Appendix 5.6

Geology and Soils Appendices

Appendix 5.6A

Geologic/Geotechnical Evaluation for Environmental Impact Report for the Entrada South Project

R.T. Frankian & Associates

October 31, 2013

GEOLOGIC/GEOTECHNICAL EVALUATION FOR

ENVIRONMENTAL IMPACT REPORT

ENTRADA SOUTH PROJECT

LOS ANGELES COUNTY, CALIFORNIA

FOR

NEWHALL LAND AND FARMING COMPANY

OCTOBER 31, 2013

JOB NO. 2004-700-052(R2)

RTF&A

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

October 31, 2013

Newhall Land and Farming Company
25124 Springfield Court, Suite 300
Valencia, California 91355

Job No. 2004-700-052(R2)

Attention: Mr. Alex Herrell

Ladies/Gentlemen;

We are pleased to submit our "Geologic/Geotechnical Evaluation for Environmental Impact Report, Entrada South Project, Los Angeles County, California." The location of the site is shown on the Site Location Map, Figure 1. The scope of our services was planned in consultation with Mr. Alex Herrell of Newhall Land and Farming Company, in accordance with our proposal dated October 18, 2013 (Proposal No. P032(A)-2013-052).

Our evaluation is provided for incorporation into an Environmental Impact Report for the Entrada South Project, and includes a discussion of the site geologic and geotechnical conditions and their impact on future site development.

Should you have any questions regarding this project, please do not hesitate to call our office.

Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

by: Alan W. Rasplicka
Principal Geotechnical Engineer

Distribution: (1) Newhall Land & Farming Company
Attn: Mr. Alex Herrell
(wet-signed, stamped copy and 1 CD containing PDF file)
(1) Matrix Environmental
Attn: Ms. Stephanie Eyestone-Jones

R. T. FRANKIAN & ASSOCIATES
1329 SCOTT ROAD BURBANK CALIFORNIA 91504
TEL. (818) 531-1501 FAX (818) 531-1511 WWW.RTFRANKIAN.COM

Newhall Land and Farming Company
October 31, 2013
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GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

GEOLOGIC/GEOTECHNICAL EVALUATION FOR

ENVIRONMENTAL IMPACT REPORT

ENTRADA SOUTH PROJECT

LOS ANGELES COUNTY, CALIFORNIA

OCTOBER 31, 2013

JOB NO. 2004-700-052(R2)

INTRODUCTION

This report presents the results of R. T. Frankian & Associates' (RTF&A) evaluation of the geologic and geotechnical conditions within the Entrada South Project, including Vesting Tentative Tract Map No. 53295 (VTTM 53295), Los Angeles County, California. The purpose of the evaluation is to assess the impact of the geologic/geotechnical conditions on future site development. This data is provided for incorporation into an Environmental Impact Report (EIR).

RTF&A performed a geotechnical plan review of the 100-scale revised Vesting Tentative Tract Map (RTF&A, 2013), including the adjacent areas located outside of VTTM 53295 where associated infrastructure improvements would occur. The RTF&A review was based on the June 24, 2013, Vesting Tentative Tract Map, prepared by Alliance Land Planning & Engineering, Inc. (Alliance). The findings, conclusions, and recommendations presented in this report are based on the 2013 study as well as previous geotechnical investigations and plan reviews for VTTM 53295 conducted by RTF&A (RTF&A, 2005; 2007; 2008; and 2013).

Our findings and recommendations are based on the results of a review of published data, and appropriate engineering and geologic analyses. The assessment of general site conditions for the presence of contaminants in the soils and groundwater was beyond the scope of this investigation.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers and geologists practicing in this or similar localities. This report has been prepared for Newhall Land and Farming Company and their design consultants, to be used solely for planning and design of VTTM 53295.

PROJECT DESCRIPTION

The Project is proposed as a mixed-use master-planned community located in northwestern unincorporated Los Angeles County, west of I-5 and The Old Road, generally along Magic Mountain Parkway. The Project Site consists of 501.4 acres, of which 382.3 acres are located within the boundaries of VTTM 53295, with the remaining 119.1 acres providing for External Map Improvements that would support the development of, and uses within, VTTM 53295. Elevations across the Project Site range from approximately 1,000 feet above mean sea level (msl) to 1,400 feet msl.

Development proposed to occur within VTTM 53295 includes 339 single-family residences, 1,235 multi-family residences, and 730,000 square feet of commercial uses anticipated to be comprised of approximately 435,000 square feet of office uses and approximately 295,000 square feet of retail commercial development. VTTM 53295 also includes a 9.4-acre elementary school site, a 27.2-acre spineflower preserve, a 5.6-acre public neighborhood park site, two recreational centers totaling 2.9 acres, and 106.8 acres of open space areas.

Facilities and infrastructure proposed within VTTM 53295 include a network of roads and trails, drainage and water quality improvements, potable and recycled water systems, a sanitary sewer system, and dry utilities systems.

As indicated above, the Project Site includes External Map Improvements within approximately 119.1 acres located outside of VTTM 53295. These External Map Improvements would support the uses within VTTM 53295 and consist of roadway improvements, including

improvements to portions of Magic Mountain Parkway, Media Center Drive, and Commerce Center Drive, as well as the extension of Westridge Parkway to B Drive. Other External Map Improvements include: a water quality basin; debris basins; storm drain/flood control improvements and associated access roads; a potable water system, including a new water tank and an expanded booster station; wastewater and recycled water systems; relocation of a gas line with the extension of Westridge Parkway; and a grading borrow site to the west of VTTM 53295 within Mission Village.

Conventional cut-and-fill grading will be used to develop the level building pads proposed for VTTM 53295. The maximum anticipated cut slope will be approximately 85 feet high; the highest proposed fill slope is approximately 80 feet high. In total, Project grading would require the removal and recompaction of approximately 7.8 million cubic yards of existing material in a balanced cut and fill operation. Grading would include mass grading for the development areas, along with fine grading for development pads. Mass grading would consist of rough grading operations that would provide for major roads and infrastructure, including improvements outside of VTTM 53295 (i.e., the External Map Improvements), establish drainage patterns, and create building pads for the various land uses within the Project Site. Remedial grading and custom grading may also be required depending upon future site-specific soils and geotechnical investigations. Graded slopes would be landscaped and irrigated pursuant to County grading and erosion control requirements.

Included in the overall 7.8 million cubic yards of grading is approximately 1.4 million cubic yards of grading for the External Map Improvements, including the extension of Westridge Parkway and a portion of Commerce Center Drive, a water quality basin, debris basins, storm drain/flood control improvements, access roads, and an approximately 400,000-cubic yard borrow site within the External Map area from which 200,000 cubic yards would be imported into VTTM 53295 as part of the requested CUP. The remaining 200,000 cubic yards would be used as fill elsewhere within the External Map area. There would also be minor grading associated with reconstruction of the Magic Mountain Theme Park entrance and Media Center

Lane. Collectively, Project-related earthwork activities would result in a balanced cut and fill condition on the Project Site.

While it is likely that the Project Site would be mass graded all at one time to allow for construction of secondary access and utilities, overall Project-related grading may occur in several phases, including partial grading within VTTM 53295. This phased grading would be protected from flooding and erosion in accordance with current County standards.

GEOLOGY

REGIONAL GEOLOGY

The Project Site is located in the eastern Ventura basin within the Transverse Ranges geomorphic province of California. The Ventura basin consists of a narrow, elongate 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 and the Santa Barbara Channel. The Ventura basin has been an area of subsidence and sediment accumulation since the beginning of the Tertiary period, with the present trough-like form developing near the beginning of the Miocene epoch (Winterer and Durham, 1962).

The structure of the basin is defined as a highly folded “synclinorium” (a broad regional syncline on which are superimposed minor folds) formed by north-south compressional forces (Kew, 1924) and containing a maximum 50,000± feet of marine and nonmarine Tertiary through Quaternary age sediments (Bailey and Jahns, 1954). Two main periods of general deformation of the Ventura basin are indicated by the regional geologic structure: one in middle to late Miocene (represented by deposition of the Modelo Formation), and the other during the Pleistocene epoch, after deposition of the Plio-Pleistocene Saugus Formation (Kew, 1924; Winterer and Durham, 1962; Yeats et al., 1994). The flanks of the Ventura basin synclinorium are broken by a series of large reverse/thrust faults including the Santa Susana and Oak Ridge

faults on the southern flank, and the Red Mountain and San Cayetano faults on the northern flank (Bailey and Jahns, 1954; Yeats et al., 1994). The San Gabriel fault, the dominant geologic feature in the Santa Clarita Valley, forms the eastern Ventura basin boundary, and separates the Ventura basin from the structurally similar Soledad basin.

Sedimentary rock units comprising the eastern Ventura basin include approximately 2,000 feet of undifferentiated middle to late Eocene age rocks, 1,000± feet of the middle Miocene age Topanga Formation, 5,000± feet of the late Miocene age Modelo Formation, 4,000± feet of the late Miocene to early Pliocene age Towsley Formation, 5,000± feet of the Pliocene age Pico Formation, and 7,000± feet of the Plio-Pleistocene Saugus Formation (Winterer and Durham, 1962). The undifferentiated Eocene units and the Topanga, Modelo, Towsley, and Pico Formations are composed of marine sediments; the Saugus Formation is composed of interfingering shallow-water marine, brackish water, and nonmarine units (Kew, 1924; Winterer and Durham, 1962). These Tertiary period rock units rest unconformably on pre-Cretaceous age metamorphic and igneous basement rocks of the San Gabriel Mountains.

Within the Santa Clarita Valley, the primary sedimentary rock formations are the Pico and Saugus Formations. The Pico Formation outcrops along the northern flanks of the Santa Susana Mountains and in the Chiquita Canyon-Val Verde area. The Saugus Formation overlies the Pico Formation and comprises most of the hills of the valley between Newhall and Castaic. These two formations have been deformed into a series of closely spaced anticlines and synclines whose moderately- to steeply-dipping flanks are broken by the Holser fault and cut off diagonally by the San Gabriel fault (Bailey and Jahns, 1954). Other geologic materials exposed within the valley include Pleistocene fanglomerate deposits exposed in the southern portion of the valley, sporadic remnant terrace deposits of Pleistocene age, and Holocene alluvium mantling the valley floor.

SITE GEOLOGY

Geologic Units: Geologic units observed within, or adjacent to, the Project Site include the Saugus Formation, landslides, terrace deposits, alluvium, and engineered and non-engineered fill. The areal extent of the various geologic units is depicted on the Geologic Map, Figures. 2.1 and 2.2. A description of each unit is presented as follows:

Saugus Formation (TQs): The Plio-Pleistocene age Saugus Formation underlies the entire Project Site and was observed in outcrops in the eastern portion of the Project Site. The Saugus Formation consists of massive to well bedded, fine to coarse sandstone interbedded with matrix-supported coarse sand and gravel conglomerate. Sandy siltstone is encountered locally. The Saugus Formation is generally moderately to weakly cemented with alkaline earth carbonates, and is friable.

Landslides (Qls): Several landslides are located within the External Map Improvements area, immediately west of the VTTM 53295 boundary, within the limits of Mission Village (VTTM 61105). The landslides consist of translational slides that failed along a weak, unsupported bedding surface within Saugus Formation units. As such, the landslide deposits are typically composed of disturbed Saugus Formation units (i.e., sandstone, siltstone, and mudstone) that can range from highly weathered/altered rock to relatively competent materials. Most of the landslides are believed to be pre-Holocene age (greater than 11,000 years old).

Terrace Deposits (Qt)**:** Pleistocene age terrace deposits cap the Saugus Formation over most of the western half of the Project Site. The terrace deposits consist of materials originally deposited as alluvial fans (known as fanglomerates) derived from the Santa Susana Mountains. Terrace deposits consist of massive to poorly bedded sand, gravel, and silt. Cobbles and boulders are common, with clast size ranging from 3 to 12 inches in diameter. The unit is loose and poorly consolidated.

The contact between the terrace deposits and Saugus Formation on-site is sometimes difficult to accurately define due to the similarity of the units, particularly the loosely consolidated gravel beds of the terrace deposits and the Saugus Formation conglomerates.

Alluvium (Qal): Holocene age alluvial deposits are present in two northerly-draining canyons within the Project Site. Alluvial deposits consist of loose and poorly consolidated mixtures of sand, silt, and gravel. Some alluvial areas have been disturbed by past farming activities and these areas are designated as undifferentiated artificial fill and alluvium (map unit "af/Qal").

Residual Soil: Residual soil (not shown on the Geologic Map) has developed as a mantle over much of the natural slopes within the Project Site. The residual soil generally consists of silty sand/sandy silt to sandy and silty clay deposits.

Surficial Slope Failures (Qsf): Surficial slope failures have been mapped on the natural slopes within the Project Site. These failures include weathered bedrock, terrace deposits, and slope wash. They are limited in lateral extent and have a maximum thickness of 15 feet near the toe.

Artificial Fill (af): Artificial fill associated with past agricultural and petroleum activities is present within the Project Site. The artificial fill is composed primarily of reworked Saugus Formation materials and terrace deposits.

Stockpile Fill (sf): An existing stockpile fill is located in the east-central portion of the Project Site. This stockpile fill (map unit "sf") was created on a former oil well pad to accommodate excess fill material generated during excavation for relocation of the Chevron Service Station, located at the southwest corner of the intersection of Magic Mountain Parkway and The Old Road. Placement of the stockpile fill was observed and tested by RTF&A in accordance with the requirements of the Los Angeles County Department of Public Works. These requirements included construction of a subdrain at the base of the fill, and compaction of the fill materials to at least 85 percent relative compaction. Prior to performing earthwork within VTTM 53295, these fill materials and subdrain should be removed. The majority of the stockpile fill is within proposed cut areas that will be removed as part of excavation to establish pad grade. The excavated stockpile fill material may be reused for construction of engineered fills on-site.

Geologic Structure: The Saugus Formation has been warped into a northwest-striking homoclinal structure with northeast dips between 4 degrees to 20 degrees. Bedding within the terrace deposits is generally subparrallel to the bedding in the underlying Saugus Formation, with northeasterly dips typically less than 10 degrees. Bedding planes within both the Saugus Formation and terrace deposits vary from diffuse and gradational to sharp and planar.

GROUNDWATER

The Project Site is located in Township 4 North, Range 16 West, Sections 19 and 20, within the Eastern Hydrologic Subarea of the Upper Santa Clara River watershed of Los Angeles County. Within the Project Site, groundwater occurs in the alluvial deposits within the major tributary canyons, and within the aquifers of the Saugus Formation.

The Water Resources Division of Los Angeles County Department of Public Works (LACDPW) has periodically measured groundwater levels in water wells within the vicinity of the Project Site. There was one well within approximately ½-mile of the Project Site that was monitored by LACDPW. This well was located near the intersection of The Old Road and Rye Canyon Road, and was established within the alluvial aquifer. The well was designated by LACDPW as Well No. 7076C.

LACDPW water level measurement records for Well No. 7067C, established at a ground surface elevation of 1,223.0 feet above msl, date back to November 1954. The highest observed water level in the well was 8.0 feet below ground surface (corresponding to a water surface elevation of 1,215.0 feet msl), measured on April 8, 1986, and on April 25, 1988. The most recent recorded water level from the well was 39.4 feet (water surface elevation of 1,183.6 feet msl), measured on April 14, 1992. Well No 7067C was reported destroyed in 1993.

Exploration completed within the Project Site shows that groundwater is generally deeper than 40 feet below ground surface within VTTM 53295 and 10 feet below ground surface within the External Map Improvements, based on exploratory borings excavated to a maximum depth of 65 feet. The exceptions are two of the northerly-draining canyons, designated as Magic

Mountain Canyon and Unnamed Canyon 2. At the time of field exploration, groundwater was not encountered in these canyons, but during winter season these canyons may experience intermittent surface flow and high groundwater elevations.

GEOLOGIC AND GEOTECHNICAL HAZARDS

GENERAL

Potential geologic and geotechnical hazards include, but are not limited to, primary earthquake hazards (ground shaking and ground rupture), secondary earthquake hazards from earthquake ground shaking (such as liquefaction, tsunamis, and seiches), and landslides/slope instability. Earthquakes have the potential to inflict the greatest loss of life and property damage. Consequently, the proximity of a site to active or potentially active faults is a key element in assessing the potential for earthquake damage.

The major cause of damage from earthquakes is generally the result of strong ground shaking from movement along a fault or fault zone. Ground shaking could occur not only immediately adjacent to the earthquake epicenter, but within areas for many miles in all directions. Damage due to actual fault displacement or ground rupture beneath a structure may also occur; however, fault ground rupture is much less common, and typically confined to areas along, or immediately adjacent to, the fault surface trace.

Landslides are common hazards in southern California, particularly in hillside areas underlain by sedimentary rock units. Landslides can occur in terrain ranging from vertical cliffs to slopes as gentle as one or two degrees. Materials on slopes that are subject to landsliding include rock, soil, artificial fill, or combinations of these.

FAULTS

Earthquakes result from movement along faults or volcanic activity. In California, earthquakes are more commonly associated with faults or fault zones, and the southern California region is historically seismically active. The numerous faults in California include

both active and potentially active faults. In accordance with criteria established by the California Geological Survey (CGS), formerly known as California Division of Mines and Geology (CDMG), for the Alquist-Priolo Earthquake Fault Zoning program (Hart and Bryant, 1999), a fault can be considered active if it has demonstrated movement within the Holocene epoch, or approximately the last 11,000 years. Faults that have demonstrated Quaternary movement (last 1.6 million years), but lack strong evidence of Holocene movement, are classified as potentially active. Faults that have not moved since the beginning of the Quaternary period are deemed inactive.

No known active faults underlie the Project Site, and the Project Site is not within an Alquist-Priolo Earthquake Fault Zone, as established by the CGS. The closest active (and zoned) fault to the site is the San Gabriel fault, located approximately 1.4 miles to the northeast. In our opinion, there is little probability of surface rupture due to faulting occurring on-site during the design life of the project for the reasons stated above.

A discussion of nearby active and potentially active faults is presented in the following sections. The location of the site, relative to nearby active and potentially active faults, is illustrated on the Regional Fault Map (Figure 3).

Active Faults: The Project Site is located within an area potentially susceptible to severe ground shaking, due to the close proximity of several active faults, including the San Gabriel, Oak Ridge, Santa Susana, and San Cayetano faults.

San Gabriel Fault: The nearest active fault is the San Gabriel fault, located approximately 1.4 miles northeast of the Project Site. The San Gabriel fault extends approximately 90 miles through the Transverse Ranges of southern California. The San Gabriel fault consists of a zone of imbricate, steep, north-dipping faults. Throughout most of its extent, the fault has strong geomorphic expression, with the faults comprising the zone characterized by displaced geologic units, deflected drainages, strike valleys, notched ridges, subparallel faulting, fracturing, and folding (Oakeshott, 1958; Wentworth and Yerkes, 1971).

Within the Santa Clarita Valley, from Castaic Creek to the San Gabriel Mountains, the fault crosses the Castaic lowlands and the Santa Clara River, where its course is marked by a belt of braided small faults and steep dips in Pliocene and Pleistocene beds. Since most of the displacement within the fault zone took place before deposition of these geologically young beds, the fault's trend through this area is not nearly as conspicuous as within the rocks along the southwestern margin of the Ridge basin or in the basement rocks of the San Gabriel Mountains (Crowell, 1982). The location of the fault, however, is somewhat defined by the steeply-dipping and folded beds of the Plio-Pleistocene Saugus Formation, and the fault is exposed in cut slopes, roadcuts, and trenches.

Prior to 1979, most geologists studying the San Gabriel fault acknowledged that late Pleistocene (approximately the past 100,000 years) activity along the fault zone was probable, but evidence for possible Holocene activity was judged to be very questionable (Kahle, 1986b). However, after completing a geologic and geomorphic investigation of the San Gabriel fault, Weber (1979) concluded that some evidence strongly suggested Holocene activity. Subsequently, Cotton and Seward (1984) conducted exploratory trenching along segments of the fault zone in the Santa Clarita Valley. Although no surface evidence of faulting was recognized, at least two trenches revealed displacement of Holocene age alluvial deposits. Radiocarbon analyses of detrital charcoal from faulted alluvial materials in a trench excavated in Rye Canyon yielded an age of 3,500±250 years before present. Alluvium dated as 1,550±190 years before present was shown to be unfaulted in the same trench, establishing limits of latest movement on the Castaic-Bouquet Junction segment of the San Gabriel fault.

Based on the findings of Weber (1979), Cotton and Seward (1984), and the recommendations of Kahle (1986b) for a CDMG Fault Evaluation Report for the fault, the State Geologist established an Alquist-Priolo Earthquake Fault Zone for the San Gabriel fault in 1987 within the Newhall Quadrangle.

Santa Susana Fault: The Santa Susana fault, located approximately 6.3 miles south of the Project Site, consists of a complex zone of primarily north-dipping thrust faults. The fault zone

extends northeastward from the Santa Susana Mountains across San Fernando Pass, and into the San Gabriel Mountains. A short segment of the Santa Susana fault ruptured during the 1971 San Fernando earthquake (Southern California Earthquake Data Center [SCEDC], 2010); however, the remainder of the fault zone has not demonstrated displacement since late Pleistocene time (Slosson and Barnhart, 1967).

Oak Ridge Fault: The Oak Ridge fault is a south-dipping reverse fault that forms a ridge to the south of its trace. The fault extends for a distance of approximately 56 miles from Piru, on the east, to offshore at a point about 20 miles south of Santa Barbara. The onshore segment of the Oak Ridge fault is roughly parallel to both the Santa Clara River and State Highway 126. The offshore segment is associated with a definite zone of active seismicity (SCEDC, 2010); the only known Holocene surface rupture is found onshore, between the towns of Bardsdale and Fillmore (Yeats et al., 1986; Powell, 1991).

At its eastern end, the Oak Ridge fault appears to be overthrust by the Santa Susana fault, becoming a "blind thrust fault" (SCEDC, 2010). The fault associated with the 1994 Northridge earthquake is probably associated with the Oak Ridge fault system. At its closest point, the Oak Ridge fault is situated approximately 6.7 miles west-southwest of the Project Site.

San Cayetano Fault: The San Cayetano fault is an east-west trending, north-dipping thrust fault that extends approximately 28 miles from the foothills north of Piru to the southeastern edge of Ojai Valley. Weber et al. (1973) and Kahle (1985) suggest that Holocene fault activity is indicated by well-defined fault scarps and offset Holocene sediments. The San Cayetano fault is located approximately 8.6 miles west-northwest of the Project Site.

Other Active Faults: Other more distant but significantly active faults include the San Fernando fault zone, located approximately 9.7 miles southeast of the site, and the San Andreas fault zone, located approximately 20 miles to the northeast.

A growing body of geologic and seismologic data, supplemented by regional structural interpretations, suggests Pliocene to modern deformation in the Los Angeles basin is partly accommodated by developing basement-involved fold and thrust belts (Davis et al., 1989;

Hauksson, 1990; Shaw and Suppe, 1996). The fold and thrust belts, which may be a source for future earthquakes, are expressed at the ground surface by elongate, low-lying anticlinal ridges. At the core of these anticlinal ridges are low-angle, blind-thrust faults rising off a basal detachment surface. Recognized blind-thrust faults in the Los Angeles and Ventura basins include the Elysian Park, Compton-Los Alamitos, Oak Ridge, and Northridge blind-thrust faults. The closest known blind-thrust fault to the site is the Northridge blind-thrust fault. The site, however, is not underlain by any known blind-thrust faults.

Potentially Active Faults: Potentially active faults in close proximity to the Project Site include the Airport Mesa and Saddle faults of the Holser structural zone, and the Holser fault.

Airport Mesa and Saddle Faults: Previous geologic mapping by Weber (1979 and 1982) identified two faults as extending east-west across Airport Mesa within VTTM 61105. Allan E. Seward Engineering Geology, Inc. (AES) conducted a site-specific fault rupture hazard investigation for the two faults, identified as the Airport Mesa fault (on the north) and Saddle fault (on the south), in 1999 and 2000 (AES, 2004a). According to AES, Saugus Formation sedimentary rock units beneath Airport Mesa have been tectonically deformed, producing the two faults and several east-plunging folds. The area between the two faults has been uplifted as a block at least 40 feet, as a result of folding and reverse faulting; the terrace deposits overlying the Saugus Formation have also been deformed along the Airport Mesa fault and the Saddle fault. AES concluded that the faults have demonstrated movement within at least the last 100,000 years but, due to a lack of datable soil horizons, failed to unequivocally establish that the faults have moved in the last 11,000 years. By definitions established by CDMG, the Airport Mesa and Saddle faults are considered potentially active.

The eastern extremity of the Airport Mesa fault extends into the Entrada South External Map Improvements. The Saddle fault lies approximately 1,700 feet west of the External Map Improvements.

Holser Fault: The potentially active Holser fault is situated approximately 2.0 miles northwest of the site. The Holser fault consists of a south-dipping, sharply folded reverse fault

(Winterer and Durham, 1962) that trends east-southeast from near Piru Creek to at least Castaic Junction. The Holser fault post-dates deposition of the Pico Formation and is believed to be a "backthrust" of a subsurface thrust fault that represents the intersection of the San Cayetano and Santa Susana faults at depth (Yeats et al., 1994). Weber (1979) states that there is no clear evidence of Holocene activity along the Holser fault, but "plentiful evidence" that activity has occurred in the past 100,000 years. Geolabs (2007a) recently conducted a surface fault rupture hazard assessment for the Holser fault within Parcel Map 18108, located northeast of VTTM 61105. Geolabs concluded that the last known movement on the Holser fault was approximately 40,000 to 100,000 years ago. Consequently, the fault is considered potentially active.

SEISMICITY

Historic Seismicity: The historic occurrence of earthquakes within the region of the site was determined using the program EQSEARCH for Windows (Blake, 2000a). This program computes and prints the epicentral distance from a selected site to each of the earthquakes within a specified search radius (100 miles). From the computed distances, the program also estimates the peak horizontal ground acceleration that may have occurred at the site, due to each earthquake, utilizing the Bozorgnia-Campbell-Niazi (1999) attenuation relationship. We used a combined earthquake catalog for magnitude 4.0 or larger events between the years 1800 and 2005. An earthquake epicenter map for magnitude 5.0 or larger events between the years 1800 and 2005 is presented in Appendix A, which was obtained from the EQSEARCH output. A historic earthquake search for the time period 1932 through 2013 was also attained from the SCEC website, since the data for the EQSEARCH program has not been updated since 2005. There has only been one magnitude 5.0 or larger event within the vicinity of the site since 2005. That earthquake, known as the Chino Hills earthquake, occurred on July 29, 2008 and registered a magnitude of 5.39 (M5.39). The epicenter of this earthquake was approximately 57 miles east of the Project Site. The SCEC search data is also presented in Appendix A.

The closest recorded earthquake epicenter was located 1.6 miles from the site, based on the EQSEARCH output. This earthquake event occurred on July 22, 1999, with a measured magnitude of 4.0 (M4). The calculated site-specific ground motion associated with this event was 0.148g. At least 15 events of M5 or greater have occurred within 15 miles of the site during the period of 1800 and 2005, as listed in Appendix A. The three most recent M5 or greater earthquakes felt in the Santa Clarita area were the February 9, 1971, M6.4 San Fernando earthquake; the January 17, 1994, M6.7 Northridge earthquake; and the July 29, 2008 M5.39 Chino Hills earthquake. The San Fernando earthquake resulted in a calculated site-specific ground motion measured at 0.234g. Ground motion at the site from the Northridge earthquake was 0.217g.

The largest known earthquake event occurring within 100 miles of the site was the M7.9 Fort Tejon earthquake of January 9, 1857. The epicenter of this earthquake was approximately 92 miles from the site. The estimated site-specific ground motion from the Fort Tejon earthquake was 0.077g.

The largest recorded earthquake ground motion at the site occurred on April 4, 1893, with an estimated ground motion of 0.244g. The epicenter of this earthquake was located approximately 8 miles south of the site, near the trace of the Santa Susana fault.

Seismic Hazard Zone Mapped Accelerations: The CGS has prepared a Seismic Hazard Zone (SHZ) report for the Newhall Quadrangle (CGS, 1997). The report includes a map showing Peak Ground Accelerations (PGA) for a 10 percent probability of exceedance in 50 years for alluvial soil conditions. The report also includes an earthquake opportunity map with ground accelerations with a 10 percent exceedance in 50 years magnitude weighted pseudo-peak acceleration, which are presented in Figures 6.1 and 6.2, respectively. For the Project Site, the PGA for alluvial conditions can be taken as about 0.74g. The average magnitude weighted Pseudo-Peak Acceleration can be taken as about 0.58g.

Seismic Spectrum: The Design Response Spectrum from the USGS website is presented in Figure 9. The MCE Spectrum from the USGS website is presented in Figure 9. The Uniform

Hazard Spectrum from the USGS website for a two percent probability of exceedance in 50 years is presented in Figure 9.

Deaggregation Seismic Source Parameters: The USGS website was used to determine the Probability Seismic Hazard Deaggregation for a 2,475-year return period for a site with Vs = 600 m/s. The graph from the USGS website is presented in Figure 5.

FRISK Site-Specific Ground Motion Analysis: The probabilistic MCE was determined in accordance with Section 21.2.1 of ASCE Standard 7-05 for five percent damped acceleration response spectrum having a two percent probability of exceedance within a 50-year period, using the program FRISK, using the Boz et al. (1999) and Campbell (1997 rev) H Qal attenuation relationships with 5 percent damping. The factors from Boz et al. (1999) and Campbell (1997) are summarized below and were determined based on the response spectrum curves presented in Appendix B.

Method	Boz et al.	Campbell
Sds	1.8	1.73
Sd1	1.21	0.92
Sms	2.70	2.59
Sm1	1.81	1.38

California Building Code Seismic Design: Under Section 1613 Earthquake Loads of the CBC, the following coefficients and factors apply to seismic force design of structures at the subject site. We determined the coefficients and factors using both ASCE 7-05 and ASCE 7-10 as the Design Code Reference Standard. The parameters were determined using the U. S. Seismic Design Maps at the United States Geological Survey (USGS) Earthquakes Hazard website. The output from the USGS Earthquake Hazard website is presented in Appendix C.

Design Code Standard	ASCE 7-05	ASCE 7-10
Site Class	D	D
Ss	2.318	2.954
S1	0.707	1.021
SMs	2.318	2.954
SM1	1.060	1.532
SDs	1.545	1.969
SD1	0.707	1.021
PGA	0.618	1.077

LIQUEFACTION

The State of California Seismic Hazard Maps for the Newhall Quadrangle (1997) indicate that the four major alluviated canyons within the Project Site are considered potential liquefaction areas. The potential liquefaction areas are depicted on Figure 4, Seismic Hazard Zones. The potential liquefaction zones depicted on Figure 4 were determined by the State of California based on identification of areas mantled by Holocene to late Pleistocene age alluvial soils with groundwater levels estimated to be within 40 feet of ground surface. These areas are delineated in compliance with the Seismic Hazards Mapping Act (Chapter 7.8, Division 2 of the California Public Resources Code). It should be noted that the map identifies potential liquefaction areas requiring site-specific investigations.

Liquefaction may occur when saturated, loose to medium dense, cohesionless soils are densified by ground vibrations. The densification results in increased pore water pressures if the soils are not sufficiently permeable to dissipate these pressures during, and immediately following, an earthquake. When the pore water pressure is equal to, or exceeds, the overburden pressure, liquefaction of the affected soil layers occurs. For liquefaction to occur, three conditions are required:

- ground shaking of sufficient magnitude and duration;
- soils that are susceptible to liquefaction; and

- a groundwater level at or above the level of the susceptible soils during the ground shaking.

For a site to be considered susceptible to liquefaction using the criteria and methodology initially developed by Seed and Idriss (1982), liquefaction of underlying soil layers must result in an observed surface effect such as sand boils, mud-spouts, surface water seepage, ground cracking, or quicksand-like conditions.

Lateral spreading can result in ground cracking, and may occur when a site is sloped or is near a free-face and there is a sufficiently continuous liquefiable layer on which the overlying soils can move laterally.

Ground settlement may occur during seismic shaking of an area. The settlement can be caused by liquefaction of loose granular soils and by compaction of loose, but not necessarily liquefiable, soils.

In accordance with requirements of the Seismic Hazards Mapping Act, site-specific liquefaction evaluation was conducted within the Project Site (RTF&A, 2005, 2007, and 2008; and AES, 2000b). The liquefaction evaluation concluded that liquefaction-prone horizons are limited, and the liquefaction potential and associated differential settlements are considered to be relatively small (RTF&A, 2008). The maximum estimated settlement within the proposed development area of VTTM 53295 is on the order of 0.6 inches, and the differential seismic settlement will be 0.4 inches within a horizontal distance of 30 feet. The potential for lateral spreading is considered low.

SLOPE STABILITY

General: Slope stability considerations include future cut-and-fill slopes, slopes that will remain natural at the completion of grading, debris flows associated with natural slopes, and rockfall hazard.

Cut Slopes: Proposed site development will include the grading of 37 cut slopes. The cut slopes will be graded at inclinations ranging from 2:1 (horizontal to vertical) to 6:1. All 2:1

cut slopes exceeding 30 feet in height will be designed with terrace drains every 25 vertical feet. The maximum proposed cut slope is approximately 85 feet in height. Eighteen of the cut slopes will encounter adverse geologic conditions (i.e., unsupported geologic structure, weakly cemented and erosion-prone units, etc.) which may require construction of stabilization fills.

Existing cut slopes associated with past petroleum activities are present within the Project Site. These slopes, typically steeper than 1½:1, will be removed or re-graded as part of the site grading.

The proposed cut slopes will be grossly stable if graded in accordance with the recommendations of our Vesting Tentative Tract Map plan reviews (RTF&A, 2005; 2007; 2008; and 2013) and the project grading plan. Mitigation measures recommended for slope stabilization include:

- maintaining graded slope inclinations no steeper than 2:1 (horizontal:vertical);
- partial or complete removal of landslides; and
- construction of stability fill slopes in areas of adverse geologic structure.

Fill slopes: Proposed fill slopes will be graded at inclinations of 2:1 or flatter. All 2:1 fill slopes exceeding 30 feet in height will be designed with terrace drains every 25 vertical feet. The maximum proposed fill slope height is approximately 80 feet. The proposed fill slopes will be grossly stable if graded in accordance with the recommendations of our Vesting Tentative Tract Map plan reviews (RTF&A, 2005; 2007; 2008; and 2010) and the project grading plan.

Natural Slopes: The natural slopes that will remain within the Project Site, following site development, have gradients ranging from 1½:1 to 3:1. Natural slopes will be grossly stable if the adjacent grading is confined to the proposed grading limits and does not undercut natural slopes outside the limits.

The standard setbacks presented in Section 1808.7 and illustrated in Figure 1808.7.1 of the CBC for ascending and descending natural slopes shall be followed and incorporated in the project design.

Debris Flow: Potential debris flow hazard exists anywhere that a moderate to thick accumulation of residual soil, slope wash, or weathered bedrock materials occur on moderate to steep descending slopes that border future building pads. Potential debris flow may be mitigated by one or a combination of the following measures:

- remove loose surficial material;
- construct diverter slough walls;
- construct impact wall;
- construct debris basins;
- construct stabilization fill slopes;
- control run-off water; and
- plant selective deep-rooting vegetation.

The southerly portion of the Project Site is the most susceptible to debris flow hazard. The proposed grading, which includes construction of debris basins and drainage control devices for graded slopes, will eliminate debris flow hazard within the Project Site.

Appropriate mitigation measures include avoidance, impact walls, or debris basins.

Landslides and Surficial Failures: Several landslides are located immediately west of VTTM 53295, within the External Map Improvements, and will be encountered during grading for improvements to portions of Magic Mountain Parkway and Commerce Center Drive. Most of the landslides will be mitigated by completely removing the landslide during grading. The lone exception is the large landslide in the southwestern corner of the Project Site. Mitigation of this landslide will consist of partial removal to establish a stable configuration for the landslide mass (RTF&A, 2005; Leighton and Associates, Inc., 2012).

Numerous surficial failures have been identified within the Project Site. All surficial failures will be entirely removed during grading.

Rockfalls: The Project Site is not located directly downslope of any potential rockfalls.

DAM INUNDATION

The technical appendix to the Los Angeles County General Plan and Safety Element (Leighton, 1990) indicates that the Project Site is not susceptible to inundation as a result of catastrophic failure of nearby dams. Accordingly, the potential impact from dam inundation is judged to be very low.

TSUNAMIS AND SEICHES

The Project Site is not in a coastal zone and, therefore, not susceptible to tsunamis (seismic sea waves).

The Project Site is not located downslope of any large impounded bodies of water that would adversely impact the site as a result of seiches (oscillations in a body of water due to earthquake shaking). Therefore, the Project Site is considered safe from hazards associated with tsunamis or seiches.

SUBSIDENCE AND HYDROCONSOLIDATION

The Project Site is not within an area of known subsidence associated with petroleum or groundwater withdrawal. Furthermore, the site is not in an area of known peat deposits; therefore, the site will not be impacted by subsidence associated with peat oxidation. The potential for ground subsidence in response to fluid withdrawal or peat oxidation within the Project Site is judged to be very low.

Hydroconsolidation is the process by which dry alluvial soils with high void-ratio collapse under structural load in response to the application or introduction of water into the soils. Areas of potentially collapsible or compressible soils were investigated by RTF&A (2005 and 2007). During the Project Site grading, all susceptible soils will be removed to competent natural material. The estimated removal depths range from 8 to 20 feet below existing grade. No significant hydroconsolidation effects due to water infiltration are expected at the site after

the recommended removals are completed. Consequently, hydroconsolidation of natural soils on-site is considered unlikely upon the completion of grading.

EROSION POTENTIAL AND DRAINAGE

The bedrock, soil/alluvial material, and future fill material are susceptible to erosion if sheet flow drainage occurs. The degree of erosion is controlled by the degree of cementation or consolidation of the various materials; accordingly, the bedrock materials are less susceptible to erosion than the other materials. Water should not be allowed to pond on future graded areas, or allowed to flow uncontrolled over natural or graded slopes. Surface drainage should be directed to terrace drains or debris basins. Debris material generated from erosion should be contained within site boundaries. All slope terrace drains should be kept clear of all debris to limit impounding or surface water. Graded slopes should be seeded with deep-rooting, drought-resistant vegetation to minimize erosion.

CONSTRUCTION CONSIDERATIONS

OIL WELLS

16 abandoned oil wells are present within or immediately adjacent to the Project Site boundaries. According to Division of Oil, Gas and Geothermal Resources (DOGGR), the oil wells have been abandoned in accordance with the DOGGR regulations that existed at the time of abandonment. However, prior to grading, DOGGR will require review of the original abandonment files, relative to the proposed development. There is a possibility that DOGGR may require re-abandonment of some or all of the wells to current DOGGR requirements.

RIPPABILITY

The bedrock at the Project Site is weakly to moderately cemented and can likely be excavated with conventional grading equipment. Heavy single shank ripping may be needed for massive conglomerate or well-cemented sandstone units.

OVERSIZED MATERIAL

Cobbles and small boulders are common within the alluvium and in the terrace deposits, particularly near the base of the terrace deposits. Oversized material (material larger than 8 inches in diameter) may present some difficulty during excavation with some types of equipment, but is not considered a significant detriment to development of the Project Site. Oversized material may be incorporated into the engineered fill as rockfill windrows.

EXPANSIVE MATERIAL

Fine-grained units (i.e., siltstone, mudstone, claystone units) within the Saugus Formation and terrace deposits may be expansive in nature. The clayey alluvial, slope wash, and artificial fill deposits could also be expansive. Engineered fills created from on-site earth materials are anticipated to have a low to medium expansion potential. The expansion characteristics of engineered fill exposed at rough grade will be evaluated by the Project Geotechnical Consultant at the completion of the Project Site grading, as required by the 2011 Los Angeles County Building Code. The final foundation design should be based on those expansion test results. Expansive materials could be mitigated by utilizing special foundation and reinforcement.

SHRINKING AND BULKING

The weakly consolidated materials on-site, such as the artificial fill, slope wash deposits, and alluvium, shrink in volume when excavated then placed as engineered fill. Conversely, the terrace deposits and Saugus Formation units are likely to bulk. Estimates of shrinking or bulking for the on-site materials, based on data developed by RTF&A (2000) for adjacent Tract 45433 (Westridge) and by AES (2004b) for VTTM 61105 (Mission Village), are summarized below:

- artificial fill, slope wash, and alluvium: 15 percent to 20 percent shrinkage;
- terrace deposits: 0 to 2 percent bulking; and

- Saugus Formation: 0 to 6 percent bulking.

CORROSION

Corrosion testing performed on soils within adjacent Tract 45433 (Westridge) by RTF&A (2002) and VTTM 61105 (Mission Village) by AES (2004b) suggest that the soils within the Project Site may be corrosive to concrete and ferrous metals. Corrosion testing of the on-site soils will be performed, as required by the 2011 Los Angeles County Building Code, once a 40-scale rough grading plan has been developed for the Project Site. Final recommendations for concrete will be in accordance with the latest CBC requirements; a corrosion specialist should provide design recommendations for potential corrosion of metals in contact with on-site soils.

CONCLUSIONS

On the basis of our geologic/geotechnical evaluation, we conclude that the project is feasible from a geologic and geotechnical standpoint and will be safe from geologic hazards, provided that the geologic and geotechnical recommendations outlined in this report, past tentative plan review reports (RTF&A, 2005; 2007; 2008; and 2013), and the 2011 Los Angeles County Building Code are taken into consideration during the planning, design, and construction phases of the project. In our opinion, the Project Site is suitable for the proposed development.

GEOLOGIC AND GEOTECHNICAL HAZARDS

Potential geologic and geotechnical hazards include, but are not limited to, primary earthquake hazards (ground shaking and ground rupture associated with active or potentially active faults), secondary earthquake hazards from earthquake ground shaking (such as liquefaction, tsunamis, and seiches), and landslides/slope instability.

Faults: Earthquakes result from movement along faults or volcanic activity. In California, earthquakes are more commonly associated with faults or fault zones, and the

southern California region is historically seismically active. The numerous faults in California include both active and potentially active faults.

Active Faults**:** No known active faults underlie the site, and the site is not within an Alquist-Priolo Earthquake Fault Zone, as established by CGS. The closest active (and zoned) fault to the Project Site is the San Gabriel fault, located approximately 1.4 miles to the northeast. No evidence of active faulting or ground rupture associated with active faulting has been identified within the Project Site. For the reasons stated above, the probability of ground rupture due to active faulting occurring on-site during the design life of the project is considered to be very low to non-existent.

- **Mitigation:** No mitigation is required.

Potentially Active Faults**:** No known potentially active faults are located within the boundaries of VTTM 53295. The eastern extremity of the potentially active Airport Mesa fault extends into the Entrada South External Map Improvements. The potentially active Saddle fault lies approximately 1,700 feet west of the External Map Improvements. By definition, potentially active faults have not demonstrated movement within the last 11,000 years. Therefore, in our opinion the probability of ground rupture occurring within the Project Site from nearby potentially active faults during the design life of the project is considered to be very low.

- **Mitigation:** No mitigation is required.

Seismicity: The site is located within a region of southern California that is subject to strong ground motion from movement along a fault or fault zone. Ground shaking could occur not only immediately adjacent to the earthquake epicenter, but within areas for many miles in all directions.

- **Mitigation:** Projects should be designed in accordance with all applicable current codes and standards, utilizing the appropriate geotechnical parameters presented below and in the "Seismicity" section of this report to reduce seismic risk to an acceptable level as defined by CGS in Chapter 2 of SP 117a (CGS, 2008).

Design Code Standard	ASCE 7-05	ASCE 7-10
Site Class	D	D
Ss	2.318	2.954
S1	0.707	1.021
SMs	2.318	2.954
SM1	1.060	1.532
SDs	1.545	1.969
SD1	0.707	1.021
PGA	0.618	1.077

Liquefaction: The site is subject to liquefaction as some relatively thin liquefaction-prone zones locally exist at the site at isolated depth intervals. Liquefaction can result in ground failure and excessive settlement.

- **Mitigation**: The mitigation for liquefaction at the site will consist of a combination of ground modification and/or structural mitigation in areas subject to liquefaction to reduce the risk to an acceptable level as defined by CGS in Chapter 2 of SP 117a (CGS, 2008). The ground modification will consist of the removal of some of the soil material subject to liquefaction and/or elevating the site grades over the material subject to liquefaction. The recommended depth of removal for mitigation of liquefaction ranges from 5 to 20 feet, as presented in our 100-Scale Plan Review report (RTF&A, 2013). Structures will be designed to resist the anticipated static and seismic total and differential settlements.

Slope Stability: Slope stability considerations include future cut-and-fill slopes, slopes that will remain natural at the completion of grading, debris flows associated with natural slopes, landslides, surficial failures, and rockfall hazard.

Cut Slopes: Thirty-seven cut slopes will be created as part of the proposed site development and off-site grading. The cut slopes will be graded at inclinations ranging from 2:1 to 6:1. All 2:1 cut slopes exceeding 30 feet in height will be designed with terrace drains every 25 vertical feet. Eighteen of the cut slopes will encounter adverse geologic conditions and may require construction of stabilization fills during grading.

- **Mitigation:** All cut slopes will be grossly stable if graded in accordance with the recommendations of the Project Geotechnical Consultant. Recommended mitigation includes:

  - maintaining cut slope inclinations no steeper than 2:1 (horizontal:vertical);

- partial or complete removal of landslides; and
- construction of stability fill slopes in areas of adverse geologic structure.

Fill Slopes: Proposed fill slopes will be graded at inclinations of 2:1 or flatter. All 2:1 fill slopes exceeding 30 feet in height will be designed with terrace drains every 25 vertical feet. The maximum proposed fill slope height is approximately 80 feet.

- **Mitigation**: The proposed fill slopes will be grossly stable if graded in accordance with the recommendations of the Project Geotechnical Consultant and in accordance with the 2011 Los Angeles County Building Code. Recommended mitigation measures for fill slopes include:

  - maintaining fill slope inclinations no steeper than 2:1 (horizontal:vertical);
  - keying and benching of fill slopes into competent natural material; and
  - compacting fill slope materials to 90 percent, or greater, relative compaction.

Natural Slopes: The natural slopes proposed for the Project Site have gradients ranging from 1½:1 to 3:1.

- **Mitigation:** Natural slopes will be grossly stable if the adjacent grading is confined to the proposed grading limits and does not undercut natural slopes outside the grading limits. Furthermore, the standard setbacks presented in Section 1808.7 and illustrated in Figure 1808.7.1 of the CBC for ascending and descending natural slopes shall be followed and incorporated in the project design.

Debris Flow: Potential debris flow hazard exists anywhere that a moderate to thick accumulation of residual soil, slope wash, or weathered bedrock materials occurs on moderate to steep descending slopes that border future building pads.

- **Mitigation**: Potential debris flow may be mitigated by one or a combination of the following measures:

  - remove loose surficial material;
  - construct diverter slough walls;
  - construct impact wall;
  - construct debris basins;
  - construct stabilization fill slopes;
  - control run-off water; and
  - plant selective deep-rooting vegetation.

Landslides: Landslides are present within the External Map Improvements area, adjacent to VTTM 53295, and will be encountered during grading.

- **Mitigation:** Complete landslide removal or partial landslide removal will be performed during grading to establish a stable slope configuration as recommended by the Project Geotechnical Consultant..

Surficial Failures: Numerous surficial failures occur within the Project Site.

- **Mitigation:** All surficial failures within the grading limits will be removed during grading.

Rockfalls: The Project Site is not located directly downslope of any potential rockfalls.

- **Mitigation**: No mitigation is required.

Dam Inundation: The Project Site is not susceptible to inundation as a result of catastrophic failure of nearby dams.

- **Mitigation:** No mitigation is required.

Tsunamis and Seiches: The Project Site is not in a coastal zone and, therefore, not susceptible to tsunamis (seismic sea waves). The site is not located downslope of any large impounded bodies of water that would adversely impact the site as a result of seiches (oscillations in a body of water due to earthquake shaking). Therefore, the Project Site is considered safe from hazards associated with tsunamis or seiches.

- **Mitigation**: No mitigation is required.

Subsidence: The Project Site is not within an area of known subsidence associated with petroleum or groundwater withdrawal. Furthermore, the site is not in an area of known peat deposits; therefore, the site will not be impacted by subsidence associated with peat oxidation. The potential for ground subsidence in response to fluid withdrawal or peat oxidation within the Project Site is judged to be remote.

- **Mitigation**: No mitigation is required.

Hydroconsolidation: Loose, dry alluvial soils susceptible to hydroconsolidation have been identified within the existing drainage courses on the Project Site.

- **Mitigation**: Alluvial soils susceptible to hydroconsolidation will be removed to competent natural material during Project Site grading. The depths of alluvial removals to mitigate soils susceptible to hydroconsolidation range from 5 to 20 feet, as presented in our 100-Scale Plan Review report (RTF&A, 2013).

Erosion Potential and Drainage: The bedrock, soil/alluvial material, and future fill material are susceptible to erosion if sheet flow drainage is not provided.

- **Mitigation**: Water should not be allowed to pond on future graded areas, or allowed to flow uncontrolled over natural or graded slopes. Surface drainage should be directed to terrace drains or debris basins. Debris material generated from erosion should be contained within site boundaries. All slope terrace drains should be kept clear of all debris to limit impounding or surface water. Graded slopes should be seeded with deep-rooting, drought-resistant vegetation to minimize erosion.

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Should you have any questions regarding this report, please contact our office. The following are attached and complete this report.

- References
- Site Location Map – Figure 1
- Geologic Map – Figures 2.1 and 2.2 (in pocket)
- Regional Fault Map – Figure 3
- Seismic Hazard Zones – Figure 4
- Probabilistic Seismic Hazard Deaggregation – Figure 5
- Seismic Hazard Zone Mapped Accelerations – Figures 6.1 and 6.2
- USGS Design Spectrum – Figure 7
- USGS MCE Spectrum – Figure 8
- USGS Uniform Hazard Spectrum – Figure 9
- Appendix A – Historic Earthquake Search Results (35 pages)
- Appendix B – Probabilistic Earthquake Hazard Analyses (2 pages)
- Appendix C – CBC Seismic Design (13 pages)

REGISTERED PROFESSIONAL ENGINEER
ALAN W. RASPLICKA
No. GE 2558
GEOTECHNICAL
STATE OF CALIFORNIA

Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

PROFESSIONAL GEOLOGIST NO. 3749
TIMOTHY P. LATIOLAIT
#1140
CERTIFIED
ENGINEERING
GEOLOGIST
Expires: 12-31-15
STATE OF CALIFORNIA

by: Alan W. Rasplicka
Principal Geotechnical Engineer

and: Timothy P. Latiolait
Principal Engineering Geologist

AWR/TPL/eaw

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

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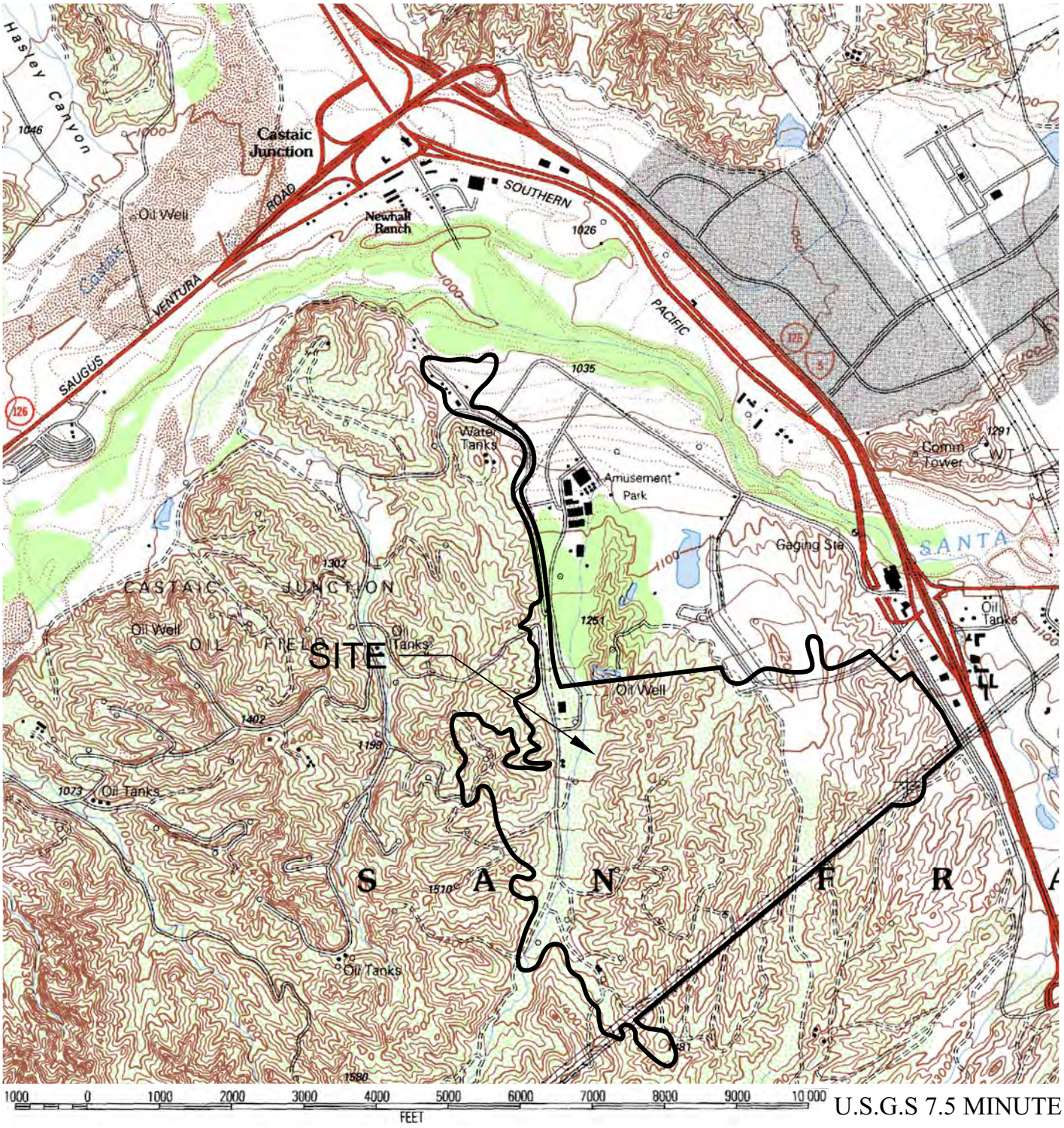
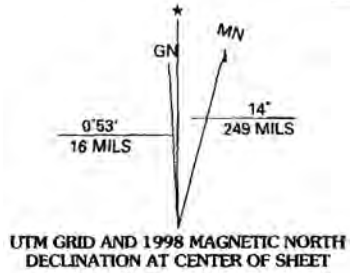


U.S.G.S 7.5 MINUTE



UTM GRID AND 1998 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Site Location Map

Prepared for

Newhall Land and Farming Company

Entrada South

Vesting Tentative Tract Map No. 53295

Los Angeles County, California

NEWHALL, CA

1995

NIMA 2252 I NE - SERIES V895

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GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

Geologic Map

PREPARED FOR
Newhall Land & Farming Company

Project Location
Vesting Tentative Tract No. 53295
Los Angeles County, California

SCALE	DRAWN BY	CHECKED BY
1"=200'	JH	TPL
DATE		JOB NO.
10-31-2013	Figure 2.1	2004-700-052(R2)

1329 SCOTT ROAD
BURBANK, CA, 91504
TEL: (818) 531-1501
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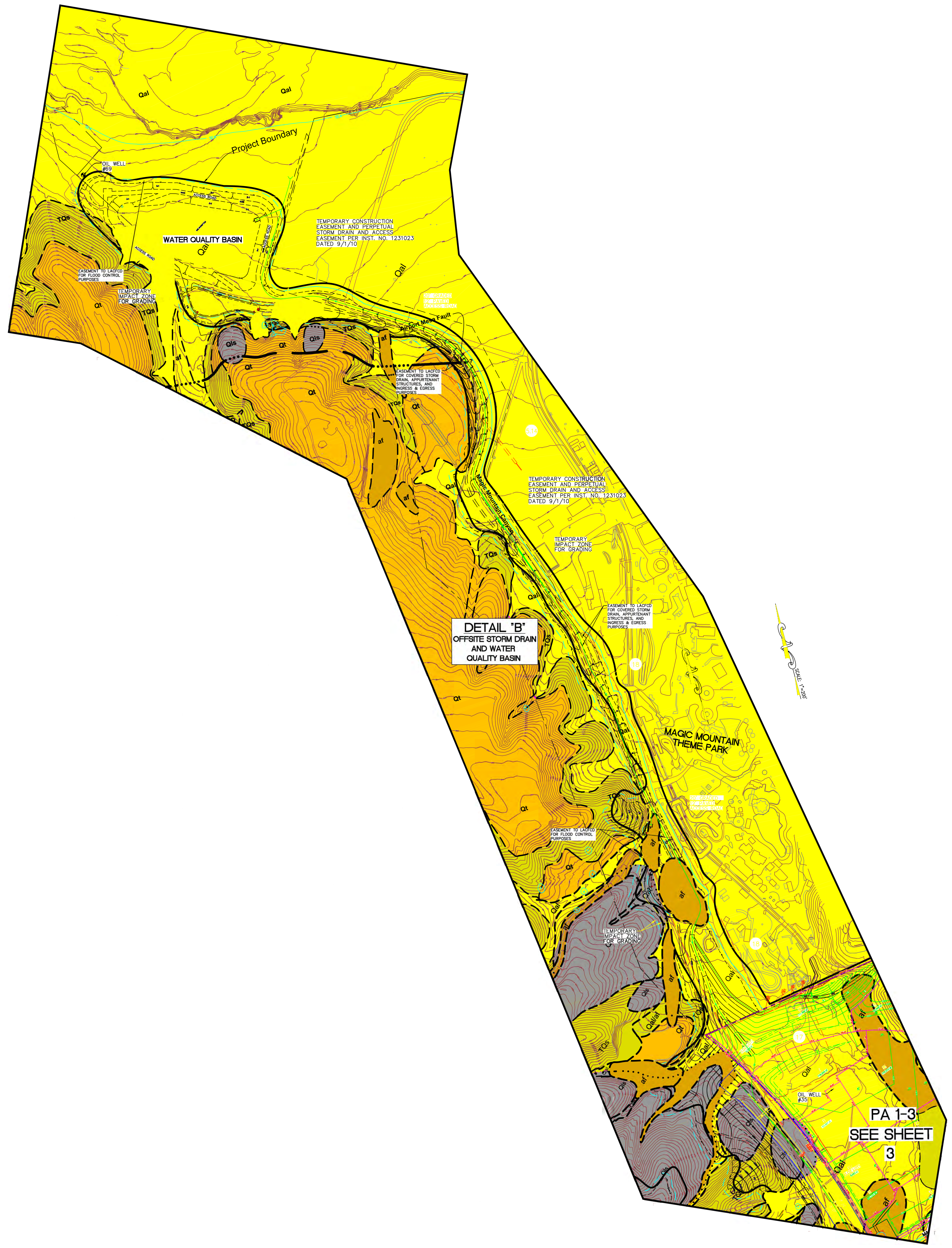
EXPLANATION

- sf — Stockpile Fill
- af — Artificial Fill
- Qal — Alluvium
- Qsf/Qls — Surficial Failure/Landslide Debris
- Qt — Terrace Deposits
- TQs — Saugus Formation
- Geologic Contact; queried where inferred; dotted where concealed

VTTM 61105
MISSION VILLAGE
NOT A PART
(SAVE OWNER)



Geologic Map

PREPARED FOR
Newhall Land & Farming Company

Project Location
Vesting Tentative Tract No. 53295
Los Angeles County, California

SCALE 1"=200'	DRAWN BY JH	CHECKED BY TPL
DATE 10-31-2013	Figure 2.2	JOB NO. 2004-700-052(R2)

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SHEET 5 | COUNTY OF LOS ANGELES | 5 SHEETS

NO.	DATE	REVISIONS	BY	APPR

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ________
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
27433 TOURNEY ROAD
SUITE 250
VALENCIA, CA 91355
TEL: (661) 799-2760
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000
REPRESENTATIVE: MR. MILES HELFRICH

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:
CW-SIG-800.TIF 6/24/13
CRAIG M. WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP 6-30-14 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

I:CAD/0930/TENTATIVE-MAP/0930-TENTATIVE MAP-SHT-05-DWG

Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION	
						ON LAND	OFFSHORE
Quaternary	Late Quaternary	Holocene Historic				Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
			200			Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
		Pleistocene	10,000			Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Pleistocene age.
	Early Quaternary		700,000			Undivided Quaternary faults – most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
			1,600,000			Late Cenozoic faults within the Sierra Nevada, including parts of, but not restricted to, the Foothills fault system. These faults may have been active in Quaternary time.	
Pre-Quaternary			4.5 billion (Age of earth)			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive. Pre-Quaternary faults not shown in Nevada and Oregon.	Fault cuts strata of Pliocene or older age.

^mmolufj^ qb=l`^ qflk =c=plrqebok =^ifclokf^
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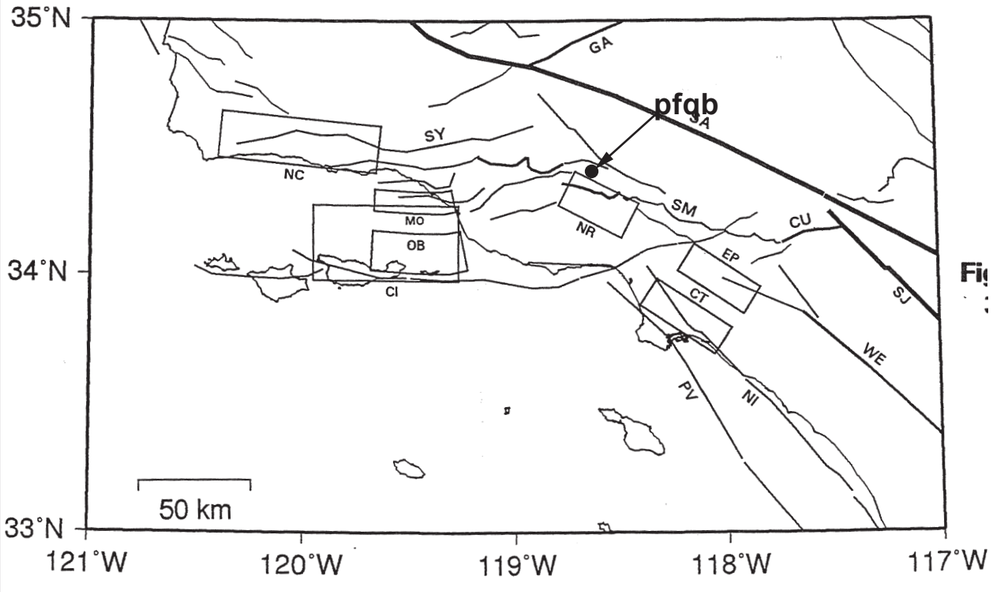

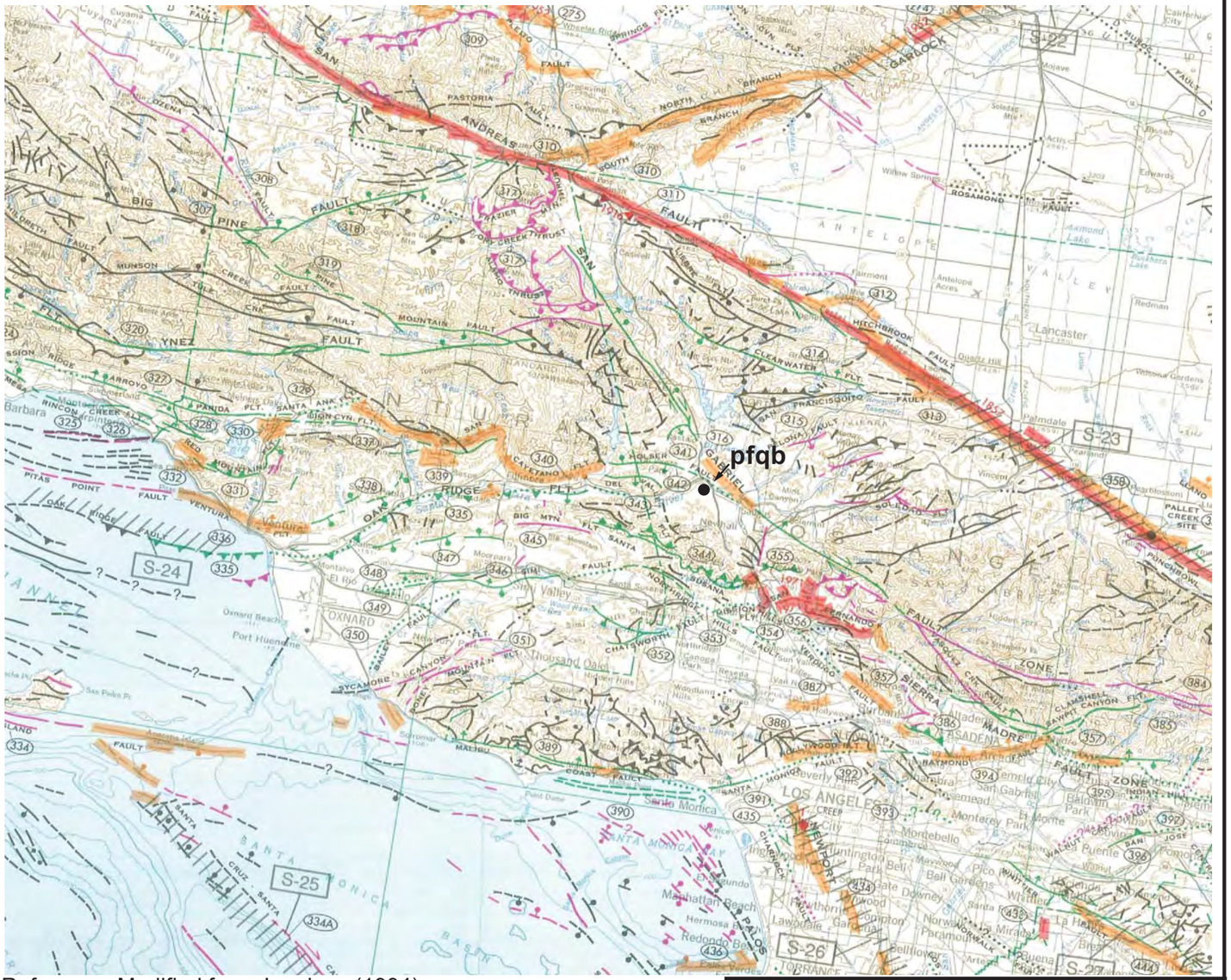

Reference: Modified from Jennings (1994).

Scale: 1" ≈ 12 Miles

oÉÖáçå~ä=c~ìäí=j~é

PREPARED FOR
Newhall Land and Farming Company

PROJECT LOCATION
Entrada South
Vesting Tentative Tract Map No. 53295
Los Angeles County, California

SCALE	DRAWN BY	CHECKED BY
As Shown	JH	TL
DATE	FIGURE NO.	JOB NO.
10-31-2013	Figure 3	2004-700-052(R2)

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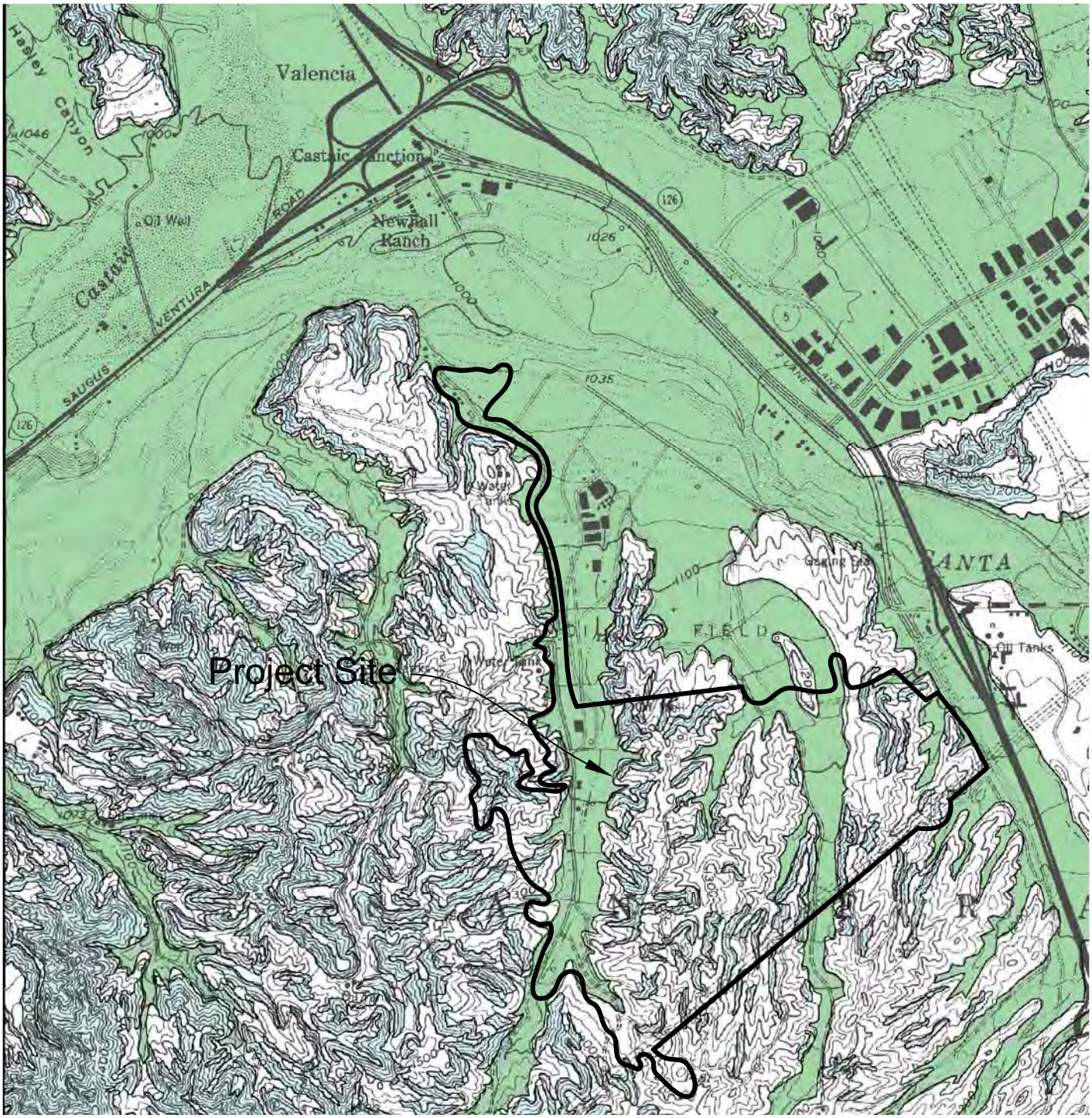
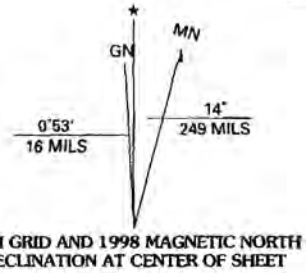


U.S.G.S 7.5 MINUTE



UTM GRID AND 1998 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Site Location Map

Prepared for

Newhall Land and Farming Company

Entrada South

Vesting Tentative Tract Map No. 53295

Los Angeles County, California

NEWHALL, CA

1995

NIMA 2252 I NE - SERIES V895

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GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

PSH Deaggregation on NEHRP C soil
Entrada 118.592° W, 34.416 N.

Peak Horiz. Ground Accel.>=1.1292 g
Ann. Exceedance Rate .404E-03. Mean Return Time 2475 years
Mean (R,M,ε_0) 7.6 km, 6.73, 1.21
Modal (R,M,ε_0) = 7.5 km, 6.61, 1.19 (from peak R,M bin)
Modal (R,M,ε*) = 7.5 km, 6.61, 1 to 2 sigma (from peak R,M,ε bin)
Binning: DeltaR 10. km, deltaM=0.2, Deltaε=1.0

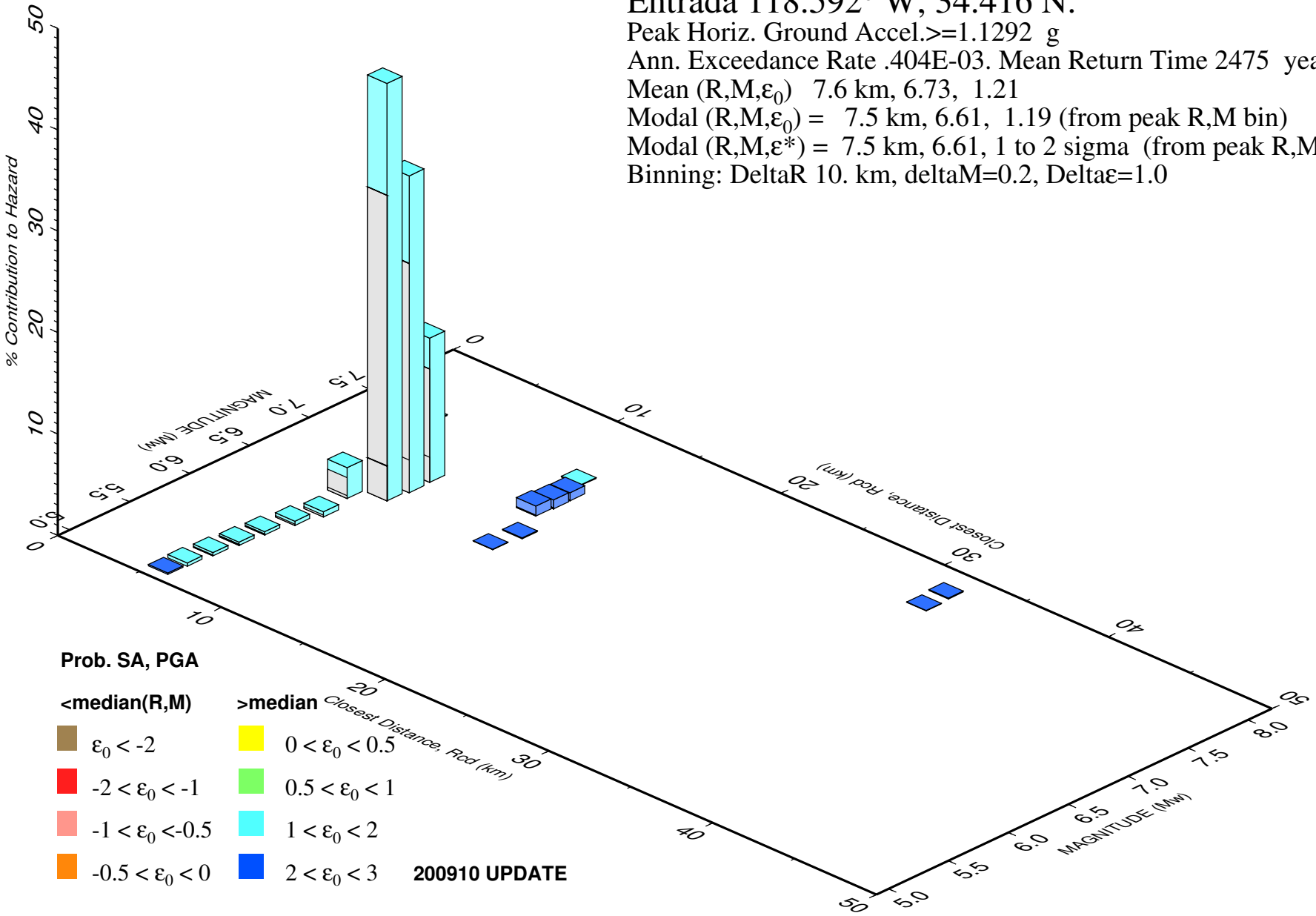


FIGURE 5

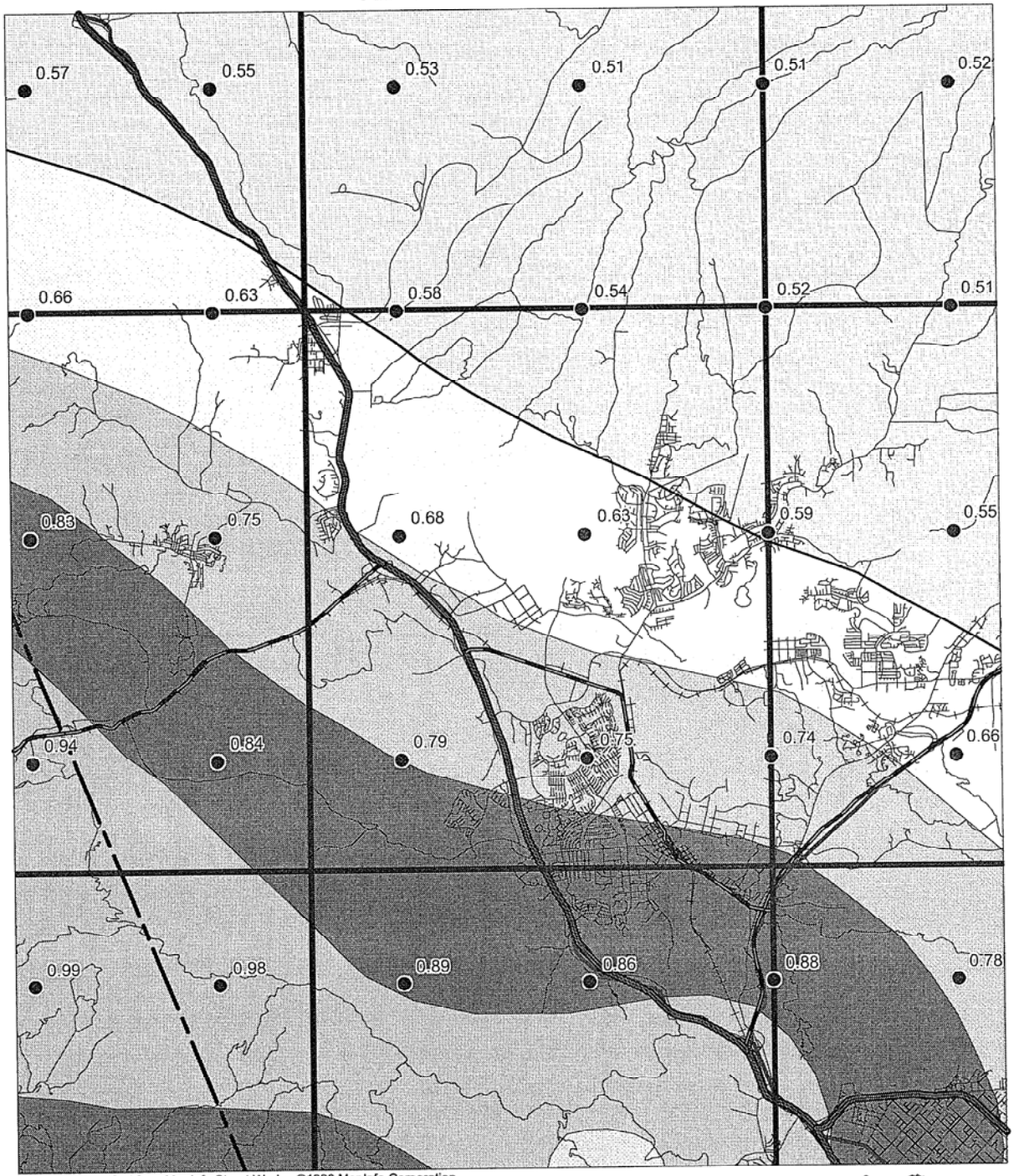
GMT 2010 Apr 30 20:09:08 **Distance (R), magnitude (M), epsilon (E0,E) deaggregation for a site on soil with average vs= 600. m/s top 30 m. USGS CGHT PSHA2008 UPDATE Bins with lt 0.05% contrib. omitted**

NEWHALL 7.5 MINUTE QUADRANGLE AND PORTIONS OF ADJACENT QUADRANGLES

10% EXCEEDANCE IN 50 YEARS PEAK GROUND ACCELERATION (g)

1998

ALLUVIUM CONDITIONS



Base map modified from MapInfo Street Works ©1998 MapInfo Corporation

0 2.5 5
Kilometers

Department of Conservation
Division of Mines and Geology

Figure 3.3

RTF&A JOB NO. 2004-700-052(R2) REPORT DATED 10-31-13

FIGURE 6.1

NEWHALL 7.5-MINUTE QUADRANGLE AND PORTIONS OF
ADJACENT QUADRANGLES

10% EXCEEDANCE IN 50 YEARS MAGNITUDE-WEIGHTED PSEUDO-PEAK ACCELERATION (g)
FOR ALLUVIUM

1998

LIQUEFACTION OPPORTUNITY

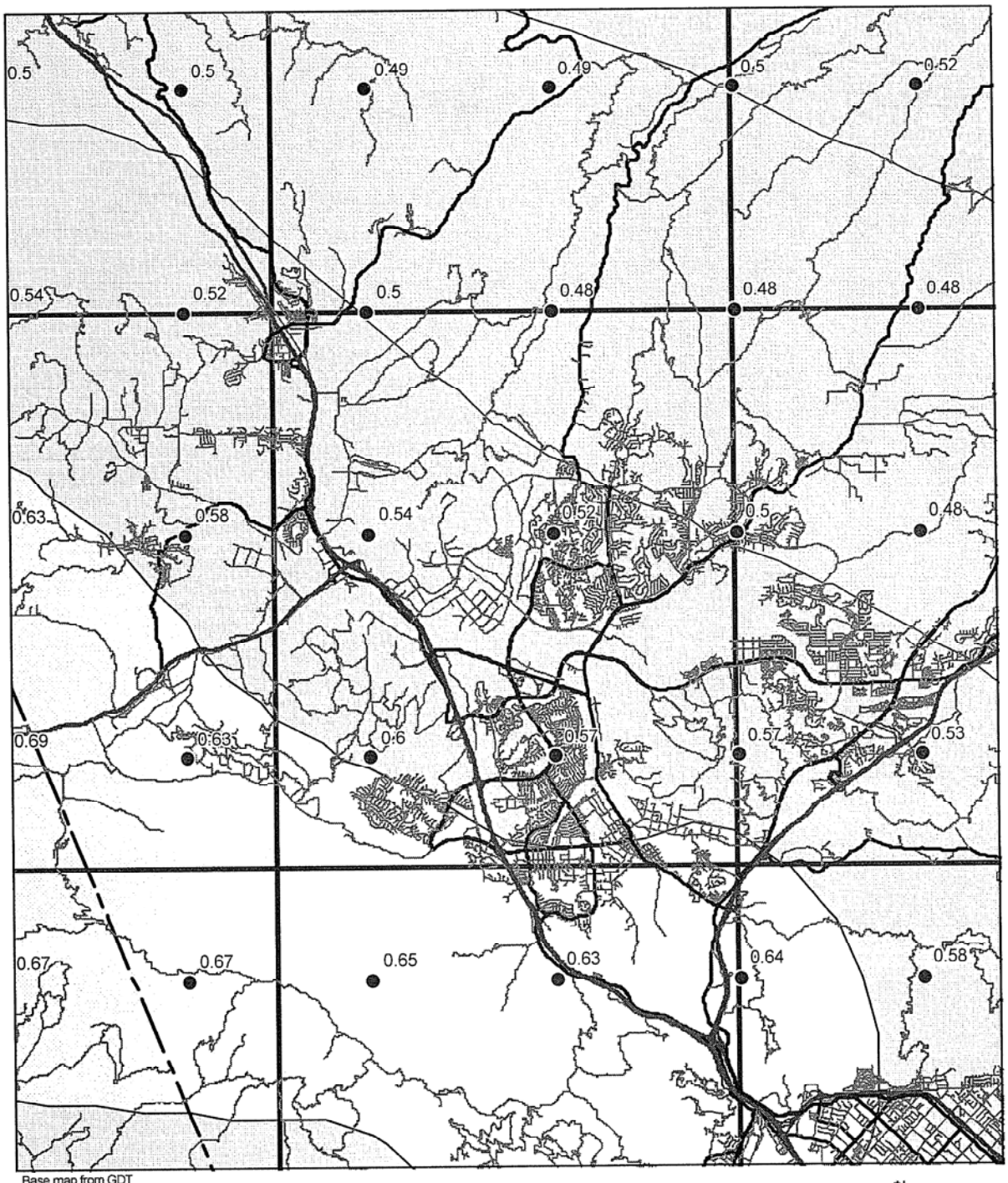
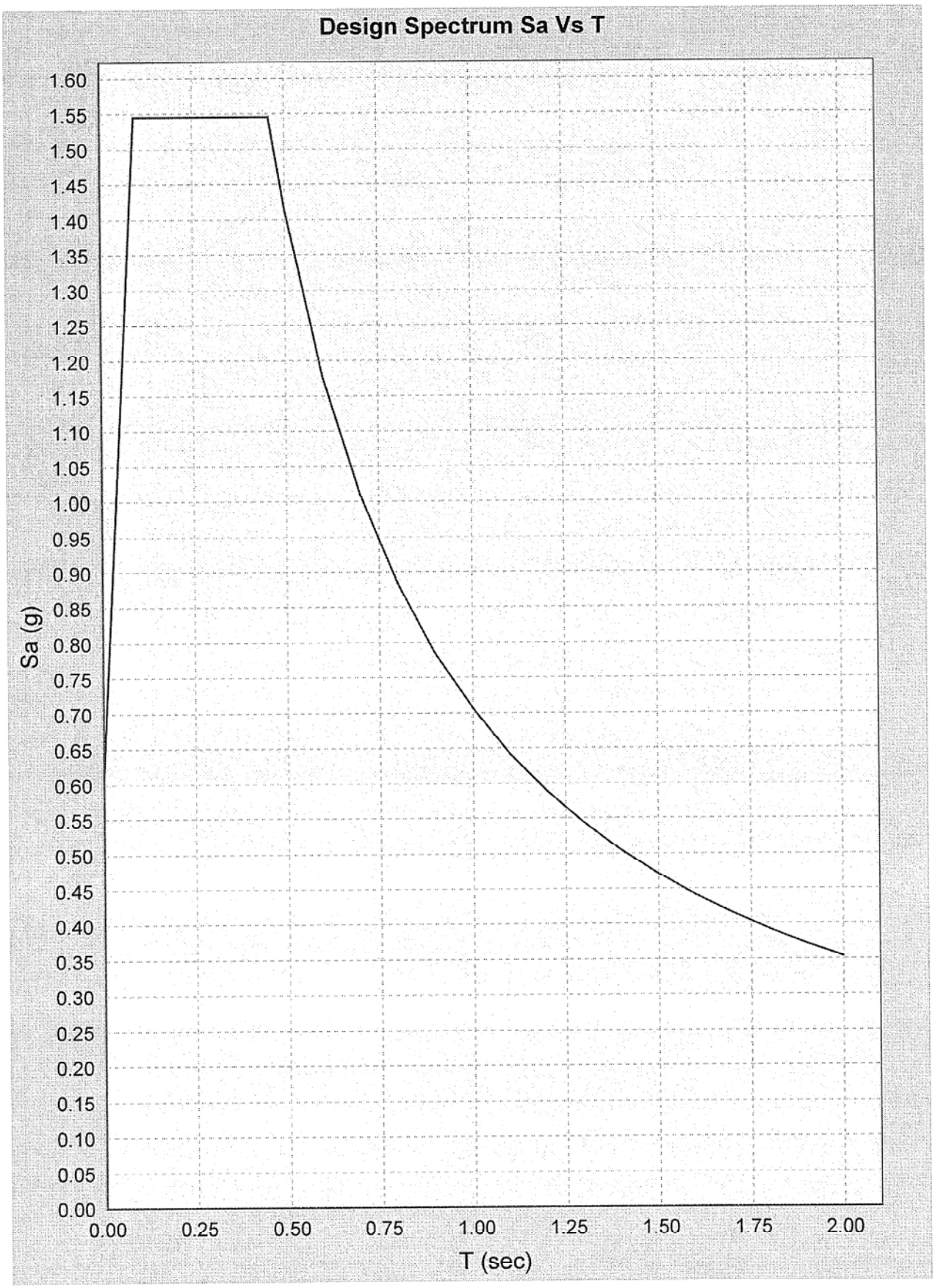


Figure 3.5


Design Spectrum Sa Vs T
Sa (g)
1.60
1.55
1.50
1.45
1.40
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
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0.40
0.35
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0.20
0.15
0.10
0.05
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0.00
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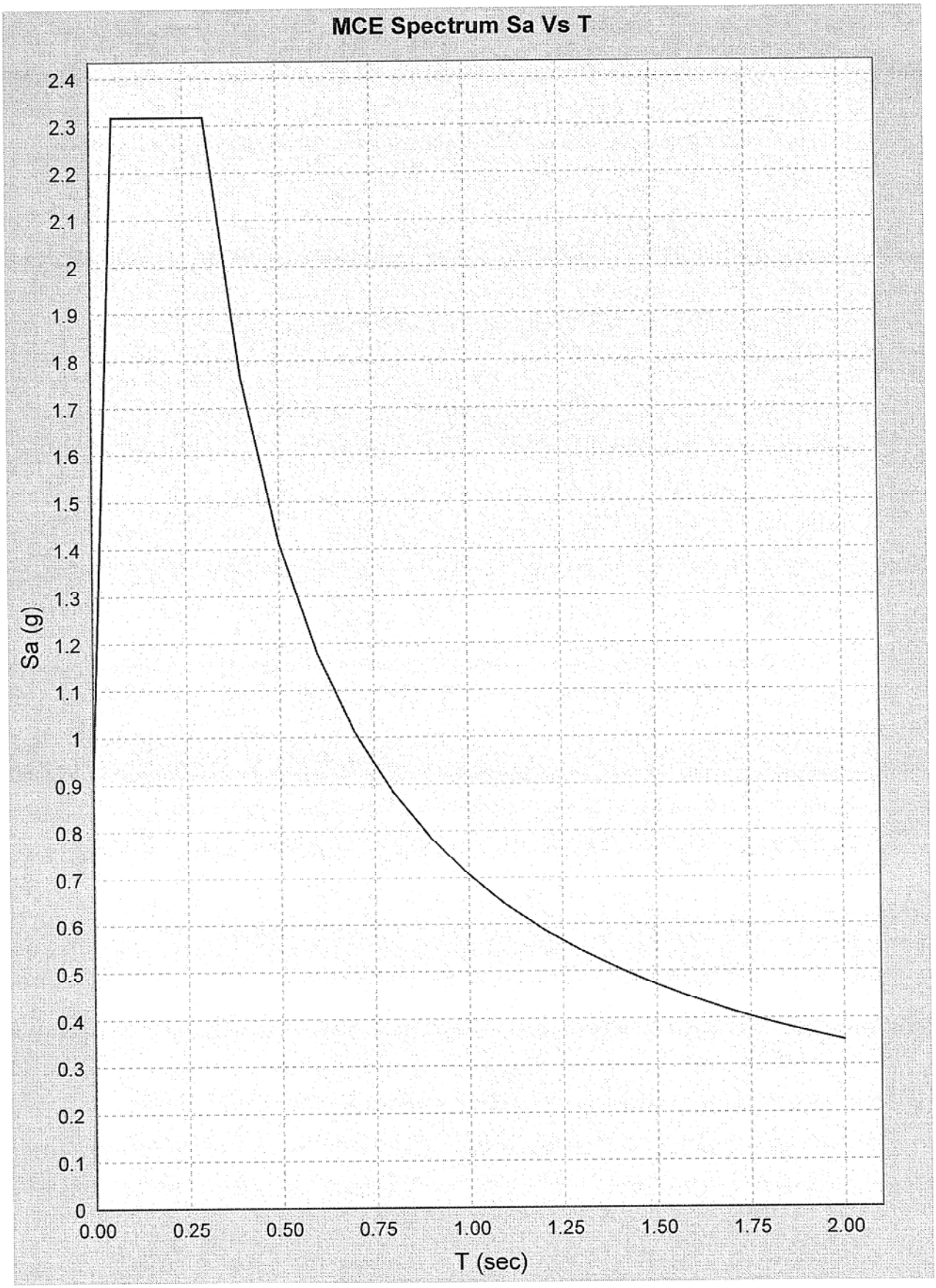
0.50
0.75
1.00
1.25
1.50
1.75
2.00
T (sec)

FIGURE 7



RTF&A JOB NO. 2004-700-052(R2) REPORT DATED 10-31-13

FIGURE 8

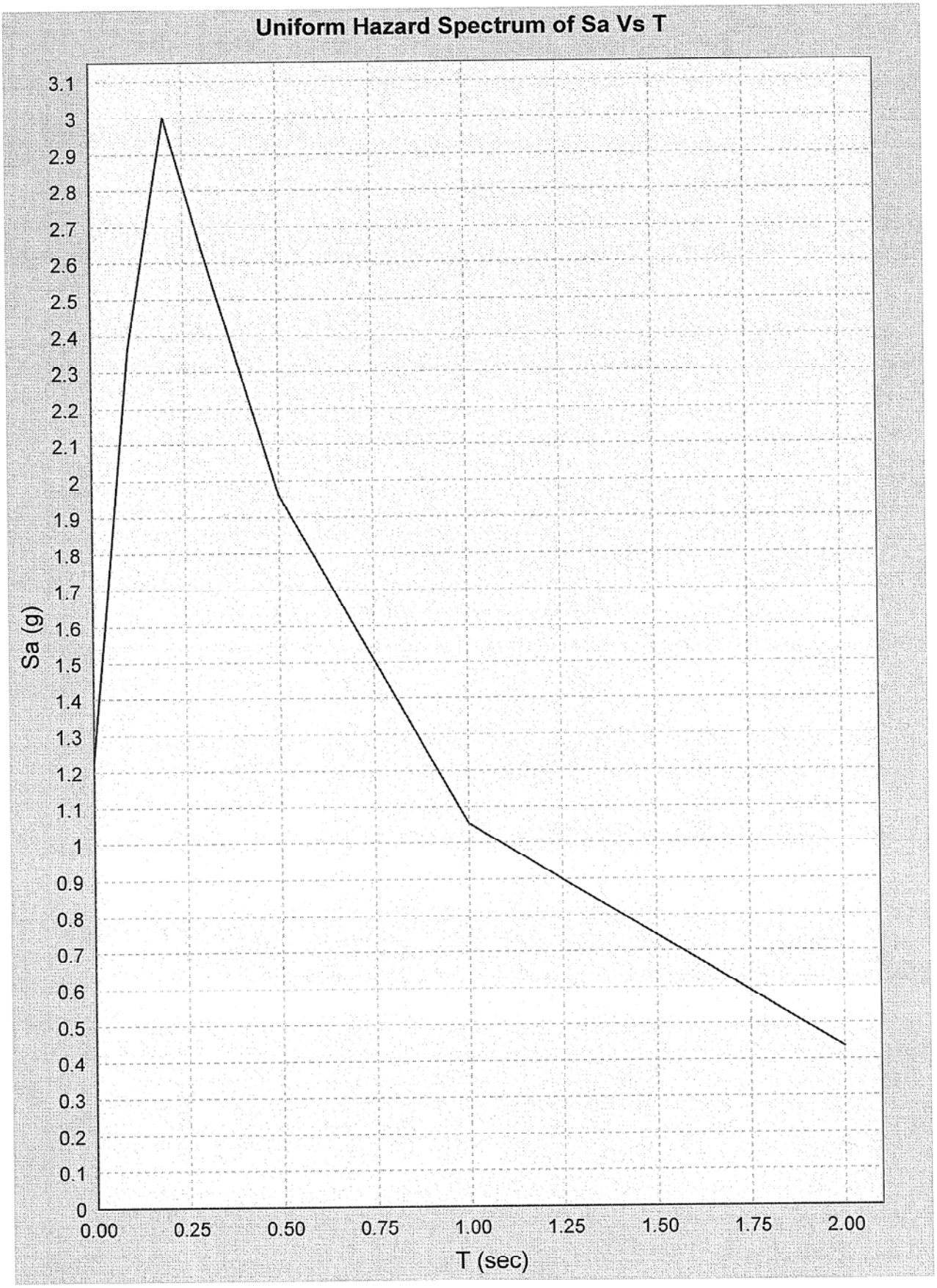

Uniform Hazard Spectrum of Sa Vs T
Sa (g)
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
T (sec)

FIGURE 9

Newhall Land and Farming Company
October 31, 2013
2004-700-052(R2)

APPENDIX A

HISTORIC EARTHQUAKE SEARCH RESULTS

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GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

TEST.OUT

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**************************
*                        *
*    E Q S E A R C H     *
*                        *
*     Version 3.00       *
*                        *
**************************
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ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 2004-700-052

DATE: 04-30-2010

JOB NAME: Entrada EIR

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

MAGNITUDE RANGE:
MINIMUM MAGNITUDE: 4.00
MAXIMUM MAGNITUDE: 9.00

SITE COORDINATES:
SITE LATITUDE: 34.4156
SITE LONGITUDE: 118.5917

SEARCH DATES:
START DATE: 1800
END DATE: 2005

SEARCH RADIUS:
100.0 mi
160.9 km

ATTENUATION RELATION: 10) Bozorgnia Campbell Niazi (1999) Hor.-Holocene Soil-Cor.
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
ASSUMED SOURCE TYPE: DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
SCOND: 0 Depth Source: A
Basement Depth: 5.00 km Campbell SSR: 0 Campbell SHR: 0
COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 3.0

EARTHQUAKE SEARCH RESULTS

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	34.3970	118.6090	07/22/1999	095724.0	11.0	4.00	0.148	VIII	1.6(2.6)

GSG	34.4080	118.5590	01/17/1994	200205.4	0.0	4.00	0.144	VIII	1.9(	3.1)
GSP	34.3780	118.6180	01/19/1994	211144.9	11.0	5.10	0.230	IX	3.0(	4.8)
GSP	34.3790	118.5630	01/18/1994	003935.0	7.0	4.40	0.158	VIII	3.0(	4.8)
DMG	34.3800	118.6230	10/29/1936	223536.1	10.0	4.00	0.130	VIII	3.0(	4.9)
GSP	34.3790	118.5610	01/18/1994	152346.9	7.0	4.80	0.192	VIII	3.1(	4.9)
GSP	34.3740	118.6220	01/17/1994	155410.8	12.0	4.80	0.186	VIII	3.3(	5.4)
GSP	34.3620	118.6150	03/20/1996	073759.8	13.0	4.10	0.124	VII	3.9(	6.3)
GSB	34.3600	118.5710	01/19/1994	044048.0	2.0	4.50	0.149	VIII	4.0(	6.5)
GSP	34.3630	118.6270	01/24/1994	055421.1	10.0	4.20	0.127	VIII	4.1(	6.7)
GSP	34.3680	118.6370	01/17/1994	194353.4	13.0	4.10	0.121	VII	4.2(	6.7)
GSP	34.3770	118.6490	04/27/1997	110928.4	15.0	4.80	0.170	VIII	4.2(	6.8)
GSB	34.3580	118.6220	01/18/1994	040126.8	1.0	4.50	0.144	VIII	4.3(	7.0)
GSP	34.3590	118.6290	01/24/1994	055024.3	12.0	4.30	0.129	VIII	4.4(	7.2)
GSP	34.3940	118.6690	06/26/1995	084028.9	13.0	5.00	0.180	VIII	4.6(	7.5)
GSB	34.3450	118.5520	01/24/1994	041518.8	6.0	4.80	0.150	VIII	5.4(	8.6)
DMG	34.3440	118.6360	02/09/1971	143436.1	-2.0	4.90	0.155	VIII	5.5(	8.9)
GSP	34.3690	118.6720	04/26/1997	103730.7	16.0	5.10	0.173	VIII	5.6(	9.0)
GSB	34.3330	118.6230	01/18/1994	072356.0	14.0	4.30	0.109	VII	6.0(	9.6)
PAS	34.3470	118.6560	04/08/1976	152138.1	14.5	4.60	0.126	VIII	6.0(	9.6)
GSP	34.5000	118.5600	07/05/1991	174157.1	11.0	4.10	0.097	VII	6.1(	9.8)
GSP	34.3740	118.4950	01/28/1994	200953.4	0.0	4.20	0.101	VII	6.2(	10.0)
DMG	34.4850	118.5210	07/16/1965	74622.4	15.1	4.00	0.091	VII	6.3(	10.1)
GSB	34.3430	118.6660	01/17/1994	234925.4	8.0	4.30	0.102	VII	6.6(	10.6)
GSP	34.3770	118.6980	01/18/1994	004308.9	11.0	5.20	0.166	VIII	6.6(	10.6)
DMG	34.3990	118.4730	03/09/1974	05431.9	24.4	4.70	0.121	VII	6.9(	11.0)
GSB	34.3190	118.5580	01/18/1994	132444.1	1.0	4.50	0.108	VII	6.9(	11.2)
DMG	34.3610	118.4870	02/10/1971	143526.7	4.4	4.20	0.092	VII	7.1(	11.3)
GSB	34.3790	118.7110	01/19/1994	210928.6	14.0	5.50	0.189	VIII	7.2(	11.7)
GSP	34.3650	118.7080	01/19/1994	044314.5	12.0	4.10	0.084	VII	7.5(	12.0)
GSP	34.3570	118.4800	02/25/1994	125912.6	1.0	4.10	0.083	VII	7.5(	12.1)
GSP	34.3050	118.5790	01/29/1994	112036.0	1.0	5.10	0.139	VIII	7.7(	12.3)
GSP	34.3540	118.7040	05/01/1996	194956.4	14.0	4.10	0.082	VII	7.7(	12.4)
DMG	34.3560	118.4740	03/25/1971	2254 9.9	4.6	4.20	0.085	VII	7.9(	12.7)
PAS	34.3800	118.4590	08/12/1977	21926.1	9.5	4.50	0.098	VII	7.9(	12.8)
DMG	34.3000	118.6000	04/04/1893	1940 0.0	0.0	6.00	0.244	IX	8.0(	12.9)
GSB	34.3010	118.5650	01/17/1994	204602.4	9.0	5.20	0.143	VIII	8.1(	13.0)
DMG	34.3840	118.4550	02/10/1971	113134.6	6.0	4.20	0.083	VII	8.1(	13.0)
GSG	34.3340	118.4840	01/17/1994	223152.1	10.0	4.20	0.081	VII	8.3(	13.4)
DMG	34.5290	118.6440	02/07/1956	21656.5	16.0	4.20	0.081	VII	8.4(	13.5)
GSP	34.3260	118.6980	01/17/1994	233330.7	9.0	5.60	0.175	VIII	8.7(	13.9)
DMG	34.3970	118.4390	02/21/1971	55052.6	6.9	4.70	0.100	VII	8.8(	14.1)
DMG	34.3530	118.4560	03/07/1971	13340.5	3.3	4.50	0.090	VII	8.9(	14.2)
DMG	34.4460	118.4360	02/10/1971	185441.7	8.1	4.20	0.075	VII	9.1(	14.7)
GSB	34.2850	118.6240	01/17/1994	135602.4	19.0	4.70	0.096	VII	9.2(	14.8)
DMG	34.3920	118.4270	02/21/1971	71511.7	7.2	4.50	0.084	VII	9.5(	15.3)
GSP	34.2780	118.6110	01/29/1994	121656.4	2.0	4.30	0.076	VII	9.6(	15.4)
DMG	34.2840	118.5280	04/02/1971	54025.0	3.0	4.00	0.064	VI	9.8(	15.7)
DMG	34.4570	118.4270	02/09/1971	161926.5	-1.0	4.20	0.071	VI	9.8(	15.8)
DMG	34.3990	118.4190	02/10/1971	134953.7	9.7	4.30	0.074	VII	9.9(	15.9)
GSB	34.3100	118.4740	01/21/1994	184228.8	7.0	4.20	0.070	VI	9.9(	15.9)
GSP	34.2740	118.5630	01/27/1994	171958.8	14.0	4.60	0.086	VII	9.9(	15.9)
DMG	34.2860	118.5150	03/31/1971	145222.5	2.1	4.60	0.085	VII	10.0(	16.0)

EARTHQUAKE SEARCH RESULTS

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TEST.OUT

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.4260	118.4140	02/10/1971	518 7.2	5.8	4.50	0.080	VII	10.1(16.3)
GSP	34.2690	118.5760	01/17/1994	125546.8	16.0	4.10	0.065	VI	10.2(16.3)
DMG	34.4280	118.4130	04/01/1971	15 3 3.6	8.0	4.10	0.065	VI	10.2(16.4)
GSP	34.3040	118.4730	01/17/1994	150703.2	2.0	4.20	0.068	VI	10.2(16.5)
GSP	34.3310	118.4420	01/17/1994	141430.3	1.0	4.50	0.079	VII	10.3(16.6)
GSP	34.3170	118.4550	01/17/1994	132644.7	2.0	4.70	0.087	VII	10.3(16.6)
DMG	34.2730	118.5320	06/21/1971	16 1 8.5	4.1	4.00	0.061	VI	10.4(16.8)
DMG	34.2650	118.5770	04/15/1971	111432.0	4.2	4.20	0.067	VI	10.4(16.8)
GSP	34.3110	118.4560	01/17/1994	193534.3	2.0	4.00	0.060	VI	10.6(17.0)
GSG	34.3040	118.7220	01/17/1994	221922.3	10.0	4.00	0.059	VI	10.7(17.2)
GSB	34.3000	118.4660	01/21/1994	183915.3	10.0	4.70	0.084	VII	10.7(17.3)
DMG	34.3080	118.4540	02/09/1971	144346.7	6.2	5.20	0.111	VII	10.8(17.4)
GSP	34.2910	118.4760	02/06/1994	131926.9	11.0	4.10	0.062	VI	10.8(17.4)
DMG	34.4110	118.4010	02/09/1971	14 439.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	141028.0	8.0	5.30	0.118	VII	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 231.0	8.0	4.70	0.083	VII	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 853.0	8.0	4.60	0.079	VII	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 244.0	8.0	5.80	0.162	VIII	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 8 7.0	8.0	4.20	0.065	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 2 3.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 1 8.0	8.0	5.80	0.162	VIII	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 541.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 133.0	8.0	4.20	0.065	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 154.0	8.0	4.20	0.065	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 159.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 730.0	8.0	4.00	0.059	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 041.8	8.4	6.40	0.234	IX	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 4 7.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 230.0	8.0	4.30	0.068	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 838.0	8.0	4.50	0.075	VII	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 446.0	8.0	4.20	0.065	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 550.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 150.0	8.0	4.50	0.075	VII	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 140.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 745.0	8.0	4.50	0.075	VII	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 434.0	8.0	4.20	0.065	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 325.0	8.0	4.40	0.071	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 8 4.0	8.0	4.00	0.059	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 444.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 346.0	8.0	4.10	0.061	VI	10.9(17.5)
DMG	34.4110	118.4010	02/09/1971	14 710.0	8.0	4.00	0.059	VI	10.9(17.5)
PAS	34.4630	118.4090	09/24/1977	212824.3	5.0	4.20	0.064	VI	10.9(17.5)
DMG	34.2960	118.4640	03/30/1971	85443.3	2.6	4.10	0.061	VI	11.0(17.7)
DMG	34.4330	118.3980	02/09/1971	144017.4	-2.0	4.10	0.060	VI	11.1(17.9)
GSP	34.2920	118.4660	01/19/1994	144635.2	6.0	4.00	0.057	VI	11.1(17.9)
GSP	34.2610	118.5340	01/17/1994	123939.8	14.0	4.50	0.073	VII	11.2(18.0)
GSP	34.2970	118.4580	01/21/1994	185344.6	7.0	4.30	0.066	VI	11.2(18.0)
GSP	34.3010	118.4520	01/21/1994	185244.2	7.0	4.30	0.066	VI	11.2(18.1)
GSP	34.3040	118.7370	01/19/1994	091310.9	13.0	4.10	0.059	VI	11.3(18.2)
DMG	34.3570	118.4060	02/09/1971	141950.2	11.8	4.00	0.056	VI	11.3(18.2)
GSP	34.2870	118.4660	01/19/1994	071406.2	11.0	4.00	0.056	VI	11.4(18.4)
GSP	34.2540	118.5450	01/17/1994	130627.9	0.0	4.60	0.075	VII	11.5(18.5)
DMG	34.5860	118.6130	02/07/1956	31638.6	2.6	4.60	0.073	VII	11.8(19.0)

EARTHQUAKE SEARCH RESULTS
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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	34.2990	118.4390	02/03/1994	162335.4	8.0	4.20	0.060	VI	11.9(19.1)
GSB	34.2990	118.4280	01/23/1994	085508.7	6.0	4.20	0.058	VI	12.3(19.8)
DMG	34.4310	118.3690	08/14/1974	144555.2	8.2	4.20	0.056	VI	12.7(20.5)
DMG	34.3960	118.3660	02/10/1971	173855.1	6.2	4.20	0.055	VI	12.9(20.8)
GSP	34.2280	118.5730	01/17/1994	175608.2	19.0	4.60	0.067	VI	13.0(20.9)
DMG	34.3870	118.3640	02/09/1971	143917.8	-1.6	4.00	0.049	VI	13.1(21.1)
DMG	34.2680	118.4450	08/30/1964	225737.1	15.4	4.00	0.049	VI	13.2(21.2)
GSP	34.3110	118.3980	06/15/1994	055948.6	7.0	4.20	0.054	VI	13.2(21.2)
GSP	34.3120	118.3930	05/25/1994	125657.1	7.0	4.40	0.059	VI	13.4(21.5)
GSP	34.2450	118.4710	01/18/1994	155144.9	12.0	4.00	0.047	VI	13.6(21.9)
GSP	34.2180	118.6070	01/18/1994	113509.9	12.0	4.20	0.052	VI	13.7(22.0)
DMG	34.4170	118.8330	06/01/1946	11 631.0	0.0	4.10	0.049	VI	13.7(22.1)
GSP	34.2890	118.4030	01/14/2001	025053.7	8.0	4.00	0.047	VI	13.9(22.3)
GSP	34.2840	118.4040	01/14/2001	022614.1	8.0	4.30	0.054	VI	14.0(22.6)
GSP	34.2930	118.3890	12/06/1994	034834.5	9.0	4.50	0.058	VI	14.3(23.0)
GSP	34.2130	118.5370	01/17/1994	123055.4	18.0	6.70	0.217	VIII	14.3(23.1)
GSP	34.2310	118.4750	03/20/1994	212012.3	13.0	5.30	0.091	VII	14.4(23.1)
GSP	34.2150	118.5100	01/19/1994	140914.8	17.0	4.50	0.057	VI	14.6(23.5)
DMG	34.4110	118.3290	02/10/1971	5 636.0	4.7	4.30	0.050	VI	15.0(24.1)
DMG	34.3390	118.3320	02/09/1971	141612.9	11.1	4.10	0.043	VI	15.7(25.3)
DMG	34.3350	118.3310	02/09/1971	155820.7	14.2	4.80	0.062	VI	15.9(25.5)
DMG	34.3680	118.3140	04/25/1971	1448 6.5	-2.0	4.00	0.040	V	16.2(26.0)
DMG	34.3610	118.3060	02/09/1971	141021.5	5.0	4.70	0.056	VI	16.7(26.9)
DMG	34.3700	118.3020	02/10/1971	31212.0	0.8	4.00	0.039	V	16.8(27.0)
T-A	34.4200	118.9200	03/29/1917	8 6 0.0	0.0	4.30	0.040	V	18.7(30.1)
DMG	34.6000	118.9000	05/18/1940	91512.0	0.0	4.00	0.030	V	21.7(34.9)
DMG	34.6670	118.8330	01/24/1950	215659.0	0.0	4.00	0.029	V	22.1(35.6)
DMG	34.4830	118.9830	09/03/1942	14 6 1.0	0.0	4.50	0.037	V	22.8(36.6)
DMG	34.4830	118.9830	09/04/1942	63433.0	0.0	4.50	0.037	V	22.8(36.6)
DMG	34.5190	118.1980	08/23/1952	10 9 7.1	13.1	5.00	0.047	VI	23.5(37.8)
PAS	34.5410	118.9890	06/12/1984	02752.4	11.7	4.10	0.028	V	24.2(39.0)
DMG	34.1000	118.8000	05/10/1911	1340 0.0	0.0	4.00	0.026	V	24.8(39.9)
PAS	34.3780	119.0350	04/03/1985	4 449.8	27.9	4.00	0.026	V	25.4(40.8)
PDP	34.0590	118.3870	09/09/2001	235918.0	4.0	4.20	0.026	V	27.2(43.9)
MGI	34.1000	118.3000	07/16/1920	2127 0.0	0.0	4.60	0.032	V	27.4(44.1)
MGI	34.1000	118.3000	07/16/1920	2022 0.0	0.0	4.60	0.032	V	27.4(44.1)
MGI	34.1000	118.3000	07/26/1920	1215 0.0	0.0	4.00	0.024	IV	27.4(44.1)
MGI	34.1000	118.3000	07/16/1920	2130 0.0	0.0	4.60	0.032	V	27.4(44.1)
DMG	34.5650	118.1130	02/28/1969	45612.4	5.3	4.30	0.026	V	29.1(46.9)
MGI	34.0000	118.5000	06/23/1920	1220 0.0	0.0	4.00	0.022	IV	29.2(46.9)
DMG	34.0000	118.5000	11/08/1914	1140 0.0	0.0	4.50	0.029	V	29.2(46.9)
DMG	34.0000	118.5000	03/06/1918	1820 0.0	0.0	4.00	0.022	IV	29.2(46.9)
DMG	34.0000	118.5000	08/04/1927	1224 0.0	0.0	5.00	0.037	V	29.2(46.9)
MGI	34.0000	118.5000	03/08/1918	1230 0.0	0.0	4.00	0.022	IV	29.2(46.9)
DMG	34.0000	118.5000	06/22/1920	248 0.0	0.0	4.90	0.035	V	29.2(46.9)
MGI	34.0000	118.5000	11/19/1918	2018 0.0	0.0	5.00	0.037	V	29.2(46.9)
T-A	34.1700	118.1700	03/07/1888	1554 0.0	0.0	4.30	0.025	V	29.4(47.4)
DMG	34.6830	119.0000	04/06/1943	223624.0	0.0	4.00	0.022	IV	29.7(47.7)
DMG	34.7170	118.9670	06/11/1935	1810 0.0	0.0	4.00	0.022	IV	29.8(48.0)
MGI	34.0800	118.2600	07/16/1920	18 8 0.0	0.0	5.00	0.036	V	29.9(48.1)
T-A	34.8300	118.7500	11/27/1852	0 0 0.0	0.0	7.00	0.127	VIII	30.0(48.3)
DMG	34.0000	118.4170	12/07/1938	338 0.0	0.0	4.00	0.021	IV	30.4(48.9)
DMG	34.7000	119.0000	10/23/1916	254 0.0	0.0	5.50	0.048	VI	30.4(48.9)

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.5000	119.1170	11/17/1954	23 351.0	0.0	4.40	0.026	V	30.5(49.0)
MGI	34.0000	118.4000	02/22/1920	1610 0.0	0.0	4.60	0.028	V	30.7(49.4)
MGI	34.0000	118.4000	10/01/1930	040 0.0	0.0	4.60	0.028	V	30.7(49.4)
MGI	34.0000	118.4000	02/07/1927	429 0.0	0.0	4.60	0.028	V	30.7(49.4)
MGI	34.0000	118.4000	01/29/1927	2324 0.0	0.0	4.00	0.021	IV	30.7(49.4)
DMG	34.7840	118.9020	07/27/1972	03117.4	8.0	4.40	0.025	V	30.9(49.8)
MGI	34.1000	118.2000	04/21/1921	1538 0.0	0.0	4.00	0.021	IV	31.2(50.2)
MGI	34.1000	118.2000	01/27/1860	830 0.0	0.0	4.30	0.024	V	31.2(50.2)
MGI	34.1000	118.2000	05/02/1916	1432 0.0	0.0	4.00	0.021	IV	31.2(50.2)
DMG	34.6170	119.0830	02/26/1950	0 622.0	0.0	4.70	0.030	V	31.2(50.2)
GSP	34.0490	118.9150	02/19/1995	212418.1	15.0	4.30	0.024	IV	31.3(50.4)
PAS	34.1490	118.1350	12/03/1988	113826.4	13.3	4.90	0.032	V	31.9(51.3)
DMG	33.9500	118.6320	08/31/1930	04036.0	0.0	5.20	0.038	V	32.2(51.9)
PAS	34.0540	118.9640	04/13/1982	11 212.2	16.6	4.00	0.020	IV	32.8(52.8)
PAS	33.9440	118.6810	01/01/1979	231438.9	11.3	5.00	0.033	V	33.0(53.0)
MGI	34.0000	118.3000	09/03/1905	540 0.0	0.0	5.30	0.039	V	33.2(53.4)
MGI	34.0000	118.3000	06/30/1920	350 0.0	0.0	4.00	0.019	IV	33.2(53.4)
MGI	34.0000	118.3000	06/22/1920	2035 0.0	0.0	4.00	0.019	IV	33.2(53.4)
PAS	33.9330	118.6690	10/17/1979	205237.3	5.5	4.20	0.021	IV	33.6(54.1)
DMG	33.9830	118.3000	02/11/1940	192410.0	0.0	4.00	0.019	IV	34.2(55.0)
PAS	33.9190	118.6270	01/19/1989	65328.8	11.9	5.00	0.032	V	34.3(55.3)
T-A	34.0000	118.2500	05/04/1857	6 0 0.0	0.0	4.30	0.021	IV	34.7(55.8)
T-A	34.0000	118.2500	09/23/1827	0 0 0.0	0.0	5.00	0.031	V	34.7(55.8)
T-A	34.0000	118.2500	01/10/1856	0 0 0.0	0.0	5.00	0.031	V	34.7(55.8)
T-A	34.0000	118.2500	01/17/1857	1 0 0.0	0.0	4.30	0.021	IV	34.7(55.8)
T-A	34.0000	118.2500	03/21/1880	1425 0.0	0.0	4.30	0.021	IV	34.7(55.8)
T-A	34.0000	118.2500	05/02/1856	810 0.0	0.0	4.30	0.021	IV	34.7(55.8)
T-A	34.0000	118.2500	03/26/1860	0 0 0.0	0.0	5.00	0.031	V	34.7(55.8)
DMG	34.8670	118.8670	07/22/1952	74455.0	0.0	4.10	0.019	IV	34.9(56.1)
DMG	34.0170	118.9670	04/16/1948	222624.0	0.0	4.70	0.026	V	34.9(56.1)
DMG	34.0650	119.0350	02/21/1973	144557.3	8.0	5.90	0.053	VI	35.0(56.3)
GSP	34.2620	118.0020	06/28/1991	144354.5	11.0	5.40	0.039	V	35.2(56.7)
GSP	34.0300	118.1800	06/12/1989	165718.4	16.0	4.40	0.022	IV	35.5(57.1)
MGI	34.1000	118.1000	07/11/1855	415 0.0	0.0	6.30	0.067	VI	35.5(57.2)
PAS	34.0160	118.9880	10/26/1984	172043.5	13.3	4.60	0.024	V	35.7(57.4)
GSP	34.0200	118.1800	06/12/1989	172225.5	16.0	4.10	0.019	IV	36.0(58.0)
GSP	34.2500	117.9900	06/28/1991	170055.5	9.0	4.30	0.021	IV	36.2(58.2)
MGI	34.0000	118.2000	06/26/1917	424 0.0	0.0	4.00	0.018	IV	36.4(58.5)
MGI	34.0000	118.2000	02/13/1917	13 5 0.0	0.0	4.60	0.024	IV	36.4(58.5)
MGI	34.0000	118.2000	06/26/1917	2115 0.0	0.0	4.60	0.024	IV	36.4(58.5)
MGI	34.0000	118.2000	06/26/1917	2120 0.0	0.0	4.60	0.024	IV	36.4(58.5)
MGI	34.0000	118.2000	06/26/1917	2130 0.0	0.0	4.60	0.024	IV	36.4(58.5)
DMG	33.9030	118.4310	11/29/1938	192115.8	10.0	4.00	0.018	IV	36.6(58.8)
DMG	34.8350	118.9880	11/29/1936	55445.3	10.0	4.00	0.017	IV	36.7(59.0)
DMG	34.8670	118.9330	09/21/1941	1953 7.2	0.0	5.20	0.033	V	36.7(59.1)
PAS	34.0730	118.0980	10/04/1987	105938.2	8.2	5.30	0.035	V	36.8(59.2)
MGI	34.2000	118.0000	01/09/1921	530 0.0	0.0	4.60	0.024	IV	36.9(59.3)
MGI	34.0000	119.0000	12/14/1912	0 0 0.0	0.0	5.70	0.044	VI	37.0(59.5)
DMG	34.0000	119.0000	09/24/1827	4 0 0.0	0.0	7.00	0.103	VII	37.0(59.5)
PAS	34.0760	118.0900	10/01/1987	1448 3.1	11.7	4.10	0.018	IV	37.0(59.6)
PAS	34.0600	118.1000	10/01/1987	1449 5.9	11.7	4.70	0.025	V	37.3(60.0)

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PAS	34.9430	118.7430	06/10/1988	23 643.0	6.8	5.40	0.036	V	37.4(60.2)
DMG	34.9000	118.9000	10/23/1916	244 0.0	0.0	6.00	0.052	VI	37.7(60.7)

EARTHQUAKE SEARCH RESULTS

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
MGI	34.2000	119.2000	06/16/1914	1052 0.0	0.0	4.60	0.023	IV	37.7(60.7)
PAS	34.0490	118.1010	10/01/1987	144541.5	13.6	4.70	0.024	V	37.7(60.7)
PAS	34.0520	118.0900	10/01/1987	151231.8	10.8	4.70	0.024	V	38.1(61.3)
PAS	34.0610	118.0790	10/01/1987	144220.0	9.5	5.90	0.048	VI	38.2(61.4)
PAS	34.0500	118.0870	10/01/1987	155953.5	10.4	4.00	0.017	IV	38.3(61.6)
DMG	34.8430	119.0260	03/07/1939	195331.8	10.0	4.00	0.017	IV	38.5(61.9)
PDP	33.9220	118.2700	10/28/2001	162745.6	21.0	4.00	0.016	IV	38.7(62.3)
PAS	34.0770	118.0470	02/11/1988	152555.7	12.5	4.70	0.024	IV	38.9(62.6)
DMG	34.9000	118.9500	08/01/1952	13 430.0	0.0	5.10	0.029	V	39.1(63.0)
DMG	34.8000	119.1000	09/05/1883	1230 0.0	0.0	6.00	0.050	VI	39.2(63.1)
DMG	34.8670	119.0170	07/21/1952	2153 9.0	0.0	4.30	0.019	IV	39.4(63.5)
T-A	34.9200	118.9200	01/20/1857	0 0 0.0	0.0	5.00	0.027	V	39.5(63.6)
T-A	34.9200	118.9200	05/23/1857	0 0 0.0	0.0	5.00	0.027	V	39.5(63.6)
T-A	34.9200	118.9200	08/29/1857	0 0 0.0	0.0	4.30	0.019	IV	39.5(63.6)
DMG	33.9390	118.2050	01/11/1950	214135.0	0.4	4.10	0.017	IV	39.6(63.8)
DMG	33.9900	119.0580	05/29/1955	164335.4	17.4	4.10	0.017	IV	39.7(63.8)
DMG	34.8850	119.0020	02/23/1939	91846.7	10.0	4.50	0.021	IV	39.9(64.2)
DMG	33.8830	118.3170	03/11/1933	1457 0.0	0.0	4.90	0.025	V	40.0(64.3)
DMG	34.9500	118.8670	07/21/1952	121936.0	0.0	5.30	0.032	V	40.1(64.5)
MGI	34.1000	118.0000	01/27/1930	2026 0.0	0.0	4.60	0.022	IV	40.2(64.7)
MGI	34.4000	119.3000	08/12/1925	1845 0.0	0.0	4.00	0.016	IV	40.4(64.9)
DMG	34.9110	118.9730	02/23/1939	84551.7	10.0	4.50	0.020	IV	40.5(65.1)
DMG	34.8830	119.0330	08/20/1952	84747.0	0.0	4.20	0.017	IV	40.9(65.8)
DMG	35.0000	118.7330	04/29/1953	124745.0	0.0	4.70	0.022	IV	41.1(66.2)
DMG	35.0000	118.7330	08/23/1952	6 3 3.0	0.0	4.30	0.018	IV	41.1(66.2)
MGI	34.3000	119.3000	05/01/1904	1830 0.0	0.0	4.60	0.021	IV	41.1(66.2)
MGI	34.3000	119.3000	09/28/1926	1749 0.0	0.0	4.00	0.015	IV	41.1(66.2)
MGI	34.3000	119.3000	05/15/1927	1120 0.0	0.0	4.00	0.015	IV	41.1(66.2)
DMG	34.1180	119.2200	03/18/1957	185628.0	13.8	4.70	0.022	IV	41.3(66.5)
DMG	34.9280	118.9700	01/15/1955	1 3 6.7	9.1	4.30	0.018	IV	41.4(66.6)
DMG	33.9500	118.1330	10/25/1933	7 046.0	0.0	4.30	0.018	IV	41.5(66.7)
DMG	34.9320	118.9760	03/01/1963	02557.9	13.9	5.00	0.026	V	41.8(67.3)
MGI	33.9000	118.2000	10/08/1927	1914 0.0	0.0	4.60	0.021	IV	42.0(67.7)
DMG	34.9030	119.0380	05/08/1939	248 5.3	10.0	4.50	0.019	IV	42.1(67.8)
DMG	34.9500	118.9500	10/16/1952	1222 7.0	0.0	4.30	0.018	IV	42.1(67.8)
DMG	34.2000	117.9000	07/13/1935	105416.5	0.0	4.70	0.022	IV	42.2(67.8)
DMG	34.2000	117.9000	08/28/1889	215 0.0	0.0	5.50	0.034	V	42.2(67.8)
DMG	34.9450	118.9680	03/04/1963	201042.3	8.5	4.00	0.015	IV	42.3(68.1)
GSP	34.9180	119.0200	12/24/2000	010421.9	14.0	4.40	0.018	IV	42.4(68.2)
DMG	34.9000	119.0500	07/22/1952	143018.0	0.0	4.30	0.017	IV	42.4(68.2)
DMG	35.0000	118.8330	07/23/1952	75319.0	0.0	5.40	0.032	V	42.6(68.6)
DMG	35.0000	118.8330	07/23/1952	181351.0	0.0	5.20	0.028	V	42.6(68.6)
DMG	35.0000	118.8330	12/01/1952	52610.0	0.0	4.40	0.018	IV	42.6(68.6)
DMG	34.9410	118.9870	11/15/1961	53855.5	10.7	5.00	0.025	V	42.7(68.6)
MGI	33.8000	118.5000	06/18/1915	15 5 0.0	0.0	4.00	0.015	IV	42.8(68.9)
DMG	34.9830	118.9000	07/24/1952	95032.0	0.0	4.30	0.017	IV	42.9(69.0)
DMG	34.9830	118.9000	03/23/1953	17 637.0	0.0	4.00	0.015	IV	42.9(69.0)

DMG	34.9670	118.9500	07/30/1952	11 255.0	0.0	4.10	0.015	IV	43.2(69.5)
DMG	34.9670	118.9500	11/27/1952	153641.0	0.0	4.00	0.015	IV	43.2(69.5)
DMG	33.8500	118.2670	03/11/1933	629 0.0	0.0	4.40	0.018	IV	43.2(69.6)
DMG	33.8500	118.2670	03/11/1933	1425 0.0	0.0	5.00	0.025	V	43.2(69.6)
DMG	33.8670	118.2170	06/19/1944	3 6 7.0	0.0	4.40	0.018	IV	43.5(70.0)
DMG	33.8670	118.2170	06/19/1944	0 333.0	0.0	4.50	0.019	IV	43.5(70.0)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	34.4810	119.3530	10/23/1996	220929.4	14.0	4.20	0.016	IV	43.6(70.1)
DMG	33.9670	118.0500	01/30/1941	13446.9	0.0	4.10	0.015	IV	43.8(70.4)
DMG	33.8670	118.2000	11/13/1933	2128 0.0	0.0	4.00	0.014	IV	44.0(70.8)
DMG	34.9500	119.0170	11/11/1952	181225.0	0.0	4.10	0.015	IV	44.1(71.0)
MGI	34.0000	118.0000	05/05/1929	1 7 0.0	0.0	4.60	0.019	IV	44.3(71.3)
MGI	34.0000	118.0000	05/05/1929	735 0.0	0.0	4.00	0.014	IV	44.3(71.3)
MGI	34.0000	118.0000	12/25/1903	1745 0.0	0.0	5.00	0.024	V	44.3(71.3)
DMG	34.9670	119.0000	09/02/1952	204556.0	0.0	4.70	0.020	IV	44.6(71.7)
DMG	34.9330	119.0670	02/10/1954	235838.0	0.0	4.50	0.018	IV	44.8(72.0)
DMG	33.7830	118.4170	10/14/1940	205111.0	0.0	4.00	0.014	IV	44.8(72.1)
DMG	33.7830	118.4170	11/01/1940	725 3.0	0.0	4.00	0.014	IV	44.8(72.1)
DMG	33.7830	118.4170	10/12/1940	024 0.0	0.0	4.00	0.014	IV	44.8(72.1)
DMG	33.7830	118.4170	11/02/1940	25826.0	0.0	4.00	0.014	IV	44.8(72.1)
DMG	35.0670	118.6170	07/23/1952	235136.0	0.0	4.00	0.014	IV	45.0(72.4)
DMG	33.7700	118.4800	04/24/1931	182754.8	0.0	4.40	0.017	IV	45.0(72.5)
DMG	34.9830	118.9830	05/23/1954	235243.0	0.0	5.10	0.025	V	45.0(72.5)
DMG	35.0330	118.8500	10/07/1953	145921.0	0.0	4.90	0.022	IV	45.1(72.5)
DMG	34.4000	117.8000	02/24/1946	6 752.0	0.0	4.10	0.015	IV	45.1(72.6)
DMG	33.9000	118.1000	07/08/1929	1646 6.7	13.0	4.70	0.020	IV	45.3(73.0)
DMG	34.9220	119.1030	01/09/1963	6 4 3.8	8.7	4.00	0.014	IV	45.4(73.1)
DMG	33.7670	118.4500	10/11/1940	55712.3	0.0	4.70	0.020	IV	45.5(73.2)
DMG	33.9960	117.9750	06/15/1967	458 5.5	10.0	4.10	0.015	IV	45.6(73.4)
MGI	33.8000	118.3000	12/31/1928	1045 0.0	0.0	4.00	0.014	IV	45.7(73.5)
DMG	33.8000	118.3000	11/03/1931	16 5 0.0	0.0	4.00	0.014	IV	45.7(73.5)
DMG	35.0630	118.4230	08/26/1952	205640.6	-0.8	4.40	0.017	IV	45.7(73.6)
DMG	35.0670	118.7670	07/22/1952	21 211.0	0.0	4.20	0.015	IV	46.1(74.1)
DMG	35.0830	118.5830	08/04/1952	535 0.0	0.0	4.00	0.014	III	46.1(74.2)
DMG	35.0830	118.5830	07/22/1952	81624.0	0.0	4.40	0.017	IV	46.1(74.2)
DMG	35.0330	118.9170	07/23/1952	211658.0	0.0	4.10	0.014	IV	46.4(74.7)
DMG	34.9830	119.0330	07/21/1952	235328.0	0.0	4.50	0.018	IV	46.5(74.8)
DMG	35.0000	119.0000	07/25/1952	0 3 0.0	0.0	4.00	0.014	III	46.5(74.9)
DMG	35.0000	119.0000	07/22/1952	82122.0	0.0	4.10	0.014	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1239 0.0	0.0	4.20	0.015	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1442 0.0	0.0	4.20	0.015	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1617 0.0	0.0	4.10	0.014	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1212 0.0	0.0	4.60	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1311 0.0	0.0	4.10	0.014	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1218 0.0	0.0	4.40	0.017	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	13 8 0.0	0.0	4.50	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1228 0.0	0.0	4.20	0.015	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1638 0.0	0.0	4.50	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1542 0.0	0.0	4.20	0.015	IV	46.5(74.9)
DMG	35.0000	119.0000	07/23/1952	043 8.0	0.0	4.40	0.017	IV	46.5(74.9)

DMG	35.0000	119.0000	07/21/1952	18 0 0.0	0.0	4.50	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1336 0.0	0.0	4.10	0.014	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1415 0.0	0.0	4.40	0.017	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	12 531.0	0.0	6.40	0.054	VI	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1359 0.0	0.0	4.60	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	132512.0	0.0	4.50	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1210 0.0	0.0	4.50	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	01/25/1919	2229 0.0	0.0	4.00	0.014	III	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1417 0.0	0.0	4.10	0.014	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	12 7 0.0	0.0	4.70	0.019	IV	46.5(74.9)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.0000	119.0000	07/21/1952	1240 0.0	0.0	4.90	0.022	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1259 0.0	0.0	4.20	0.015	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1222 0.0	0.0	4.90	0.022	IV	46.5(74.9)
DMG	35.0000	119.0000	07/22/1952	191024.0	0.0	4.10	0.014	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	14 6 0.0	0.0	4.20	0.015	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1225 0.0	0.0	4.70	0.019	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1317 0.0	0.0	4.00	0.014	III	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	12 6 0.0	0.0	4.80	0.021	IV	46.5(74.9)
DMG	35.0000	119.0000	02/16/1919	1557 0.0	0.0	5.00	0.023	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1536 0.0	0.0	4.20	0.015	IV	46.5(74.9)
DMG	35.0000	119.0000	08/10/1952	194424.0	0.0	4.10	0.014	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1313 0.0	0.0	4.50	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/22/1952	133143.0	0.0	4.80	0.021	IV	46.5(74.9)
DMG	35.0000	119.0000	03/13/1929	228 0.0	0.0	4.50	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1553 0.0	0.0	4.50	0.018	IV	46.5(74.9)
DMG	35.0000	119.0000	07/22/1952	175236.0	0.0	4.10	0.014	IV	46.5(74.9)
DMG	35.0000	119.0000	07/21/1952	1451 0.0	0.0	4.20	0.015	IV	46.5(74.9)
DMG	33.8170	118.2170	10/22/1941	65718.5	0.0	4.90	0.022	IV	46.5(74.9)
DMG	35.0330	118.9330	07/22/1952	223133.0	0.0	4.70	0.019	IV	46.8(75.3)
DMG	35.0830	118.7500	07/26/1952	18 244.0	0.0	4.00	0.013	III	46.9(75.5)
DMG	35.0830	118.7500	07/22/1952	84734.0	0.0	4.70	0.019	IV	46.9(75.5)
DMG	35.0830	118.7500	07/26/1952	15 831.0	0.0	4.40	0.016	IV	46.9(75.5)
DMG	34.1500	119.3500	08/22/1950	224758.0	0.0	4.20	0.015	IV	47.0(75.6)
DMG	35.0000	119.0170	01/12/1954	233349.0	0.0	5.90	0.039	V	47.0(75.7)
DMG	35.0000	119.0170	05/25/1953	324 1.0	0.0	4.80	0.020	IV	47.0(75.7)
DMG	35.0000	119.0170	07/21/1952	115214.0	0.0	7.70	0.132	VIII	47.0(75.7)
DMG	35.0170	118.9830	08/17/1952	9 9 7.0	0.0	4.10	0.014	IV	47.1(75.8)
PAS	35.0950	118.5190	06/22/1981	45747.3	5.0	4.00	0.013	III	47.1(75.8)
DMG	34.8410	119.2400	01/11/1958	23 847.4	10.8	4.00	0.013	III	47.1(75.8)
DMG	35.0500	118.9000	09/25/1952	162136.0	0.0	4.10	0.014	IV	47.2(75.9)
DMG	35.1000	118.6170	09/26/1952	202120.0	0.0	4.00	0.013	III	47.3(76.1)
DMG	35.0000	119.0330	07/21/1952	1158 0.0	0.0	4.60	0.018	IV	47.5(76.4)
DMG	35.0000	119.0330	07/21/1952	12 2 0.0	0.0	5.60	0.032	V	47.5(76.4)
DMG	35.0000	119.0330	07/21/1952	1154 0.0	0.0	4.50	0.017	IV	47.5(76.4)
DMG	35.0000	119.0330	07/21/1952	1155 0.0	0.0	4.50	0.017	IV	47.5(76.4)
DMG	35.0000	119.0330	07/21/1952	1157 0.0	0.0	4.50	0.017	IV	47.5(76.4)
DMG	35.0000	119.0330	07/21/1952	1159 0.0	0.0	4.50	0.017	IV	47.5(76.4)
DMG	33.7830	118.2500	11/14/1941	84136.3	0.0	5.40	0.028	V	47.8(77.0)
DMG	35.0670	118.8830	08/17/1952	21 442.0	0.0	4.30	0.015	IV	47.9(77.1)

DMG	35.0670	118.8830	08/14/1952	114146.0	0.0	4.20	0.015	IV	47.9(77.1)
DMG	35.0000	119.0500	09/12/1952	103525.0	0.0	4.50	0.017	IV	48.0(77.3)
PAS	33.9060	119.1660	05/23/1978	91650.8	6.0	4.00	0.013	III	48.1(77.4)
DMG	35.0500	118.9500	08/17/1952	614 4.0	0.0	4.00	0.013	III	48.3(77.7)
DMG	35.0500	118.9500	11/14/1952	2334 1.4	0.0	4.00	0.013	III	48.3(77.7)
DMG	35.0330	119.0000	07/22/1952	101939.0	0.0	4.10	0.014	III	48.5(78.1)
DMG	35.1170	118.4810	05/01/1953	64820.9	2.4	4.10	0.014	III	48.8(78.6)
DMG	35.0670	118.9330	07/23/1952	223220.0	0.0	4.10	0.014	III	49.0(78.8)
DMG	35.0170	119.0500	08/05/1953	122059.0	0.0	4.30	0.015	IV	49.0(78.8)
DMG	35.0000	119.0830	11/07/1952	85535.0	0.0	4.60	0.017	IV	49.0(78.9)
DMG	33.7830	118.2000	12/27/1939	192849.0	0.0	4.70	0.018	IV	49.1(79.0)
DMG	33.7590	118.2530	08/31/1938	31814.2	10.0	4.50	0.016	IV	49.3(79.3)
PAS	35.0460	119.0010	06/05/1975	144645.3	9.0	4.10	0.013	III	49.3(79.4)
DMG	35.0450	119.0040	03/23/1956	212327.1	12.1	4.30	0.015	IV	49.4(79.4)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
PAS	35.0000	119.1030	05/13/1975	02135.6	19.1	4.50	0.016	IV	49.7(80.0)
DMG	35.1330	118.5170	07/23/1952	152524.0	0.0	4.00	0.013	III	49.7(80.0)
DMG	35.1330	118.5170	08/14/1952	72822.0	0.0	4.10	0.013	III	49.7(80.0)
DMG	35.1330	118.5170	07/22/1952	141 2.0	0.0	4.50	0.016	IV	49.7(80.0)
DMG	35.1330	118.5170	07/28/1952	54554.0	0.0	4.20	0.014	IV	49.7(80.0)
GSP	35.0980	118.3060	12/31/1995	214823.1	7.0	4.00	0.013	III	49.8(80.2)
DMG	35.1330	118.7000	09/02/1952	124132.0	0.0	4.60	0.017	IV	49.9(80.3)
USG	34.4180	119.4680	09/07/1984	11 345.2	9.5	4.00	0.013	III	49.9(80.3)
DMG	35.0330	119.0500	07/27/1952	71611.0	0.0	4.10	0.013	III	49.9(80.4)
DMG	35.0330	119.0500	08/07/1952	163151.0	0.0	4.90	0.020	IV	49.9(80.4)
DMG	35.0330	119.0500	08/18/1952	44010.0	0.0	4.70	0.018	IV	49.9(80.4)
DMG	35.0670	118.9830	08/04/1952	194750.0	0.0	4.00	0.013	III	50.2(80.7)
DMG	34.1000	117.8000	03/31/1931	2033 0.0	0.0	4.00	0.013	III	50.2(80.7)
DMG	35.1330	118.7670	07/21/1952	194122.0	0.0	5.50	0.028	V	50.5(81.3)
DMG	35.1330	118.7670	07/25/1952	143442.0	0.0	4.40	0.015	IV	50.5(81.3)
DMG	35.1500	118.6330	01/27/1954	141948.0	0.0	5.00	0.021	IV	50.8(81.7)
PAS	33.9650	117.8860	01/01/1976	172012.9	6.2	4.20	0.014	III	50.9(81.9)
DMG	33.7830	118.1330	01/13/1940	749 7.0	0.0	4.00	0.012	III	50.9(82.0)
DMG	33.7830	118.1330	11/20/1933	1032 0.0	0.0	4.00	0.012	III	50.9(82.0)
DMG	33.7830	118.1330	10/02/1933	91017.6	0.0	5.40	0.026	V	50.9(82.0)
DMG	35.1500	118.6830	08/13/1952	173925.0	0.0	4.70	0.018	IV	51.0(82.0)
DMG	34.1000	119.4000	05/19/1893	035 0.0	0.0	5.50	0.028	V	51.0(82.1)
DMG	35.0330	119.1000	01/13/1954	14531.0	0.0	4.40	0.015	IV	51.5(82.8)
DMG	35.0330	119.1000	01/12/1954	234037.0	0.0	4.10	0.013	III	51.5(82.8)
DMG	35.0330	119.1000	02/07/1954	0 953.0	0.0	4.40	0.015	IV	51.5(82.8)
DMG	35.0330	119.1000	09/02/1953	152756.0	0.0	4.00	0.012	III	51.5(82.8)
DMG	35.0670	119.0330	07/23/1952	175329.0	0.0	4.10	0.013	III	51.5(82.8)
DMG	35.0670	119.0330	07/27/1952	113438.0	0.0	4.10	0.013	III	51.5(82.8)
DMG	34.3490	119.4920	07/14/1958	52555.3	16.0	4.70	0.018	IV	51.5(82.9)
DMG	33.7500	118.1830	08/04/1933	41748.0	0.0	4.00	0.012	III	51.6(83.0)
DMG	35.1000	118.9670	08/25/1952	62026.0	0.0	4.70	0.017	IV	51.8(83.4)
DMG	35.0660	119.0490	01/24/1974	5 2 0.8	6.4	4.30	0.014	IV	51.9(83.5)
PAS	35.0180	119.1410	11/10/1981	223435.5	3.1	4.50	0.016	IV	52.0(83.6)
DMG	33.7500	118.1670	05/16/1933	205855.0	0.0	4.00	0.012	III	52.0(83.6)
DMG	34.5000	119.5000	12/05/1920	1158 0.0	0.0	4.50	0.016	IV	52.0(83.7)

DMG	34.5000	119.5000	08/05/1930	1125 0.0	0.0	5.00	0.020	IV	52.0(83.7)
DMG	34.5000	119.5000	06/29/1926	2321 0.0	0.0	5.50	0.027	V	52.0(83.7)
DMG	33.7670	118.1170	11/04/1939	2141 0.0	0.0	4.00	0.012	III	52.4(84.3)
DMG	35.0670	119.0670	02/24/1954	223022.0	0.0	4.50	0.015	IV	52.4(84.4)
DMG	35.1000	119.0000	07/24/1952	311 7.0	0.0	4.10	0.013	III	52.6(84.7)
DMG	35.1000	119.0000	07/22/1952	14 511.0	0.0	4.30	0.014	IV	52.6(84.7)
PAS	35.0350	119.1370	06/16/1978	42131.6	1.8	4.30	0.014	IV	52.8(84.9)
DMG	33.7500	118.1330	03/11/1933	11 4 0.0	0.0	4.60	0.016	IV	52.9(85.1)
DMG	33.6630	118.4130	01/08/1967	738 5.3	17.7	4.00	0.012	III	53.0(85.2)
PAS	35.0120	119.1790	11/10/1981	2237 5.0	9.4	4.20	0.013	III	53.0(85.2)
DMG	35.1830	118.6000	07/29/1952	154950.0	0.0	4.90	0.019	IV	53.0(85.3)
DMG	35.1830	118.6000	07/26/1952	2241 3.0	0.0	4.60	0.016	IV	53.0(85.3)
DMG	35.1830	118.6000	07/26/1952	63850.0	0.0	4.00	0.012	III	53.0(85.3)
GSP	34.1500	117.7200	03/01/1990	032303.0	11.0	4.70	0.017	IV	53.0(85.3)
DMG	34.2500	119.5000	04/21/1917	659 0.0	0.0	4.00	0.012	III	53.0(85.3)
DMG	34.2500	119.5000	04/13/1917	359 0.0	0.0	4.50	0.015	IV	53.0(85.3)
DMG	35.1830	118.6500	07/21/1952	151358.0	0.0	5.10	0.021	IV	53.1(85.4)
DMG	35.0500	119.1330	05/23/1953	75255.0	0.0	4.20	0.013	III	53.5(86.1)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.0500	119.1330	08/06/1953	1120 4.0	0.0	4.40	0.014	IV	53.5(86.1)
DMG	34.2670	119.5170	04/12/1944	153310.0	0.0	4.00	0.012	III	53.7(86.5)
DMG	34.3700	117.6500	12/08/1812	15 0 0.0	0.0	7.00	0.070	VI	53.7(86.5)
GSP	34.3740	117.6490	08/20/1998	234958.4	9.0	4.40	0.014	IV	53.8(86.5)
PAS	34.1360	117.7090	06/26/1988	15 458.5	7.9	4.60	0.016	IV	53.9(86.8)
GSP	34.1100	117.7200	04/17/1990	223227.2	4.0	4.60	0.016	IV	54.0(86.9)
DMG	35.1990	118.5310	09/01/1961	165148.9	4.5	4.00	0.012	III	54.2(87.2)
DMG	35.2000	118.6330	07/22/1952	321 5.0	0.0	4.40	0.014	IV	54.2(87.2)
DMG	35.1940	118.4650	07/22/1952	19 858.2	3.7	4.30	0.013	III	54.2(87.3)
GSP	34.1400	117.7000	02/28/1990	234336.6	5.0	5.20	0.022	IV	54.3(87.4)
DMG	33.8000	118.0000	10/21/1913	938 0.0	0.0	4.00	0.012	III	54.3(87.4)
DMG	33.7500	118.0830	03/12/1933	1825 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1944 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	2354 0.0	0.0	4.50	0.015	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	210 0.0	0.0	4.60	0.016	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1653 0.0	0.0	4.80	0.017	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	3 5 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/15/1933	540 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	04/01/1933	642 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	439 0.0	0.0	4.90	0.018	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	347 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	2 5 0.0	0.0	4.30	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	311 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	524 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	1651 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	521 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	339 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/15/1933	2 8 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	1738 0.0	0.0	4.50	0.015	IV	54.4(87.5)
DMG	33.7500	118.0830	03/14/1933	2242 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/13/1933	432 0.0	0.0	4.70	0.017	IV	54.4(87.5)

DMG	33.7500	118.0830	03/11/1933	2 4 0.0	0.0	4.90	0.018	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1147 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	553 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	336 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/30/1933	1225 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/13/1933	343 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	515 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	15 2 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	258 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/25/1933	1346 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/15/1933	432 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	259 0.0	0.0	4.60	0.016	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	926 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	04/02/1933	8 0 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	2128 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	436 0.0	0.0	4.60	0.016	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1138 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	3 9 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1141 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/13/1933	617 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	555 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/14/1933	1219 0.0	0.0	4.50	0.015	IV	54.4(87.5)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.7500	118.0830	03/13/1933	1929 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	835 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	6 1 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	740 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1547 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	911 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/21/1933	326 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	2 9 0.0	0.0	5.00	0.019	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	323 0.0	0.0	5.00	0.019	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	216 0.0	0.0	4.80	0.017	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1129 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	230 0.0	0.0	5.10	0.021	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	227 0.0	0.0	4.60	0.016	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	513 0.0	0.0	4.70	0.017	IV	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	448 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1357 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/14/1933	036 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	257 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	837 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	546 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/20/1933	1358 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	910 0.0	0.0	5.10	0.021	IV	54.4(87.5)
DMG	33.7500	118.0830	03/31/1933	1049 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	11 0 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	04/02/1933	1536 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1045 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	618 0.0	0.0	4.20	0.013	III	54.4(87.5)

DMG	33.7500	118.0830	03/11/1933	2240 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	027 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/13/1933	131828.0	0.0	5.30	0.023	IV	54.4(87.5)
DMG	33.7500	118.0830	03/13/1933	1532 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	616 0.0	0.0	4.60	0.016	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	440 0.0	0.0	4.70	0.017	IV	54.4(87.5)
DMG	33.7500	118.0830	03/23/1933	840 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/23/1933	1831 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/19/1933	2123 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	2231 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/12/1933	034 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1025 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/16/1933	1456 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	635 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	23 5 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	2232 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/16/1933	1529 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	611 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	832 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	222 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	8 8 0.0	0.0	4.50	0.015	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	1956 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	252 0.0	0.0	4.00	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/18/1933	2052 0.0	0.0	4.20	0.013	III	54.4(87.5)
DMG	33.7500	118.0830	03/16/1933	1530 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	211 0.0	0.0	4.40	0.014	IV	54.4(87.5)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.7500	118.0830	03/17/1933	1651 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	22 0 0.0	0.0	4.40	0.014	IV	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	759 0.0	0.0	4.10	0.012	III	54.4(87.5)
DMG	33.7500	118.0830	03/11/1933	751 0.0	0.0	4.20	0.013	III	54.4(87.5)
GSP	34.1300	117.7000	03/01/1990	003457.1	4.0	4.00	0.012	III	54.6(87.8)
DMG	33.6320	118.4670	01/08/1967	73730.4	11.4	4.00	0.012	III	54.6(87.8)
DMG	35.0500	119.1670	12/14/1950	135623.0	0.0	4.40	0.014	IV	54.6(87.9)
GSP	34.1400	117.6900	03/02/1990	172625.4	6.0	4.60	0.016	IV	54.8(88.3)
DMG	35.1000	119.0830	12/06/1934	743 0.0	0.0	4.00	0.011	III	54.9(88.3)
DMG	35.1000	119.0830	07/24/1946	019 8.0	0.0	4.00	0.011	III	54.9(88.3)
DMG	33.7330	118.1000	03/11/1933	1447 0.0	0.0	4.40	0.014	IV	54.9(88.3)
DMG	33.7330	118.1000	03/11/1933	1350 0.0	0.0	4.40	0.014	IV	54.9(88.3)
DMG	33.7330	118.1000	03/11/1933	15 9 0.0	0.0	4.40	0.014	IV	54.9(88.3)
DMG	33.6330	118.4000	10/17/1934	938 0.0	0.0	4.00	0.011	III	55.1(88.7)
DMG	35.2170	118.6670	09/14/1952	204324.0	0.0	4.10	0.012	III	55.5(89.3)
DMG	34.1000	117.6830	01/18/1934	214 0.0	0.0	4.00	0.011	III	56.2(90.5)
DMG	34.1000	117.6830	01/09/1934	1410 0.0	0.0	4.50	0.014	IV	56.2(90.5)
PAS	34.0060	117.7390	02/18/1989	717 4.8	3.3	4.30	0.013	III	56.3(90.6)
DMG	35.2290	118.5130	06/28/1957	1132 0.8	1.6	4.10	0.012	III	56.3(90.7)
DMG	35.2330	118.6000	01/10/1953	221738.0	0.0	4.00	0.011	III	56.4(90.8)
DMG	35.2330	118.6000	07/22/1952	91025.0	0.0	4.50	0.014	IV	56.4(90.8)
DMG	35.2330	118.5330	03/17/1953	161517.0	0.0	4.00	0.011	III	56.5(91.0)
DMG	35.2330	118.5330	07/24/1952	1735 6.0	0.0	4.20	0.012	III	56.5(91.0)

DMG	35.2330	118.5330	07/21/1952	174244.0	0.0	5.10	0.020	IV	56.5(91.0)
DMG	35.2330	118.5330	07/29/1952	173643.0	0.0	4.40	0.014	III	56.5(91.0)
DMG	35.2330	118.5330	07/30/1952	144650.0	0.0	4.10	0.012	III	56.5(91.0)
DMG	35.2330	118.5330	07/22/1952	15 314.0	0.0	4.20	0.012	III	56.5(91.0)
DMG	34.2670	119.5670	06/29/1968	191357.0	10.0	4.40	0.014	III	56.5(91.0)
DMG	34.3670	119.5830	07/01/1941	75054.8	0.0	5.90	0.032	V	56.6(91.0)
DMG	35.2350	118.5480	03/03/1973	181449.5	8.0	4.00	0.011	III	56.6(91.1)
DMG	34.3330	119.5830	09/08/1941	31423.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/12/1941	1618 0.0	0.0	4.50	0.014	IV	56.8(91.4)
DMG	34.3330	119.5830	07/03/1941	1926 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	2354 0.0	0.0	4.50	0.014	IV	56.8(91.4)
DMG	34.3330	119.5830	11/21/1941	1656 3.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	09/25/1941	51256.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	09/08/1941	31245.0	0.0	4.50	0.014	IV	56.8(91.4)
DMG	34.3330	119.5830	07/02/1941	2219 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	1820 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	11/18/1941	18 810.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	830 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	09/15/1941	137 2.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	09/14/1941	14518.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	819 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	10/02/1938	1845 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	9 5 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	945 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	858 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	821 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	1025 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	34.3330	119.5830	07/01/1941	848 0.0	0.0	4.00	0.011	III	56.8(91.4)
DMG	35.2170	118.8170	07/23/1952	1317 5.0	0.0	5.70	0.028	V	56.8(91.4)
DMG	35.2170	118.8170	12/15/1953	124436.0	0.0	4.60	0.015	IV	56.8(91.4)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.0500	119.2330	08/19/1952	191226.0	0.0	4.50	0.014	IV	56.9(91.6)
DMG	35.1500	119.0500	11/11/1952	1722 8.0	0.0	4.20	0.012	III	57.0(91.7)
DMG	35.2390	118.5180	07/21/1952	2021 5.1	-2.0	4.20	0.012	III	57.0(91.7)
DMG	35.2410	118.5600	07/21/1952	1912 7.4	5.8	4.30	0.013	III	57.0(91.8)
DMG	33.7500	118.0000	11/16/1934	2126 0.0	0.0	4.00	0.011	III	57.1(91.8)
DMG	34.3000	117.6000	07/30/1894	512 0.0	0.0	6.00	0.034	V	57.1(91.9)
DMG	33.7000	118.0670	02/08/1940	165617.0	0.0	4.00	0.011	III	57.8(93.0)
DMG	33.7000	118.0670	03/11/1933	85457.0	0.0	5.10	0.019	IV	57.8(93.0)
DMG	33.7000	118.0670	03/11/1933	51022.0	0.0	5.10	0.019	IV	57.8(93.0)
DMG	33.7000	118.0670	07/20/1940	4 113.0	0.0	4.00	0.011	III	57.8(93.0)
PDP	33.9550	117.7460	12/14/2001	120135.5	13.0	4.00	0.011	III	57.8(93.1)
DMG	35.2500	118.4830	07/23/1952	1330 4.0	0.0	4.40	0.013	III	57.9(93.2)
DMG	35.2500	118.4830	07/23/1952	93842.0	0.0	4.20	0.012	III	57.9(93.2)
DMG	34.2450	119.5880	06/29/1968	203633.6	1.8	4.00	0.011	III	58.0(93.4)
MGI	33.8000	117.9000	05/22/1902	740 0.0	0.0	4.30	0.013	III	58.0(93.4)
GSP	35.1490	119.1040	05/28/1993	044740.6	21.0	5.20	0.020	IV	58.4(93.9)
MGI	34.0000	117.7000	12/03/1929	9 5 0.0	0.0	4.00	0.011	III	58.4(94.0)
DMG	33.6330	118.2000	11/01/1940	20 046.0	0.0	4.00	0.011	III	58.5(94.1)
DMG	33.9860	119.4750	08/06/1973	232917.0	16.9	5.00	0.018	IV	58.5(94.2)

DMG	33.6300	118.2000	09/13/1929	132338.2	0.0	4.00	0.011	III	58.7(94.4)
DMG	35.0830	119.2330	03/03/1956	62412.0	0.0	4.20	0.012	III	58.7(94.5)
DMG	34.3040	117.5700	05/05/1969	16 2 9.6	8.8	4.40	0.013	III	58.7(94.5)
DMG	34.0000	119.5000	03/19/1905	440 0.0	0.0	4.00	0.011	III	59.3(95.4)
MGI	34.0000	119.5000	05/03/1926	1353 0.0	0.0	4.30	0.012	III	59.3(95.4)
DMG	34.0000	119.5000	02/18/1926	1818 0.0	0.0	5.00	0.018	IV	59.3(95.4)
DMG	33.6830	118.0500	03/11/1933	658 3.0	0.0	5.50	0.024	IV	59.3(95.5)
DMG	33.6830	118.0500	03/11/1933	1250 0.0	0.0	4.40	0.013	III	59.3(95.5)
DMG	34.2550	119.6140	07/31/1968	224445.3	15.0	4.00	0.011	III	59.3(95.5)
DMG	35.2670	118.4500	07/21/1952	191619.0	0.0	4.30	0.012	III	59.3(95.5)
PAS	33.6710	119.1110	09/04/1981	155050.3	5.0	5.30	0.021	IV	59.4(95.5)
PAS	33.6300	119.0200	10/23/1981	172816.9	12.0	4.60	0.014	IV	59.5(95.8)
DMG	34.1830	117.5830	10/03/1948	24628.0	0.0	4.00	0.010	III	59.7(96.1)
GSP	33.9510	117.7090	01/05/1998	181406.5	11.0	4.30	0.012	III	59.8(96.2)
PAS	34.2510	119.6220	03/23/1988	84247.0	16.4	4.00	0.010	III	59.8(96.3)
DMG	35.2830	118.5830	07/31/1952	1719 8.0	0.0	4.50	0.013	III	59.9(96.4)
DMG	35.2830	118.5500	07/23/1952	737 0.0	0.0	4.80	0.016	IV	59.9(96.4)
DMG	35.2830	118.5500	07/26/1952	922 6.0	0.0	4.30	0.012	III	59.9(96.4)
DMG	35.2830	118.5500	07/31/1952	41022.0	0.0	4.20	0.012	III	59.9(96.4)
DMG	35.2830	118.5500	08/01/1952	31611.6	0.0	4.50	0.013	III	59.9(96.4)
DMG	35.2830	118.5500	07/22/1952	15151.0	0.0	4.40	0.013	III	59.9(96.4)
DMG	35.2830	118.5500	07/23/1952	34928.0	0.0	4.70	0.015	IV	59.9(96.4)
PAS	33.6370	119.0560	10/23/1981	191552.5	6.3	4.60	0.014	IV	60.0(96.5)
DMG	34.2810	117.5520	09/13/1970	44748.6	8.0	4.40	0.013	III	60.0(96.5)
DMG	34.2540	119.6280	07/08/1968	91837.2	15.7	4.00	0.010	III	60.1(96.8)
DMG	35.1840	119.0990	07/01/1959	234923.4	9.0	4.70	0.015	IV	60.3(97.1)
DMG	35.2890	118.4600	07/26/1952	1 221.3	10.8	4.20	0.011	III	60.8(97.8)
DMG	35.2900	118.4700	07/24/1952	12 757.6	14.1	4.10	0.011	III	60.8(97.8)
DMG	34.2700	117.5400	09/12/1970	143053.0	8.0	5.40	0.022	IV	60.8(97.8)
DMG	35.3000	118.5330	07/21/1952	182628.0	0.0	4.10	0.011	III	61.2(98.4)
DMG	35.3000	118.5330	07/30/1952	95929.0	0.0	4.00	0.010	III	61.2(98.4)
DMG	35.3000	118.5330	07/21/1952	182338.0	0.0	4.50	0.013	III	61.2(98.4)
DMG	35.3000	118.5330	09/02/1952	1638 9.0	0.0	4.00	0.010	III	61.2(98.4)
DMG	35.2890	118.4110	08/10/1952	122318.0	4.0	4.60	0.014	IV	61.2(98.4)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.6710	118.0120	10/20/1961	223534.2	5.6	4.10	0.011	III	61.2(98.4)
DMG	35.3000	118.6670	08/13/1952	212548.0	0.0	4.10	0.011	III	61.2(98.5)
DMG	33.6800	117.9930	11/20/1961	85334.7	4.4	4.00	0.010	III	61.3(98.6)
DMG	35.3000	118.5000	02/19/1953	812 6.0	0.0	4.40	0.012	III	61.3(98.6)
DMG	33.6170	118.1170	01/20/1934	2117 0.0	0.0	4.50	0.013	III	61.5(98.9)
DMG	35.3030	118.4810	09/04/1952	18 649.1	5.8	4.40	0.012	III	61.6(99.1)
DMG	35.3050	118.5070	08/09/1952	10 732.1	-2.0	4.20	0.011	III	61.6(99.1)
DMG	35.2940	118.4010	08/13/1952	42940.6	14.5	4.60	0.014	III	61.6(99.1)
DMG	35.2990	118.4350	07/25/1952	20 6 6.1	-1.4	4.80	0.015	IV	61.6(99.2)
DMG	34.2500	119.6540	06/29/1968	153242.8	14.6	4.10	0.011	III	61.6(99.2)
DMG	35.3030	118.4730	08/01/1952	213522.4	4.2	4.00	0.010	III	61.6(99.2)
DMG	34.1830	117.5480	09/01/1937	163533.5	10.0	4.50	0.013	III	61.7(99.2)
T-A	34.5000	119.6700	07/09/1885	0 0 0.0	0.0	4.30	0.012	III	61.7(99.2)
T-A	34.5000	119.6700	03/14/1857	23 0 0.0	0.0	4.30	0.012	III	61.7(99.2)
T-A	34.5000	119.6700	06/25/1855	22 0 0.0	0.0	4.30	0.012	III	61.7(99.2)

T-A	34.5000	119.6700	06/01/1893	12 0 0.0	0.0	5.00	0.017	IV	61.7(99.2)
T-A	34.5000	119.6700	02/09/1902	15 0 0.0	0.0	4.30	0.012	III	61.7(99.2)
T-A	34.5000	119.6700	05/31/1854	1250 0.0	0.0	4.30	0.012	III	61.7(99.2)
DMG	33.8540	117.7520	10/04/1961	22131.6	4.3	4.10	0.011	III	61.7(99.3)
DMG	35.3000	118.4320	07/23/1952	61045.9	14.5	4.20	0.011	III	61.7(99.3)
DMG	35.3080	118.5160	07/31/1952	19 515.4	7.3	4.00	0.010	III	61.8(99.4)
DMG	33.5430	118.3400	09/14/1963	35116.2	2.2	4.20	0.011	III	61.9(99.7)
DMG	35.3110	118.4990	07/25/1952	1313 8.2	2.8	5.00	0.017	IV	62.0(99.8)
DMG	34.2670	117.5180	09/12/1970	141011.2	8.0	4.10	0.011	III	62.1(99.9)
MGI	33.8000	117.8000	11/07/1926	1948 0.0	0.0	4.60	0.014	III	62.1(99.9)
MGI	33.8000	117.8000	11/10/1926	1723 0.0	0.0	4.60	0.014	III	62.1(99.9)
MGI	33.8000	117.8000	05/19/1917	635 0.0	0.0	4.00	0.010	III	62.1(99.9)
MGI	33.8000	117.8000	05/20/1917	945 0.0	0.0	4.00	0.010	III	62.1(99.9)
MGI	33.8000	117.8000	11/09/1926	1535 0.0	0.0	4.60	0.014	III	62.1(99.9)
MGI	33.8000	117.8000	11/04/1926	2238 0.0	0.0	4.60	0.014	III	62.1(99.9)
MGI	33.8000	117.8000	05/19/1917	719 0.0	0.0	4.00	0.010	III	62.1(99.9)
DMG	35.3140	118.5300	07/26/1952	225856.1	6.8	4.30	0.012	III	62.1(100.0)
PAS	34.2110	117.5300	10/19/1979	122237.8	4.9	4.10	0.011	III	62.2(100.0)
DMG	34.2110	117.5300	09/01/1937	1348 8.2	10.0	4.50	0.013	III	62.2(100.0)
DMG	35.3000	118.8000	12/23/1905	2223 0.0	0.0	5.00	0.017	IV	62.2(100.1)
DMG	35.3130	118.4890	10/20/1952	181443.6	14.0	4.30	0.012	III	62.2(100.1)
DMG	34.1830	119.6460	06/29/1968	63320.9	8.4	4.00	0.010	III	62.2(100.2)
DMG	35.3150	118.5160	07/25/1952	194323.7	11.2	5.70	0.025	V	62.2(100.2)
DMG	33.9170	119.5000	08/26/1954	1348 3.0	0.0	4.80	0.015	IV	62.3(100.2)
DMG	35.3160	118.5140	07/24/1952	14 525.9	5.4	4.30	0.012	III	62.3(100.3)
DMG	35.3140	118.4820	08/30/1952	45559.8	5.5	4.70	0.014	IV	62.3(100.3)
GSP	35.2100	118.0660	07/11/1992	181416.2	10.0	5.70	0.025	V	62.4(100.4)
DMG	35.1830	119.1740	06/04/1956	83319.3	14.3	4.00	0.010	III	62.4(100.5)
DMG	35.3160	118.4870	09/15/1952	44013.2	4.2	4.90	0.016	IV	62.4(100.5)
DMG	35.3170	118.4940	07/25/1952	19 944.6	5.5	5.70	0.025	V	62.5(100.5)
DMG	33.6650	117.9790	10/20/1961	214240.7	7.2	4.00	0.010	III	62.6(100.7)
DMG	35.3210	118.5400	07/24/1952	141012.2	9.5	4.00	0.010	III	62.6(100.7)
DMG	35.3200	118.5180	07/27/1952	0 915.6	6.5	4.20	0.011	III	62.6(100.7)
DMG	33.6540	117.9940	10/20/1961	194950.5	4.6	4.30	0.012	III	62.7(100.9)
DMG	34.3000	117.5000	07/22/1899	2032 0.0	0.0	6.50	0.042	VI	62.7(101.0)
DMG	35.3210	118.4940	02/11/1955	194431.5	14.7	4.50	0.013	III	62.8(101.0)
DMG	34.1670	117.5330	03/01/1948	81213.0	0.0	4.70	0.014	IV	62.8(101.0)
DMG	34.4900	119.6910	09/16/1962	181235.2	13.3	4.00	0.010	III	62.8(101.1)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.6590	117.9810	10/20/1961	20 714.5	6.1	4.00	0.010	III	62.8(101.1)
DMG	33.7670	117.8170	08/22/1936	521 0.0	0.0	4.00	0.010	III	63.0(101.4)
DMG	35.3240	118.4860	01/20/1953	81322.8	7.2	4.00	0.010	III	63.0(101.4)
PAS	34.3470	119.6960	08/13/1978	225453.4	12.8	5.10	0.018	IV	63.1(101.5)
MGI	34.4000	119.7000	06/24/1926	1530 0.0	0.0	4.00	0.010	III	63.1(101.6)
MGI	34.4000	119.7000	07/06/1926	1745 0.0	0.0	4.00	0.010	III	63.1(101.6)
MGI	34.4000	119.7000	08/26/1927	1240 0.0	0.0	4.00	0.010	III	63.1(101.6)
MGI	34.4000	119.7000	03/25/1806	8 0 0.0	0.0	5.00	0.017	IV	63.1(101.6)
MGI	34.4000	119.7000	08/09/1926	412 0.0	0.0	4.00	0.010	III	63.1(101.6)
DMG	33.6040	119.1050	03/25/1956	332 2.3	8.2	4.20	0.011	III	63.3(101.8)
MGI	33.7000	117.9000	07/08/1902	945 0.0	0.0	4.00	0.010	III	63.3(101.9)

DMG	35.3300	118.5070	05/29/1968	22938.7	3.1	4.00	0.010	III	63.3(101.9)
DMG	35.3330	118.6000	07/31/1952	12 9 9.0	0.0	5.80	0.027	V	63.3(101.9)
DMG	35.3330	118.6000	09/16/1952	142454.0	0.0	4.00	0.010	III	63.3(101.9)
DMG	35.3330	118.6000	08/10/1952	6 118.0	0.0	4.00	0.010	III	63.3(101.9)
DMG	35.3330	118.6000	07/23/1952	164853.0	0.0	4.50	0.013	III	63.3(101.9)
DMG	35.3330	118.6000	07/23/1952	161838.0	0.0	4.50	0.013	III	63.3(101.9)
DMG	35.3330	118.5670	08/08/1952	51718.0	0.0	4.00	0.010	III	63.4(102.0)
MGI	34.5000	119.7000	08/26/1919	1457 0.0	0.0	4.00	0.010	III	63.4(102.0)
MGI	34.5000	119.7000	08/26/1919	1212 0.0	0.0	4.00	0.010	III	63.4(102.0)
MGI	34.5000	119.7000	07/29/1925	14 0 0.0	0.0	4.00	0.010	III	63.4(102.0)
DMG	35.3330	118.5330	08/01/1952	103556.0	0.0	4.00	0.010	III	63.4(102.1)
DMG	34.3170	119.7000	10/21/1953	16 238.0	0.0	4.00	0.010	III	63.5(102.2)
DMG	35.3370	118.5370	08/30/1952	45954.8	3.5	4.00	0.010	III	63.7(102.5)
DMG	33.6170	118.0330	05/21/1938	944 0.0	0.0	4.00	0.010	III	63.7(102.6)
DMG	35.3380	118.5230	08/06/1952	34624.2	12.6	4.30	0.011	III	63.8(102.7)
DMG	35.3350	118.4740	07/23/1952	172224.0	6.6	4.50	0.013	III	63.8(102.7)
DMG	35.3330	118.7330	08/05/1952	65010.0	0.0	4.40	0.012	III	63.8(102.7)
DMG	35.3360	118.4720	07/23/1952	105413.5	19.7	4.10	0.010	III	63.9(102.8)
DMG	34.2000	117.5000	06/14/1892	1325 0.0	0.0	4.90	0.016	IV	64.0(103.0)
DMG	34.2530	119.6980	06/29/1968	191221.3	9.5	4.20	0.011	III	64.1(103.1)
DMG	35.3400	118.4730	07/24/1952	5 249.6	2.1	4.50	0.012	III	64.2(103.3)
DMG	33.6170	118.0170	03/15/1933	111332.0	0.0	4.90	0.015	IV	64.2(103.3)
DMG	33.6170	118.0170	10/02/1933	1326 1.0	0.0	4.00	0.010	III	64.2(103.3)
DMG	33.6170	118.0170	03/14/1933	19 150.0	0.0	5.10	0.017	IV	64.2(103.3)
DMG	34.2120	119.6910	06/26/1968	181111.2	13.9	4.00	0.010	III	64.2(103.4)
DMG	34.1270	117.5210	12/27/1938	10 928.6	10.0	4.00	0.010	III	64.3(103.4)
DMG	34.1400	117.5150	01/01/1965	8 418.0	5.9	4.40	0.012	III	64.3(103.5)
DMG	35.3450	118.5070	07/23/1952	18 328.3	10.4	4.00	0.010	III	64.3(103.5)
PAS	33.5380	118.2070	05/25/1982	134430.3	13.7	4.10	0.010	III	64.5(103.7)
DMG	35.3460	118.4650	12/25/1952	55633.0	4.6	4.10	0.010	III	64.6(104.0)
DMG	35.3510	118.5270	08/11/1952	132149.2	-2.0	4.40	0.012	III	64.7(104.1)
DMG	35.3560	118.5380	07/19/1955	2 425.5	6.4	4.10	0.010	III	65.0(104.6)
DMG	35.3580	118.6160	08/24/1955	17 540.9	7.2	4.00	0.010	III	65.1(104.7)
DMG	33.6000	118.0170	12/25/1935	1715 0.0	0.0	4.50	0.012	III	65.2(104.9)
MGI	35.3000	119.0000	09/04/1908	0 0 0.0	0.0	4.60	0.013	III	65.3(105.1)
MGI	35.3000	119.0000	01/08/1903	030 0.0	0.0	4.60	0.013	III	65.3(105.1)
GDP	33.8060	117.7150	03/07/2000	002028.2	11.0	4.00	0.009	III	65.4(105.3)
DMG	35.3170	118.9500	09/01/1952	1039 0.0	0.0	4.10	0.010	III	65.5(105.3)
DMG	34.2170	117.4670	03/25/1941	234341.0	0.0	4.00	0.009	III	65.6(105.5)
DMG	35.3670	118.5830	07/27/1952	73539.0	0.0	4.20	0.010	III	65.7(105.7)
DMG	35.3670	118.5830	07/23/1952	65342.0	0.0	4.20	0.010	III	65.7(105.7)
DMG	35.3670	118.5830	07/28/1952	154120.0	0.0	4.00	0.009	III	65.7(105.7)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.3670	118.5830	07/23/1952	03832.0	0.0	6.10	0.031	V	65.7(105.7)
DMG	35.3670	118.5830	07/23/1952	31923.0	0.0	5.00	0.016	IV	65.7(105.7)
DMG	35.3670	118.5830	07/23/1952	04738.0	0.0	4.60	0.013	III	65.7(105.7)
DMG	35.3670	118.5830	07/23/1952	4 140.0	0.0	4.70	0.014	III	65.7(105.7)
DMG	35.3670	118.5830	07/23/1952	62628.0	0.0	4.00	0.009	III	65.7(105.7)
DMG	35.3670	118.5830	09/16/1952	1521 8.0	0.0	4.30	0.011	III	65.7(105.7)
DMG	33.6000	118.0000	03/11/1933	217 0.0	0.0	4.50	0.012	III	65.7(105.7)

DMG	33.6000	118.0000	03/11/1933	231 0.0	0.0	4.40	0.012	III	65.7(105.7)
DMG	33.6170	117.9670	03/11/1933	154 7.8	0.0	6.30	0.035	V	65.7(105.7)
DMG	35.3670	118.5330	07/23/1952	195134.0	0.0	4.20	0.010	III	65.8(105.8)
DMG	35.3600	118.4380	08/03/1952	15156.1	7.0	4.10	0.010	III	65.8(105.9)
DMG	35.3670	118.5000	06/20/1953	231852.0	0.0	4.40	0.012	III	65.9(106.0)
DMG	35.3330	118.9170	08/22/1952	224124.0	0.0	5.80	0.025	V	66.0(106.2)
DMG	35.3330	118.9170	07/31/1952	195314.0	0.0	4.50	0.012	III	66.0(106.2)
DMG	35.3330	118.9170	08/07/1952	1919 7.0	0.0	4.20	0.010	III	66.0(106.2)
DMG	35.3330	118.9170	07/29/1952	195132.0	0.0	4.50	0.012	III	66.0(106.2)
DMG	33.9500	117.5830	04/11/1941	12024.0	0.0	4.00	0.009	III	66.0(106.2)
DMG	33.5000	118.2500	06/18/1920	10 8 0.0	0.0	4.50	0.012	III	66.2(106.5)
DMG	33.5610	118.0580	01/15/1937	183547.0	10.0	4.00	0.009	III	66.4(106.9)
DMG	34.4710	119.7570	11/16/1958	934 6.1	15.2	4.00	0.009	III	66.5(107.0)
DMG	34.1240	117.4800	05/15/1955	17 326.0	7.6	4.00	0.009	III	66.5(107.1)
DMG	34.1180	119.7020	07/05/1968	04517.2	5.9	5.20	0.018	IV	66.6(107.2)
DMG	35.3790	118.6680	11/21/1955	205527.6	5.3	4.30	0.011	III	66.7(107.3)
DMG	33.5830	119.1830	02/10/1952	135055.0	0.0	4.00	0.009	III	66.7(107.3)
DMG	35.3830	118.6000	09/05/1953	192436.0	0.0	4.10	0.010	III	66.8(107.5)
DMG	35.3830	118.5670	07/23/1952	546 3.0	0.0	4.70	0.013	III	66.8(107.5)
PAS	35.3720	118.7740	12/15/1987	182346.1	3.2	4.10	0.010	III	66.8(107.6)
DMG	34.1920	119.7330	07/05/1968	036 6.4	15.6	4.00	0.009	III	66.9(107.7)
DMG	34.3250	119.7610	08/09/1956	0 849.2	4.0	4.00	0.009	III	66.9(107.7)
DMG	34.1160	117.4750	06/28/1960	20 048.0	12.0	4.10	0.010	III	67.0(107.8)
DMG	35.3670	118.8330	03/17/1935	2026 0.0	0.0	4.00	0.009	III	67.1(108.0)
DMG	34.3500	119.7670	11/10/1940	102510.0	0.0	4.00	0.009	III	67.1(108.0)
T-A	35.3300	119.0000	01/04/1870	7 0 0.0	0.0	4.30	0.011	III	67.2(108.2)
GSP	35.3700	118.8500	12/18/1990	165643.0	6.0	4.20	0.010	III	67.5(108.6)
DMG	35.3950	118.6200	08/08/1955	32150.5	4.1	4.70	0.013	III	67.6(108.8)
DMG	33.5750	117.9830	03/11/1933	518 4.0	0.0	5.20	0.017	IV	67.7(108.9)
GSP	33.6200	117.9000	04/07/1989	200730.2	13.0	4.50	0.012	III	67.7(109.0)
DMG	35.3670	118.8830	09/12/1953	64116.0	0.0	4.10	0.010	III	67.7(109.0)
DMG	35.3500	118.9670	02/04/1954	204841.0	0.0	4.00	0.009	III	67.9(109.3)
DMG	35.4000	118.5830	07/25/1952	7 351.0	0.0	4.10	0.010	III	68.0(109.4)
DMG	35.4000	118.5830	07/24/1952	114756.0	0.0	4.40	0.011	III	68.0(109.4)
DMG	35.4000	118.6330	10/02/1952	231021.0	0.0	4.20	0.010	III	68.0(109.4)
PAS	34.1350	117.4480	01/08/1983	71930.4	4.6	4.10	0.010	III	68.1(109.5)
DMG	33.5170	118.1000	03/22/1941	82240.0	0.0	4.00	0.009	III	68.1(109.6)
DMG	33.5670	117.9830	04/17/1934	1833 0.0	0.0	4.00	0.009	III	68.2(109.7)
DMG	33.5670	117.9830	07/07/1937	1112 0.0	0.0	4.00	0.009	III	68.2(109.7)
DMG	34.1760	119.7540	07/07/1968	143330.8	12.8	4.50	0.012	III	68.3(110.0)
DMG	35.3830	118.8500	10/13/1952	222035.0	0.0	4.00	0.009	III	68.4(110.0)
DMG	35.3830	118.8500	07/29/1952	7 347.0	0.0	6.10	0.030	V	68.4(110.0)
MGI	34.0000	117.5000	12/16/1858	10 0 0.0	0.0	7.00	0.054	VI	68.6(110.4)
DMG	34.0000	117.5000	07/03/1908	1255 0.0	0.0	4.00	0.009	III	68.6(110.4)
DMG	34.0720	119.7230	07/05/1968	23614.1	4.3	4.00	0.009	III	68.8(110.7)
MGI	34.4000	119.8000	09/09/1929	515 0.0	0.0	4.60	0.012	III	68.8(110.8)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
PAS	34.4020	119.8020	03/10/1986	153316.3	18.0	4.10	0.009	III	68.9(111.0)
DMG	35.4000	118.8170	07/29/1952	8 146.0	0.0	5.10	0.016	IV	69.2(111.3)
DMG	34.1320	117.4260	04/15/1965	20 833.3	5.5	4.50	0.012	III	69.3(111.6)

DMG	34.3000	119.8000	06/29/1925	144216.0	0.0	6.25	0.032	V	69.3(111.6)
MGI	34.3000	119.8000	07/03/1925	1821 0.0	0.0	5.30	0.018	IV	69.3(111.6)
MGI	34.3000	119.8000	07/03/1925	1638 0.0	0.0	5.30	0.018	IV	69.3(111.6)
PAS	33.5080	118.0710	11/20/1988	53928.7	6.0	4.50	0.011	III	69.4(111.7)
DMG	34.2000	117.4000	07/22/1899	046 0.0	0.0	5.50	0.020	IV	69.6(112.0)
DMG	34.1120	117.4260	03/19/1937	12338.4	10.0	4.00	0.009	III	69.7(112.2)
T-A	34.4200	119.8200	00/00/1862	0 0 0.0	0.0	5.70	0.023	IV	70.0(112.6)
GSP	34.1900	117.3900	12/28/1989	094108.1	15.0	4.50	0.011	III	70.3(113.1)
DMG	35.4320	118.6640	09/30/1964	175125.8	7.4	4.00	0.009	III	70.3(113.1)
DMG	34.2000	119.8000	12/21/1812	19 0 0.0	0.0	7.00	0.052	VI	70.5(113.5)
DMG	35.4330	118.7000	05/01/1954	22 439.0	0.0	4.20	0.010	III	70.5(113.5)
DMG	33.8000	117.6000	09/16/1903	1210 0.0	0.0	4.00	0.009	III	70.9(114.0)
MGI	33.8000	117.6000	04/22/1918	2115 0.0	0.0	5.00	0.015	IV	70.9(114.0)
DMG	34.3330	119.8330	06/26/1933	62752.0	0.0	4.30	0.010	III	71.0(114.2)
DMG	34.3330	119.8330	06/26/1933	62542.0	0.0	4.30	0.010	III	71.0(114.2)
USG	34.1390	117.3860	02/21/1987	231530.1	2.6	4.07	0.009	III	71.4(114.9)
DMG	35.4540	118.6050	02/07/1964	22 750.3	-2.0	4.40	0.011	III	71.7(115.4)
PAS	33.4710	118.0610	02/27/1984	101815.0	6.0	4.00	0.009	III	72.0(115.8)
DMG	35.4540	118.4760	11/23/1953	2039 0.9	5.9	4.40	0.010	III	72.0(115.9)
DMG	35.4400	118.3470	01/02/1964	194841.0	6.3	4.20	0.009	III	72.1(116.0)
GSP	35.4530	118.4310	05/06/1997	191253.8	6.0	4.50	0.011	III	72.2(116.2)
DMG	35.4650	118.6680	02/07/1964	221052.0	-0.5	4.20	0.009	III	72.6(116.8)
T-A	34.0000	117.4200	04/12/1888	1315 0.0	0.0	4.30	0.010	III	72.8(117.1)
T-A	34.0000	117.4200	09/10/1920	1415 0.0	0.0	4.30	0.010	III	72.8(117.1)
DMG	33.6670	119.5000	11/30/1939	64251.0	0.0	4.00	0.008	III	73.3(117.9)
DMG	35.3330	119.2500	01/20/1941	135816.0	0.0	4.00	0.008	III	73.5(118.3)
GSP	34.1680	117.3370	06/28/1997	214525.1	9.0	4.20	0.009	III	73.6(118.4)
PAS	35.4520	118.8990	02/08/1985	65816.9	11.1	4.60	0.011	III	73.6(118.5)
MGI	34.0000	117.4000	05/22/1907	652 0.0	0.0	4.60	0.011	III	73.8(118.8)
DMG	33.4300	119.0960	10/31/1969	103929.0	7.3	4.80	0.013	III	73.9(119.0)
DMG	34.1400	117.3390	02/26/1936	93327.6	10.0	4.00	0.008	III	74.0(119.0)
DMG	34.1270	117.3380	02/23/1936	222042.7	10.0	4.50	0.011	III	74.3(119.5)
DMG	34.1180	117.3410	09/22/1951	82239.1	11.9	4.30	0.010	III	74.3(119.5)
PAS	35.2970	119.3460	05/06/1985	231433.0	24.4	4.40	0.010	III	74.4(119.7)
T-A	34.1700	117.3200	12/02/1859	2210 0.0	0.0	4.30	0.010	III	74.5(119.9)
MGI	35.2000	119.5000	12/01/1920	130 0.0	0.0	4.60	0.011	III	74.7(120.3)
DMG	35.2000	119.5000	06/09/1928	822 0.0	0.0	4.00	0.008	III	74.7(120.3)
PAS	35.2700	119.4020	09/26/1980	131841.1	5.0	4.10	0.009	III	74.8(120.3)
DMG	33.5450	117.8070	10/27/1969	1316 2.3	6.5	4.50	0.011	III	75.0(120.8)
DMG	35.5000	118.5000	07/27/1952	24912.0	0.0	4.00	0.008	III	75.0(120.8)
DMG	35.5000	118.7000	01/06/1905	1430 0.0	0.0	5.00	0.014	IV	75.1(120.9)
MGI	34.2000	117.3000	04/13/1913	1045 0.0	0.0	4.00	0.008	III	75.2(120.9)
DMG	34.0330	117.3500	04/18/1940	184343.9	0.0	4.40	0.010	III	75.6(121.7)
DMG	33.3670	118.1500	04/16/1942	72833.0	0.0	4.00	0.008	III	76.7(123.4)
DMG	34.1000	117.3000	02/16/1931	1327 0.0	0.0	4.00	0.008	III	76.9(123.7)
MGI	34.1000	117.3000	11/22/1911	257 0.0	0.0	4.00	0.008	III	76.9(123.7)
MGI	34.1000	117.3000	12/27/1901	11 0 0.0	0.0	4.60	0.011	III	76.9(123.7)
MGI	34.1000	117.3000	07/15/1905	2041 0.0	0.0	5.30	0.016	IV	76.9(123.7)
DMG	34.0330	117.3170	09/03/1935	647 0.0	0.0	4.50	0.010	III	77.4(124.6)
DMG	33.9330	117.3670	10/24/1943	02921.0	0.0	4.00	0.008	III	77.5(124.7)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]

DMG	35.5000	118.9670	09/29/1948	4 648.0	0.0	4.20	0.009	III	77.8(125.2)
DMG	35.3530	117.8260	07/03/1944	53823.5	-2.0	4.70	0.011	III	77.9(125.4)
DMG	33.6820	117.5530	07/05/1938	18 655.7	10.0	4.50	0.010	III	78.1(125.6)
PAS	35.2250	117.6290	05/02/1975	18 323.1	10.0	4.20	0.009	III	78.1(125.7)
DMG	33.7170	117.5170	06/19/1935	1117 0.0	0.0	4.00	0.008	II	78.1(125.7)
DMG	33.7480	117.4790	06/22/1971	104119.0	8.0	4.20	0.009	III	78.6(126.4)
DMG	33.7170	117.5070	08/06/1938	22 056.0	10.0	4.00	0.008	II	78.6(126.5)
DMG	33.7250	117.4980	01/03/1956	02548.9	13.7	4.70	0.011	III	78.6(126.6)
DMG	33.8330	117.4000	06/05/1940	82727.0	0.0	4.00	0.008	II	79.1(127.3)
DMG	33.6990	117.5110	05/31/1938	83455.4	10.0	5.50	0.018	IV	79.2(127.4)
DMG	35.5340	118.2640	05/28/1955	194420.0	12.3	4.50	0.010	III	79.4(127.8)
DMG	33.7330	117.4670	10/26/1954	162226.0	0.0	4.10	0.008	III	79.7(128.3)
DMG	33.3390	119.1040	10/24/1969	202642.5	-1.8	4.70	0.011	III	79.9(128.6)
DMG	35.4170	119.3000	06/04/1941	84719.0	0.0	4.00	0.008	II	79.9(128.6)
T-A	34.0800	117.2500	10/07/1869	0 0 0.0	0.0	4.30	0.009	III	80.0(128.7)
DMG	34.0000	117.2830	11/07/1939	1852 8.4	0.0	4.70	0.011	III	80.0(128.8)
PAS	34.6610	119.9730	05/07/1984	193232.8	9.9	4.20	0.008	III	80.4(129.3)
GDP	34.0470	117.2550	02/21/2000	134943.1	15.0	4.50	0.010	III	80.4(129.4)
DMG	35.4500	119.2500	01/23/1935	1352 0.0	0.0	4.00	0.008	II	80.6(129.6)
DMG	33.9960	117.2700	02/17/1952	123658.3	16.0	4.50	0.010	III	80.8(130.1)
DMG	35.3890	117.7830	07/15/1966	10 943.0	4.7	4.00	0.008	II	81.3(130.9)
PAS	34.0230	117.2450	10/02/1985	234412.4	15.2	4.80	0.011	III	81.5(131.2)
DMG	34.0000	117.2500	07/23/1923	73026.0	0.0	6.25	0.027	V	81.8(131.6)
DMG	34.0000	117.2500	11/01/1932	445 0.0	0.0	4.00	0.008	II	81.8(131.6)
DMG	34.0430	117.2280	04/03/1939	25044.7	10.0	4.00	0.007	II	82.0(131.9)
MGI	35.5000	118.0000	03/23/1918	1515 0.0	0.0	4.60	0.010	III	82.0(132.0)
DMG	35.3970	117.7730	11/18/1961	31836.0	11.1	4.30	0.009	III	82.1(132.1)
GSP	34.0240	117.2300	03/11/1998	121851.8	14.0	4.50	0.010	III	82.3(132.5)
DMG	35.4140	117.7960	07/08/1970	92530.2	8.0	4.00	0.007	II	82.3(132.5)
MGI	34.1000	117.2000	04/23/1923	2113 0.0	0.0	4.00	0.007	II	82.4(132.5)
DMG	35.6000	118.8000	06/30/1926	1331 0.0	0.0	5.00	0.013	III	82.6(133.0)
DMG	33.4000	119.4000	07/24/1947	1654 2.0	0.0	4.30	0.008	III	84.0(135.2)
DMG	35.5820	118.1590	07/26/1948	1750 1.4	4.6	4.50	0.009	III	84.2(135.4)
DMG	33.7000	117.4000	05/13/1910	620 0.0	0.0	5.00	0.012	III	84.2(135.5)
DMG	33.7000	117.4000	05/15/1910	1547 0.0	0.0	6.00	0.022	IV	84.2(135.5)
DMG	33.7000	117.4000	04/11/1910	757 0.0	0.0	5.00	0.012	III	84.2(135.5)
DMG	33.2910	119.1930	10/24/1969	82912.1	10.0	5.10	0.013	III	85.0(136.7)
DMG	35.1060	117.3460	10/11/1966	165912.9	6.5	4.40	0.009	III	85.2(137.2)
DMG	35.6320	118.2680	03/17/1946	81636.0	-2.0	4.60	0.010	III	86.0(138.3)
DMG	35.6470	118.3450	06/05/1946	215932.4	0.0	4.30	0.008	III	86.2(138.6)
DMG	34.0000	120.0170	04/01/1945	234342.0	0.0	5.40	0.015	IV	86.3(138.9)
DMG	34.2000	117.1000	09/20/1907	154 0.0	0.0	6.00	0.022	IV	86.4(139.0)
GSP	35.1600	117.3620	06/29/1992	011813.4	4.0	4.70	0.010	III	86.6(139.4)
DMG	35.6590	118.3780	03/03/1971	12 516.0	4.1	4.00	0.007	II	86.7(139.5)
GSP	34.1920	117.0950	04/06/1994	190104.1	7.0	4.80	0.011	III	86.7(139.6)
DMG	35.6670	118.4040	03/08/1971	23 8 7.7	5.9	4.10	0.007	II	87.0(140.1)
DMG	33.9000	117.2000	12/19/1880	0 0 0.0	0.0	6.00	0.022	IV	87.1(140.2)
GSP	35.1610	117.3500	06/29/1992	012615.6	6.0	4.10	0.007	II	87.2(140.3)
GSP	35.6800	118.4300	11/11/1991	045327.0	4.0	4.00	0.007	II	87.8(141.3)
DMG	34.7000	120.1000	07/28/1945	23348.0	0.0	4.20	0.008	II	88.0(141.6)
DMG	35.6480	118.1870	01/19/1937	235738.5	10.0	4.00	0.007	II	88.1(141.8)
GSP	35.0170	117.2030	06/29/1992	041642.6	3.0	4.00	0.007	II	89.1(143.4)
DMG	35.4200	117.6000	04/23/1931	2334 7.3	0.0	4.30	0.008	III	89.2(143.6)

EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.6870	118.2630	05/03/1936	1421 1.8	10.0	4.00	0.007	II	89.7(144.4)
DMG	35.6770	118.2050	06/11/1935	162046.3	-1.4	4.00	0.007	II	89.8(144.5)
DMG	34.3330	117.0000	02/27/1942	1 853.0	0.0	4.00	0.007	II	90.9(146.3)
GSP	35.7310	118.4790	07/11/1999	182046.8	4.0	4.40	0.008	III	91.0(146.5)
GSP	34.1800	117.0200	12/04/1991	081703.5	11.0	4.00	0.007	II	91.1(146.6)
PAS	34.7360	120.1470	11/06/1986	91958.3	0.0	4.00	0.007	II	91.1(146.7)
PAS	34.7370	120.1480	10/25/1984	1036 2.4	6.0	4.50	0.009	III	91.2(146.8)
DMG	35.6740	118.0780	03/17/1946	6 347.1	0.0	4.40	0.008	III	91.6(147.4)
DMG	34.4330	116.9830	04/18/1945	458 2.0	0.0	4.30	0.008	II	91.6(147.4)
DMG	35.3000	119.8000	01/09/1857	16 0 0.0	0.0	7.90	0.077	VII	91.7(147.6)
DMG	35.6790	118.0770	03/25/1946	233644.9	0.0	4.30	0.008	II	92.0(148.0)
DMG	35.6770	118.0670	02/06/1947	172040.1	0.0	4.60	0.009	III	92.0(148.1)
DMG	34.0170	117.0500	02/19/1940	12 655.7	0.0	4.60	0.009	III	92.2(148.4)
PAS	35.7550	118.5420	04/17/1975	91833.8	9.6	4.00	0.007	II	92.5(148.9)
DMG	34.7000	117.0000	07/16/1916	1230 0.0	0.0	4.00	0.007	II	92.6(149.0)
DMG	34.7000	117.0000	07/16/1916	1150 0.0	0.0	4.50	0.008	III	92.6(149.0)
DMG	33.7380	117.1870	04/27/1962	91232.1	5.7	4.10	0.007	II	93.0(149.6)
DMG	34.2670	116.9670	08/29/1943	34513.0	0.0	5.50	0.015	IV	93.2(150.0)
DMG	34.2670	116.9670	08/29/1943	51630.0	0.0	4.00	0.007	II	93.2(150.0)
DMG	34.2670	116.9670	08/29/1943	35754.0	0.0	4.00	0.007	II	93.2(150.0)
DMG	35.7330	118.2330	07/10/1943	31233.0	0.0	4.00	0.007	II	93.2(150.0)
GSP	34.1200	116.9980	06/29/1992	144126.0	4.0	4.40	0.008	III	93.2(150.0)
DMG	33.2670	119.4500	11/18/1947	2159 3.0	0.0	5.00	0.011	III	93.3(150.2)
DMG	34.1670	116.9830	10/16/1951	1241 5.0	0.0	4.00	0.007	II	93.4(150.2)
DMG	35.6460	117.8950	08/31/1946	91012.8	0.0	4.20	0.007	II	93.6(150.7)
GSP	34.0970	116.9960	12/05/1997	170438.9	4.0	4.10	0.007	II	93.7(150.8)
PAS	34.1510	116.9720	11/20/1978	655 9.5	6.1	4.30	0.008	II	94.2(151.6)
GSP	34.2900	116.9460	02/10/2001	210505.8	9.0	5.10	0.012	III	94.2(151.6)
GSP	34.0850	116.9890	06/30/1992	214900.3	3.0	4.40	0.008	II	94.3(151.7)
PAS	34.1980	116.9590	04/01/1978	105227.4	8.0	4.00	0.006	II	94.3(151.8)
DMG	35.6790	117.9550	05/26/1948	193512.2	0.0	4.10	0.007	II	94.4(151.9)
DMG	35.7150	118.0740	03/15/1946	14 035.4	0.0	5.30	0.013	III	94.4(151.9)
GSP	34.2870	116.9420	02/11/2001	003916.0	8.0	4.20	0.007	II	94.5(152.0)
DMG	35.7280	118.0990	03/24/1946	20 0 3.0	0.0	4.50	0.008	III	94.8(152.5)
GSP	34.3620	116.9230	12/07/1992	033331.5	1.0	4.00	0.006	II	95.1(153.1)
DMG	34.3200	116.9250	04/18/1968	174213.4	4.7	4.00	0.006	II	95.2(153.2)
DMG	34.0000	117.0000	06/30/1923	022 0.0	0.0	4.50	0.008	III	95.3(153.4)
DMG	35.7250	118.0550	03/15/1946	134935.9	22.0	6.30	0.024	IV	95.4(153.5)
GSP	34.3770	116.9180	12/04/1992	052511.2	2.0	4.80	0.010	III	95.4(153.5)
DMG	34.4000	116.9170	02/01/1942	151555.0	0.0	4.00	0.006	II	95.4(153.5)
DMG	34.4000	116.9170	01/25/1942	215133.0	0.0	4.00	0.006	II	95.4(153.5)
DMG	34.4000	116.9170	02/01/1942	16 334.0	0.0	4.50	0.008	III	95.4(153.5)
DMG	34.4000	116.9170	02/01/1942	151828.0	0.0	4.50	0.008	III	95.4(153.5)
DMG	33.0380	118.7340	09/13/1937	221439.5	10.0	4.00	0.006	II	95.5(153.6)
DMG	35.7230	118.0350	03/18/1946	10 555.1	0.0	4.90	0.010	III	95.6(153.8)
DMG	35.8000	118.5330	07/26/1932	65158.3	0.0	4.50	0.008	III	95.6(153.9)
DMG	34.1330	116.9500	06/10/1938	1440 0.0	0.0	4.00	0.006	II	95.7(154.0)
GSP	34.3610	116.9130	12/04/1992	125942.1	0.0	4.20	0.007	II	95.7(154.0)
DMG	34.3370	116.9090	11/30/1962	2351 5.5	7.0	4.30	0.007	II	96.0(154.6)
DMG	35.7140	117.9770	03/15/1946	191853.6	0.0	5.40	0.013	III	96.1(154.7)
PAS	35.7290	118.0230	06/14/1979	73928.3	5.0	4.60	0.009	III	96.2(154.8)
GSP	34.3640	116.9040	11/27/1992	183225.0	1.0	4.10	0.007	II	96.2(154.8)
DMG	35.7330	118.0330	03/17/1946	211835.0	0.0	4.00	0.006	II	96.3(154.9)

TEST.OUT
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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.7330	118.0330	03/24/1946	25646.0	0.0	4.40	0.008	II	96.3(154.9)
DMG	35.7330	118.0330	03/18/1946	16 346.0	0.0	4.10	0.007	II	96.3(154.9)
DMG	35.7330	118.0330	03/22/1946	10 833.0	0.0	4.10	0.007	II	96.3(154.9)
DMG	35.7330	118.0330	03/26/1946	6 713.0	0.0	4.10	0.007	II	96.3(154.9)
DMG	35.7330	118.0330	03/18/1946	115 9.0	0.0	4.10	0.007	II	96.3(154.9)
DMG	35.7330	118.0330	03/16/1946	13 7 5.0	0.0	4.10	0.007	II	96.3(154.9)
DMG	35.7330	118.0330	03/18/1946	3 022.0	0.0	4.10	0.007	II	96.3(154.9)
DMG	35.7330	118.0330	03/15/1946	2254 2.0	0.0	4.20	0.007	II	96.3(154.9)
DMG	35.7330	118.0330	03/16/1946	195359.0	0.0	4.00	0.006	II	96.3(154.9)
GSP	34.2560	116.9120	06/28/1992	170557.5	8.0	4.60	0.009	III	96.4(155.1)
GSP	34.3400	116.9000	11/27/1992	160057.5	1.0	5.30	0.013	III	96.5(155.4)
GSP	34.3690	116.8970	12/04/1992	020857.5	3.0	5.30	0.013	III	96.6(155.5)
GSP	34.1780	116.9220	06/28/1992	170131.9	13.0	4.70	0.009	III	96.6(155.5)
DMG	34.1800	116.9200	01/16/1930	02433.9	0.0	5.20	0.012	III	96.7(155.7)
DMG	34.1800	116.9200	01/16/1930	034 3.6	0.0	5.10	0.011	III	96.7(155.7)
MGI	34.3000	116.9000	12/01/1915	14 5 0.0	0.0	4.00	0.006	II	96.8(155.7)
DMG	35.6870	117.8690	04/12/1946	103433.7	-2.0	4.00	0.006	II	96.8(155.8)
DMG	35.7450	118.0390	03/16/1946	94617.9	0.0	5.10	0.011	III	97.0(156.0)
DMG	35.1470	117.1310	07/01/1960	221344.6	7.7	4.50	0.008	III	97.0(156.1)
GSP	34.1210	116.9280	08/16/1998	133440.2	6.0	4.70	0.009	III	97.1(156.2)
DMG	35.7500	118.0500	09/16/1963	53616.0	0.0	4.90	0.010	III	97.1(156.2)
PAS	34.2460	116.9010	06/29/1979	55320.5	5.7	4.60	0.008	III	97.1(156.3)
PAS	34.2490	116.9000	06/30/1979	7 353.0	5.6	4.50	0.008	III	97.1(156.3)
DMG	35.7450	118.0230	10/24/1959	153515.3	7.4	4.20	0.007	II	97.2(156.5)
DMG	35.7890	118.2040	04/16/1946	1037 4.7	0.0	4.10	0.007	II	97.3(156.6)
PAS	34.2430	116.8960	06/30/1979	03411.6	5.8	4.90	0.010	III	97.4(156.8)
DMG	35.7540	118.0440	09/16/1962	53616.0	3.8	4.90	0.010	III	97.5(156.8)
DMG	34.3240	116.8850	12/01/1962	03548.8	9.6	4.30	0.007	II	97.5(156.9)
DMG	35.7510	118.0290	03/15/1946	215433.4	0.0	5.20	0.012	III	97.5(156.9)
DMG	34.3330	116.8830	10/14/1943	142844.0	0.0	4.50	0.008	III	97.5(157.0)
GSP	34.3700	116.8800	11/29/1992	142120.5	3.0	4.00	0.006	II	97.6(157.0)
DMG	35.7380	117.9810	03/24/1946	51727.8	0.0	4.10	0.007	II	97.6(157.1)
MGI	34.2000	116.9000	10/10/1915	5 6 0.0	0.0	4.00	0.006	II	97.6(157.1)
GSP	34.1120	116.9200	10/01/1998	181816.0	4.0	4.70	0.009	III	97.7(157.2)
DMG	34.3120	116.8790	01/31/1972	155 4.2	8.0	4.00	0.006	II	97.9(157.5)
GSP	35.5120	117.4940	10/19/1994	004958.8	3.0	4.20	0.007	II	97.9(157.6)
DMG	34.3250	116.8750	12/02/1962	04138.4	6.7	4.40	0.008	II	98.0(157.8)
DMG	35.6970	117.8360	05/05/1946	9 343.7	2.3	4.20	0.007	II	98.2(158.1)
DMG	34.3500	116.8670	10/15/1943	1650 1.0	0.0	4.50	0.008	III	98.4(158.3)
DMG	35.7530	117.9860	03/15/1946	1321 0.9	0.0	5.20	0.012	III	98.5(158.5)
DMG	34.9760	116.9960	11/07/1958	1738 3.7	12.2	4.10	0.006	II	98.5(158.5)
DMG	35.7230	117.8910	04/27/1946	223723.8	-0.7	4.10	0.006	II	98.6(158.6)
DMG	33.7000	117.1000	06/11/1902	245 0.0	0.0	4.50	0.008	III	98.6(158.7)
DMG	34.3250	116.8650	10/29/1962	24253.9	8.6	4.80	0.009	III	98.6(158.7)
DMG	35.7780	118.0510	03/15/1946	15 0 9.2	0.0	4.40	0.008	II	98.9(159.2)
DMG	35.7780	118.0490	01/28/1961	81246.2	5.5	5.30	0.012	III	98.9(159.2)
DMG	35.0000	117.0000	08/01/1947	154230.0	0.0	4.00	0.006	II	98.9(159.2)
DMG	34.7000	120.3000	01/12/1915	431 0.0	0.0	5.50	0.014	IV	99.1(159.5)
DMG	34.7000	120.3000	07/31/1902	920 0.0	0.0	5.50	0.014	IV	99.1(159.5)
DMG	34.4170	116.8500	02/11/1932	231120.0	0.0	4.00	0.006	II	99.2(159.6)
DMG	35.7000	117.8000	07/07/1930	12 9 0.0	0.0	4.50	0.008	II	99.3(159.8)
GSP	34.3200	116.8500	10/27/1998	154017.1	4.0	4.10	0.006	II	99.5(160.1)
DMG	35.7610	117.9530	06/26/1951	12639.1	8.1	4.40	0.007	II	99.7(160.4)

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EARTHQUAKE SEARCH RESULTS

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSP	34.3220	116.8460	09/20/1999	070249.2	2.0	4.20	0.007	II	99.7(160.4)
DMG	35.7470	117.9080	03/18/1946	155042.6	4.4	5.30	0.012	III	99.7(160.5)
DMG	34.5830	120.3330	12/18/1934	3 9 0.0	0.0	4.00	0.006	II	99.8(160.5)
DMG	34.5830	120.3330	12/17/1934	1110 0.0	0.0	4.50	0.008	II	99.8(160.5)
DMG	34.9540	116.9610	10/01/1953	193516.2	6.0	4.10	0.006	II	99.8(160.5)
GSP	34.1980	116.8620	08/18/1992	094640.7	12.0	4.20	0.007	II	99.8(160.6)
GSP	34.3230	116.8440	10/27/1998	010840.7	5.0	4.90	0.010	III	99.8(160.6)
GSP	34.1950	116.8620	08/17/1992	204152.1	11.0	5.30	0.012	III	99.8(160.6)
DMG	34.1000	116.8830	10/24/1935	1452 0.0	0.0	4.50	0.008	II	99.9(160.8)
DMG	34.1000	116.8830	10/24/1935	1527 0.0	0.0	4.00	0.006	II	99.9(160.8)
DMG	34.1000	116.8830	10/24/1935	1451 0.0	0.0	4.50	0.008	II	99.9(160.8)

****

-END OF SEARCH- 1018 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2005

LENGTH OF SEARCH TIME: 206 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 1.6 MILES (2.6 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.9

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.244 g

COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 3.947
b-value= 0.817
beta-value= 1.882

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	1018	4.94175
4.5	390	1.89320
5.0	142	0.68932
5.5	53	0.25728
6.0	25	0.12136
6.5	9	0.04369
7.0	7	0.03398
7.5	2	0.00971

#YYY/MM/DD	HH:mm:SS.ss	ET	MAG	M	LAT	LON	DEPTH	Q	EVID	NPH	NGRM
1932/10/21	17:29:41.27	le	4.12	l	33.234	-118.579	6.0	C	3359393	13	0
1932/11/01	04:45:46.79	le	4.00	l	34.033	-117.304	18.7	B	3359417	9	0
1933/02/24	19:33:17.51	le	4.85	l	33.063	-118.163	6.0	C	3359699	1	0
1933/03/11	01:54:09.34	le	6.40	w	33.631	-117.999	6.0	C	3359741	7	0
1933/03/11	02:04:00.06	le	4.68	h	33.630	-117.970	6.0	C	3359742	1	0
1933/03/11	02:09:00.06	le	4.54	l	33.630	-117.970	6.0	C	3359745	1	0
1933/03/11	02:09:57.69	le	4.40	h	33.794	-118.059	6.0	C	3359752	10	0
1933/03/11	02:11:00.00	le	4.40	h	33.750	-118.083	0.0	Z	10084338	0	0
1933/03/11	02:16:00.00	le	4.50	h	33.750	-118.083	6.0	Z	10087150	0	0
1933/03/11	02:17:23.10	le	4.62	l	33.728	-117.892	6.0	C	3359754	10	0
1933/03/11	02:28:13.84	le	4.47	l	33.733	-117.983	6.0	C	3359756	12	0
1933/03/11	02:29:59.21	le	4.70	l	33.750	-118.083	6.0	D	3359757	8	0
1933/03/11	02:31:00.00	le	4.40	h	33.600	-118.000	0.0	Z	10084346	0	0
1933/03/11	02:58:17.97	le	4.20	h	33.736	-118.114	6.0	C	3359763	9	0
1933/03/11	03:00:23.34	le	4.43	h	33.752	-118.201	6.0	C	3359764	11	0
1933/03/11	03:05:57.14	le	4.17	l	33.683	-117.661	6.0	C	3359766	11	0
1933/03/11	03:10:21.42	le	4.00	l	33.715	-117.924	6.0	C	3359767	10	0
1933/03/11	03:11:00.06	le	4.03	h	33.750	-118.083	6.0	C	3359768	1	0
1933/03/11	03:24:01.18	le	4.75	l	33.705	-118.069	6.0	C	3359769	11	0
1933/03/11	04:37:31.13	le	4.43	h	33.735	-118.042	6.0	C	3359783	11	0
1933/03/11	04:39:00.00	le	4.90	h	33.750	-118.083	0.0	Z	10084354	0	0
1933/03/11	04:40:00.00	le	4.70	h	33.750	-118.083	0.0	Z	10084358	0	0
1933/03/11	05:11:02.84	le	4.90	h	33.756	-118.020	6.0	C	3359790	7	0
1933/03/11	05:13:24.72	le	4.37	l	33.638	-117.913	6.0	C	3359794	10	0
1933/03/11	05:18:47.51	le	5.02	h	33.767	-117.985	6.0	C	3359797	11	0
1933/03/11	05:21:45.49	le	4.12	l	33.722	-117.910	6.0	C	3359799	9	0
1933/03/11	06:12:28.72	le	4.10	l	33.794	-118.114	6.0	C	3359806	12	0
1933/03/11	06:18:45.04	le	4.11	l	33.681	-118.118	6.0	C	3359808	11	0
1933/03/11	06:58:44.39	le	5.29	h	33.624	-118.001	6.0	C	3359813	11	0
1933/03/11	07:50:53.98	le	4.07	l	33.785	-118.066	6.0	C	3359817	10	0
1933/03/11	08:09:07.25	le	4.28	l	33.655	-117.976	6.0	C	3359819	12	0
1933/03/11	08:55:39.05	le	4.86	h	33.701	-118.003	6.0	C	3359825	9	0
1933/03/11	09:10:58.00	le	4.83	h	33.757	-117.944	6.0	C	3359827	8	0
1933/03/11	09:11:00.06	le	4.08	l	33.750	-118.083	6.0	C	3359828	1	0
1933/03/11	11:04:38.27	le	4.36	l	33.764	-118.020	6.0	C	3359842	9	0
1933/03/11	11:42:27.94	le	4.01	l	33.770	-118.142	6.0	C	3359846	10	0
1933/03/11	11:47:42.48	le	4.21	l	33.744	-118.037	6.0	C	3359847	9	0
1933/03/11	12:50:50.44	le	4.22	l	33.679	-117.950	6.0	C	3359850	12	0
1933/03/11	13:51:15.25	le	4.21	l	33.737	-117.991	6.0	C	3359856	12	0
1933/03/11	14:26:19.69	le	4.45	l	33.820	-118.127	6.0	C	3359862	12	0
1933/03/11	14:47:16.84	le	4.31	l	33.752	-118.005	6.0	C	3359865	12	0
1933/03/11	14:57:37.75	le	4.33	l	33.885	-118.157	6.0	C	3359866	11	0
1933/03/11	15:10:20.00	le	4.30	l	33.745	-118.013	6.0	C	3359867	12	0
1933/03/11	16:54:29.18	le	4.54	l	33.728	-117.999	6.0	C	3359872	11	0
1933/03/11	22:32:00.00	le	4.01	l	33.799	-118.071	6.0	C	3359880	12	0
1933/03/12	00:28:04.72	le	4.18	l	33.712	-118.006	6.0	C	3359885	12	0
1933/03/12	06:16:56.75	le	4.09	l	33.814	-118.129	3.0	C	3359893	12	0
1933/03/12	17:38:25.76	le	4.09	l	33.505	-117.867	6.0	C	3361628	5	0
1933/03/12	19:30:29.71	le	4.07	l	33.752	-118.178	6.0	C	3359949	12	0
1933/03/12	23:24:39.40	le	4.00	h	33.678	-117.975	8.0	C	3359910	12	0
1933/03/12	23:54:37.36	le	4.34	l	33.712	-117.981	4.0	C	3359911	12	0
1933/03/13	04:33:26.09	le	4.44	l	33.817	-118.176	6.0	C	3359913	12	0
1933/03/13	13:18:14.05	le	4.78	l	33.741	-118.001	6.0	C	3359943	12	0
1933/03/13	19:30:29.68	le	4.07	l	33.750	-118.186	5.0	C	3359975	12	0
1933/03/14	00:36:54.82	le	4.06	l	33.688	-118.086	6.0	C	3359959	10	0
1933/03/14	12:19:48.45	le	4.40	l	33.706	-118.070	6.0	C	3359960	12	0
1933/03/14	19:02:36.10	le	4.76	l	33.688	-118.019	8.0	C	3359963	12	0
1933/03/15	05:41:03.25	le	4.11	l	33.783	-118.198	6.0	C	3359971	12	0
1933/03/15	11:13:19.42	le	4.66	l	33.714	-118.002	6.0	C	3359974	10	0

1933/03/16 15:28:59.70	le	4.21	l	33.535	-117.844	6.0	C 3360027	1 0
1933/03/16 15:30:00.00	le	4.10	h	33.750	-118.083	6.0	Z 10087154	0 0
1933/03/18 20:52:00.07	le	4.15	l	33.474	-117.917	6.0	C 3360029	1 0
1933/03/21 03:26:00.02	le	4.04	l	33.837	-118.160	6.0	C 3360309	1 0
1933/03/23 08:40:00.03	le	4.06	l	33.496	-118.170	6.0	C 3360319	1 0
1933/03/25 13:46:00.02	le	4.12	l	33.422	-117.754	6.0	C 3360328	1 0
1933/03/30 12:25:00.05	le	4.25	l	33.840	-118.208	6.0	C 3360329	1 0
1933/04/01 06:42:00.04	le	4.21	l	33.552	-118.041	6.0	C 3360331	1 0
1933/04/29 14:59:59.41	le	4.19	l	33.433	-118.145	6.0	C 3360402	2 0
1933/06/26 06:25:39.58	le	4.42	l	34.220	-120.123	6.0	C 3360824	7 0
1933/06/26 06:27:47.85	le	4.45	l	34.033	-120.251	6.0	D 3360826	8 0
1933/10/02 09:10:18.92	le	4.75	l	33.822	-118.164	6.0	C 3361375	8 0
1933/10/25 07:00:45.50	le	4.04	l	33.954	-118.145	7.7	C 3361582	12 0
1934/01/09 14:10:32.15	le	4.30	l	34.123	-117.662	8.6	B 3361801	13 0
1934/11/16 21:26:44.86	le	4.06	l	33.729	-117.975	6.0	C 3362562	15 0
1935/01/23 13:52:56.99	le	4.05	l	35.481	-119.296	6.0	D 3362716	10 0
1935/06/19 11:17:08.35	le	4.44	l	33.736	-117.469	6.0	C 3363034	13 0
1935/07/13 10:54:18.04	le	4.57	l	34.111	-117.892	2.7	B 3363080	13 0
1935/09/03 06:47:11.53	le	4.20	l	34.023	-117.242	6.0	C 3363155	14 0
1935/12/25 17:15:48.79	le	4.31	l	33.664	-117.964	19.7	C 3363371	13 0
1936/02/23 22:20:42.30	le	4.69	l	34.031	-117.323	19.7	B 3363468	8 0
1937/09/01 13:48:08.37	le	4.39	l	34.181	-117.557	0.3	C 3364379	16 0
1937/09/01 16:35:33.41	le	4.43	l	34.196	-117.537	9.2	B 3364381	12 0
1938/05/31 08:34:55.42	le	5.23	l	33.699	-117.511	10.2	C 3364626	11 0
1938/07/05 18:06:55.69	le	4.27	l	33.691	-117.545	6.0	C 3364686	12 0
1938/08/31 03:18:14.12	le	4.35	l	33.767	-118.277	6.0	C 3364738	11 0
1938/09/17 14:23:05.36	le	4.75	l	35.622	-117.659	6.0	C 3364749	23 0
1938/10/02 18:45:15.07	le	4.07	l	34.192	-119.727	11.4	C 3364775	15 0
1939/02/23 08:45:50.09	le	4.41	l	35.033	-118.988	6.0	C 3364901	18 0
1939/02/23 09:18:46.75	le	4.63	l	34.902	-119.012	6.0	C 3364903	18 0
1939/05/08 02:48:02.94	le	4.38	l	35.063	-119.062	6.0	C 3364995	10 0
1939/11/07 18:52:09.68	le	4.45	l	34.037	-117.251	17.4	A 3365145	16 0
1939/12/27 19:28:48.59	le	4.51	l	33.744	-118.328	6.0	C 3365178	13 0
1940/02/19 12:06:56.57	le	4.39	l	34.067	-117.010	20.0	C 3365227	12 0
1940/04/18 18:43:45.22	le	4.29	l	34.048	-117.333	11.7	A 3365255	15 0
1940/10/11 05:57:13.51	le	4.70	l	33.778	-118.472	6.0	C 3365468	12 0
1940/11/01 07:25:04.41	le	4.18	l	33.843	-118.465	6.0	C 3365487	9 0
1941/03/25 23:43:40.89	le	4.00	l	34.259	-117.431	2.5	B 3365591	13 0
1941/06/04 08:47:19.92	le	4.02	l	35.405	-119.251	6.0	C 3365625	15 0
1941/07/01 07:50:56.96	le	5.47	l	34.329	-119.564	9.6	D 3365643	8 0
1941/07/01 08:18:58.81	le	4.09	l	34.209	-119.663	18.0	D 3365651	7 0
1941/07/01 23:53:42.37	le	4.54	l	34.254	-119.664	9.7	D 3365668	10 0
1941/07/12 16:18:53.04	le	4.68	l	34.173	-119.591	6.0	C 3365685	12 0
1941/09/08 03:12:45.06	le	4.40	l	34.323	-119.680	18.0	D 3365731	7 0
1941/09/15 01:37:01.88	le	4.17	l	34.150	-119.633	6.0	D 3365748	4 0
1941/09/21 19:53:08.83	le	5.10	l	34.838	-118.933	6.0	C 3365754	11 0
1941/10/22 06:57:18.96	le	4.69	l	33.811	-118.301	0.2	C 3365787	8 0
1941/11/14 08:41:37.65	le	5.12	l	33.791	-118.264	6.0	C 3365807	10 0
1941/11/18 18:08:08.25	le	4.06	l	34.172	-119.643	6.0	C 3365814	7 0
1941/11/21 16:56:02.62	le	4.25	l	34.212	-119.624	9.9	D 3365816	7 0
1942/02/27 01:08:57.83	le	4.03	l	34.353	-116.852	6.0	C 3365912	13 0
1942/09/03 14:06:01.30	le	4.36	l	34.617	-118.992	20.0	C 3366067	14 0
1942/09/04 06:34:32.97	le	4.53	l	34.664	-118.983	20.0	C 3366068	12 0
1943/08/29 03:45:14.31	le	5.28	l	34.268	-116.968	6.0	C 3366373	13 0
1943/08/29 03:57:55.96	le	4.04	l	34.208	-116.990	6.0	C 3366374	16 0
1943/10/14 14:28:44.70	le	4.38	l	34.364	-116.850	6.0	C 3366402	15 0
1943/10/15 16:50:02.48	le	4.21	l	34.363	-116.854	6.0	C 12277739	20 0
1944/06/13 08:27:33.90	le	4.38	l	35.035	-120.182	6.0	C 3366556	18 0
1944/06/19 00:03:34.18	le	4.36	l	33.882	-118.249	0.0	C 3366571	16 0
1944/06/19 03:06:07.27	le	4.31	l	33.879	-118.296	1.0	C 3366572	20 0

1944/07/03 05:38:24.00	le	4.57	l	35.368	-117.847	6.0	C 3366587	20 0
1945/04/01 23:43:45.43	le	4.94	l	34.127	-119.823	0.1	C 3360909	20 0
1945/04/18 04:58:03.80	le	4.27	l	34.364	-116.972	6.0	C 3360925	17 0
1946/03/15 13:21:01.91	le	5.43	l	35.723	-117.941	6.0	C 3360172	12 0
1946/03/15 13:49:37.09	le	6.30	h	35.702	-117.944	6.0	C 3360174	10 0
1946/03/15 19:18:54.84	le	5.43	l	35.678	-117.820	6.0	C 3360181	13 0
1946/03/15 21:54:35.12	le	5.04	l	35.697	-118.052	6.0	D 3360183	11 0
1946/03/15 22:54:02.00	le	4.20	h	35.667	-117.800	6.0	Z 10084918	3 0
1946/03/16 09:46:18.75	le	4.83	l	35.703	-118.102	0.5	C 3360191	15 0
1946/03/16 13:07:05.00	le	4.10	h	35.733	-118.033	6.0	Z 10084946	2 0
1946/03/16 19:53:59.00	le	4.00	h	35.733	-118.033	6.0	Z 10084966	2 0
1946/03/17 06:03:48.50	le	4.15	l	35.636	-117.824	6.0	C 3360200	10 0
1946/03/17 08:16:36.81	le	4.12	l	35.649	-117.857	6.0	D 3360202	9 0
1946/03/17 21:18:35.00	le	4.00	h	35.733	-118.033	6.0	Z 10085038	2 0
1946/03/18 01:15:09.00	le	4.10	h	35.733	-118.033	6.0	Z 10085046	2 0
1946/03/18 03:00:22.00	le	4.10	h	35.733	-118.033	6.0	Z 10085054	2 0
1946/03/18 16:03:46.00	le	4.10	h	35.733	-118.033	6.0	Z 10085086	3 0
1946/03/25 23:36:46.22	le	4.06	l	35.653	-117.921	6.0	C 3359807	17 0
1946/06/05 21:59:33.43	le	4.31	l	35.628	-118.232	6.0	C 3359628	18 0
1946/07/24 00:19:09.53	le	4.08	l	35.136	-119.145	6.0	C 3359716	13 0
1947/02/06 17:20:41.56	le	4.55	l	35.660	-117.854	6.0	C 3358855	21 0
1947/08/13 20:09:00.57	le	4.36	l	35.041	-117.019	6.0	C 3358106	22 0
1947/11/18 21:59:05.81	le	4.96	l	33.172	-119.457	6.0	C 3358068	33 0
1948/03/01 08:12:13.52	le	4.60	l	34.266	-117.474	2.5	A 3357723	29 0
1948/04/16 22:26:25.30	le	4.55	l	33.900	-118.985	6.0	C 3357617	29 0
1948/05/26 19:35:12.19	le	4.00	l	35.733	-117.870	6.0	C 3357669	27 0
1948/07/26 17:50:01.82	le	4.42	l	35.586	-118.114	6.0	C 3357595	31 0
1948/09/29 04:06:49.29	le	4.13	l	35.518	-118.834	6.0	C 3356953	31 0
1950/02/26 00:06:22.29	le	4.49	l	34.776	-119.089	6.0	C 3366626	24 0
1950/08/22 22:47:57.96	le	4.11	l	34.120	-119.440	6.0	C 3344084	30 0
1950/12/14 13:56:20.57	le	4.27	l	35.232	-119.080	6.0	D 3342405	17 0
1951/06/25 19:45:41.18	le	4.42	l	35.735	-117.956	2.5	B 3322408	22 0
1951/06/26 01:26:39.20	le	4.18	l	35.750	-117.927	0.0	C 3322409	23 0
1951/09/22 08:22:38.90	le	4.14	l	34.137	-117.331	11.1	A 3322256	25 0
1952/02/17 12:36:58.06	le	4.39	l	34.014	-117.222	13.8	B 3322079	20 0
1952/07/21 11:52:14.54	le	7.50	w	34.958	-118.998	6.0	C 3319401	22 0
1952/07/21 11:54:00.00	le	4.50	h	35.000	-119.033	0.0	Z 10084394	0 0
1952/07/21 11:57:00.00	le	4.50	h	35.000	-119.033	0.0	Z 10084402	0 0
1952/07/21 11:58:00.00	le	4.60	h	35.000	-119.033	0.0	Z 10084406	0 0
1952/07/21 11:59:00.00	le	4.50	h	35.000	-119.033	0.0	Z 10084410	0 0
1952/07/21 12:02:00.00	le	4.31	h	35.000	-119.000	0.0	C 3319400	1 0
1952/07/21 12:05:31.24	le	5.80	h	34.973	-119.066	6.0	C 3319398	14 0
1952/07/21 12:06:00.00	le	5.40	h	35.000	-119.000	0.0	C 3319397	0 0
1952/07/21 12:07:00.00	le	5.18	h	35.000	-119.000	0.0	C 3319396	0 0
1952/07/21 12:10:00.02	le	4.53	l	35.100	-118.800	6.0	C 3319395	1 0
1952/07/21 12:12:00.02	le	4.75	l	35.100	-118.800	6.0	C 3319393	1 0
1952/07/21 12:18:08.33	le	4.17	l	35.089	-118.585	6.0	C 3319394	6 0
1952/07/21 12:19:36.19	le	5.20	l	35.020	-118.830	6.0	C 3319392	15 0
1952/07/21 12:22:00.00	le	4.97	l	35.100	-118.800	6.0	Z 10086310	0 0
1952/07/21 12:25:19.56	le	4.73	h	34.854	-118.879	6.0	C 3319391	8 0
1952/07/21 12:28:00.00	le	4.29	l	35.100	-118.800	6.0	Z 10086314	0 0
1952/07/21 12:39:00.02	le	4.27	l	35.100	-118.800	6.0	C 3319387	1 0
1952/07/21 12:39:11.61	le	4.26	l	35.049	-118.661	6.0	C 10086318	13 0
1952/07/21 12:59:37.48	le	4.42	l	35.188	-118.644	6.0	C 3319162	9 0
1952/07/21 13:08:00.03	le	4.39	l	35.028	-118.953	6.0	C 3319160	9 0
1952/07/21 13:11:05.87	le	4.06	l	35.153	-118.684	6.0	C 3319159	10 0
1952/07/21 13:13:05.91	le	4.51	l	34.997	-118.981	6.0	C 3319158	13 0
1952/07/21 13:17:00.61	le	4.18	l	35.026	-118.849	6.0	C 3319155	13 0
1952/07/21 13:25:12.09	le	4.35	l	34.936	-118.877	6.0	C 3319154	11 0
1952/07/21 13:35:57.05	le	4.19	l	35.127	-118.431	6.0	C 3319152	14 0

1952/07/21	13:38:36.58	le 4.03	l	34.991	-119.065	6.0 C	3319150	14	0
1952/07/21	13:59:55.57	le 4.88	l	35.069	-118.850	6.0 D	3319129	3	0
1952/07/21	14:06:20.35	le 4.03	l	35.000	-119.000	6.0 D	3319130	4	0
1952/07/21	14:15:13.42	le 4.35	l	34.868	-118.927	6.0 C	3319146	9	0
1952/07/21	14:17:52.06	le 4.10	l	34.978	-118.916	6.0 C	3319145	10	0
1952/07/21	14:42:37.73	le 4.26	l	35.296	-118.574	6.0 C	3319142	9	0
1952/07/21	14:51:38.54	le 4.18	l	35.018	-118.568	6.0 C	3319141	9	0
1952/07/21	15:13:58.54	le 4.93	l	35.187	-118.564	6.0 C	3319128	21	0
1952/07/21	15:34:02.79	le 4.19	l	35.346	-118.604	6.0 C	3319127	10	0
1952/07/21	15:36:15.55	le 4.33	l	35.266	-118.886	6.0 C	3319116	10	0
1952/07/21	15:38:02.22	le 4.48	l	34.984	-119.024	6.0 C	3319115	10	0
1952/07/21	15:42:35.31	le 4.24	l	35.299	-118.507	6.0 C	3319114	10	0
1952/07/21	15:53:04.71	le 4.42	l	34.968	-118.966	6.0 C	3319102	11	0
1952/07/21	16:17:00.34	le 4.05	l	35.040	-119.007	6.0 D	3319103	8	0
1952/07/21	16:38:40.01	le 4.52	l	34.974	-118.913	6.0 C	3319104	13	0
1952/07/21	17:42:44.83	le 4.66	l	35.291	-118.477	6.0 C	3319095	18	0
1952/07/21	18:00:25.86	le 4.60	l	35.174	-118.737	6.0 C	3319093	13	0
1952/07/21	18:23:39.08	le 4.40	l	35.275	-118.460	6.0 C	3319078	26	0
1952/07/21	18:26:28.23	le 4.05	l	35.346	-118.597	6.0 C	3319089	14	0
1952/07/21	19:12:07.64	le 4.17	l	35.243	-118.502	1.0 C	3319090	22	0
1952/07/21	19:16:19.00	le 4.21	l	35.261	-118.424	6.0 C	3319076	22	0
1952/07/21	19:41:22.62	le 5.19	l	35.115	-118.792	6.0 C	3319075	24	0
1952/07/21	20:21:05.16	le 4.09	l	35.235	-118.512	1.0 C	3319073	21	0
1952/07/21	21:53:08.90	le 4.28	l	34.864	-118.984	6.0 C	3319066	21	0
1952/07/21	22:03:12.91	le 4.02	l	35.318	-118.613	6.0 C	3318982	21	0
1952/07/21	23:53:28.30	le 4.41	l	34.969	-118.980	6.0 C	3318976	26	0
1952/07/22	01:41:02.47	le 4.49	l	35.142	-118.467	6.0 C	3318914	29	0
1952/07/22	01:51:51.07	le 4.45	l	35.272	-118.499	6.0 C	3318910	36	0
1952/07/22	03:21:04.86	le 4.42	l	35.237	-118.586	6.0 C	3318901	36	0
1952/07/22	07:44:54.78	le 4.02	l	34.892	-118.868	6.0 C	3318800	35	0
1952/07/22	08:16:22.71	le 4.36	l	35.123	-118.622	6.0 C	3318799	36	0
1952/07/22	08:21:21.08	le 4.20	l	35.017	-118.980	6.0 C	3318798	36	0
1952/07/22	08:47:33.37	le 4.64	l	35.079	-118.766	6.0 C	3318797	26	0
1952/07/22	09:10:24.93	le 4.42	l	35.236	-118.584	6.0 C	3318796	35	0
1952/07/22	10:19:38.55	le 4.02	l	35.002	-119.036	6.0 C	3319412	32	0
1952/07/22	13:31:42.74	le 4.71	l	34.926	-118.980	6.0 C	3318794	35	0
1952/07/22	14:05:10.69	le 4.03	l	35.035	-118.968	6.0 C	3318793	30	0
1952/07/22	14:30:18.31	le 4.13	l	34.875	-119.008	6.0 C	3318791	34	0
1952/07/22	15:03:14.24	le 4.31	l	35.250	-118.557	6.0 C	3318790	29	0
1952/07/22	17:52:34.88	le 4.09	l	35.031	-119.082	6.0 C	3318788	15	0
1952/07/22	19:08:58.55	le 4.32	l	35.210	-118.477	6.0 C	3318786	32	0
1952/07/22	19:10:21.61	le 4.00	l	35.163	-118.412	6.0 C	3318787	16	0
1952/07/22	21:02:09.98	le 4.12	l	35.118	-118.817	6.0 C	3318785	33	0
1952/07/22	22:31:33.62	le 4.64	l	34.962	-118.908	6.0 C	3318784	34	0
1952/07/23	00:38:31.81	le 5.43	h	35.372	-118.565	6.0 C	3318780	26	0
1952/07/23	00:43:08.21	le 4.34	l	34.950	-118.928	6.0 C	3318779	16	0
1952/07/23	00:47:36.88	le 4.62	l	35.407	-118.644	6.0 C	3318778	29	0
1952/07/23	03:19:22.25	le 5.07	l	35.378	-118.628	6.0 C	3318777	30	0
1952/07/23	03:49:27.61	le 4.26	l	35.283	-118.497	6.0 C	3318776	27	0
1952/07/23	04:01:39.20	le 4.81	l	35.342	-118.555	6.0 C	3318775	27	0
1952/07/23	05:46:03.01	le 4.58	l	35.338	-118.559	6.0 C	3318253	25	0
1952/07/23	06:10:45.58	le 4.17	l	35.260	-118.445	6.0 C	3318254	32	0
1952/07/23	06:26:28.71	le 4.16	l	35.362	-118.528	6.0 C	3318255	25	0
1952/07/23	06:53:41.76	le 4.22	l	35.432	-118.656	6.0 C	3318256	27	0
1952/07/23	07:37:00.03	le 4.78	l	35.264	-118.527	6.0 C	3318257	30	0
1952/07/23	07:53:18.13	le 5.55	l	34.988	-118.803	6.0 C	3318258	24	0
1952/07/23	09:38:42.28	le 4.31	l	35.270	-118.473	6.0 C	3318259	38	0
1952/07/23	10:54:13.57	le 4.11	l	35.284	-118.398	6.0 C	3318260	36	0
1952/07/23	13:17:05.67	le 5.51	l	35.166	-118.799	6.0 C	3318262	24	0
1952/07/23	13:30:03.77	le 4.50	l	35.267	-118.498	6.0 C	3318265	34	0

1952/07/23	16:18:38.10	le	4.43	l	35.284	-118.542	6.0 C	3318269	27	0
1952/07/23	16:48:52.77	le	4.44	l	35.345	-118.592	6.0 C	3318270	28	0
1952/07/23	17:22:24.21	le	4.49	l	35.313	-118.448	6.0 C	3318273	32	0
1952/07/23	17:53:28.91	le	4.09	l	35.050	-119.027	6.0 C	3318274	29	0
1952/07/23	18:03:28.29	le	4.03	l	35.332	-118.484	6.0 C	3318276	36	0
1952/07/23	18:13:50.17	le	5.13	l	34.996	-118.930	15.2 B	3318277	32	0
1952/07/23	19:51:33.85	le	4.15	l	35.325	-118.521	6.0 C	3318285	30	0
1952/07/23	21:16:58.00	le	4.03	l	35.035	-118.938	6.0 C	3318287	30	0
1952/07/23	22:32:19.37	le	4.05	l	35.033	-118.896	0.7 C	3318297	38	0
1952/07/24	02:41:43.21	le	4.06	l	35.266	-118.513	6.0 C	3318315	24	0
1952/07/24	03:11:06.51	le	4.08	l	35.113	-118.997	6.0 C	3318317	30	0
1952/07/24	05:02:50.36	le	4.33	l	35.321	-118.412	6.0 C	3318324	34	0
1952/07/24	09:50:33.05	le	4.45	l	34.912	-118.912	15.7 B	3318348	28	0
1952/07/24	11:47:55.27	le	4.25	l	35.409	-118.589	1.0 C	3318351	33	0
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1952/07/24	14:05:26.53	le	4.29	l	35.300	-118.483	6.0 C	3318355	33	0
1952/07/24	17:35:05.71	le	4.26	l	35.233	-118.538	6.0 C	3318361	27	0
1952/07/25	00:03:45.01	le	4.07	l	35.225	-118.562	6.0 C	3318381	25	0
1952/07/25	01:46:55.57	le	4.10	l	35.155	-118.903	6.0 C	3318388	18	0
1952/07/25	07:03:50.93	le	4.23	l	35.445	-118.643	6.0 C	3318395	33	0
1952/07/25	13:13:08.23	le	4.93	l	35.316	-118.481	1.0 C	3318457	36	0
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1952/07/25	19:09:45.29	le	5.55	l	35.332	-118.463	6.0 C	3318460	27	0
1952/07/25	19:43:23.50	le	5.62	l	35.304	-118.468	6.0 C	3318463	23	0
1952/07/25	20:06:06.28	le	4.74	l	35.330	-118.422	6.0 C	3318465	32	0
1952/07/26	01:02:20.42	le	4.09	l	35.297	-118.471	3.2 B	3318469	35	0
1952/07/26	06:38:49.71	le	4.07	l	35.197	-118.627	6.0 C	3318491	31	0
1952/07/26	09:22:07.28	le	4.30	l	35.316	-118.487	5.2 C	3318495	36	0
1952/07/26	15:08:30.70	le	4.43	l	35.059	-118.689	6.0 C	3318697	31	0
1952/07/26	18:02:43.14	le	4.05	l	35.114	-118.764	6.0 C	3318698	31	0
1952/07/26	22:41:02.70	le	4.54	l	35.179	-118.620	6.0 C	3318703	36	0
1952/07/26	22:58:55.84	le	4.30	l	35.322	-118.546	0.2 A	3318182	35	0
1952/07/27	00:09:16.24	le	4.20	l	35.319	-118.469	6.0 C	3317792	24	0
1952/07/27	02:49:11.05	le	4.05	l	35.505	-118.526	6.0 C	3317795	32	0
1952/07/27	07:16:09.83	le	4.09	l	35.066	-119.147	4.3 C	3317797	28	0
1952/07/27	07:35:39.02	le	4.06	l	35.362	-118.599	6.0 C	3317799	35	0
1952/07/27	11:34:38.16	le	4.04	l	35.090	-119.060	13.2 C	3317800	32	0
1952/07/28	05:45:54.57	le	4.11	l	35.130	-118.449	6.0 C	3317812	29	0
1952/07/29	07:03:46.25	le	5.72	l	35.357	-118.895	6.0 C	3317823	21	0
1952/07/29	07:13:58.28	le	4.01	l	35.337	-118.840	6.0 C	3317824	24	0
1952/07/29	08:01:45.83	le	5.19	l	35.403	-118.820	6.0 C	3318185	26	0
1952/07/29	15:49:50.22	le	4.78	l	35.189	-118.596	6.0 C	3317847	30	0
1952/07/29	17:36:42.60	le	4.43	l	35.243	-118.538	6.0 C	3317849	33	0
1952/07/29	19:51:31.75	le	4.57	l	35.346	-118.977	6.0 C	3317850	27	0
1952/07/30	09:59:28.65	le	4.21	l	35.314	-118.548	6.0 C	3317852	35	0
1952/07/30	11:02:55.33	le	4.13	l	34.892	-119.011	5.7 C	3317854	34	0
1952/07/30	14:46:49.71	le	4.07	l	35.243	-118.561	6.0 C	3317856	34	0
1952/07/31	04:10:21.07	le	4.27	l	35.285	-118.566	6.0 C	3317865	32	0
1952/07/31	12:09:09.13	le	5.64	l	35.249	-118.497	6.0 C	3317866	21	0
1952/07/31	17:19:08.02	le	4.64	l	35.283	-118.529	6.0 C	3317869	28	0
1952/07/31	19:53:13.09	le	4.70	l	35.352	-119.018	6.0 C	3317872	27	0
1952/08/01	03:16:11.79	le	4.54	l	35.301	-118.476	6.0 C	3317874	32	0
1952/08/01	13:04:29.18	le	4.92	l	34.904	-118.996	6.0 C	3317879	25	0
1952/08/01	21:35:22.88	le	4.04	l	35.295	-118.456	6.0 C	3317880	27	0
1952/08/03	01:51:56.52	le	4.03	l	35.359	-118.438	6.0 C	3317884	24	0
1952/08/04	19:47:52.39	le	4.00	l	35.026	-118.987	6.0 C	3317887	7	0
1952/08/05	06:50:09.74	le	4.32	l	35.376	-118.801	6.0 C	3317888	23	0
1952/08/06	03:46:23.64	le	4.26	l	35.309	-118.498	6.0 C	3317895	26	0
1952/08/07	16:31:50.61	le	5.03	l	35.045	-119.094	6.0 C	3317936	20	0
1952/08/07	19:19:07.31	le	4.19	l	35.342	-118.890	6.0 C	3317940	22	0

1952/08/09 10:07:31.99	le	4.19	l	35.298	-118.475	1.0 C	3306401	20 0
1952/08/10 12:23:16.69	le	4.59	l	35.318	-118.448	1.0 C	3306475	24 0
1952/08/10 19:44:23.40	le	4.21	l	35.012	-119.019	6.0 C	3306519	25 0
1952/08/11 13:21:48.57	le	4.43	l	35.374	-118.571	1.0 C	3306530	27 0
1952/08/13 04:29:39.07	le	4.63	l	35.286	-118.427	0.5 C	3306532	25 0
1952/08/13 17:39:25.60	le	4.68	l	35.089	-118.681	6.0 C	3306533	21 0
1952/08/13 21:25:48.63	le	4.16	l	35.261	-118.534	1.0 C	3306535	27 0
1952/08/14 07:28:21.84	le	4.27	l	35.120	-118.518	6.0 C	3306541	23 0
1952/08/14 11:41:46.13	le	4.10	l	35.033	-118.881	6.0 C	3306542	25 0
1952/08/17 09:09:06.51	le	4.00	l	35.028	-118.972	0.0 C	3306564	23 0
1952/08/17 21:04:41.25	le	4.17	l	35.027	-118.859	0.0 C	3306585	21 0
1952/08/18 04:40:10.04	le	4.70	l	35.035	-119.077	13.0 A	3306593	21 0
1952/08/19 19:12:26.62	le	4.42	l	35.020	-119.240	6.0 C	3306639	19 0
1952/08/20 08:47:46.52	le	4.26	l	34.897	-119.014	6.0 C	3306672	19 0
1952/08/22 22:41:23.48	le	5.52	l	35.352	-118.954	6.0 C	3306746	20 0
1952/08/23 06:03:02.34	le	4.28	l	35.015	-118.751	6.0 C	3306749	28 0
1952/08/23 10:09:06.82	le	4.75	l	34.508	-118.174	6.0 C	3306750	30 0
1952/08/25 06:20:26.10	le	4.66	l	35.057	-118.952	6.0 C	3306754	23 0
1952/08/26 20:56:41.08	le	4.48	l	35.058	-118.410	6.0 C	3306755	21 0
1952/08/30 04:55:59.47	le	4.71	l	35.318	-118.483	0.1 A	3306759	22 0
1952/09/01 10:39:00.50	le	4.01	l	35.273	-118.847	6.0 C	3306765	23 0
1952/09/02 12:41:32.52	le	4.61	l	35.068	-118.703	6.0 C	3306768	22 0
1952/09/02 16:38:08.52	le	4.04	l	35.298	-118.539	6.0 C	3306769	24 0
1952/09/02 20:45:56.83	le	4.70	l	34.909	-118.989	6.4 C	3306770	27 0
1952/09/04 18:06:49.67	le	4.43	l	35.300	-118.463	6.0 C	3306772	25 0
1952/09/12 10:35:24.61	le	4.43	l	34.982	-119.084	4.9 C	3306776	26 0
1952/09/16 15:21:06.52	le	4.32	l	35.345	-118.597	2.2 C	3306786	23 0
1952/09/25 16:21:35.47	le	4.03	l	35.056	-118.889	8.4 C	3306792	31 0
1952/09/26 20:21:20.05	le	4.04	l	35.123	-118.619	6.0 C	3306796	31 0
1952/10/02 23:10:19.77	le	4.13	l	35.431	-118.675	0.1 C	3306798	27 0
1952/10/13 22:20:35.17	le	4.02	l	35.362	-118.842	6.0 C	3306855	26 0
1952/10/16 12:22:06.95	le	4.35	l	34.952	-118.966	6.0 C	3306856	24 0
1952/10/20 18:14:43.24	le	4.26	l	35.291	-118.480	6.0 C	3306860	23 0
1952/11/07 08:55:35.01	le	4.53	l	34.964	-119.100	8.3 C	3307201	23 0
1952/11/07 09:42:37.51	le	4.00	l	35.027	-119.035	0.6 C	3307202	28 0
1952/11/11 17:22:07.19	le	4.12	l	35.133	-119.027	6.0 C	3307206	28 0
1952/11/11 18:12:24.80	le	4.05	l	34.945	-119.030	6.0 C	3307207	26 0
1952/11/14 23:34:00.47	le	4.02	l	35.051	-118.980	1.4 A	3307210	28 0
1952/11/27 15:36:41.78	le	4.09	l	34.924	-118.963	14.8 B	3307234	21 0
1952/12/01 05:26:09.76	le	4.41	l	34.979	-118.857	4.7 B	3307248	22 0
1952/12/25 05:56:33.13	le	4.05	l	35.356	-118.480	6.0 C	3307891	22 0
1953/01/20 08:13:22.08	le	4.03	l	35.317	-118.515	6.0 C	3317323	21 0
1953/02/19 08:12:06.00	le	4.41	l	35.301	-118.551	6.0 C	3302212	22 0
1953/03/23 17:06:36.37	le	4.04	l	35.032	-118.925	5.7 C	3303090	24 0
1953/04/29 12:47:45.02	le	4.69	l	34.990	-118.720	8.6 B	3303154	22 0
1953/05/23 07:52:54.29	le	4.16	l	34.998	-119.142	0.3 C	3304002	23 0
1953/05/25 03:24:00.47	le	4.77	l	34.971	-119.049	3.2 B	3304007	20 0
1953/06/20 23:18:51.43	le	4.30	l	35.396	-118.513	6.0 C	3305766	20 0
1953/08/05 12:20:59.30	le	4.19	l	35.007	-119.087	6.0 C	3300063	39 0
1953/08/06 11:20:03.25	le	4.29	l	35.064	-119.077	0.1 A	3300093	40 0
1953/09/12 06:41:16.04	le	4.02	l	35.374	-118.832	6.0 C	3300164	26 0
1953/10/07 14:59:21.28	le	4.70	l	34.996	-118.828	3.8 C	3300189	22 0
1953/11/23 20:39:01.15	le	4.33	l	35.461	-118.492	6.0 C	3300251	40 0
1953/11/26 16:19:12.53	le	4.09	l	35.326	-118.528	6.0 C	3300260	31 0
1953/12/15 12:44:35.69	le	4.64	l	35.198	-118.848	6.0 C	3300290	39 0
1954/01/12 23:33:48.28	le	5.40	l	34.982	-119.061	0.0 C	3301140	37 0
1954/01/12 23:40:37.21	le	4.06	l	35.054	-119.116	5.2 C	3301113	33 0
1954/01/13 01:45:31.10	le	4.60	l	35.036	-119.087	8.5 A	3301121	39 0
1954/01/27 14:19:48.19	le	4.96	l	35.143	-118.586	6.0 C	3301213	33 0
1954/02/07 00:09:53.23	le	4.56	l	35.045	-119.082	7.9 C	3301253	27 0

1954/02/10	23:58:38.28	le	4.61	l	34.930	-119.099	9.6	B	3301260	27	0
1954/02/24	22:30:22.55	le	4.67	l	35.060	-119.049	8.1	B	3298682	46	0
1954/05/01	22:04:38.99	le	4.09	l	35.438	-118.662	6.0	C	3299855	37	0
1954/05/23	23:52:43.13	le	5.03	l	34.968	-119.002	14.5	A	3299932	31	0
1954/08/26	13:48:01.61	le	4.76	l	33.870	-119.541	6.0	C	3298426	29	0
1954/10/26	16:22:25.77	le	4.05	l	33.709	-117.488	5.0	B	3298674	26	0
1954/11/17	23:03:52.15	le	4.29	l	34.562	-119.183	20.0	C	3298612	20	0
1955/01/15	01:03:06.84	le	4.28	l	34.955	-118.992	9.6	A	3298015	31	0
1955/02/11	19:44:30.27	le	4.40	l	35.366	-118.616	6.0	C	3297719	37	0
1955/05/28	19:44:20.03	le	4.51	l	35.538	-118.247	6.0	C	3297817	42	0
1955/08/08	03:21:50.51	le	4.48	l	35.414	-118.638	6.0	C	3297943	42	0
1955/08/24	17:05:40.82	le	4.06	l	35.387	-118.663	6.0	C	3297962	28	0
1955/11/21	20:55:27.45	le	4.40	l	35.380	-118.673	6.0	C	3297360	28	0
1956/01/03	00:25:49.13	le	4.71	l	33.753	-117.491	10.8	A	3297472	39	0
1956/02/07	02:16:56.50	le	4.05	l	34.562	-118.615	6.0	C	3297512	32	0
1956/02/07	03:16:38.56	le	4.38	l	34.579	-118.601	6.0	C	3297513	32	0
1956/03/03	06:24:14.36	le	4.16	l	35.054	-119.007	7.8	B	3297693	31	0
1956/03/23	21:23:26.12	le	4.37	l	35.077	-119.043	0.0	C	3295049	27	0
1956/03/25	03:32:02.55	le	4.12	l	33.617	-119.097	6.0	C	3295054	34	0
1956/06/04	08:33:19.12	le	4.03	l	35.177	-119.148	6.0	C	3295291	34	0
1956/07/11	19:22:06.71	le	4.11	l	35.758	-117.947	6.0	C	3295330	36	0
1956/08/09	00:08:49.08	le	4.09	l	34.341	-119.791	3.1	B	3295365	35	0
1957/03/18	18:56:28.18	le	4.82	l	34.146	-119.203	6.0	C	3295906	29	0
1958/07/14	05:25:55.11	le	4.44	l	34.350	-119.512	16.2	B	3296690	21	0
1958/11/16	09:34:03.88	le	4.12	l	34.461	-119.954	10.9	B	3296821	30	0
1959/07/01	23:49:23.62	le	4.63	l	35.178	-119.087	6.0	C	3297109	33	0
1959/10/24	15:35:15.34	le	4.14	l	35.750	-118.035	4.6	C	3297234	38	0
1960/06/28	20:00:47.49	le	4.09	l	34.126	-117.477	1.3	C	3350653	22	0
1961/01/28	08:12:46.26	le	5.05	l	35.758	-118.041	6.0	C	3347759	24	0
1961/09/01	16:51:49.00	le	4.07	l	35.212	-118.504	6.0	C	3344790	21	0
1961/10/04	02:21:30.89	le	4.40	l	33.853	-117.754	0.6	B	3344750	22	0
1961/10/20	19:49:50.18	le	4.58	l	33.671	-117.984	0.6	A	3344656	23	0
1961/10/20	20:07:13.88	le	4.12	l	33.666	-117.981	0.0	A	3344658	23	0
1961/10/20	21:42:40.25	le	4.10	l	33.673	-117.980	0.3	B	3344660	24	0
1961/10/20	22:35:33.60	le	4.12	l	33.671	-118.007	0.0	A	3344662	23	0
1961/11/15	05:38:55.62	le	4.97	l	34.946	-118.987	5.5	B	3344602	20	0
1961/11/18	03:18:36.00	le	4.30	l	35.390	-117.770	6.0	C	3344605	22	0
1961/11/20	08:53:35.32	le	4.10	l	33.727	-117.971	6.0	C	3344609	21	0
1962/04/27	09:12:31.07	le	4.19	l	33.800	-117.100	1.2	B	3344428	26	0
1962/09/16	05:36:16.14	le	4.95	l	35.759	-118.051	6.0	C	3331691	23	0
1962/10/29	02:42:53.71	le	4.97	l	34.349	-116.866	6.0	C	3331521	24	0
1962/11/30	23:51:05.81	le	4.33	l	34.329	-116.938	6.0	C	3331496	25	0
1962/12/01	00:35:48.84	le	4.40	l	34.341	-116.900	6.0	C	3331497	23	0
1962/12/02	00:41:39.02	le	4.44	l	34.301	-116.886	6.0	C	3331510	19	0
1963/01/09	06:04:03.39	le	4.08	l	34.939	-119.136	5.8	B	3331464	23	0
1963/03/01	00:25:57.93	le	4.64	l	34.956	-118.971	8.4	C	3331412	23	0
1963/09/14	03:51:16.77	le	4.70	l	33.562	-118.329	6.0	C	3331219	23	0
1963/09/16	05:36:16.00	le	4.90	h	35.750	-118.050	6.0	Z	10086718	0	0
1964/01/02	19:48:41.38	le	4.22	l	35.442	-118.349	6.0	C	3331038	26	0
1964/02/07	22:07:49.96	le	4.46	l	35.466	-118.641	0.9	C	3331017	22	0
1964/02/07	22:10:52.12	le	4.29	l	35.481	-118.687	0.0	C	3331019	23	0
1965/01/01	08:04:17.78	le	4.46	l	34.129	-117.509	3.3	A	3330737	22	0
1965/04/15	20:08:33.45	le	4.61	l	34.135	-117.436	6.0	C	3330616	23	0
1965/07/16	07:46:22.35	le	4.09	l	34.519	-118.484	6.0	C	3330501	24	0
1966/10/11	16:59:12.80	le	4.36	l	35.118	-117.315	6.0	C	3329994	25	0
1967/06/15	04:58:05.77	le	4.06	l	33.992	-117.991	9.0	B	3329599	31	0
1968/04/18	17:42:12.93	le	4.12	l	34.324	-116.888	6.0	C	3329101	21	0
1968/06/29	19:12:21.46	le	4.29	l	34.232	-119.738	16.3	C	3328761	25	0
1968/06/29	19:13:56.32	le	4.42	l	34.277	-119.630	5.9	D	3328762	7	0
1968/07/05	00:45:16.74	le	5.05	l	34.139	-119.723	0.2	B	3328690	24	0

1968/07/07 14:33:31.23	le	4.56	l	34.207	-119.802	21.0	C 3328708	23 0
1969/02/28 04:56:12.66	le	4.35	l	34.553	-118.121	6.0	C 3327845	24 0
1969/05/05 16:02:09.32	le	4.30	l	34.312	-117.556	3.2	C 3327639	26 0
1969/10/24 08:29:12.42	le	4.85	l	33.336	-119.161	6.0	C 3326120	20 0
1969/10/24 20:26:43.62	le	4.63	l	33.343	-119.133	6.0	C 3326128	21 0
1969/10/27 13:16:02.14	le	4.40	l	33.526	-117.800	6.0	C 3326147	23 0
1969/10/31 10:39:29.51	le	4.60	l	33.461	-119.132	6.0	C 3326170	21 0
1970/07/08 09:25:30.41	le	4.07	l	35.419	-117.791	6.0	C 3323937	31 0
1970/09/12 14:10:11.23	le	4.03	l	34.258	-117.501	7.5	B 3323896	28 0
1970/09/12 14:30:53.00	le	5.22	l	34.255	-117.534	10.8	A 3323898	30 0
1970/09/13 04:47:48.83	le	4.21	l	34.260	-117.538	12.2	C 3323910	26 0
1971/02/09 14:00:41.92	le	6.60	w	34.416	-118.370	8.9	C 3347678	23 0
1971/02/09 14:01:12.45	le	5.80	h	34.416	-118.370	6.0	C 3360255	2 0
1971/02/09 14:01:36.84	le	4.20	h	34.416	-118.370	6.0	C 3360254	2 0
1971/02/09 14:01:40.08	le	4.10	h	34.416	-118.370	6.0	C 3360253	1 0
1971/02/09 14:01:53.04	le	4.50	h	34.416	-118.370	6.0	C 3360252	1 0
1971/02/09 14:01:54.44	le	4.20	h	34.416	-118.370	6.0	C 3360251	1 0
1971/02/09 14:01:59.08	le	4.10	h	34.416	-118.370	6.0	C 3360250	1 0
1971/02/09 14:02:03.00	le	4.10	h	34.411	-118.401	6.0	Z 12315507	0 0
1971/02/09 14:02:29.94	le	4.70	h	34.416	-118.370	6.0	C 3360246	1 0
1971/02/09 14:02:30.00	le	4.30	h	34.411	-118.401	6.0	Z 12315511	0 0
1971/02/09 14:02:31.00	le	4.70	h	34.411	-118.401	6.0	Z 12315515	0 0
1971/02/09 14:02:45.74	le	5.80	h	34.416	-118.370	6.0	C 3360245	3 0
1971/02/09 14:03:25.08	le	4.40	h	34.416	-118.370	6.0	C 3360238	1 0
1971/02/09 14:03:43.34	le	4.10	h	34.416	-118.370	6.0	C 3360236	1 0
1971/02/09 14:04:07.44	le	4.10	h	34.416	-118.370	6.0	C 3360235	1 0
1971/02/09 14:04:35.98	le	4.20	h	34.416	-118.370	6.0	C 3360232	3 0
1971/02/09 14:04:37.64	le	4.10	h	34.416	-118.370	6.0	C 3360230	1 0
1971/02/09 14:04:42.34	le	4.20	h	34.416	-118.370	6.0	C 3360226	1 0
1971/02/09 14:04:44.08	le	4.10	h	34.416	-118.370	6.0	C 3360227	1 0
1971/02/09 14:04:46.00	le	4.20	h	34.411	-118.401	6.0	Z 12315527	0 0
1971/02/09 14:05:41.34	le	4.10	h	34.416	-118.370	6.0	C 3360221	2 0
1971/02/09 14:05:52.15	le	4.10	h	34.416	-118.370	6.0	C 3360220	2 0
1971/02/09 14:07:10.44	le	4.00	h	34.416	-118.370	6.0	C 3360212	1 0
1971/02/09 14:07:43.97	le	4.50	h	34.416	-118.370	6.0	C 3360209	2 0
1971/02/09 14:07:59.24	le	4.00	h	34.416	-118.370	6.0	C 3360207	3 0
1971/02/09 14:08:03.41	le	4.20	h	34.416	-118.370	6.0	C 3360206	3 0
1971/02/09 14:08:34.04	le	4.50	h	34.416	-118.370	6.0	C 3360204	1 0
1971/02/09 14:08:53.72	le	4.60	h	34.416	-118.370	6.0	C 3360203	4 0
1971/02/09 14:10:21.33	le	4.64	l	34.246	-118.396	14.6	B 3342443	7 0
1971/02/09 14:10:29.04	le	5.30	h	34.416	-118.370	6.0	C 3360199	1 0
1971/02/09 14:11:31.38	le	4.00	h	34.274	-118.321	6.0	C 3360257	5 0
1971/02/09 14:22:17.04	le	4.15	l	34.353	-118.316	7.6	C 3342486	11 0
1971/02/09 14:34:39.35	le	4.83	l	34.310	-118.414	2.8	B 3342514	13 0
1971/02/09 14:40:17.11	le	4.08	l	34.400	-118.455	6.1	C 3342533	13 0
1971/02/09 14:43:47.72	le	4.38	l	34.314	-118.428	19.0	C 3347629	20 0
1971/02/09 15:58:20.88	le	4.59	l	34.350	-118.339	13.9	B 3347652	24 0
1971/02/09 16:19:27.72	le	4.08	l	34.322	-118.460	10.4	B 3347654	29 0
1971/02/10 05:06:35.96	le	4.29	l	34.376	-118.311	10.9	B 3347693	27 0
1971/02/10 05:18:07.06	le	4.40	l	34.403	-118.421	9.8	B 3347694	29 0
1971/02/10 11:31:33.93	le	4.22	l	34.406	-118.394	0.3	C 3347703	26 0
1971/02/10 13:49:53.64	le	4.25	l	34.347	-118.440	12.6	B 3347709	27 0
1971/02/10 14:35:26.18	le	4.15	l	34.347	-118.476	1.8	C 3347710	25 0
1971/02/10 17:38:54.97	le	4.04	l	34.374	-118.362	12.2	B 3347716	26 0
1971/02/10 18:54:41.24	le	4.05	l	34.426	-118.436	0.0	B 3347717	26 0
1971/02/21 05:50:52.30	le	4.43	l	34.383	-118.434	7.9	B 3323345	21 0
1971/02/21 07:15:11.48	le	4.25	l	34.346	-118.447	14.2	B 3323346	21 0
1971/03/03 12:05:15.69	le	4.09	l	35.660	-118.355	0.9	A 3323213	24 0
1971/03/07 01:33:40.01	le	4.20	l	34.346	-118.430	2.4	C 3323221	22 0
1971/03/08 23:08:07.64	le	4.20	l	35.661	-118.371	3.3	A 3323232	27 0

1971/03/25	22:54:09.55	le	4.16	l	34.301	-118.493	13.0	B	3323276	22	0
1971/03/31	14:52:22.42	le	4.30	l	34.285	-118.464	2.2	B	3322956	22	0
1971/04/01	15:03:03.67	le	4.09	l	34.403	-118.418	11.7	B	3322983	30	0
1971/04/15	11:14:32.19	le	4.15	l	34.256	-118.511	3.2	C	3323057	19	0
1971/06/22	10:41:17.87	le	4.22	l	33.715	-117.490	1.6	B	3322532	26	0
1972/01/31	01:55:04.31	le	4.01	l	34.306	-116.883	6.0	C	3321559	30	0
1972/07/27	00:31:17.21	le	4.31	l	34.790	-118.892	3.7	C	3321101	31	0
1973/02/21	14:45:56.14	le	5.30	w	33.979	-119.050	10.0	C	3320341	22	0
1973/07/14	08:00:20.17	le	4.49	l	34.431	-116.853	6.0	C	3319553	49	0
1973/08/06	23:29:16.66	le	5.14	l	33.957	-119.475	16.9	B	3319386	37	0
1974/01/24	05:02:01.00	le	4.05	l	35.033	-119.079	6.0	C	3318571	58	0
1974/03/09	00:54:31.63	le	4.37	l	34.386	-118.385	8.6	B	3320111	45	0
1975/04/17	09:18:33.45	le	4.06	l	35.773	-118.606	3.1	A	3076282	91	0
1975/05/02	18:03:22.90	le	4.25	l	35.218	-117.617	1.0	C	3021953	102	0
1975/05/13	00:21:35.60	le	4.56	l	35.007	-119.097	24.1	B	3022027	104	0
1975/06/05	14:46:45.06	le	4.09	l	35.052	-119.000	1.0	C	3022245	80	0
1976/01/01	17:20:12.91	le	4.38	l	33.972	-117.896	10.2	A	3001636	88	0
1976/04/08	15:21:37.99	le	4.47	l	34.358	-118.673	15.1	A	3002657	121	0
1976/11/22	17:55:11.60	le	4.16	l	33.950	-118.629	11.8	A	152235	89	0
1977/08/12	02:19:26.14	le	4.37	l	34.371	-118.458	10.8	A	3334224	81	120
1977/09/24	21:28:24.35	le	4.02	l	34.459	-118.418	13.3	A	3334905	87	109
1978/06/16	04:21:31.95	le	4.16	l	35.041	-119.129	11.0	A	3340018	72	150
1978/08/13	22:54:52.91	le	5.08	l	34.314	-119.706	18.0	C	10012262	102	0
1978/11/20	06:55:09.30	le	4.27	l	34.147	-116.960	14.5	A	3314007	109	147
1979/01/01	23:14:38.62	le	5.21	l	33.916	-118.687	13.3	A	12228815	100	142
1979/06/14	07:39:28.10	le	4.54	l	35.736	-117.974	5.8	A	3349792	119	139
1979/06/29	05:53:20.44	le	4.40	l	34.245	-116.891	11.3	A	3350266	101	142
1979/06/30	00:34:11.59	le	4.83	l	34.242	-116.882	12.6	A	3350295	109	148
1979/06/30	07:03:52.89	le	4.36	l	34.248	-116.889	12.9	A	3350317	114	146
1979/10/17	20:52:36.97	le	4.31	l	33.893	-118.658	10.7	A	12281891	82	115
1979/10/19	12:22:37.83	le	4.07	l	34,203	-117.529	7.1	A	3352948	84	91
1980/09/26	13:18:41.46	le	4.29	l	35.255	-119.377	9.9	A	3302524	40	164
1981/06/22	04:57:47.16	le	4.02	l	35.098	-118.504	1.3	A	518117	98	152
1981/09/04	15:50:48.70	le	5.45	l	33.557	-119.120	6.0	C	522177	121	153
1981/10/23	17:28:16.44	le	4.76	l	33.590	-119.004	10.0	C	526000	93	146
1981/10/23	19:15:52.17	le	4.61	l	33.618	-119.017	14.8	A	526013	97	152
1981/11/10	22:34:35.73	le	4.71	l	35.011	-119.133	8.0	A	526822	135	151
1981/11/10	22:37:04.69	le	4.19	c	35.013	-119.178	1.7	A	526823	62	149
1982/04/13	11:02:12.36	le	4.01	l	34.063	-118.970	12.1	A	528652	96	155
1982/05/25	13:44:30.30	le	4.36	l	33.546	-118.206	12.6	A	531265	88	148
1983/01/08	07:19:30.49	le	4.02	l	34.133	-117.453	7.8	A	503897	119	153
1984/05/07	19:32:32.76	le	4.26	l	34.661	-119.973	9.9	C	39006	60	195
1984/06/12	00:27:52.38	le	4.04	l	34.541	-118.989	11.7	C	41122	112	205
1984/10/25	10:36:02.37	le	4.53	l	34.737	-120.147	6.0	C	52453	21	197
1984/10/26	17:20:43.54	le	4.56	l	34.016	-118.988	13.3	A	53124	77	203
1985/02/08	06:58:16.86	le	4.61	l	35.457	-118.906	6.0	C	58486	88	212
1985/04/03	04:04:50.07	le	4.07	l	34.380	-119.038	24.9	A	61973	117	206
1985/05/06	23:14:33.02	le	4.41	l	35.297	-119.346	24.4	A	64604	131	205
1985/10/02	23:44:12.45	le	4.58	l	34.023	-117.245	15.2	A	107945	186	244
1986/03/10	15:33:16.27	le	4.14	l	34.402	-119.802	18.0	C	118360	103	207
1987/05/11	15:10:10.24	le	4.12	l	34.311	-116.918	5.3	A	721973	139	255
1987/10/01	14:42:20.02	le	5.90	w	34.061	-118.079	9.5	A	731691	178	254
1987/10/01	14:45:41.45	le	4.70	l	34.049	-118.100	13.6	A	624578	33	127
1987/10/01	14:48:03.11	le	4.11	l	34.076	-118.090	11.7	A	731693	55	161
1987/10/01	14:49:05.92	le	4.75	l	34.060	-118.100	11.7	A	624580	47	125
1987/10/01	15:12:31.76	le	4.62	l	34.052	-118.091	10.8	A	134294	164	251
1987/10/01	15:59:53.55	le	4.02	l	34.050	-118.087	10.4	A	731717	128	227
1987/10/04	10:59:38.19	le	5.25	l	34.074	-118.098	8.3	A	732031	189	256
1987/10/24	23:58:33.12	le	4.03	l	33.676	-119.058	12.2	A	733642	95	244
1987/12/15	18:23:46.10	le	4.02	l	35.372	-118.774	3.2	A	630677	112	227

1988/02/11	15:25:55.65	le	4.69	l	34.077	-118.047	12.5	A	743060	135	260
1988/02/22	07:43:13.88	le	4.20	l	35.546	-119.676	6.0	C	743909	83	246
1988/03/23	08:42:46.96	le	4.01	l	34.250	-119.622	17.6	A	136023	113	260
1988/06/10	23:06:43.05	le	5.37	l	34.943	-118.743	6.8	A	640798	120	262
1988/06/26	15:04:58.48	le	4.66	l	34.136	-117.709	7.9	A	136984	134	260
1988/09/12	13:24:34.20	le	4.04	l	33.867	-118.457	3.4	A	1008955	74	259
1988/11/20	05:39:28.67	le	4.83	l	33.507	-118.071	6.0	C	1013254	105	270
1988/12/03	11:38:26.45	le	5.02	l	34.151	-118.130	14.3	A	650799	187	271
1989/01/19	06:53:28.84	le	4.96	l	33.919	-118.627	11.9	A	1018595	165	272
1989/02/14	15:43:54.65	le	4.10	l	35.043	-119.156	13.8	A	1020974	65	247
1989/02/18	07:17:04.85	le	4.05	l	34.006	-117.738	3.3	A	1021313	145	269
1989/03/29	09:29:49.53	le	4.31	l	34.914	-118.992	14.3	A	1025141	117	265
1989/04/07	20:07:30.30	le	4.80	l	33.619	-117.902	12.8	A	657729	142	271
1989/06/12	16:57:18.49	le	4.82	l	34.028	-118.180	15.6	A	1032113	142	272
1989/06/12	17:22:25.52	le	4.47	l	34.022	-118.178	15.5	A	661481	139	271
1989/12/28	09:41:08.20	le	4.23	l	34.192	-117.386	14.6	A	140477	145	271
1990/01/11	01:22:10.30	le	4.01	l	35.225	-118.215	3.6	A	1049754	107	258
1990/02/28	23:43:36.75	le	5.51	l	34.144	-117.697	4.5	A	1053635	120	271
1990/03/01	00:34:57.15	le	4.03	l	34.127	-117.701	4.4	A	1053648	83	233
1990/03/01	03:23:03.03	le	4.72	l	34.153	-117.720	11.4	A	676027	158	269
1990/03/02	17:26:25.48	le	4.47	l	34.145	-117.695	5.6	A	1053953	162	271
1990/04/17	22:32:27.29	le	4.50	l	34.106	-117.722	3.6	A	1057313	113	277
1990/12/18	16:56:43.09	le	4.25	l	35.374	-118.846	6.0	B	688784	106	266
1991/06/28	14:43:54.66	le	5.80	w	34.270	-117.993	9.2	A	2021449	157	331
1991/06/28	17:00:55.56	le	4.30	l	34.253	-117.992	9.5	A	2021473	120	308
1991/07/05	17:41:57.12	le	4.13	l	34.497	-118.556	10.9	A	2022113	132	311
1991/12/04	08:17:03.51	le	4.09	l	34.178	-117.022	10.7	A	2036038	152	313
1992/06/28	17:01:32.01	le	4.98	l	34.179	-116.925	10.8	A	3031154	67	305
1992/06/28	17:05:57.56	le	5.26	l	34.255	-116.912	7.7	A	3031157	102	296
1992/06/28	17:21:27.31	le	4.16	l	34.225	-116.862	1.4	A	3031168	73	284
1992/06/29	01:18:13.40	le	4.67	l	35.160	-117.362	4.2	A	3040295	28	296
1992/06/29	01:26:15.67	le	4.12	l	35.156	-117.351	5.5	C	2057196	68	214
1992/06/29	04:16:42.61	le	4.12	l	35.016	-117.203	3.5	A	3031395	52	200
1992/06/29	14:41:26.04	le	4.59	l	34.111	-116.997	4.8	A	3031622	66	311
1992/06/30	02:32:12.22	le	4.08	l	35.165	-117.351	4.9	A	3042717	98	303
1992/06/30	21:49:00.39	le	4.48	l	34.078	-116.987	4.6	A	3032368	148	327
1992/07/03	17:17:06.41	le	4.10	l	34.262	-116.896	7.6	A	3034125	138	368
1992/07/11	18:14:16.16	le	5.67	l	35.210	-118.067	10.7	A	3041390	83	365
1992/08/17	20:41:52.12	le	5.23	l	34.195	-116.863	11.3	A	3055028	141	350
1992/08/18	09:46:40.73	le	4.14	l	34.197	-116.862	12.2	A	3055197	138	353
1992/11/27	16:00:57.49	le	5.29	l	34.340	-116.900	1.4	A	3079915	164	336
1992/11/27	18:32:24.96	le	4.15	l	34.364	-116.905	1.1	A	3080022	85	332
1992/12/04	02:08:57.50	le	5.26	l	34.369	-116.898	3.0	A	3081404	151	325
1992/12/04	05:25:07.44	le	4.61	c	34.373	-116.912	3.6	A	3081485	36	323
1992/12/04	05:25:11.21	le	4.66	l	34.377	-116.918	2.7	A	3081464	157	296
1992/12/04	12:59:42.11	le	4.24	l	34.361	-116.914	0.7	A	3081531	130	326
1992/12/07	03:33:31.47	le	4.03	l	34.362	-116.924	1.1	A	3081990	74	326
1993/05/28	04:47:40.60	le	5.19	l	35.149	-119.104	21.4	A	3107503	157	362
1993/05/31	08:55:29.99	le	4.11	l	34.120	-116.995	5.7	A	3107911	66	360
1994/01/17	12:30:55.39	le	6.70	w	34.213	-118.537	18.4	A	3144585	160	428
1994/01/17	12:31:58.12	le	5.89	l	34.275	-118.493	6.0	C	3149646	40	346
1994/01/17	12:34:18.42	le	4.44	l	34.308	-118.475	6.0	C	3144599	11	346
1994/01/17	12:39:39.80	le	4.89	l	34.265	-118.540	6.0	C	3144652	119	367
1994/01/17	12:40:09.52	le	4.82	l	34.320	-118.507	6.0	C	3144673	28	352
1994/01/17	12:40:36.12	le	5.20	l	34.340	-118.614	6.0	C	3144694	18	352
1994/01/17	12:55:46.83	le	4.07	l	34.277	-118.578	6.0	C	3140674	104	364
1994/01/17	13:06:28.34	le	4.62	l	34.251	-118.550	6.0	C	3140678	103	409
1994/01/17	13:26:45.01	le	4.68	l	34.318	-118.456	6.0	C	3140684	112	406
1994/01/17	13:56:02.48	le	4.44	l	34.293	-118.621	6.0	C	3140691	123	394
1994/01/17	14:14:30.63	le	4.45	l	34.331	-118.445	6.0	C	3140870	110	403

1994/01/17	15:07:03.17	le 4.20	l	34.304	-118.474	2.6	A	3140728	158	400
1994/01/17	15:07:35.46	le 4.14	l	34.307	-118.467	1.6	A	2138698	80	397
1994/01/17	15:54:10.76	le 4.85	l	34.376	-118.627	13.0	A	3140766	141	403
1994/01/17	17:56:08.21	le 4.63	l	34.228	-118.572	19.2	A	3140853	149	397
1994/01/17	19:43:53.38	le 4.05	l	34.368	-118.637	13.9	A	3141205	118	394
1994/01/17	20:46:02.40	le 4.85	l	34.302	-118.565	6.0	C	3141219	153	411
1994/01/17	22:31:53.73	le 4.12	l	34.339	-118.442	6.0	C	3141242	96	402
1994/01/17	23:33:30.69	le 5.58	l	34.326	-118.698	9.8	A	3141273	134	415
1994/01/18	00:39:35.02	le 4.40	l	34.379	-118.564	7.2	A	3141108	111	376
1994/01/18	00:40:04.09	le 4.21	l	34.394	-118.543	0.0	A	2150850	45	349
1994/01/18	00:43:08.89	le 5.24	l	34.377	-118.698	11.3	A	3141286	139	373
1994/01/18	04:01:26.72	le 4.26	l	34.358	-118.623	0.9	A	3141180	117	415
1994/01/18	07:23:56.02	le 4.04	l	34.333	-118.623	14.8	A	3141341	127	430
1994/01/18	11:35:09.90	le 4.19	l	34.218	-118.607	12.1	A	3141570	90	403
1994/01/18	13:24:44.13	le 4.32	l	34.319	-118.558	1.7	A	3141584	118	388
1994/01/18	15:23:46.89	le 4.84	l	34.379	-118.561	7.7	A	3141597	134	424
1994/01/19	04:40:47.00	le 4.34	l	34.361	-118.571	2.6	A	3142081	146	436
1994/01/19	04:43:14.57	le 4.04	l	34.366	-118.709	6.0	C	3142082	126	370
1994/01/19	09:13:10.90	le 4.05	l	34.304	-118.737	13.0	A	3142087	125	412
1994/01/19	14:09:14.83	le 4.52	l	34.215	-118.510	17.5	A	3142198	158	436
1994/01/19	21:09:28.61	le 5.06	l	34.379	-118.712	14.4	A	3142595	144	468
1994/01/19	21:11:44.90	le 5.07	l	34.378	-118.619	11.3	A	3142597	104	391
1994/01/21	18:39:15.26	le 4.53	l	34.301	-118.466	10.6	A	3145627	159	551
1994/01/21	18:39:47.08	le 4.00	l	34.297	-118.479	11.9	A	3159009	34	428
1994/01/21	18:42:28.77	le 4.25	l	34.310	-118.474	7.9	A	3143541	93	482
1994/01/21	18:52:44.23	le 4.31	l	34.302	-118.452	7.6	A	3143546	146	539
1994/01/21	18:53:44.57	le 4.32	l	34.298	-118.458	7.7	A	3143547	84	515
1994/01/22	22:54:10.66	le 4.64	c	34.393	-118.568	7.6	A	3187383	12	81
1994/01/23	08:55:08.66	le 4.07	l	34.300	-118.428	6.0	A	3144303	139	566
1994/01/24	04:15:18.82	le 4.59	l	34.347	-118.552	6.5	A	3145150	174	578
1994/01/24	05:50:24.34	le 4.30	l	34.361	-118.628	12.1	A	3145168	159	578
1994/01/24	05:54:21.07	le 4.20	l	34.364	-118.627	10.9	A	3145171	147	569
1994/01/27	17:19:58.83	le 4.57	l	34.273	-118.563	14.9	A	3146628	146	584
1994/01/28	20:09:53.43	le 4.21	l	34.375	-118.494	0.7	A	3146983	81	590
1994/01/29	11:20:35.97	le 5.06	l	34.306	-118.579	1.1	A	3147406	134	622
1994/01/29	12:16:56.35	le 4.33	l	34.278	-118.611	2.6	A	3147259	122	599
1994/02/06	13:19:27.02	le 4.09	l	34.292	-118.476	9.3	A	3150210	154	587
1994/02/25	12:59:12.59	le 4.03	l	34.357	-118.480	1.2	A	3155150	154	557
1994/03/20	21:20:12.26	le 5.24	l	34.231	-118.475	13.1	A	3159411	176	427
1994/04/06	19:01:04.06	le 4.78	l	34.192	-117.095	7.3	A	3162132	190	412
1994/05/25	12:56:57.05	le 4.40	l	34.312	-118.393	7.0	A	3169078	155	420
1994/06/15	05:59:48.63	le 4.13	l	34.311	-118.398	7.4	A	3172383	160	423
1994/10/19	00:49:58.80	le 4.18	l	35.512	-117.494	3.4	A	3188805	78	414
1994/12/06	03:48:34.49	le 4.54	l	34.293	-118.389	9.0	A	3195727	167	440
1995/02/19	21:24:18.07	le 4.34	l	34.049	-118.915	15.6	A	3203644	163	419
1995/06/26	08:40:28.94	le 5.02	l	34.394	-118.669	13.3	A	3217586	187	426
1995/12/27	09:42:58.51	le 4.20	h	34.245	-118.599	6.0	C	3247748	12	57
1995/12/31	21:48:23.06	le 4.09	l	35.098	-118.306	7.9	A	3248154	113	409
1996/03/20	07:37:59.76	le 4.11	l	34.362	-118.615	13.0	A	3258844	152	345
1996/05/01	19:49:56.42	le 4.09	l	34.354	-118.703	14.4	A	3263467	160	456
1996/10/23	22:09:29.38	le 4.07	l	34.481	-119.353	14.5	A	7047275	133	523
1997/04/26	10:37:30.67	le 5.07	l	34.369	-118.670	16.4	A	9008753	183	706
1997/04/27	11:09:28.38	le 4.92	l	34.377	-118.649	15.2	A	9008934	174	664
1997/05/06	19:12:53.76	le 4.49	l	35.453	-118.431	6.0	A	9009850	152	680
1997/06/28	21:45:25.10	le 4.18	l	34.168	-117.336	10.0	A	9014489	177	601
1997/12/05	17:04:38.92	le 4.08	l	34.097	-116.996	4.5	A	9033757	171	818
1998/01/05	18:14:06.47	le 4.29	l	33.951	-117.709	11.5	A	9038699	186	796
1998/03/11	12:18:51.83	le 4.45	l	34.024	-117.230	14.9	A	3298292	193	867
1998/08/16	13:34:40.23	le 4.78	l	34.121	-116.928	6.2	A	9064093	161	1320
1998/08/20	23:49:58.44	le 4.40	l	34.374	-117.648	9.0	A	9064568	209	811

1998/10/01	18:18:15.96	le	4.63	l	34.111	-116.920	4.4	A 7112721 150 1375
1998/10/27	01:08:40.65	le	4.82	l	34.323	-116.844	5.9	A 9069997 173 816
1998/10/27	15:40:17.06	le	4.09	l	34.320	-116.850	4.3	A 9070083 108 1370
1999/07/11	18:20:46.89	le	4.35	l	35.731	-118.478	5.7	A 9095528 56 1723
1999/09/20	07:02:49.18	le	4.12	l	34.322	-116.846	2.8	A 9105672 141 992
2000/02/21	13:49:43.13	le	4.37	l	34.050	-117.252	15.4	A 9140050 157 1630
2000/12/24	01:04:21.87	le	4.42	l	34.918	-119.020	13.9	A 9171679 102 3343
2001/01/14	02:26:14.06	le	4.26	l	34.284	-118.404	8.8	A 9173365 177 916
2001/01/14	02:50:53.69	le	4.05	l	34.289	-118.403	8.4	A 9173374 173 829
2001/02/10	21:05:05.78	le	4.66	w	34.289	-116.946	9.1	A 9627721 249 1432
2001/02/11	00:39:15.97	le	4.22	l	34.288	-116.942	8.1	A 9627953 309 1434
2001/09/09	23:59:18.04	le	4.24	l	34.059	-118.388	7.9	A 9703873 140 1531
2002/01/29	05:53:28.93	le	4.18	l	34.361	-118.657	14.2	A 9753485 129 1596
2002/03/16	21:33:23.82	le	4.60	l	33.666	-119.330	7.0	C 12659440 75 1616
2002/09/03	07:08:51.87	le	4.75	l	33.917	-117.776	12.9	A 9818433 245 1594
2003/01/25	09:16:10.22	le	4.54	l	35.318	-118.654	5.6	C 9882329 100 1769
2003/02/22	12:19:10.58	le	4.99	w	34.310	-116.848	1.2	A 13935988 202 1728
2003/02/22	12:20:15.64	le	4.00	h	34.311	-116.847	4.4	A 13935992 61 1728
2003/02/22	12:21:33.13	le	4.34	l	34.311	-116.851	4.4	A 13935996 104 1728
2003/02/22	12:25:13.64	le	4.01	l	34.326	-116.857	9.3	C 13936076 128 1732
2003/02/22	14:16:08.42	le	4.10	l	34.324	-116.858	4.2	A 13936432 193 1718
2003/02/22	19:33:45.80	le	4.50	l	34.310	-116.850	3.0	A 13936812 175 1719
2003/02/25	04:03:04.80	le	4.61	l	34.316	-116.844	2.7	A 13938812 230 1795
2003/02/27	05:00:21.70	le	4.04	l	34.304	-116.843	4.6	A 13939856 177 1799
2004/02/14	12:43:11.38	le	4.34	l	35.038	-119.132	11.7	A 9983429 192 1918
2004/05/09	08:57:17.30	le	4.40	l	34.395	-120.022	4.4	A 10006857 256 1930
2004/07/24	12:55:19.90	le	4.27	l	34.380	-119.436	3.6	A 14077668 224 1929
2004/09/29	22:54:54.24	le	5.03	w	35.390	-118.624	3.5	A 14095628 246 1902
2004/11/13	17:39:16.93	le	4.19	l	34.353	-116.845	9.6	A 10059745 221 1890
2005/01/06	14:35:27.67	le	4.42	l	34.125	-117.439	4.2	A 14116972 311 1844
2005/04/16	19:18:13.55	le	4.59	w	35.027	-119.178	10.3	A 14138080 292 1892
2005/05/06	02:29:09.51	le	4.06	l	35.031	-119.181	11.6	A 10097009 241 1896
2005/06/16	20:53:26.02	le	4.88	w	34.058	-117.011	11.6	A 14155260 326 1871
2005/07/24	12:59:42.87	le	4.11	l	33.674	-119.761	6.0	C 14165408 193 1814
2005/09/22	20:24:04.88	le	4.47	l	35.034	-119.010	11.2	A 14186608 101 1889
2005/09/22	20:24:48.62	le	4.69	w	35.043	-119.014	11.0	A 14186612 208 1889
2005/09/22	20:30:52.41	le	4.18	l	35.045	-119.007	11.2	A 14186628 77 1889
2007/08/09	07:58:49.59	le	4.66	l	34.300	-118.620	7.6	A 14312160 303 2005
2007/09/02	17:29:14.79	le	4.73	l	33.732	-117.477	12.6	A 10275733 352 1969
2007/10/16	08:53:44.12	le	4.20	l	34.385	-117.635	8.1	A 10285533 336 1979
2007/12/19	12:14:09.63	le	4.06	l	34.156	-116.981	9.3	A 10295849 205 1922
2008/05/01	08:11:43.22	le	4.43	l	35.473	-118.425	6.0	C 10321585 271 2019
2008/07/29	18:42:15.71	le	5.39	w	33.953	-117.761	14.7	A 14383980 366 1889
2008/10/02	09:41:49.27	le	4.14	l	34.084	-116.968	12.5	A 14396336 303 1986
2009/01/09	03:49:46.27	le	4.45	w	34.107	-117.304	14.2	A 10370141 342 1915
2009/01/31	21:09:22.59	le	4.39	l	35.413	-117.786	8.5	A 14418600 233 1931
2009/05/02	01:11:13.66	le	4.42	l	34.067	-118.882	14.2	A 10403777 179 2022
2009/05/08	20:27:13.95	le	4.17	l	34.440	-119.183	7.6	A 10406593 247 2071
2009/05/18	03:39:36.34	le	4.70	w	33.938	-118.336	13.9	A 10410337 294 2067
2009/05/19	22:49:11.55	le	4.04	l	33.934	-118.329	12.8	A 10411545 206 2060
2009/11/15	22:45:27.13	le	4.35	l	33.166	-119.302	6.0	C 10497389 181 2030
2010/01/16	12:03:25.70	le	4.28	l	33.932	-117.023	13.9	A 10530013 227 2046
2010/02/13	21:39:06.60	le	4.10	l	34.005	-117.180	8.5	A 10541957 191 2000
2010/03/16	11:04:00.19	le	4.44	l	33.992	-118.082	18.9	A 14601172 233 1969
2010/05/08	19:23:06.27	le	4.27	l	35.008	-119.268	17.2	A 10657701 99 2067
2011/09/01	20:47:07.95	le	4.24	l	34.339	-118.475	7.3	A 11001205 209 2213
2011/09/14	14:44:51.02	le	4.14	l	33.953	-117.076	16.9	A 11006189 167 2211
2012/01/03	14:18:56.11	le	4.14	l	33.195	-119.449	18.4	B 11049285 31 2127
2012/08/08	06:23:34.16	le	4.46	l	33.905	-117.792	10.1	A 15189073 345 2435
2012/08/08	16:33:22.05	le	4.45	l	33.904	-117.791	10.4	A 15189281 246 2445

```
2012/08/29 20:31:00.35 le 4.13 l    33.906 -117.788   9.2 A 15207433  200 2519
2013/05/15 20:00:06.23 le 4.08 w    33.658 -118.372   1.2 A 15343145   78 2408
2013/05/29 14:38:03.27 le 4.80 w    34.413 -119.926   8.0 A 15350729   39 2500
2013/07/24 16:46:02.63 le 4.29 l    35.486 -118.287   6.6 A 11339042  124 2459
2013/08/25 18:50:28.71 le 4.20 w    35.480 -118.285   2.3 A 15396881  120 2312

# Number of events: 724
```

Newhall Land and Farming Company
October 31, 2013
2004-700-052(R2)

APPENDIX B

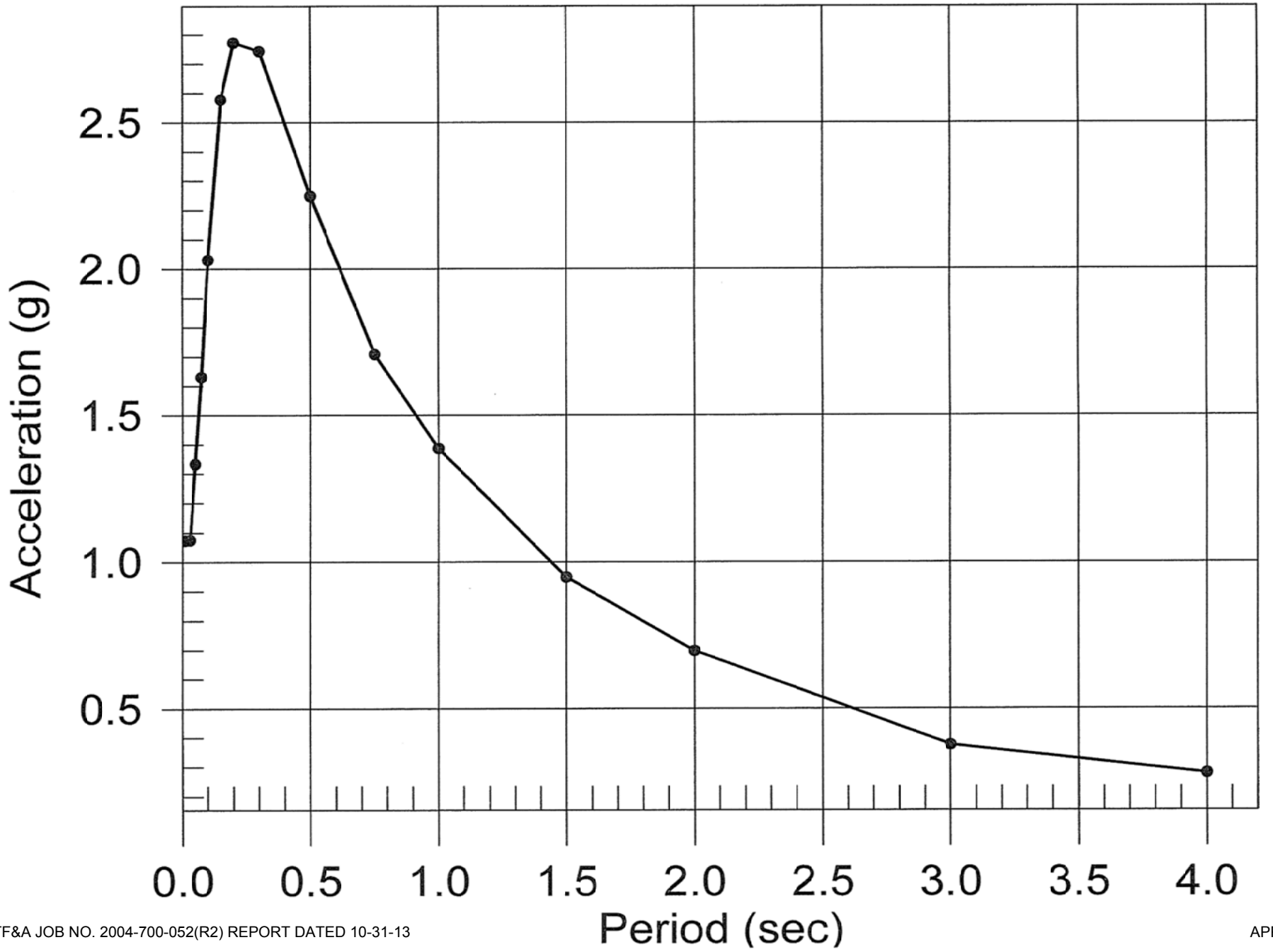
PROBABILISTIC EARTHQUAKE HAZARD ANALYSES

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

Campbell (1997 Rev.) Alluvium, 5% Damping

ACCELERATION vs. PERIOD

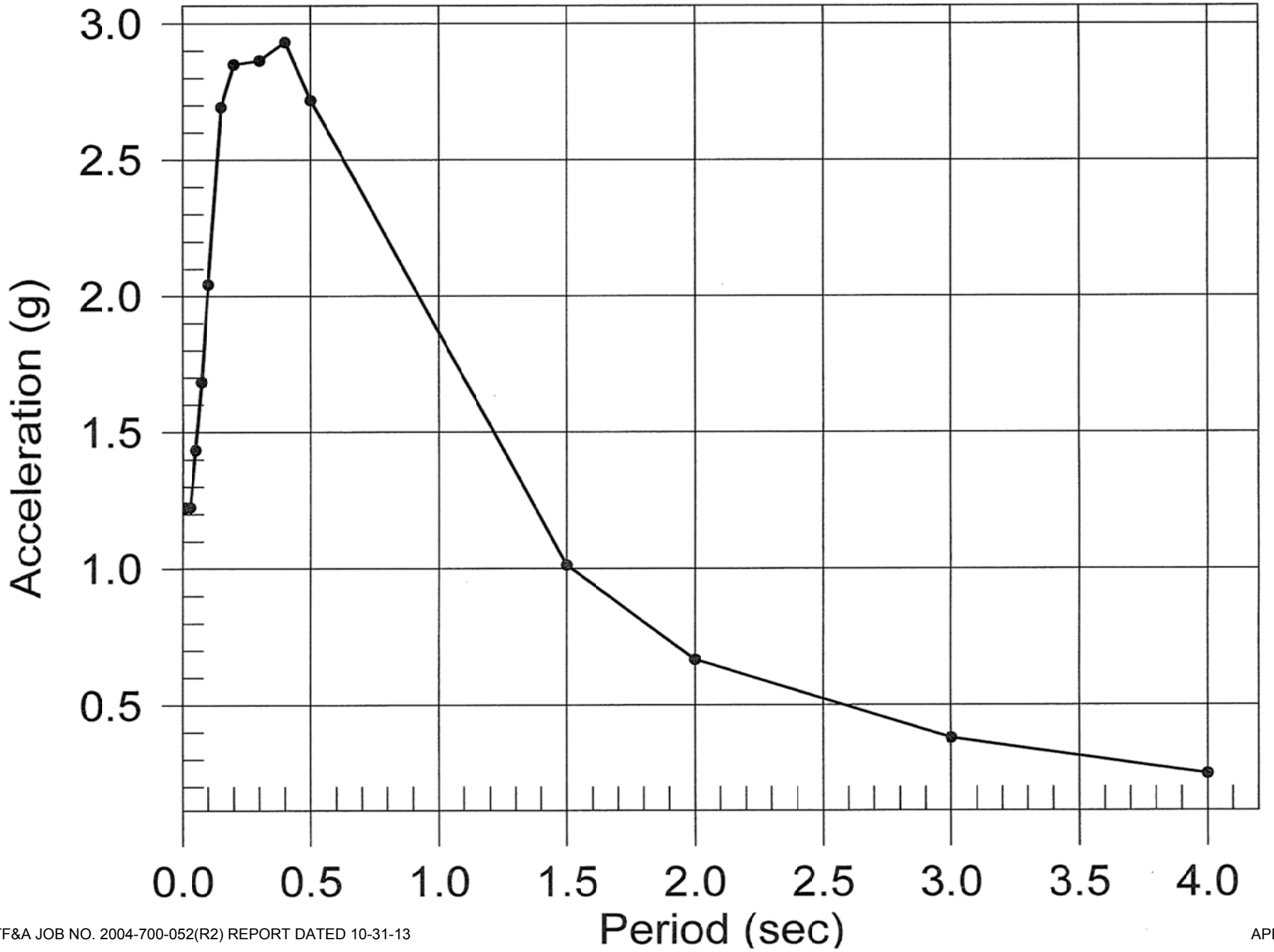
2475-Year Return Period



Boz, Campbell, Niaz (1999) Holocene, 5% Damping

ACCELERATION vs. PERIOD

2475-Year Return Period



Newhall Land and Farming Company
October 31, 2013
2004-700-052(R2)

APPENDIX C

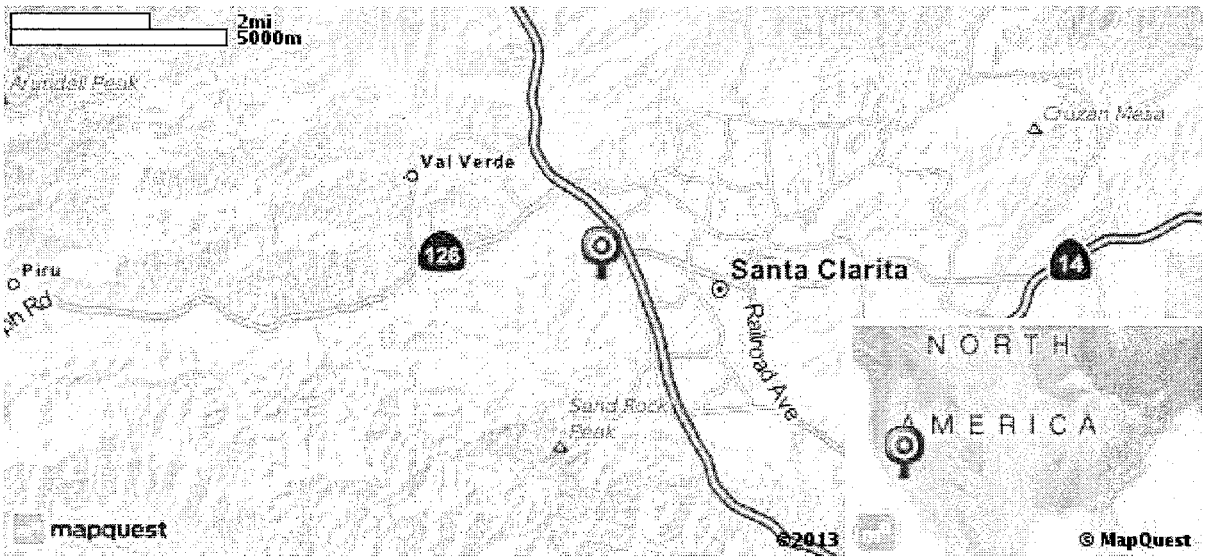
CBC SEISMIC DESIGN

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

USGS Design Maps Summary Report

User–Specified Input

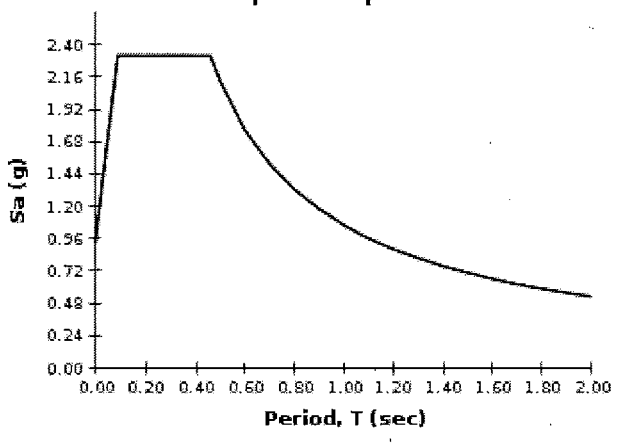
Report Title	2004-700-052 Thu December 5, 2013 16:53:03 UTC
Building Code Reference Document	ASCE 7-05 Standard (which utilizes USGS hazard data available in 2002)
Site Coordinates	34.4156°N, 118.5917°W
Site Soil Classification	Site Class D – "Stiff Soil"
Occupancy Category	I/II/III



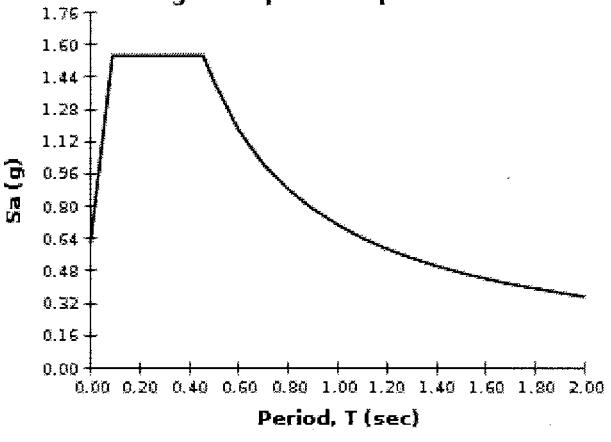
USGS–Provided Output

S_S =	2.318 g	S_{MS} =	2.318 g	S_{DS} =	1.545 g
S_1 =	0.707 g	S_{M1} =	1.060 g	S_{D1} =	0.707 g

MCE Response Spectrum



Design Response Spectrum



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USGS Design Maps Detailed Report

ASCE 7-05 Standard (34.4156°N, 118.5917°W)

Site Class D – "Stiff Soil", Occupancy Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Maps in the 2005 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1[1]	S_s = 2.318 g
From Figure 22-2[2]	S_1 = 0.707 g

Section 11.4.2 — Site Class

SITE CLASS	SOIL PROFILE NAME	Soil shear wave velocity, $\bar{v}_s$, (ft/s)	Standard penetration resistance, $\bar{N}$	Soil undrained shear strength, $\bar{s}_u$, (psf)
A	Hard rock	$\bar{v}_s$ > 5,000	N/A	N/A
B	Rock	2,500 < $\bar{v}_s$ ≤ 5,000	N/A	N/A
C	Very dense soil and soft rock	1,200 < $\bar{v}_s$ ≤ 2,500	$\bar{N}$ > 50	>2,000 psf
D	Stiff soil profile	600 ≤ $\bar{v}_s$ < 1,200	15 ≤ $\bar{N}$ ≤ 50	1,000 to 2,000 psf
E	Stiff soil profile	$\bar{v}_s$ < 600	$\bar{N}$ < 15	<1,000 psf
E	—	Any profile with more than 10 ft of soil having the characteristics: 1. Plasticity index *PI* > 20, 2. Moisture content *w* ≥ 40%, and 3. Undrained shear strength $\bar{s}_u$ < 500 psf		
F	—	Any profile containing soils having one or more of the following characteristics: 1. Soils vulnerable to potential failure or collapse under seismic loading such as liquefiable soils, quick and highly sensitive clays, collapsible weakly cemented soils. 2. Peats and/or highly organic clays (*H* > 10 feet of peat and/or highly organic clay where *H* = thickness of soil) 3. Very high plasticity clays (*H* > 25 feet with plasticity index *PI* > 75) 4. Very thick soft/medium stiff clays (*H* > 120 feet)		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Adjusted Maximum Considered Earthquake (MCE) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_S

For Site Class = D and S_S = 2.318 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.707 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 2.318\ g = 2.318\ g$

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 0.707\ g = 1.060\ g$

Section 11.4.4 — Design Spectral Acceleration Parameters

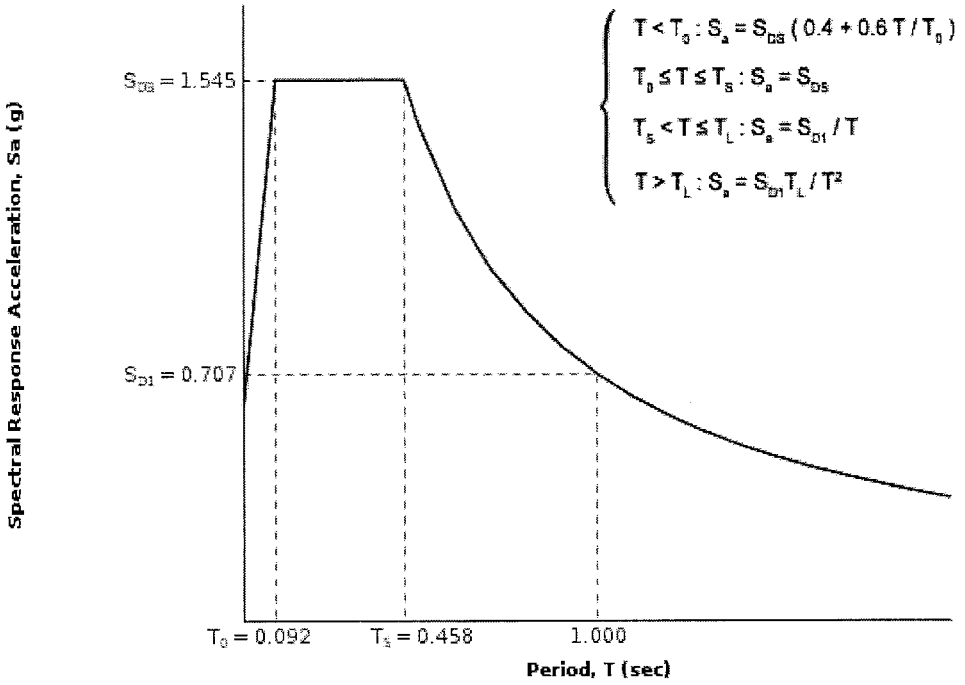
Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 2.318\ g = 1.545\ g$

Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.060\ g = 0.707\ g$

Section 11.4.5 — Design Response Spectrum

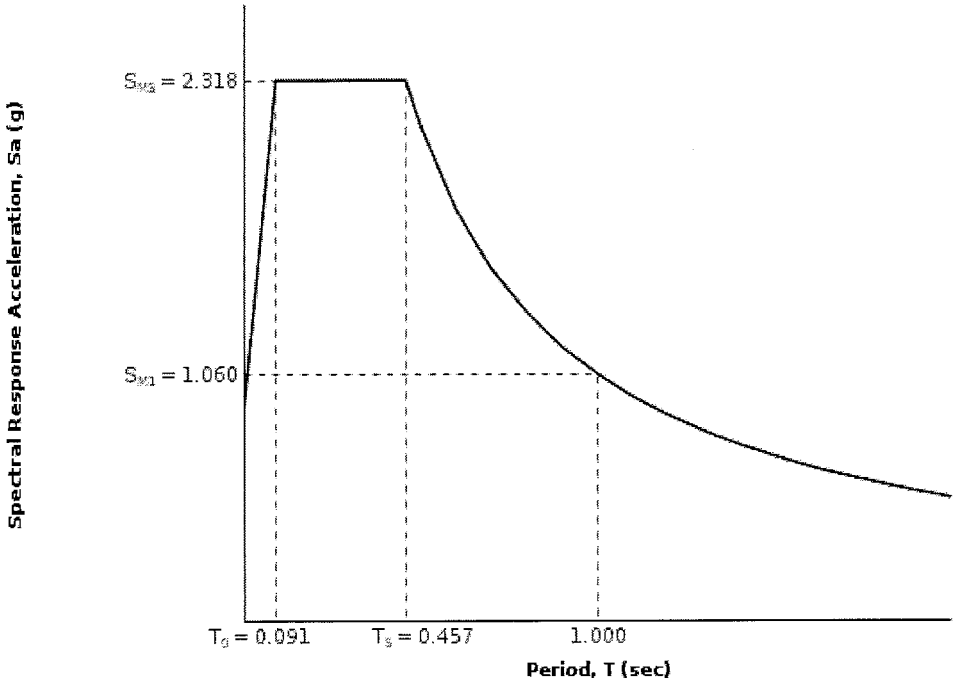
From Figure 22-15[3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Maximum Considered Earthquake (MCE) Response Spectrum

The MCE Response Spectrum is determined by multiplying the design response spectrum by 1.5.



Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	OCCUPANCY CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Occupancy Category = I and S_{DS} = 1.545 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	OCCUPANCY CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Occupancy Category = I and S_{D1} = 0.707 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Occupancy Categories I, II, and III, and **F** for those in Occupancy Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/ASCE7-2005-Figure22-01.pdf
2. *Figure 22-2*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/ASCE7-2005-Figure22-02.pdf
3. *Figure 22-15*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/ASCE7-2005-Figure22-15.pdf

USGS Design Maps Summary Report

User-Specified Input

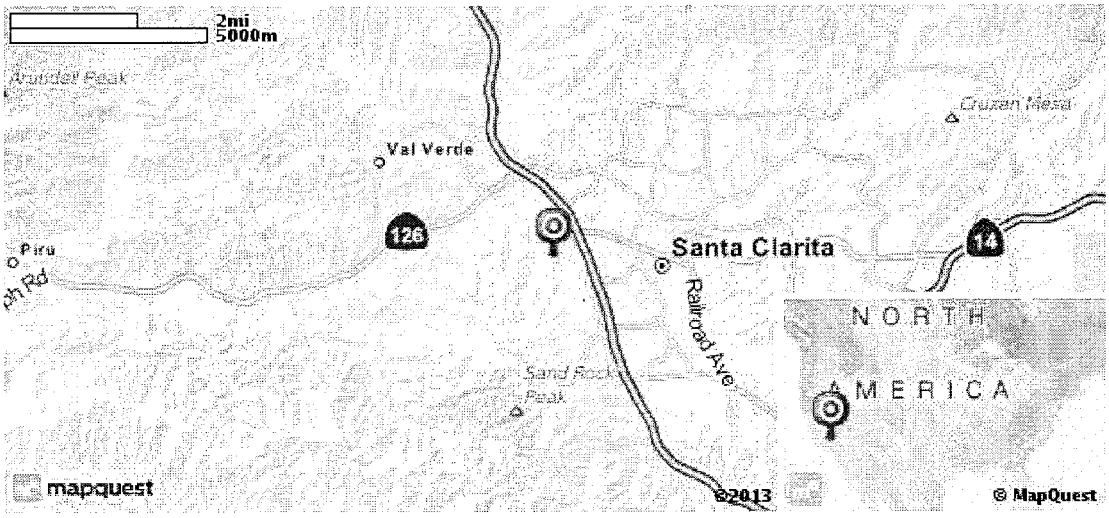
Report Title 2004-700-052
Wed December 4, 2013 23:37:37 UTC

Building Code Reference Document ASCE 7-10 Standard
(which utilizes USGS hazard data available in 2008)

Site Coordinates 34.4156°N, 118.5917°W

Site Soil Classification Site Class D – "Stiff Soil"

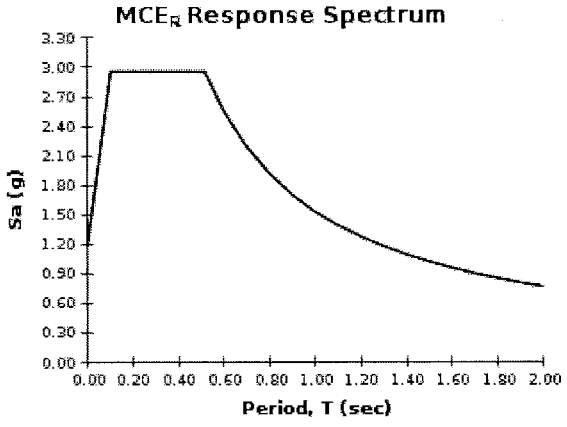
Risk Category I/II/III

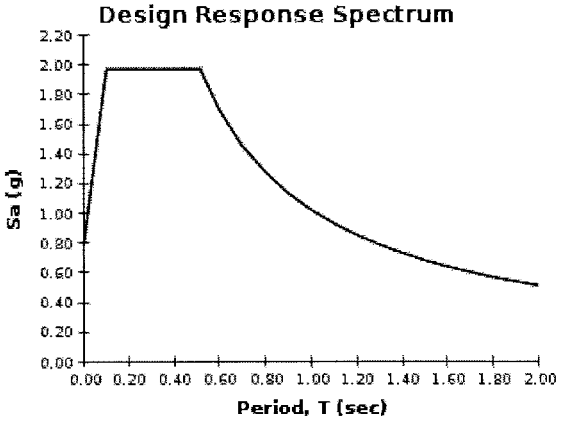


USGS-Provided Output

S_S =	2.954 g	S_{MS} =	2.954 g	S_{DS} =	1.969 g
S_1 =	1.021 g	S_{M1} =	1.532 g	S_{D1} =	1.021 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

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USGS Design Maps Detailed Report

ASCE 7-10 Standard (34.4156°N, 118.5917°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_s) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1[1] $S_s = 2.954$ g

From Figure 22-2[2] $S_1 = 1.021$ g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \le 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \ge 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_S

For Site Class = D and S_S = 2.954 g, F_a = 1.000

Table 11.4-2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \le 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \ge 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 1.021 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 2.954 = 2.954$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 1.021 = 1.532$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

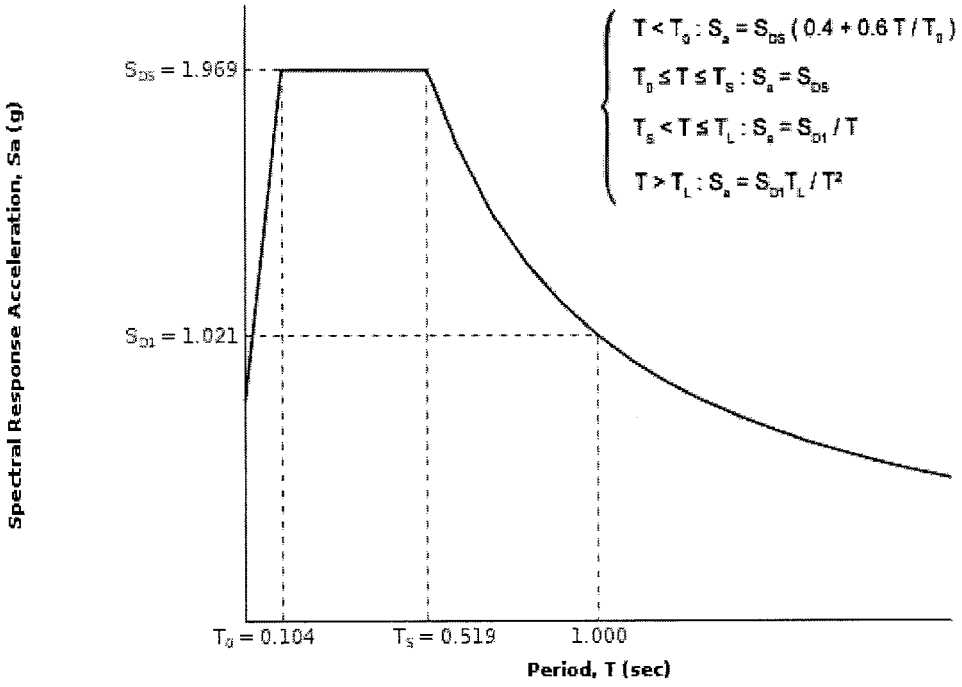
Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 2.954 = 1.969$ g

Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.532 = 1.021$ g

Section 11.4.5 — Design Response Spectrum

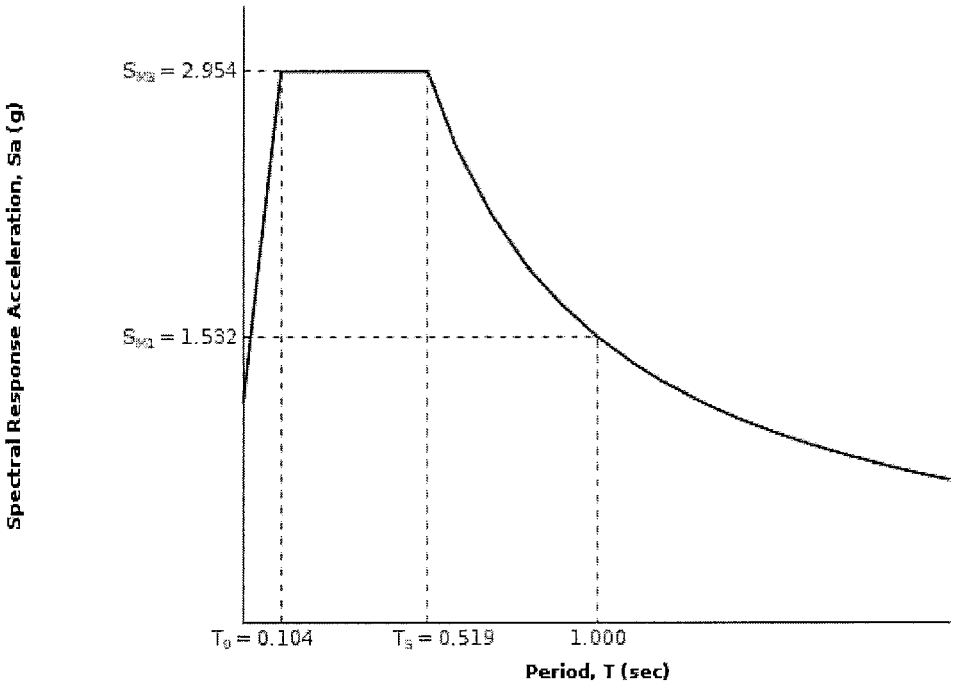
From Figure 22-12[3] $T_L = 8$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7[4] PGA = 1.077

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 1.077 = 1.077$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = D and PGA = 1.077 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17[5] C_{RS} = 0.955

From Figure 22-18[6] C_{R1} = 0.973

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.969 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 1.021 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

Appendix 5.6B

100-Scale Plan Review for Vesting Tentative Tract Map No. 53295

R.T. Frankian & Associates

September 16, 2013

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

September 16, 2013

Newhall Land and Farming Company
25124 Springfield Court, Suite 300
Valencia, California 91355

Job No. 2004-700-021

Attention: Mr. Miles Helfrich

Subject: 100-Scale Plan Review
Revised Vesting Tentative Tract Map No. 53295
Entrada South
Los Angeles County, California

References: See attached References

Ladies and Gentlemen:

We are pleased to present this 100-scale plan review for revisions to Vesting Tentative Tract Map No. 53295 (VTTM 53295), Entrada South, in Los Angeles County, California. The revised tentative tract map was prepared by Alliance Land Planning & Engineering, Inc. (Alliance) and is dated June 24, 2013. This map was used as a base for our Geotechnical Map, attached as Figures 1.1 through 1.5. The purpose of this report is to evaluate proposed revisions to VTTM 53295 and provide geotechnical recommendations as required. This review supplements and updates previous R. T. Frankian & Associates (RTF&A) reports for this site (RTF&A, 2005; 2007; 2008; 2009a; and 2010). Geologic and geotechnical conditions on-site were addressed in our previous reports and remain unchanged. Conclusions and recommendations in our previous reports remain applicable except as updated or changed by this report.

The proposed grading depicted on the VTTM 53295 map extends westerly into adjacent VTTM 61105. Geologic conditions within adjacent VTTM 61105 were addressed by RTF&A in

our 2009 VTTM 61105 geotechnical report (2009b). Additionally, we have reviewed the Leighton and Associates, Inc. (Leighton) bulk grading plan geotechnical review report for VTTM 61105 (Leighton, 2012), relative to geologic and geotechnical conditions adjacent to VTTM 53295. The conclusions and recommendations presented in these reports, where applicable to proposed VTTM 53295 grading, are incorporated into our VTTM 53295 conclusions and recommendations. The geologic units mapped within VTTM 61105 are depicted on Figures 1.2 and 1.3 of our Geotechnical Map.

PROPOSED DEVELOPMENT

VTTM 53295 covers a total area of approximately 382 acres and includes 500 lots. The site is bounded by Magic Mountain Theme Park (Parcel Map 12337) on the north, VTTM 61105 on the west, Tract No. 45433 (Westridge) on the south, and The Old Road on the east. VTTM 53295 is divided into planning areas (PA), designated as PA1-3 and PA-4 through PA-14. The PA boundaries are shown on Figure 1.1 The uses for the various planning areas include residential (PA-4 through PA-7 and PA-9 through PA-13), commercial/retail (PA-3 and PA-14), and a school and park site (PA-8).

Development will include extensions to Magic Mountain Parkway, Westridge Parkway, and Commerce Center Drive, as well as construction of numerous interior streets and associated utilities. The VTTM 53295 grading for Westridge Parkway and Commerce Center Drive will extend into adjacent VTTM 61105, and result in a temporary condition that would exist between the grading of VTTM 53295 and the completion of grading for VTTM 61105. Consequently, most of the cut slopes west of VTTM 53295, depicted on the Alliance plan, will be modified or eliminated at the conclusion of the VTTM 61105 grading. Additionally, an "Offsite Grading/Borrow Site" (depicted on Detail "B" of Figure 1.2) is planned within VTTM 61105. The borrow site grading will also result in a temporary condition until bulk grading proceeds for VTTM 61105.

VESTING TENTATIVE TRACT MAP REVISIONS

The majority of the revisions to the vesting tentative tract map are related to the grade adjustments within most of the Planning Areas and reconfiguration of streets and lot lines within the single-family residential Planning Areas (PA-5, PA-6 and PA-7). The tentative tract map revisions include:

Sheet 3 (Figure 1.3)

- Building pads raised approximately 2 feet in PA-4, PA-8, PA-9, and PA-10
- Building pads in PA-5, PA-6, and PA-7 raised approximately 2 to 6 feet
- Lot lines and streets in PA-5, PA-6, and PA-7 reconfigured

Sheet 4 (Figure 1.4)

- Inclusion of drainage channel and desilting basin in canyon between PA-7 and PA-13
- Inclusion of bio basins in canyon between PA-10 and PA-11
- Building pad raised approximately 2 feet in PA-12
- Building pad raised approximately 2 to 13 feet in PA-13

Sheet 5 (Figure 1.5)

- Realignment of Westridge Parkway

SCOPE OF WORK

The scope of work for this plan review included:

- reviewing and analyzing previous RTF&A reports covering previous versions of the VTTM 53295;
- preparing a revised Geotechnical Map, attached as Figures 1.1 through 1.5;
- revising Geologic Sections G-G' and FF-FF', attached as Figure 2;
- constructing new Geologic Sections II-II' through OO-OO', attached as Figure 2;
- evaluating proposed revisions to the grading plan with respect to slope stability; and
- preparing this report and accompanying illustrations.

SLOPE STABILITY

GENERAL

The revised vesting tentative tract map for VTTM 53295 will include grading of 37 cut slopes. Twelve of the cut slopes (Cut Slopes CS-1 through CS-12) were previously addressed in our prior VTTM 53295 reports (RTF&A, 2005; 2007; 2008; 2009a, and 2010). Details specific to all proposed cut slopes, including anticipated geologic conditions and recommended mitigation of potential slope instability, are presented on Table 1. For the purposes of this report, only cut slopes not previously addressed in our prior reports, or in which the grading revisions or conditions are substantially different, are discussed in the following sections.

GEOLOGIC FACTORS

Cut slopes proposed for the site are primarily underlain by bedrock of the Saugus Formation. Terrace deposits will be exposed in a few of the cut slopes. The Saugus Formation can range from massive to thinly bedded sedimentary rock units of sandstone, conglomerate, siltstone, and claystone/mudstone. Bedding planes within the Saugus Formation are poorly to moderately well developed, and can constitute significant planes of weakness, particularly where sandstone/conglomerate beds are in contact with siltstone or claystone. Where bedding is adversely oriented, or "daylighted," with respect to natural or cut slopes, potential for bedding plane, or "block-glide," failure exists.

The terrace deposits primarily consist of weakly to moderately cemented, massive to thickly bedded sand, silty sand, and gravel. Bedding observed within the terrace deposits is poorly developed and not well-defined.

STABILITY ANALYSES

Slope stability analyses were performed using the program Slope/W by GEO-SLOPE International Ltd., which utilized Bishop's Simplified Method or Spencer's Method.

SHEAR STRENGTH PARAMETERS

As part of the evaluation of shear strength parameters to be used in slope stability calculations, the referenced reports concerning the subject site were reviewed. A discussion of the geologic factors affecting slope stability, the shear strength parameters, and the stability methods used in the analyses were previously presented in RTF&A reports for VTTM 53295 (2005, 2007, and 2008) and by AES (2004c) for VTTM 61105. Presented below are the recommended shear strengths for use at the subject site.

SUMMARY OF SHEAR STRENGTH PARAMETERS

Material	Static Cohesion (psf)	Static Ø (degrees)
Landslide Failure Plane Material	200	18
Terrace Deposit Material	450	27
Entrada Saugus Cross-Bedding	400	30
Mission Village Cross-Bedding	500	35
Saugus Along Bedding (static)	250	22
Saugus Along Bedding (Pseudostatic)	300	30
Compacted Fill	250	29
Alluvium	100	38

GEOTECHNICAL SECTIONS AND ASSUMED CRITICAL FAILURE SURFACE

The analyses were based on subsurface conditions as depicted on the Geotechnical Sections, Figure 3. The existing ground surface, proposed grading scheme, and subsurface geologic structure are shown on the sections. For analyses where the location of a weak bedding plane is unknown or uncertain, one is assumed to be located at the critical location, typically near the toe of the slope. The slope stability analyses did not include the presence of any recommended stability fills, which is conservative. The Geotechnical Sections and Slope Stability Analyses and calculations are presented in Figure 3 and the Appendix, respectively. The results of the slope stability calculations are discussed below.

CUT SLOPE STABILITY

Cut Slope CS-11: The stability of Cut Slope CS-11 (Figure 1.4) was previously addressed in our November 13, 2009 report. However, the 2009 report was based on a topographic base map that has been revised on the latest tentative tract map. The new base map and our Geotechnical Map reflect the non-structural stockpile fill (map unit "sf") not shown on previous Geotechnical Maps. As depicted on our revised Geologic Section FF-FF' (Figure 2), most of the stockpile fill lies above proposed cut grades and will be removed to establish rough grade. However a portion of the stockpile fill will remain once grade is achieved. The stockpile fill has been designated as "non-structural" fill (RTF&A, 2006) It is RTF&A's recommendation that all stockpile fill be removed during grading and areas of stockpile fill removal below rough grade reestablished with certified engineered fill. This will result in an adverse fill-over-cut condition for the north-facing segment of Cut Slope CS-11. RTF&A previously recommended a 15-foot-wide stability fill for CS-11 to control seepage along potentially daylighted bedding. This stability fill, also encompassing the north-facing segment of the cut slope, will eliminate the adverse fill-over-cut condition.

Cut Slope CS-13: Cut Slope CS-13 (Figure 1.3) will consist of a northwest- to northeast-facing, 2:1 cut slope that will attain a height of approximately 50 feet. The cut slope will expose Saugus Formation units in which the underlying bedding strikes northwest and dips 8 to 20 degrees to the northeast. As depicted on Geologic Section JJ-JJ', this bedding orientation is daylighted with respect to the northeast-facing portion of Cut Slope CS-13. Stability analyses performed for potential failure along the adversely oriented bedding indicate that the proposed cut slope meets the minimum County factor of safety requirements of 1.5. The slope stability results are indicated on the Geotechnical Section JJ-JJ' (Figure 3). The slope stability calculations are presented in the Appendix.

The Saugus Formation units within VTTM 53295 are weakly cemented and poorly indurated and could be subjected to erosion and surficial failures. Therefore, it is recommended

that a stability fill slope be constructed. The keyway for the stability fill slope should measure 25 feet wide and 3 feet deep.

Cut Slope CS-14: Cut Slope CS-14 (Figure 1.3) will consist of a northwest- to southwest-facing, 2:1 cut slope that will attain a height of approximately 35 feet. The cut slope will expose Saugus Formation units in which the underlying bedding strikes northwest and dips 8 to 20 degrees to the northeast. As depicted on Geologic Section JJ-JJ', the bedding is favorably oriented with respect to Cut Slope CS-14, and the cut slope is considered grossly stable from a geologic standpoint.

Cut Slope CS-15: Cut Slope CS-15 (Figure 1.2) is planned as a 30-foot-high, north-facing, 2:1 slope. The cut slope is underlain by Saugus Formation units in which the underlying bedding strikes northwest and dips 5 to 15 degrees to the northeast. The bedding is favorably oriented with respect to the north-facing cut slope, and the slope is considered grossly stable from a geologic standpoint.

Cut Slope CS-16: Cut Slope CS-16 (Figure 1.2) will consist of a north- to northeast-facing, 2:1 cut slope that will attain a height of approximately 50 feet. The cut slope is underlain by Saugus Formation units in which the bedding strikes northwest and dips 15 degrees to the northeast. As depicted on Geologic Section II-II', this bedding is daylighted with respect to the northeast-facing portion of the cut slope. Stability analyses performed for potential failure along the adversely oriented bedding indicate that the proposed cut slope meets the minimum County factor of safety requirements of 1.5. The slope stability results are indicated on the Geotechnical Section II-II' (Figure 3). The slope stability calculations are presented in the Appendix.

A stability fill slope with keyway measuring 25 feet wide and 3 feet deep is recommended for Cut Slope CS-16, to control erosion and seepage along bedding planes.

Cut Slope CS-17: Cut Slope CS-17 (Figure 1.2) will be graded as a 15-foot-high, southeast-facing, 2:1 slope. The cut slope will expose Saugus Formation units in which the underlying bedding strikes northwest and dips 13 to 15 degrees to the northeast, and is favorably oriented with respect to the southeast-facing cut slope.

Cut Slope CS-18: Cut Slope CS-18 (Figure 1.3) will consist of a northwest- to southwest-facing, 2:1 cut slope that will attain a maximum height of 15 feet. Saugus Formation units will be exposed in the cut slope, with the bedding observed in these units striking northwest and dipping 8 to 15 degrees to the northeast. This bedding orientation is considered favorable with respect to the northwest- and southwest-facing cut slope.

Cut Slopes CS-19 and CS-20: Cut Slopes CS-19 and CS-20 (Figure 1.3) will be graded as west-facing, 2:1 slopes to heights of 20 and 30 feet, respectively. The slopes are underlain by Saugus Formation units in which the underlying bedding strikes northwest and dips 10 to 12 degrees to the northeast. The bedding is favorably oriented with respect to the west-facing cut slopes, and the slopes are considered grossly stable from a geologic standpoint.

Cut Slope CS-21: Cut Slope CS-21 (Figure 1.3) will consist of a northwest-facing, 2:1 cut slope that will attain a height of approximately 40 feet. The cut slope is underlain by Saugus Formation units in which the bedding strikes northwest and dips 15 degrees to the northeast. As depicted on Geologic Section G-G', an 8-degree bedding component is daylighted with respect to Cut Slope CS-21. Stability analyses performed for potential failure along the adversely oriented bedding indicate that the proposed cut slope meets the minimum County factor of safety requirements of 1.5. The slope stability results are indicated on the Geotechnical Section G-G' (Figure 3). The slope stability calculations are presented in the Appendix.

A stability fill slope with keyway measuring 25 feet wide and 3 feet deep is recommended for Cut Slope CS-21, to control erosion and seepage along bedding planes.

Cut Slope CS-22: Cut Slope CS-22 (Figure 1.3) will consist of a west-, northwest-, and southwest-facing, 2:1 cut slope that will attain a maximum height of 60 feet. Saugus Formation units will be exposed in the cut slope, with the bedding observed in these units striking northwest and dipping 8 to 15 degrees to the northeast. This bedding orientation is considered favorable with respect to Cut Slope CS-22.

It is recommended that a stability fill slope be constructed for the northerly facing, daylighted portion of the cut slope to control erosion. The keyway for the stability fill slope should measure 30 feet wide and 3 feet deep.

Cut Slopes CS-23 and CS-24: Cut Slopes CS-23 and CS-24 (Figure 1.3) will be graded as west- and southwest-facing, respectively, 2:1 cut slopes. Cut Slope CS-23 will attain a height of approximately 20 feet; Cut Slope CS-24 will be approximately 15 feet high. The slopes are underlain by Saugus Formation units in which the underlying bedding strikes northwest and dips 15 degrees to the northeast. The bedding is favorably oriented with respect to the two cut slopes, and the slopes are considered grossly stable from a geologic standpoint.

Cut Slope CS-25: Cut Slope CS-25 (Figure 1.3) will be graded as an east-facing, 2:1 slope to an approximate height of 30 feet. The cut slope will encounter terrace deposits in which the underlying bedding dips 8 degrees to the northeast. This bedding orientation is considered favorable with respect to Cut Slope CS-25.

Cut Slope CS-26: Cut Slope CS-26 (Figure 1.3) will be graded as a north-facing, 2:1 slope to an approximate height of 35 feet. The cut slope will encounter terrace deposits in which the underlying bedding dips 8 degrees to the northeast. This bedding orientation is considered favorable with respect to Cut Slope CS-26.

Cut Slope CS-27: Cut Slope CS-27 (Figure 1.3) will consist of a north- to northeast-facing, 2:1 cut slope that will attain a height of approximately 30 feet. The cut slope is underlain by Saugus Formation units in which the bedding strikes northwest and dips 10 to 15 degrees to the northeast. As depicted on Geologic Section KK-KK', this bedding is daylighted with respect to the northeast-facing portion of the cut slope. Stability analyses performed for potential failure along the adversely oriented bedding indicate that the proposed cut slope meets the minimum County factor of safety requirements of 1.5. The slope stability results are indicated on the Geotechnical Section KK-KK' (Figure 3). The slope stability calculations are presented in the Appendix.

A stability fill slope with keyway measuring 20 feet wide and 3 feet deep is recommended for Cut Slope CS-16, to control erosion and seepage along bedding planes.

Cut Slope CS-28: Cut Slope CS-28 (Figure 1.4) will consist of a 2:1 fill-over-cut slope in which the exposed cut materials will be Saugus Formation and terrace deposits. The cut portion of the slope will face northwest and attain a height of approximately 40 feet. Bedding in the Saugus Formation and terrace deposits strikes northwest and dips 11 and 8 degrees, respectively, to the northeast. This bedding orientation is considered favorable with respect to Cut Slope CS-28.

A stability fill slope is recommended for the cut slope to eliminate the adverse fill-over-cut condition. The keyway for the stability fill should be 25 feet wide and 3 feet deep.

Cut Slope CS-29: Cut Slope CS-29 (Figure 1.4) will be graded as an east-facing, 45-foot-high, 2:1 cut slope above a future bio-basin. The cut slope will expose terrace deposits and a surficial failure. Bedding observed in the terrace deposits strikes northwest and dips 3 to 14 degrees to the northeast. As depicted on Geologic Section LL-LL' (Figure 2), a 9-degree bedding component will be daylighted in the cut slope. Stability analyses performed for potential failure along the adversely oriented bedding indicate that the proposed cut slope meets the minimum County factor of safety requirements of 1.5. The slope stability results are indicated on the Geotechnical Section LL-LL'' (Figure 3). The slope stability calculations are presented in the Appendix.

The surficial failure should be removed during grading of the cut slope. A stability fill slope with keyway measuring 25 feet wide and 3 feet deep should be constructed to restore slope grades following removal of the surficial failure, and to control erosion and seepage along the daylighted bedding planes.

Cut Slope CS-30: Cut Slope CS-30 (Figure 1.4) is planned as a 25-foot-high, north- to northeast-facing, 2:1 cut slope that will be capped by engineered fill. The north-facing portion of the cut slope will expose alluvial deposits and, to a lesser extent, terrace deposits; the northeast-facing portion will expose alluvial deposits. Bedding in the terrace deposits strikes northwest

and dips 3 to 14 degrees to the northeast. This bedding is favorably oriented with respect to the terrace deposits exposed in the north-facing portion of the cut slope.

A stability fill slope is recommended for the entire cut slope to eliminate an adverse fill-over-cut condition and to control erosion of the alluvial deposits. The keyway for the stability fill should be 20 feet wide and 3 feet deep.

Cut Slope CS-31: Cut Slope CS-31 (Figure 1.4) will consist of a north-, northeast-, and northwest-facing, 2:1 slope that will attain a maximum height of approximately 30 feet. The cut slope is underlain by Saugus Formation units in which the bedding strikes northwest and dips 3 to 14 degrees to the northeast. This bedding orientation will be daylighted with respect to the north-facing portion of the cut slope (see Geologic Section NN-NN', Figure 2). Based on data from nearby Boring B-1, it is anticipated that the bedding exposed in the cut slope will dip 11 degrees. Stability analyses performed for potential failure along the adversely oriented bedding indicate that the proposed cut slope meets the minimum County factor of safety requirements of 1.5. The slope stability results are indicated on the Geotechnical Section NN-NN' (Figure 3). The slope stability calculations are presented in the Appendix.

A stability fill slope with keyway measuring 20 feet wide and 3 feet deep is recommended for Cut Slope CS-31, to control erosion and seepage along bedding planes.

Cut Slope CS-32: Cut Slope CS-32 (Figure 1.4) will be graded as a 20-foot-high, west-facing, 2:1 cut slope that will expose Saugus Formation units. Bedding in the Saugus Formation strikes north to northwest and dips 2 to 14 degrees to the east and northeast. This bedding orientation is favorable with respect to the west-facing cut slope.

Cut Slope CS-33: Cut Slope CS-33 (Figure 1.4) will consist of a 40-foot-high, southeast-facing, 2:1 cut slope capped by engineered fill. The cut slope will expose Saugus Formation units in which the bedding strikes north to northwest and dips 2 to 14 degrees to the east and northeast. This bedding orientation is favorable with respect to the southeast-facing cut slope.

A stability fill slope is recommended for the entire cut slope to eliminate an adverse fill-over-cut condition. The keyway for the stability fill should be 25 feet wide and 3 feet deep.

Cut Slope CS-34: Cut Slope CS-34 (Figure 1.4) will be graded as a north- to northeast-facing, 45-foot-high, 2:1 cut slope. The cut slope will expose Saugus Formation units and alluvial deposits. Bedding observed in the Saugus Formation strikes north to northwest and dips 3 to 5 degrees to the northeast. As depicted on Geologic Section MM-MM' (Figure 2), the bedding will be daylighted in the cut slope. Due to the flat-lying bedding orientation, the cut slope is considered grossly stable from a geologic standpoint.

A stability fill slope with keyway measuring 25 feet wide and 3 feet deep should be constructed to control erosion of the alluvial deposits and seepage along the daylighted bedding planes.

Cut Slope CS-35: Cut Slope CS-35 (Figure 1.3) is planned as a west-facing, 2:1 slope that will attain a maximum height of approximately 30 feet. Saugus Formation units will be exposed in the cut slope, with the bedding observed in these units striking northwest and dipping 10 to 20 degrees to the northeast. This bedding orientation is considered favorable with respect to Cut Slope CS-35.

Cut Slopes CS-36 and CS-37: Cut Slopes CS-36 and CS-37 will consist of 5:1 slopes that will be graded within the offsite borrow area (Figure 1.2, Detail "B") of VTTM 61105. Cut Slope CS-36 will be graded to a height of 40 feet and will face east to southeast. Cut Slope CS-37 is planned to a height of approximately 50 feet and will face north to northeast. Both cut slopes will expose Saugus Formation units; landslide Qls XXV will also be exposed in Cut Slope CS-36. Bedding in the Saugus Formation strikes 18 to 26 degrees to the northeast. This bedding is favorable with respect to both cut slopes due to either the slope face orientation (CS-36) or the steepness of the dip relative to the 5:1 (11-degree) cut slope gradient.

A portion of Qls XXV will likely be exposed along the eastern edge of Cut Slope CS-36. This cut slope is temporary and will be eliminated, and the landslide removed, during bulk

grading of VTTM 61105 (Leighton, 2012). Therefore, no landslide mitigation is recommended for the VTTM 53295 offsite grading.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

Based on our previous plan review reports and analyses completed as part of this work, revisions to VTTM 53295 are feasible and may be graded as proposed. Except as modified herein, conclusions and recommendations from RTF&A 2005, 2007, 2008, 2009a, and 2010 reports are applicable and should be implemented during the design and construction phases of this project.

NON-STRUCTURAL STOCKPILE FILL

An existing stockpile fill is located within portions of PA-12 and PA-13 (see Figure 1.4). This stockpile fill (map unit "sf") was created on a former oil well pad to accommodate excess fill material generated during excavation for relocation of the Chevron Service Station, located at the southwest corner of the intersection of Magic Mountain Parkway and The Old Road. Placement of the stockpile fill was observed and tested by RTF&A in accordance with the requirements of the Los Angeles County Department of Public Works. These requirements included construction of a subdrain at the base of the fill and compaction of the fill materials to 85 percent. The results of RTF&A's observation and testing were presented in our May 5, 2006 report (RTF&A, 2006). The stockpile fill soils are not considered suitable for structural support, and are considered "non-structural" fill. Therefore, prior to performing earthwork within VTTM 53295, these fill materials and the existing subdrain should be removed. It is anticipated that most of the stockpile fill lies within future cut areas and will be removed as part of excavation to establish pad grade. The excavated stockpile fill materials may be re-used for construction of engineered fills on-site.

SECTION 111 STATEMENT

Based on the findings summarized in this submittal, it is our professional opinion that the proposed grading, as depicted on revised VTTM 53295 plans, and any future structures at the site will be safe from the hazards of landslide, settlement, or slippage. Furthermore, the proposed site grading will not adversely affect adjacent properties. This statement assumes that the recommendations contained herein and in the Los Angeles County Building Code are followed during design and construction.

CLOSURE

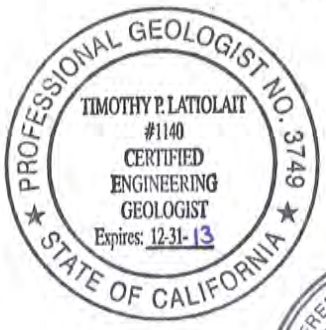
This report was prepared in accordance with generally accepted professional engineering geology and geotechnical engineering principles and practice in southern California at this time. We make no other warranty, either express or implied. Findings and recommendations in this report are based on review of previous work completed on-site. No subsurface exploration or laboratory testing was performed.

We appreciate the opportunity to be of service. Please call if you have questions or would like to discuss this report in more detail.

-oOo-

The following are attached and complete this report.

- References
- Geotechnical Map – Figures 1.1 through 1.5 (in pocket)
- Geologic Sections – Figure 2
- Geotechnical Sections – Figure 3
- Summary of Cut Slopes – Table 1
- Appendix – Slope Stability Analyses



Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

by: Timothy P. Latiolait
Principal Engineering Geologist

and: Alan W. Rasplicka
Principal Geotechnical Engineer

TPL/AWR/eaw

Distribution: (2) Newhall Land and Farming Company
Attn: Mr. Miles Helfrich
(1) Alliance Land Planning & Engineering, Inc
Attn: Mr. Craig Whitteker
(3) County of Los Angeles
(wet-signed, stamped copies and 1 CD of PDF file for submittal to the Geotechnical and Materials Engineering Division)

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

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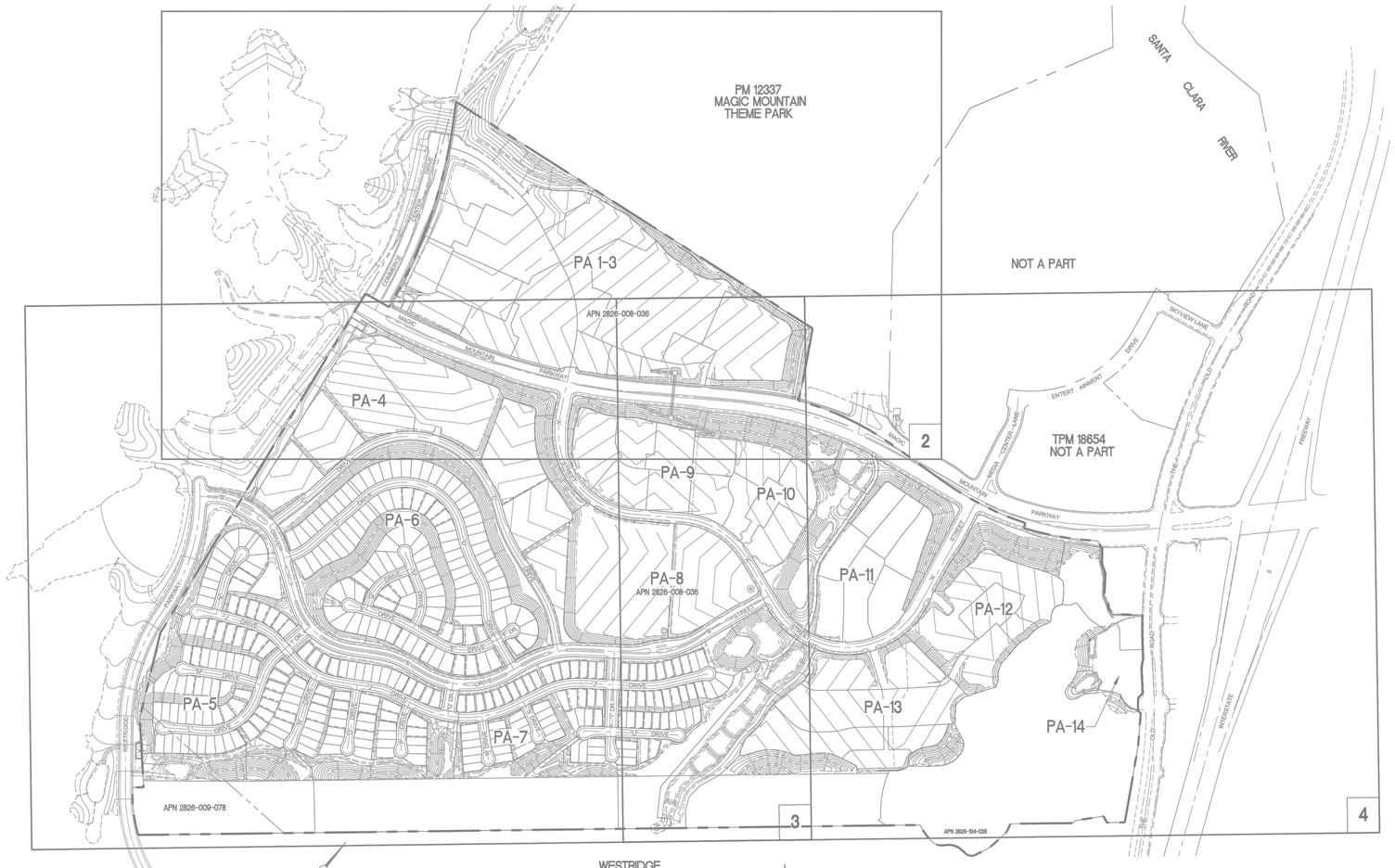
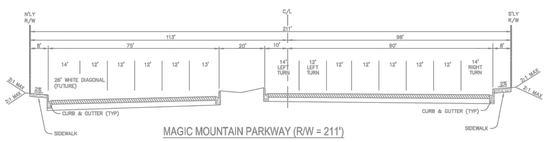


WESTRIDGE
TRACT 45433

2 = SHEET NUMBER

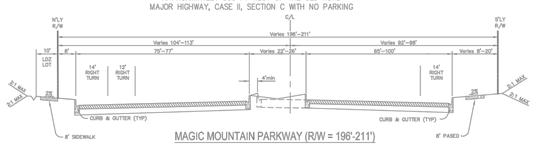
SCALE: 1"=300'

300 150 0 300 600 FEET
1 1/2 0 1 2 INCHES



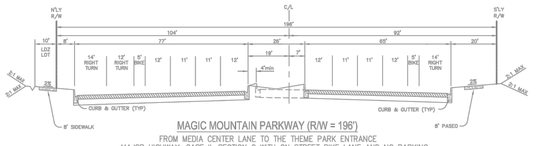
MAGIC MOUNTAIN PARKWAY (R/W = 211')

SECTION TO JOIN PER METROPOINTE IMPROVEMENT PLANS AT APPROXIMATELY 300 FT WEST OF THE OLD ROAD
MAJOR HIGHWAY, CASE II, SECTION C WITH NO PARKING



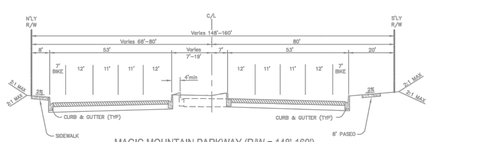
MAGIC MOUNTAIN PARKWAY (R/W = 196'-211')

FROM THE JOIN WITH METROPOINTE IMPROVEMENTS TO MEDIA CENTER LANE
MAJOR HIGHWAY, CASE II, SECTION C WITH NO PARKING



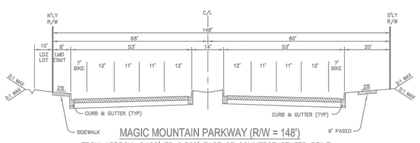
MAGIC MOUNTAIN PARKWAY (R/W = 196')

FROM MEDIA CENTER LANE TO THE THEME PARK ENTRANCE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING



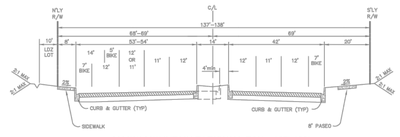
MAGIC MOUNTAIN PARKWAY (R/W = 148'-160')

FROM THE THEME PARK ENTRANCE TO APPROX. 2,300' EAST OF COMMERCE CENTER DRIVE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING



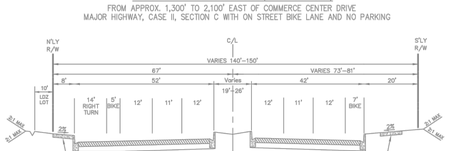
MAGIC MOUNTAIN PARKWAY (R/W = 148')

FROM APPROX. 2,100' TO 2,300' EAST OF COMMERCE CENTER DRIVE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING



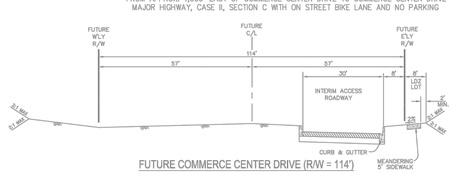
MAGIC MOUNTAIN PARKWAY (R/W = 137'-138')

FROM APPROX. 1,300' TO 2,100' EAST OF COMMERCE CENTER DRIVE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING

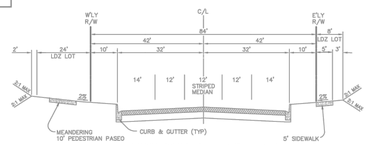


MAGIC MOUNTAIN PARKWAY (R/W = 140'-150')

FROM APPROX. 1,300' EAST OF COMMERCE CENTER DRIVE TO COMMERCE CENTER DRIVE
MAJOR HIGHWAY, CASE II, SECTION C WITH ON STREET BIKE LANE AND NO PARKING

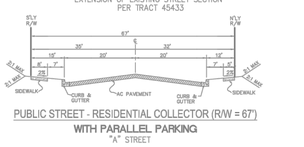


FUTURE COMMERCE CENTER DRIVE (R/W = 114')

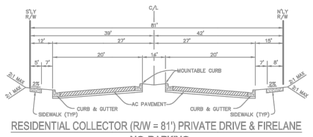


WESTRIDGE PARKWAY (R/W = 84')

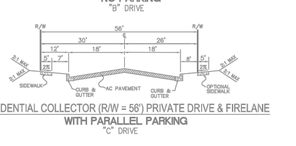
EXTENSION OF EXISTING STREET SECTION PER TRACT 45433



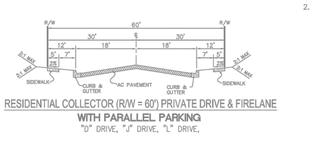
PUBLIC STREET - RESIDENTIAL COLLECTOR (R/W = 67')
WITH PARALLEL PARKING
"A" STREET



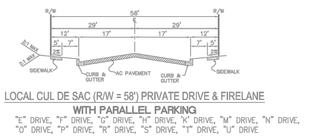
RESIDENTIAL COLLECTOR (R/W = 81') PRIVATE DRIVE & FIRELANE
NO PARKING
"B" DRIVE



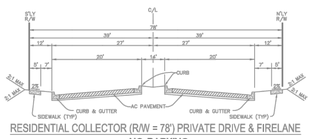
RESIDENTIAL COLLECTOR (R/W = 56') PRIVATE DRIVE & FIRELANE
WITH PARALLEL PARKING
"C" DRIVE



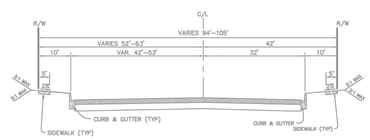
RESIDENTIAL COLLECTOR (R/W = 60') PRIVATE DRIVE & FIRELANE
WITH PARALLEL PARKING
"D" DRIVE, "J" DRIVE, "L" DRIVE,



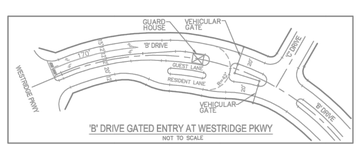
LOCAL CUL DE SAC (R/W = 58') PRIVATE DRIVE & FIRELANE
WITH PARALLEL PARKING
"E" DRIVE, "I" DRIVE, "G" DRIVE, "H" DRIVE, "K" DRIVE, "M" DRIVE, "N" DRIVE, "O" DRIVE, "P" DRIVE, "R" DRIVE, "S" DRIVE, "T" DRIVE, "U" DRIVE



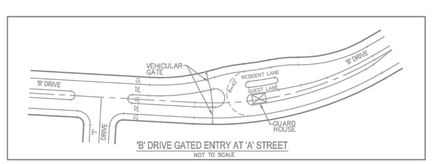
RESIDENTIAL COLLECTOR (R/W = 78') PRIVATE DRIVE & FIRELANE
NO PARKING
"I" DRIVE, "Q" DRIVE, "T" DRIVE (FROM "B" DR. TO "U" DR.)



MEDIA CENTER LANE (R/W = 94'-105')



'B' DRIVE GATED ENTRY AT WESTRIDGE PKWY
NOT TO SCALE



'B' DRIVE GATED ENTRY AT 'A' STREET
NOT TO SCALE

GENERAL NOTES

1. GRADE ELEVATIONS SHOWN ON THE VTM AND THE EXHIBITS MAP ARE APPROXIMATE. THE ELEVATIONS MAY CHANGE BY 3 FEET. ELEVATION CHANGES MAY BE GREATER THAN 3 FEET BUT ONLY IF DETERMINED BY DPW AND DRP. THAT THE REVISIONS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL.
2. LOT LINES CAN BE ADJUSTED TO THE SATISFACTION OF DRP PROVIDED NO ADDITIONAL DEVELOPMENT LOTS ARE CREATED. THE DEGREE OF ADJUSTMENT SHALL BE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP ACT.
3. ALIGNMENT AND GEOMETRICS OF STREETS AND TRAILS ARE APPROXIMATE. ADJUSTMENTS TO TRAILS CAN BE MADE WITH APPROVAL BY DRP AND THE PARKS AND RECREATION DEPARTMENT.
4. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE VTM OR THIS EXHIBIT MAP ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS AND FOOTPRINTS MAY VARY. APPROVAL IS REQUESTED DURING PLOT PLAN REVIEW PROVIDED THE PROPOSED BUILDINGS SATISFY ALL EXISTING CODES AND ORDINANCES. THIS MINOR CHANGE DOES NOT, HOWEVER, INCLUDE:
   A. THE CHANGE IN PROPOSED LAND USE.
   B. A CHANGE OF MORE THAN 5 FEET IN BUILDING HEIGHT.
5. THE RECORDATION OF A "LARGE LOT" PARCEL MAP WHERE ALL PARCELS ARE LARGER THAN 20 ACRES SHALL NOT REQUIRE THE OBLIGATION OF CONSTRUCTING IMPROVEMENTS OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
6. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL NOT REQUIRE THE OBLIGATION OF FEES, DEDICATIONS (E.G., RIGHTS-OF-WAY OR PARKS), EXACTIONS, OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
7. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL BE CONSIDERED THE FILING OF THE FIRST UNIT FOR THE PURPOSE OF TIME EXTENSIONS PURSUANT TO THE SUBDIVISION MAP ACT.
8. PERMISSION IS REQUESTED FOR UNIT PHASING.
9. PERMISSION IS REQUESTED TO COMBINE LOTS.
10. PERMISSION IS REQUESTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
11. PERMISSION IS REQUESTED TO RECORD ADDITIONAL UTILITY LOTS AND PROVIDE MAINTENANCE EASEMENTS TO THE SATISFACTION OF THE DPW AND DRP.
12. THE LOCATIONS OF APPURTENANT STRUCTURES (E.G., PASEOS, PEDESTRIAN BRIDGES, TRANSIT SHELTERS, WATER QUALITY BASINS, ETC.) MAY BE RELOCATED TO THE SATISFACTION OF DPW AND DRP.
13. PERMISSION IS REQUESTED TO RECORD JOINT ACCESS EASEMENTS (20' WIDE) AS LOTS.
14. PERMISSION IS REQUESTED TO MASS GRADE.
15. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LAYOUT AND PLANS.
16. LOCATION OF TRAILS TO BE FINALIZED PRIOR TO FINAL MAP APPROVAL.
17. PERMISSION IS REQUESTED TO PROVIDE RIGHT OF WAY RETURN RADII OF 13 FT AT ALL LOCAL STREET INTERSECTIONS AND 27 FT WHERE ALL PLANNED HIGHWAYS INTERSECT OR WHERE ONE OF THE ROADS SERVES A COMMERCIAL OR INDUSTRIAL DEVELOPMENT.
18. MODIFIED STREET CROSS-SECTIONS AS SHOWN ON VESTING TENTATIVE TRACT MAP ARE REQUESTED. HOWEVER, PERMISSION IS SOUGHT TO CONSTRUCT STANDARD AND ALTERNATE STREET CROSS-SECTIONS AT THE DISCRETION OF THE SUBDIVIDER.
19. ALL DIMENSIONS SHOWN ARE APPROXIMATE.
20. TOPO COMPILED FROM DATA FLOWN 09/11.
21. ADDITIONAL RIGHT OF WAY MAY BE DEDICATED AS REQUIRED TO THE SATISFACTION OF PUBLIC WORKS.
22. RELATED ENTITLEMENTS:
   - TENTATIVE MAP NO. 53295
   - CONDITIONAL USE PERMINT NO. 00-210
   - OAK TREE PERMIT NO. 200700018
   - ZONE CHANGE NO. 00-210
   - PARKING PERMIT NO. 200700013
23. PERMISSION IS REQUESTED TO ALLOW OFFICE & RETAIL SPACE TO BE INTERCHANGEABLE PROVIDED THE REQUIRED PARKING IS SATISFIED.
24. FIRE ACCESS TO BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.
25. MODIFICATIONS OF REQUIRED STREET FRONTAGE IS REQUESTED PER SECTION 21.24.040 OF THE LOS ANGELES COUNTY CODE.
26. GUEST PARKING PROPOSED ON PRIVATE DRIVES PER COUNTY PRIVATE DRIVE MANUAL.
27. PRIVATE DRIVES DESIGNED PER THE COUNTY PRIVATE DRIVE MANUAL.
28. SHARED AND RECIPROCAL PARKING SHOWN PER REQUESTED PARKING PERMIT.
29. WITHIN COMMERCIAL PLANNING AREA 1-3, RESIDENTIAL PLANNING AREAS 4, 9-13 AND COMMERCIAL PLANNING AREA 14 FLEXIBILITY IN FUTURE DESIGN IS PERMITTED, INCLUDING BUT NOT LIMITED TO: CHANGING COMMERCIAL TO OFFICE AND OFFICE TO COMMERCIAL, CHANGING APARTMENTS TO CONDOMINIUMS AND CONDOMINIUMS TO APARTMENTS, CHANGING FROM ATTACHED TO DETACHED UNITS AND DETACHED TO ATTACHED UNITS, CHANGES TO BUILDING TYPES AND LOCATION, LOT CONFIGURATIONS AND RELOCATION OF DRIVEWAYS, DRIVE ENTRIES, DRIVEWAY ALIGNMENT AND OPEN SPACE AND LANDSCAPE AREA LOCATIONS AFFECTED AS A RESULT OF DESIGN CHANGES, PROVIDED THE CHANGES DO NOT EXCEED THE APPROVED TOTAL RESIDENTIAL UNIT COUNT, TOTAL COMMERCIAL/OFFICE SQUARE FOOTAGE AND DOES NOT RESULT IN A REDUCTION OF TOTAL OPEN SPACE. CHANGES SHALL BE DEPICTED ON A REVISED EXHIBIT MAP.
30. THE ABOVE MENTIONED GENERAL NOTES (THAT ADDRESS MINOR MODIFICATION) MAY REQUIRE REVIEW AND APPROVAL OF A REVISED EXHIBIT MAP.
31. PERMISSION REQUESTED TO HAVE REDUCED LOT SIZES (< 5000 SF) AND REDUCED LOT WIDTHS (< 50'). MINIMUM RESIDENTIAL SINGLE-FAMILY LOT SIZE IS 4,000 SF. MINIMUM RESIDENTIAL SINGLE-FAMILY LOT WIDTH(NON-CUDESAC) IS 40'.
32. GRADING OF VTM 53295 MAY BE DONE IN SUB-PHASES OVER TIME BUT SUCH GRADING WILL STILL BE BALANCED WITHIN THE GRADING LIMITS IDENTIFIED ON THE TENTATIVE TRACT MAP. ALL GRADING OF SLOPES WILL BE PERFORMED AS ENGINEERED GRADING. THE LIMIT OF A GRADING SUB-PHASE WILL BE ESTABLISHED TO ACHIEVE A BALANCED EARTHWORK FOR THAT SUB-PHASE AND MAY EXTEND BEYOND THE LIMITS OF A PARTICULAR FINAL UNIT MAP BOUNDARY IN ORDER TO ACHIEVE A PHASED OF GRADING BALANCED. AN INTERIM HYDROLOGY REPORT WILL BE PROVIDED TO SUPPORT THE PHASED GRADING. DRAINAGE AND EROSION CONTROL FACILITIES WILL BE PROVIDED TO THE SATISFACTION OF DWP.
33. PERMISSION REQUESTED TO VACATE EXCESS RIGHT OF WAY ON MAGIC MOUNTAIN PARKWAY.
34. A BLANKET EASEMENT FOR COVERED STORM DRAIN, APPURTENANT STRUCTURES, AND INGRESS AND EGRESS PURPOSES SHALL BE DEDICATED TO THE LACFCD OVER ALL PRIVATE DRIVEWAYS AND FIRELANES TO THE SATISFACTION OF PUBLIC WORKS.

SPECIAL NOTES

1. WATER QUALITY BASINS AND BIOSWALES WILL PROVIDE FOR TREATMENT OF STORM WATER RUN OFF PER THE APPROVED DRAINAGE CONCEPT.
2. PROPOSED RECLAIMED WATER LINES WILL BE LOCATED IN PUBLIC/PRIVATE STREETS AND TRAILS.

SURVEY NOTES:

VERTICAL DATUM:
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK DESCRIBED AS FOLLOWS: LACDPW L5402 RND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O C/L THE OLD RD (W ROWY) AND 0.6 MI S/O HENRY MAYO DR @ MI MKR @5.25 NEWHALL QUAD, 1995 ADJUSTMENT (NAVD 1988) ELEVATION = 1031.951

THERE IS APPROXIMATELY 2.3 FEET DIFFERENCE BETWEEN PREVIOUS COUNTY OF LOS ANGELES DATUMS BASED UPON NAVD 1929 AND NAVD 1988 (NAVD 1988 IS 2.3 FEET HIGHER THAN NAVD 1929).

AERIAL PLANIMETRY:
THIS SURVEY WAS PREPARED BY PHOTOGRAMMETRIC PROCESSES, UTILIZING AERIAL PHOTOGRAPHY DATED NOVEMBER 15, 2006. THE OUTLINE OF BUILDINGS AND OTHER ROOFED IMPROVEMENTS, MAY INCLUDE EAVES, CANOPIES AND BALCONIES. SINCE BUILDINGS BELOW THESE ITEMS ARE NOT VISIBLE TO THE CAMERA.

TOPOGRAPHY:
DATED SEPTEMBER 15, 2011, AND COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.

CONTOUR INTERVAL:
5 FOOT, UNLESS OTHERWISE NOTED.

PROJECT SUMMARY:

GROSS AREA: 382.3 Acres
NET AREA: 363.0 Acres
TOTAL LOTS: 496
TOTAL RESIDENTIAL D.U.: 1,574 DU
TOTAL OFFICE/COMMERCIAL: 730,000 SF

EXISTING ZONING: R1 (322.9 AC), C-3 (57.9 AC), C-R (1.5 AC)
PROPOSED ZONING: C-3 (3.9 AC), C-3-DP (57.9 AC), RPD-5000-4U (140.3 AC), RPD-5000-8U (182.6 AC), C-R (1.5 AC)
EXISTING LAND USE: H5 (322.9 AC), CM (57.9 AC), OS-PR (1.5 AC)
PROPOSED LAND USE: H5 (322.9 AC), CM (57.9 AC), OS-PR (1.5 AC)
APN: 2826-008-036, 2826-009-078, 2826-134-028

ESTIMATED EARTHWORK:
ONSITE: 6,400,000 CY CUT, 6,000,000 CY FILL, 200,000 CY IMPORT
OFFSITE: 1,400,000 CY CUT, 1,200,000 CY FILL, 200,000 CY EXPORT
TOTAL: 7,800,000 CY CUT, 7,800,000 CY FILL

OAK TREES TO BE REMOVED: ONSITE 55 TREES, OFFSITE 12 TREES
OAK TREES TO BE ENCROACHED: ONSITE 10 TREES, OFFSITE 2 TREES
OAK TREES TO REMAIN: ONSITE 15 TREES, OFFSITE 10 TREES
TOTAL OAK TREES: 104

RELATED ENTITLEMENTS

CONDITION USE PERMINT NO.. 00-210
OAK TREE PERMIT NO. . . . . ROAK 200700018
ZONE CHANGE NO.. . . . . RZC 00-210
PARKING PERMIT NO.. 200700013

VICINITY MAP
NOT TO SCALE

LEGEND:

1 — LOT NO.
10,000 SF — LOT AREA (SQUARE FEET)
1010.0 — PAD ELEVATION

- PROJECT BOUNDARY
- PROPOSED RIGHT OF WAY
- PROPOSED UTILITY EASEMENT
- EXISTING EASEMENT
- 1000 — PROPOSED CONTOUR
- PROPOSED DAYLIGHT LINE
- TEMPORARY IMPACT LINE FOR GRADING
- D — PROPOSED STORM DRAIN
- SS — PROPOSED SANITARY SEWER
- W — PROPOSED WATER
- D — PROPOSED STORM DRAIN INLET/OUTLET
- PROPOSED CATCH BASIN
- SD — EXISTING STORM DRAIN LINE
- S — EXISTING SEWER LINE
- W — EXISTING WATER LINE
- O — EXISTING OIL LINE
- G — EXISTING GAS LINE
- OE — EXISTING OVERHEAD POWER LINE
- EXISTING POWER POLE
- PROPOSED RETAINING WALL
- SIGHT DISTANCE LINE
- EXISTING OIL WELL LOCATION
- OAK NO. XX (TBR) — OAK TREE (TO BE ENCROACHED)
- OAK NO. XX (TBR) — OAK TREE (TO BE REMOVED)
- OAK NO. XX (TR) — OAK TREE (TO REMAIN)

ABBREVIATIONS:

AC	ACRES
EX	EXISTING
FF	FINISH FLOOR
GB	GRADE BREAK
HP	HIGH POINT
L	LENGTH
MIN	MINIMUM
PROP	PROPOSED
R	RADIUS
R/W	RIGHT OF WAY
SF	SQUARE FEET
SD	STORM DRAIN
SS	SANITARY SEWER
TBI	TO BE IMPACTED
TBR	TO BE REMOVED
VC	VERTICAL CURVE
W	WATER

UTILITY PROVIDERS

SEWER:	L.A. COUNTY SANITATION DIST. 32
WATER:	VALENCIA WATER COMPANY
ELECTRICAL:	SOUTHERN CALIFORNIA EDISON
GAS:	SOUTHERN CALIFORNIA GAS CO.
TELEPHONE:	AT&T
CABLE TV:	TIME WARNER CABLE

Lot Numbers	Sheet No.	No. of Lots	No. of Units
Planning Area 1-3			
1–6,11	2	7	7
7–10,12–17		10	5
18–26		9	9
Planning Area 4	2,3		
27–32		6	3
Planning Area 5	3		
33–166		134	134
Planning Area 6	3		
167–281		115	115
Planning Area 7	3	90	90
282–371			
Planning Area 8	3	1	
372		1	
373		1	
Planning Area 9	3,4	7	
374–380			
Planning Area 10	4	5	
381–385			
Planning Area 11	4	8	
386–393			
Planning Area 12	4	5	
394–398			
Planning Area 13	4	7	
399–405			
Planning Area 14	4	2	
406,407			
Miscellaneous	2,3,4	1	
408			
409		1	
410–433		23	
434–442		8	
443		1	
444–497		53	
TOTAL		497	

EXPLANATION

- sf — Stockpile Fill
- cef — Certified Engineered Fill
- af — Artificial Fill
- af/Qal — Artificial Fill over Alluvium
- Qal — Alluvium
- Qsf — Surficial Failure
- Qt — Terrace Deposits
- TQs — Saugus Formation
- Geologic Contact
- Fault
- L — L' — Geologic Section Line
- 14 / 18 — Bedding Attitude
- Attitude of Shear Surface
- TP-3 ■ — Test Pit, RTF&A 96-149-21 Dated 12-30-03
- TP-5 ⊠ — Test Pit, RTF&A 96-149-F Dated 12-30-03
- R=10' — Recommended Minimum Depth of Removal and Recompaction
- Recommended Subdrain
- Existing Subdrain
- B-65E ⊠ — Bucket Boring, AES, 2004
- CPT-18 ▲ — Cone Penetration Test Sounding, AES 5-25-00
- RW-2 ● — Rotary Wash Boring, AES 5-25-00
- HS-10 ⊕ — Hollow Stem Boring, AES 5-25-00
- B-62E ⊕ — Bucket Boring, AES 5-25-00
- T-64 ⊠ — Test Pit, AES 5-25-00
- Approximate Location of Stabilization Fill Keyway

Geotechnical Map

PREPARED FOR:
Newhall Land & Farming Company

Project Location:
Vesting Tentative Tract No. 53295
Los Angeles County, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	JH	TPL
DATE		JOB NO.
9-16-2013	Figure 1.1	2004-700-021

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SHEET 1 | COUNTY OF LOS ANGELES | 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
27433 TOURNEY ROAD
SUITE 200
VALENCIA, CA 91355
TEL: (661) 799-2760
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000
REPRESENTATIVE: MR. MILES HELFRICH

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTAKER R.C.E. 51929 — 6/24/13 DATE

REGISTERED PROFESSIONAL ENGINEER — CRAIG M. WHITTAKER — NO. 51929 EXP. 6-30-14 — CIVIL — STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

EASEMENTS BASED ON FIRST AMERICAN TITLE INSURANCE COMPANY
PRELIMINARY TITLE REPORT ORDER NO. 3403118 (29) DATED JUNE 25, 2010

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION	ADDITIONAL COMMENTS	TENTATIVE MAP SHEET NO.
2	GENERAL PIPE LINE COMPANY OF CALIFORNIA	PIPE LINE	AUGUST 5, 1912 INSTR. NO. 119 BOOK 5156 PAGE 8	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
3	PACIFIC LIGHT AND POWER CORPORATION	POLES, etc.	MAY 22, 1914 INSTR. NO. 131 BOOK 5810 PAGE 192	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
4	PACIFIC TELEPHONE AND TELEGRAPH COMPANY	POLES, etc.	JUNE 12, 1915 INSTR. NO. 130 BOOK 6080 PAGE 40	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
5.1	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 27, 1920 INSTR. NO. 428 BOOK 7068 PAGE 323	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE PART OF DOCUMENT IS ILLEGIBLE	———
5.2	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 25, 1924 INSTR. NO. 570 BOOK 4022 PAGE 192	TO BE QUITCLAIMED PRIOR TO FINAL MAP		2,4
5.3	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	APRIL 17, 1928 INSTR. NO. 1620 BOOK 3397 PAGE 67	TO REMAIN		3,4
5.4	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 10, 1928 INSTR. NO. 1921 BOOK 7953 PAGE 11	TO REMAIN		3,4
5.5	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JANUARY 12, 1931 INSTR. NO. 917 BOOK 10631 PAGE 4	TO REMAIN		3,4
5.6	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 14, 1941 INSTR. NO. 20 BOOK 18811 PAGE 7	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
5.7	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 28, 1948 INSTR. NO. 3084 BOOK 27828 PAGE 248	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE PART OF DOCUMENT IS ILLEGIBLE	———
5.8	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 25, 1950 INSTR. NO. 2284 BOOK 33233 PAGE 24	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.9	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	NOVEMBER 24, 1950 INSTR. NO. 3033 BOOK 34881 PAGE 223	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
5.10	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 27, 1951 INSTR. NO. 2213 BOOK 37299 PAGE 252	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.11	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	MAY 22, 1952 INSTR. NO. 2249 BOOK 38991 PAGE 298	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.12	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 11, 1952 INSTR. NO. 2766 BOOK 39363 PAGE 41	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
5.13	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	SEPTEMBER 10, 1952 INSTR. NO. 3424 BOOK 39811 PAGE 49	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.14	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	OCTOBER 27, 1954 INSTR. NO. 3026 BOOK 45950 PAGE 255	TO BE QUITCLAIMED PRIOR TO FINAL MAP		5
5.15	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JANUARY 15, 1958 INSTR. NO. 3080 BOOK 56366 PAGE 205	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE DOCUMENT IS ILLEGIBLE	———
5.16	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	JULY 15, 1966 INSTR. NO. 2217 BOOK 03363 PAGE 475	TO REMAIN		3,4
5.17	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	AUGUST 7, 1968 INSTR. NO. 3513 BOOK D4263 PAGE 406	TO BE QUITCLAIMED PRIOR TO FINAL MAP		3
5.18	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 5, 1971 INSTR. NO. 3029 BOOK 04984 PAGE 282	TO BE QUITCLAIMED PRIOR TO FINAL MAP		4

EASEMENT NOTE: PLOTTABLE EASEMENTS ARE SHOWN ON TENTATIVE MAP SHEETS. NON–PLOTTABLE EASEMENTS ARE NOTED AS SUCH IN THE SUMMARY TABLE HEREON. IT IS RECOMMENDED THAT LEGAL COUNSEL AND TITLE COMPANY BE RETAINED TO ANALYZE AND REPORT ON SUCH EASEMENTS.

EASEMENTS (CONTINUED)

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION	ADDITIONAL COMMENTS	TENTATIVE MAP SHEET NO.
6	SOUTHERN CALIFORNIA TELEPHONE COMPANY	POLES, ect.	AUGUST 21, 1935 INSTR. NO. 732 BOOK 13612 PAGE 109	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE PARTS OF DOCUMENT ARE ILLEGIBLE	———
7	UNION OIL COMPANY OF CALIFORNIA	PIPE LINE	MAY 6, 1938 INSTR. NO. 952 BOOK 15781 PAGE 98	TO BE QUITCLAIMED PRIOR TO FINAL MAP		2,3
8	AUGUST A. RUBEL & MARY RUBEL	PIPE LINE	JUNE 14, 1940 INSTR. NO. 888 BOOK 17588 PAGE 237	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE NO SPECIFIC DESCRIPTION OF EASEMENT	———
9	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
10	SOUTHERN PACIFIC RAILROADS & SOUTHERN PACIFIC CO.	ROADWAY	SEPTEMBER 20, 1941 INSTR. NO. (D BOOK 18811 PAGE 7	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
11	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
12	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
13	COUNTY SANITARY DISTRICT NO. 32 OF LA COUNTY	SEWER LINE	FEBRUARY 25, 1966 INSTR. NO. 4236 BOOK 03219 PAGE 352	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
14	THE COUNTY OF LOS ANGELES	PUBLIC ROAD AND HIGHWAY	APRIL 6, 1971 INSTR. NO. 3104 BOOK 05018 PAGE 704	TO REMAIN		4
15	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINE	APRIL 13, 1971 INSTR. NO. 3154 BOOK 05024 PAGE 891	TO REMAIN		3,4
16.1	VALENCIA WATER COMPANY	WATER LINE	NOVEMBER 10, 1972 INSTR. NO. 2874 BOOK D–5563 PAGE 731	TO BE QUITCLAIMED PRIOR TO FINAL MAP	NOT PLOTTABLE INDETERMINATE POINT OF BEGINNING	———
16.2	VALENCIA WATER COMPANY	WATER LINE	JULY 26, 2004 INSTR. NO. 04–1986888	TO BE QUITCLAIMED PRIOR TO FINAL MAP	BLANKET EASEMENT	———
16.3	VALENCIA WATER COMPANY	WATER LINE	SEPTEMBER 27, 2004 INSTR. NO. 2474523	TO BE QUITCLAIMED PRIOR TO FINAL MAP	BLANKET EASEMENT	———
17	SIX FLAGS MAGIC MOUNTAIN INC.	GREENHOUSE NURSERY	JUNE 5, 1979 INSTR. NO. 79–603645	TO BE QUITCLAIMED PRIOR TO FINAL MAP		2
18	SIX FLAGS MAGIC MOUNTAIN INC.	LIVESTOCK	JUNE 5, 1979 – INSTR. NO. 79–603648 JUNE 10, 1980 – INSTR. NO. 80–559806	TO REMAIN		5
19	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ect.	SEPTEMBER 15, 1988 INSTR. NO. 88–1483381	TO BE QUITCLAIMED PRIOR TO FINAL MAP		3
20	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
21	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
22	LA COUNTY FLOOD CONTROL DISTRICT	FLOOD CONTROL	AUGUST 23, 2005 INSTR. NO. 05–2021536	TO BE QUITCLAIMED PRIOR TO FINAL MAP		4
23.1	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06–337027	TO REMAIN		4
23.2	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06–0337033	TO REMAIN		4
23.3	THE CITY OF SANTA CLARITA	PUBLIC ROAD AND HIGHWAY	FEBRUARY 9, 2006 INSTR. NO. 06–0337031	TO REMAIN		4
24	THE CITY OF SANTA CLARITA	STORM DRAIN	MAY 2, 2006 INSTR. NO. 06–0963640	TO BE QUITCLAIMED PRIOR TO FINAL MAP		4
25	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———
26	INTENTIONALLY DELETED FROM TITLE REPORT	———	———	———	———	———

LEASES (NOT PLOTTED)

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION	ADDITIONAL COMMENTS	TENTATIVE MAP SHEET NO.
27	HUMBLE OIL COMPANY	OIL/GAS	SEPTEMBER 1, 1948 INSTR. NO. 993 BOOK 28138 PAGE 231, 264	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
28	TIDE WATER OIL COMPANY	OIL/GAS	DECEMBER 3, 1954 INSTR. NO. 954	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
29	THE TEXAS COMPANY	OIL/GAS	JULY 31, 1958 INSTR. NO. 555 BOOK 17–79 PAGE 641	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
30	STANDARD OIL COMPANY	OIL/GAS	AUGUST 19, 1958 INSTR. NO. 3370 BOOK 17–35 PAGE 123	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
31	RICHARD R. CLEMENTS	OIL/GAS	AUGUST 7, 1962 INSTR. NO. 3408	TO BE TERMINATED PRIOR TO FINAL MAP	———	———
32	DEPCO INC.	OIL/GAS	APRIL 22, 1976 INSTR. NO. 27	TO BE TERMINATED PRIOR TO FINAL MAP	———	———

See Explanation on Figure 1.1

Geotechnical Map

PREPARED FOR: Newhall Land & Farming Company

Project Location: Vesting Tentative Tract No. 53295, Los Angeles County, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	JH	TPL
DATE: 9-16-2013	Figure 1.2	JOB NO.: 2004-700-021

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NOTE: SEE TABLE ON SHEET 2 FOR EASEMENT DETAILS.

PORTION OF RANCHO SAN FRANCISCO (MLF OWNERSHIP)

PA 1-3

PA 4

PA 5

PA 6

PA 7

PA 8

PA 9

PA 10

NOTE: SEE DETAIL 'A' ON SHEET 3 FOR BUILDOUT CONDITION WITH TM 61105

AES
Qls I
(PR = 30' or to Bedrock)

Qls A
(westridge)

Qls (III)

Qls (IV)

Qls (V)

Qls (II)
(CR = 10'-20')

Qsf

Qsf2

Qsw

Qal/af

Qal

Qt

TQs

af

R = 8'-12'

R = 5'-8'

R = 5'-10'

R = 5'-18'

R = 8'-15'

R = 10'-20'

R = 12'-20'

R = 4'-8'

R = 6'-10'

R = 4'-8'

R = 8'-15'

R = 5'-18'

R = 5'-10'

R = 12'-20'

R = 12'-20'

R = 4'-8'

R = 6'-10'

R = 4'-8'

CS-1 CS-2 CS-3 CS-4 CS-6 CS-8 CS-9 CS-13 CS-14 CS-17 CS-18 CS-19 CS-20 CS-21 CS-22 CS-23 CS-24 CS-25 CS-26 CS-27 CS-28 CS-35

B-1 B-2 B-3 B-4 B-40E B-41E B-42E B-43E B-47E B-48E B-49E B-53E B-54E B-55E B-56E B-57E B-58E B-59E B-60E B-62E B-68E B-71E B-81E

T-10 T-11 T-12 T-13 T-14 T-15 T-16 T-17 T-18 T-19 T-20 T-21 T-23 T-24 T-25 T-26 T-27 T-28 T-29 T-30 T-31 T-32 T-34 T-36 T-37 T-39 T-40 T-41 T-42 T-44 T-46 T-48 T-55 T-56 T-57 T-59 T-60 T-61 T-62 T-63 T-64 T-65 T-66 T-67

CPT-1M CPT-5 CPT-6 CPT-9M CPT-18

HS-1T HS-2T HS-3T HS-4T HS-7 HS-10 HS-14I

RTF&A B-1 RTF&A B-2 RTF&A B-3 RTF&A B-4 RTF&A B-5

See Explanation on Figure 1.1

SEE SHEET 2

SEE SHEET 3

SEE SHEET 4

SEE SHEET 5

SEE SHEET 6

SEE SHEET 7

SEE SHEET 8

SEE SHEET 9

SEE SHEET 10

SEE SHEET 11

SEE SHEET 12

SEE SHEET 13

SEE SHEET 14

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SEE SHEET 93

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SEE SHEET 95

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SEE SHEET 97

SEE SHEET 98

SEE SHEET 99

SEE SHEET 100

Geotechnical Map

PREPARED FOR: Newhall Land & Farming Company

PROJECT LOCATION: Vesting Tentative Tract No. 53295
Los Angeles County, California

SCALE: AS SHOWN | DRAWN BY: JH | CHECKED BY: TPL

DATE: 9-16-2013 | Figure 1.3 | JOB NO.: 2004-700-021

1329 SCOTT ROAD
BURBANK, CA. 91504
TEL: (818) 531-1501
FAX: (818) 531-1511
www.rtfranklin.com
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ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9905
FAX: (760) 431-8802
27433 TOURNEY ROAD
SUITE 200
VALENCIA, CA 91355
TEL: (661) 799-3760
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000
REPRESENTATIVE: MR. MILES HELFRICH

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
(760) 431-9896

PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTEKER R.C.E. 51929 — 6/24/13 DATE

REGISTERED PROFESSIONAL ENGINEER — CRAIG M. WHITTEKER — NO. 51929 — EXP 6-30-14 — CIVIL — STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO. | DATE | REVISIONS | BY | APPR

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO.

LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

SHEET 2 SEE SHEET 3

SEE PROP GATE

TQs
Qal
R = 12'-20'
cef
af/Qal
af
R = 5'-10'
Qt
Qsf
R = 4'-8'
R = 6'-10'
sf
R = 20'-50'
Qsf2
R = 8'-12'
CS-17
CS-28
CS-30
CS-29
CS-25
CS-26
CS-10
CS-32
CS-34
CS-31
CS-4
CS-33
CS-5
HS-8
HS-6
HS-7
CPT-18
CPT-6
CPT-4
CPT-5
B-62E
B-1
B-2
T-36
T-37
T-55
T-57
T-56
T-39
T-59
T-60
T-61
T-62
T-49
T-48
T-45
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T-50
T-46
T-44
T-51
T-53
T-52
T-54
TP-1
TP-2
TP-3
TP-4
TP-5
PA 8
PA 9
PA 10
PA 11
PA 12
PA 13
PA 14
LL
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A
A'
B
B'
FF
FF'
K
K'
O
O'
MM
MM'
NN
NN'
OO
OO'
PM 18654
NOT A PART
SKYVIEW LANE
ENTERTAINMENT
CENTER LANE
MAGIC MOUNTAIN PARKWAY
OLD ROAD
THE OLD ROAD
EXISTING CHEVRON SERVICE STATION
OPEN SPACE
INTERSTATE 5 FREEWAY
(PUBLIC)

SECTION A-A
SECTION B-B

See Explanation on Figure 1.1

NOTE: SEE TABLE ON SHEET 2 FOR EASEMENT DETAILS.

SCALE 1"=100'
100 50 0 100 200 FEET
1 1/2 0 1 2 INCHES

Geotechnical Map

PREPARED FOR: Newhall Land & Farming Company

Project Location: Tract No. 53901-01, Valencia, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	JH	TPL
DATE: 9-16-2013	Figure 1.4	JOB NO: 2004-700-021

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SHEET 4 | COUNTY OF LOS ANGELES | SHEET 5

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

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CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

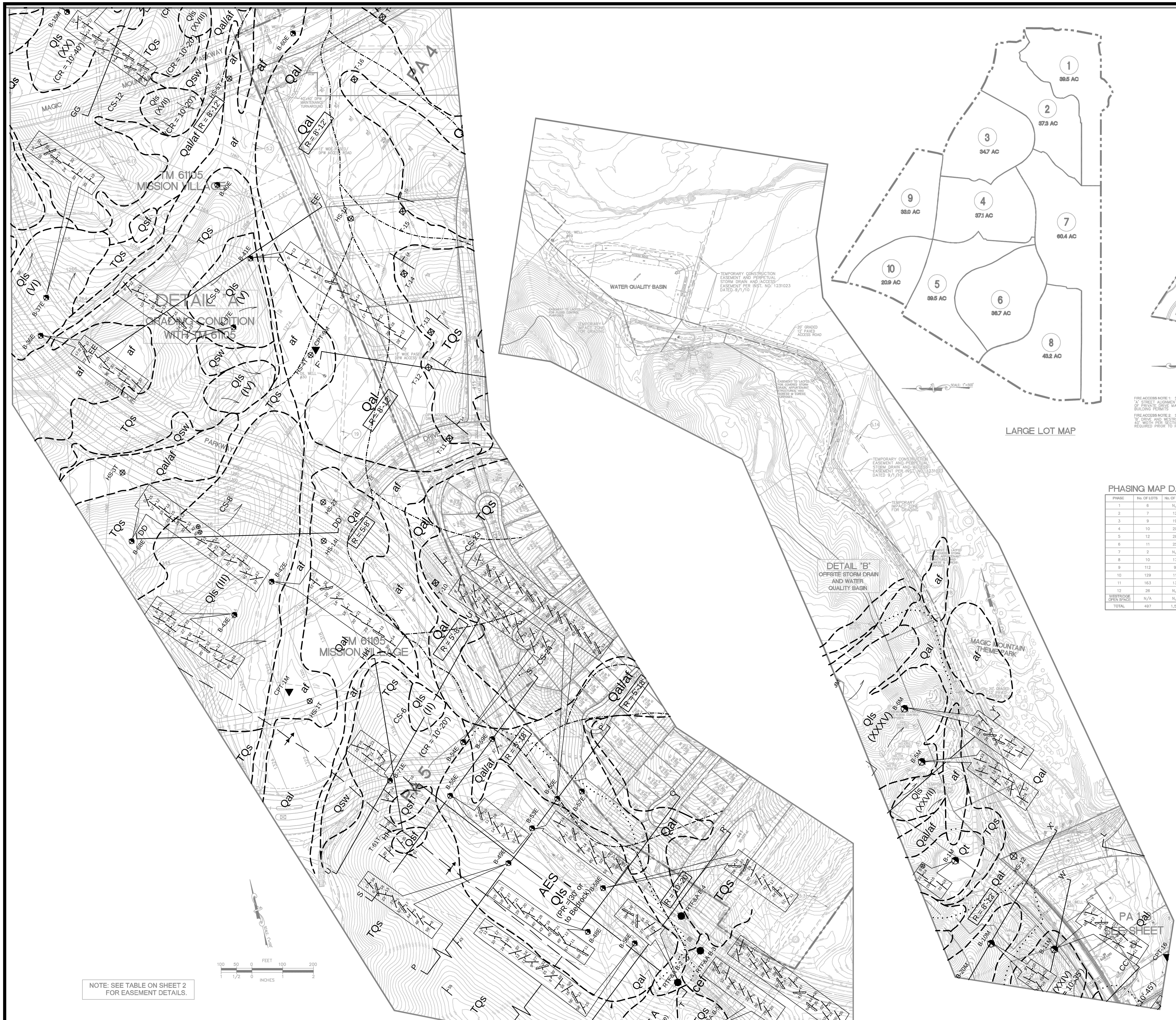
PREPARED FOR: NEWHALL LAND & FARMING CO. 25124 SPRINGFIELD COURT SUITE 300 VALENCIA, CA 91355 (661)255-4000
REPRESENTATIVE: MR. MILES HELPRICH

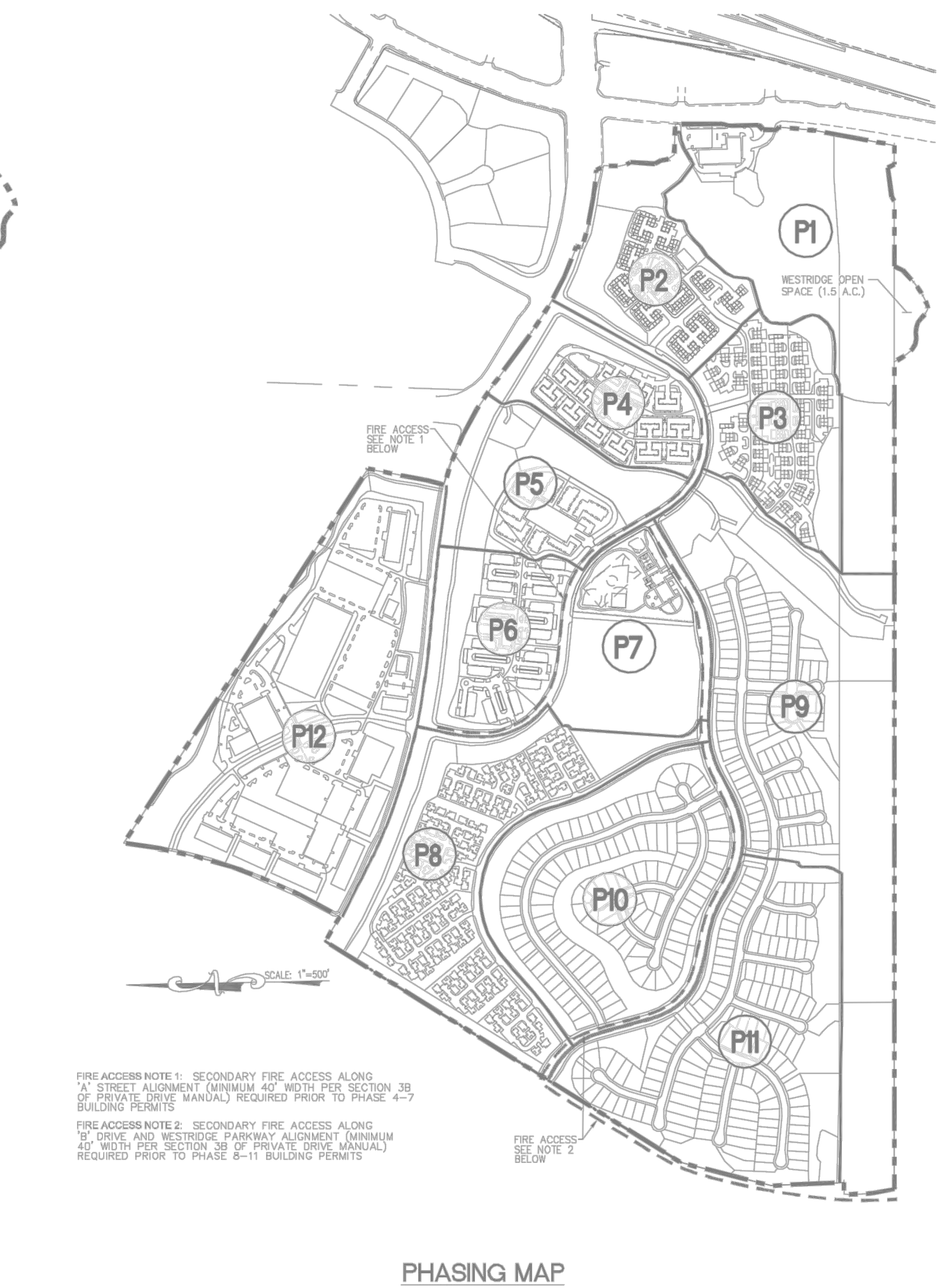
PLANS PREPARED BY: ALLIANCE LAND PLANNING & ENGINEERING INC. 2248 FARADAY AVE. CARLSBAD, CA 92008 (760) 431-9896
PLANS PREPARED UNDER THE DIRECTION OF: CRAIG M. WHITTEKER R.C.E. 51929 DATE 6/24/13

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP 6-30-14 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO. DATE REVISIONS BY APPR





PHASING MAP DATA TABLE

PHASE	No. OF LOTS	No. OF UNITS	GROSS AREA (AC.)	OPEN SPACE AREA (AC.)	% OPEN SPACE	Σ No. OF LOTS	Σ No. OF UNITS	Σ GROSS AREA (AC.)	Σ OPEN SPACE AREA (AC.)	Σ % OPEN SPACE
1	6	N/A	39.1	36.1	92%	5	N/A	39.1	36.1	92%
2	7	120	17.6	5.5	31%	13	120	56.7	41.6	76%
3	9	194	18.9	2.9	15%	22	314	75.6	44.5	59%
4	10	208	16.1	4.2	26%	32	522	91.7	48.7	53%
5	12	280	19.3	8.6	44%	44	802	111.0	57.3	52%
6	11	255	19.0	3.7	20%	55	1057	130.0	61.0	47%
7	2	N/A	15.9	6.5	41%	57	N/A	145.9	67.5	46%
8	10	178	37.7	8.2	21%	67	1235	183.6	75.7	41%
9	112	90	60.4	41.1	68%	179	1325	244.0	116.8	48%
10	129	115	39.1	11.4	29%	308	1440	283.1	128.2	45%
11	163	134	43.8	13.5	31%	471	1595	326.9	141.7	43%
12	26	N/A	53.9	8.5	16%	497	N/A	380.8	151.7	40%
WESTRIDGE OPEN SPACE	N/A	N/A	1.5	1.5	N/A	N/A	N/A	382.3	N/A	N/A
TOTAL	497	1,574	382.3	151.7	37%	497	1,574	382.3	151.7	40%

See Explanation on Figure 1.1

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Project Location
Vesting Tentative Tract No. 53295
Los Angeles County, California

SCALE AS SHOWN	DRAWN BY JH	CHECKED BY TPL
DATE 9-16-2013	Figure 1.5	JOB NO. 2004-700-021

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SHEET 5 — COUNTY OF LOS ANGELES — 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

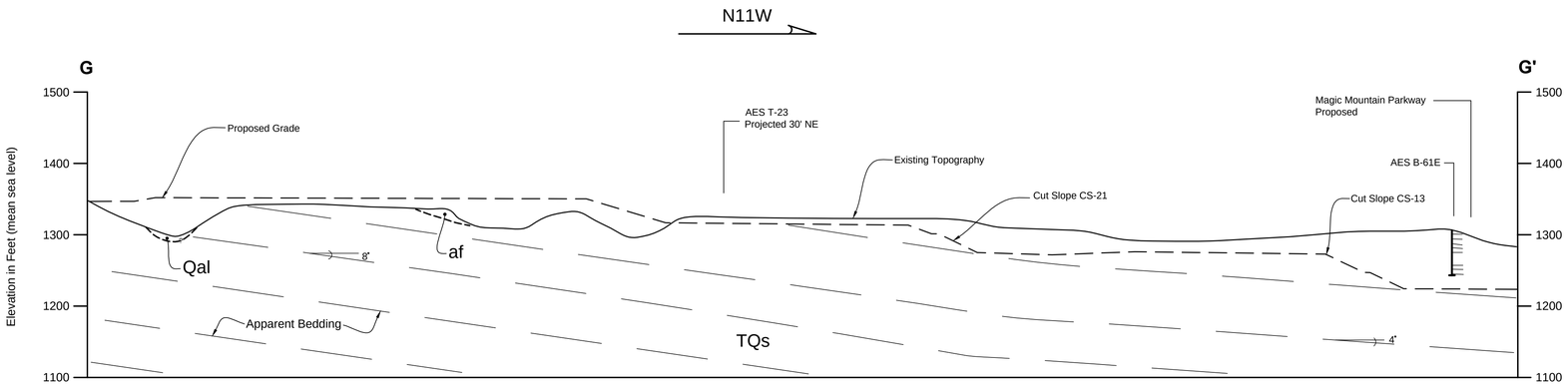
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE. CARLSBAD, CA 92008

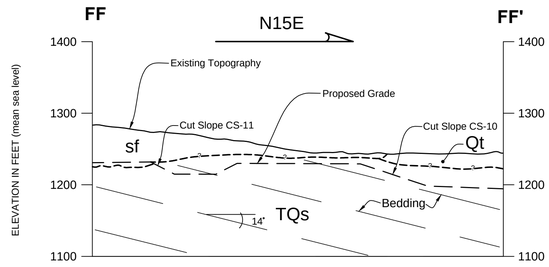
PREPARED FOR:
NEWHALL LAND & FARMING CO.
25124 SPRINGFIELD COURT
SUITE 300
VALENCIA, CA 91355
(661)255-4000
REPRESENTATIVE: MR. MILES HELFRICH

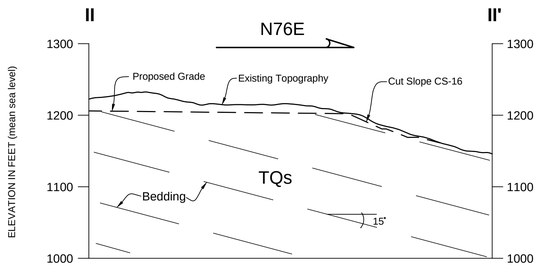
PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
(760) 431-9896
PLANS PREPARED UNDER THE DIRECTION OF:
CRAIG M. WHITTEKER R.C.E. 51929 6/24/13

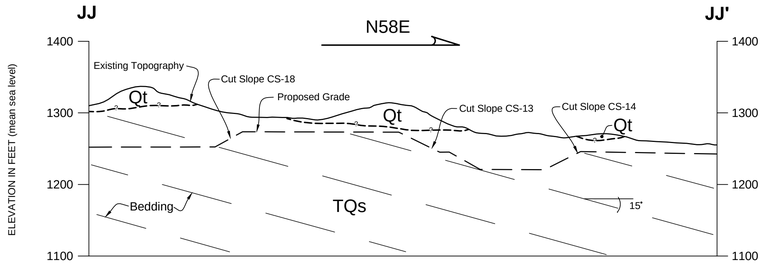
LEGAL DESCRIPTION:
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

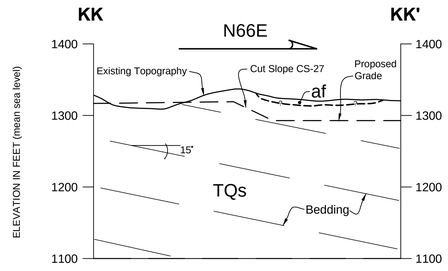
NO.	DATE	REVISIONS	BY	APPR

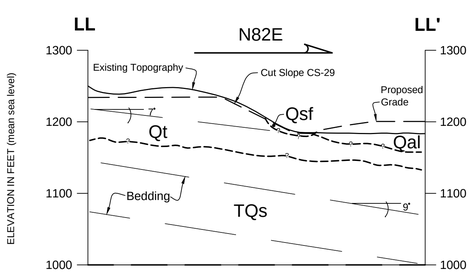


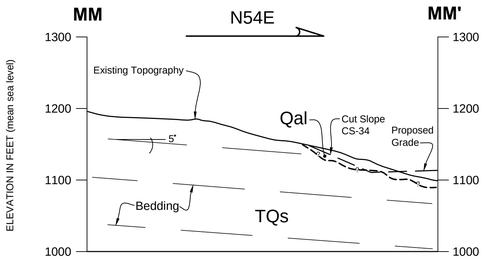


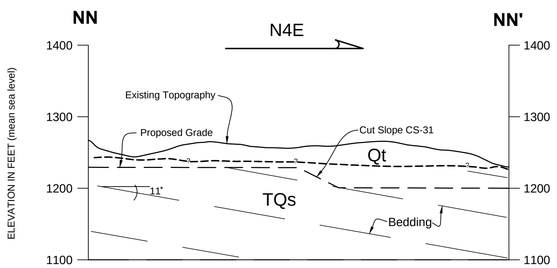


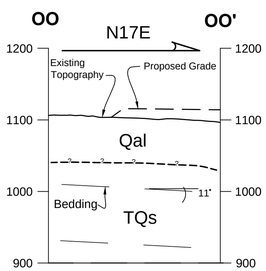












Geologic Sections

PREPARED FOR
Newhall Land & Farming Company

Project Location
Tract No.
Valencia, California

SCALE	DRAWN BY	CHECKED BY
1"=100'	JH	TPL
DATE		JOB NO.
9-16-2013	Figure 2	2004-700-021

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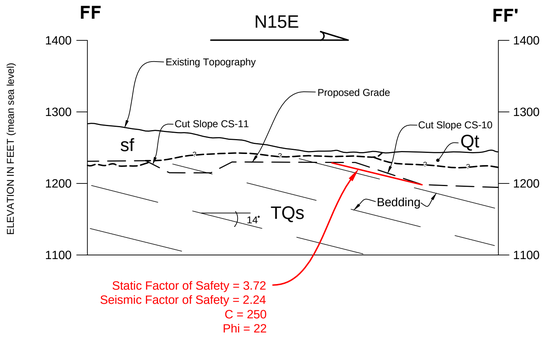

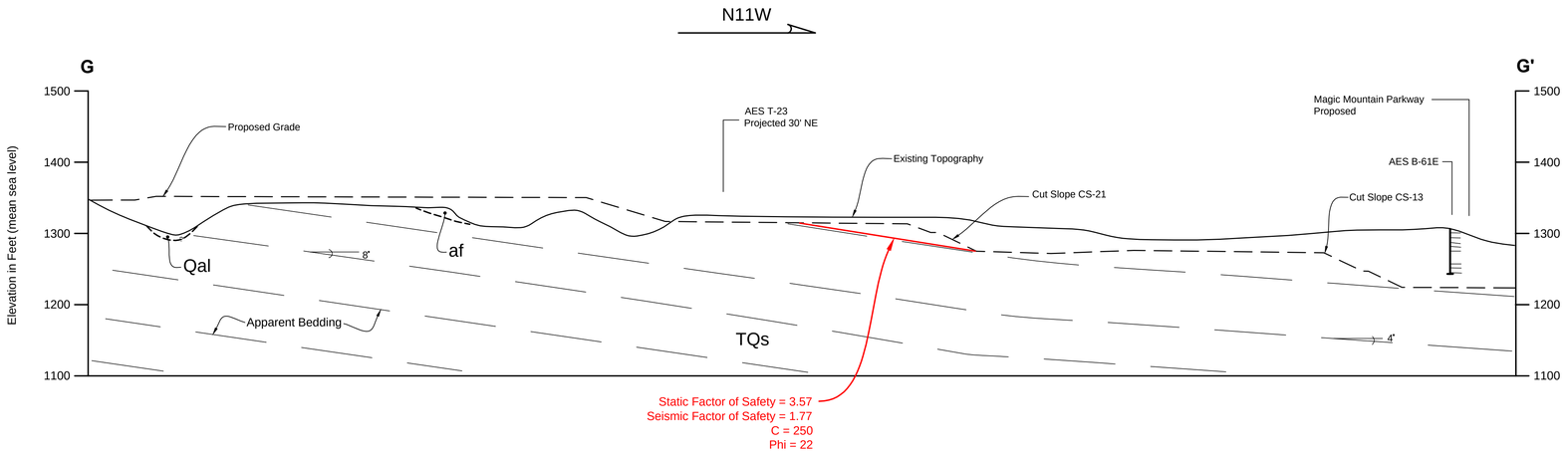

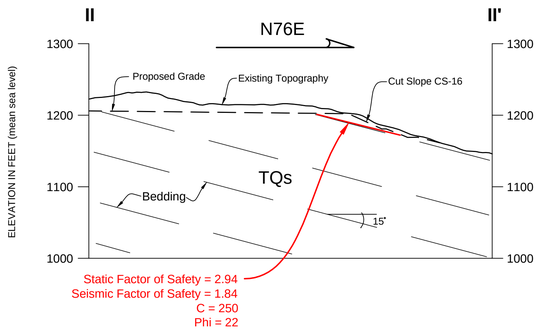

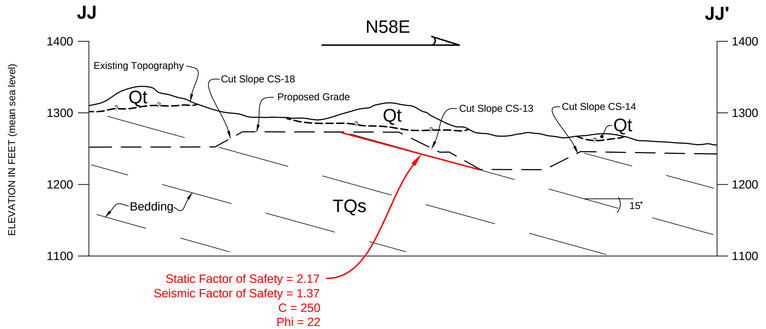

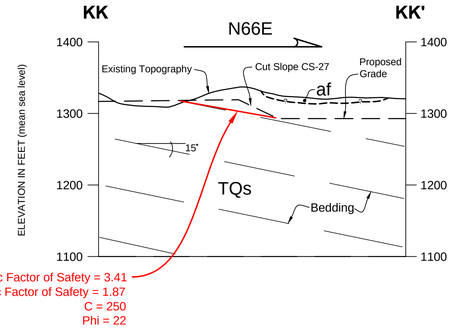

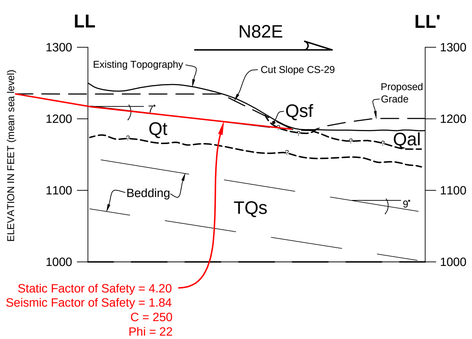

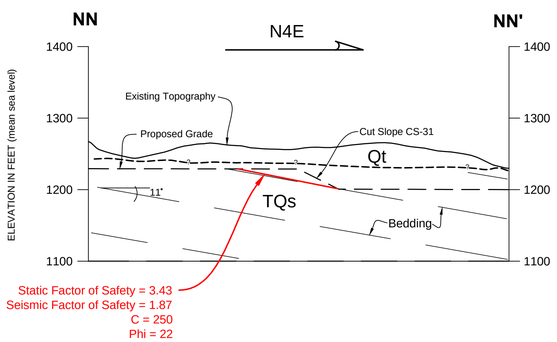

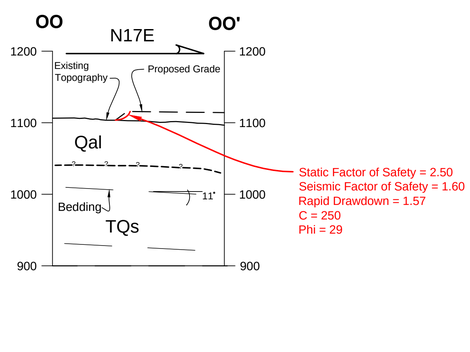

Geotechnical Sections

PREPARED FOR
Newhall Land & Farming Company

Project Location
Tract No.
Valencia, California

SCALE	DRAWN BY	CHECKED BY
1"=100'	JH	TPL
DATE		JOB NO.
9-16-2013	Figure 3	2004-700-021

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TABLE 1

SUMMARY OF CUT SLOPES
Entrada South/Vesting Tentative Tract Map No. 53295

CUT SLOPE	FIGURE NO.	SLOPE GRADIENT	SLOPE HEIGHT (feet)	SLOPE FACE DIRECTION	GEOLOGIC MATERIALS	GEOLOGIC SECTION	GEOLOGIC STABILITY	MITIGATION
CS-1	1.3	2:1	55	NW	TQs	C-C' & M-M'	Daylighted bedding; stable by analyses	Construct 30' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-2	1.3	2:1	45	NW	TQs	D-D' & N-N'	Daylighted bedding; stable by analyses	Construct 25' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-3	1.3	2:1	40	E	TQs	---	Favorable bedding; grossly stable	None
CS-4	1.3	2:1	60	NW	Qt & TQs	K-K' & O-O'	Daylighted bedding; stable by analyses	Construct 30' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-5	1.4	2:01	65	NW to W	TQs	A-A' & B-B'	Daylighted bedding; stable by analyses	Construct 30' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-6	1.3	3:1 to 4:1	45	N	Qls II & TQs	HH-HH'	Daylighted bedding; stable by analyses	Remove Qls II and restore slope grades with engineered fill as necessary
CS-7	1.2	3:1	60	NE	Qls XXIV & TQs	CC-CC'	Daylighted bedding; stable by analyses	Remove Qls XXIV and replace with engineered fill to restore grades
CS-8	1.3	3:1 to 6:1	60	E to SE	Qls III & TQs	DD-DD'	Steeply dipping and favorable bedding; stable geologic structure	Remove Qls III and replace with engineered fill to restore grades
CS-9	1.3	3:1	85	E	Qls V & TQs	EE-EE'	Daylighted bedding; stable by analyses	Remove Qls V and restore slope grades with engineered fill as necessary
CS-10	1.4	2:1	30	N, NW & SW	TQs	FF-FF'	Daylighted bedding; stable by analyses	Construct 20' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-11	1.4	2:1	20	N, NW & SW	sf & TQs	FF-FF'	Daylighted bedding; stable by analyses	Remove all stockpile fill and construct 15' wide by 3' deep stability fill for entire cut slope to control seepage and eliminate fill over cut condition
CS-12	1.2	3:1	45	NE	Qls XX & TQs	GG-GG'	Daylighted bedding; stable by analyses	Remove Qls XX and restore slope grades with engineered fill as necessary
CS-13	1.3	2:1	50	NW to NE	TQs	G-G' & JJ-JJ'	Daylighted bedding; Section G-G' stable by inspection; Section JJ-JJ' stable by analyses	Construct 25' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-14	1.3	2:1	35	NW to SW	TQs	JJ-JJ'	Favorable bedding; grossly stable	None
CS-15	1.2	2:1	30	N	TQs	---	Favorable bedding; grossly stable	None
CS-16	1.2	2:1	50	N to NE	TQs	II-II'	Daylighted bedding; stable by analyses	Construct 25' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-17	1.2	2:1	15	SE	TQs	---	Favorable bedding; grossly stable	None
CS-18	1.3	2:1	15	NW to SW	TQs	JJ-JJ'	Favorable bedding; grossly stable	None
CS-19	1.3	2:1	20	W	TQs	F-F'	Favorable bedding; grossly stable	None

TABLE 1

SUMMARY OF CUT SLOPES
Entrada South/Vesting Tentative Tract Map No. 53295

CUT SLOPE	FIGURE NO.	SLOPE GRADIENT	SLOPE HEIGHT (feet)	SLOPE FACE DIRECTION	GEOLOGIC MATERIALS	GEOLOGIC SECTION	GEOLOGIC STABILITY	MITIGATION
CS-20	1.3	2:1	30	W	TQs	---	Favorable bedding; grossly stable	None
CS-21	1.3	2:1	40	NW	TQs	G-G'	Daylighted bedding; stable by analyses	Construct 25' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-22	1.3	2:1	60	W, NW & SW	TQs	F-F'	Favorable bedding; grossly stable	Construct 30' wide by 3' deep stability fill to control erosion
CS-23	1.3	2:1	20	W	TQs	---	Favorable bedding; grossly stable	None
CS-24	1.3	2:1	15	SW	TQs	---	Favorable bedding; grossly stable	None
CS-25	1.3	2:1	30	E	Qt	---	Daylighted bedding; stable by inspection	None
CS-26	1.3	2:1	35	N	Qt	---	Favorable bedding; grossly stable	None
CS-27	1.3	2:1	30	N to NE	TQs	KK-KK'	Daylighted bedding; stable by analyses	Construct 20' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-28	1.4	2:1	40	NW	Qt & TQs	---	Favorable bedding; grossly stable	Construct 25' wide by 3' deep stability fill to upper bench to eliminate adverse fill over cut condition
CS-29	1.4	2:1	45	E	Qsf & Qt	LL-LL'	Daylighted bedding; stable by analyses	Remove Qsf and construct 25' wide by 3' deep stability fill to restore slope grades and control erosion
CS-30	1.4	2:1	25	N to NE	Qal & Qt	A-A'	Favorable bedding; grossly stable	Construct 20' wide by 3' deep stability fill to eliminate adverse fill over cut condition and control erosion of alluvial deposits
CS-31	1.4	2:1	30	N, NE & NW	TQs	NN-NN'	Daylighted bedding; stable by analyses	Construct 20' wide by 3' deep stability fill to control seepage along bedding and erosion
CS-32	1.4	2:1	20	W	TQs	---	Favorable bedding; grossly stable	None
CS-33	1.4	2:1	40	SE	TQs	---	Favorable bedding; grossly stable	Construct 25' wide by 3' deep stability fill to eliminate adverse fill over cut condition and control erosion
CS-34	1.4	2:1	45	N to NE	Qal & TQs	MM-MM'	Daylighted bedding; stable by inspection	Construct 25' wide by 3' deep stability fill to control seepage along bedding erosion
CS-35	1.3	2:1	30	W	TQs	---	Favorable bedding; grossly stable	None
CS-36	1.2	5:1	40	E to SE	Qls XXV & TQs	---	Steeply dipping and favorable bedding; stable geologic structure	None
CS-37	1.2	5:1	50	N to NE	TQs	---	Favorable bedding; grossly stable	None

Newhall Land and Farming Company
September 16, 2013
2004-700-021

APPENDIX

SLOPE STABILITY ANALYSES

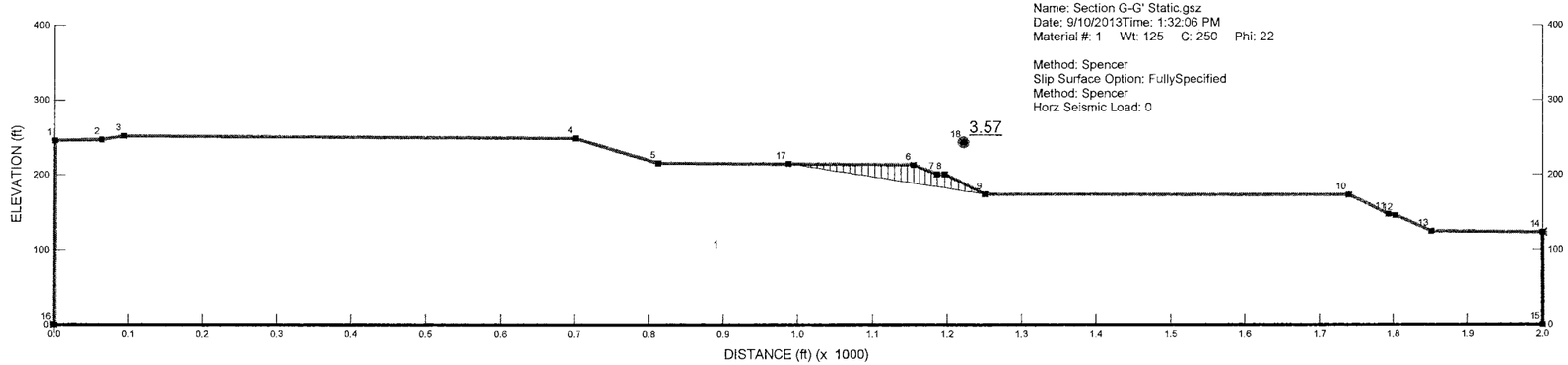
RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

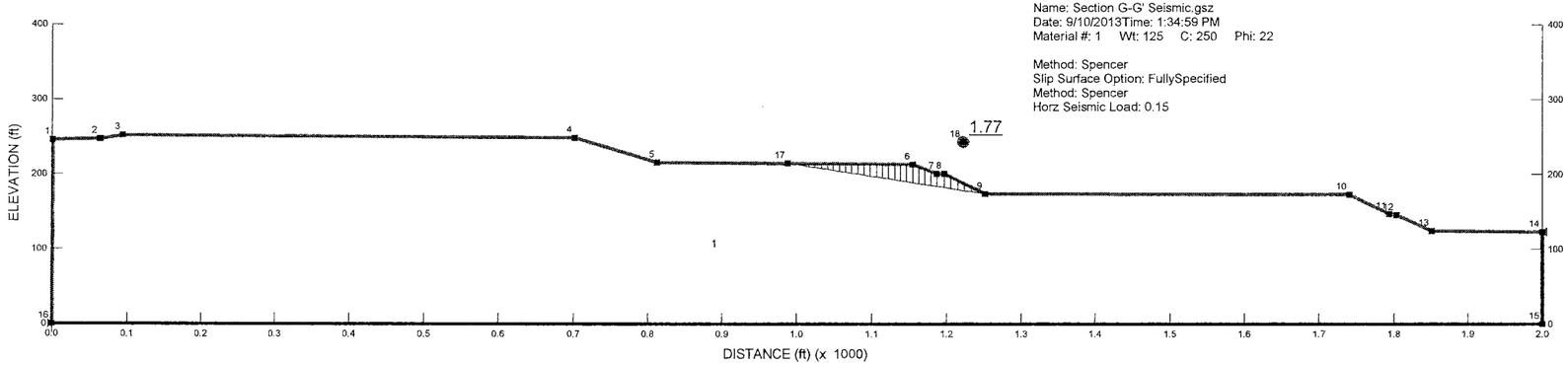
Summary of Slope Stability Calculations

Section	Case	File	Factor of Safety	Condition
G-G'	Static	Section G-G' Static.gsz	3.57	Bedding through toe
G-G'	Seismic	Section G-G' Seismic.gsz	1.77	Bedding through toe
FF-FF'	Static	Section FF Static.gsz	3.72	Bedding through toe
FF-FF'	Seismic	Section FF Seismic.gsz	2.24	Bedding through toe
II-II'	Static	Section II Static.gsz	2.94	Bedding through toe
II-II'	Seismic	Section II Seismic.gsz	1.84	Bedding through toe
JJ-JJ'	Static	Section JJ Static.gsz	2.17	Bedding through toe
JJ-JJ'	Seismic	Section JJ Seismic.gsz	1.37	Bedding through toe
KK-KK'	Static	Section KK Static.gsz	3.41	Bedding through toe
KK-KK'	Seismic	Section KK Seismic.gsz	1.87	Bedding through toe
LL-LL'	Static	Section LL Static.gsz	4.2	Bedding through toe
LL-LL'	Seismic	Section LL Seismic.gsz	1.84	Bedding through toe
NN-NN'	Static	Section NN Static.gsz	3.43	Bedding through toe
NN-NN'	Seismic	Section NN Seismic.gsz	1.87	Bedding through toe
OO-OO'	Static	Section OO Static.gsz	2.03	Circular Failure
OO-OO'	Seismic	Section OO Seismic.gsz	1.6	Circular Failure
OO-OO'	Static	Section OO Static.gsz	1.57	Rapid Drawdown

Title: Entrada 2004-700-21
Comments:
Name: Section G-G' Static.gsz
Date: 9/10/2013Time: 1:32:06 PM
Material #: 1 Wt: 125 C: 250 Phi: 22

Method: Spencer
Slip Surface Option: FullySpecified
Method: Spencer
Horz Seismic Load: 0

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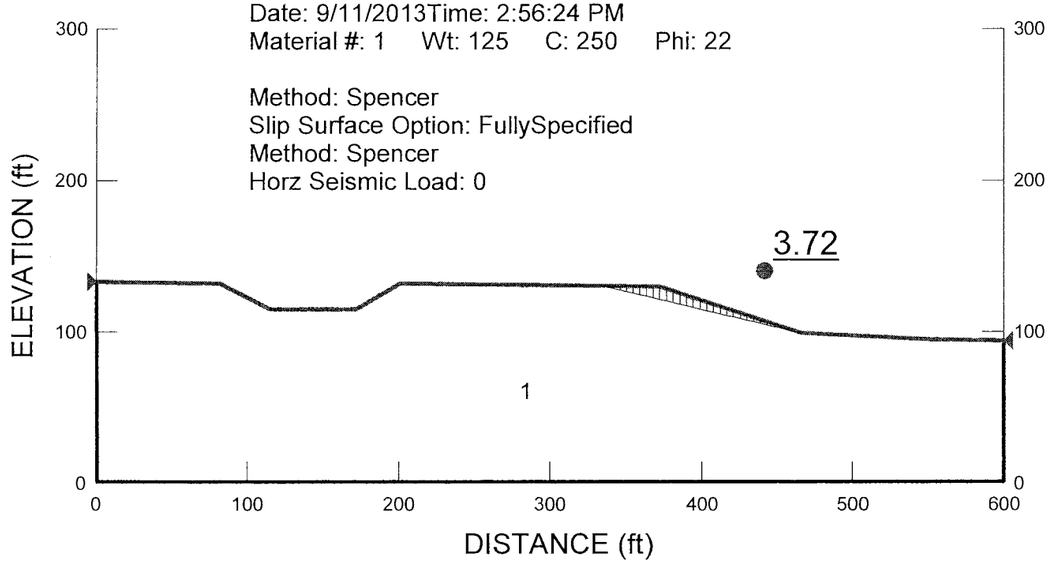

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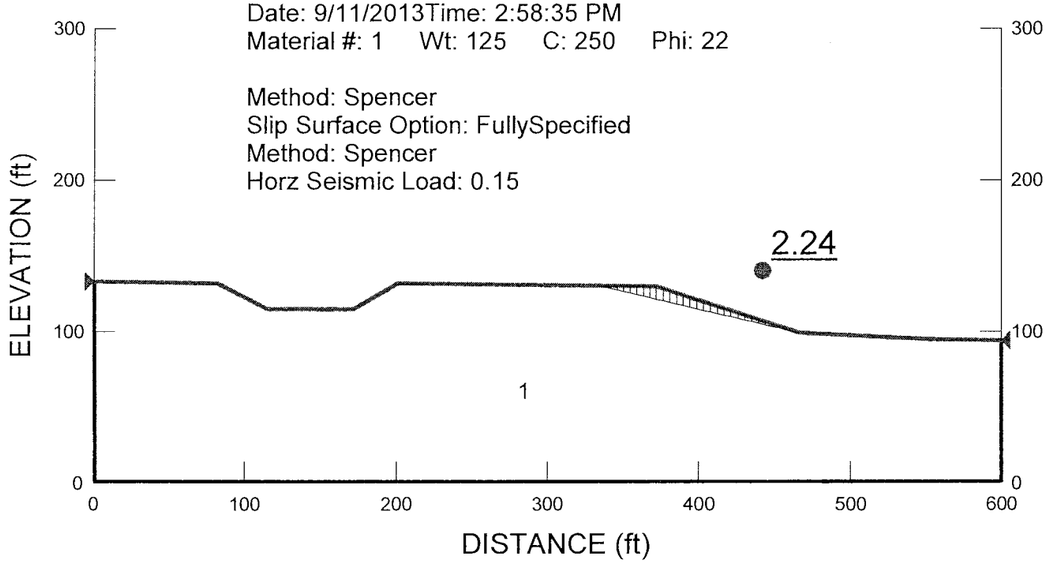

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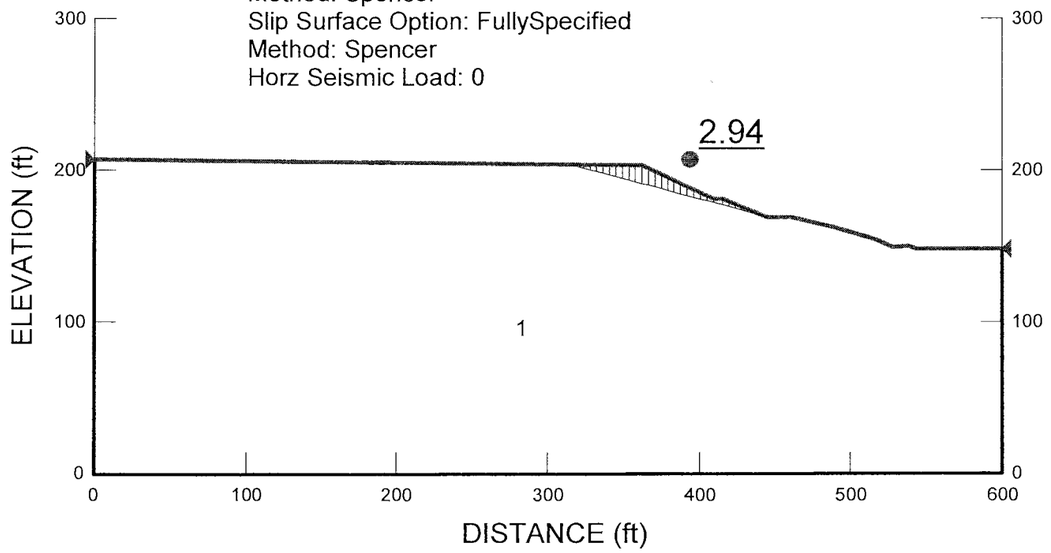

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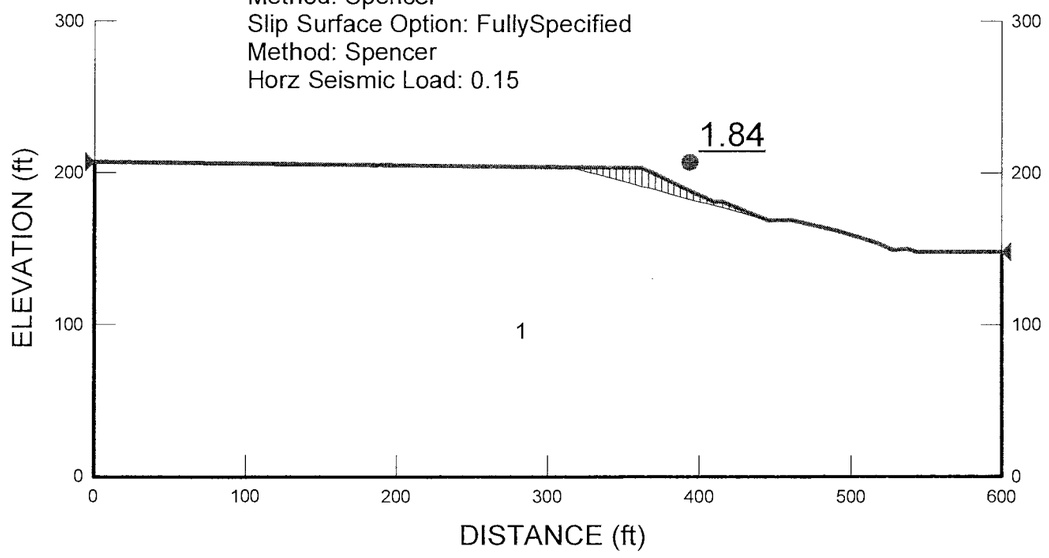

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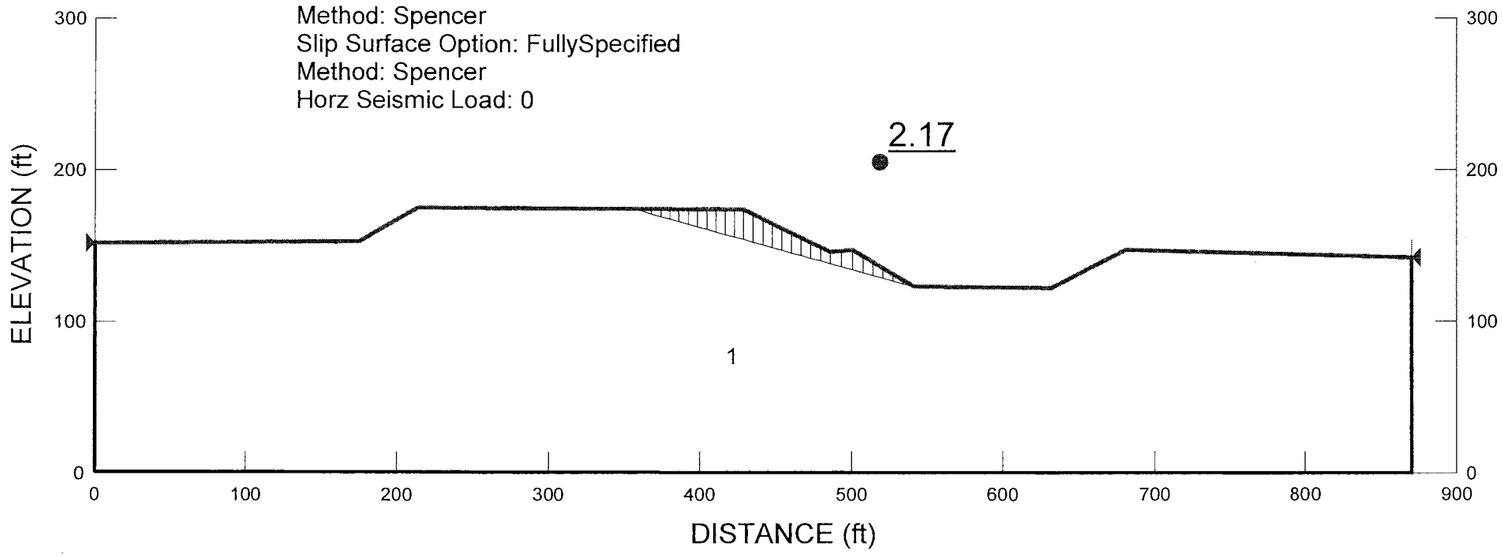

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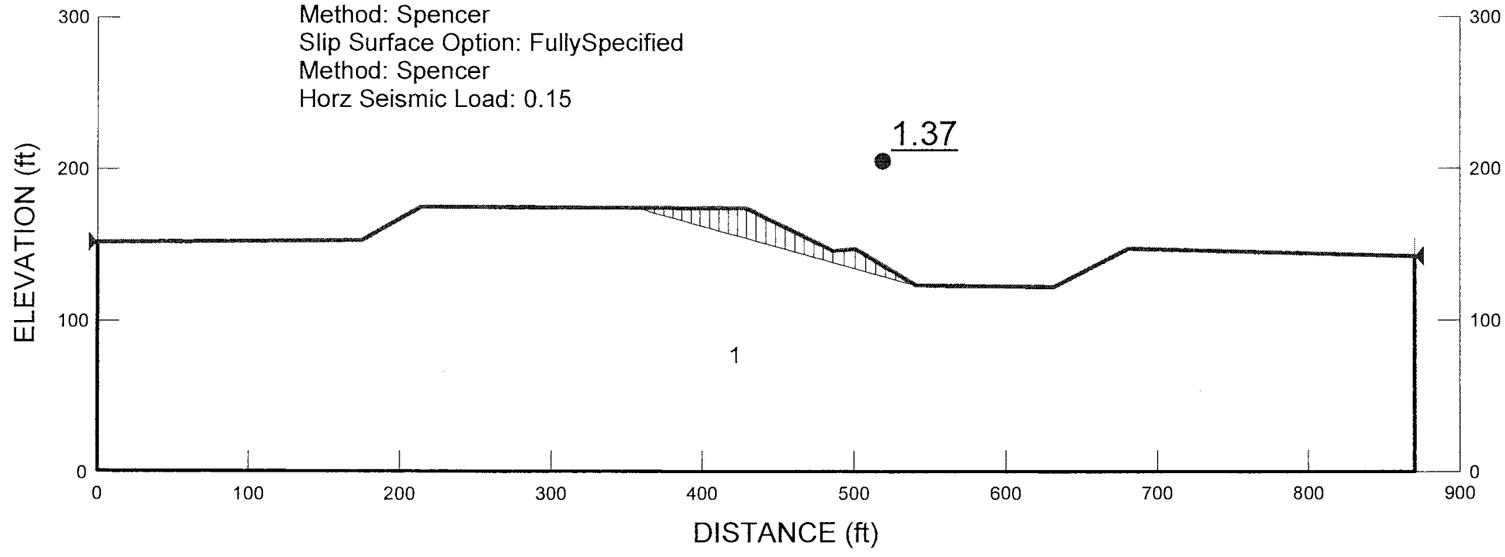

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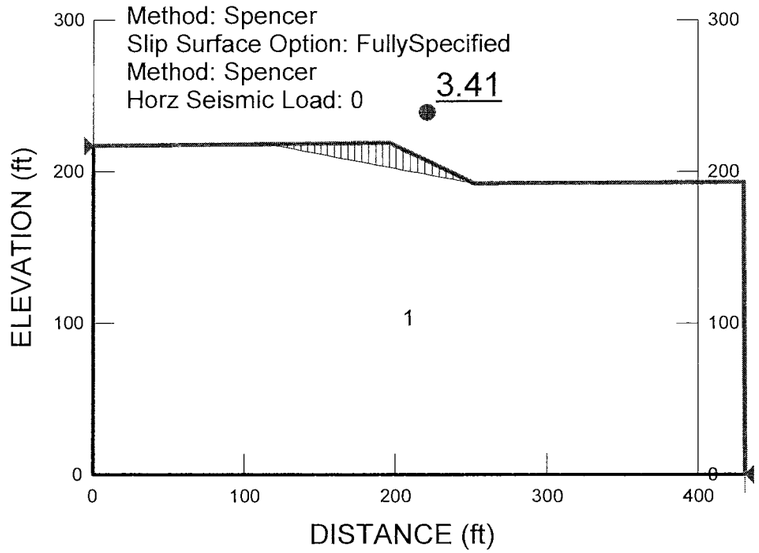

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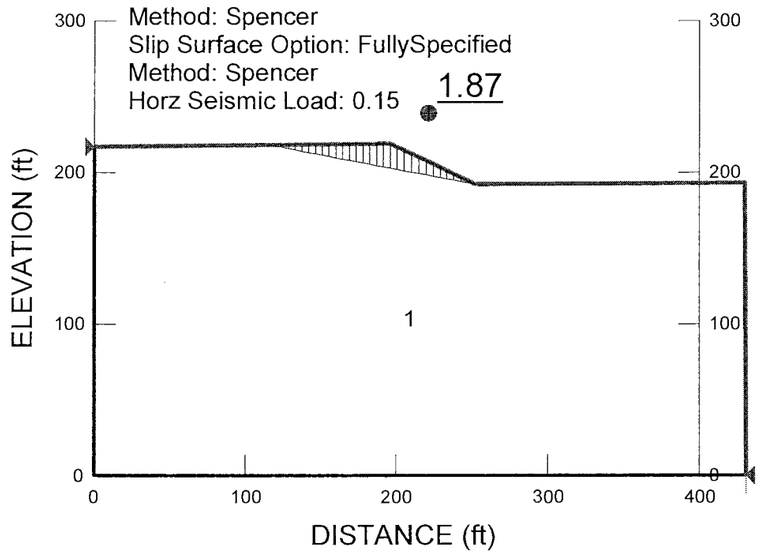

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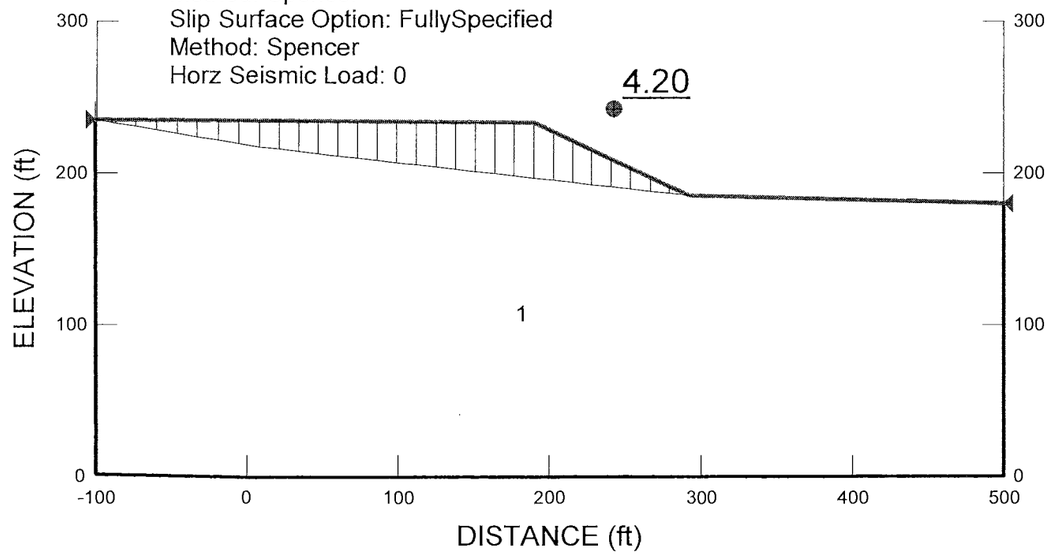

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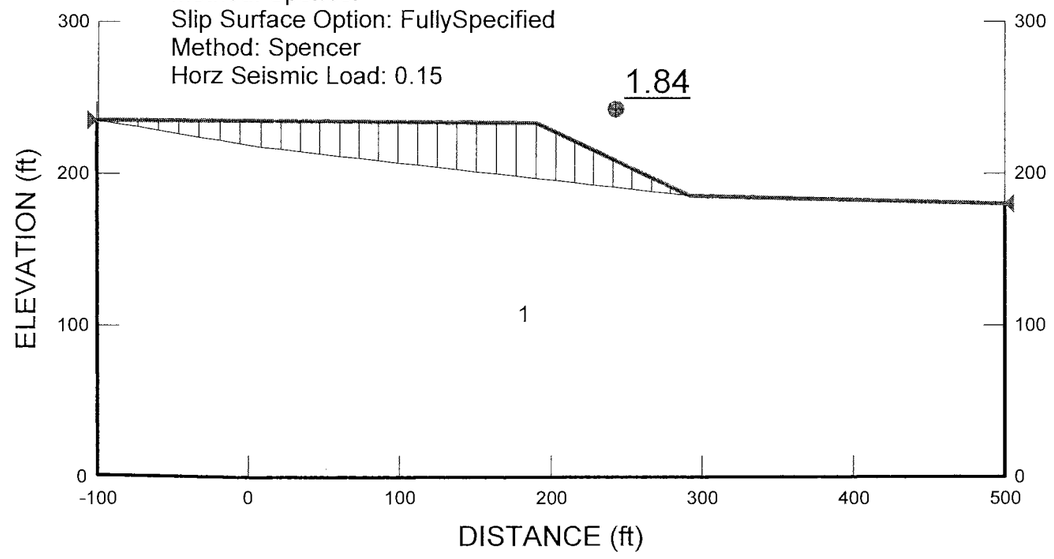

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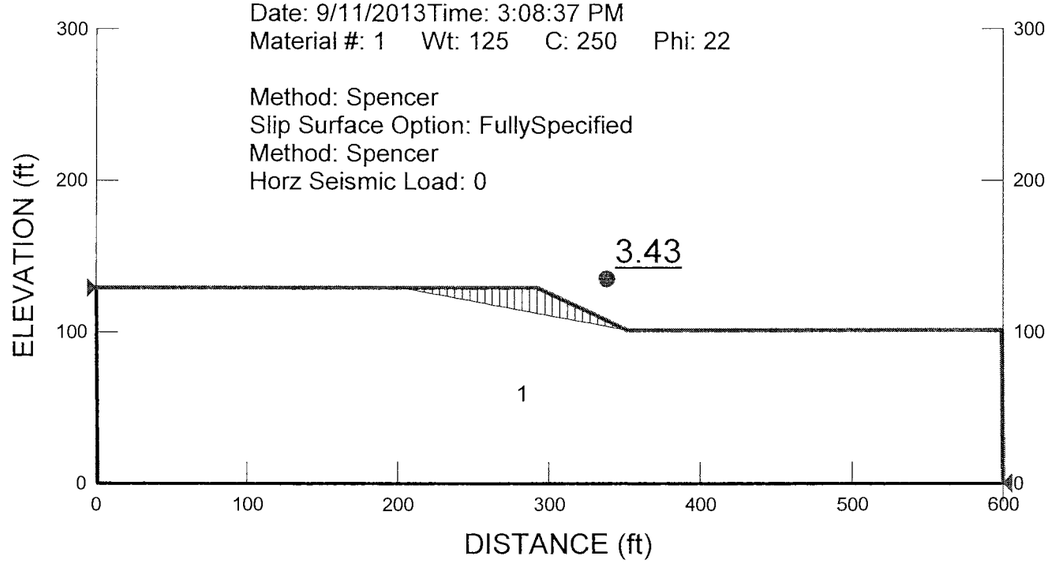

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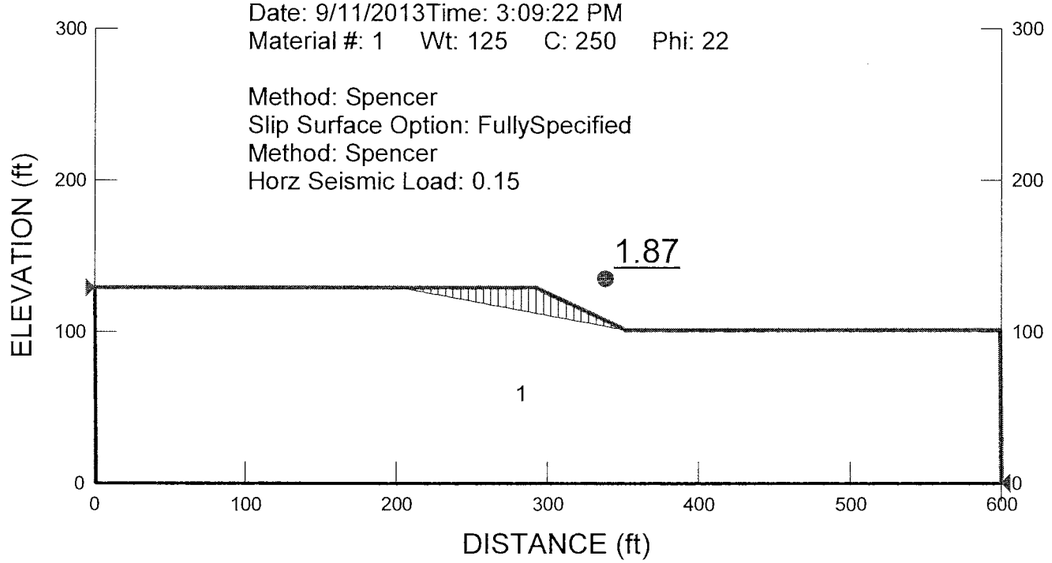

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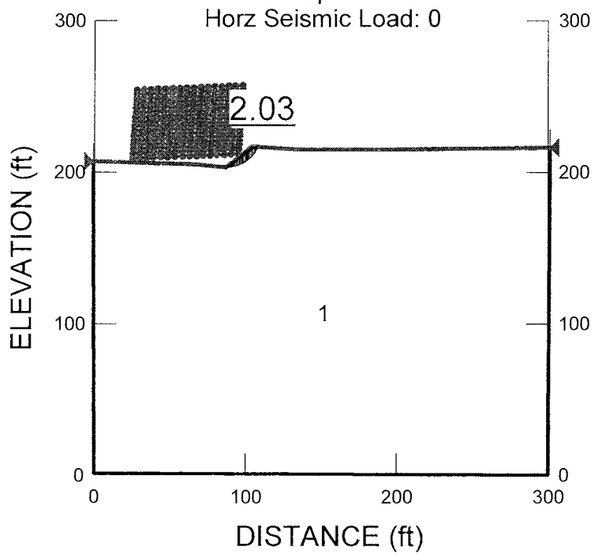

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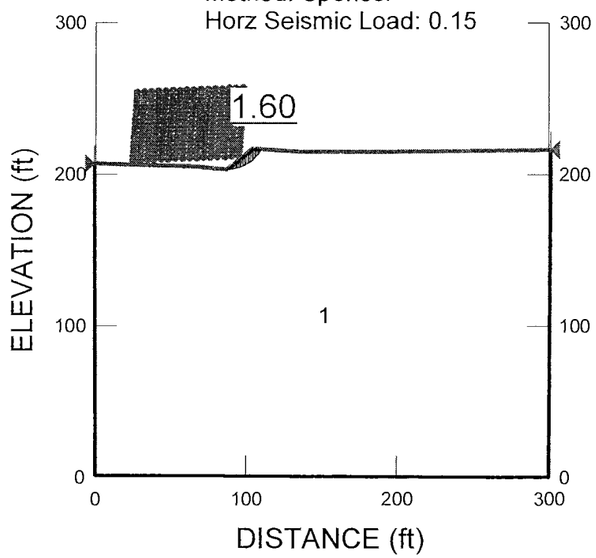

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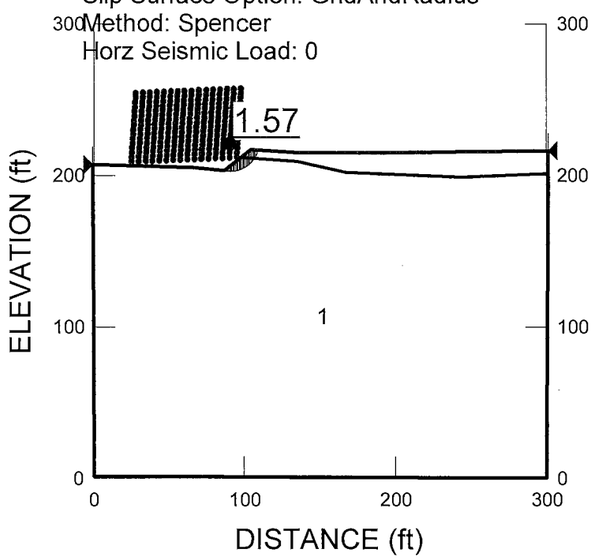


Appendix 5.6C

Geotechnical Review of the 40-Scale Bulk Grading Plan for Mission Village Tract 61105

Leighton and Associates, Inc.

May 14, 2012

GEOTECHNICAL REVIEW OF THE 40-SCALE BULK GRADING PLAN, MISSION VILLAGE TRACT 61105, NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

Newhall Land

25124 Springfield Court, Suite 300
Valencia, California 91355

Volume III of III

Project No. 062580-100

May 14, 2012

Leighton and Associates, Inc.

A LEIGHTON GROUP COMPANY

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

May 14, 2012

Project No. 062580-100

To: Newhall Land
25124 Springfield Court, Suite 300
Valencia, California 91355

Attention: Mr. David Wong

Subject: Geotechnical Review of the 40-Scale Bulk Grading Plan, Mission Village Tract 61105, Newhall Ranch, Los Angeles County, California

In accordance with your request and authorization, Leighton and Associates, Inc., (Leighton) has performed a geotechnical review of the 40-scale bulk grading plan for Mission Village Tract 61105, prepared by Hunsaker & Associates Los Angeles, Inc. The bulk grading will include construction of large building pads, detention basins, drainage devices, permanent perimeter area slopes, and temporary interior slopes that will be re-graded during rough grading.

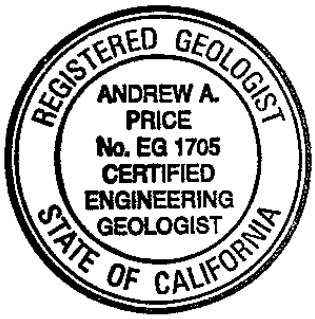
The site will eventually be developed for residential and commercial use buildings with corresponding infrastructure, a school, a library, park sites, fire station, water tanks, and low impact development water quality basins. The development will also include extension of Magic Mountain Parkway, Westridge Parkway and Commerce Center Drive, construction of a new bridge at Commerce Center Drive, and Lion Canyon Restoration. Design elements including culvert and street improvements, water quality basins, Commerce Center Drive bridge and Lion Canyon Restoration will be evaluated during future 40-scale rough grading plan review.

Geotechnical review of the vesting tentative tract map of the proposed development was previously performed by others in 2004, 2009 and 2010. Results of the geotechnical review and recommendations for site grading were documented in several reports that were subsequently reviewed and approved by County of Los Angeles

Geotechnical and Materials Engineering Division (GMED) in January of 2011. Leighton assumes responsibilities as "Consultant of Record" for the proposed project and submitted a Change of Consultant letter to GMED on April 27, 2012.

This report presents our review of the bulk grading plan. The conclusions and recommendations presented herein are based on our review of information from previous geotechnical investigations and analyses, supplemented by available geotechnical and geologic data from adjacent developments. No additional subsurface exploration was performed as a part of this review. The subsurface information collected from the referenced reports was used to evaluate the site as it applies to the current 40-scale bulk grading plan.

We appreciate the opportunity to work with you on the development of this project. If you have any questions regarding this report, please call us at your convenience.



Respectfully submitted,

LEIGHTON CONSULTING, INC.

Djan Chandra, PE, GE 2376
Senior Principal Engineer

Andrew A. Price, PG, CEG 1705
President

DJC/AAP/lr

Distribution: (3) Address

Leighton

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Leighton

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1.0 INTRODUCTION

1.1 Site Description

The Mission Village development is located in the eastern portion of the Newhall Ranch in the County of Los Angeles, California. The project site is bounded by the Santa Clara River on the north and northwest, Magic Mountain Theme Park (Parcel Map 12337) on the east, VTTM 53295 on the west, VTTM 061996 on the south, and VTTM 060678 on the southwest. An Index Map showing the entire subject site is included as Plate 1 (in pocket).

The project site includes approximately 1,262 acres of largely undeveloped area with elevations ranging from 940 feet above mean sea level along the Santa Clara River to 1,510 feet in the southern portion. The topography in the northern and western portions is dominated by gently sloping mesas, including Airport Mesa and Exxon Mesa, bordered by steep bluffs and northwesterly-draining canyons. The central and eastern portions of the project site have moderate to moderately steep, north- to northeast trending bedrock ridges and intervening canyons. Major canyons at the site include the Magic Mountain Canyon along the eastern site boundary, Lion Canyon on the western margin, and Middle Canyon and Dead End Canyon in between. Past site usage included agricultural activities, cattle grazing, and petroleum exploration with the associated access roads, pads, and cut slopes.

1.2 Proposed Development

It is our understanding that the site will be developed for residential and commercial use buildings with corresponding infrastructure, a school, a library, park sites, a fire station, water tanks, water quality basins, and spine flower preserves. The project also includes extension of Magic Mountain Parkway, Westridge Parkway and Commerce Center Drive, construction of new bridge at Commerce Center Drive and Lion Canyon Restoration. These improvements will not be constructed during the bulk grading of the site, and, therefore, will be addressed separately either during the 40-scale rough grading plan review or under separate cover specific to the improvement. Recommendations for development of the residential and commercial structures will be provided at the completion of rough grading of the site.

Proposed bulk grading for the site generally consists of excavation of ridgelines and placement of fill in canyon areas, creating relatively large sheet-graded building pads and surface drainage facilities. Cut slopes constructed during bulk grading at a gradient of 2:1 (horizontal to vertical) and located along the northern, southern and western perimeter areas of the project site are considered permanent cut slopes and will be incorporated into the final site development. All other cut slopes constructed during bulk grading of the site will be constructed at gradients of 2:1 or flatter and are considered temporary cut slopes that will be regraded during rough grading phases. The maximum height of the cut slopes is approximately 140 feet. Fill slopes will also be constructed at a gradient of 2:1 or flatter. The slope ratios used throughout this report are horizontal to vertical.

1.3 Purpose and Scope

Geotechnical review of the Vesting Tentative Tract Map (VTTM) of the proposed development was previously performed by Allan E. Seward Engineering Geology, Inc. (AES) in 2004 and R. T. Frankian & Associates (RTFA) in 2009 and 2010. Results of the geotechnical review and recommendations for site grading were documented in several reports that were subsequently reviewed and approved by County of Los Angeles Geotechnical and Materials Engineering Division (GMED) in January of 2011.

The purpose of this 40-scale bulk grading plan review is to evaluate the current geologic conditions and geotechnical properties of earth materials at the subject site and assess their impact upon the proposed bulk grading plans. The 40-scale Bulk Grading Plans for Mission Village, prepared by Hunsaker & Associates, were used by Leighton as base maps to present the existing geologic conditions and the recommended remedial measures for the subject site (Plates 2 through 39). The scope of our bulk grading plan review has included the following tasks:

- Review of available geotechnical literature pertinent to the subject site and the bordering properties, including previous geotechnical reports, geologic maps, and aerial photographs (Appendix A).
- Review and incorporation of the results of previous geotechnical investigations in the subject site area and adjacent existing developments.
- Preparation of Geotechnical Maps illustrating the geology of the site areas as it relates to the proposed bulk grading plan.

- Preparation of Geotechnical Cross-Sections (Plates 41 through 66) illustrating the proposed bulk grading profiles and underlying geologic conditions.

- Geotechnical review of faulting, seismicity, and secondary seismic effects at the site.

- Geotechnical review and interpretation of field and laboratory data from previous reports for soil properties and engineering analysis.

- Engineering interpretation and assessment, including analysis of slope stability and design of remedial measures such as stabilization and buttress keyways. Computer printouts of the results of our analyses are included in Appendix D. Geotechnical analyses in the previous reports were reviewed to verify that they remain applicable.

- Identification of remedial measures that include stabilization keyways and buttresses, landslide and unsuitable material removals, and zones of increased compaction requirements (deep fills).

- Preparation of this report, summarizing our findings, conclusions and recommendations for site development.

1.4 Previous Geotechnical Studies

Previous geotechnical studies have been conducted by Allan E. Seward Engineering Geology, Inc. (AES) and R. T. Frankian & Associates (RTFA) for the subject site and adjacent areas. The geologic and geotechnical conditions described in their reports have not changed. As such, we have used this information as it relates to the bulk grading plan for the conclusions and recommendations included in this report. Their reports along with other publications used in preparation of this report are listed in Appendix A. Available geotechnical logs of exploratory excavations and laboratory test results from previous geotechnical studies of the site are included in Appendix B and Appendix C, respectively. Approximate locations of the borings, test pits and CPT soundings are shown on the Geotechnical Maps (in pocket).

2.0 GEOLOGY AND SEISMICITY

2.1 Site Specific Geology

AES (2004a) and RTFA (2010a) provided a detailed discussion on the geology of the project in the VTTM review report. No additional fieldwork was conducted during this bulk grading plan review. We have reviewed the data in the report and agreed with the findings. The write-up on geologic units from the previous reports is excerpted in the following sections for ease of reference.

2.1.1 Saugus Formation (TQs and TQsu)

The tract map site is underlain by the Plio-Pleistocene age Saugus Formation. This formation is comprised of sedimentary rock units deposited in a fluvial environment approximately 700,000 to 2.5 million years before present. Saugus Formation units consist of poorly to moderately well bedded, light gray to yellowish gray, very fine- to coarse-grained sandstone, silty sandstone, and pebbly sandstone with moderate brown to reddish brown siltstone, mudstone, and, to a lesser extent, claystone. Sandstone units range from thinly laminated to thickly bedded. The siltstone units are typically massive. The hardness of the Saugus Formation ranges from friable to moderately hard.

2.1.2 Quaternary Terrace Deposits (Qt)

Late Pleistocene age terrace deposits are present within the tract map site and include the mesa-forming deposits bordering the Santa Clara River (Airport Mesa and Exxon Mesa), as well as the extensive terrace deposits located along the future Magic Mountain Parkway extension. The terrace deposits capping Airport Mesa are believed to have been deposited in a fluvial environment; the terrace deposits exposed on Exxon Mesa and in the area of future Magic Mountain Parkway were deposited as alluvial fans emanating from the Santa Susana Mountains (AES, 2004b). The terrace deposits are composed of light brown to yellowish brown sand and silty sand/sandy silt with minor pebbly sand interbeds and a cobble- to locally boulder-rich layer near the base of the deposits.

2.1.3 Quaternary Alluvium (Qal)

Holocene age alluvium, including recent river channel deposits of the active Santa Clara River stream course and adjacent flood plain deposits, are present within the confines of the Santa Clara River bed, and in the tributary drainages that feed the river. The alluvial deposits are composed of interbeds of sand, silt, and gravel.

2.1.4 Slopewash (Qsw)

Slope wash deposits consist of generally structureless and incoherent deposits of soil and rock material that accumulate at the base of the slopes and at the head of tributary canyons. Within the tract map site, these deposits are composed of unconsolidated silty sand/sandy silt with gravel and some cobbles.

2.1.5 Landslides (Qls)

AES (2004b) identified 52 landslides within the tract map site. The landslides, for the most part, consist of translational slides that failed along a weak, unsupported bedding surface within Saugus Formation units. As such, the landslide deposits are typically composed of disturbed Saugus Formation units (i.e., sandstone, siltstone, and mudstone) that can range from highly weathered/altered rock to relatively competent materials. According to AES (2004b), most of the landslides within the site are believed to be pre-Holocene age (greater than 11,000 years old).

2.1.6 Residual Soil

Residual soil (not shown on the Geotechnical Maps) has developed as a mantle over much of the natural, moderate to gentle slopes within the site. The residual soil generally consists of silty sand/sandy silt to sandy and silty clay deposits.

2.1.7 Artificial Fill (af)

Man-made fill includes both uncompacted artificial fill (af) associated with past agricultural and petroleum activities on site, and engineered fill in the southeast corner of the project site, placed as part of the Westridge development (Tract No. 45433). The engineered fill, however, is located

outside the bulk grading limits. The man-made fill is composed primarily of reworked Saugus Formation materials and terrace deposits.

2.2 Faulting

The fault classification criteria adopted by the California Geological Survey, formerly the California Division of Mines and Geology (CDMG), defines Earthquake Fault Zones along active or potentially active faults. An active fault is one that has ruptured during Holocene time (the last 11,000 years). A fault that has ruptured during the last 1.8 million years (Quaternary time) but has not been proven by direct evidence to have not moved within Holocene time is considered to be potentially active. A fault that has not moved during both Pleistocene and Holocene time (that is no movement within the last 1.8 million years) is considered to be inactive.

The project site is not located in an Alquist-Priolo Earthquake Fault Zone (Hart and Bryant, 2007) and there are no known active faults traversing the site. Some of the closest active faults to the site are the San Gabriel fault, Oak Ridge fault, Santa Susana fault, San Cayetano fault, San Fernando fault, and San Andreas fault, located approximately 2, 5, 5.2, 8.4, 9.5, and 20 miles, respectively, from the project site. No known blind thrust faults underlie the site. The closest blind-thrust fault to the site is the Northridge Blind-Thrust fault. The potential for surface rupture resulting from the movement on nearby active faults is not known with certainty, but is considered low.

The Airport Mesa fault and Saddle fault are potentially active faults located within the site beneath the Airport Mesa. Extensive mapping and fault studies were performed by AES (2004a) and further evaluations were conducted by RTFA (2009a). The faults are not located within an Alquist-Priolo Earthquake Fault Zone or designated as active by the Los Angeles County Safety Element. The faults have demonstrated movement in late Quaternary time, but not Holocene time. However, since the Holocene displacement (fault movement within the last 11,000 years) cannot be ruled out, a 50-foot “Fault Building Setbacks” has been established on each side for the Airport Mesa and Saddle Fault traces, or any subsidiary faults, that have disrupted the Pleistocene age terrace deposits. The fault setback zones are shown on the Geotechnical Maps.

2.3 Seismicity

The site is likely to be subjected to strong ground shaking during the life of the project. The intensity of ground shaking depends primarily upon the earthquake magnitude, the distance from the source, and the site response characteristics. Peak Horizontal Ground Accelerations (PHGA) is generally used to evaluate the intensity of ground motion.

A Probabilistic Seismic Hazard Analysis was performed using the deaggregation program developed by the United States Geological Survey (USGS) National Seismic Hazard Mapping Program (2008). The analysis was conducted for a 2 percent probability of exceedance in 50 years (average return period of 2,475 years). Since the project site covers a relatively large area, the analysis was performed for four different locations within the site. The results of the probabilistic seismic hazard analysis are presented in the table below.

Table 1 – Peak Horizontal Ground Accelerations

Location	Coordinates (degrees)		PHGA (g)	Moment Magnitude, Mw
	Longitude	Latitude		
Northwest	-118.6177	34.43459	1.0846	6.6
Northeast	-118.6024	34.42227	1.1118	6.6
Southwest	-118.6198	34.41830	**1.1542**	6.6
Southeast	-118.6042	34.41434	1.1476	6.6

Based on the table above, the selected modal seismic event for the site is Moment Magnitude (MW) 6.6 at a distance of 7.5 kilometers and a PHGA of 1.15g.

2.4 Liquefaction

Liquefaction is a seismic phenomenon in which loose, saturated fine-grained granular soils behave similarly to a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater; 2) low density, fine, clean sandy soils; and 3) high-intensity ground motion. Effects of severe liquefaction on level ground can include sand boils, settlement, and bearing capacity failures below structural foundations.

Seismic hazard zone report for the Newhall and Vel Verde Quadrangles identifies the Santa Clara River and the major tributary canyons to the river as being potentially susceptible to the occurrence of liquefaction. Liquefaction analysis for the site was previously conducted by AES (2004b). AES utilized an estimated peak ground acceleration of 0.88g with Mw of 6.5 for the liquefaction analysis.

Per the 2010 California Building Code (CBC) criteria, two-thirds of the PHGA for 2 percent probability of exceedance in 50 years may be used for liquefaction analysis. Based on the analysis presented in Section 2.4, this acceleration is estimated as 0.77g, lower than that used in the previous liquefaction analysis. Since the geotechnical conditions remain unchanged, the existing liquefaction analysis is conservative and remains valid.

Results of the liquefaction analysis indicate the potential for liquefaction of isolated, thin zones, separated by non-liquefiable layers, after the recommended removals. The maximum cumulative total seismic settlement was calculated to be less than ½ inch. The differential settlements are expected to be less than ¼ inches over a horizontal distance of 30 feet.

2.5 Groundwater

Based on published data for the project site, groundwater in the area occurs in the alluvial deposits within the Santa Clara River and major tributary canyons, within the upper Saugus Formation as perched groundwater and within the lower Saugus Formation regional groundwater system. The County of Los Angeles Department of Public Works has periodically monitored the groundwater table in the area since 1942 through groundwater monitoring wells in the vicinity of the site. Four of the wells are located to the north of the site, within the confines of the Santa Clara River/Castaic Creek flood plain. Location of the wells and recorded groundwater levels are summarized in the following table.

Table 2 – Groundwater Table from Adjacent Monitoring Wells

Well No.	Location	Ground Surface Elevation (feet)	Highest Water Level		Recent Water Level	
			Depth (feet)	Date Measured	Depth (feet)	Date Measured
6995D	Near the intersection of The Old Road and Henry Mayo Drive; destroyed in 2006	1013.4	6.6	3/17/1978	13.0	11/22/2005
6986	North side of Henry Mayo Drive between The Old Road and Commerce Center Drive	985.8	8.1	4/20/1945	23.3	2/26/2007
6976A	Along Henry Mayo Drive, approximately ¼ mile west of Commerce Center Drive	982.0	9	12/15/1966	24.6	11/13/2006
6977C	Approximately 100 feet south of Henry Mayo Drive within the Castaic Creek flood Plain	957.4	15.3	4/19/1978	25.9	12/1/2005

Within the project site, the shallowest groundwater table was encountered in the mouth of the Middle Canyon. Piezometers installed in the Middle Canyon indicated groundwater at approximately 15 feet below the ground surface near the canyon mouth, and at 35 feet approximately 1,500 feet upstream from the mouth. Groundwater was also encountered in bedrock at depths of 40 and 49 feet in two borings drilled near the mouth of Middle Canyon.

A spring exists near the mouth of the Middle Canyon where the source of water was determined to be likely from perched groundwater and excess irrigation that flow along the upper permeable Saugus Formation (AES, 2007). The spring was created by the presence of mudstone beds and clay fault gouge materials along the nearby faulted syncline that act as barriers impeding the groundwater water from percolating. A slump or debris flow of fine-grained deposits at the canyon mouth also restricts groundwater from directly entering Santa Clara River.

No significant groundwater was encountered in other borings or test pits located within the remaining areas of the project site.

3.0 SLOPE STABILITY

3.1 Approach

Stability of the existing landslides, proposed cut slopes and fill slopes, and natural slopes to remain in place was previously addressed by AES and RTFA during their review of the Vesting Tentative Tract Map (VTTM) for the project. The surface profiles, geologic information, and slope stability analyses were reviewed to verify that they remain valid for the bulk grading plan. The slope stability analyses were not re-performed where the proposed profiles do not differ significantly from the VTTM or where the new grades are deemed to improve the stability of the slopes (e.g. flatter and/or lower slopes).

Where slope stability analyses were needed, they were conducted using the computer program SLIDE v6.008 (Rocscience, 2011). SLIDE performs stability calculations using two-dimensional (2D) limit equilibrium techniques based on vertical slice equilibrium. The stability of representative cross sections was analyzed by routine search for the minimum factor of safety for failure surface along potential planes of weakness in the bedrock materials at various depths. For fill slopes, the analyses were conducted using circular surfaces based on the Simplified Bishop Method considering the generally isotropic strength model of the material. The analysis typically included generating 5,000 trial surfaces using the search technique programmed into the software based upon specific search parameters input to the program. The critical surface (lowest factor of safety) of each analysis was plotted on the computer output included in Appendix D.

The criteria used in our analyses of permanent slopes were minimum factors of safety of 1.5 and 1.1 for the static and pseudostatic conditions, respectively. The criterion used for temporary backcuts was a minimum factor of safety of 1.25.

3.2 Shear Strength Parameters

Direct shear tests have been performed on samples of various materials from the site (AES, 2004b). The shear strength parameters established for slope stability analysis of the project are summarized in the following table. Additional samples of the various site materials will be collected during bulk grading to confirm the shear strength parameters used in the slope stability analyses.

Table 3 - Summary of Shear Strength Parameters

Material	Cohesion (psf)	Ø (degrees)
Landslide Failure Plane	200	15
Landslide Mass	140	25
Terrace Deposit Material	200	30
Cross-Bedding	500	35
Saugus Along Bedding (static)	200	20
Saugus Along Bedding (pseudostatic)	300	30
Compacted Fill (coarse-grained)	300	30
Compacted Fill (fine-grained)	350	24
Alluvium	200	29

3.3 Changes on Bulk Grading Plan

Permanent slopes will be constructed during bulk grading at a gradient of 2:1 (horizontal to vertical) or flatter. These slopes are located along the perimeters of the project site and generally have substantially the same profiles as those on the VTTM. Interior slopes will be constructed mostly at 3:1 or flatter to create large pads and provide drainages throughout the site. The interior slopes are generally flatter than those on the VTTM. The interior slopes are temporary in nature and will be re-graded to their final configuration during future rough grading phases.

An overlay of the bulk grading plan was placed on to the tentative map for the purpose of comparing the relationship of slopes between the two plans and is presented as Plate 40. Seven locations were identified where fairly tall new slopes were created as part of the bulk grading plans to address site edge conditions unique to the bulk grading plans or where temporary detention basins are proposed. Geologic cross sections (Plates LA-1 through LA-7) were constructed through the slope areas to evaluate slope stability of these interim slopes. Slope stability analysis was performed on cross sections LA-3, LA-5 and LA-7, computer printouts of which are presented in Appendix D.

The cross sections and slope stability analysis show the slopes either have favorable bedding conditions or factors of safety higher than 1.50, except the natural slope on Cross Section LA3 where the bedding plane is out of slope. To maintain a minimum factor of safety of 1.50, a buttress fill of 65 feet wide by 52 feet high at a slope gradient of 2½:1 will be required at the toe of this slope. This buttress fill is temporary because the area at the toe of this natural slope will be

raised significantly during rough grading to a finish grade higher than the buttress fill.

3.4 Landslides

Fifty two landslides were mapped within the project site (AES, 2004b); two of which are location outside the bulk grading limits. The mapped landslides have been located by interpretation of aerial photos, field mapping and subsurface investigations to define depths of the rupture surfaces and limits of the slides. The landslides appear to have occurred predominately along planes of weakness such as bedding, faults, or fractures. Table 4 presents inventory of the landslides and the recommended remedial measures. As shown in the table, most of the landslides will be completely removed as a result of the proposed cut during grading and implementation of the recommended remedial measures. Four landslides, namely Qls-XXXV, Qls-XXXVII, Qls-XLIII and Qls-XLIV, will be partially removed. Engineered fill will be placed in the removal areas to restore proposed slope and/or pad grades. Landslides may also be encountered during grading where not previously mapped and will be dealt with on a case by case basis.

Qls-XXXV, Qls-XLIII and Qls-XLIV will be removed until a competent landslide configuration as determined by where a minimum factor of safety of 1.5 is achieved and where intact, non-compressible material is observed throughout the partial removal. The removal depth is estimated to be approximately 30 feet of the upper landslide materials. The southern portion of Qls-XXXVII below future building pads will be completely removed. The northern portion of the landslide will remain in place due to the environmental constraints from the spineflower preserve and has been designated as a Restricted Use Area. A shear key and buttress fill slope will be constructed to stabilize the remaining slide.

3.5 Cut slopes

Sixty six cut slopes were identified for the proposed development. However, only 46 cut slopes are being constructed as part of the bulk grading. Of these, 13 cut slopes (CS-5, CS-6, CS-8 through C-11, CS-12a, CS-18, CS-21a, CS-21b, CS-62, CS-63, and CS-64) are permanent cut slopes. These permanent cut slopes will be graded at inclinations of 2:1 to 3:1. All other cut slopes within the site are

interior slopes that will be replaced with permanent 2:1 slopes with terraces and drainage devices during the rough grading stage.

The maximum height of the proposed permanent cut slopes is approximately 140 feet. Three of the permanent cut slopes are expected to encounter adverse geologic conditions, requiring construction of buttresses or stabilization fills. The maximum height of the proposed temporary interior cut slopes is also approximately 140 feet in height. Some of these cut slopes will require buttresses or stabilization fills.

Table 5 summarizes the conditions of the proposed cut slopes and the recommended remedial measures, where necessary. The table presents the changes of the proposed cut slopes as compared to the VTTM. The changes are also shown on the geotechnical cross sections on Plates 41 through 66 where the proposed grades for bulk grading and VTTM are shown in red and blue, respectively. In some instances on the cross sections, bulk and VTTM/permanent grades are the same. Therefore, where bulk grades are the same as the VTTM on the cross sections, the profile will be shown in blue. Grades of permanent slopes that have been altered slightly from the VTTM are shown in red.

The permanent cut slopes around the site perimeters have minor changes and will be constructed at the same gradient. The interior slopes will be mostly graded at flatter gradients of 3:1 or less. Slope stability analyses previously performed for these slopes remain valid.

The buttresses or stabilization fills, where necessary, will generally be at the locations shown on the VTTM since the VTTM reflects the anticipated final grades. Fill slope soils placed in front of the buttress and stability fills constructed based upon ultimate rough grades should be keyed into natural ground to a minimum depth of 3 feet.

3.6 Fill Slopes

Proposed fill slopes will be graded at an inclination of 2:1 or flatter. Permanent 2:1 fill slopes exceeding 30 feet in height will be designed with terrace drains every 25 vertical feet. The highest permanent fill slopes are located in the northern portion of the site at a maximum height of 100 feet and a gradient of 3:1 and in the western portion at 80 feet and 2½:1. The highest interim fill slope is located at the southwestern portion of the site with a maximum height of 130 feet

and a gradient of 3:1. Our slope stability analysis indicates that the fill slopes have factors of safety exceeding 1.5 for static condition and 1.1 for pseudostatic condition.

3.7 Natural Slopes

Natural slopes surrounding the site have gradients ranging from ½:1 to 5:1 (horizontal to vertical). The steepest slopes are the bluff along the Santa Clara River at the north and northwestern boundaries of the site. Stability of the natural slopes has been evaluated by EAS (2004b) and RTFA (2009b). Where the factor of safety is less than the code minimum or where the existing slopes are relatively steep, building setbacks and Restricted Use Areas have been established. These Restricted Use Areas are shown on the Geotechnical Maps.

The surficial stability of slopes proposed to remain natural is dependent upon the thickness of weaker surficial soils and slope gradient. Thick accumulations of surficial soils on steep slopes are susceptible to surficial failures, mudflows and downhill creep during periods of heavy rainfall. Significant damage to downslope improvements can result from soil slumps and debris flows originating on steep slopes above the development. The area particularly susceptible to debris flow hazard is on the southern portion of the site where steep natural slopes descend to the tract boundary. The proposed grading in this area has been designed such that the potential for impact from debris flow is minimized (AES, 2004b and RTFA, 2010a). Additionally, several debris basins are planned during the bulk grading that will contain potential debris flow and erosion-related soils within the property. The impact of debris flow on the proposed bulk grading is, therefore, considered minimal.

3.8 Surficial Slope Stability

Shallow surficial failures involving soils, slopewash, and weathered bedrock were observed. Where surficial slope failures are present, complete removals should be performed. In areas where shallow landslide material extends below proposed cuts, the disturbed and/or weathered landslide material will be removed and replaced with properly moisture conditioned and compacted fill material.

The characteristics of earth materials at the subject site play a prominent role in determining the amount of surficial instability and/or erosion that will occur on a long-term basis. The shear strength parameters established for compacted fill

have a cohesion of 300 psf or higher. Slopes constructed with this material are expected to have adequate factor of safety against surficial slope failure. Sandy soils exist at the site and should not be used within approximately ten feet of finished slope face. Additionally, provisions for site drainage, sediment retention structures, terrace drains, slope planting and other measures in accordance with the requirements of the County of Los Angeles should afford adequate protection. Local areas may require additional measures, at the discretion of the geotechnical consultant, during grading.

3.9 Desilting Basins

Several desilting basins are planned throughout the site to collect and temporary store surface water runoff. The detention basins are typically 7 feet deep with side slopes at a 2:1 gradient. The side slopes of the basin are expected to be stable. We have performed slope stability analysis for a rapid drawdown case where the water in the basin becomes empty rapidly while the side slopes are still saturated. We have conservatively assumed that the basins will have a maximum storage of 7 feet (equal to the total depth of the basin)_at the peak runoff. The computer printouts of the analysis is included in Appendix D and indicated a minimum factor of safety of 1.50.

Table 4 - Recommended Remediation Measures for Landslides

LANDSLIDE NO.	CROSS SECTION	REMOVAL DEPTH RANGE & COMMENTS
I	**NOT A PART OF BULK GRADING**	
II	NA	Complete Removal (CR) = 10-20'
III	11E-11'; 20E-20E'	CR = 10-40'
IV	NA	CR = 10-25'
V	12E-12E'	CR = 10-30'
VI	10E-10E'	CR = 10-30'
VII	NA	CR = 10-20'
VIII	NA	CR = 10-25'
IX	18-18'	CR = 10-30"
X	NA	CR = 10-25'
XI	27-27' & 28-28'	CR = 10-25'
XII	NA	CR = 10-30'
XIII	NA	CR = 10-25'
XIV	8E-8E'; 5-5'; 14-14' & 33-33'	CR = 10-35'
XV	14-14'	CR = 10-20' (most of the upper Qls will be removed by proposed cut)
XVI	9E-9E'	CR = 10-40'
XVII	NA	CR = 10-20'
XVIII	NA	CR = 10-20'
XIX	NA	CR = 10-20'
XX	7M-7M'	CR = 10-40'
XXI	NA	CR = 10-20'
XXII	NA	CR = 10-20' (most of the upper Qls will be removed by proposed cut)
XXIII	NA	CR = 10-45'
XXIV	6M-6M'	CR = 10-35'
XXV	4M-4M & 5M-5M'	CR = 10-60'
XXVI	NA	CR = 10-20'
XXVII	NA	CR = 10-20'
XXVIII	1M-1M'	CR = 10-20'
XXIX	NA	CR = 10-20'
XXX	NA	CR = 10-35'
XXXI	NA	CR = 10-30'
XXXII	NA	CR = 10-25'
XXXIII	NA	CR = 10-20'
XXXIV	NA	Will be completely removed by proposed cut.
XXXV	M-M' & N-N'	PR = 15-40' or to bedrock. Northeastern portion within the Spineflower preserve to remain in-place.
XXXVI	NA	CR = 10-20'
XXXVII	38-38' thru 41-41' &8M-8M'	Partial Removal (PR) and shear key. A portion of this landslide to remain due to environmental constraints. The landslide debris below the proposed building pad will be completely removed (CR = 10-50'). A shear key is needed at the toe of the proposed manufactured fill slope/cut-slope (CS-16) as illustrated on the attached maps and cross-sections (20 to 40' below the toe elevation). Remainder to be shown as RUA
XXXIX	9M-9M'	No removal - located in open space and will not have an adverse affect on proposed or adjacent development. Shown as an RUA on the Geotechnical Map.

Table 4 - Recommended Remediation Measures for Landslides

LANDSLIDE NO.	CROSS SECTION	REMOVAL DEPTH RANGE & COMMENTS
XL	3E-3E'	CR = 10-40'
XLI	NA	CR = 10-30'
XLII	4E-4E'	CR = 10-40'
XLIII	5E-5E'	PR = 30' or to bedrock (stable by inspection)
XLIV	6E-6E'	PR = 30' or to bedrock (stable by inspection)
XLV	15-15'	Will be completely removed by proposed cut.
XLVI	NA	CR = 10-20'
XLVII	NA	CR = 10-25'
XLVIII	NA	Will be completely removed by proposed cut.
XLIX	7E-7E'	CR = 10-45'; Removals include overlying Qt deposits
L	NA	CR = 10-20'
LI	**NOT A PART OF BULK GRADING**	
LII	1E-1E' & 2E-2E'	CR = 10-35'; Replace lower portion with 2:1 fill slope as shown on 2E-2E'
LV	NA	CR=10-15'

Table 5 - Bulk Grading Cut Slope Summary

Cut Slope	Slope Gradient	Slope Height (feet)	Slope Face Direction	Geologic Materials	Geologic Section	Geologic Stability	Changes from VTTM 06115	Mitigation
CS-1a	**NOT A PART OF BULK GRADING**							
CS-1b	**NOT A PART OF BULK GRADING**							
CS-2	3:1	70	N to W	TQsl, Qal, af	34-34'	Steeply dipping and neutral bedding, stable geologic structure	Previously 2:1 slope	Grading will remove Qal & af; construct 25' wide by 3' deep stability fill along north facing segment to eliminate "sliver" fill
CS-3a	2:1 to 3:1	35	S	TQsl & af	N/A	Neutral bedding, stable geologic structure	Previously 2:1 slope	Grading will remove af
CS-3b	2:1 to 3:1	35	E	TQsl & af	N/A	Daylighted bedding, grossly stable by inspection	Previously 2:1 slope	Construct 20' wide by 3' deep stability fill to control erosion and seepage along daylighted bedding
CS-3c	2:1 to 3:1	35	N	TQsu, Qls, af	N/A	Daylighted bedding, grossly stable by inspection	Previously 2:1 slope	Grading will remove Qal & af; construct 25' wide by 3' deep stability fill tto control erosion and seepage along daylighed bedding
CS-4	3:1	40	N	TQsl, TQsu, Qls, af	32-32' & 33-33'	Daylighted bedding, grossly stable by analyses	Previously 2:1 slope	Remove Qls & af; construct 20' wide by 3' deep stability fill to control erosion and restore slope grades in Qls removal area
CS-5*	2:1	130	NW	TQsl & Qls	48-48' & 8E-8E'	Neutral bedding, stable geologic structure	No Change	Grading will remove Qls
CS-6*	2:1	110	N & E	TQsl & three Qls	49-49' & 8E-8E'	Daylighted bedding to steeply dipping bedding, stable by analyses	No Change	Remove landslides; construct 100' wide by 10' deep buttress for daylighted bedding and to restore slope grades in Qls removal areas
CS-7	3:1	30	NNE	TQsl &Qsw	C-C'	Daylighted bedding, grossly stable by analyses	Previously 2:1 slope	Construct 20' wide by 3' deep stability fill to control erosion and seepage along daylighted bedding
CS-8*	2:1	95	N, NE & W	TQsl &Qsw	47-47'	Neutral (stable)bedding for NW facing segment; N facing unstable	No Change	Grading will remove Qsw; construct 110' wide by 5' deep buttress w/1.5:1 backcut for N facing segment
CS-9*	2:1	80	NNE	TQsl, Qls & Qsw	46-46'	Steeply dipping bedding; grossly stable by analyses	No Change	None
CS-10*	2:1	140	NE	TQsl & Qls	18-18' & 19-19'	Steeply dipping and favorable bedding, stable geologic structure	No Change	Remove Qls; construct 30' wide by 5' deep stability fill to eliminate "sliver" cut and restore slope grades in Qls removal area
CS-11*	2:1	55	E	TQsl & Qls	E-E'; LA-1 - LA-1'	Steeply dipping bedding; grossly stable by inspection	No Change	Remove Qls; construct 30' wide by 5' deep stability fill to restore slope grades in Qls removal area
CS-12a*	2:1	90	NE	TQsl, TQsu & Qls	44-44' & 11E-11E'	Daylighted bedding lower portion of slope; stable by analyses	No Change	Remove Qls; construct 30' wide by 5' deep stability fill to restore slope grades in Qls removal area
CS-12c	2:1 to 3:1	25	NE	TQsu	D-D'	Daylighted bedding, grossly stable by analyses	Previously 2:1 slope	None
CS-13	**NOT A PART OF BULK GRADING**							
CS-14	3:1	75	NE	TQsu, Qls & af	D-D'	Daylighted bedding, grossly stable by analyses	Previously 2:1 slope	Remove Qls; construct 30' wide by 5' deep stability fill to restore slope grades in Qls removal areas and control deepage along bedding
CS-15	3:1	70	N	TQsu, Qls, Qsw & af	22-22' & 45-45'	Daylighted bedding; unstable	Previously 2:1 slope	Construct 85' wide by 10' deep buttress w/1.5:1 backcut (eastern half); 85' wide by 15' deep buttress w/ 1.5:1 backcut (western half)
CS-16	2:1	30	N	TQsu, Qls & af	41-41'	Unstable due to landslide	No Change	Remove landslide beneath slope and upper pad; construct buttress to support slope and pad above landslide
CS-18*	2:1	110	W, N & NW	TQs & Qt	N/A	Favorable bedding; Qt susceptible to erosion	No Change	Construct 35' by 5' stability fill (west-facing segment); construct 20' bv 3' stability fill (north- and northwest-facing segment)
CS-19	3:1 or flatter	25	NW, SW & SE	Qt over TQs	N/A	Stable geologic structure	Previously 2:1 to 3:1 slope	None
CS-20	**NOT A PART OF BULK GRADING**							
CS-21a*	2:1	30	E	TQsu	N/A	Favorable bedding; stable geologic structure	No Change	None
CS-21b*	2:1	55	S	TQsu	N/A	Favorable bedding; stable geologic structure	No Change	None

Table 5 - Bulk Grading Cut Slope Summary

Cut Slope	Slope Gradient	Slope Height (feet)	Slope Face Direction	Geologic Materials	Geologic Section	Geologic Stability	Changes from VTTM 06115	Mitigation
CS-23	3:1	40	NW	TQsu & Qls	LA-4 - LA-4'	Favorable bedding; stable geologic structure	Previously 2:1 slope	Grading will remove landslide
CS-24	3:1	25	NW	TQsu & Qls	N/A	Neutral bedding; stable geologic structure	Previously 2:1 slope	Grading will remove landslide
CS-26	3:1	40	NW	TQsu	N/A	Neutral bedding; stable geologic structure	Previously 2:1 slope	None
CS-27	3:1	50	N	TQsu	23-23'	Daylighted bedding; grossly stable by analyses	Previously 2:1 slope	Construct 30' wide by 3' deep stability fill to control erosion and seepage along daylighted bedding
CS-28a	2:1 to 3:1	115	W	TQsl & af	N/A	Favorable bedding; stable geologic structure	Previously 2:1 slope	None
CS-28b	3:1	85	N & NW	TQsl, TQsu, Qls, af	23-23', 24-24', 31-31' & 2E-2E'	Daylighted bedding; western portion stable, eastern portion unstable	Previously 2:1 slope	Grading will remove landslide; construct stability/buttress fill 30' wide by 5' deep for full slope length
CS-29	3:1	90	NE	TQsu	15-15'	Daylighted bedding; unstable	Previously 2:1 slope	Construct 75' wide by 10' deep buttress w/ 2.75:1 backcut
CS-30	2:1 to 3:1	25	N	TQsl & Qsw	N/A	Neutral to shallow daylighted component; stable geologic structure	Previously 2:1 slope	Grading will remove Qsw
CS-31	3:1	30	N	TQsl & af	N/A	Neutral to shallow daylighted component; stable geologic structure	Previously 2:1 slope	Grading will remove af
CS-32	3:1	40	E	TQsl	N/A	Neutral to shallow daylighted component; stable geologic structure	Previously 2:1 slope	None
CS-33	3:1	35	W	Qt	N/A	Favorable bedding; Qt susceptible to erosion	Previously 2:1 slope	Construct 25' wide by 3' deep stability fill to eliminate fill over cut condition and control ersosion of Qt
CS-34	3:1	65	NW & W	Qt & af	N/A	Favorable bedding; Qt susceptible to erosion	Previously 2:1 slope	Grading will remove af. Construct 30' wide by 5' deep stabliity fill to control erosion of Qt
CS-35	3:1	130	W	TQsl & Qt	N/A	Favorable bedding; stable geologic structure	Previously 2:1 slope	Construct 45' wide by 5' deep stability fill to eliminate fill over cut condition and control ersosion of Qt
CS-37	**NOT A CUT SLOPE DURING BULK GRADING**						Previously 2:1 Slope	Potential stability fill, dependent on final rough grades
CS-38	3:1 or flatter	50	SW	TQsl	N/A	Stable geologic structure; "sliver" cut	Previously 2:1 slope	Construct 20' wide by 3' deep stability fill to eliminate "sliver" cut
CS-39	3:1	90	SW	Qt	N/A	Favorable bedding; Qt susceptible to erosion	Previously 2:1 slope	Construct 30' wide by 5' deep stability fill to eliminate fill over cut condition and control ersosion of Qt
CS-40	**NOT A CUT SLOPE DURING BULK GRADING**						Previously 2:1 Slope	Potential stability fill, dependent on final rough grades
CS-41	**NOT A CUT SLOPE DURING BULK GRADING**						Previously 2:1 Slope	Potential stability fill, dependent on final rough grades
CS-42	3:1 or flatter	35	W	TQsl & af	LA-2 - LA-2' & LA-3 - LA-3'	Favorable bedding; stable geologic structure	Previously 2:1 slope	Grading will remove af
CS-43	3:1	30	SE	TQsl & af	N/A	Favorable bedding; stable geologic structure	Previously 2:1 slope	Grading will remove af
CS-44	2:1 to 3:1	40	NW	TQsl	N/A	Favorable bedding; stable geologic structure	Previously 2:1 slope	None
CS-45	**NOT A PART OF BULK GRADING**							
CS-46	3:1	100	N	TQsu & Qt	42-42',43-43' & LA-7 - LA-7'	Favorable bedding; stable geologic structure	Previously 2:1 to 3:1 slope	None
CS-47	3:1	55	S	TQsu	N/A	Favorable bedding; stable geologic structure	Previously 2:1 to 3:1 slope	None
CS-48	**NOT A PART OF BULK GRADING**							

Table 5 - Bulk Grading Cut Slope Summary

Cut Slope	Slope Gradient	Slope Height (feet)	Slope Face Direction	Geologic Materials	Geologic Section	Geologic Stability	Changes from VTTM 06115	Mitigation
CS-49	**NOT A PART OF BULK GRADING**							
CS-50	**NOT A PART OF BULK GRADING**							
CS-51	**NOT A PART OF BULK GRADING**							
CS-52	**NOT A PART OF BULK GRADING**							
CS-53	**NOT A PART OF BULK GRADING**							
CS-54	2:1	40	SW	TQsl	N/A	Favorable bedding; stable geologic structure	No Change	None
CS-55	**NOT A PART OF BULK GRADING**							
CS-56	3:1	25	NW & W	Qt	N/A	Favorable bedding; Qt susceptible to erosion	Previously 2:1 slope	Grading will remove af. Construct 20' wide by 3' deep stabliity fill to control erosion of Qt
CS-57	**NOT A PART OF BULK GRADING**							
CS-58	**NOT A PART OF BULK GRADING**							
CS-59	**NOT A PART OF BULK GRADING**							
CS-60	**NOT A PART OF BULK GRADING**							
CS-61	**NOT A PART OF BULK GRADING**							
CS-62*	2:1	70	SW	TQsu	N/A	Favorable bedding; grossly stable from a geologic standpoint	No Change	None
CS-63*	2:1	80	S	TQsu	9-9'	Favorable bedding; grossly stable from a geologic standpoint	No Change	None
CS-64*	2:1	100	E,S & SW	TQsu & Qls	3E-3E' & L-L'	Neutral to favorable bedding and grossly stable	No Change	Grading should remove all Qls. If any Qls debris remains after grading, debris should be removed and replaced as stability fill with backdrains.

* Permanent slope

4.0 FINDINGS AND CONCLUSIONS

4.1 Summary of Findings

The following is a summary of the geotechnical factors that may affect development of the site as discussed in the proceeding sections of this report and as presented in the referenced reports.

- The Airport Mesa fault and Saddle fault are potentially active faults. A 50-foot "Fault Building Setback" has been established on each side for the fault traces.

- Groundwater is not expected to be encountered during bulk grading. However, localized zones of perched seepage may be encountered in removal areas or buttress excavations. Blanket drains and/or interceptor trenches may be required during grading to control surface water runoff and perched groundwater that may exist.

- Fifty two landslides were mapped within the project site; 48 of the landslides will be completely removed. The four remaining landslides will be removed to a competent, stable configuration.

- Forty six cut slopes are proposed during the bulk grading; 13 of which will be permanent slopes. Buttresses and stability fills, where required, are presented in Table 5 and are indicated on the Geologic Maps.

- Topsoil, alluvium, colluvium/slopewash, weathered formational material, and existing fill soils are considered potentially compressible and may settle under the surcharge of compacted fill and/or foundation loads. These materials will require complete or partial removal. The removal depths are estimated to range from 5 to 22 feet.

- The compressibility of the soils below the recommended removal depths is considered low to moderate. Consolidation settlement is expected to occur mostly during grading and fill placement. The soils below the removal depths are not considered susceptible to hydroconsolidation.

- Based on the available laboratory test results, the terrace deposits typically exhibit very low to low expansion potential and the Saugus formation exhibit low to medium expansion potential. Individual clay beds within the Saugus

formation can have high expansion potential. Additional laboratory testing will be performed on near-surface soils after completion of rough grading.

- Based on the available laboratory test results, on-site soils are moderately to severely corrosive to ferrous metals. Concrete exposure to sulfate attack are classified as negligible. The near-surface soils will be tested for corrosion potential at the completion of rough grade operations.

- The materials anticipated to be encountered during grading of the site consist primarily of topsoil, uncompacted artificial fill, colluvium/slopewash, alluvium and Saugus Formation bedrock. The majority of the bedrock units are expected to be rippable to moderate depths (i.e., most planned depths) utilizing standard grading equipment. Excavation difficulties can be expected where relatively deep cuts (>100 feet) are planned and localized hard rock areas can occur even at relatively shallow depths. These localized areas may require special excavation techniques (i.e., rock breaker or blasting) and may produce over-sized material.

4.2 Conclusions

Based on our review, it is our opinion that the bulk grading design proposed for Tract is feasible from a geotechnical standpoint, and that the subject area can be developed as planned, provided the preliminary conclusions and recommendations contained in this report are implemented during grading and construction.

4.3 Section 111 Statement

Based on the findings presented in this report, it is our professional opinion that the proposed bulk grading will be safe from the hazards of landslide, settlement or slippage. Furthermore, the proposed site grading will not adversely affect adjacent properties. This statement assumes that the recommendations contained herein and in the County of Los Angeles Building Code are followed during design and construction.

5.0 RECOMMENDATIONS

5.1 General Earthwork and Grading

We anticipate the earthwork will consist of removals, excavations, and placement of compacted fill. We recommend that earthwork on the site be performed in accordance with the following recommendations and the General Earthwork and Grading Specifications included in Appendix E. If conflict arises, the recommendations in Appendix E shall be superseded by the recommendations contained in this report.

5.2 Site Preparation

Prior to grading, all areas to receive structural fill or engineered structures should be cleared of surface and subsurface obstructions, including any existing debris and undocumented fill soils, and stripped of vegetation. Removed vegetation and debris should be properly disposed of offsite. Excavations resulting from removal of buried obstructions extending below finish grade elevations should be filled with suitable compacted fill material. All areas to receive fill and/or other surface improvements should be scarified to a minimum depth of 6 inches, properly moisture-conditioned in accordance with the type of material, and recompacted to at least 90 percent relative compaction (based on ASTM Test Method D 1557).

5.3 Removal of Compressible Soils

Excessive settlement will occur if the proposed improvements are placed directly on collapsible/compressible materials such as topsoil, colluvium/slopewash, unsuitable landslide debris, weathered bedrock, and undocumented existing fill. Generally, complete removal of the collapsible/compressible materials will be required. Removals should extend to competent bedrock or native soil as approved by the geotechnical consultant. Removal bottoms should be firm and non-yielding with relatively uniform materials and a minimum relative compaction of 85 percent. The estimated removal depths, excluding landslide removals, range from 5 to 22 feet. Actual depths and extent of the required removals will be determined in the field by the geotechnical consultant based on ingrading observation/testing.

Cut/fill transitions should be mapped in the field during bulk grading operations and properly documented. Remedial measures for areas affected by cut/fill transitions will be developed during rough grading plan review when proposed finish grades are available. Similarly, recommendations for overexcavation of building pads and roadways will be addressed during the rough grading plan review when locations of the building pads and roadways become available.

5.3.1 Existing Fill

Existing fill at the site is generally composed of reworked Saugus Formation materials and terrace deposits. The fill is associated with the past site usage that included agricultural activities and petroleum exploration. All existing fill within the grading limits should be removed. Actual removal depths should be determined in the field by the geotechnical consultant during grading.

5.3.2 Topsoil/Slopewash/Weathered Bedrock

The overburden topsoil, colluvium/alluvium, areas of soil slumps and slope creep, and near-surface weathered bedrock on the natural sidehills and drainages will require complete removal prior to fill placement. The anticipated removal depths are shown on the Geotechnical Maps and estimated to range from 5 to 22 feet below the existing ground surface.

5.3.3 Landslide Debris

Landslides should be removed and replaced with compacted fill per the recommendations in Table 4 of Section 3.0 of this report. Landslides may also be encountered during grading where not previously mapped. Actual depths and extent of the required removals will be determined in the field by the geotechnical consultant based on grading observation/testing.

5.4 Fill Placement

Structural fill soils should be placed in accordance with the General Earthwork and Grading Specifications presented in Appendix E, except as amended herein. In order to reduce the potential for hydroconsolidation and to a limited degree, expansion potential of fill soils, we recommend that structural fill be placed at a minimum of 90 percent of the maximum dry density and near optimum moisture content. To reduce the amount of post-construction settlement, we recommend

that all structural fill deeper than 40 feet be placed at 93 percent relative compaction at near optimum moisture content.

The onsite soil is acceptable for placement as controlled fill provided it is free of organic and other deleterious materials. Oversize material (greater than 12 inches in dimension) such as rock, broken concrete and asphalt is recommended to be processed to develop material suitable for use as structural fill or may be used in the deep fills throughout the site when placed in accordance with our recommendations described in Section 3.0 of the General Earthwork and Grading Specifications in Appendix E. For the bulk grading of the site, rock disposal areas are recommended to be in fills greater than 15 feet below finished grade and at least 15 feet away from any slope face. Organic debris, if encountered, should be generally removed prior to placement of fill and should not be allowed to exceed one percent of the fill material by volume.

After remedial removals and overexcavation, areas to receive fill shall be scarified, moisture-conditioned, and recompacted to 90 percent relative compaction to a minimum depth of approximately 6 to 12 inches. The exact depth to which processing will be required should be determined during grading, based on the moisture-density condition of the material at that time. In some areas, removed materials may require drying to the compactable range prior to compaction. All fill materials, except where stated above, should be compacted to a minimum relative compaction of 90 percent, as determined by ASTM D 1557. Fill materials should be compacted at moisture content of near optimum moisture content.

5.5 Proposed Slopes

Large manufactured cut slopes and fill slopes are planned within the proposed development. All manufactured slopes are designed at a maximum slope angle of 2:1 (horizontal to vertical).

5.5.1 Cut Slopes

Cut slopes where adverse bedding conditions are anticipated should be provided with buttresses or stability fills. The buttresses should be constructed to the recommended dimensions presented in Table 5 in Section 3.0 of this report provided conditions exposed at the time of grading generally conform with those anticipated. The excavations should be mapped and evaluated by the geotechnical consultant prior to fill

placement to document that the keys extend into competent materials and the geologic conditions are generally as anticipated.. To facilitate geologic mapping, key bottoms and backcuts should be cleaned of loose surficial debris. The project civil engineer should survey all keyways to verify they have been excavated to the recommended dimensions and elevations. A typical detail for buttress and stability fill construction is provided in the attached General Earthwork and Grading Specifications (Appendix E).

5.5.2 Fill Slopes

Fill slopes should be constructed in accordance with the attached General Earthwork and Grading Specifications (Appendix E), following typical key excavation and benching. In order to achieve adequate compaction at the slope face, we recommend that fill slopes be overfilled a minimum of 4 feet and then cut back to the compacted material. After cutting back, the final slope should be rolled with compaction equipment where determined necessary by the geotechnical engineer. In addition, to reduce potential for surficial failure, cohesionless materials (loose sand) should not be used for the near-slope face zone (a minimum of 10 feet from the slope face).

5.5.3 Temporary Excavations

Based on the anticipated conditions, backcut excavations for buttresses and stability fills should be inclined at no steeper than 1½:1 except where noted. Front cuts for buttress excavations may be excavated at 1:1, as illustrated on the Geotechnical Cross-Sections.

We recommend that the buttress backcut and toe-cut be observed and geologically mapped by the geotechnical consultant during construction of the buttress. The purpose of this mapping is to substantiate the geologic conditions that we have assumed in our analysis. To expedite the mapping of these temporary slopes, we recommend that the grading contractor trim these cuts with a slope board to be free of loose material as they are excavated. The backcut should be flattened where necessary to maintain a minimum fill thickness of 15 feet in front of the designed slope face, or minimum dimensions shown on cross-sections, whichever is greater.

Temporary backcuts are anticipated to expose material with an adverse geologic structure. Backcut failures and surficial sloughing are possible. Any loose soils that are deposited into the buttress key areas as a result of such failures should be removed per the recommendations of the geotechnical engineer prior to placement of the buttress fill. Should excessive failures occur during grading, it may be necessary to lay slopes back to a flatter inclination. The potential for slide reactivation and/or backcut slope failures may be reduced by constructing the buttresses in several sections.

In general, to reduce the potential for backcut failures, it is the contractors' responsibility to plan buttress excavation and embankment construction operations to minimize the time the backcut stands open. Due to the importance of maintaining backcut stability, we recommend that the grading contractor develop a plan of work, outlining the proposed grading sequence, including specific plans for excavating the proposed keyways.

5.5.4 Subdrainage

To control future groundwater rise in the recommended buttress and stability fills, subdrains and backdrains should be provided in accordance with the General Earthwork and Grading Specifications in Appendix E. Subdrains at the heel of the buttresses and stability fills should be continuous across the length of the keyway. Backdrains should be placed across the backcuts as fill progresses at vertical intervals not exceeding 30 feet. Based on the site conditions, additional drains may also be locally recommended on buttress front cuts or where zones of seepage are encountered. The subdrains and backdrains should be constructed with 4-inch diameter perforated pipe and, unless otherwise recommended, have a minimum gradient of 2 percent toward a suitable outlet. For the deep keyways shown on the Geotechnical Maps, the basal drains should be installed per direction of the geotechnical consultant during construction. Some revision to drain layout may occur based on observations made during grading.

Each buttress or stability fill subdrain should be constructed with outlets that are no more than 100 linear feet apart. Upon completion of bulk grading, all subdrain outlets should be cleared of soil cover or other potential blockage, which may have occurred after initial subdrain construction, and repaired if necessary due to damage occurring during

grading and post grading activities. These outlets should be protected from future blockage. All outlets should be verified by the contractor and observed by the geotechnical consultant at the completion of grading.

5.6 Shrinkage and Bulking

The change in volume of excavated and recompacted soil varies according to soil type, location, and compaction efforts. This volume change is represented as a percentage increase (bulking) or decrease (shrinkage) in volume of fill after removal and recompaction. AES (2004b) estimated the volume change of onsite materials upon removal and recompaction using field and laboratory data including laboratory-measured maximum dry densities for soil types encountered at the subject site and the measured in-place densities of soils. The estimated earth volume changes during grading are presented in the following table.

Table 6 – Shrinkage and Bulking

Material Type	Shrinkage)	Bulking
Artificial Fill (af)	12-18%	
Alluvium (Qal)	20%	
Slopewash (SW)	4-14%	
Upper Qt (0-8' depth)	10-16%	
Qt (>8' depth)	10%	
Upper TQs (0-3' depth)*	4%	
TQs (>3' depth)		0-6%

The level of fill compaction, variations in the dry density of the existing soils and other factors influence the amount of volume change. The quantity of each material type and the estimated volume change should be verified during grading by field mapping and documentation and comparison of excavated volume and the resulting compacted fill. Some adjustments to earthwork volume should be anticipated during grading of the site.

5.7 Slope Protection

Permanent cut and fill slopes should be designed with appropriate surface drainage features and landscaped immediately following completion of grading with drought tolerant, deep rooting vegetation to reduce erosion potential. Provisions for surface drainage, terrace drains, slope planting and other

measures in accordance with County of Los Angeles guidelines should provide adequate protection against erosion and surficial slope failure. We understand that the interim slopes will be provided with adequate debris and erosion control devices and SWPPP to control surficial erosion that may occur. Additionally, we understand that the slopes will be covered with bonded matrix fiber hydroseed mix to comply with Section J110 of County of Los Angeles Building Code. Additional slope protection, such as covering the finished slopes with jute mesh or spraying polymer coating on the slope face, may be required in areas where there is a higher potential for erosion as determined by Leighton during bulk grading.

5.8 Canyon Subdrains

In order to help reduce the potential for groundwater accumulation in the proposed fill areas, we recommend the installation of subdrains in the main canyons and tributary drainage courses prior to fill placement. In general, canyon subdrains should be placed at the base of all canyon removals. The approximate locations of proposed subdrains are shown on the Geotechnical Maps (Plates 3 through 39). Details for subdrain construction are provided in the attached General Earthwork and Grading Specifications (Appendix E). Additional subdrainage may be needed in areas of seepage if encountered during grading. The exact need and location of the subdrains should be determined by Leighton during grading based on the actual field conditions.

A representative of the project civil engineer should survey the installed subdrains for location and elevation. Sufficient time should be allowed for the surveys prior to placing fill over the subdrain. The subdrain outlets should be installed to discharge water into acceptable drainage devices.

Canyon subdrains should be placed on a clean bedrock surface in canyon bottoms (or on a clean surface of left in-place alluvium, as recommended in the field by the geotechnical consultant) prior to subsequent fill placement and constructed in accordance with the recommended guidelines. The upper (highest elevation) 500 lineal feet of any subdrain pipe may be 4 inches in diameter. The next 1,000 lineal feet of subdrain pipe (perforated and non-perforated) should be a minimum of 6 inches in diameter. After 1,500 lineal feet, all subdrain pipe (perforated and non-perforated) should be a minimum 8 inches in diameter. Independent tributary lines may be sized similarly where they connect to a main line that is already an 8-inch diameter pipe. The subdrain may

consist of SDR 35 PVC pipe for fill thickness of less than 50 feet. For fill thickness of 50 feet or greater, the subdrain pipe should consist of Schedule 40 PVC (or equivalent) pipe. A 20-foot section of non-perforated pipe should be placed at the outlet location. Subdrain outlets should be protected from damage and the potential for local erosion due to water discharge from the outlets should be properly mitigated.

5.9 Geotechnical Observation and Testing During Grading

This report was based, in part, upon review of data obtained from a limited number of observations, and a site visit. Such information is, by necessity, incomplete. The nature of many sites is such that differing soils or geologic conditions can be experienced within small distances and under varying climatic conditions. Changes in subsurface conditions can and do occur over time. Therefore, the findings, conclusions, and recommendations presented in this report are only valid if Leighton has the opportunity to observe the subsurface conditions during grading and construction in order to confirm that our collected data are representative for the site.

Our geotechnical recommendations provided in this report are based on current design information. Additional geotechnical studies will be required as the project proceeds to evaluate modifications to the development plan.

Leighton should review future rough grading plans when available and comment further on the geotechnical aspects of the project. Geotechnical observation and testing should be conducted during excavation and all phases of grading operations. Geotechnical observation and testing should be conducted at the following stages:

- Upon completion of clearing and grubbing.
- During all phases of bulk grading, including removals, benching and fill operations, key excavation, pad overexcavation, and cut slope excavation.
- During installation of subdrains and filter materials.
- At the completion of bulk grading to field review final bulk graded conditions.
- When any unusual conditions are encountered during grading.

APPENDIX A

APPENDIX A

References

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APPENDIX B

BORING LOGS

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/11 & 12/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-1B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1211		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SOIL; (0-5.5 ft.) @ 0' Grayish-brown fine sandy silt with clay and scattered pebbles; firm; dry to slightly damp (A-horizon) @ 2' Brown to slightly reddish-brown muddy pebbly sand; moderately hard; slightly damp; grades less clayey and more friable with depth	Logged to 75' on 2/11/02 and deepened to 96' and logged on 2/12/02
		4 4 4					@ 3' Pebble in sampler tip
5						**TERRACE DEPOSITS; Qt, (5.5-83 ft.)** @ 5.5' Gradational contact with yellowish-brown silty pebbly sandstone; dense slightly friable; damp; subhorizontal lamellae	
		3 3 5				@ 8' Interbed of poorly sorted sandy siltstone with pebbles	
				Apx.B: Horizontal			
10		3 5 6				@ 10' Light yellowish-brown silty sandstone with pebbles; more friable; moderately bedded; local lamellae	
					SP-SM		@ 12' Bulk sample
15		2 5 8					
						@ 17.5' Grades more pebbly; moderately friable	
20		3 4 5				@ 19.5' Erosional contact with light yellowish-brown fine silty sandstone to sandy siltstone; dense; damp	@ 19.5' Possible unconformity with older unit of terrace deposits
				B:NW Strike Apx. 2-3NE		@ 20.5' Irregular silty pebbly sandstone; interbedded fine silty sandstone/sandy siltstone with pebbles and silty pebbly sandstone; poorly sorted; bedding irregular and lensing	
25		3 3 4				@ 24.5' Pebbly lenses	
				Apx.B: Horizontal			
30		3 9 15				@ 30' Silty pebbly sandstone with local pebbles to small cobbles; poorly sorted; no bedding	@ 30' Pebble in sampler tip
							@ 32' Bulk sample
35		6 14 6/4"		Apx.B: Horizontal		@ 36' Cross bedding	@ 35' Pebble in sampler tip

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/11 & 12/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-1B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1211		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				B:NW Strike, Apx. 3NE		@ 38.5' 2"-thick moderate yellowish-brown mudstone; moist; locally channelled out	
40						@ 40' Coarse pebbly sandstone interbed; slightly friable; locally clast supported @ 41' - same	
45						@ 44' Cross-bedded sandstone above an erosional contact; yellowish-gray to light yellowish-brown, fine-grained silty sandstone and sandy siltstone below @ 45 & 46' Small cobbles in poorly bedded, pebbly silty sandstone unit	
50				B:N30W,4NE		@ 50' Fine sandy siltstone interbed; yellowish-gray sandstone and pebbly sandstone below; silty units rare; dense; slightly friable; damp; coarse units locally clast supported; well-bedded; attitudes generally consistent	
55				B:N45W,3NE		@ 55' Slightly to moderately friable; locally clast supported	
	■	13 44/5		B:N48W,4NE			@ 57' Bulk sampl @ 58' Rock in sampler lip
60							
65				B:N45W,4NE			
70						@ 68.5' Coarse pebbly sandstone interbed; locally clast supported	
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/11 & 12/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-1B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1211		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80						@ 79.5' Yellowish-gray coarse pebbly sandstone; slightly friable; damp; increasing concentration of large pebbles and local small cobbles; less than 5% cobbles overall	
85						**BEDROCK; TQsu, (83-96 ft.)** @ 83' Erosional contact with yellowish-brown to light yellowish-brown slightly sticky clayey siltstone with sand and local pebbles; depositionally chaotic with irregular lenses of pebbly sandstone and silty pebbly sandstone; no bedding	
90							
95		27					@ 93' Driving wt = 1740#
100						Total Depth 96' (Elev. 1115) No Groundwater No Caving	Backfill tamped every 5 ft.
105							
10							

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/13-15/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-2B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1184		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SOIL; (0-8 ft.) @ 0' Light-brown silty sand to sandy silt with clay and pebbles; firm; dry to slightly damp; scattered cobbles; grades less clayey and more sandy with depth	
	■	1/12" 2					
5							
	■	2 2 3		B:N67W,7NE		**TERRACE DEPOSITS; Qt, (8-96 ft.)** @ 8' Gradational contact with yellowish-gray sand; medium-dense; slightly friable; damp	
10						@ 8.5' Light-brown to yellowish-brown sandy silt and silty sand with pebbles; dense; damp; structureless @ 9' Sandstone lenses	
	■	2 2 2					
				B:N40W,5NE		@ 14' Interbed of pebbly sand; grades siltier and less pebbly	
15							
	■	1 2 2			SC		@ 15' Bulk sample
						@ 17' Grades sandier; slightly friable	
20							
	■	2 2 3		B:N54W,7NE		@ 20.5' Contact with light-brown silt; grades to sandy silt and yellowish-gray silty sand with pebbles; dense; damp	
25				B:N72W,8NE		@ 24.5' Contact with light-brown sandy silt to silty sand with pebbles	
						@ 26' Yellowish-gray pebbly sand; moderately friable @ 27' Light-brown to light yellowish-brown silty sand to sandy silt with scattered pebbles; interbedded sand lenses	
30							
	■	3 5 7					
35							
	■	3 5 9					
						@ 36.5' Yellowish-gray pebbly and cobbly sand; friable @ 37' Erosional contact with silty sand	

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/13-15/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-2B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1184		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						@ 39' Yellowish-gray pebbly cobbly sand; slightly to moderately friable; interbedded fine-grained sand; local laminations; locally clast supported	< 5% Cobbles
				Apx.B: Horizontal			
45							@ 45' Bulk sample
				B:NW Strike Apx. 2-3 NE		@ 48' Interbedded yellowish-gray sand to light yellowish-brown pebbly sand; cross-bedded; local laminations	
50						@ 50' Interbed of cobbly sand	
		4 11 17				@ 50.5' Interbedded light-brown sandy silt and brown clayey silt; firm; small pebble lenses	
						@ 52' Pebbly sand with small cobbles	
55						@ 54' Thinly interbedded silt and clayey silt; upper contact eroded	
				B:N22W,4NE			
60		7 26/5"		B:N67W,5NE			
						@ 63' Cobbly bed	
65						@ 64.5' Interbedded sand, silt and clayey silt; firm to moderately dense; locally friable; local clast-supported pebbly lenses; local cross bedding	
70		7 25		Apx.B: Horizontal			
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/13-15/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-2B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1184		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80	■	13 32					
				B:NW Strike Apx. 1-2 NE		@ 83' Orange-stained sand and pebbly sand with interbedded light-gray, laminated, fine-grained sand; dense; moist; silt and grayish-brown clayey silt to silty clay below	
85							
				Apx.B: Horizontal		@ 86.5' Contact with yellowish-gray coarse-grained sand and pebbly and cobbly sand; loose; friable; local laminations and cross bedding; scattered cobbles up to 8" diameter; common clast supported pebble lenses and beds	Cobbles < 5%
90							
95							
				B:N53W,15NE		**<u>BEDROCK</u>; TQs, (96-104 ft.)** @ 96' Erosional contact with light-gray, fine- to medium-grained laminated sandstone; moderately hard; locally friable @ 98' Interbedded siltstone and silty sandstone with scattered pebbles @ 99' Yellowish-gray coarse-grained sandstone with interbedded fine-grained laminated sandstone and pebbly sandstone; slightly hard; locally slightly friable to friable	
100							
105						Total Depth 104 ft. (Elev. 1080) No Ground Water Minor belling from 86 to 96 ft.	Backfill tamped every 5 ft.
110							

DRILL HOLE LOG

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004
	LOGGED BY: MJD
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/15-18/02
LLING METHOD: Bucket-Auger	HOLE DIA: 24"
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1208

BORING NO. B-3B

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 3 5				**SOIL; (0-3 ft.)** @ 0' Reddish-brown sand and clayey silt to silty clay with scattered pebbles; dense; moist to wet; caliche **TERRACE DEPOSITS; Qt, (3-17 ft.)** @ 3' Grades more sandy and pebbly; less dense	
10						@ 6' Yellowish-brown pebbly sand; moderately dense; moist; no bedding @ 8' Light-brown silty sand to sandy silt; moderately dense; small voids	
15				Apx.B: N25W,3NE		@ 10' Yellowish-gray, fine- to medium-grained sand; moderately dense; orange-staining; no bedding @ 11.5' Gray silty sand; minor clay @ 12.5' Pebbly sand with cobbles; friable @ 13' Grades more pebbly and cobbly; orange-staining; loose; friable; clast-supported pebbles and cobble lenses; cross bedding; channelling; scattered boulders to 17" diameter	
20				B:N42E,25SE	SP-SM	**BEDROCK; TQs, (17-32 ft.)** @ 17' Yellowish-gray pebbly sandstone with cobbles; hard; damp @ 18' Interbed of laminated sandstone; scattered pebbles @ 19' More cobbly	@ 16' Bulk sample 10-20% cobbles from 13 to 17'
25				B:N41E,27SE			
30		5 6 22		B:N10E,30SE		@ 27' Erosional contact with brown siltstone and silty claystone; dense; moist; locally plastic and sticky @ 30' Light-brown siltstone	
35						Total Depth 32 ft. (Elev. 1176) No Groundwater Slight belling from 13 to 17 ft.	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/13-15/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-4B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1236		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SOIL; (0-7 ft.) @ 0' Medium- to dark-brown sandy silt to silty sand with scattered pebbles and minor clay; firm; moist to damp	
		Push/ 6" 1/12"			SM		
5							
		2 2 2				**TERRACE DEPOSITS; Qt, (7-16 ft.)** @ 7' Grades more pebbly with scattered cobbles @ 8' Grades to light-brown silty pebbly sand with scattered cobbles; dense; slightly damp; vaguely bedded	
10							
		1 1 2				@ 11.5' Grades more pebbly and cobbly @ 12' Medium-brown silty sand and sandy silt with scattered pebbles and cobbles; dense; slightly damp @ 14' Silty pebbly cobbly sand	25% Cobbles 14 to 16'
15							
				B:N50W,25NE		**BEDROCK; TQs, (16 to 37.5 ft.)** @ 16' Light yellowish-gray sandstone; moderately dense; damp; local laminations @ 17' Pebbly cobbly sandstone; moderately hard; locally friable; vaguely bedded	
20							
							@ 24' Bulk sample
25							
30							
		6 11/5"		B:N35W,33NE		@ 32.5' Gray, fine- to coarse-grained sandstone; moderately hard; local laminations; well-bedded @ 34.5' Yellowish-brown siltstone interbeds	
35						@ 35' Pebbly sandstone with scattered cobbles	

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/13-15/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-4B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1236		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
		12 26/5"				Total Depth 37.5 ft. (Elev. 1198.5) No Groundwater No Caving	Backfilled tamped every 5 ft.
40							
45							
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/19-21/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-5B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1198		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						TERRACE DEPOSITS; Qt, (0-112 ft.) @ 0' Interbedded yellowish-brown and light yellowish-brown sand, pebbly sand and silty sand; moderately dense; locally friable; damp to moist; locally channeled	
5						@ 4.5' Silty sand with scattered pebbles; minor clay	
		3 4 6		B:NW Strike Apx. 1-2 NE		@ 6.5' Pebbly sand with cobbles; loose to moderately dense; moist; channeled; vaguely to moderately bedded; local clast-supported pebble beds/lenses; local silty sand interbeds; less than 3% cobbles	
10							
15							
				Apx.B: Horizontal		@ 18' 6"-thick interbed of silty sand	
20							
						@ 22' More pebbly and cobbly; less than 5% cobbles	
25							@ 25' Bulk samp
				Apx.B: Horizontal		@ 27.5' Interbedded, laminted silty sand @ 28.5' Interbedded light- to medium-brown sand and silty sand with scattered pebbles and pebble lenses	
30							
				B:NW Strike 2-3 NE		@ 33' Pebbly sand with scattered cobbles with interbedded silty sand	
35							
				B:Subhorizontal		@ 36' 1"-thick cobble bed; cobbles to 8" diameter @ 37' Interbedded silty sand, sand and pebbly sand with minor sandy silt;	

CLIENT: Newhall Ranch Co.		JOB NO.: 02-1703B-1	**DRILL HOLE LOG**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 7/22/2004	
		LOGGED BY: MJD	
DRILLING COMPANY: Tri-Valley Drilling (Dave)		DRILLED: 2/19-21/02	
DRILLING METHOD: Bucket-Auger		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12	**BORING NO.** B-5B
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs		ELEVATION: 1198	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						moderately dense; well-bedded	
40							
		3 5 8					
45							
		5 8 8					
50							
		2 4 8					
						@ 52' 1-ft. thick cobbly bed	
55							
						@ 56' Interbedded sandy silt and sand with scattered pebbles; well-bedded	
60							
		6 16 31					
						@ 62' Interbed of pebbly sand with scattered cobbles	
						@ 64' Interbed of pebbly sand with scattered cobbles	
65							
70							
		8 14 30					
75						@ 75' Interbed of pebbly sand with scattered cobbles	

CLIENT: Newhall Ranch Co.		JOB NO.: 02-1703B-1	**DRILL HOLE LOG**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 7/22/2004	
		LOGGED BY: MJD	
DRILLING COMPANY: Tri-Valley Drilling (Dave)		DRILLED: 2/19-21/02	
DRILLING METHOD: Bucket-Auger		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12	**BORING NO.** B-5B
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs		ELEVATION: 1198	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				B:Subhorizontal		@ 76' Yellowish-gray to light yellowish-brown pebbly and cobbly sand; loose to moderately dense; damp; locally friable; channeled; local clast-supported pebble beds/lenses	<3% Cobbles below 76'
80							@ 80' Bulk sample
85							
90							
				B:Subhorizontal to gently North dipping		@ 92' Interbedded light-brown and yellowish-brown silt and silty sand; dense; damp; well-bedded	
95				B:Subhorizontal to gently North dipping		@ 95' Yellowish-gray pebbly sand with scattered cobbles	
						@ 97' Interbedded yellowish-gray to yellowish-brown sand and silty sand with local light-brown thin silt interbeds; dense; moist; locally friable; well-bedded	
100		4 9 17					
105						@ 101.5' Siltier with scattered pebbles	
						@ 106' Clean sand with pebbles and scattered cobbles; friable; dry to damp; Basal Qt layer	Downhole logged to 105' Surface logge from 105 to 11
110						@ 107' Belling @ 110' More cobbles	Backfilled lamp every 5 ft
						Total Depth 112 ft. (Elev. 1086) No Groundwater Belling from 107-112 ft.	

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	LOGGED BY: MJD		
DRILLING METHOD: Bucket-Auger	DRILLED: 2/22-25/02		
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"		
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	AVERAGE DROP (in.): 12	**BORING NO.** B-6B	
	ELEVATION: 1156		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0						**ARTIFICIAL FILL; af, (0-9 ft.)** @ 0' Medium- to dark-brown pebbly sandy silt to silty sand with scattered cobbles; loose to moderately dense; moist; miscellaneous trash	
		1/12"					
5		2					
		Push/ 18"					
10		1				**TERRACE DEPOSITS; Qt, (9-70.5 ft.)** @ 9' Grades lighter brown; sandier; soft; damp to moist; no cobbles; no bedding	
		1					
		2					
						@ 12' Interbed of yellowish-brown pebbly sand	
						@ 13' Grayish-brown sandy to pebbly silt with local clay; moderately dense to dense; moist; orange staining; structureless; interbedded pebbly sand lenses	
15		1					
		1					
		2					
						@ 17' Yellowisb-brown pebbly sand with scattered cobbles; loose; damp; friable; local clasts-supported pebble lenscs	
				Apx.B: Horizontal	SM		@ 19' Bulk sample
20		1					
		3					
		3				@ 20' Sand interbed; well-bedded	
						@ 22' 4"-thick, medium-brown silt interbed	
25		1					
		1					
		1				@ 24.5' Grayish-brown sandy silt with scattered pebbles; moderately dense	
						@ 26' Interbed of pebbly sand	
						@ 27' Yellowish-brown, light-brown and medium-brown, thinly interbedded sand; silty sand and sandy silt with local clay and scattered pebbles; moderately dense; damp to moist; local pebble lenses; well-bedded	
				B:N45E,3NW			
30		3					
		3					
		3		Apx.B: Horizontal			
				B:N15E,2NW			
35		3					
		5					
		4					

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/22-25/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-6B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1156		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		2 3 6				@ 39.5' More clayey, less sandy	
45				Apx.B: Horizontal		@ 45' Interbedded yellowish-brown sand and pebbly sand; friable; well-bedded	@ 45' Bulk sample
50				Apx.B: Horizontal		@ 52.5' Thinly interbedded, medium-brown silty clay	
55		2 4		Apx.B: Horizontal			
60						@ 58.5' Yellowish-gray pebbly and cobbly sand; loose; friable; damp; local laminations @ 60' Medium-brown sandy silt to silty sand with pebbles and scattered cobbles; structureless	<3% cobbles from 58-65'
65						@ 63' Light yellowish-brown pebbly and cobbly sand; moderately dense but friable; clast-supported pebble beds/lenses; orange staining; eross-bedding	5-10% cobble from 65-70.5'
70				B:N30W,29NE		@ 70' One boulder **BEDROCK; TQs, (70.5-83 ft.)** @ 70.5' Yellowish-gray pebbly sandstone; hard; damp; cross-bedded @ 72' Erosional contact with reddish-brown siltstone; dense; damp @ 73' Yellowish-gray, fine-grained sandstone and silty sandstone	
75				B:N22W,18NE			

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/22-25/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-6B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1156		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
		33				@ 75.5' Interbedded, light- to medium-gray silty sandstone	
80						@ 79' Light greenish-gray silty sandstone to sandy siltstone	
							@ 81' Bulk sample
		19 68				Total Depth 83 ft. (Elev. 1073) No Groundwater Belled out from 58 to 70.5 ft.	Backfill tamped every 5 ft.
85							
90							
95							
100							
105							
110							

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/22-25/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-7B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1208		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ARTIFICAL FILL; af, (0-6 in.) @ 0' Medium-brown silty, pebbly sand; loose; dry **TERRACE DEPOSITS; Qt, (6 in.-109 ft.)** @ 6" Yellowish-gray to light yellowish-brown pebbly sand with seattered cobbles; moderately dense; damp; locally friable; vaguely to moderately bedded	
	■	2 1 1				@ 4' Interbed of light-brown silty sand	
5						@ 6' Local clast-supported pebble lenses; loose; moist; interbedded	
10	■	1 3 5		B:N15W,3SW		@ 10.5' Interbedded light yellowish-brown and light-brown, fine-grained sand and silty sand; locally pebbly; moderately dense; well-bedded	
15	■	1 3 2				@ 17' Interbed of sandy silt	
20				Apx.B: N-S,2-3 W	SM	@ 18.5' Thinly interbedded silty sand	@ 19' Bulk samp
25	■	1 1					
30	■	1 5 9					
35	■	2 3 5		Apx.B: N-S, 1-2 W		@ 36.5' Interbed of medium-brown clayey silt	

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/22-25/02		
'LLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-7B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1208		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf) MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
		2 3 5					
45							
		4 6 12					
50							
55		4 8 9					
60						@ 60' Grades more pebbly	
65						@ 65' Interbed of pebbly sand with cobbles; loose; clast supported	@ 65' Bulk sample
70						@ 73' Interbed of pebbly, cobbly sand	
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/22-25/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-7B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1208		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80							
85						@ 83' Cobbly bed	
90							
95							
100				Apx.B: Horizontal		@ 98.5' Grayish-brown silt and sandy silt with pebbles; moderately dense	
105				B:N10W,4SW			
		9 13/5"					
110						Total Depth 109 ft. (Elev. 1099) No Groundwater No Caving	Backfill lamps every 5 ft

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/27-28/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-8B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1248		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SOIL; (0-6 ft.) @ 0' Medium-brown silty sand to sandy silt with pebbles and scattered cobbles; moderately dense; dry to damp	
		4 7				@ 3' Light-brown pebbly and cobbly sand with minor silt; dry	Small cobble in sampler tip
5							
						TERRACE DEPOSITS; Qt, (6-34 ft.) @ 6' Yellowish-brown pebbly sand with scattered cobbles and minor silt; loose to moderately dense; dry to damp; locally friable; local clast-supported pebble lenses @ 8' Medium-brown silty sand to sandy silt with pebbles; moderately dense; dry	
10							
		2 2 3		Apx.B: Horizontal		@ 10' Interbedded yellowish-brown sand and pebbly sand; loose to moderately dense	
						@ 14' Krotovina and roots	
15							
		2 4 3/3"				@ 16' Light yellowish-brown pebbly and cobbly sand; very loose; friable; dry to damp; clast-supported pebble beds/lenses; interbedded laminated sand	@ 16' 1-2% Cobbles
20							@ 20' Bulk sample @ 20-25' ~3% Cobbles
25						@ 25' Scattered cobbles	
				Apx.B: Horizontal		@ 27.5' Interbedded fine sand, silty sand and pebbly sand; loose to moderately dense; locally friable; damp; well-bedded	
30		1 2 3				@ 31' Yellowish-brown pebbly sand; channeled out; clast-supported pebble lense	
35						**TERRACE/OLD SLOPEWASH DEPOSITS; Qt/Qosw, (34-76.5 ft.)** @ 34' Erosional contact with medium-brown sandy clayey silt; moderately dense; moist; scattered pebbles; no bedding	
		2 3 6					

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/27-28/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-8B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1248		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						@ 38' Grades move sandy and pebbly with scattered cobbles; no bedding	
						@ 41' Brown to greenish-brown clayey silt/silty clay with pebbles scattered sandstone cobbles and boulders; very stiff; dense; locally plastic and sticky	
45		4 6 8					
						@ 47' Large, 2 ft.-diameter sandstone block	@ 48' Bulk samp
50							
55		4 7 9					
60						@ 62' Mixed assemblage of brown silt and clay with sandstone clasts, pebbles and cobbles; irregular sandstone lenses; no bedding	
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 02-1703B-1	**DRILL HOLE LOG**	
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 7/22/2004		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri-Valley Drilling (Dave)	DRILLED: 2/27-28/02		
DRILLING METHOD: Bucket-Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12	**BORING NO.** B-8B	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1248		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				CTC: N24E,76NW B:N35W,15-18NE		**BEDROCK; TQs, (76.5-83 ft.)** @ 76.5' Yellowish-gray to light-gray sandstone and conglomerate; hard; dry to slightly damp; sandstone locally laminated	
80							
85						Total Depth 83 ft. (Elev. 1165) No Groundwater Belling from 15-20 ft.	Backfill lamped every 5 ft.
90							
95							
100							
105							
110							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: VCG		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 11/3-4/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-1E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1109'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			Qsw			**SLOPEWASH; Qsw (0 - 7 Ft.)** @ 0' Light yellowish-brown to tan, fine- to coarse-grained silty pebbly sand; dry; loose; abundant root hairs and pinholes to 6 ft.	Downhole logged on 11/3 and 11/4/99
5		1 2 2		114/5.6			@ 5' Bulk Sample
10		3 5 4		B:N68W,32NE		**BEDROCK; TQs (7 - 74 Ft.)** @ 7' Mottled rusty brown and gray, fine- to medium-grained sandstone with thin interbeds of gray to dark-brown clayey siltstone; minor CaCo3-lined fractures; friable; loose to moderately dense; dry; krotovina to 8 ft.	@ 10' Bulk Sample @ 10' % fines = 20.2
15		4 6 8		123/12.2		@ 13' Tan to gray, fine- to coarse-grained pebbly sandstone with scattered pebbles; friable; well stratified @ 15' Medium-brown silty sandstone interbed, damp	
20		2 5 6	TQs	apx B:N33W,24NE 107/18.7		@ 17' Medium- to coarse-grained pebbly sandstone	@ 17-22' minor ravelling and belling of hole
25				B:N63W,21NE B:N66W,25NE		@ 22' Medium- to rusty-brown clayey siltstone with minor sand; well stratified; soft to slightly firm @ 22.5' Minor parting surface	
30						@ 27' Grades to medium to very coarse pebbly sandstone and fine- to coarse-grained sandstone with scattered cobbles; moderately dense; friable	
35				B:N68W,22NE		@ 32' Yellowish-tan fine-grained silty sandstone with minor CaCo3 pods @ 35' Medium-brown siltstone with mionr sand and clay	
						@ 37' Yellowish-tan fine-grained sandstone	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: VCG	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/3-4/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-1E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1109'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						@ 38' Medium-brown plastic clay with minor silt, 1" thick; no striations on parting surface; CaCo3 on parting surface @ 38.5' Yellowish-tan fine-grained silty sandstone	
45						@ 43.5' Grades to fine- to coarse-grained pebbly sandstone and conglomerate; very friable	@ 45' belling of hole up to 7 ft. wide
50							@ 47' Downhole logging ceased due to unsafe conditions
55							
60							
65							
70							
75						TOTAL DEPTH 74 Ft. (Elev. 1035') No Ground Water Minor Caving @ 17-22 Ft. Caving @ 45-74 Ft.	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: VCG		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 11/9/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-2E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1072'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SURFACE CASING; (0 - 2.5 Ft.)	Downhole logged on 11/9/99
						BEDROCK; TQs, (2.5 - 18 Ft.) @ 2.5' Tan to light yellowish-brown medium- to coarse-grained sandstone, pebbly sandstone and cobble conglomerate; friable; moderately dense; dry to damp	Upper 3 ft. loose and ravelling @ 3' Bulk Sample
5				B:N64W,17NE			
10			TQs	B:N61W,21NE		@ 12' Fine-grained sandstone lense; well stratified	
15							
20						TOTAL DEPTH 18 Ft. (Elev. 1054') No Ground Water No Caving	Backfill tamped every 5 ft.
25							
30							
35							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: SKM	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/9/99	
DRILLING METHOD: Bucket-Auger (86'Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-3E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1145 lbs		ELEVATION: 1087'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 4 6		B:N61W,22NE		**SLOPEWASH; Qsw (0 - 6 inches)** @ 0' Medium grayish-brown sandy silt with pebbles; moderately dense **BEDROCK; TQs (6 inches - 49.5 Ft.)** @ 6" Weathered bedrock medium brown clayey siltstone with CaCO3 nodules @ 2' Mottled olive-brown with FeOx (and CaCo3) siltstone to clayey siltstone; moderately hard; damp @ 8' Dark grayish-brown massive sandy clayey siltstone with pebbles and concretions	Downhole logged on 11/9/99 All contacts continuous and with consistent thickness around hole. Weathered down to 2 ft. @ 5' % fines = 84.5
10							
15		3 8 9		123/14.2		@ 11.4' Light grayish-brown sandy gravel lense @ 11.7' Silty claystone to clayey siltstone @ 15.5' Grades to a mottled light reddish-brown to light greenish-tan silty sandstone	
20			TQs			@ 18' Grades to an olive brown clayey siltstone interbedded with clay lenses	
25				B:N63W,24NW		@ 23' 1" medium brown silty clay lense	Clay lenses @ 23', 27.1' and 33' do not exhibit sharp contacts
30		4 10 14		B:N64W,27NE 108/19.1		@ 27.1' 3/4" medium brown clay lense	
35				B:N65W,26NE		@ 33' 1.5" medium brown clay lense @ 35' Grades to a mottled light brown to grayish-brown silty sandstone with siltstone lenses	

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East
Phase II Landslide Investigation
DRILLING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86'Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1145 lbs

JOB NO.: 99-1703QlsII-1
DATE: 7/22/04
LOGGED BY: SKM
DRILLED: 11/9/99
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1087'

DRILL HOLE LOG

BORING NO. B-3E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						@ 38' Light grayish-tan to brown cobble conglomerate with minor silt, moderately friable, damp	@ 38'-49.5' Minor caving (1 ft. back) Conglomerate unit is laminated in places and has continuous interbeds (1-2" thick) of fine-grained sandstone
			TQs	B:N48W,25NE			
45				B:N53W,23NE			
55						TOTAL DEPTH 49.5 Ft. (Elev. 1037.5') No Ground Water Minor Caving 38 to 49.5 Ft.	Stopped drilling at 49.5' due to bucket spinning on top of large igneous clasts Backfill tamped every 5 ft.
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: VCG	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/15/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-4E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1152'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5			TQs	B:N62W,18NE		**BEDROCK; TQs (0 - 42 Ft.)** @ 0' Tan to light yellowish-brown fine- to medium- grained silty sandstone/sandy siltstone with minor carbonate deposits within the upper 2 ft.; moderately dense; dry to damp @ 5' Tan fine- to coarse-grained sandstone, pebbly sandstone and pebble to cobble conglomerate; friable; minor belling due to ravelling of the sandstone units	Downhole logged on 11/15/99
10				B:N64W,21NE		@ 10' Cobble conglomerate	
15						@ 14' Grades to pebble conglomerate @ 17' Very coarse-grained sandstone	
20				B:N73W,24NE		@ 20' Medium-grained sandstone with scattered pebbles	
25						@ 26' Pebble lense 6" thick	
30							
35				apx B:N48W,17NE		@ 34' Scattered cobbles	

CLIENT: Newhall Ranch Company

PROJECT: Newhall Ranch - Mesas-East
Phase II Landslide Investigation

DRILLING COMPANY: Tri-Valley Drilling/Dave

DRILLING METHOD: Bucket-Auger (86' Rig)

HAMMER TYPE: Telescoping Kelly Bar

DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QlsII-1

DATE: 7/22/04

LOGGED BY: VCG

DRILLED: 11/15/99

HOLE DIA: 24"

AVERAGE DROP (in.): 12"

ELEVATION: 1152'

DRILL HOLE LOG

BORING NO. B-4E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQs				
						TOTAL DEPTH 42 Ft. (Elev. 1110') No Ground Water Minor Belling from 5 to 42 Ft.	Backfill tamped every 5 ft.
45							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: VCG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/15/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-5E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1184'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			Qsw			**SLOPEWASH; Qsw (0 - 8 Ft.)** @ 0' Medium to yellowish-brown fine- to coarse- grained silty pebbly sand and silt with scattered cobbles; loose; dry to damp	Downhole logged on 11/15/99
5							
				B:N68W,24NE		**BEDROCK; TQs (8 - 45 Ft.)** @ 8' Tan to light yellowish-brown fine- to medium- grained silty sandstone; moderately dense; damp @ 9' Grades to a medium- to coarse-grained pebbly sandstone; friable	
10							
			TQs	B:N68W,24NE		@ 12.5' Cobble conglomerate within sandstone and pebbly sandstone	
15							
				B:N61W,25NE			
20							
				B:N68W,34NE			
25							
						@ 31' Scattered cobbles	
30				B:N65W,26NE			
35							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: VCG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/15/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-5E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1184'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQs	Apx B:N49W,39NE			
45						TOTAL DEPTH 45 Ft. (Elev. 1139') No Ground Water No Caving	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: VCG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/16/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-6E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1170'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5			Qsw			**SLOPEWASH; Qsw (0 - 7 Ft.)** @ 0' Medium- to pale yellowish-brown fine- to coarse-grained silty pebbly sand; loose; dry to damp; abundant pinholes to 6 ft.; roots to 7.5 ft.	Downhole logged on 11/16/99
10			Qls	B:N31E,16SE		**LANDSLIDE DEBRIS; Qls (7 - 31 Ft.)** @ 7' Medium- to light-brown fine- to coarse-grained silty sandstone with pebbles; loose; dry; friable; stratigraphy very faint and dipping towards the south @ 10' Pale yellow to tan fine- to coarse-grained sandstone; well stratified; moderately friable; loose to dense; fractured and discontinuous	
15				B:N43W,24NE			
20				B:N40W,14NE B:N62W,22NE		@ 17.4' Moderate- to dark-brown sandy siltstone with carbonate deposits; faint bedding	
25				B:N48W,22NE			
30						@ 31' Reddish-brown fine-grained clayey sandy siltstone; slightly plastic	Slide Plane?
35			TQs	B:N62W,16NE B:N59W,20NE B:N56W,24NE		**BEDROCK; TQs (31 - 50 Ft.)** @ 33' Fine-grained sandstone with minor silt and minor lenses of medium- to coarse-grained sandstone and pebbly sandstone; moderately dense; well stratified; slightly mottled @ 37' Tan medium- to coarse-grained pebbly sandstone and pebble to cobble conglomerate; friable; damp	Minor belling of hole up to 4 ft. in diameter @ 37'

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: VCG/BJS	
LING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/16/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-6E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1170'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQs				
45							
50						TOTAL DEPTH 50 Ft. (Elev. 1120') No Ground Water Minor Belling from 37 to 50 Ft. Slide Plane? @ 31 Ft. (Elev. 1139')	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: VCG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 11/17/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-7E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1156'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5			TQs	B:N62W,24NE B:N49E,26NE		**BEDROCK; TQs (0 - 15 Ft.)** @ 0' Tan to pale yellowish-brown to gray pebbly sandstone and pebble conglomerate; friable; moderately dense to dense; dry to damp; stratified	Downhole logged on 11/17/99
10						@ 10' Cobble conglomerate	Minor belling of hole below 9 ft.
15						TOTAL DEPTH 15 Ft. (Elev. 1141') No Ground Water Minor Belling from 9-15 Ft.	Backfill tamped every 5 ft.
20							
25							
30							
35							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: VCG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/18/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-8E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1080'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 4 Ft.)** @ 0' Medium- to light yellowish-brown fine-grained sandy silt with carbonate pods; minor roots; loose to moderately dense; dry to damp	Downhole logged on 11/18/99
5				B:N62W,20NE		**BEDROCK; TQs (4 - 36 Ft.)** @ 4' Light yellowish-brown to tannish-brown to tan fine-grained sandy siltstone with lenses of medium-brown clayey siltstone, moderately dense; well bedded	
				B:N68W,25NE		@ 8' Tan to rusty gray fine- to coarse-grained sandstone	
10						@ 10' Fine-grained sandstone	
15			TQs	B:N52W,24NE		@ 12.2' Medium- to grayish-brown, fine- to coarse-grained silty sandstone; damp	
				B:N54W,21NE			
20						@ 19' Light yellowish-green to yellowish-brown fine-grained sandy siltstone with rusty brown mottling and minor clay @ 21' Grades to yellowish-tan, fine- to coarse-grained sandstone with scattered pebbles; well bedded	
25				B:N41W,24NE			
30							@ 33' Minor belling of hole
35						@ 35' Scattered cobbles	
						TOTAL DEPTH 36 Ft. (Elev. 1044') No Ground Water, Minor Belling from 33 to 36 Ft.	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: VCG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 11/19/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-9E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1156'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5			Qls			**LANDSLIDE DEBRIS; Qls (0 - 23.8 Ft.)** @ 0' Chaotic jumbled assemblage of light yellowish- to reddish-brown silty sandstone, sandstone and sandy siltstone with minor clay; loose to moderately dense; damp; minor rootlets to 9 ft; non-bedded	Downhole logged on 11/19/99
10							
15						@ 11' Tan to yellowish-tan fine- to coarse-grained pebbly sandstone with clasts of medium- to dark-brown clayey siltstone; nonbedded; loose	
20				B:N62W,32SW		@ 19' Medium- to dark-brown to greenish-brown silty claystone; non-planar; fractured @ 20' Tan fine-grained sandstone; carbonate-lined fractures @ 21' Clay stringers	
25				B:N41E,12SE SP:N19E,13NW B:N41W,24NE		@ 23.2-23.8' SLIDE PLANE; medium- to reddish-brown plastic silty clay; lower contact planar with carbonate modules up to 3-inches in diameter **BEDROCK; TQs (23.8 - 74 Ft.)** @ 23.8' Light yellowish-green to reddish-brown fine- grained sandy siltstone/silty sandstone; moderately hard; damp	
30			TQs	B:N43W,23NE B:N35W,24NE		@ 24.5' Medium-brown clayey siltstone/silty claystone with gypsum, minor carbonate nodules @ 26' Grades to light yellowish-brown fine-grained sandstone with thinly bedded medium- to reddish-brown siltstone with minor clay; some primary soft sediment deformation	
35				B:N38W,17NE			

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QisII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: VCG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 11/19/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-9E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1156'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
						@ 43' Medium- to dark-brown slightly plastic clay; some polished surfaces, minor faulting above plastic clay interbed	
45							
						@ 46.5' Dark greenish-black silty clay interbed; plastic; sticky	
				B:N58W,28NE			
55			TQs	F:N64W,49NE			
				B:N36W,80NE			
				F:N80W,50NE		@ 57' Pebble conglomerate @ 57.5' Reddish-brown sandy siltstone with minor clay @ 58' Minor faulting; no gouge; 3" apparent normal offset; small fractures more prevalent	
60							
65				B:N46W,30NE			
70				B:N46W,29NE			
75						TOTAL DEPTH 74 Ft. (Elev. 1082') No Ground Water, No Caving Slide Plane @ 23.2 to 23.8 Ft. (Elev. 1132.8-1132.2')	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/19-20/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-10E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1137'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/Qdf (0 - 11 Ft.)	Downhole logged on 11/19 and 11/20/99
						@ 0' Medium-brown to dark grayish-brown sandy silt and slightly clayey silt with scattered pebbles; stiff; dry to slightly damp	
5		2 2 1	Qsw/ Qdf	111/8.3			@ 5' Bulk Sample
						@ 7.2' Softer with scattered cobbles	
10		1 2 2		116/6.2		@ 9' Grayish-brown sandy silt and silty sand with scattered pebbles and cobbles; loose to moderately dense; slightly damp to damp	
						LANDSLIDE DEBRIS; Qls (11 - 29 Ft.)	@ 11' Bulk Sample
						@ 11' Disrupted mix of olive-gray to brown siltstone, sandy siltstone and mudstone with pebbly patches; firm to stiff; damp	
15		2 3 4		118/11.1		@ 15' Siltstone clasts apparent	
						@ 17' Disrupted medium-gray to reddish-brown siltstone to clayey siltstone	
				B:N56W,32NE		@ 19.5' Thin olive-gray clayey seam	
20		3 3 3	Qls	108/19.1			@ 20' Bulk Sample
		1 2 3		SP:N32W,31NE		@ 23' Clayey interlayers	@ 23' % fines = 99.5
25		3 7 11		119/13.5		@ 24.5' Irregular contact from olive-gray clay to reddish-brown clay @ 25' Reddish-brown mudstone; moderately plastic; slide plane?; underlain by olive-gray sandy siltstone and silty sandstone with fine-grained sandstone interbeds; dense; damp	
				B:N47W,31NE		@ 27' 2" thick clay siltstone interbed	
				SP:N51W,25NE		@ 29' 1/2" thick olive-gray clayey slide plane; moderately plastic and sheared	@ 29' 4 hand-driven ring samples oriented normal to slide plane;
30		17 31		117/10.5		**BEDROCK; TQs (29 - 60 Ft.)**	@ 30' % fines = 98.5
				MF:N57W,49NE		@ 29' Medium-gray siltstone; moderately hard; hard concretions @ 30' Mottled light-gray to orangish-brown siltstone; moderately hard; damp	@ 31.7' Minor reverse fault with 15' offset
35			TQs	B:N39W,34NE		@ 34.5' Olive-gray fine-grained sandstone with siltstone interbeds	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
LLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 11/19-20/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-10E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1137'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N59W,32NE		@ 39' Light-gray to light yellowish-gray pebble conglomerate with cobbles and pebbly sandstone; moderately dense to moderately hard	
		12 20/3"		120/6.8			@ 42' Bulk Sample
45						@ 44.3' Erosional contact with yellowish-brown to slightly orangish-green siltstone, clayey siltstone and sandy siltstone; moderately hard; damp; poorly bedded	
				B:N41W,33NE		@ 47' 3/4" moderate reddish-brown mudstone interbed with interbed siltstone and sandstone below	
0			Tos				
		9 11/3"		114/17.5			
55				B:N46W,32NE		@ 53.5' Irregular patch of moderate-brown siltstone and clayey siltstone; discontinuous; bedding on opposite wall of boring undisturbed; probable primary soft sediment deformation or a clast	
						@ 56' Fine yellowish-brown sandy siltstone; moderately hard to hard; slightly damp to damp	
60							
		26 35/1"		104/14.8		TOTAL DEPTH 60 Ft. (Elev. 1077') No Ground Water No Caving Slide Plane @ 24.5 Ft. (Elev. 1112.5') Slide Plane @ 29 Ft. (Elev. 1108')	Backfill tamped every 5 ft.
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1123-24/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-11E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1214'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			Qls			**LANDSLIDE DEBRIS; Qls (0 - 18.5 Ft.)** @ 0' Yellowish-olive-tan sandy siltstone and silty sandstone with pebbles and cobbles; loose; dry to slightly damp	Downhole logged on 11/23 and 11/24/99 Casing used from 0 - 12.5 ft. due to loose zone
5							@ 5' Bulk Sample
10						@ 7' Coarse-grained; slightly damp to damp @ 11' Siltstone interbeds; damp	
15		1 2 2		107/22.6		@ 12.5' Olive-brownish-gray siltstone, clayey siltstone and sandy siltstone; firm; damp	
				SP:N42E,22SE		@ 15.8' Sandy silt with pebbles (Qsw?) with a thin 1/2" thick medium-brown clayey siltstone (Sp?) and olive-brown siltstone below	@ 15' Bulk Sample
				SP:N22E,16SE		@ 17' 1/2" thick moderate-brown sticky plastic clay (SP); underlain by medium olive-gray fine-grained sandstone	
20				B:N32W,26NE		@ 18' Thin (1/4") irregular, sheared, moderate reddish-brown mudstone; (probable slip surface)	
		5 15/5"		124/10.7		**BEDROCK; TQs (18.5 - 75 Ft.)** @ 18.5' Interbedded yellowish-brown siltstone and light yellowish-brown sandy siltstone; moderately hard; damp	
				B:N37W,25NE		@ 19' Thin reddish-brown silty sandstone interbed @ 20' Pebbly lenses; hard	
25						@ 21.5' 1.5' thick, discontinuous pebbly sandstone interbed	
		5 11 5/1"	TQs			@ 25' Moderate yellowish-brown siltstone and fine sandy siltstone with local fine light yellowish-brown silty sandstone interbeds; moderately hard; damp; locally laminated	@ 25' % fines = 85.0
30				118/14.2			
		8 12/4"					
35				Apx B: N42W,26NE		@ 34' Two thin pebbly sandstone stringers	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
'LLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1123-24/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-11E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1214'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
		10 18/3"		B:N35W,22NE 118/13.8			
				B:N39W,28NE		@ 43' Coarse pebbly silty sandstone interbed	
45				B:N47W,30NE			
				B:N45W,28NE		@ 47.4' Coarse pebbly silty sandstone interbed	
0							
			TQs				
55							
				B:N34W,23NE			
60						@ 60' Still moderately hard to hard; local laminations	
						@ 62' Laminated fine-grained sandstone unit; minor primary soft sediment deformation in sandstone	
65		21 36/3"		N43W,30NE 109/16.0		@ 65' 2" thick moderate-brown claystone; sticky; moderately plastic	@ 67' drilling harder
70							
75							Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1123-24/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-11E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1214'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80						TOTAL DEPTH 75 Ft. (Elev. 1139') No Ground Water Moderate Caving from 0 - 12 Ft. Slide Plane @ 15.8' (Elev. 1198.2') Slide Plane @ 17' (Elev. 1197') Slide Plane @ 18' (Elev. 1196')	
85							
90							
95							
100							
105							
110							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 11/29-30/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-12E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1228'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						LANDSLIDE DEBRIS; Qls (0 - 20 Ft.) @ 0' Yellowish-gray silty pebbly sandstone; loose, slightly damp	Downhole logged on 11/29 and 11/30/99 Upper 12 ft. of hole cased due to loose material
5						@ 3' Pebbly to cobbly sandstone; loose	@ 5' Bulk Sample
10							
		2 4 5		Apx B: N61W,30NE 115/16.3		@ 12' Olive-gray to olive-brown sandy siltstone/ silty sandstone and siltstone; firm; damp; slightly disrupted; local concretions	
15		2 3 4		111/20.3		@ 16' Disrupted sandstone interbed	@ 14 & 17' minor normal offset of bedding @ 17' Bulk Sample
			Qls	Apx B: N30W,26NE			
20		2 8 10/3"		SP:N41W,24NE		@ 20.5' 1/4-1/2" thick moderate-brown, sticky silty clay; slide plane **BEDROCK; TQs (20.5 - 50 Ft.)** @ 20.5' Slightly reddish-brown to olive-yellowish- brown siltstone, sandy siltstone/silty sandstone and fine-grained sandstone; moderately hard; damp; local concretions	@ 20' % fines = 69.5 @ 20.5' 4 hand-driven ring samples oriented normal to slide plane @ 20.5 % fines = 86.6
				B:N43W,26NE			
25		8 15/3"		117/7.9		@ 24.5' Light yellowish-gray fine, slightly silty sandstone interbed	
			TQs			@ 27' Moderate yellowish-brown slightly mottled silty sandstone/ sandy siltstone interbed	
30				B:N38W,22NE		@ 30' Silty pebbly sandstone interbed with local cobbles	
				Apx B: N62W,30NE		@ 32' Mottled light-brown to olive-green coloration @ 32.8' Light yellowish-gray to light-brown pebbly to cobbly sandstone; dense; slightly friable; damp; cross bedded	
35							@ 37' Coring bucket

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 11/29-30/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-12E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1228'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQs			@ 39.5' Large siltstone rip-up clast	
45							
50						TOTAL DEPTH 50 Ft. (Elev. 1178') No Ground Water Moderate Caving from 0 - 12 Ft. Slide Plane @ 20.5' (Elev. 1207.5')	Backfill tamp every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
'LLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/1/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-13E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1232'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5			Qls			**LANDSLIDE DEBRIS; Qls (0 - 15.8 Ft.)** @ 0' Yellowish-gray slightly silty pebbly sandstone with cobbles; loose; dry to slightly damp	Downhole logged on 12/1/99 Casing used from 0-8 ft. due to loose zone
10				B:N88W,16NE		@ 8' Light yellowish-brown to grayish-brown sandstone and siltstone; damp; firm; slightly disrupted @ 11' Light bluish-gray to grayish-brown siltstone	
15				SP:N48W,30NE		@ 15.5' 3-4" of moderate reddish-brown clay; sticky; plastic; damp to moist; thin light bluish-gray clay at base	@ 15.5' Bag sample of slide plane material
20			TQs	B:N48W,22NE		**BEDROCK; TQs (15.8 - 30 Ft.)** @ 15.8' Moderate yellowish-brown silty sandstone/sandy siltstone; moderately hard; damp @ 17.5' Thin grayish-brown silty clayey interbed @ 19' Moderate reddish-brown sandy siltstone interbed; local sandstone interbeds below @ 21' Local concretions along silty beds	
25						@ 27' Light-gray pebbly sandstone interbed	
30						TOTAL DEPTH 30 Ft. (Elev. 1202') No Ground Water No Caving Hydrocarbon Odor @ 11-15.5 Ft.; not methane or H2S Slide Plane @ 15.5 Ft. (Elev. 1216.5')	Backfill tamped every 5 ft.
35							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/1-2/99	
DRILLING METHOD: Bucket-Auger (85' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-14E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1160'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						LANDSLIDE DEBRIS; Qls (0 - 61 Ft.) @ 0' Light yellowish-brown silty sandstone with scattered clasts of TQs siltstone; loose to locally firm; slightly damp; material is highly disturbed to 61 feet but generally dense; fractures and minor offsets common	Downhole logged on 12/1/99 and 12/2/99 Surficial material removed
5						@ 2' Fragmented interbed of light-gray pebbly sandstone	
	■	1 2 2		109/8.1		@ 5.5' Yellowish-brown fine sandy siltstone with local moderate yellowish-brown clayey siltstone interbeds; disturbed; soft; damp	@ 5' Bulk Sample @ 5' Consol
						@ 7.5' Patches of sandstone	
10							
	■	1 2 2		110/13.6			@ 9' Bedding dips roughly south @ 10' Bulk Sample @ 10' Consol
						@ 12' Isolated patch of light-gray pebbly sandstone; disrupted mix of light yellowish-brown fine silty sandstone and moderate yellowish-brown siltstone/mudstone with local sandstone stringers and patches below; damp; dense but softer than typical bedrock	
15							
	■	1 1 2	Qls				@ 15' % fines = 83.8 @ 15' Consol
20							
	■	2 2 3		103/23.7			@ 20' Consol
				Apx B:N84W,25NE		@ 22.5' 3/4" thick, irregular, moderate reddish-brown mudstone; slightly plastic and sticky	Firmer drilling from 21 to 27 ft.
25						@ 24.5' Moderate-brown slightly clayey siltstone interbed	
30							
	■	3 7 8		110/18.6			@ 30' Consol
						@ 32.5' Sandstone patches	
35							
				Apx SP:N83E,22NW Apx SP:N10W,28SW		@ 35' Thick irregular zone of moderate-brown sticky plastic clay with local siltstone inclusions; damp to moist @ 37' Slightly irregular 1/2" thick moderate-brown plastic clay	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/1-2/99	
DRILLING METHOD: Bucket-Auger (85' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-14E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1160'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				Apx B:N75E,26NE		@ 38.2' 1/16-1/8" moderate-brown plastic clay	
				SP:N82E,26NW		@ 43' 1/8-1/2" moderate-brown sticky plastic clay	
45				SP:N63W,23NE			
				MF:N67W,59NE			MF @ 46' clearly truncates beds
				B:N65W,37NE		@ 47' Light yellowish-gray sandstone and pebbly sandstone interbeds; dense but slightly disrupted and clayey partings are present	
50				B:N85W,31NE		@ 50' Moderate-brown silty claystone; slightly sticky to sticky and plastic; underlying material is dense but highly disturbed mix of light yellowish-brown fine silty sandstone and moderate brown siltstone and claystone	
				SP:N85E,29NW			
55				Parting: N49E, 56NW		@ 54.8' Thin, striated, clayey parting	
				St:7,S53W			
				SP:N72E,32NW		@ 57' Thin moderate-brown silty pebbly sandstone @ 57.5' Thin yellowish-brown silty pebbly sandstone	
60				B:N80W,22NE		@ 59.5' Moderate-brown mudstone interbed with a light-gray disturbed sandstone bed below	
				SP:N64W,16NE		@ 61' Slightly soft yellowish-brown clayey siltstone and light yellowish-brown siltstone with local concretions; base of highly disturbed	Material from 61 to 70.5' is as light as bedrock but locally appears slightly disrupted
				Apx B:N30W,37NE			
65				?/14.6		@ 64' Moderate-brown silty mudstone interbed; not sheared	
		18 75/3"				@ 66.5' Discontinuous laminated sandstone interbeds; appears slightly disturbed with some bedding pinchouts; moderately hard	@ 67' Bulk Sample
				Contact (B?): N56W, 23NE			
70		16 75/4"		109/16.3			
				B:N44W,25NE		**BEDROCK; TQs (70.5 - 92 Ft.)** @ 70.5' Distinct 3" thick planar light yellowish-brown sandstone bed; dip is consistent and regional	Material below 70.5' appears in fact with regional bedding; no distinct slide plane @ 70.5'
						@ 72' Pebbly sandstone lense	
75						@ 73.5' Homogeneous moderate reddish-brown silty clay; no shearing; upper contact irregular	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/1-2/99	
DRILLING METHOD: Bucket-Auger (85' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-14E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1160'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80			Qls	B:N49W,24NE		@ 76' Grades slightly siltier and less clayey @ 80' Local concretions @ 82' 1/2" moderate-brown silty clay; tight; no shearing; local concretions; yellowish-brown fine silty sandstone with sandstone lenses below	
85				B:N43W,26NE			
90						@ 88' Light yellowish-gray pebbly sandstone; hard; damp; minor siltstone interbeds; slight depositional irregularities in bedding	
95						TOTAL DEPTH 92 Ft. (Elev. 1068') No Ground Water No Caving Slide Plane @ 35 Ft. (Elev. 1125') Slide Plane @ 37 Ft. (Elev. 1123') Slide Plane @ 43 Ft. (Elev. 1117') Slide Plane @ 50 Ft. (Elev. 1110') Slide Plane @ 57 Ft. (Elev. 1103') Slide Plane @ 61 Ft. (Elev. 1099') Base of landslide? @ 66.5 Ft. (Elev. 1093.5')	Backfill tamped every 5 ft.
100							
105							
110							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/7/99	
DRILLING METHOD: Bucket-Auger		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-15E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1175'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qls	B:N29E,30NW		**LANDSLIDE DEBRIS; Qls (0 - 9 Ft.)** @ 0' Moderate grayish-brown slightly plastic mudstone and light yellowish-brown fine-grained sandstone and silty sandstone; moderately hard; damp; clearly disturbed and fractured	Downhole logged on 12/7/99
				SP?:N35W,30NE		@ 3.5' 1/2-1" thick moderate-brown clay; plastic; damp; medium olive-brown to grayish-brown siltstone below; tight but slightly disrupted	Surficial material removed
5		3 8 13		118/14.4			
				B:N39W,29NE			
				SP:N28W,31NE Apx B:N47W,27NE		@ 8' Bedding slightly wispy and irregular @ 9' 1/2" thick moderate-brown clay; plastic; slightly sticky	@ 8' Bulk Sample
10		6 15		120/9.5		**BEDROCK; TQs (9 - 45 Ft.)** @ 9' Light yellowish-brown silty sandstone; moderately hard; damp	
				B:N32W,26NE		@ 13' Fine- to medium-grained sandstone	
15		5 12 3/.5"	TQs	B:N48W,30NE 125/13.0		@ 13.5' Slightly orangish-yellowish-brown siltstone; massive; moderately hard; damp	
20		4 12 4/3"		122/12.4		@ 21' Local concretionary lenses; very hard; minor sandstone and sandy siltstone interbeds below; moderately hard	@ 19' Bulk Sample
				B:N42W,80NE			
25				Apx MF:N65W,7NE			@ 24.5' Minor (3-4") normal offset along thin clayey parting
30		12 13/3"		B:N38W,30NE 107/7.9			
				B:N41W,27NE			
35				Apx B:N44W,28NE		@ 35' Yellowish-gray fine- to medium-grained pebbly sandstone; moderately hard to hard; damp; local concretions @ 38' Yellowish-gray pebble conglomerate with cobbles in fine- to medium-grained sandstone matrix	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/7/99	
DRILLING METHOD: Bucket-Auger		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-15E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1175'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQs			@ 42' Interbedded siltstone and fine silty sandstone	
45						TOTAL DEPTH 45 Ft. (Elev. 1130') No Ground Water No Caving Slide Plane @ 3.5 Ft. (Elev. 1171.5') Slide Plane @ 9 Ft. (Elev. 1166')	Backfill tamped every 5 ft.
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/8/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-16E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1160'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0				Apx B:N33W,24NE		**LANDSLIDE DEBRIS; Qls, (0 - 14.5 Ft.)** @ 0' Light yellowish-brown fine silty sandstone with moderate-brown to yellowish-brown siltstone/mudstone interbeds; moderately dense but softer than typical TQs; slightly damp; local concretions; roots common to 2 ft.; bedding slightly irregular	Downhole logged on 12/8/99 Surficial material removed for pad
				Apx SP:N64W,13NE		@ 4.5' 1/4" thick irregular moderate-brown plastic clay; damp	
5		1 3 3		115/14.0		@ 5'-6.5' Moderate-brown mudstone interbed	
			Qls			@ 8.5' Moderate-brown to yellowish-brown clayey siltstone; soft; disturbed; fine silty sandstone interbeds below	Local fractures in coarser units
10		1 2 2		108/16.7			
15				SP:N83W,28NE ST:27,N50E		@ 14.3' Discontinuous plastic clay @ 14.5' Distinct 3/4-1.5" thick, moderate-brown plastic clay; sticky; moist; slide plane; roots along clay	@ 14.5' 4 hand-driven ring samples oriented perpendicular to slide plane
				B:N44W,27NE		**BEDROCK; TQs (14.5 - 30 Ft.)** @ 14.5' Yellowish-brown slightly sandy siltstone; moderately hard; damp; minor concretions	Bedrock is consistently moderately hard
20		6 16		121/11.0		@ 17' Moderate-brown mudstone with concretions @ 20' Interbedded yellowish-brown siltstone/mudstone with local fine-grained sandstone interbeds; some cross laminations	@ 20' Bulk Sample
			TQs	B:N44W,24NE			
25						@ 24' Thin pebbly sandstone stringer; light yellowish-brown fine-grained sandstone interbedded with minor siltstone below	
30						TOTAL DEPTH 30 Ft. (Elev. 1130') No Ground Water No Caving Slide Plane @ 4.5 Ft. (elev. 1155.5') Slide Plane @ 14.5 Ft. (elev. 1145.5')	Backfill tamped every 5 ft.
35							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/8/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-17E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1098'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 4.5 Ft.)** @ 0' Light yellowish-brown silty pebbly sand with scattered cobbles; moderately dense; dry to slightly damp; approximately 2% voids; rootlets and minor CACO3; jumbled blocks of TQs at base	Downhole logged on 12/9/99
5		1 2 2		108/7.0		**LANDSLIDE DEBRIS; Qls (4.5 - 34.5 Ft.)** @ 4.5' Highly disturbed TQs units including light yellowish-brown fine silty sandstone, yellowish-gray sandstone and pebbly sandstone, yellowish-brown sandy siltstone/siltstone and local moderate to dark yellowish-brown mudstone stringers; soft to firm; damp	
				Apx B: N35E,34SE			
10		1 2 2		109/14.8			@ 10' Consol
						@ 12' Local concretions	
15			Qls			@ 14.5' Sandstone interbeds	
				Apx B: N18E,22NW		@ 16' Tighter and slightly less jumbled but still disturbed	
20		4 5 5		96/16.8		@ 20.5' Local concretions; locally soft	Drive Sample @ 20' had concretion in tip and only 6" of disturbed material; blow count suspect
				Apx SP: N35E,8SE		@ 21.5' 1/4" thick moderate-brown clay; slightly sticky; soft and plastic	
						@ 23' Concretions	
				SP:N35E,30NW		@ 24' Thin clayey slip surface; dense but disrupted mix of siltstone, fine silty sandstone and local sandstone/pebbly sandstone below	
25		2 2 4		106/20.9			@ 25' Bulk Sample @ 25' Consol
30		2 3 10		SP:N32W,12NE Parting: N5E,19NW St: 2,N2W 117/13.4		@ 29.5' Distinct 1/2"-thick, moderate reddish-brown clay; plastic; sticky; moist; within sheared moderate-brown mudstone @ 30.5' Thin clay parting along disturbed mudstone @ 31.5' Grayish-brown siltstone	@ 29.5' 4 hand driven rings oriented normal to slide plane @ 30' Consol
						@ 33.5' Slightly silty pebbly sandstone with local cobbles	@ 33.5' Coarse may be disturbed Qoa
35				Apx Contact: N35W, 38SW B:N38W,32NE		**BEDROCK; TQs (34.5 - 57 Ft.)** @ 34.5' Irregular (erosional?) contact with grayish- brown to locally blue-gray mottled siltstone and sandstone interbeds; possibly slightly disturbed; moderately hard; damp	
			TQs				

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
LLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/8/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-17E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1098'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		6 19		Sh:N37W,26NE B:N42W,28NE 116/16.5		@ 37.5' 1/4-1" moderate-brown mudstone; slightly sheared with a planar parting @ 37.6' Interbedded moderate yellowish-brown siltstone and mudstone and light yellowish-brown fine silty sandstone; moderately hard to hard; damp	
45				B:N40W,27NE			
50				B:N42W,26NE			
55							
60						TOTAL DEPTH 57 Ft. (Elev. 1041') No Ground Water No Caving Slide Plane @ 24 Ft. (Elev. 1074') Slide Plane @ 29.5 Ft. (Elev. 1068.5') Base of landslide @ 33.5 Ft. (Elev. 1064.5')	Backfill tamped every 5 ft.
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/9/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-18E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1143'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qal	B:Horizontal		**QUATERNARY ALLUVIUM; Qal (0 - 1 Ft.)** @ 0' Yellowish-gray sandstone and silty sandstone; moderately dense; slightly friable; dry; well bedded **ARTIFICIAL FILL; af (1 - 6 Ft.)** @ 1' Yellowish-brown to dark yellowish-brown muddy pebbly sand with local cobbles; dense to locally loose; damp; apx 1% voids; local fragments of decomposing vegetation	Downhole logged on 12/9/99
5			af	Apx. Contact: N65E, 27NW 113/9.4		**DEBRIS FLOW DEPOSITS/ALLUVIUM; Qdf/Qal (6 - 13 Ft.)** @ 6' Brown muddy sand with scattered pebbles and local siltstone clasts; some organics at sharp upper contact; possible buried soil at top of debris flows with interfingering Qal @ 8' Irregular contact with jumbled mix of yellowish-gray sand and pebbly sand (Qal?), light yellowish-brown fine silty sand and brown pebbly muddy sand with local charcoal fragments @ 11-12.5' Two lenses of pebbly sand on north side of hole; alluvium?; locally clast supported	@ 5' Bulk Sample @ 5' Sampler had only 10" of material; possibly disturbed
10			Qdf Qal	119/6.5			@ 10-12' Bag Sample of char fragmen
15			Qls	SS:N37W,33NE		**LANDSLIDE DEBRIS; Qls (13 - 18.5 Ft.)** @ 13' Light yellowish-brown fine silty sandstone, sandstone and pebbly sandstone; dense; slightly damp to damp; slightly disturbed (creep?) @ 14' 1-2"-thick; moderate-brown clay interbed; soft; sticky; plastic; sheared; carbonate blebs; truncated by overlying Qal	@ 14' Small bag sample of clay
		6		122/2.6			
20				SP:N24W,28NE X-B:N7W,30NE		@ 18.5' 1/4-3/4" moderate-brown clay; slightly plastic; damp; slide plane? **BEDROCK; TQs (18.5 - 30 Ft.)** @ 18.5' Yellowish-gray sandstone and pebbly sandstone; moderately hard to hard; damp; obvious cross-bedding and channeling	Drive sample at 18 ft. stopped due to hard pebbly sandstone
25			TQs	B:N49W,35NE B:N38W,30NE			
30						@ 28' Thin, irregular yellowish-gray siltstone interbed	
35						TOTAL DEPTH 30 Ft. (Elev. 1113') No Ground Water No Caving Slide Plane @ 18.5 Ft. (Elev. 1124.5')	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
LLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/10/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-19E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1125'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 2 2		Apx B: N41E,31NW 123/2.0		**ARTIFICIAL FILL; af (0 - 3.5 Ft.)** @ 0' Grayish-brown muddy pebbly sand; firm; slightly damp; irregular basal contact **LANDSLIDE DEBRIS; Qls (3.5 - 53.5 Ft.)** @ 3.5' Highly disturbed light-gray pebbly sandstone; loose; dry to slightly damp	Downhole logged on 12/10/99 Drive Sample @ 5 ft. had rock in tip
10		1 2 1				@ 7' Irregular contact with light yellowish-brown to yellowish-brown fine sandy siltstone; moderately dense; damp @ 10.5' Yellowish-brown to brown mudstone interbeds; slight blue-gray mottling; wispy; disturbed	@ 10' Consol
15							
20		2 2 4	Qls	SP:N70W,13SW 110/15.8		@ 16.5' Irregular clayey mudstone; slightly sticky @ 18' Bedding clearly disrupted @ 21' 1.5-2" thick moderate-brown plastic clay; very sticky and plastic	@ 21' 4 hand-driven rings oriented normal to slide plane @ 20' Consol @ 21' % fines = 96.1
25				B:N85W,18SW		@ 22.5' Yellowish-gray sandstone and pebbly sandstone interbeds	
30		4 12 20		B:N52W,60SW 114/13.1		@ 26' Yellowish-brown fine-grained silty sandstone @ 28' Tight folded bedding; landslide disrupted	@ 31' Bedding overturned?
35				Parting: N65W, 74SW ST:Down Dip SP:E-W,40SW SP:N74W,63SW		@ 35' Moderate-brown clay parting; disturbed mix of siltstone and claystone below	@ 34' 2 minor reverse faults; 6-8" separation

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/10/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-19E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1125'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		4 11 17	Qls	ST:Downdip to southwesterly SP:N27E,10SE 109/22.0		@ 39.5' 1/8-1/4"-thick moderate reddish-brown plastic clay; yellowish-brown siltstone with local fine silty sandstone interbeds below; dense; damp	@ 40' Consol
45				Parting: N68E,53SE ST:Gently SW SP:N30W,21NE B:N55W,24NE		@ 44' Common discontinuous clay-lined partings with subhorizontal striations @ 44.5' 1/4-1/2" thick, moderate-brown mudstone; sheared; sticky; tighter rock below but slightly disturbed	
50		6 20		B:N52W,22NE 113/17.9		@ 52.5' Discontinuous, polished clay partings with variable striations	
55				SP:N52W,26NE MP:N43W,47NE		@ 53.5' 1"-thick moderate-brown clay; very plastic and sticky; moist; local polished pebbles in clay; irregular claystone and minor fault just below main slide plane **BEDROCK; TQs (53.5 - 65 Ft.)** @ 53.5' Yellowish-brown fine-grained silty sandstone with light-gray sandstone and pebbly sandstone interbeds; moderately hard to hard; damp	@ 54' Bulk sample of clay @ 54.5' Minor fault with 1/16" silty sand gouge; related to landslide movement?
60			TQs	B:N41W,30NE		@ 59' Conglomerate locally concretionary	
65						TOTAL DEPTH 65 Ft. (Elev. 1060') No Ground Water No Caving Slide Plane @ 21 Ft. (Elev. 1104') Slide Plane @ 35 Ft. (Elev. 1090') Slide Plane @ 39.5 Ft. (Elev. 1085.5') Slide Plane @ 44.5 Ft. (Elev. 1080.5') Slide Plane @ 53.5 Ft. (Elev. 1071.5')	Backfill tamped every 5 ft.
70							
75							

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East
Phase II Landslide Investigation
DRILLING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QlsII-1
DATE: 7/22/04
LOGGED BY: BJS/MAS
DRILLED: 12/13/99
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1161'

DRILL HOLE LOG

BORING NO. B-20E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1 2 2		101/11.1		**LANDSLIDE DEBRIS; Qls (0 - 31.5 Ft.)** @ 0' Highly disturbed mix of light yellowish-brown siltstone and fine silty sandstone and yellowish-brown to moderate-brown mudstone stringers; moderately dense to crumbly; slightly damp to damp; local concretions; rootlets to 6 ft.	Downhole logged on 12/13/99 @ 0-10 ft. Mixed Bulk Sample
				SP:N45E,25SE B:N63E,63SE		@ 6.5' Brown fine sandy mud layer; interbedded, steeply dipping pebbly sandstone and pebbly mudstone below	
10		1 2 3		108/21.4		@ 11' Thoroughly disturbed; possible Qosw?	@ 10' Consol @ 12-17' Mixed Bulk Sample
15			Qls	SP:N43E,32SE B:N80W,23NE		@ 14.5' 1/2"-thick moderate-brown clay; sticky; plastic; moist; slide plane; mottled yellowish-brown fine sandy siltstone below @ 16' Light-gray pebbly sandstone below sharp irregular contact parallel to slide plane @ 14.5'; cross bedding and chanelling @ 17.5' Siltstone rip-up clast	
20				Apx B: N5E,32SE		@ 19' Very coarse pebbly sandstone with minor silt; moderately hard to hard; poorly bedded @ 21' Pebbly conglomerate; locally clast-supported with black stains on pebbles	
25				Parting: N40W, 22NE		@ 25' Large siltstone rip-up clasts at base of conglomerate @ 27' Sharp, erosional contact with yellowish-brown fine sandy siltstone and mudstone; clayey parting just below contact @ 29' Grades to silty sandstone and sandstone	
30		30		SP:N49W,29NE		@ 31' Slightly wispy moderate-brown mudstone interbeds @ 31.5' 1/2"-thick moderate-brown clay; sticky; plastic; sheared; slide plane **BEDROCK; TQs (31.5 - 50 Ft.)**	Drive Sample at 30 ft. had rock in tip- no recovery
35		12 39	TQs	B:N49W,28NE 121/12.1		@ 31.5' Light yellowish-brown fine silty sandstone; moderately hard to hard; damp; locally laminated; local concretions	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS/MAS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/13/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-20E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1161'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		26 51	TQs	134/7.8 B/SH:N45W,32NE		@ 38' Thin light yellowish-brown sandstone interbeds and lenses with local cross-bedding @ 42' 3/8"-thick moderate-brown mudstone interbed; slightly sheared, plastic and sticky @ 43.5' Cobble conglomerate with coarse-grained pebbly sandstone below; hard to very hard; well cemented	@ 42' Probable tectonic shearing
50						TOTAL DEPTH 50 Ft. (Elev. 1111') No Ground Water No Caving Slide Plane @ 6.5 Ft. (Elev. 1154.5') Slide Plane @ 14.5 Ft. (Elev. 1146.5') Slide Plane @ 31.5 Ft. (Elev. 1129.5')	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East
Phase II Landslide Investigation
DRILLING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QlsII-1
DATE: 7/22/04
LOGGED BY: BJS/MAS
DRILLED: 12/14-15/99
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1175'

DRILL HOLE LOG

BORING NO. B-21E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 1.5 Ft.)** @ 0' Yellowish- to grayish-brown silty pebbly sand; soft; slightly damp; 1-2% voids **LANDSLIDE DEBRIS; Qls (1.5 - 70 Ft.)** @ 1.5' Disturbed interbeds of light yellowish-brown fine silty sandstone, yellowish-brown siltstone/sandy siltstone and yellowish-brown to brown mudstone; soft to moderately dense; damp; fractures with CACO3 linings common to 5 ft.	Downhole logged on 12/14 and 12/15/99
5		2 3 4		108/15.2		@ 5' Dense	
						@ 7.5' Small patch of Qsw; local moderate reddish- brown siltstone interbeds	@ 7.5' Minor normal fault; 2' offset
10		3 4 6		Apx B:N55E,44NW Apx MF:N63E,44SE 111/16.5			@ 10' Minor Fault @ 10' Consal
							@ 12' Minor normal fault; 10" offset
15			Qls	B:N30E,52NW		@ 14' Yellowish-brown fine-grained silty sandstone interbed @ 16' Pebble conglomerate and sandstone interbeds	
20		5 15 33		110/11.3			@ 20' Bulk Sample
25						@ 23.5' Irregular contact/minor fault with 1/4-1/2" yellowish-brown slightly sticky sandy mud @ 25' Second irregular contact	
				Apx B:N47E,43NW		@ 27' Concretions	
30		7 20 28		129/10.8		@ 29.5' Moderate reddish-brown fine muddy sandstone	@ 29' Minor Fault
						@ 32.5' Grades yellowish-brown	@ 33' Minor Fault
35							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS/MAS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/14-15/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-21E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1175'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		3 6 10		113/14.2		@ 38' Irregular contact/minor fault; local hollow sound below when struck with a hammer @ 40' Interbedded yellowish-brown siltstone/sandy siltstone with minor light yellowish-gray sandstone; moderately hard; damp; local fracturing	@ 40' Consol @ 42.5' Minor fault
45							
				Apx B:N55E,36NW		@ 46.5' Complex zone of disturbed mudstone and cross-bedded pebbly sandstone; locally soft	
50		6 10 19/4"		B:N51E,43NW 117/4.2		@ 50' Interbedded light yellowish-brown fine silty sandstone and yellowish-brown siltstone; moderately hard to locally soft; damp; well bedded but slightly irregular @ 53' Thin reddish-brown siltstone interbed	
55				B:N53E,42NW			@ 54.5' Minor Fault
				B:N50E,40NW MF:N2E,61SE		@ 58' Thin reddish-brown siltstone interbed	@ 58.5' Minor normal fault; 4" offset
60		16 85 61/4"		107/18.5			
65						@ 62.5' Sandstone	
				SP:N76E,37NW		@ 67' Siltstone/mudstone with clayey slide plane; underlain by additional sheared mudstone	@ 68' bag sample of clay @ 68' 4 hand-driven rings oriented normal to slide plane; Landslide mat[illegible] generally fig non-regiona[illegible] fl
70						**BEDROCK; TQs (70 - 85 Ft.)** @ 70' Yellowish-brown fine silty sandstone/sandy siltstone with siltstone and mudstone interbeds; moderately hard; damp	
75							

CLIENT: Newhall Ranch Company

PROJECT: Newhall Ranch - Mesas-East
Phase II Landslide Investigation

DRILLING COMPANY: Tri-Valley Drilling/Dave

DRILLING METHOD: Bucket-Auger (86' Rig)

HAMMER TYPE: Telescoping Kelly Bar

DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QIsII-1

DATE: 7/22/04

LOGGED BY: BJS/MAS

DRILLED: 12/14-15/99

HOLE DIA: 24"

AVERAGE DROP (in.): 12"

ELEVATION: 1175'

DRILL HOLE LOG

BORING NO. B-21E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				B:N42W,24NE			
80							
85						TOTAL DEPTH 85 Ft. (Elev. 1090') No Ground Water No Caving Slide Plane @ 67 Ft. (Elev. 1108')	Backfill tamped every 5 ft.
90							
95							
100							
105							
110							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/15/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-22E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1093'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			af			**ARTIFICIAL FILL; af (0 - 3 Ft.)** @ 0' Grayish-brown muddy sand with local pebbles; firm; slightly damp	Downhole logged on 12/16/99
5		1/18"	Qsw			**SLOPEWASH; Qsw (3 - 10 Ft.)** @ 3' Yellowish-brown pebbly muddy sand with blocks of TQs sandstone; soft to firm; damp; irregular basal contact	@ 5' % fines = 43.3
10		2 3 3	Qls	107/23.0		**LANDSLIDE DEBRIS; Qls (10 - 26 Ft.)** @ 10' Yellowish-brown siltstone and light yellowish-brown fine sandy siltstone with sandstone and pebbly sandstone interbeds; disrupted; dense; damp; local CACO3 from 10-12 ft.	
				B:N70W,56NE			
15						@ 16' Brown siltstone; soft; bedding disrupted	
20		1 2 2		106/21.5		@ 20' Local light-brown sandstone stringers; soft; thoroughly disrupted; possibly some Qal material	
25						@ 25.5' Large clast of light-gray pebbly sandstone; hard	
				Apx B: Horizontal		**QUATERNARY OLDER ALLUVIUM; Qoa (26 - 32 Ft.)** @ 26' Yellowish-gray sand and pebbly sand with local cobbles; loose; damp; crude horizontal stratification; slightly disturbed; basal contact erosional	
30		6 4 18	Qoa	133/4.0		**BEDROCK; TQs (32 - 50 Ft.)** @ 32' Yellowish-brown to light yellowish-brown siltstone and mudstone with local sandstone interbeds; moderately hard to hard; damp; well bedded; evidence of slight primary soft sediment deformation	
35			TQs	B:42W,23NE			

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East
Phase II Landslide Investigation
DRILLING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QlsII-1
DATE: 7/22/04
LOGGED BY: BJS
DRILLED: 12/15/99
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1093'

DRILL HOLE LOG

BORING NO. B-22E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		36 39 50/4"		117/15.8 B:N35W,24NE		@ 40' Concretions. @ 42' Thin moderate-brown clayey siltstone interbed; locally cross-bedded sandstone interbeds below @ 43' Pebbly interbed	
45			TQs				
50						TOTAL DEPTH 50 Ft. (Elev. 1043') No Ground Water No Caving Base of landslide @ 25.5 Ft. (Elev. 1067.5')	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/16-17/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-23E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1185'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw/Qdf			**SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/Qdf (0 - 14 Ft.)** @ 0' Silty pebbly sand with cobbles and small boulders; loose; slightly damp; poorly sorted	Downhole logged on 12/17/99 Surface casing used to 11 ft. due to moderate caving
5		4 6 6		129/3.8			
10		2 3 3		113/12.1			@ 10' Consol
						@ 11' Sandstone clasts in light yellowish-brown sandstone matrix; highly disturbed; loose/soft to moderatley dense; damp	
15						**LANDSLIDE DEBRIS; Qls (14 - 33 Ft.)** @ 14' Yellowish-brown to grayish-yellowish-brown siltstone; soft to firm; damp	
						@ 17' Disturbed sandstone interbeds	
20		2 3 3	Qls	124/11.7		@ 19.5' Light yellowish-brown silty sandstone to sandy siltstone with local pebbles	@ 20' Consol
						@ 21' Yellowish-brown fine sandy mudstone; slightly sticky	
				SP-N87W,19NE		@ 23' 1/2"-thick moderate yellowish-brown silty clay; moderately plastic and sticky	
25						@ 24' Yellowish-brown silty sandstone with pebbles and local clasts of sandstone; thoroughly disrupted; moderately dense to dense; possible old debris flow	
30		3 5 6		113/16.8		@ 31.5' 1-2"-thick, irregular moderate grayish-brown muddy siltstone; soft; basal contact irregular but no distinct slide plane	@ 30' Consol
				B:N65E,15NW			
				Apx. Contact: N60E, 55NW		**BEDROCK; TQs (33 - 50 Ft.)** @ 33' Interbedded yellowish-brown siltstone/sandy siltstone with light yellowish-brown fine sandstone, moderate reddish-brown muddy sandstone, and moderate yellowish-brown mudstone interbeds; moderately hard to hard; damp; typically thin bedded	
35			TQs	Apx B:N42W,34NE		@ 35' Moderate reddish-brown mudstone interbeds	

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation
LING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703Qlsll-1
DATE: 7/22/04
LOGGED BY: MAS/BJS
DRILLED: 12/16-17/99
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1185'

DRILL HOLE LOG

BORING NO. B-23E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		7 18 24	Qls	B:N32W,27NE N37W,23NE 118/15.6		@ 38' Moderate reddish-brown mudstone interbeds	
45						@ 47' Pebbles	
0						TOTAL DEPTH 50 Ft. (Elev. 1135') No Ground Water Moderate Caving to 11 Ft. Slide Plane @ 23 Ft. (elev. 1162') Base of landslide @ 31.5 Ft. (Elev. 1153.5')	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: MAS/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/17,20/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-24E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1058'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0		1 2 2	af Qsw	119/5.2		**ARTIFICIAL FILL; af (0 - 2 Ft.)** @ 0' Yellowish-brown muddy sand with pebbles; firm; dry to damp; poorly sorted; pinhole voids **SLOPEWASH; Qsw (2 - 4.5 Ft.)** @ 2' Yellowish-brown silty clayey sand with pebbles; soft; damp; minor caliche **LANDSLIDE DEBRIS; Qls (4.5 - 40 Ft.)** @ 4.5' Disrupted mix of yellowish-brown siltstone, moderate yellowish-brown mudstone and light yellowish-brown silty sandstone; stiff to moderately dense; damp; locally laminated @ 6' Brown clayey silt layer	Downhole logged on 12/17 and 12/20/99
5		1 2 2		118/10.6			
10		2 2 2		105/22.1		@ 10' Light-brown siltstone and clayey siltstone; sheared; fractures @ 11' 1-4"-thick moderate-brown siltstone and claystone; moderately plastic; moist; irregular; local disturbed sandstone units and mudstone stringers below	
15				SP:N40E,26SE		@ 14' Yellowish-brown silty sandstone and sandy siltstone; soft to moderately dense; damp	
				B/SP:N49E,29SE			
20		1 2 2	Qls	108/15.3		@ 20' Pebbly sandstone interbed @ 22' Dense	
25				Apx B: N43W,20NE			
				SP:N76E,19NW		@ 27' Local concretions @ 28' Thin moderate-brown clay, sheared	
30		5 9 15		120/8.8			
				SP:N84W,15NE		@ 33' 1"-thick moderate-brown silty clay; slightly sheared; truncates beds; dense but disrupted below; concretions	
35							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: MAS/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/17,20/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-24E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1058'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qls	B:N10W,9NE Contact: N22E,8NW		@ 39.5' Pebbly sand layer; dense; possible old alluvium **BEDROCK; TQs (40 - 50 Ft.)** @ 40' Interbedded yellowish-brown siltstone and mudstone and light yellowish-brown fine silty sandstone; moderately hard to hard; damp @ 42' Pebbly lense	
				B:N40W,29NE			
45			TQs	B:N41W,28NE			
50						TOTAL DEPTH 50 Ft. (Elev. 1008') No Ground Water No Caving Slide Plane @ 14 Ft. (Elev. 1044') Slide Plane @ 18 Ft. (Elev. 1040') Slide Plane @ 28 Ft. (Elev. 1030') Slide Plane @ 33 Ft. (Elev. 1025') Base of landslide @ 39.5 Ft. (Elev. 1018.5)	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: MAS/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/20-21/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-25E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1047'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
		2 2 4	Qsw			**SLOPEWASH; Qsw (0 - 5.5 Ft.)** @ 0' Light yellowish-brown silty pebbly sand with zones of pebbly sand; poorly sorted; loose to firm; dry; structureless	Downhole logged on 12/20 and 12/21/99
5		3 2 3		124/2.4		**DEBRIS FLOW DEPOSIT/LANDSLIDE; Qdf/Qls (5.5 - 23 Ft.)** @ 5.5' Light yellowish-brown silty sand with pebbles and locally sandy lenses; loose to firm; slightly damp; vague subhorizontal layering of sandy lenses	
10		1 1 4		114/6.0		@ 11' Yellowish-brown fine silty sand with scattered pebbles and local sand lenses; damp; thin carbonate filaments	@ 10' Drive sample had rock in tip
15			Qdf/Qls				
20		2 4 8		126/8.4 B: Shallow		@ 21.5' Light-gray coarse-grained pebbly sand layer; loose; possibly fluvial **LANDSLIDE DEBRIS?; Qls? (23 - 35.5 Ft.)** @ 23' Yellowish-brown siltstone/silty sandstone with TQs sandstone fragments and local moderate yellowish-brown mudstone; dense but slightly disturbed; damp; locally thin bedded	
25				B:N2W,28NE Apx B: N39W,26NE		@ 25' End of TQs sandstone fragments but still a slightly disturbed appearance @ 27' Moderately hard and only slightly disturbed appearance	
30		17 18 33	Qls	124/8.2			
35			Contact/SP: N77W, 14NE B:N49W,31NE TQs			@ 35' Moderate-brown silty clay; slightly plastic; overlies a thin yellowish-gray pebbly sandstone lense (possibly fluvial?) **BEDROCK; TQs (35.5 - 50 Ft.)** @ 35.5' Interbedded yellowish-brown siltstone and mudstone with light	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/20-21/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-25E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1047'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		7 16 49		B:N40W,32NE 117/16.6		yellowish-brown silty sandstone interbeds; moderately hard to hard; damp; thin bedded to locally laminated; upper 2 feet slightly disturbed	
45			TQS	B:N48W,25NE			
						TOTAL DEPTH 50 Ft. (Elev. 997') No Ground Water No Caving Base of landslide @ 35 Ft. (Elev. 1012')	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/21-22/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-26E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1036'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
		7 17/4"		127/7.5 B:N50W,24NE		**BEDROCK; TQs (0 - 43 Ft.)** @ 0' Light yellowish-gray pebbly sandstone and conglomerate with local silty interbeds; moderately hard and cemented; dry to slightly damp; cross bedded and channeled; siltstone rip-up clasts	Downhole logged on 12/21 and 12/22/99 @ 1' Drive sample had rock in tip
5		7 30		134/2.8			
				Apx B: N38W,31NE		@ 8' Pebble to cobble conglomerate with black stains; clast supported with locally no matrix; well cemented; cross-bedded sandstone interbed below	
10		18 30		138/3.2			
				B:N45W,26NE		@ 12' Erosional contact with light yellowish-brown sandy siltstone interbed; mottled to laminated; damp	
15			TQs				
				B:N40W,33NE			
20		7 16 16/3"		B:N41W,23NE 126/12.3		@ 20' Erosional contact with yellowish-brown to brown siltstone and fine sandy siltstone and local silty clay interbeds; moderately hard to hard; damp; slight evidence of soft sediment deformation; local concretions	
25							
30		6 10 20		B/Sh:N42W,40NE B/Sh:N48W,33NE Sl:32,N33E		@ 30' 1"-thick moderate-brown clay; slightly plastic; soft; bedding sheared and steeper than regional to 31 ft. @ 31' 1"-thick moderate-brown silty clay; slightly plastic; 1/8"-thick plastic clay parting at base @ 31.1' Yellowish-brown siltstone and sandy siltstone with light yellowish-brown silty sandstone interbeds; moderately hard to hard; damp; thin bedded to laminated	@ 30' % fines = 87 Landslides to southeast probably failed along same clay beds observed here @ 30 & 31' bedrock above appears int[illegible] observed [illegible]g is probably [illegible]nic in origin
35				B:N46W,28NE			

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: MAS/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/21-22/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-26E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1036'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		20 38	TQs	116/16.4			
45						TOTAL DEPTH 43 Ft. (Elev. 993') No Ground Water No Caving	Backfill tamped every 5 ft.
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/22/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-27E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1042'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0		1 1 1		Apx B: N65E,6NW 102/13.0		**TERRACE DEPOSITS; Qt (0 - 28 Ft.)** @ 0' Yellowish-brown siltstone and light yellowish- brown silty sandstone and discontinuous sandstone interbeds and lenses; moderately dense; dry to damp; minor carbonate; local dark grayish-brown muddy sand interbeds may represent paleosols	Downhole logged on 12/23/99
5		1 2 3		B:Gently SW dipping			@ 5' % fines = 75. 3
10		3 4 5	Qt	B:N30W,6SW 116/7.7		@ 9' Brown muddy sand layer; possible paleosol; charcoal fragments	@ 9' Bag sample of charcoal material
15				B: Subhorizontal		@ 13' Brown muddy sand layer; possible paleosol	
20		2 3 4		Contact: N50E, 25NW 126/7.5		@ 18.5' Brown muddy sand layer; possible paleosol @ 19' Brown mudstone interbed; slightly soft @ 20' Light yellowish-brown silty sandstone @ 21' Yellowish-brown to brown muddy sand with scattered pebbles; soft to firm; damp to moist; poorly sorted; structureless; probably old slopewash/debris flow deposit; scattered charcoal fragments	@ 21-23' Bag sample of charcoal material
25						@ 25.5' Irregular contact with pebbly sandstone with cobbles; dense but friable; damp; crude bedding; cross bedded; basal deposits of older alluvium	
30		14 38 40		Apx B: N60W,5NE 113/6.4 B:N39W,26NE		**BEDROCK; TQs (28 - 50 Ft.)** @ 28' Erosional contact with yellowish-gray fine-grained sandstone; moderately hard; damp; thin bedded to laminated and cross bedded; minor weathering and fracturing below older alluvium @ 31' Light yellowish-brown sandstone and silty sandstone, yellowish-brown siltstone and local lenses of clast-supported pebble conglomerate; local concretions	
35			TQs				

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/22/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-27E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1042'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		10 24 48	TQs	119/12.7 B:N57W,27NE B:N44W,23NE		@ 40' Primarily siltstone and sandy siltstone interbeds; thin bedded to laminated; some mottling and cross laminations	
50						TOTAL DEPTH 50 Ft. (Elev. 992') No Ground Water No Caving	Backfill tamped every 5 Ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/27/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-28E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1237'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 3 Ft.)** @ 0' Yellowish-brown sandy silt with pebbles; soft; damp; krotovina	Downhole logged on 12/27/99 @ 0-10' mixed bulk sample
5		1 3 2		Apx B: N34W,20NE 109/8.3		**LANDSLIDE DEBRIS; Qls (3 - 18.5 Ft.)** @ 3' Light yellowish-brown siltstone with sandy lenses; firm; damp; caliche common; bedding appears slightly disrupted @ 6' Yellowish-brown mudstone interbeds; generally tight but with local soft spots	
10		1 3 4		115/17.4		@ 9' Bedding slightly irregular	@ 10-20' mixed bulk sample
			Qls				
15				Apx B: N40W,8NE		@ 14' Discontinuous slightly irregular sandstone interbed @ 15.5' Wispy fine-grained sandstone interbed	
				B:N18W,18NE		@ 17' Interbedded siltstone and light yellowish- brown fine-grained sandstone; wispy; cross laminated; slightly soft	
				SP:N37W,20NE		@ 18.4' Thin moderate yellowish-brown sandy mudstone; soft; slightly sticky and sheared	
20		1 4 22		B:N33W,28NE 115/13.4		**BEDROCK; TQs (18.5 - 45 Ft.)** @ 18.5' Interbedded yellowish-brown siltstone and light yellowish-brown silty sandstone and sandstone; dense; damp; bedding more consistent than above; possibly slightly disturbed	@ 20' Rock in tip of drive sampler
				B:N41W,23NE		@ 22' Well-cemented conglomerate lense; hard; basal contact erosional	
25				B:N22W,33NE		@ 23' Interbedded yellowish-brown siltstone and light yellowish-brown fine-grained sandstone with local lenses of pebbly to cobbly sandstone; moderately hard; damp; locally laminated	
			TQs			@ 28' Pebbly lense with cobbles	
30		12 22 49		128/11.7			
				B:N40W,25NE			
						@ 33' Evidence or primary soft sediment deformation; poorly sorted silty sandstone interbed with scattered pebbles below	
35				B:N30W,27NE		@ 36' Well-cemented layer of pebbles and cobbles	

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation
DRILLING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QlsII-1
DATE: 7/22/04
LOGGED BY: MAS/BJS
DRILLED: 12/27/99
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1237'

DRILL HOLE LOG

BORING NO. B-28E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N30W,23NE		@ 40' Sandstone and pebbly sandstone interbeds	
45						TOTAL DEPTH 45 Ft. (Elev. 1192') No Ground Water No Caving Slide Plane @ 18.4 Ft. (Elev. 1218.6')	Backfill tamped every 5 ft.
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/28/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-29E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1182'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			Soil			**SOIL; (0 - 3 Ft.)** @ 0' Grayish-brown sandy mud with scattered pebbles; soft to firm; slightly damp to damp; poorly sorted; structureless; small carbonate filaments **LANDSLIDE/DEBRIS FLOW DEPOSIT; Qls/Qdf (3 - 25 Ft.)** @ 3' Gradational contact with yellowish-brown muddy sand with scattered pebbles; soft to firm; damp; structureless; highly disturbed	Downhole logged on 12/28/99 @ 0-20' Mixed Bulk Sample
5		1 1 1		103/12.0			
10			Qls/Qdf				
15						@ 17' Irregular light yellowish-brown silty sand layer @ 18' Yellowish-brown silty pebbly sand below	
20							
25			Apx Contact: N80E, 10SE			**BEDROCK; TQs (25 - 35 Ft.)** @ 25' Yellowish-gray silty, coarse, pebbly sandstone with local cobbles; moderately hard; damp	No distinct slide plane at base of Qls/Qdf
30			TQs			@ 30' Irregular erosional contact with yellowish-brown to light yellowish-brown siltstone and fine sandy siltstone with interbedded mudstone; moderately hard; damp	
35			B:N54W,23NE				
		7 14 29		121/13.6		TOTAL DEPTH 35 Ft. (Elev. 1147') No Ground Water, No Caving Base of landslide @ 25 Ft. (Elev. 1157')	Backfill tamped every 5 Ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/28/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-30E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1218'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			af			**DUMPED FILL; af (0 - 1.5 Ft.)**	Downhole logged on 12/28/99 and 12/29/99
		1/12" 1		84/12.6		**SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/Qdf (1.5-7.5 Ft.)** @ 1.5' Brown sandy mud with scattered pebbles; soft; slightly damp; krotovina	@ 0-5' mixed bulk sample
5		1 1 2	Qsw/ Qdf	110/8.8			@ 5-10' mixed bulk sample
						BEDROCK; TQs (7.5 - 35 Ft.) @ 7.5' Yellowish-brown sandy siltstone with sandstone interbeds; dense to moderately hard; damp	
10		4 8 12		B:N35W,26NE		@ 10' Interbedded light yellowish-brown slightly silty sandstone; pebbly sandstone and pebble conglomerate; moderately hard; damp; some cross bedding and channeling	@ 10' % fines = 37.3 @ 10-20' mixed bulk sample
15				B:N42W,29NE			
20		17 5/1"	TQs	124/3.5			
25				B:N45W,22NE		@ 23' Erosional contact with yellowish-brown siltstone; moderately hard; damp	
30		17 50/5"		131/3.4		@ 28' Yellowish-gray sandstone with pebbly lenses	
35						TOTAL DEPTH 35 Ft. (Elev. 1183') No Ground Water No Caving	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/29/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-31E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1260'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 2.5 Ft.)** @ 0' Grayish-brown sandy silt with pebbles; soft; damp	Downhole logged on 12/29/99
5		1 2 3	Qls/Qdf	109/14.1		**LANDSLIDE/DEBRIS FLOW DEPOSIT; Qls/Qdf (2.5 - 15 Ft.)** @ 2.5' Moderate yellowish-brown siltstone with silty pebbly sandstone patches; firm; damp to moist; local carbonate; nearly structureless; grades muddier with depth	
10		1 2 3				@ 12' Slightly sticky	@ 10' Bulk Sample
15				B:N31W,25NE		@ 14.9' Slightly sheared mudstone above intact bedrock; slide plane? **BEDROCK; TQs (15 - 45 Ft.)** @ 15' Yellowish-brown siltstone, moderate-brown mudstone and interbedded light yellowish-brown fine- to medium-grained sandstone; moderately hard; damp; commonly thin bedded to laminated	
				B:N36W,20NE			
20		6 13 23		119/12.0			
				B:N45W,19NE		@ 21' Moderately hard to hard	
25			TQs				
30		8 29 52		118/14.3			
				B:N32W,25NE		@ 34' Sandstone interbed with a slightly erosional base @ 35' Local cross laminations and evidence of soft sediment deformation	
35							

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East
Phase II Landslide Investigation
DRILLING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QlsII-1
DATE: 7/22/04
LOGGED BY: MAS/BJS
DRILLED: 12/29/99
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1260'

DRILL HOLE LOG

BORING NO. B-31E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Tqs	B:N35W,25NE			
45						TOTAL DEPTH 45 Ft. (Elev. 1215') No Ground Water No Caving Base of landslide @ 14.9 Ft. (lev. 1245.1')	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: MAS/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 12/29-30/99	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-32E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1255'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 8 Ft.)** @ 0' Brown muddy sand with pebbles; firm; dry to damp; poorly sorted; krotovina; roots; tight but pinhole voids to 7 ft.	Downhole logged on 12/30/99
5		2 2					
10		2 5		127/2.2		**LANDSLIDE; Qls (8 - 35 Ft.)** @ 8' Irregular contact with light yellowish-brown silty pebbly sandstone; firm to locally loose; damp; bedding jumbled; some roots	@ 12' Bulk Sample
15			Qls			@ 16' Irregular contact with moderate yellowish- brown, mottled clayey siltstone with irregular patches of sandstone and pebbly sandstone; damp to moist	
20		3 4 5					@ 20' % fines = 73.7
25						@ 28' Gravelly sand; loose	
30		7 4 8		SP:N87W,10N 110/21.1		@ 30' 1-1.5"-thick moderate-brown clay; plastic; interbedded yellowish-brown sandy siltstone and mudstone below; slightly soft for TQs	@ 30' 3 hand-driven rings oriented normal to slide plane
				SP:N30E,10NW		@ 32' Thin silty clay with minor blue-gray mottling and a parting/ slideplane	
35				B:N35W,20NE		@ 34.9' Slightly sticky and plastic with clayey partings	
			TQs			**BEDROCK; TQs (35 - 55 Ft.)** @ 35' Interbedded moderate-brown to yellowish-brown siltstone and mudstone; moderately hard; damp to moist; bedding vague; possible	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/29-30/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-32E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1255'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						primary soft sediment deformation	
40		7 13 33		116/17.8 B:N40W,24NE		@ 39' Light yellowish-brown silty sandstone interbed @ 41' Sandstone interbed	
45				Apx B: N20W,18NE		@ 45' Sandstone interbed	
			Qs	B:N42W,24NE			
55						TOTAL DEPTH 55 Ft. (Elev. 1200') No Ground Water No Caving Slide Plane @ 30 Ft. (Elev. 1225') Slide Plane @ 32 Ft. (Elev. 1223') Base of landslide @ 34.9 Ft. (elev. 1220.1')	Backfill tamped every 5 ft.
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/30/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-33E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1214'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			af			**ARTIFICIAL FILL; af (0 - 1.5 Ft.)**	Downhole logged on 1/3/00
			Qsw/Qt			**SLOPEWASH/TERRACE DEPOSIT; Qsw/Qt (1.5 - 4 Ft.)** @ 1.5' Yellowish-brown pebbly silty sand; firm; slightly damp; sandy lenses; cobbles at base; vague stratification suggests fluvial deposit	
		3 5 7		110/14.2			@ 3' Bulk Sample
5						**LANDSLIDE DEBRIS; Qls (4 - 12 Ft.)**	@ 4' Fracture and minor offset
		4 7 9		112/21.2		@ 4' Moderate-brown to yellowish-brown mudstone and siltstone with minor CaCO3; dense; slightly damp to damp; bedding is slightly irregular but tight	
			Qls				@ 8' Minor offset
10							
		3 5 6		B:N5W,17NE 106/22.3			@ 10' Bulk Sample
				SP:N32W,18NE		@ 11.9' Moderate-brown, sheared, moderately plastic clay mixed wtih siltstone and sandy siltstone with light-gray silty clay parting (slide plane) at the base	
15						**BEDROCK; TQs (12 - 38.5 Ft.)**	
				B:N35W,22NE		@ 12' Interbedded moderate-brown mudstone to yellowish-brown silty sandstone; moderately hard; damp; bedding vague @ 13' Minor bedding plane shear @ 16' Local coarse-grained sandstone lenses; local concretions in siltstone; well bedded; locally laminated; some soft sediment deformation	
20							
		5 7 13		118/16.3		@ 20' Interbedded yellowish-brown siltstone and light yellowish-brown sandy siltstone	
			TQs				
25						@ 25' Mudstone interbed	
				B:N27W,20NE			
30							
		7 19 57		115/13.7 B:N17W,23NE			
				B:N42W,18NE		@ 33.5' Slightly sticky mudstone interbeds	
35						@ 34.5' Slightly sticky mudstone interbeds	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
ING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 12/30/99		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-33E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1214'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						TOTAL DEPTH 38.5 Ft. (Elev. 1175.5') No Ground Water No Caving Slide Plane @ 11.9 Ft. (Elev. 1202.1')	Backfill tamped every 5 ft.
45							
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/3/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-34E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1382'		

DEPTH (fdet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 4.5 Ft.)** @ 0' Grayish-brown sandy mud with scattered pebbles; firm to localy soft; damp; 1-2% voids; rootlets	Downhole logged on 1/3/00
						@ 3' Sandy siltstone clasts; basal Qsw contact irregular	
5		Push 1 1		98/9.7		**LANDSLIDE DEBRIS; Qls (4.5 - 22.5 Ft.)** @ 4.5' Highly disrupted mix of yellowish-brown to light yellowish-brown fine sandy siltstone and silty sandstone with scattered pebbles; soft to firm; slightly damp; minor carbonate filaments; bedding	@ 5' Bulk Sample
10		2 4 5	Qls	Apx B: N72E,23NW 112/8.3		@ 9' Bedding present but disrupted and soft; interbedded siltstone and sandy siltstone below	@ 10' Bulk Sample
						@ 12' Pebbly sandstone lense	
15		1 1 2		106/12.6			
						@ 18' Moderate-brown to moderate reddish-brown mudstone; soft; sticky; wispy	
20		2 5 8		SP:N85W,23NE 117/11.5 B:N13W,20NE R:N18W,18NE		@ 19.5' 0.5-1.5"-thick moderate reddish-brown plastic clay with silty CaCO3 inclusions; plastic; sheared; sticky; disturbed mudstone, pebbly sandstone and muddy sandstone below; soft to firm	@ 19.5' 4 hand-driven ring samples oriented normal to slide plane
						BEDROCK; TQs (22.5 - 65 Ft.) @ 22.5' Yellowish-brown siltstone and sandy siltstone with concretions; moderately hard; damp	
25				B:N27W,20NE		@ 25.5' Pebbly sandstone lense @ 26' Yellowish-brown fine silty sandstone, light yellowish-gray pebbly sandstone and yellowish-brown siltstone interbeds; moderately hard; damp; well bedded with local laminations and cross laminations; possible primary soft sediment deformation	
			TQs				
30		3 11 23		B/Sh:N39W,25NE 113/15.8		@ 30' Moderate grayish-brown mudstone; slightly sticky and plastic; moderately hard to hard below	
						@ 33.5' Cemented pebbly sandstone	
35				B/SH:N33W,22NE B:N35W,23NE		@ 35' 1-1.5"-thick moderate-brown clay interbed; sticky and plastic; damp to moist; reddish-brown siltstone and light yellowish-brown sandstone and silty sandstone with concretions below; moderately	@ 35' Bulk Sample

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/3/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-34E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1382'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		10 30 48		116/17.2		hard	
45				B:N42W,23NE			
			Tqs	B:N3&W,22NE		@ 48' Light-gray pebbly sandstone to pebble conglomerate with cobbles; hard; damp; channeling and cross bedding	
55							
60						@ 59' Yellowish-brown siltstone interbeds	
65						TOTAL DEPTH 65 Ft. (Elev. 1317') No Ground Water No Caving Slide Plane @ 19.5 Ft. (Elev. 1362.5')	Backfill tamped every 5 ft.
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/4/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.:** B-35E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1355'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			Slough			**SLOUGH (0 - 1 Ft.)**	Downhole logged on 1/4/00
			Qsw			**SLOPEWASH; Qsw (1 - 8 Ft.)** @ 1' Yellowish-brown to grayish-brown sandy silt with scattered pebbles; soft; slightly damp to damp; roots; pinhole voids throughout	
5							@ 5' Bulk Sample
						@ 6' $CaCO_3$ filaments to 8 ft.	
						LANDSLIDE/DEBRIS FLOW DEPOSIT; Qls/Qdf (8 - 32 Ft.) @ 8' Gradational contact with yellowish-brown sandy silt to light yellowish-brown silty sandstone with local pebbles; firm to locally soft; damp; rare roots; minor $CACO_3$; highly disturbed with no obvious bedding	
10		3					@ 10' % fines = 66.0
		3					
						@ 13.5' Light yellowish-brown pebbly silty sandstone	
15							
			Qls/ Qdf			@ 15.5' Light yellowish-brown to grayish-brown sandy silt with pebbles and local light-brown mottling; firm; damp	
						@ 19' Cobbly zone; locally loose to very hard	
20		7		132/3.4			Material from 20-32 ft. is only slightly disturbed @ 21' Bulk Sample
		20				@ 20.5' Yellowish-gray pebbly sandstone with yellowish- brown siltstone and sandy siltstone; dense to moderately hard; damp; bedding locally laminated and undulating	
		13/1"		B:N26W,14NE		@ 22.5' Hard concretionary layer underlain by yellowish-brown to light yellowish-brown silty sandstone/sandy siltstone	Hard drilling from 21-24 ft.
25				Apx B: N30W,19NE		@ 24.5' Mudstone interbed; slightly sheared	
						@ 28' Hard pebbly sandstone lense	
30				SP:N30W,25NE		@ 29.5' 1/2-3/4"-thick moderate reddish-brown clay; plastic; sticky; moist; sheared; parting; local carbonate/silt inclusions; slightly sticky and soft sandy mudstone below	
						BEDROCK; TQs (32-55 Ft.) @ 32' Interbedded light yellowish-brown silty sandstone and yellowish-brown siltstone/mudstone; moderately hard to hard; damp; moderately bedded to laminated; local evidence of primary soft sediment deformation	
				B:N24W,25NE			
35			TQs				
				B:N32W,25NE		@ 36' Sandstone interbeds; cross laminated	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/4/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-35E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1355'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
						@ 42.5' 3/4"-thick moderate-brown mudstone interbed; slightly sticky and irregular	
45				B/Sh:N30W,24NE		@ 43.5' 1/8"-thick moderate-brown mudstone interbed; slightly sticky; sheared and plastic; damp to moist	
			Qs			@ 46.5' Moderate-brown mudstone interbed; slightly sticky and soft	
				B/Sh:N36W,21NE		@ 47.5' 2-4"-thick moderate-brown mudstone/claystone; moderately sheared and plastic; damp to moist; parting at base	
55				B:N28W,26NE		TOTAL DEPTH 55 Ft. (Elev. 1300') No Ground Water No Caving Slide Plane @ 29.5 Ft. (elev. 1325.5')	Backfill tamped every 5 ft.
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: MAS/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/5/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-36E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1308'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 5 Ft.)** @ 0' Grayish-brown silty sand with pebbles; soft; dry to slightly damp; poorly sorted; roots; 1-2% voids	Downhole logged on 1/5/00
5						**LANDSLIDE DEBRIS; Qls (5 - 18 Ft.)** @ 5' Irregular contact with yellowish-brown to light-brown silty sand; moderately dense to dense; poorly sorted; damp	
10			Qls			@ 9' Irregular contact with light yellowish-brown sandstone; loose; weathered; crude bedding disturbed	
15						@ 13' Yellowish-brown sandy clayey siltstone; soft to firm; damp to moist; caliche; fractures; bedding very disturbed	
				SP:N23W,17NE		@ 17.5' 1/4-1/2" moderate reddish-brown clay; plastic; mottled; parting at top; moderate-brown slightly disturbed and sticky mudstone with concretions below	
20						**BEDROCK; TQs (18 - 60 Ft.)** @ 18' Yellowish-brown siltstone and sandy siltstone with local sandstone and pebbly sandstone interbeds; dense to moderately hard; damp; poorly bedded	@ 20' Bulk Sample
				Apx B: N14W,23NE		@ 21.5' Mudstone interbed	
25		3 6 12				@ 25' Mudstone interbed	@ 25' % fines = 89.9
				B/Sh:N27W,23NE		@ 27' 1/2"-thick moderate-brown silty clay; moderately sticky and plastic	
30			TQs			@ 31' Yellowish-brown sandy siltstone and mudstone; damp to moist	
						@ 33' Moderate-brown mudstone interbed; bedding slightly irregular-soft sediment deformation?; light-brown sandstone interbed below	
35		8 18 25		121/12.4			
				B:N43W,20NE		@ 36.5' 3/8"-thick moderate reddish-brown silty clay interbed; slightly	

DRILL HOLE LOG

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04
	LOGGED BY: MAS/BJS
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/5/00
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1308'

BORING NO. B-36E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						plastic	
40						@ 40' Yellowish-brown silty sandstone @ 41' Light yellowish-brown sandstone and pebbly sandstone with siltstone, sandy siltstone and fine-grained sandstone interbeds; moderately hard to hard; bedding thin but discontinuous; local cross laminations and evidence of primary soft sediment deformation	
45				B:N40W,17NE			
				B:N43W,15NE			
			JQs			@ 49.5' Yellowish-gray pebble to cobble conglomerate with pebbly sandstone interbeds; hard; damp; cross bedding and channeling	
55				B:N32W,20NE			
60						TOTAL DEPTH 60 Ft. (Elev. 1248') No Ground Water No Caving Slide Plane @ 17.5 Ft. (Elev. 1290.5')	Backfill tamped every 5 ft.
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/5-6/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-37E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1288'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0						**SLOPEWASH; Qsw (0 - 6 Ft.)** @ 0' Yellowish-brown to grayish-brown silty sand with pebbles; soft to firm; slightly damp; poorly sorted; roots; krotovina	Downhole logged on 1/5/00 and 1/6/00 @ 0-10' mixed bulk sample
5		1 1 1	Qsw	104/6.4			
10		5 8 9	Qls	110/15.6		**LANDSLIDE DEBRIS; Qls (6 - 19.5 Ft.)** @ 6' Irregular contact with light yellowish-brown silty sandstone and yellowish-brown siltstone; soft; damp; bedding disrupted; roots; krotovina @ 11' Moderate yellowish-brown clayey siltstone; firm @ 12' Yellowish-gray pebbly sandstone interbed; loose to moderately dense; disrupted	
15				Apx B: N83E,30NW SP:N82E,28NW		@ 14' Yellowish-brown clayey siltstone and light yellowish-brown fine sandy siltstone interbeds; locally slightly plastic @ 16.5' 1/2-1"-thick moderate-brown clay; plastic; sticky; moderately sheared; damp to moist; underlying bedding still disrupted	@ 16.5' 3 hand-driven rings oriented normal to slide plane
20		6 9 12		SP:N37W,17NE 126/13.1		@ 19.5' Thin grayish silty clay parting at base of slightly soft moderate-brown mudstone/siltstone **BEDROCK; TQs (19.5 - 40 Ft.)** @ 19.5' Light-brown slightly silty sandstone with local pebbles; moderately hard; damp; poorly bedded	@ 20' Drive sample had rock in tip
25			TQs	B:N43W,20NE		@ 22' Moderate yellowish-brown to moderate reddish- brown mudstone and siltstone; slightly plastic @ 24' Reddish-brown mudstone clast with crystalline core	
30				B:N40W,15NE		@ 30' Light yellowish-brown fine silty sandstone with local reddish-brown sandy mudstone interbeds; local concretions; bedding gradational; possible primary soft sediment deformation	
35				B:N37W,19NE			

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: MAS/BJS		
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/5-6/00		
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"		
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"	**BORING NO.** B-37E	
	ELEVATION: 1288'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		21 36 50/4"	TOP	122/8.2		TOTAL DEPTH 40 Ft. (Elev. 1248') No Ground Water No Caving Slide Plane @ 16.5 Ft. (Elev. 1271.5') Slide Plane @ 19.5 Ft. (Elev. 1268.5')	Backfill tamped every 5 ft.
45							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: MAS/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/6/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-38E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1398'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw/Qdf			**SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/Qdf (0 - 4 Ft.)** @ 0' Yellowish-brown silty sand with local pebbles TQs clasts; soft; slightly damp; krotovina; minor CaCo3; roots; 1-2% voids	Downhole logged on 1/6/00
5		2 2 3	Qls	Apx B:N35W,10NE 110/8.7		**LANDSLIDE DEBRIS; Qls (4 - 23.5 Ft.)** @ 4' Light yellowish-brown sandy siltstone and yellowish-brown mudstone; soft to firm; damp; CaCo3; poorly bedded	@ 0-10' Mixed Bulk Sample
10		2 4 7		Apx B:N40W,32NE 118/11.?		@ 9' Pebbly sandstone interbed; generally dense but bedding is moderately disrupted	
15						@ 13.5' Disrupted yellowish-brown pebbly silty sandstone	
20		12 4 8		126/6.4			@ 20' Drive sample had rock in tip; blow count suspect
25				B:N24W,40NE		**BEDROCK; TQs (23.5 - 45 Ft.)** @ 23.5' Interbedded light yellowish-gray sandstone and pebbly sandstone and yellowish-brown siltstone; moderately hard to hard; damp to moist @ 23.5' Irregular contact at base of Qls; no distinct slide plane @ 26' Light yellowish-brown to yellowish-brown silty sandstone, siltstone and mudstone; well bedded @ 27' Interbed of pebbly sandstone and conglomerate; channeling	
30		21 50/3"	TQs	B:N35W,50NE 130/4.9			
35				B:N42W,48NE		@ 37' 2"-thick moderate-brown clay interbed; moderately plastic and slightly sheared; bedding parallel above and below bed	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: MAS/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/6/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-38E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1398'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Tls				
45						TOTAL DEPTH 45 Ft. (Elev. 1353') No Ground Water No Caving Base of landslide @ 23.5 Ft. (Elev. 1374.5')	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/7/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-39E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1396'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 3 5		Apx B:N45W,32NE B:N60W,37NE B:N46W,44NE 120/12.3 120/12.3		**BEDROCK; TQs (0 - 40 Ft.)** @ 0' Yellowish-brown to light yellowish-brown silty sandstone/sandy siltstone with yellowish-gray pebbly sandstone and moderate yellowish-brown siltstone interbeds; moderately hard but upper 2-3 ft. weathered and fractured; slightly damp to damp; minor caliche and rootlets @ 5' Slight kink in bedding; thin sandstone interbeds; moderately hard	Downhole logged on 1/7/00 Upper 2-4 ft. weathered with fractures @ 0-10 ft. Mixed Bulk Sample
10		4 6 12		B:N50W,43NE 118/16.3		@ 10' Thin clayey siltstone interbeds	
15			TQs				
20		3 6 11		B/Sh: N52W,48NE 120/15.7		@ 18' 1-2"-thick moderate-brown, moderately plastic mudstone interbed; slightly sheared with CaCO3; moderately hard to hard siltstone with vague bedding below	Sheared @ 18' is apparently tectonic in origin
25				B:N45W,45NE		@ 25' Thin clayey mudstone interbeds; locally well bedded with evidence of minor, primary soft sediment deformation	
30				B:N40W,45NE		@ 31' Pebbly sandstone interbed @ 32' Pebbly sandstone interbed with minor channelling; thin (≅1") sandy interbeds below	@ 30' Bulk Sample
35							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/7/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-39E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1396'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Tqs			TOTAL DEPTH 40 Ft. (Elev. 1356') No Ground Water No Caving	Backfill tamped every 5 ft.
45							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: DGG/BJS		
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/7,10/00		
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"		
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"	**BORING NO.** B-40E	
	ELEVATION: 1230'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0				Apx B:N41E,5SE		**BEDROCK; TQs (0 - 40 Ft.)** @ 0' Yellowish-brown to moderate-brown siltstone and sandy siltstone with lenses of fine- to medium-grained sandstone; dense; slightly damp @ 2.5' Yellowish-brown to moderate-brown clayey siltstone, grading into light yellowish-brown sandy siltstone/silty sandstone; moderately hard; damp; local concretions	Downhole logged 1/7 and 1/10/00 Material to 5 ft. is weathered with CaCO3- lined fractures @ 0-10' Mixed Bulk Sample
5		3 9 15		B:N49W,14NE 116/17.5 B:N48W,10NE			
				B:N44W,18NE		@ 6.9' Poorly bedded siltstone with sandy siltstone below	
10		5 9 11		126/11.0			
15				Apx B:N44W,18NE		@ 14.8' Fine- to medium-grained sandstone lenses and locally concretionary	
				B:N42W,19NE		@ 17.5' Fine-grained and coarse-grained sandstone interbeds @ 18.5' Pebbly sandstone lense; poorly sorted	
20		9 9 15		115/12.7			
			TQs	B:N48W,21NE			
25				B:N45W,18NE		@ 28' Discontinuous pebbly sandstone interbed; yellowish-brown sandy siltstone/siltstone below	
30				B:N47W,17NE			
35							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsli-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/7,10/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-40E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1230'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Tqs			TOTAL DEPTH 40 Ft. (Elev. 1190') No Ground Water No Caving	Backfill tamped every 5 ft.
45							
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/10/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-41E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1240'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			Qsw			**SLOPEWASH; Qsw (0 - 2.5 Ft.)** @ 0' Yellowish-brown sandy silt with pebbles; loose to moderately dense; slightly damp; locally soft with caliche; krotovina **LANDSLIDE DEBRIS; Qls (2.5 - 9.5 Ft.)**	Downhole logged on 1/10/00 @ 0-10' Mixed Bulk Sample
5		3 6 8	Qls	B:N49W,13NE 115/11.3		@ 2.5' Light yellowish-brown to yellowish-brown siltstone and silty sandstone; moderately dense to dense; slightly damp; caliche-filled fractures; bedrock slightly disturbed @ 5.7' Discontinuous pebbly sandstone interbed	
				Apx B:N51W,21NE		@ 7' Bedding slightly irregular and soft	
				B:N42W,20NE			
10		3 4 10		SP:N62W,15NE 119/14.0		@ 9.5' Thin silty clay layer; slightly sheared; base of caliche **BEDROCK; TQs (9.5 - 35 Ft.)**	@ 10' % fines = 84.9
				B:N54W,14NE		@ 9.5' Olive to yellowish-brown siltstone to clayey siltstone; moderately hard; damp; local discontinuous concretionary lenses; bedding is typically subtle but locally thin bedded to laminated	
				Apx B:N49W,14NE		@ 12.5' Grades into pale reddish-brown siltstone and sandy siltstone @ 13.7' Pebbly sandstone interbeds; lensing and channeled	
15						@ 15.5' Discontinuous medium- to coarse-grained sandstone interbed	
				B:N54W,16NE		@ 17.5' Moderate to yellowish-brown siltstone/mudstone	
20		4 9 15	Qs	B:N45W,15NE 114/13.0			
25				B:N47W,16NE		@ 26' Bedding slightly irregular and cross laminated; possible primary soft sediment deformation	
				B:N46W,13NE		@ 28.3' Pale reddish-brown siltstone @ 29' Light yellowish-brown slightly silty, fine-grained sandstone; grades into yellowish-gray pebbly sandstone	
30							
35						TOTAL DEPTH 35 Ft. (Elev. 1205') No Ground Water, No Caving Slide Plane @ 9.5 Ft. (Elev. 1230.5')	Backfill tamped every 5 Ft.

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/10-11/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-42E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1269'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1 1 2	Qsw	107/9.1		**SLOPEWASH; Qsw (0 - 3 Ft.)** @ 0' Yellowish-brown sandy silt with scattered pebbles and cobbles; loose to moderately dense; slightly damp; CaCO3 on clasts above 5' **LANDSLIDE DEBRIS; Qls (3 - 18.5 Ft.)** @ 3' Moderate yellowish-brown siltstone to slightly sandy siltstone with scattered pebbles; moderately dense; locally soft; damp; CaCO3 filaments; weathered	Downhole logged on 1/10/00 and 1/11/00 @ 0-10 Ft. Mixed Bulk Sample
10		3 6 9	Qls	B:N40W,12SW 125/10.9 SP?:N85W,32NE		@ 8.1' Moderate-brown clayey silt layer with CaCO3; dense sandstone and pebbly sandstone interbeds below @ 9.7' Grades to silty sandstone @ 10.6' Moderate-brown clayey siltstone; slightly sheared; minor carbonate; pebble to cobble lense and sandy siltstone below; poorly bedded	
15				B:N68W,10NE		@ 14' Interbedded moderate-brown clayey siltstone and sandstone @ 16' Fine- to medium-grained sandstone with pebbles	
20		6 18	Qls	B/SP:N45W,7NE Apx B:N43W,21NE 132/9.3		@ 18' Siltstone/mudstone; slightly sticky and sheared **LANDSLIDE?; Qls? (18.5 - 27.5 Ft.)** @ 18.5' Yellowish-brown siltstone; dense to moderately hard; damp @ 21' Fine- to coarse-grained pebbly sandstone with minor siltstone interbeds; cross-bedded and channeled	Queried landslide material looks fairly intact but correlations with B-43E indicate the basal slide plane is at 27 ft.
25				B:N46W,14NE		@ 23' Moderate-brown siltstone; locally laminated	
30			Qls	B/SP:N44W,13NE @ 27' % fines = 95.7 B:N42W,14NE		@ 27' 1-2.5"-thick mudstone; slightly sheared; soft and sticky; slide plane? **BEDROCK; TQs (27.5 - 35 Ft.)** @ 27.5' Yellowish-brown siltstone; moderately hard; damp @ 29.5' Sandstone interbed	@ 27' 4 hand-driven rings oriented normal to mudstone bed
35						TOTAL DEPTH 35 Ft. (Elev. 1234') No Ground Water, No Caving Slide Plane @ 10.6 Ft. (Elev. 1258.4') and @ 18 Ft. (Elev. 1257')	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: DGG/BJS		
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/11-12/00		
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"		
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"	**BORING NO.** B-43E	
	ELEVATION: 1312'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 4 Ft.)** @ 0' Light-brown to yellowish-brown sandy silt and mud with scattered pebbles; loose to moderately dense; slightly damp; includes highly weathered Qls	Downhoel logged on 1/11/00 and 1/12/00 @ 0-10' Mixed Bulk Sample
5		2 3 3		114/12.2		**LANDSLIDE DEBRIS; Qls (4 - 35.5 Ft.)** @ 4' Moderate yellowish-brown siltstone; moderately dense to dense; slightly damp; poorly bedded; CaCO3; fractures	
						@ 7.5' Sandy siltstone with scattered pebbles @ 8.5' Pebbles and cobbles; loose; slightly damp	
10		2 3 3		Apx B:N47W,25NE 110/12.2		@ 9.5' Moderate-brown siltstone/mudstone with local pebbles; dense; damp; mudstone/siltstone below	Landslide material is generally dense but slightly disrupted with local minor normal offset beds
				Apx B:N46W,18NE		@ 14' Irregular mudstone interbed with CaCO3	
15		3 6 11		120/11.6			
				Apx B:N41W,15NE		@ 16' Pebbly sandstone lense up to 8" thick	
			Qls				
20		2 2 4		B:N38W,24NE 113/16.4		@ 20.2' Moderate yellowish-brown clayey siltstone; irregular and moderately sheared; offset by minor normal fault	@ 20' % fines = 88.4 @ 20' Minor normal fault with apx 6" offset
						@ 23' Grades to sandy siltstone	
25							
				Apx B:N54W,22NE		@ 27' Pebbly sandstone lense	
						@ 28.2' Pebbly to cobbly sandstone lense; slightly loose	
30				B:N55W,18NE		@ 29.6' Moderate-brown mudstone interbeds, slightly sheared; offset by minor normal faults	@ 30' Minor normal faults with up to 5" of offset
		5 11 16		B:N50W,14NE 120/12.8 B:N47W,16NE			
						@ 33.5' Clayey siltstone @ 34' 1/2"-thick moderate-brown silty clay; moderately plastic and sticky; undulating and shallow-dipping @ 35.2' 1/4-1/2"-thick moderate-brown clay and silty clay	
35				SP:N38W,13NE ST:Northeast			Mudstone between 34 and 35.2' appears disturbed
			TQs			**BEDROCK; TQs (35.5 - 50 Ft.)** @ 35.5' Yellowish-brown sandy siltstone; moderately hard; damp	
				B:N50W,13NE			

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/11-12/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-43E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1312'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N47W,16NE		@ 37.4' Discontinuous sandstone interbeds and pebbly lenses @ 39.5' Yellowish-brown siltstone and sandy siltstone	
45				B:N51W,16NE		@ 45.5' Fine- to medium-grained sandstone interbed @ 47' Pebbly sandstone with local cobbles; some cross bedding	
50						TOTAL DEPTH 50 Ft. (Elev. 1262') No Ground Water No Caving Slide Plane @ 35.2 Ft. (Elev. 1276.8')	Backfill tamp every 5 Ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation
DRILLING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QlsII-1
DATE: 7/22/04
LOGGED BY: DGG/BJS
DRILLED: 1/12-13/00
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1096'

DRILL HOLE LOG

BORING NO. B-44E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				B:N88W,53SW &N60E,48NE		**BEDROCK; TQs (0 - 45 Ft.)** @ 0' Light yellowish-brown to yellowish-gray, fine- to medium-grained sandstone with scattered pebbles; moderately hard; slightly damp; thin bedded to laminated; caliche-lined fracture @ 1.5 ft.	Downhole logged on 1/12/00 and 1/13/00 @ 0-10' Mixed Bulk Sample
5		6 13		126/12.5		@ 2.5' Siltstone interbed; damp @ 3.6' Greenish-gray siltstone to sandy siltstone; moderately hard to hard @ 5' Clayey siltstone interbed; slightly sheared	
10		7 17		B:N84W,47SW 124/11.4		@ 8.5' Clayey siltstone interbeds; slightly sheared @ 9.5' Light-gray fine- to medium-grained sandstone; moderately hard to hard; damp	
15				B:N82W,43SW B:N88W,42SW		@ 15.5' Erosional contact with medium-brown siltstone to sandy siltstone and slightly clayey siltstone	
20		7 20	TQs	126/6.1		@ 17' Grades to medium-grained sandstone	@ 20' % fines = 36.5
				Apx B:N72E,30SE		@ 22' Greenish-gray sandy siltstone and siltstone; locally laminated	
25		4 8 15		B:N87E,34SE B:N72W,42SW 117/16.8		@ 25.5' Siltstone to clayey siltstone interbed	@ 27' % fines = 90.8
30				B:N75W,38SW		@ 31' Mudstone interbed; slightly soft; grades sandier below	
35				B:N75W,43SW		@ 33.5' Medium-gray fine-grained sandstone to silty sandstone; cross-bedded to cross-laminated	
				B:N72W,44SW		@ 37' Medium- to coarse-grained sandstone and pebbly sandstone	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/12-13/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-44E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1096'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						interbeds	
40			Qs			@ 40' Coarse-grained pebbly sandstone interbed with silty sandstone below	
45						TOTAL DEPTH 45 Ft. (Elev. 1051') No Ground Water No Caving	Backfill tamped every 5 ft.
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/13/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-45E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1112'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				Apx B:N60E,19NW		**TERRACE DEPOSITS; Qt (0 - 17 Ft.)** @ 0' Yellowish-brown pebbly silty sand with cobbles; loose; slightly damp @ 2' Yellowish-brown silitstone to sandy siltstone interbed; moderately dense; crude bedding	Downhole logged on 1/13/00 @ 0-10' Mixed Bulk Sample
5		3 3 4		118/2.7 B: Subhorizontal		@ 5' Light yellowish-brown slightly silty pebbly sand with cobbles and local silty sand interbeds; loose to moderately dense; damp; crude sub-horizontal bedding	Qt material overlies Qls and may be slightly affected by landslide movement
10		2 4 4		128/3.2			
15							
20		2 3 4		116/5.1		**LANDSLIDE DEBRIS; Qls (17 - 32 Ft.)** @ 17' Silty pebbly sandstone; loose to moderately dense; damp; looks like disrupted TQs material; weathered	Landslide material is generally softer than typical TQs
25				B:N70W,38NE		@ 24.5' Interbed of silty sand with pebbles underlain by siltstone/ sandy siltstone	
				SP/Sh: N65W,36NE B:N68W,34NE		@ 26.5' Moderate yellowish-brown slightly clayey sandy siltstone; moderately dense to dense; damp; slightly sheared; non-regional orientation @ 27' Light yellowish-gray fine-grained sandstone interbed; laminated	
30		8 17 20/5"		119/11.7 B:N23W,27NE SP:N8W,22NE		@ 31.5' 1/4-1/2"-thick moderate reddish-brown silty clay; moderately plastic and sheared; damp to moist	
				B:N15W,25NE		**BEDROCK; TQs (32 - 45 Ft.)** @ 32' Medium-gray sandstone, pebbly sandstone and slightly silty sandstone; moderately hard; damp; locally concretionary and laminated to thin bedded	@ 34' Fracture/ minor fault
35				B:N19W,24NE		@ 36.5' Concretionary bed	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/13/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-45E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1112'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		19	Qls	111/5.5			@ 40' % fines = 22.8
45						TOTAL DEPTH 45 Ft. (Elev. 1067') No Ground Water No Caving Slide Plane @ 26.5 Ft. (Elev. 1085.5') Slide Plane @ 31.5 Ft. (Elev. 1080.5')	Backfill tamped every 5 ft.
50							
55							
60							
65							
70							
75							

DRILL HOLE LOG

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04
	LOGGED BY: DGG/BJS
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/14/00
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1129'

BORING NO. B-46E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0						**TERRACE DEPOSITS; Qt (0 - 23 Ft.)** @ 0' Yellowish-brown silty sandstone to silty pebbly sandstone with cobbles and small boulders; loose; slightly damp to damp	Downhole logged on 1/14/00 Casing placed from 0-21 ft. due to slight to moderate caving @ 0-10 ft. Mixed Bulk Sample
5							
10			Qt				
15		3 5 7		132/3.7			
20							
		1 1 1	Qsw	Contact: N35E, 35NW		@ 21' Medium-brown sandy silt/mud with scattered pebbles; soft to dense; damp; looks like older slopewash (Qosw)	
		1 3 5		Contact: N19E, 42NW 129/14.5		**BEDROCK; TQs (23 - 50 Ft.)** @ 23' Grayish-brown siltstone with local sandstone interbeds; moderately hard; damp	
25				B:N84W,54SW		@ 25' Two slightly sheared siltstone/mudstone interbeds	
30		17 20/3"	TQs	121/9.5			
				B:N82W,52SW			
35				B:N80W,52SW		@ 35' Medium-gray fine-grained sandstone to silty sandstone	
				B:N79W,50SW		@ 36.5' Thin concretionary siltstone interbed	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/14/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-46E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1129'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		8 23		121/15.7 B:N64W,53SW		@ 41.5' Yellowish-gray fine- to medium-grained sandstone @ 43' Grades into pebbly sandstone with cobbles	
45							
50						TOTAL DEPTH 50 Ft. (Elev. 1079') No Ground Water Slight to Moderate Caving from 0-21 Ft.	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/20/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-47E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1280'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0						**LANDSLIDE DEBRIS; Qls (0 - 24.5 Ft.)** @ 0' Yellowish-brown silty sandstone with local sandstone lenses and thin mudstone interbeds; dense, but slightly soft for TQs; slightly damp to damp; caliche-lined fractures; disturbed mudstone bleb	Downhole logged on 1/20/00. Surficial material removed for drill pad
5				B:N22W,12NE		@ 3.5' Slightly disturbed, moderate-brown mudstone interbed; slightly sticky @ 6' Slightly undulating, laminated siltstone/sandy siltstone	
				B:N54W,13NE		@ 8' Reddish-brown, fine sandy mudstone interbed @ 8.5' Moderate-brown mudstone bleb; dense to moderately hard	
10				B:N47W,17NE		@ 9' Cross-laminated fine sandstone interbed	Landslide material is generally light and only slightly disturbed; suggesting only minor movement
15			Qls			@ 13' Disturbed mudstone fragments and local hard concretions; slightly soft	
				B:N44W,17NE		@ 16' Light reddish-brown sandy siltstone interbed	
20				B:N48W,13NE		@ 18' Moderate-brown silty mudstone interbed; slightly sticky @ 19' Light yellowish-brown to yellowish-gray sandstone with interbedded siltstone and sandy siltstone; dense	
				B:N28W,15NE			
25				SP?:N30W,15NE		@ 24.4' Moderate-brown mudstone; slightly soft and sheared **BEDROCK; TQs (24.5 - 40 Ft.)** @ 24.5' Light-brown sandy siltstone with pebbles; moderately hard; damp; poorly sorted @ 27' Yellowish-brown sandy mudstone	
30			TQs			@ 29' Grades brown and more clayey; slightly sticky	
				Parting: N50W, 23NE		@ 32' Minor discontinuous partings and polished pebbles; minor CaCO3 @ 32.5' Grades sandier	
35						@ 36' Discontinuous slightly silty sandstone interbeds	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/20/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-47E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1280'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qls			TOTAL DEPTH 40 Ft. (Elev. 1240') No Ground Water No Caving Slide Plane @ 24.4 Ft. (Elev. 1255.6')	Backfill tamped every 5 ft.
45							
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/20-21/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-48E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1340'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 2 2	Qsw/ Qdf	117/7.6		**SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/Qdf (0 - 12 Ft.)** @ 0' Grayish-brown to brown muddy sand with pebbles; generally moderately dense to dense but locally loose; damp; minor carbonate filaments @ 7' Scattered cobbles	Downhole logged on 1/20 and 1/21/00 @ 0-10' Mixed Bulk Sample
10		Push 1 1		106/7.5		@ 9' Moderate- to yellowish-brown sandy silt with local patches of pebbly sand; loose to moderately dense	
15		Push 1 1		B:N26W,23NE 114/7.6		**LANDSLIDE DEBRIS; Qls (12 - 45 Ft.)** @ 12' Very irregular but distinct contact with interbedded pebbly sandstone and sandy siltstone; moderately dense to dense; damp; sandstone channeled and cross-bedded and slightly friable	
				B:N19W,27NE		@ 18' Moderate-brown siltstone @ 19' Pebbly sandstone interbed; upper contact slightly irregular	
20		5 8 11	Qls	131/6.0			
				B:N25W,16NE Apx MF: N35W, 76NE B:N26W,21NE		@ 21.5' Moderate-brown slightly clayey siltstone; slightly sheared @ 24' Pebbly sandstone stringer and clayey siltstone interbed; offset by fault	@ 23' Minor reverse fault with 2-3" offset
25							
				B:N21W,20NE			@ 28' Minor reverse fault with 3-4" offset
30		7 17 27		131/6.8		@ 29' Interbedded silty sandstone and sandstone; moderately dense to dense; offset by fault @ 30.9' Pebbly sandstone interbed with cobbles @ 31.5' Siltstone to sandy siltstone; slightly soft and irregular	Landslide material is generally tight but slightly disrupted and steeper-dipping than underlying bedrock
				Contact: N88W, 40SW		@ 33' Irregular contact with pebbly sandstone; dense	
35				B:N47W,19NE Parting: N34W, 24NE		@ 34.5' Medium-brown sandy mudstone to mudstone, slightly sheared and sticky; slightly irregular @ 36.5' Pebbly to cobbly silty sandstone; dense; damp	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/20-21/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-48E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1340'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		6 28 33	Qls	B:N33W,28NE 137/3.8		@ 39.2' Siltstone @ 41' Pebbly, cobbly sandstone; dense	
				B:N29W,19NE		@ 43' Siltstone	
45				Apx B:N18W,18NE SP:N35W,21NE		@ 44.9' 1-2"-thick moderate-brown clay within 4-6" thick disturbed, wispy mudstone; plastic; sticky; soft; moist **BEDROCK; TQs (45 - 70 Ft.)** @ 45' Yellowish-brown siltstone/mudstone; moderately hard; damp	@ 45' Bulk Sample
				Apx B:N20W,12NE		@ 48.8' Interbedded sandstone and siltstone; sandstone highly cross-bedded and channelled; thin sand backfill in underlying siltstone	
50		6 25 26		110/17.3			
55			TQs	B:N48W,11NE		@ 55' Yellowish-brown siltstone with vague fine silty sandstone laminations; siltstone breaks apart locally on strike-sides of boring	
				B/Sh:N47W,11NE		@ 58' Thin moderate-brown mudstone interbed; slightly irregular and sheared; moderately plastic; poorly bedded, yellowish-brown sandy siltstone below; moderately hard to hard	
60							
65							
70						TOTAL DEPTH 70 Ft. (Elev. 1270') No Ground Water No Caving Slide Plane @ 44.9 Ft. (Elev. 1295.1')	Backfill tamped every 5 ft.
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: DGG/BJS		
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/21,24/00		
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"		
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"	**BORING NO.** B-49E	
	ELEVATION: 1331'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw/Qdf	116/7.2		**SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/Qdf (0 - 8 Ft.)** @ 0' Medium- to dark-brown siltstone to sandy mudstone with scattered pebbles; dense and very tight; slightly damp	Downhole logged 1/21 and 1/24/00 @ 0-10' Mixed Bulk Sample
5		1 2 4				@ 4.7' Yellowish-brown sandy silt with scattered pebbles; moderately dense to dense	
10		1 3 6	Qls	130/2.3		**LANDSLIDE DEBRIS; Qls (8 - 18.6 Ft.)** @ 8' Irregular but distinct contact with medium-brown pebbly silty sandstone with cobbles; loose to moderately dense; slightly damp to damp; patchy sandstone interbeds	
15				Apx B:N72E,37NW		@ 14.1' Irregular contact with medium-brown siltstone; dense; damp; contact in part erosional and possibly disturbed	
		2 3 5		B:N25W,34NE 110/18.7		@ 17' 1/2"-thick moderate-brown clayey siltstone; underlain by discontinuous pebbly sandstone; loose to moderately dense	
20		2 5 11		SP:N5E,6SE B:N15E,12SE Apx B:N17W,28NE 117/2.8		@ 18.5' 1/2"-thick moderate-brown clay; moderately sticky and plastic **BEDROCK; TQs (18.6 - 70 Ft.)** @ 18.6' Yellowish-brown siltstone; dense to moderately hard; damp	
			TQs	B:N50W,18NE		@ 21.8' Slightly irregular contact with sandstone and pebbly sandstone interbed; cross bedded	
25						@ 24.5' Pebbly to cobbly sandstone; dense but slightly friable	
				Apx B:N5W,5NE			
30		6 13 20		110/18.9		@ 28.7' Erosional contact with moderate yellowish-brown siltstone	
				B/Sh:N21W,17NE		@ 32.2' 5"-thick moderate-brown clayey siltstone/ mudstone; slightly to moderately plastic; upper 1/4-1/2" is sticky and plastic @ 32.5' Siltstone/sandy siltstone; poorly bedded; moderately hard to hard	
35							

CLIENT: Newhall Ranch Company
PROJECT: Newhall Ranch - Mesas-East
Phase II Landslide Investigation
DRILLING COMPANY: Tri-Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.

JOB NO.: 99-1703QlsII-1
DATE: 7/22/04
LOGGED BY: DGG/BJS
DRILLED: 1/21,24/00
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1331'

DRILL HOLE LOG

BORING NO. B-49E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		10 25/3"		129/6.7		@ 40' Grades to sandy siltstone and fine-grained sandstone with scattered pebbles	@ 40' Cobble in sampler tip; blow count maybe suspect
				Apx B:N30W,9NE		@ 43.5' Siltstone	
45				B:N15W,8NE		@ 46.2' Sandy siltstone	@ 47' Bulk Sample
50		9 15 34		124/13.3		@ 49' Yellowish-brown siltstone and clayey siltstone	
55							
60				Apx B:N38W,8NE		@ 59' Discontinuous fine- to medium-grained pebbly sandstone @ 60' Grades to reddish-brown siltstone and sandy mudstone with scattered pebbles	
65							
70						TOTAL DEPTH 70 Ft. (Elev. 1261') No Ground Water No Caving Slide Plane @ 18.5 Ft. (Elev. 1312.5')	Backfill tamped every 5 ft.
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/27-28/00	
'LLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-50E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1281'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 7 Ft.)** @ 0' Yellowish-brown to brown sandy silt with scattered pebbles; moderately dense to dense; slightly damp	Downhole logged on 1/27/00 and 1/28/00 @ 0-10' Mixed Bulk Sample
5		2 2 2		116/10.4			
			Qls			**LANDSLIDE DEBRIS; Qls (7 - 23.5 Ft.)** @ 7' Moderate-brown to yellowish-brown siltstone and clayey siltstone and light yellowish-brown sandy siltstone; moderately dense to dense; damp; bedding disturbed and slightly sheared; caliche-filled fractures; locally soft	
10		1 2 2					@ 10' Consol
				B:N35E,17SE		@ 13' Scattered pebbles	
15		2 4 4		Apx B:N74E,21NW		@ 14.2' Fine silty sandstone interbed with pebbles; loose to moderately dense; underlain by interbedded moderate yellowish-brown siltstone to clayey siltstone and discontinuous yellowish-gray sandstone patches; clayey siltstone is sheared; loose to moderately dense; damp	@ 15' Consol
						@ 18' Yellowish-brown muddy sandstone; slightly sticky and soft; minor caliche; grades coarser below	
20		2 3 5					@ 20' Consol
				SP:N-S,15E		@ 22' Bedding is very disturbed @ 23.5' 1/4-3/8"-thick moderate-brown to light-gray clay; moderately plastic; moist; minor caliche	
25						**BEDROCK; TQs (23.5 - 75 Ft.)** @ 23.5' Yellowish-brown to light yellowish-brown siltstone/sandy siltstone; moderately hard; damp; evidence of primary soft sediment deformation	
				B:N11W,17NE		@ 25.9' Light yellowish-brown to yellowish-gray pebbly sandstone; cross bedded	
			TQs	Apx B:N7W,16NE		@ 26.5' Erosional contact with yellowish-brown siltstone with interbedded sandy siltstone and fine-grained sandstone	
30		7 14 17		120/13.2			@ 30' Minor caliche-lined fracture
				B:N16W,19NE		@ 34' Pebbly silty sandstone with cobbles; grades into fine- to medium-grained sandstone and silty sandstone	@ 35' Bedrock breaks apart locally on strike-sides of boring
35							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/27-28/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-50E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1281'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N17W,13NE		@ 39' Slightly sheared clayey siltstone	
		7 27		122/12.2			
				B:N14W,16NE		@ 41' Sandy siltstone/silty sandstone @ 42' Fine- to medium-grained sandstone; well bedded; moderately hard	
45				B:N14W,18NE		@ 45' Pebbly silty sandstone with cobbles; locally well cemented	
						@ 47.5' Siltstone interbeds; soft sediment deformation	
50				B:N11W,16NE			
						@ 52' Pebbles and cobbles more abundant	
						@ 54' Silty sandstone with pebbles; poorly stratified	
55				B:N4W,15NE		@ 58.2' Clayey siltstone; slightly sheared	
60						@ 60' Cobbly lense with pebbly silty sandstone below; damp to moist	
				Apx Contact: N6W, 11SW Apx B:N9W,14NE		@ 63' Erosional contact with moderate-brown to yellowish-brown siltstone/clayey siltstone; slightly plastic @ 63.6' Slightly sheared interbed; same at 66.5', 67.2' and 68.9'	
65				B:N15W,16NE			
				B:N15W,16NE			
				B:N12W,13NE			
70				116/17.5			
		20 85					
75							Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 1/27-28/00		
ILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-50E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	ELEVATION: 1281'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						TOTAL DEPTH 75 Ft. (Elev. 1206') No Ground Water No Caving Slide Plane @ 23.5 Ft. (Elev. 1257.5')	
80							
85							
90							
95							
100							
105							
10							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 1/28,31/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-51E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.		ELEVATION: 1312'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 3 3		107/15.3		**LANDSLIDE DEBRIS; Qls (0 - 16.2 Ft.)** @ 0' Yellowish-brown to medium-brown siltstone to sandy siltstone with scattered pebbles and cobbles with pockets of pebbly sandstone; loose to moderately dense; damp	Downhole logged on 1/28/00 and 1/31/00 @ 0-10' Mixed Bulk Sample
						@ 6' Pebbly sandstone clast in matrix @ 7' Irregular contact with pebbly muddy sand; locally soft	Surficial material removed for drill pad
				Apx B:N10E,21NW			
10		1 2 2	Qls	Apx B:N58E,13NW 116/10.3			
						@ 12.7' Pebbly sandstone clast; cemented; patchy pebbly sandstone adjacent and below clast; loose to moderately dense @ 14' Irregular contact with pebbly silty sandstone and siltstone	
15		2 4 7		112/12.4			
				B:N34W,31NE		@ 16.2' Base of disturbed material; contact irregular; no distinct slide plane **BEDROCK; TQs (16.2 - 35 Ft.)** @ 16.2' Interbedded siltstone, sandy siltstone and pebbly sandstone; moderately hard; damp; well bedded; local concretions @ 16.5' Clayey siltstone interbed; slightly sheared @ 20.5' Mudstone interbed; slightly sticky; local partings	
20		2 6 8		105/29.2			
				B:N47W,28NE			
						@ 23.5' Scattered concretions	
25			TQs	Apx B:N32W,25NE			
				B:N43W,28NE			
30		12 35		122/11.4			
35						TOTAL DEPTH 35 Ft. (Elev. 1277') No Ground Water, No Caving Base of landslide @ 16.2 Ft. (Elev. 1295.8')	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri-Valley Drilling/Greg		DRILLED: 2/2/00	
DRILLING METHOD: Bucket-Auger (116' Rig)		HOLE DIA: 30"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 6"	**BORING NO.** B-52E
DRIVING WEIGHTS: 0-30'=5952 lbs; 30-57'=3921 lbs; 57-86'=2531 lbs; 86-116'=1407lbs		ELEVATION: 1222'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Slough			**SLOUGH; (0 - 3 Ft.)**	Downhole logged on 2/2/00 @ 0-10' Mixed Bulk Sample
5		1 2	Qsw			**SLOPEWASH; Qsw (3 - 12.5 Ft.)** @ 3' Grayish-brown pebbly muddy sand; firm; slightly damp; 1-2% voids @ 8' Grades to yellowish-brown pebbly silty sand with scattered cobbles; slightly friable; damp	
10		3 3 4					Drive sample at 10 ft. had rock in tip; disturbed; blow count suspect
15		2 2 2				**LANDSLIDE DEBRIS; Qls (12.5 - 30.6 Ft.)** @ 12.5' Irregular transition into light yellowish- brown slightly silty pebbly sandstone; loose to dense; damp; weathered @ 16' Very irregular contact with yellowish-brown sandy mudstone; soft to firm; slightly sticky; damp to moist; very disturbed; $CaCO_3$ pods common	
20		2 2 3	Qls	SP:E-W,13N SP:N60W,21NE		@ 21' Light-brown to light-gray mottling; bedding vague @ 22.6' 1/8"-thick moderate reddish-brown plastic clay with parting, within an olive-brown mudstone; slightly sheared; moist; underlain by mottled yellowish-brown silty sandstone/sandy siltstone; slightly soft; damp	
25				B:N48W,21NE B:N43W,25NE		@ 24.5' Thin mudstone with partings; tighter below @ 26' Cross-bedded sandstone interbed; siltstone and silty sandstone interbeds below; local concretions	@ 28' Bulk Sample
30		4 10 13		SP:N42W,21NE		@ 30' Grades muddier; moderately sheared with partings @ 30.5' 0.1-1"-thick moderate-brown clay; plastic; moist; thins to northwest **BEDROCK; TQs (30.6 - 64 Ft.)** @ 30.6' Yellowish-brown sandy siltstone; moderately hard to hard; damp to moist; grades to light yellowish-brown slightly silty sandstone	
35			TQs	B:N46W,25NE		@ 33' Concretions @ 33.5' Yellowish-brown sandy siltstone interbed @ 36' Light yellowish-gray sandstone and pebbly sandstone with local cobbly zones; cross bedded and channeled; moderately hard to hard;	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri-Valley Drilling/Greg	DRILLED: 2/2/00		
DRILLING METHOD: Bucket-Auger (116' Rig)	HOLE DIA: 30"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 6"	**BORING NO.** B-52E	
DRIVING WEIGHTS: 0-30'=5952 lbs; 30-57'=3921 lbs; 57-86'=2531 lbs; 86-116'=1407lbs	ELEVATION: 1222'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		11 26/5"		B:N58W,22NE B:N47W,20NE		local siltstone rip-up clasts	
45				B:N54W,29NE			
50			TQs	B:N49W,25NE		@ 49' Large siltstone rip-up clasts	
55				B:N53W,21NE		@ 56' Erosional contact with fine-grained, laminated, slightly silty sandstone	
60						@ 60' Pebbly sandstone interbed	
65						TOTAL DEPTH 64 Ft. (Elev. 1158') No Ground Water No Caving Slide Plane @ 22.6 Ft. (Elev. 1199.4') Slide Plane @ 24.5 Ft. (Elev. 1197.5') Slide Plane @ 30.5 Ft. (Elev. 1191.5')	Backfill tamped every 10 ft.
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 2/1/00		
'LLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-53E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs	ELEVATION: 1308'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 3 2	Qsw	117/4.3		**SLOPEWASH; Qsw (0-5 Ft.)** @ 0' Medium-brown to yellowish-brown sandy silt with scattered pebbles; dense and tight; damp @ 3' Scattered cobbles; loose to moderately dense	Downhole logged on 2/1/00 @ 0-10' Mixed Bulk Sample
10		3 5 9	Qls	B:N47E,19NW 107/16.7 Apx B:N65W,12NE Apx Contact:N42E, 44SE		**LANDSLIDE DEBRIS; Qls (5-25.5 Ft.)** @ 5' Yellowish-brown siltstone, sandy siltstone and fine-grained sandstone with scattered pebbles and cobbles; loose to moderately dense; damp; disturbed @ 8.5' Moderate-brown clayey siltstone; firm to stiff; sheared; siltstone/ mudstone below @ 11' Moderate-brown clayey siltstone; firm to stiff; sheared; pebbly silty sandstone below with scattered cobbles; loose to moderately dense @ 12' Erosional contact with moderate-brown siltstone with scattered pebbles; dense to moderately hard but fractured; bedding slightly disturbed	
15		3 8 7/4"		119/12.2 Apx B:N17W,17NE			
20		3 5 9		111/20.7		@ 19' Irregular contact with pebbly silt sandstone with scattered cobbles @ 20.4' Erosional contact with moderate yellowish-brown siltstone	@ 19-21' Carbide toothed bucket used for rocks
25				SP:N2E,7SE B:N2E,6SE		@ 25.4' 1-1.5"-thick moderate-brown clay; plastic; base of fractures **BEDROCK; TQs (25.5-65 Ft.)** @ 25.5' Yellowish-brown siltstone; moderately hard; damp to moist; poorly bedded; sandy siltstone @ 27' Sandstone interbed	@ 25' Bag sample of clay
30		8 14 22	TQs	121/14.7			
35				B:N22W,14NE (cross bedded)		@ 34.4' Shallow, slightly irregular contact with pebbly sandstone with cobbles; moderately hard to slightly friable; crudely bedded; cross bedding	@ 36-40' Carbide toothed bucket used for rocks

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 2/1/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-53E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs		ELEVATION: 1308'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		25 20/12"		B:N6W,8NE 124/3.9			
45				B:N10W,8NE B:N1W,9NE			
50				B:N6E,13SE		@ 52.3' Cobbly lenses with local silty sandstone stringers	
55				B:N15W,10NE		@ 54.5' Sandstone stringer	
60				Apx B:N10W,8NE		@ 56.5' Erosional contact with yellowish-brown siltstone and sandy siltstone; moderately hard; damp to moist	
65						TOTAL DEPTH 65 Ft. (Elev. 1243') No Ground Water No Caving Slide Plane @ 25.4 Ft. (Elev. 1282.6')	Backfill tamped every 5 ft.
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 2/2/00		
'LLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-54E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs	ELEVATION: 1284'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		3 6 13		123/13.0		**BEDROCK; TQs (0-60 Ft.)** @ 0' Yellowish-brown sandy siltstone; slightly loose to dense; slightly damp @ 2' Moderately hard with scattered pebbles and caliche filled fractures	Downhole logged on 2/2/00 Upper 5 ft. of TQs is weathered with CaCO3 - lined fractures @ 0-10' Mixed Bulk Sample
10		6 13 16		B:N25E,9SE 118/4.5 B:N12W,12NE		@ 8.7' Interbed of pebble to cobble conglomerate; damp @ 9.4' Yellowish-brown slightly sandy siltstone with scattered pebbles; poorly bedded @ 11.5' Local concretions @ 12.3' Pebbly to cobbly silty sandstone with sandy siltstone/silty sandstone and siltstone interbeds; moderately hard to locally loose	
15		6 13 16/4"		Apx B:N4E,15SE 121/11.0 B:N10W,13NE			
20		4 8 16	Qs	B:N23W,9NE 127/8.7 B:N11W,14NE		@ 20.5' 0-1/4"-thick slightly clayey siltstone; no significant shearing or partings	
25						@ 25' Poorly sorted silty pebbly sandstone @ 28.2' Pebble to cobble conglomerate and pebbly sandstone; slightly friable; rip-up clasts	
30		11 11 17		123/13.3 B:N26W,8NE B:N17W,22NE		@ 31.8' Erosional contact with moderate yellowish-brown siltstone and mudstone with local pebbles and sandy interbeds; moderately hard; damp; poorly bedded	
35				Apx B:N8W,12NE B:N20W,8NE			

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 2/2/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-54E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs	ELEVATION: 1284'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						@ 37.4' Interbedded fine- to coarse-grained sandstone and silty sandstone; well bedded; low angle cross bedding	
		11 28		123/4.5 Contact:N2W 19NE		@ 40.9' Moderate yellowish-brown siltstone to clayey siltstone; slightly sticky; poorly bedded @ 42' 4-6" thick mudstone to sandy mudstone interbed; slightly soft; sticky and sheared with minor partings	
45				B:N15,13NE			
50				B:N8W,11NE		@ 49' Sandy siltstone and fine- to medium-grained pebbly sandstone interbeds; moderately hard to locally slightly loose; damp	
55				B:N3W,11NE B:N7W,9NE		@ 53.9' Erosional contact with slightly sandy siltstone; moderately hard @ 55' Fine- to coarse-grained sandstone @ 56.3' Erosional contact with moderate yellowish--brown siltstone	@ 57' Bedrock breaks apart locally on strike- sides of boring
60						TOTAL DEPTH 60 Ft. (Elev. 1224) No Ground Water No Caving	Backfill tamped every 5 ft.
65							
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 2/3/00		
'LLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-55E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs	ELEVATION: 1313'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			Qls			**LANDSLIDE; Qls (0-4 Ft.)** @ 0' Moderate-brown to yellowish-brown siltstone and slightly sheared clayey siltstone; soft to moderately dense; slightly damp; caliche; slightly disturbed bedding	Downhole logged on 2/3/00
				SP:N1E,10SE		@ 3.9' 1"-thick clayey siltstone; sheared	
5		2 5 7		121/14.1		**BEDROCK; TQs (4-40 Ft.)** @ 4' Moderate yellowish-brown siltstone with scattered pebbles and lenses of pebbly silty sandstone; dense with caliche-lined fractures in upper 2.5 ft.; damp; poorly bedded	@ 0-10' Mixed Bulk Sample
10		14 32	TQs	132/2.8 Apx B:N2W,18NE		@ 10' Fine- to medium-grained pebbly sandstone and sandstone; moderately hard to hard; damp; lensing; minor fractures @ 11.5' Erosional contact with silty sandstone and sandy siltstone; local concretions	
				B:N15W,10NE		@ 13.2' Discontinuous pebbly to cobbly lense	
15		8 27		111/6.9			
				Apx B:N7E,8SE		@ 17.2' Pebbly sandstone interbed	
20		8 15 16		114/9.4 B:N4W,10NE		@ 20' Thin fine-grained sandstone interbed with yellowish-brown slightly sandy siltstone below; poorly bedded	
25							
30		14 29		127/10.5			
						@ 32' Pebbly sandstone lense @ 33' Grades slightly reddish-brown	
35				B:N5W,5NE		@ 37.2' Fine- to medium-grained pebbly sanstone	

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 2/3/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-55E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs		ELEVATION: 1313'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						TOTAL DEPTH 40 Ft. (Elev. 1273') No Ground Water No Caving Slide Plane @ 3.9 Ft. (Elev. 1309.1')	Backfill tamped every 5 ft.
45							
50							
55							
60							
65							
70							
75							

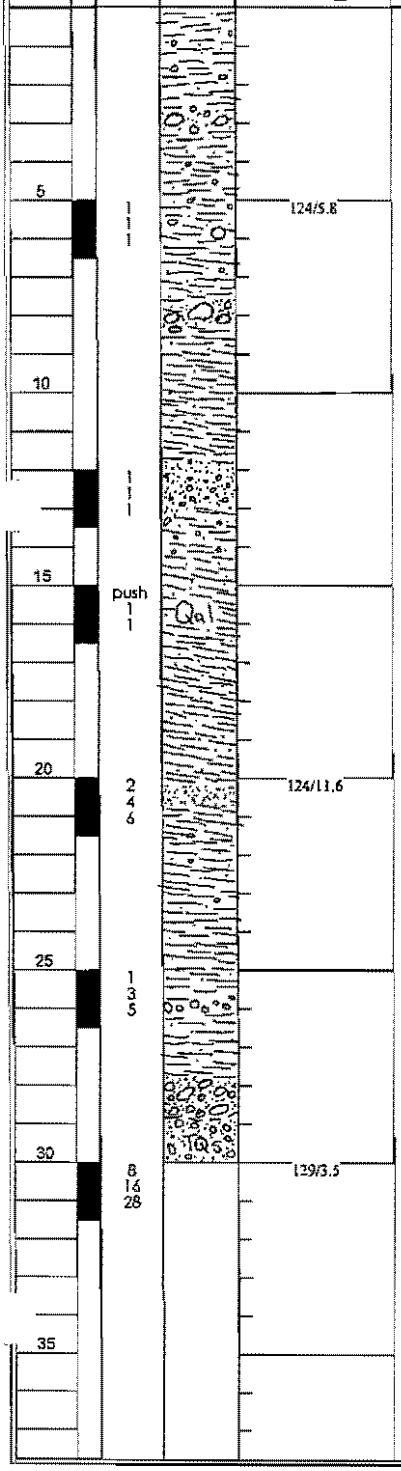
CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 2/3/00	
'LLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-56E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs		ELEVATION: 1332'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SOIL/SLOPEWASH; soil/Qsw (0-5 Ft.) @ 0' Brown muddy sand with pebbles; moderately dense and tight; damp	Downhole logged on 2/3 and 2/4/00
			Soil/Qsw			@ 3.5' Local cobbles	
5		2 3 2		112/6.9		**LANDSLIDE; Qls (5 - 57 Ft.)** @ 5' Yellowish-brown silty pebbly sandstone and silty sandstone; loose to moderately dense; damp; very disturbed	@ 0-10' Mixed Bulk Sample
						@ 7.8' Cobbles	
						@ 8.8' Irregular erosional contact	
10		3 6 12		129/6.0 B:N82W,11SW		@ 10' Patch of pebbly slopewash; loose	
				B:N59W,10SW		@ 11.8' Silty sandstone to fine-grained sandstone; loose @ 12.5' Pebbly to cobbly sandstone and silty sandstone	
15		3 8 13		126/3.3 B:N40W, 24SW		@ 15.5' Fine-grained sandstone to silty sandstone interbed; fractures; tighter below; pebbly sandstone interbed below	
				B:N66W,14SW		@ 17.6' Erosional contact with silty sandstone/sandy silstone with local pods of pebbly sandstone	Bedding dep is not regional
20		6 5 13	Qls	128/5.0 B:E-W 12S		@ 19.3' Irregular contact with siltstone/sandy siltstone @ 20.1' Fine- to coarse-grained sandstone interbed	
				B:N82E,11SE		@ 22.5' Slightly silty pebble to cobble congolmerate; slightly loose; bedding is fairly consistent but not regional	
25				B:N75W,9SW		@ 27.6' Erosional contact with medium-brown siltstone; dense @ 28' Thin yellowish-brown sticky mudstone interbed	
30		3 6 8		SP:N89E,15SE		@ 31.1' 1 ft. thick with interbed of moderate-brown mudstone and claystone; slightly soft-sticky and sheared	@ 30' Consol % ~~faults~~ = 84.4 fines
35							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG/BJS	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 2/3/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-56E
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs		ELEVATION: 1332'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				MF:N65E,70NW B:N80W,8SW		@ 38' Pebbly sandstone interbed; offset by minor fault; moderate-brown siltstone, mudstone and sandy siltstone below; moderately dense	@ 38' Minor normal fault with 3-4" of offset
		3 5 10		114/5.4		@ 41' Irregular stringers of sandstone and pebbly sandstone within slightly sheared siltstone and mudstone; disturbed and slightly soft @ 43.7' Irregular contact with siltstone and mudstone	
45						@ 45' Irregular sandtstone interbed; offset by minor fault; generally dense	@ 45' Two minor normal faults
			Qls	B:N55E,18SE		@ 48' Mudstone with a thin sandstone stringer; slightly soft and sticky	Landslide material is fairly tight but bedding is not regional and is locally disrupted @ 50' Cons'
50		2 5 12		B:N75E,16SE		@ 50' Pebbly sandstone stringer	
55				SP:N12W,13NE B:N14W,15NE		@ 55' Pebbly sandstone interbed; base erosional and disturbed; dense to moderately hard @ 56' 6"-thick disturbed mudstone iwth minor sandstone laminations; 1.5" - thick silty clay at base; sticky and plastic; damp to moist **BEDROCK; TQs (57-65 Ft.)** @ 57' Moderate yellowish-brown silstone and sandy siltstone and thin light yellowish-brown fine silty sandstone stringers; moderately hard; damp; faint laminations	@ 57' Bag Sample of Clay; Bedrock breaks apart on strike- sides of boring @ 60' % FINES = 78.66
60		11 26 62	TQs				
65		15 78		118/15.0		TOTAL DEPTH 65 Ft. (Elev. 1267') No Ground Water No Caving Slide Plane @ 31.1 Ft. (Elev. 1300.9') Slide Plane @ 56 Ft. (Elev. 1276')	Backfill tamped every 5 ft.
70							
75							

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 2/4/00		
LLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-57E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs	ELEVATION: 1282'		



Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
ALLUVIUM; Qal (0-29 Ft.)	Surface logged on 2/4/00; no downhole logging
@ 0' Medium-brown silt to sandy silt with scattered pebbles and cobbles; damp	
@ 3' Large cobbles	
@ 5' Medium- to yellowish-brown silt to sandy silt with pebbles and cobbles; damp to moist	@ 5' Bulk sample
@ 8' Large cobbles to small boulders	
	@ 10' Bulk sample
@ 12' Orangish- to medium-brown silt to sandy silt to fine- to coarse-grained sand with pebbles and cobbles; damp	@ 12' Consol
@ 15' Yellowish- to orangish-brown silt; damp to moist	@ 15' Consol @ 16' Bulk Sample
@ 20' Pebbly sandy silt interbed	
@ 25' Slightly clayey, sandy silt	@ 25' Consol
@ 26' Scattered cobbles	
@ 28' Sandy; large cobbles	
BEDROCK; TQs (29-30 Ft.)	
@ 29' Yellowish- to orangish-tan, fine - to coarse-grained pebbly sandstone; damp	
TOTAL DEPTH 30 Ft. (Elev. 1252')	
No Ground Water	
No Caving	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Greg	DRILLED: 2/7/00		
DRILLING METHOD: Bucket-Auger (116' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 6"	**BORING NO.** B-58E	
DRIVING WEIGHTS: 0-30' =5952#, 30-57' = 3921#, 57-86' = 2531#, 86-116 = 1407#	ELEVATION: 1321'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 4 4		123/4.5		**SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/Qdf (0-18 Ft.)** @ 0' Dark-brown pebbly mudstone and sandy mudstone; dense and tight; slightly damp @ 3' Scattered cobbles; locally loose	Downhole logged on 2/7/00 and 2/8/00 @ 0-10' Mixed Bulk Sample
10		1 3 3	Qsw / Qdf	Apx Contact: N58W, 24NE 122/7.6		@ 7' Yellowish-brown silty pebbly sand @ 9' Irregular contact with medium - to dark-brown pebbly sandy mud; moderately dense to dense and tight; damp; possible old slopewash or debris flow	@ 10' Consol
15		1 2 6		127/7.0		@ 15' Grades to dark yellowish-brown	@ 15' Consol
20		3 8 15	Qls	Apx Contact:N5E, 55N W 131/4.4		**LANDSLIDE; Qls (18 - 44 Ft.)** @ 18' Steep irregular contact with yellowish- to orangish- brown silty sandstone and sandy siltstone with scattered pebbles and cobbles and pebbly lenses; moderately dense to locally loose; damp; disturbed	
25				SP:N21W,16NE		@ 23.8' 1/4-1/8"-thick moderate-brown clay; sticky and plastic; sheared clayey siltstone below; locally soft	@ 24' Bulk sample
				SP:N55E,27NW		@ 27.6' 1/2 - 3/4"-thick moderate-brown clay	@ 28' Bulk Sample
30		4 6 8		B:N38E,19NW 114/15.7		@ 29.5' Locally sandy @ 30' Irregular patch of pebbly sandstone; loose to moderately dense; damp; very irregular; underlying siltstone tighter but still wispy and locally soft and hollow sounding	
35				B:N17W,14NE			

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri-Valley Drilling/Greg	DRILLED: 2/7/00		
LING METHOD: Bucket-Auger (116' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 6"	**BORING NO.** B-58E	
DRIVING WEIGHTS: 0-30' =5952#, 30-57' = 3921#, 57-86' = 2531#, 86-116 = 1407#	ELEVATION: 1321'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N13W,8NE			
		5		114/14.0			
		9		B:N12W,17NE B/Sh:N18W,18NE		@ 40.8' 1/2"-thick moderate-brown clay; sheared; moderately plastic	
				SP:N30W,9NE		@ 43.5' 1/2- 1/12"-thick clay within mudstone unit	@ 43.5' 4 hand-driven ring samples oriented normal to slide plane
45						**BEDROCK; TQs (44-65 Ft.)**	
						@ 44' Interbedded yellowish-brown siltstone/mudstone and fine silty sandstone; moderately hard, damp, local laminations	@ 44' Bedding locally breaks apart on strike-sides of boring
50							
		3		113/17.2			
		8 7/2"		B:N10W,11NE		@ 50.8' Fine-grained sandstone; cross bedded	
			TQs			@ 52.2' Fine- to coarse-grained pebbly sandstone	
						@ 53.5' Cobbly zone; locally loose	
55						@ 55' Erosional contact with moderate yellowish-brown siltstone; poorly bedded	
60							@ 59' Bag Sample
		7		113/17.9			
		15					
		24					
65						TOTAL DEPTH 65 Ft. (Elev. 1256') No Ground Water No Caving Slide Plane @ 23.8 Ft. (Elev. 1297.2') Slide Plane @ 27.6 Ft. (Elev. 1293.4') Slide Plane @ 43.5 Ft. (Elev. 1277.5)	Backfill tamped every 10 ft.
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 2/10/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-59E
DRIVING WEIGHTS: 0-28' = 3450lbs, 28-57' = 2050lbs, 57-85' = 1140lbs		ELEVATION: 1273'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/Qdf (0-11 Ft.) @ 0' Medium-brown silt to sandy silt with scattered pebbles; firm; slightly damp	Downhold logged on 2/10/00 @ 0 - 10' mixed bulk sample
5		1 1 1	Qsw/ Qdf	109/8.6			
						@ 7' Medium to yellowish-brown	
						@ 8.5' Soft to stiff	
10		1/12" 1		Apx B:Horizontal		**LANDSLIDE; Qls (11-28.3 Ft.)**	@ 10' Consol
						@ 11' Pebbly silty sand interbed; soft; damp; within disrupted mix of medium- to yellowish-brown siltstone, sandy siltstone and pebbly to cobbly siltstone; soft to firm; damp	
15		1/12" 1					@ 15' Consol
			Qls				
20		1 2 2				@ 20' Medium brown siltstone, locally clayey or sandy, with scattered pebbles; soft to stiff	@ 20' Consol
25						@ 26' Scattered cobbles	
				Contact: N52W 16NE,		**BEDROCK; TQs (28.3 - 40 Ft.)**	
30		5 8 16		116/15.2 E:N10E,11NW E:N80E,32NW		@ 28.3' Irregular erosional contact; fine- to medium-grained sandstone, locally pebbly and cobbly; in contact above medium-brown siltstone; stiff to firm; damp	1/2 -1" thick caliche-filled fractures @ 31.5', 32', & 34'
			TQs	E:N5E,19NW			
35				B:N-S,8E		@ 36.5' Slightly sandy siltstone	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 2/10/00		
'LLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-59E	
DRIVING WEIGHTS: 0-28' = 3450lbs, 28-57' = 2050lbs, 57-85' = 1140lbs	ELEVATION: 1273'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qs				
		5 10 17		122/13.5		TOTAL DEPTH 40 Ft. (Elev. 1233') No Ground Water No Caving Base of Landslide @ 28.3Ft. (Elev. 1244.7')	Backfill lamped every 5 ft.
45							
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Company		JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation		DATE: 7/22/04	
		LOGGED BY: DGG	
DRILLING COMPANY: Tri-Valley Drilling/Dave		DRILLED: 2/11/00	
DRILLING METHOD: Bucket-Auger (86' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-60E
DRIVING WEIGHTS: 0-28' = 3450lbs, 28-57' = 2050lbs, 57-85' = 1140lbs		ELEVATION: 1200'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ALLUVIUM; Qal (0-35 Ft.) @ 0' Yellowish-brown silt with scattered pebbles and cobbles; slightly damp	Surface logged on 2/11/00; no downhole logging
						@ 3' Color yellowish brown to light gray	
5		push/12 1				@ 5' Medium-brown silt	@ 5' Consol @ 5' Bulk Sample
10		1 2 4				@ 10' Medium- to grayish brown pebbly, cobbly, silty sand to sandy silt; damp	@ 10' Bulk sample @ 10' Consol
						@ 12' Yellowish-to medium-brown, fine- to medium-grained removed already pebbly to cobbly sand @ 13' Orangish-brown	
15							
		1 1 2				@ 17' Medium- to slightly orangish-brown silt to slightly sandy silt @ 18' Scattered pebbles and cobbles	% fines = 47.6 @ 17' Consol
20			Qal				
		1 3 2		123/2.5		@ 20' Orangish- to yellowish-tan, fine- to medium-grained sand @ 21' Pebbles and cobbles	
							@ 23' Bulk sample
25							@ 25' Too cobbly for drive sample
						@ 28' Finer-grained	
30		2 3 3				@ 30' Medium-brown silt to slightly sandy silt @ 31' Silty sand to sandy silt with pebbles and cobbles	@ 30' Consol
35		3 8 16	TQs	120/3.5		**BEDROCK; TQs (35 - 43 Ft.)** @ 35' Orangish-yellow, fine- to medium-grained pebbly sandstone @ 37' Medium- to orangish-brown siltstone with pebbles	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri-Valley Drilling/Dave	DRILLED: 2/11/00		
DRILLING METHOD: Bucket-Auger (86' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-60E	
DRIVING WEIGHTS: 0-28' = 3450lbs, 28-57' = 2050lbs, 57-85' = 1140lbs	ELEVATION: 1200'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qls / TQs			@ 39' Pebbly, cobbly sandstone	
45		3 8 16				@ 43' Yellowish-orange fine-to coarse-grained pebbly sandstone TOTAL DEPTH 43 Ft. (Elev. 1157') No Ground Water No Caving	
50							
55							
60							
65							
70							
75							

DRILL HOLE LOG

BORING NO. B-61E

PROJECT: Newhall Ranch - Mesas East — JOB NO.: 00-1703CM-1
Phase II Landslide Investigation — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Tri Valley Drilling/Danny
METHOD OF DRILLING/HOLE DIAMETER (in.) Bucket-Auger 24" (4WD Rig)
HAMMER TYPE: Telescoping Kelly Bar — AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-24'=3160 lbs, 24-47'=2040 lbs, 47-72'=1120 lbs
ELEVATION: 1300± — LOGGED BY: BJS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						BEDROCK; TQs (0 - 65 Ft.)	Excavated and logged on 3/1/00 and 3/2/00
						@ 0' Light yellowish-brown sandy siltstone to silty sandstone with local interbeds and channels of sandstone and pebbly sandstone; finer beds dense, slightly damp to damp, not well sorted and poorly bedded; coarse beds dense but slightly friable, dry to slightly damp, cross bedded and locally laminated	Surface material removed for drill pad
				B:N16W,16NE (x-bedded)		@ 2' Cross-bedded sandstone interbed	@ 0-10' Mixed Bulk Sample
5						@ 5' Light yellowish-brown to yellowish-gray silty sandstone with local pebbles, concretions and sandy lenses	
						@ 9' Fine silty sandstone	
10							
	■	5 10 13		Consol			% fines=50.2
				B:N12W,9NE (x-bedded)		@ 13' Sandstone and pebbly sandstone channel with cross bedding	
15							
	■	5 8 13		116/7.0		@ 15.5' Light yellowish-brown to yellowish-gray silty sandstone with local pebbles and pebbly lenses, and rare, discontinuous muddy layers	@ 15' Bulk Sample
				Apx B:N30W,8NE			
				Apx B:N50W,13NE			
20				B:N55W,10NE			
	■	6 8 12/ 5"		119/3.6		@ 20' Pebbly lense; pebbly silty sandstone interbeds below	@ 20' Bulk Sample
25				B:N52W,10NE		@ 24' Pebbly to cobbly lense with underlying cross-bedded sandstone; poorly sorted silty sandstone below; dense to moderately hard; slightly damp to damp	
				B:N20W,15NE		@ 29' Thin sandstone interbed within yellowish-brown pebbly silty sandstone and local silty interbeds	
30							
	■	7 24		132/7.5		@ 31' Pebbly sandstone lense channeled into yellowish-brown sandy siltstone and mudstone with local pebbles; poorly sorted and poorly bedded	@ 30' Bulk Sample Bedding is poor from 30 to 50 feet
35							
						@ 37.5' Yellowish-brown to brown slightly sandy mudstone/siltstone	

DRILL HOLE LOG

BORING NO. B-61E

PROJECT: Newhall Ranch - Mesas East — JOB NO.: 00-1703CM-1
Phase II Landslide Investigation — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Tri Valley Drilling/Danny
METHOD OF DRILLING/HOLE DIAMETER (in.) Bucket-Auger 24" (4WD Rig)
HAMMER TYPE: Telescoping Kelly Bar — AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-24'=3160 lbs, 24-47'=2040 lbs, 47-72'=1120 lbs
ELEVATION: 1300± — LOGGED BY: BJS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
	■	5 11 23		Consol 126/11.0		@ 40' Concretions	% fines=7
45						@ 45.5' Mudstone interbed; bedding vague but shallow	
						@ 48' Grades sandier	
50				Apx B:N20W,10NE		@ 50' Grades siltier with local concretions; local sandstone interbeds below; bedding vague	
				B:N20W,8NE			
55							
60				B:N38W,15NE (x-bedded)		@ 59.5' Grades sandier @ 60.5' Sandstone and pebbly sandstone interbed; cross bedded and channeled; lithologically identical to coarse bed at 2 ft.	
65							
	■	11 46		120/5.7		TOTAL DEPTH 65 Ft. (Elev. 1235) No Ground Water No Caving	Backfill tamped every 10 ft.
70							
75							

DRILL HOLE LOG

BORING NO. B-62E

PROJECT: Newhall Ranch - Mesas East — JOB NO.: 00-1703CM-1
Phase II Landslide Investigation — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Tri Valley Drilling/Dave
METHOD OF DRILLING/HOLE DIAMETER (in.) Bucket-Auger 24" (4WD Rig)
HAMMER TYPE: Telescoping Kelly Bar — AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-24'=3160 lbs, 24-47'=2040 lbs, 47-72'=1120 lbs
ELEVATION: 1164± — LOGGED BY: MAS/BJS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SLOPEWASH/ALLUVIUM; Qsw/Qal (0 - 11 Ft.)	Excavated and logged on 3/2/00
						@ 0' Brown muddy sand with scattered pebbles; soft; moist to wet, roots; poorly sorted	
		1/ 18"		116/13.0			@ 3' Bulk Sample
5						@ 5' Grades yellowish-brown and moderately dense	@ 0-10' Mixed Bulk Sample
10		2 3 4		115/6.8			@ 10' Bulk Sample
						BEDROCK; TQs (11 - 32 Ft.)	
						@ 11' Light yellowish-brown fine sandy siltstone; soft to moderately dense; damp; weathered with roots and bioturbation	
15						@ 15' Light yellowish-brown to yellowish-gray fine silty sandstone with sandstone and pebbly sandstone lenses and interbeds; dense; slightly damp; local caliche-filled fractures	
				B:N32W,10NE			
				B:N52W,8NE		@ 17.5' Siltstone and sandstone interbeds; moderately well bedded and thin bedded	
						@ 19' Cross-bedded yellowish-gray sandstone and pebbly sandstone with channels; slightly to moderately friable	
20		5 3/1"					Drive Sample @ 20' hit rock % fines= 62
						@ 23' Coarse sandstone and pebbly sandstone lense/channel; cross bedded; moderately friable but dense	@ 20' Bulk Sample
25				B:N53W,6NE		@ 25' Slightly clayey sandy siltstone; dense; damp	
30							
		3 11 16		123/10.1		TOTAL DEPTH 32 Ft. (Elev. 1132) No Ground Water No Caving	Backfill Tamped every 10 ft.
35							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/17 - 21/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-63E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs 90-120'=2090 lbs	ELEVATION: 1310'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Casing			**BEDROCK; TQs (0-120')** @ 0-4' Casing	
5		3 5		123/3.9		@ 4' Yellowish-gray sandstone and pebbly sandstone; moderately hard; damp to moist; local 1-2" thick interbedded yellowish-brown sandy siltstone; moderately well-bedded; local laminations	@ 5-10' Bulk sample
10		3 7		120/15.5 B:N41W,19NE B:N54W,18NE		@ 8.5' Yellowish-brown to grayish-brown sandy and clayey siltstone; hard; moist; massive, structureless @ 11' Yellowish-gray sandstone and pebbly sandstone; moderately hard to hard; erosional scours and channels; local siltstone rip-up clasts; locally slightly to moderately friable; scattered cobbles; cross-bedded	
15		4 7		124/3.3 B:N49W,23NE			
20			TQs			@ 19' Yellowish-brown silty, pebbly sandstone; hard	
25		1 4		113/20.6 B:N58W,23NE		@ 25' Yellowish-brown to grayish-brown sandy to clayey siltstone @ 26.5' Yellowish-gray sandstone and pebbly sandstone	@ 25-28' Bulk sample
30				B:N45W,20NE		@ 30-32' Cobbly	@ 30-33' Bulk sample
35		14/6" bounce		129/3.5			

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/17 - 21/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-63E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs 90-120'=2090 lbs	ELEVATION: 1310'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N46W,21NE			
				B:N57W,22NE			
45			TQs				
		8 2/1" bounce		128/3.6		@ 46.5' Grayish to orangish-brown silty, pebbly, clayey sandstone	@ 47-50' Bulk sample
		2 7		B:N31W,20NE 104/25.1		@ 48' Grayish-brown siltstone with interbedded thin mudstone	
50						@ 50' Yellowish-gray sandstone and pebbly sandstone	
				B:N51W,24NE			
55						@ 53-57' Cobbly	
				B:N49W,22NE			
60		7 6		126/3.0			
65				B:N50W,22NE			
						@ 67-70' Cobbly	
70							
				B:N53W,23NE		@ 73' Cobbly	
75						@ 74' Grayish-brown sandy, clayey siltstone; erosional contacts @ 75' Yellowish-gray sandstone and pebbly sandstone	

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/17 - 21/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-63E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs 90-120'=2090 lbs	ELEVATION: 1310'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80		20 7/2"					
				B:N51W,18NE			
85							@ 85' stop drilling @ 1:00PM 10/17/03 Broken clutch on drill rig
				B:N41W,19NE			
90			Q_s			@ 89' Grayish-brown to yellowish-brown sandy, clayey siltstone; mostly massive, structureless; local sandy siltstone and clayey siltstone interbeds	
				B:N40W,22NE			
95							
				B:N63W,24NE			
100						@ 101' Yellowish-gray sandstone and pebbly sandstone	
105						@ 105-106' Grayish-brown siltstone	
				B:N57W,27NE			
0							
				B:N38W,20NE			

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/17 - 21/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-63E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs 90-120'=2090 lbs	ELEVATION: 1310'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
115			Tqs	B:N46W,21NE			
120						TOTAL DEPTH 120' No Groundwater No Caving	
125							
130							
135							
140							
145							
150							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/22/03		
"LLING METHOD: Bucket Auger	HOLE DIA: 24"		
...MMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-64E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs, 90-120'=2090 lb lbs	ELEVATION: 1120'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Casing			**BEDROCK; TQs (0-60')** @ 0-4' Casing	Drilled & logged 10/22/03
5						@ 4' Yellowish-gray pebbly sandstone; moderately hard; damp @ 5' Yellowish-brown sandy siltstone with scattered pebbles	@ 5-6' Bulk sample
				Apx. B:N57W,27NE		@ 8' light yellowish-brown pebbly sandstone; moderately hard; moist; scattered cobbles and siltstone clasts	
10		1 1		116/6.3		@ 9.5' Yellowish-brown to brown sandy siltstone; moderately hard	
			TQs			@ 11' Yellowish-to grayish-brown silty sandstone/sandy siltstone; massive; structureless	
15				Apx. B:N44W,27NE		@ 15' Yellowish-gray pebbly sandstone with cobbles; cross- bedded; locally slightly friable to friable	
20		2 3		111/20.9		@ 19' Yellowish-brown silty, pebbly sandstone; hard @ 19.5' Brown to grayish-brown siltstone and mudstone; hard; moist; massive, structureless; locally plastic, sticky	
25							
30		2 4		114/16.0			
				B:N53W,33NE		@ 33.5' 6" thick yellowish-brown fine-grained sandstone interbed	@ 33' Bulk sample
35				B:N48W,84NE		@ 36' Thinly interbedded yellowish-brown sandy siltstone, orangish- to grayish-brown siltstone, and brown mudstone; well-bedded	

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/22/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-64E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs, 90-120'=2090 lb lbs	ELEVATION: 1120'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N50W,31NE B:N45W,32NE			
		4 9/3"		102/17.9			
				B:N46W,32NE			
45						@ 45' Brown to grayish-brown siltstone and mudstone; massive, structureless; locally plastic, sticky	
			Qs				
50		2 11		124/13.1			
55						@ 54' Grades to siltstone and sandy siltstone; massive, structureless	
60		7 10		114/4.9		TOTAL DEPTH 60' No Ground Water No Caving	
65							
70							
75							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/22 - 24/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-65E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs, 90-120'=2090 lb	ELEVATION: 1148'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		push 1	Qt	107/4.8		**QUATERNARY TERRACE DEPOSITS; Qt (0-34')** @ 0' Medium to light reddish-brown silt and sandy silt; soft; dry to slightly damp; scattered pebbles; roots and voids; massive; structureless	@ 5-6' Bulk sample
10		1 1		115/8.4		@ 10' Moderately hard	
						@ 12' Moist @ 13' Light orangish- to reddish-brown silty pebbly sand	
15		1/12"		115/9.9		@ 16.5' Grades to grayish-brown sandy, silty clay with scattered pebbles	@ 16-36' Set casing
20						@ 18.5' Relatively sharp irregular contact with yellowish-gray pebbly, cobbly sand; loose; friable; scattered boulders; orange iron-staining; erosional scours, channels; clast supported pebble lenses; cross-bedded	
25						@ 24' Boulders	@ 24' use crowds drill to 25' 10/22/03
30							
35		3 11	TQs	Apx. CTC:N50E, 30SE 109/3.7		**BEDROCK; TQs (34-120')** @ 34' sharp erosional contact with yellowish-gray sandstone and pebbly sandstone; moderately hard to hard; moist; locally slightly to moderately friable; scattered cobbles; local laminations; highly erosional and cross-bedded	

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/22 - 24/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-65E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs, 90-120'=2090 lb	ELEVATION: 1148'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N47E,36SE			
				B:N23E,40SE			
45		5 12/2"		B:N27E,23SE			@ 45' Rock in tip
						@ 48-50' Cobbly; local clast supported pebble beds; black staining	
50							@ 50-60' Bulk sample
				B:N37E,29SE			
55				B:N34E,29SE		@ 56' 2" thick orangish-brown silty sandstone bed	
						@ 58-61' Cobbly	
60							
				B:N35E,29SE		@ 61' Yellowish-gray to light yellowish-brown fine-to coarse-grained sandstone; hard; moist; well-bedded; thinly bedded; laminated; scattered pebbles	
65				B:N38E,22SE		@ 65' Local thin 1/8-1/4" thick interbedded grayish-brown sandy siltstone	
				B:N38E,29SE		@ 67' Brown clay interbed; 1/2" thick @ 68' Yellowish-gray pebbly sandstone	
70							
				B:N27E,31SE			
75						@ 75' 6" thick concretionary bed	

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/22 - 24/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-65E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs, 90-120'=2090 lb	ELEVATION: 1148'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80				B:N30E,31SE		@ 76.5' Same @ 78' Same	
				B:N30E,33SE		@ 81' Yellowish-gray pebbly sandstone	
85		8 11					
		3 9		B:N42E,21SE		@ 86' Interbedded yellowish-brown sandy siltstone orangish- to grayish-brown siltstone and brown mudstone; thinly bedded, well-bedded	
90			TQs	B:N37E,28SE		@ 90.5' Grades to grayish-brown siltstone; massive	@ 90-92' Bulk sample
95				B:N31E,30SE B:N34E,29SE		@ 96' Yellowish-gray sandstone @ 98' Interbedded yellowish-gray fine- to medium-grained sandstone and massive grayish-brown silty sandstone	
100				B:N32E,32SE			
105							
110						@ 108' Grayish-brown siltstone and mudstone; massive	

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
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DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/22 - 24/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-65E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs, 90-120'=2090 lb	ELEVATION: 1148'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
115			Tqs				
120						TOTAL DEPTH 120' No Ground Water Belled out, Caving @ 18.5-34'	
125							
130							
135							
140							
145							
150							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/11-13/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-66E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90=3270'lbs, 90-120'=2090 lbs lbs	ELEVATION: 1071'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		Push 1	Qsw			**SLOPEWASH; Qsw; S (0-12')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; pinhole voids; roots rootlets	@ 0-10' Bulk sample
10		1 3					@ 10-15' Bulk sample
15		2 8	Qt	C:Horizontal		**QUATERNARY TERRACE DEPOSITS; Qt (12-15')** @ 12' Silty sand with gravel; loose to medium dense; dry; light yellowish-gray to light gray; large cobbles≥ 1 foot in diameter; caving **BEDROCK; TQs (15-121')** @ 15' Light-gray silty fine-grained sandstone; moderately hard; damp; finely laminated; white concretions~ 6" in diameter @ 17' Brown silty claystone; moderately hard to hard; moist	Boring was cased after logged to 16'
20		3 5/2"		B:N48W,19NE		@ 20' Same; claystone grades into light-brown sandy siltstone; damp; concretions ~6" in diameter	
25		2 5/4"		Apx. B:N56W,10NE		@ 23' Sandy siltstone grades to light-brown silty sandstone; damp to moist; concretions~ 4-6" in diameter, massive @ 26' Light-gray well-graded sandstone; damp	
30				Apx. B:N32W,34NE		@ 29' Same; gravelly channels/lenses	
35		14		B:N48W,26NE		@ 32' Same; with interbedded light-gray fine-grained sandstone; moderately hard; finely cross-bedded @ 35' Light-gray fine- to medium-grained sandstone; moderately hard to hard	

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PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/11-13/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-66E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90=3270'lbs, 90-120'=2090 lbs lbs	ELEVATION: 1071'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
						@ 41' Same; grades to light-gray well-graded sandstone with gravel channels	
				Apx. B:N54W,22NE			
45							
		22		Apx. B:N25W,12NE		@ 45' Same; with discontinuous brown silty claystone lenses; moderately hard; moist; no parting planes or striations @ 46' Light-gray silty fine-grained sandstone; moderatley hard to hard; damp @ 47-48.5' Same; concretion with light-reddish-brown rim; silty sandstone is discolored dark-gray within concretion rim	
50							
			TQs				
55							
		14					
				B:N33W,27NE		@ 57' Greenish-gray clayey sandy siltstone; moist	
				Apx. B:N39W,25NE		@ 58' Lenses of dark grayish-brown sandy, silty claystone; moderately hard	@ 58' Small bag sample
60							
65							
		10		Apx. B:N32W,25NE		@ 65' Greenish-gray clayey, sandy siltstone; grades to yellowish-brown silty fine-grained sandstone; hard	
				Apx. B:N69W,25NE		@ Brown silty sandy claystone; hard; concretion demarcates bedding contact	
70							
				Apx. B:N25W,19NE		@ 73' Same, grades to light-brown clayey sandy siltstone; hard	
75							
		18					

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/11-13/03		
"LLING METHOD: Bucket Auger	HOLE DIA: 24"		
.MMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-66E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90=3270'lbs, 90-120'=2090 lbs lbs	ELEVATION: 1071'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80				B:N43W,19NE		@ 77' Grades to light-gray silty sandstone; moderately hard to hard; damp; gravel channels; commonly thinly bedded	
				B:N55W,17NE			
85							
90						@ 87' Grades to light-gray well-graded sandstone; hard; damp; locally thinly bedded	
			TQs	Apx. B:N15W,17NE			
95							
100							
105				B:N27W,18NE		@ 109' Same with, light-gray pebbly sandstone; moderately hard	
10							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/11-13/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-66E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90=3270'lbs, 90-120'=2090 lbs lbs	ELEVATION: 1071'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
115			TQs	Apx. B:N55E,18NE			
120						TOTAL DEPTH 121' No Ground Water Caving 12-16'	
125							
130							
135							
140							
145							
150							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/14 -17/03		
'LLING METHOD: Bucket Auger	HOLE DIA: 24"		
...MMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-67E	
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60=4780; 60-90'=3270 lbs; 90-120'=2090 lbs	ELEVATION: 1262'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		5	Soil	Apx. B:N16W,31NE 112/5.5		**SOIL; S (0-2')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown **BEDROCK; TQs (2-121')** @ 2' Light-brown sandy siltstone; moderately hard; dry @ 5.5' Light-brown silty sandstone with local channels of coarse-grained sandstone pebbly sandstone to loose; dry roots	
10		1 2	TQs	111/10.2			
15		8		Apx. B:N21W,13NE B:N35W,25NE		@ 15' Light-brown sandy siltstone; damp; with interbedded light-brown to brown sandy silty claystone beds; moderately hard to hard; moist; irregular erosional contact with sandstone above	
20		2 8					
25		9		Apx. B:N29W,31NE B:N42W,29NE		@ 23' Light-brown to gray pebbly sandstone @ 24' Light-brown silty sandstone; moist @ 25' Light-brown sandy clayey siltstone; moderately hard to hard	
30						@ 30' Siltstone grades to light-brown silty pebbly sandstone; moderately hard; damp; local coarse-grained sandstone and pebbly sandstone channels	
35		14		Apx. B:N56W,18NE			

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/14 -17/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-67E	
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60=4780; 60-90'=3270 lbs; 90-120'=2090 lbs	ELEVATION: 1262'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				Apx. B:N56W,16NE			
45		18		Apx. B:N50W,27NE			
50							
55		15	TQs	B:N59W;11NE		@ 52' Irregular erosional contact; light-brown silty fine-grained sandstone	
60						@ 57' Light-brown to gray silty, pebbly sandstone; damp	
65		8 10/5"		B:N52W,24NE		@ 61' Light brown sandy siltstone; moderately hard to hard; moist; with interbedded lenses of brown silty claystone; moderately hard to hard, moist; lenses; clay layers not well defined; no parting planes or striations	
70				Apx. B:N44W,16NE			
75		19/5"		Apx. B:N38W,17NE B:N38W,22NE		@ 74' Light yellowish-brown, well-graded sandstone; soft to moderatley hard; damp; local channels and lenses of pebbly, silty fine-	

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PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/14 -17/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-67E	
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60=4780; 60-90'=3270 lbs; 90-120'=2090 lbs	ELEVATION: 1262'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				B:N49W,31NE		grained sandstone, and clay	
80			Tqs	B:N50W,35NE PC:N47W,38NE		@ 80' Light-brown sandy siltstone; moderately hard; moist; steeply dipping erosional contact with sandstone above @ 81.5' ~1" thick brown claystone interbed; soft; moist; plastic; caliche @81.6 Brown mudstone; moderately hard to hard	
85		11		B:N42W,18NE		@ 85' Interbedded light-brown silty fine-grained sandstone and light-brown to light yellowish-brown clayey siltstone, moderately hard to hard @ 87' Light-gray sandstone; moderately hard; damp; friable	
90				B:N31W,25NE		@ 93' Light-brown clayey sandy siltstone; moderately hard to hard; moist	
95				B:N54W,31NE		@ 98' Light-gray medium-grained sandstone bed; damp; 1 foot thick	
100				Apx. B:N38W,34NE			
105							
110							

CLIENT: Newhall Ranch Company®		JOB NO.: 04-2023-4	**DRILL HOLE LOG**
PROJECT: Mesas East - Tentative Map		DATE: 07/22/04	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling (Danny)		DRILLED: 11/14 -17/03	
DRILLING METHOD: Bucket Auger		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-67E
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60=4780; 60-90'=3270 lbs; 90-120'=2090 lbs		ELEVATION: 1262'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
115			Tqs	B:N30W,34NE			
120						TOTAL DEPTH 121' No Ground Water No Caving	
125							
130							
135							
140							
145							
150							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/18/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-68E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780, 60-90'=3270 lbs, 90-120'=2090 lbs	ELEVATION: 1351'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
1			S			**SOIL; S (0-5')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown; roots, rootlets; voids	
5		2 5		Apx. B:N6W,15NE 111/10.6		**BEDROCK; TQs (5-100')** @ 5' Interbedded light-brown silty sandstone and sandy siltstone; moderately hard; dry to damp; weathered, caliche	
10		2 4	TQs	109/5.8			
				B:N37W,12NE B:N36W,13NE		@ 12.5' Light yellowish-brown silty, clayey sandstone	
15		4 8		B:N37W,15NE		@ 15.5' Light yellowish-brown sandy siltstone; soft to moderately hard; dry	
20		3 4				@ 19' Grades to light-brown clayey siltstone; moderately hard; moist @ 20' Yellowish-brown pebbly silty, clayey sandstone; soft to moderately hard; channel deposit @ 21.5' Light yellowish-brown clayey siltstone; moderately hard	
25		4 2/2"				@ 25' Grades to yellowish-brown silty clayey sandstone	@ 25-35' Bulk sample
				B:N52W,13NE		@ 28.5' Same; with light reddish-brown sandy claystone; moderately hard to hard	
30				B:N33W,32NE		@ 30' Grades to gray to brown pebbly sandstone; moderately hard @ 31' Light yellowish-brown clayey siltstone; soft to moderatley hard	
35		10 5/2"					

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/18/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-68E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780, 60-90'=3270 lbs, 90-120'=2090 lbs	ELEVATION: 1351'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						@ 39' Light-gray pebbly sandstone interbed; moderately hard, damp	
45				Apx. B:Horizontal		@ 43.5' Light reddish-brown sandy claystone interbed moderately hard to hard; moist	
				Apx. B:Horizontal		@ 45.5' Light yellowish-brown to light-gray coarse-grained sandstone interbed; moderately hard; damp @ 46.5' Light yellowish-brown sandy clayey siltstone to clayey siltstone; moderately hard to hard; moist	
50							
55		2 6		B:N47W,13NE		@ 55' Reddish-brown sandy claystone interbed @ 55.5' Interbedded light yellowish-brown siltstone and silty sandstone; moderately hard	
60				Apx. B:N63W,14NE			
				Apx. B:N35W,22NE			
65		15		B:N37W,12NE		@ 65' Light-brown clayey silty sandstone; damp to moist; friable	
70				B:N60W,13NE		@ 70' Local laminae	
75		5				@ 73' Grades to light yellowish-gray silty pebbly conglomerate to pebbly sandstone; moist	

DRILL HOLE LOG

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04
	LOGGED BY: MAS
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/18/03
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780, 60-90'=3270 lbs, 90-120'=2090 lbs	ELEVATION: 1351'

BORING NO. B-68E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80		10				@ 76' Light-brown sandy clayey siltstone to silty sandstone; damp to moist @ 78' Same; locally laminated to cross laminated with pebbly sandstone lenses @ 80' ("Fractures") Slaking "pattern" of vertical cleavage; 1-4" back in sides of boring ~N75W both sides of boring; slightly more prevalent on SE side of boring 78' to bottom	
85				B:N38W,13NE			
		5 10		TQs			
90				B:N54W,12NE			
95				Apx. B:N85W,12NE		@ 98' Same; with light yellowish-brown fine- to medium-grained sandstone bed; damp	
100						TOTAL DEPTH 100' No Ground Water No Caving	
105							
10							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/20/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-69E	
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60'= lbs; 60-90'=3270; 90-120'=2090 lbs	ELEVATION: 1375'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1	Soil	111/8.7		**SOIL; S (0-11')** @ 0' Silty clayey sand with gravel; medium dense; dry; light brown to brown; voids; roots and rootlets	@ 5-15' Bulk sample
10		1 1		115/9.6		**QUATERNARY LANDSLIDE DEPOSIT; Qls (11-18')** @ 11' Silty, clayey sand; medium dense; moist; brown to dark brown	
15		1 1		113/14.7			
				SP:N28W,29NE		**BEDROCK; TQs (18-90')** @ 18' Brown sandy clayey siltstone; moderately hard; moist; with brown claystone lenses	
20		1 2		B:N22W,24NE 114/16.9		@ 20' Reddish-brown sandy claystone interbed; soft; plastic clay	@ 20' Small bag sample
				B:N27W,24NE		@ 22' Interbedded light yellowish-brown well-graded sandstone and light-brown silty sandstone to sandy siltstone; soft to moderately hard	
25		3 6	Qls	133/8.9		@ 25' Light-brown pebble conglomerate	
				B/X,B:N44W,25NE		@ 27' Same; local laminar cross bedding/bedding	
				B:N19W,7NE			
30				B:N30W,23NE		@ 29' Light-brown sandy siltstone; with lenses of fine-grained silty sand	
						@ 30' Same; grades to light-brown silty claystone; moderately hard to hard	
35		18		Apx. B:N22W,18NE 119/14.8		@ 35' Grades to light-brown clayey, silty sandstone; moderately hard	

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/20/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-69E	
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60'= lbs; 60-90'=3270; 90-120'=2090 lbs	ELEVATION: 1375'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				B:N15W,21NE		@ 38' Light-gray claystone; moderately hard to hard	
40				B:N31W,32NE		@ 39.5' Discontinuous layer of light-brown silty fine-grained sandstone; soft to moderately hard @ 40' Interbedded light-brown silty sandstone and sandy siltstone and light-brown to brown claystone; moderately hard	
				B:N27W,21NE		@ 44' Light-brown claystone; moderately hard to hard	
45		3 5					
				Apx. B:N22W,26NE			
50						@ 49' Light-brown silty fine-grained sandstone interbed; moderately hard @ 50' Claystone grades to light-brown siltstone with claystone lenses; moderately hard to hard	
			Qs	B:N19W,16NE		@ 53' Light-brown silty fine-grained sandstone; moderately hard; local laminations	
55		3 11		B:N35W,15NE 124/7.0		@ 55.5' Brown silty claystone @ 56' Light-brown clayey sandstone to pebble conglomerate	
				Apx. B:N37,25NE			
60							
				Apx. B:N53W,17NE		@ 63' Light brown sandy siltstone to silty sandstone	
65		18		B:N55W,12NE		@ 65' Light brown silty fine-grained sandstone interbed	
						@ 68' Light-brown sandstone to pebble conglomerate	
70							
				Apx. B:N15W,15NE			
75		10		117/3.0			

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/20/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-69E	
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60'= lbs; 60-90'=3270; 90-120'=2090 lbs	ELEVATION: 1375'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
80				Ch Apx, B:N50W, 15NE		@ 78.5' Interbedded light-brown sandy clayey siltstone to clayey silty sandstone, moderately hard to hard,	
85		6 13	TQs	B:N45W,14NE		@ 83' Locally pebbly @ 84' Light-brown to brown clayey siltstone, moderately hard to hard	
90						TOTAL DEPTH 90' No Ground Water No Caving	
95							
100							
105							
110							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/21/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-70E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs, 90-120'=2090 lb	ELEVATION: 1371'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1	af	107/8.8		**ARTIFICIAL FILL; Af (0-6')** @ 0' Silty clayey sand; loose to medium dense; moist; brown to dark brown; fragments of siltstone; rootlets	@ 0-15' Bulk sample
10		Push 1		107/9.1		**QUATERNARY LANDSLIDE; Qls (6-41')** @ 6' Light yellowish-brown siltstone; moderatley hard; dry; rootlets	
15		1 1		108/8.5		@ 16' Same; block of light-gray sandstone; soft to moderately hard; damp	
20		2 7	Qls	114/15.4 B:N49E,39SE		@ 19.5' Interbedded light yellowish-brown siltstone; moderately hard; with light brown claystone; moist @ 22' Light brown pebble conglomerate; soft to moderately hard	
25		2 4				@ 26' Light brown sandy siltstone; soft to moderately hard	
30							
35		2 6		C:N75E,51SE 129/5.7			

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/21/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-70E	
DRIVING WEIGHTS: 0-30'=6780 lbs, 30-60'=4780 lbs, 60-90'=3270 lbs, 90-120'=2090 lb	ELEVATION: 1371'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qls	B:N29W,31NE		@ 39' Silty plastic clay; soft; moist; grayish brown; slide zone; no parting plane; no striae	@ 39-40' Small bag sample
						BEDROCK; TQs (41-70') @ 41' Interbedded light-brown sandy siltstone; moderately hard to hard; moist; with lenses of light brown claystone	
				B:N26W,27NE		@ 43' Interbedded light-gray pebbly sandstone; moderately hard, damp, and light brown sandy siltstone; moist	
45							
		3 9					
				Apx. B:N19W,21NE		@ 47' Interbedded light-brown siltstone and light brown claystone; moderately hard to hard	
50							
				Apx. B:N34W,24NE			
			TQs	B:N32W,16NE			
55						@ 54' Lense of light-gray silty fine-grained sandstone; damp	
		13 20		119/15.4			
				B:N31W,27NE		@ 58' Lense of light-gray, silty fine-grained sandstone	
60							
				B:N25W,19NE		@ 61' Claystone grades to light brown silty fine-grained sandstone; wet	@ 61' Minor seepage
						@ 62' Reddish-brown sandy claystone; moist	
				Apx. B:N19W,22NE		@ 64' Grades to light brown sandy clayey siltstone	
65							
		22					
70						TOTAL DEPTH 70' Minor Seepage @ 61' No Caving	
75							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Jesse)	DRILLED: 12/3/03		
'LLING METHOD: Bucket Auger	HOLE DIA: 24"		
·AMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-71E	
DRIVING WEIGHTS: 0-25'=2854 lbs; 25-47'=1802 lbs; 47-70'=1091 lbs	ELEVATION: 1339'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		3 4 5	Soil			**SOIL; S (0-3')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown; roots and rootlets **BEDROCK; TQs (3-40')** @ 3' Light-brown siltstone; moderately hard to hard; dry; weathered; fractured @ 6' Discontinuous brown clay lenses; northwest side of boring @ 8' Same with discontinuous sand lenses ~1-2" thick, 3-5" long	
10		3 5 8					
15		5 11	TQs				
				Apx. B:N56W,16NE		@ 18.5' Light-gray pebble conglomerate	
20		4 6 6		B:N44W,23NE Apx. B:N37W,21NE		@ 21' Interbedded light brown siltstone and light reddish-brown claystone; moderately hard; damp; not plastic; no striae	
25		7 12		Apx. B:N21W,19NE		@ 26' Gray pebble conglomerate interbed; dry	
				Apx. B:N29W,24NE		@ 28' Interbedded brown claystone and siltstone; moderately hard to hard; damp to moist	
30							
35		8 9 10					

CLIENT: Newhall Ranch Company®		JOB NO.: 04-2023-4	**DRILL HOLE LOG**
PROJECT: Mesas East - Tentative Map		DATE: 07/22/04	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling (Jesse)		DRILLED: 12/3/03	
DRILLING METHOD: Bucket Auger		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-71E
DRIVING WEIGHTS: 0-25'=2854 lbs; 25-47'=1802 lbs; 47-70'=1091 lbs		ELEVATION: 1339'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TOP				
		7 9 11				TOTAL DEPTH 40' No Ground Water No Caving	
45							
50							
55							
60							
65							
70							
75							

DRILL HOLE LOG

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04
	LOGGED BY: MAS
DRILLING COMPANY: Tri-Valley Drilling (David)	DRILLED: 3/4 -5/04
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1067'

BORING NO. B-72E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		Push 1/12"	Soil	117/5.0		**SOIL/DEBRIS FLOW; S (0-14')** @ 0' Light brown silty sand with gravel; loose; damp; roots; no voids	
10		Push 1/12"		113/2.7			
15				3.9		**BEDROCK; TQs (14-50')** @ 14' Pale yellowish-brown to pale whitish-gray pebbly sandstone; moderately hard to hard; dry to damp	
				B:N78W,37NE			@ 18-45' Continual use of core and grab buckets
20		2/4"					20' No Recovery, Rock In Tip
			TQs	B:N65W,34NE		@ 23' Pale yellowish-brown thinly laminated silty sandstone interbeds; moderately hard; damp	
25		2/6" Bounce					25' No Recovery, Rock In Tip
30				16.7		@ 30' Light brown to pale reddish-brown silty sandy mudstone interbed; moderately hard to hard; damp; continuous planes	@ 30' Small bulk sample
				B:N68W,24NE		@ 33' Pale yellowish-brown thinly laminated silty sandstone interbeds; moderately hard; damp	
35							@ 35' Did not sample due to cobbles

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Tri-Valley Drilling (David)	DRILLED: 3/4 -5/04		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-72E	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1067'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
45							@ 45' Did not sample due to excessive cobble
50							@ 49' Ground Water
55						TOTAL DEPTH 50' Ravelling 15-45' Ground Water @ 49' Caving 0-14'	
60							
65							
70							
75							

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Tri-Valley Drilling (David)	DRILLED: 3/5 - 9/04		
'LLING METHOD: Bucket Auger	HOLE DIA: 24"		
.MMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-73E	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1060'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1 4 4		B:N65W,20NE		**BEDROCK; TQs (0-55')** @ 0' Pale yellowish-brown silty pebbly sandstone conglomerate; moderately hard; dry to damp; roots; no voids; pebbly channels	@ 3-40' continual use of care and grab bucket @ 5' No Recovery, rock in tip
10		1 4 6		136/3.7		@ 7' Light brown to pale reddish-brown silty claystone pods; moderately hard; damp	
15		5 5/5"		17.7 129/2.0 B:N68W,22NE			@ 14' Small bulk sample @ 15' Rock in Tip
20		2					@ 20' No recovery, rock in tip; 1 Drop & 1 Bounce; Tip was destroyed
25				B:N58W,30NE			@ 25' Did not attempt to sample; abundant cobbles
30							
35				B:N64W,22NE			

CLIENT: Newhall Ranch Company®	JOB NO.: 04-2023-4	**DRILL HOLE LOG**	
PROJECT: Mesas East - Tentative Map	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Tri-Valley Drilling (David)	DRILLED: 3/5 - 9/04		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-73E	
DRIVING WEIGHTS: 0-27'=3450 lbs, 27-57'=2050 lbs, 57-87'=1140 lbs	ELEVATION: 1060'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
45						TOTAL DEPTH 55' Ravelling @ 0-55' Ground Water @ 40' Caving @ 40-45'	
50							
55							
60							
65							
70							
75							

DRILL HOLE LOG

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1
PROJECT: Mesas Entertainment	DATE: 07/22/04
	LOGGED BY: DGG
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 12/15/00
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1201±

BORING NO. B-1M

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5	■	6 15	Qt	B:Horizontal 124 / 3.0		**QUATERNARY TERRACE DEPOSITS; Qt, (0 - 18 ft.)** @ 0' Light yellowish-gray to light orangish-brown fine to coarse-grained sandstone, pebbly sandstone and pebble to cobble conglomerate with siltstone interbeds; loose; friable; dry to damp	Drilled & Logged 12/15/00 Drilled in cut for oil well pad; hole cased to 18 ft. due to loose conditions Drive sample @ 5' bouncing on cobble after 12"
10							
15							
20	■	3 7 7		B:N38W,14NE		**BEDROCK; TQsu, (18 - 50 ft.)** @ 18' Pale orangish-brown to orangish-gray silty sandstone to sandy siltstone with interbedded medium- to coarse-grained pebbly sandstone lenses; moderately hard to hard; damp @ 21' Medium orangish- to yellowish-brown siltstone with scattered pebbles; hard; local concretions; grades to sandy siltstone and mudstone	@ 21' Core bucket
25							@ 25' Bulk sample
30	■	10 33/5"	TQsu	B:N40W,16NE 115/ 14.3 B:N36W,16NE		@ 29.5' Medium- to coarse-grained silty sandstone; moderately hard @ 29.75' Grades to pale orangish- to olive-gray siltstone; hard @ 31.25' Medium orangish-brown silty sandstone/sandy siltstone with scattered pebbles; moderately hard; damp	Drive sample @ 30' bouncing after 11"
35							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: DGG	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 12/15/00	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-1M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1201±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
		10 23 29	Q_{sc}	131 / 10.1			
45							
50							Backfill tamped every 5 ft.
						Total Depth 50 ft. (Elev. 1151) No Ground Water No Caving	
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY:	DRILLED: 12/18/00		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-2M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1202±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qal			**QUATERNARY ALLUVIUM; Qal, (0-6")** @ 0' Orangish-brown medium-to coarse-grained pebbly sand with silt; loose; dry **QUATERNARY LANDSLIDE; Qls, (6"-12.5 ft.)** @ 6" Yellowish- to olive-brown siltstone with scattered pebbles; loose to moderately dense; slightly damp to damp @ 2" to 6" Thick siltstone bed	Drilled and logged 12/18/00 @ 6" to 2' possible old debris flow deposit
5		3 4 6	Qls	SS?:N12W,22NE 123/9.6		@ 4.5' Irregular, ½" - thick silty clay; possible slip surface (ss); yellowish-gray siltstone below; dense to locally soft @ 7' Pebbly lenses and local disturbed siltstone stringers to 9 ft.	
10		2 2 6		118/8.4 B:Horizontal Apx. contact: N12E,37SE		@ 11.5' Irregular contact with loose sandy pebbly interbed with local cobbles; subhorizontal stratifaction	Unit at 11.5' may be Qoa; underlying material is generally dense but shows local evidence of minor disturbance
15			Qls?	B:N48W,17NE B:N47W,14NE		**QUATERNARY LANDSLIDE?; Qls? (12.5-24 ft.)** @ 12.5' Erosional contact with light olive-brown (2.5Y 5/4) to light yellowish-brown siltstone and yellowish-gray sandy siltstone; moderately hard; damp; local concretions; some soft sediment deformation locally @ 16.75' Discontiuous ½"-thick mudstone/claystone @ 17.25' 3 to 5"-thick sand interbed; dense @ 18.5' & 19.7' 3 to 8"-thick pebbly, cobbly sand lenses	
20		5 14		114/9.6 Apx. B:N60W,16NE			Drive sample @ 20' bouncing after 12"
25				SP:N46W,15NE		@ 22.5' Pebbly sand interbed @ 23.9' 3/8"-thick, moderate-brown clay; moderately plastic; sticky **BEDROCK; TQsu, (24-35 ft.)** @ 24' Light olive-brown to light yellowish-brown siltstone and pebbly siltstone with local pebbly sand interbeds; moderately hard to hard; damp; poorly bedded	
30		9 28	TQsu	B:49W,14NE		@ 29' Siltstone	@ 28' Bulk sample
35						Total Depth 35 ft. (Elev. 1167) No Groundwater - No Caving Slide Plane @ 23.9'	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 12/18/00	
DRILLING METHOD: Bucket-Auger (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-3M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1144±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOUGH; (0-6")**	Drilled 12/18/00 and Logged 12/19/00
						QUATERNARY SLOPEWASH; Qsw, (6"-2.5 ft.) @ 6" Yellowish-gray pebbly sandy silt; loose; dry to slightly damp	
				B/Sh:N53W,16NE		**QUATERNARY LANDSLIDE; Qls, (2.5-36.5 ft.)** @ 2.5' Light yellowish-gray fine sandy siltstone and siltstone with olive-brown (2.5Y 4/4) mudstone interbeds; dense; slightly damp to damp; caliche pods; bedding disturbed	
5							
		1 2 3		102 / 24.7		@ 5' Mudstone interbeds slightly to moderately sheared; damp	@ 6' Bulk Sample
				B:N18W,12NE		@ 7' Light yellowish-gray sandstone and pebbly sandstone interbeds; slightly to moderately friable	
10							
		2 4 6	Qls	115 / 10.5 Apx. B:N51W;13NE		@ 11' Light yellowish-gray fine sandy siltstone with thin brown mottled mudstone interbeds; dense; locally sheared and disturbed	
				B:N35W,13NE		@ 13.5' Light-gray to light yellowish-gray sandstone and pebbly sandstone; slightly to moderately friable; cross bedding and laminations; local channelling	
15							
				XB:N40W,8NE		@ 18' - less friable	
20							
		5 8 8/3"		112 / 2.4			Drive Sample @ 20' bouncing after 15"
				B:N20W,24NE		@ 22' Steep erosional contact with light yellowish-brown siltstone and fine sandy siltstone with local thin mudstone interbeds; moderately hard to locally friable; damp @ 23.5' Local pebbly lenses and concretions	
25							
				B:N38W,16NE		@ 28' Erosional contact with light yellowish-brown to brown siltstone and mudstone interbeds; bedding appears slightly disturbed locally	@ 28' Material is light but slightly softer than typical TQs
30		8 16 28					
				B:N44W,13NE			@ 32' Bulk Sample
				SP:N42W,15NE		@ 33' 1/8 to 3/8"-thick moderate-brown clay; plastic; sticky and sheared; parting, but no distinct striations; bedding slightly disturbed above and below to thin parting at 36. 5 ft.	
35						**BEDROCK?; TQsu, (36.5-43 ft.)** @ 36.5' Yellowish- to moderate-brown siltstone and mudstone interbeds; moderately hard; damp	
				MF:N39W,33NE			

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 12/18/00		
LING METHOD: Bucket-Auger (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-3M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1144±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQsu?	B/SS:N58W,15NE F:N55W,13NE		@ 39.5' Wispy clay rip-up clast; evidence of soft sediment deformation	
45			TQsu	B/SS:N57W,16NE		@ 42.9' 1/8"-thick moderate-brown mudstone; moderately sheared **BEDROCK; TQsu, (43-49 ft.)** @ 43' Moderate yellowish-brown siltstone underlain by light- gray sandstone and pebbly sandstone with local cobbles; very dense but slightly friable; damp	
50						Total Depth 49 ft. (Elev. 1095) No Ground Water No Caving Slide plane @ 33 ft.	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 12/19/00	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-4M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1148±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
				104 / 6.1		**QUATERNARY SLOPEWASH/DEBRIS FLOW DEPOSIT; Qsw/ Qdf, (0-10 ft.)** @ 0' Yellowish-brown pebbly sandy mud; very tight; damp; no bedding	Drilled and Logged on 12/19/00
		1/12" 1	Qsw/Qdf			@ 3' Grades to pebbly sandy silt; soft; krotovina	
5		1/6" 1/20"				@ 7' Highly disturbed mix of TQs fragments in a yellowish-gray sandy silt matrix; soft; loose with minor caving; slightly damp	
10		3 5 7	Qls	104 / 11.6 Apx. B:Horizontal		@ 9.5' Loose sand and pebbly sand layer **QUATERNARY LANDSLIDE; Qls, (10-16 ft.)** @ 10' Irregular contact with light olive-brown (2.5Y 5/4-wet) to pale yellow (2.5Y 7/4-dry) fine sandy siltstone and siltstone with thin mudstone interbeds; laminations common; distinctly disturbed; dense but softer than typical TQs	@ 10-15' Bulk Sample
15		3 9 15		108 / 14.5 SP:N34W,10NE B:N46W,17NE		@ 13.8' Discontinuous moderate-brown plastic clay; sheared @ 15' Irregular sheared claystone @ 15.5' 3/8 to 3/4"-thick moderate-brown clay; plastic; sticky; moist **BEDROCK; TQsu, (16-35 ft.)** @ 16' Olive-brown (2.5Y 4/4-wet) to pale yellow (2.5Y 8/4-dry) fine sandy siltstone with moderate-brown mudstone interbeds; moderately hard; damp; local concretions; evidence of soft sediment deformation and rip-up clasts from 18-22 ft.	@ 16' Bulk Sample and 4 hand driven rings oriented normal to slide plane
20		3 10 13	TQsu	B:N41W,13NE		@ 22.5' Possible evidence of ancient liquefaction in fine sandy siltstone.	
25				B:N40W,17NE B:N51W,15NE		@ 27' Light-gray to light yellowish-gray sandstone and pebbly sandstone; very dense but slightly friable; damp; local cross bedding and channelling	
30		17 68		121 / 2.0			
35						Total Depth 35 ft. (Elev. 1113) No Ground Water Minor Caving from 7 to 10 ft.	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 12/20/00		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-5M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1167±		

1 DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 4 8	Qsw / Qls	105 / 11.7 B/SS?:N55W,13NE B:N55W,13NE		**QUATERNARY SLOPEWASH; Qsw, (0-3 ft.)** @ 0' Pale yellowish- to orangish-brown to gray sandy silt with scattered pebbles; loose; dry to damp **QUATERNARY LANDSLIDE; Qls, (3-9.5 ft.)** @ 3' Pale orangish-brown to olive-gray siltstone with scattered pebbles and local lenses and pods of pebbly sand and layers of brown siltstone with caliche; moderately hard; damp @ 5.75' Irregular pebbly sandstone interbed; loose @ 7.5' Gray to brown clayey siltstone; medium dense; abundant caliche @ 8.5' Pale yellowish- to orangish-olive-gray siltstone @ 9.25' Pebbly sandstone interbed	Drilled and logged 12/20/00 @ 7' Core Bucket
10		7 15		116 / 9.3 B:N48W,14NE B:N35W,13NE		**BEDROCK; TQsu, (9.5-35 ft.)** @ 9.4' ½ to 2"-thick olive-gray siltstone to clayey siltstone; slightly plastic and sticky @ 9.5' Olive-gray sandy siltstone and fine-grained sandstone; very dense but moderately friable; damp; grades to fine- to coarse-grained pebbly sandstone	@ 10' Drive Sample Bouncing after 12"
15		11 30	TQsu	124 / 3.2		@ 11.25' Pebbly cobbly interbed @ 15.5' Large cobbles	
20		10 25		B:N44W,11NE Apx.B: N25E,7SE Apx.B:N38E,12SE		@ 22.5' Erosional contact with orangish-brown to olive-gray siltstone with scattered pebbles; moderately hard to hard; concretions; locally clayey	
25				B:N42W,18NE		@ 26.5' Pale orangish- to olive-gray, fine- to coarse-grained pebbly sandstone lense	
30		10 27		130 / 10.4			
35						Total Depth 35 ft. (Elev. 1132) No Ground Water - No Caving Slide Plane @ 9.4 ft.	@ 35' Bulk Sample Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 12/20/00		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-6M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1184±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1/12" 2		107 / 7.8 Apx. Contact: N25W,35SW		**QUATERNARY LANDSLIDE; Qls (0-30.5 ft.)** @ 0' Pale yellowish- to grayish-brown and olive-gray siltstone with scattered pebbles and cobbles; moderately hard to locally loose; dry to damp; grades to medium orangish-brown pebbly silty sandstone @ 5' Irregular contact with orangish-brown to olive-gray siltstone; highly fractured; very loose; belling	Drilled 12/20/00 and logged 12/21/00
10		1 1 2		111 / 1.4		@ 9' Pale yellowish- to orangish-brown fine- to medium-grained sandstone and silty sandstone with scattered pebbles; loose; dry to damp; siltstone is locally hard	
15		1 2 2	Qls	101 / 6.0 Apx. B:N50W,31SW		@ 14' Siltstone; moderately dense; damp; lenses of sandy siltstone and sandstone @ 16' Medium-brown clayey siltstone interbed; irregular bedding surface @ 16.5' Lense of fine- to coarse-grained sandstone; loose	Bedding in landslide is not oriented regionally
20		2 3 4				@ 19' Fine- to coarse-grained pebbly sandstone interbed; irregular bedding surface	
25							
30		6 9 20		SP:N68W,24NE 119 / 9.0 SP:N48W,13NE		@ 28' 3 to 4"-thick, dark-yellowish-brown (10 YR 4/4) to olive-gray clay; moderately plastic and sticky; damp to moist; underlain by moderately hard siltstone with concretions @ 30.4' 1"-thick clay to silty clay; slightly plastic and sticky; damp to moist **BEDROCK; TQsu, (30.5 - 45 ft.)** @ 30.5' Pale orangish- to yellowish-olive-gray silty sandstone/sandy siltstone; moderately hard; damp	@ 28' (4) hand-driven rings oriented normal to slide plane, and bulk sample
35			TQsu	B:N43W,14NE		@ 33' Fine- to medium-grained pebbly sandstone with local cobbles; slightly friable; damp; cross bedding; local silty sandstone interbeds and lenses	@ 34' core b[illegible]
				B:N45W,12NE			

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 12/20/00		
'LLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-6M	
DRIVING WEIGHTS: 0-26'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1184±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		14 41	Qls	B:N47W,14NE			
45							Backfill tamped every 5 ft.
50						Total Depth 45 ft. (Elev. 1139) No Ground Water Minor Belling from 5 to 9 ft. Slide planes @ 28 & 30.5 ft.	
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 12/21/00		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-7M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1184±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0						**QUATERNARY LANDSLIDE; Qls, (0-48 ft.)** @ 0' Yellowish- to orangish-gray siltstone with local lenses of fine- to medium-grained sandstone; moderately hard; dry to damp; local caliche; poorly bedded	Drives and logged on 12/21/00
5		3 4 5		115/4.0			
				B:N42E,15SE		@ 7.5' Interbedded fine- to coarse-grained pebbly sandstone and siltstone; sandstone is friable; damp	
10		2 3 4		121 / 1.9 Contact: N18E,13SE		@ 9.75' Pale orangish-brown, fine- to coarse-grained pebbly sandstone, very friable	
						@ 12.25' Pale orangish-gray siltstone with minor clay; local concretions	@ 12' Bulk sample
15		2 3 3		106/22.3 Apx. B: N28E,13SE			
			Qls				
20		2 3 3		Apx. B: N80W,33SW			
25							
				SP/SS:N20W,12NE		@ 26' 3 to 4"-thick medium-brown to olive-gray clay; moderately sticky and plastic; damp to moist; irregular @ 26.5' Pale orangish- to olive-gray siltstone with clay, and fine-grained sandstone lenses; local concretions	
30		3 5 8		SP?:N65W,27SW 110/15.6		@ 29.5' Medium-brown to olive-gray clayey siltstone; slightly plastic and sticky; damp to moist	
35		4 7 12					

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: DGG	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 12/21/00	
LING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-7M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1184±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		7 13 25	Qls	SP:N49W,12NE		@ 40.5' Apx. 1"-thick medium-brown to olive-gray clay; moderately sticky to plastic	
				B:N46W,11NE		@ 42.25' Silty sandstone/sandy siltstone interbed	
45							
50			TQsu	SP:N48W,14NE B:46W,13NE		@ 47.5' 3 to 4"-thick medium-brown to olive-gray clayey siltstone to clay; moderately sticky and plastic; damp BEDROCK; TQsu, (48-60 ft.) @ 48' Orangish-brown to gray silty sandstone/sandy siltstone; hard; damp @ 48.75' 6"-thick medium-gray fine- to medium-grained pebbly sandstone @ 49.25' Interbedded fine-grained sandstone, fine- to coarse-grained pebbly sandstone and silty sandstone/sandy siltstone; moderately hard to slightly friable; damp	@ 47.5' 4 Hand driven rings oriented normal to slide plane and bag sample
55		34 25/1"		B:N51W,18NE			
60						Total Depth 60 ft. (Elev. 1124) No Ground Water No Caving Slide planes @ 26, 29.5, 40.5 and 47.5 ft.	Backfill tamped every 5 ft.
65							
70							
75							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: DGG	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 12/22/00	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-8M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1200±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0						**QUATERNARY LANDSLIDE; Qls, (0-31.5 ft.)** @ 0' Medium-brown siltstone; soft; dry to damp @ 1.5' Yellowish-to orangish-brown siltstone with scattered pebbles; varies from moderately dense to locally soft; damp	Drilled and logged on 12/22/00
5							
		1 1 2		110 / 9.2		@ 7.25' Lense of olive-gray fine- to medium-grained pebbly sandstone; loose	
10							
		2 2 3		117 / 14.6		@ 10' Lense of pebbly silty sandstone/sandy siltstone; soft @ 12' Locally clayey	
15				Apx. B: N49E,36NW		@ 14' 10"-thick discontinuous lense of fine- to medium-grained silty pebbly sandstone; loose	
		1 2 2	Qls	110 / 12.5 Contact: N10E,44NW		@ 16.5 Fine- to coarse-grained pebbly sandstone interbed; loose @ 17.5' Orangish-brown locally clayey siltstone with interbeds and lenses of sandstone; pebbly sandstone and silty sandstone; moderately hard to friable	
20							
		1 3 3					
25							
30							
		5 8 11		112 / 11.3 SP:N46W,13NE B:N30W,12NE B:N63W,14NE		@ 31' 5"-thick medium-brown to olive-gray clay to clayey siltstone; plastic and sticky; moist **BEDROCK; TQsu, (31.5-45 ft.)** @ 31.5' Pale orangish-gray silty sandstone/sandy siltstone; moderately hard; damp @ 32.75' Pebbly sandstone interbed	
35							
		10 44	TQsu			@ 33' Interbedded pale orangish-gray pebbly sandstone and orangish-brown siltstone to sandy siltstone; sandstone is friable, siltstone is moderately hard to hard; both damp	

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 12/22/00		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-8M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1200±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		14 43	TQsa	B:N51W,11NE B:N47W,12NE		@ 34.5' Cross-bedded sandstone @ 38' Olive-brown (2.5 YR 4/4) color @ 43' Siltstone rip-up clasts	@ 38' Bulk sample
45						Total Depth 45 ft. (Elev. 1155) No Ground Water No Caving Slide Plane @ 31 ft.	Backfill tamped every 5 ft.
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: DGG/VCG	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 12/27/00	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-9M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1247±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1/12" 2	Qls	120/1.4		**QUATERNARY LANDSLIDE; Qls, (0-13.5 ft.)** @ 0' Pale orangish- to olive-gray siltstone with scattered pebbles; loose to moderately dense; damp @ 6' Chaotic assemblage of silty sandstone/sandy siltstone, fine-grained sandstone, and fine- to coarse-grained pebbly sandstone with scattered cobbles; loose; irregular contacts	Drilled 12/27/00 Logged 12/27 and 12/28/00
10		1 2 3		111/2.1			@ 12' Bulk Sample
15		5 10		SP:N46W,12NE B:N49W,11NE 121/4.3 B:N33W,12NE		@ 13' 1 to 1.5"-thick olive-gray to brown clay to silty clay; moderately plastic and sticky; moist; carbonate nodules **BEDROCK; TQsu, (13.5-35 ft.)** @ 13.5' Olive-gray sandy siltstone/silty sandstone with minor sandy lenses; moderately hard; damp; locally laminated; soft sediment deformation @ 16' Light yellowish-brown to yellowish-gray fine- to coarse-grained sandstone and pebbly sandstone with local cobbles; cross bedded; moderately friable	@ 15' Drive sample bouncing after 12"
20			TQsu			@ 20' Pebbly to cobbly lense	
25				B:N48W,14NE B:N46W,10NE			
30		9 24 49		Apx.B:N38W,12NE		@ 29' Erosional contact with pale reddish-brown to medium-brown sandy siltstone and silty sandstone with olive- gray mottling; moderately hard; damp; poorly bedded	
35		10 31		129/10.17		Total Depth 35 ft. (Elev. 1212) No Ground Water - Minor belling between 16 & 29 ft. Slide plane @ 13 ft.	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/10/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-10M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1192±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		3 6 12		123/6.4		**LANDSLIDE?; Qls, (0-30 ft.)** @ 0' Light yellowish-brown fine sandy siltstone with local pebbly lenses; moderately hard; damp; minor caliche-filled fractures to 1.5 ft. @ 3' 12"-thick pebbly sandstone interbed; cross-bedding; slightly friable @ 5' Erosional contact with dark yellowish-brown (10 YR 4/4) siltstone and mudstone with minor caliche	Drilled and Logged on 1/10/01 @ 5' Bulk Sample
10		4 9 12		B:N39W,10NE 116/12.9 B:N48W,13NE		@ 5.5' Interbedded light yellowish-brown fine silty sandstone and sandy siltstone, and yellowish-gray fine-grained sandstone with local moderate yellowish-brown siltstone/mudstone interbeds; bedding typically vague @ 11' Yellowish-brown siltstone/mudstone; grades downward to fine sandy siltstone with scattered pebbles; poorly sorted	
15		5 12 19	Qls	127/6.1		@ 15.5' Concretions @ 16.5' Lense of pebble conglomerate	
20				B:N38W,20NE		@ 19.5' Pebble to cobble conglomerate interbed	@ 19.5' Grab bucket
25				B:N20W,16NE		@ 23.5' Fine sandstone interbed @ 24' Pebble to cobble conglomerate interbed	Note: Material is generally tight with regional bedding, but nearby boring and trenches indicate it is part of a large landslide
30		8 18 33				Total Depth 30 ft. (Elev. 1162) No Ground Water No Caving	Backfill tamped every 5 ft.
35							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: BJS	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 1/10/01	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-11M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1188±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		3 5 7	Qls	106 / 6.6 B:N56W,10NE		**QUATERNARY LANDSLIDE; Qls, (0-18.5 ft.)** @ 0' Light yellowish-brown to yellowish-gray fine sandy siltstone with scattered pebbles and local interbeds and lenses of sandstone and pebbly sandstone; moderately dense; damp; weathered backfills to 2.5 ft.; locally disturbed @ 6' Poorly sorted sandy siltstone; moderately hard	Drilled and logged on 1/10/01 Deepened and logged 1/16/01 Upper 3-4 ft. of surficial material removed for pad
10		4 7 10		112 / 6.1		@ 10.5' Pebbly lense @ 13' Irregular mudstone @ 14' Base of caliche-lined fractures	
15		3 5 10		129 / 6.6 Apx.B:N47W,12NE SP:N75W,7NE		@ 16' Pebbly sandstone interbed; crossbedded; slightly friable; disturbed @ 17.5' Erosional contact with siltstone @ 18.2' 1/8"-thick moderate-brown clay with caliche; slightly to moderately plastic and sheared	
20		4 9 4/2"		B:N50W,10NE		**BEDROCK; TQsu, (18.5-44 ft.)** @ 18.5' Light yellowish-brown fine sandy siltstone; moderately hard; damp @ 21' Grades to yellowish-gray fine silty sandstone	
25				Apx.B:N50W,7NE		@ 25.5' Pebble to cobble conglomerate and pebbly sandstone @ 27.5' Siltstone interbed	@ 26' Carbide bucket and crowding
30		3 13 34/5"	TQsu	131 / 7.6 B:N30W,12NE		@ 30.25' Silty pebbly sandstone with scattered cobbles @ 31' Pebble to cobble conglomerate and pebbly sandstone	
35				Apx.B:N45W,10NE B:N48W,11NE		@ 35.5' Fine-grained sandstone interbed @ 38' Siltstone to sandy siltstone interbed	

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/10/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-11M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1188±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				Apx.B:N47W,11NE			
	■	9 25				@ 41' Olive-gray siltstone; moderately hard; damp	
45						Total Depth 44 ft. (Elev 1144) No Ground Water No Caving Slide plane @ 18.2 ft.	Backfill tamped every 5 ft.
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/16/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-12M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1183±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY TERRACE DEPOSITS; Qt, (0-10 ft.) @ 0' Medium- to orangish-brown siltstone with scattered pebbles; moderately hard to locally friable; damp	Drilled and logged on 1/16/01
5		3 3 2	Qt	93/4.6			
				B:Horizontal		@ 6' Siltstone, silty sandstone and fine- to coarse-grained pebbly cobbly sandstone; friable; damp; few scattered boulders; belling	
10							@ 9' Grab bucket @ 10' Belling
		2 5 3		104/21.8		**BEDROCK; TQsu, (10-30 ft.)** @ 10' Olive-gray siltstone; moderately hard; damp; local caliche-rich zones	@ 12-15' carbide bucket
15				B:N50W,13NE		@ 14' Orangish-brown fine- to coarse-grained pebbly sandstone; moderately dense to dense; moderately friable; damp	
				B:N48W,12NE		@ 16' Fine-grained sandstone; moderately dense; slightly friable @ 17' Fine- to coarse-grained pebbly sandstone	@ 18' Bulk sample
20			TQsu	B:N47W,14NE		@ 19' Siltstone interbed	
		9 10/3"		B:N46W,13NE 117/2.1		@ 20.5' Orangish-gray fine- to coarse-grained pebbly sandstone; moderately hard; moderately friable	@ 21' Drive sample Bouncing after 9" @ 22-28' carbide bucket
25				B:N50W,12NE		@ 25' Lenticular rip-up clasts	
30		11 25/5"				@ 29' Olive-gray siltstone	
						Total Depth 30 ft. (Elev. 1153) No Ground Water Caving from 6-10 ft.	Backfill tamped every 5 ft.
35							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: DGG	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 1/19/01	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-13M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1205±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY LANDSLIDE; Qls, (0-41.5 ft.) @ 0' Medium-brown siltstone; stiff; damp to moist @ 1.5' Orangish-brown siltstone with scattered pebbles and cobbles; hard; damp	Drilled and logged on 1/19/01
5		4 5 5		124 / 8.4		@ 6' Sandy siltstone; local patches of fine- to coarse-grained pebbly sandstone	
10		3 4 5		125 / 3.0		@ 11' Patch of fine- to coarse-grained pebbly cobbly sandstone; friable; damp @ 12' Fine-grained pebbly sandstone; friable; cross bedded	
				Apx.B:N62E,9NW		@ 14' Pale orangish-brown siltstone; moderately hard to hard; damp @ 15' Faint laminations; scattered pebbles	
15			Qls				
20		3 4 6		111 / 14.9			@ 21' Bulk Sample
				Apx.B/Contact: N84W,10NE		@ 22.5' Fine- to coarse-grained pebbly sandstone interbed with scattered cobbles; friable; damp @ 24' Caliche-filled fractures	
25							
30		5 7 9		Apx.B:N78E,11NW		@ 30' Clayey siltstone; slightly plastic and sticky; damp	Note: Bedding observed in landslide material is not regional
						@ 33' Orangish-brown siltstone with scattered pebbles; moderately hard to hard; damp; local patches of friable fine- to coarse-grained pebbly sandstone	
35						@ 38' Discontinuous lense of fine- to coarse-grained pebbly sandstone; friable	

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/19/01		
ILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-13M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1205±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		7 17 19		113 / 13.5 SP:N80W-80E,12N Apx.B:N82E,13NW		@ 41.3' Medium-brown to olive-gray clay; moderately plastic and sticky; moist **BEDROCK; TQsu, (41.5 - 50 ft.)** @ 42' Pale-orangish-brown to gray siltstone; moderately hard to hard; damp	@ 41.3' 4 Hand-driven rings oriented normal to slide plane
45			TQsu	Apx.B:N78W,9NE			
50		8 29/4"				Total Depth 50 ft. (Elev. 1155) No Ground Water No Caving Slide Plane @ 41.5 ft.	Backfill tamped every 5 ft.
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/19-1/20/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-14M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1205±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY LANDSLIDE; Qls, (0-8 ft.) @ 0' Pale yellowish-gray siltstone with scattered pebbles; soft; damp @ 1.5' No pebbles; slightly to moderately hard	Drilled 1/19/01 and 1/22/01 and logged on 1/22/01
5			Qls				
		2 5 6		106 / 12.3		@ 5' Fractures	
				SP:N73W,13NE		@ 7' Discontinuos fine-grained sandstone interbed; Apx. 3" thick @ 7.5' Slightly clayey siltstone layer with caliche; slide plane?	
						BEDROCK; TQsu, (8-35 ft.)	
10						@ 8' Yellowish-gray siltstone; moderately hard to hard locally; damp	
		3 4 6		116 / 13.7			
				B:N83E,14NW			
15						@ 14' 2-3"-thick fine- to coarse-grained pebbly sandstone interbed; friable; few cobbles @ 15' Scattered pebbles	
			TQsu				
20							
		4 9 18		126 / 12.2			
				Apx.B:N75W,11NE		@ 21' Locally sandy siltstone	
25							@ 25' Bulk Sample
				B:N74W,14NE		@ 29' Local concretions	
30							
		3 13 23					
						@ 32' Sandy siltstone interbeded with pebbly sandstone	
35							
						Total Depth 35 ft. (Elev. 1170) No Ground Water - No Caving Slide Plane @ 7 ft.	Backfill samples every 5 ft.

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG/VCG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/22/01		
ILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-15M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1260±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY LANDSLIDE; Qls, (0-27.5 ft.)	Drilled and logged on 1/22/01
						@ 0' Orangish-brown siltstone with scattered pebbles; soft; damp	
						@ 2.5' Fine- to coarse-grained pebbly sandstone; friable and loose to slightly dense; damp	
				Contact: N32W,24SW			
5		3 5 6		119 / 6.5		@ 4.5' Pale orangish- to yellowish-gray to brown siltstone; moderately hard; damp	
10		2 2 4		Apx.B:N22W,23NE 117 / 5.3		@ 10.5' Medium-brown clay; moderately plastic and sticky; damp; irregular surface; disrupted	
				Apx.B:N40W,24NE		@ 11' Yellowish- to orangish-gray siltstone to sandy siltstone with scattered cobbles, pebbles and zones of coarse-grained sandstone; moderately hard; damp	
15			Qls	XB:N84W,10NE		@ 14' Orangish-brown, fine- to coarse-grained pebbly sandstone and siltstone with scattered cobbles; friable and loose to moderately dense; damp	
						@ 16' Cross bedding	@ 17' Carbide bucket
				Apx.B:N30W,11NE		@ 18' Cobbles	
20				B:N70W,10NE		@ 20' Cobbles	
		8/5"		111 / 1.0		@ 20.5' Pale orangish-gray siltstone to sandy siltstone; grades to fine-grained sandstone and fine- to coarse-grained pebbly sandstone; friable; damp; some beds discontinuous	@ 23' Sampler Bouncing after 5"
25				SP:N60W,29NE		@ 25.5' Orangish- to medium-brown slightly clayey siltstone; slightly plastic and sticky; damp	
				SP:N44W,12NE		@ 27' 2"-thick medium-brown clay; plastic and sticky; damp	
						BEDROCK; TQsu, (27.5-42 ft.)	
30		9 15 23	TQsu	B:N47W,18NE		@ 27.5' Orangish-brown siltstone to sandy siltstone with fine- to coarse-grained pebbly sandstone; moderately hard to hard; damp; local lenses	
35				B/SS:N48W,16NE		@ 35' 2"-thick medium-brown clayey siltstone interbed; slightly sticky and plactic; damp	@ 34' Bulk sample

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: DGG/VCG	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 1/22/01	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-15M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1260±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		6 12 32	Qal / Qsm	Apx.B:N30W,18NE Apx.B:N43W,12NE		@ 38' Clayey interbed	
							Backfill tamped every 5 ft.
45						Total Depth 42 ft. (Elev. 1218) No Ground Water No Caving Slide Planes @ 25.5 and 27 ft.	
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/23/01		
ILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-16M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1228±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 2 1	Qsw			**QUATERNARY SLOPEWASH; Qsw, (0-4 ft.)** @ 0' Medium orangish-brown silt and sandy silt with pebbles and scattered cobbles; firm; damp to moist	Drilled and logged on 1/23/01
10			Qosw			**QUATERNARY OLDER SLOPEWASH; Qosw, (4-9 ft.)** @ 4' Light orangish-brown to olive-brown silt with scattered pebbles; dense to locally soft; damp	Qosw may be an old debris flow deposit
15		4 8 10		Apx.B:N20E,10NW B?:N40W,17NE 122 / 8.4		**QUATERNARY LANDSLIDE; Qls, (9-36 ft.)** @ 9' Irregular zones of pebbly siltstone, coarse-grained pebbly sandstone and concretionary zones; locally friable and loose to hard; damp @ 12.5' Erosional contact with orangish- to olive-gray siltstone; moderately hard; caliche-filled fractures @ 14' Discontinuous pebbly lense	
20		3 6 7	Qls	117/14.5 B/SS:N44W,14NE SP:N43W,14NE		@ 15.5' Medium-brown siltstone/mudstone; contact gradational @ 18' Caliche nodules @ 19.5' Local mudstone and sandstone fragments/clasts @ 21.5' Slightly clayey interbed, slightly sticky; disturbed below @ 23' Slightly clayey, caliche-rich bed; slightly sheared and plastic	
25				±N60W,33-45NE Apx.B:N40W,13NE		@ 24.5' Sandy siltstone grading to sandstone with scattered pebbles; weathered; bedding slightly disturbed; planar fractures @ 26.5' Local concretions @ 27' Pocket of pebbly sandstone; friable; cross bedded	@ 28' Bulk sample
30						@ 29' Chaotic assemblage of medium orangish-brown siltstone, sandy siltstone and pebbly sandstone; friable	
35		4 8 16		B:N50W,54SW SP:N42W,12NE SP:N54W,13NE		@ 33' Erosional contact with olive-gray to medium-brown siltstone below; moderately hard @ 34' 1 to 1.5"-thick moderate reddish-brown clay; plastic; moist @ 34.5' 0.25 to 0.5"-thick moderate-brown clay; plastic; sticky; planar; slightly disturbed below	@ 33' Bedding locally steep above erosional contact @ 34' 4 Hand-driven rings oriented normal to slide plane
			TQs	SP:N45W,13NE		**BEDROCK; TQsu, (36-42 ft.)** @ 36' Light yellowish-brown siltstone and fine silty sandstone;	

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/23/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-16M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1228±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qls	Apx.B:N37W,11NE 114 / 17.4		moderately hard; damp	
45		8 15 20				Total Depth 42 ft. (Elev. 1186) No Ground Water No Caving Slide Planes @ 23, 34, 34.5 and 36 ft.	Backfill tamped every 5 ft.
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: DGG	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 1/25/01	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-17M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1212±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1 1 2	Qls			**QUATERNARY LANDSLIDE; Qls, (0-14.5 ft.)** @ 0' Medium olive-gray to pale yellowish-olive-gray siltstone; soft to firm; damp to moist; some caliche surfaces @ 4' Increasingly firm	Drilled and logged on 1/25/01
				110 / 10.2		@ 6' Local patches of clayey siltstone and fine- to medium-grained pebbly sand	
10		1 2 2					
15				SP:N44W,20NE 110/2b. 1		@ 14.4' ¾"-thick medium olive-gray clayey siltstone; moderately plastic and sticky; damp **BEDROCK; TQsu, (14.5-40 ft.)** @ 14.5' Yellowish- to orangish-olive-gray siltstone to sandy siltstone; moderately hard; damp @ 16.5' Local concretions	@ 14.4' 4 Hand-driven rings oriented normal to slide plane
20		3 4 6					
				B:N47W,17NE			
25			Qsu	fN82E,90		@ 22.5' Sandy to pebbly interbed @ 24.5' Fractures	
				B:N43W,19NE		@ 25.5' Silty to fine-grained sandstone; dense; damp	
				B:N44W,17NE		@ 27' Fine- to coarse-grained pebbly sandstone; dense to slightly friable @ 27.5' Siltstone to sandy siltstone with clay; moderately hard; damp	
30		7 11 19		Apx.B:N42W,14NE fN88E,90 115 / 14.6		@ 29' Fractured	
				Apx.B:N40W,16NE			
35							@ 35' Bulk sample

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 1/25/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-17M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1212±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		8 21 49				Total Depth 40 ft. (Elev. 1172) No Ground Water No Caving Slide Plane @ 14.5 ft.	Backfill tamped every 5 ft.
45							
50							
55							
60							
65							
70							
75							

DRILL HOLE LOG

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1		
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 2/6/01		
'LLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	BORING NO.	B-18M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1259±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 3 4		Contact: N33W,27SW 114 / 5.8		**QUATERNARY LANDSLIDE; Qls, (0-42 ft.)** @ 0' Medium-brown siltstone with scattered pebbles and cobbles; soft; damp @ 1' Yellowish-brown siltstone @ 2' Large cobbles; loose @ 4' Locally sandy with patches of fine- to medium-grained pebbly sandstone; very friable and loose	Drilled and logged on 2/6/01
				B:N82W,28NE		@ 6' Caliche surfaces @ 7' Discontinuous orangish-brown, fine- to medium-grained sandstone interbed @ 8' Orangish-brown siltstone; stiff to hard; damp	
10		3 4 4		SP/SS:N65W,6SW 119 / 2.9		@ 9' Sandy @ 9.5' Fine- to coarse-grained pebbly sandstone @ 10' Medium-brown silty clay; brittle; damp; slide plane? @ 10.5' Chaotic assemblage of siltstone, sandy siltstone and fine- to medium-grained pebbly sandstone; locally cobbly; siltstone is firm to stiff; sandstone is friable	
15			Qls				
				B/Contact: N35W,47SW		@ 16.5' Erosional contact with chaotic assemblage of fine- to coarse-grained pebbly sandstone and fine-grained sandstone	@ 18' Bulk sample
20		3 3 4		116 / 3.9			
				B/Contact: N45W,42SW		@ 22' Erosional contact within chaotic assemblage to orangish-brown siltstone with sandy and pebbly to cobbly zones; hard to locally friable	Note: Bedding within landslide material is not regional
25						@ 27' Predominantly coarser-grained units	
30		6 10 18					
				B/Contact: N80W,26SW			
35							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 2/6/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-18M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1259±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qls				
				SS/SP:N41W,11NE SP:N37W,14NE		@ 41.5' and 42' Medium-brown to gray clay; moderately plastic and sticky; damp	
	■	5 30				**BEDROCK; TQsu, (42-55 ft.)** @ 42' Orangish-brown to gray siltstone; hard; damp; massive; local concretions	
45			TQsu				
50	■	6 17 24					
55						Total Depth 55 ft. (Elev. 1204) No Ground Water No Caving Slide Planes @ 10, 41.5 and 42 ft.	Backfill tamped every 5 ft.
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: MJD/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 2/6-2/7/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-19M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1204±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY LANDSLIDE; Qls, (0-38.5 ft.) @ 0' Light-brown sandy siltstone with scattered pebbles; dense but locally softer and fractured; moist; bedding is distinctly disturbed @ 2' Caliche; hard; damp	Drilled and logged on 2/6/01 and 2/7/01 and Logged 2/7/01
5		1 2 4		B:N28E,19SE 104 / 21.0 B:N39E,21SE		@ 4.5' 3 to 5"-thick yellowish-gray, fine- to medium-grained sandstone bed; interbedded medium-brown silty clay to clayey siltstone with yellowish-brown sandstone lenses below; moderately hard; caliche @ 7.5' Medium- to light-brown fine sandy siltstone and silty sandstone	
10		2 4 6		B:N57E,22SE 113 / 4.5 B:N39E,16SE		@ 10' Yellowish-gray fine- to coarse-grained sandstone and silty sandstone with pebbly sandstone lenses	@ 13' Bulk sample
15						@ 16.5' Medium-brown sandy siltstone with scattered pebbles; massive	
20		3 7 10		127 / 9.2 B/Contact: N24E,15SE MF:N40W,62NE		@ 20' Light-brown to yellowish-gray fine- to coarse-grained silty sandstone with discontinous clayey siltstone interbeds; scattered pebbles and cobbles @ 24' Erosional contact with sandy to clayey siltstone	
25						@ 25' Sandy to pebbly lense within slightly sticky medium-brown clayey siltstone	
30		4 6 12		B/Contact: N80W,28NE SP:N80W,10SW		@ 29.5' Yellowish-brown fine- to medium-grained sandstone and silty sandstone @ 31.5' Coarse-grained pebbly lense; soft	
35				SP:N20W,7NE Apx.SP:N28W,		@ 34.5' Medium-brown sandy to silty mudstone; slightly sticky and plastic; caliche @ 37' Irregular slip surface; underlying siltstone and mudstone are disturbed	@ 34' 4 Hand-driven rings oriented normal to slide plane

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: MJD/BJS	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 2/6-2/7/01	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-19M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1204±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		2 4 5		17NE Contact: N31W,17NE 12.6 / 11.9		@ 38.5' Thin, sticky slip surface above coarse material **QUATERNARY OLDER ALLUVIUM; Qoa, (38.5-46 ft.)** @ 38.5' Weathered silty sandstone and pebbly sandstone; loose to moderately dense; damp; appears disturbed by overlying Qls @ 42' Yellowish-brown to yellowish-gray medium to coarse-grained sandstone and pebbly sandstone; moderately dense to dense but slightly friable; locally cemented; damp; matrix locally lacking	
45						**BEDROCK; TQsu, (46-60 ft.)** @ 46' Light yellowish-brown pebbly to cobbly sandstone; moderately hard to locally strongly cemented; damp	@ 46' Grab/core bucket used
50				B:N40W,16NE			
55		29 7/1"		B:N47W,14NE		@ 53' Slightly silty sandstone, pebbly sandstone and pebble conglomerate with scattered cobbles; strongly cemented	
60		31 25/1"				Total Depth 60 ft. (Elev. 1144) No Ground Water No Caving Slide Planes @ 34.5, 37 and 38.5 ft.	Backfill tamped every 5 ft.
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: MJD/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 2/7-2/8/01		
LING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-20M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1225±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		5 9		Apx.B:N33W,22NE B:N47W,15NE 123 / 9.1		**QUATERNARY LANDSLIDE; Qls, (0-57 ft.)** @ 0' Yellowish-brown to light yellowish-brown fine sandy siltstone with slightly silty pebbly sandstone lenses and interbeds; dense but slightly friable; damp to moist; northeast-dipping fractures with minor caliche @ 5' Contact with yellowish-brown siltstone and mudstone with minor sand and local pebbles; bedding irregular at contact; moderately hard; damp; poorly bedded below 5 ft.	Drilled 2/7/01 and 2/8/01 and logged on 2/8/01 Note: Surficial material removed for drill pad
10		3 6 11		123 / 10.1 B:N75W,10NE		@ 10' Thin, irregular moderate-brown clay seams; concretions @ 12.5' Yellowish-gray fine sandstone interbed; local laminations; fractures	
15			Qls	B:N50W,15NE		@ 13.5' 6"-thick moderate-brown mudstone with fine laminations; moderately disturbed and sheared @ 15' Fine-grained sandstone interbed @ 16' Yellowish-gray to light yellowish-brown sandstone and pebbly sandstone interbed; fine sandy siltstone with local mudstone interbeds below; soft sediment deformation	
20		4 8 14		116 / 15.5 B:N32W,15NE			
25				SP:N37W,12NE		@ 23' 1/8"-thick moderate-brown clayey seam; moderately plastic; slightly irregular @ 24.5' Pebbly lenses; bedding slightly weathered	
30		7 18 32		B:N75W,15NE		@ 28' Caliche-lined fracture @ 29' Pebbly sandstone interbed @ 31' Local concretions; slightly softer overall; bedding slightly irregular and discontinuous; slightly weathered; some soft sediment deformation also; local clayey blebs	
35				MF:N15E,50-90NW		@ 35' Discontinous interbed of slightly silty sandstone with pebbles @ 38' Light yellowish-gray sandstone interbed; moderately friable; truncated by minor fault; caliche at top of bed	

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: MJD/BJS	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 2/7-2/8/01	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-20M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1225±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				115/17.5			
		5 6 11		SP:N10W,10NE		@ 40' Concretions; disturbed sandstone @ 40.5' 1/4 to 1/2"-thick, moderate reddish-brown silty claystone; moderately plastic; underlying mudstone is slightly plastic	
45			Qls	B:N14W,11NE		@ 43' Grades to yellowish-brown slightly sandy siltstone with scattered pebbles; local clay blebs @ 44' Irregular sandstone lense; slightly softer @ 45' Grades to slightly disturbed siltstone and mudstone	
50		8 15 17		SP:N31W,15NE		@ 49' Mudstone interbeds @ 50' Laminated siltstone and mudstone	
55				SP:N45W,11NE		@ 52' Thin seam of moderate-brown clay; moderately plastic; damp to moist; disturbed moderate-brown to moderate reddish-brown mudstone and claystone below @ 54' 3/8 to 3/4"-thick moderate-brown clay; plastic and sticky; moist; slightly disturbed mudstone and sandy siltstone below	Note: Most of landslide distress appears to be above slide plane @ 54 ft.; slightly disturbed to 57 ft.
60		23 75	TQsu	SP?:N54W,14NE B:N46W,14NE		@ 56' Sandstone interbed; slightly disturbed @ 57' Silty claystone below; slightly sheared **BEDROCK; TQsu, (57-65 ft.)** @ 57' Yellowish-brown fine sandy siltstone with local pebbles; hard; damp; poorly bedded	
65						Total Depth 65 ft. (Elev. 1160) No Ground Water No Caving Slide Planes @ 23, 40.5, 52, 54 and 57 ft.	Backfill tamped every 5 ft.
70							
75							

CLIENT: Newhall Ranch Co.
PROJECT: Mesas Entertainment
DRILLING COMPANY: Tri Valley Drilling/Dave
DRILLING METHOD: Bucket-Auger/24" (82' Rig)
HAMMER TYPE: Telescoping Kelly Bar
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.

JOB NO.: 01-1703M-1
DATE: 07/22/04
LOGGED BY: DGG/BJS
DRILLED: 2/8-2/9/01
HOLE DIA: 24"
AVERAGE DROP (in.): 12"
ELEVATION: 1271±

DRILL HOLE LOG

BORING NO. B-21M

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 3 5		114 / 3.9		**QUATERNARY LANDSLIDE; Qls, (0-52 ft.)** @ 0' Medium yellowish-brown siltstone, sandy siltstone, and fine- to coarse grained pebbly sandstone with scattered cobbles; soft; friable; damp; highly weathered @ 3.5' Yellowish-brown siltstone and fine-grained pebbly sandstone; siltstone is firm, sandstone is friable; disturbed pebble lense @ 5' Chaotic assemblage of siltstone, sandy siltstone/silty sandstone and fine- to coarse-grained pebbly sandstone; loose and friable; damp	Drilled 2/8/01 and 2/9/01 and Logged on 2/9/01 @ 3' Bulk sample
10		3 4 7		123 / 1.5 Apx.B:N34E,8SE MF:N-S,71E			@ 8' Bulk sample. From 8-20', Units are cut by a series of landslide-related minor normal faults @ 13' 3-5" separation on MF
15			Qls	Apx.B:N30W,7SW			
20				Contact: N25E,38SE MF:N22E,73SE 117 / 14.2		@ 20' Offset erosional contact above yellowish-brown siltstone to sandy siltstone; stiff; damp; local pebbly lenses; bedding faint and disturbed	@ 21' 12-15" Separation on MF
25		2 2 3		B:N72W,14SW		@ 25' Discontinuous fine-to coarse-grained pebbly interbeds and local mudstone interbeds; coarse units friable	
30		4 8 13		MF:N5W,60NE		@ 30' Relatively hard @ 31' Grades to light-brown slightly sandy mudstone with scattered pebbles @ 34' Grades to yellowish-brown slightly sandy siltstone; moderately hard	@ 36' 2-3" Separation on MF
35							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: DGG/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 2/8-2/9/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-21M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1271±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N84E,7SE		@ 37.5' Interbedded fine sandy siltstone and mudstone	
		3 6 10		III/17. 7			
				SP:N87E,16SE Apx.B:N80W,12SW B:N70E,32SE		@ 42' 1 to 2"-thick olive-gray clayey siltstone to silty clay; moderately plastic and sticky; damp; grades to mudstone; disturbed	@ 43-47' Landslide-related minor faults
45				MF:N55W,50NE			
				SP:N50E,7SE Apx. Contact: N28E,14NW		@ 48' 1 to 3"-thick medium-brown clay; locally plastic and sticky; damp	
50		4 5 8				@ 50' Disturbed lense of pebbly sandstone	
				SP:N55W,14NE		@ 52' 1"-thick moderate reddish-brown clay; moderately plastic **BEDROCK; TQsu, (52-75 ft.)** @ 52' Yellowish-brown to olive siltstone, sandy siltstone and mudstone; moderately hard; damp to moist	
55							
				B:N40W,19NE			
				B:N41W,13NE			
60		17 59		B/SS:N40W,13NE		@ 60.5' Clayey interbed; slightly sheared; local concretions below	
65							
70		21 85/5"					
75							Backfill tamped

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

DRILLING COMPANY: Tri Valley Drilling/Dave

DRILLING METHOD: Bucket-Auger/24" (82' Rig)

HAMMER TYPE: Telescoping Kelly Bar

DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.

JOB NO.: 01-1703M-1

DATE: 07/22/04

LOGGED BY: DGG/BJS

DRILLED: 2/8-2/9/01

HOLE DIA: 24"

AVERAGE DROP (in.): 12"

ELEVATION: 1271±

DRILL HOLE LOG

BORING NO. B-21M

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						Total Depth 75 ft. (Elev. 1196) No Ground Water No Caving Slide Planes @ 42, 48 and 52 ft.	every 5 ft.
80							
85							
90							
95							
100							
105							
110							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: MJD		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 3/28/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-22M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1176±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1 1 1	af	113/5.6		**ARTIFICIAL FILL; af, (0-18 ft.)** @ 0' Medium-brown sandy pebbly silt; moist to damp @ 3' Light brown; with cobbles	Excavated on 3/28/01 Surface logged only due to hydrocarbon contaminated soil
10		1/12" 1		122 / 10.5		@ 5' Medium brown @ 10' Blueish gray	@ 5' Bulk Sample
15		Push/ 12" 2		99/24.8			
20		2 4 8	Qls			**QUATERNARY LANDSLIDE; Qls, (18-28 ft.)** @ 18' Yellowish-gray sandstone and pebbly sandstone; moderately dense; moist; scattered cobbles	
25		3 2 2		113/6.2			@ 26' Bulk sample
30		6 8 13/2"	TQsu			@ 27.5 Tan sandy and clayey siltstone; slightly sheared **BEDROCK; TQsu, (28-55 ft.)** @ 28' Light brown silty sandstone; dense; damp @ 31' Yellowish-gray pebbly sandstone	
35		10 23 13/1"		119/2.2		@ 33' Cobbles @ 34' Grayish white	

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

DRILLING COMPANY: Tri Valley Drilling/Dave

LING METHOD: Bucket-Auger/24" (82' Rig)

HAMMER TYPE: Telescoping Kelly Bar

DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.

JOB NO.: 01-1703M-1

DATE: 07/22/04

LOGGED BY: MJD

DRILLED: 3/28/01

HOLE DIA: 24"

AVERAGE DROP (in.): 12"

ELEVATION: 1176±

DRILL HOLE LOG

BORING NO. B-22M

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
45		24 54				@ 43' Medium-brown sandy and pebbly siltstone; mottled	
			Tos				
50						@ 49' Yellowish-brown silty and pebbly sandstone; scattered pebbles	
55		17 59				Total Depth 55' (Elev. 1121) No Ground Water No Caving Slide Plane ? @ 27.5 ft.	@ 54-55' Bulk Sample Backfill tamped every 5 ft.
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: MJD/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 3/29/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-23M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1250		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**QUATERNARY SLOPEWASH; Qsw, (0-5 ft.)** @ 0' Brown pebbly, silty sand/sandy silt with local cobbles; moist; no bedding	Excavated and logged on 3/29/01
5		1 2 1	Qls	123/4.4 B:N21W,12NE B:N50W,28NE		**QUATERNARY LANDSLIDE; Qls, (5-19.5 ft.)** @ 5' Yellowish-brown slightly silty sandstone and pebbly sandstone; moderately dense; slightly friable; moist; cross bedding; channeling, crudely bedded to laminated	Qls may include disturbed Qt deposits @ 7' Bulk sample
10		1 1 2		115/16.0		@ 10' Bedding truncated; irregular contact with mottled medium-to light-brown sandy siltstone with scattered pebbles; firm to soft; moist; disrupted	
				Apx.B:N77W,6SW		@ 13.5' Interbedded yellowish-gray sandstone, medium-brown clayey siltstone; and silty to pebbly sandstone; bedding	
15		1 1 2		116/14.6			
20		3 6 11		SP:N81W,17NE B:N87W,17NE		@ 19.5' 1/4"-thick, medium yellowish-brown silty clay; parting; slightly sticky & plastic **QUATERNARY LANDSLIDE?; Qls?, 19.5-51 ft.)** @ 19.5' Light-brown to tan silty sandstone and sandy siltstone with scattered pebbles; moderately hard; moist; structureless, massive; grades downward into sandstone; slightly friable	Note: Qls? material may include disturbed Qt deposits; Qls? is generally dense but shows local evidence of secondary disturbance
25		5 5 10					
			Qls?	B:N65W,16NE		@ 27' Vaguely bedded; laminated	
30		10 26 25		126/2.9 B:N55W,11NE		@ 29.5' Light yellowish-brown pebbly sandstone; cross-bedded; laminated; slightly friable; pebbly stringer; locally lack matrix; siltstone rip-up clasts @ 32' Erosional contact with medium-brown sandy siltstone with scattered pebbles and local sandy to pebbly lenses; moderately hard; bedding discontinuous	
35							@ 36' Minor seep @ 38' Minor seep

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: MJD/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 3/29/01		
DRILLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-23M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1250		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						@ 39' Irregular contact with orangish and grayish-brown clayey siltstone	
		5 10 24					@ 40-41' Minor seeps
				MF:N44W,55NE		@ 42' Discontinuos sandstone interbed with non-regional dip	@ 40-45' Mixed bulk sample 42' Minor fault with adjacent tilted bedding
45			Qls?				
				B:N53W,12NE		@ 46' Interbedded, laminated sandstone; locally friable	
50				B:N46W,15NE SP?:N47W,13NE		@ 49.5' 6"-thick laminated sandstone interbed; friable	
		9 14 24		117/16.1		@ 50.5' Moderate-brown silty clay layer; slightly plastic; moist; slide plane? **BEDROCK; TQsu, (51-65 ft.)** @ 51' Brown siltstone; hard; moist; massive, structureless; concretions; vague discontinuous laminations; locally clay rich and sandy	
55							
			TQsu				
60							
		7 70/5"					
65						Total Depth 65' (Elev. 1185) Minor Ground water Seeps @ 36, 38, 40 and 41 ft. No Caving Slide Planes @ 19.5 and 50.5? ft.	Backfill tamped every 5 ft.
70							
75							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: MJD/BJS	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 3/30/01	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-24M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1106±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1 1 2	Qsw	122 / 8.7		**QUATERNARY SLOPEWASH; Qsw, (0-7.5 ft.)** @ 0' Medium-brown clayey and silty sand with pebbles and cobbles; firm; moist @ 5' Less clay and silt; more pebbles and cobbles	Excavated and logged on 3/30/01
10		1 2 2	Ql	B/Contact: N77W,23NE 92 / 28.1 B/Sh:N87E,43NW		**QUATERNARY LANDSLIDE; Qls, (7.5 to 19.5 ft.)** @ 7.5' Yellowish-brown silty, pebbly sandstone with cobbles; weathered; loose; moist; poorly stratified @ 10' Irregular shallow dip @ 10.5' Grayish-brown mottled clayey siltstone and claystone; stiff; moist; weathered; slightly plastic; slightly sheared @ 13' Less disturbed; laminated siltstone and mudstone below	@ 10.5' Sharp planar contact
15		2 2 2		100 / 7.2 SS/SP?:N75W 20NE		@ 15' Sandy siltstone bed @ 18' Slightly irregular slip surface showing normal-slip drag features @ 19.2' Soft zone underlain by gray siltstone with small caliche pods	Material from 7.5 to 19 ft. appears to be Ql deposits deformed tectonically and overprinted by landslide movement
20		3 7 14		SP:N84W,10NE		**QUATERNARY TERRACE DEPOSITS; Qt, (19.5 36 ft.)** @ 19.5' Yellowish-gray fine-grained sandy siltstone; dense; moist @ 21' Light yellowish-gray sandstone; dense but friable; damp; grades progressively coarser-grained	@ 22' Bulk sample
25			Qt	B:Horizontal			Ql deposits from 28 to 36 ft. logged from surface cuttings due to caving and placement of casing; basal Ql layer
30							
35			TQs	B:N60W,30NE		**BEDROCK; TQs, (36-54 ft.)** @ 36' Yellowish-gray sandstone and pebbly sandstone; moderately hard; locally friable; moist; scattered cobbles; cross bedded; laminated; channeling	

CLIENT: Newhall Ranch Co.	JOB NO.: 01-1703M-1	**DRILL HOLE LOG**	
PROJECT: Mesas Entertainment	DATE: 07/22/04		
	LOGGED BY: MJD/BJS		
DRILLING COMPANY: Tri Valley Drilling/Dave	DRILLED: 3/30/01		
LLING METHOD: Bucket-Auger/24" (82' Rig)	HOLE DIA: 24"		
HAMMER TYPE: Telescoping Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-24M	
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.	ELEVATION: 1106±		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N47W,26NE			
		13 26		115 / 5 -1			
				B:N70W,29NE			
				B:N52W,25NE			
45			QS	B:N66W,27NE			
				B:N55W,29NE			
50		27					
55						Total Depth 54 ft. (Elev. 1052 ft.) No Ground Water Caving from 19.2 to 36 ft. Slide Planes @ 18 and 19.2 ft.	Backfill tamped every 5 ft.
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: MJD/BJS	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 4/3/01	
DRILLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-25M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1126±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		1/12" 2	Soil	112 / 7.4		**SOIL; (0-3.5 ft.)** @ 0' Dark-brown to light reddish-brown pebbly and cobbly sand with silt and clay; firm; moist **QUATERNARY TERRACE DEPOSITS; Qt, (3.5-41 ft.)** @ 3.5' Grades to yellowish-brown to light-brown silty pebbly sand with local cobbles; moderately dense but slightly friable	Excavated and logged on 4/3/01
				B:N10E,8NW		@ 6' Yellowish-gray pebbly sandstone with cobbles; friable; crudely bedded to cross-bedded	@ 7' Bulk sample
10		2 4 6		MF:N28W,22NE B:N14W,16SW B:N24W,22SW MF:N55W,16NE 113 / 4.6		@ 8' Irregular lense of clean sandstone; local laminations; slightly disturbed; moderately well bedded below	@ 9' Minor fault with 4-6" normal offset @ 11' Minor fault with Apx. 6" normal offset @ 14' Minor fault with 2-4" reverse offset
15		2 3 4		B:N30W,23SW MF:N49W,5TNE 110 / 1.6		@ 13' Interbedded light-gray sandstone to silty sandstone @ 14' Medium-brown siltstone; disrupted and faulted; orange Fe02 staining @ 16' Erosional contact with interbedded clayey siltstone and light-brown sandstone and silty sandstone; possible soft sediment deformation	Qt material approximately 21.5 ft. shows evidence of tectonic disturbance with local minor faults; material may be affected by down slope movement as well
20		1 2 4	Qt	B/SS:N38W,15SW B:N44W,18SW B:Horizontal		@ 17.5' Yellowish-gray pebbly sandstone; friable; Fe02-rich laminations; minor offsets @ 19.5' Interbedded light-brown sandstone and clayey siltstone; slightly irregular @ 21.5' Disturbed interval approximately 6"-thick with medium-brown moderately plastic clay; irregular; slipsurface?; interbedded fine-grained sandstone; siltstone and pebbly sandstone	
25		5 7 14		B:N60W,9NE 112 / 2.7 B:N15E,8NW		@ 25' Reddish-orange stained pebbly sandstone; moderately friable @ 26' Yellowish-gray fine-grained sandstone and pebbly sandstone; locally laminated; local black stains; cross bedded; moderate caving	
30		5 16 28		Apx.B: Horizontal			
35						@ 35' Local pebbly and cobbly lenses lack sand matrix; black stains @ 36' Irregular contact with zone of highly disturbed mix of yellowish-brown to medium-brown siltstone and mudstone clasts in a sandy matrix	

CLIENT: Newhall Ranch Co.		JOB NO.: 01-1703M-1	**DRILL HOLE LOG**
PROJECT: Mesas Entertainment		DATE: 07/22/04	
		LOGGED BY: MJD/BJS	
DRILLING COMPANY: Tri Valley Drilling/Dave		DRILLED: 4/3/01	
LLING METHOD: Bucket-Auger/24" (82' Rig)		HOLE DIA: 24"	
HAMMER TYPE: Telescoping Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-25M
DRIVING WEIGHTS: 0-25'=2852 lbs; 25-54'=1700 lbs.; 54-82'=950 lbs.		ELEVATION: 1126±	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQs	B:N50W,26NE		@ 39' Contact with light yellowish-gray pebbly to cobbly sandstone; friable @ 40' Irregular contact with yellowish-brown muddy pebbly sand; dense; possible old buried slopewash **BEDROCK; TQs, (41-55 ft.)** @ 41' Erosional contact with light yellowish-brown to yellowish-gray sandstone; moderately hard to hard; damp; cross-bedded	
45		6 16 16/3"	TQs	B:N33W,20NE 114 / 2.1 B:N37W,18NE			
50			TQs				
55		26 89/5"	TQs			Total Depth 55 ft. (Elev. 1071) No Ground Water Moderate Caving from 26 to 36 ft. and @ 40 ft.	Backfill tamped every 5 ft.
60							
65							
70							
75							

KEY TO SYMBOLS

Symbol Description

UNITED SOIL CLASSIFICATION SYMBOLS

Silt

Fat clay

SAMPLE TYPE

CALIFORNIA DRIVE SAMPLE
2.42" I.D. sampler

Notes:

1. These logs are subject to the limitations, conclusions, and recommendations in this report.

2. Results of tests conducted on samples recovered are reported on the logs

DRILL HOLE LOG

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1
PROJECT: Mesas West	DATE:
	LOGGED BY: MJD
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/27/03
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60'=4780 lbs; 60-90'=3270 lbs; 90-120'=2090 lb	ELEVATION: 1183

BORING NO. B-1W

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
1			Casing			**QUATERNARY TERRACE DEPOSITS; Qt (0-45')** @ 0-4' Casing	
5		push 1		108/11.6		@ 4' Light-brown to light yellowish-brown sand, pebbly sand and silty, pebbly sand with cobbles and scattered boulders; soft to moderately hard; dry to damp; mostly massive, structureless; locally crudely bedded @ 6' Moist	
10		1 2		130/5.5		@ 11-12.5' Silty sand	@ 10-15' Bulk Sample
15		1 --	Qt	114/7.8		@ 16' Pebbly sand, scattered cobbles and boulders	
20							
25		1 7				@ 24-26' Silty sand	
30							
3		4 11					@ 33' Rock in tip

CLIENT: Newhall Ranch Co.		JOB NO.: 1703W-1	**DRILL HOLE LOG**
PROJECT: Mesas West		DATE:	
		LOGGED BY: MJD	
DRILLING COMPANY: Valley Well Drilling (Danny)		DRILLED: 10/27/03	
DRILLING METHOD: Bucket Auger		HOLE DIA: 24"	
HAMMER TYPE: Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-1W
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60'=4780 lbs; 60-90'=3270 lbs; 90-120'=2090 lb		ELEVATION: 1183	

1 DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qc			@ 38' Boulders	
40			Qc				
			Qc	B: N38E,10SE		@ 42' Interbedded light-brown silty sand; moderately well-bedded	
45			Qc	clc: subhorizontal		**BEDROCK; TQsl (45-65')**	
			TQsl			@ 45' Light yellowish-gray medium- to coarse-grained sandstone and pebbly sandstone; hard; moist; scattered cobbles; mostly massive, structureless; local laminae; local cross bedding	
50			TQsl	B: N89E,22SE			
			TQsl	B: N83E,33SE			
55			TQsl				
			TQsl	B: N55W,27SW			
			TQsl	B: N84E,36SE			
60			TQsl				
			TQsl				
65			TQsl				
	■	8 31/5"				Total Depth 65' No Caving No Ground Water	
70							
75							

DRILL HOLE LOG

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1
PROJECT: Mesas West	DATE:
	LOGGED BY: MAS
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 10/28/03
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60=4780 lbs; 60-90'=3270 lbs; 90-120'=2090	ELEVATION: 1215

BORING NO. B-2W

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			af			**ARTIFICIAL FILL; af (0-3')** @ 0' Medium-brown silty, pebbly sand with cobbles; soft; dry to damp	
5	■	3	TQsl	119/13.4 B: N59E,13SE		**BEDROCK; TQsl (3-25')** @ 3' Grayish-brown sandy siltstone; hard; damp; massive, structureless @ 6.5' Thin mudstone interbed 1/8" thick; plastic; sticky @ 7' Grades to light yellowish-gray medium- to coarse-grained sandstone and pebbly sandstone; hard; moist; mostly massive, structureless; local laminations; local cross-bedding; scattered cobbles	@ 10-15' Bulk Sample
10	■	6		B: N71E,10SE			@ 10-15' Bulk Sample
15	■	7		B: N81W,13SW			
20							
25	■	5				Total Depth 25' No Caving No Ground Water	
30							
35							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/10/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-6W	
DRIVING WEIGHTS: 0-30'=6780lbs; 30-60'=4780lbs; 60-90'=3270lbs; 90-120'=2090lbs	ELEVATION: 1179		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			s/Qsw			**SOIL/SLOPEWASH; s/Qsw (0-7')** @ 0' Silty, clayey sand; medium dense; moist; brown; roots; rootlets	Drilled on 11/10/03. Logged on 11/11/03. Located in agricultural area
5		push 18"		114/8.0			
						QUATERNARY TERRACE DEPOSITS; Qt (7-121') @ 7' Silty sand; medium dense; damp; light brown with coarse-grained sand channels; loose to medium dense; damp; light brown and interbedded fine-grained sand; loose; dry; light gray	
10		push 1	Qt	Apx B: Horizontal 111/7.4			
				Apx B: Horizontal			
15		2		112/12.9 Apx. B: Horizontal			
						@ 18' Silty, clayey sand with gravel; medium dense; moist; light brown; rootlets; uncommon gravelly channels	
20		1 2		115/8.9			
				Apx B: Horizontal			
25		push 1		Apx B: Horizontal 107/9.1	SM	@ 25' Silty sand; loose; slightly moist; yellowish-brown	
				B: Horizontal			
30						@ 30' Sand; loose to medium dense; dry to damp; light gray with channels composed of sandy gravel; medium dense; dry; light gray	
35		2 5				@ 37' Silty sand to sandy silt; medium dense; firm; damp; light brown; interbedded	

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/10/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-6W	
DRIVING WEIGHTS: 0-30'=6780lbs; 30-60'=4780lbs; 60-90'=3270lbs; 90-120'=2090lbs	ELEVATION: 1179		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						with sandy gravel to gravelly sand; loose to medium dense; dry to damp; light gray; silty sand commonly contain laminar bedding, cross bedding or finely laminated	
45		2 4		Apx B: Horizontal			
50			Qt	B: Horizontal			
55		6 13				@ 54' Interbedded well-graded sand; medium dense; dry; light gray with sandy gravel channels; loose to medium dense; dry; light gray; and uncommon fine-grained silty sand layers/lenses; medium dense; dry; light gray	
60				B: Horizontal			
65		6 13		B: Horizontal		@ 62' Fine-grained silty sand; medium dense; damp; light brown; interbedded with sandy silt; firm; damp to moist; light brown	
70				Apx B: Horizontal			
75		9				@ 72' Fine-grained silty sand; medium dense; damp; light brown; with interbedded sandy silt; firm; damp to moist; light brown; and sandy gravel channels; loose to medium dense; dry; light gray to light yellowish-brown	

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/10/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-6W	
DRIVING WEIGHTS: 0-30'=6780lbs; 30-60'=4780lbs; 60-90'=3270lbs; 90-120'=2090lbs	ELEVATION: 1179		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
		21		B: Horizontal		@ 76' Fine-grained silty sand; medium dense; damp; light brown with interbedded sandy silt; firm; damp to moist; light brown	
80							
						@ 82' Fine-grained silty sand; medium dense; damp; light brown; with interbedded sandy silt; firm; damp to moist; light brown; and sandy gravel channels; loose to medium dense; dry; light gray to light yellowish-brown	
85		6 13					
			Qf				
90				B: Horizontal		@ 90' Fine-grained silty sand; medium dense; damp; light yellowish brown; interbedded with sandy silt; firm ; damp to moist; light brown; uncommon coarse-grained sand to gravel channels; medium dense; dry to damp; light brown to light yellowish-brown; fine-grained sands are commonly laminated	
		5 7					
95							
				B: Horizontal			
100							
105				Apx B: Horizontal			
110							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/10/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-6W	
DRIVING WEIGHTS: 0-30'=6780lbs; 30-60'=4780lbs; 60-90'=3270lbs; 90-120'=2090lbs	ELEVATION: 1179		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
115			Qt				
				B: Horizontal			
120							
						Total Depth 121' No Caving No Ground Water	
125							
130							
135							
140							
145							
150							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/3-4/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-9W	
DRIVING WEIGHTS: 0-30'=6780 lbs; 20-60'=4780 lbs; 60-90'=3270 lbs; 90-120'=2090lbs	ELEVATION: 1192		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Casing			**BEDROCK; TQsl (0-40')** @ 0-4' Casing	
5		2 4				@ 4' Light-gray to light yellowish-gray sandstone and pebbly sandstone; hard; slightly damp; slightly to moderately fractured; massive to crudely bedded; erosional scours and channels	@ 6-8' Bulk Sampl
10		5 7				@ 9.5-12' Pebbly sandstone; moist; cross-bedded	
15		2 4		B: N68E,19SE		@ 15' Open fracture up to 1/16" wide, probably due to tectonic deformation near hinge of syncline	
20			TQsl				
25				B: N69W,15SW			
30				B: N65W,18SW			
		4 7		B: N61E,13SE B: N61E,11SE		@ 32.5' Sharp, relatively planar, erosional contact with medium-gray to grayish-brown siltstone and mudstone; hard; damp to moist; moderately well-bedded; locally sticky, plastic @ 33' 1.5" thick brown clay interbed; moist; plastic; sticky @ 34' Grades to yellowish-brown sandy siltstone @ 35.5' Grades to light yellowish-brown silty sandstone @ 37' Yellowish-gray sandstone	@ 33' No slicke[illegible] or striations on bed
35							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MJD		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/3-4/03		
LLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-9W	
DRIVING WEIGHTS: 0-30'=6780 lbs; 20-60'=4780 lbs; 60-90'=3270 lbs; 90-120'=2090lbs	ELEVATION: 1192		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQs				
		5 11				Total Depth 40' No Caving No Ground Water	
45							
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/4 & 5/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12" .	**BORING NO.** B-10W	
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60'=4780 lbs; 60-90'=3270 lbs; 90-120'=2090lbs	ELEVATION: 1146		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			S			**SOIL; s (0-4')** @ 0' Silty, clayey sand with gravel; loose to medium dense; dry; brown; pinhole voids; burrows; krotovina; roots and rootlets	Start drilling at nc 11/4/03
5		push 12"	Qt	106/3.5		**QUATERNARY TERRACE DEPOSITS; Qt (4-16')** @ 4' Silty sand with gravel to silty sandy gravel; loose to medium dense; dry; light gray to light brown; roots; local burrows; rootlets; local pop-outs, cobbles; vague bedding and gravel channels gently dipping	@ 4-16' Quickly logged and th cased
10		1 1		118/1.8			
				Apx B: N20W,7NE c: Horizontal			
15		2 3					@ 15' No sample retrieved/fell out
						BEDROCK; TQsl (16-65') @ 16' Light-gray silty fine-grained sandstone; soft to moderately hard; dry to damp	
20		1 1		112/6.3			
			TQsL	B: N67E,15SE		@ 23' Light-brown silty sandstone; moderately hard; damp; with interbedded discontinuous fine-grained sandstone lenses	
25							@ 25-30' Bu Sample
30		2 4		Apx B: N22E,20SE 130/5.3		@ 30' Light-gray fine- to medium-grained sandstone	
35				Apx B: N10E,22SE			

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/4 & 5/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-10W	
DRIVING WEIGHTS: 0-30'=6780 lbs; 30-60'=4780 lbs; 60-90'=3270 lbs; 90-120'=2090lbs	ELEVATION: 1146		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				Apx B: N10E,22SE B: N27W,18NE			
45	■	5 10/3"	TQsc			@ 42' Light-gray sandstone with coarse-grained sandstone to pebbley sandstone channels	Drill to 41' on 11/4/03; 41-65' on 11/5/03
50	■	5 10		Apx B: N 6 W, 10NE			
55				B: N18W,15NE		@ 59' Light greenish-gray to brown sandy siltstone; hard; moist; @ 60' Plastic clay, soft; grayish-brown; soft plastic clay 2" thick	Clay @ 60' Not a sharp contact No Striations or slickensides
60	■	4 10					
65	■	20/6"				Total Depth 65' Caving @ 5-16' No Ground Water	
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/6/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-11W	
DRIVING WEIGHTS: 0-30'=6780lbs; 30-60'=4780lbs; 60-90'=3270 lbs; 90-120'=2090lbs	ELEVATION: 1158		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SOIL; s (0-7') @ 0' Silty, clayey sand with gravel; loose to medium dense; dry; brown; pinhole voids; rootlets	
5		1 1		108/3.6		Soil - Qt contact is gradational	
						QUATERNARY TERRACE; Qt (7-105') @ 7' Silty sand; loose to medium dense; dry; light-gray to light-brown; gravel channels	
10		2 2					No recovery @ 10'
				Apx B: Horizontal		@ 12' Silty, clayey sand; moist; light-brown; with interbedded sandy silt lenses; light yellowish-brown	
15		1 2		121/8.3			
				Apx B: Horizontal			
20		2 4	Qt				
25		1 2		117/8.3		@ 25' Coarse-grained sand to gravel lenses	
30				Apx B: Horizontal			
35		3/10"		111/3.1			

CLIENT: Newhall Ranch Co.		JOB NO.: 1703W-1	**DRILL HOLE LOG**
PROJECT: Mesas West		DATE:	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling (Danny)		DRILLED: 11/6/03	
DRILLING METHOD: Bucket Auger		HOLE DIA: 24"	
HAMMER TYPE: Kelly Bar		AVERAGE DROP (in.): 12"	**BORING NO.** B-11W
DRIVING WEIGHTS: 0-30'=6780lbs; 30-60'=4760lbs; 60-90'=3270 lbs; 90-120'=2090lbs		ELEVATION: 1158	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				Apx B: Horizontal			
45		3 6		B: Horizontal		@ 41' Fine-grained silty sand; damp; light-gray; to sandy, clayey silt; firm; moist; light yellowish-brown	
50			Qt			@ 49' Fine-grained sandy silt with clay; firm; moist; light-brown; with interbedded discontinuous lenses of sand; loose to medium dense; damp to moist; light-gray to light yellowish-brown	
55		3 7					
60							
65		5 14					
70				Apx B: Horizontal			
75		4					

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Danny)	DRILLED: 11/6/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-11W	
DRIVING WEIGHTS: 0-30'=6780lbs; 30-60'=4780lbs; 60-90'=3270 lbs; 90-120'=2090lbs	ELEVATION: 1158		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
		15		B: Horizontal			
80							
85		4 10		B: Horizontal			
90		5 6		B: Horizontal			
95						@ 97' Silty fine-grained sand to medium-grained sand; loose to medium dense; light-gray; with interbedded sandy silt; moist; light-brown; gravelly channels	
100							
105						Total Depth 105' No Ground Water No Caving	
110							

DRILL HOLE LOG

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1
PROJECT: Mesas West	DATE:
	LOGGED BY: MAS
DRILLING COMPANY: Valley Well Drilling (Jesse)	DRILLED: 11/24/03
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-25'=2854 lbs; 25-47'=1802 lbs; 47-70'=1091 lbs	ELEVATION: 1242

BORING NO. B-13W

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SOIL; s (0-2') @ 0' Silty, clayey sand with gravel; medium dense; dry; brown; roots, rootlets; voids ≤ 1/8"	
						QUATERNARY LANDSLIDE DEPOSIT; Qls(Qt derived) (2-24') @ 2' Interbedded light yellowish-brown, silty, fine-grained sandstone and sandy siltstone; moderately hard; dry	
5		2 3					
10		1 2 3		Apx B: N8E, 34NW			
				B: N66W, 16SW			
				Apx B: Horizontal			
15		5 10	Qls (Qt)			@ 14' Light-brown pebble conglomerate; damp	@ 15' rock in tip
20		5 10					@ 20' rock in tip
				Apx B: Horizontal		**QUATERNARY LANDSLIDE DEPOSIT; Qls(TQs derived) (24-30.5')** @ 24' Interbedded light-brown sandy siltstone and brown claystone; moderately hard to hard; moist	
25		8 11 7/3"	Qls (TQs)	B: N75E, 19SE			
				B: N68E, 13SE		@ 29' Light-gray silty, fine-grained sandstone; damp	
30				SP: N73E, 15SE Avg B: N66E, 14SE		@ 30' Plastic clay; soft; moist; greenish-gray; approx 1-2" thick; anastomosing parting for 6" beneath **BEDROCK; TQsl (30.5-45')** @ 30.5' Greenish-gray claystone; moderately hard to hard; moist	
				B: N63E, 16SE		@ 33' Light-gray silty, fine-grained sandstone	@ 33' crowding to 45'
35		16	TQsl	B: N70E, 11SE		@ 35' Interbedded light-gray sandy siltstone and grayish-brown claystone;	
				Apx B: N65E, 15SE		@ 36.5' Light-brown pebble conglomerate	

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Jesse)	DRILLED: 11/24/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-13W	
DRIVING WEIGHTS: 0-25'=2854 lbs; 25-47'=1802 lbs; 47-70'=1091 lbs	ELEVATION: 1242		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			TQsL				
45		16				Total Depth 45' No Ground Water No Caving	
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Jesse)	DRILLED: 11/25/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-14W	
DRIVING WEIGHTS: 0-25'=2854 lbs; 25-47'=1802 lbs; 47-70'=1091 lbs	ELEVATION: 1195		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
5		2 6 9	TQsl	Apx B: N45E, 27SE		**BEDROCK; TQsl (0-45')** @ 0' Light yellowish-brown sandy siltstone; moderately hard; dry; with interbedded silty, fine-grained sandstone lenses @ 5' Light-gray silty sandstone with gravelly lenses	
				B: N47E, 25SE			
				B: N65E, 29SE		@ 9' Light-brown sandy siltstone; moderately hard to hard	
10		4 6 10		B: N56E, 28SE		@ 11' Light-brown sandstone to pebble conglomerate; moderately hard	
				B: N68E, 25SE			
15		1 7 12		B: N68E, 26SE		@ 16' Light-brown sandy siltstone with interbedded lenses of light brown fine-grained sandstone and light-brown claystone; moderately hard to hard; damp	
				B: N61E, 31SE			
20		3 3 3		B: N72E, 25SE			
				Apx B: N61E, 22SE		@ 22.5' Light-brown to brown plastic clay; soft; moist @ 23' Light-brown pebble conglomerate; moderately hard to hard; damp	
25		10 17					
30				B: N75E, 16SE		@ 31.5' Light-brown sandy siltstone; moderately hard; damp to moist; with interbedded light-brown claystone	
				Apx B: N46E, 24SE			
35		6 7 13					

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Jesse)	DRILLED: 11/25/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-14W	
DRIVING WEIGHTS: 0-25'=2854 lbs; 25-47'=1802 lbs; 47-70'=1091 lbs	ELEVATION: 1195		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES; DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qs	B/sh: N82E, 22SE Apx B: N53E, 19SE		@ 38' Approximately 3" of light-gray to gray, moderately plastic clay; soft to moderately hard; moist; followed by light-gray silty, fine-grained sandstone with interbedded light-gray to light-brown claystone lenses; moderately hard to hard	
45	■	13 18				Total Depth 45' No Ground Water No Caving	
50							
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Jesse)	DRILLED: 12/1/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-15W	
DRIVING WEIGHTS: 0-25'=2854 lbs; 25-47'=1802 lbs; 47-70'=1091 lbs	ELEVATION: 1214		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0			S			**SOIL; s (0-1')** @ 0' Silty, clayey sand with gravel; loose; dry; brown **BEDROCK; TQsl (1-50')** @ 1' Pale yellowish-brown silty fine-grained sandstone to coarse-grained sandstone; moderately hard; dry; fractured; roots and rootlets	Bedrock highly weathered to 9'
5		6 9 9		B: N69W, 40NE 128/2.3		@ 5' Pale yellowish-brown sandy siltstone	
				f: N64W, 42SW			
				B: N68W, 55NE		@ 7.5' Light-gray sandstone	
						@ 8.5' Light-brown sandy siltstone	
10		3 5 9		B: N59W, 59NE 123/6.2		@ 10' Light-brown sandy siltstone; moderately hard; dry; with lenses of brown claystone	
			TQs	Apx B: N55W, 52NE			
15		5 15		B: N57W, 54NE		@ 15' With light-brown, discontinuous, silty fine-grained sandstone lenses; pale yellowish-brown concretions approximately 4" long and 1-2" thick @ 16.5' Light-brown sandstone; dry to damp	@ 15-20' Bulk Sample
20		7 12		Apx B: N67W, 69NE		@ 19.5' Light-brown sandy siltstone with brown claystone lenses	
				Apx B: N55W, 60NE			
25		8 13		B: N64W, 59NE		@ 24' With light-brown, fine-grained, silty sandstone lenses	
						@ 27' Interbedded with light-brown silty sandstone and sandy siltstone	
30				Apx B: N64W, 66NE			
				B: N68W, 65NE			
35		7 12		Apx B: N65W, 60NE		@ 35' Brown claystone; damp; no parting planes or striae	

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Jesse)	DRILLED: 12/1/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-15W	
DRIVING WEIGHTS: 0-25'=2854 lbs;25-47'=1802 lbs; 47-70'=1091 lbs	ELEVATION: 1214		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B: N51W, 56NE		@ 39' Light-brown pebble conglomerate	
						@ 41' Light-brown silty sandstone to sandy siltstone with brown claystone lenses	
45			TOS	Apx B: N61W, 52NE			
	■	15				@ 45' Light-brown silty sandstone	
50	■	18				Total Depth 50' No Ground Water No Caving	
55							
60							
65							
70							
75							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703W-1	**DRILL HOLE LOG**	
PROJECT: Mesas West	DATE:		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling (Jesse)	DRILLED: 12/2/03		
DRILLING METHOD: Bucket Auger	HOLE DIA: 24"		
HAMMER TYPE: Kelly Bar	AVERAGE DROP (in.): 12"	**BORING NO.** B-16W	
DRIVING WEIGHTS: 0-25'=2854 lbs; 25-47'=1802 lbs; 47-70'=1091 lbs	ELEVATION: 1202		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SOIL/SLOPEWASH; s/Qsw (0-2.5')** @ 0' Silty, clayey sand with gravel; medium dense; dry; brown	@ 0-5' Bulk Sample
			Qt			**QUATERNARY TERRACE DEPOSITS; Qt (2.5-5.5')** @ 2.5' Coarse-grained sand to gravel; medium dense; yellowish-brown; dry; cobbles	
5		3 5 5		C: Horizontal		**BEDROCK; TQsl (5.5-35')** @ 5.5' Brown, silty, gravelly sandstone; moderately hard; dry; roots and rootlets	
				Apx B: N70W, 44NE		@ 8.5' Light-gray gravelly sandstone	
10		6 10				@ 11' Light-gray pebble conglomerate; moderately hard to hard	
				B: N44W, 56NE		@ 13' Light-gray, coarse-grained sandstone; gravel lenses; medium- to light-gray concretions	
15		12	TQsl				
						@ 18' Pale light-gray concretions	@ 18' crowding
20		10 6/3"		Apx B: N66W, 56NE			
				Apx B: N56W, 47NE			
25		18		Apx B: N56W, 59NE		@ 26' Light-brown siltstone; moderately hard; damp; with brown claystone lenses	
30				B: N67W, 46NE			
						@ 32' Light-brown sandy siltstone with brown claystone lenses	
35		10 13				Total Depth 35' No Ground Water No Caving	

CLIENT: Newhall Ranch Co.	JOB NO.: 99-1703L-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch Mesas Area	DATE: 7/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/6/99		
DRILLING METHOD: Rotary Wash	HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-1M	
HAMMER TYPE: Automatic Safety	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 993		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-25')**				
		12 20 20		SM	@ 3' Silty SAND with gravel; medium dense; damp; borwn to grayish-brown	2.5	114		
5		32 42 33		SP-SM	@ 5' Poorly graded SAND with silt and gravel; dense; moist; grayish-brown	7.3	135	9	
		27 22 24			@ 8' -medium dense	9.9	110		
10		15 17 18				6.3	114	8	
15		12 17 18		SM	@ 15' Silty SAND; dense; moist; grayish-brown			24	
20		36 50			**BEDROCK; TQs (20-50')** @ 20' SANDSTONE and gravel; dense; moist; grayish-brown			7	
25		32 52/2"			@ 26.5' -very dense				
30									
35		36 50			@ 35' -dense; moist to wet; grayish-brown	7.4	113		

CLIENT: Newhall Ranch Co.	JOB NO.: 99-1703L-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch Mesas Area	DATE: 7/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/6/99		
DRILLING METHOD: Rotary Wash	HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-1M	
HAMMER TYPE: Automatic Safety	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 993		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		50			@ 40' -wet				
45		50/3"			@ 45' SILTSTONE; very dense; wet; grayish-brown				
50		47 50/5"			@ 50' SANDSTONE; very dense; wet; grayish-brown TOTAL DEPTH 50' (Elev. 943') Ground Water @ 35' No Caving				
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.		JOB NO.: 99-1703L-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch Mesas Area		DATE: 7/22/04	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 10/9/99	
DRILLING METHOD: Rotary Wash		HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-2M
HAMMER TYPE: Automatic Safety		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 987	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-25')**				
		20 20 25		SM	@ 2' Silty SAND with gravel; medium dense; damp; brown	4.4	108		
5		35 40 38			@ 4' -dense	5.0	112		Consol
		13 20 16			@ 7' -medium dense	4.2	114		
10		13 16 16		CL	@ 10' Sand lean CLAY; very stiff; moist; brown	6.4	113		LL= 31 PI= 11 Consol
15		26 38 50		SM	@ 15' Silty SAND with gravel; very dense; moist; brown			38	
20		24 32 32			@ 19' -dense	9.0	124		
25		27 50/5"			**BEDROCK; TQs (25-50')** @ 25' SANDSTONE and gravel; very dense; moist; grayish-brown				
30		35 50/5"							
35		23 40 50			@ 35' CLAYSTONE; very dense; moist to wet; olive brown	14.1	119		

CLIENT: Newhall Ranch Co.	JOB NO.: 99-1703L-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch Mesas Area	DATE: 7/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/9/99		
DRILLING METHOD: Rotary Wash	HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-2M	
HAMMER TYPE: Automatic Safety	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 987		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		50			@ 40' SANDSTONE; very dense; wet; grayish brown				
45		50							
50		34 36 37			TOTAL DEPTH 50' (Elev. 937') Ground Water @ 35' No Caving				
55									
60									
65									
70									
75									

DRILL HOLE LOG

CLIENT:	Newhall Ranch Co.	JOB NO.:	99-1703L-1
PROJECT:	Newhall Ranch Mesas Area	DATE:	7/22/04
		LOGGED BY:	MAS
DRILLING COMPANY:	Valley Well Drilling	DRILLED:	10/7/99
DRILLING METHOD:	Rotary Wash	HOLE DIA:	5 1/2" O.D.
HAMMER TYPE:	Automatic Safety	AVERAGE DROP (in.):	30"
DRIVING WEIGHTS:	140 lbs	ELEVATION	1068

BORING NO. RW-3M

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-30')**			7	
		17 13 10		SW-SM	@ 3' Well graded SAND with silt and gravel; medium dense; moist; grayish-brown				
5		7 10 15		SW	@ 5' Well graded SAND with gravel; medium dense; moist; grayish-brown	8.5	117	4	Consol
		12 20 18		SM	@ 8' Silty SAND with gravel; medium dense; moist; grayish-brown	11.1	119	31	Consol
10		10 15 25		SP-SM	@ 11' Poorly graded SAND with silt and gravel; medium dense; moist; grayish-brown	5.5	122		
15		12 21 22		SM	@ 15' Silty SAND with gravel; medium dense; moist; grayish-brown			33	
20		17 37 34			@ 20' -very dense			21	
25		10 17 20		CL-ML	@ 25' Sandy, silty CLAY with gravel; hard; moist; brown			51	LL= 27 PI= 7 % -5 micron= 10
30		17 50			**BEDROCK; TQs (30-50')** @ 30' SANDSTONE; dense; moist to wet; grayish-brown @ 32' -wet				
35		12 50			@ 35' -very dense				

CLIENT: Newhall Ranch Co.		JOB NO.: 99-1703L-1	**DRILL HOLE LOG**
PROJECT: Newhall Ranch Mesas Area		DATE: 7/22/04	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 10/7/99	
DRILLING METHOD: Rotary Wash		HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-3M
HAMMER TYPE: Automatic Safety		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 1068	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		50							
45		50			@ 45' SILTSTONE; very dense; wet; brown				
50		27 34 50/5"			@ 50' CLAYSTONE; hard; wet; yellowish-brown TOTAL DEPTH 50' (Elev. 1018) No Caving Ground Water @ 32'				
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: KPC		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/21/03		
DRILLING METHOD: Rotary Wash	HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-1T	
HAMMER TYPE: Safety Drive	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs.	ELEVATION 999'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-38')**				
		7 8 15		CL-ML	@ 3' Silty CLAY; stiff; damp; grayish brown; caliche and voids	7.7	107		
5		20 35 50/3"		CL	@ 6' Lean CLAY with sand and gravel; hard; damp; orangish to grayish brown; some small cobbles and voids	6.6	121		
		27 24 50/5"		SP-SM	@ 9' Poorly graded SAND with silt and gravel; very dense; damp; yellowish brown	5.7	123		
10		23 35 25		SP	@ 12' Poorly graded SAND with gravel; very dense; moist; yellowish brown	9.4			
15		10 10 14		SP-SC	@ 15' Poorly graded SAND with clay; medium dense; slightly moist; grayish brown	14.1			
20		6 7 11		CL	@ 20' Lean CLAY with gravel; stiff; slightly moist; gray	23.3	105		Consol
25		10 24 48		GC CL	@ 25' Clayey GRAVEL; medium dense; slightly moist; gray @ 25.5' Sandy lean CLAY; hard; slightly moist; gray	13.9	117		
30		5 6 10			@ 30' -very stiff	27.6			LL= 35 PI= 16
35		30 27 29		SP-SM	@ 35' Poorly graded SAND with silt and gravel; dense; moist; orangish brown	15.3	112		
		32 50		GM	@ 38' Silty GRAVEL; very dense; moist; grayish brown	11.2			

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: KPC		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/21/03		
DRILLING METHOD: Rotary Wash	HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-1T	
HAMMER TYPE: Safety Drive	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs.	ELEVATION 999'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40					Total depth 38' Ground Water @ 15'				
45									
50									
55									
60									
65									
70									
75									

DRILL HOLE LOG

CLIENT:	Newhall Ranch Co.	JOB NO.:	1703E-1
PROJECT:	Mesas East	DATE:	07/22/04
		LOGGED BY:	KPC
DRILLING COMPANY:	Valley Well Drilling	DRILLED:	10/21/03
DRILLING METHOD:	Rotary Wash	HOLE DIA:	5 1/2" O.D.
HAMMER TYPE:	Safety Drive	AVERAGE DROP (in.):	30"
DRIVING WEIGHTS:	140 lbs.	ELEVATION	1037'

BORING NO. RW-2T

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-35')**				
		18 16 24		SM	@ 3' Silty SAND with gravel; medium dense; damp; yellowish to grayish brown	3.3	122		
5		30 50/5"			@ 6' -dense	4.2	129		
		35 50		SP-SM	@ 9' Poorly graded SAND with silt; very dense; damp; yellowish to grayish brown	10.0			
10					@ 12' -no recovery				
15		30 50			@ 15' -with gravel; damp to moist; grayish brown	7.2	124		
20		30 50				7.1			
25		10 20 30		SP	@ 25' Poorly graded SAND; dense to very dense; damp to moist; grayish to yellowish brown	3.1			
30		26 29/2" 29/2"			@ 30' -very dense	5.1			
35		17 24 36				5.0			
					Total depth 35' Ground Water @ 14.5'				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: KPC		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/22/03		
DRILLING METHOD: Rotary Wash	HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-3T	
HAMMER TYPE: Safety Drive	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs.	ELEVATION 1051'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-40')** @ 0-5' Bulk Sample				
		5 4 3		SM	@ 3' Silty SAND; loose; damp; yellowish brown	8.8			
5		7 4 2		SP-SM	@ 6' Poorly graded SAND with silt and gravel; loose; damp; yellowish brown; partial recovery	9.0			
		7 4 9		SC	@ 9' Clayey SAND; medium dense; damp to moist; yellowish brown	10.8			
10		11 12 12		SP-SM	@ 12' Poorly graded SAND with silt; medium dense; damp; yellowish to grayish brown; sandy clay lenses at 13.5 ft	17.9	112		
15		15 14 21		SC	@ 15' Clayey SAND with cobbles; dense; slightly moist; yellowish brown	10.0			
20		12 13 25		CL	@ 20' Sandy lean CLAY with gravel; hard; moist; yellowish brown	18.9			
25		8 16 22		SC	@ 25' Clayey SAND; dense; moist; yellowish brown	12.7	124		
30		50/5"			@ 30' -no recovery				
		22 50/5"		GP-SP	@ 33' Poorly graded SAND interbedded with poorly graded GRAVEL; very dense; moist; light gray	6.0			
35		30 50/4"				7.8			

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: KPC		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/22/03		
DRILLING METHOD: Rotary Wash	HOLE DIA: 5 1/2" O.D.	**BORING NO.** RW-3T	
HAMMER TYPE: Safety Drive	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs.	ELEVATION 1051'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		8 16 46		SP	@ 40' Poorly graded SAND; very dense; moist; grayish brown	6.7			
					Total Depth 40' Ground Water @ 21'				
45									
50									
55									
60									
65									
70									
75									

KEY TO SYMBOLS

Symbol	Description
	UNITED SOIL CLASSIFICATION SYMBOLS
	Poorly graded sand
	Silty sand
	Silty lean clay
	Blank
	Clayey sand
	Silty clayey sand
	Lean clay
	Poorly graded sand with silt
	Poorly graded sand with clay
	Silt
	Poorly graded gravel
	Silty gravel
	Clayey gravel
	Silty clayey gravel
	Fat clay

Symbol	Description
	Poorly graded gravel and sand
	GROUND WATER DATA
	GROUND WATER WHILE DRILLING
	SAMPLE TYPE
	CALIFORNIA DRIVE SAMPLE 2.42" I.D. sampler
	No Recovery
	STANDARD PENETRATION TEST Split barrel sampler in accordance with ASTM D-1558 Standard Test Method

Notes:

1. These logs are subject to the limitations, conclusions, and recommendations in this report.

2. Results of tests conducted on samples recovered are reported on the logs.

DRILL HOLE LOG

BORING NO. HS-4

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1151 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ARTIFICIAL FILL; af? (0 - 5 Ft.)	Excavated and logged on 3/15/00
		1 36 50		118.6/8.6	SM	@ 2' Silty sand with gravel, dense, damp, light yellowish-brown	@ 0-3' Bulk Sample
5		28 50		122.6/10.6	SC	QUATERNARY ALLUVIUM; Qal (5 - 25 Ft.) @ 5' Clayey sand with gravel, dense, moist, brown	
		9 8 9		107.0/10.3	SM	@ 8' Silty sand, loose, moist, light yellowish-brown	% fines=39.0
10		9 18 36		115.3/4.8		@ 11' - with gravel and medium dense	% fines=18.7
				103.1/2.9			@ 13-15' Bulk Sample
15		12 22 15				@ 15' - with gravel and medium dense	
20		5 8 19		119.9/5.7		@ 20' - medium dense	% fines=16.3
25		48 50/ 5"			SP-SM	QUATERNARY TERRACE; Qt (25 - 30 Ft.) @ 25' Poorly graded sand with silt and gravel, very dense, moist, yellowish-brown	@ 25-30' Bulk Sample
30		58 56/ 2"				TOTAL DEPTH 30 Ft. (Elev. 1121) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-5

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1180 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 12 Ft.)	Excavated and logged on 3/21/00
		3 5 7		109.1/5.0	SM	@ 2' Silty sand, loose, moist, light brown	@ 0-2' Bulk Sample
5		15 18 25		112.0/4.4		@ 5' - medium dense	
		15 19 32		110.1/6.7		@ 8' - medium dense and yellowish-brown	@ 8-11' Bulk Sample
10		50/ 6"					@ 11' No recovery
		50/ 6"		105.0/9.1		QUARTERNARY TERRANCE; Qt (12 - 20 Ft.) @ 12' - very dense, yellowish-brown	
15		31 50/ 4"		94.3/14.8	CL	@ 15' Lean clay, hard, moist, yellowish-brown	@ 15-20' Bulk Sample
		18 46 50/ 4"					
20		33 38 50/ 6"				@ 20' - sandy TOTAL DEPTH 20 Ft. (Elev. 1160) No Ground Water No Caving	
25							
30							
35							

DRILL HOLE LOG

BORING NO. HS-6

PROJECT: Valencia Company — **JOB NO.:** 00-1729-1
Magic Mountain Entertainment — **DATE:** 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — **AVERAGE DROP (in.):** 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1184 — **LOGGED BY:** MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
		3 6 9		98.5/2.9	SM	@ 2' Silty sand, loose, damp, light yellowish-brown	
5		6 7 14		98.9/2.2		@ 5' - medium dense	
		15 21 35		110.2/3.3		@ 8' - dense	
10		5 29 32		106.0/2.9	SW-SM	@ 11' Well graded sand with silt, dense, moist, light yellowish-brown	@ 11-15' Bul Sample % fines=9.2
15		25 27 27		108.8/2.7		@ 15' - medium dense	
20		15 17 19		107.2/4.4	SM	@ 20' Silty sand, medium dense, moist, light yellowish-brown	
25		28 40 50/4"				@ 25' - with gravel and very dense	
30		24 32 36				@ 30' - with gravel and dense TOTAL DEPTH 30 Ft. (Elev. 1154) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-8

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1160 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
						@ 6" Top Soil, silty, soft, moist, brown with roots and grass	
		5 6 12		93.2/7.5	CL	@ 2' Sandy clay, stiff, damp, light yellowish-brown	@ 0-5' Mixed Bulk Sample
5							
		13 6 9		98.3/4.3	SM-SC	@ 5' Clayey, silty sand, loose, moist, yellowish-brown	
		15 27 27		101.7/3.9		@ 8' - medium dense	@ 8' Rock
10							
		5 6 8		99.3/7.7			
15							
		8 8 8		112.5/8.9			@ 15-18' Bulk Sample
20							
		9 9 9		109.9/4.8	SM	@ 20' Silty sand with gravel, loose, moist, yellowish-brown	% fines=17.0
25							
		15 7 8			SM	@ 25' - medium dense	% fines=14.8
30							
		19 28 40			CL	BEDROCK?; TQs? (30 Ft.) @ 30' Lean clay, hard, moist, light yellow TOTAL DEPTH 30 Ft. (Elev. 1130) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-10

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1219 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
1						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
		2 2 2		107.7/7.8	SM	@ 2' Silty sand with gravel, loose, moist, light brown	
5		8 11 25		108.2/3.5		@ 5' - less gravel and medium dense	
		11 13 11		107.9/5.3		@ 8' - less gravel and medium dense	
10		17 22 34		110.1/4.1		@ 11' - dense	% fines=19.8
15		31 36 50/ 6"					@ 15' No Recovery
		13 25 40		103.1/7.6		@ 16.5' - dense, light yellowish-brown	
20		50/ 4"					@ 20' No Recovery
		50/ 4"		110.3/2.5	SP-SM	@ 21' Poorly graded sand with silt and gravel, very dense, moist, light yellowish-brown	
		48 50/ 5"					
25		32 36 50/ 5"					
30		50			SM	@ 30' Silty sand wtih gravel, very dense, moist, yellowish-brown	
						TOTAL DEPTH 30 Ft. (Elev. 1189) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-11

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1176 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
0						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
		13 16 17		91.8/3.8	SP	@ 2' Poorly graded sand, medium dense, damp, light yellowish-brown	@ 0-5' Bulk Sample
5		7 8 32		105.7/4.1		@ 5' - with some gravel	@ 5' Bulk Sample % fines=3.9
		50/ 6"		104.4/5.5	SM	@ 9' Silty sand, dense, damp, yellowish-brown	% fines=21.9
10		12 20 47					@ 11' No Recovery
		24 50/ 6"		113.8/1.9	SW	@ 13' Well graded sand with gravel, dense, damp, yellowish-brown	
15		50/ 6"		110.0/2.3	SW- SM	@ 15' Well graded sand with silt and gravel, dense, damp, yellowish-brown	110.0/2.3
20		15 16 17		102.8/6.7	SM	@ 20' Silty sand, medium dense, moist, yellowish-brown	% fines=33.0
25		17 21 17				@ 25' - with gravel	@ 25-30' Bulk Sample
30		17 20 21				@ 30' - with gravel TOTAL DEPTH 30 Ft. (Elev. 1146) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-12

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1163 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
1						QUATERNARY ALLUVIUM; Qal (0 - 8 Ft.)	Excavated and logged on 3/21/00
		3 3 6		112.3/6.6	SM	@ 2' Silty sand with gravel, loose, moist, yellowish-brown	@ 0-5' Bulk Sample
5		12 13 15		109.6/3.6		@ 5' - medium dense, damp, light yellowish-brown	
		18 32 21		124.2/2.8		BEDROCK; TQs (8 - 30 Ft.) @ 8' - medium dense	
10		36 22 30		116.1/3.3		@ 12' - medium dense	
15		33 28 30		116.6/2.8		@ 15' - dense	@ 17-20' Bulk Sample
20		30 20 17		107.0/5.0		@ 20' - medium dense	
25		30 42 42			SP-SM	@ 25' Poorly graded sand with silt and gravel, very dense, damp, light yellowish-brown	
30		50/5"				TOTAL DEPTH 30 Ft. (Elev. 1133) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-13

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1085 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ARTIFICIAL FILL; af (0 - 5 Ft.)	@ 0-2' Bulk Sample
		50/5"		113.1/4.1			@ 2' No Recovery
		11 13 15			SM	@ 3' Silty sand, medium dense, moist, light brown	
5		13 8 9		97.5/11.0		QUATERNARY ALLUVIUM; Qal (5 - 23 Ft.)	% fines=12.5
		5 4 7		102.0/12.2	CL	@ 8' Sandy clay, stiff, moist, brown	% fines=65.6
10							
		5 7 12		91.0/22.9		@ 11' - less sand and very stiff	@ 11-15' Bulk Sample
15		7 6 7		104.5/6.8	SC	@ 15' Clayey sand with gravel, loose, moist, light reddish-brown	% fines=34.5
20		16 21 31		122.1/10.2		@ 20' - medium dense	@ 20-23' Bulk Sample
		27 44 50				QUATERNARY TERRACE; Qt/TQs?, (23 - 25 Ft.) @ 23' - very dense	@ 23' may be TQs
25		13 40 50/4				@ 25' - very dense	
						TOTAL DEPTH 25 Ft. (Elev. 1060) No Ground Water No Caving	
30							
35							

DRILL HOLE LOG

BORING NO. HS-12I

PROJECT: Newhall Ranch Infrastructure — JOB NO.: 00-115SI-1 — DATE:

DRILLING COMPANY/DRILLER: Valley Well Drilling

METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow Stem Auger

HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"

DRIVING WEIGHTS: 140 lbs.

ELEVATION: 1105 — LOGGED BY: DGG

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 25 Ft.)	Drilled and logged on 5/24/00
		3 4 6			SM	@ 2' Silty sand; loose; damp; medium brown	
5		17 15 12		119/3.0	SW-SM	@ 5' Well-graded sand sith silt; medium dense; damp; light brown to light orange	% fines=8
		26 25 24					
10		6 22 23		114/3.3	SP-SM	@ 11' Poorly graded sand with silt; medium dense; damp; light brown	% fines=11
15		16 15 14				@ 15' - with gravel	% fines=12
20		17 27 25				@ 20' - very dense	@ 20' Cobble in tip
25		33 50			SM	@ 25' Silty sand; very dense; damp; yellowish-gray	% fines=41
						TOTAL DEPTH 25 Ft. (Elev. 1080) No Ground Water No Caving	
30							
35							

DRILL HOLE LOG

BORING NO. HS-14I

PROJECT: Newhall Ranch Infrastructure — JOB NO.: 00-1155I-1 — DATE:

DRILLING COMPANY/DRILLER: Valley Well Drilling

METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow Stem Auger

HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"

DRIVING WEIGHTS: 140 lbs.

ELEVATION: 1248 — LOGGED BY: DGG

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 25 Ft.)	Drilled and logged on 5/24/00
		8 5 5			SM	@ 3' Silty sand; loose; damp; medium to darkish-brown	
5		8 12 12		115/2.6	SP-SM	@ 5' Poorly graded sand with silt; medium dense; damp; medium brown	% fines=12
		16 17 23		118/2.7		@ 8' - orangish-gray	
10		17 25 32		123/2.6		@ 11' - dense; orangish-gray	% fines=5
15		12 18 19					% fines=10
20		19 34 34			SM	@ 20' Silty sand; very dense; damp; medium brown	
25		40 50				@ 25' - light orangish-brown TOTAL DEPTH 25 Ft. (Elev. 1223) No Ground Water No Caving	
30							
35							

CLIENT: Newhall Ranch Co.
PROJECT: Mesas East
DRILLING COMPANY: Valley Well Drilling
DRILLING METHOD: Hollow-Stem
HAMMER TYPE: Automatic Safety Hammer
DRIVING WEIGHTS: 140 lbs

JOB NO.: 1703E-1
DATE: 07/22/04
LOGGED BY: MAS
DRILLED: 10/24/03
HOLE DIA: 8" O.D.
AVERAGE DROP (in.): 30"
ELEVATION: 1269'

DRILL HOLE LOG

BORING NO. HS-1T

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-7')**				
		9 11 11		SP	@ 2' Poorly graded SAND; medium dense; dry; light gray to light brown	1.7	118		
5		7 10 10		ML	@ 5' Sandy SILT; stiff; damp; light brown	2.5	117	63	
					QUATERNARY ALLUVIUM; Qal (7-25')				
10		1 4 4		CL-ML	@ 10' Silty CLAY; soft to firm; damp; brown to dark brown	14.8	99		Consol
15		12 17 22		SP	@ 15' Poorly graded SAND with gravel; medium dense; damp; light gray to light brown	1.5	124		
20		29 44 49			@ 20' -no recovery				
		19 22 26		SM	@ 22' Silty SAND; medium dense; damp to moist; light yellowish brown	3.7	111		
25		12 14 26			**BEDROCK; TQs (25')** @ 25' Silty SANDSTONE; medium dense; moist; light brown	10.0	113		
					Total Depth 25' No Ground Water				
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 11/4/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-2T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1245'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-34')**				
		12 19 22		SM	@ 2' Silty SAND; medium dense; dry to damp; light brown; pinhole voids	4.5	103		
5		11 21 30		SC	@ 5' Clayey SAND with gravel; medium dense; dry to damp; light brown	2.7	114		
10		13 26 31		SP	@ 10' Poorly graded SAND; dense; damp; light gray	1.3	124		
15		32 50/5"			@ 15' -no recovery				
20		36 50/5"			@ 20' -no recovery				
25		10 14 17		SM-SC	@ 25' Silty, clayey SAND; medium dense; moist; brown	5.4	123	30	
30		12 23 23				3.8	129		
35		25 50/5"			**BEDROCK; TQs (34-45')** @ 35' Silty, clayey SANDSTONE; very dense; moist; light brown				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 11/4/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-2T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1245'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		45 50/4"							
45		50			@ 45' -light yellowish brown				
					Total Depth 45' No Ground Water Caving @ 10-25'				
50									
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/24/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-3T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1287'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-10')**				
		6 7 8		CL-ML	@ 2' Sandy, silty CLAY; firm to stiff; damp to moist; brown to dark brown	5.6	110		
5		5 9 12		CL	@ 5' Sandy lean CLAY with gravel; stiff; damp to moist; brown to dark brown	7.0	105		Consol
10		5 15 22		SM	**QUATERNARY ALLUVIUM; Qal (10-42')** @ 10' Silty SAND; medium dense; damp; gray to brown	2.9	110		
15		8 12 16		SC	@ 15' Clayey SAND; medium dense; damp; gray to brown	4.8	110	46	
20		9 14 20				4.5	113		
25		6 12 16		SM-SC	@ 25' Silty, clayey SAND; medium dense; damp; light brown	10.4	112	48	
30		5 5 5		CL	@ 30' Silty CLAY with sand; firm; moist; mottled brown	14.0	99	69	Consol
35		6 9 29			@ 35' Silty CLAY; very stiff; moist; brown to dark brown	14.2	99		Consol

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/24/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-3T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1287'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		50/5"			@ 40' -no recovery				
		50/5"			@ 42' -no recovery				
					Total Depth 42' No Ground Water				
45									
50									
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/24/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-4T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1233'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-10')**				
		5 3 2		SC	@ 2.5' Clayey SAND with gravel; loose; moist; brown	4.2		31	
5		1 1 1				7.2		47	
		2 2 3		SM	@ 7.5 Silty SAND with gravel; loose; moist; brown to light brown	5.4		38	
10		5 4 4		CL	**QUATERNARY ALLUVIUM; Qal (10-35')** @ 10' Sandy lean CLAY; firm; moist; brown	7.5		51	
		24 25 17		SM	@ 12.5' -no recovery	0.7		19	
15		10 14 13			@ 15' Silty SAND; medium dense; moist; light brown to light gray	3.2		20	
		9 14 14			@ 17.5' -with gravel; damp; light gray	3.1		17	
20		8 11 15		SC	@ 20' -moist; light brown	6.3		40	
		7 12 18		SM	@ 22.5' -dense; damp; light gray	3.1		18	
25		15 28 32		SP-SM	@ 25' Poorly graded SAND with silt and gravel; very dense; damp; light gray	1.2		8	
		7 8 15		SM	@ 27.5' Silty SAND with gravel; medium dense; damp; light brown	4.5		29	
30		8 12 17		CL	@ 30' Sandy lean CLAY; very stiff; moist; light brown	9.8		60	
		10 24 25		SP-SM	@ 32.5' Poorly graded SAND with silt and gravel; dense; damp; light brown	1.9		10	
35		16 38 50/5"			@ 35' -very dense	1.4		8	
					Total Depth 35' No Ground Water				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/24/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-5T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1200'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-20')**				
		9 13 15		SP	@ 2' Poorly graded SAND with gravel; medium dense; dry; light gray	0.8	112		
5		6 13 24				1.4	120		
10		12 19 21				1.4	122		
15		16 27 27			@ 15' Poorly graded SAND with silt and gravel; dense; damp; light gray	3.0	116		
20		15 32 38			Total Depth 20' No Ground Water	2.9	120		
25									
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/27/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-6T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1248'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY TERRACE; Qt (0-15')**				
		29 50/5"		SC	@ 2' Clayey SAND; dense to very dense; damp; reddish brown	7.1	120		
5		29 50				4.3	120		
10		17 23 25			@ 10' -with gravel; medium dense; light brownish yellow	5.2	118		
15		26 28 39		SP-SM	@ 15' Poorly graded SAND with silt; dense; dry; light brownish yellow	2.8	122		
					Total Depth 15' No Ground Water				
20									
25									
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/27/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-7T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1190'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY TERRACE; Qt (0-10')**				
		27 50		SC	@ 2' Clayey SAND; very dense; damp; reddish brown	3.8	127		
5		20 50		SM-SC	@ 5' Silty, clayey SAND; very dense; damp; reddish brown	5.2	116		
10		14 18 38		SM	@ 10' Silty SAND with gravel; dense; damp; yellowish brown	6.5	120		
					Total Depth 10' No Ground Water				
15									
20									
25									
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/27/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-8T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1059'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-5')**				
		10 15 17		SM	@ 2' Silty SAND; medium dense; dry; brown; pinhole voids	3.0	117		
5		10 13 17			**QUATERNARY ALLUVIUM; Qal (5-48')** @ 5' Silty SAND; medium dense; dry; brown	3.8	119		
10		11 26 37			@ 10' -dense; damp; no voids	4.3	116	31	
15		10 15 19		SP-SM	@ 15' Poorly graded SAND with silt and gravel; dense; dry; brown	2.2	115		
20		11 12 13		SM	@ 20' Silty SAND with gravel; medium dense; damp; light brown	7.5	112	50	
25		25 33 40		SP-SM	@ 25' Poorly graded SAND with silt and gravel; dense; damp; light brown to light yellowish brown	3.0	112		
30		11 13 18			@ 30' -medium dense; light brown	7.1	112		
35		50/5"			@ 35' -no recovery				

CLIENT: Newhall Ranch Co.
PROJECT: Mesas East
DRILLING COMPANY: Valley Well Drilling
DRILLING METHOD: Hollow-Stem
HAMMER TYPE: Automatic Safety Hammer
DRIVING WEIGHTS: 140 lbs

JOB NO.: 1703E-1
DATE: 07/22/04
LOGGED BY: MAS
DRILLED: 10/27/03
HOLE DIA: 8" O.D.
AVERAGE DROP (in.): 30"
ELEVATION: 1059'

DRILL HOLE LOG

BORING NO. HS-8T

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		50			@ 40' -no recovery				
		50/5"		SM	@ 42' Silty SAND; dense; wet; light brown; rock in tip				
45		50/5"			@ 45' -no recovery				
					@ 48' -refusal				
50					Total Depth 47' Ground Water @ 40' Caving @ 40-47' Sloughing from 40-48'				
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/27/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-9T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1093'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-50')**				
		2 2 4		SM	@ 2' Silty SAND with gravel; very loose; damp; brown	4.3	115		
5		3 6 6			@ 5' -loose	6.7	118		
10		3 6 17			@ 10' -medium dense; moist	10.8	121		
15		5 5 7		SP-SM	@ 15' Poorly graded SAND with silt; loose; damp; brown	6.9	112		
20		5 7 14		SM	@ 20' Silty SAND; medium dense; moist; brown	9.5	114		
25		8 18 13		SP-SM	@ 25' Poorly graded SAND with silt and gravel; medium dense; damp; brown	3.9	116		
30		8 14 25			@ 30' -moist; light brown				
35		28 42 50			@ 35' -very dense; light gray				

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East

DRILLING COMPANY: Valley Well Drilling

DRILLING METHOD: Hollow-Stem

HAMMER TYPE: Automatic Safety Hammer

DRIVING WEIGHTS: 140 lbs

JOB NO.: 1703E-1

DATE: 07/22/04

LOGGED BY: MAS

DRILLED: 10/27/03

HOLE DIA: 8" O.D.

AVERAGE DROP (in.): 30"

ELEVATION 1093'

DRILL HOLE LOG

BORING NO. HS-9T

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40	■	47 50				3.2	118		
45	⧅	39 50			@ 45' -no recovery				
50	⧅	50			@ 50' -no recovery Total Depth 50' No Ground Water				
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/28/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-10T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1074'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-50')**				
		1 2 2		CL	@ 2' Sandy lean CLAY with gravel; soft; damp; brown	5.3		55	
5		1 2 3			@ 5' -firm; moist	12.6		66	
		3 4 4			@ 7.5' -light brown	10.7		55	
10		3 7 5		SM	@ 10' Silty SAND with gravel; medium dense; damp; light yellowish brown	3.3		13	
		4 6 3			@ 12.5' -loose	3.5		18	
15		1 2 3		CL	@ 15' Sandy lean CLAY; firm; moist; light brown	12.6		61	
		3 7 14		SP	@ 17.5' Poorly graded SAND with silt and gravel; medium dense; moist; light gray	2.4		9	
20		9 11 9			@ 20' -no gravel; damp; light gray to light brown	2.1		6	
		13 15 10			@ 22.5' -with gravel; light brown	2.5		8	
25		7 13 22		SC	@ 25' Clayey SAND; dense; moist; light gray to light brown	10.1		41	
		16 19 28		SM	@ 27.5' Silty SAND with gravel; dense; damp; light gray to light brown	6.5		28	
30		9 16 24				6.4		24	
		16 30 39		SP	@ 32.5' Poorly graded SAND with silt and gravel; very dense; wet; light gray to light brown	27.6		12	
35		44 54			@ 35' -damp; gray	2.2		6	
		50				2.6		10	

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East

DRILLING COMPANY: Valley Well Drilling

DRILLING METHOD: Hollow-Stem

HAMMER TYPE: Automatic Safety Hammer

DRIVING WEIGHTS: 140 lbs

JOB NO.: 1703E-1

DATE: 07/22/04

LOGGED BY: MAS

DRILLED: 10/28/03

HOLE DIA: 8" O.D.

AVERAGE DROP (in.): 30"

ELEVATION 1074'

DRILL HOLE LOG

BORING NO. HS-10T

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		36 50/3"		SM	@ 40' Silty SAND; very dense; damp; gray	7.0		15	
		40 50/5"		SP-SM	@ 42.5' Poorly graded SAND with silt and gravel; very dense; wet; gray	12.3		9	
45		40 50/3"				12.4		8	
		40 50/5"				12.6		8	
50		40 50/1"				14.2		11	
					Total Depth 50' Ground Water @ 42.5'				
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/28/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-11T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1277'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-5')**				
		7 8 12		CL	@ 2' Sandy lean CLAY; stiff; moist; light brown	10.6	119		
5		13 15 17		SC	**QUATERNARY ALLUVIUM; Qal (5-30')** @ 5' Clayey SAND; medium dense; moist; light brown	5.7	120		
10		14 19 18		CL	@ 10' Lean CLAY with sand; very stiff; moist; light brown	11.2	113	72	
15		11 15 20			@ 15' -with gravel	9.9	123		
20		8 12 13		CL-ML	@ 20' Sandy, silty CLAY with gravel; stiff; moist; light brown	6.1	113		
25		6 10 11		SC	@ 25' Clayey SAND; medium dense; moist; light brown @ 27' -hard drilling, possible TQs	7.5	121		
30		15 31 50/4"			**BEDROCK; TQs (30')** @ 30' Poorly graded SANDSTONE with clay; very dense; moist; light brown to light gray				
35					Total Depth 30' No Ground Water				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/28/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-12T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1277'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af, (0-5')**				
	■	8 8 11		SM	@ 2' Silty SAND with gravel; medium dense; dry; light brown; very friable	1.0	109		Consol
5	■	14 20 30			**QUATERNARY ALLUVIUM; Qal, (5-20')** @ 5' Silty SAND with gravel; medium dense; dry; light yellow to yellowish brown	1.0	126		
10	■	19 21 17				1.7	121		
15	■	13 21 40			@ 15' -dense; damp; light brown; pinhole voids				
20	■	16 25 27			@ 20' -medium dense; light brownish yellow				
					Total Depth 20' No Ground Water				
25									
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/29/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-13T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (In.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1174'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-8')**				
		6 7 9		SM	@ 2' Silty SAND with gravel; loose; damp; brown	2.9	119		
5		9 13 25			@ 5' -medium dense	2.4	114		
				SP-SM	**QUATERNARY ALLUVIUM; Qal (8-29')**				
10		25 50/5"			@ 10' Poorly graded SAND with silt and gravel; dense; damp; light yellowish brown	1.9	119		
15		50			@ 15' -very dense	2.5	105		
20		10 12 15		SP	@ 20' Poorly graded SAND with gravel; medium dense; damp; light yellowish brown	3.0	119		
25		6 9 13		SC	@ 25' Clayey SAND with gravel; medium dense; moist; light yellowish brown	7.4	123		
					BEDROCK; TQs (29-40')				
30		20 33 17			@ 30' Poorly graded SANDSTONE with silt and gravel; medium dense; moist; weathered	3.2	121		
35		50			@ 35' -very dense				

LIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
ING COMPANY: Valley Well Drilling	DRILLED: 10/29/03		
ING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-13T	
AMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
RIVING WEIGHTS: 140 lbs	ELEVATION 1174'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		32 39 50/5"			@ 40' Sandy SILTSTONE; hard; moist; light greenish gray to reddish brown along fractures Total Depth 40' No Ground Water				
45									
50									
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/29/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-14T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1121'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-7')** @ 0-20' Bulk Sample				
		7 10 11		SM	@ 2' Silty SAND; medium dense; damp; light brown; pinhole voids and rootlets	3.4	114		
5		6 6 12			@ 5' -loose	3.8	114		
					QUATERNARY ALLUVIUM; Qal (7-33')				
10		12 18 12		SP	@ 10' Poorly graded SAND with silt and gravel; medium dense; damp; light brown	1.4	120		
15		12 15 39			@ 15' Poorly graded SAND with gravel; medium dense; damp; light yellowish brown	0.9	128		
20		12 19 28							
25		33 50			@ 25' -very dense				
30		35 50/5"							
					BEDROCK; TQs (33-40')				
35		26 38 50/3"			@ 35' Silty SANDSTONE; very dense; moist; light brown				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/29/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-14T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1121'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		50			Total Depth 40' No Ground Water				
45									
50									
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/29/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-15T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1149'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL/QUATERNARY ALLUVIUM; af/Qal(0-19)'**				
		7 10 13		SM	@ 2' Silty SAND; medium dense; damp; light brown	4.3	119		
5		5 6 10			@ 5' -loose	2.5	115		
10		4 7 11				6.5	118	43	
15		7 17 34		SP-SC	@ 15' Poorly graded SAND with clay; medium dense; damp; light brown	7.9	123		
					BEDROCK; TQs (19-25')				
20		19 50			@ 20' Sandy MUDSTONE; hard; damp; light brown	15.7	115		
25		37 50/3"			@ 25' Sandy MUDSTONE; hard; moist; light brown				
					Total Depth 25' No Ground Water				
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/30/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-16T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1203'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-10')**				
		10 13 13		CL-ML	@ 2' Sandy, silty CLAY; stiff; moist; light brown; weathered	9.0	113		
5		7 9 15			@ 5' Sandy lean CLAY; stiff; moist; light brown	8.4	113		
10		3 6 7		CL	**QUATERNARY ALLUVIUM; Qal (10-23')** @ 10' Lean CLAY with sand; firm; moist; light brown; weathered; pinhole voids	7.7	101	80	Consol
15		4 5 8				12.1	106		Consol
20		21 28 50		SC	@ 20' Clayey SAND; dense; damp; light brown @ 23' -refusal				
25					Total Depth 23' No Ground Water				
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/30/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-17T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1205'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-11')**				
		2 10 11		CL-ML	@ 2' Silty CLAY; stiff; moist; light brown	14.5	105	94	Consol
5		5 8 18				5.2	108		
10		16 6 5		CL	**QUATERNARY ALLUVIUM; Qal (11-13')** @ 10' Sandy lean CLAY; firm; moist; light yellowish brown	7.7	105	56	Consol
					BEDROCK; TQs (13-20')				
15		19 50			@ 15' MUDSTONE; hard; moist; light brown				
20		29 50/5"			Total Depth 20' No Ground Water				
25									
30									
35									

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East

DRILLING COMPANY: Valley Well Drilling

DRILLING METHOD: Hollow-Stem

HAMMER TYPE: Automatic Safety Hammer

DRIVING WEIGHTS: 140 lbs

JOB NO.: 1703E-1

DATE: 07/22/04

LOGGED BY: MAS

DRILLED: 10/30/03

HOLE DIA: 8" O.D.

AVERAGE DROP (in.): 30"

ELEVATION: 1265'

DRILL HOLE LOG

BORING NO. HS-18T

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-5')**				
		28 50		SM	@ 2' Silty SAND; dense; damp; light yellowish brown	6.2	128		
5		29 50/5"			**BEDROCK; TQs (5-10')** @ 5' Sandy MUDSTONE; hard; damp; light yellowish brown	12.6	124		
10		27 50/5"			Total Depth 10' No Ground Water				
15									
20									
25									
30									
35									

CLIENT: Newhall Ranch Co.		JOB NO.: 1703E-1	**DRILL HOLE LOG**
PROJECT: Mesas East		DATE: 07/22/04	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 10/30/03	
DRILLING METHOD: Hollow-Stem		HOLE DIA: 8" O.D.	**BORING NO.** HS-19T
HAMMER TYPE: Automatic Safety Hammer		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 1262'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-10')**				
		2 3 4		CL	@ 2' Lean CLAY with sand; soft; damp to moist; brown	9.9	108		
5		5 8 11			@ 5' -stiff	10.5	112	79	
10		5 6 9		SC	**QUATERNARY ALLUVIUM; Qal (10-15')** @ 10' Clayey SAND with gravel; loose; moist; light brown; pinhole voids	4.3	120		
15		29 50			**BEDROCK; TQs (15-20')** @ 15' Sandy SILTSTONE; hard; moist; light brown	6.3	128		
20		34 50/3"			Total Depth 20' No Ground Water				
25									
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/30/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-20T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1139'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-5')**				
		12 13 13		SC	@ 2' Clayey SAND with gravel; medium dense; dry; dark brown; pinhole voids	6.6	116		
5		3 6 6		CL	**QUATERNARY TERRACE; Qt (5-25')** @ 5' Sandy lean CLAY; firm; dry; dark brown	5.6	108		Consol
10		3 3 5			@ 10' -moist; light yellowish brown	7.2	107	56	Consol
15		7 9 11		CL-ML	@ 15' Sandy, silty CLAY; stiff; moist; light yellowish brown	5.1	117	59	
20		5 9 14		CL	@ 20' Sandy lean CLAY; stiff; moist; light yellowish brown; pinhole voids	13.9	114		
25		12 28 45			**BEDROCK; TQs (25-30')** @ 25' Silty, clayey SANDSTONE; dense; moist; light yellowish brown	12.8	114		
30		12 32 50			@ 30' Silty CLAYSTONE; hard; moist; light brownish yellow				
					Total Depth 30' No Ground Water				
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/31/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-21T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1013'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-5')**				
		6 4 11		SC	@ 2' Silty, clayey SAND with gravel; loose; moist; brown; rootlets	6.2	113		
5		6 10 10		ML	**QUATERNARY ALLUVIUM; Qal (5-27')** @ 5' Sandy SILT; stiff; moist; light yellowish brown; pinhole voids and rootlets	3.8	115	51	
10		4 6 10			@ 10' -brown	9.0	112		
15		4 6 9		CL	@ 15' Sandy lean CLAY; stiff; moist; brown	14.0	111	53	
20		6 9 15				14.8	112		LL= 33 PI= 14
25		10 14 20		SM-SC	@ 25' Silty, clayey SAND; medium dense; moist; light brown	10.7	112		
					BEDROCK; TQs (27-40')				
30		50/2"			@ 30' -no recovery				
35		50/2"			@ 35' -no recovery				
		50/3"			@ 37.5' Poorly graded SANDSTONE with gravel; very dense; damp; light gray; minimal recovery				

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East

DRILLING COMPANY: Valley Well Drilling

DRILLING METHOD: Hollow-Stem

HAMMER TYPE: Automatic Safety Hammer

DRIVING WEIGHTS: 140 lbs

JOB NO.: 1703E-1

DATE: 07/22/04

LOGGED BY: MAS

DRILLED: 10/31/03

HOLE DIA: 8" O.D.

AVERAGE DROP (in.): 30"

ELEVATION 1013'

DRILL HOLE LOG

BORING NO. HS-21T

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		50/1"			@ 40' -no recovery				
					Total Depth 40' No Ground Water				
45									
50									
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.		JOB NO.: 1703E-1	**DRILL HOLE LOG**
PROJECT: Mesas East		DATE: 07/22/04	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 10/31/03	
DRILLING METHOD: Hollow-Stem		HOLE DIA: 8" O.D.	**BORING NO.** HS-22T
HAMMER TYPE: Automatic Safety Hammer		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 1064'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-9')**				
		11 26 20		SM-SC	@ 2' Silty, clayey SAND with gravel; medium dense; dry to damp; brown	8.1	125		
5		10 10 13		SM	@ 5' Silty SAND; medium dense; damp to moist; light yellowish brown	6.9	112		
					QUATERNARY ALLUVIUM; Qal, (9-35')				
10		16 17 17		SP-SM	@ 10' Poorly graded SAND with silt and gravel; medium dense; damp; light yellow	1.0	120	10	
15		12 35 31		GP	@ 15' Poorly graded GRAVEL; dense; damp; light yellowish brown	0.8	121		
20		16 43 50			@ 20' -very dense; rock in tip				
25		9 13 43		SM	@ 25' Silty SAND; dense; moist; light brownish yellow				
30		35 39 12			@ 30' -with gravel; medium dense				
35		29 40 50/5"			**BEDROCK; TQs (35')** @ 35' Silty conglomerate; very dense; damp; medium brown				
					Total Depth 35' No Ground Water				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/31/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-23T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1095'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af, (0-4')**				
		4 4 5		CL	@ 2' Sandy lean CLAY; firm; moist; light brown	11.5	112	67	LL= 36 PI= 18 Consol
					QUATERNARY ALLUVIUM; Qal (4-14')				
5		1 1 1			@ 5' Silty CLAYwith sand; very soft; moist; light brown	14.6	101		Consol
10		3 4 6			@ 10' Sandy, silty CLAY with gravel; firm; damp; light brown; pinhole voids	8.9	100		LL= 33 PI= 13
					BEDROCK; TQs (14-20')				
15		16 25 29			@ 15' Sandy CLAYSTONE; hard; damp to moist; light brown				
20		9 20 23			@ 20' -very stiff; moist				
					Total Depth 20' No Ground Water				
25									
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/31/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-24T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1117'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-10')**				
		4 6 10		SM	@ 2' Silty SAND; loose; dry; brown; roots and pinhole voids	4.0	104		Consol
5		4 5 6		CL		4.1	101		LL= 30 PI= 13 Consol
10		21 50			**BEDROCK; TQs (10-15')** @ 10' SILTSTONE; hard; damp; light brown				
15		30 50/5"			Total Depth 15' No Ground Water				
20									
25									
30									
35									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/31/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-25T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1138'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-10')**				
		14 16 17		GM	@ 2' Silty GRAVEL with sand; medium dense; dry; light gray.	1.8	122		
5		15 30 23				1.5	120		
					@ 8' -refusal; moved rig over 5'				
10		14 13 13		SM	**QUATERNARY ALLUVIUM; Qal (10-37')** @ 10' Silty SAND with gravel; medium dense; damp; light gray to light brown	4.6	114		
15		10 24 16			@ 15' -light gray				
20		12 20 33							
25		37 50			@ 25' -dense			26	
30		12 32 37							
35		9 12 15		SM-SC	@ 35' Silty, clayey SAND with gravel; medium dense; moist; light gray	1.8	92		
					BEDROCK; TQs (37-45')				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 10/31/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-25T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1138'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		40 30/3"			@ 42' Sandy, silty CLAYSTONE; hard; moist; light brown				
45		50/5"			Total Depth 45' No Ground Water				
50									
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 11/03/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-26T	
HAMMER TYPE: Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1128'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY TERRACE; Qt (0-23')**				
		7 12 15		SM	@ 2' Silty SAND with gravel; medium dense; dry; brown; pinhole voids	2.4	125		
5		9 15 41		SP	@ 5' Poorly graded SAND with gravel; dense; dry; light yellowish brown; very friable	1.5	122		
10		27 50		SP-SM	@ 10' Poorly graded SAND with silt and gravel; dense; dry; light brown	1.8	92		
15		32 40 40		SM-SC	@ 15' Silty, clayey SAND with gravel; dense; damp; light brown				
20		15 37 50/3"			@ 20' -very dense				
					BEDROCK; TQs (23-35')				
25		50/5"			@ 25' -no recovery				
30		35 30/4"			@ 30' Silty, clayey SANDSTONE; dense to very dense; moist; brown to grayish brown				
35		50/3"			@ 35' Silty SANDSTONE; very dense; damp; light brown				
					Total Depth 35' No Ground Water				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 11/3/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-27T	
HAMMER TYPE: Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1061'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-4')**			22	
					@ 0-25' Bulk Sample				
		14 13 12		SM	@ 2' Silty SAND with gravel; medium dense; dry; light brown	2.0	114		
					QUATERNARY ALLUVIUM; Qal (4-54 ft)				
5		12 13 16			@ 5' -light brown to yellow	1.6	118		
10		29 22 24		SC	@ 10' Clayey SAND; medium dense; damp; light brown to yellow	5.9	128	29	
15		26 37 23		SM	@ 15' Silty SAND with gravel; dense; damp; light yellowish brown	3.5	123		
20		26 43 50			@ 20' -very dense; light yellow				
25		40 50							
30		22 43 50							
35		32 50/5"							

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 11/3/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-27T	
HAMMER TYPE: Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1061'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		35 50			@ 40' -no recovery				
45		25 50			@ 45' -damp to moist; yellowish brown				
50		25 50		GP	@ 50' Poorly graded GRAVEL with sand; very dense; wet; gray to green				
55		41 50/4"			**BEDROCK; TQs (54-55')** @ 55' Sandy MUDSTONE; hard; moist; grayish green to greenish gray	16.6	115		
60					Total Depth 55' Ground Water @ 50'				
65									
70									
75									

CLIENT: Newhall Ranch Co.		JOB NO.: 1703E-1	**DRILL HOLE LOG**
PROJECT: Mesas East		DATE: 07/22/04	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 11/4/03	
DRILLING METHOD: Hollow-Stem		HOLE DIA: 8" O.D.	**BORING NO.** HS-28T
HAMMER TYPE: Automatic Safety Hammer		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 1171'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-4')**				
		18 19 25		CL	@ 2' Sandy lean CLAY; very stiff; dry; brown	5.1	122		
					QUATERNARY TERRACE; Qt (4-40')				
5		2 7 12			@ 5' -stiff; voids	4.6	110	51	
10		16 17 18		SM	@ 10' Silty SAND with gravel; medium dense; dry; light yellowish brown	3.2	115		
15		13 14 20		SP CL	@ 15' Poorly graded SAND; medium dense; dry; light yellowish brown @ 15.5' Sandy lean CLAY; very stiff; dry; light yellowish brown	2.1	118		
20		11 13 16		SM	@ 20' Silty SAND; medium dense; dry to damp; light brownish yellow	2.8	114	29	
25		12 15 25		CL	@ 25' Sandy lean CLAY; very stiff; damp; light yellowish brown	11.4	114		
30		35 27 32		GC	@ 30' Clayey GRAVEL with sand; dense; damp; light yellowish brown to light gray				
35		32 44 40		SM	@ 35 Silty SAND with gravel; dense; damp; light brownish yellow				

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 11/4/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-28T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1171'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		31 50		GM-GC	@ 40' Silty, clayey GRAVEL with sand; very dense; moist; light yellowish brown				
					Total Depth 40' No Ground Water				
45									
50									
55									
60									
65									
70									
75									

CLIENT: Newhall Ranch Co.		JOB NO.: 1703E-1	**DRILL HOLE LOG**
PROJECT: Mesas East		DATE: 07/22/04	
		LOGGED BY: MAS	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 11/4/03	
DRILLING METHOD: Hollow-Stem		HOLE DIA: 8" O.D.	**BORING NO.** HS-29T
HAMMER TYPE: Automatic Safety Hammer		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 1158'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**ARTIFICIAL FILL; af (0-5')**				
		10 11 13		SC	@ 2' Clayey SAND with gravel; medium dense; damp; brown to dark brown; pinhole voids	8.0	124		
5		10 12 15		SM	**QUATERNARY TERRACE; (5-40')** @ 5' Silty SAND with gravel; medium dense; damp; brown to dark brown	3.6	115		
10		10 14 15		SC	@ 10' Clayey SAND; medium dense; moist; brown	8.2	117		
15		9 15 21		CL-ML	@ 15' Silty CLAY with sand; very stiff; moist; brown	17.3	113		
20		10 19 14		SM-SC	@ 20' Silty, clayey SAND; medium dense; moist; light yellowish brown	11.4	110		
25		6 9 15		CL-ML	@ 25' Silty CLAY; stiff; moist; light brown	17.6	106		Consol
30		15 32 19		SP-SM	@ 30' Poorly graded SAND with silt; medium dense; damp to moist; light yellowish brown	3.0	115		
35		8 10 14		CL-ML	@ 35' Silty CLAY; stiff; moist; light yellowish brown	28.0	96		

CLIENT: Newhall Ranch Co.	JOB NO.: 1703E-1	**DRILL HOLE LOG**	
PROJECT: Mesas East	DATE: 07/22/04		
	LOGGED BY: MAS		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 11/4/03		
DRILLING METHOD: Hollow-Stem	HOLE DIA: 8" O.D.	**BORING NO.** HS-29T	
HAMMER TYPE: Automatic Safety Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1158'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		30 40 40		SP-SM	@ 40' Poorly graded SAND with silt; dense; damp; light gray				
					Total Depth 40' No Ground Water				
45									
50									
55									
60									
65									
70									
75									

CLIENT: Newhall Land and Farming Co.	JOB NO.: 04-2023A-4	**DRILL HOLE LOG**	
PROJECT: Mesas East Access Road	DATE: 12/22/2004		
	LOGGED BY: DGG		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 1/16/04		
DRILLING METHOD: Hollow Stem Auger	HOLE DIA: 8" O.D.	**BORING NO.** HS-30T	
HAMMER TYPE: Auto Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1203'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0 - 25')** @ 0-5' Bulk sample				
		4 9 10		CL-ML	@ 3' CLAY with silt; very stiff; damp; yellowish brown	3.6			
5		10 20 25				3.1	117		
		25 35 35			@ 9' -with gravel; hard				
10		9 15 25			@ 12' -very stiff	1.1	109		
				SP-SM	@ 13' Poorly graded SAND with silt; medium dense; damp; yellowish brown				
15		7 13 17		CL-ML	@ 15' Silty CLAY; very stiff; damp; yellowish brown				
20		15 31 35		SP-SM	@ 20' Poorly graded SAND with silt and gravel; dense; damp; yellowish brown				
25		15 36 42			@ 25' -very dense				
					Total Depth 25' No Ground Water				
30									
35									

CLIENT: Newhall Land and Farming Co.		JOB NO.: 04-2023A-4	**DRILL HOLE LOG**
PROJECT: Mesas East Access Road		DATE: 12/22/2004	
		LOGGED BY: DGG	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 1/16/04	
DRILLING METHOD: Hollow Stem Auger		HOLE DIA: 8" O.D.	**BORING NO.** HS-31T
HAMMER TYPE: Auto Hammer		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 1210'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0 - 25')** @ 0-5' Bulk sample				
	■	3 6 12		SC-SM	@ 3' Silty, clayey SAND; loose to medium dense; damp; yellowish brown	3.8	107		
5	◪	8 11 16			@ 6' -medium dense; sampled through cobble				
	■	9 14 19				4.6	121		
10	◪	15 20 20			@ 12' -with gravel; dense				
15	■	18 19 20		SP-SM	@ 15' Poorly graded SAND with silt; medium dense; damp; yellowish brown	2.3	116		
20	◪	9 18 41			@ 20' -with gravel; very dense				
25	■	17 34 30/3"			Total Depth 25' No Ground Water				
30									
35									

CLIENT: Newhall Land and Farming Co.	JOB NO.: 04-2023A-4	**DRILL HOLE LOG**	
PROJECT: Mesas East Access Road	DATE: 12/22/2004		
	LOGGED BY: DGG		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 1/16/04		
DRILLING METHOD: Hollow Stem Auger	HOLE DIA: 8" O.D.	**BORING NO.** HS-32T	
HAMMER TYPE: Auto Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1162'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0 - 35')** @ 0-5' Bulk sample				
		3 5 5		CL-ML	@ 3' Silty CLAY; stiff; damp; grayish brown				
5		5 7 12		SM	@ 6' Silty SAND; medium dense; damp; yellowish to grayish brown	4.0	114		
		5 8 10							
10		6 10 14				1.7	118		
15		6 7 9							
		7 18 20		SP-SM	@ 18' Poorly graded SAND with silt; medium dense; damp; yellowish brown	1.4	119		
20		5 6 7		SM	@ 21' Silty SAND; medium dense; damp; yellowish brown				
25		6 10 16		CL-ML	@ 25' Sandy, silty CLAY; stiff; damp; yellowish brown	8.3	125		
30		15 35 45		SP-SM	@ 30' Poorly graded SAND with silt; very dense; damp; yellowish brown				
35		11 50/5"		CL-ML	@ 35' Silty CLAY; hard; damp; yellowish brown				
					Total Depth 35' No Ground Water				

CLIENT: Newhall Land and Farming Co.		JOB NO.: 04-2023A-4	**DRILL HOLE LOG**
PROJECT: Mesas East Access Road		DATE: 12/22/2004	
		LOGGED BY: DGG	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 1/16/04	
DRILLING METHOD: Hollow Stem Auger		HOLE DIA: 8" O.D.	**BORING NO.** HS-33T
HAMMER TYPE: Auto Hammer		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 1186'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0 - 25')**				
					@ 0-5' Bulk sample				
		2 3 4		CL-ML	@ 3' Silty CLAY; soft; damp; yellowish brown	7.1	105		
5		1 2 2				7.1			
		2 3 5			@ 9' -firm	9.0	115		Consol
10		3 4 5				10.5			
15		4 7 13			@ 15' -stiff	11.5	118		Consol
		9 17 22			@ 18' -hard	15.3			
20		19 33 50							
25		12 22 44			Total Depth 25' No Ground Water				
30									
35									

CLIENT: Newhall Land and Farming Co.	JOB NO.: 04-2023A-4	**DRILL HOLE LOG**	
PROJECT: Mesas East Access Road	DATE: 9/1/2004		
	LOGGED BY: DGG		
DRILLING COMPANY: Valley Well Drilling	DRILLED: 1/19/04		
DRILLING METHOD: Hollow Stem Auger	HOLE DIA: 8" O.D.	**BORING NO.** HS-34T	
HAMMER TYPE: Auto Hammer	AVERAGE DROP (in.): 30"		
DRIVING WEIGHTS: 140 lbs	ELEVATION 1167'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0 - 50')** @ 0-5' Bulk sample				
		25 50		CL-ML	@ 3' Silty CLAY; hard; damp; yellowish to grayish brown				
5		6 18 22		SP-SM	@ 6' Poorly graded SAND with silt; medium dense; damp; yellowish brown	0.7	119		
		9 25 25		ML	@ 9' Sandy SILT with gravel; very stiff; damp; yellowish brown				
10		10 13 16		SP-SM	@ 12' -very stiff @ 12.5' Poorly graded SAND with silt; medium dense; damp; yellowish brown	1.8	106		Consol
15		8 13 16				2.9			
20		8 19 26		ML	@ 20.5' SILT with sand; very stiff; damp; yellowish brown				
25		15 33 35		SM	@ 25' Silty SAND; very dense; damp; yellowish brown				
30		36 50			@ 30' -no recovery; cobble in tip				
35		26 50/5"			@ 35' -with gravel				

CLIENT: Newhall Land and Farming Co.		JOB NO.: 04-2023A-4	**DRILL HOLE LOG**
PROJECT: Mesas East Access Road		DATE: 9/1/2004	
		LOGGED BY: DGG	
DRILLING COMPANY: Valley Well Drilling		DRILLED: 1/19/04	
DRILLING METHOD: Hollow Stem Auger		HOLE DIA: 8" O.D.	**BORING NO.** HS-34T
HAMMER TYPE: Auto Hammer		AVERAGE DROP (in.): 30"	
DRIVING WEIGHTS: 140 lbs		ELEVATION 1167'	

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	% fines	Other Tests
40		40 50/2"							
45		30 50/4"							
50		25/5"			Total Depth 50' No Ground Water				
55									
60									
65									
70									
75									

TRENCH LOGS

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

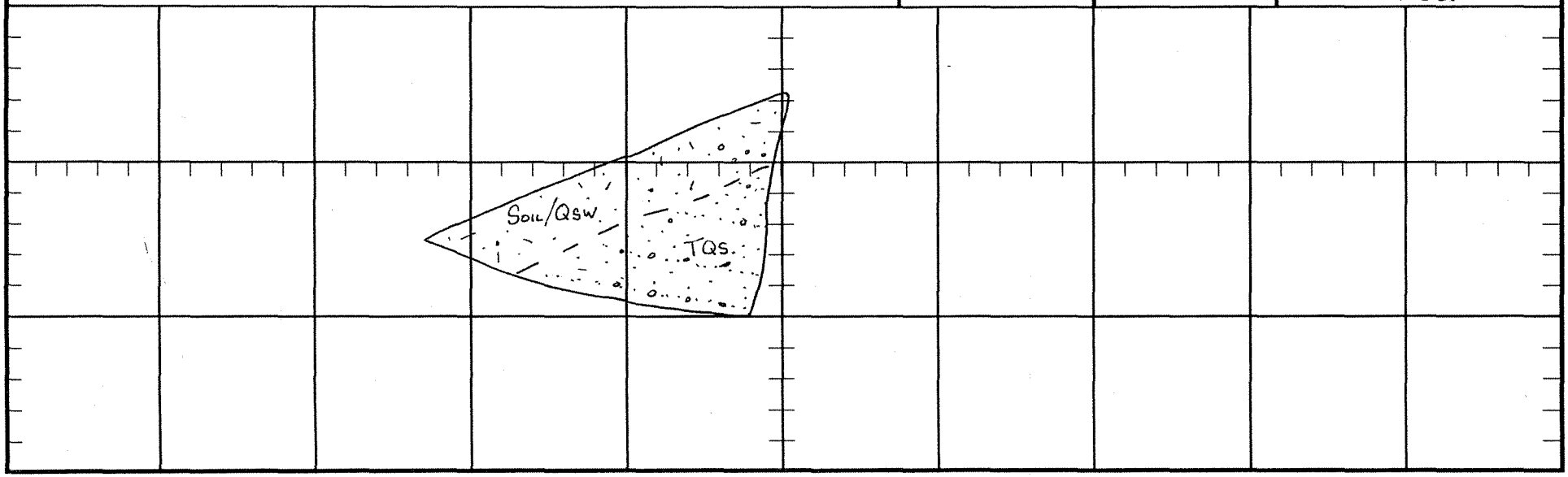
Trench Log No. 1Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Brown sandy mud with pebbles and cobbles; soft; dry; structureless			Trenches T-1Q thru T-12Q excavated with a 4WD rubber-tired backhoe and logged on 9/7/99
2 - 7' BEDROCK; TQs, Yellowish-gray sandstone and pebbly mudstone; moderately dense but moderately friable; dry; finely bedded	N46W,15NE		No Ground Water No Caving

SCALE 1" = 5'

N 46 E



TOTAL DEPTH 7 Ft.

ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

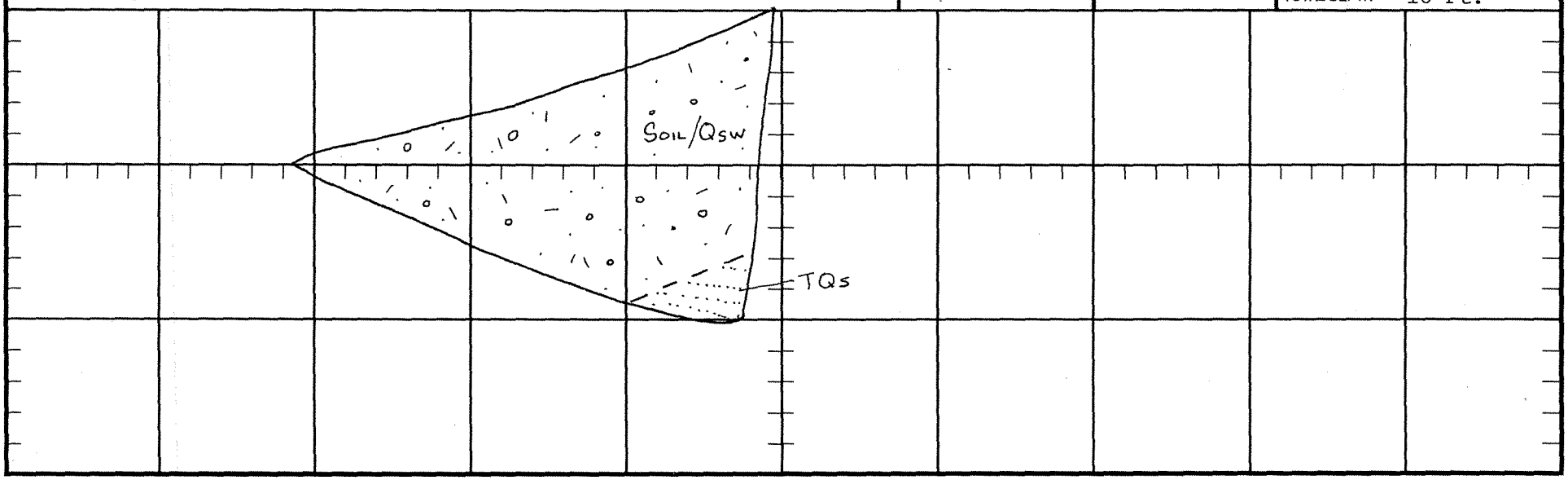
Trench Log No. 2Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Grayish-brown sandy mud with pebbles and cobbles; soft; dry			
7 - 10' BEDROCK; TQs, Yellowish-gray to tan, finely bedded sand; moderately dense to dense; moderately friable; dry	N57W,22NE		No Ground Water No Caving
			TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 65 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

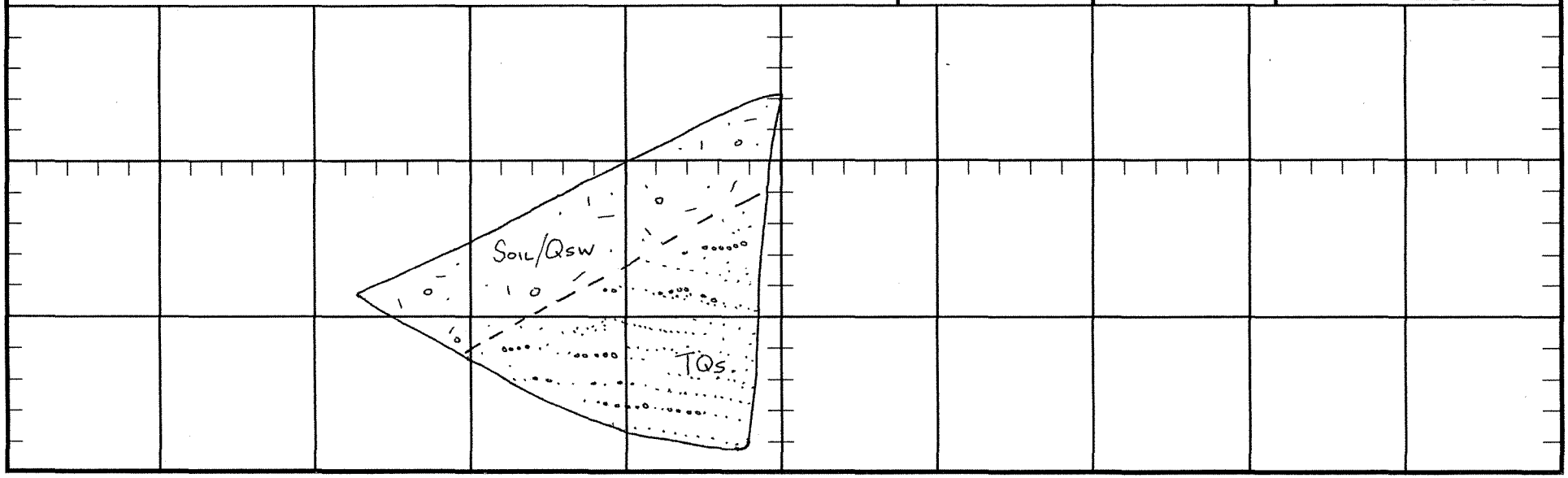
Trench Log No. 3Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Brown, silty clay with sand with cobbles; soft; dry			
3 - 11' BEDROCK; TQs, Light yellowish-gray to tan sandstone and pebbly sandstone; moderately dense to dense; dry to slightly damp; local cross bedding and channeling	N57W,12NE		No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 35 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

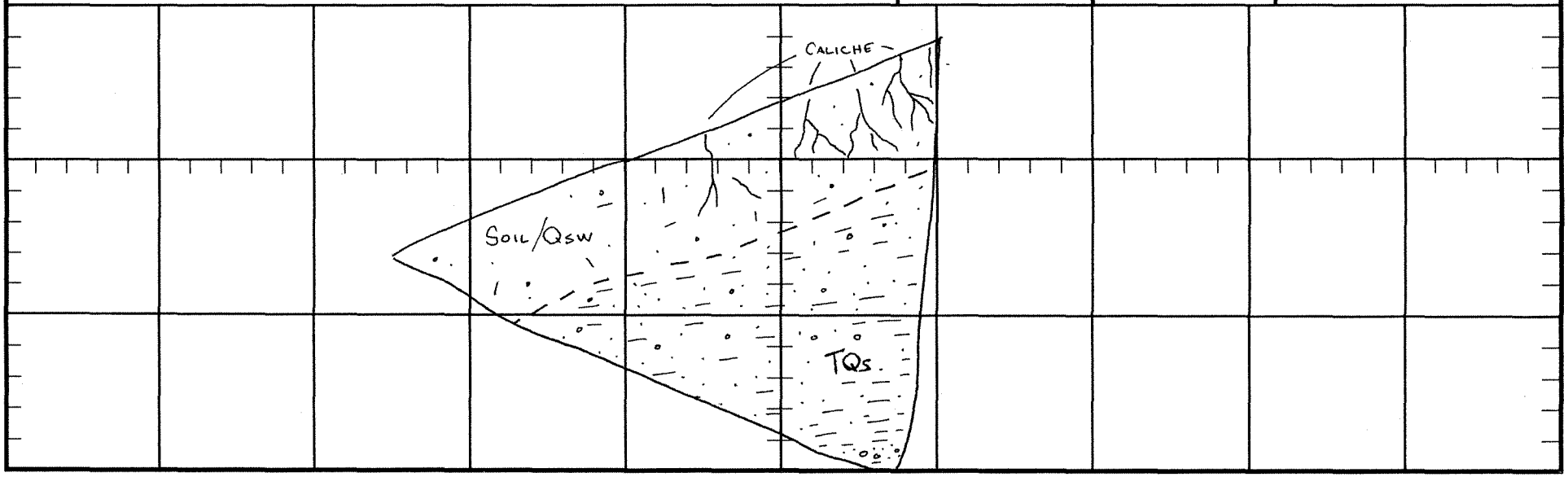
Trench Log No. 4Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Brown sandy mud with scattered pebbles; moderately hard; dry; local caliche			No Distinct Bedding
4 - 14' BEDROCK; TQs, Tan to brown pebbly silty sand; hard; dry; poorly bedded and poorly sorted			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 54 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY MAS/BJS

Trench Log No. 5Q

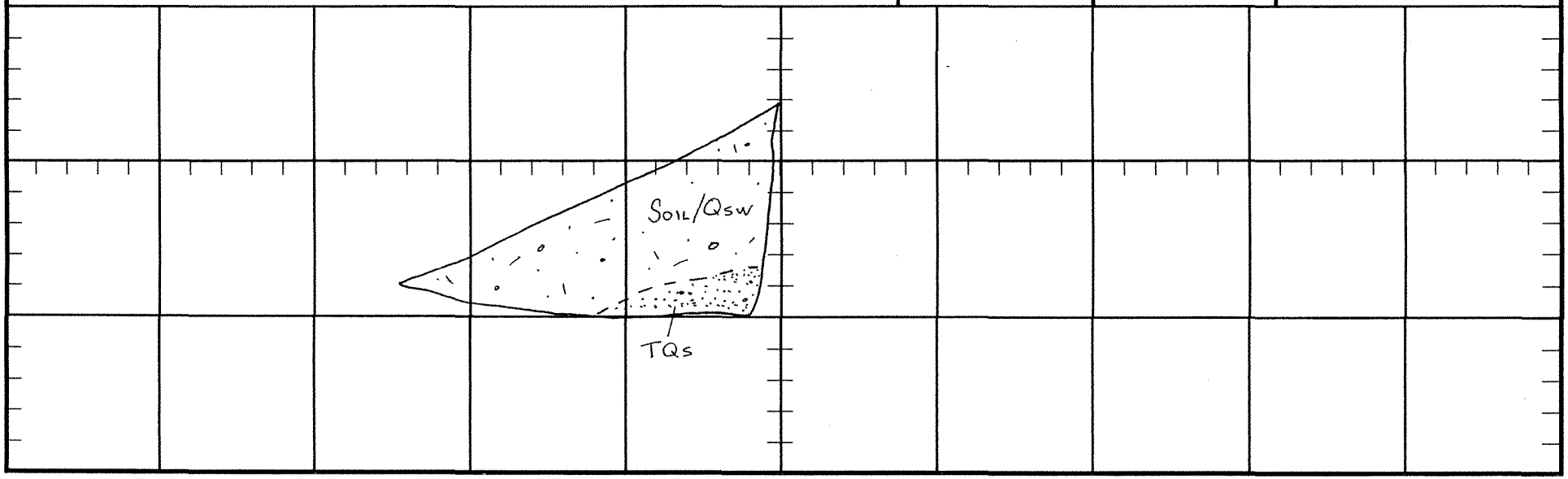
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Brown silty sand and gravel with local cobbles; loose; dry; no apparent bedding; organics			
3 - 7' BEDROCK ; TQs, Light-gray, well graded sandstone and pebbly sandstone; loose; bedding is vague with channels and cross bedding	N42W,6NE		No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 78 W



ALLAN E. SEWARD

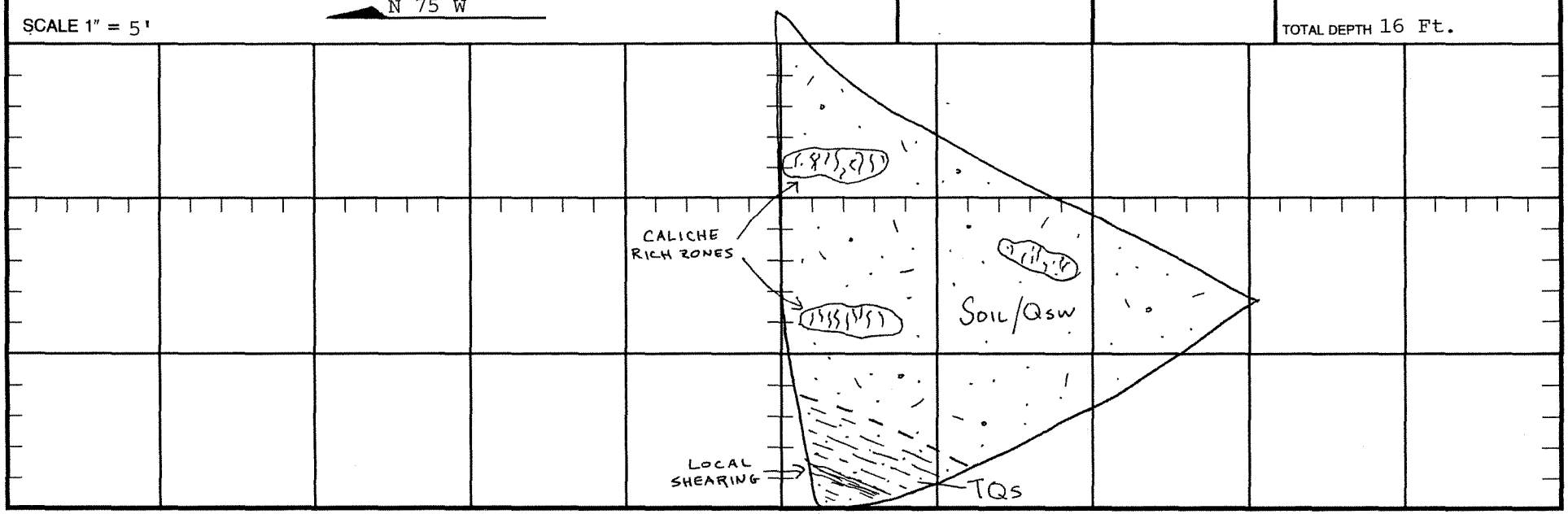
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS **Trench Log No.** 6Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11' SOIL/SLOPEWASH; soil/Qsw, Brown muddy sand with scattered pebbles; soft; dry; local cemented areas with caliche			
11 - 16' BEDROCK; TQs, Yellowish-brown to brown siltstone and mudstone; moderately hard; damp to moist; clays are locally sheared			No Distinct Bedding
			No Ground Water No Caving
			TOTAL DEPTH 16 Ft.

SCALE 1" = 5'

N 75 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

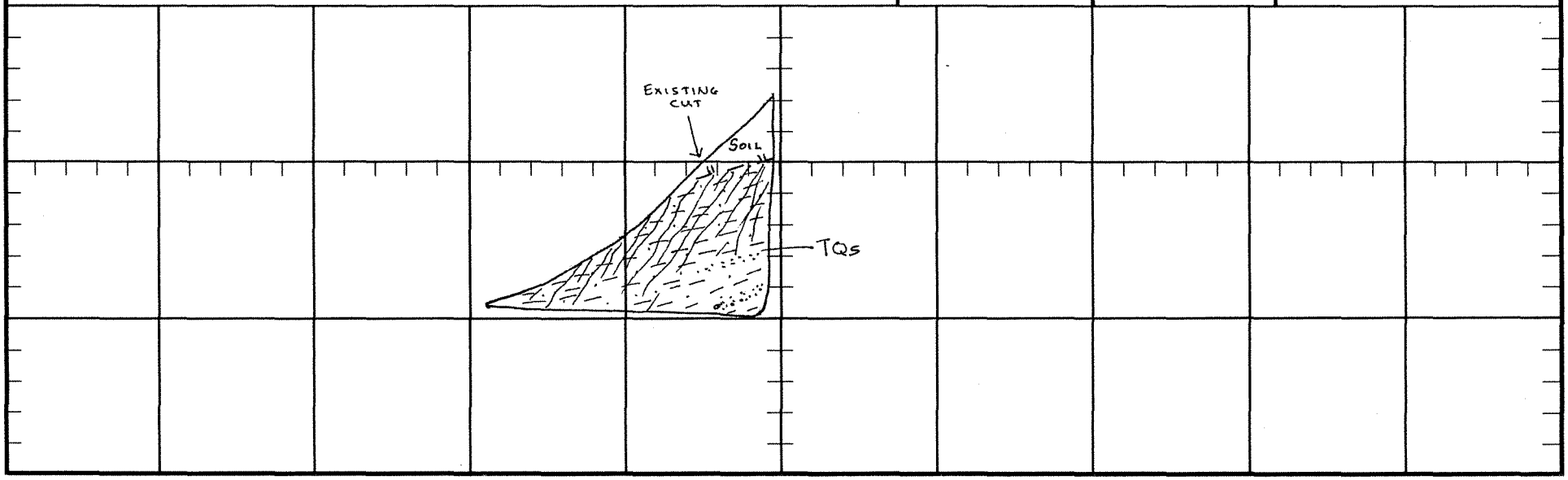
Trench Log No. 7Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL; Brown sandy silt; loose; dry; some organics			Surficial material partially removed
2 - 7' BEDROCK; TQs, Light yellowish-brown to tan siltstone with local pebbly sandstone channels and clayey siltstone interbeds; moderately hard; damp; local caliche; upper 3 ft. highly fractured and creep affected	N50W,23NE		No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 85 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

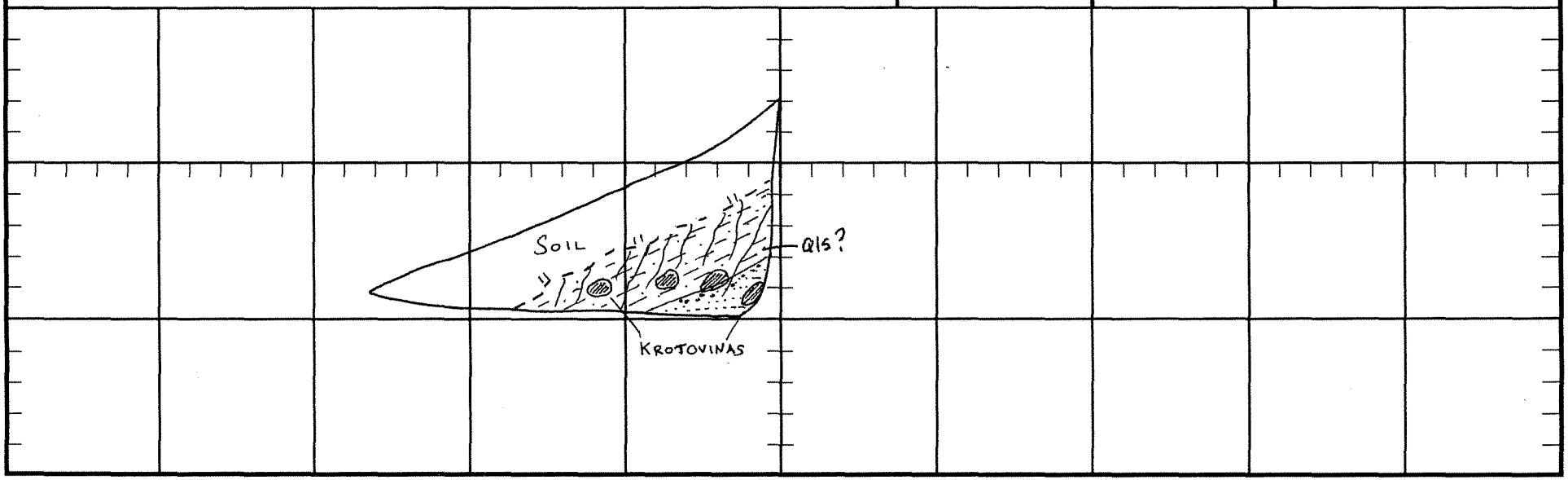
Trench Log No. 8Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL; Brown sandy mud with local pebbles and cobbles; soft; dry; roots and minor organics			
2 - 7' LANDSLIDE?; Qls?, Light yellowish-brown siltstone and yellowish-gray sandstone; loose to firm; dry; local caliche; cross-bedding and channels in sandstone; krotovina common in siltstone	N40W,43NE		Weathered nature of bedrock and non-regional bedding attitude suggests possible landslide movement
			No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 62 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY MAS/BJS

Trench Log No. 9Q

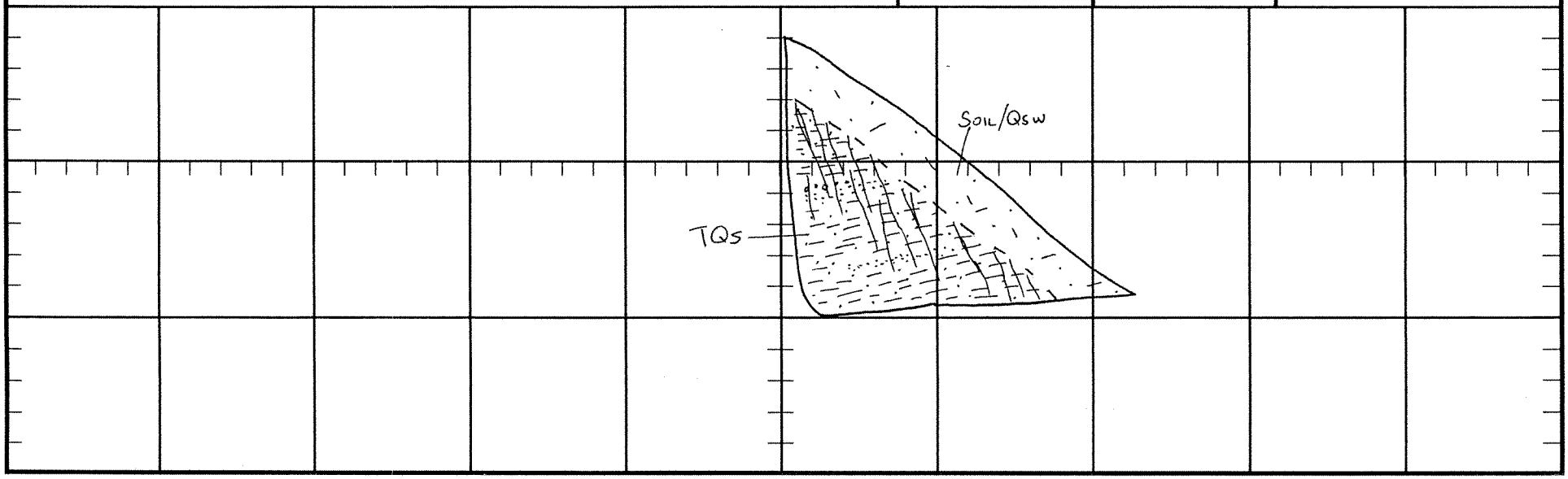
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown sandy mud; soft; dry; minor roots and organics			
2 - 9' BEDROCK; TQs, Yellowish-brown mudstone silty sandstone, sandstone and pebbly sandstone; moderately hard; damp; fractured and weathered in upper 5 ft.	N47W,22NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 33 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

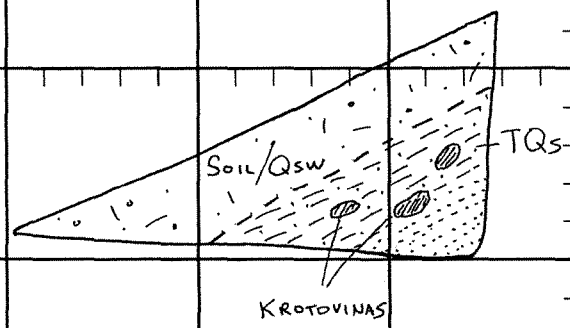
Trench Log No. 10Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Brown sandy mud with pebbles; soft; dry; minor organics			
2 - 7' BEDROCK; TQs, Light yellowish-brown siltstone and light yellowish-gray sandstone; soft to moderately dense; dry to slightly damp; sandstone is well bedded; caliche and krotovina common in siltstone	N46W,23NE		No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 73 W



ALLAN E. SEWARD

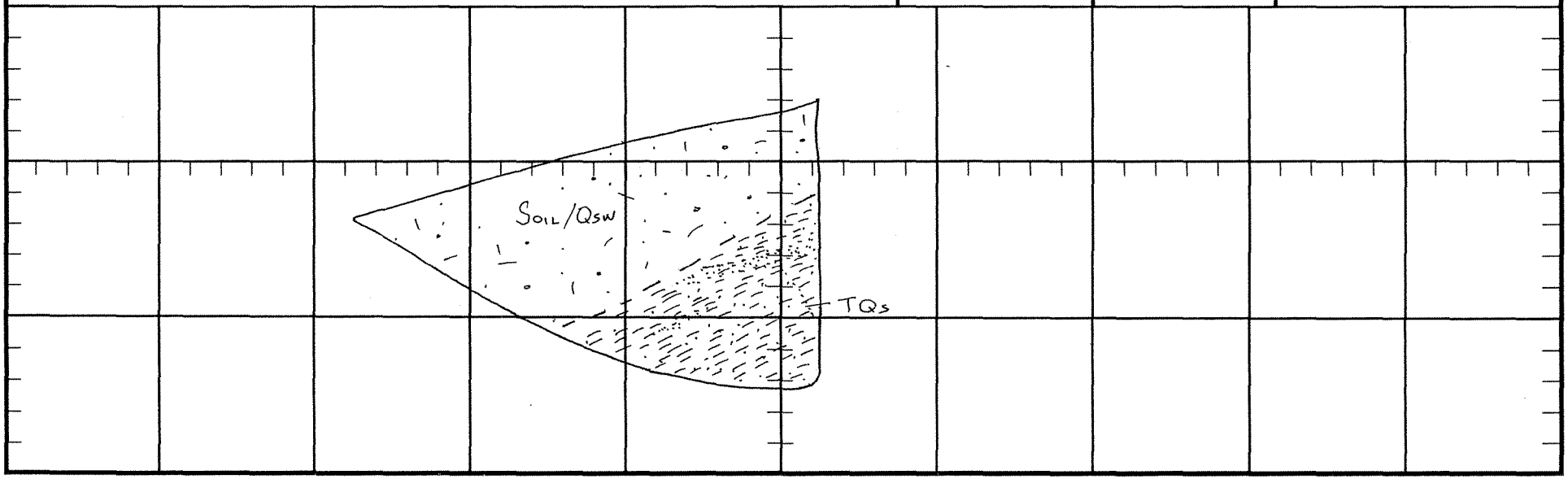
JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY VCG **Trench Log No.** 11Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SOIL/SLOPEWASH; soil/Qsw, Light yellowish-brown fine- to coarse-grained silty pebbly sand; loose; dry			Logged north-facing side of excavation, south-facing side has channel deposits and is bedded
4.5 - 9' BEDROCK; TQs, Light yellowish-tan to light-brown fine- to medium-grained silty sandstone and sandy siltstone; moderately dense; damp; minor fractures; faint stratification; calcium carbonate deposits present	N52W,20NE N58W,26NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 80 W



ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY VCG

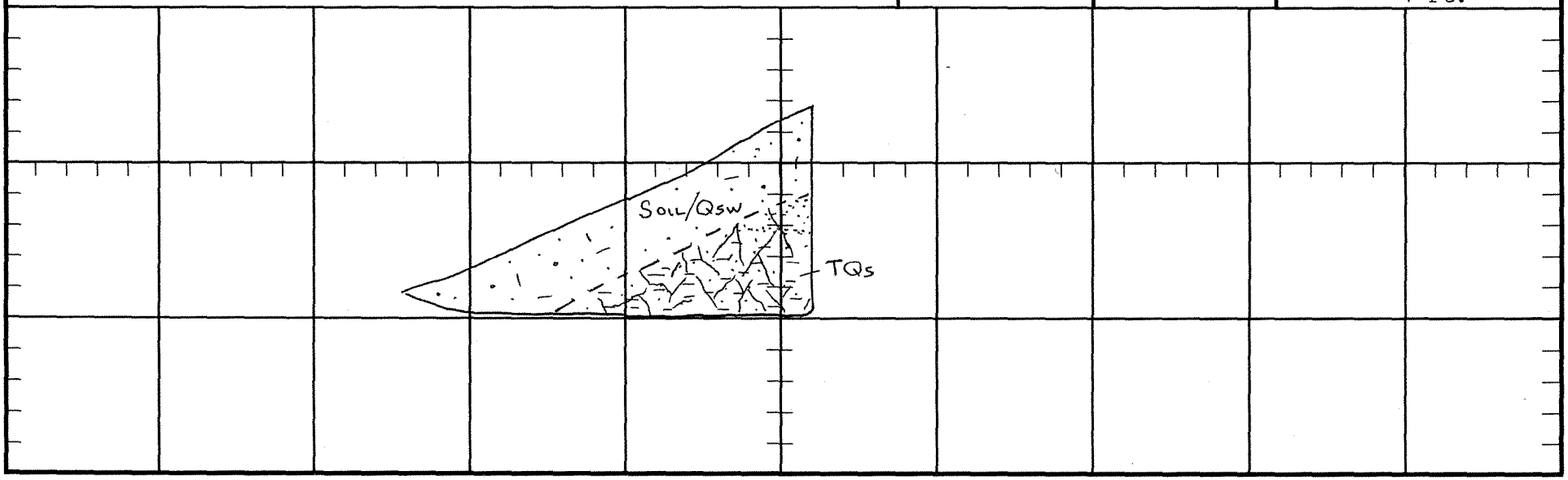
Trench Log No. 12Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light yellowish-brown fine- to coarse-grained silty pebbly sand; loose; dry; abundant roots			
3 - 7' BEDROCK; TQs, Light yellowish-brown to light reddish-brown fine- to medium-grained silty sandstone and sandy siltstone, and fine- to coarse-grained sandstone; loose to moderately dense; dry; calcium carbonate on cleavage/fractures	Apx: N60W,23NE		Bedding vague
			No Ground Water No Caving
			TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 45 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

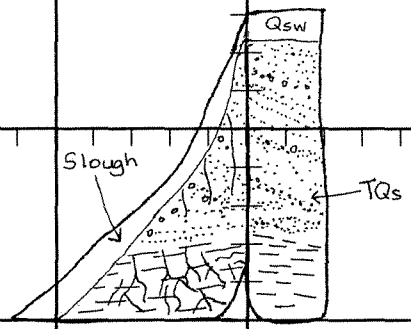
Trench Log No. 13Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SLOPEWASH; Qsw, Brown silty sand; soft; dry 1 - 8' BEDROCK; TQs, Light-gray to yellowish-gray sandstone; loose; slightly damp; channeling and cross bedding; underlain by yellowish-brown clayey siltstone; stiff; damp	N30W,16NE		Trenches T-13Q thru T-20Q excavated with a 4WD rubber-tired backhoe and logged on 9/8/99 Bag samples of sandstone (@4') and clayey siltstone (@7') Trench excavated into existing cut; surficial material removed No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 72 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

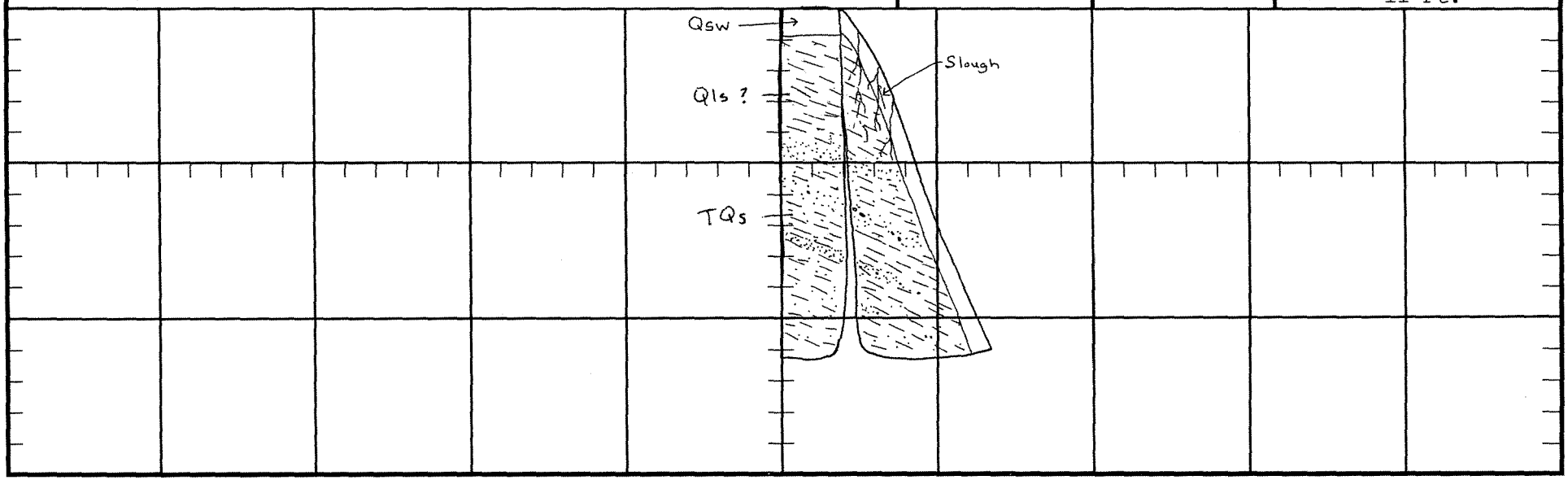
Trench Log No. 14Q

DATE 7/22/09

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SLOPEWASH; Qsw, Brown silty sand; soft; dry; minor organic material			Trench excavated into existing cut; surficial material mostly removed
1 - 5' LANDSLIDE?; Qls?, Brown silty claystone; stiff; damp; bedding looks slightly disrupted	Contact/B: N86W,22NE		
5 - 11' BEDROCK ; TQs , Yellowish-brown to tan sandy siltstone with channels of fine-grained sandstone and pebbly sandstone; dense; dry; bedding discontinuous and vague	Apx: N30E,40NW		No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 27 E



ALLAN E. SEWARD

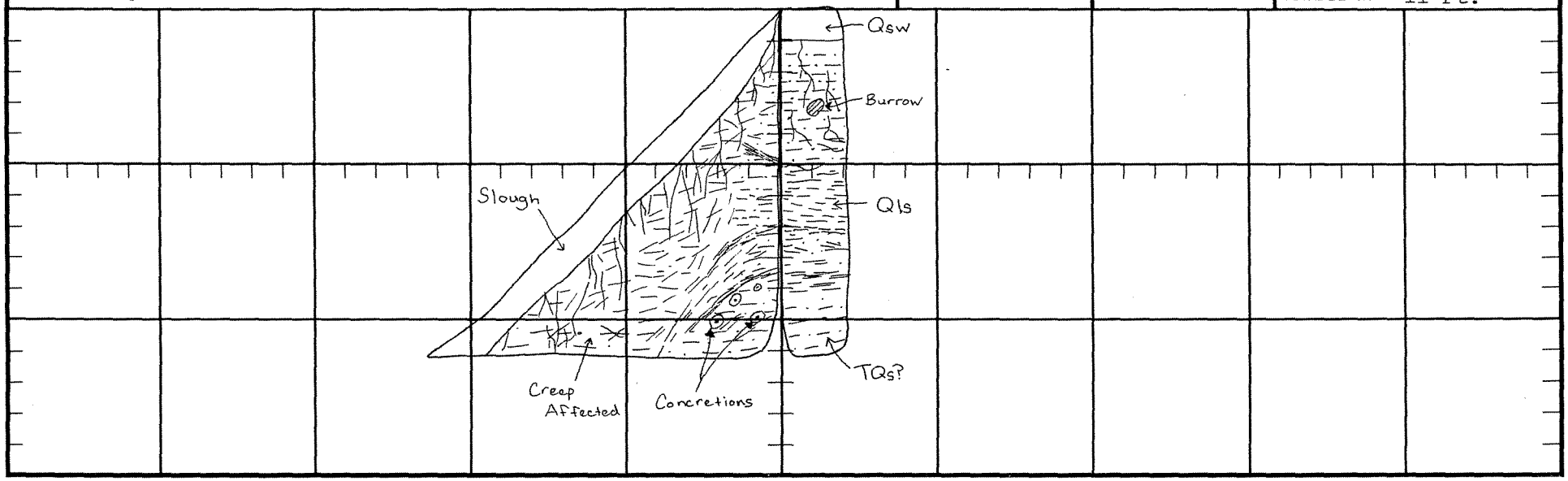
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS **Trench Log No.** 15Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SLOPEWASH; Qsw, Brown clayey sand; soft; krotovina; organic material			Trench excavated into existing cut; surficial material removed
1 - 9' LANDSLIDE; Qls, Yellowish-brown to tan siltstone with dark brownish-gray, moderately plastic clay interlayers; firm; slightly damp to damp, krotovina caliche, noduals, organic material weathered, locally thinly bedded (laminated) and irregular	N80E,12NW		Bedding is distinct but variable
9 - 11' BEDROCK?; TQs?, Yellowish-brown mudstone inter-bedded with yellowish-tan siltstone; firm to stiff; damp to moist			No Ground Water No Caving

SCALE 1" = 5'

N 55 E



TOTAL DEPTH 11 Ft.

ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY MAS/BJS

Trench Log No. 16Q

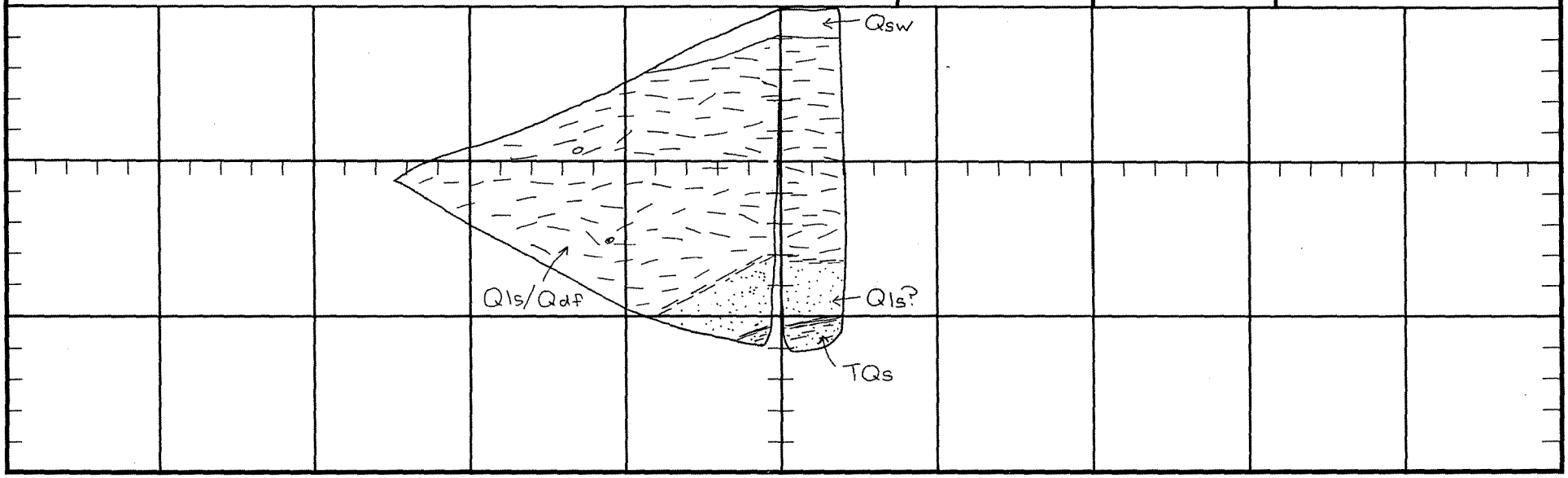
PROJECT Newhall Ranch - Phase IB

DATE

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SLOPEWASH; Qsw, Brown sandy mud; soft; dry; krotovina; minor organic material			
1 - 8' LANDSLIDE/DEBRIS FLOW DEPOSIT; Qls/Qdf, Brown sandy clayey siltstone; firm; damp; disturbed; $CaCo_3$ nodules; no distinct bedding; moderate yellowish-brown clay @ 8'; moderately plastic; damp; firm; 2-4" thick; slide plane?			
8 - 10' LANDSLIDE?; Qls?, Yellowish-tan, silty sandstone; dense; damp; claiche noduals; clay at base may be slide plane	B/SP?: N72W,41NE		Possible slide planes at 8 and 10 ft.
10 - 11' BEDROCK?; TQs, Slightly bluish-gray clayey siltstone; stiff; damp		SP?:N47W,23NE	
			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 10 E



ALLAN E. SEWARD

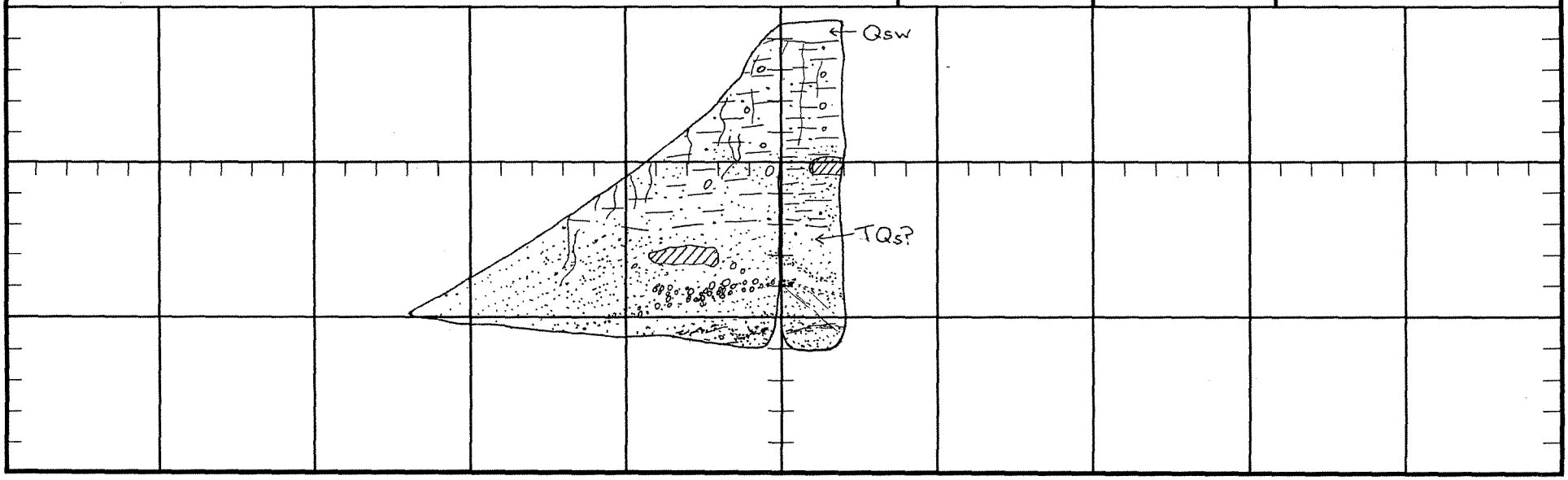
JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS **Trench Log No.** 17Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 0.5' SLOPEWASH; Qsw, Brown sandy silt; soft; dry 0.5 - 10.5' BEDROCK?; TQs?, Yellowish-brown siltstone and sandy siltstone; stiff; weathered; slightly damp; krotovina; underlain by light yellowish-brown to light-gray sandstone and pebbly sandstone; moderately dense to dense but friable; dry to slightly damp; channeling and cross-bedding	N30E,16SE		Trench excavated into existing cut; surficial material removed May be creep affected No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5'

N 10 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

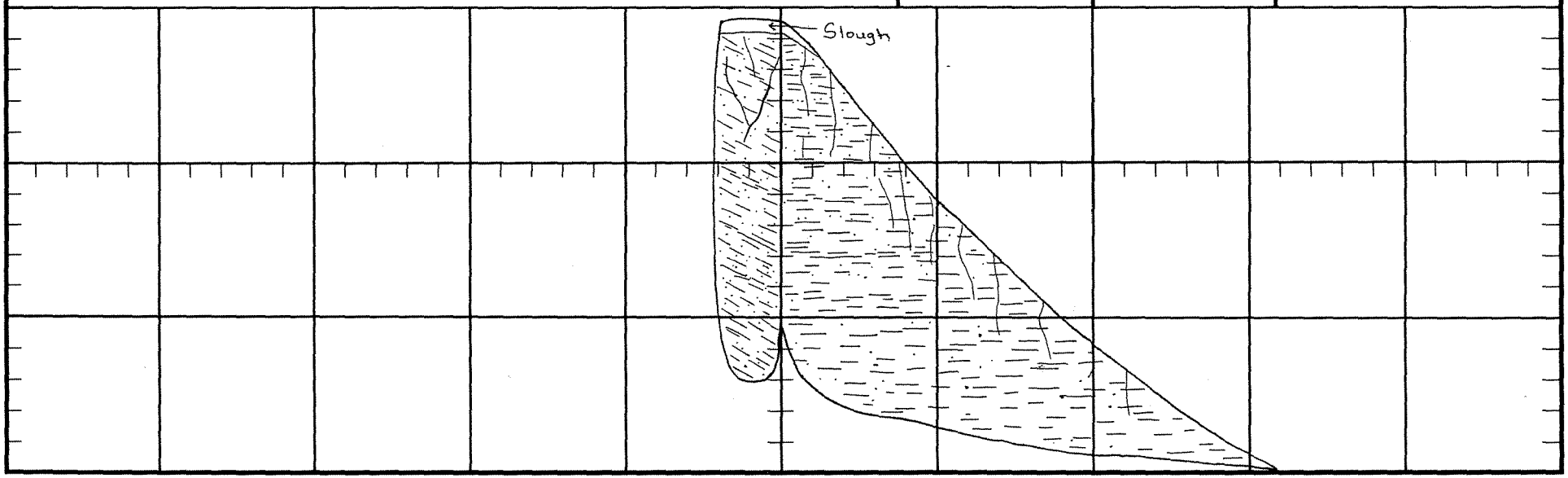
Trench Log No. 18Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11.5' BEDROCK; TQs, Interbedded light yellowish-brown siltstone and sandy siltstone; moderately hard; slightly damp to damp; siltstone commonly laminated	N50W,32NE		Trench excavated into existing cut; surficial material removed No Ground Water No Caving TOTAL DEPTH 11.5 Ft.

SCALE 1" = 5'

N 44 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

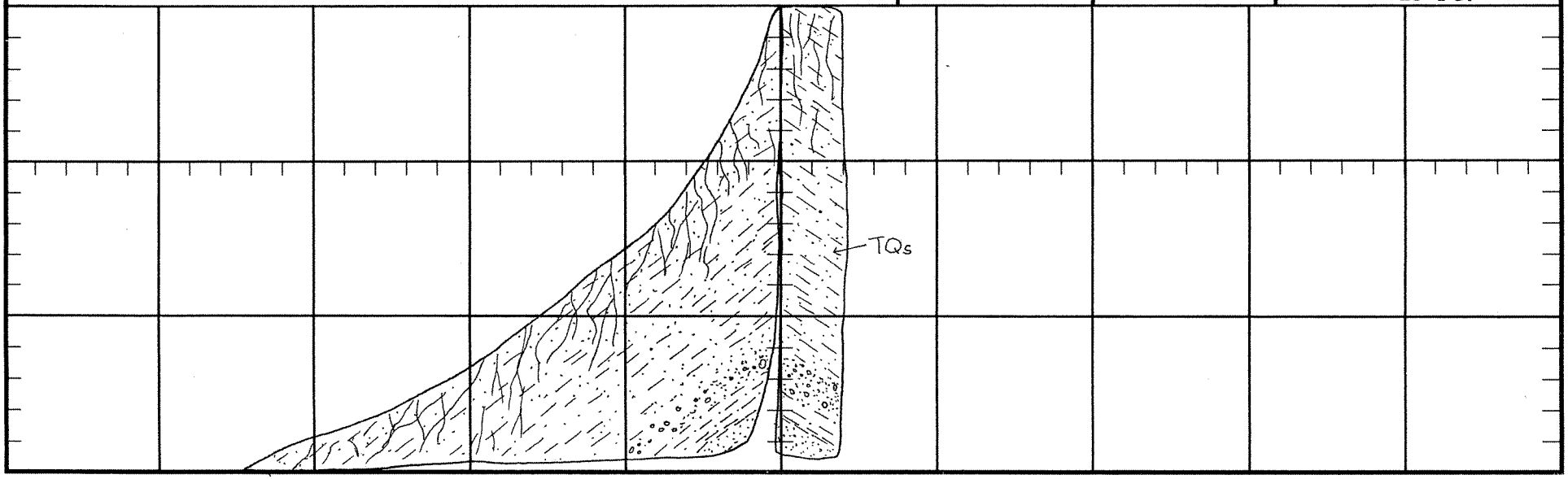
Trench Log No. 19Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 15' BEDROCK; TQs, Interbedded yellowish-brown clayey siltstone and light yellowish-brown silty sandstone and sandstone; moderately hard; slightly damp to damp; upper 4 ft. fractured and creep affected; channeling and cross bedding in sandstone	Apx N53W,28NE		Trench excavated into existing cut; surficial material removed No Ground Water No Caving TOTAL DEPTH 15 Ft.

SCALE 1" = 5'

N 75 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

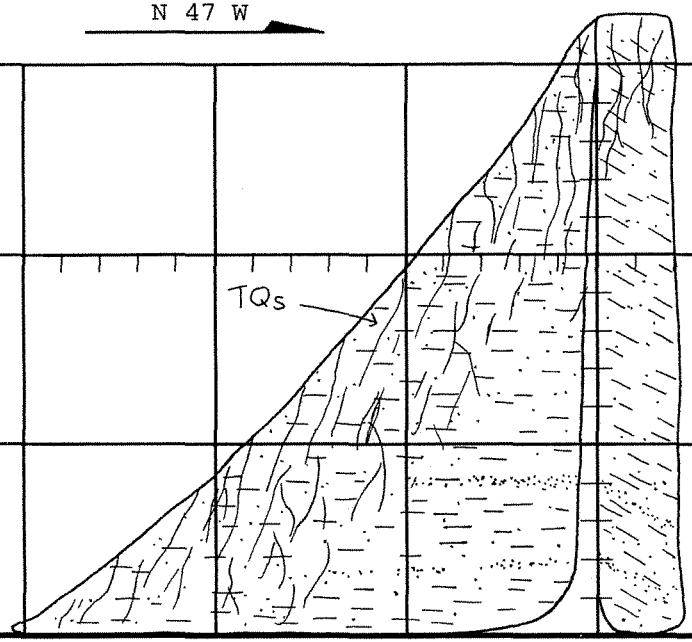
Trench Log No. 20Q

DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 16' BEDROCK; TQs, Light yellowish-brown sandy clayey siltstone with local pebbles and sand stringers; moderately hard; slightly damp to damp; upper 4 ft. fractured and creep affected	Apx N40W,31NE		Trench excavated into existing cut; surficial material removed No Ground Water No Caving TOTAL DEPTH 16 Ft.

SCALE 1" = 5'

N 47 W



ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1

LOGGED BY MAS/BJS

Trench Log No. 21Q

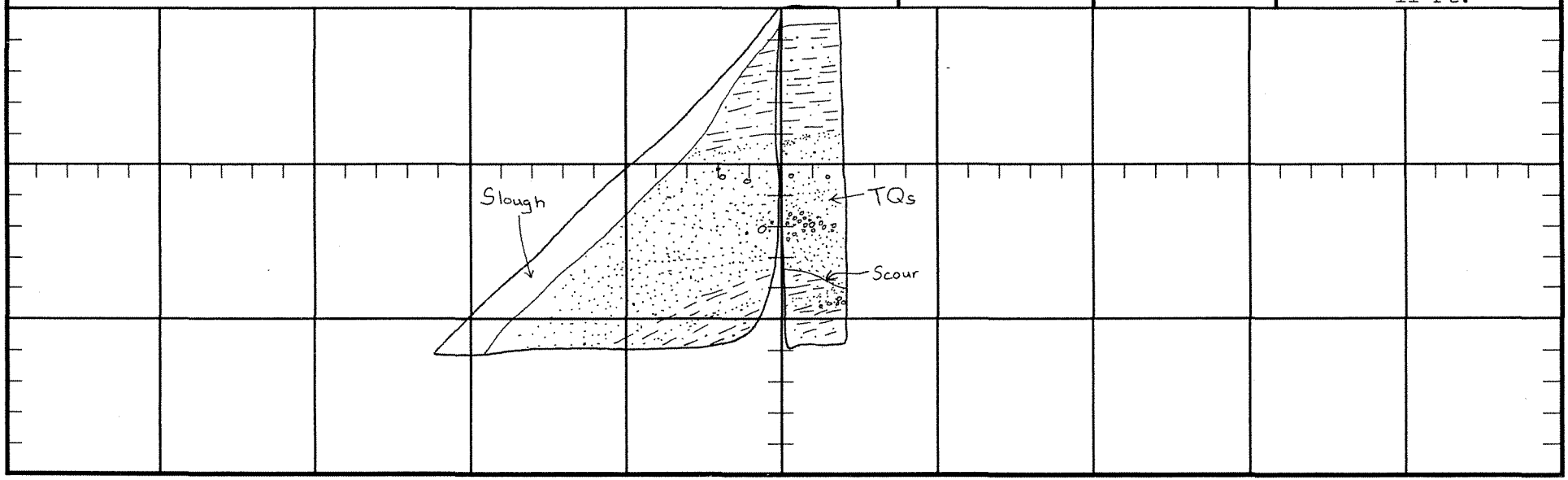
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SLOUGH; Brown sandy silt; soft; dry 1 - 11' BEDROCK; TQs, Light yellowish-brown sandy siltstone and yellowish-gray sandstone and pebbly sandstone; moderately hard to slightly friable; slightly damp; channeling and cross beddding in sandstone	N39W,29NE		Trenches T-21Q thru T-28Q excavated with a track-mounted back-hoe and logged on 9/10/99 Trench excavated into existing cut No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 15 W



ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

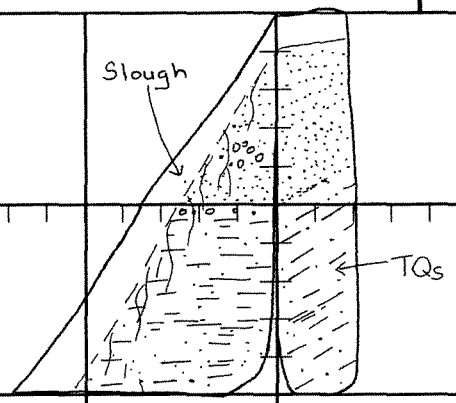
Trench Log No. 22Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SLOUGH; Yellowish-brown silty sand; soft; loose; dry			Trench excavated into existing cut
1 - 10' BEDROCK; TQs, Yellowish-gray sandstone and pebbly sandstone and yellowish-brown siltstone; moderately hard; dry to damp; crude bedding and channeling in sandstone; upper 2 feet creep affected and fractured	N40W,29NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 40 W



ALLAN E. SEWARD

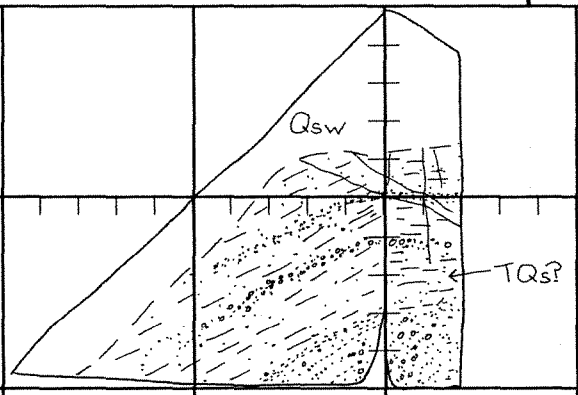
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS **Trench Log No.** 23Q DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; Qsw, Brown sandy silt with scattered pebbles and cobbles; loose; dry 4 - 10' BEDROCK?; TQs?; Yellowish-brown silty sandstone and light yellowish-brown sandstone and pebbly sandstone; moderately hard; slightly damp; $CACO_3$-lined fractures in upper 2 feet; bedding poor	Apx N82W,25NE		TQs is generally tight but bedding attitude is slightly off of regional

SCALE 1" = 5' N 45 E

TOTAL DEPTH 10 Ft.



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

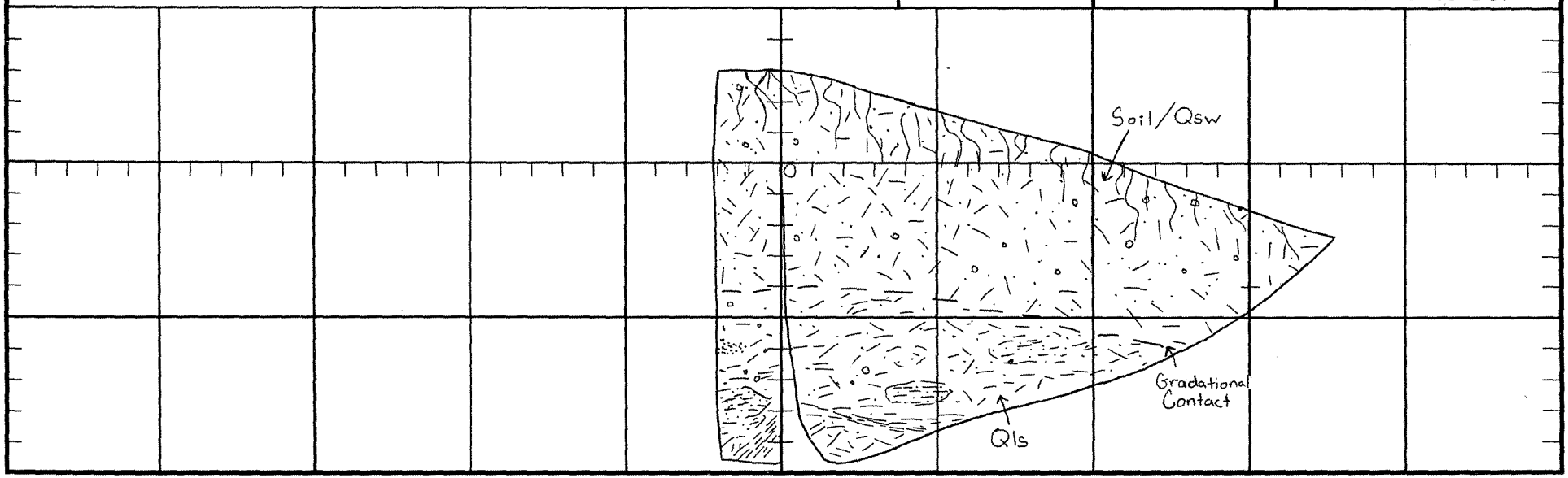
Trench Log No. 24Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Brown clayey silt with scattered pebbles and cobbles; soft to firm; damp			Soil/Slopewash may be an old debris flow
7 - 12.5' LANDSLIDE; Qls, Yellowish-brown to olive-brown sandy siltstone with irregular fragments of disturbed siltstone, sandstone and mudstone; soft to firm; damp	N10W,33NE		No Ground Water No Caving
			TOTAL DEPTH 12.5 Ft.

SCALE 1" = 5'

N 35 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

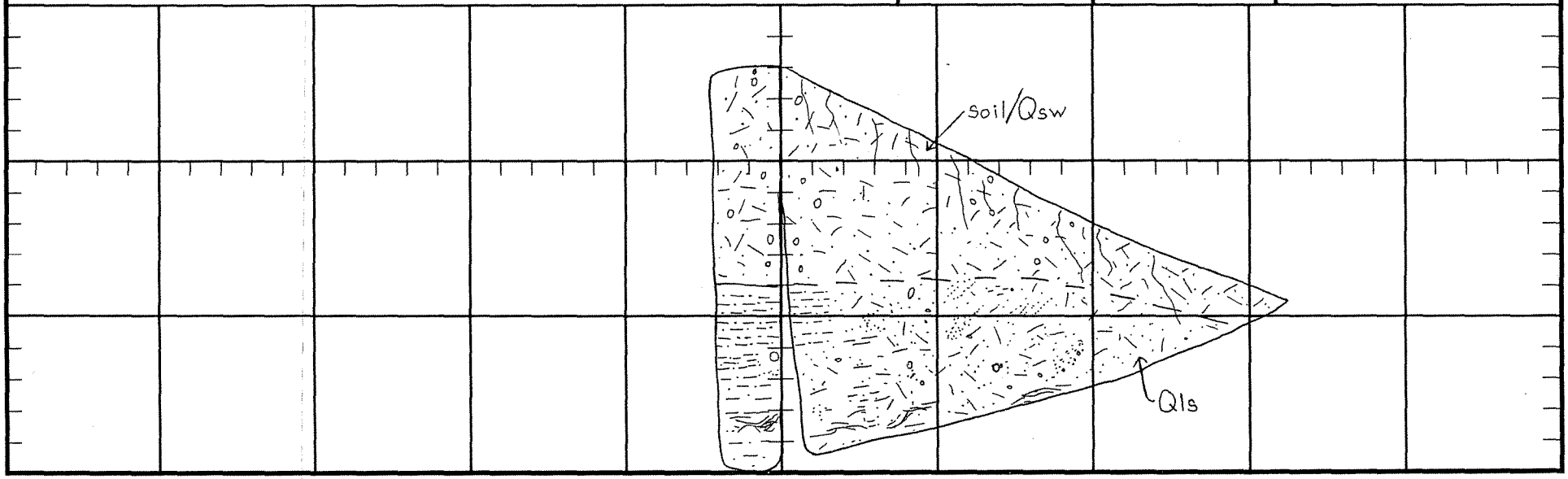
Trench Log No. 25Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Brown clayey sandy silt with scattered pebbles and cobbles 7 - 13' LANDSLIDE; Qls, Disrupted mix of yellowish-brown siltstone, light yellowish-brown silty sandstone and brown mudstone; soft to firm; damp; bedding jumbled			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 10 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

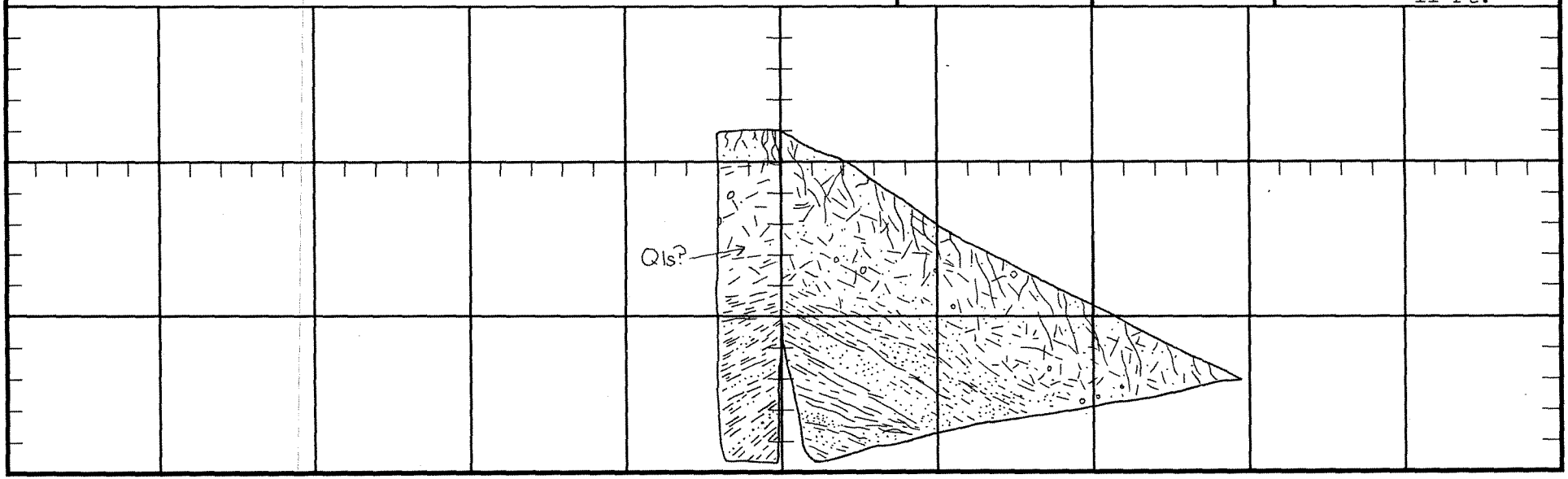
Trench Log No. T-26Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11' LANDSLIDE? Qls?, Yellowish-brown sandy siltstone to silty sandstone with interbedded laminated mudstone and sandstone; upper 3 feet weathered and fractured; moderately dense to moderately hard below; bedding locally laminated but slightly irregular	N64W,26NE		No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 20 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

LOGGED BY MAS/BJS

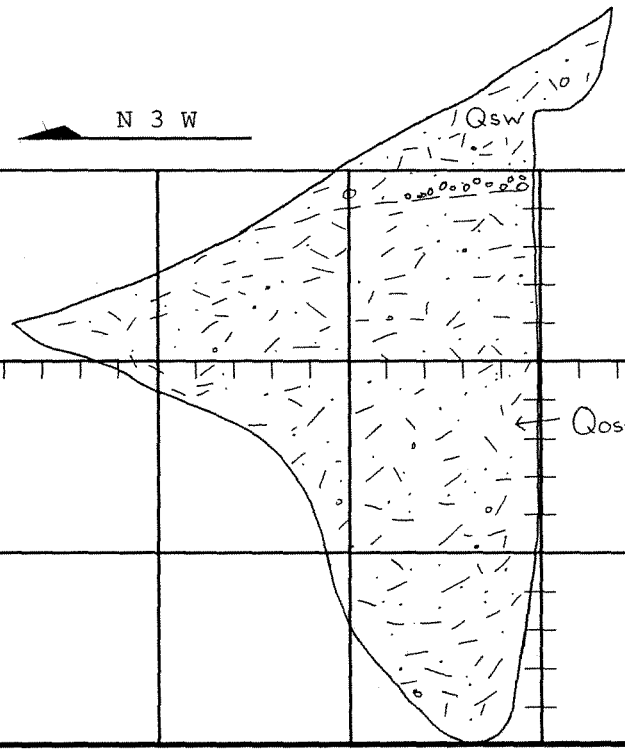
Trench Log No. 27Q

PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; Qsw, Brown clayey sandy silt; soft; dmap 4 - 19' OLDER SLOPEWASH/DEBRIS FLOW DEPOSIT; Qosw/Qdf, Yellowish-brown clayey sandy silt with local pebbles; soft to firm; damp to moist; no apparent bedding structure			Trench logged from surface No Ground Water No Caving TOTAL DEPTH 19 Ft.

SCALE 1" = 5'



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY MAS/BJS

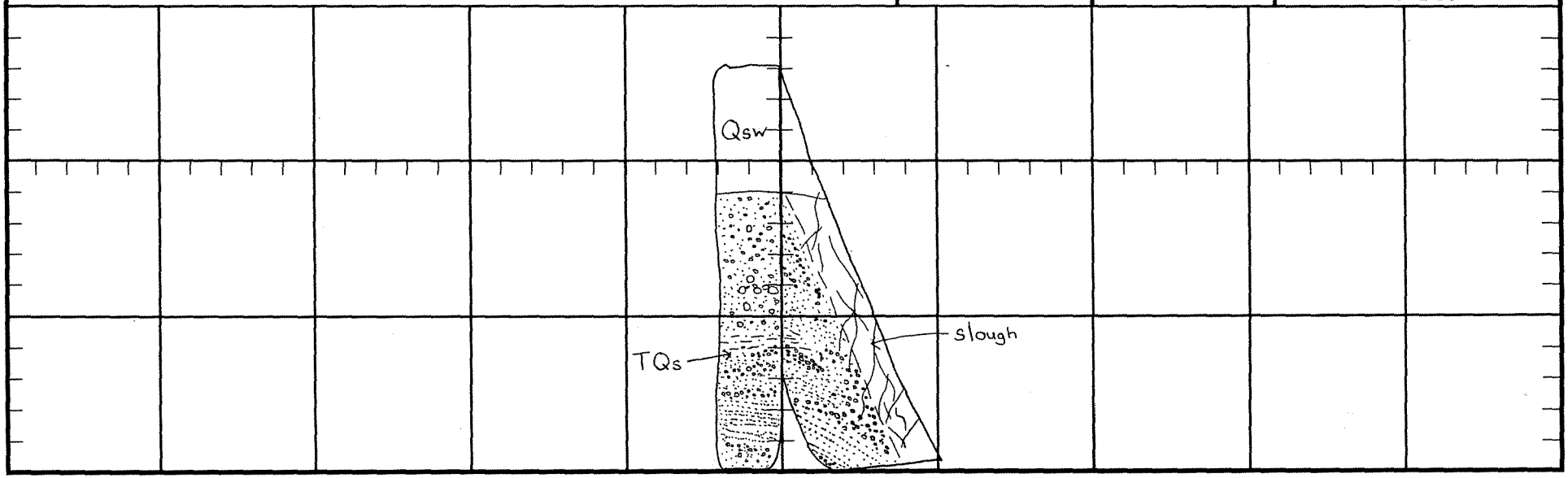
Trench Log No. 28Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; Qsw, Yellowish-brown sandy silt with scattered pebbles; soft; dry			Trench excavated into existing cut
4 - 13' BEDROCK?; TQs?, Light-gray sandstone and pebbly sandstone; dense but slightly to moderately friable; dry to slightly damp; cross bedding and channeling common	N35W,21NE		No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 45 E



ALLAN E. SEWARD

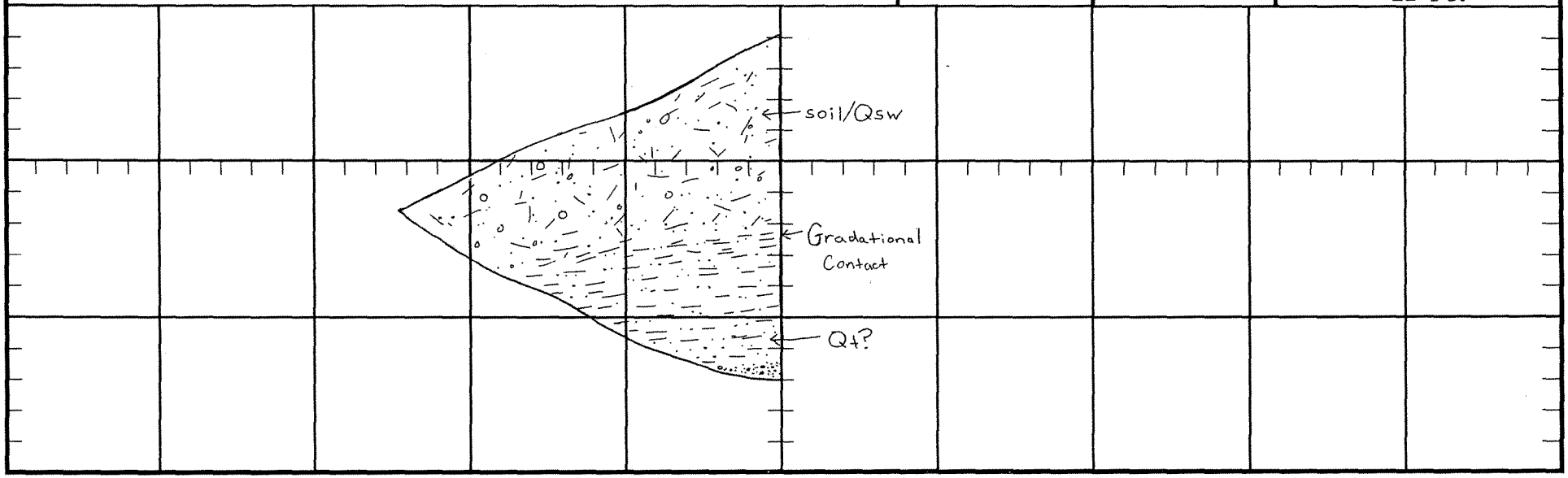
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 29Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light to medium-brown pebbly to cobbly sandy silt; moderately dense; dry 6 - 11' TERRACE DEPOSITS?; Qt?, Olive-gray to grayish-brown siltstone with scattered pebbles and light olive-gray coarse-grained pebbly sandstone at base; moderately dense to dense; slightly damp	Apx N60E,8NW		Trenches T-29Q and T-30Q excavated with a track-mounted backhoe and logged on 9/24/99 No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

Due East



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

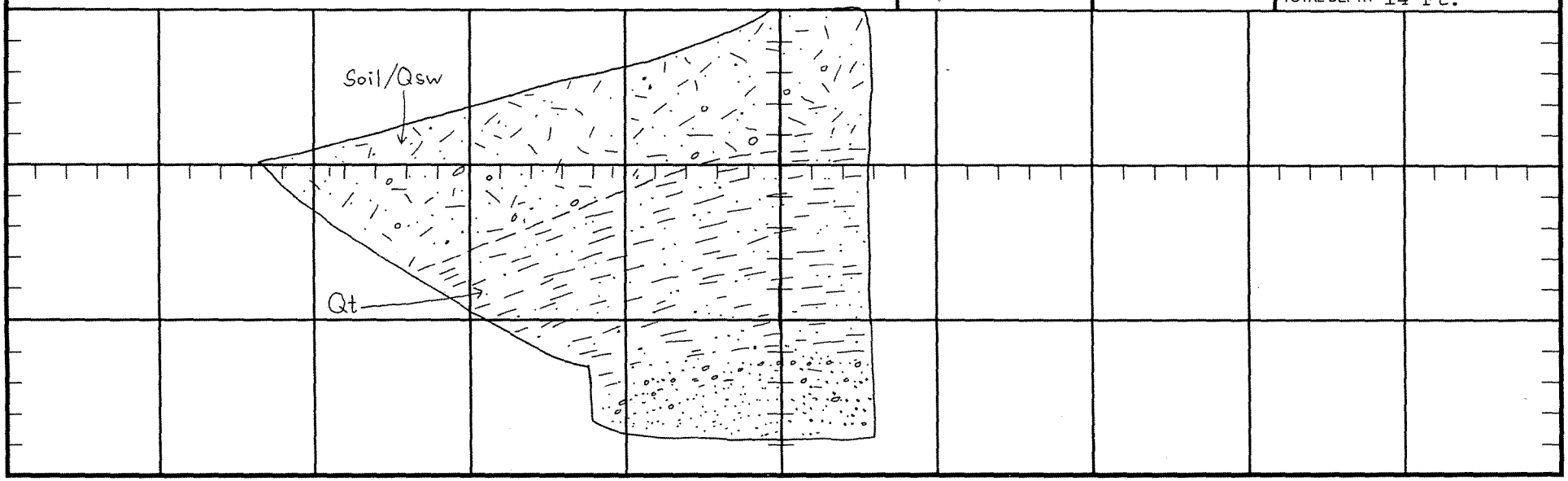
Trench Log No. 30Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown pebbly to cobbly sandy silt; moderately dense; dry	N84E,11NW		sw/Bedrock contact very gradational
4.5 - 14' TERRACE DEPOSITS?; Qt?, Olive-gray to grayish-brown siltstone with scattered pebbles and light olive-gray to yellowish-gray coarse-grained sandstone; moderately dense to dense; slightly damp			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 9 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

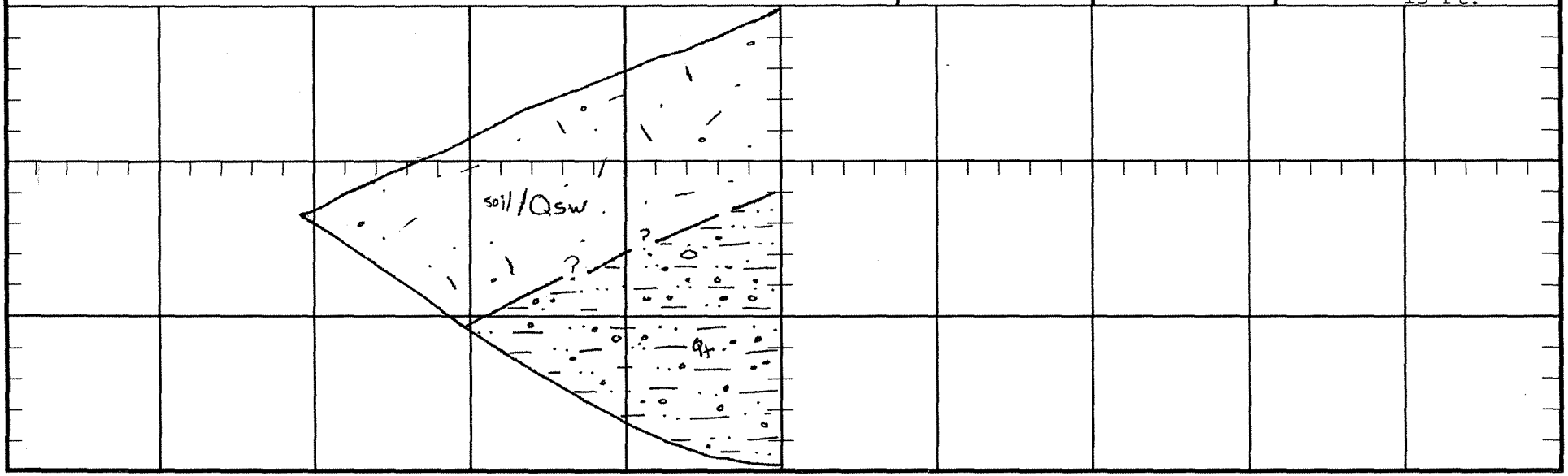
Trench Log No. 31Q

DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp 7 - 15' TERRACE DEPOSITS; Qt, Light-to medium-brown sandy siltstone with pebbles and scattered cobbles; moderately dense to dense; dry to slightly damp			Trenches 31Q thru 41Q excavated and logged 9/28/99 using track mounted backhoe with 24" bucket Contact between Qsw/ Qt gradational No Ground Water No Caving TOTAL DEPTH 15 Ft.

SCALE 1" = 5'

N 43 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

LOGGED BY DGG

Trench Log No. 32Q

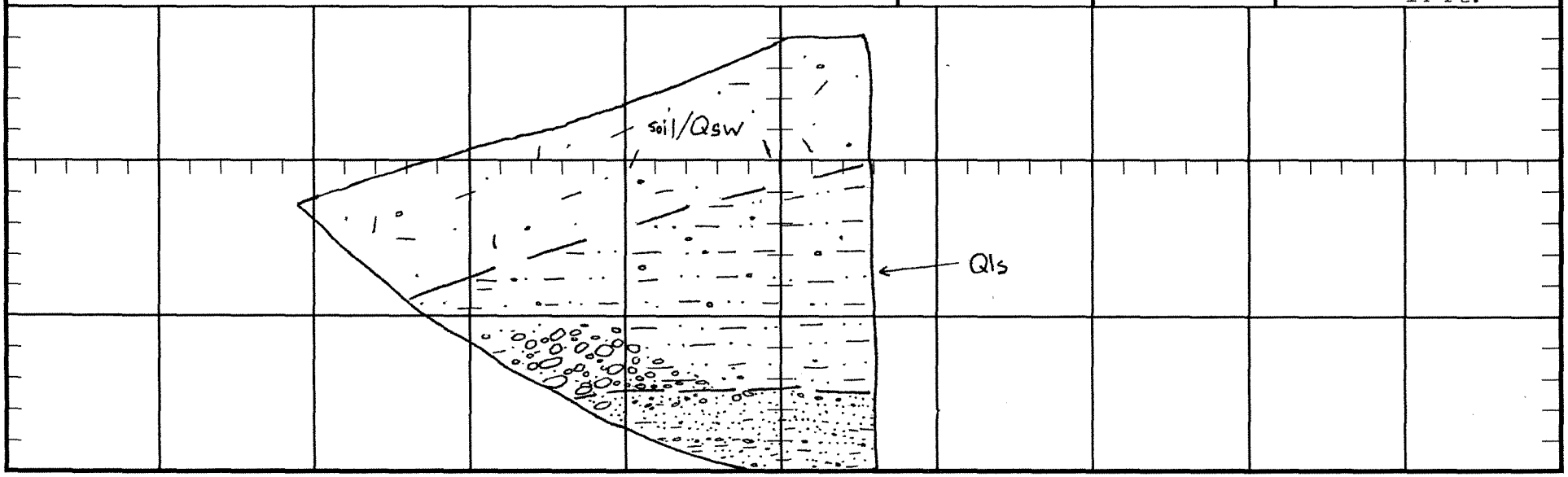
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp			
5 - 11.5' LANDSLIDE; Qls, Light-gray siltstone with scattered pebbles and large cobbles to boulders locally at base;dense; dry to slightly damp			
11.5 - 14' Medium-gray to light olive-gray siltstone to fine- to coarse-grained sandstone with pebbles and some scattered cobbles; moderately dense to dense; dry to slightly damp	Apx:N55W,8SW		No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 54 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

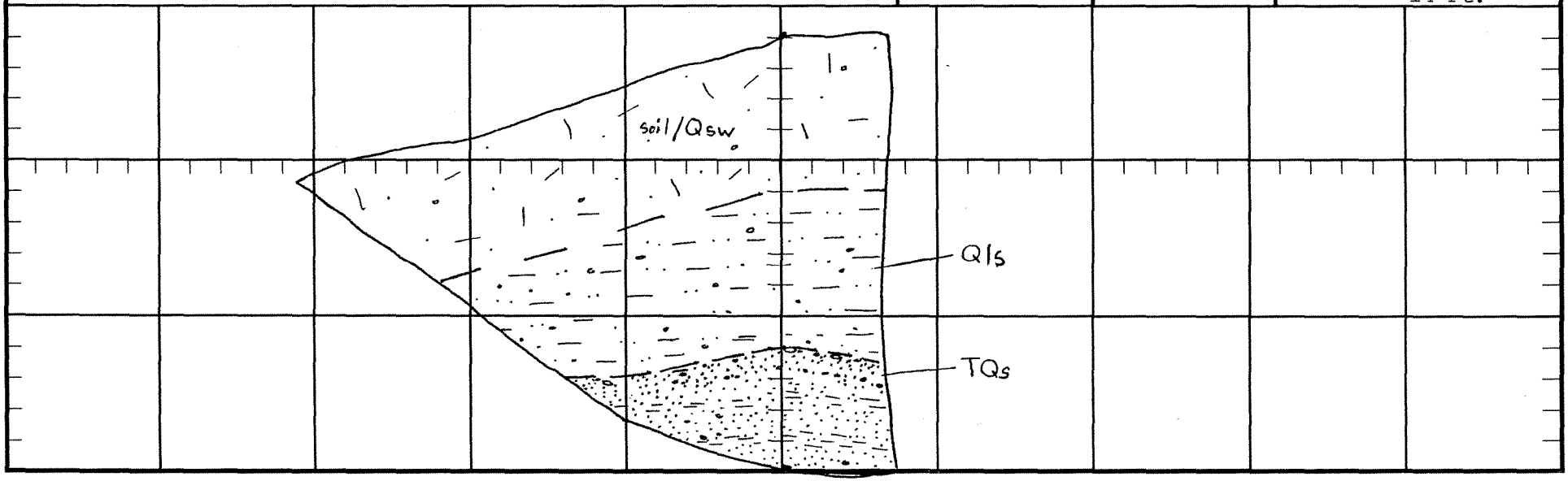
Trench Log No. 33Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp			
5 - 10' LANDSLIDE; Qls, Light-gray siltstone with scattered pebbles; dense; dry to slightly damp			
10 - 14' BEDROCK; TQs, Medium-gray to light olive-gray siltstone to fine- to coarse-grained sandstone with pebbles and some scattered cobbles; moderately dense to dense; dry to slightly damp	N62W,14NE		No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 84 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

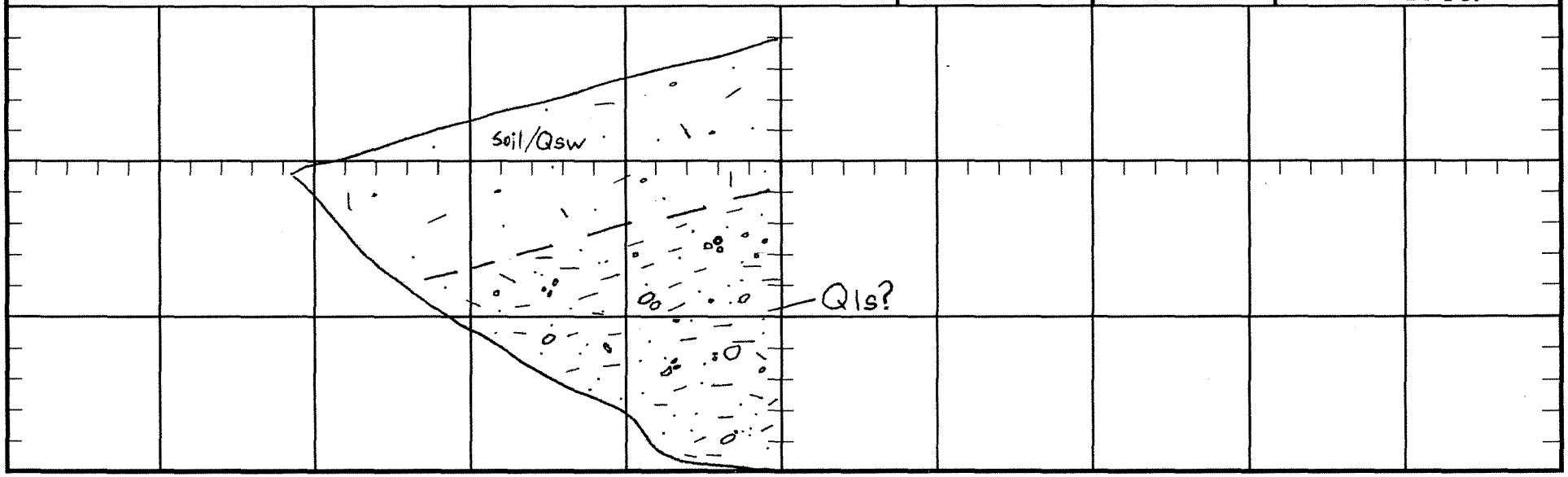
Trench Log No. 34Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp 5 - 14' LANDSLIDE; Qls?, Light to medium olive-gray siltstone to sandy siltstone with scattered pebbles and cobbles; moderately dense; slightly damp			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 67 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

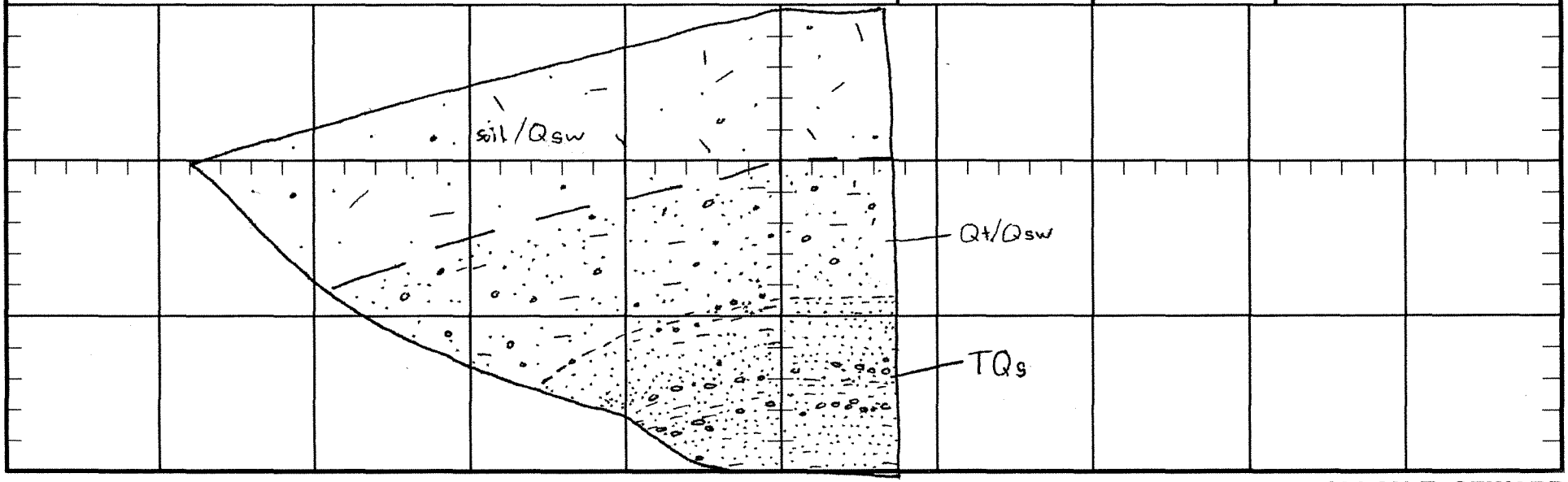
Trench Log No. 35Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp			
5 - 9' TERRACE/OLDER SLOPEWASH?, Qt/Qsw?, Slightly reddish-brown fine- to medium-grained sandstone with minor silt, pebbles and scattered cobbles; dense; slightly damp			
9 - 15' BEDROCK; TQs, Medium-gray to light olive-gray silt-stone to fine- to coarse-grained sandstone with pebbles and some scattered cobbles; moderately dense to dense; dry to slightly damp	Apx:N70W,13NE		No Ground Water No Caving TOTAL DEPTH 15 Ft.

SCALE 1" = 5'

N 43 E



ALLAN E. SEWARD

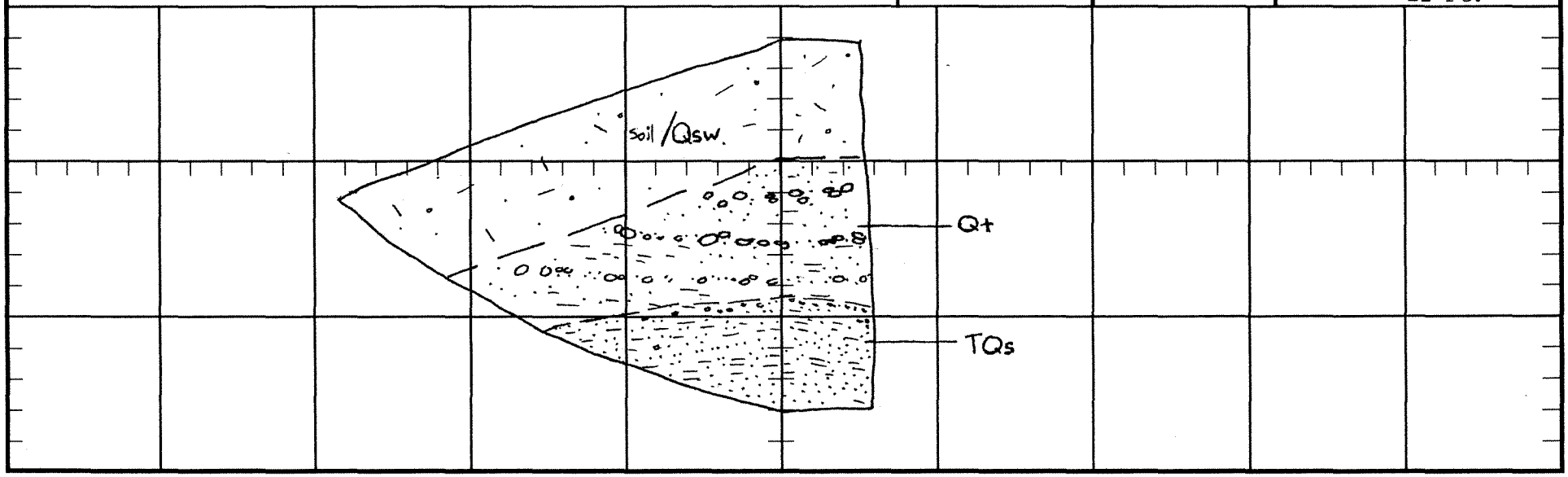
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 36Q DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp			
4 - 8.5' TERRACE DEPOSITS; Qt, Light-gray pebbly, cobbly, silty sandstone; loose to moderately dense; dry			
8.5 - 12' BEDROCK; TQs, Medium-gray to light olive-gray siltstone to fine- to coarse-grained sandstone with pebbles and some scattered cobbles; moderately dense to dense; dry to slightly damp	N60W,12NE		No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 15 W



ALLAN E. SEWARD

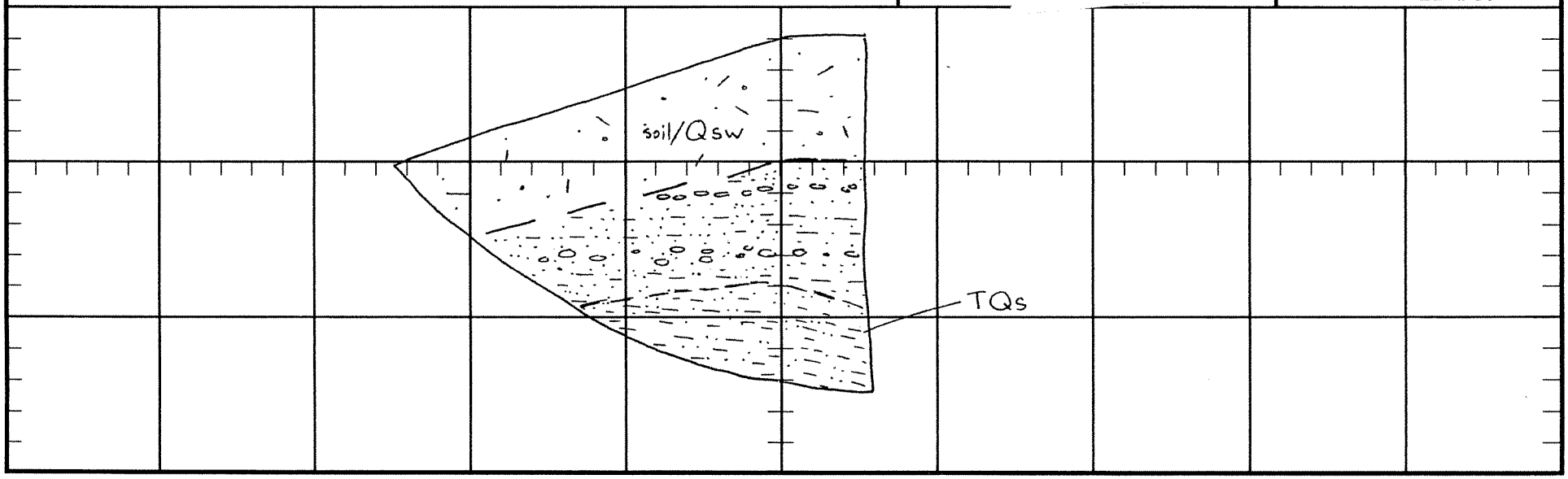
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 37Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp 4 - 8' TERRACE DEPOSIT; Qt, Light-gray pebbly, cobbly, silty sandstone; loose to moderately dense; dry 8 - 11' BEDROCK; TQs, Medium-gray to light olive-gray siltstone; dense; slightly damp	N69W,8NE		No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 88 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

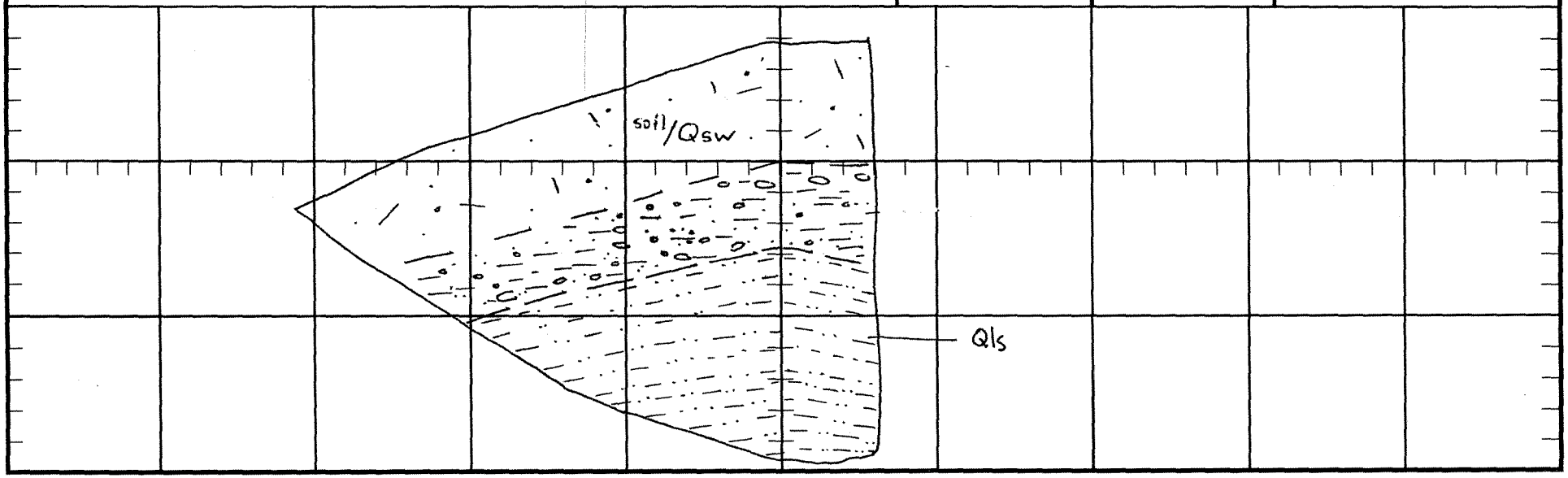
Trench Log No. 38Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp			All contacts very gradational
4 - 14' LANDSLIDE; Qls, Light-gray pebbly, cobbly, silty sandstone and medium-gray to light olive-gray siltstone; dense; sandstone slightly loose and weathered;dry to slightly damp	N68W,12NE		No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 40 E



ALLAN E. SEWARD

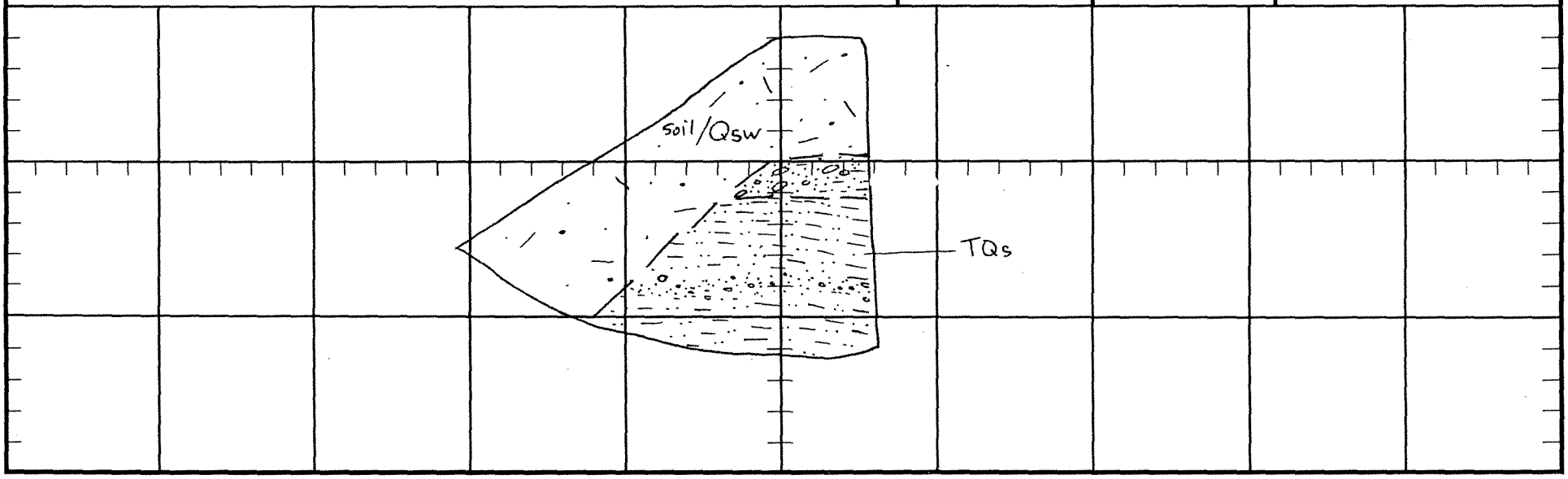
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 39Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp 4 - 10' BEDROCK; TQs, Light- to medium-gray pebbly sandstone and silty sandstone with scattered cobbles and light olive-gray sltstone; moderately dense to dense; dry; upper foot slightly reddish-brown and loose	Apx:N75W,9NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 37 W



ALLAN E. SEWARD

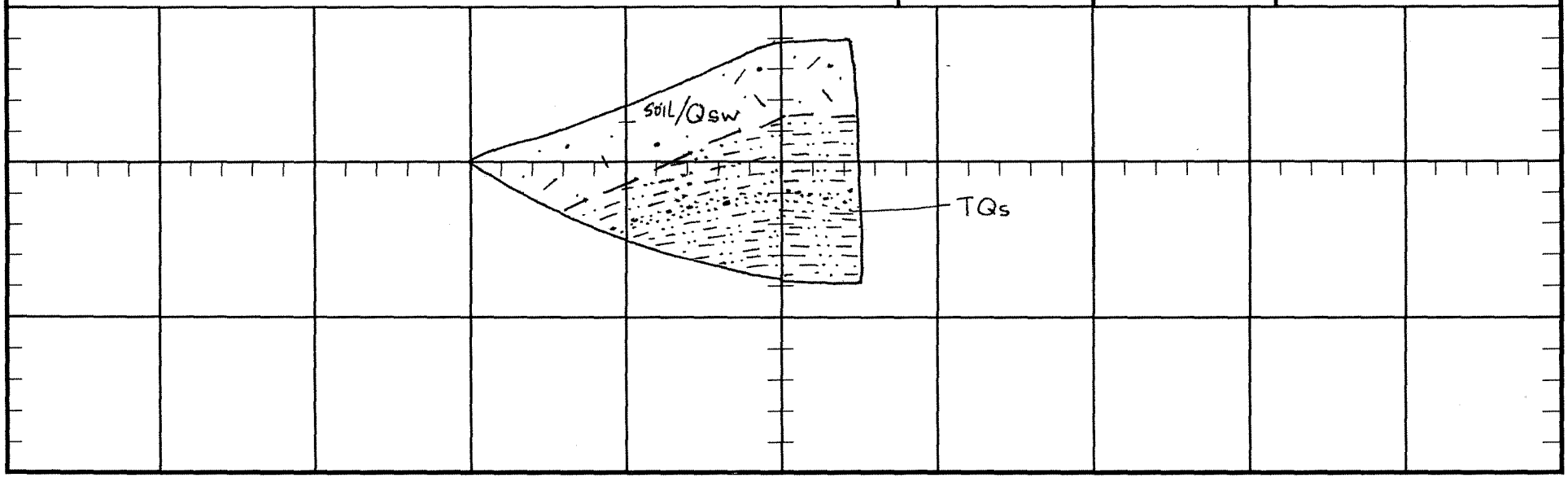
JOB NO. 99-1703Q1sI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 40Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp			
2.5 - 8' BEDROCK; TQs, Light-gray to light olive-gray siltstone to pebbly sandstone with scattered cobbles; moderately dense; dry	N38W,13NE		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 87 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

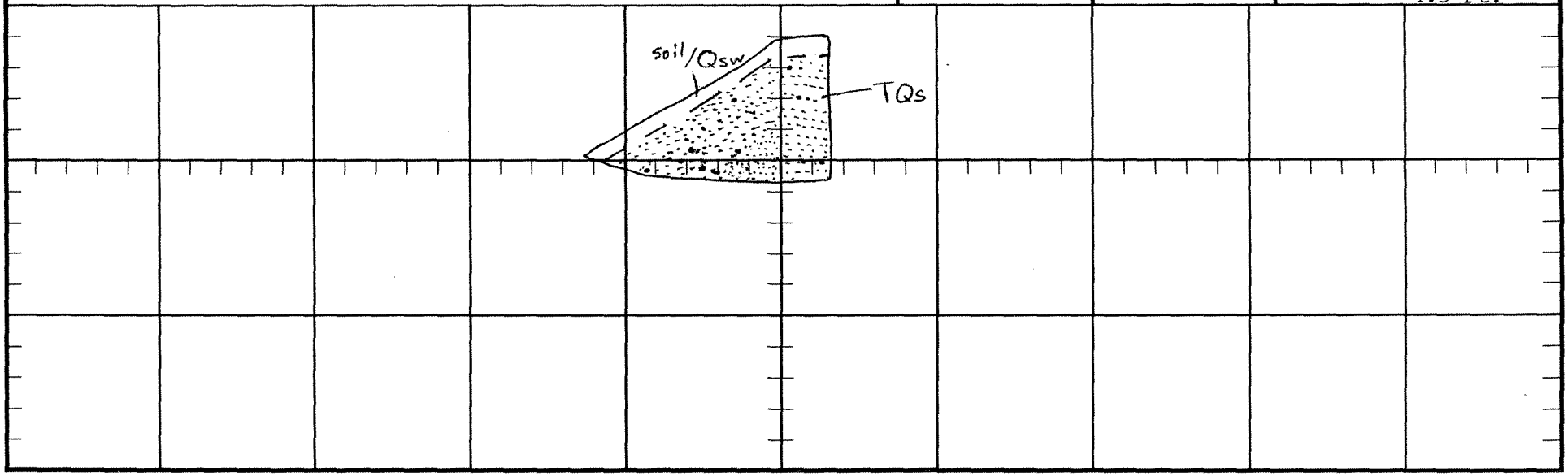
Trench Log No. 41Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6" SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; dense; dry to slightly damp 6" - 4.5' BEDROCK; TQs, Light-gray fine- to coarse-grained pebbly sandstone with scattered cobbles; loose to moderately dense; dry	N58W,11NE		No Ground Water No Caving TOTAL DEPTH 4.5 Ft.

SCALE 1" = 5'

N 36 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

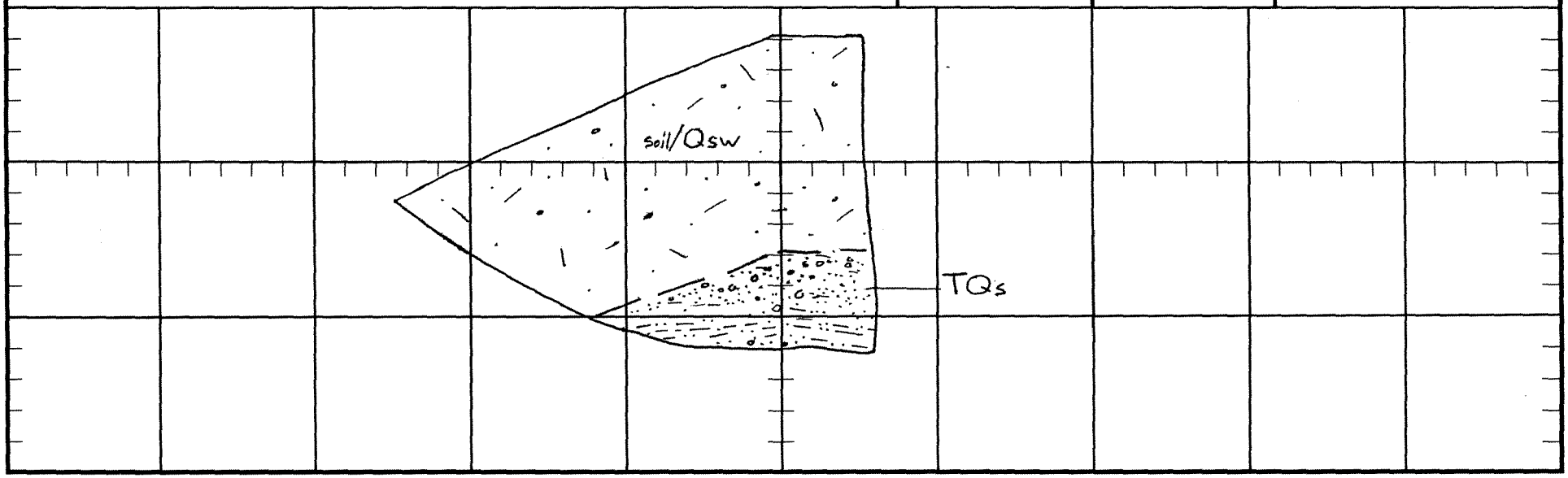
Trench Log No. 42Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Light to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry 7 - 10' BEDROCK; TQs, Light-brown to medium-gray siltstone to fine- to coarse-grained sandstone with scattered pebbles and cobbles; loose to moderately dense; dry	Apx:N79W,13NE		Trenches 42Q thru 53Q excavated and logged 9/29/99 using track-mounted back-hoe with 24" bucket 7-9' Highly weathered No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 65 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

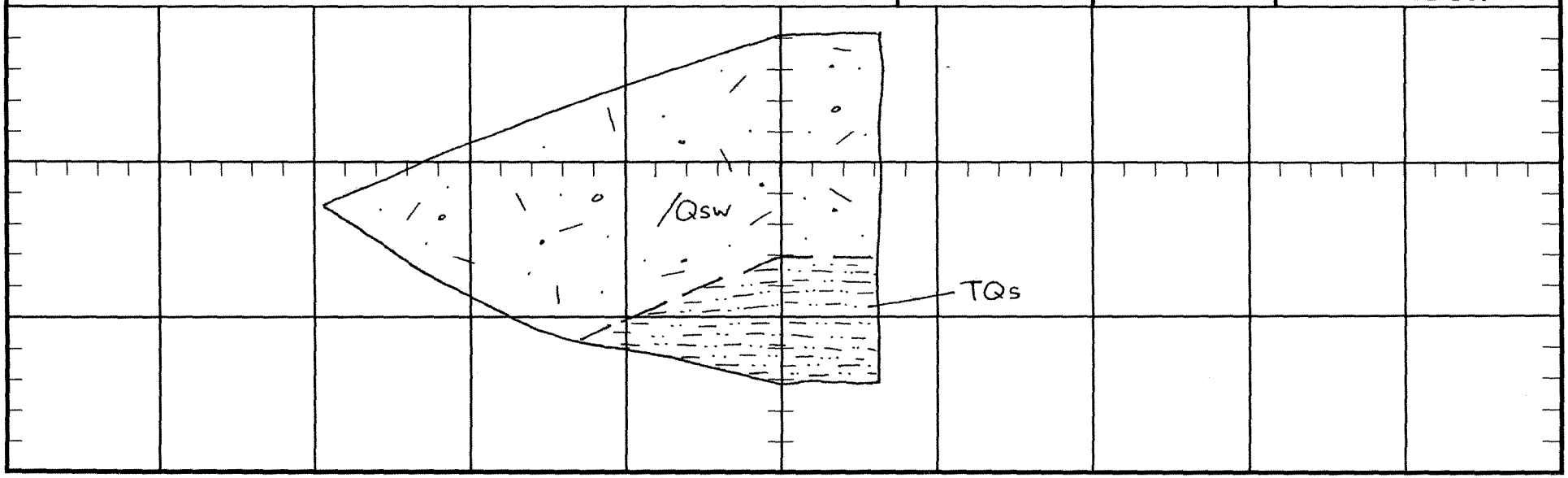
Trench Log No. 43Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry			
7 - 11' BEDROCK?; TQs?, Light-gray to medium-brown silt-stone; dense; dry	Apx:N35W,12NE		
			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 38 E



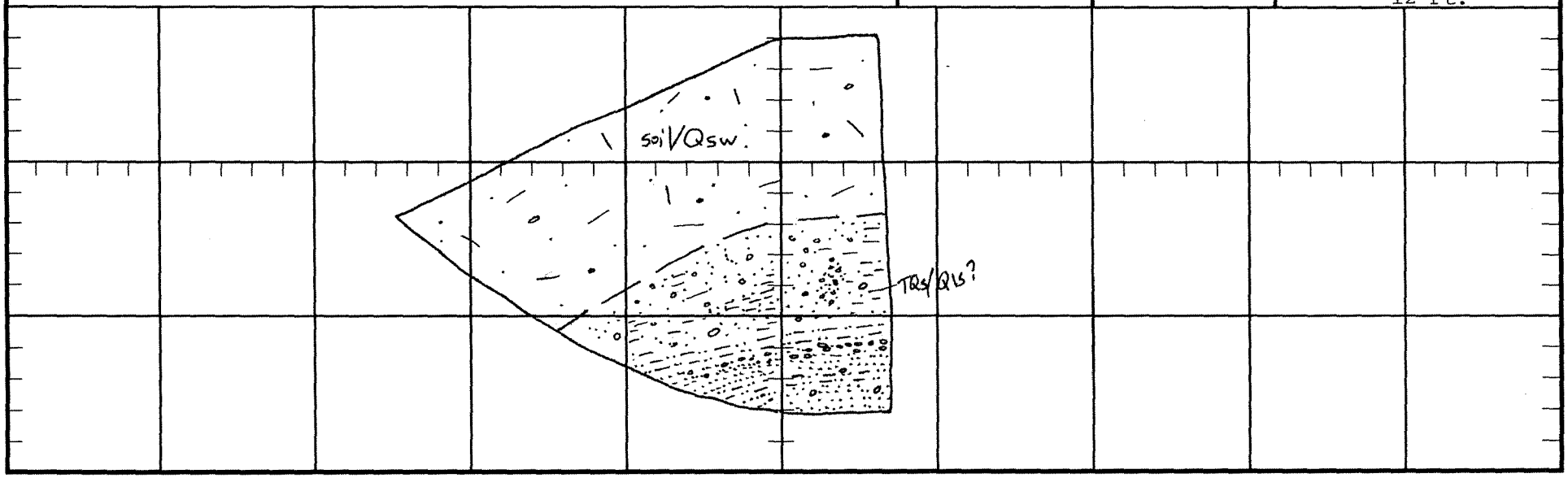
ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 44Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry			Material from 6-9' appears disturbed; material from 9-12' is tighter and may be in-place
6 - 12' BEDROCK/LANDSLIDE?; TQs/Qls?, Light-gray silty sandstone sandy siltstone and light-brown to medium-gray siltstone to fine- to coarse-grained sandstone with scattered pebbles and cobbles; loose to moderately dense; dry	N30W,16NE		No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5' N 49 E



ALLAN E. SEWARD

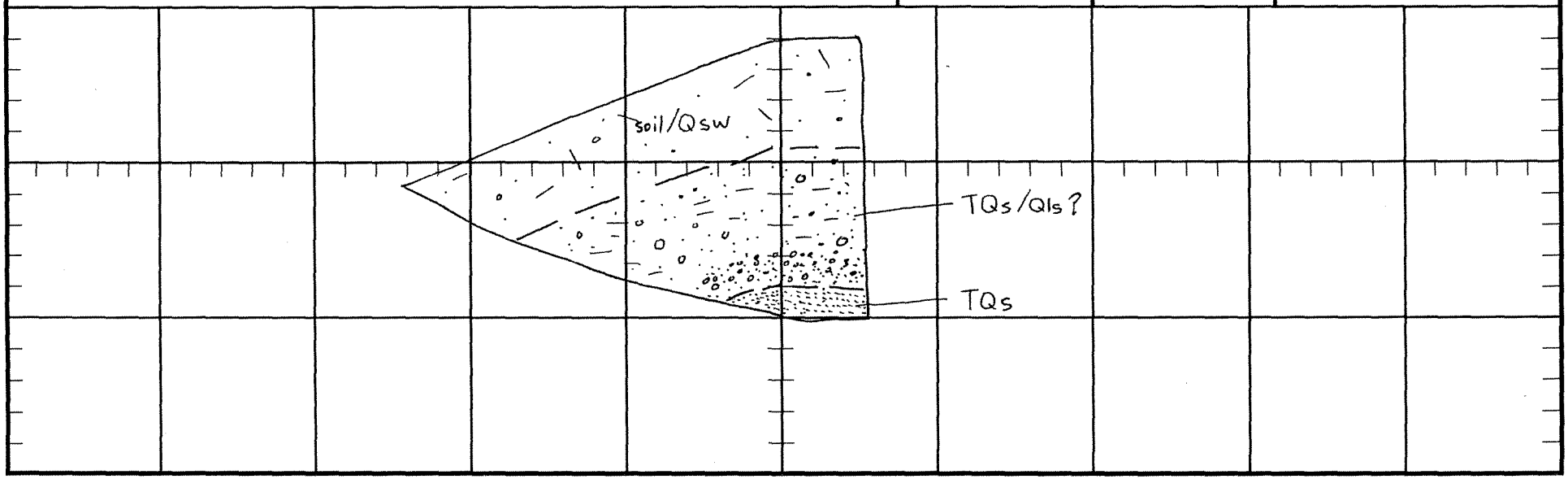
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 45Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry			
3.5 - 8' BEDROCK/LANDSLIDE?; TQs/Qls?, Light-gray silty sandstone/sandy siltstone with scattered pebbles and cobbles; loose; dry			
8 - 9' BEDROCK; TQs, Light-gray fine-grained sandstone; moderately dense; dry	N30W,12NE		
			No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

Due East



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

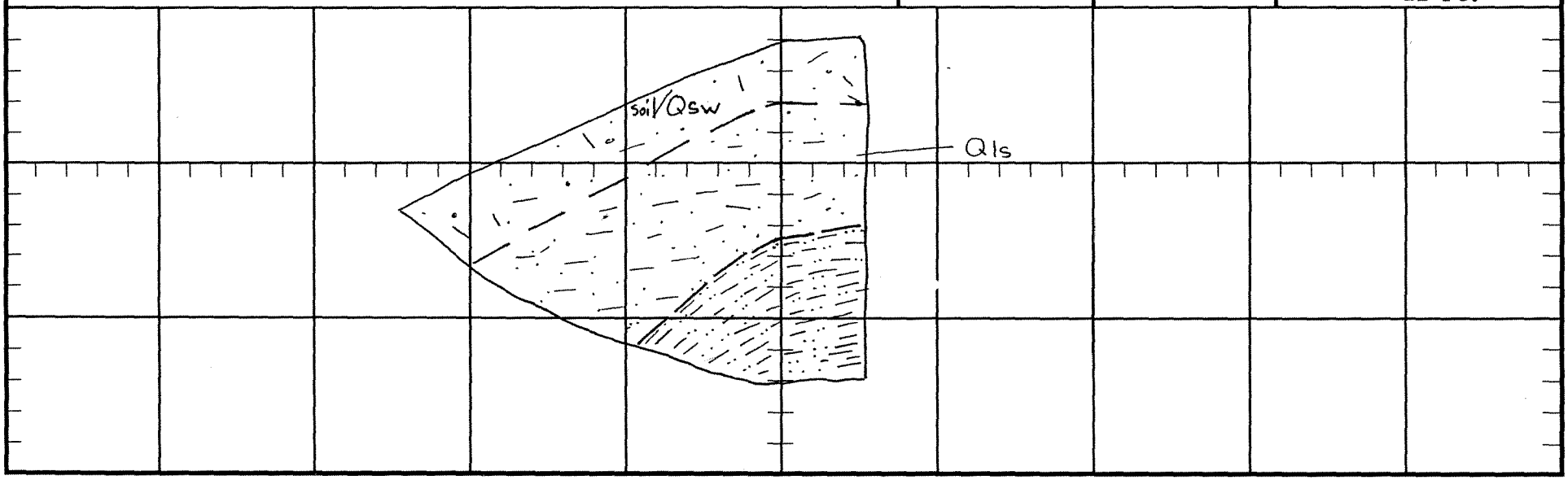
Trench Log No. 46Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry 2 - 6.5' LANDSLIDE; Qls, Light yellowish-gray siltstone; loose; dry 6.5 - 11' Light-gray to medium-gray silt-stone; dense; dry to slightly damp		Sp? Apx: N53E,26SE	No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 75 W



ALLAN E. SEWARD

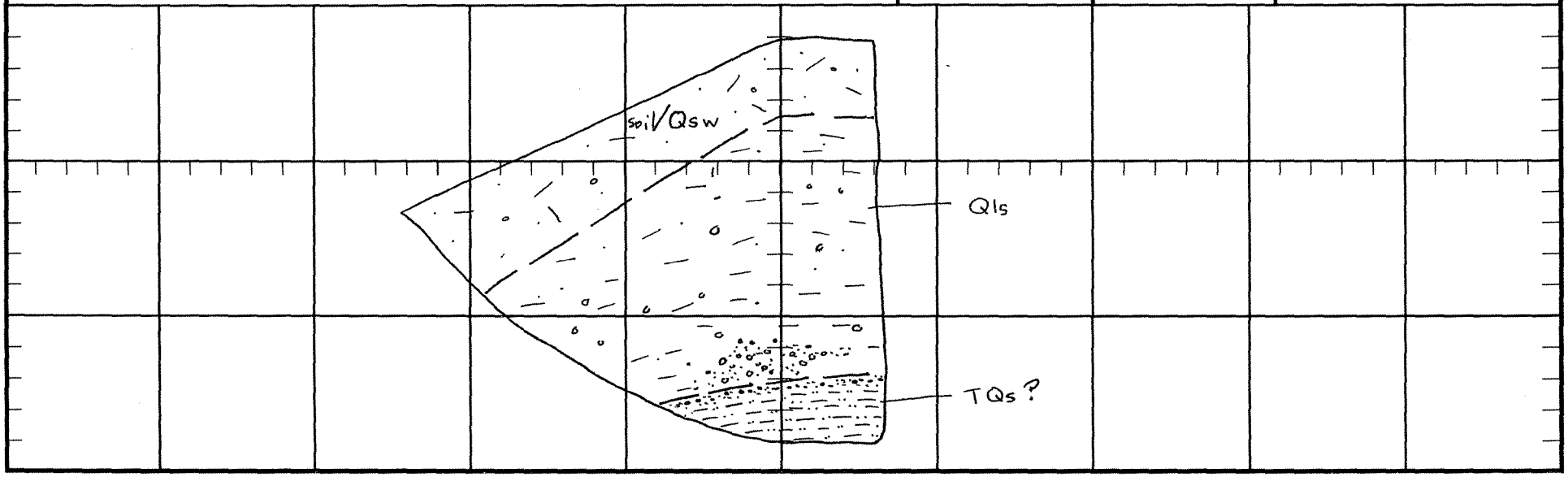
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 47Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry			Slopewash/Qls contact gradational
2.5 - 11' LANDSLIDE; Qls, Light- to medium-gray sandy siltstone with scattered pebbles and cobbles; loose; dry to slightly damp with caliche			
11 - 13' BEDROCK?; TQs?, Light- to medium gray sandy siltstone to coarse-grained pebbly sandstone; dense; slightly damp	Apx:N65W,18NE		No Ground Water No Caving

SCALE 1" = 5' N 6 E

TOTAL DEPTH 13 Ft.



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

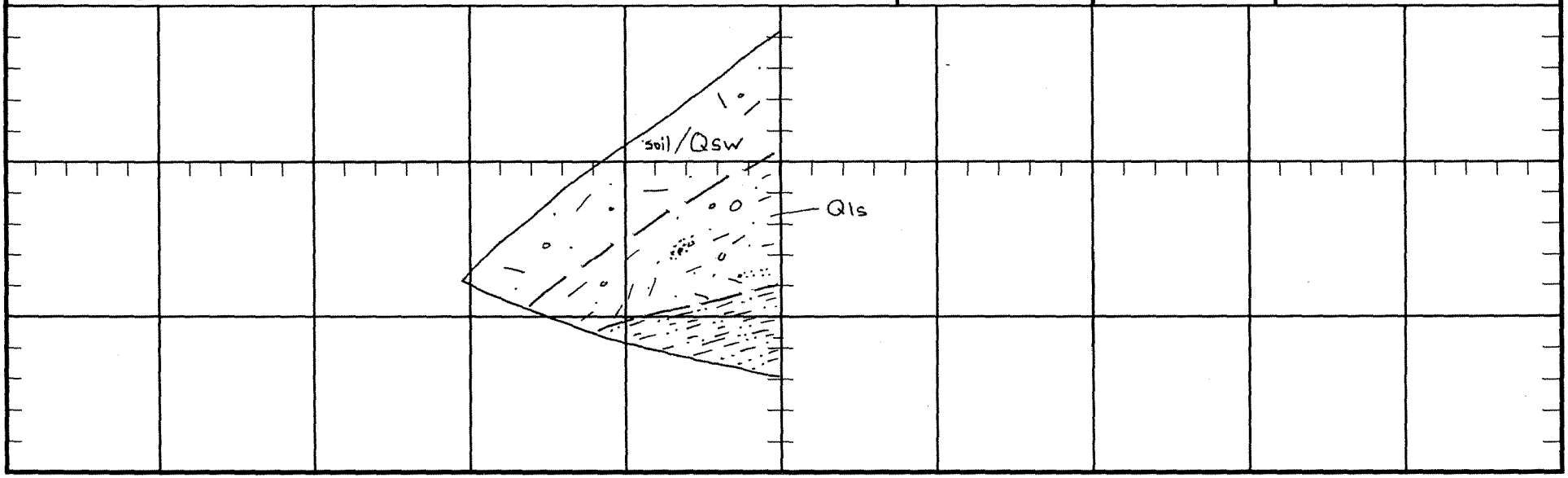
Trench Log No. 48Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry 3.5 - 8' LANDSLIDE; Qls, Light-to medium-gray sandy silt-sotne with scattered pebbles and cobbles; loose; dry to slightly damp with caliche 8 - 11' Light- to medium-gray siltstone; dense;slightly damp		SP?:N58E,15SE	No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

Due East



ALLAN E. SEWARD

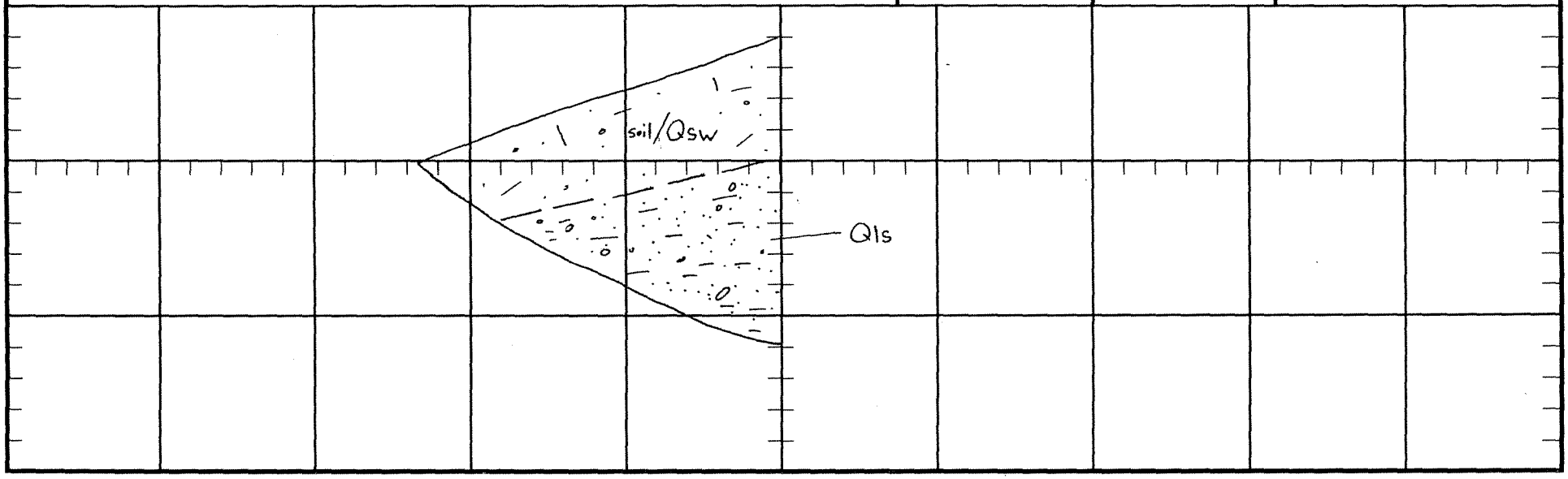
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 49Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry 4 - 10' LANDSLIDE?; Qls?, Light- to medium-gray sandy siltstone with scattered pebbles and cobbles; loose; dry to slightly damp with caliche; moderately dense at base			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 28 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

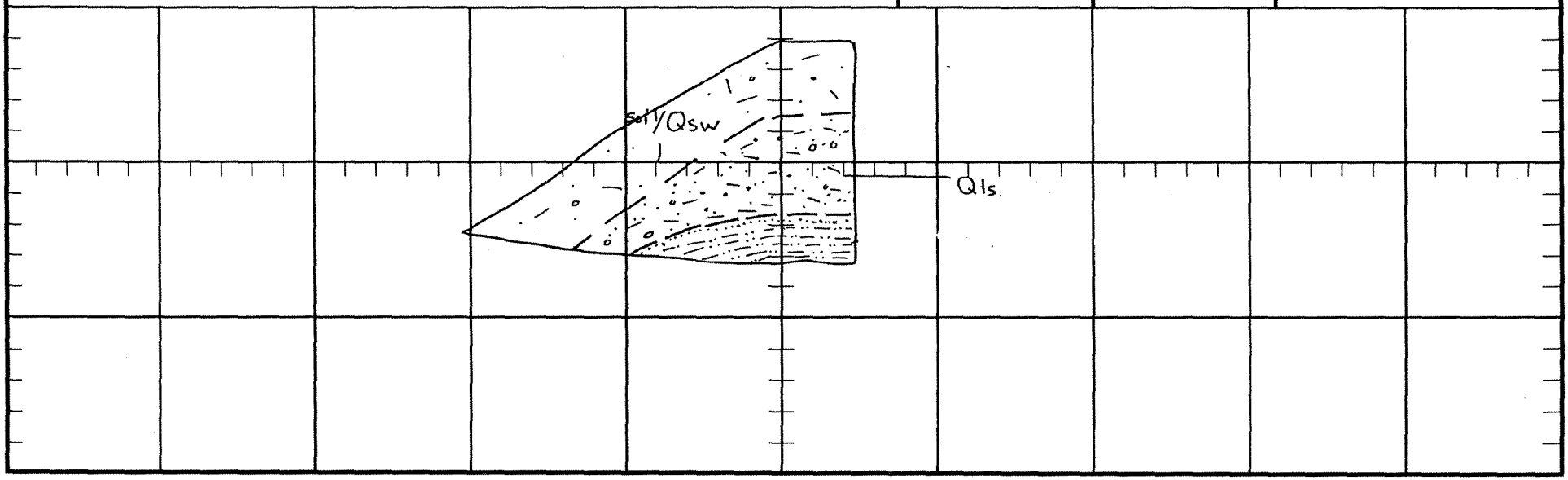
Trench Log No. 50Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2.5'? SOIL/SLOPEWASH; soil/Qsw, Light to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry			
2.5 - 6' LANDSLIDE; Qls, Light to medium-gray sandy siltstone with scattered pebbles and cobbles; loose; dry to slightly damp with caliche caliche	N56W,18NE		
6 - 7' Medium-gray sandy siltstone; dense; dry			
			No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 48 E



ALLAN E. SEWARD

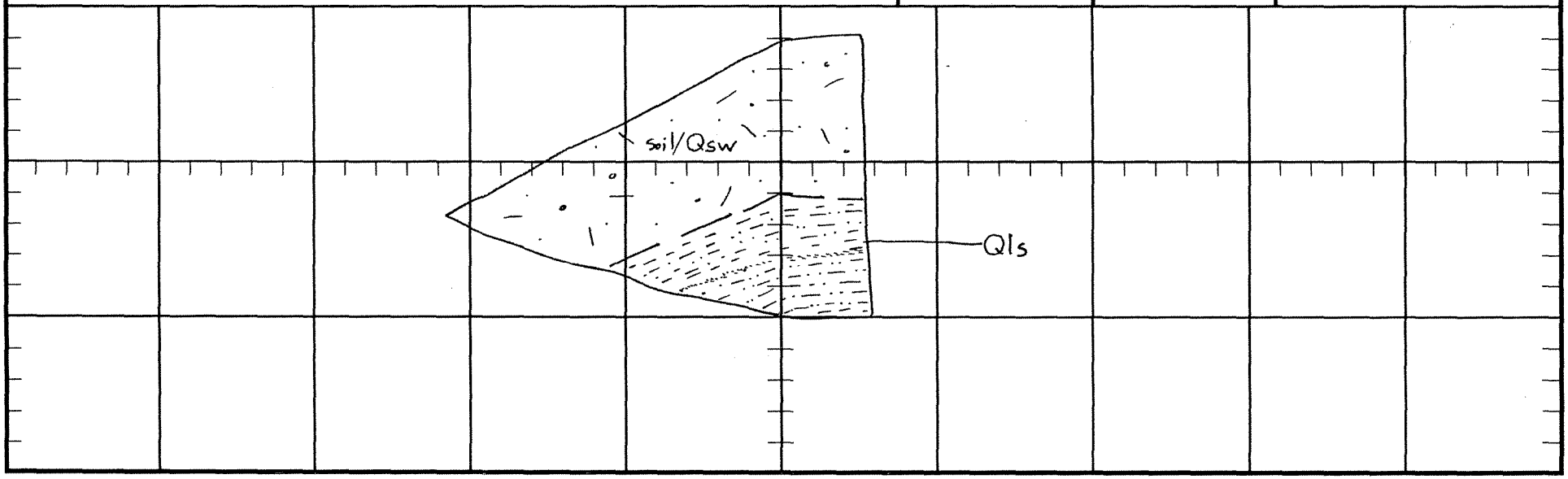
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 51Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry			
5 - 9' LANDSLIDE; Qls, Light- to medium-gray siltstone to sandy siltstone; dense to very dense; dry	Apx:N64W;16NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 28 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

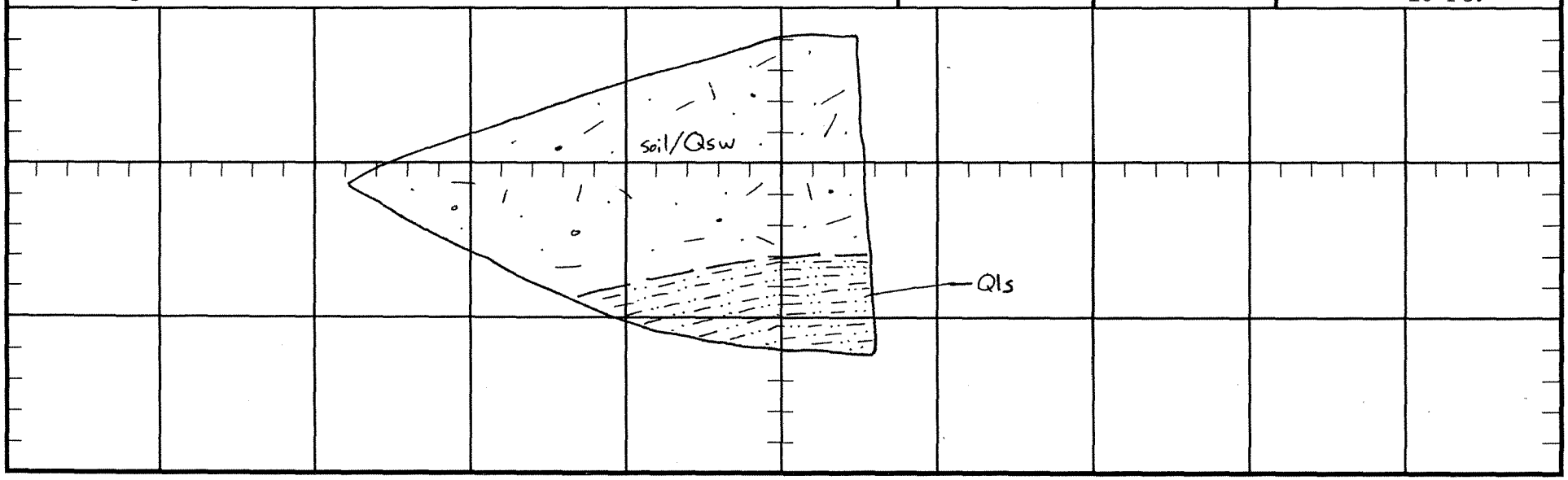
Trench Log No. 52Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry			
7 - 10' LANDSLIDE; Qls, Light- to medium-gray siltstone to sandy siltstone; dense to very dense; dry	Apx:N65W,11NE		
			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 23 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

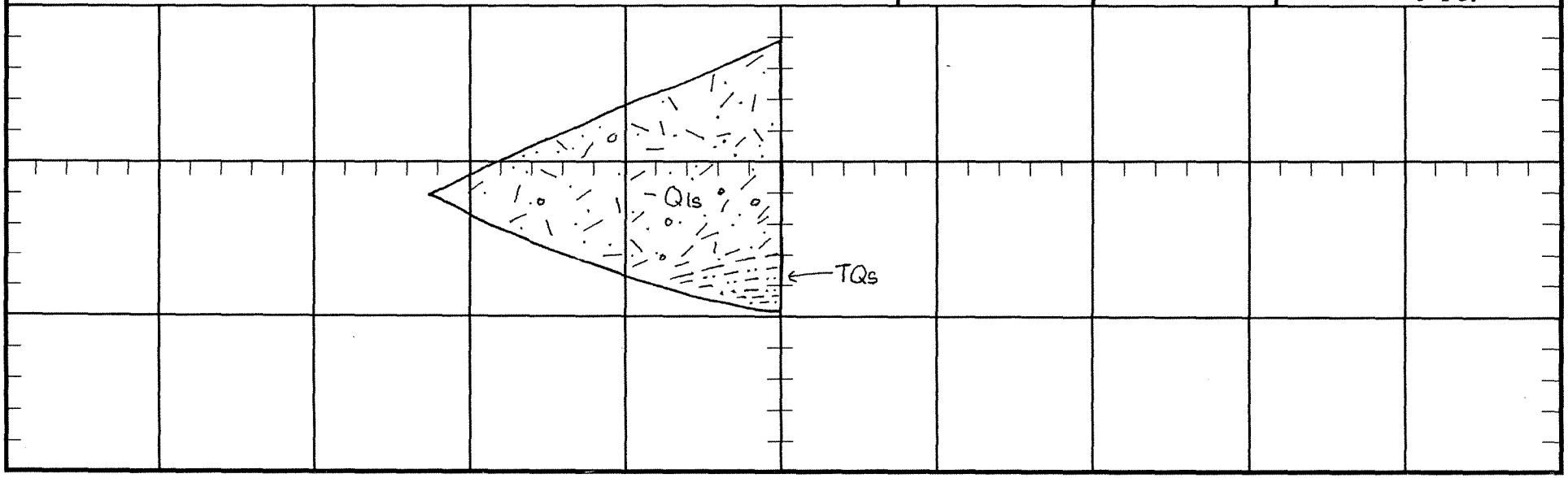
Trench Log No. 53Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' LANDSLIDE; Qls, Medium-brown to brownish-gray silty sand/sandy silt with pebbles and cobbles; chaotic; loose; dry			Upper portion of Qls is probably Qsw.
7 - 9' BEDROCK; TQs, Light-to medium-gray siltstone to sandy siltstone; moderately dense; dry			
			No Ground Water No Caving
			TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 78 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

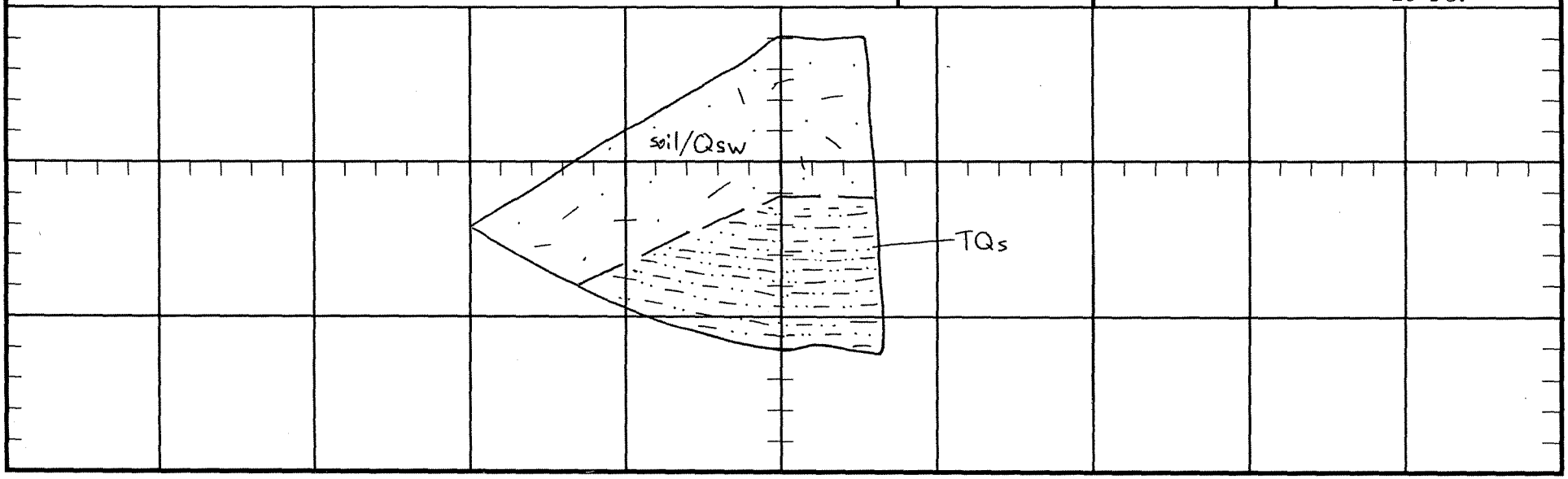
Trench Log No. 54Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light to medium-gray sandy siltstone; loose to moderately dense; dry; fractured; caliche with local lenses of fine- to coarse-grained sand; loose 5 - 10' BEDROCK; TQs, Medium-gray to medium-brown siltstone; dense to very dense; slightly damp	Apx: N48W,15NE		Trenches 54Q thru 64Q excavated and logged 9/30/99 using a track-mounted backhoe with a 24" bucket No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 46 E



ALLAN E. SEWARD

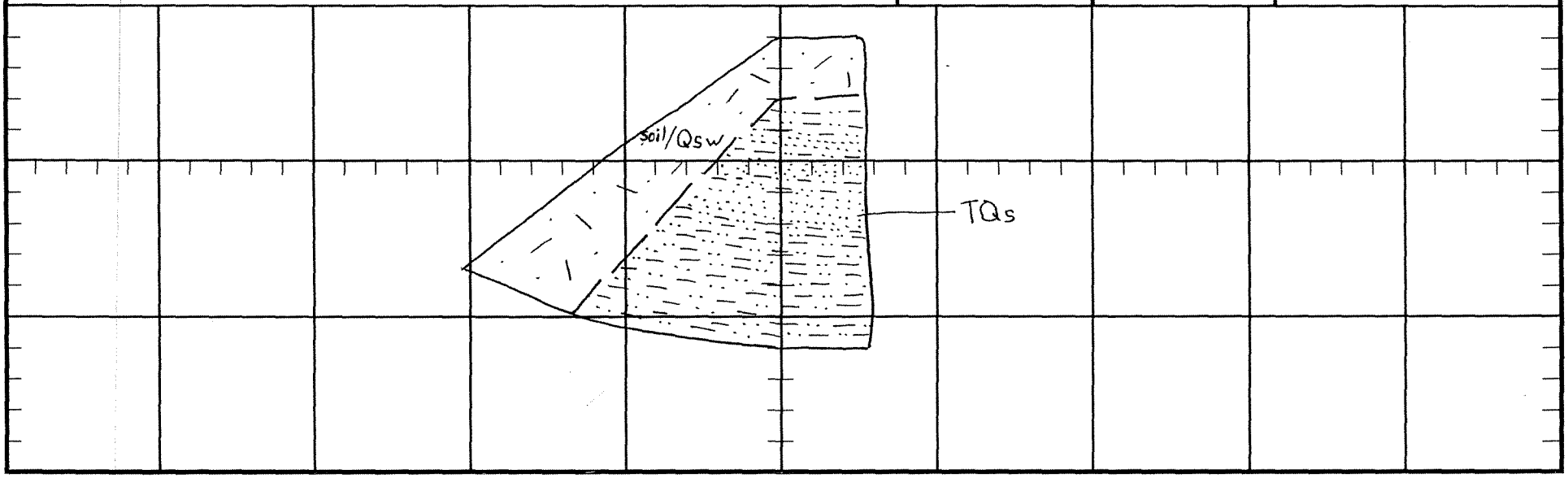
JOB NO. 99-1703Q1sI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 55Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-gray sandy siltstone; loose to moderately dense; dry; fractured; caliche with local lenses of fine- to coarse-grained sand; loose			Upper portions of TQs creep affected
2 - 10' BEDROCK; TQs, Light-to medium-gray siltstone to sandy siltstone to fine- to medium-grained siltstone; dense to very dense; slightly damp	N52W,14NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

N 51 E

SCALE 1" = 5'



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

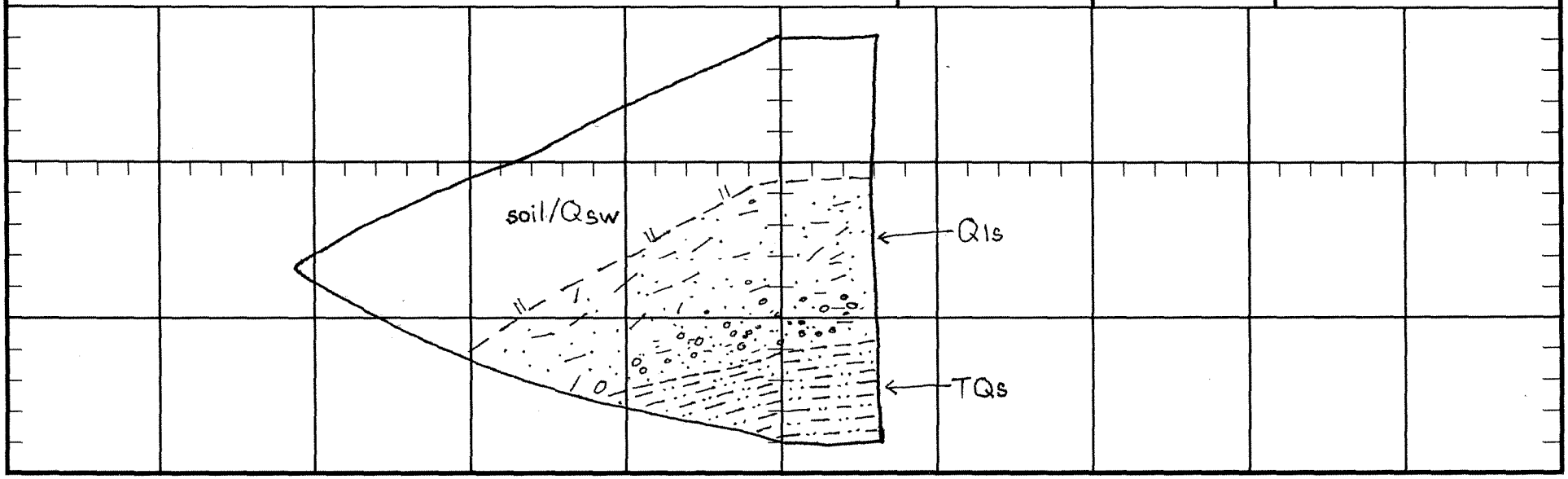
Trench Log No. 56Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-gray sandy siltstone, with local lenses of fine- to coarse-grained sand ; loose to moderately dense; dry; fractured; caliche 4.5 - 10' LANDSLIDE; Qls, Medium-gray sandy siltstone; moderately dense; soft; slightly damp; cobble lense at base 10 - 13' BEDROCK; TQs, Medium-gray siltstone; dense; slightly damp	SP?:N36W,15NE		No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 9 E



ALLAN E. SEWARD

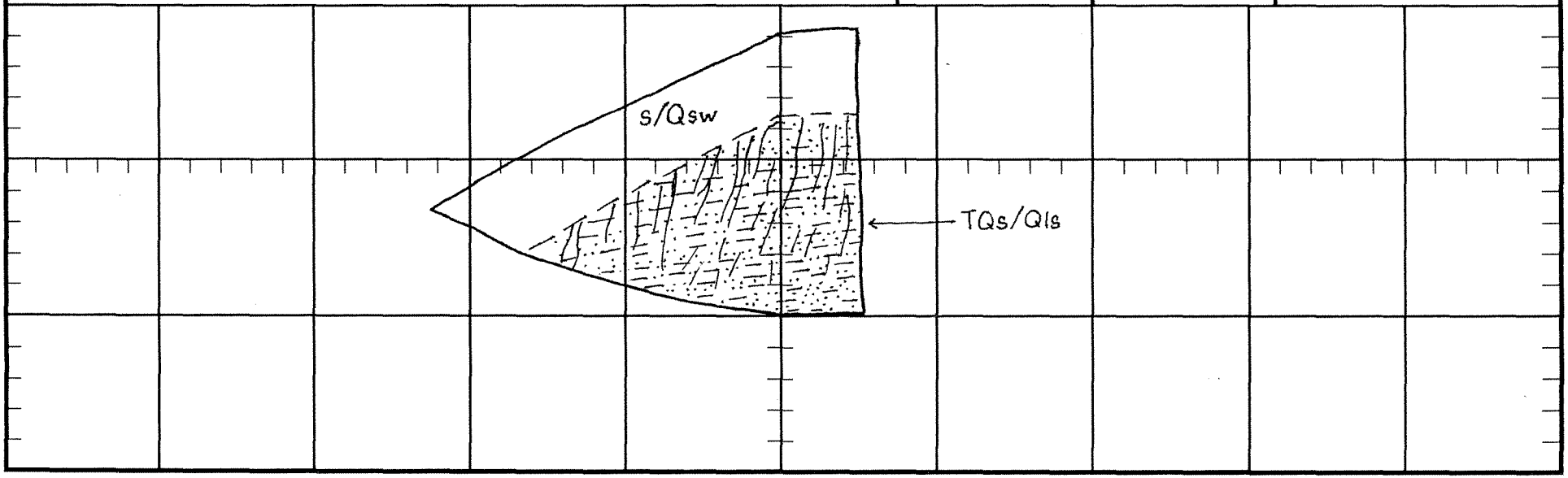
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 57Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2.5' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt; loose to moderately dense; dry			Upper 2 ft. TQs - weathered caliche-lined fracture surfaces
2.5 - 9' BEDROCK/LANDSLIDE?; TQs/Qls?, Light-to medium-gray siltstone to sandy siltstone; loose to dense; soft at upper margin; slightly damp	Apx:N40W,15NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 48 W



ALLAN E. SEWARD

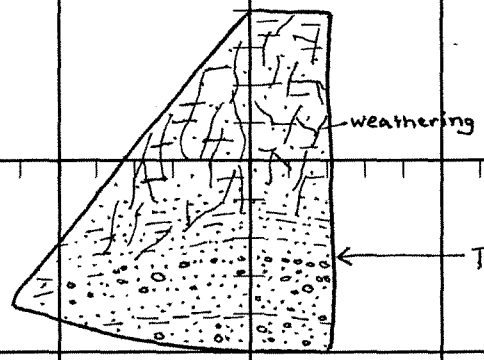
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 58Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light-gray siltstone to sandy siltstone to fine- to coarse-grained pebbly cobbly sandstone; loose to moderately dense; dry	N66W,13NE		Top 5 ft. of TQs weathered No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 87 E



ALLAN E. SEWARD

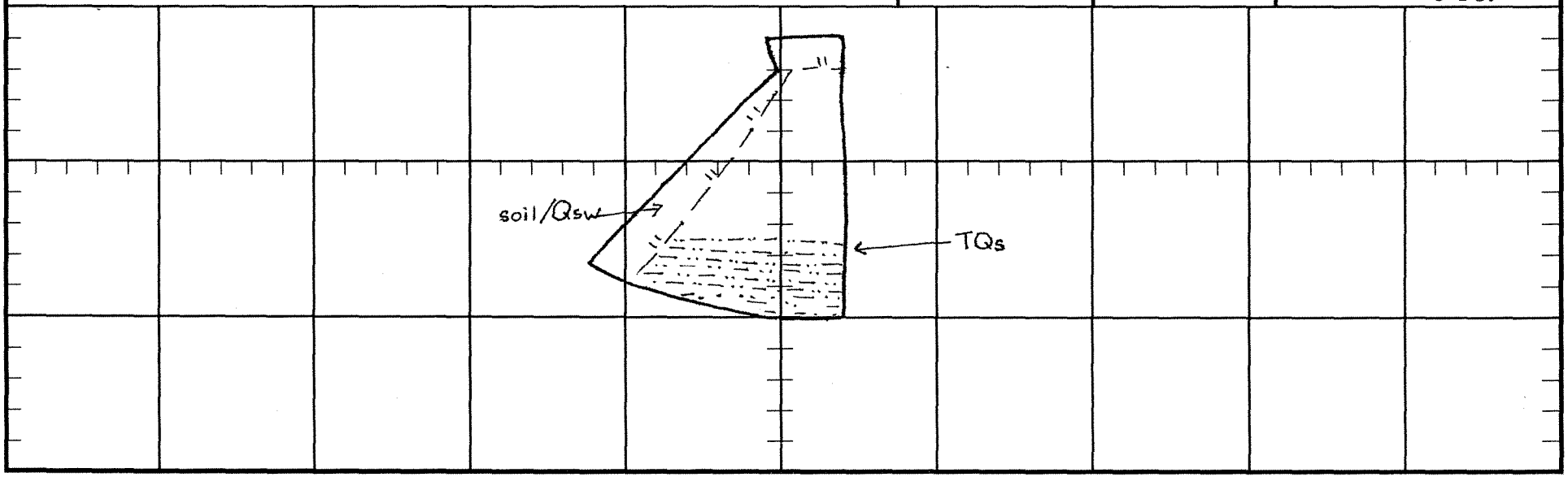
JOB NO. 99-1703Q1sI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 59Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt; loose to moderately dense; dry 1 - 8' BEDROCK; TQs, Light-to medium-gray siltstone to sandy siltstone; dense to very dense; slightly damp	N62W,13NE		Top 4.5' of TQs creep affected - fractured and caliche surfaces No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 84 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

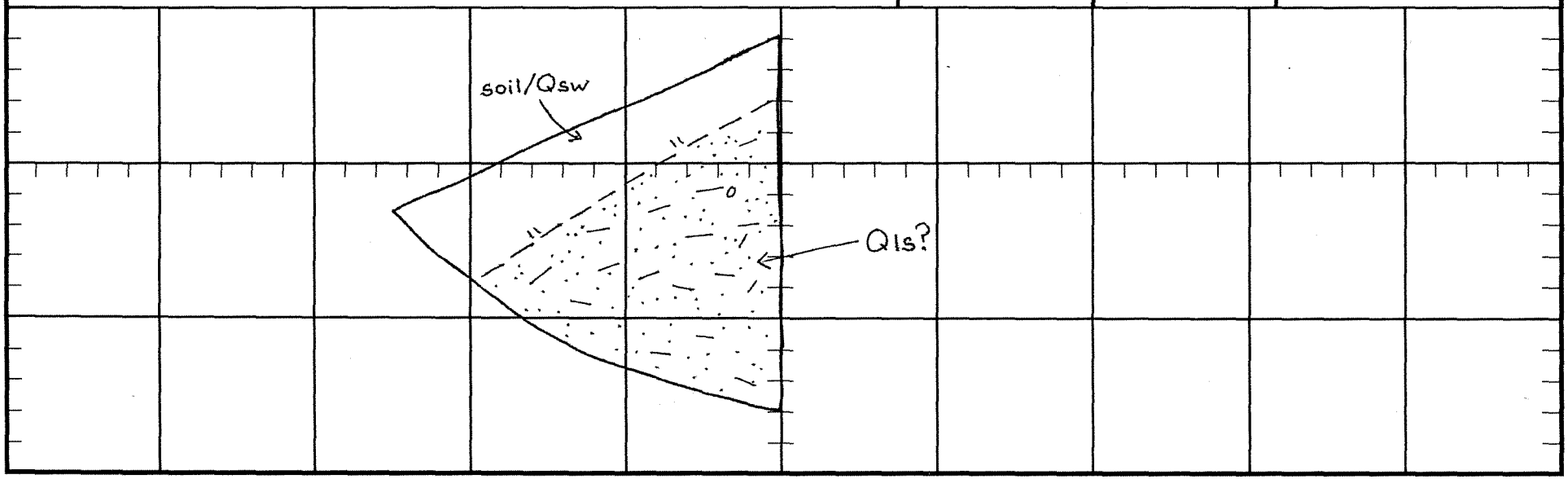
Trench Log No. 60Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt; loose to moderately dense; dry 2 - 12' LANDSLIDE?; Qls?, Light- to medium-gray siltstone to sandy siltstone; loose to moderately dense; soft; slightly damp			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 26 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

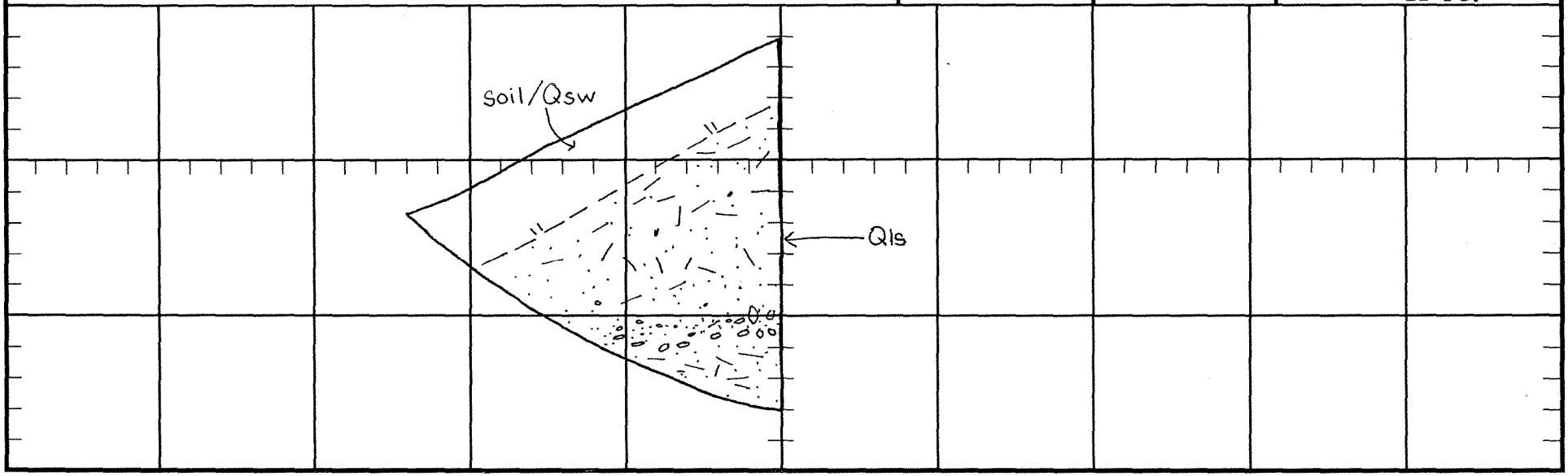
Trench Log No. 61Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt; loose to moderately dense; dry 2 - 12' LANDSLIDE?; Qls?, Light- to medium-gray siltstone to sandy siltstone with local cobble lenses; loose to dense; soft to stiff; slightly damp			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 41 E



ALLAN E. SEWARD

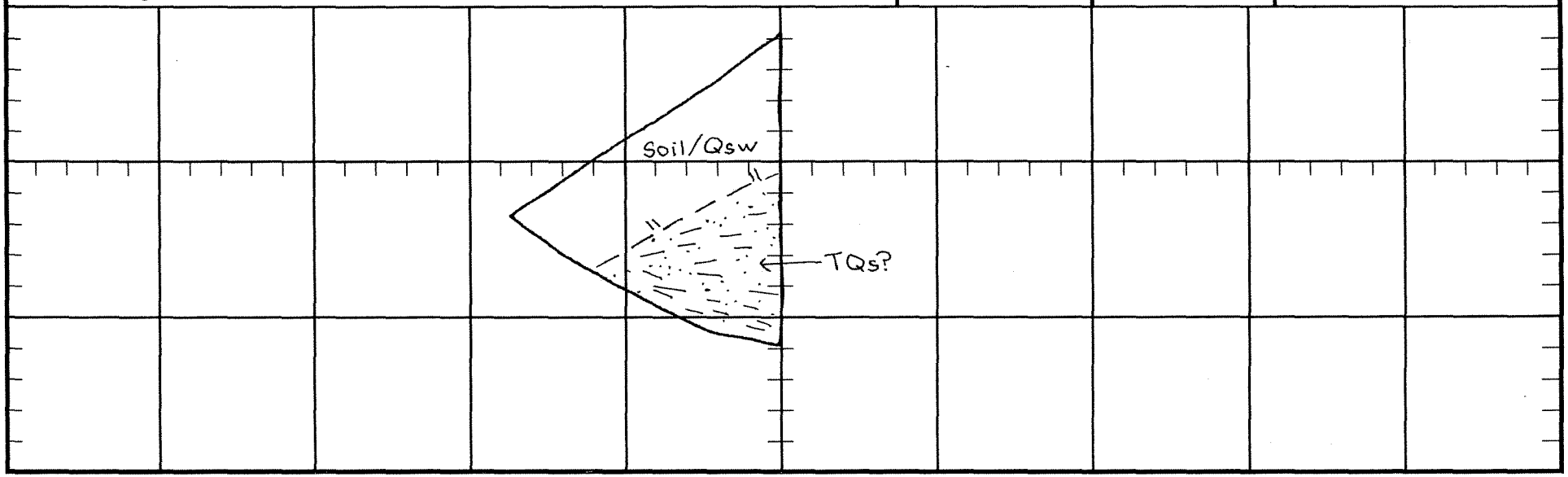
JOB NO. 99-1703Q1sI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 62Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt; loose to moderately dense; dry 4.5 - 10' BEDROCK;(?) TQs, Medium-gray to medium brown siltstone; loose to moderately dense; soft to firm; slightly damp; fractured; caliche			No Ground Water No Caving TOTAL DEPTH 10 Ft.

N 87 W

SCALE 1" = 5'



ALLAN E. SEWARD

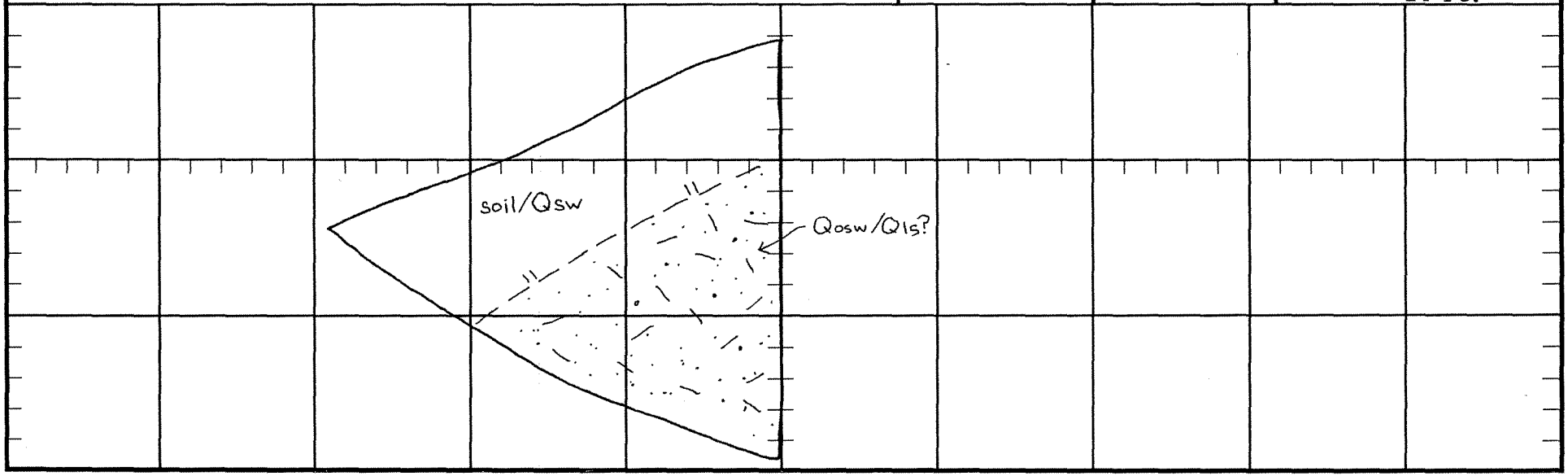
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 63Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt; loose to moderately dense; dry 4 - 14' OLDER SLOPEWASH?/LANDSLIDE?; Qsw/Qls?, Medium-gray to medium-brown siltstone; loose to moderately dense; soft to firm; slightly damp; fractured; caliche			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 28 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

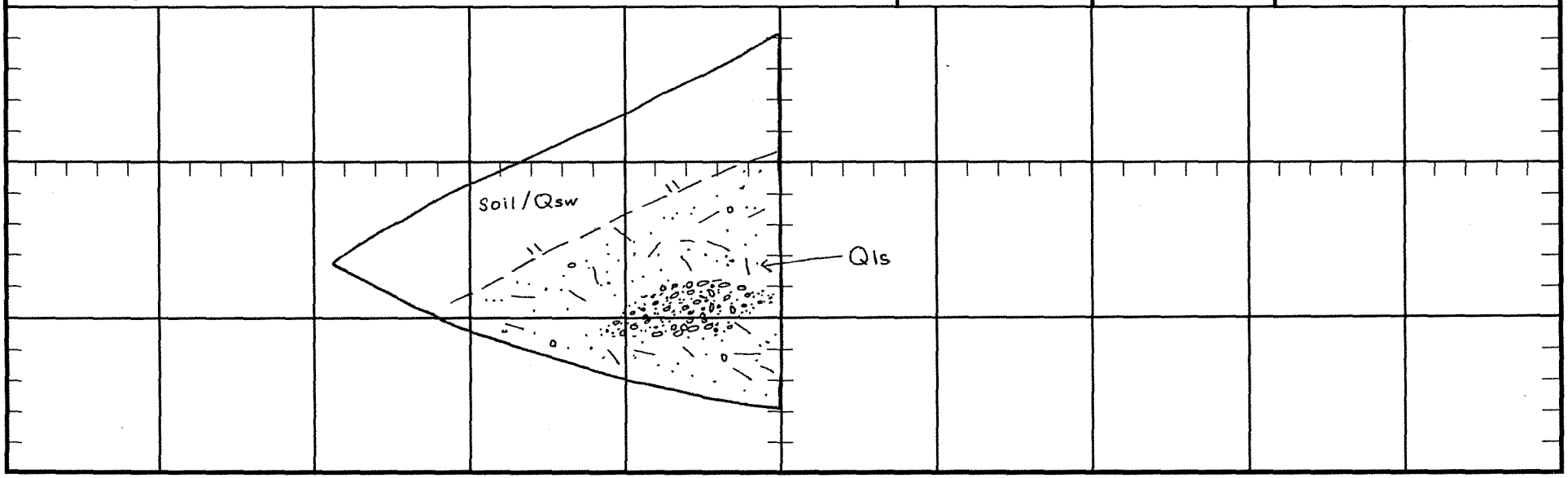
Trench Log No. 64Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt; loose to moderately dense; dry 3.5 - 12' LANDSLIDE; Qls, Medium-gray to medium-brown siltstone to sandy siltstone with local pockets of pebbles and cobbles; loose to dense; soft to firm; slightly damp			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 40 E



ALLAN E. SEWARD

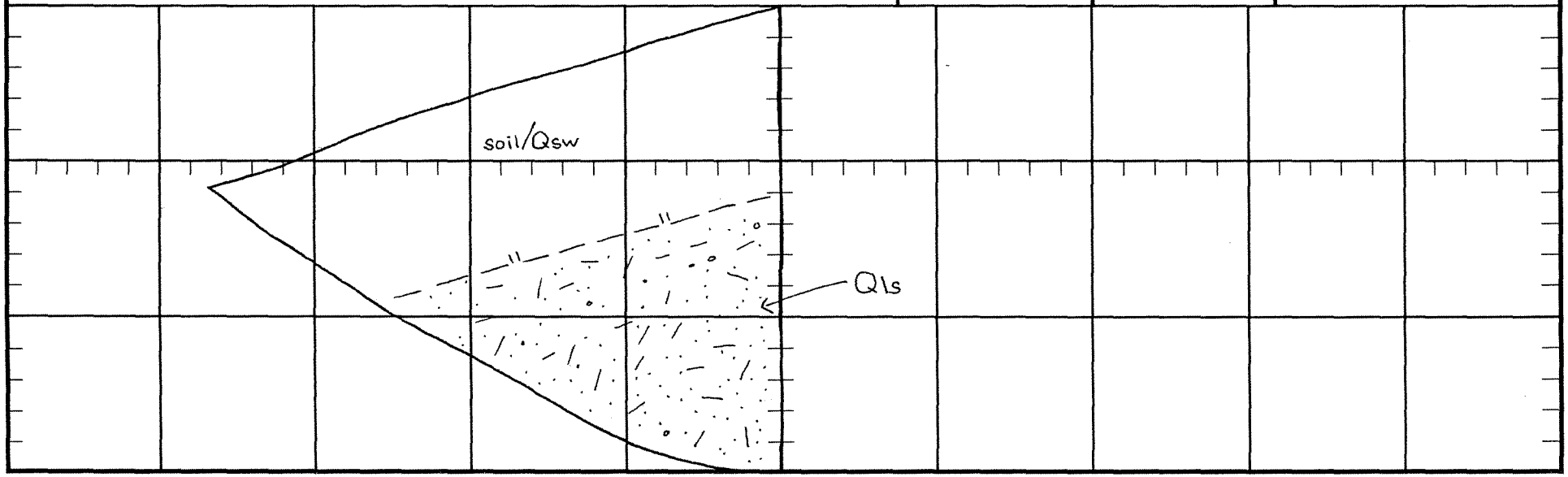
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 65Q DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown silt to sandy silt with some scattered pebbles; loose to medium dense; dry 6 - 15' LANDSLIDE; Qls, Light-to medium-gray to medium-brown siltstone; loose to dense; soft to stiff; slightly damp; upper 4-5' fractured with caliche	Apx:N5E,15NW		Trenches 65Q-73Q excavated and logged 10/1/99 using track-mounted backhoe with 24" bucket No Ground Water No Caving TOTAL DEPTH 15 Ft.

SCALE 1" = 5'

N 58 E



ALLAN E. SEWARD

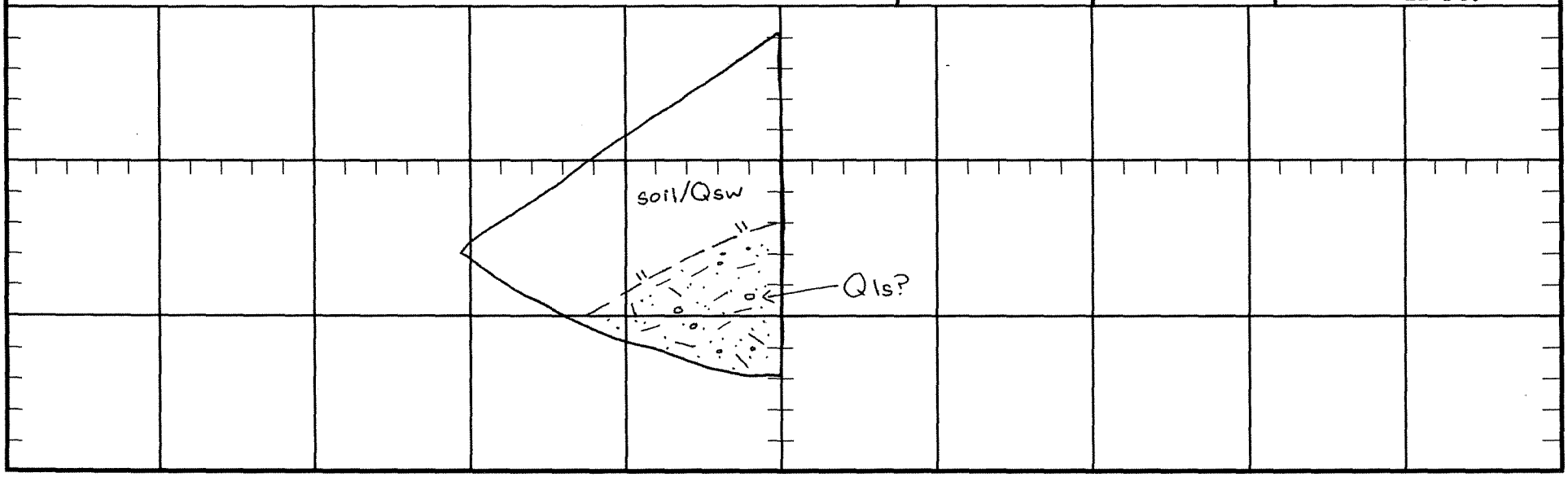
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 66Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt with some scattered pebbles; loose to medium dense; dry 6 - 11' LANDSLIDE?; Qls?, Light-gray to medium-gray silt-stone with few scattered pebbles and cobbles; soft to firm; dry to slightly damp			Caliche surfaces in upper 2 ft. of trench No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 38 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

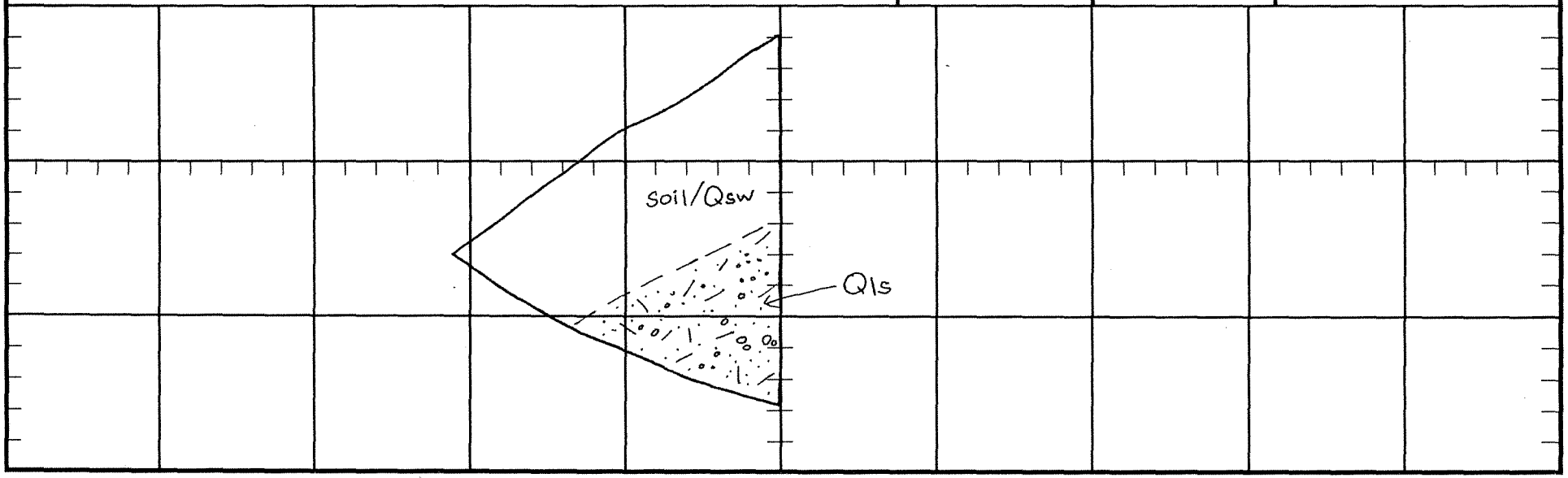
Trench Log No. 67Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt with some scattered pebbles; loose to medium dense; dry 6 - 12' LANDSLIDE; Qls, Medium-brown to dark-gray siltstone and sandy siltstone with scattered pebbles; soft to firm; loose to dense; slightly damp			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 36 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

Trench Log No. 68Q

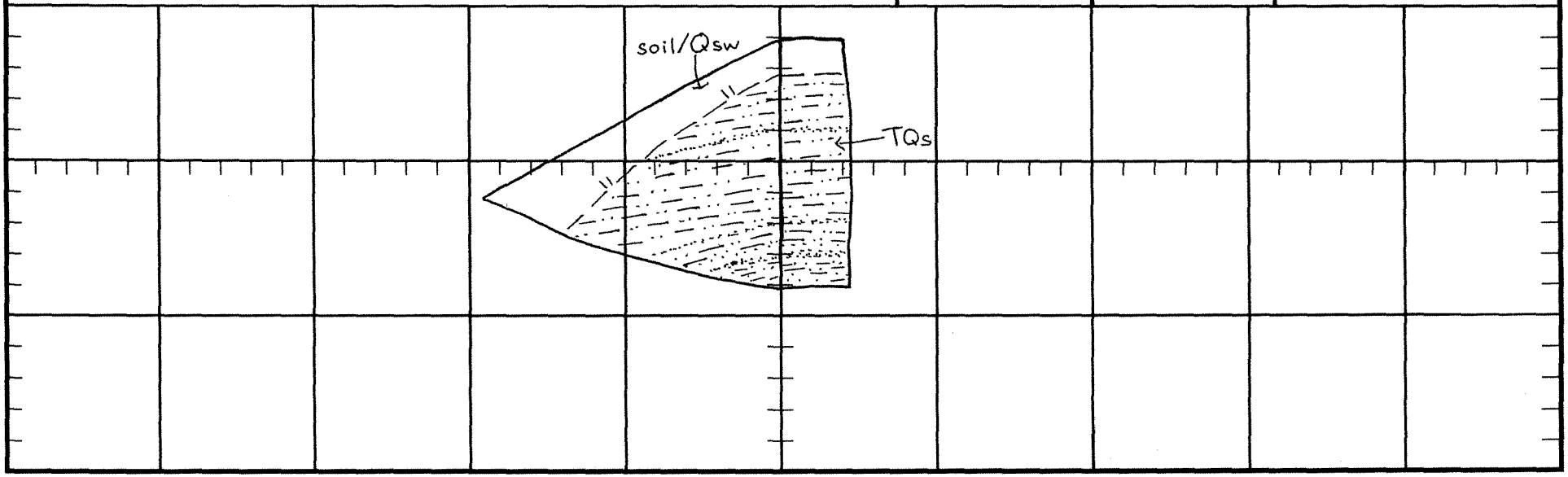
DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown silt to sandy silt with some scattered pebbles; loose to medium dense; dry			Upper 3 ft. TQs creep affected; some fracturing and caliche
1 - 8' BEDROCK; TQs, Light-gray to medium-gray siltstone to sandy siltstone to fine- to medium-grained sandstone; dense; slightly damp	N75W,18NE		No Ground Water No Caving

SCALE 1" = 5'

N 47 E

TOTAL DEPTH 8 Ft.



ALLAN E. SEWARD

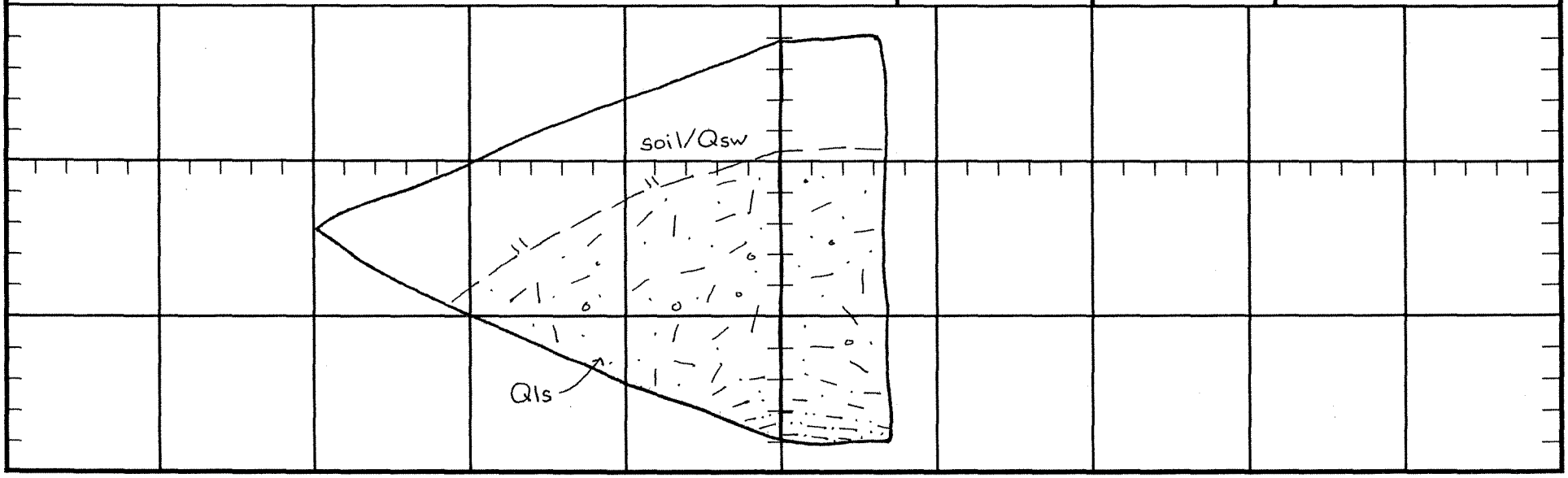
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 69Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt with some scattered pebbles; loose to medium dense; dry			
3.5 - 13' LANDSLIDE; Qls, Medium-brown to dark-gray siltstone and sandy siltstone with scattered pebbles; soft to firm; loose to dense; slightly damp		SP:N28W,19NE	Possible bedrock at base of trench
			No Ground Water No Caving
			TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 71 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

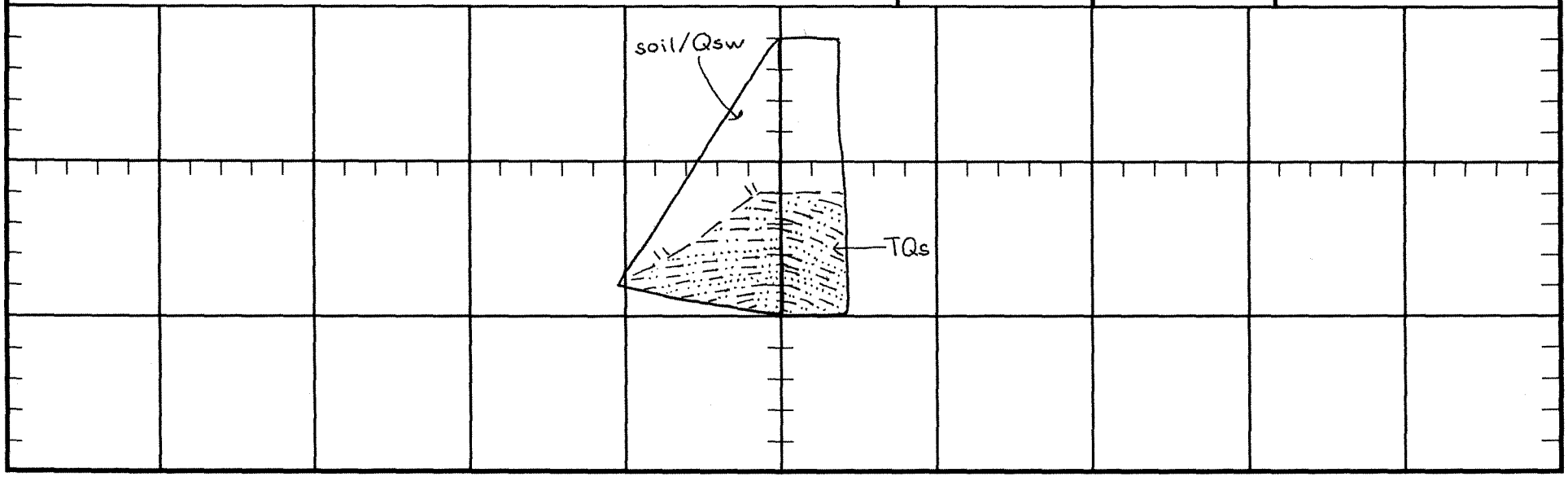
Trench Log No. 70Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown silt to sandy silt with some scattered pebbles; loose to medium dense; dry			
5 - 9' BEDROCK; TQs, Light-gray to medium-brown siltstone with fine to medium-grained sandstone stringers; moderately dense to dense; slightly damp	N57W,21NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 67 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

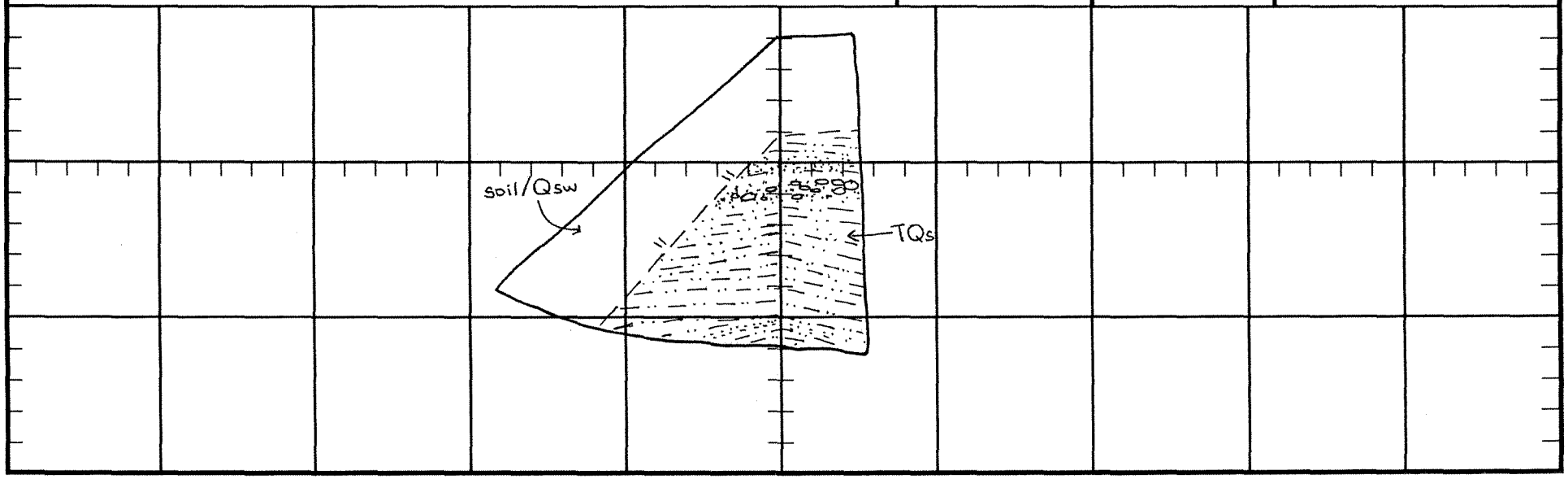
Trench Log No. 71Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt with some scattered pebbles; loose to medium dense; dry			Top 3-4' of TQs creep affected
3 - 10' BEDROCK; TQs, Light-gray to medium-brown siltstone with fine- to medium-grained sandstone stringers and local pebble/cobble lense; medium dense to dense; slightly damp	N35W,14NE		
			No Ground Water No Caving
			TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 41 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

LOGGED BY DGG

Trench Log No. 72Q

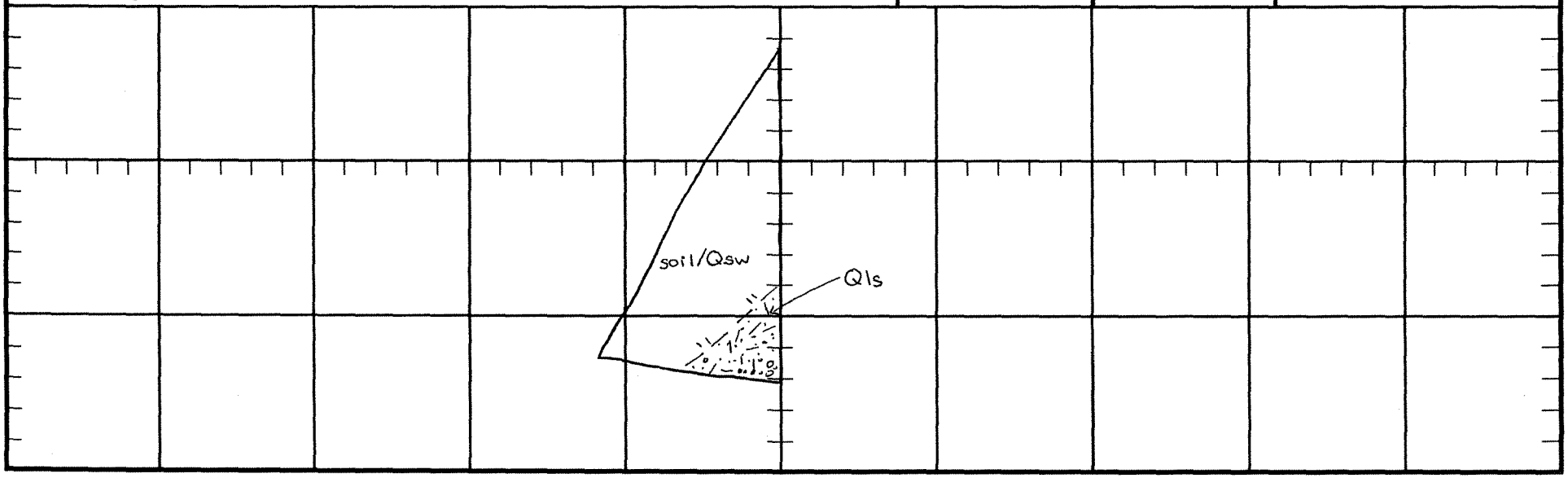
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SOIL/SLOPEWASH; soil/Qsw, Tan to light-brown sandy, pebbly, cobbly silt; loose; dry 8 - 11' LANDSLIDE; Qls, Tan to medium-gray to reddish-brown sandy siltstone with scattered pebbles and some cobbles at base; soft to firm; loose to dense; slightly damp			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 35 E



ALLAN E. SEWARD

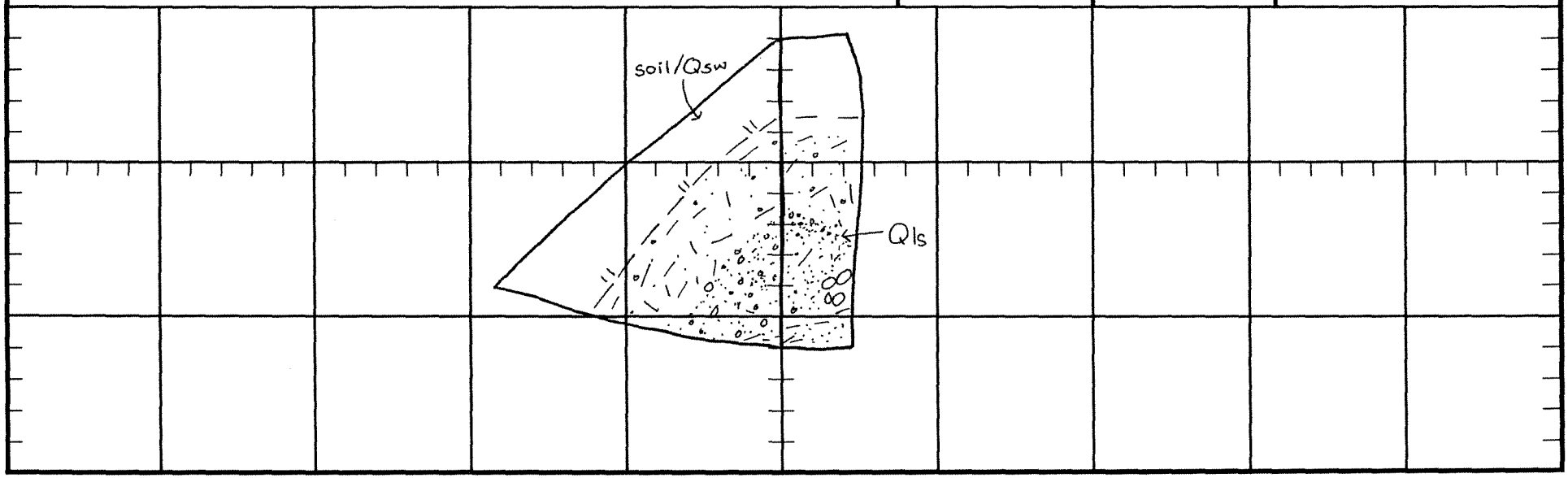
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 73Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt with some scattered pebbles; loose to medium dense; dry 2.5 - 10' LANDSLIDE; Qls, Medium-gray to medium brownish-gray siltstone and fine- to coarse-grained pebbly sandstone with scattered cobbles; soft to firm; loose to dense; slightly damp; upper 3' fractured with caliche			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 49 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

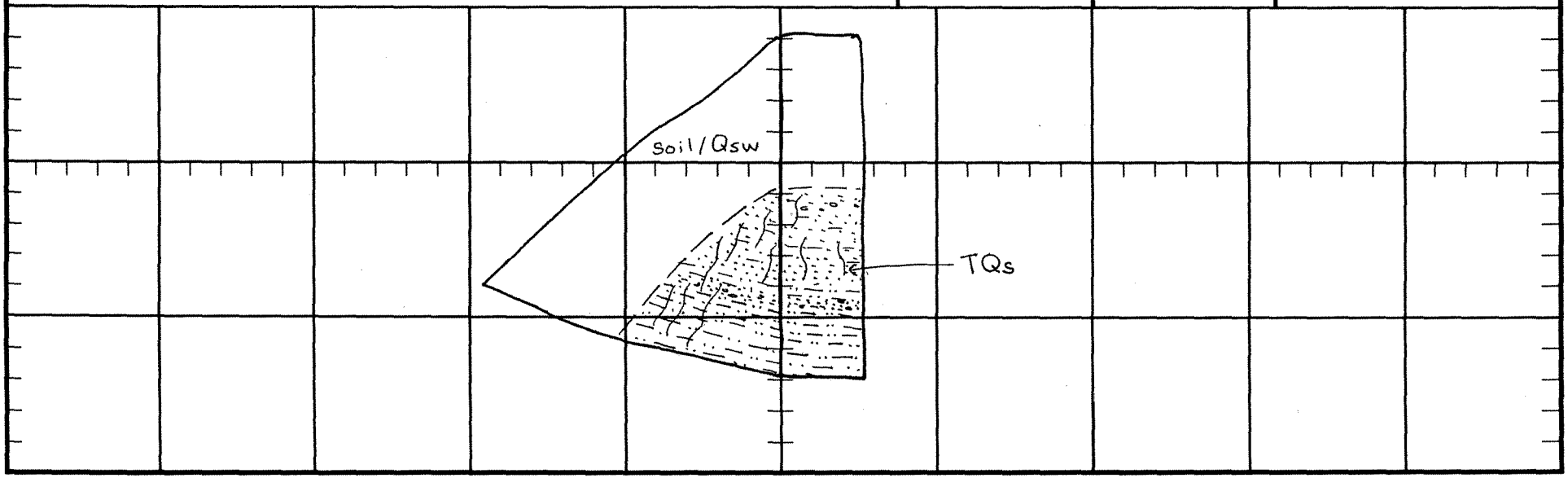
Trench Log No. 74Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt; soft; dry 5 - 11' BEDROCK; TQs, Light-brown to medium-gray siltstone; sandy siltstone, and fine- to coarse-grained sandstone with pebbles; soft to firm; loose to dense; slightly damp	N44W,27NE		Trenches 74Q thru 86Q excavated and logged 10/4/99 using a track-mounted backhoe with 24" bucket Upper 3 ft. of TQs highly creep affected-fractured; soft; loose; caliche No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 40 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

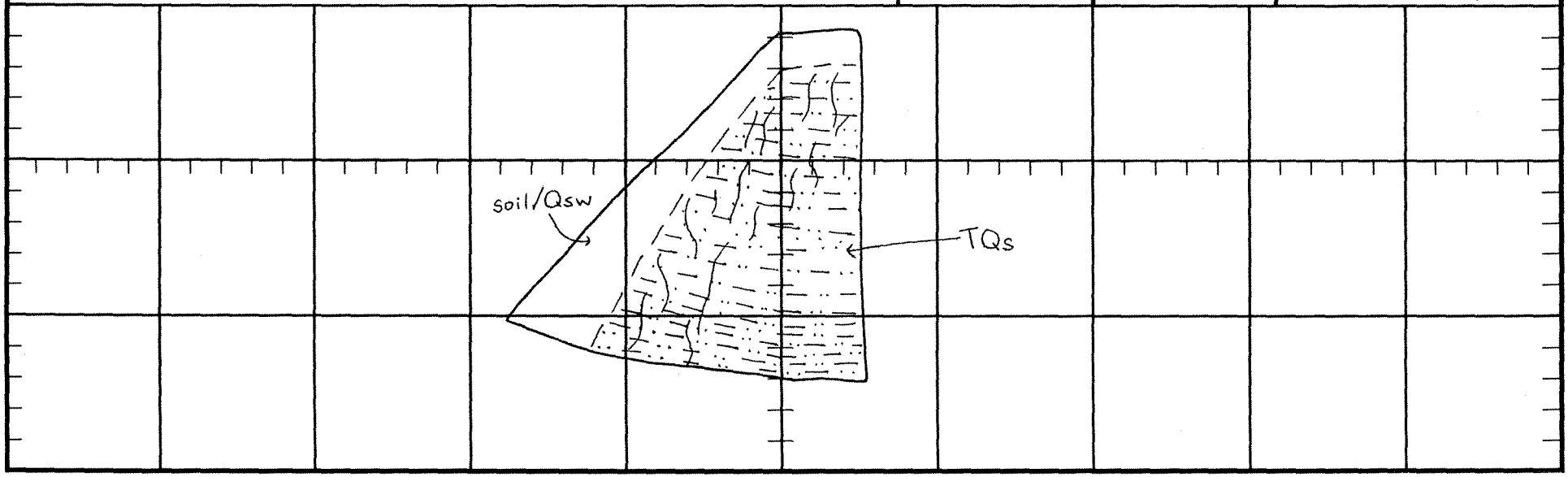
LOGGED BY DGG **Trench Log No.** 75Q DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt; soft; dry			Upper 4.5 - 5' of TQs highly creep affected; fractured caliche
1 - 11' BEDROCK; TQs, Light gray to medium brown siltstone to sandy siltstone; loose to dense; dry to slightly damp	N41W,29NE		No Ground Water No Caving

SCALE 1" = 5'

N 58 E

TOTAL DEPTH 11 Ft.



ALLAN E. SEWARD

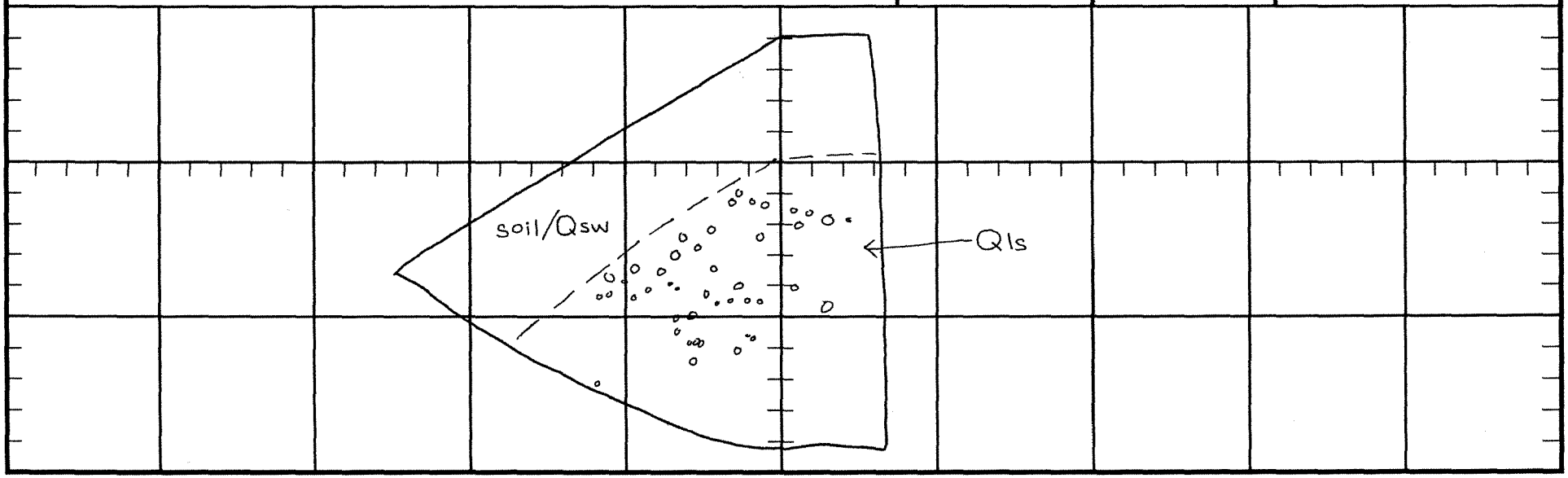
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 76Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt; soft; dry 4 - 13' LANDSLIDE; Qls, Light- to medium-gray to medium-brown siltstone to sandy siltstone to fine- to coarse-grained pebbly sandstone with scattered cobbles; soft to firm; loose to dense; slightly damp	Apx:N70E,28SE		No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 12 W



ALLAN E. SEWARD

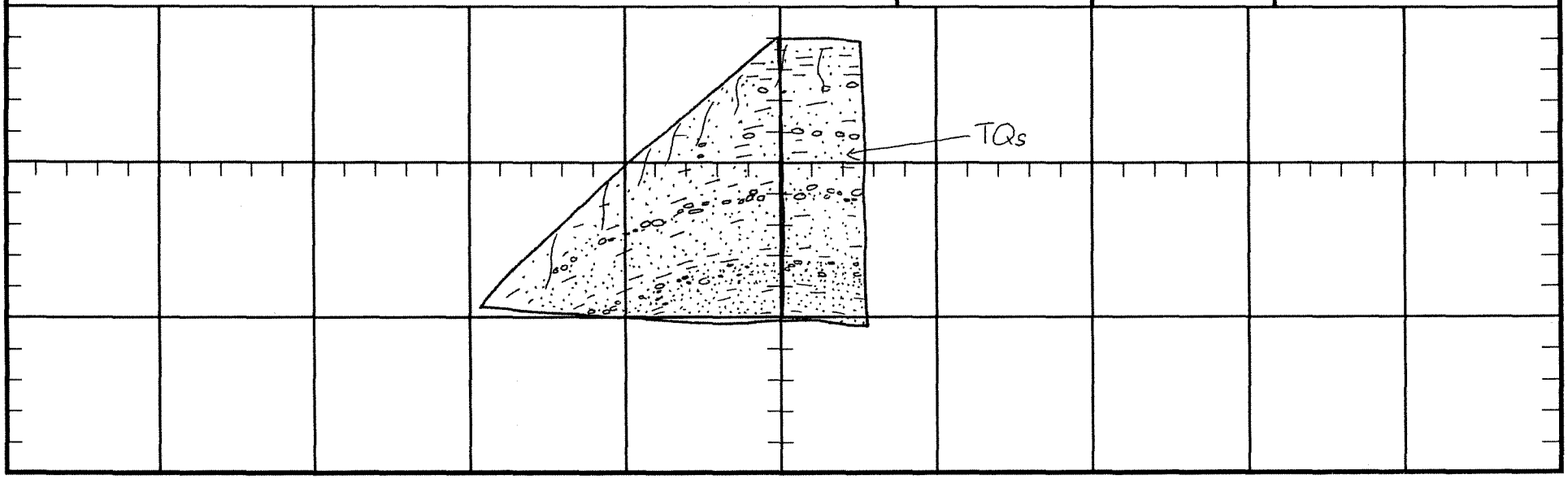
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 77Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light-gray to yellowish-tan siltstone to sandy siltstone to fine- to coarse-grained pebbly sandstone with scattered cobbles; loose to dense; dry to slightly damp	N37W,20NE		Top 2-3' of TQs creep affected No Ground Water No Caving

SCALE 1" = 5' N 59 E

TOTAL DEPTH 9 Ft.



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

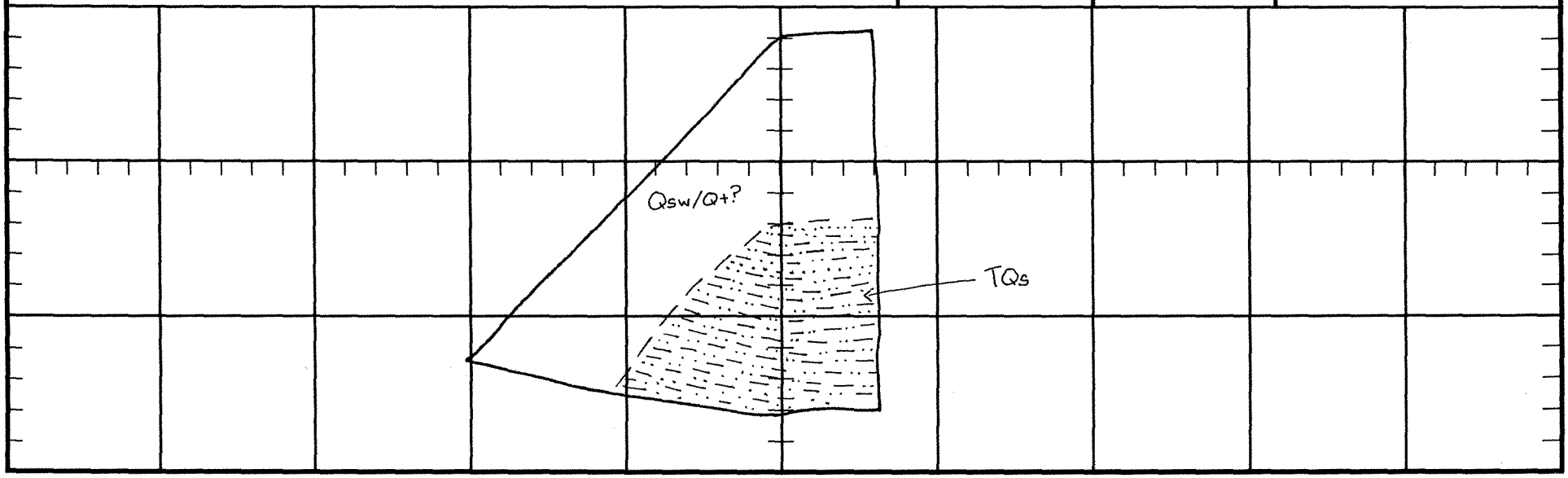
Trench Log No. 78Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SLOPEWASH/TERRACE DEPOSITS?; Qsw/Qt?, Tan to light-brown sandy silt with pebbles and cobbles; loose; dry			Upper 2-3' of TQs highly creep affected
6 - 12' BEDROCK; TQs, Light-to medium-gray siltstone to sandy siltstone; firm; medium dense to dense; slightly damp	N37W,23NE		No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 68 E



ALLAN E. SEWARD

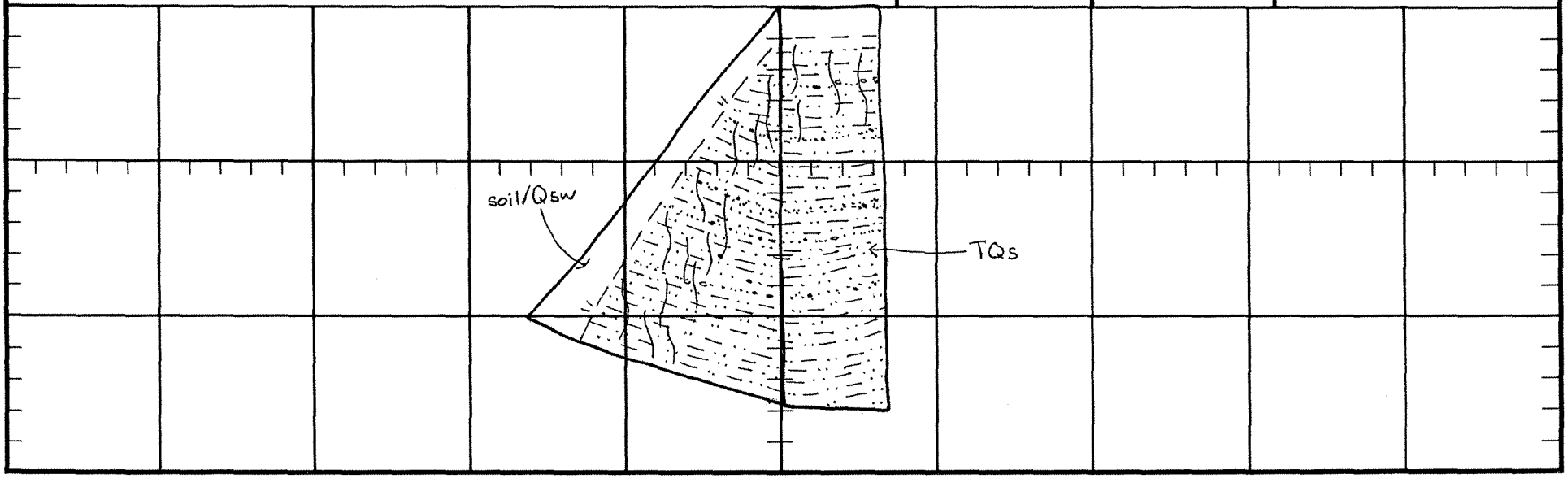
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 79Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown silt to sandy silt; soft; dry			Upper 2-3' of TQs highly creep affected; fractured
1 - 13' BEDROCK; TQs, Light-to medium-gray siltstone to sandy siltstone to pebbly sandstone; firm; medium dense to dense; slightly damp	N36W,22NE		
			No Ground Water No Caving
			TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 75 E



ALLAN E. SEWARD

JOB NO. 99-1703Qlsl-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

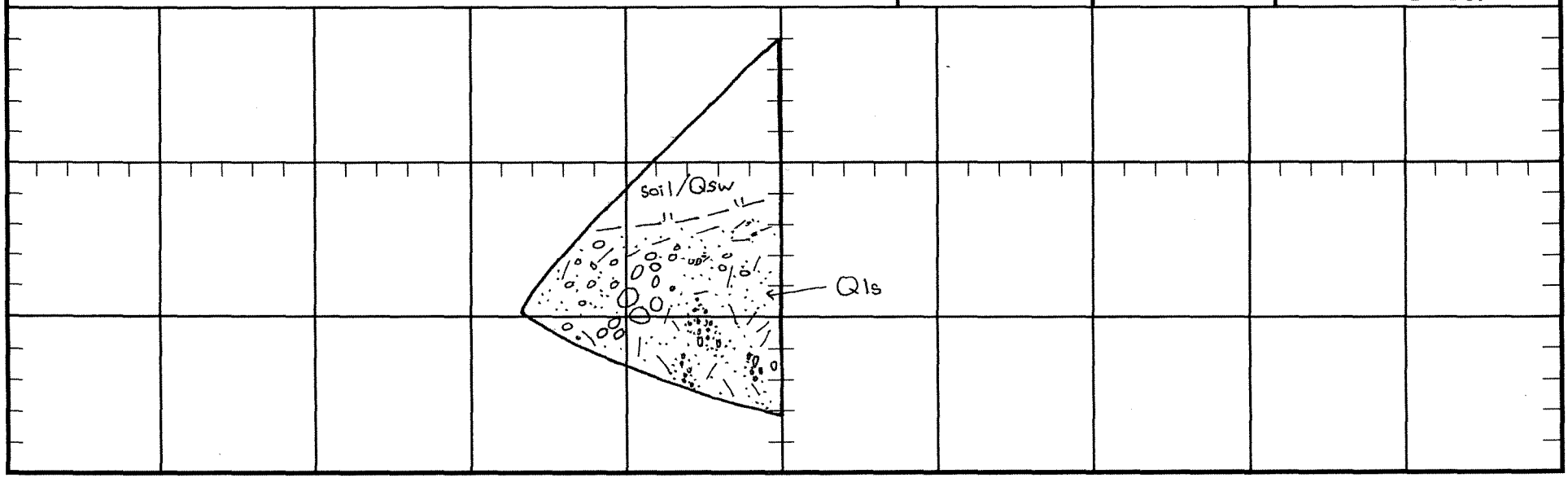
Trench Log No. 80Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH: soil/Qsw, Light-to medium-brown silt to sandy silt; soft; dry 5 - 12' LANDSLIDE; Qls, Tan to light-gray to medium-brown sandy siltstone with pebbles and scattered cobbles; soft to firm; loose to dense; slightly damp			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 60 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

LOGGED BY DGG

Trench Log No. 81Q

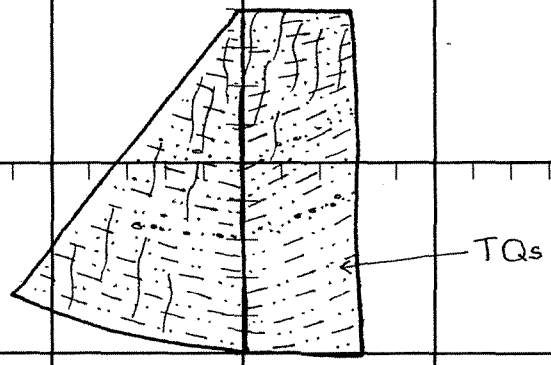
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK?; TQs?, Light-to medium-gray to medium-brown siltstone, sandy siltstone and fine- to coarse-grained sandstone; soft to firm; loose to dense; slightly damp	Apx:N54W,24NE		Upper 4-5' highly creep affected; fractured No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 49 W



ALLAN E. SEWARD

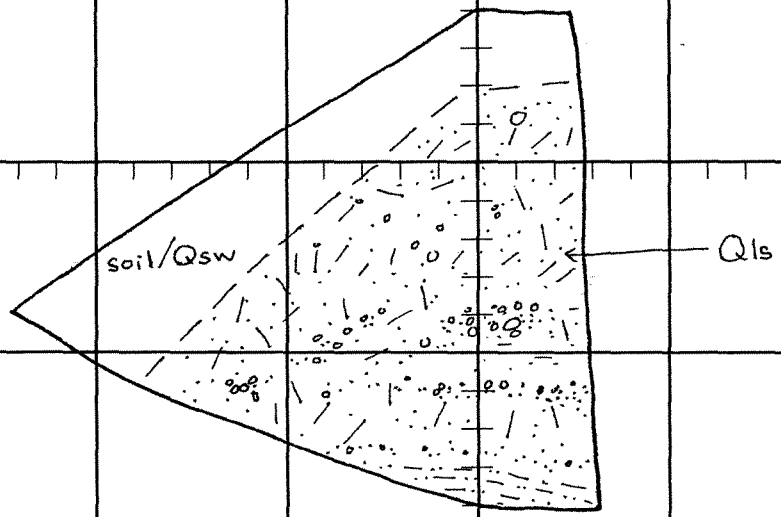
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 82Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Light to medium brown silt to sandy silt; soft; dry 2 - 13' LANDSLIDE; Qls, Tan to light-gray to medium-brown sandy siltstone with pebbles and scattered cobbles; soft to firm; loose to dense; slightly damp	N23W;22SW		No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 51 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

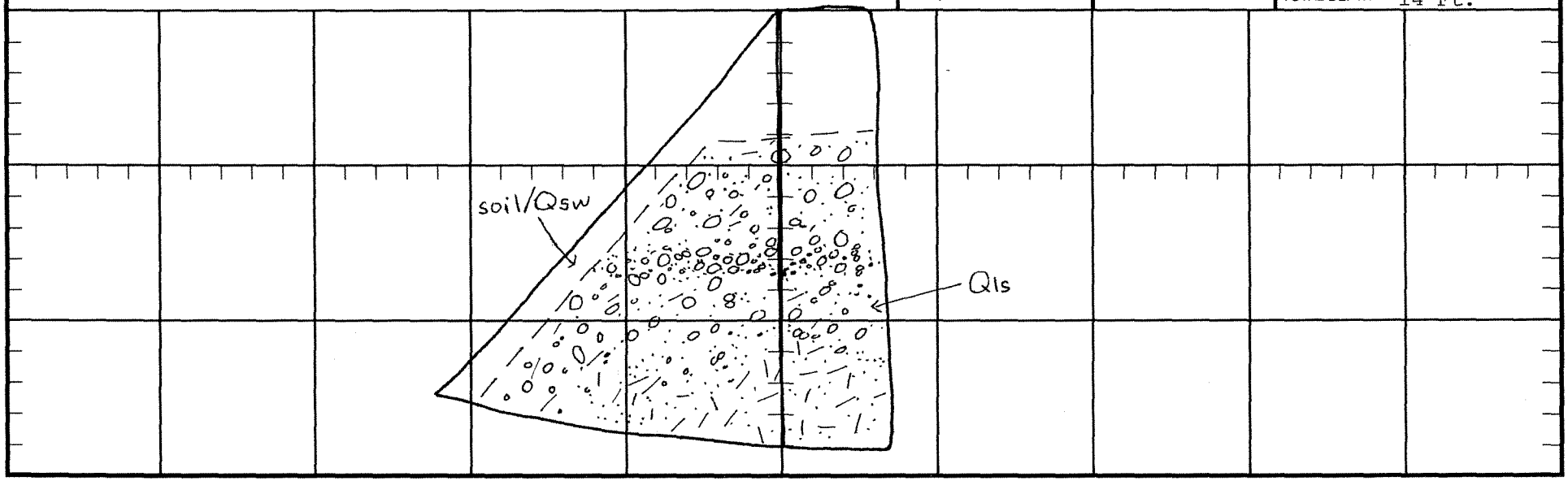
LOGGED BY DGG **Trench Log No.** 83Q DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown silt to sandy silt; soft; loose; dry 4 - 14' LANDSLIDE; Qls, Light-gray pebble, cobble conglomerate; soft; loose; dry; and medium brownish-gray siltstone; soft to firm; loose to moderately dense; slightly damp			Pebble/Cobble conglomerate=Qt? very rough stratification No Ground Water No Caving

SCALE 1" = 5'

N 48 E

TOTAL DEPTH 14 Ft.



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

LOGGED BY DGG

Trench Log No. 84Q

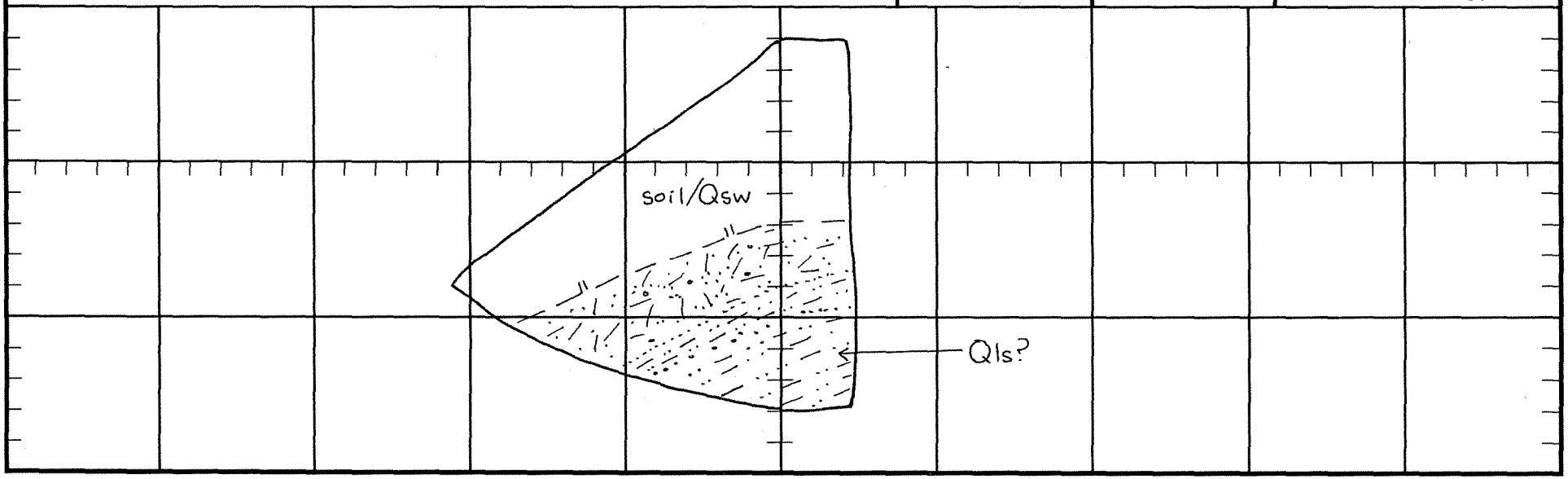
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown silt to sandy silt; soft; dry 6 - 12' LANDSLIDE?; Qls?, Tan to medium-gray siltstone to sandy siltstone; soft to firm; dry to slightly damp	Apx:N16W,26NE		Bottom 3' tighter than material above; faint bedding; not as disrupted as upper 3' of Qls? No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 39 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

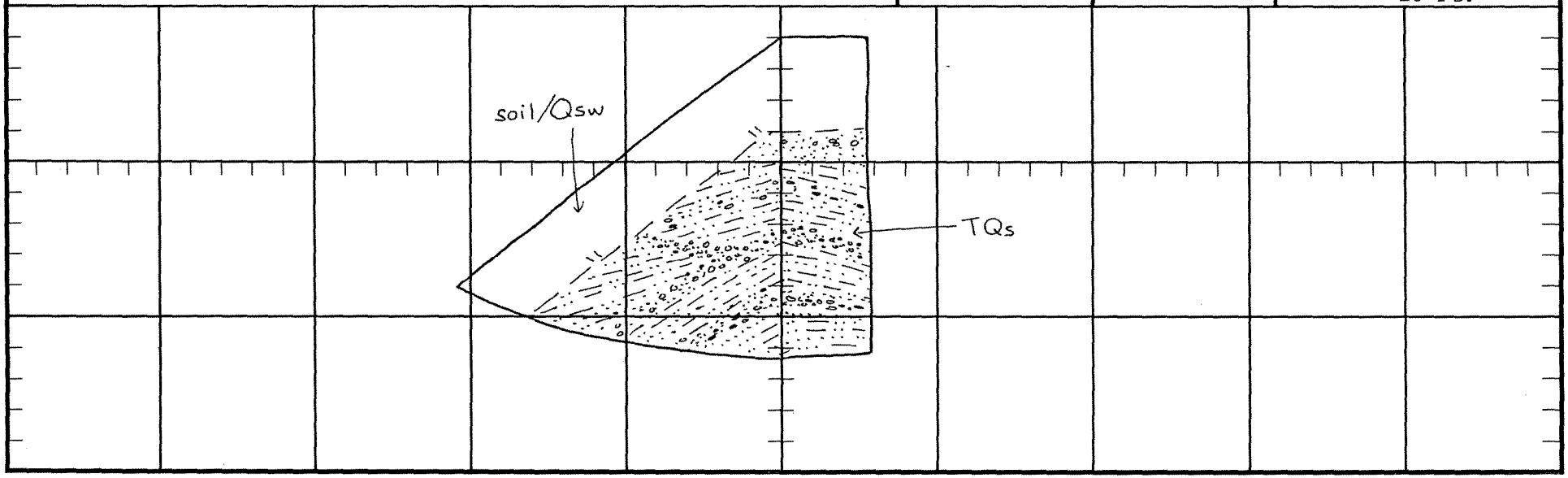
Trench Log No. 85Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown silt to sandy silt; soft; dry			
3 - 10' BEDROCK?; TQs?, Light orangish-brown to light-gray sandy siltstone to fine- to coarse-grained pebbly sandstone with scattered cobbles; soft to firm; loose to dense; dry to slightly damp	N64W,20NE		No Ground Water Slight Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 33 E



ALLAN E. SEWARD

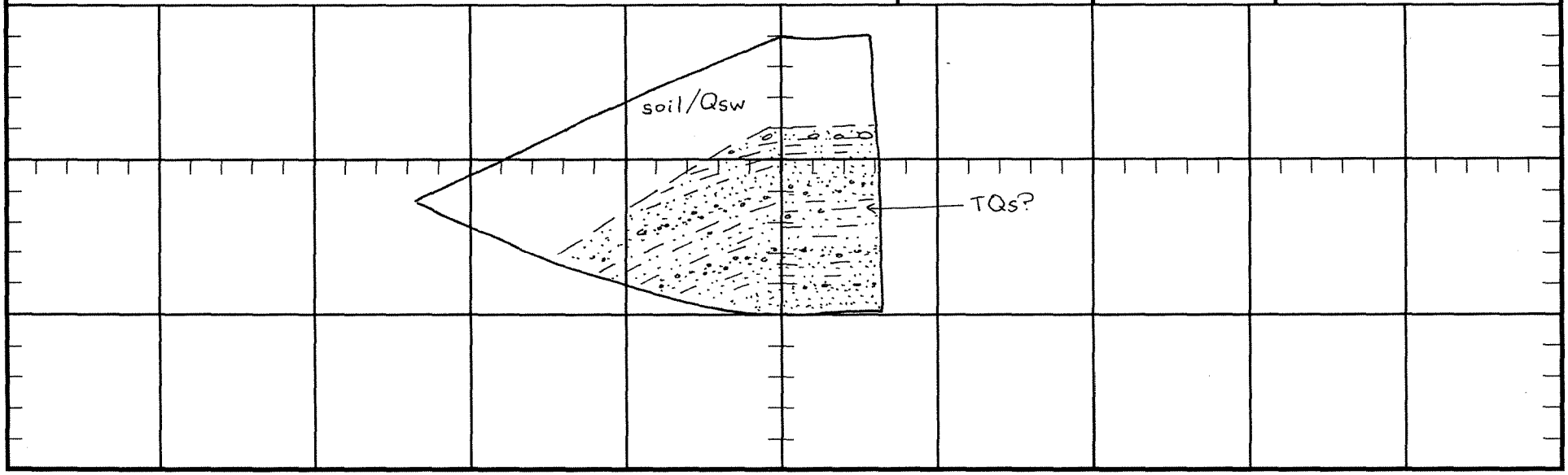
JOB NO. 99-1703Q1sI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 86Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3'? SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown silt to sandy silt; soft; dry			
3 - 9' BEDROCK?; TQs?, Light orangish-brown to light-gray sandy siltstone to fine- to coarse-grained pebbly sandstone with scattered cobbles; soft to firm; loose to dense; dry to slightly damp	N54W,25NE		No Ground Water Slight Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 32 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

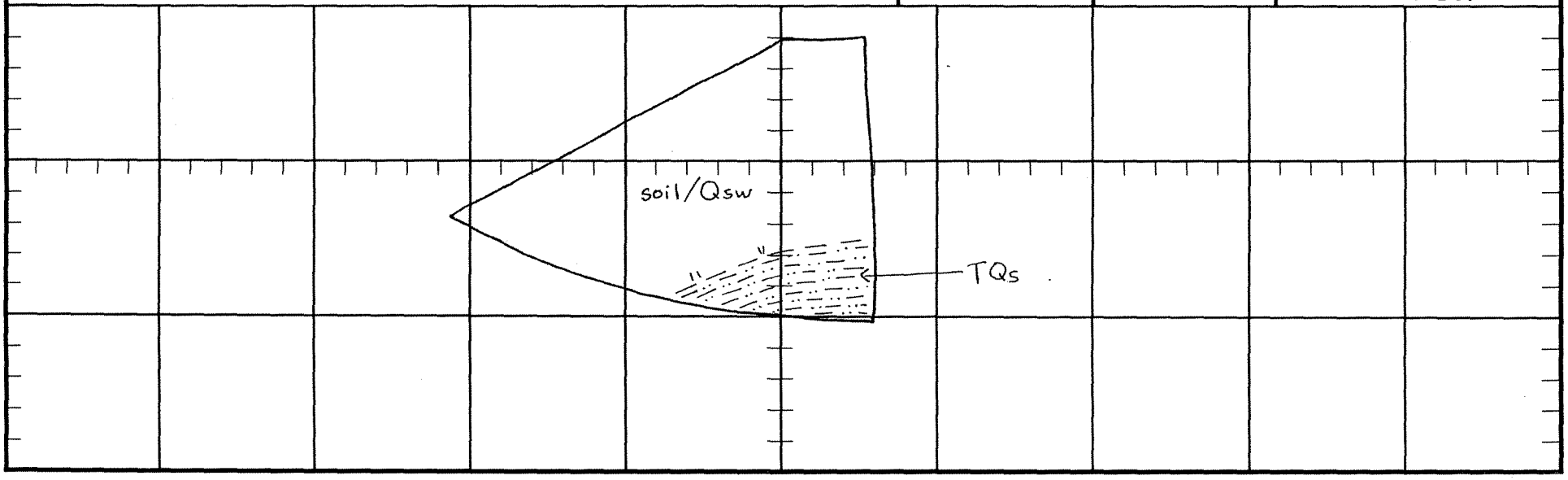
Trench Log No. 87Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qls, Light-to medium-brown sandy silt with pebbles and cobbles predominant in lower 3'; loose; dry; 3-5% void space in upper 3'; slight caving 5-7'; lower 2' sandier 7 - 9' BEDROCK; TQs, Yellowish-brown to light-gray silt-stone; firm to stiff; dry to slightly damp	N56W,24NE		Trenches 87Q thru 98Q excavated and logged 10/5/99 using a track mounted backhoe with 24" bucket No Ground Water Slight Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 19 E



ALLAN E. SEWARD

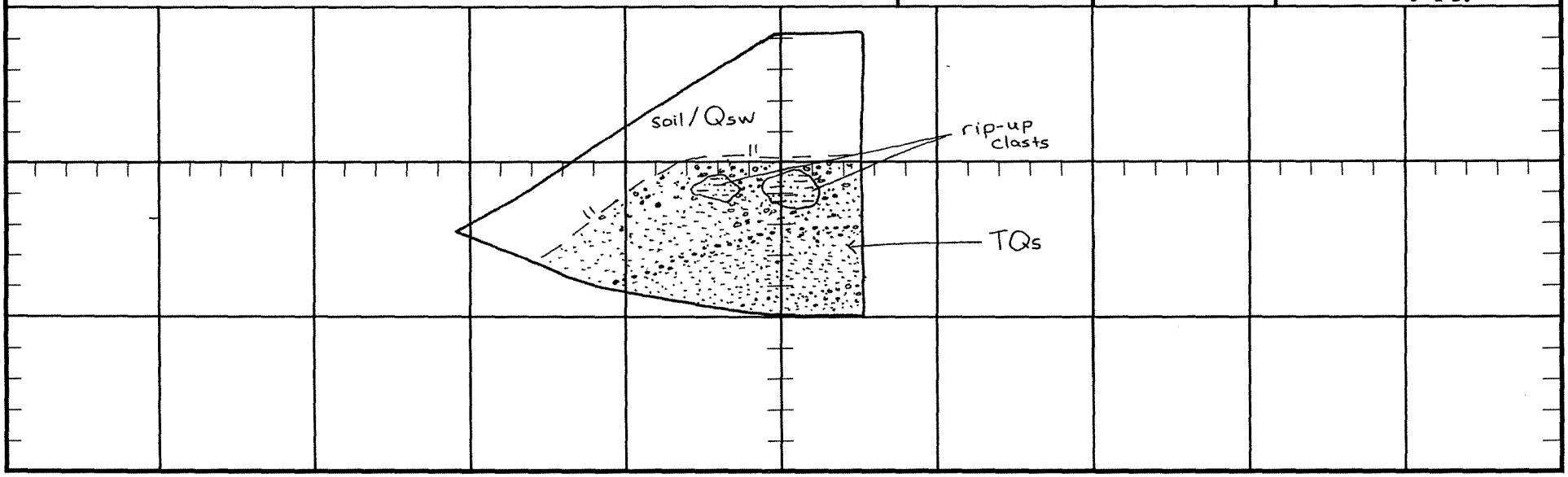
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 88Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown to medium-brown silty sand to medium-to coarse-grained sand with pebbles and cobbles; soft; loose; dry			
4 - 9' BEDROCK; TQs, Light-gray to medium-gray fine- to coarse-grained sandstone and pebbly sandstone; loose to moderately dense; dry to slightly damp	N38W,15NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 23 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

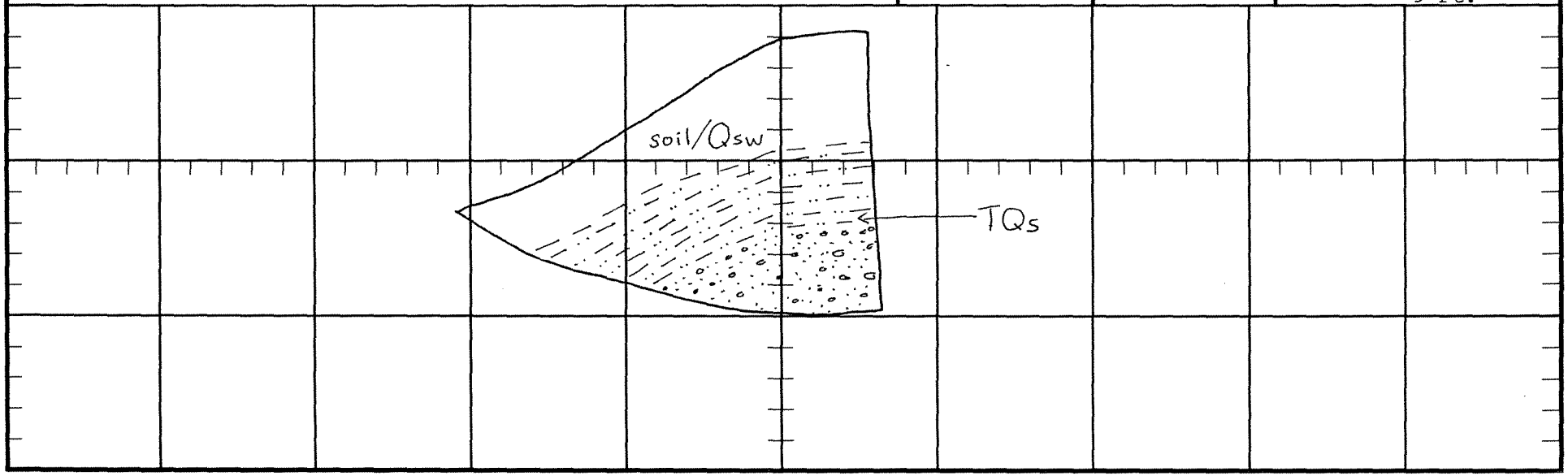
Trench Log No. 89Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; loose to firm; dry			
3.5 - 9' BEDROCK; TQs, Light-gray to medium-gray siltstone, sandy siltstone and fine- to course-grained sand-sandstone and pebbly sandstone; loose to dense; dry to slightly damp	N54W,24NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 5 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

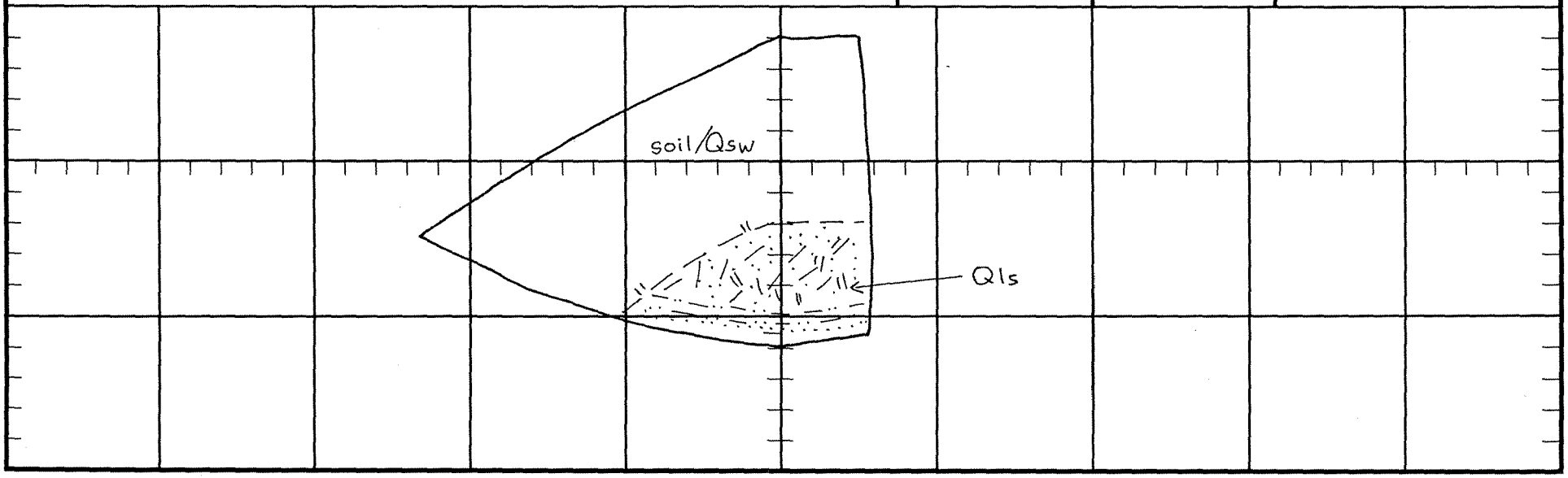
Trench Log No. 90Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt with scattered pebbles; loose to firm; dry			
6 - 10' LANDSLIDE; Qls, Light-to medium-gray siltstone with minor fine-grained sandstone; soft to firm; loose to moderately dense; slightly damp	N43E,20SE		
			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 13 W



ALLAN E. SEWARD

JOB NO. 99-1703Q1sI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

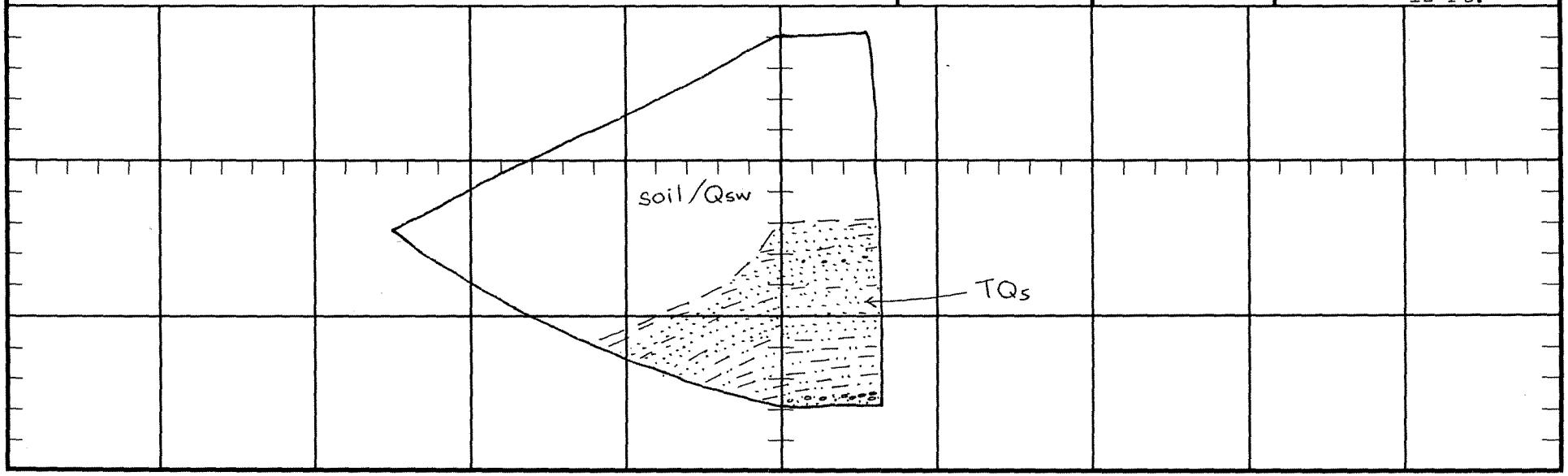
Trench Log No. 91Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt wtih scattered pebbles; soft; loose to firm; dry 6 - 12' BEDROCK; TQs, Light-brown to medium grayish-brown siltstone, sandy siltstone and fine- to coarse-grained sandstone and pebbly sandstone; soft to firm; loose to dense; dry to slightly damp	N75W,14NE		No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 24 E



ALLAN E. SEWARD

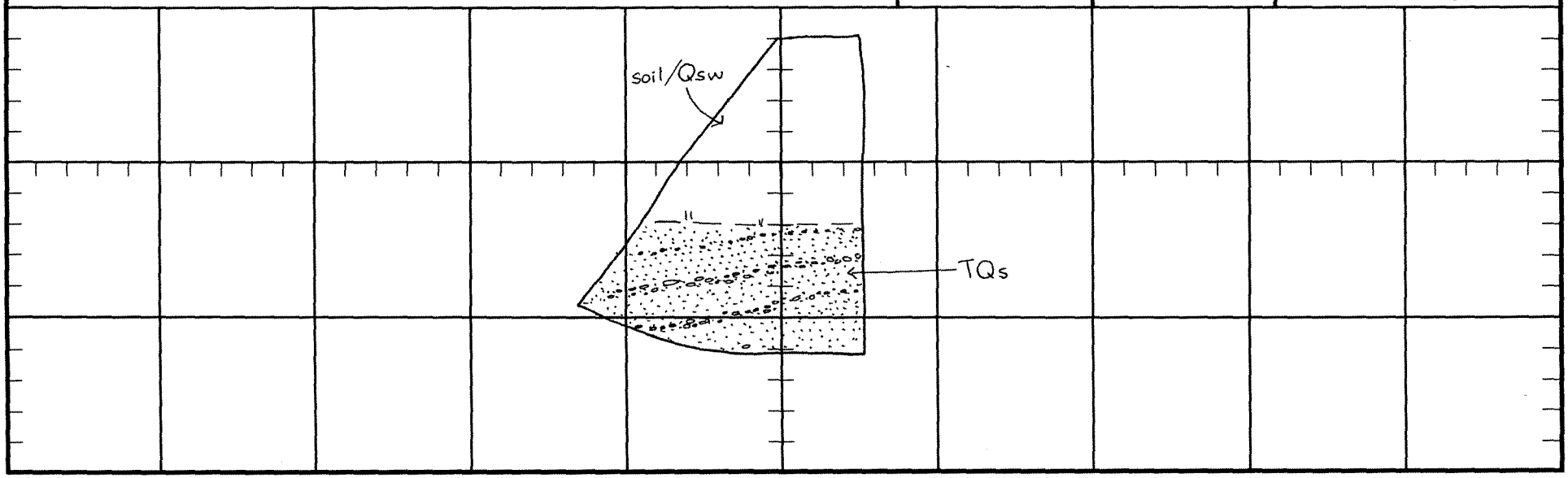
JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 92Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light-brown sandy silt; soft to firm; loose to moderately dense; dry 6 - 10' BEDROCK: TQs, Light- to medium-gray fine- to coarse-grained sandstone; pebbly sandstone; and pebble/cobble conglomerate; soft to firm; loose to dense; slightly damp	N49W,18NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 14 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

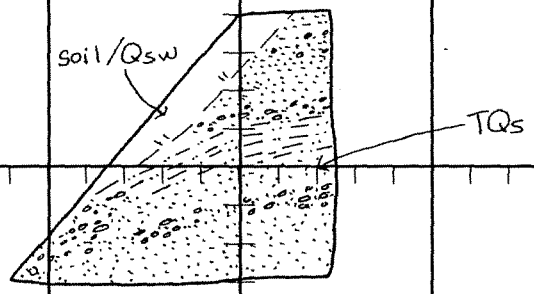
Trench Log No. 930

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; soil/Qsw, Light yellowish-brown silt with pebbles and cobbles; soft; loose; dry 1 - 7' BEDROCK; TQs, Light-to medium-gray fine- to coarse-grained sandstone, pebbly sandstone and pebbly conglomerate; firm; medium dense; slightly damp; and yellowish-orangish-brown siltstone; firm to stiff; dense; slightly damp	N79W,12NE		No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 43 W



ALLAN E. SEWARD

JOB NO. 99-1703Q1sI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

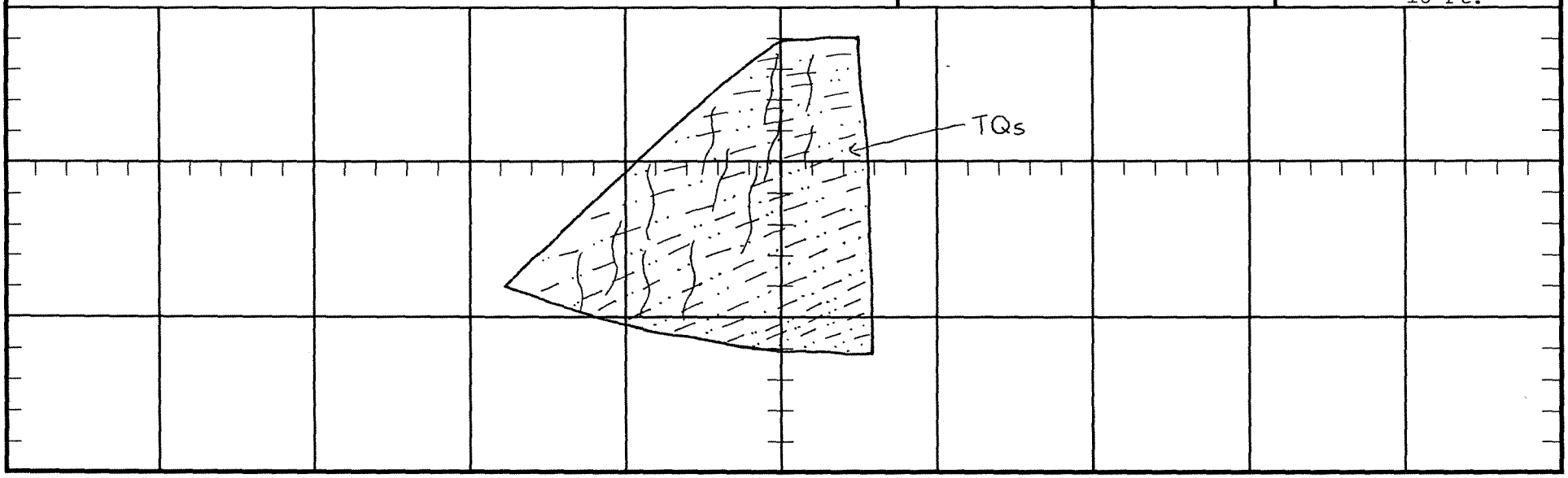
Trench Log No. 94Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 10' BEDROCK; TQs, Medium-gray to medium-brown siltstone; stiff to hard; dense to very dense; upper 5' highly creep affected; fractured; caliche surfaces	Apx:N65W,28NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 68 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

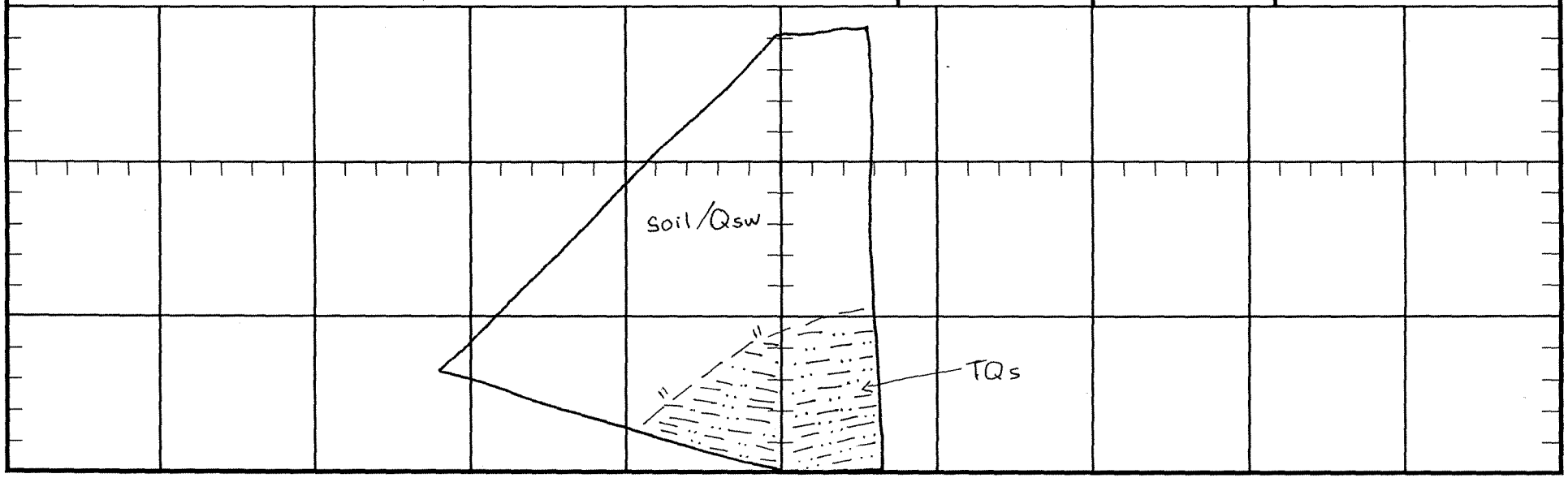
Trench Log No. 95Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' SOIL/SLOPEWASH; soil/Qsw, Light-brown sandy silt with scattered pebbles and cobbles; soft to firm; loose to dense; dry to slightly damp			
9 - 14' BEDROCK; TQs, Medium-gray to medium-brown siltstone; firm to stiff; dense; slightly damp; upper 3' minorly fractured with caliche surfaces	N37W,27NE		No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 48 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

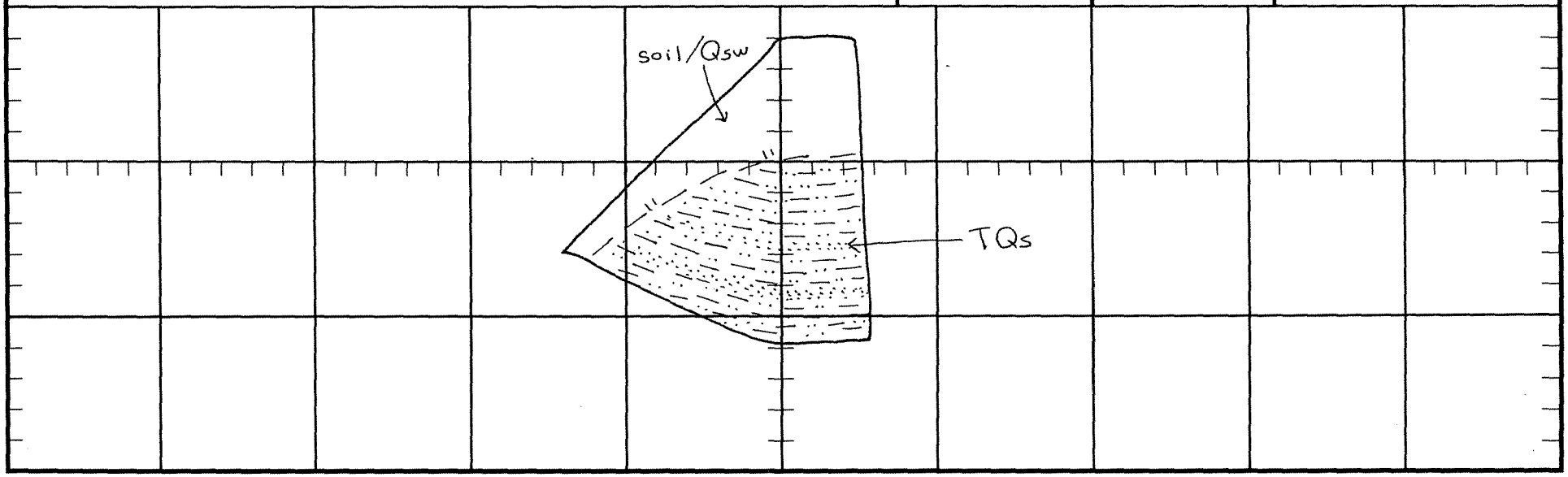
Trench Log No. 96Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light-brown sandy silt with few scattered pebbles; soft; loose; dry 4 - 10' BEDROCK; TQs, Light-to medium-gray siltstone, sandy siltstone and fine-grained sandstone; stiff; dense; slightly damp; upper 3' creep affected; fractured	N54W,29NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 44 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

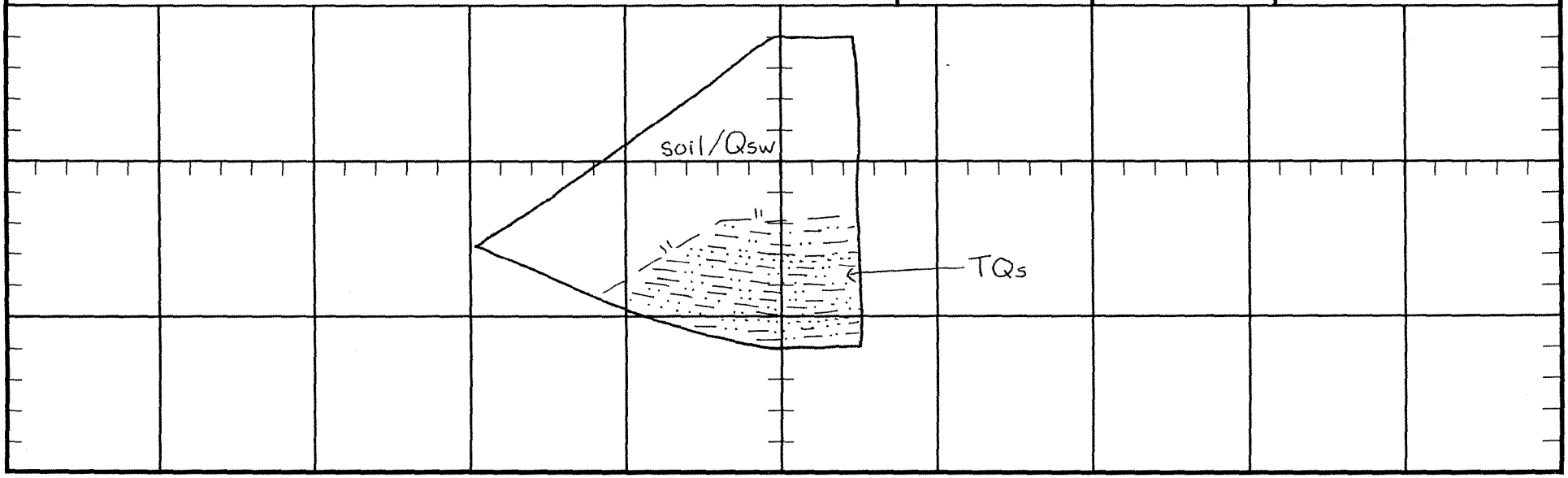
Trench Log No. 97Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light-brown sandy silt with scattered pebbles, cobbles and small boulders; soft to firm; loose to dense; dry to slighlty damp 6 - 10' BEDROCK; TQs, Light-to medium-gray siltstone, sandy siltstone and fine-grained sandstone; stiff; dense; slightly damp; upper 3 ft. creek affected; fractured	N66W,26NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 18 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

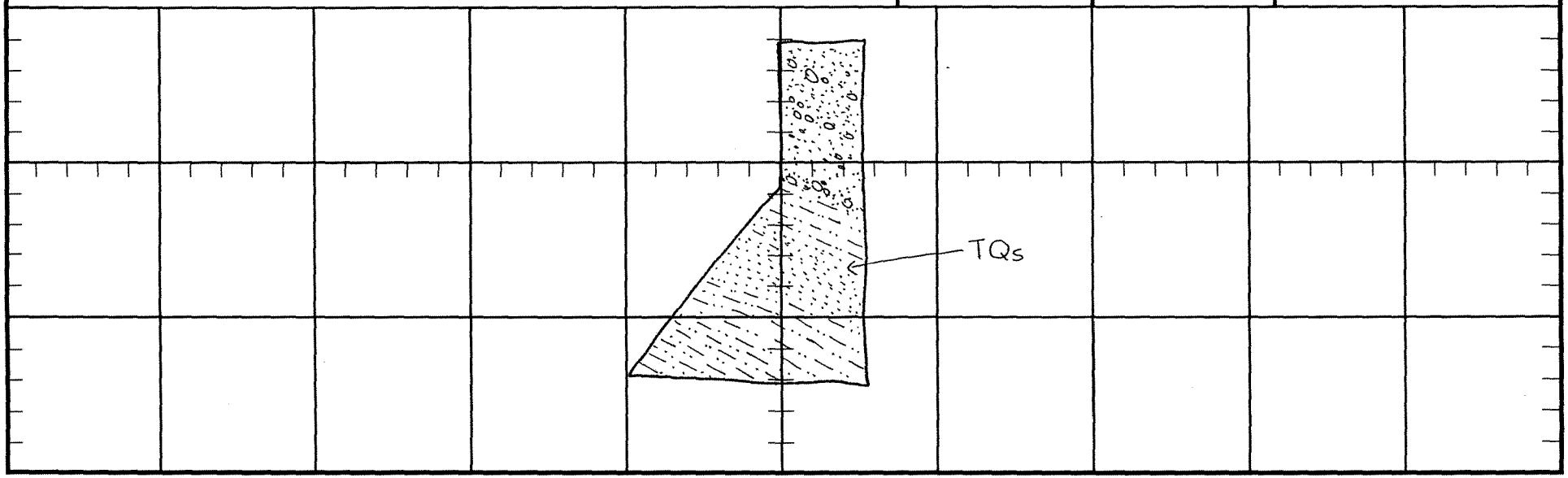
Trench Log No. 98Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11' BEDROCK; TQs, Light-to medium-gray fine- to coarse-grained sandstone, pebbly sandstone, and pebble conglomerate; firm; loose to moderately dense; dry; and light yellowish-brown to medium-brown siltstone and snady siltstone; stiff to hard; dense to very dense; slightly damp	N50W,29NE		No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 38 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

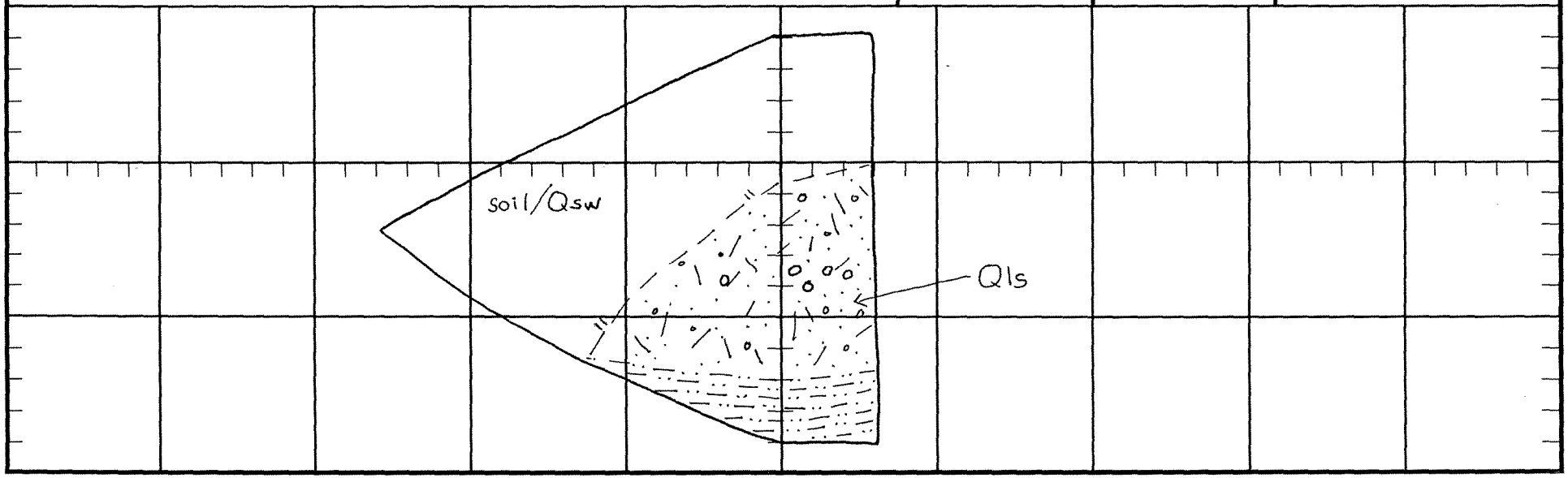
Trench Log No. 99Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5'? SOIL/SLOPEWASH; soil/Qsw, Light to medium grayish-brown sandy silt with scattered pebbles; soft to firm; loose to moderately dense; dry to slightly damp			Trenches 99Q thru 107Q excavated and logged 10/11/99 using a track-mounted backhoe with a 24" bucket
4.5 - 13' LANDSLIDE; Qls, Medium grayish-brown to medium-brown siltstone with scattered pebbles and some cobbles; soft to firm; loose to moderately dense; slightly damp to damp	N84E,14SE		No Ground Water No Caving
			TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 43 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

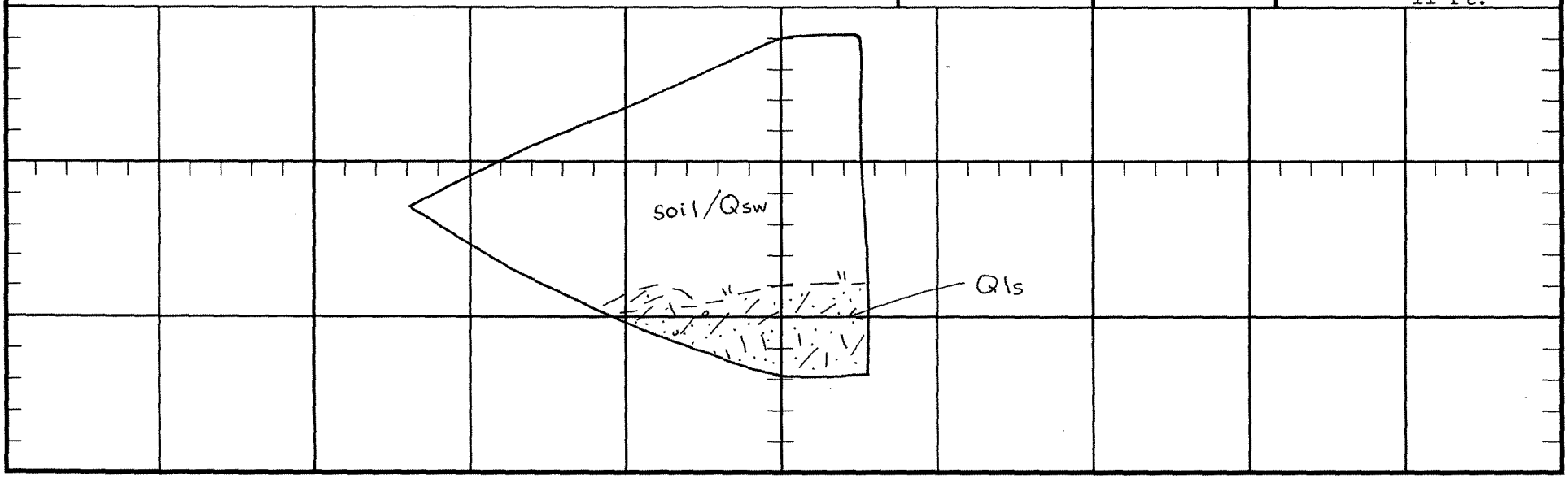
Trench Log No. 100Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SOIL/SLOPEWASH; soil/Qsw, Light to medium grayish-brown sandy silt with scattered pebbles; firm to stiff; moderately dense to dense; dry to slightly damp 8 - 11' LANDSLIDE; Qls, Light yellowish-gray to brownish-gray siltstone; firm to stiff; moderately dense to dense; slightly damp			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 46 E



ALLAN E. SEWARD

JOB NO. 99-1703Qlsl-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

Trench Log No. 101Q

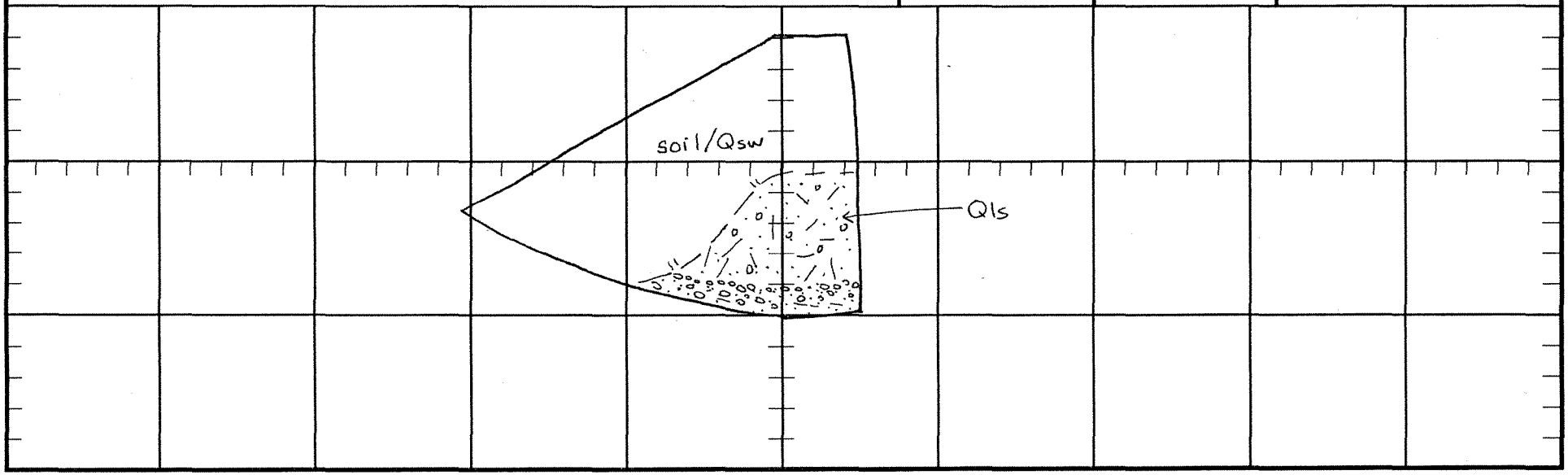
DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt; soft to firm; loose to moderately dense; dry			
4.5 - 9' LANDSLIDE; Qls, Light to medium olive-brown sandy siltstone to pebbly sandstone with a cobbly, sandy siltstone bed at base; moderately dense to dense; dry to slightly damp	N58W,15NE		No Ground Water No Caving

SCALE 1" = 5'

N 53 E

TOTAL DEPTH 9 Ft.



ALLAN E. SEWARD

JOB NO. 99-1703Q1sI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

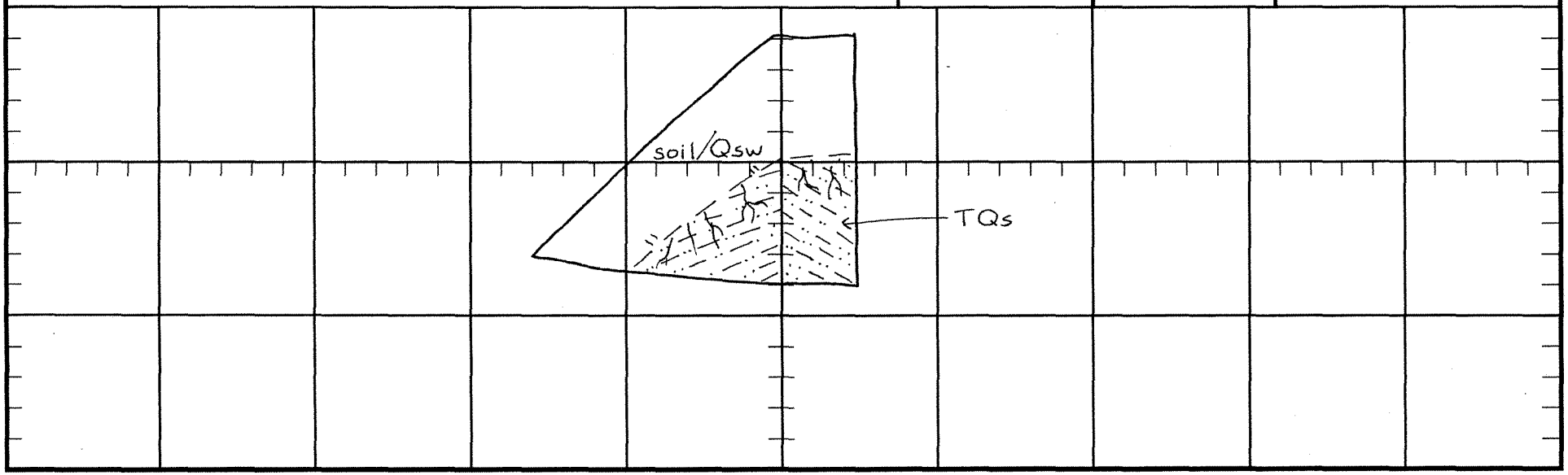
Trench Log No. 102Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Light-gray to grayish-brown sandy pebbly silt; soft; loose; dry 4 - 8' BEDROCK; TQs, Light- to medium-gray siltstone; firm to stiff; moderately dense to dense; slightly damp; upper 2 ft. fractured	N43W;42NE		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

Due West



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

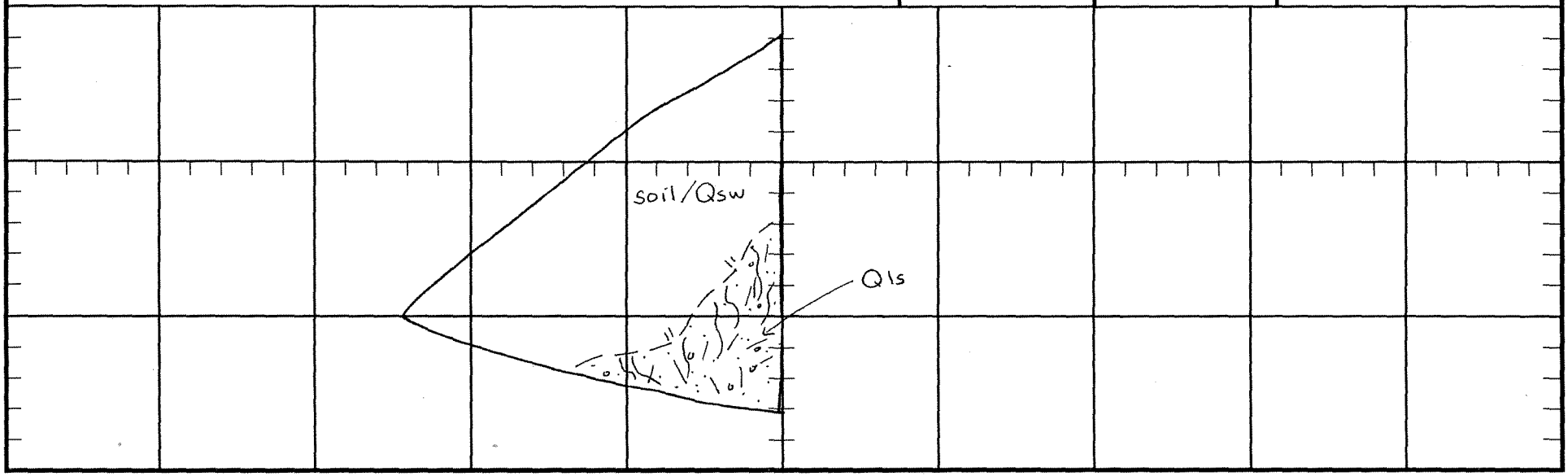
Trench Log No. 103Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Tan to light yellowish-brown sandy silt with scattered pebbles and cobbles; soft; loose; dry 6 - 12' LANDSLIDE; Qls, Grayish-brown to medium-brown siltstone with few scattered pebbles; soft to firm; loose to moderately dense; slightly damp; fractured; caliche surfaces			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 79 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

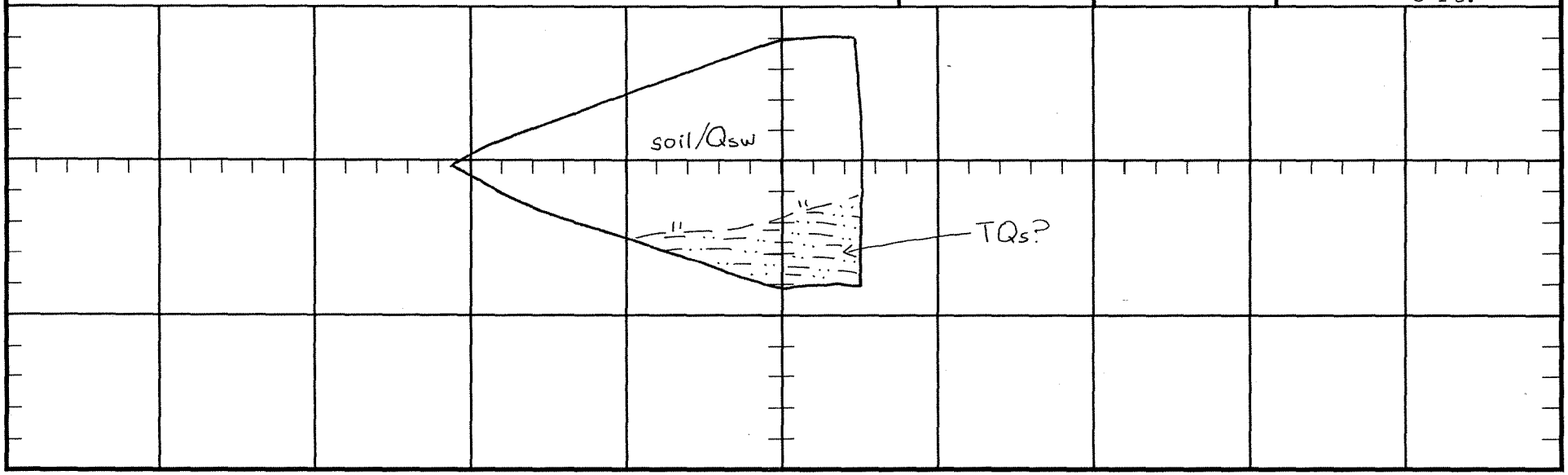
Trench Log No. 104Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Slightly reddish-brown silty pebbly cobbly sand; soft; loose; dry			
6 - 8' BEDROCK?; TQs?; Medium-gray to medium-brown siltstone; dense; slightly damp	Apx:N52W,22NE		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 79 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

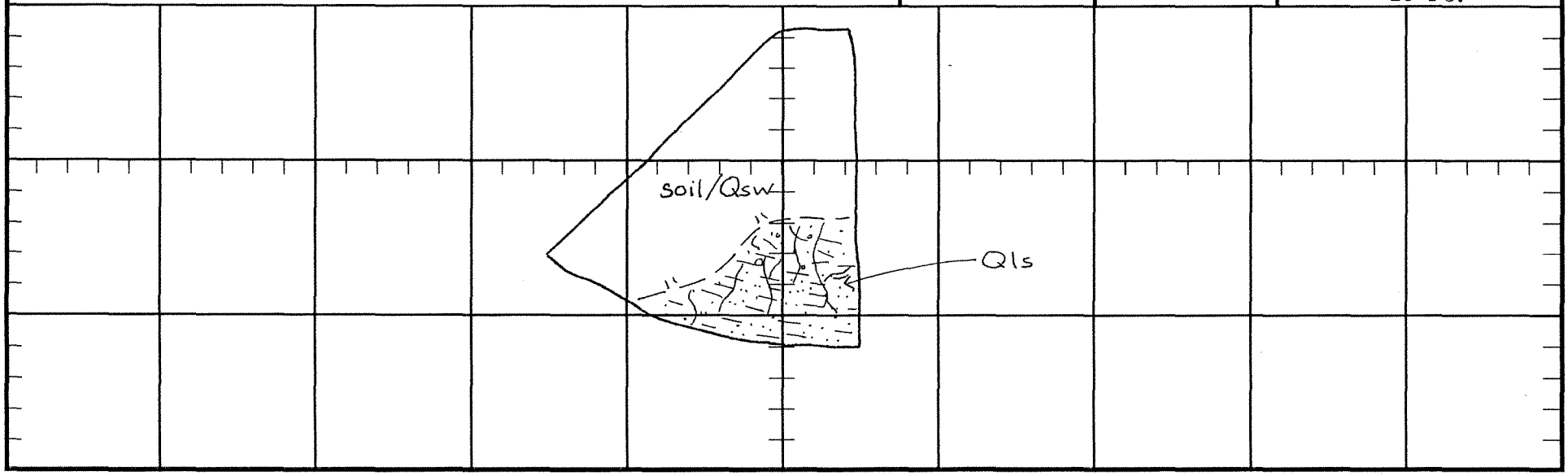
Trench Log No. 105Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Medium-brown to slightly reddish-brown sandy silt with scattered pebbles; firm; moderately dense; dry 6 - 10' LANDSLIDE; Qls, Medium-gray siltstone; stiff; dense; slightly damp; fractured surfaces with caliche	Apx:N70E,10NW		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 88 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

LOGGED BY DGG

Trench Log No. 106Q

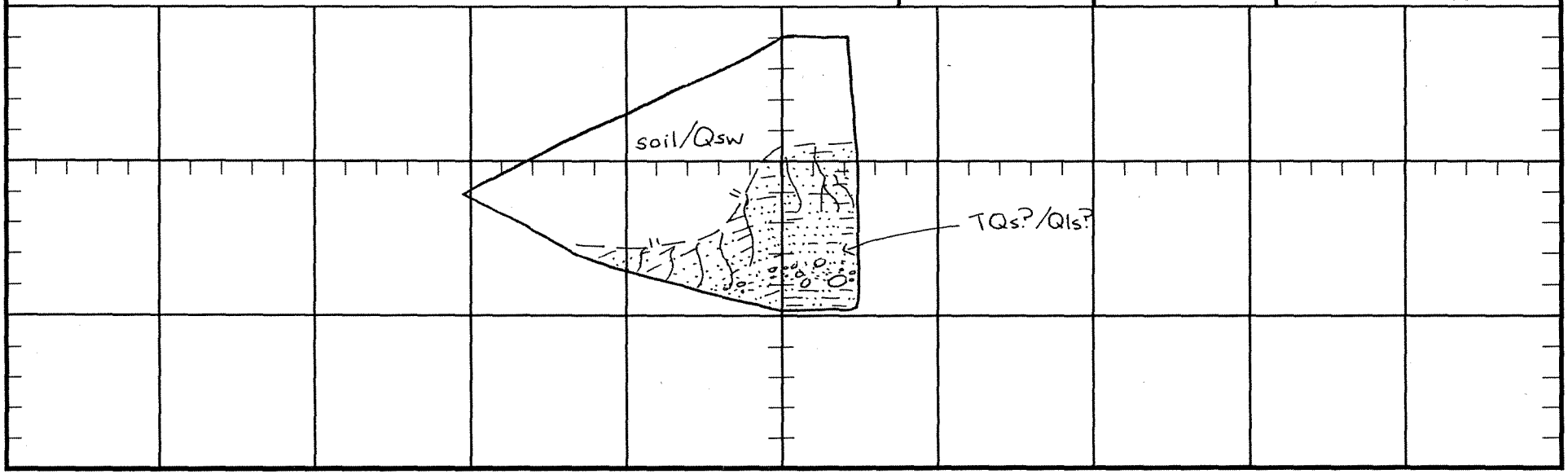
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Medium-brown to slightly reddish-brown sandy silt with scattered pebbles; firm; moderately dense; dry 3.5 - 9' LANDSLIDE?/BEDROCK?; TQs?/Qls?, Medium-gray siltstone, fine to medium-grained sandstone and pebbly sandstone with scattered cobbles; loose to moderately dense; dry to slightly damp; fractured surfaces with caliche	N51E,32SE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 37 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsI-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

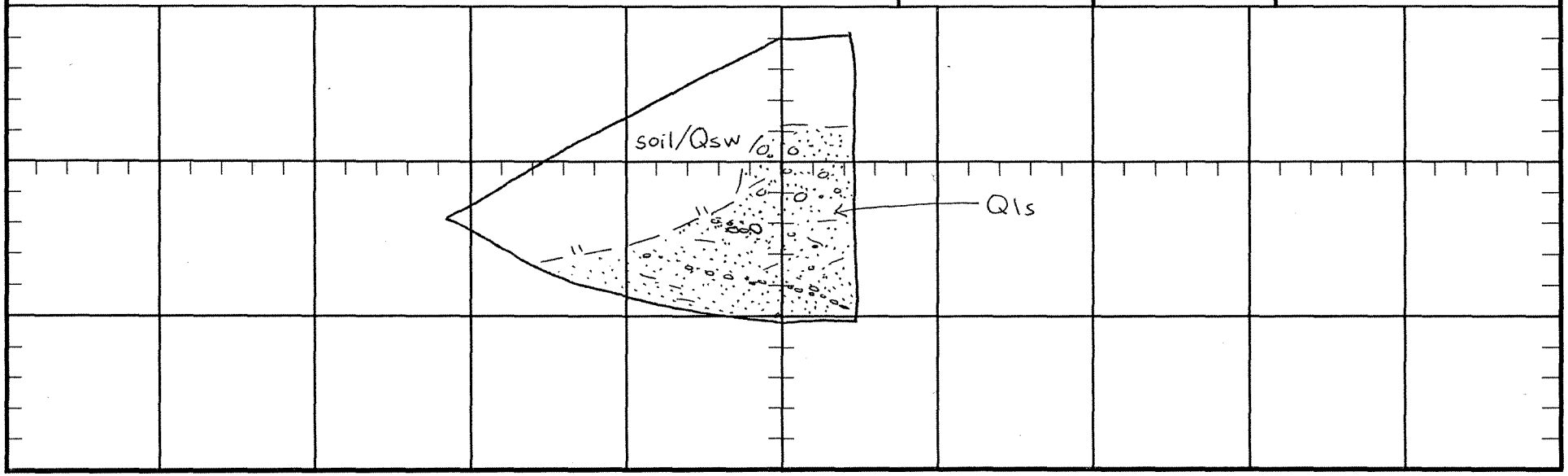
Trench Log No. 107Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt with scattered pebbles; loose; dry			
3 - 9' LANDSLIDE; Qls, Light orangish-brown fine- to medium-grained sandstone with scattered pebbles and fine- to coarse-grained pebbly sandstone; soft; loose; slightly damp	N9W,32SW		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 35 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

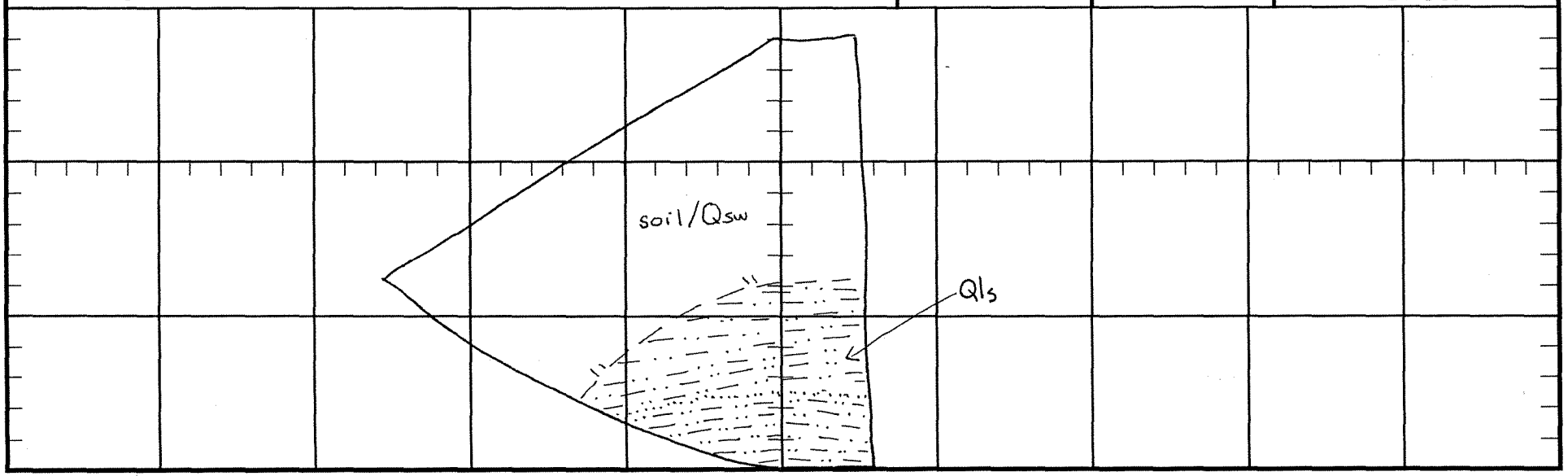
Trench Log No. 108Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SOIL/SLOPEWASH; soil/Qsw, Light to medium-brown and yellowish-brown sandy silt with scattered pebbles; firm to stiff; loose to moderately dense; dry to slightly damp			Trenches 108Q thru 116Q excavated and logged 10/27/99 using a track-mounted backhoe with a 24" bucket
8 - 14' LANDSLIDE; Qls Olive-gray to medium-gray siltstone with local pebble stringers; moderately dense to dense; slightly damp	Very apx: E-W,9N		No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 83 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

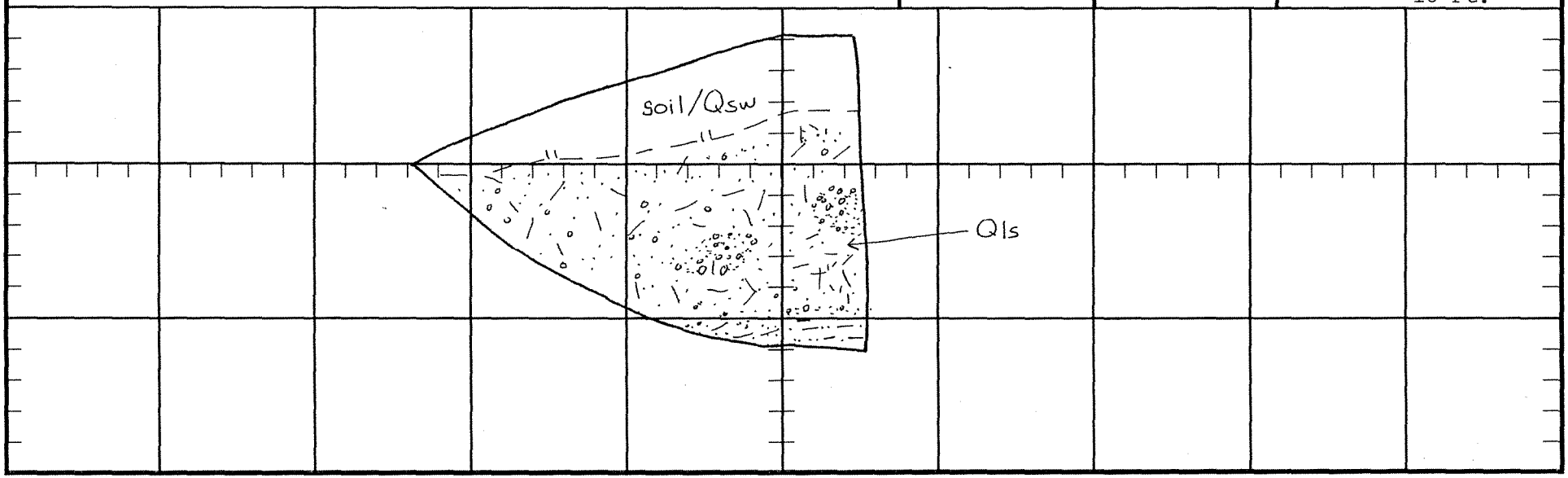
Trench Log No. 109Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2.5' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown silty sand; stiff; dense; dry 2.5 - 10' LANDSLIDE; Qls, Medium-to reddish-brown to light-gray to medium olive-gray siltstone, sandy siltstone and pebbly sandstone; loose to dense; dry to slightly damp			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 37 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY DGG

Trench Log No. 110Q

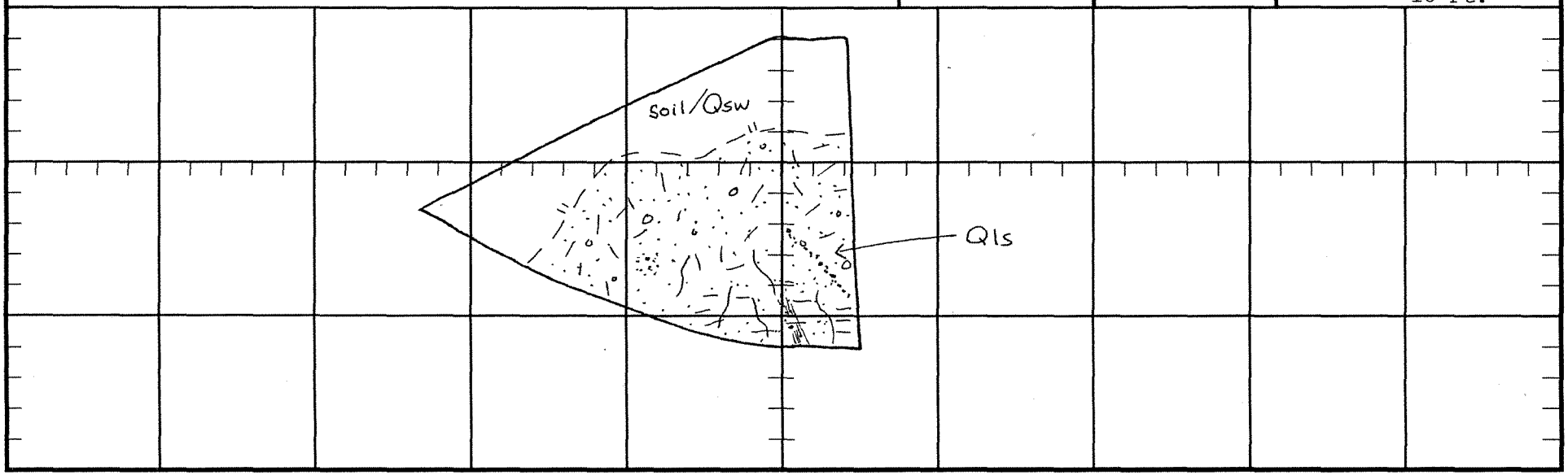
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Medium grayish-brown sandy silt; firm; moderately dense; dry 3 - 10' LANDSLIDE; Qls, Medium grayish-brown to medium olive-gray siltstone and sandy siltstone with scattered pebbles; loose to dense; dry to damp			Siltstone at base appears sheared and/ or fractured No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 37 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

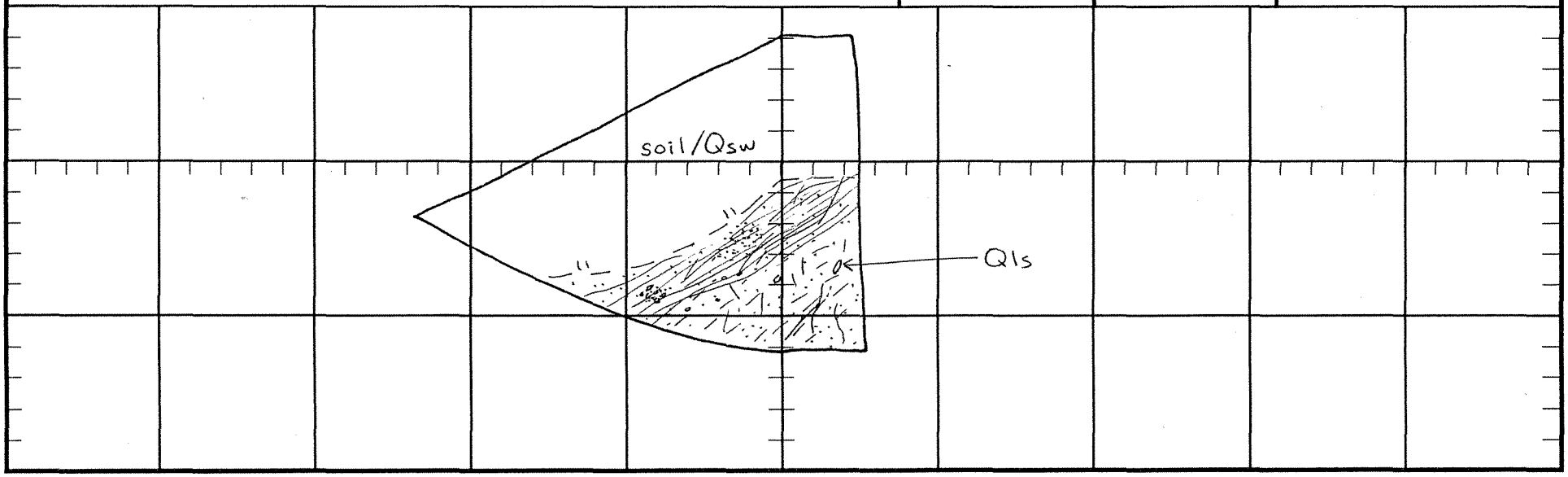
Trench Log No. 111Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt; soft to firm; loose to moderately dense; dry			Bottom 2.5-3' of Qls is tight, upper 2.5-3' of Qls has well developed fracture surfaces with caliche
4.5 - 10' LANDSLIDE; Qls, Tan to medium-brown to medium-gray siltstone to sandy siltstone with scattered pebbles; soft to stiff; loose to dense; damp	Apx:N56W,34NE	f:N60W,50NE	
			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 21 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY DGG

Trench Log No. 112Q

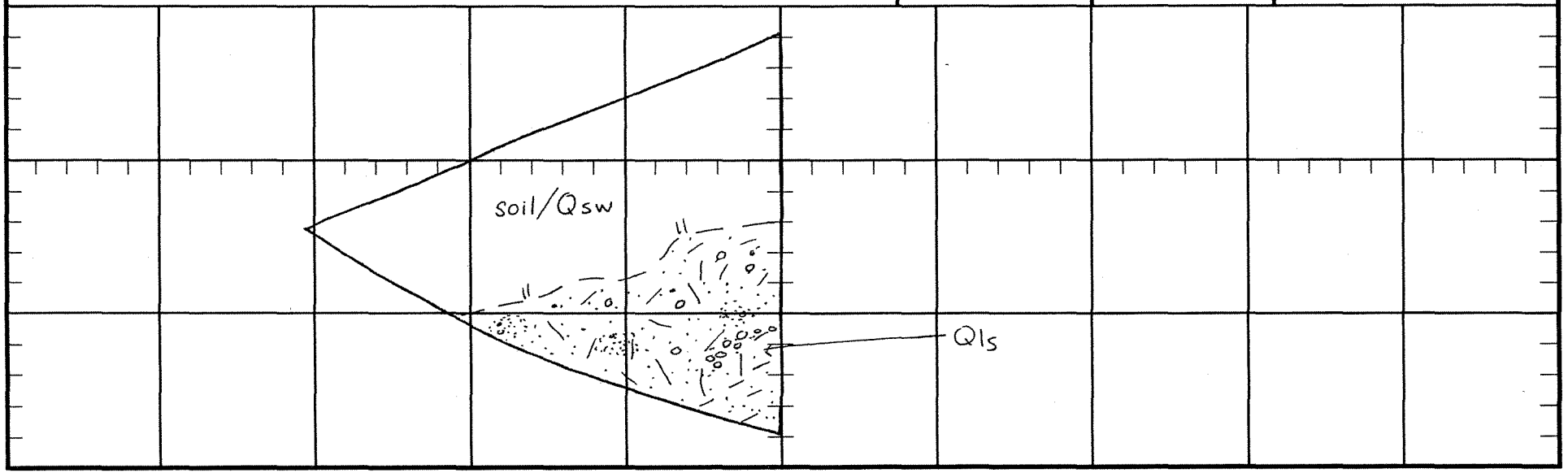
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; soft to firm; loose to moderately dense; dry			Bottom 2-3 Ft. of Qls is tight and dense
6 - 13' LANDSLIDE; Qls, Tan to medium-brownish gray siltstone to sandy siltstone with local pods of pebbles and scattered cobbles; soft to stiff; loose to dense; slightly damp to damp			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 46 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

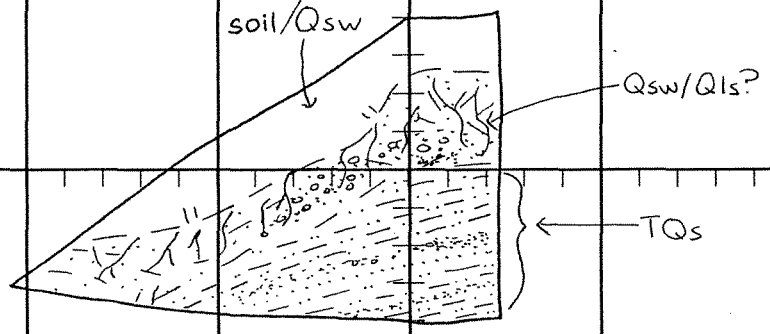
Trench Log No. 113Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL/SLOPEWASH; soil/Qsw, Medium-brown to medium grayish-brown sandy silt; soft; loose; dry 1.5 - 4' SLOPEWASH/LANDSLIDE?; Qsw/Qls?, Tan to grayish-tan sandy silt with pebbles and cobbles in concretionary pods; soft to firm; loose to moderately dense; dry; fractured 4 - 8' BEDROCK; TQs, Light-gray to medium brownish-gray siltstone, sandy siltstone, and fine- to medium-grained pebbly sandstone; moderately dense to dense; dry to damp	B:N27W,17NE		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 25 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY DGG

Trench Log No. 114Q

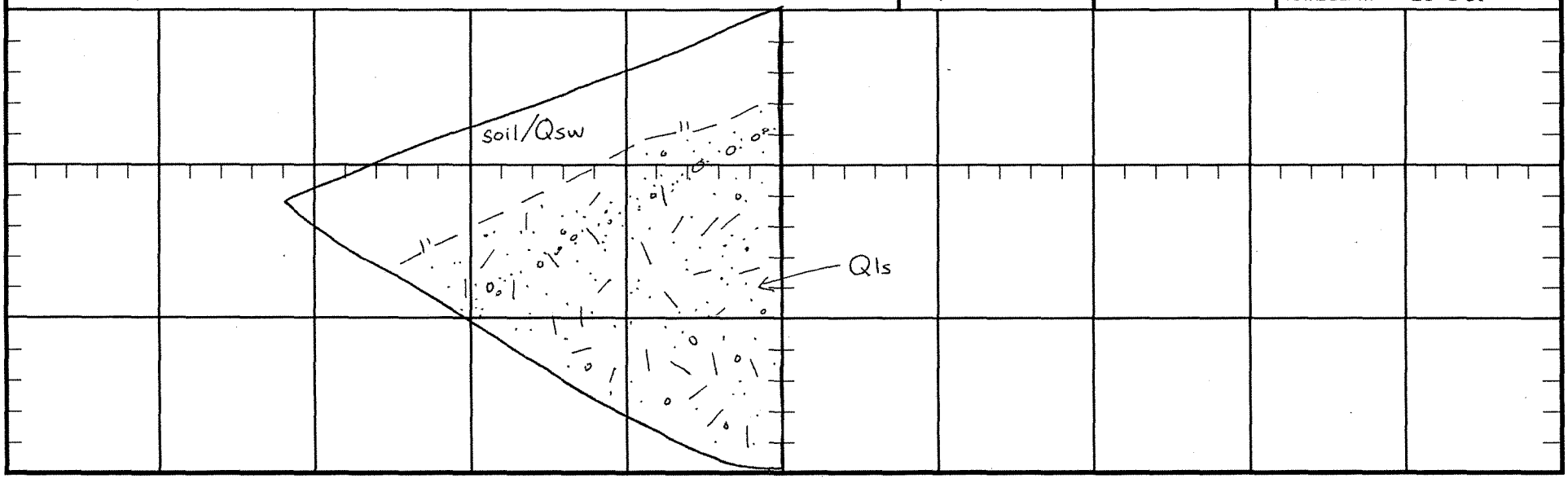
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light-brown sandy silt with scattered pebbles and cobbles; firm; moderately dense; dry 3 - 15' LANDSLIDE; Qls, Medium-to dark-gray to brownish-gray sandy siltstone with scattered pebbles; firm; loose to moderately dense; damp			No Ground Water NO Caving TOTAL DEPTH 15 Ft.

SCALE 1" = 5'

N 78 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

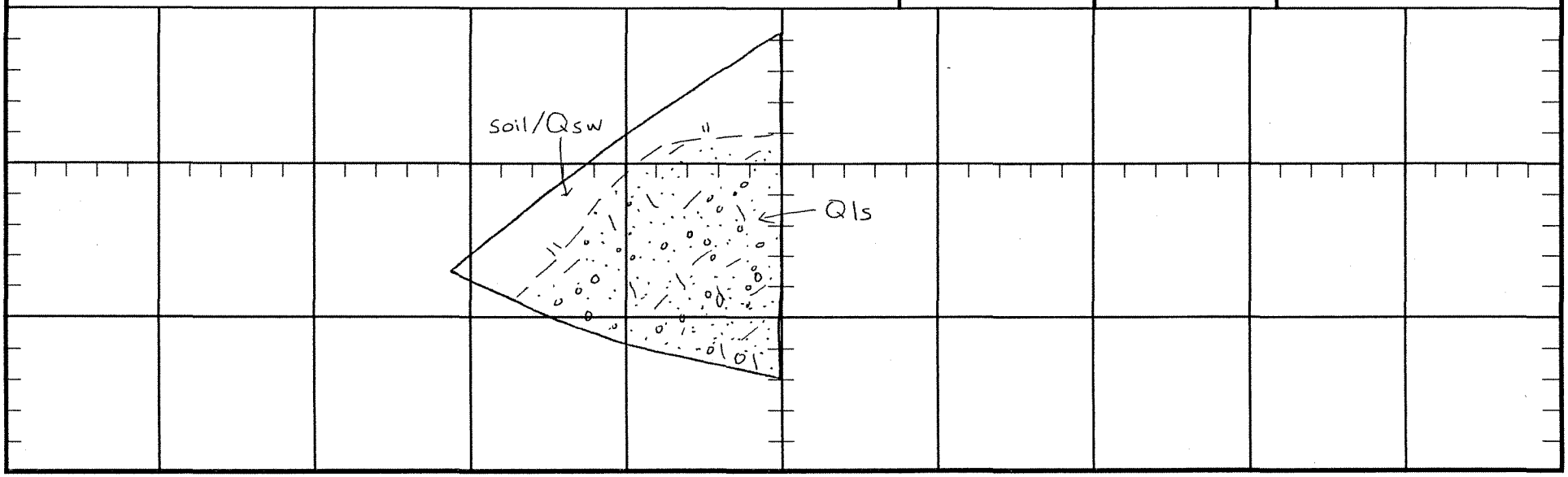
Trench Log No. 115Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Medium-brown silt with scattered pebbles and cobbles; firm; loose to moderately dense; dry 4 - 11' LANDSLIDE; Qls, Tan to light-brown to medium-gray sandy siltstone to medium- to coarse-grained pebbly sandstone with scattered cobbles; soft to firm; loose to moderately dense; dry to slightly damp			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 51 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

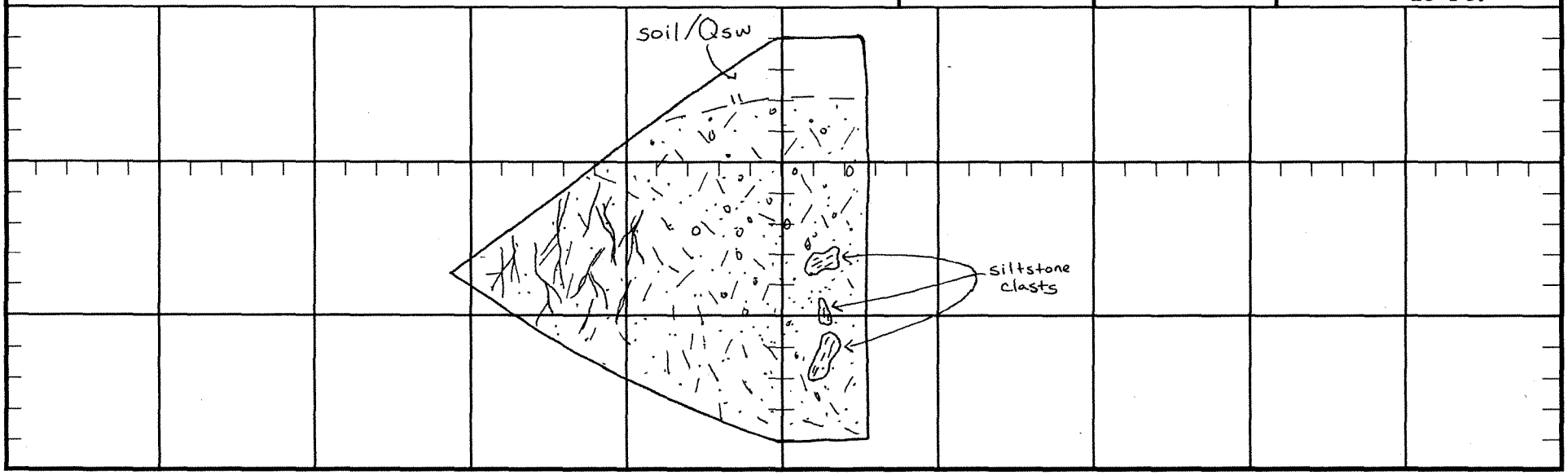
Trench Log No. 116Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt with scattered pebbles; firm; loose to moderately dense; dry 2 - 13' LANDSLIDE; Qls, Light- to medium-gray pebbly, silty sandstone/sandy siltstone and light-gray siltstone; soft to firm; loose to moderately dense; damp; locally fractured			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 58 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

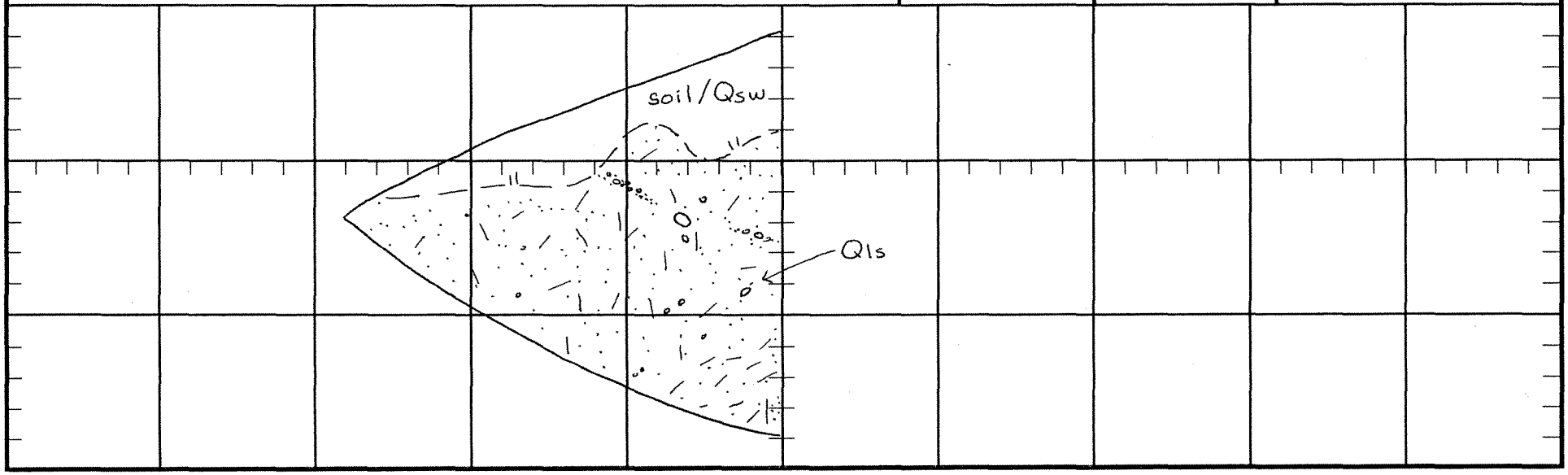
Trench Log No. 117Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Medium brown sandy silt with scattered pebbles; firm; moderately dense; slightly damp to damp 4 - 13' LANDSLIDE; Qls, Medium brown to olive gray siltstone and sandy siltstone with scattered pebbles; soft to firm; loose to dense; damp			Trenches 117Q thru 127Q excavated and logged 10/28/99 using a track-mounted backhoe with a 24" bucket Bottom 3' of Qls is fairly tight No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 23 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

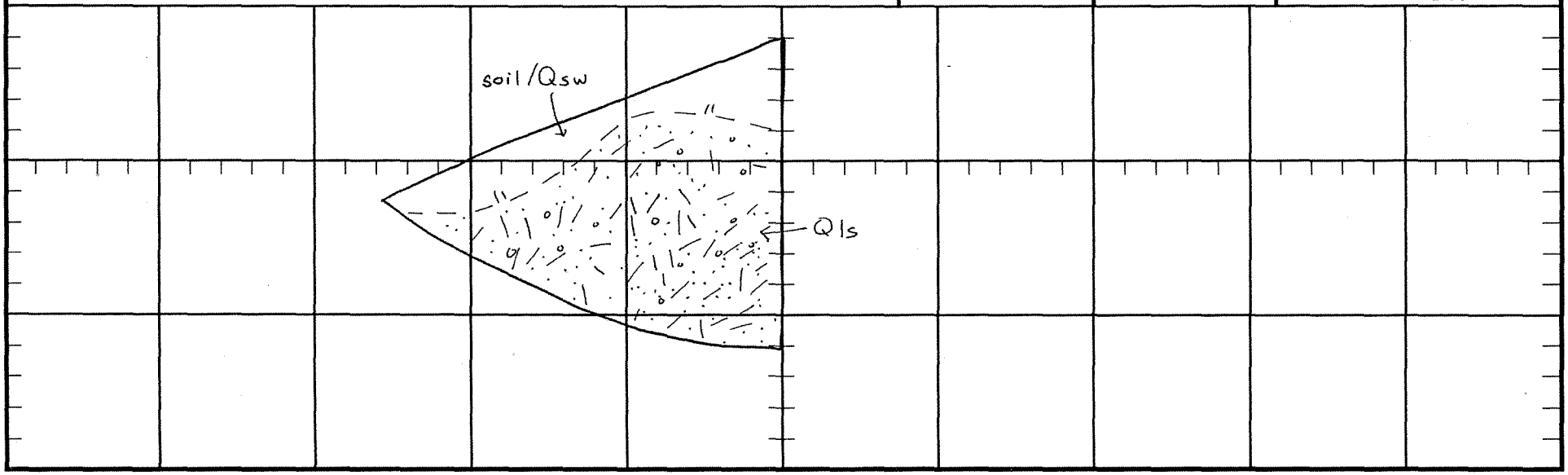
LOGGED BY DGG

Trench Log No. 118Q

PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH: soil/Qsw, Medium-brown sandy silt; soft; loose; dry			Bottom 3' of Qls hard/very dense
3 - 10' LANDSLIDE; Qls, Yellowish-brown to medium-brown to light olive-gray siltstone and sandy siltstone with scattered pebbles; stiff to hard; dense to very dense; dry to damp			
			No Ground Water No Caving
SCALE 1" = 5' N 59 E			TOTAL DEPTH 10 Ft.



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

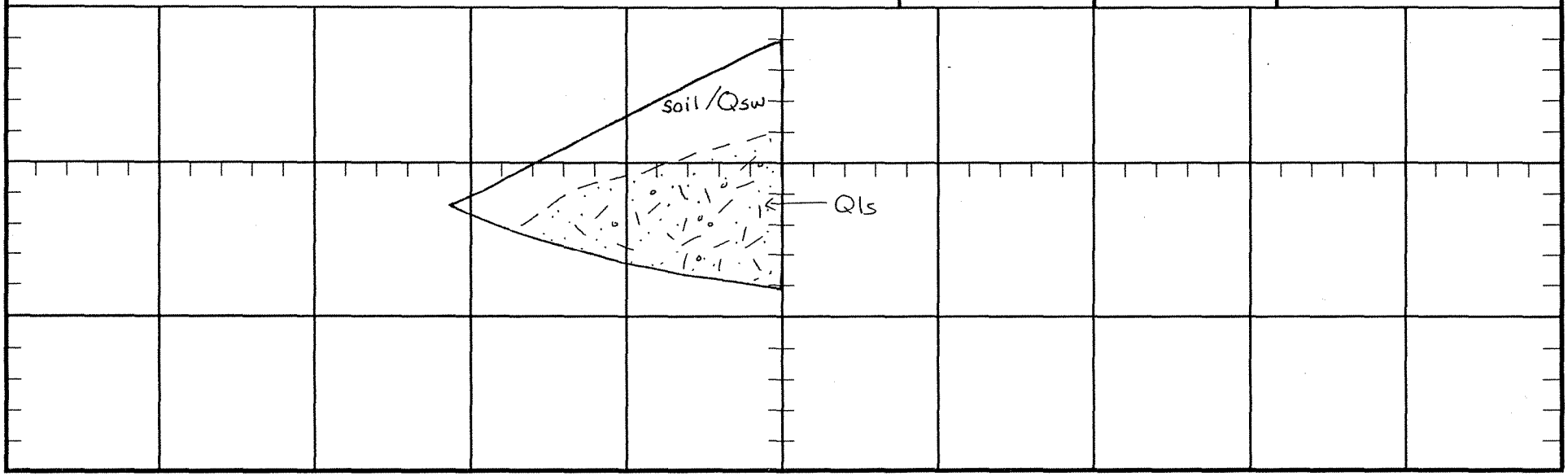
Trench Log No. 119Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt; soft to firm; loose to moderately dense; dry to slightly damp 3 - 8' LANDSLIDE; Qls, Light-gray to medium-gray to medium olive-gray siltstone and sandy siltstone with scattered pebbles; soft to stiff; loose to dense; slightly damp to damp			No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 42 E



ALLAN E. SEWARD

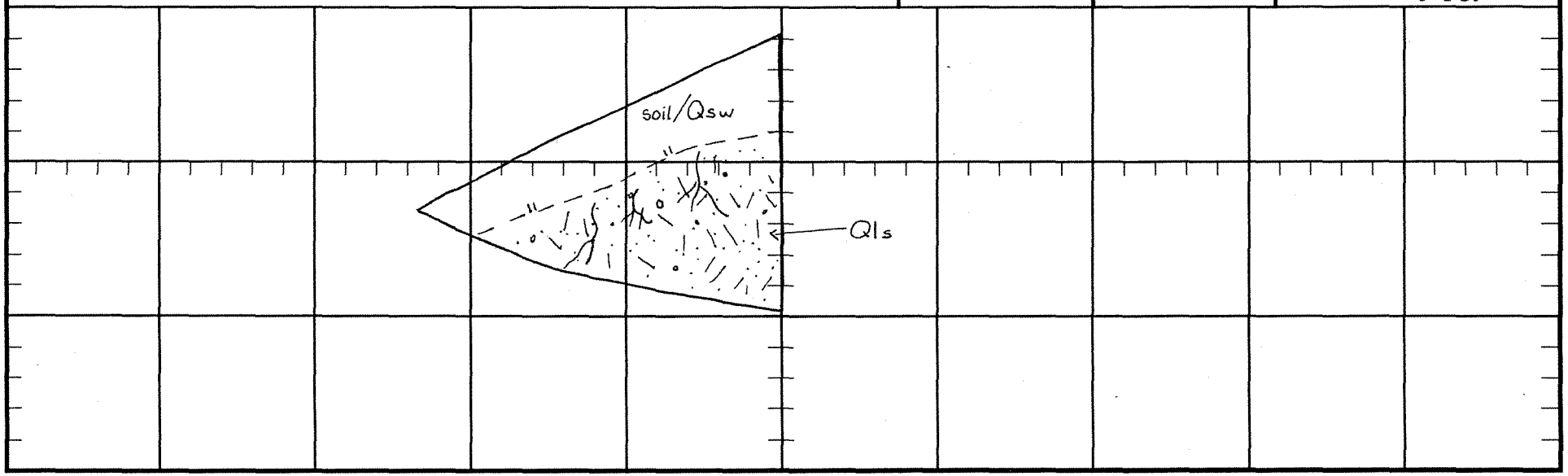
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 120Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt; soft to firm; loose to moderately dense; dry to slightly damp 3 - 9' LANDSLIDE; Qls, Light- to medium-gray siltstone to sandy siltstone with scattered pebbles; soft to stiff; loose to dense; dry to slightly damp			No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 24 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

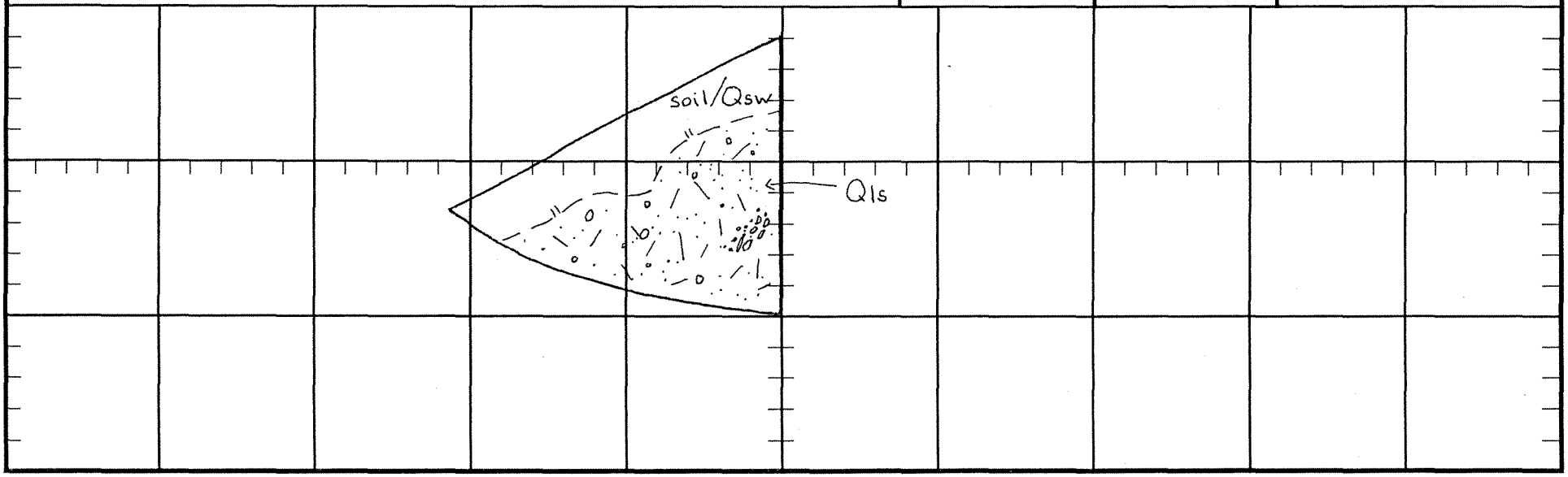
Trench Log No. 121Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2.5' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt with scattered pebbles; firm; moderately dense; dry 2.5 - 9' LANDSLIDE; Qls, Light-to medium-gray siltstone and sandy siltstone with scattered pebbles and cobbles; firm to stiff; loose to dense; dry to slightly damp			No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 25 E



ALLAN E. SEWARD

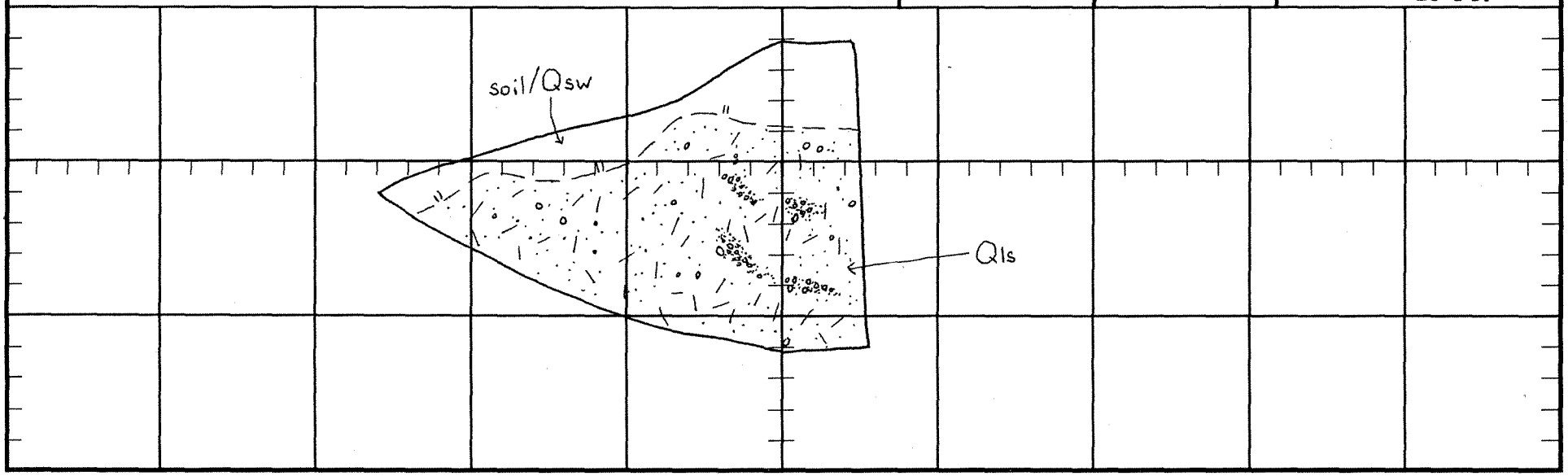
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 122Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light-brown sandy silt; soft; loose; dry 3 - 10' LANDSLIDE; Qls, Light- to medium-gray siltstone, sandy siltstone and medium- to coarse-grained pebbly sandstone; soft to firm; loose to moderately dense; dry to slightly damp			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 35 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

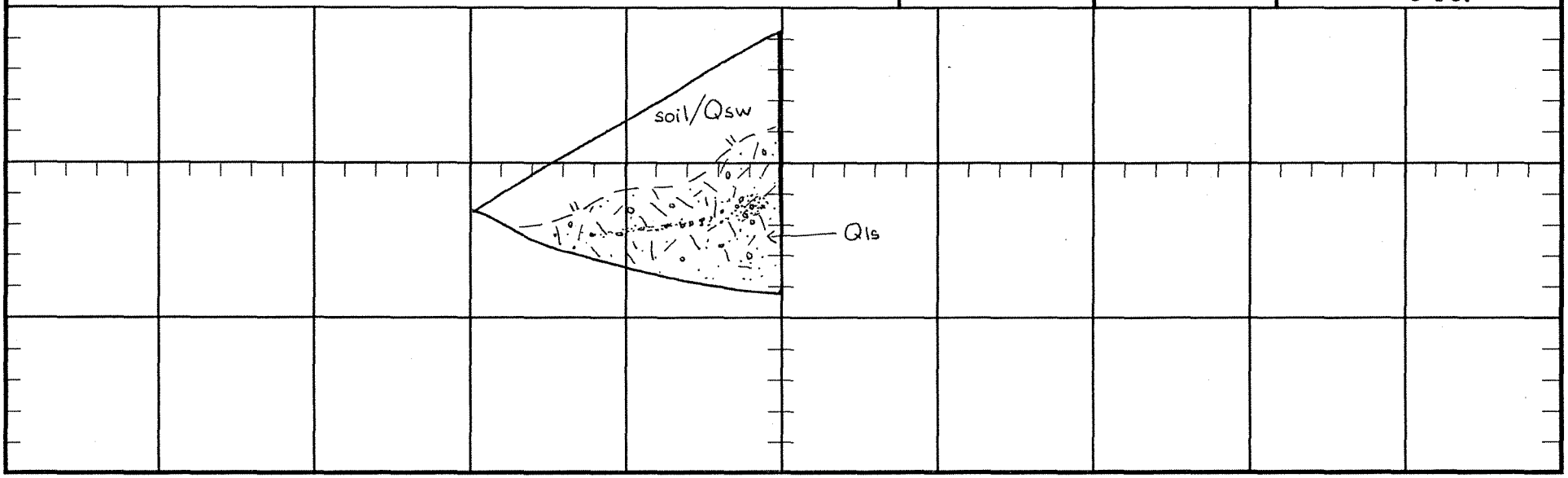
Trench Log No. 123Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown sandy silt with scattered pebbles; soft; loose; dry 3 - 8' LANDSLIDE; Qls, Light- to medium-gray siltstone and sandy siltstone with scattered pebbles; soft to firm; loose to moderately dense; dry to slightly damp			No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 33 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

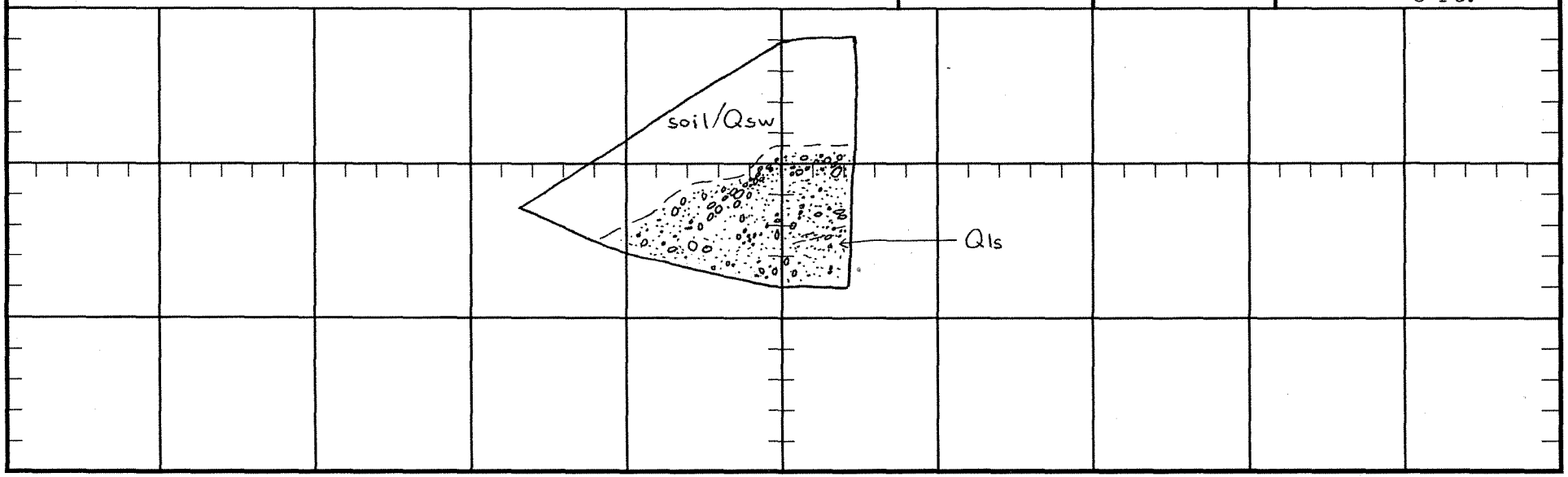
Trench Log No. 124Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Medium-brown pebbly sandy silt; soft; loose; dry 3.5 - 8' LANDSLIDE; Qls, Tan to light-gray fine- to coarse-grained pebbly sandstone and pebble to cobble conglomerate; loose to moderately dense; dry			Qls-disrupted TQs lithologies; no distinct bedding No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 7 W



ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

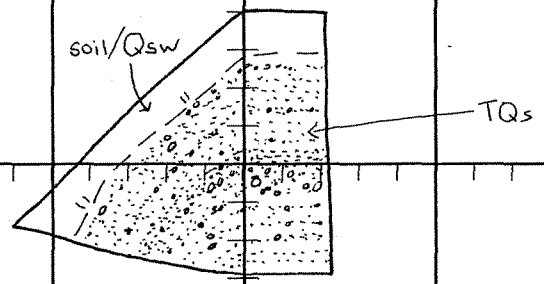
Trench Log No. 125Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; s/Qsw, Medium-brown pebbly sandy silt; soft; loose; dry 1 - 7' BEDROCK; TQs, Tan to light-gray fine-grained sandstone, medium to coarse-grained sandstone and pebble conglomerate; loose to dense; dry	Apx:N50W,27NE		TQs appears to be slightly creep affected - could account for steeper dip No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 36 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

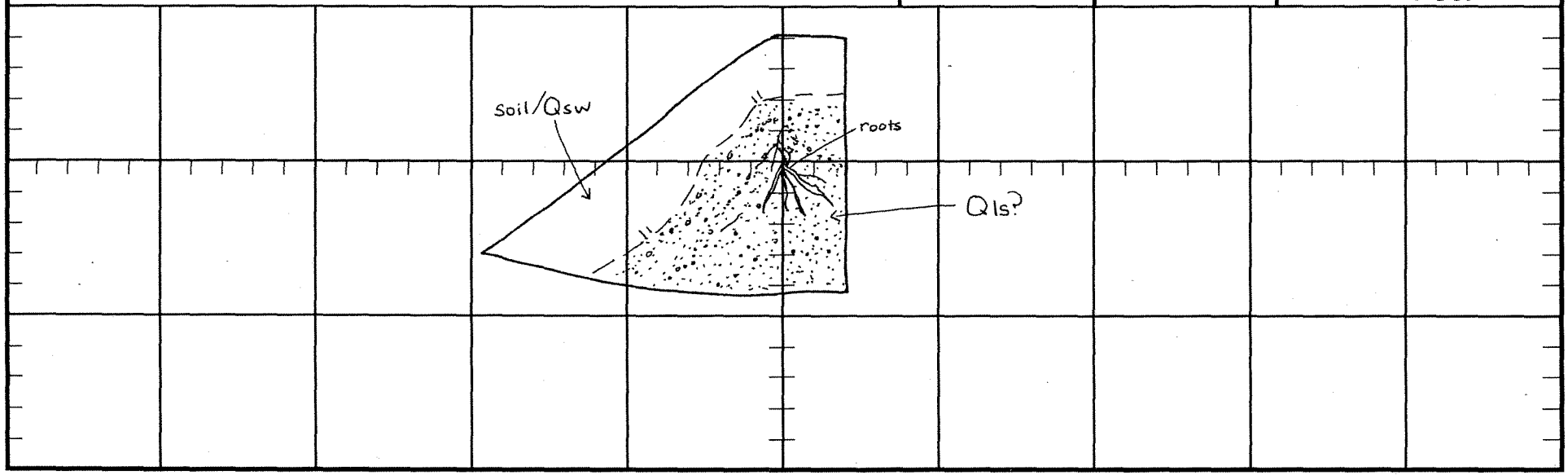
Trench Log No. 126Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt with scattered pebbles; soft; loose; dry 2 - 8' LANDSLIDE?; Qls?, Tan to light-gray medium- to coarse-grained pebbly sandstone; loose to dense; dry			Top 3' of Qls creep affected bottom 3' vague stratification/ bedding? No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 15 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

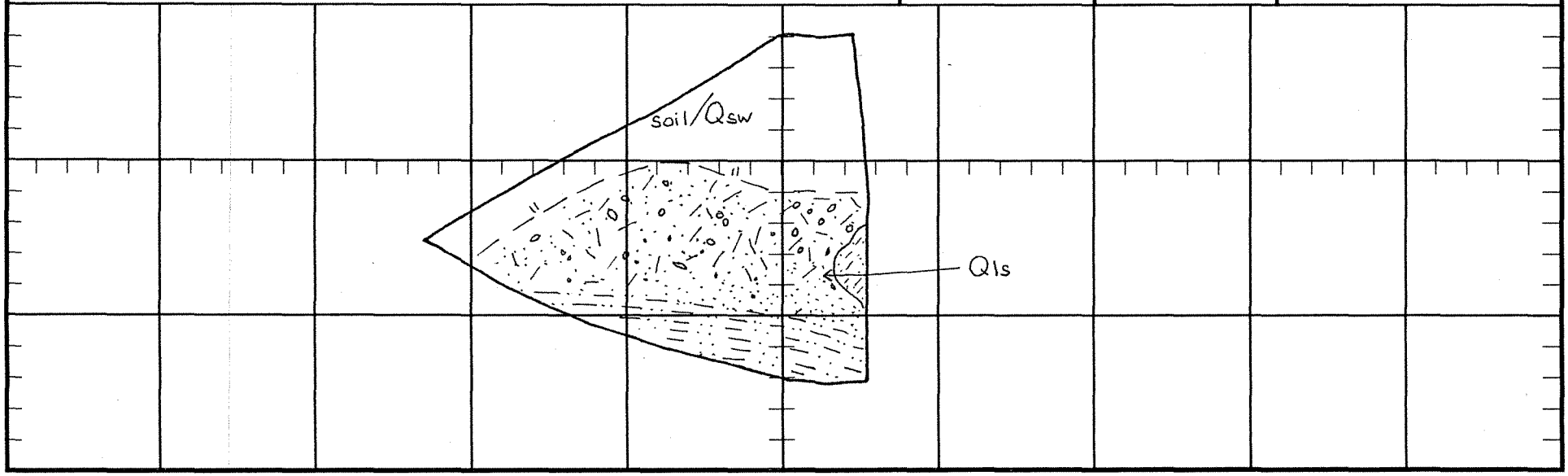
Trench Log No. 127Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Yellowish- to medium-brown sandy silt with scattered pebbles; soft to firm; loose to moderately dense; dry			
5 - 11' LANDSLIDE; Qls, Orangish-brown to medium-brown to olive-gray siltstone, sandy siltstone and medium- to coarse-grained pebbly sandstone; loose to moderately dense; dry to damp		Disrupted bedding N52W,21SW	No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 27 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

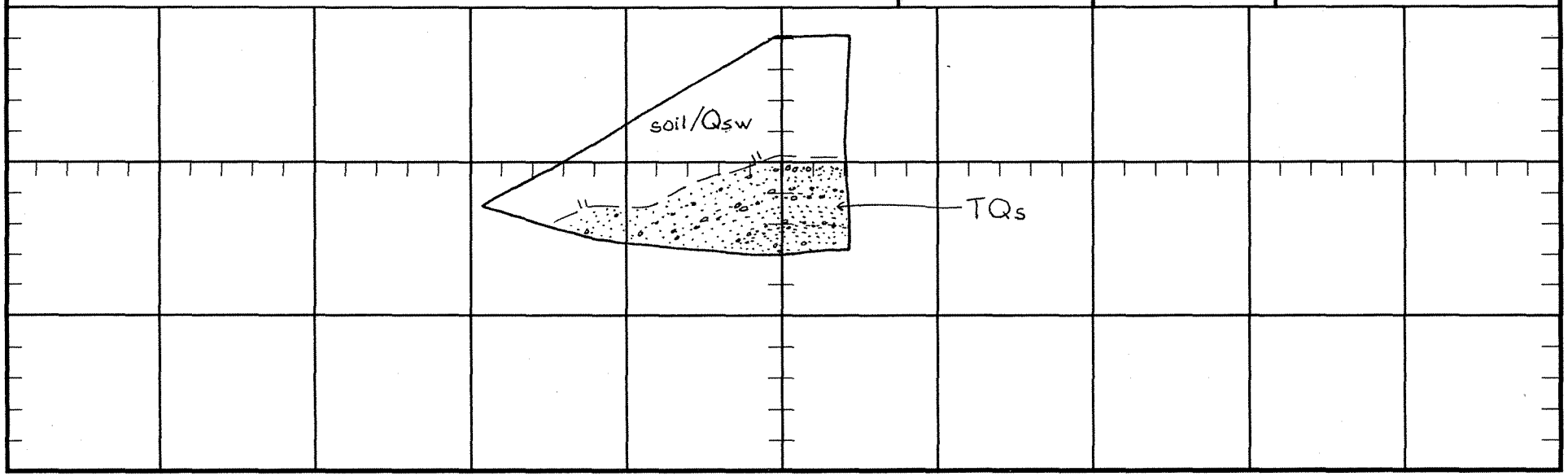
Trench Log No. 128Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt with scattered pebbles; firm to stiff; dense; dry 4 - 7' BEDROCK; TQs, Light-to medium-gray fine-grained sandstone, medium to coarse-grained pebbly sandstone; dense; dry	N45W,26NE		Trenches 128Q thru 141Q excavated on 10/29/99 using a trackmounted backhoe with a 24" bucket No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 41 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

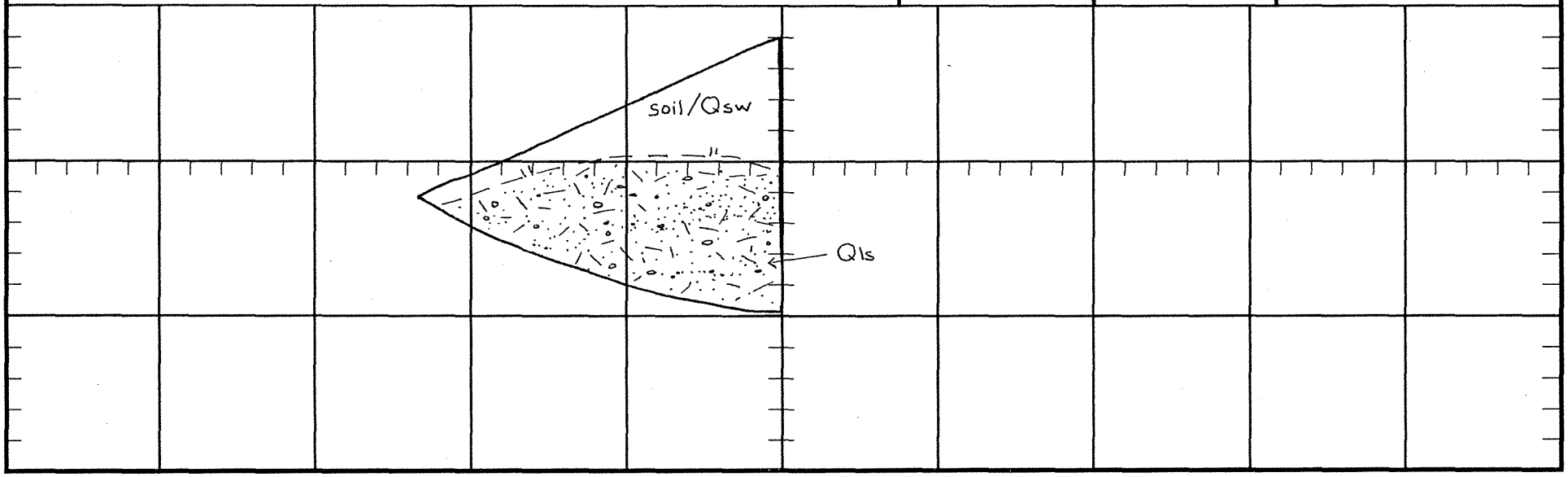
Trench Log No. 129Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SOIL/SLOPEWASH; soil/Qsw, Yellowish-tan to yellowish-brown sandy silt with scattered pebbles; firm; moderately dense; dry 4.5 - 9' LANDSLIDE; Qls, Light- to medium-gray sandy siltstone, medium- to coarse-grained sandstone, and medium- to coarse-grained pebbly sandstone; soft to firm; loose to moderately dense; dry to slightly damp			No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 19 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

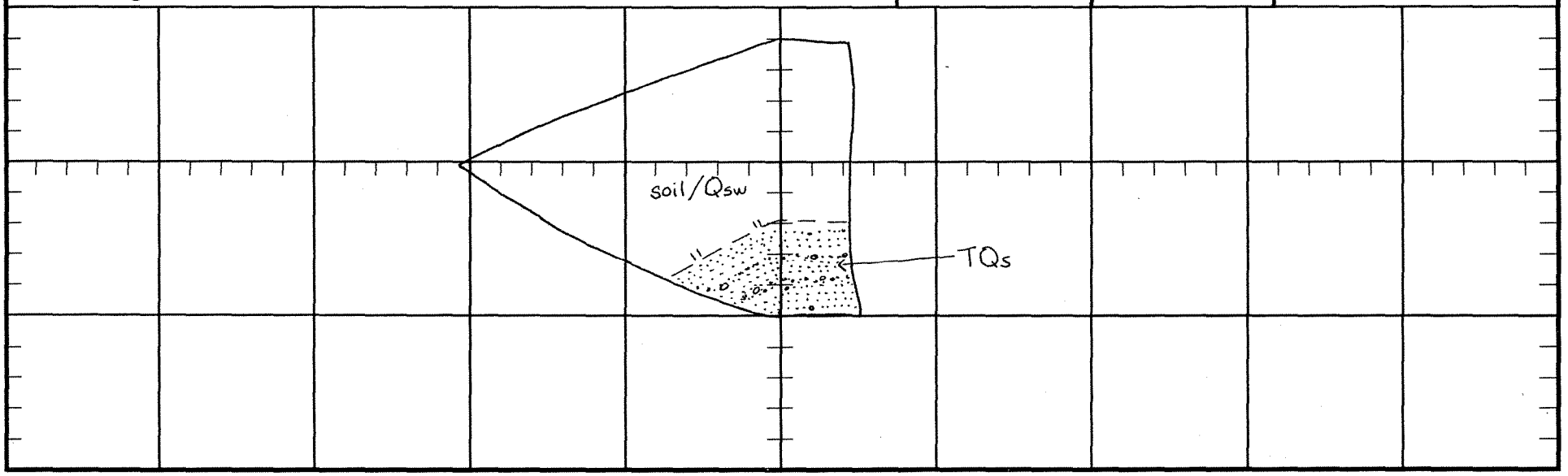
Trench Log No. 130Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt with scattered pebbles; firm to stiff; dense to very dense; dry			
6 - 9' BEDROCK; TQs, Light- to medium-gray and orangish-brown fine-grained sandstone, medium- to coarse-grained sandstone and medium to coarse-grained pebbly sandstone; dense; dry	N48W,27NE		
			No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 38 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

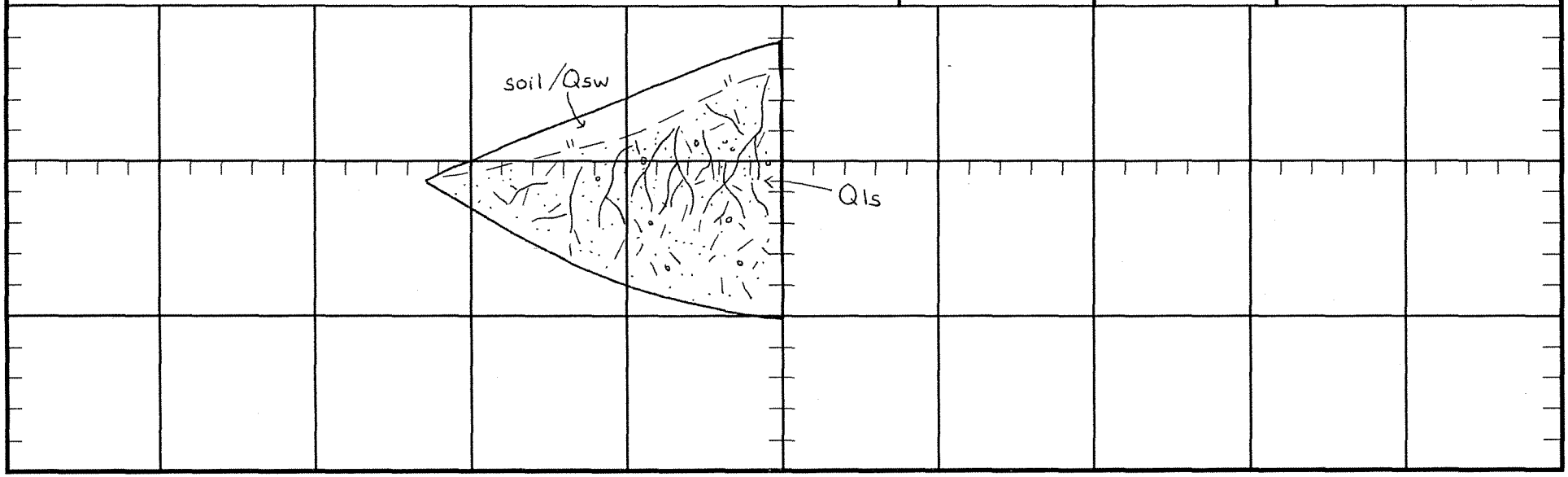
Trench Log No. 131Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; soil/Qsw, Light-to yellowish-brown sandy silt; soft; loose; dry 1 - 8' LANDSLIDE; Qls, Light-gray to medium olive-gray siltstone and sandy siltstone; soft to firm; loose to dense; dry to slightly damp			Top 4' of Qls highly fractured No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 43 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

Trench Log No. 132Q

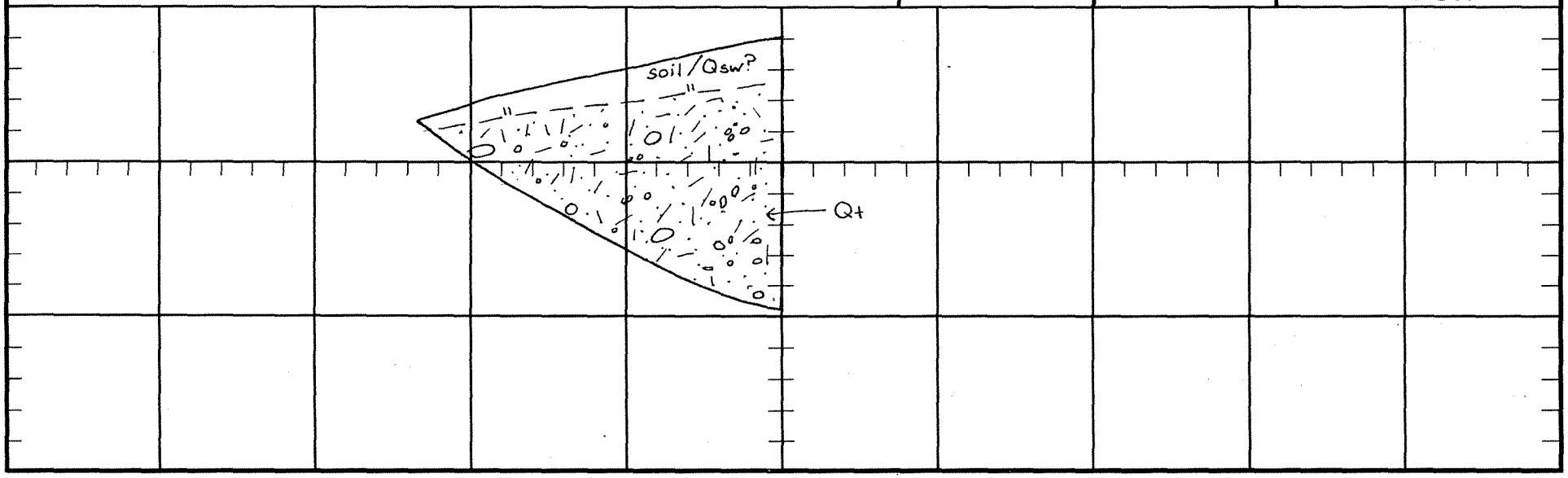
DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL/SLOPEWASH?; soil/Qsw?, Light-brown sandy silt with scattered pebbles; stiff; dense; dry 1.5 - 9' TERRACE DEPOSITS; Qt, Medium-green to slightly orangish-brown sandy silt with scattered pebbles and cobbles; loose to moderately dense; dry			Qt is weathered and possibly creep affected No Ground Water No Caving

SCALE 1" = 5'

N 38 E

TOTAL DEPTH 9 Ft.



ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

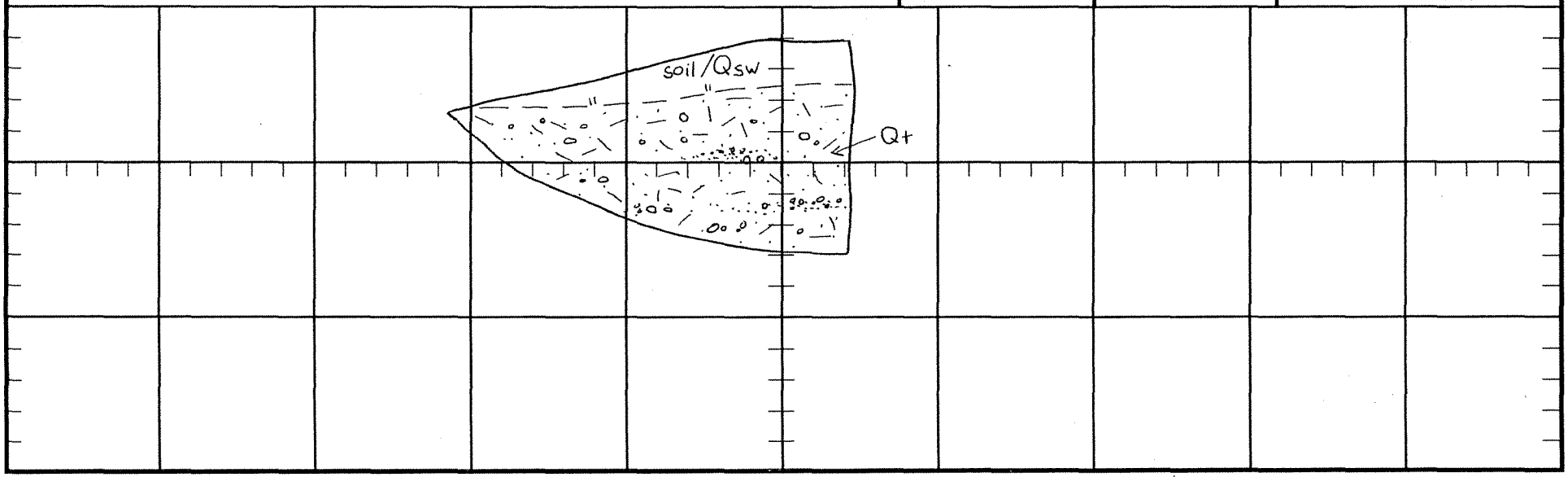
Trench Log No. 133Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL/SLOPEWASH; soil/Qsw, Medium brown sandy silt with scattered pebbles; firm; moderately dense to dense; dry			Qt is weathered and possibly creep affected
1.5 - 7' TERRACE DEPOSITS; Qt, Yellowish- to medium-brown sandy silt with scattered pebbles and cobbles; loose to dense; dry to slightly damp; pebble and cobble beds are discontinuous			No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 87 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

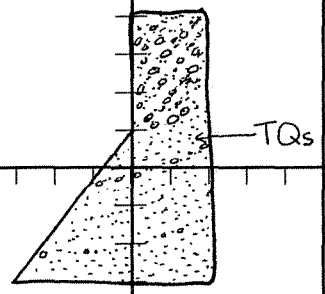
Trench Log No. 134Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' BEDROCK; TQs, Light-gray fine- to medium-grained sandstone and pinkish-gray pebble/cobble conglomerate; dense; dry	N7W,22NE		No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 15 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

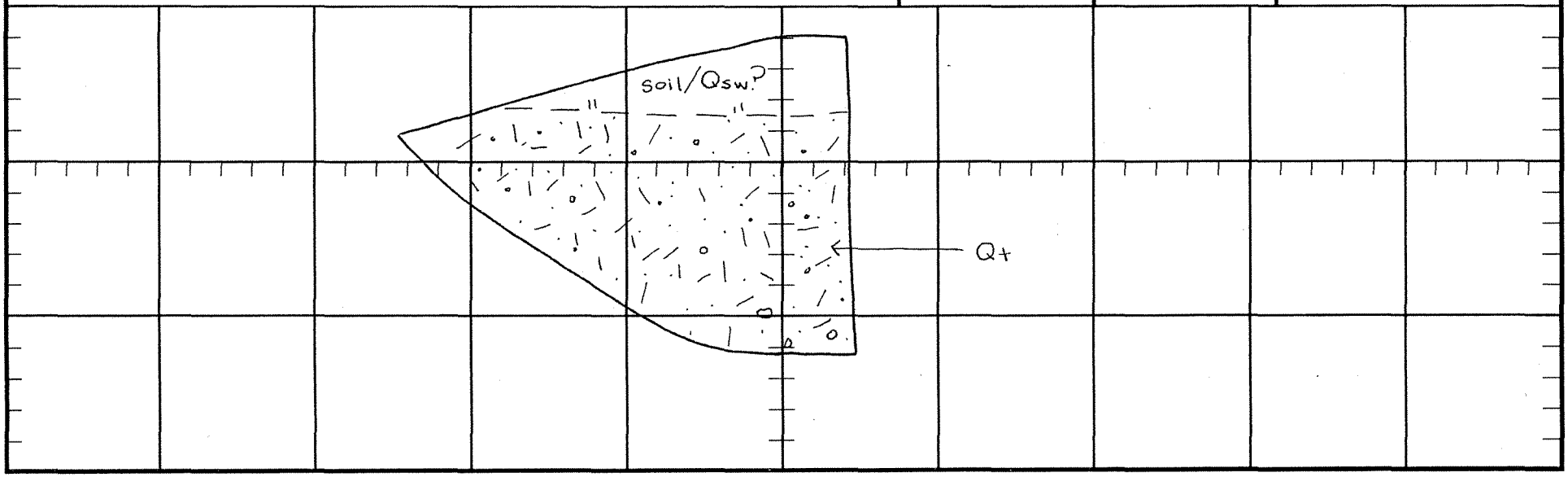
Trench Log No. 135Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2.5? SOIL/SLOPEWASH?; soil/Qsw?, Light-brown sandy silt; firm; moderately dense; dry 2.5 - 10' TERRACE DEPOSITS; Qt, Mottled light yellowish-brown and medium-brown siltstone to sandy siltstone; firm; moderately dense; damp			Qt is weathered with no distinct stratification No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 54 E



ALLAN E. SEWARD

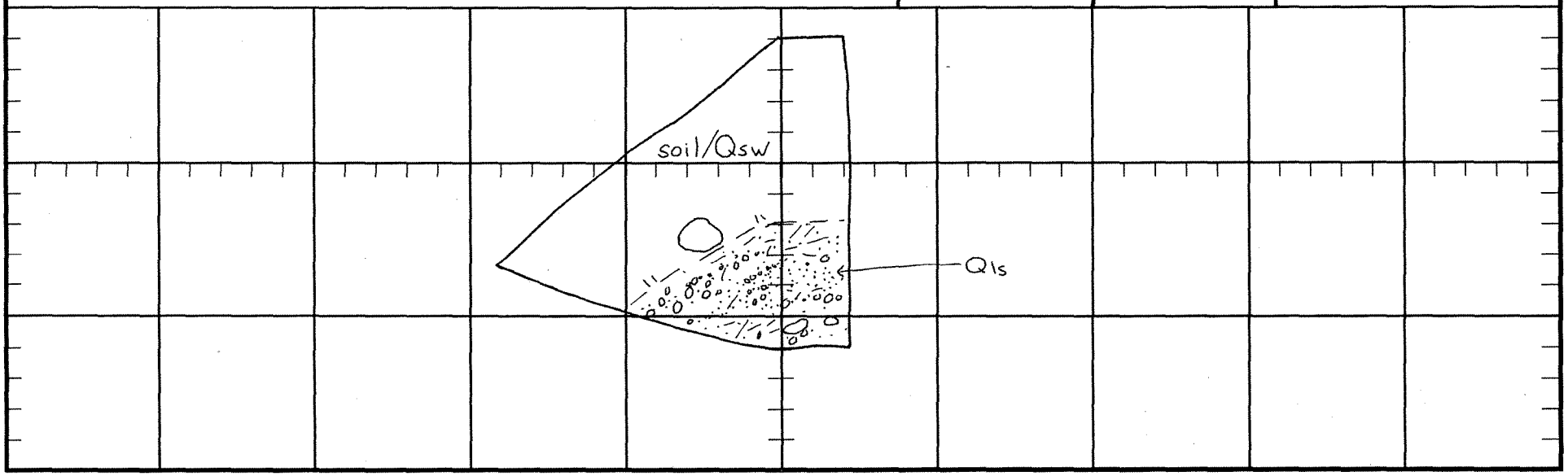
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 136Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Light-brown to slightly yellowish-brown sandy silt with scattered pebbles and cobbles; soft to firm; loose to moderately dense; dry 6 - 10' LANDSLIDE; Qls, Light- to medium-gray silty sandstone, fine-grained sandstone and medium- to coarse-grained pebbly sandstone with scattered cobbles; moderately dense; dry			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 44 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

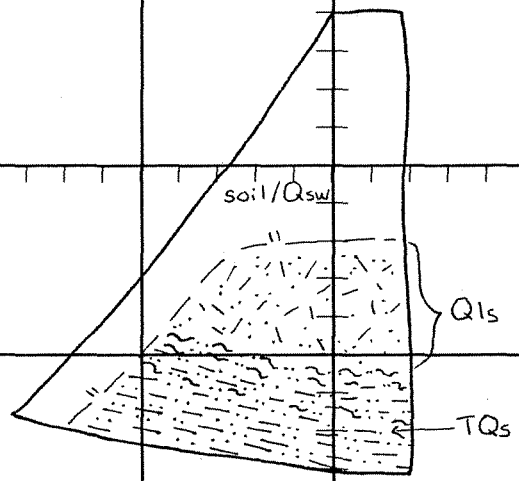
Trench Log No. 137Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Tan to light-brown sandy silt; soft to firm; loose to moderately dense; dry			
6 - 9.5' LANDSLIDE; Qls, Tan to light-gray silty sandstone; moderately dense; dry to damp			
9.5 - 12' BEDROCK?; TQs? Medium-brown to yellowish-gray siltstone; dense; damp	N85E,18SE		No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 10 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY DGG

Trench Log No. 138Q

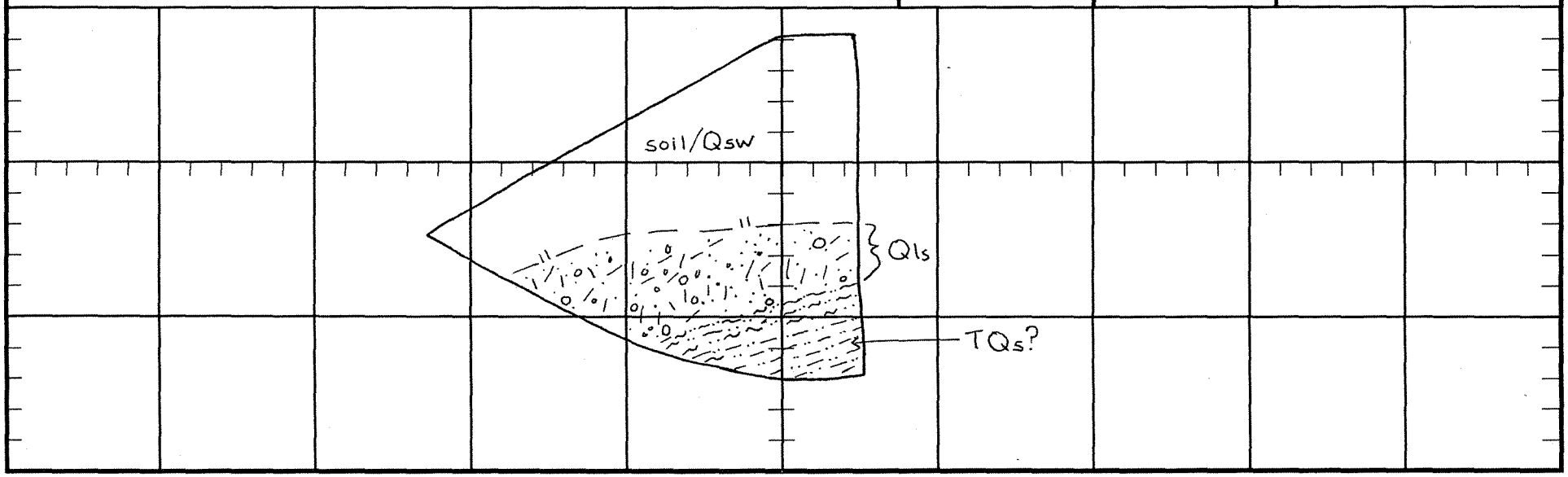
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown to light brown sandy silt with scattered pebbles; soft; loose; dry			Bottom 3' in place??
6 - 8.5' LANDSLIDE; Qls, Yellowish-brown pebbly sandy siltstone with scattered cobbles; soft; loose; dry	B? N25W,28NE		
8.5 - 11' BEDROCK?; TQs?, Medium-brown olive-gray siltstone; moderately dense; slightly damp			No Ground Water No Caving
			TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 13 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY DGG

Trench Log No. 139Q

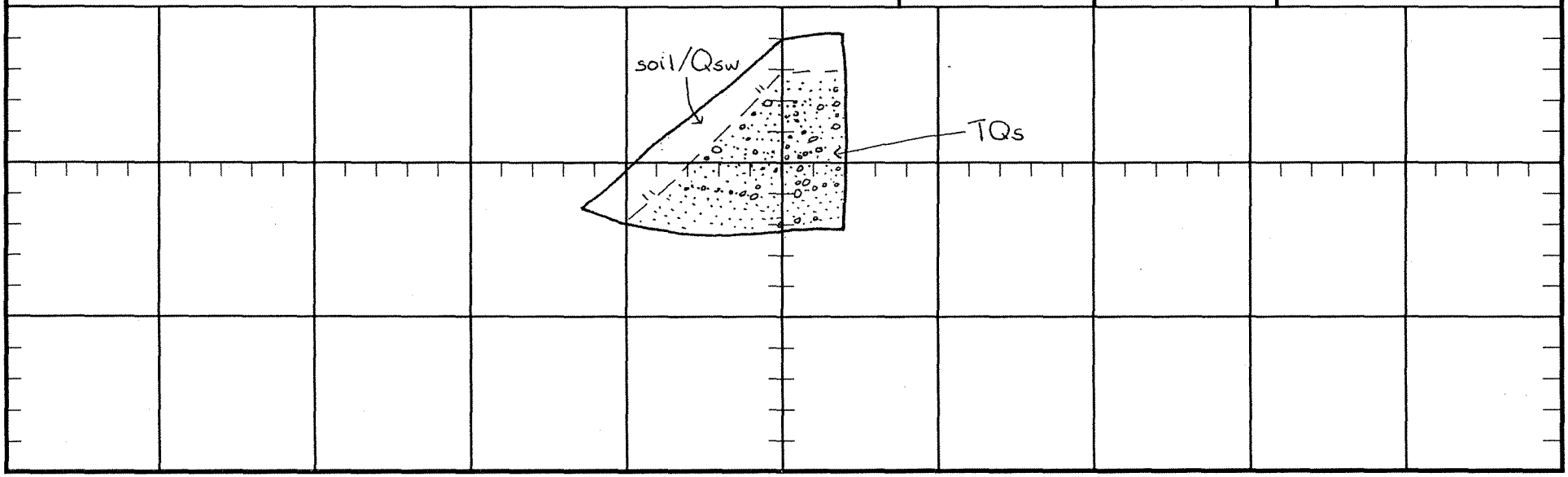
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; soil/Qsw, Light- to medium-brown sandy silt; firm; moderately dense; dry			
1 - 6' BEDROCK; TQs, Tan to light-gray medium-grained sandstone and pebble to cobble conglomerate with a medium- to coarse-grained matrix; dense; dry	Apx: N29W,28NE		No Ground Water No Caving
			TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 63 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

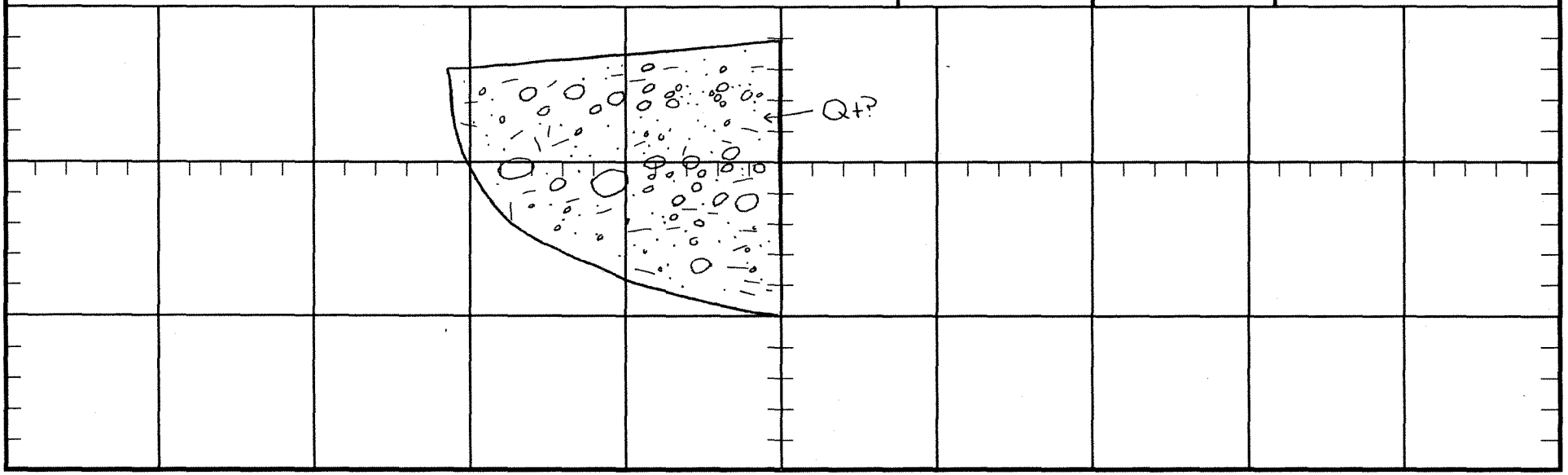
Trench Log No. 140Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' TERRACE DEPOSITS?; Qt?, Light-brown to yellowish-brown sandy siltstone with scattered pebbles, cobbles and small boulders; soft; loose; dry			Logged from surface due to caving No Ground Water Slight Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 4 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY DGG

Trench Log No. 141Q

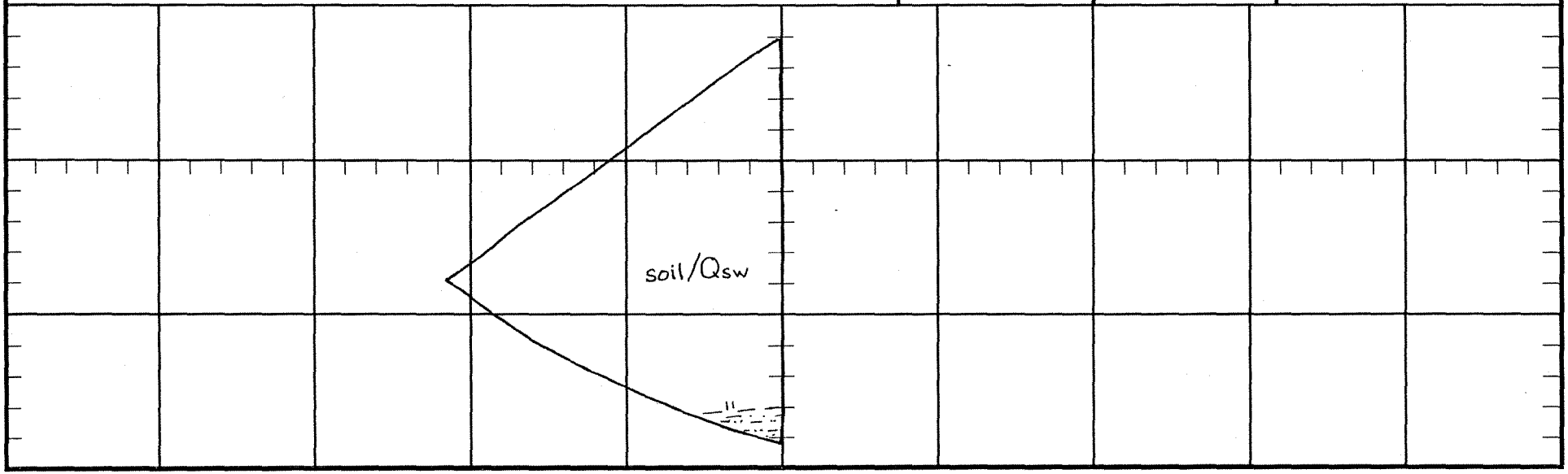
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 12' SOIL/SLOPEWASH; soil/Qsw, Light to medium grayish-brown sandy silt with scattered cobbles; firm; moderately dense; dry 12 - 13' BEDROCK?, TQs?, Medium olive-gray siltstone; hard; dense; slightly damp			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 7 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY DGG

Trench Log No. 146Q

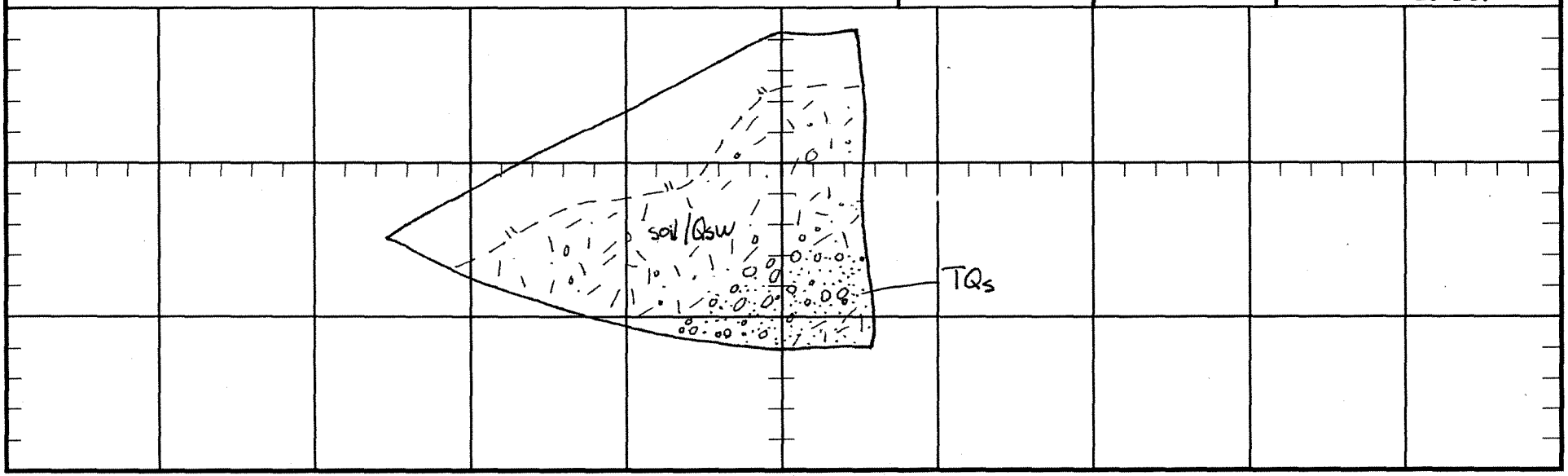
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Light yellowish-brown sandy silt with scattered pebbles; soft; dry and light yellowish-brown sandy siltstone with scattered pebbles; soft to firm; loose to moderately dense; dry 7 - 10' BEDROCK; TQs; Grayish-brown fine- to coarse-grained cobbly, pebbly sandstone; loose; dry	Apx B?: N1W,36NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

Due West



ALLAN E. SEWARD

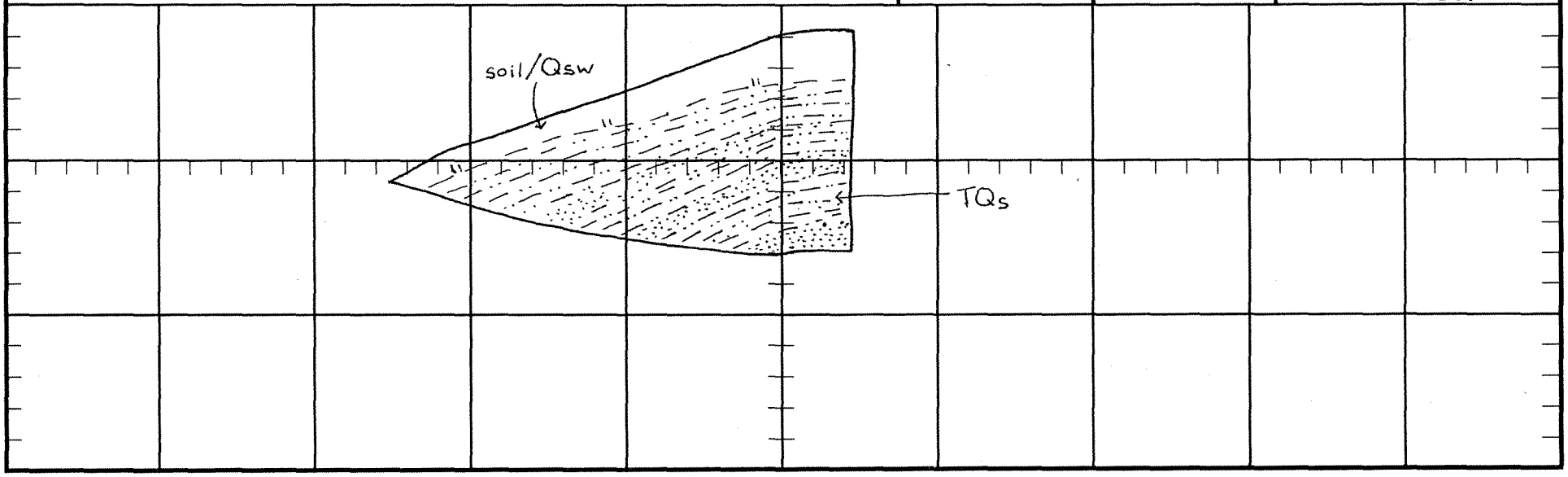
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 147Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL/SLOPEWASH; soil/Qsw, Medium yellowish-brown sandy silt; soft; dry			Top 1' of TQs fractured
1.5 - 7' BEDROCK; TQs, Light-to medium-gray fine-grained sandstone, medium to coarse-grained sandstone, sandy siltstone and siltstone; moderately dense to dense; dry to damp	B:N73E,20SE		No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 62 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

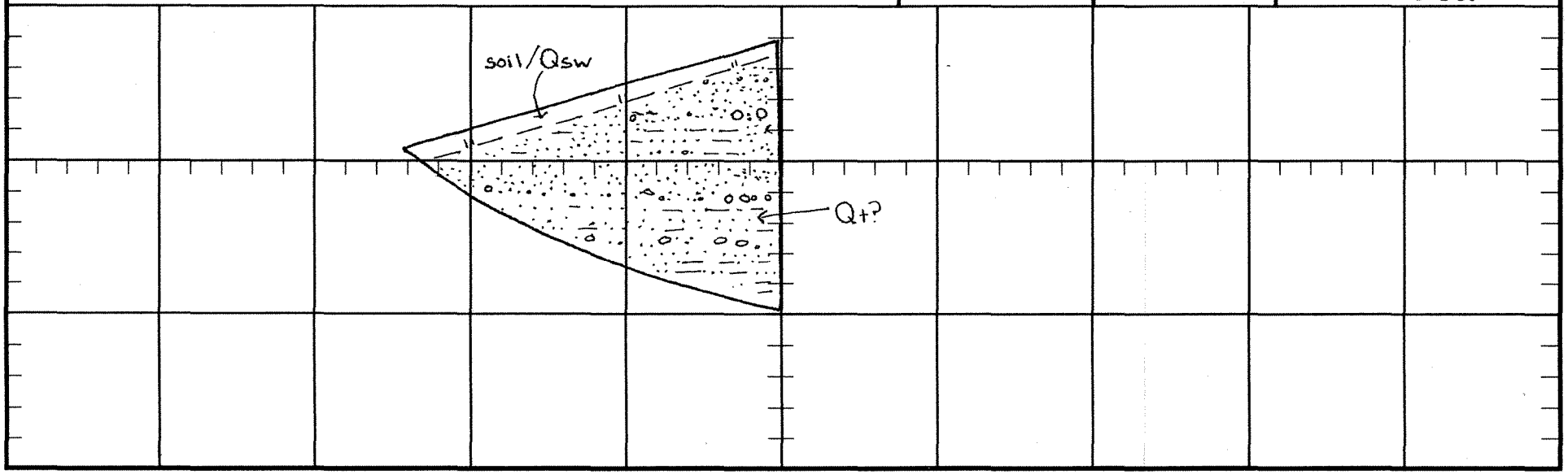
Trench Log No. 148Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6" SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt with scattered pebbles; loose; dry 6" - 9' TERRACE DEPOSITS?; Qt?, Slightly orangish- to yellowish- to grayish-brown sandy siltstone, fine- to coarse-grained sandstone, and medium- to coarse-grained pebbly cobbly sandstone; loose; dry	B:Apx Horizontal		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 28 E



ALLAN E. SEWARD

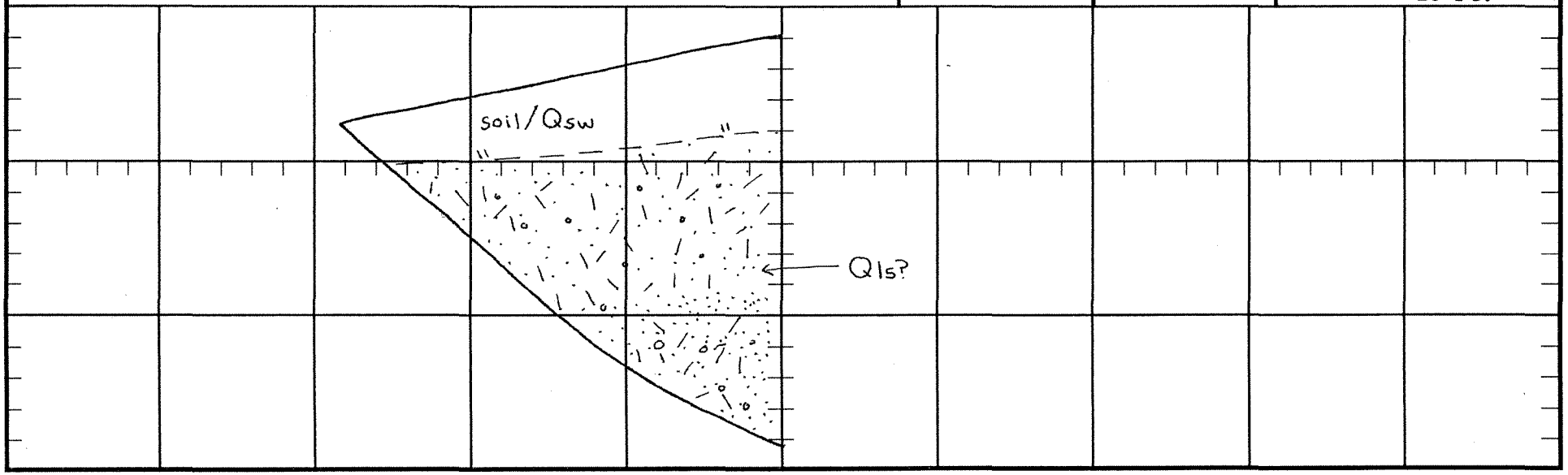
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 149Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown to yellowish-brown sandy silt with scattered pebbles; soft to firm; dry			Bottom 3-4' of Qls sandier
3 - 13' LANDSLIDE ?; Qls?, Light-gray to yellowish-gray sandy siltstone and silty sandstone; soft to firm; loose to moderately dense; dry to slightly damp			Possible creep-affected terrace deposits
			No Ground Water No Caving
			TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 60 E



ALLAN E. SEWARD

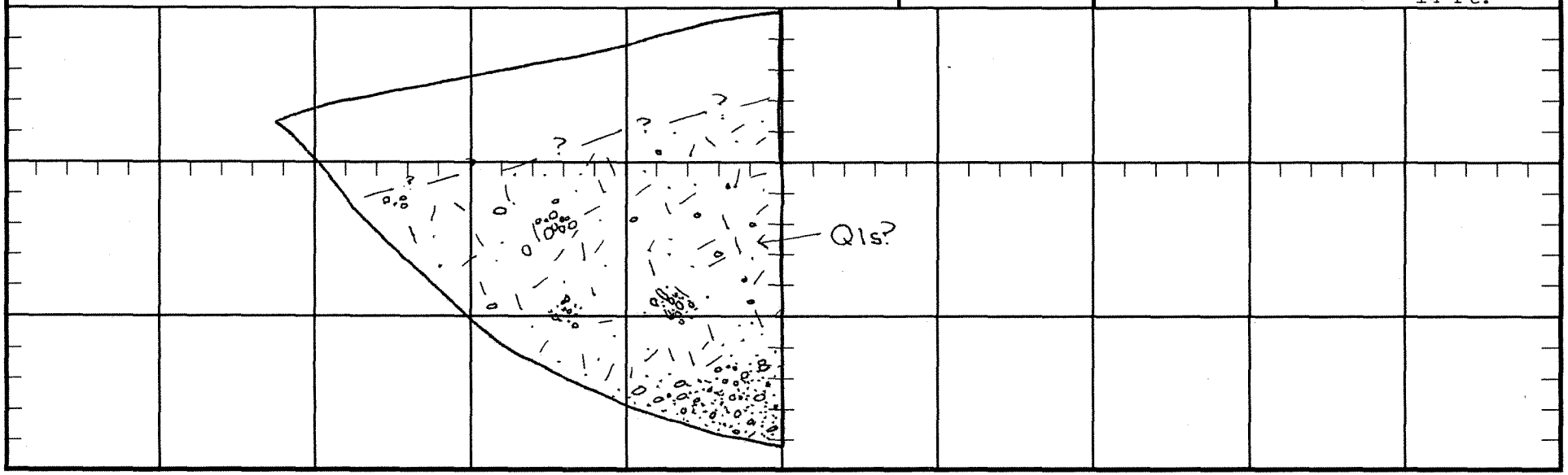
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 1500 DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light-to yellowish-brown sandy silt with scattered pebbles; soft to firm; dry			Possible creep-affected terrace deposits
3 - 14' LANDSLIDE ?; Qls?, Light-to medium-gray sandy siltstone with scattered pebbles and lcoal cobble pods; soft to firm; loose to moderately dense; dry to slightly damp; and light-to medium-gray medium- to coarse-grained pebbly sandstone; loose; dry			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 73 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

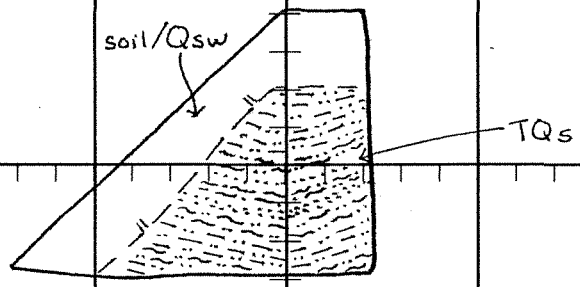
Trench Log No. 151Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Light-to medium-brown sandy silt with scattered pebbles; soft to firm; dry			Clayey siltstone is very sticky; at bottom 8" thick-sheared clay
2 - 7' BEDROCK; TQs, Light-gray siltstone to sandy silt-stone; moderately dense to dense; slightly damp; and medium-to dark-brown clayey siltstone; firm to stiff; dense; damp; sticky	B:N80E,29SE		
			No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 64 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

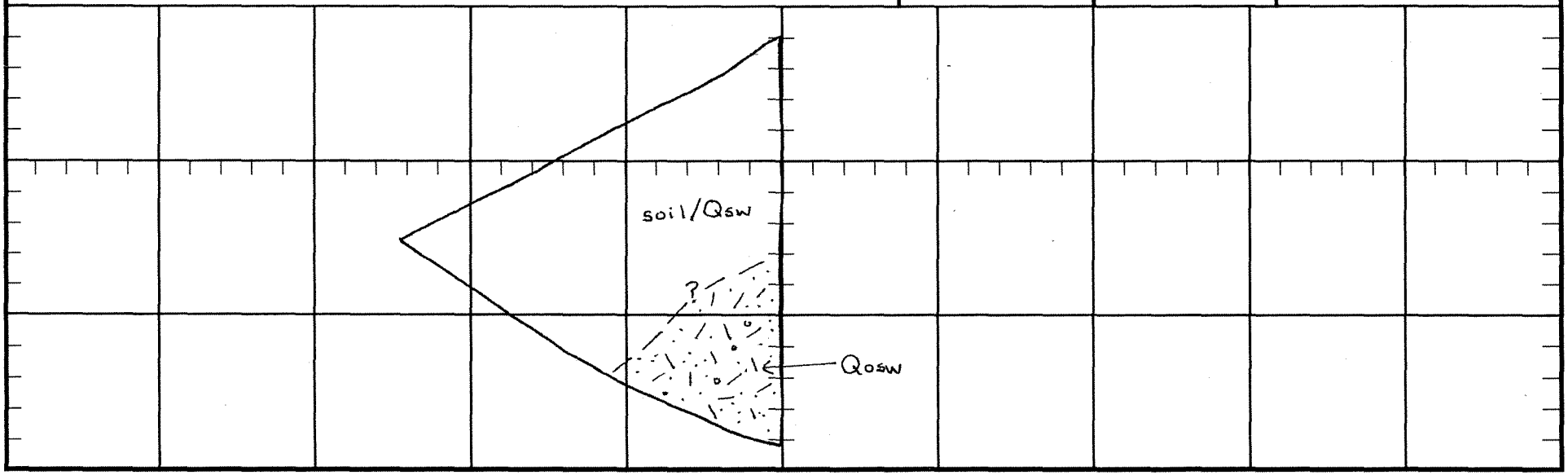
Trench Log No. 152Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Medium-brown sandy silt with scattered pebbles; soft to firm; dry to slightly damp 7 - 13' OLDER SLOPEWASH?;Qosw?, Medium-gray to medium grayish-brown sandy siltstone with scattered pebbles; soft to firm; loose to dense; slightly damp			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 53 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

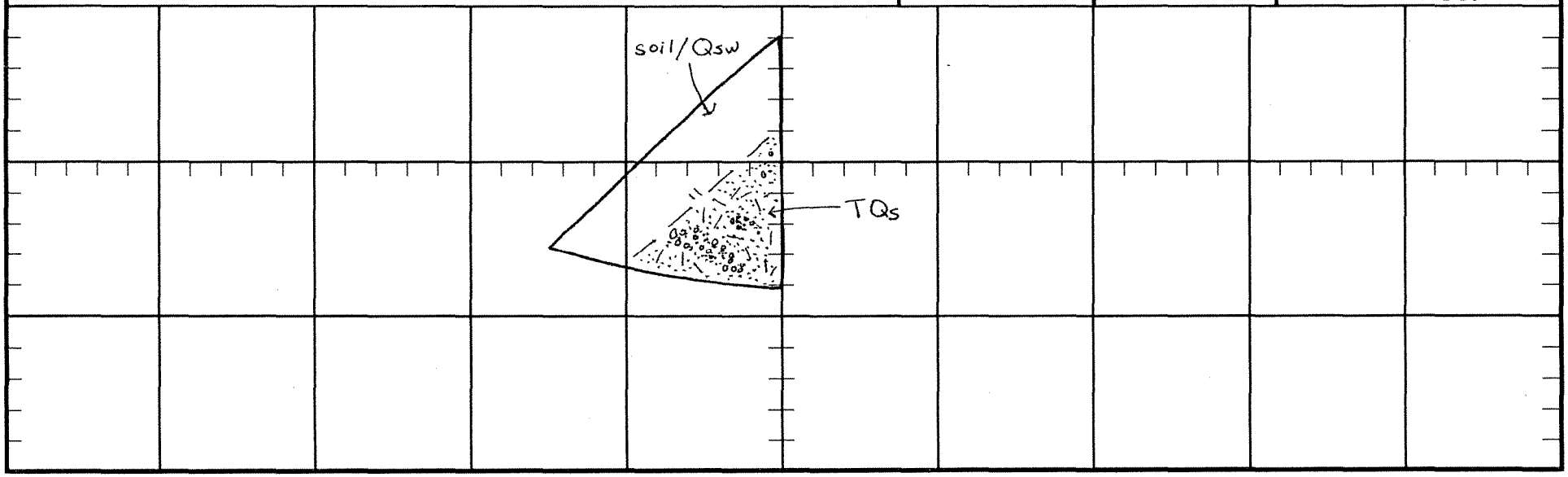
Trench Log No. 153Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light-brown to yellowish-brown sandy silt with scattered pebbles; soft to firm; dry			
3 - 8' BEDROCK?; TQs?, Light-gray to medium-gray fine- to coarse-grained sandstone and pebbly sandstone; loose to moderately dense; dry			Bedrock is creep affected; bedding dips vaguely to south but is discontinuous (depositional?)
			No Ground Water No Caving
			TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 32 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

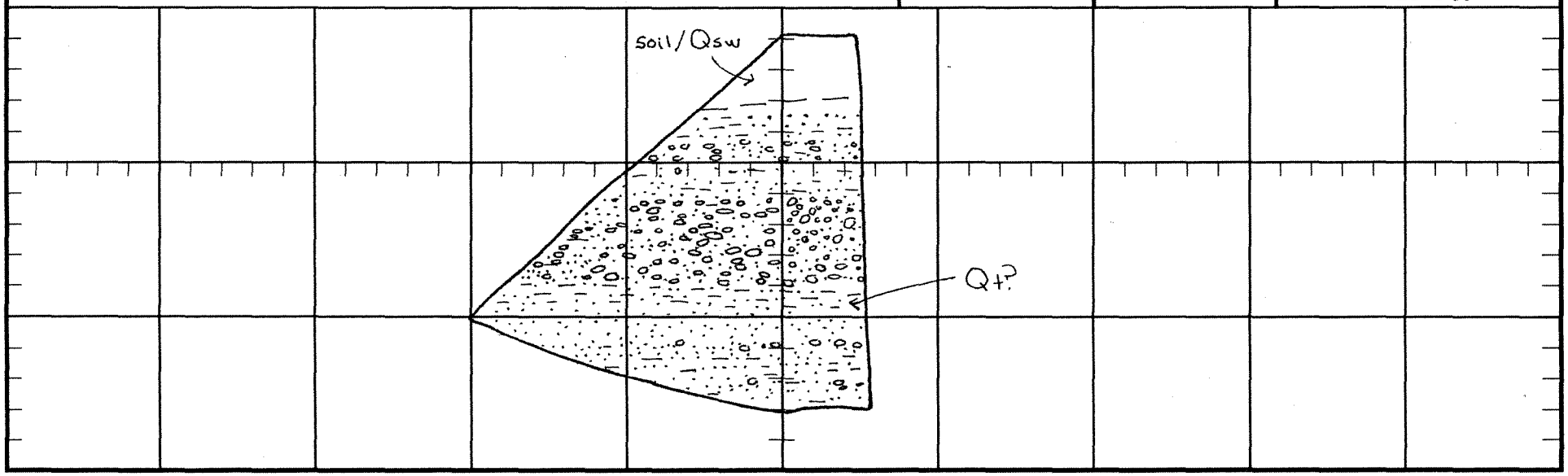
Trench Log No. 154Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown sandy silt with scattered pebbles; soft; dry 2 - 12' TERRACE DEPOSITS?; Qt?, Yellowish-gray to light-gray sandy siltstone, fine-grained sandstone and medium- to coarse-grained pebbly sandstone; loose to moderately dense; dry to slightly damp	Apx:Horizontal		No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 25 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1

LOGGED BY DGG

Trench Log No. 155Q

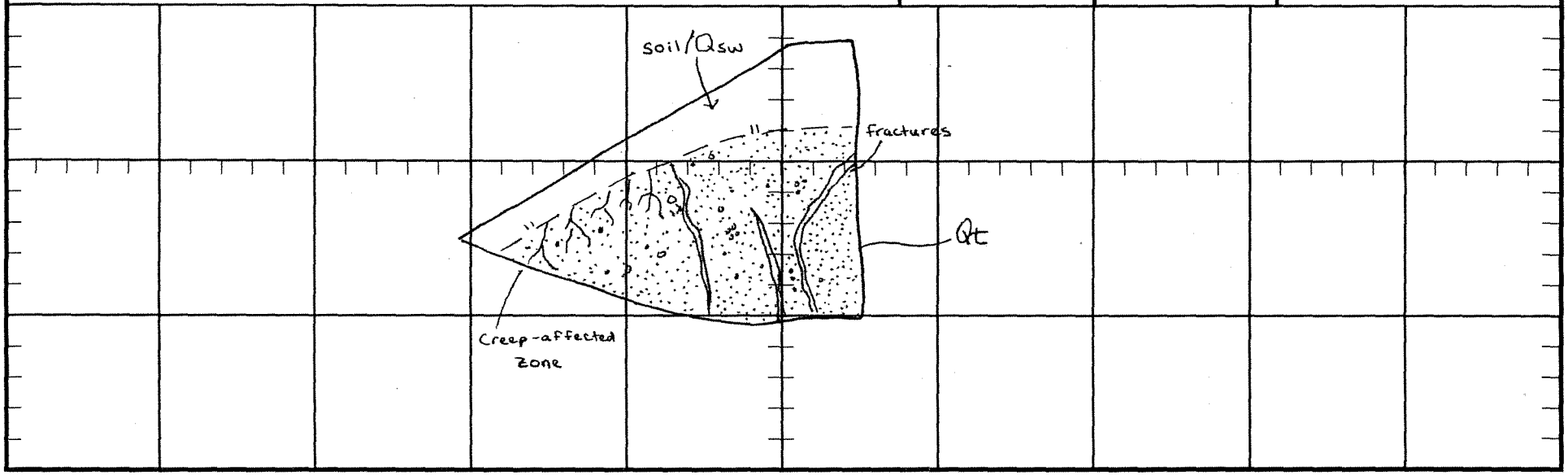
PROJECT Newhall Ranch - Phase IB

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SOIL/SLOPEWASH; soil/Qsw, Light-brown sandy silt with scattered pebbles and clasts of TQs; soft; loose; dry 3 - 9' TERRACE DEPOSITS; Qt, Light-gray fine- to coarse-grained sandstone with scattered pebbles; loose to moderately dense; dry; fractured			No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 47 E



ALLAN E. SEWARD

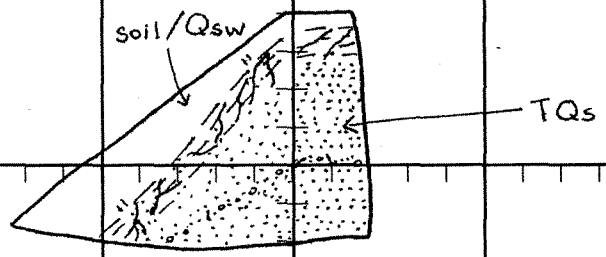
JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 156Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown sandy silt with scattered pebbles; soft; dry 1.5 - 6' BEDROCK; TQs, Medium-brown siltstone; firm; loose to moderately dense; dry; highly fractured; creep affected; and light-gray fine- to medium-grained sandstone and pebbly sandstone; moderately dense to dense; dry	Apx B:N59W,42SW		Trenches 156Q thru 164Q excavated and logged 11/2/99 using a trackmounted back-hoe with a 24" bucket No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 24 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

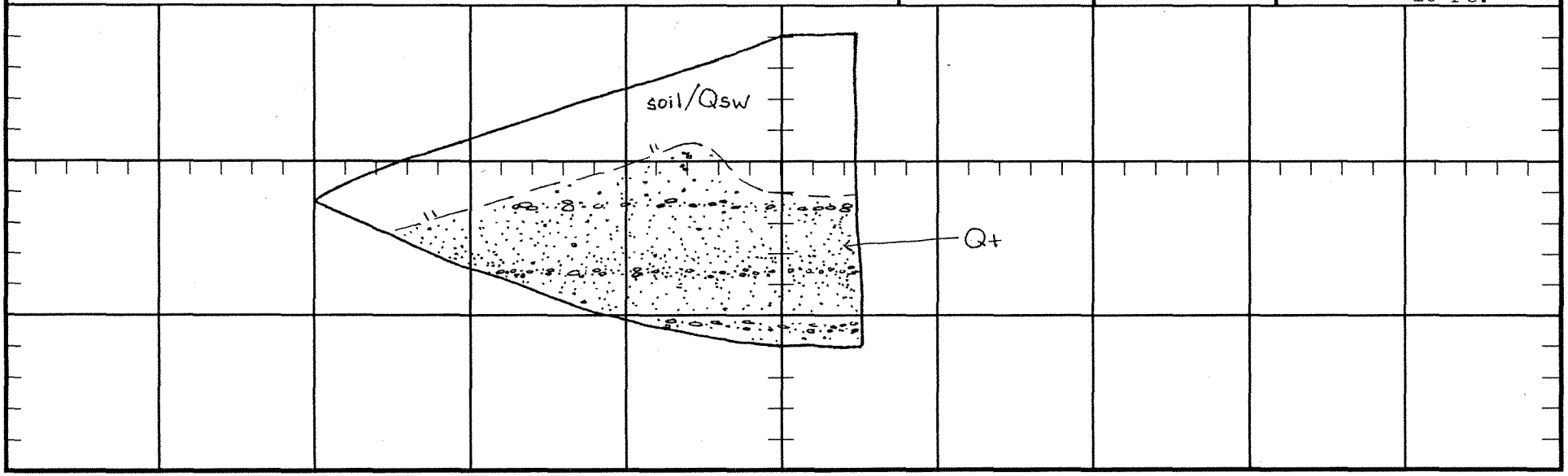
Trench Log No. 157Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Light to medium-brown sandy silt with scattered pebbles and cobbles; firm moderately dense; dry 5 - 10' TERRACE DEPOSITS; Qt, Light-gray to brownish-gray fine- to coarse-grained sandstone and pebbly sandstone; loose to moderately dense; dry	Apx:N10W,3NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" =5'

N 52 E



ALLAN E. SEWARD

JOB NO. 99-1703Qls-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG

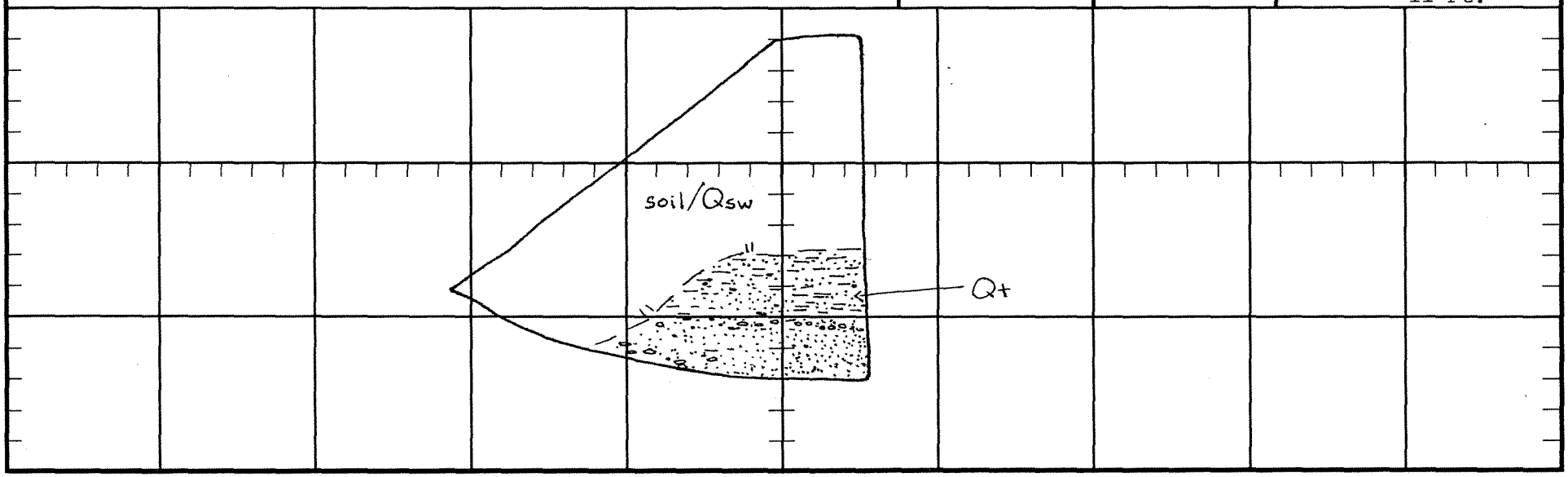
Trench Log No. 158Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Light yellowish-brown to medium-brown sandy silt; soft to firm; loose to moderately dense; dry 7 - 11' TERRACE DEPOSITS; Qt, Light- to medium-gray fine-grained sandstone; medium- to coarse-grained sandstone and pebbly sandstone with scattered cobbles; loose to moderately dense; dry			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 49 E



ALLAN E. SEWARD

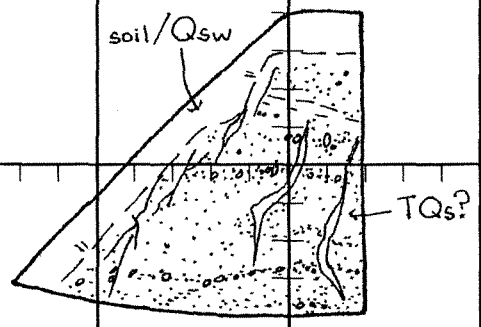
JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 1590 DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL/SLOPEWASH; soil/Qsw, Medium-brown silty sand with scattered pebbles and cobbles; soft; loose; dry 1 - 8' BEDROCK?; TQs?, Light-to medium-gray fine- to coarse-grained sandstone and pebbly sandstone; moderately dense; dry	Apx B:N32W,12SW		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 56 E



ALLAN E. SEWARD

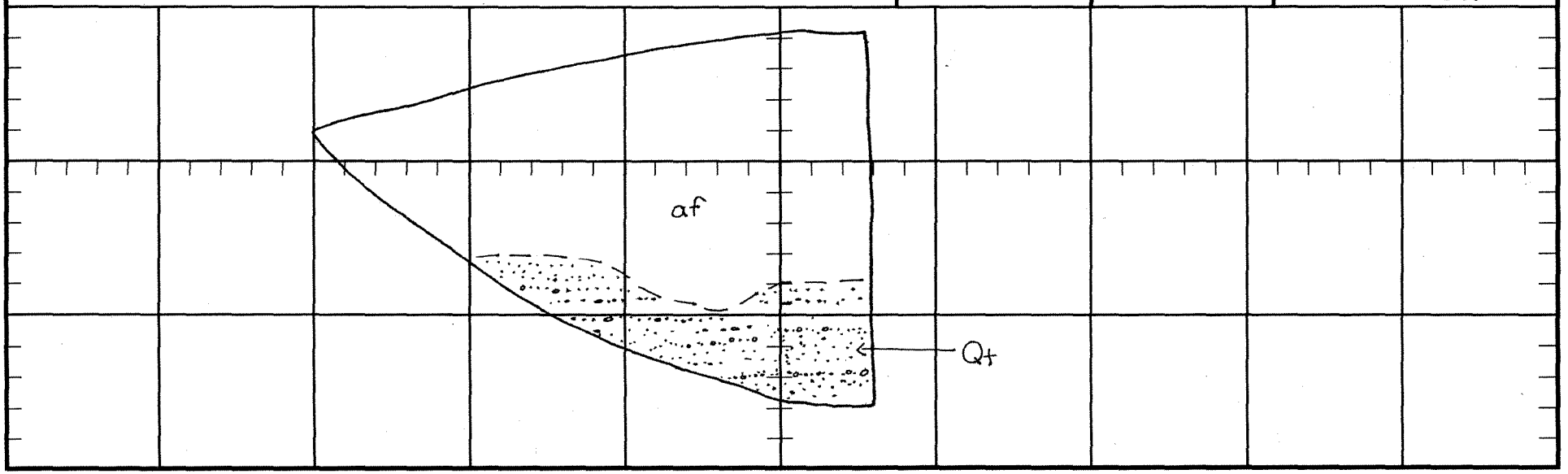
JOB NO. 99-1703Q1s-1 PROJECT Newhall Ranch - Phase IB

LOGGED BY DGG **Trench Log No.** 160Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' ARTIFICIAL FILL; af, Yellowish-brown to medium-brown sandy silt; firm; dry 8 - 12' TERRACE DEPOSITS; Qt, Medium-gray fine- to coarse-grained sandstone and pebbly sandstone; loose to moderately dense; dry			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 60 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas-East

LOGGED BY BJS

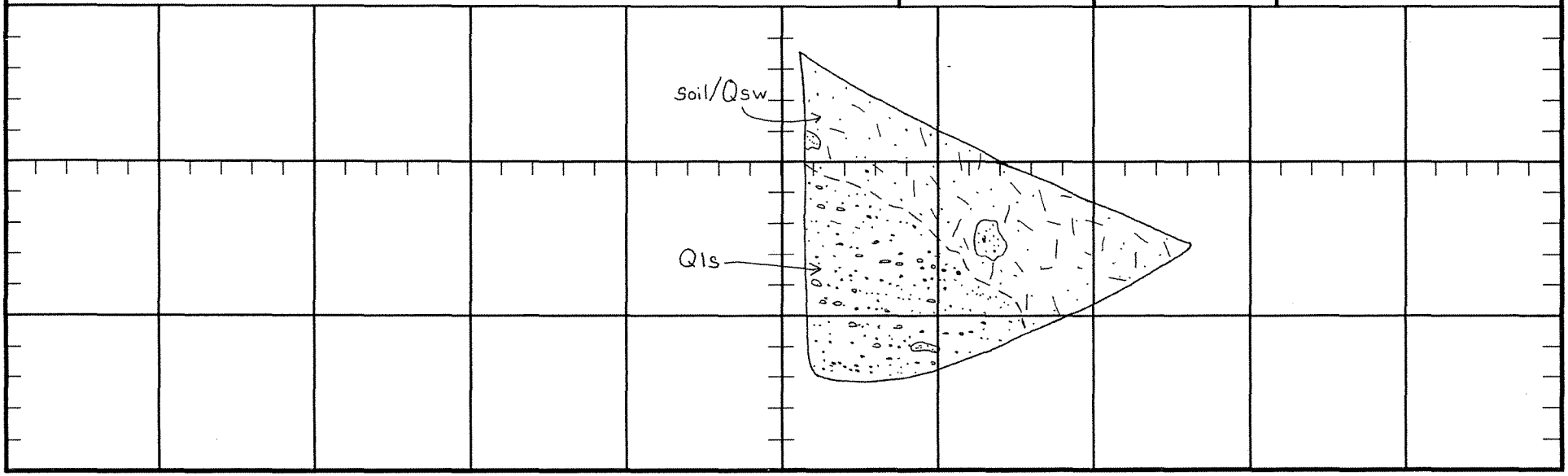
Trench Log No. 177Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Grayish-brown silty pebbly sand with TQs sandstone clasts; loose; dry to slightly damp			Trenches T-177Q thru T-189Q excavated with a track-mounted back-hoe and logged on 1/20/00
3.5- 10.5' LANDSLIDE?, Qls?, Yellowish-gray pebbly sandstone and sandstone; moderately dense; friable; slightly damp; local fractures and slightly weathered overall; bedding is slightly shallow for regional	N64W,9NE		No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5'

N 70 W



ALLAN E. SEWARD

JOB NO. 99-1703Qls-II

PROJECT Newhall Ranch - Mesas-East

LOGGED BY BJS

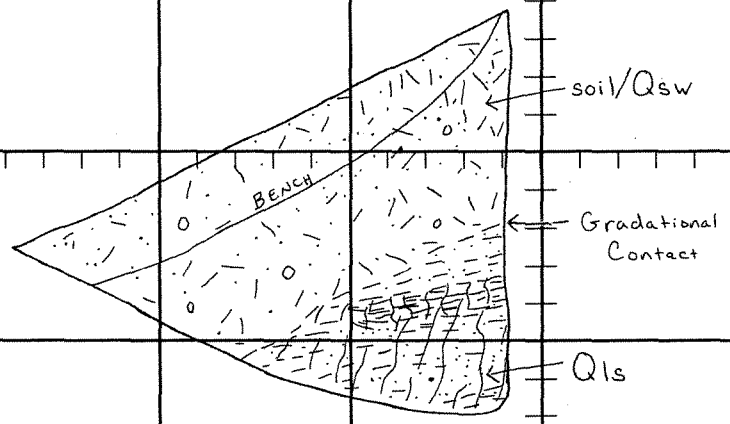
Trench Log No. 178Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown silty pebbly sand with local cobbles; loose to firm; slightly damp; 5% voids			Trench laid back
6 - 11' LANDSLIDE; Qls, Light yellowish-brown siltstone, sandy siltstone and slightly silty sandstone with pebbles and moderate grayish-brown mudstone; firm to locally soft; slightly damp to damp; fractures and $CACO_3$ linings common, especially in mudstone; 1% pinhole voids in upper 2 ft.			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 25 W



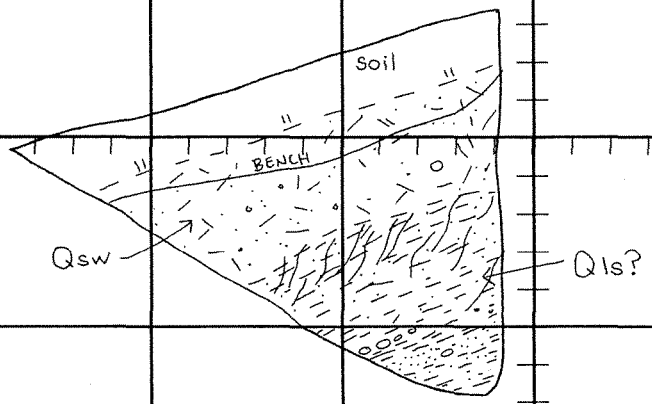
ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1 PROJECT Newhall Ranch - Mesas-East

LOGGED BY BJS **Trench Log No.** 179Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Brown to yellowish-brown muddy, silty sand with scattered pebbles; firm; slightly damp 5 - 10.5' LANDSLIDE?, Qls?, Light yellowish-brown fine silty sandstone with discontinuous pebbly sandstone interbeds; moderately hard to locally slightly soft; slightly damp to damp; $CACO_3$-lined fractures	N35W,9NE		No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5' Due North



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

LOGGED BY BJS

Trench Log No. 180Q

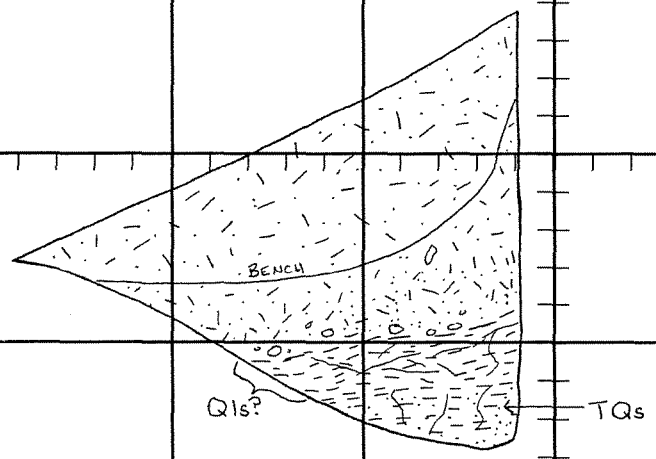
PROJECT Newhall Ranch - Mesas-East

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SOIL/SLOPEWASH; soil/Qsw, Brown to yellowish-brown sandy mud with pebbles and pebbly silty sand at base; loose to firm; slightly damp; 1-3% voids throughout			
8 - 10' LANDSLIDE?; Qls?; Fractured and weathered yellowish-brown siltstone and sandy siltstone; moderately dense; slightly damp to damp; $CACO_3$ common		B/Base of Qls N25W,18NE	Qls may just be creep affected TQs
10 - 12' BEDROCK; TQs, Light yellowish-brown fine silty sandstone; moderately hard; damp; minor fractures with $CACO_3$			
			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 24 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas-East

LOGGED BY BJS

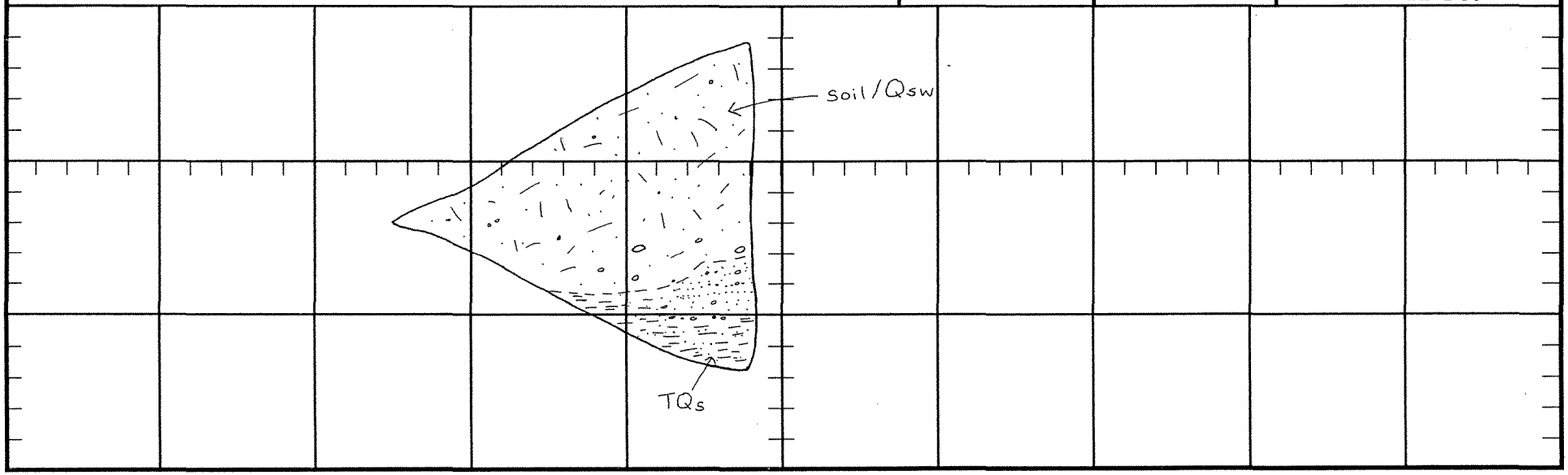
Trench Log No. 181Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7' SOIL/SLOPEWASH; soil/Qsw, Brown to yellowish-brown muddy pebbly sand and silty pebbly sand with cobbles; loose to firm; slightly damp; $CACO_3$ filaments common from 4-6 ft.; roots; 1-3% voids	Apx. N38W,10NE		
7 - 11' BEDROCK; TQs, Yellowish-gray pebbly sandstone and sandstone and yellowish-brown to brown sandy siltstone and mudstone; moderately hard to slightly friable; slightly damp to damp; cross bedding and channeling in coarse units			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 44 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

LOGGED BY BJS

Trench Log No. 182Q

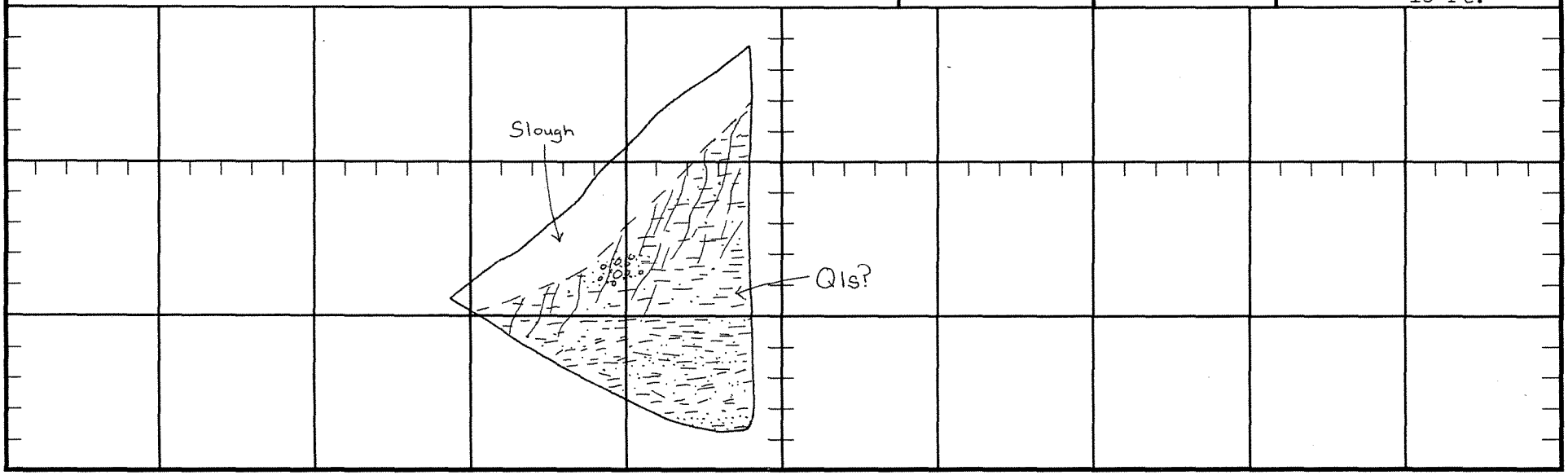
PROJECT Newhall Ranch - Mesas-East

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' Slough 2 - 13' LANDSLIDE?; Qls?, Interbedded yellowish-brown to light yellowish-brown siltstone and sandy siltstone with minor mudstone interbeds; moderately dense to moderately hard; upper 4 feet creep affected; damp; bedding slightly irregular and locally laminated; basal 2 feet seems fairly intact	Apx N12E,17SE		Trench excavated into old cut No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 10 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch Mesas-East

LOGGED BY BJS

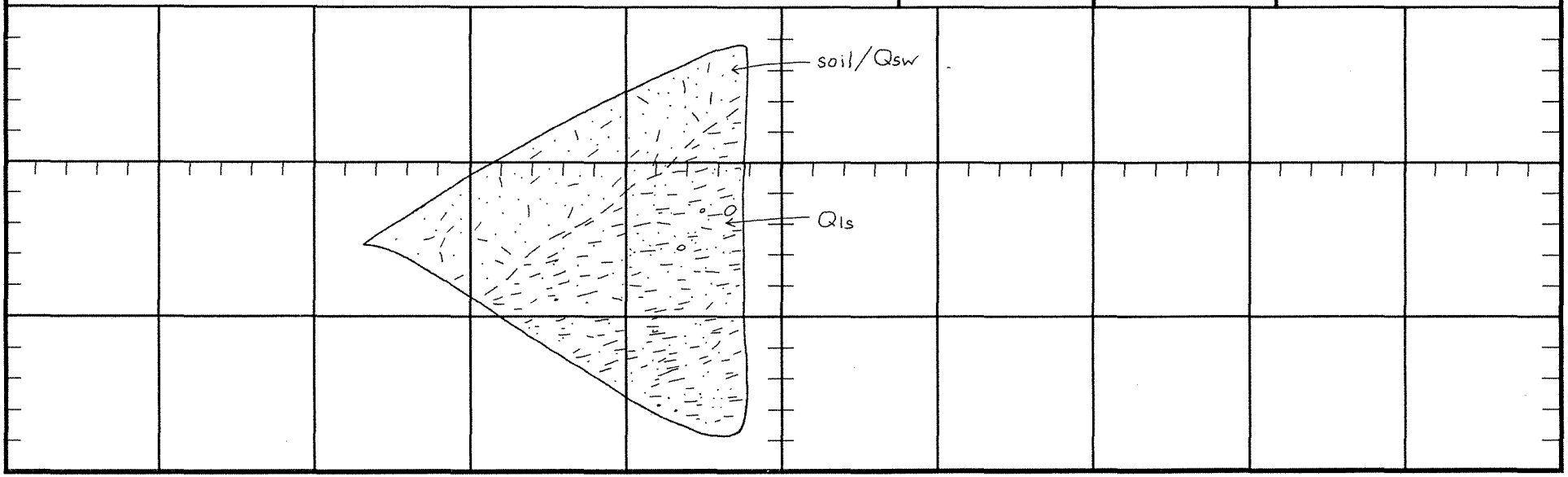
Trench Log No. 183Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown sandy silt wtih local pebbles; soft; slightly damp 2 - 13' LANDSLIDE; Qls, Yellowish-brown to light yellowish-brown siltstone and sandy siltstone with local mudstone and silty pebbly sandstone; locally soft to dense; damp; bedding poor but locally disturbed; bottom foot slightly more intact			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 19 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas-East

LOGGED BY BJS

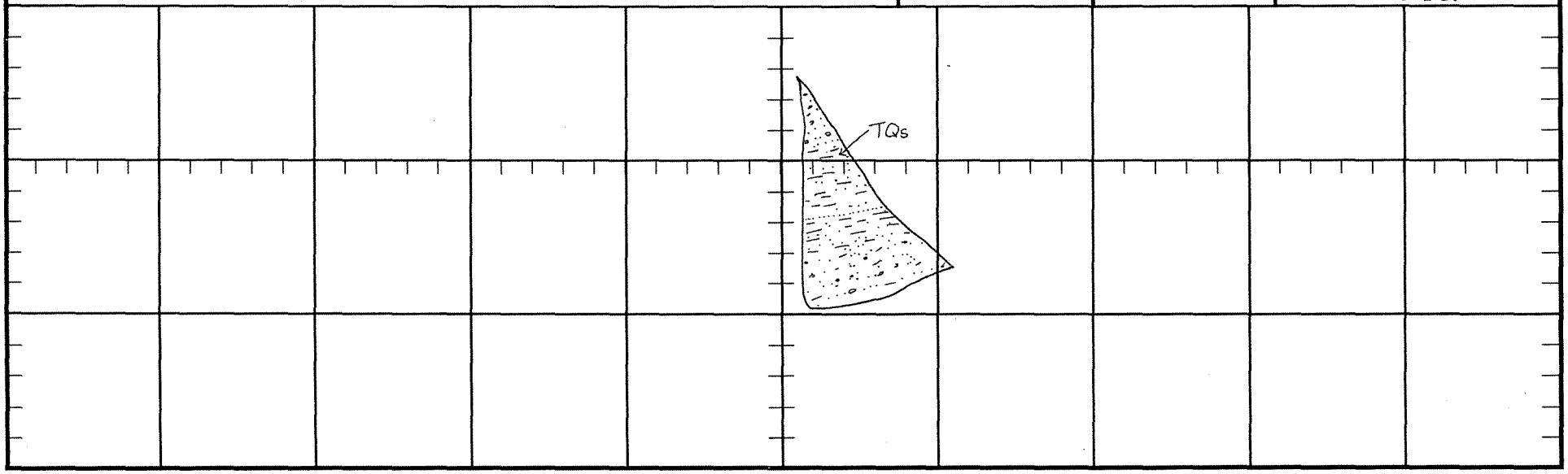
Trench Log No. 184Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' BEDROCK; TQs, Interbedded light yellowish-brown fine silty sandstone and yellowish-gray sandstone and pebbly sandstone; moderately hard; slightly damp	N30W,12NE		Trench excavated into existing cut No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 17 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

LOGGED BY BJS

Trench Log No. 185Q

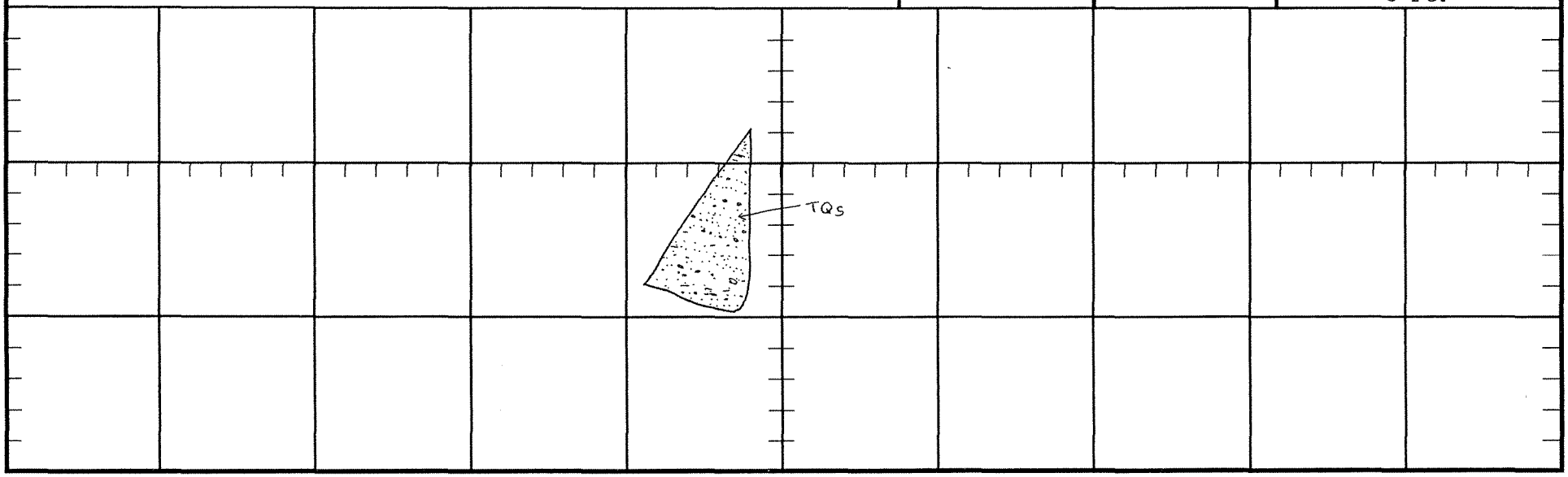
PROJECT Newhall Ranch - Mesas-East

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' BEDROCK; TQs, Interbedded light yellowish-brown sandstone and pebbly sandstone with local moderate-brown mudstone interbeds; moderately hard; slightly damp; cross-bedding	N47W,13NE		Trench excavated into existing cut No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 2 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1 PROJECT Newhall Ranch - Mesas-East

LOGGED BY BJS

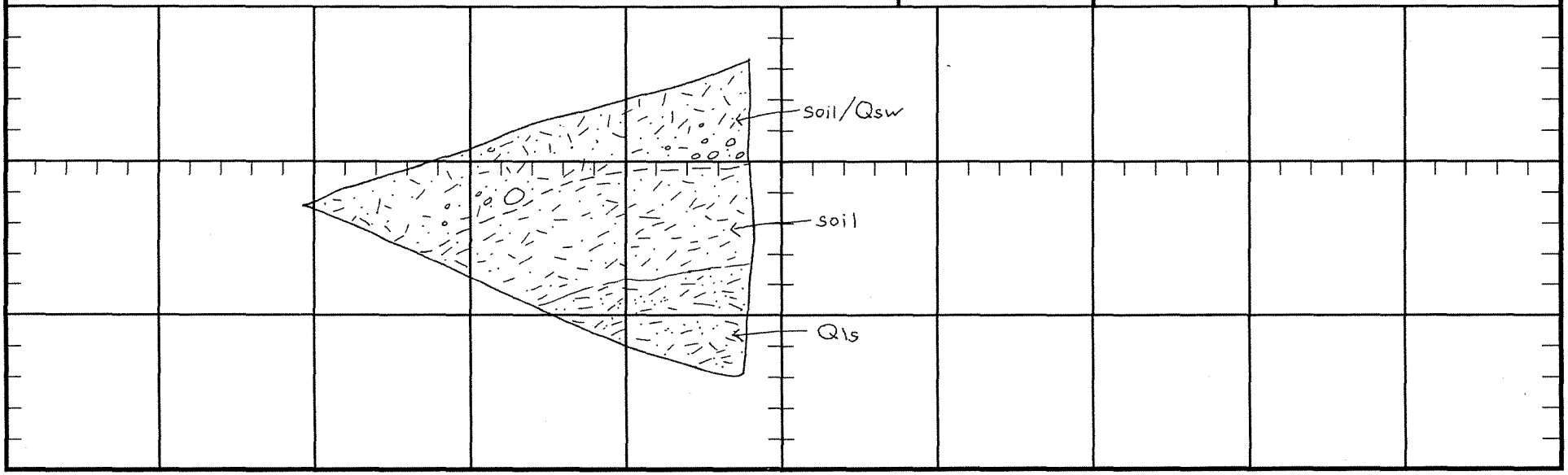
Trench Log No. 186Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SOIL/SLOPEWASH; soil/Qsw, Brown sandy pebbly mud; firm; damp; well developed soil with peds and some mud coatings on clasts 3.5 - 7' SOIL; Yellowish-brown fine sandy silt and clay; firm; damp; roots; minor $CACO_3$ 7 - 10.5' LANDSLIDE; Qls, Disturbed mix of moderate-brown mudstone and yellowish-brown to light-gray fine silty sandstone; stiff to soft; damp; minor $CAC0_3$	B?:N50W,47NE		No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5'

N67W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

LOGGED BY BJS

Trench Log No. 187Q

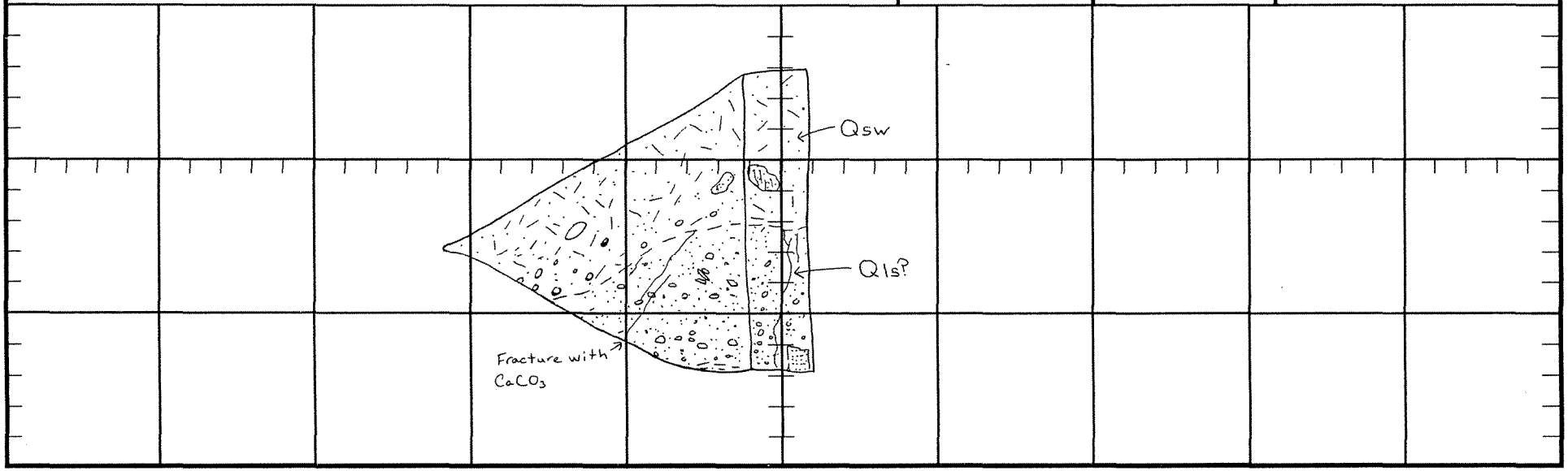
PROJECT Newhall Ranch - Mesas-East

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SLOPEWASH; Qsw, Yellowish-brown silty pebbly sand with local cobbles; loose; dry to slightly damp; TQs clasts 5 - 10' LANDSLIDE?; Qls?, Yellowish-gray to light yellowish-brown pebbly sandstone, conglomerate and sandstone; loose to dense; slightly damp; carbonate coatings on many clasts; secondary silty backfill/matrix common; bedding vague	Apx. N53W,8NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 63 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1 PROJECT Newhall Ranch - Mesas-East

LOGGED BY BJS

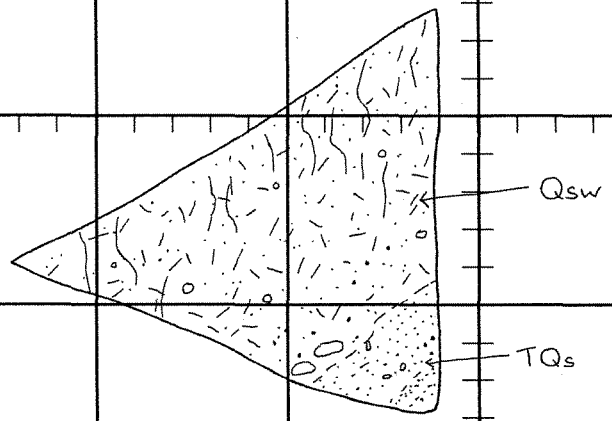
Trench Log No. 188Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7.5' SLOPEWASH; Qsw, Yellowish-brown sandy silt with scattered pebbles; firm to loose; slightly damp; minor carbonate; 1-3% void space			
7.5 - 11' BEDROCK; TQs Yellowish-gray sandstone and pebbly sandstone; moderately hard; slightly damp	N42W,48NE		
			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 64 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas-East

LOGGED BY BJS

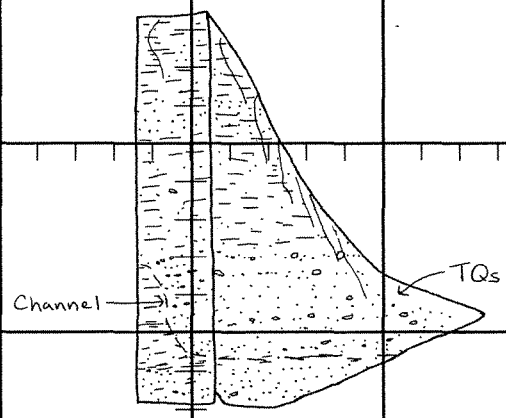
Trench Log No. 189Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 10.5' BEDROCK; TQs, Interbedded light yellowish-brown sandy siltstone and silty sandstone and yellowish-gray sandstone and pebbly sandstone; moderately friable to moderately hard; slightly damp; upper 2 ft. creep affected; cross bedding and channeling in sandstone	N18W,12NE		Trench excavated in existing cut/ bank No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5'

N 57 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD

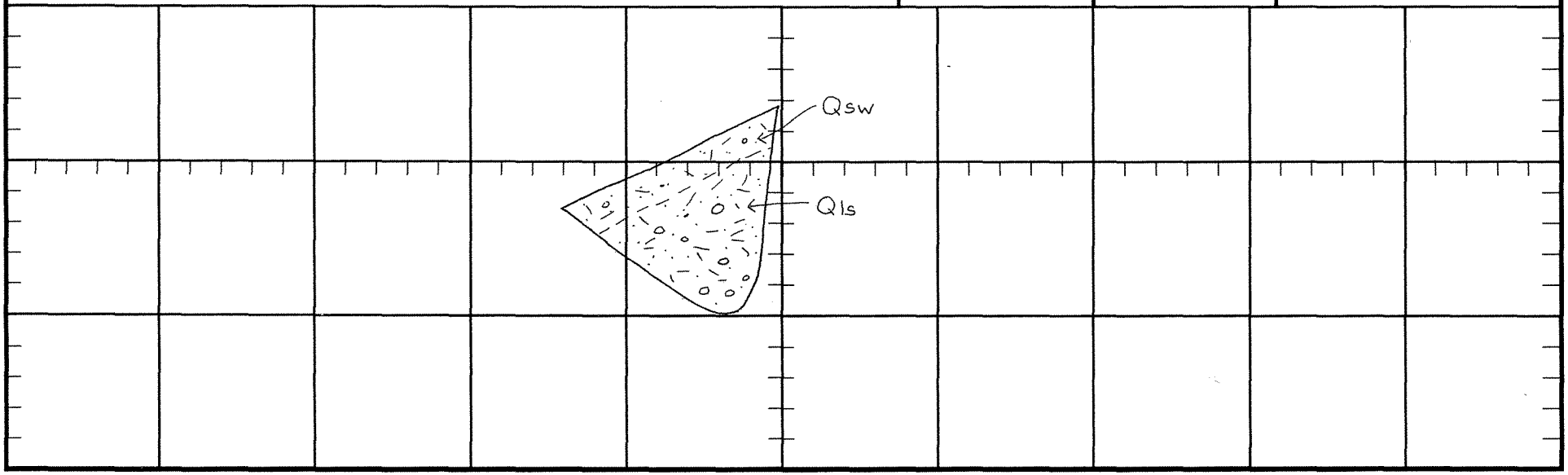
Trench Log No. T-190Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SLOPEWASH; Qsw, Tan to light-brown silty sand and sandy silt with pebbles and cobbles; soft; moist; large holes and voids; heavily bioturbated; abundant roots 1.5 - 7' LANDSLIDE; Qls, Light brown to tan sandy silt-stone; abundant pebbles and cobbles; loose to moderately dense; damp; no distinct bedding; pinhole voids and roots to bottom of trench; abundant caliche			Trenches T-190Q thru T-201Q excavated with a trackhoe and logged on 1/21/00 No Ground Water No Caving TOTAL DEPTH 7 Ft.

N 78 W

SCALE 1" = 5'



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD

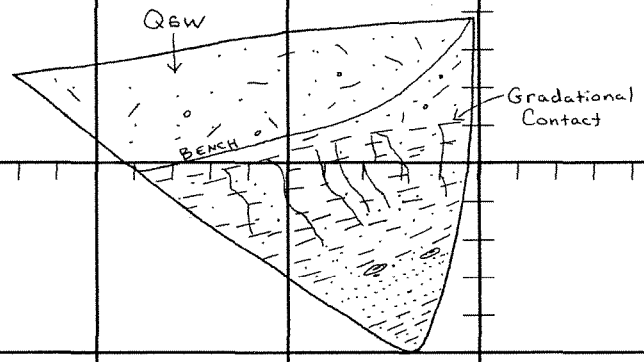
Trench Log No. T-191Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; Qsw, Brown silty sand and sandy silt; loose to firm; damp to moist; heavily bioturbated; abundant roots and voids; scattered pebbles and cobbles			
3 - 9' BEDROCK?; TQs? Moderate-brown siltstone, light yellowish-brown pebbly fine- to medium-grained sandstone and light-brown sandy siltstone; moderately hard; damp; lenticular siltstone clasts in sandstone; pinhole voids, roots and fractures in upper 3 ft.	B:N43W,20NE B:N15W,23NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 55 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD

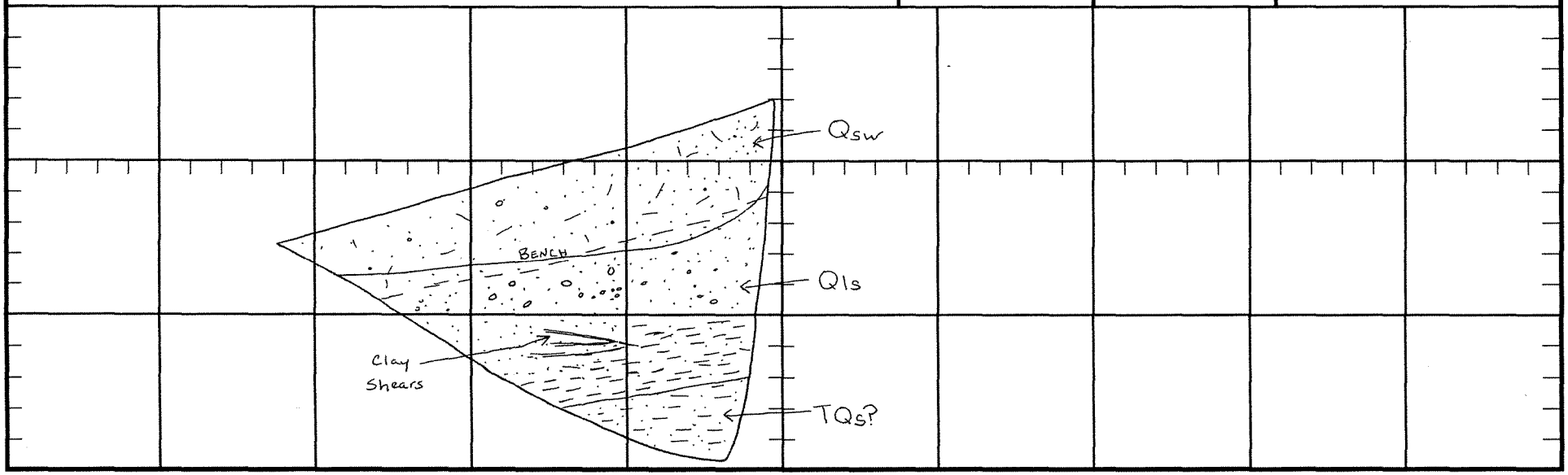
Trench Log No. T-192Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; Qsw, Dark reddish-brown sandy silt with scattered pebbles and cobbles; firm; damp to moist; abundant voids and roots			
4 - 9' LANDSLIDE; Qls, Tan to yellowish-brown pebbly sandstone with discontinuous coarse-grained lenses and dark-brown clayey siltstone with abundant caliche; firm to moderately hard; clayey siltstone splays into sandstone above; dry to damp	B:N30W,16NE B: N14W,17NE	Shears: N1E;47SE N13E,42SE Basal Land-slide contact approx. E-W,12N	
9 - 12' BEDROCK?; TQs?, Moderate-brown siltstone; hard; dry; no distinct bedding; relatively sharp contact with dark-brown clayey siltstone above; some caliche			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

Due North



ALLAN E. SEWARD

JOB NO. 99-1703Q1sII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD

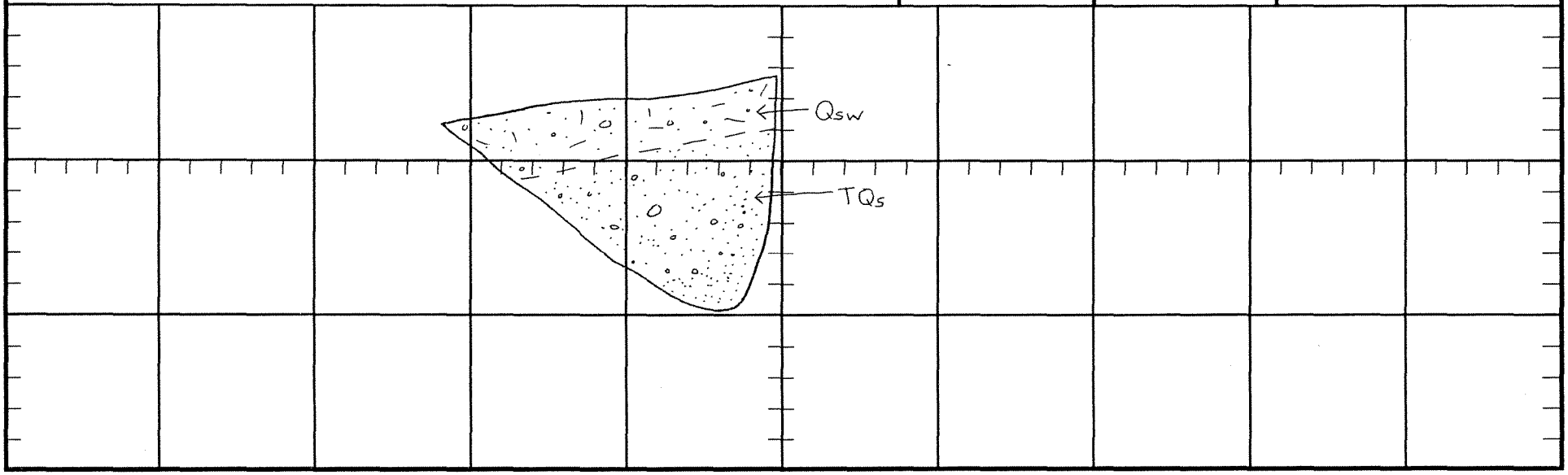
Trench Log No. T-1930

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SLOPEWASH; Qsw, Moderate-brown silty sand and sandy silt; abundant pebbles and cobbles; voids and roots abundant; firm; damp 2 - 8' BEDROCK; TQs, Tan to yellowish-gray fine- to coarse-grained sandstone with scattered pebbles and cobbles; moderately hard; damp; massive; no distinct bedding; finer-grained at bottom			No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 30 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sII-1

LOGGED BY MJD

Trench Log No. T-194Q

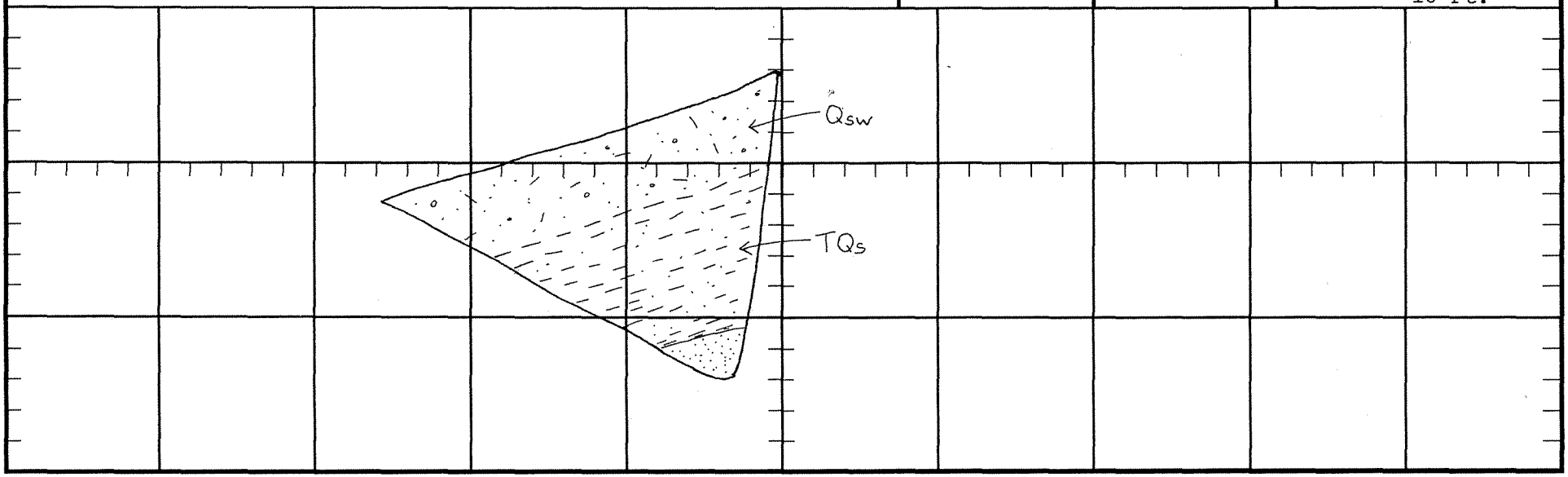
PROJECT Newhall Ranch - Mesas East

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; Qsw, Light-brown sandy silt with scattered pebbles; soft; damp; abundant voids and roots			
4 - 10' BEDROCK; TQs, Light yellowish-brown sandy siltstone and yellowish-gray sandstone; firm to hard; damp; heavily weathered, fractured and bioturbated to 7 ft.; 1/4-inch thick dark-brown siltstone on top of sandstone; sandstone massive; no distinct bedding	B:N32W,23NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 42 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD

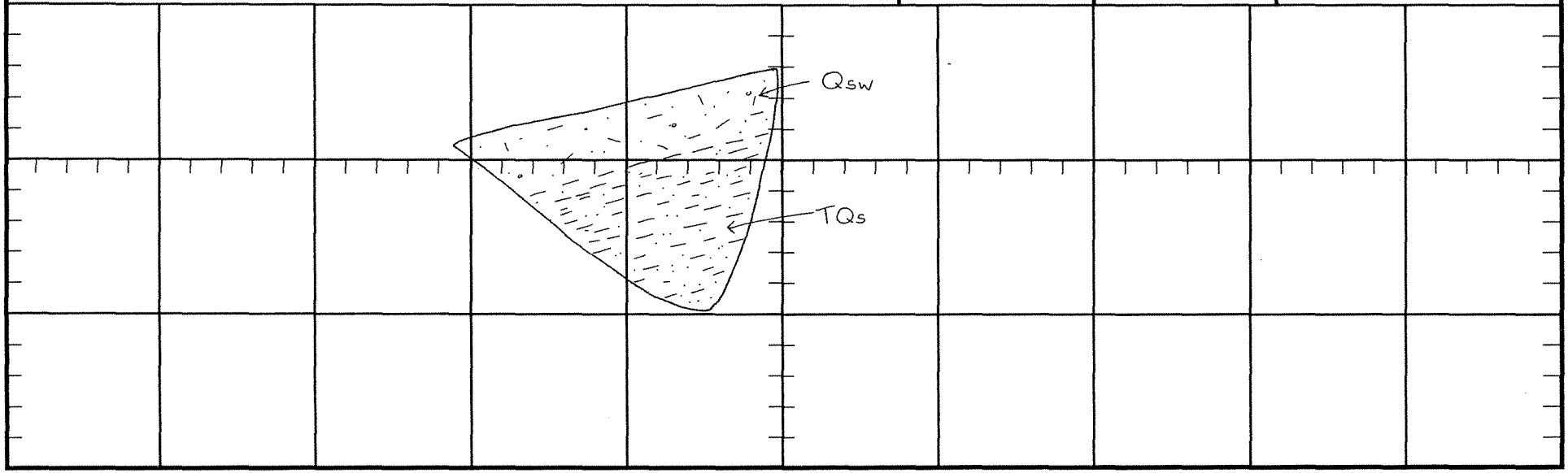
Trench Log No. T-195Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; Qsw, Light-brown to moderate grayish-brown sandy silt with scattered pebbles; firm; damp; caliche			
3 - 8' BEDROCK; TQs; Moderate-brown clayey siltstone and yellowish-brown sandy siltstone; hard; damp; abundant caliche in brown clayey siltstone; relatively sharp contact	B:N42W,18NE		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 24 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD

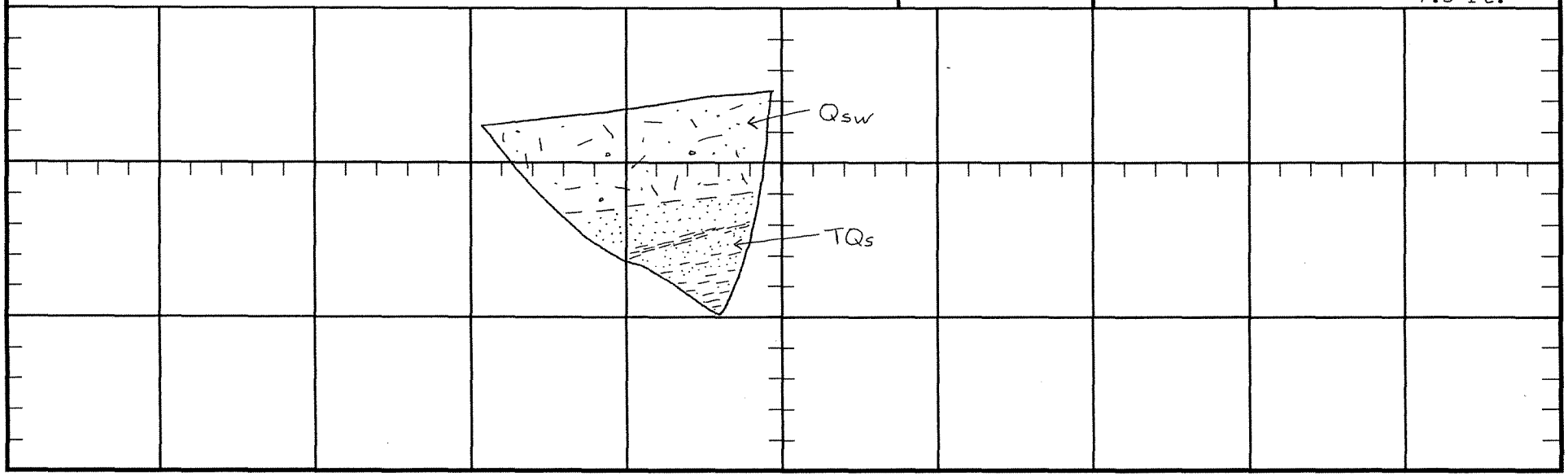
Trench Log No. T-196Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SLOPEWASH; Qsw, Dark-brown sandy silt with scattered pebbles; loose to moderately dense; damp 3.5 - 7.5' BEDROCK; TQs, Yellowish-gray coarse-grained sandstone and moderate-brown siltstone with interbedded 1"-thick reddish-brown claystone and light-brown silty sandstone; hard; damp	B:N29W,23NE B:N26W,21NE		No Ground Water No Caving TOTAL DEPTH 7.5 Ft.

SCALE 1" = 5'

N 66 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD

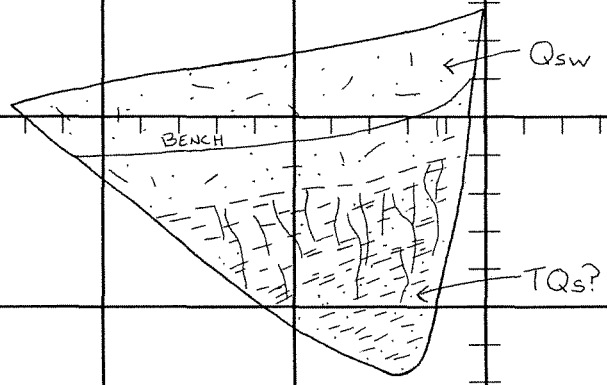
Trench Log No. T-197Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; Qsw, Light-brown silty sand and sandy silt; loose to moderately dense; damp to moist; voids and roots abundant 4 - 10' BEDROCK?; TQs?, Light-brown to brown siltstone and clayey siltstone; firm to hard; damp; caliche down to 8 ft.	B:N27W,18NE		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 77 E



ALLAN E. SEWARD

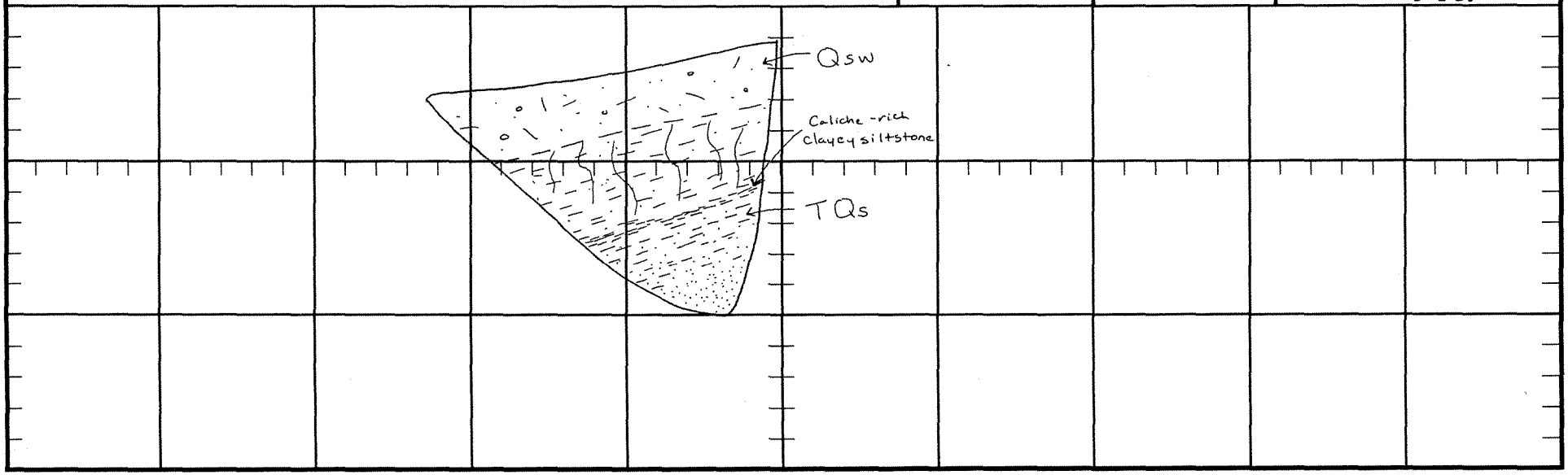
JOB NO. 99-1703QlsII-1 PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD **Trench Log No.** T-198Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; Qsw, Brown silty sand and sandy silt with scattered pebbles and cobbles; firm; damp			
3 - 9' BEDROCK; TQs, Brown clayey siltstone and tan sandstone; hard; damp; abundant caliche to 6'; weathered and fractured to 6'; gradational contact with sandstone at bottom	B:N36W,23NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 60 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY MJD

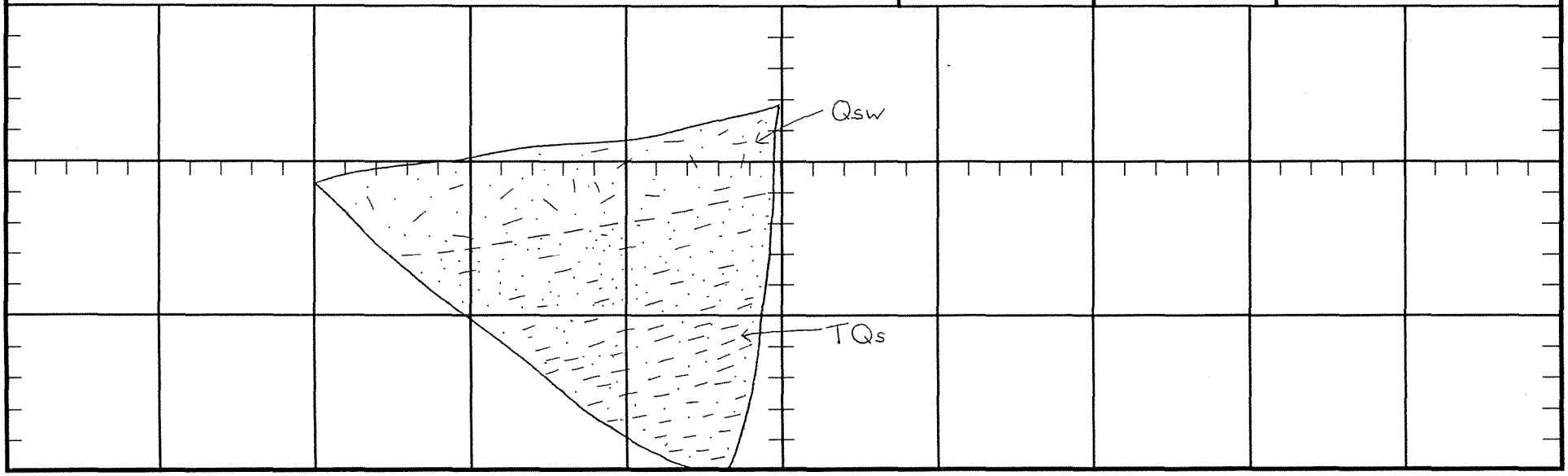
Trench Log No. T-199Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; Qsw, Reddish-brown sandy silt; firm; damp; abundant voids and roots			
3 - 12' BEDROCK; TQs, Orangish-yellow fine- grained silty sandstone and brown siltstone; hard; damp; vaguely bedded; mostly massive/structureless	B:N40W,28NE apx		No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 43 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sII-1

PROJECT Newhall Ranch-Mesas East

LOGGED BY MJD

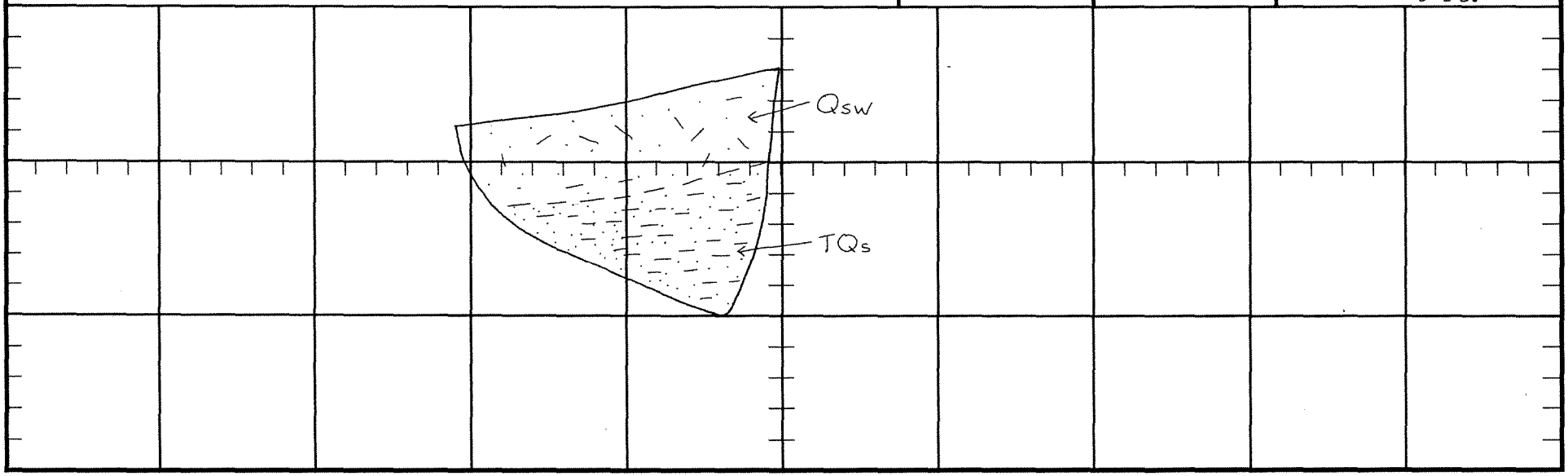
Trench Log No. T-200Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; Qsw, Light yellowish-brown silty sand and sandy silt; firm; damp; abundant roots and voids; scattered pebbles and cobbles 3 - 9' BEDROCK; TQs, Tan to yellowish-brown silty sandstone; hard; damp; massive/structureless			No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 54 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sII-1

PROJECT Newhall Ranch- Mesas East

LOGGED BY MJD

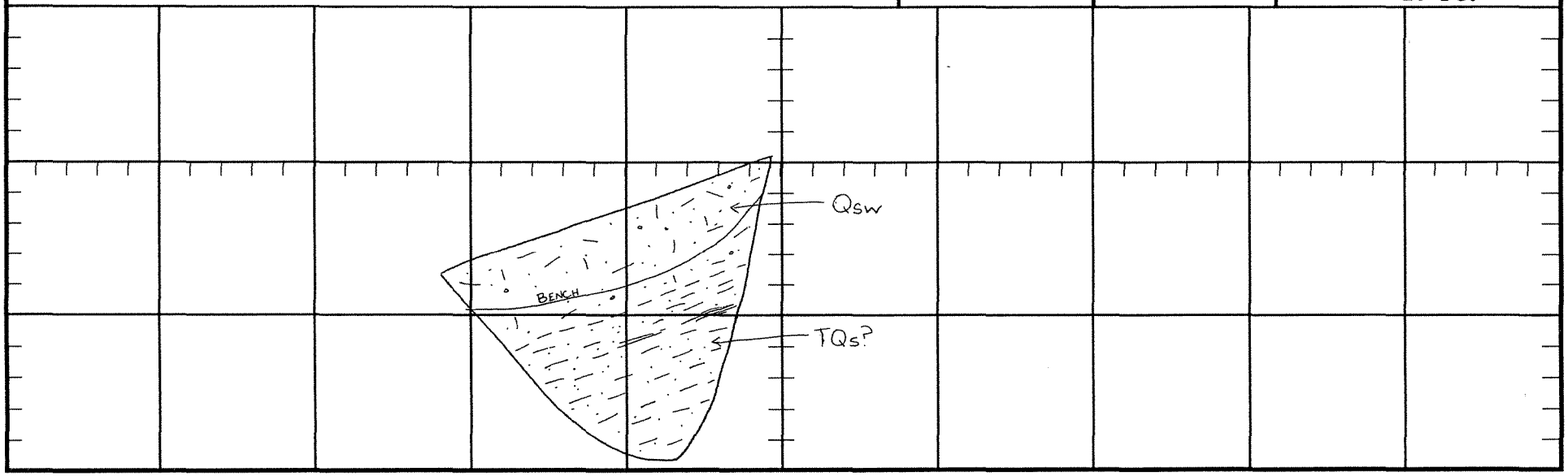
Trench Log No. T-201Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SLOPEWASH; Qsw, Brown sandy silt and silty sand; soft to firm; damp; scattered pebbles 3.5 - 10' BEDROCK?; TQs?, Yellowish-brown sandy siltstone; hard; damp; with 1/2" thick discontinuous mudstone interbed at depth of 5 ft.; otherwise massive; structureless	B:N-S,24E apx		No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 54 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sII-1 PROJECT Newhall Ranch-Mesas East

LOGGED BY BJS

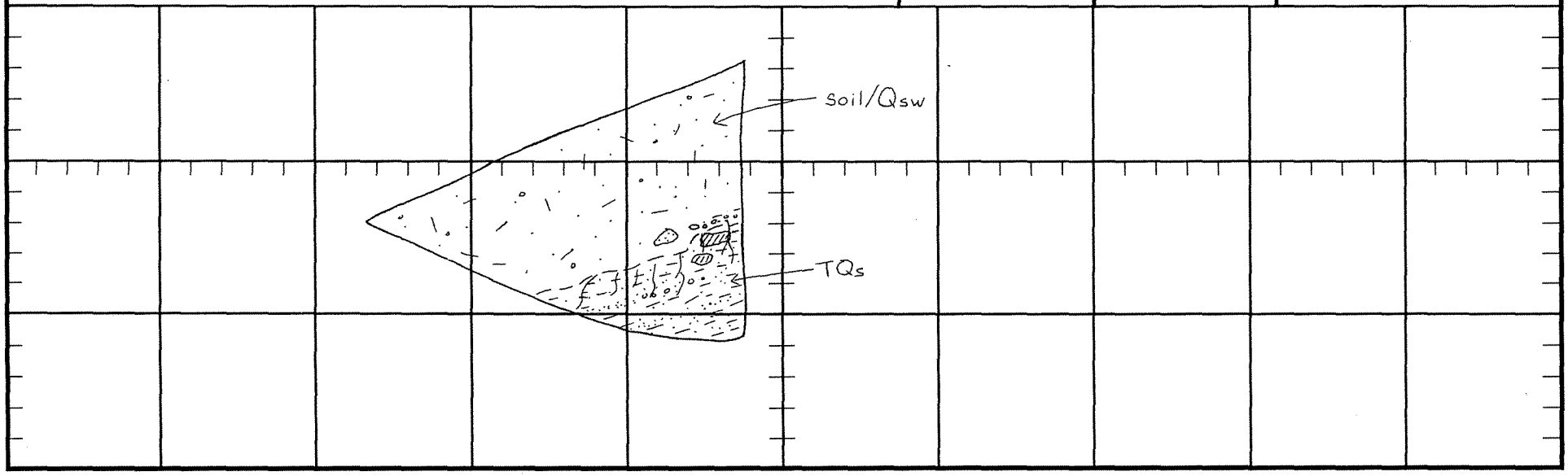
Trench Log No. T-202Q

DATE 7/24/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SOIL/SLOPEWASH; soil/Qsw, Brown to yellowish-brown muddy pebbly sand; soft to firm; slightly damp; carbonate filaments and TQs clasts in lower foot 5 - 9.5' BEDROCK; TQs, Light yellowish-brown silty sandstone and pebbly sandstone; moderately hard; damp; upper foot weathered	N58W,13NE		Trenches T-202Q thru T-214Q excavated with a track-mounted backhoe and logged on 1/24/00 No Ground Water No Caving TOTAL DEPTH 9.5 Ft.

SCALE 1" = 5'

N 33 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY BJS

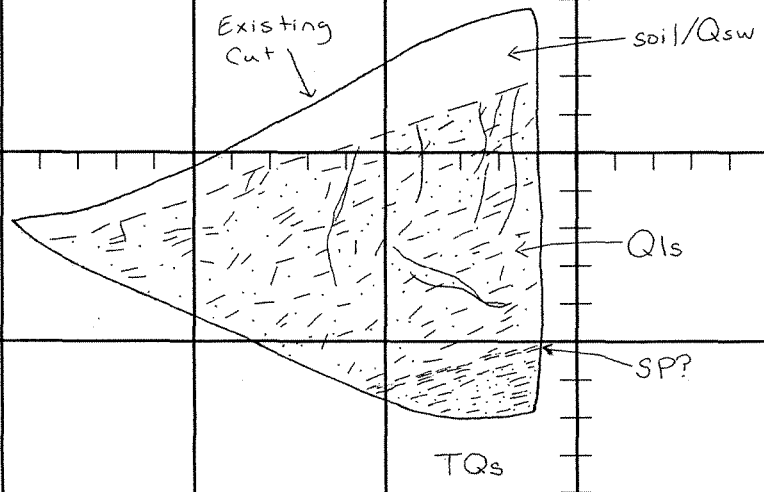
Trench Log No. T-203Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SOIL/SLOPEWASH; soil/Qsw, Brown sandy mud with scattered pebbles; firm to crumbly; dry to slightly damp		SP?:N44W,30NE	
2 - 9' LANDSLIDE; Qls, Light yellowish-brown sandy siltstone/silty sandstone and local yellowish-brown mudstone at base; moderately dense to dense; slightly damp to damp; bedding clearly disturbed; mudstone at base is slightly sheared and plastic; minor carbonate			Bedding in TQs is vague but appears subparallel to "slide plane" at 9 ft.
9 - 11' BEDROCK; TQs, Light yellowish-brown silty sandstone; moderately hard; damp; upper 6-8" slightly disturbed parallel to "slide plane"			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 2 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1 PROJECT Newhall Ranch-Mesas East

LOGGED BY BJS

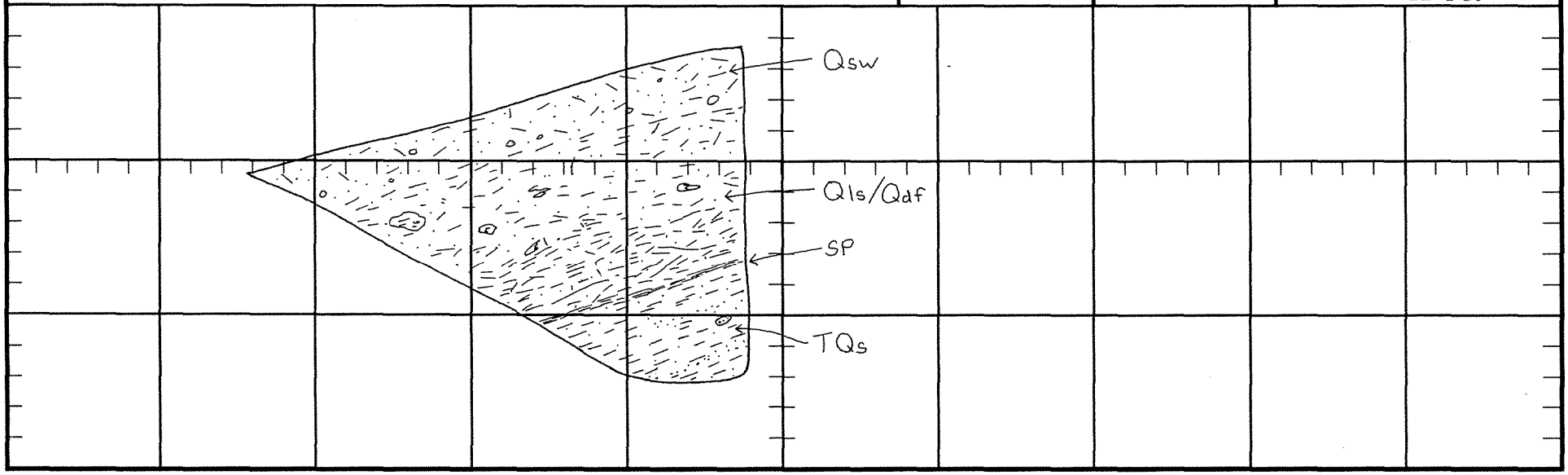
Trench Log No. T-204Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SLOPEWASH; Qsw, Yellowish-brown pebbly silty sand; soft; slightly damp			
2 - 7' LANDSLIDE/DEBRIS FLOW DEPOSIT; Qls/Qdf, Light yellowish-brown silty sandstone/sandy siltstone; soft; slightly damp to damp; upper 3 ft. thoroughly disturbed wtih TQs fragments in silty sand matrix (Qdf)	Apx B: N55W,33NE	SP:N51W,29NE	SP- apx ¼"-thick slightly sheared moderate-brown silty clay with partings
7 - 11' BEDROCK; TQs, Light yellowish-brown sandy siltstone with local sandstone stringers; moderately hard; damp			No Ground Water No Caving
			TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 73 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch- Mesas East

LOGGED BY BJS

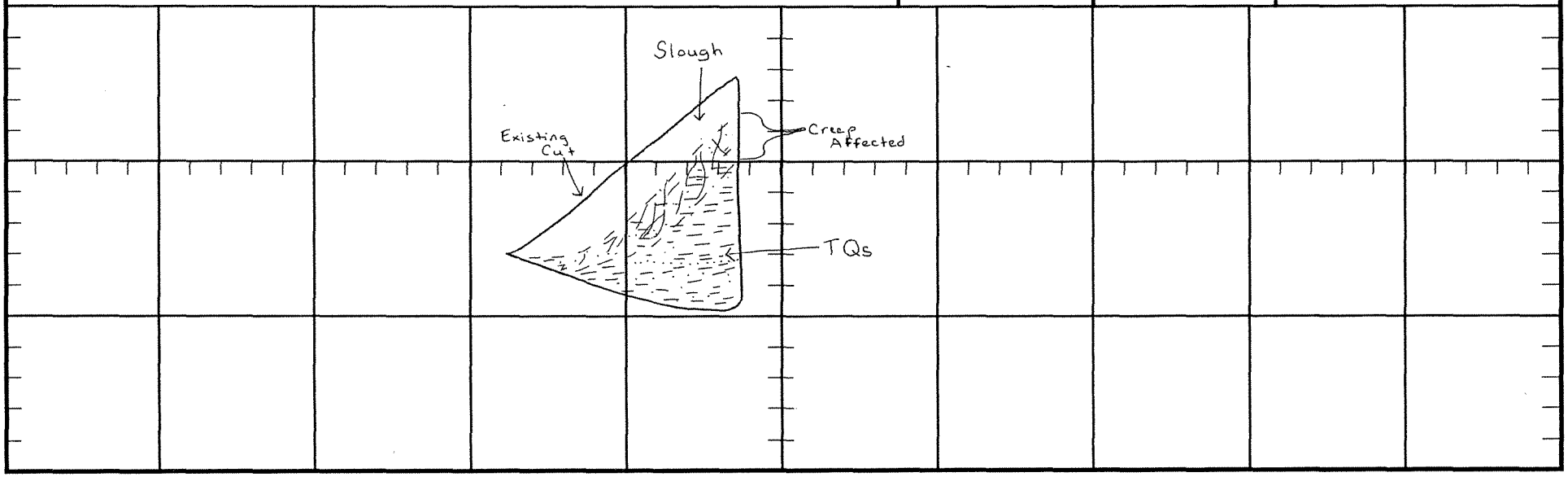
Trench Log No. T-205Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SLOUGH 2 - 8' BEDROCK; TQs, Light yellowish-brown silty sandstone with local sandstone lenses on opposite trench wall; moderately hard; damp; upper 2 feet fractured and creep affected; locally laminated	N33W,25NE		Trench excavated into existing cut No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 42 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch-Mesas East

LOGGED BY BJS

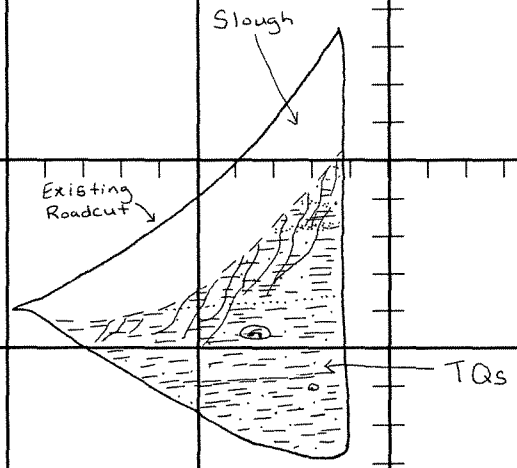
Trench Log No. T-206Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOUGH 4 - 11.5' BEDROCK; TQs, Interbedded light yellowish-brown silty sandstone and local sandstone and yellowish-brown siltstone; moderately hard; upper 2-3 ft. fractured and creep affected; damp; locally thin bedded to laminated; locally cross-laminated; local concretions	N35W,18NE		Trench excavated into existing cut No Ground Water No Caving TOTAL DEPTH 11.5 Ft.

SCALE 1" = 5'

N 12 W



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1 PROJECT Newhall Ranch-Mesas East

LOGGED BY BJS

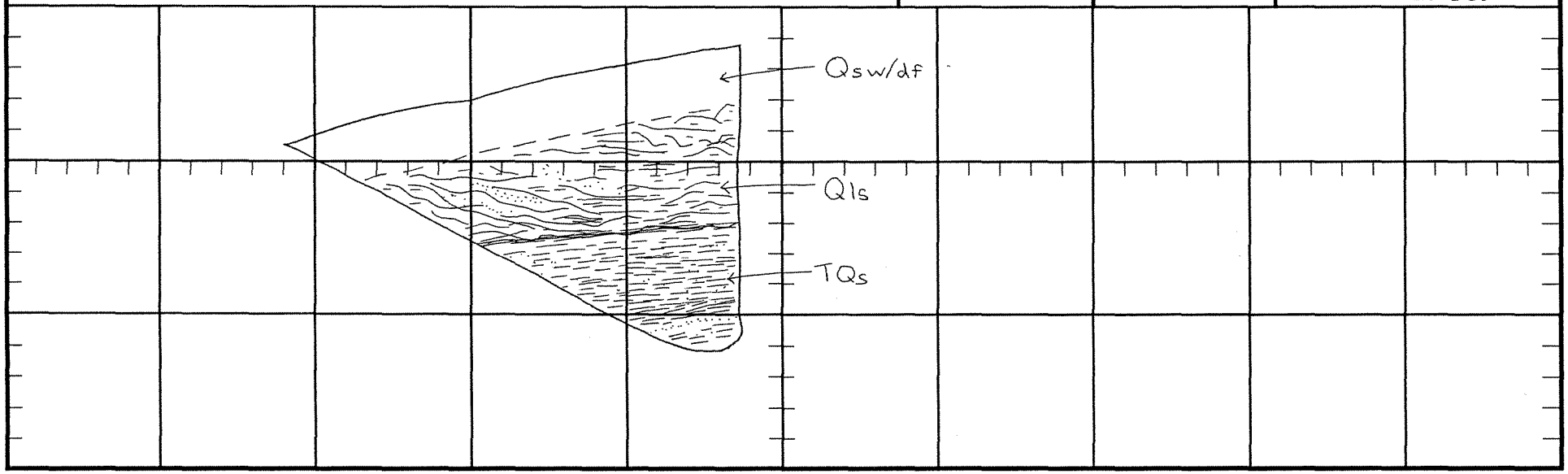
Trench Log No. T-207Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SLOPEWASH/DUMPED FILL; Qsw/df, Brown sandy mud; firm but fractured; slightly damp			
2 - 6' LANDSLIDE; Qls, Highly disturbed and moderately sheared, moderate reddish-brown mudstone and claystone with local silty sandstone stringers; soft to firm; damp to moist	N47W,24NE	Apx SP: N60E,5NW	
6 - 10' BEDROCK; TQs, Light yellowish-brown fine sandy siltstone and local silty sandstone and yellowish-brown siltstone/mudstone; moderately hard to locally fractured in upper 1.5 ft.; damp			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 48 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch-Mesas East

LOGGED BY BJS

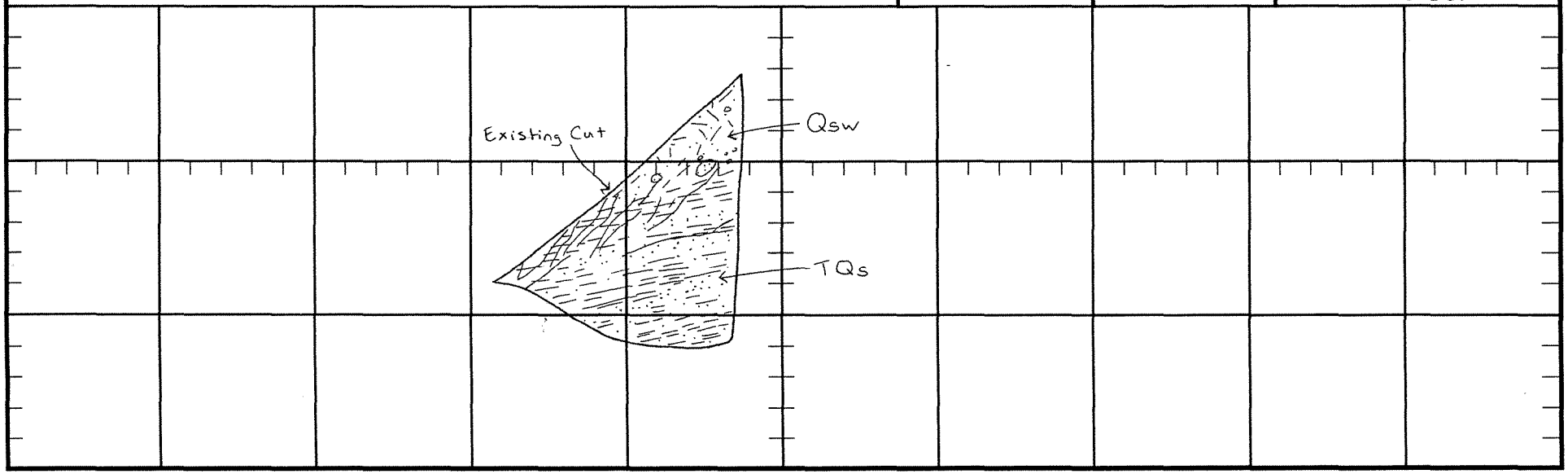
Trench Log No. T-208Q

DATE 7/12/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; Qsw, Light yellowish-brown silty pebbly sand with local clasts of TQs; loose; dry			Trench excavated into existing cut
3 - 9' BEDROCK; TQs, Light yellowish-brown silty sandstone/sandy siltstone and local sandstone, and local yellowish-brown siltstone; dense to moderately hard; upper 4 ft. fractured and creep affected; cross laminations	N48W,17NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 60 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY BJS

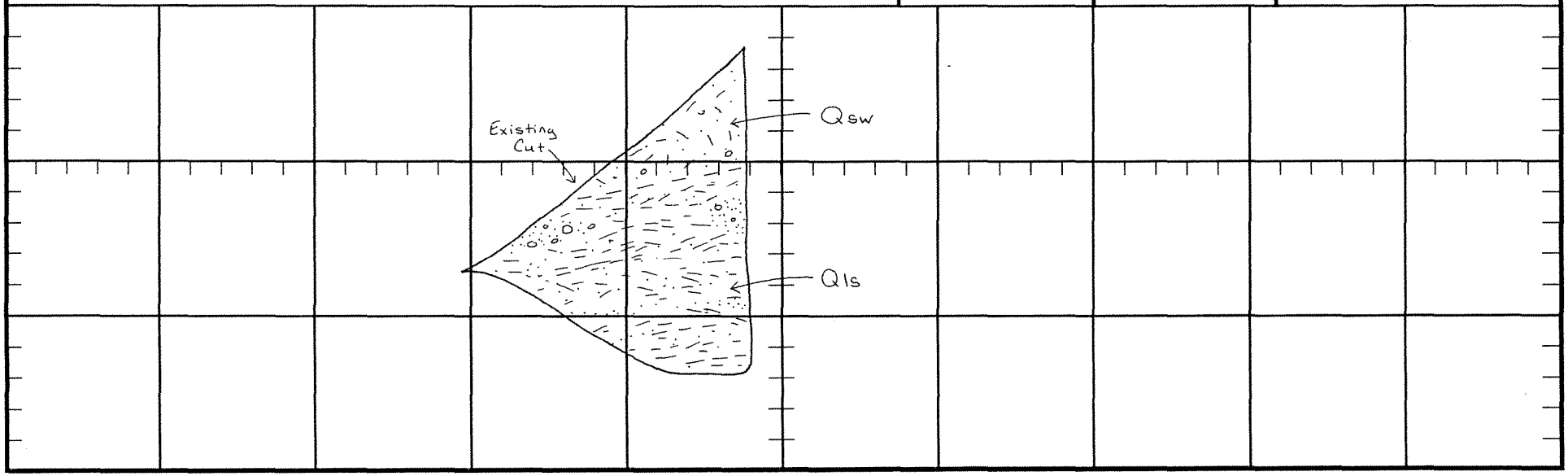
Trench Log No. T-209Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; Qsw, Yellowish-brown pebbly silty sand; loose; dry			Trench excavated into existing cut
4 - 11' LANDSLIDE; Qls, Light yellowish-brown silty sandstone and sandy siltstone and local pebble conglomerate, sandstone and siltstone; soft to dense; damp; bedding patchy and slightly to moderately disrupted; pinhole voids common in upper 3 ft.			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 55 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sII-1

LOGGED BY BJS

Trench Log No. T-210Q

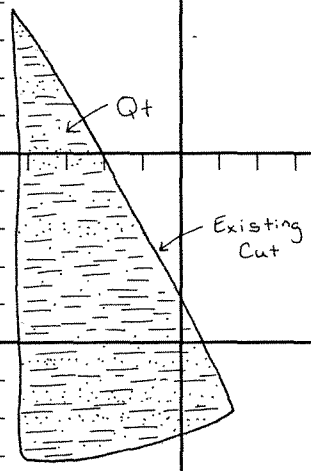
PROJECT Newhall Ranch-Mesas East

DATE 7/22/64

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 12' TERRACE DEPOSITS; Qt, Light yellowish-brown siltstone and sandy siltstone interbedded with yellowish-gray sandstone and pebbly sandstone; moderately dense to dense; well bedded	Subhorizontal		Trench excavated into existing cut No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 68 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY BJS

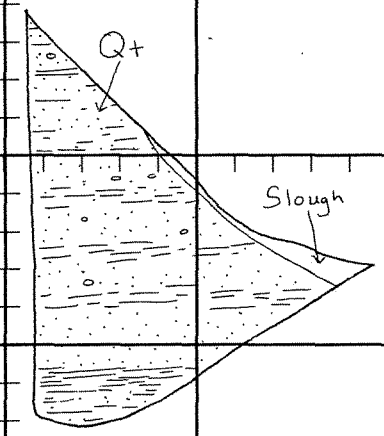
Trench Log No. T-211Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11' TERRACE DEPOSITS; Qt, Light yellowish-brown siltstone and sandy siltstone interbedded with yellowish-gray sandstone and pebbly sandstone; moderately dense to dense; well bedded	Subhorizontal		Trench excavated into existing cut/bank No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 86 E



ALLAN E. SEWARD

JOB NO. 99-1703QlsII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY BJS

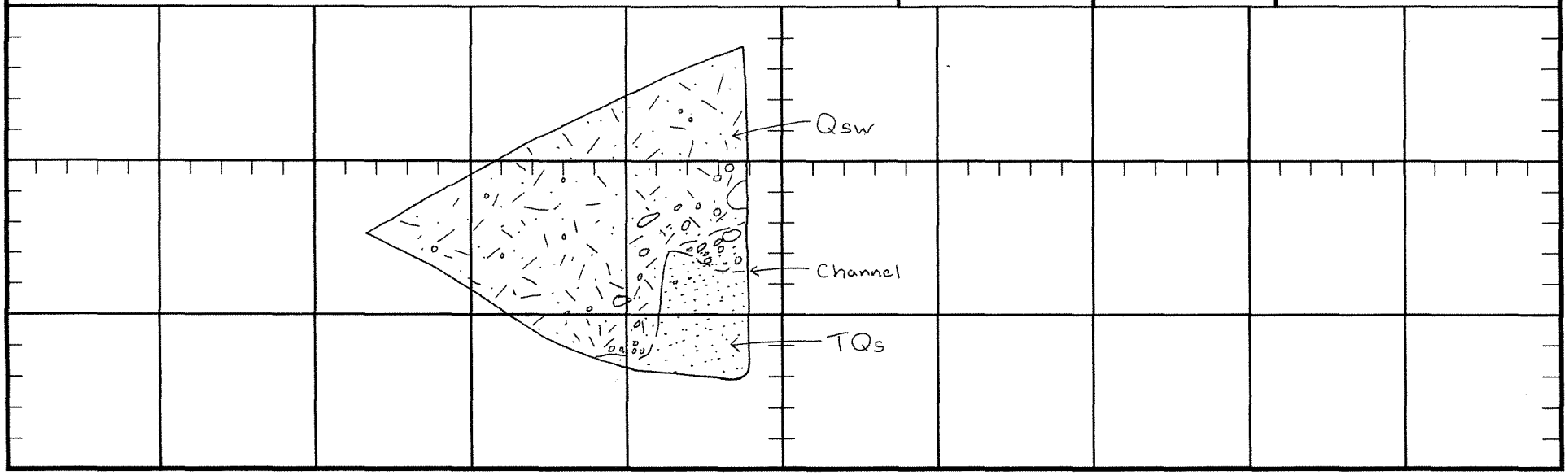
Trench Log No. T-212Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SLOPEWASH; Qsw, Brown to yellowish-brown pebbly muddy sand with scattered cobbles and boulders; soft; dry to slightly damp			
6 - 11' BEDROCK; TQs, Light yellowish-gray sandstone, pebbly sandstone and conglomerate; moderately hard to hard; slightly damp; channeling and cross bedding	N32W,18NE		Cobbles and boulders probably from basal Qt
			No Ground Water No Caving
			TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 88 E



ALLAN E. SEWARD

JOB NO. 99-1703Q1sII-1

PROJECT Newhall Ranch - Mesas East

LOGGED BY BJS

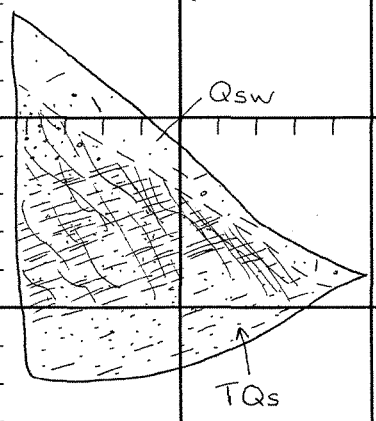
Trench Log No. T-213Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SLOPEWASH; Qsw, Grayish-brown pebbly silty sand; loose; dry			Trench excavated into existing stream bank
2 - 10' BEDROCK; TQs, Interbedded yellowish-brown siltstone/mudstone with light-brown to light-gray mottling near surface and light yellowish-gray fine sandstone and pebbly sandstone; moderately hard; damp; upper 1-2' weathered, creep affected and locally iron-stained	N46W,20NE		Faint sulfurous odor in trench
			No Ground Water No Caving
			TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 50 E



ALLAN E. SEWARD

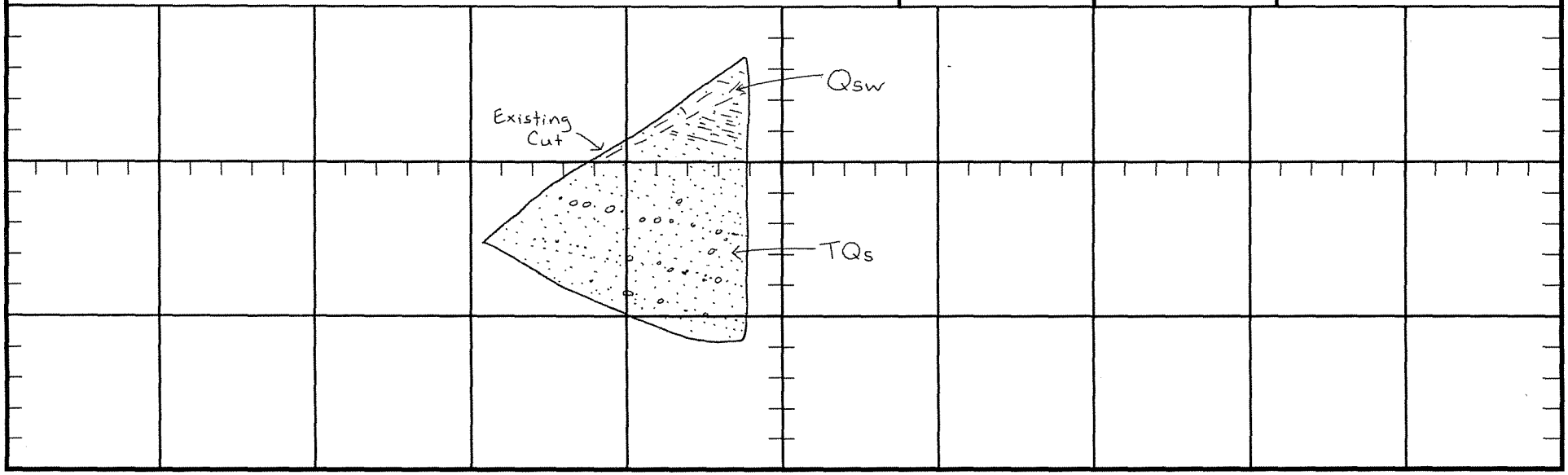
JOB NO. 99-1703QlsII-1 PROJECT Newhall Ranch-Mesas East

LOGGED BY BJS **Trench Log No.** T-214Q DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL/SLOPEWASH; soil/Qsw, Yellowish-brown silty pebbly sand; loose; dry			Trench excavated into existing cut
1.5 - 9.5' BEDROCK; TQs, Light-gray sandstone and pebbly sandstone and yellowish-gray sandy siltstone; moderately hard; slightly damp; upper 2-3 ft. fractured and weathered	N36W,16NE		No Ground Water No Caving TOTAL DEPTH 9.5 Ft.

SCALE 1" = 5'

N 72 W



ALLAN E. SEWARD

JOB NO. 00-1703QlsII-1

PROJECT Newhall Ranch-Mesas East

LOGGED BY MJD

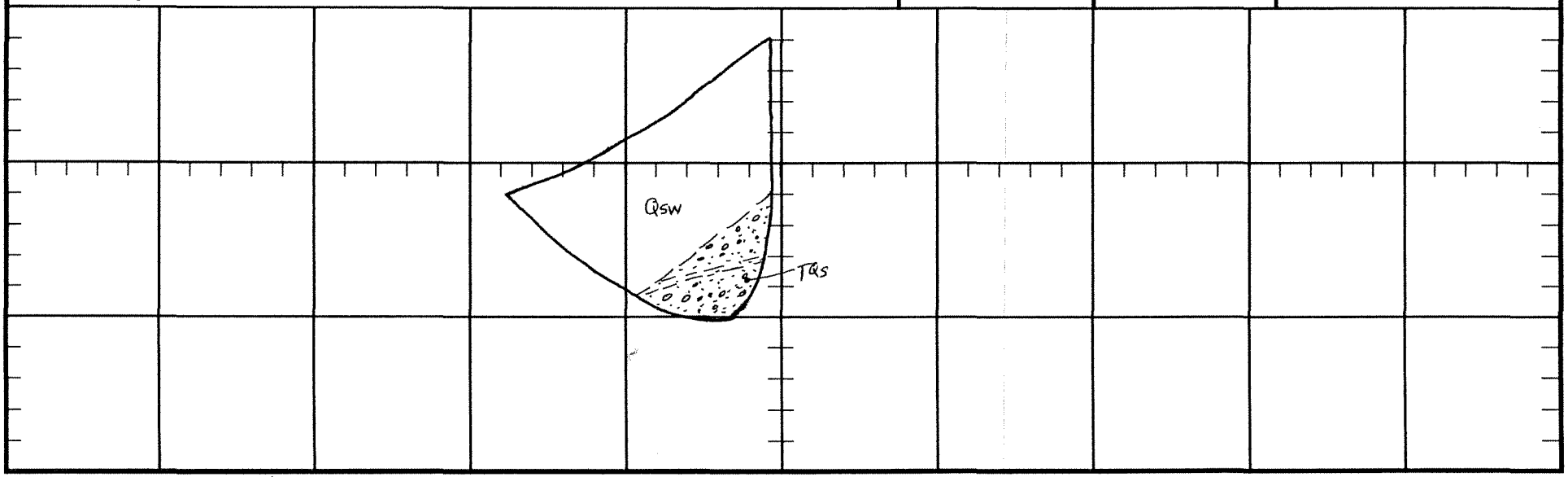
Trench Log No. 217Q

DATE 7/22/04

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SLOPEWASH; Qsw, Light-brown to brown silty to pebbly sand with scattered cobbles; loose to moderately dense; dry to moist			Logged on 3/16/00 Slopewash moist from recent rain
5 - 9' BEDROCK; TQs, Yellowish-gray to gray coarse-grained sandstone and conglomerate; loose; friable; dry; interbedded with yellowish-brown siltstone bed; discontinuous; dense; damp	Apx B: N34W,22NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 3 W

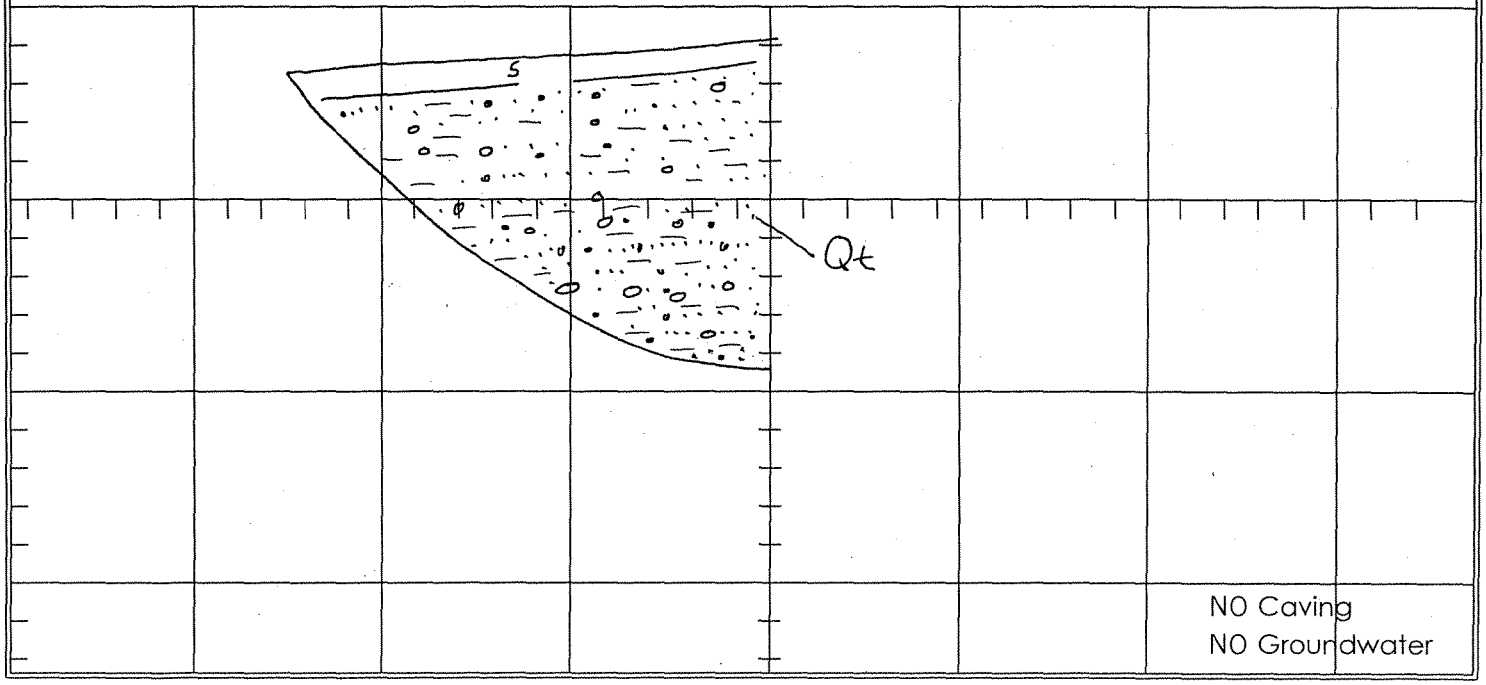


ALLAN E. SEWARD

CLIENT: Newhall Ranch Co.	JOB NO: 02-1703B-1	**TRENCH LOG NO. T-1B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 9/12/02	
	LOGGED BY: DGG	
	EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket	ELEVATION: 1231	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL; (0-0.5 ft.)** @ 0' Light- to medium-brown sandy silt/silty sand with pebbles; loose to firm; dry to damp **QUATERNARY TERRACE DEPOSIT; Qt, (0.5-8.5 ft.)** @ 0.5' Light- to grayish-brown cobbly pebbly silty sand; slightly hard; dry to damp; friable NOTE: Pits 1B through 13B excavated on the southern margin of Airport Mesa.	Apx.B: Horizontal			
5									
10									
15									
20									

TOTAL DEPTH: 8.5 feet N88W→ SCALE: 1 inch = 5 feet

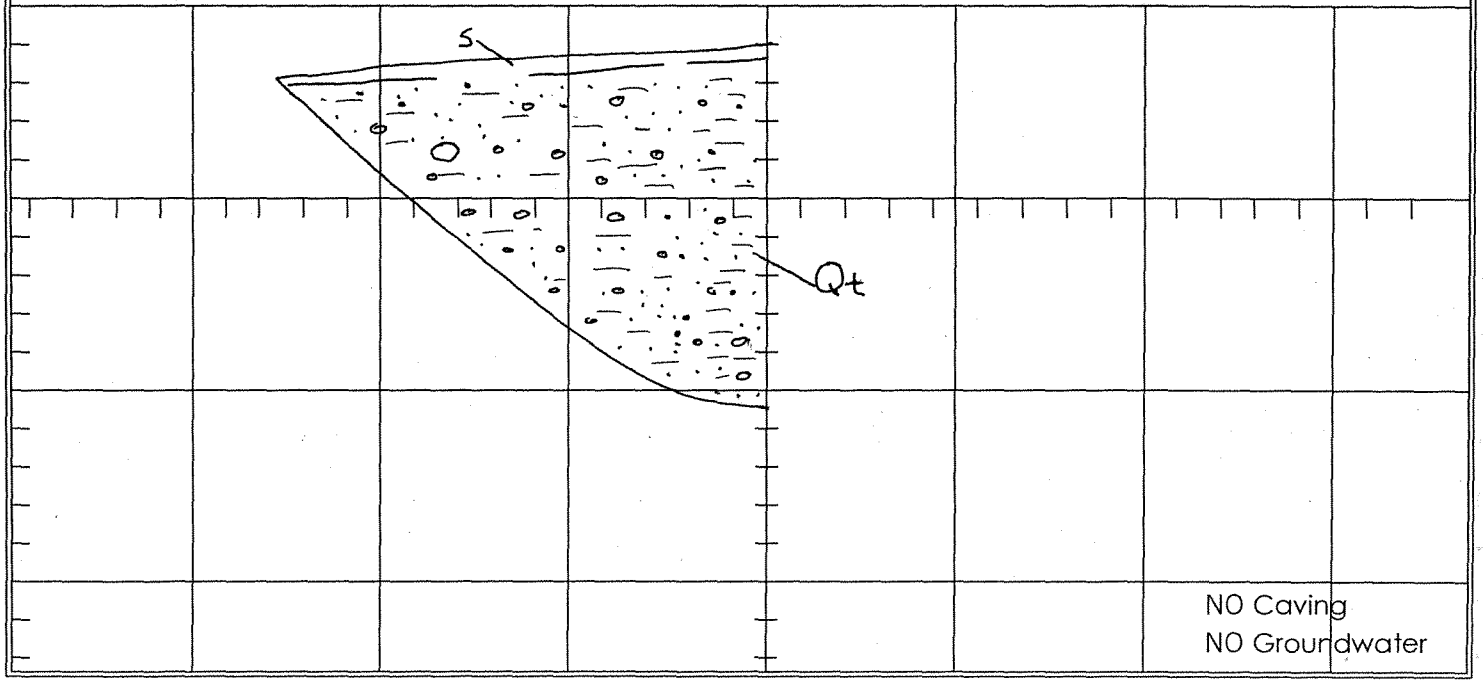


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-2B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1218	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL; (0-3")** @ 0' Light- to grayish-brown silty sand/sandy silt with pebbles; firm; dry to damp **QUATERANARY TERRACE DEPOSITS; Qt, (3"-9. 5 ft.)** @ 3" Light- to grayish-brown cobbly pebbly silty sand; moderately dense; dry to damp; friable	Apx.B: Horizontal			
5									
10									
15									
20									

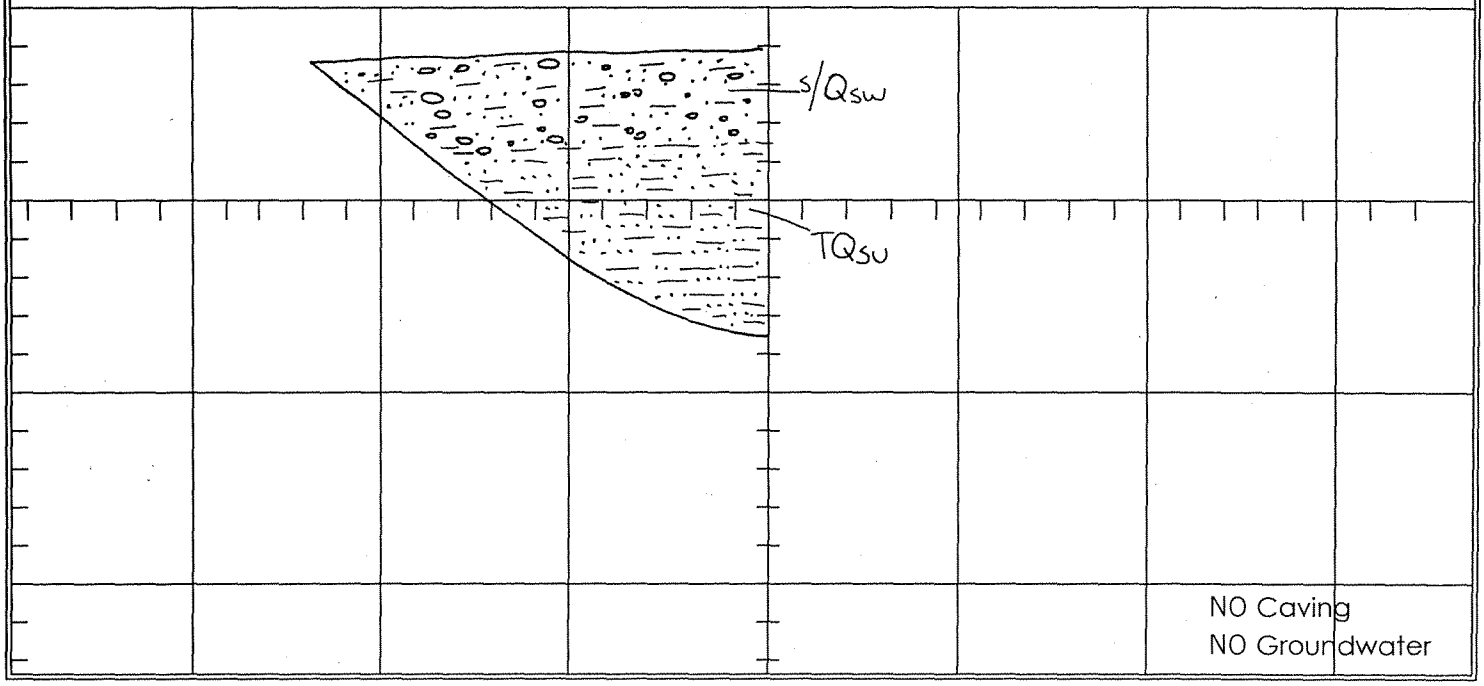
TOTAL DEPTH: 9.5 feet ←N85E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-3B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1202	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-2.5 ft.)** @ 0' Medium- to grayish-brown silty sand/sandy silt with pebbles & scattered cobbles; firm; dry to damp; friable **BEDROCK; TQsu, (2.5-7.5 ft.)** @ 2.5' Reddish- to yellowish-brown siltstone; hard; dry to damp; some caliche surfaces; upper 2'-clayey; bedding is massive				
5									
10									
15									
20									

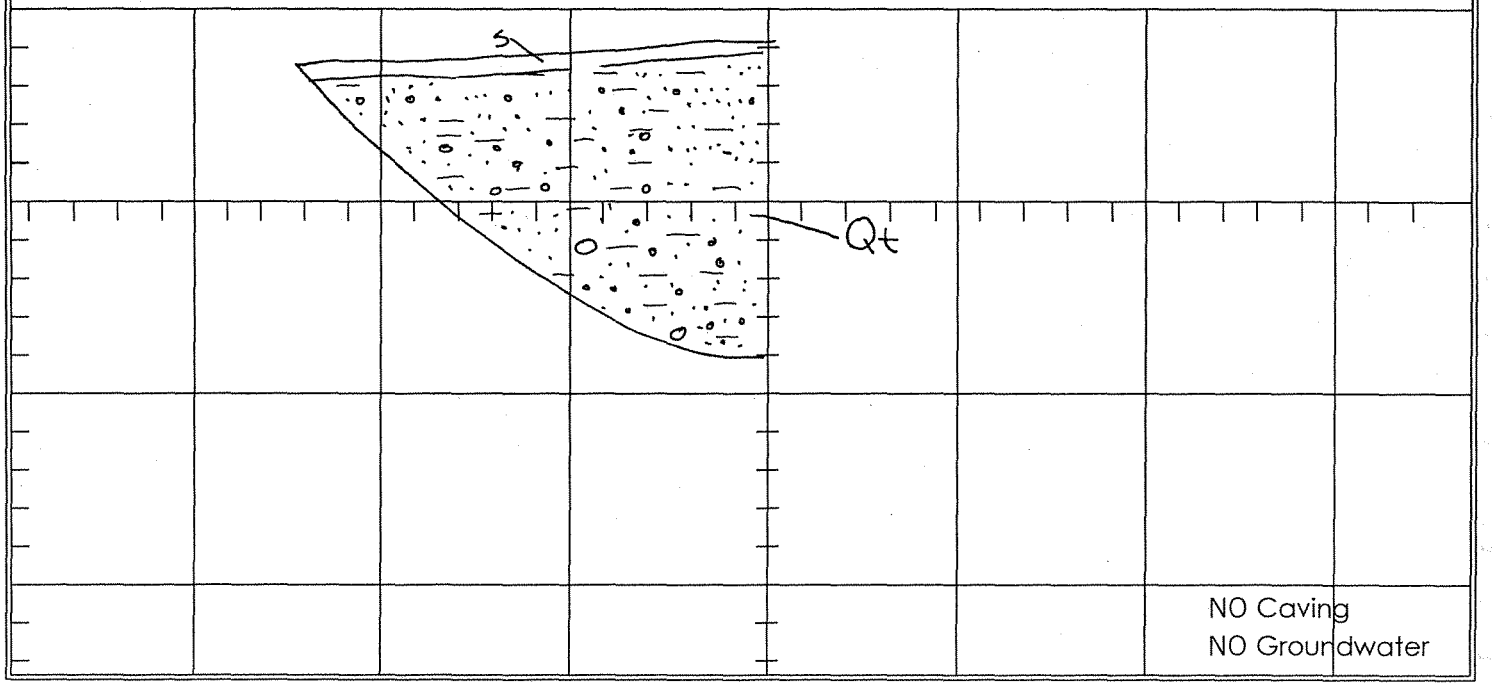
TOTAL DEPTH: 7.5 feet ←N85E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-4B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1182	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL; (0-3")** @ 0' Medium- to grayish-brown silty sand/sandy silt; firm; dry to damp				
					QUATERNARY TERRACE DEPOSITS; Qt, (3"-8 ft.) @ 3" Orangish- to grayish-brown pebbly silty sand with scattered cobbles; moderately dense; dry to damp; friable	Apx.B: Horizontal			
5									
10									
15									
20									

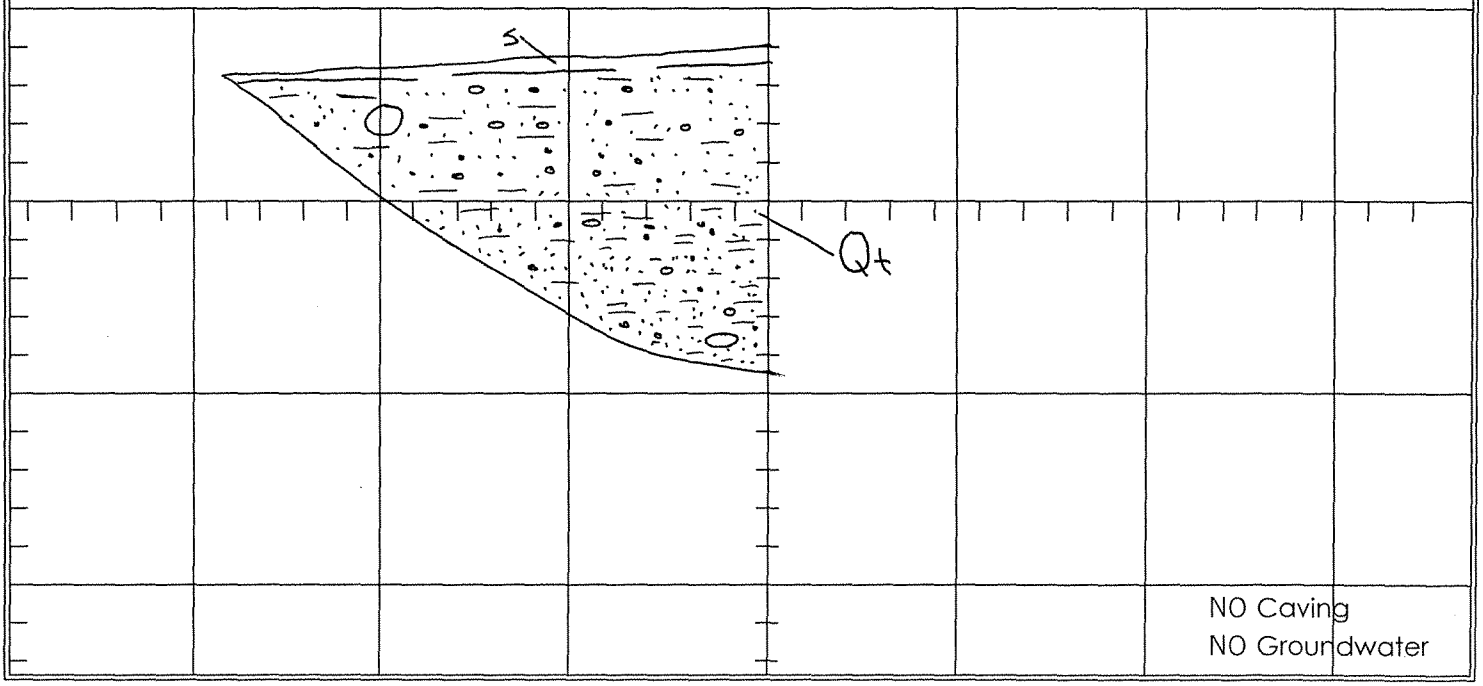
TOTAL DEPTH: 8 feet ←N72E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-5B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1165	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL; (0-3")** @ 0' Medium- to grayish-brown pebbly sandy silt/silty sand; firm; dry to damp				
					QUATERNARY TERRACE DEPOSITS; Qt, (3"-8.5 ft.) @ 3" Orangish- to grayish-brown pebbly silty sand with scattered cobbles (1 boulder); moderately dense to dense; damp; friable; local clast supported texture; lamellae @ 4.5' Medium- to grayish-brown pebbly silty sand with scattered cobbles; dense; damp; slightly friable	Apx.B:N85E,6NW			
5									
10									
15									
20									

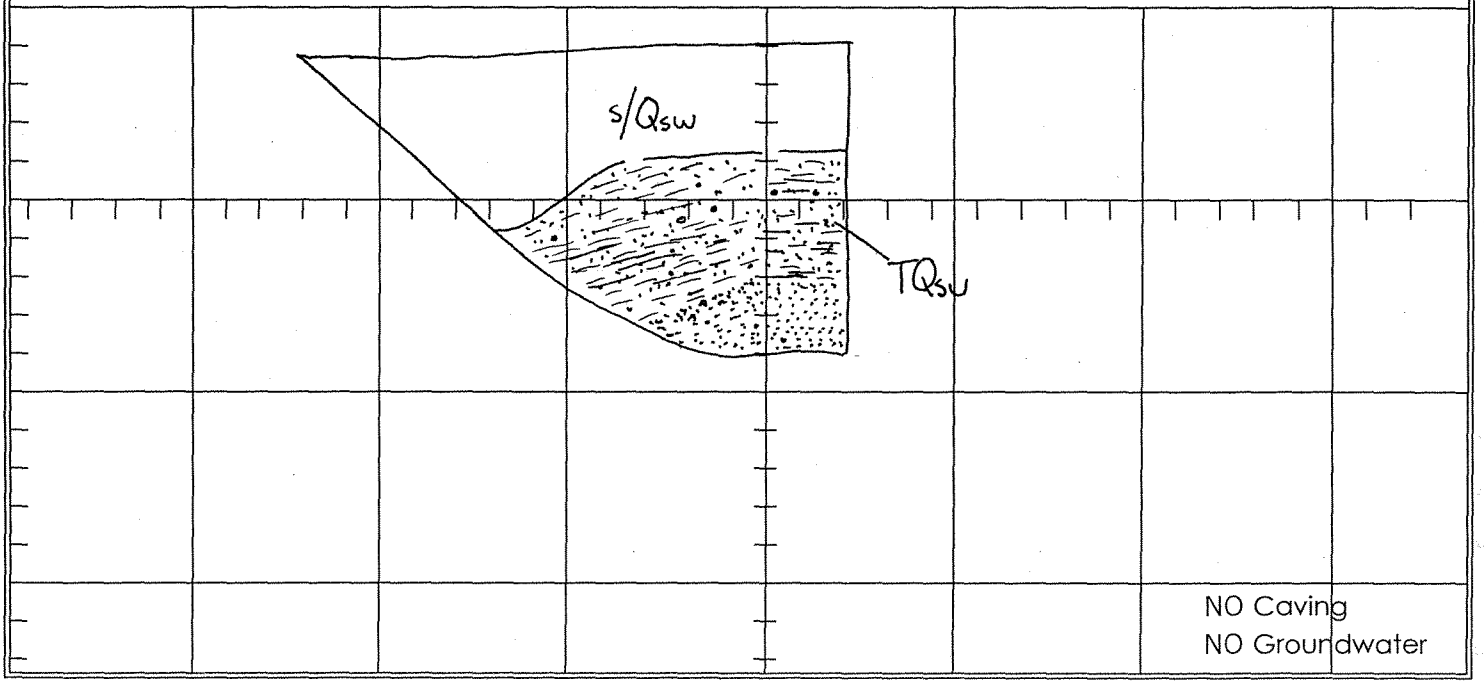
TOTAL DEPTH: 8.5 feet ←N18E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 02-1703B-1	**TRENCH LOG NO. T-6B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 9/12/02	
	LOGGED BY: DGG	
	EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket	ELEVATION: 1157	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-3 ft.)** @ 0' Orangish- to yellowish-brown pebbly sandy silt/silty sand with scattered cobbles; firm to stiff; damp; friable				
					BEDROCK; TQsu, (3-8 ft.) @ 3' Pale yellowish- to grayish-brown siltstone and pebbly sandy siltstone/silty sandstone; moderately hard; damp; sandstone is moderately friable	B:N54W,22NE			
5									
10									
15									
20									

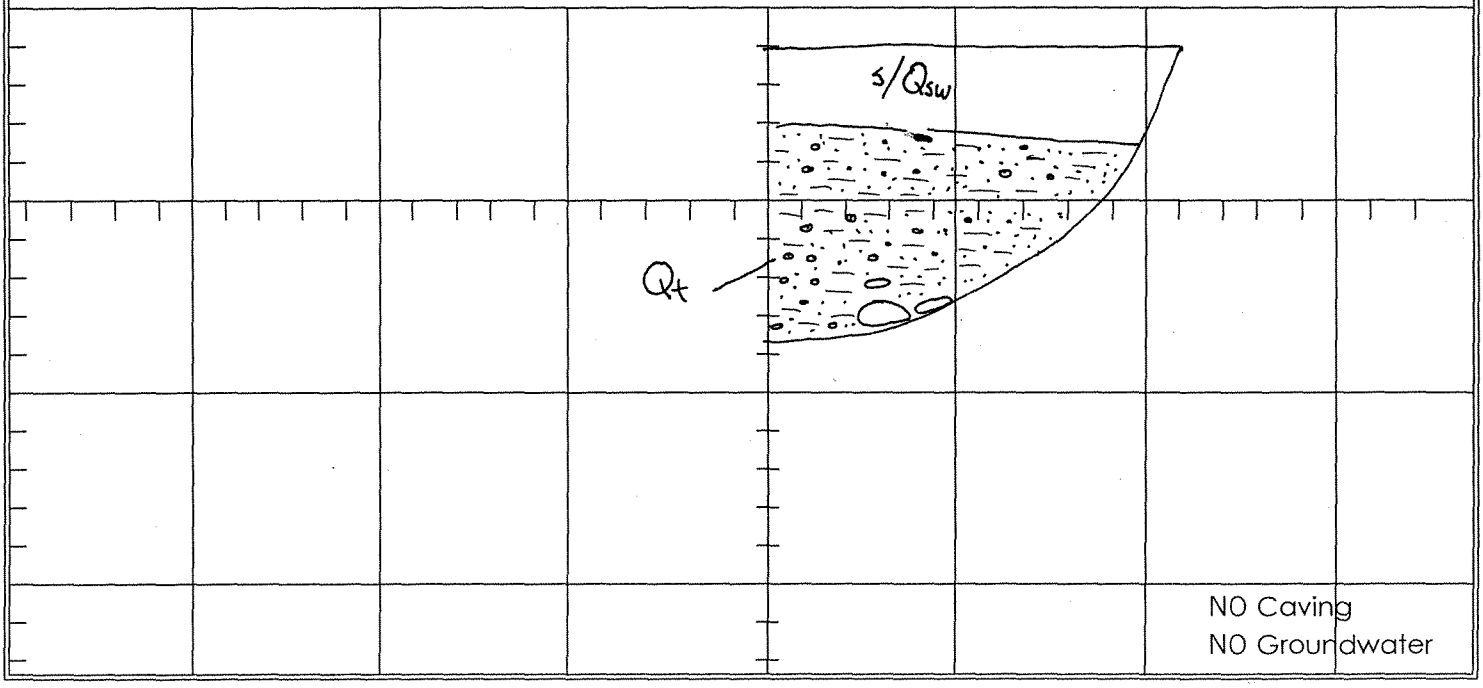
TOTAL DEPTH: 8 feet ←N40E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-7B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1172	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-3 ft.)** @ 0' Orangish- to grayish-brown pebbly sandy silt; firm; dry to damp; pinhole voids **QUATERNARY TERRACE DEPOSITS; Qt, (3-7.5 ft.)** @ 3' Reddish- to grayish-brown pebbly silty sand/sandy silt with scattered cobbles and boulders; moderately dense to dense; damp; friable; upper 2' finer grained				
5									
10									
15									
20									

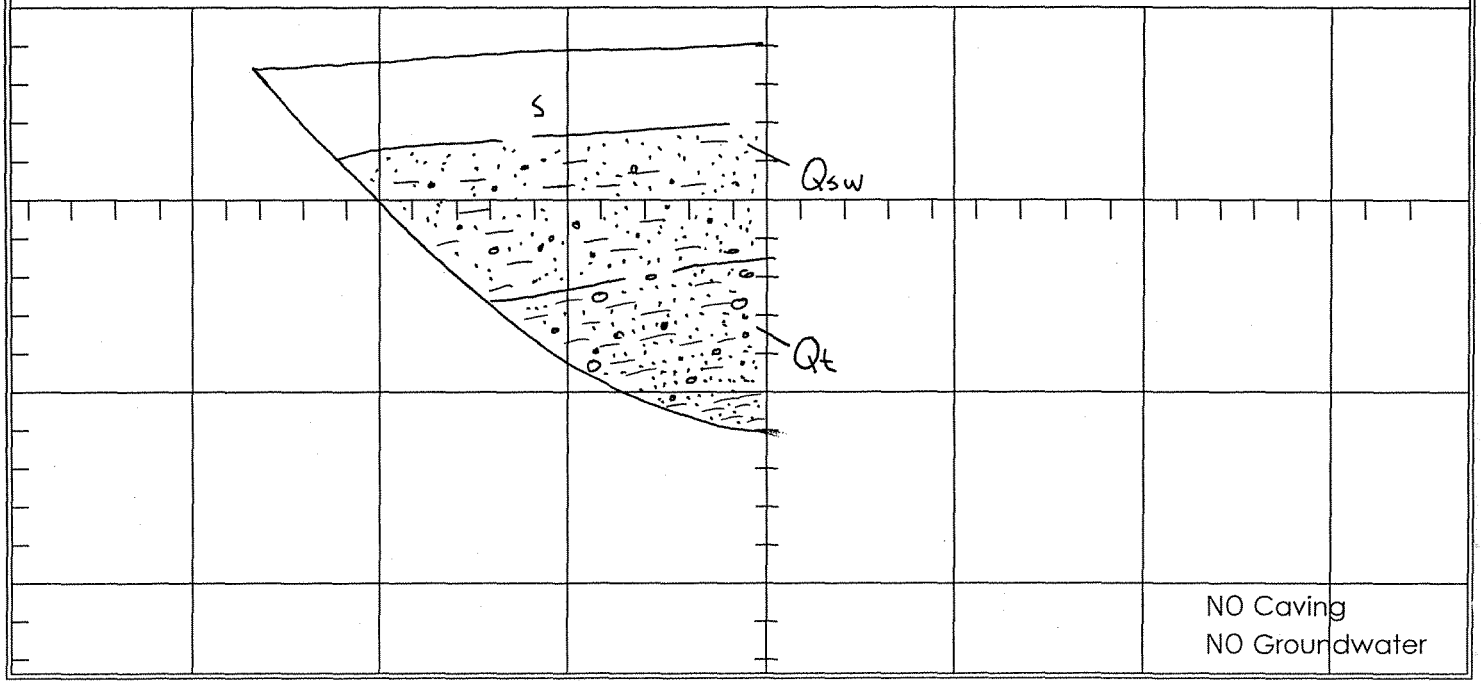
TOTAL DEPTH: 7.5 feet N40E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-8B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1162	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL; (0-2 ft.)** @ 0' Medium- to grayish-brown sandy silt with scattered pebbles; firm; dry to damp **SLOPEWASH; Qsw, (2-7 ft.)** @ 2' Reddish- to medium-brown pebbly silty sand/sandy silt with scattered cobbles; moderately dense; damp; friable				
5					**QUATERNARY TERRACE DEPOSITS; Qt, (7-10 ft.)** @ 7' Orangish- to grayish-brown pebbly silty sand and silt; dense; damp; friable	B:N61W,6NE			
10									
15									
20									

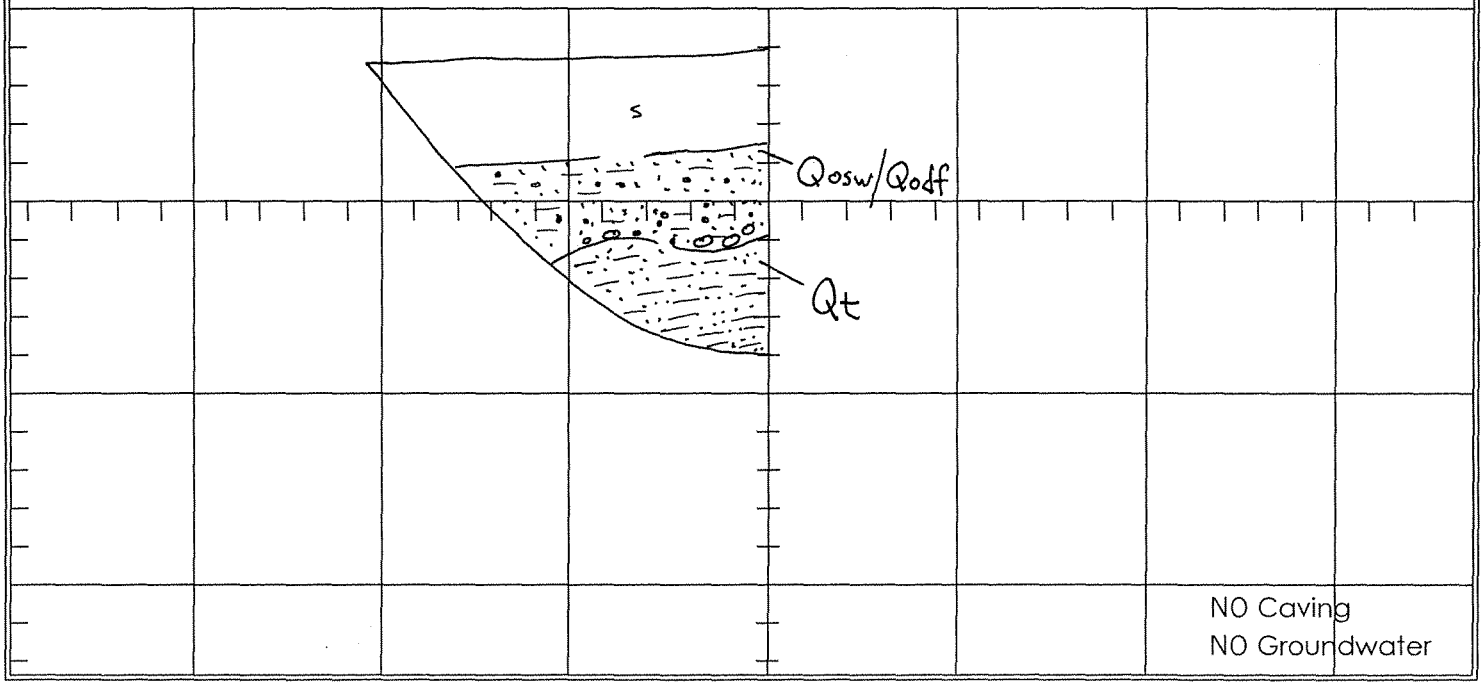
TOTAL DEPTH: 10 feet ←N44E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-9B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1129	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL; (0-2.5 ft.)** @ 0' Medium- to light-brown pebbly sandy silt with clay; firm to stiff; damp **OLDER SLOPEWASH/OLDER DEBRIS FLOW; Qosw/ Qodf, (2.5-5 ft.)** @ 2.5' Orangish-brown pebbly silty sand/sandy silt; dense to very dense; damp **QUATERNARY TERRACE DEPOSITS; Qt, (5-8 ft.)** @ 5' Medium- to grayish-brown silt; moderately dense to dense; damp COMMENTS: -Contacts are gradational				
5									
10									
15									
20									

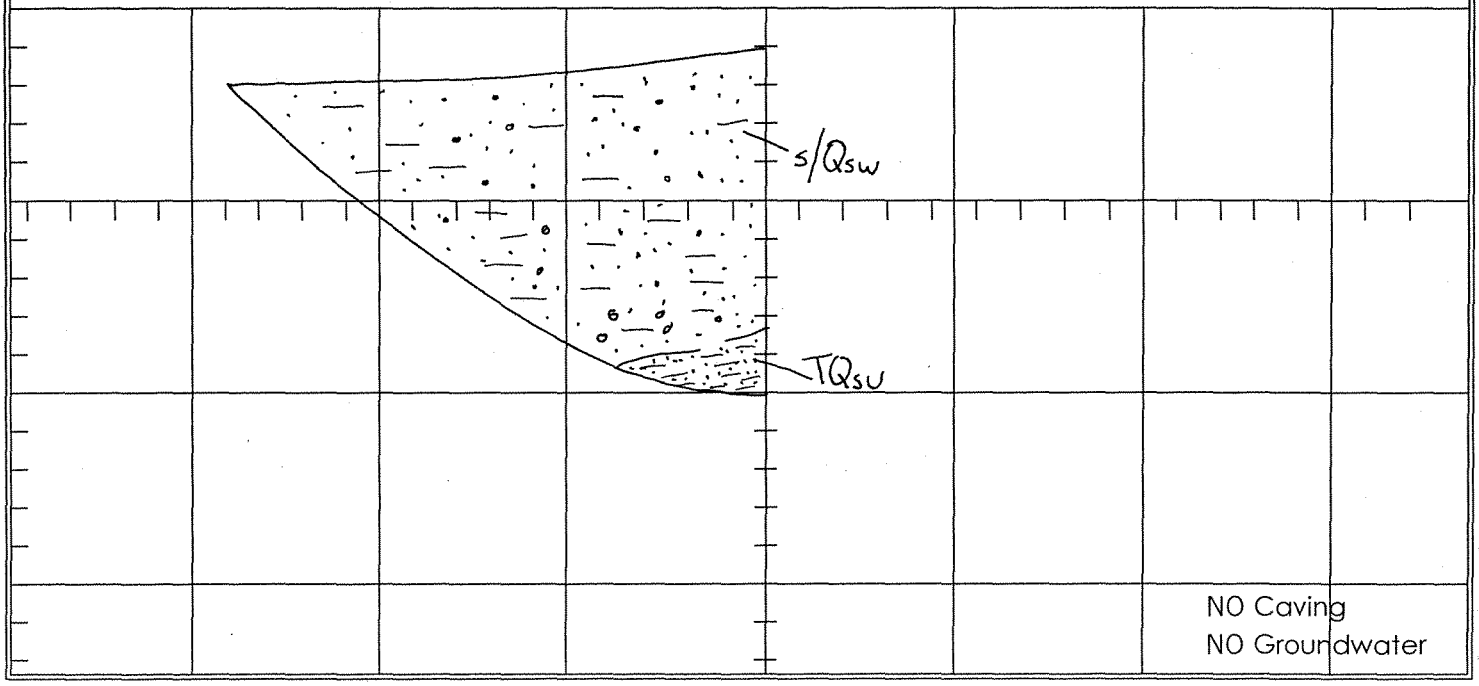
TOTAL DEPTH: 8 feet ←N36E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-10B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1161	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-7.5 ft.)** @ 0' Medium- to grayish-brown sandy silt with scattered pebbles; firm to stiff; dry to damp; voids to 1/4" diameter				
5					**BEDROCK; TQsu, (7.5-9 ft.)** @ 7.5' Pale yellowish- to grayish-brown siltstone; moderately hard but punky; damp				
10									
15									
20									

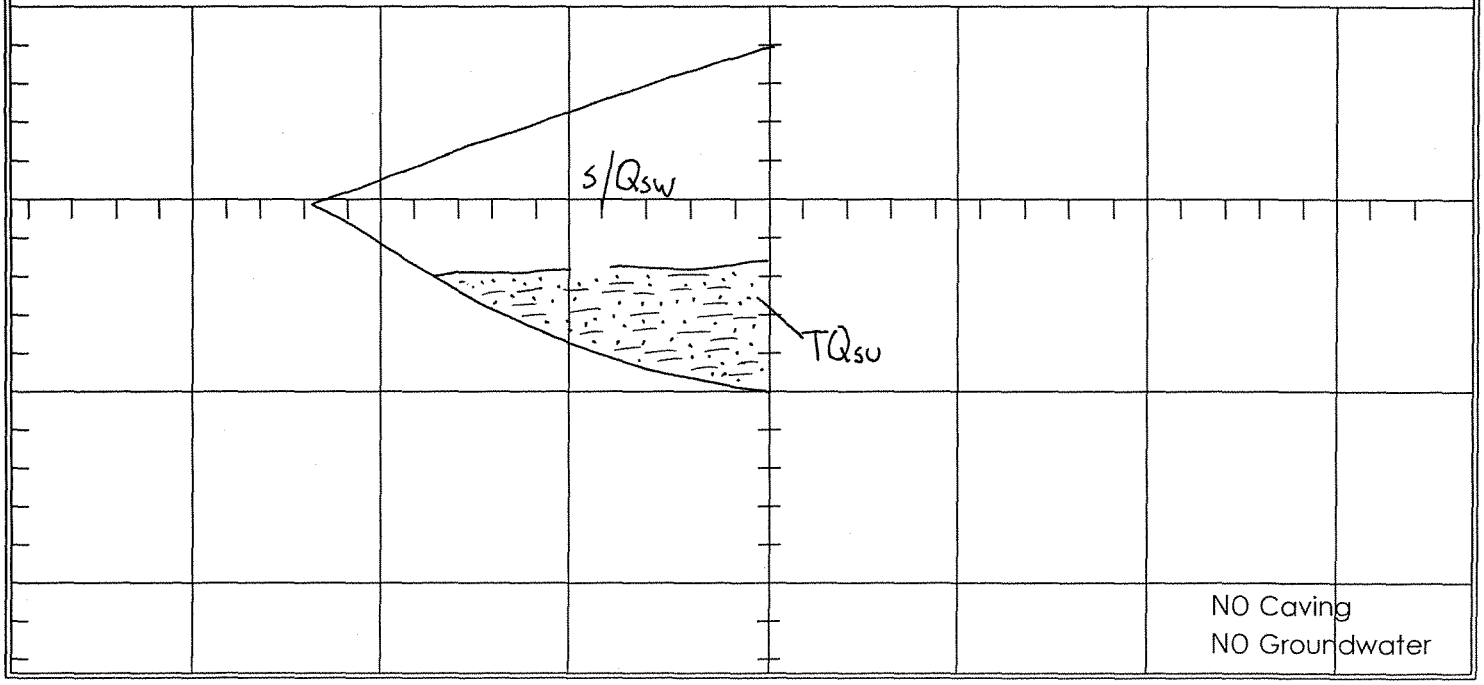
TOTAL DEPTH: 9 feet ←N32E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-11B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1150	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-6.5 ft.)** @ 0' Medium- to grayish-brown silt to sandy silt with scattered pebbles and one 2"-thick coarse-grained sandy lens; stiff; damp				
5					**BEDROCK; TQsu, (6.5-9 ft.)** @ 6.5' Pale yellowish- to grayish-brown siltstone; moderately hard; damp; caliche surfaces				
10									
15									
20									

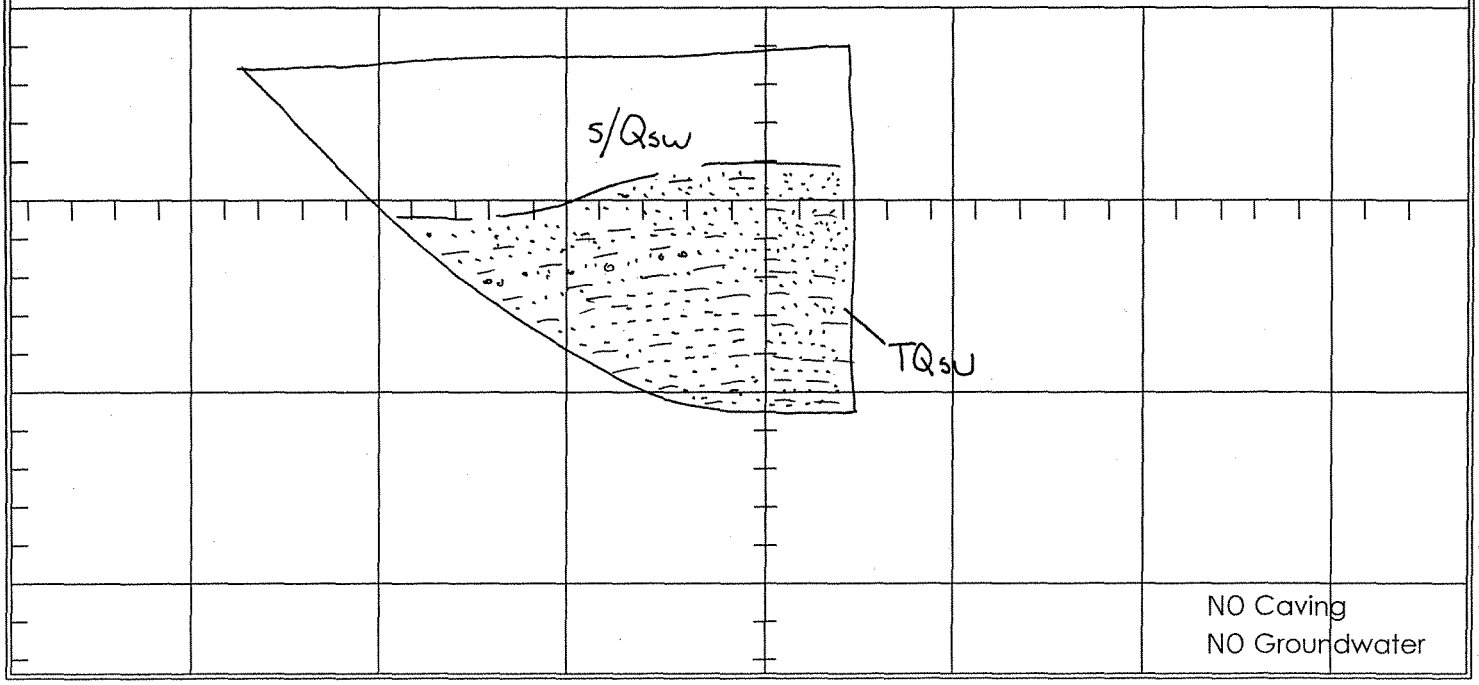
TOTAL DEPTH: 9 feet ←N18W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-12B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1133	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-3 ft.)** @ 0' Medium- to grayish-brown pebbly sandy silt with scattered cobbles; firm; damp				
					BEDROCK; TQsu, (3-9.5 ft) @ 3' Medium- to grayish-brown pebbly sandy siltstone/silty sandstone; dense; damp; moderately friable	B:N45W,13NE			
5									
10									
15									
20									

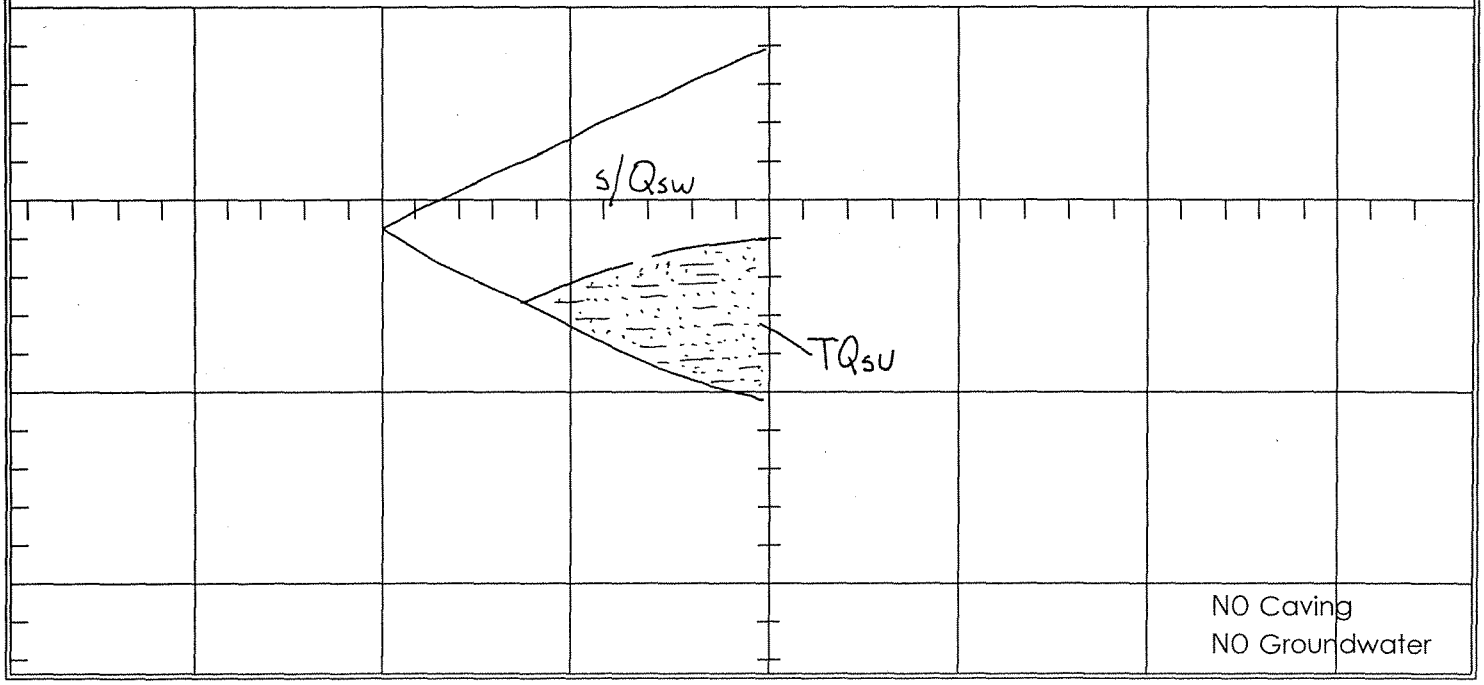
TOTAL DEPTH: 9.5 feet ←N55E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-13B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/11/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1095	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-5 ft.)** @ 0' Medium- to grayish-brown sandy silt with scattered pebbles and cobbles; firm; dry to damp; caliche surfaces				
5					**BEDROCK; TQsu, (5-9 ft.)** @ 5' Medium- to grayish-brown siltstone; moderately hard; damp; caliche surfaces; bedding is massive				
10									
15									
20									

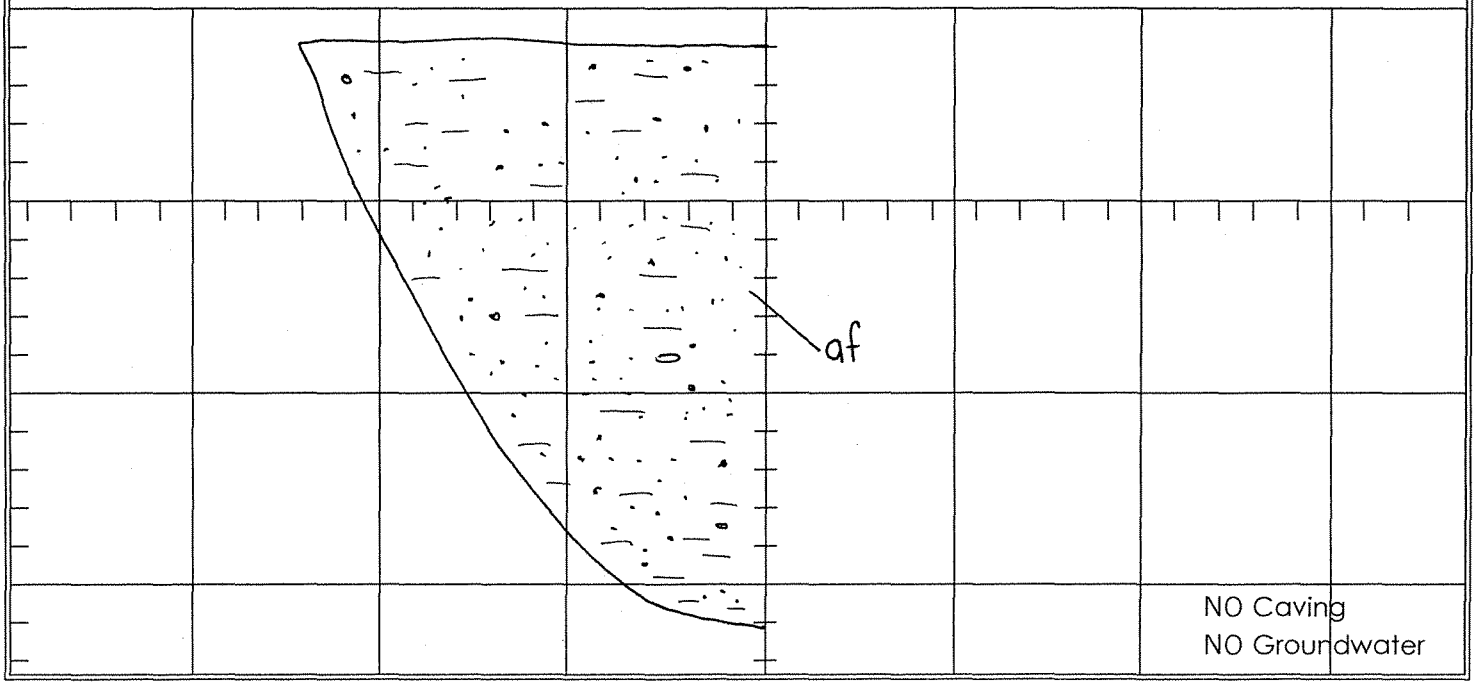
TOTAL DEPTH: 9 feet N44E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-14B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1274	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**ARTIFICIAL FILL; af, (0-16 ft.)** @ 0' Medium- to grayish-brown silt to silty sand/sandy silt; firm; damp; scattered pebbles and a few cobbles				
5									
10									
15					NOTE: Pits 14B through 32B excavated at Exxon Mesa and vicinity. COMMENTS: -Surface logged due to depth -Possible buried soil at 14 ft.				
20									

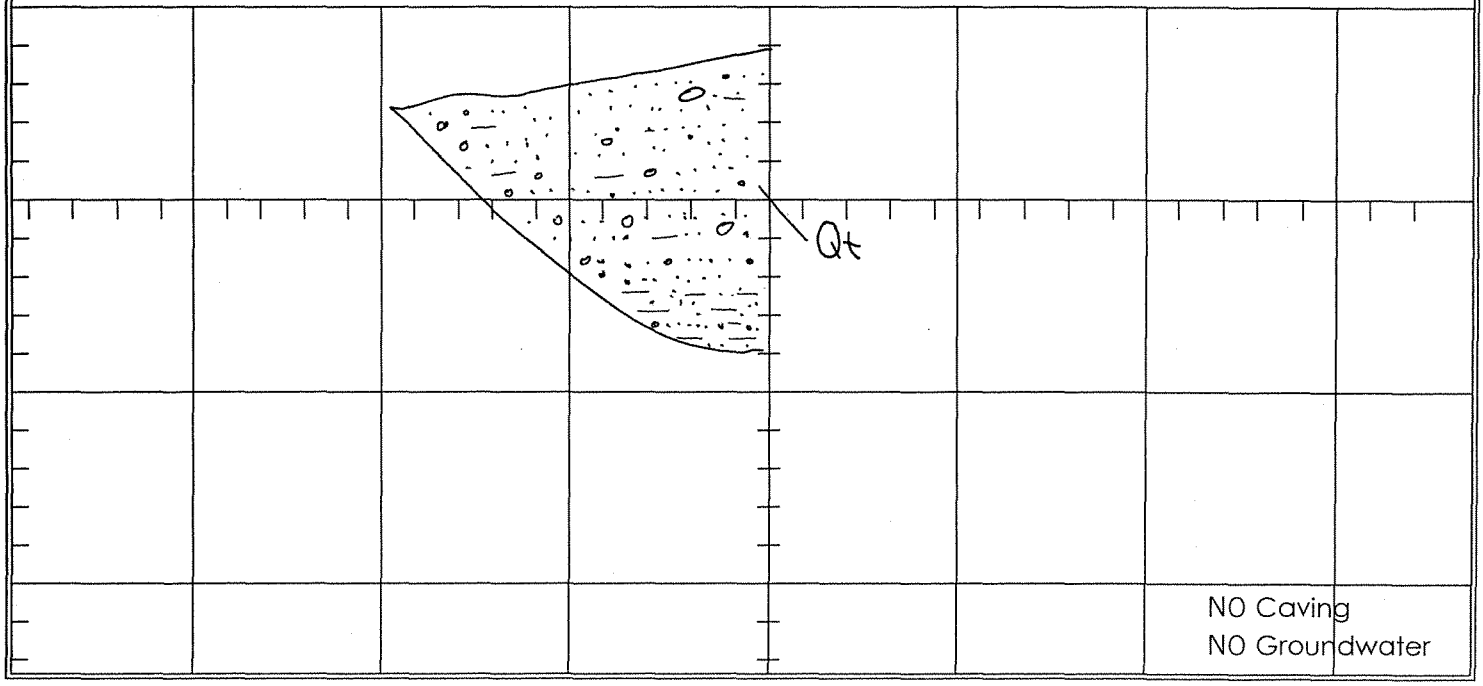
TOTAL DEPTH: 16 feet N65W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-15B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1123	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**QUATERNARY TERRACE DPEOSITS; Qt, (0-8 ft.)** @ 0' Medium- to grayish-brown cobbly pebbly silty sand/ sandy silt; dense; damp; friable; bottom 1.5' finer grained	Apx.B: Horizontal			
5									
10									
15									
20									

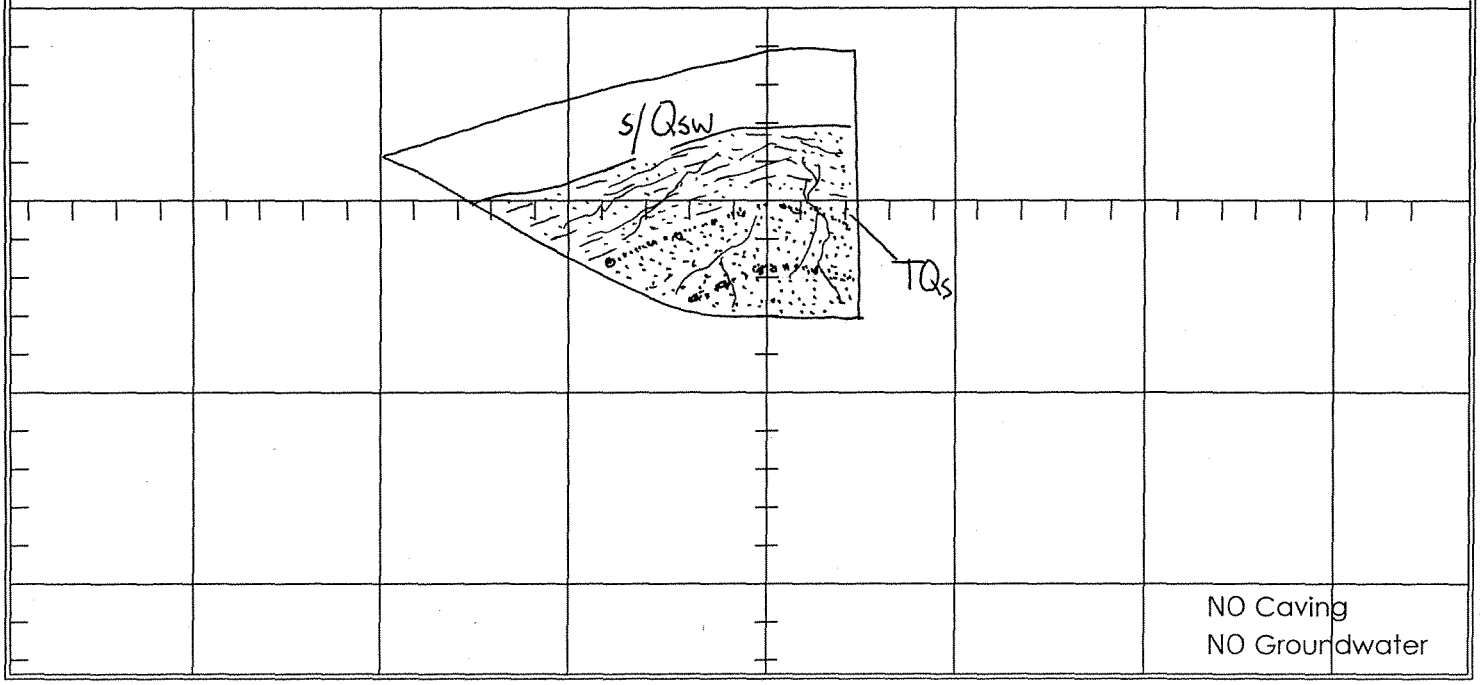
TOTAL DEPTH: 8 feet N16W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-16B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1080	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-2 ft.)** @ 0' Medium-brown sandy silt with scattered pebbles and cobbles; firm; dry to damp; voids **BEDROCK; TQs, (2-7 ft.)** @ 2' Medium-brown siltstone; moderately hard; damp; moderately fractured; caliche surfaces; and light-gray fine-grained sandstone and fine- to coarse-grained sandstone; moderately hard; damp; moderately fractured	B:N88W,28SW			
5									
10									
15									
20									

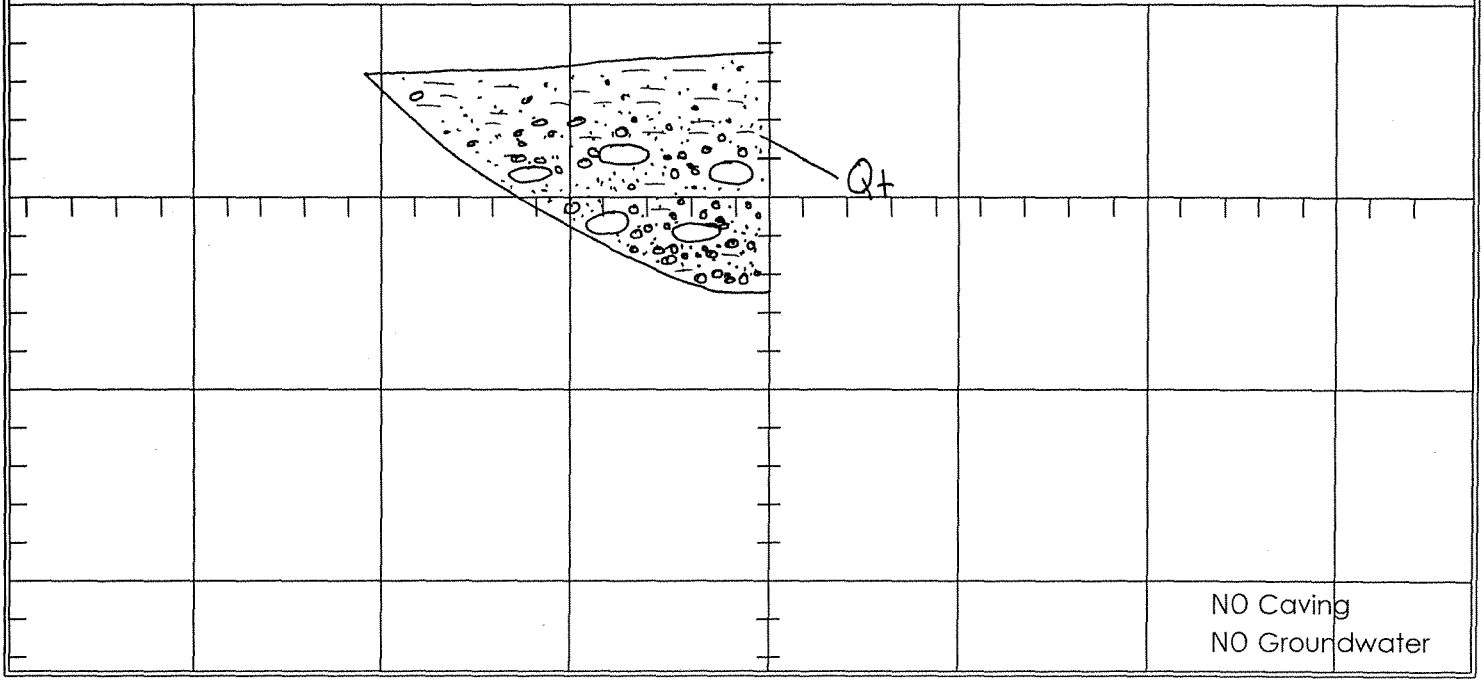
TOTAL DEPTH: 7 feet N13E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-17B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1088	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**QUATERNARY TERRACE DEPOSITS; Qt, (0-6.5 ft.)** @ 0' Slightly orangish- to grayish-brown, cobbly pebbly silty sand with boulders; loose to firm; dry to damp; very friable; upper 1' finer-grained; 25-30% cobble- to boulder-size clasts in lower 4 ft.; locally clast supported				
5									
10									
15									
20									

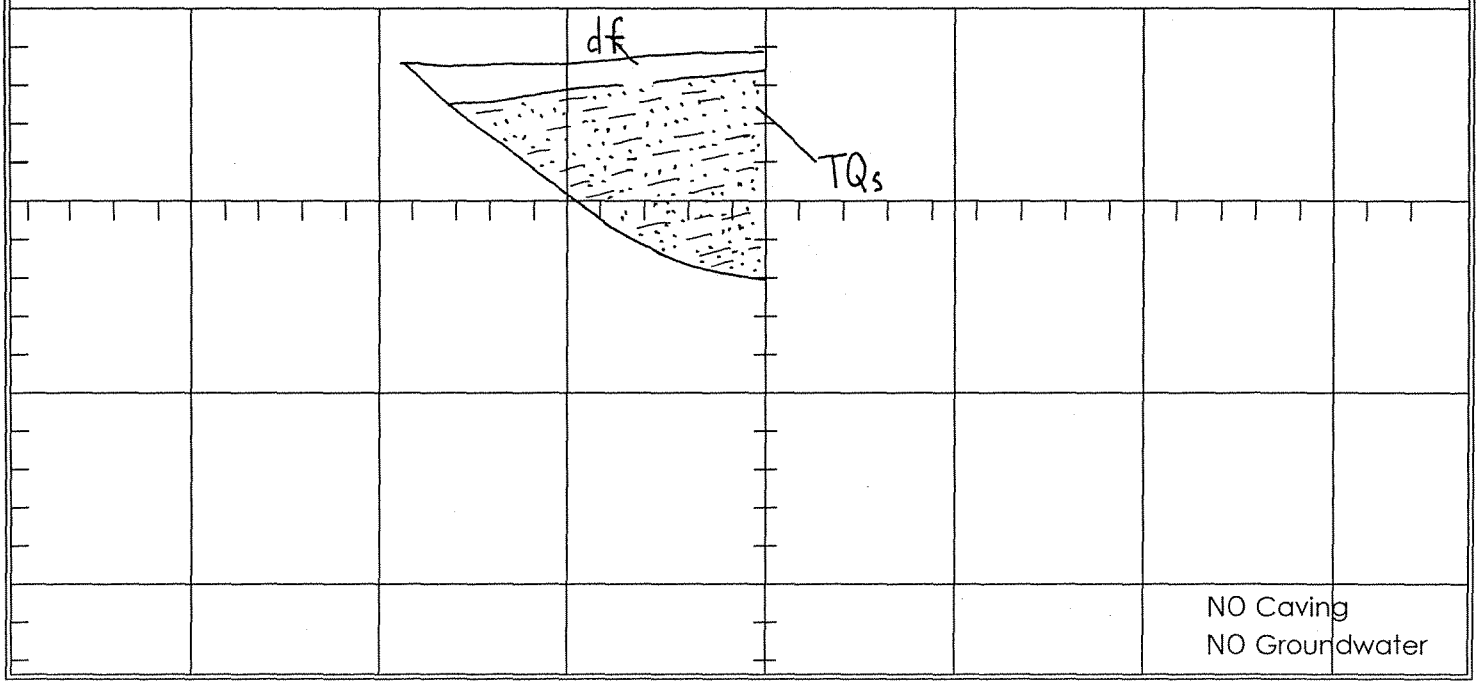
TOTAL DEPTH: 6.5 feet N23W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-18B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1084	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**DUMPED FILL; df, (0-8")** @ 0' Orangish- to grayish-brown pebbly silty sand; loose to firm; damp **BEDROCK; TQs, (8"-6 ft.)** @ 8" Medium-gray to medium-brown siltstone to slightly sandy siltstone; moderately hard; damp				
5									
10									
15									
20									

TOTAL DEPTH: 6 feet N21W→ SCALE: 1 inch = 5 feet

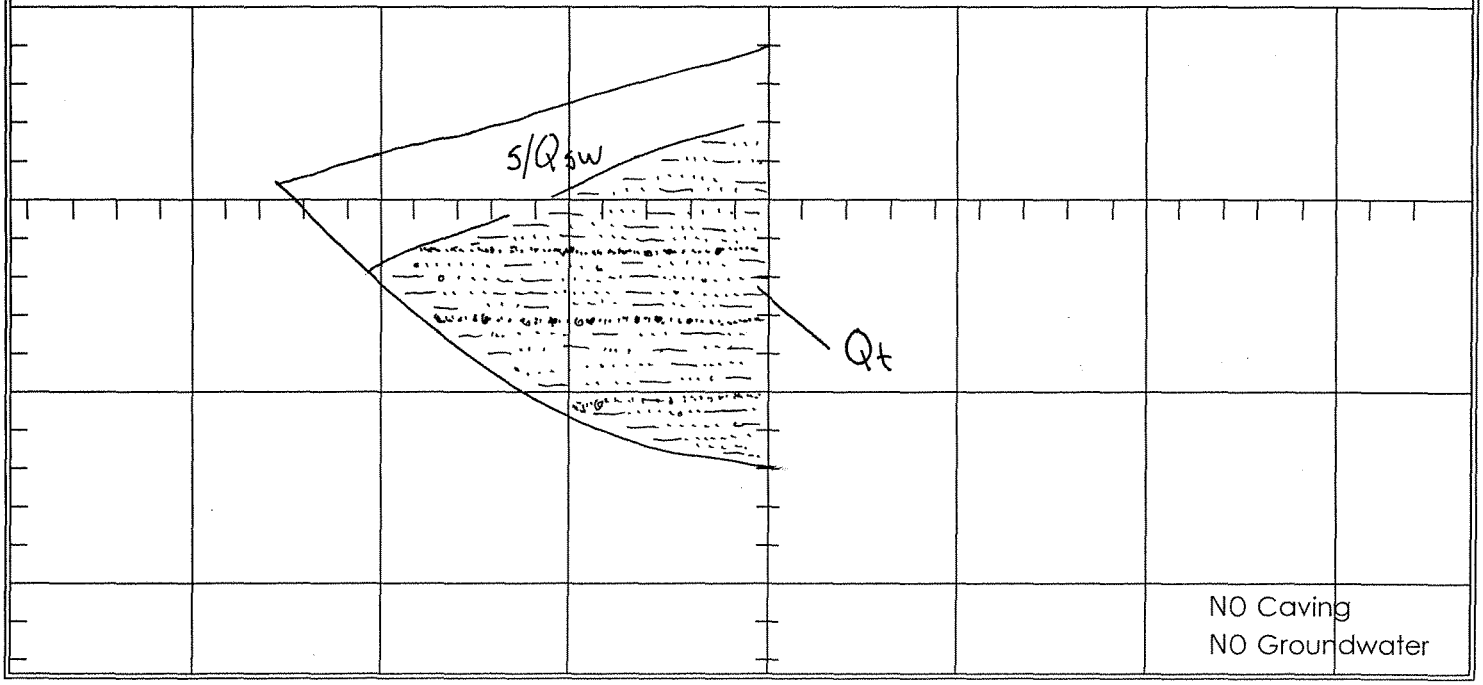


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-19B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1101	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-2.5 ft.)** @ 0' Medium-brown silt; firm; dry to damp; many voids **QUATERNARY TERRACE DEPOSITS; Qt, (2.5-11 ft.)** @ 2.5' Grayish- to medium-brown interbedded silt, sandy silt and fine-grained sand with scattered pebbles; moderately dense; damp; local burrows	Apx.B: Horizontal			
5									
10									
15									
20									

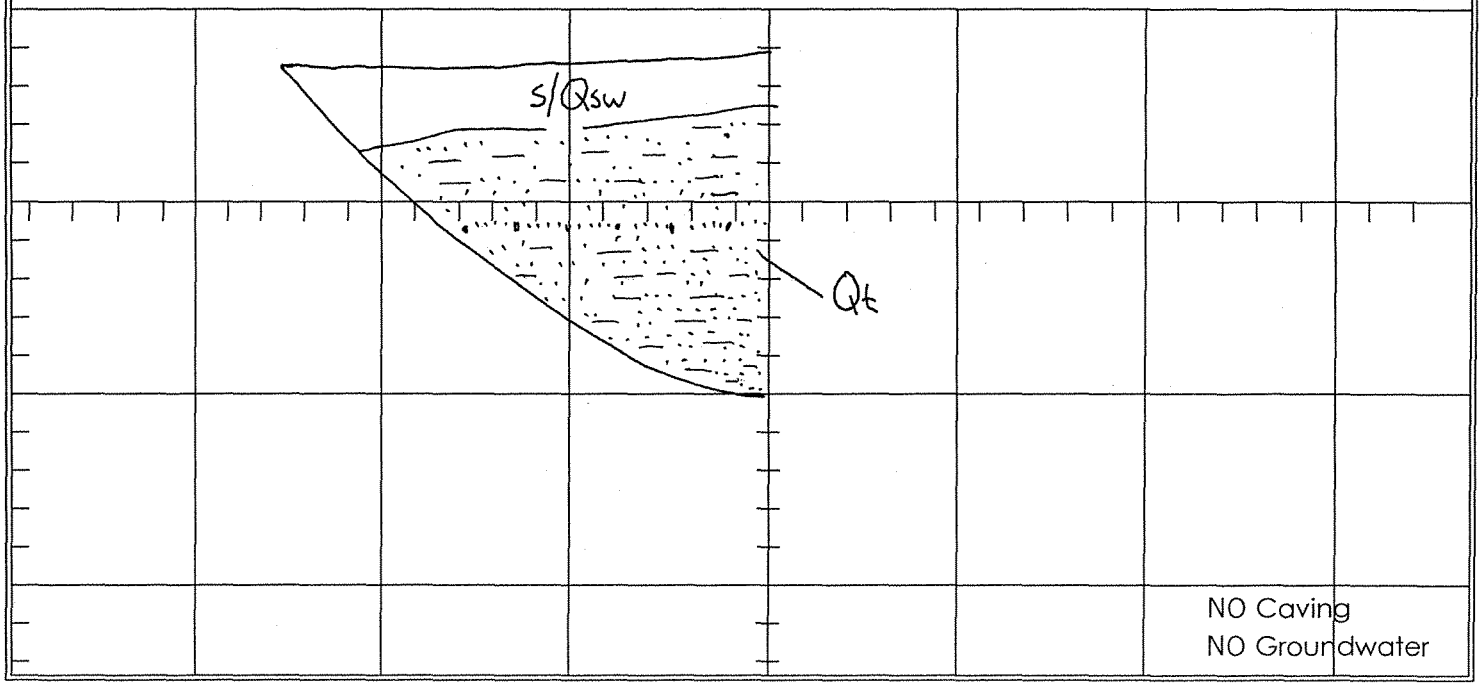
TOTAL DEPTH: 11 feet ←N80W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-20B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1120	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-1.5 ft.)** @ 0' Medium-brown sandy silt; firm; dry to damp; voids **QUATERNARY TERRACE DEPOSITS; Qt, (1.5-9 ft.)** @ 1.5' Medium- to grayish-brown interbedded silt; sandy silt; and fine-grained sand with pebbles; moderately dense; damp; local burrows	Apx.B: Horizontal			
5									
10									
15									
20									

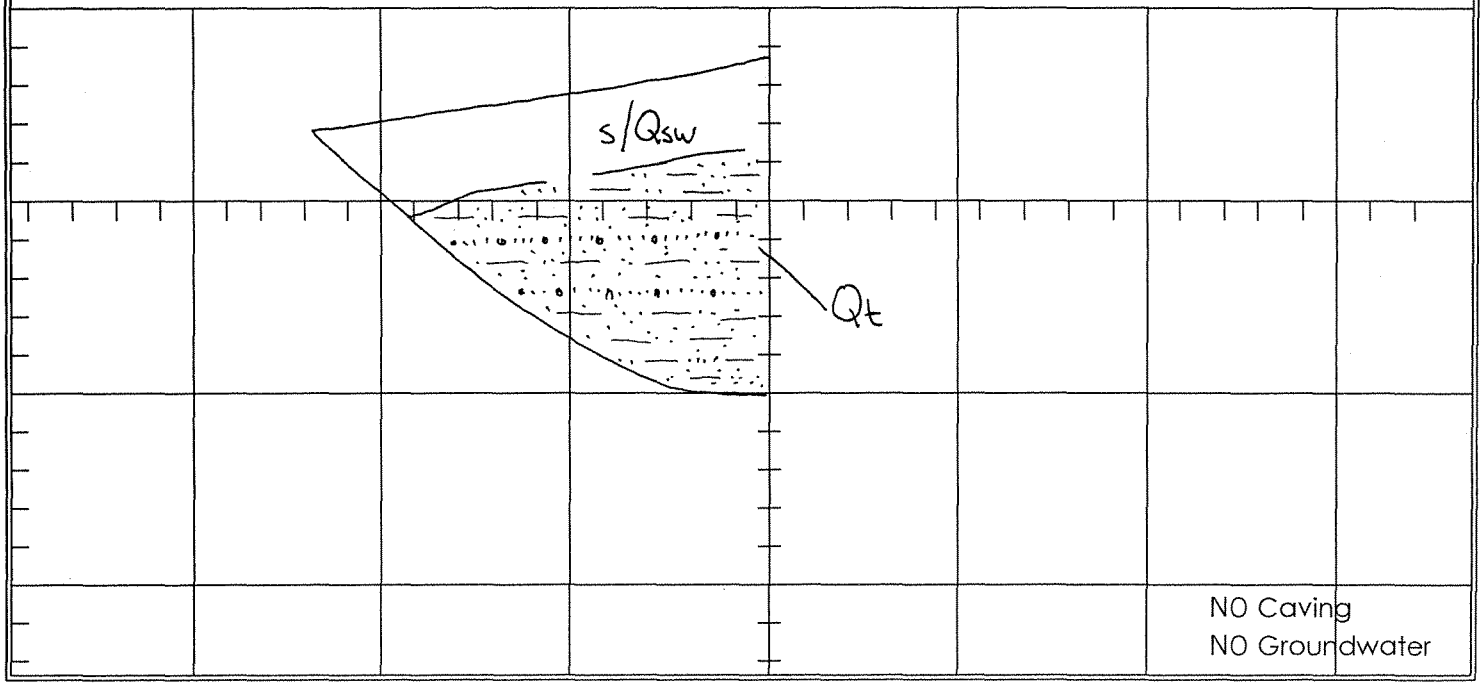
TOTAL DEPTH: 9 feet ←N12E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-21B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1106	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-2.5 ft.)** @ 0' Medium-brown sandy silt; firm; dry to damp; voids				
					QUATERNARY TERRACE DEPOSITS; Qt, (2.5-9 ft.) @ 2.5' Medium- to grayish-brown interbedded silt, sandy silt and fine-grained sand with pebbles; moderately dense; damp; local burrows	B:Horizontal			
5									
10									
15									
20									

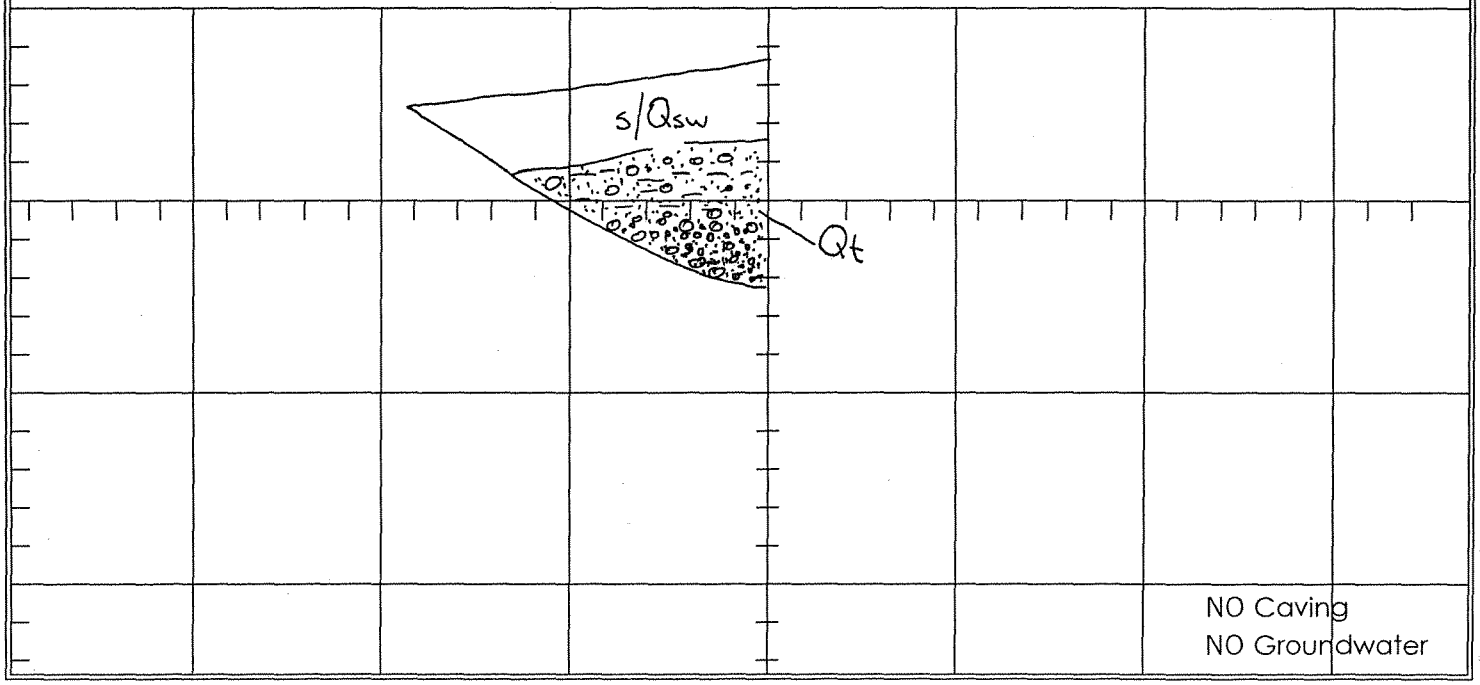
TOTAL DEPTH: 9 feet ←N5E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-22B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1089	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-2.5 ft.)** @ 0' Medium-brown sandy silt; firm; damp; numerous voids **QUATERNARY TERRACE DEPSOSITS; Qt, (2.5 6 ft.)** @ 2.5' Medium- to grayish-brown pebbly silty sand with cobbles and boulders; loose to firm; damp; friable; 10% of clasts cobble-sized or larger COMMENTS: -East wall possibly creep affected	B: Horizontal			
5									
10									
15									
20									

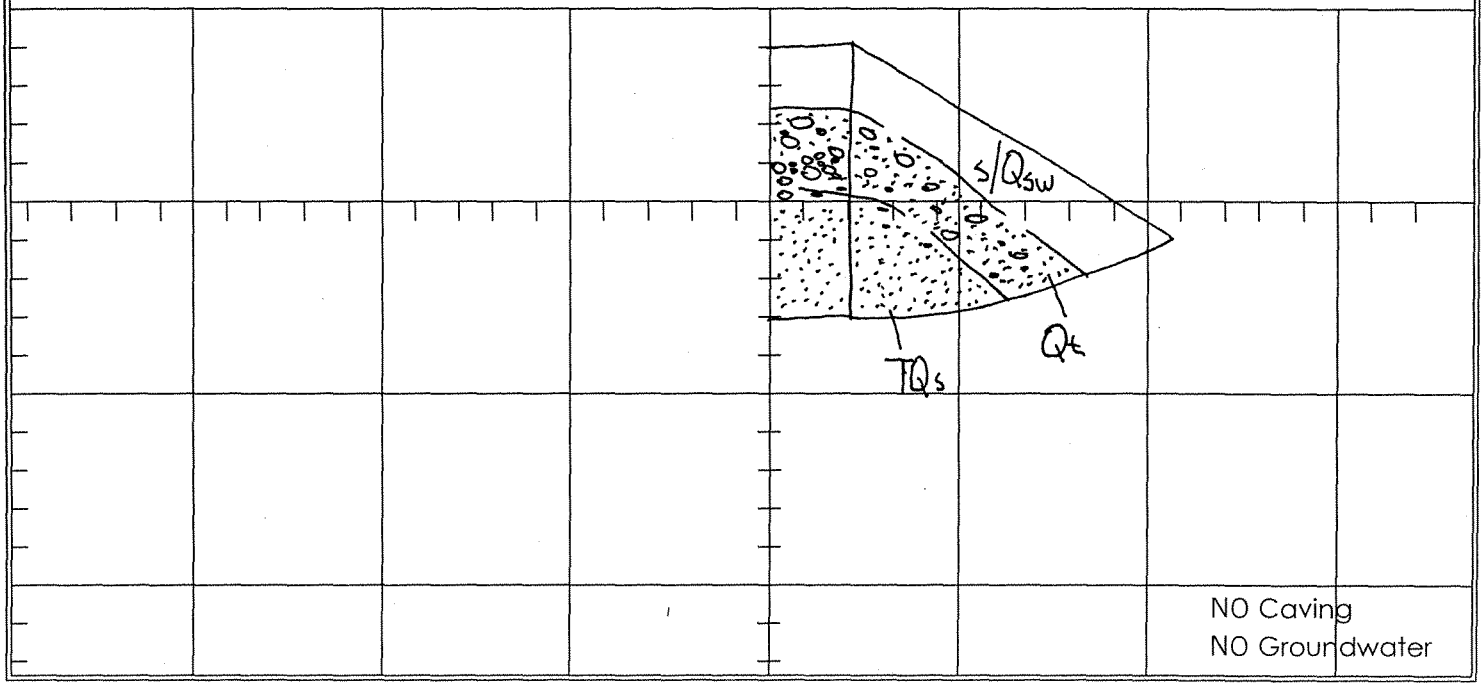
TOTAL DEPTH: 6 feet ←N5E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-23B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1068	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-1.5 ft.)** @ 0' Medium-brown sandy silt with scattered pebbles; firm; dry to damp; numerous voids **QUATERNARY TERRACE DEPOSITS; Qt, (1.5-4 ft.)** @ 1.5' Orangish- to grayish-brown pebbly cobbly silty sand with boulders; loose; damp; 20% of clasts cobble-sized or larger **BEDROCK; TQs; (4-7 ft.)** @ 4' Light-gray, fine- to medium-grained sandstone; dense; damp; slightly friable; bedding is massive COMMENTS: -Upper 4' creep affected				
5									
10									
15									
20									

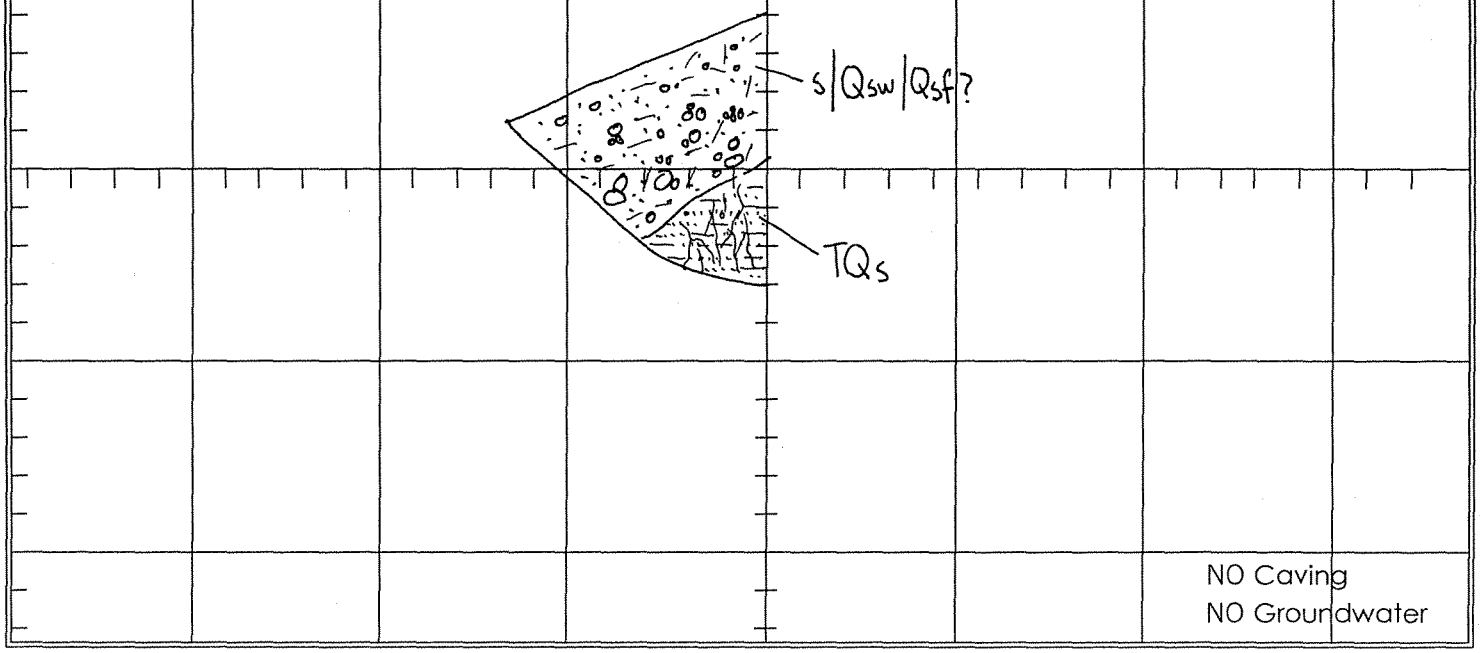
TOTAL DEPTH: 7 feet N42W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-24B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1070	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH/SURFICIAL FAILFURE?; Soil/Qsw/ Qsf?, (0-4 ft.)** @ 0' Medium-brown pebbly cobbly sandy silt with boulders; loose to firm; dry to damp				
5					**BEDROCK; TQs, (4-7 ft.)** @ 4' Light-gray to grayish-brown sandy siltstone/silty sandstone; moderately hard; damp; mooderately fractured, caliche surfaces; bedding is massive				
10					COMMENTS: -Upper 4' chaotic assemblage no stratification; basal Qt layer probably just up slope				
15									
20									

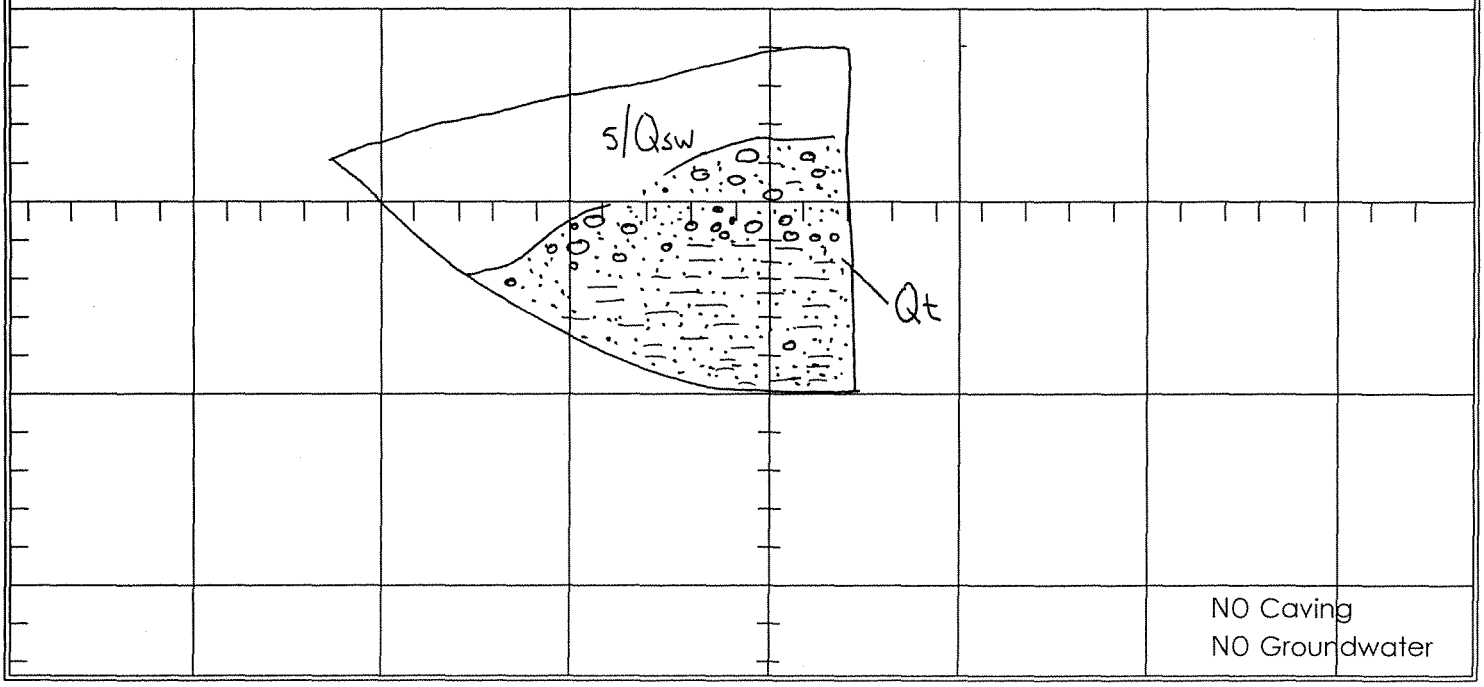
TOTAL DEPTH: 7 feet N35E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 02-1703B-1	**TRENCH LOG NO. T-25B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 9/12/02	
	LOGGED BY: DGG	
	EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket	ELEVATION: 1086	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-2.5 ft.)** @ 0' Medium-brown sandy silt with pebbles; firm; dry to damp; some voids **QUATERNARY TERRACE DEPOSITS; Qt, (2.5-9 ft.)** @ 2.5' Medium- to grayish-brown cobbly pebbly silty sand; loose to moderately dense to dense; damp; friable @ 5' Medium- to grayish-brown silt to silty sand; moderately dense to dense; damp; 1 cobble; friable COMMENTS: -Qt creep affected	B: Horizontal			
5									
10									
15									
20									

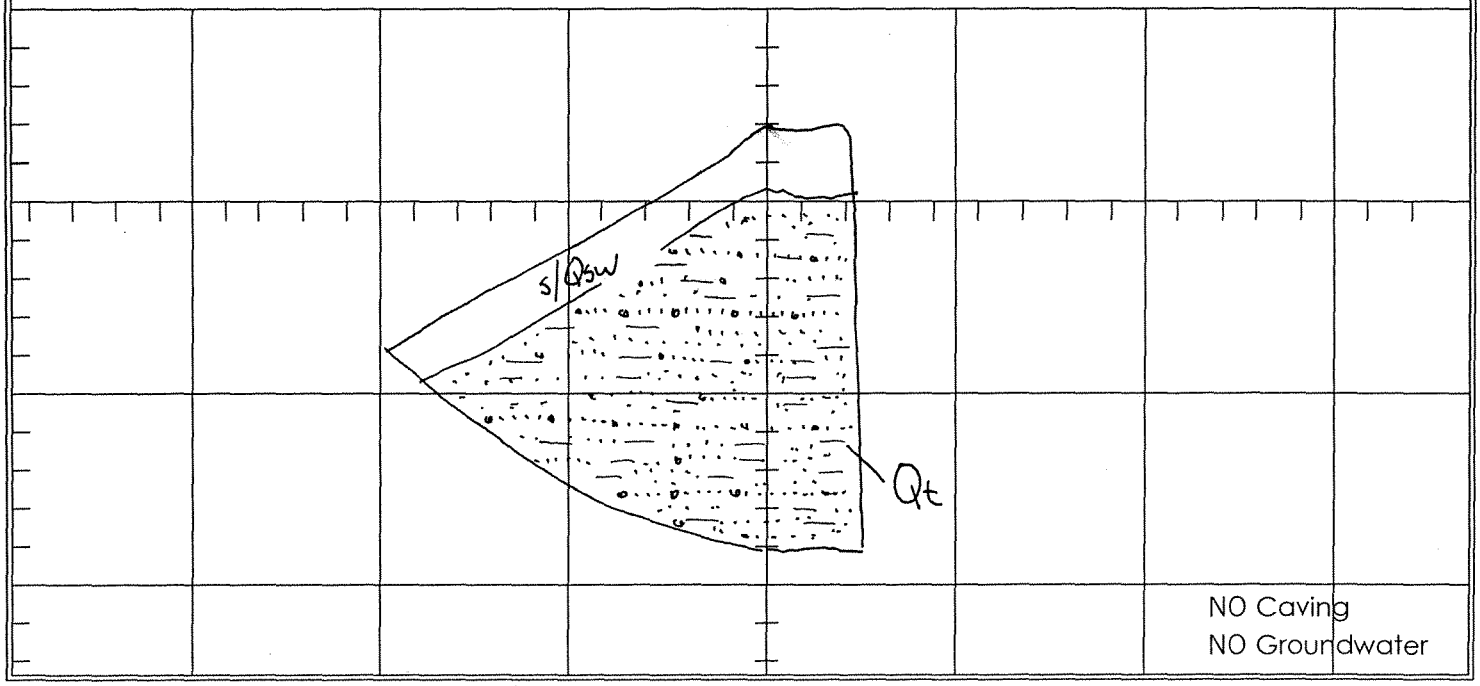
TOTAL DEPTH: 9 feet N33W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-26B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1180	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-4.5 ft.)** @ 0' Medium-brown sandy silt with scattered pebbles; firm; dry to damp; numerous voids				
5					**QUATERNARY TERRACE DEPOSITS; Qt, (4.5-13 ft.)** @ 4.5' Medium- to grayish-brown silt; silty sand and pebbly sand; moderately dense to dense; damp; friable	Apx.B: Horizontal			
10									
15									
20									

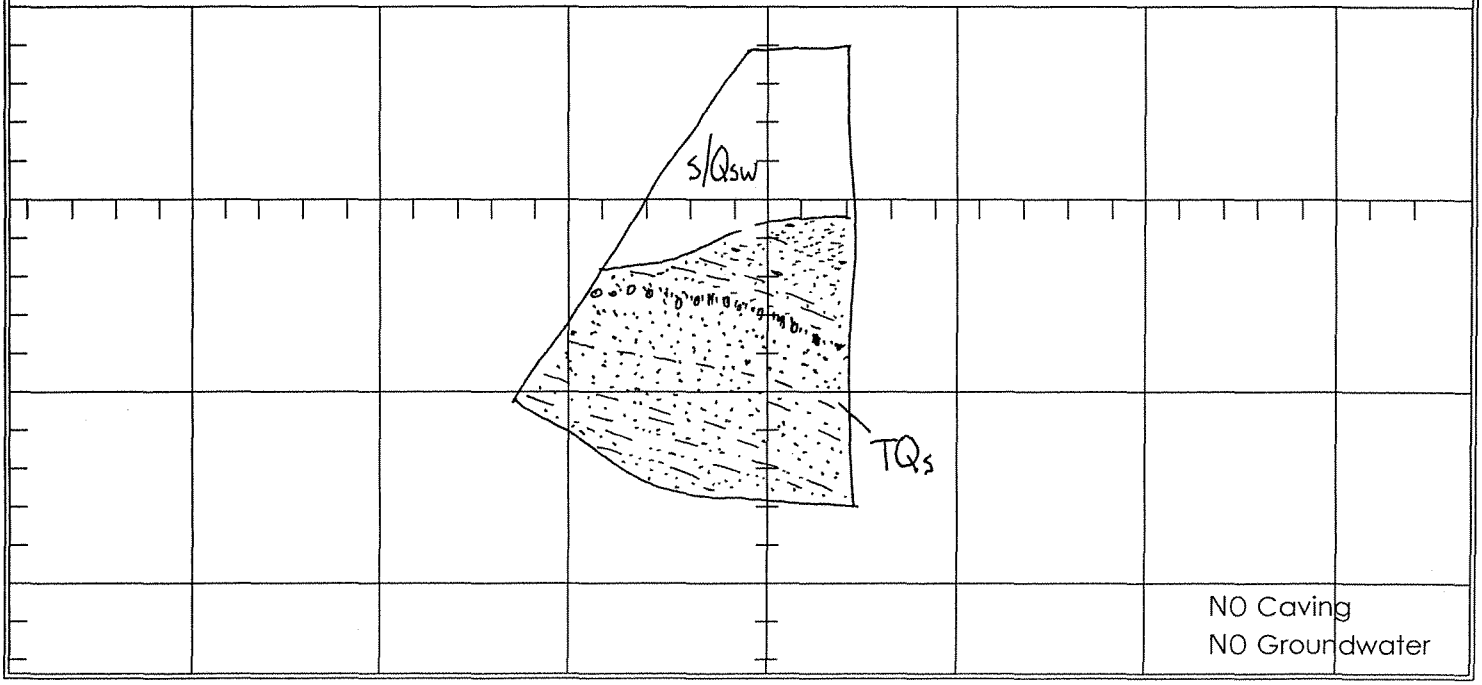
TOTAL DEPTH: 13 feet ←N10W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 02-1703B-1	**TRENCH LOG NO. T-27B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 9/12/02	
	LOGGED BY: DGG	
	EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket	ELEVATION: 1220	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-4.5 ft.)** @ 0' Pale orangish- to grayish-brown sandy silt with pebbles and cobbles; firm; dry to damp				
5					**BEDROCK; TQs, (4.5-12 ft.)** @ 4.5' Light-gray to grayish-brown siltstone, silty sandstone and pebbly sandstone with some cobbles; moderately hard; damp	B:N15W,25NE			
10									
15					COMMENTS: -TQs creep affected?				
20									

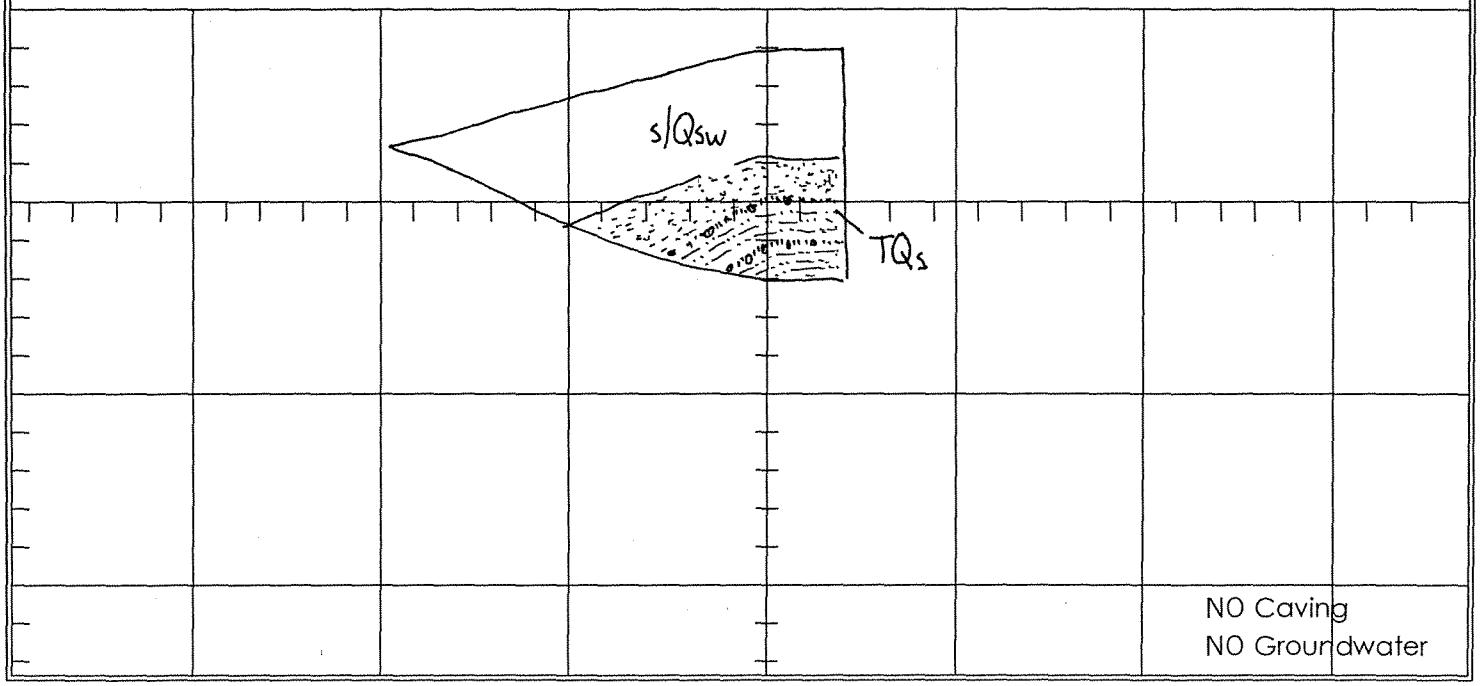
TOTAL DEPTH: 12 feet N10W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-28B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: DGG	
		EXCAVATED: 2/12/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1271	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw, (0-3 ft.)** @ 0' Medium-brown sandy silt; firm; dry to damp				
					BEDROCK; TQs, (3-6 ft.) @ 3' Light-gray siltstone, silty sandstone and pebbly sandstone; moderately hard to hard; damp; some fractures	B:N45W,25NE			
5									
10									
15									
20									

TOTAL DEPTH: 6 feet ←N48E SCALE: 1 inch = 5 feet

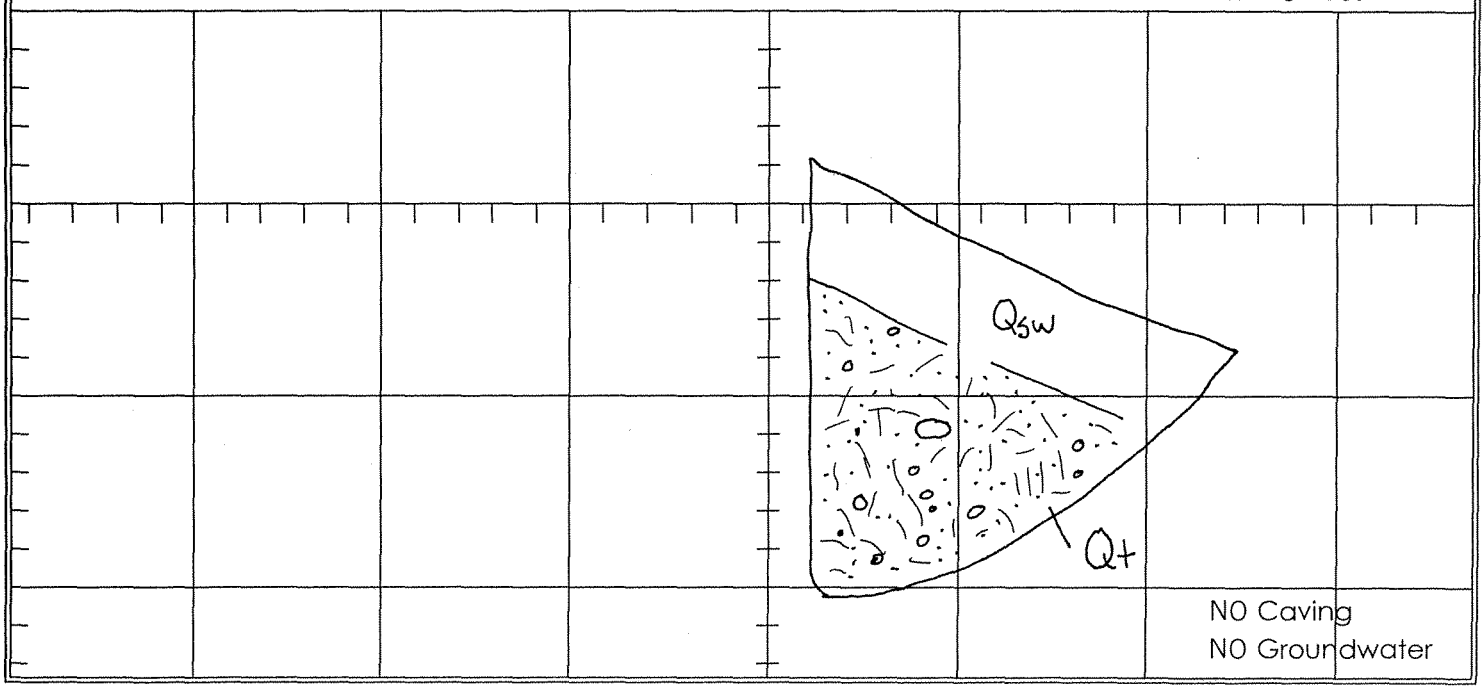


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-29B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: MJD	
		EXCAVATED: 3/19/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1195	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw, (0-3 ft.)** @ 0' Light-brown silty sand to sandy silt with pebbles and cobbles; soft; dry to damp; roots and voids **QUATERNARY TERRACE DEPOSITS; Qt, (3-11 ft.)** @ 3' Yellowish-brown, light-brown and medium-brown sandy silt to silty sand and silt with pebbles and cobbles; loose to dense; damp; heavily weathered and fractured; siltstone clasts; caliche rich; no bedding; roots to 10'				
5									
10									
15					COMMENTS: -Highly weathered to bottom of trench; digs soft				
20									

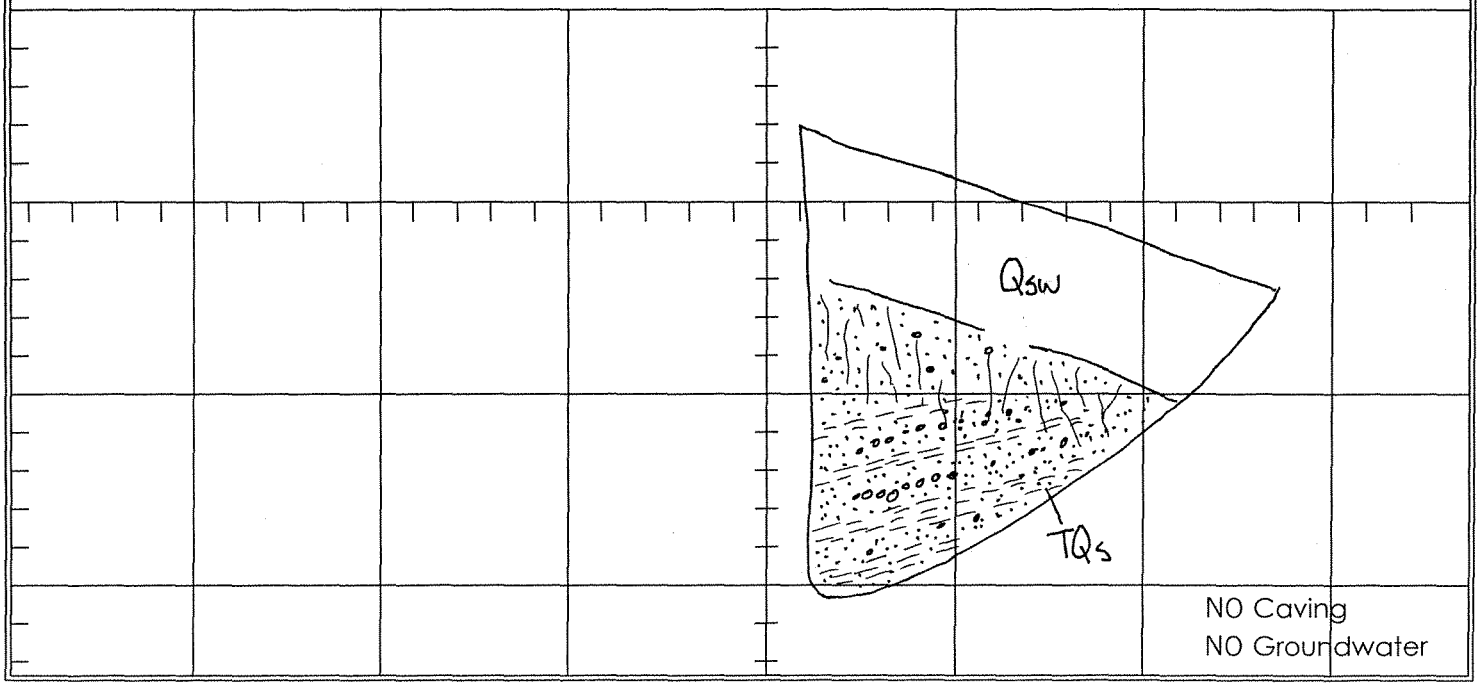
TOTAL DEPTH: 11 feet ←N15W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 02-1703B-1	**TRENCH LOG NO. T-30B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas	DATE: 9/12/02	
	LOGGED BY: MJD	
	EXCAVATED: 3/19/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket	ELEVATION: 1150	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw, (0-4 ft.)** @ 0' Light-brown pebbly silty sand; loose; dry to slightly damp; cobbles up to 10" in diameter; roots to 5'				
5					**BEDROCK; TQs, (4-12 ft.)** @ 4' Yellowish-gray sandstone and brown siltstone with local pebble lenses; moderately hard to hard; slightly damp; caliche rich; well-bedded	B:N65W,21NE			
10									
15					COMMENTS: -Highly weathered to 7 ft.				
20									

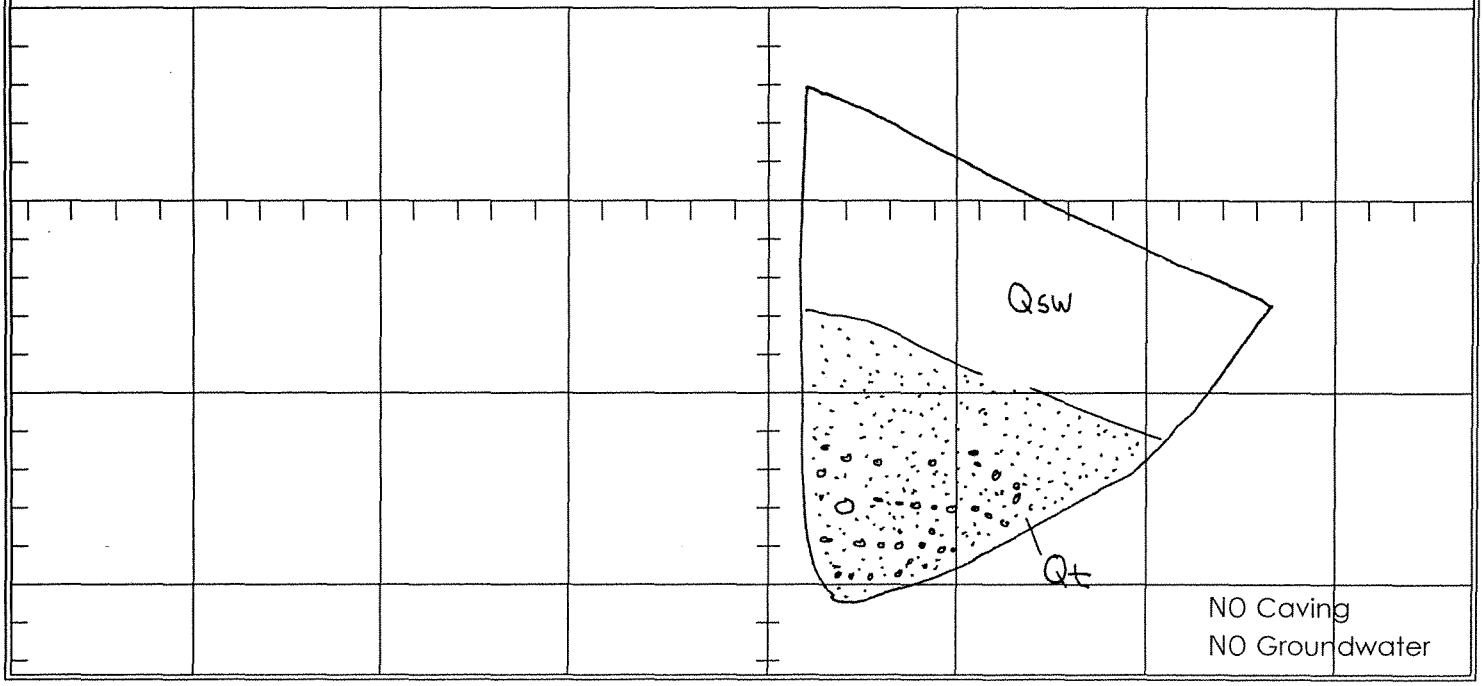
TOTAL DEPTH: 12 feet ←N8E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-31B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: MJD	
		EXCAVATED: 3/19/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1114	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw, (0-6 ft.)** @ 0' Light-brown silty, pebbly, cobbly sand; loose; dry to slightly damp; roots; caliche rich				
5					**QUATERNARY TERRACE DEPOSITS; Qt, (6-13 ft.)** @ 6' Light yellowish-brown to yellowish-gray sand and pebbly sand with scattered cobbles; loose to moderately dense; locally friable; creep-affected; vaguely bedded; caliche rich	Apx.B: Horizontal			
10									
15					COMMENTS: -Highly weathered to 7 ft.				
20									

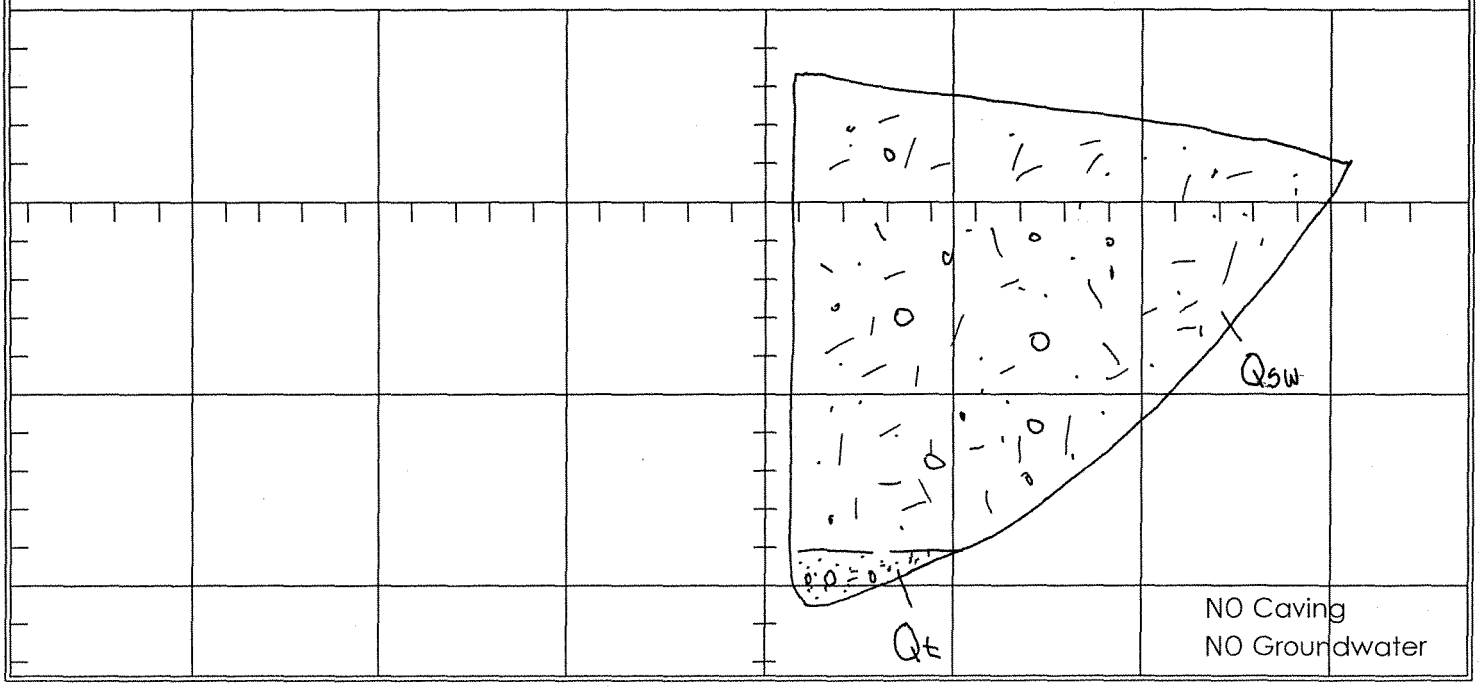
TOTAL DEPTH: 13 feet ←N60E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1703B-1	**TRENCH LOG NO. T-32B**
PROJECT: Cobble/Boulder Assessment Airport and Exxon Mesas		DATE: 9/12/02	
		LOGGED BY: MJD	
		EXCAVATED: 3/19/02	
EXCAVATION METHOD: Track-Mounted Backhoe w/24" Bucket		ELEVATION: 1087	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw, (0-12 ft.)** @ 0' Medium-brown silty pebbly, cobbly sand; loose to firm; dry to damp; holes and roots to 10'				
5									
10					**QUATERNARY TERRACE DEPOSITS; Qt, (12-13 ft.)** @ 12' Yellowish-brown pebbly cobbly sand; loose and friable; dry; no bedding				
15									
20									

TOTAL DEPTH: 13 feet ←N11E SCALE: 1 inch = 5 feet



JOB NO. 00-1155I-1

LOGGED BY MJD

PROJECT Newhall Ranch Infrastructure - Phase I

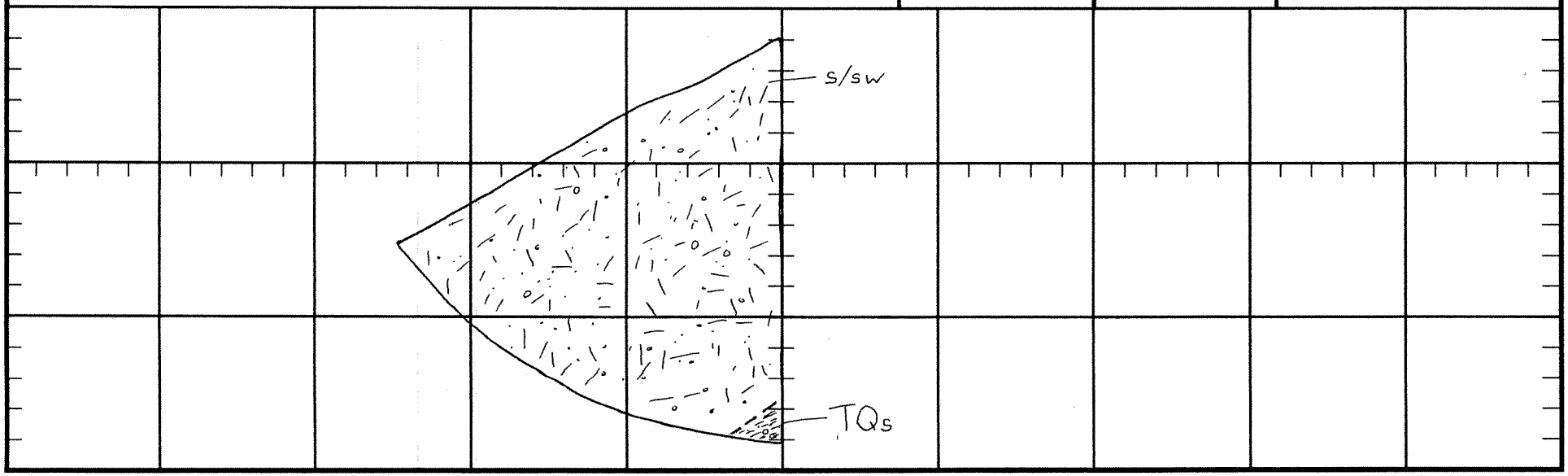
DATE

Trench Log No. T-42I

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 12' SOIL/SLOPEWASH; s/sw, Light to medium brown silt to sandy silt with scattered pebbles; soft to firm; dry to slightly damp 12 - 13' BEDROCK; TQs, Medium brownish-gray siltstone with few scattered pebbles/cobbles; moderately hard; slightly damp			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 1 W



ALLAN E. SEWARD

JOB NO. 00-1155I-1

LOGGED BY MJD

PROJECT Newhall Ranch Infrastructure - Phase I

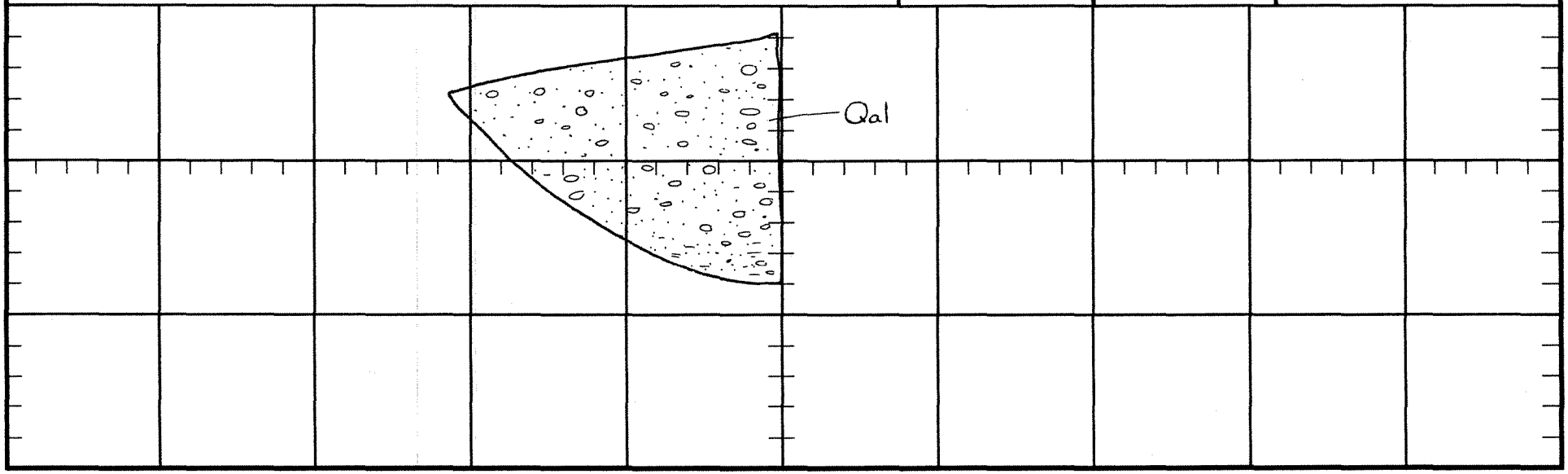
DATE

Trench Log No. T-43I

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 7 Ft. ALLUVIUM: Qal, Medium grayish-brown silt to coarse-grained sand with pebbles to medium cobbles; soft; loose; slightly damp to damp	horizontal		Bottom 2' siltier No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 72 W



ALLAN E. SEWARD

JOB NO. 00-1155I-1

LOGGED BY MJD

PROJECT Newhall Ranch Infrastructure - Phase I

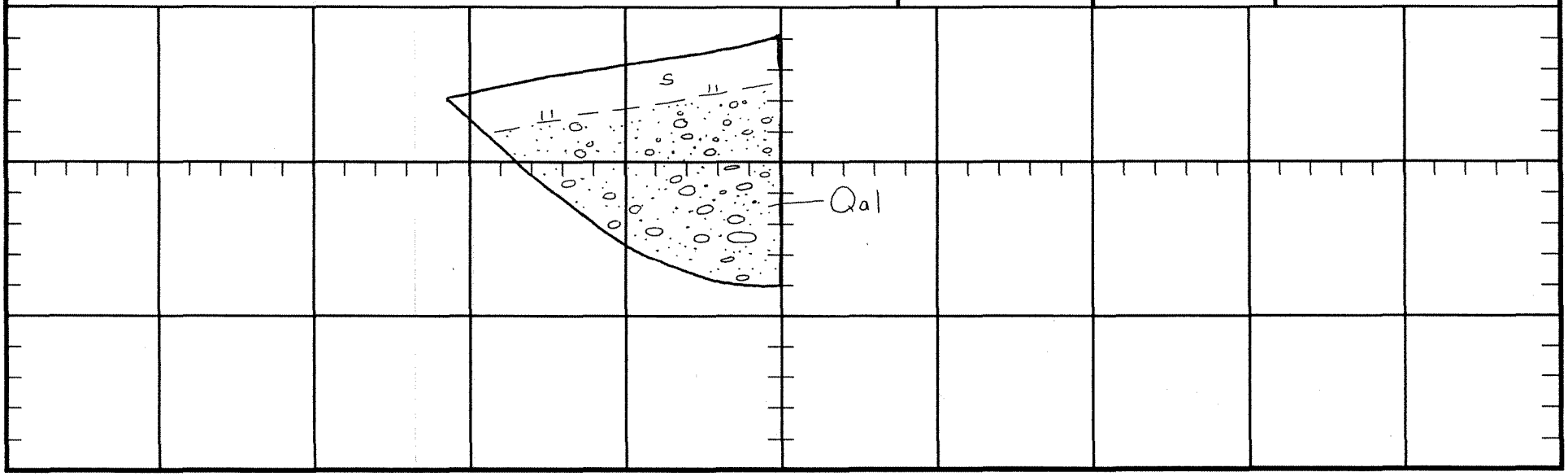
DATE

Trench Log No. T-44I

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL; s, Medium brown silt; soft; dry 1.5 - 8' ALLUVIUM; Qal, Medium grayish-brown silt to coarse-grained sand with pebbles to small boulders; soft to loose; slightly damp to damp	horizontal		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

Due W



ALLAN E. SEWARD

JOB NO. 00-1155I-1

LOGGED BY DGG

Trench Log No. T-45I

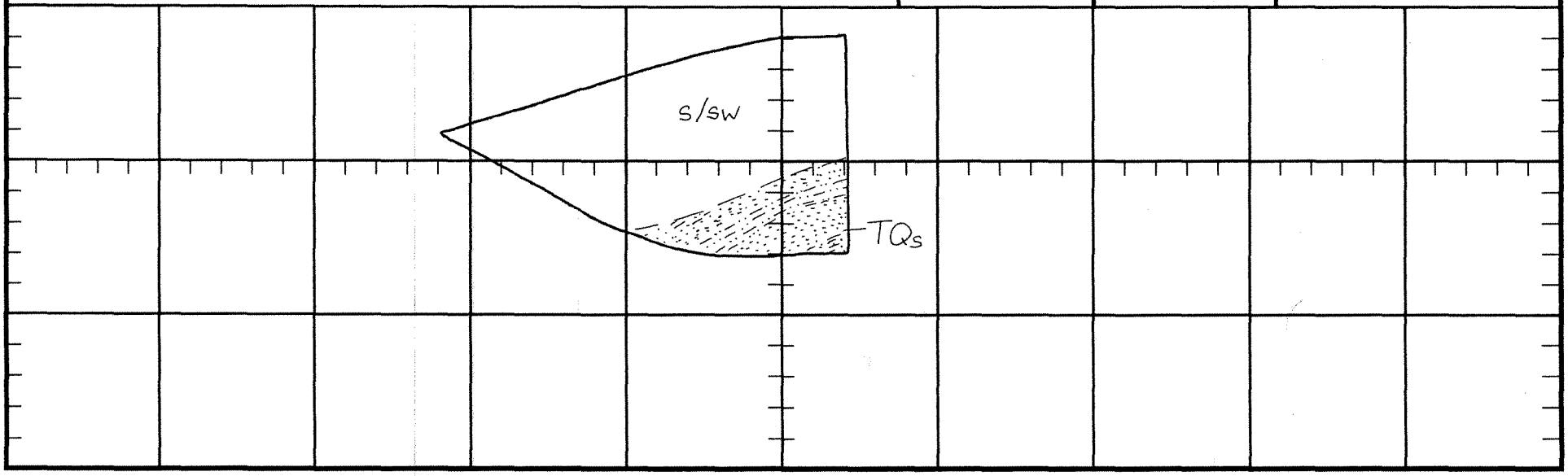
PROJECT Newhall Ranch Infrastructure - Phase I

DATE

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SOIL/SLOPEWASH; s/sw, Medium brown silt; soft to firm; slightly damp 4.5 - 7' BEDROCK; TQs, Medium brown to grayish-brown siltstone and light gray fine- to coarse-grained sandstone with scattered pebbles; slightly hard to moderately hard; slightly damp	B:N35W,25NE		No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 29 E



ALLAN E. SEWARD

JOB NO. 00-1155I-1

LOGGED BY DGG

PROJECT Newhall Ranch Infrastructure - Phase I

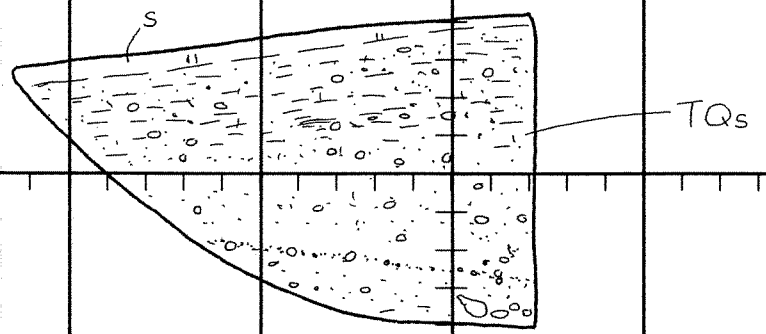
DATE

Trench Log No. T-46I

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3" SOIL; s, Light brown silt; firm; dry 3" - 8' BEDROCK; TQs, Yellowish-brown siltstone and yellowish-gray to yellowish-brown fine- to coarse-grained sandstone and pebbly sandstone with scattered cobbles; slightly hard; dry to slightly damp	B:N45W,28NE apx.		Highly weathered down to 8 ft. No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 8 W



ALLAN E. SEWARD

JOB NO. 00- 1155I-1

LOGGED BY DGG

Trench Log No. T-47I

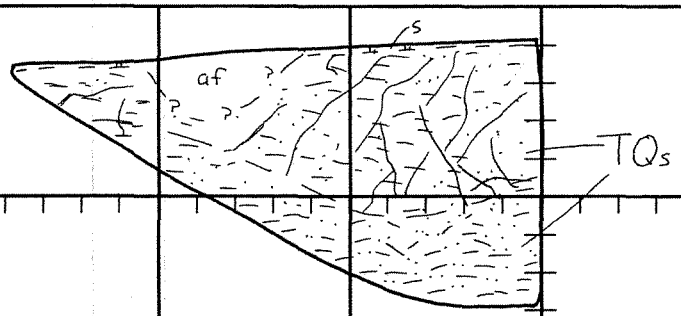
PROJECT Newhall Ranch Infrastructure - Phase I

DATE

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1" SOIL; s, Medium brown silt; firm; dry 1" - 7' BEDROCK; TQs, Yellowish-gray siltstone; loose; soft to hard; slightly damp to damp			Highly weathered down to apx. 4 ft. No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 42 W



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

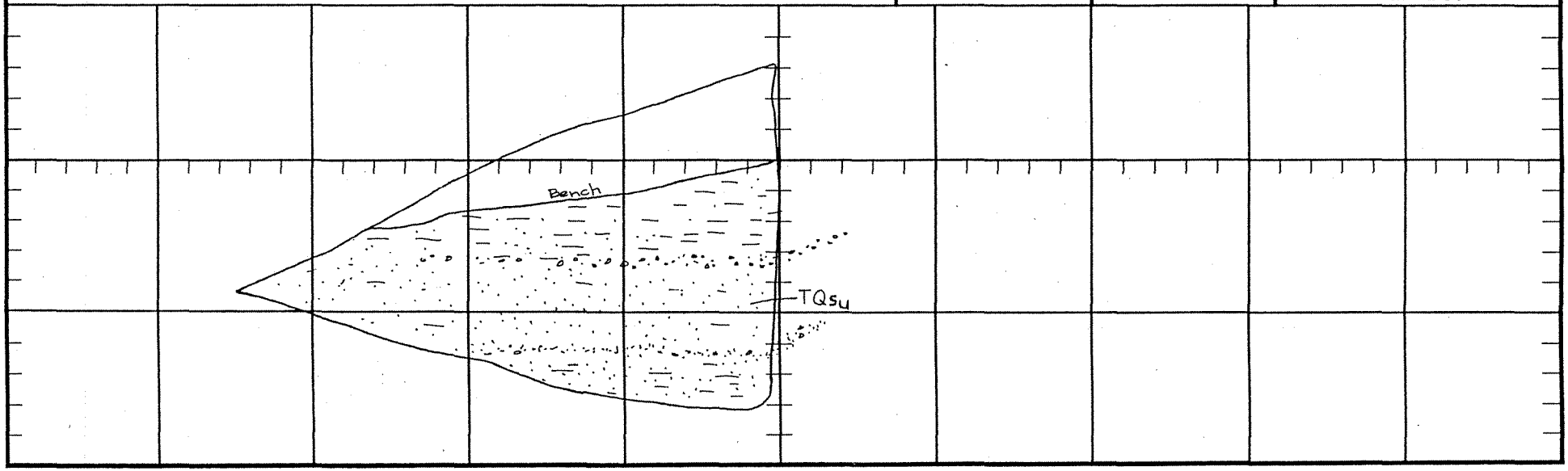
Trench Log No. T-14

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11' BEDROCK; TQs, Light brown, light yellowish-brown and light grayish-brown siltstone, silty sandstone and pebbly sandstone; moderately hard and friable; dry to damp	N44W,14NE		Upper 2-3 ft. widened i.e. soil removed Weathered down to 3.5 ft. No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 60 W



ALLAN E. SEWARD

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-15

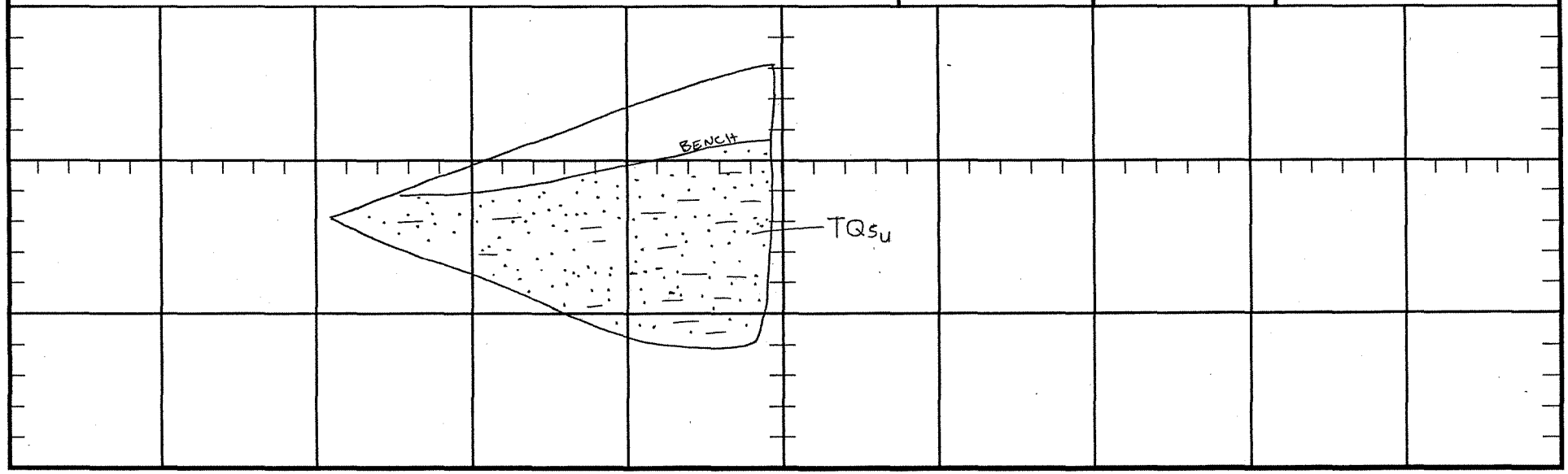
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light yellowish-brown silty sandstone and pebbly sandstone; moderately hard and friable; dry	N60W,10NE		Weathered down to 3.5 Ft. Upper 2-3 Ft. widened No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 62 E



ALLAN E. SEWARD

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-16

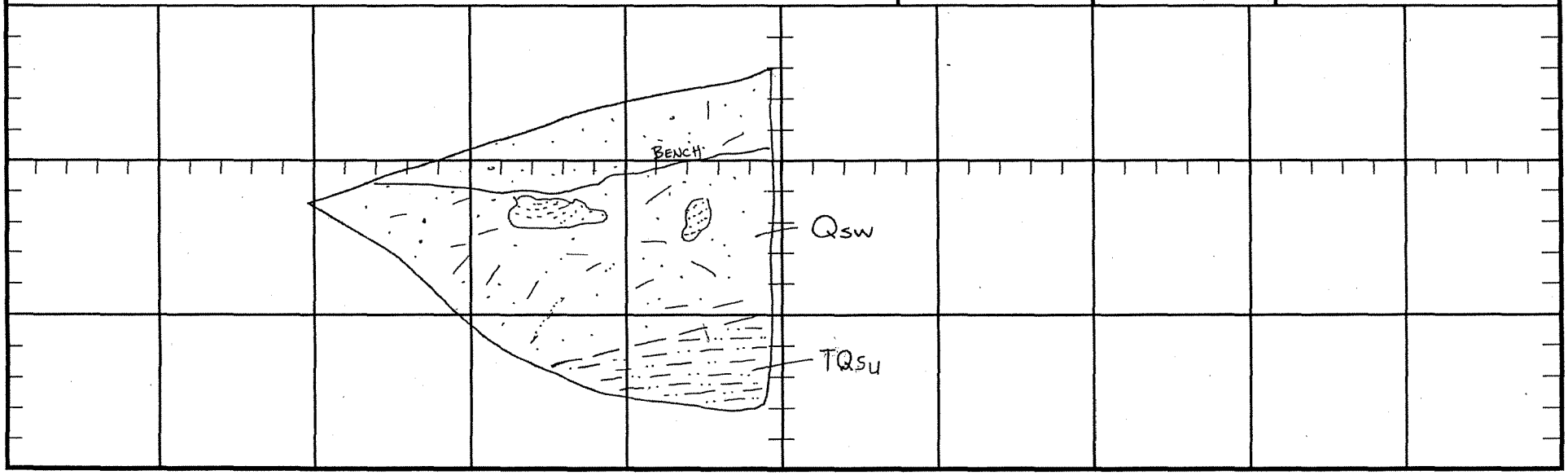
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SURFICIAL FAILURE; Qsw, Light yellowish-brown silty sand and laminated sands disturbed ("rotated back" laminae) loose to moderately dense; dry		Slip Surface N75W,21NE	Upper 2-3' widened Weathered down to 4 ft.
8 - 11' BEDROCK; TQs, Light yellowish-brown sandy siltstone; moderately hard; dry to damp	Massive		Softer above planar surface at 8 ft. harder below and no rotated laminae below
			No Ground Water No Caving
			TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 24 W



ALLAN E. SEWARD

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-17

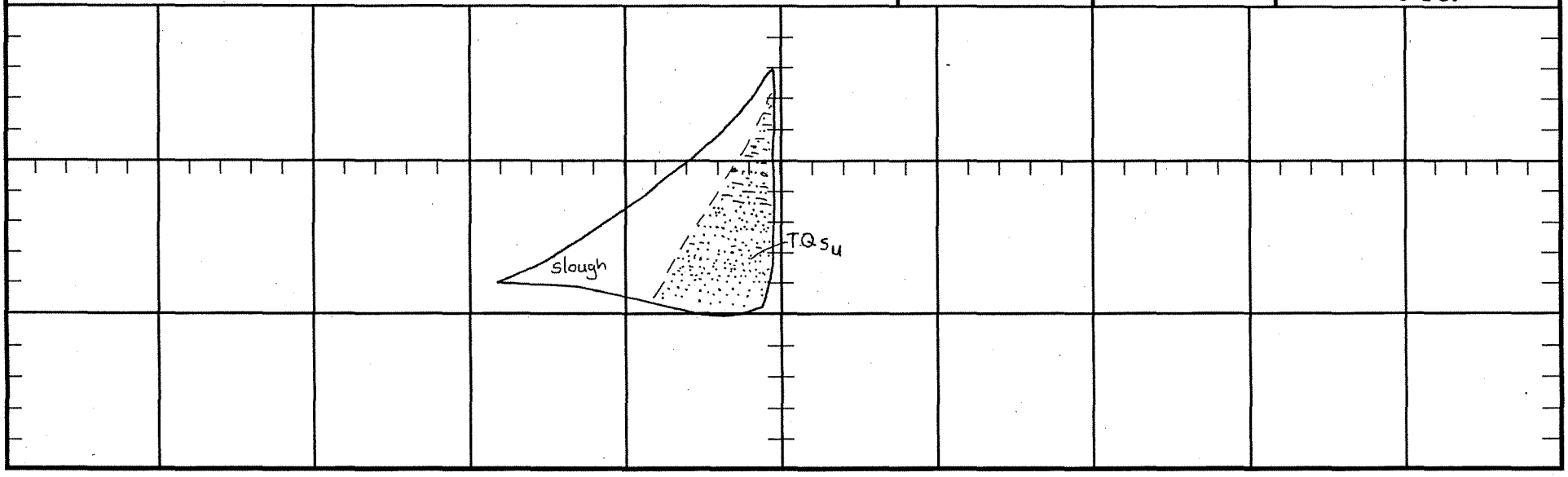
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' BEDROCK; TQs, Light yellowish-brown and light grayish-brown silty sandstone, sandstone and pebbly sand to gravel, laminated lenses; friable to moderately hard; dry	a) N51W,10NE b) N38W,15NE		Excavated in oil pad "backcut" Friable at base of trench Moderately hard at top Upper portion looks like our Qp while friable lower portion has a more Qt appearance, but is dipping with regional No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 33 E



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

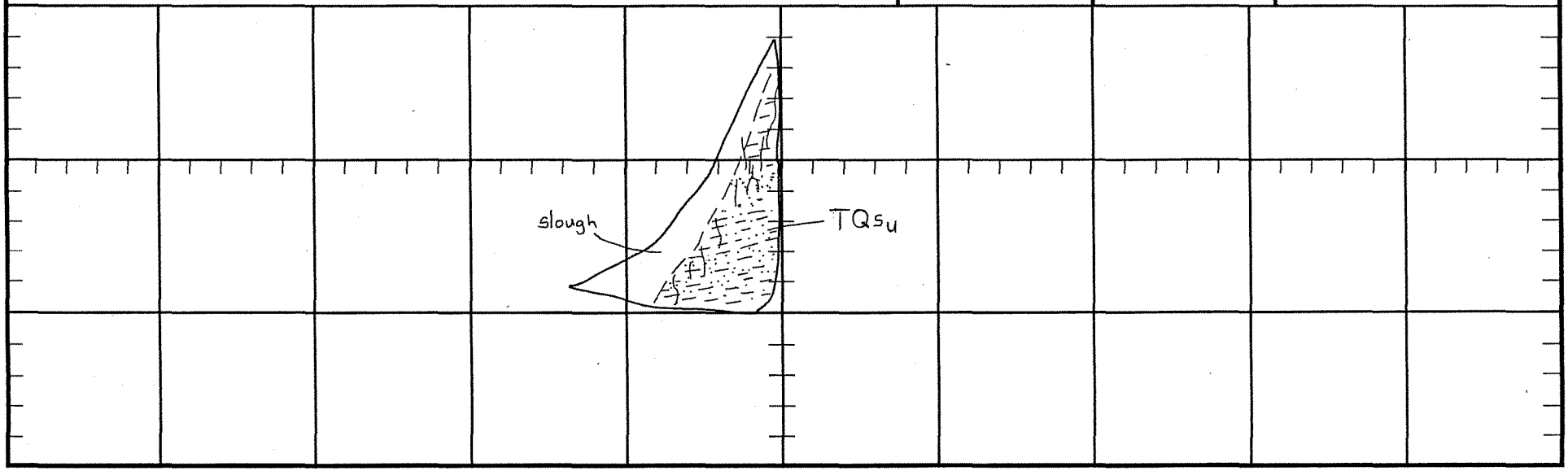
Trench Log No. T-33

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light yellowish-brown and light brown silty sandstone, sandy siltstone and siltstone; moderately hard; dry to damp	N44W,15NE		Trenches T-33 thru T-46 excavated on 1/13/00 Excavated in existing road cut No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 87 W



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

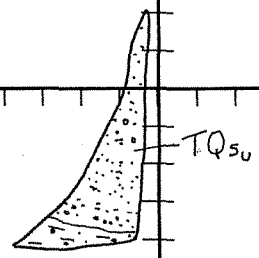
Trench Log No. T-34

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' BEDROCK; TQs, Light yellowish-brown and light grayish-brown sandstone, pebbly sandstone and sandy pebbly siltstone; moderately friable to moderately hard; dry to damp	N57W,9NE		Excavated in oil pad "backcut" No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 50 W



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainmen

LOGGED BY SKM

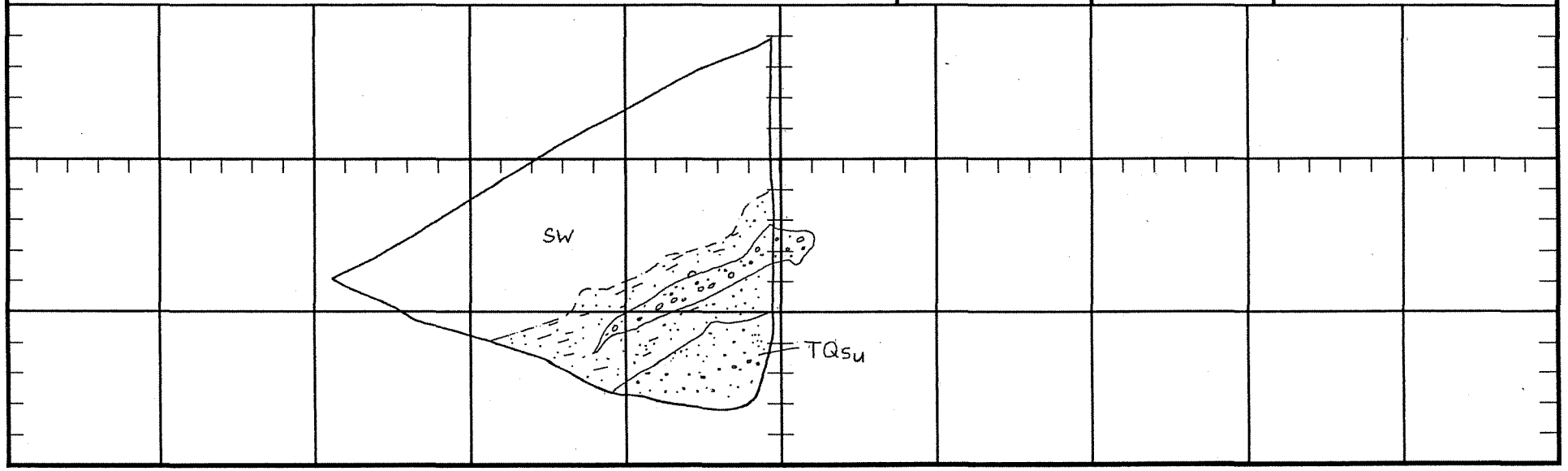
Trench Log No. T-35

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SLOPEWASH; sw, Light brown to tan sandy silt with pebbles; loose; dry			From 5 to 9' appears creep affected or slumped
5 - 12' BEDROCK; TQs, Light grayish-brown and light yellowish-brown pebble conglomerate (friable) and silty sandstone (moderately friable); dry to damp	Massive		Pebbles in pebble conglomerate are subangular to sub-rounded (high pebble content, low sand content)
			No Ground Water No Caving
			TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

East



ALLAN E. SEWARD

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-36

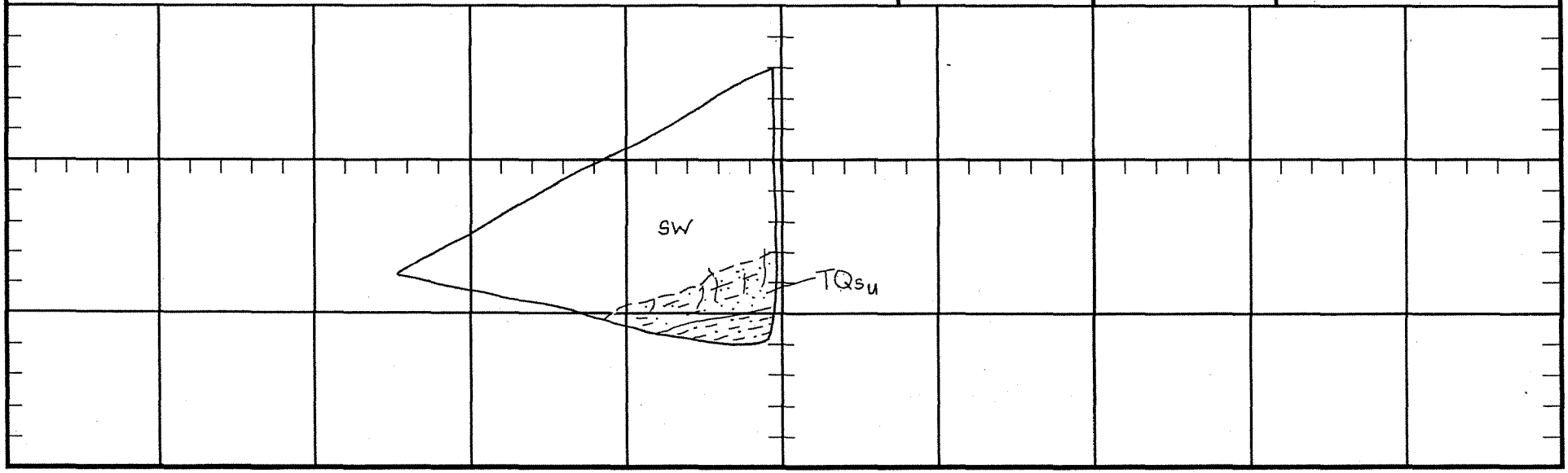
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SLOPEWASH; sw, Light brown pebbly sandy silt; loose to dense; dry to damp			Weathered down to 7 ft.
6 - 9' BEDROCK; TQs, Light yellowish-brown and light to medium brown silty sandstone and siltstone; moderately hard to hard; dry to damp	N42W,14NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 72 W



ALLAN E. SEWARD

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-37

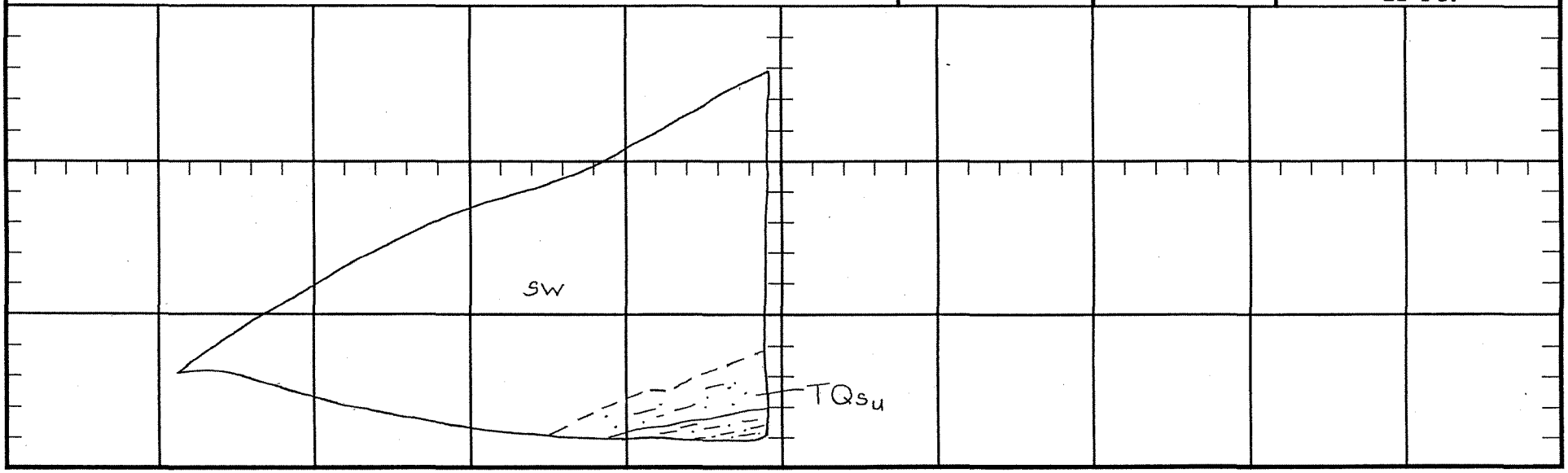
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11' SLOPEWASH; sw, Light brown to light yellowish-brown sandy silt to silty sand; loose to moderately dense; dry to damp			Upper 3-4 feet widened
11 - 12' BEDROCK; TQs, Light to medium brown siltstone; moderately hard; damp	N60W,11NE (apx)		From 9-11 ft. may be surficial failure
			No Ground Water No Caving
			TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 83 E



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

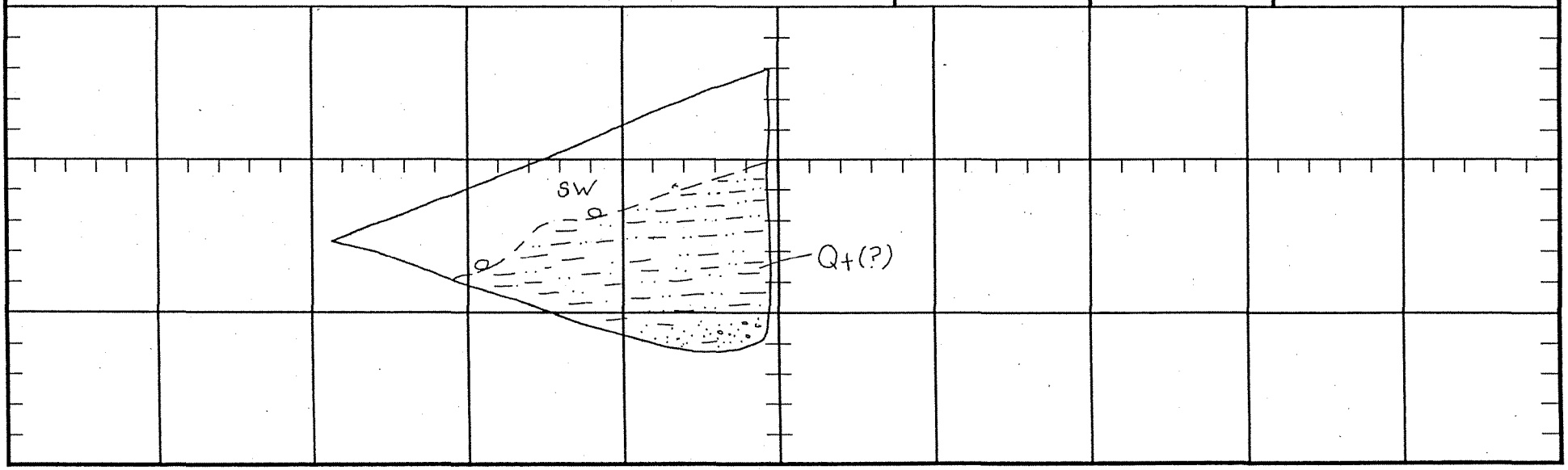
Trench Log No. T-38

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; sw, Light brown sandy silt with pebbles and cobbles; loose; dry 3 - 9' QUATERNARY TERRACE; Qt (?), Light yellowish-brown to light reddish-brown sandy siltstone, sandstone and pebbly sandstone	N70W,8NE apx		Generally massive No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 80 E



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

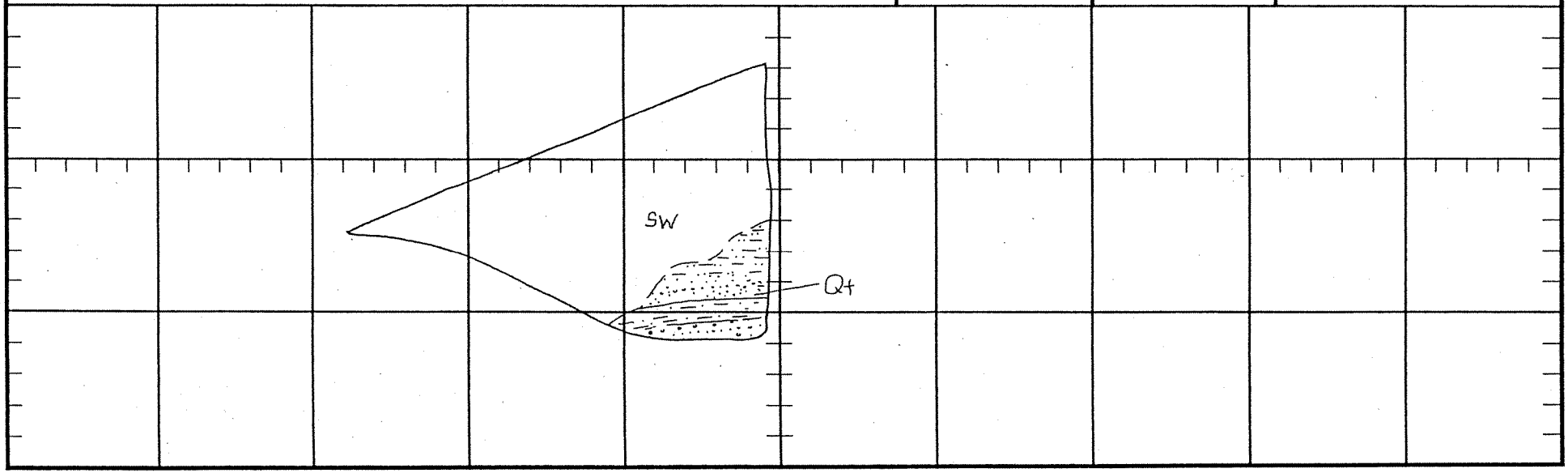
Trench Log No. T-39

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SLOPEWASH; sw, Light yellowish-brown sandy silt to silty sand with pebbles and cobbles; loose to moderately dense; dry to damp 5 - 9' QUATERNARY TERRACE; Qt, Light brown and light grayish-brown sandy siltstone, siltstone and pebbly sandstone; moderately hard and friable; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 83 E



ALLAN E. SEWARD

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-48

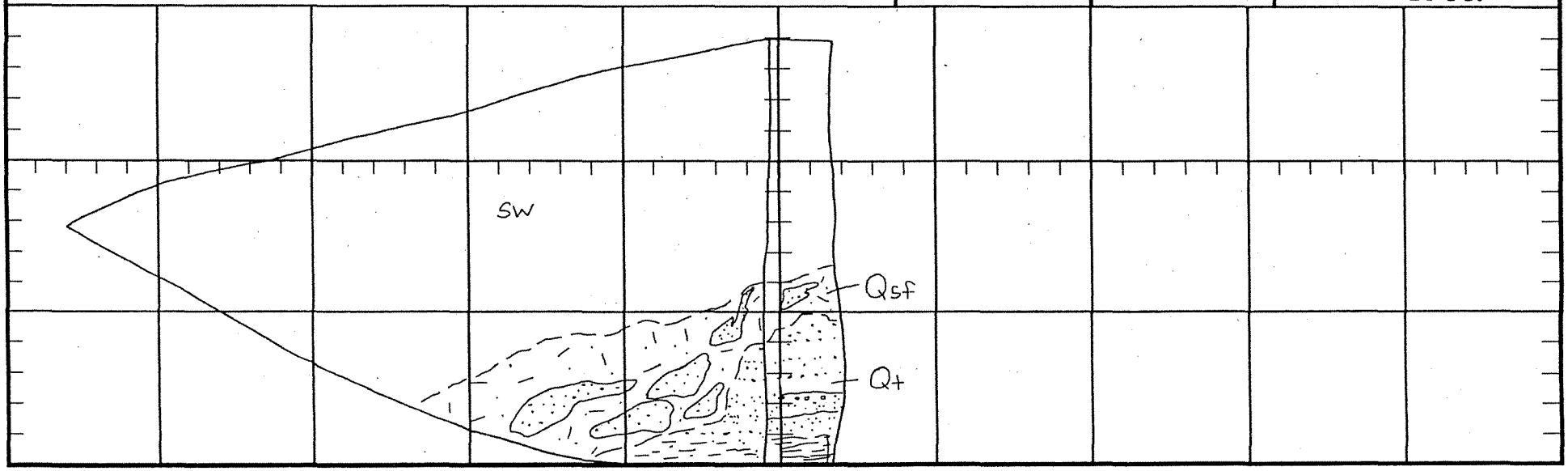
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SLOPEWASH; sw, Light brown sandy silt with pebbles; loose to moderately dense; dry to damp 8 - 10' SURFICIAL FAILURE/LANDSLIDE; sf/Qls, Weathered Qt fragments/blocks intermixed with slopewash; loose; dry to damp 10 - 14' QUATERNARY TERRACE; Qt, Light yellowish-brown slightly silty sandstone, pebbly sandstone and silty sandstone; moderately hard and moderately friable; damp			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 72 W



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

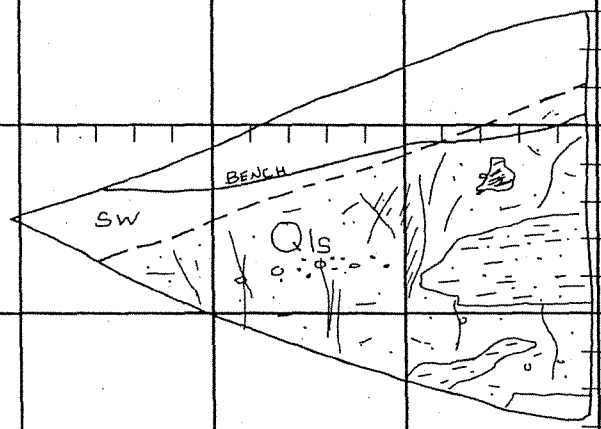
Trench Log No. T-49

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SLOPEWASH; sw, Light to medium brown, slightly sandy silt with pebbles; loose to moderately dense; dry to damp 2 - 10.5' LANDSLIDE; Qls, Jumbled Qt lithologies and soil backfill, loose to moderately dense; dry to damp			No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5'

N 70 W



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

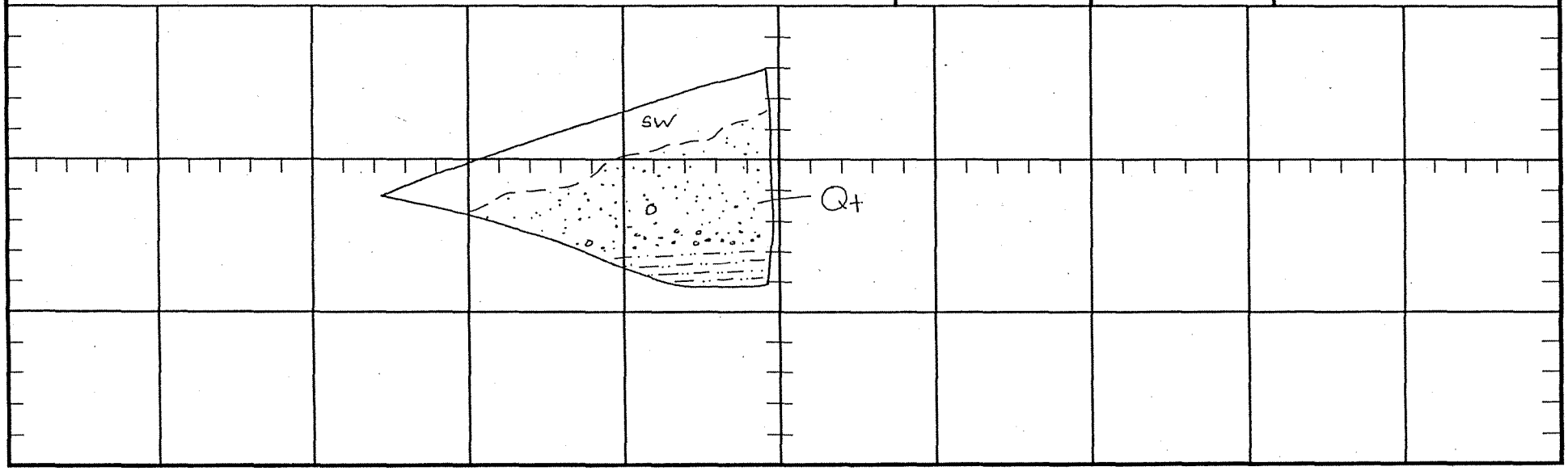
Trench Log No. T-50

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SLOPEWASH; sw, Light brown to light reddish-brown sandy silt with pebbles; loose to moderately dense; dry			
1.5 - 7' QUATERNARY TERRACE; Qt, Light reddish-brown silty pebbly sandstone, and sandy siltstone with pebbles; moderately hard to hard; damp	Horizontal		Hard siltstone at base with 2-3" grooves cut by backhoe teeth
			No Ground Water No Caving
			TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 44 E



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

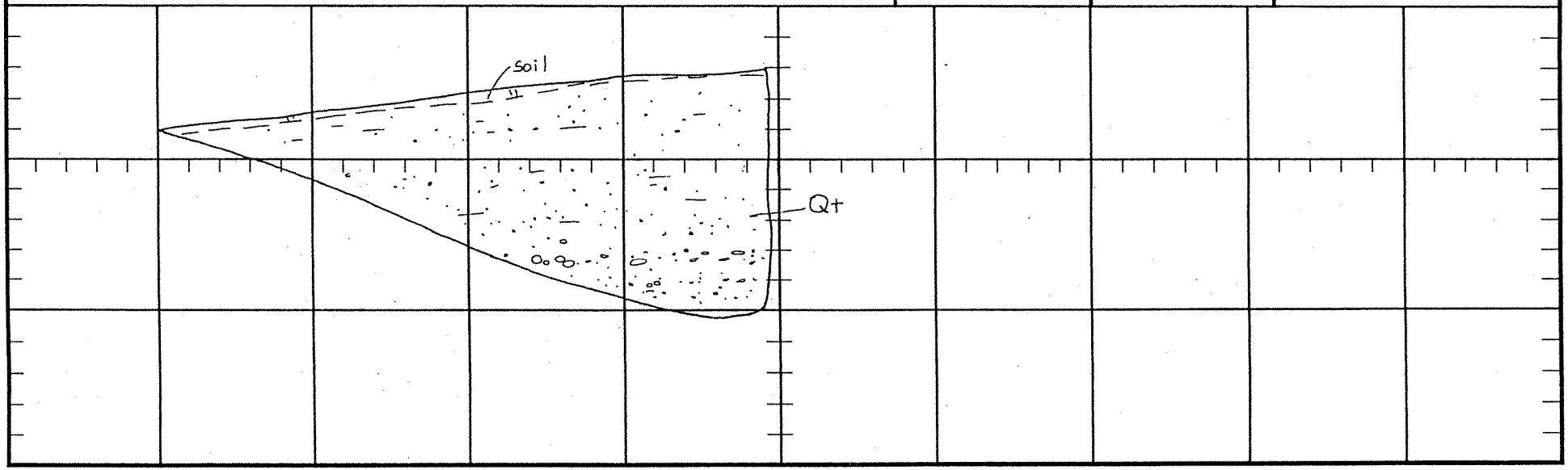
Trench Log No. T-52

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2" SOIL; s, Light brown silty sand to sandy silt; loose; dry 2" - 8' QUATERNARY TERRACE; Qt, Light brown and light reddish-brown silty pebbly sandstone and pebbly sandstone; moderately hard to moderately friable; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 8 Ft.

N 17 E

SCALE 1" = 5'



ALLAN E. SEWARD

JOB NO. 00-1729-1

PROJECT Magic Mountain Entertainment

LOGGED BY SKM

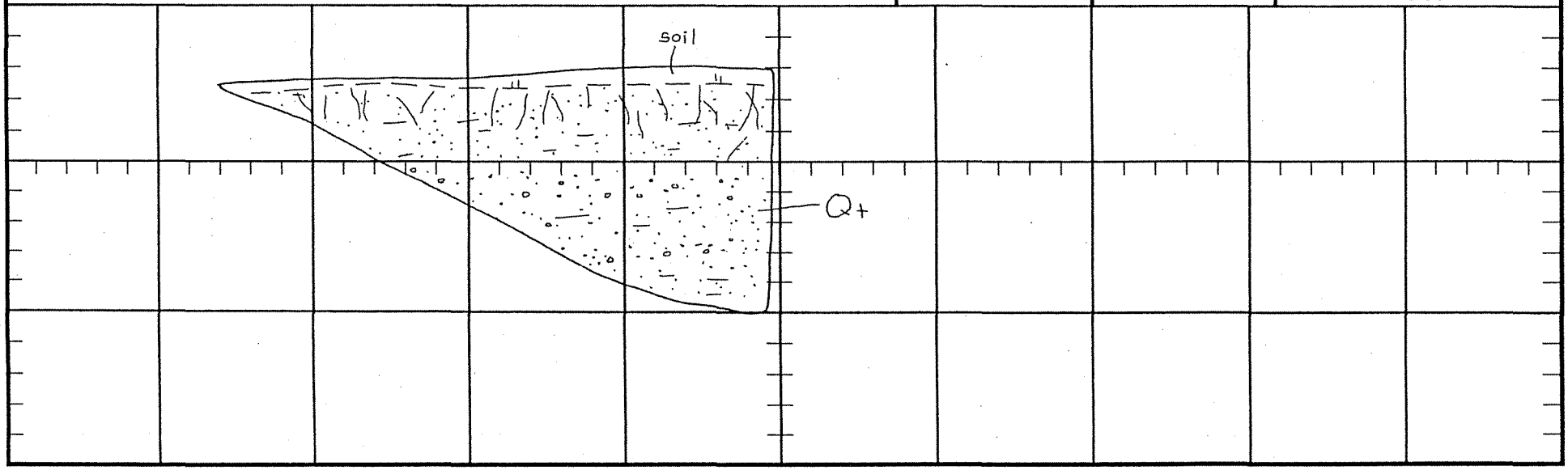
Trench Log No. T-53

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6" SOIL; s, Light brown sandy silt with pebbles; loose; dry			Weathered down to 2'
6" - 8' QUATERNARY TERRACE; Qt, Light brown to light reddish-brown silty sandstone and pebbly sandstone; moderately hard; friable in places; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 79 E



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-55

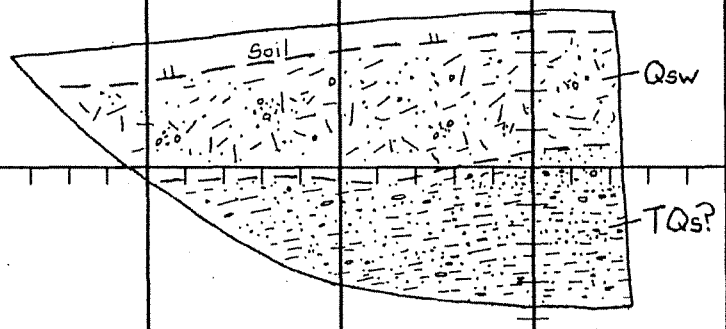
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6" SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			T-55 thru T-67 excavated 2/18/00 using a track mounted backhoe with a 24" bucket
6" - 3.5' SLOPEWASH; Qsw, Yellowish-brown silt to sandy silt within scattered pebbles and local pods of pebbles; loose to moderately dense; slightly damp to damp			
3.5 - 7.5' BEDROCK; TQs?, Yellowish- to light-brown siltstone, sandy siltstone with scattered pebbles, and fine- to coarse-grained pebbly sandstone; dense to slightly friable; slightly damp to damp; top 1.5' weathered	N46W,8NE		Lithology is transitional between TQs and Qt but bedding attitude indicates probable young TQs
			No Ground Water No Caving
			TOTAL DEPTH 7.5 Ft.

SCALE 1" = 5'

N 16 E



ALLAN E. SEWARD

JOB NO. 00-1703CM-1 PROJECT Magic Mountain Entertainment

LOGGED BY DGG

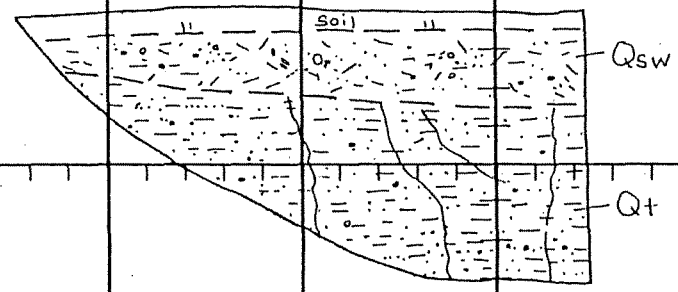
Trench Log No. T-56

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 0.5' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
0.5 - 2.5' SLOPEWASH; Qsw, Yellowish-brown silt to sandy silt within scattered pebbles and local pods of pebbles; loose to moderately dense; slightly damp to damp		f:N34E,85NW	Fractures may be shattered ridge effects
2.5 - 7' QUATERNARY TERRACE DEPOSITS; Qt, Yellowish- to slightly pale reddish-brown siltstone to sandy siltstone with scattered pebbles; moderately dense to dense; damp; locally fractured	N82E,3NW		Lithology is transitional between TQs and Qt but bedding attitude indicates Qt
			No Ground Water No Caving
			TOTAL DEPTH 7 Ft.

N 15 E

SCALE 1" = 5'



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

PROJECT Magic Mountain Entertainment

LOGGED BY DGG

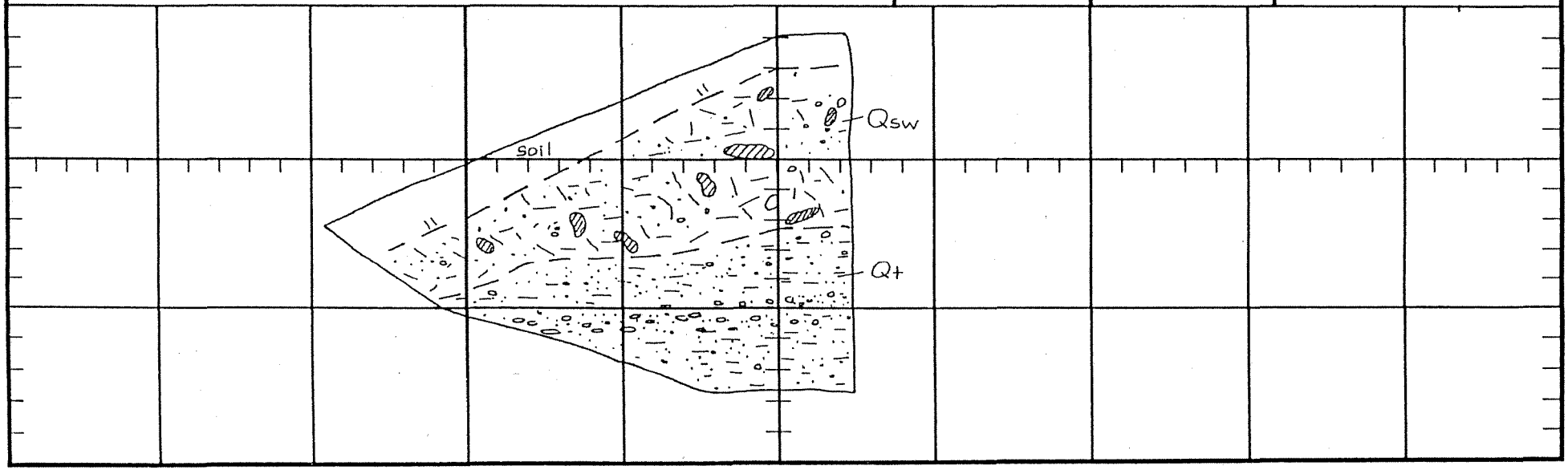
Trench Log No. T-57

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 6.5' SLOPEWASH; Qsw, Yellowish-brown silt to sandy silt with scattered pebbles and a few scattered cobbles; soft to firm; damp; abundant krotovina			
6.5 - 11.5' QUATERNARY TERRACE DEPOSITS; Qt, Yellowish-brown to light yellowish-brown siltstone, sandy siltstone and pebbly to cobbly sandstone and sandstone; moderately dense to dense but friable; damp; cross-bedding and channeling in sandstone	Apx. Horizontal		Lithology and bedding attitude indicate Qt unit No Ground Water No Caving TOTAL DEPTH 11.5 Ft.

SCALE 1" = 5'

N 65 W



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

PROJECT Magic Mountain Entertainment

LOGGED BY DGG

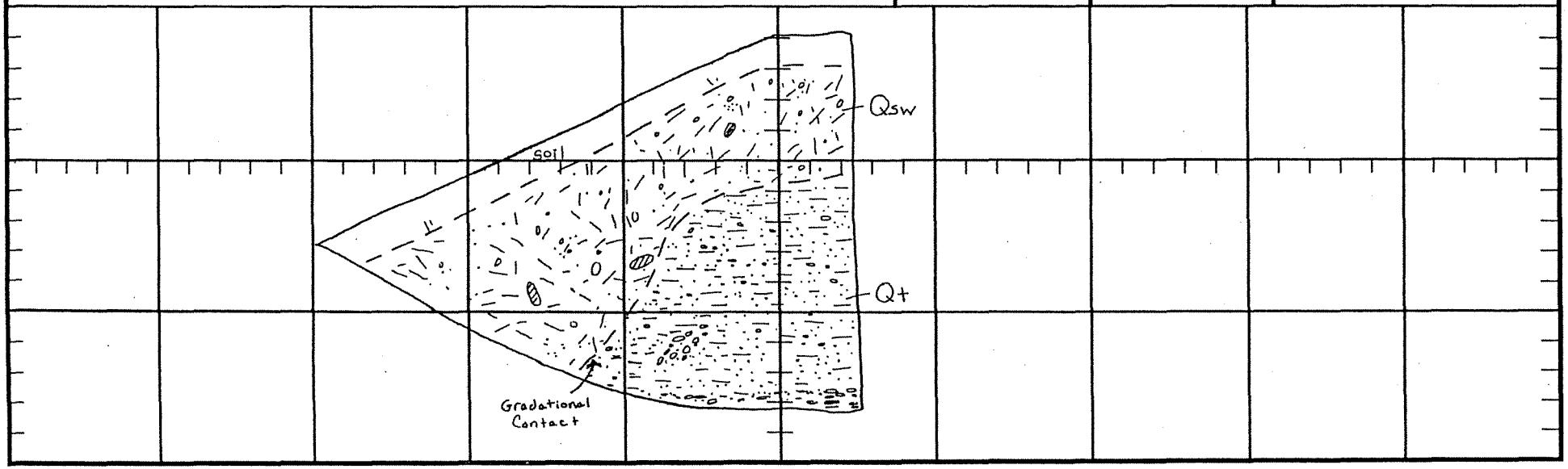
Trench Log No. T-58

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1.5 - 4' SLOPEWASH; Qsw, Yellowish-brown silt to sandy silt with scattered pebbles and a few scattered cobbles; soft to firm; damp; scattered krotovina			
4 - 12' QUATERNARY TERRACE DEPOSITS; Qt, Yellowish-brown to light yellowish-brown siltstone, sandy siltstone; pebbly to cobbly sandstone and sandstone; moderately dense to dense but friable; damp; cross-bedding and channeling in sandstone	Apx: Horizontal		Lithology and bedding attitude indicate Qt unit
			No Ground Water No Caving
			TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 60 W



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-59

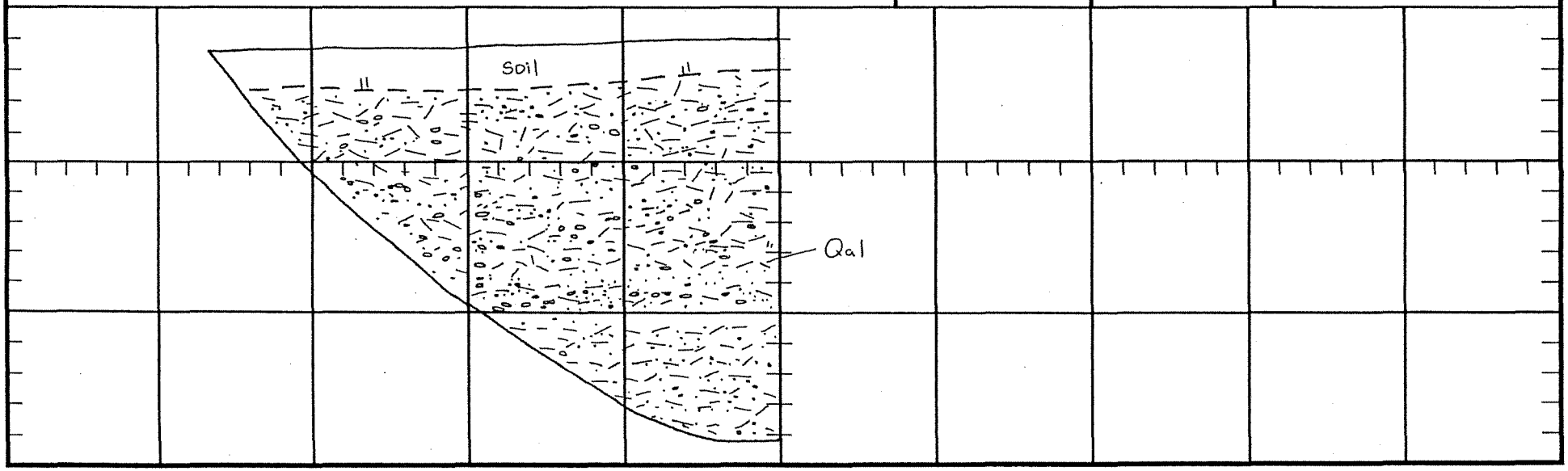
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 13' QUATERNARY ALLUVIUM; Qal, Yellowish-brown to light brown silt to sandy silt with scattered pebbles and local sandy pebbly pockets; loose/soft; damp			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 40 E



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

PROJECT Magic Mountain Entertainment

LOGGED BY DGG

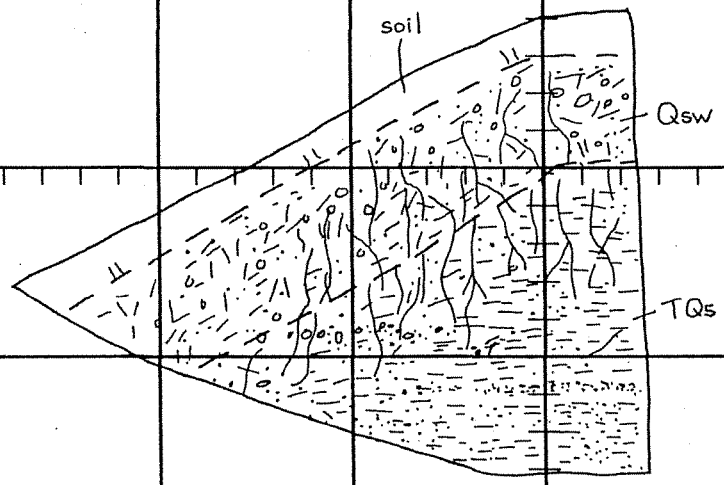
Trench Log No. T-60

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 4' SLOPEWASH; Qsw, Yellowish-to light-brown silt to sandy silt with pebbles and cobbles; loose; damp 4 - 12' BEDROCK; TQs?; Yellowish-to light-brown siltstone, sandy siltstone, and sandstone, with scattered pebbles and few scattered cobbles; local concretions; moderately dense to dense but slightly loose; damp	Apx: N15W,10NE		Lithology is transitional between TQs and Qt but bedding attitude indicates TQs Upper 5' of bedrock highly fractured, weakened and creep affected No Ground Water No Caving TOTAL DEPTH 12 Ft.

N 38 W

SCALE 1" = 5'



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

PROJECT Magic Mountain Entertainment

LOGGED BY DGG

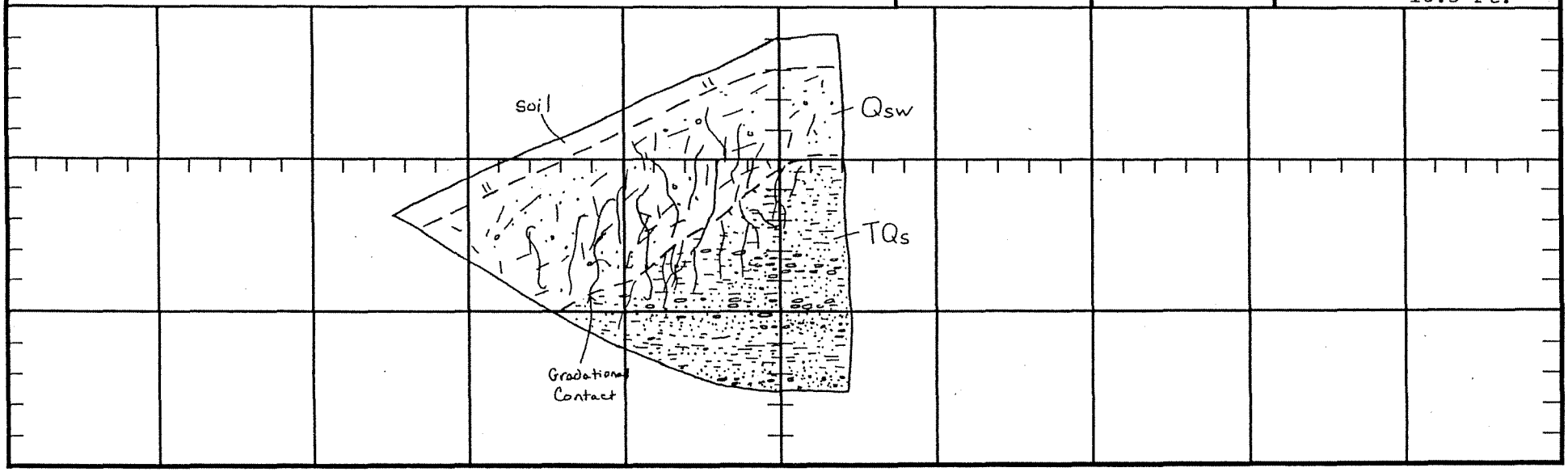
Trench Log No. T-61

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 4' SLOPEWASH; Qsw, Yellowish- to light-brown silt to sandy silt with scattered pebbles; loose/soft; damp; fractured			
4 - 10.5' BEDROCK; TQs?, Yellowish- to light-brown siltstone, sandy siltstone, pebbly cobbley sandstone and sandstone; loose to moderately dense; damp	N15W,8NE		Lithology is transitional between TQs and Qt but bedding attitude indicates TQs No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5'

N 47 W



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-62

PROJECT Magic Mountain Entertainment

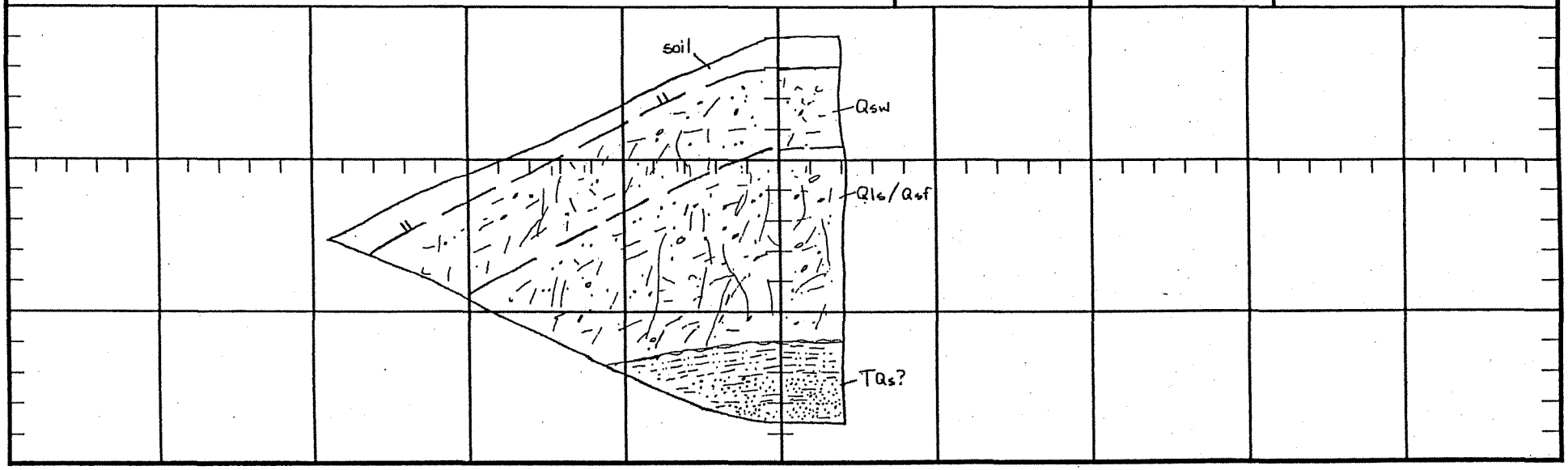
DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 3.5' SLOPEWASH; Qsw, Yellowish- to light-brown silt to sandy silt with scattered pebbles; loose; damp			
3.5 - 10' SURFICIAL FAILURE; Qsf, Yellowish-brown silt and sandy silt with scattered pebbles and few scattered cobbles; damp; 2-3% void space			
10 - 12.5' BEDROCK; TQs, Yellowish- to light-brown siltstone, sandy siltstone and fine- to coarse-grained sandstone; moderately dense to dense; damp; top 4" of bedrock sheared with caliche	N27W,5NE		Lithology and bedding attitude are transitional between TQs and Qt No Ground Water No Caving

SCALE 1" = 5'

N 71 W

TOTAL DEPTH 12.5 Ft.



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

PROJECT Magic Mountain Entertainment

LOGGED BY DGG

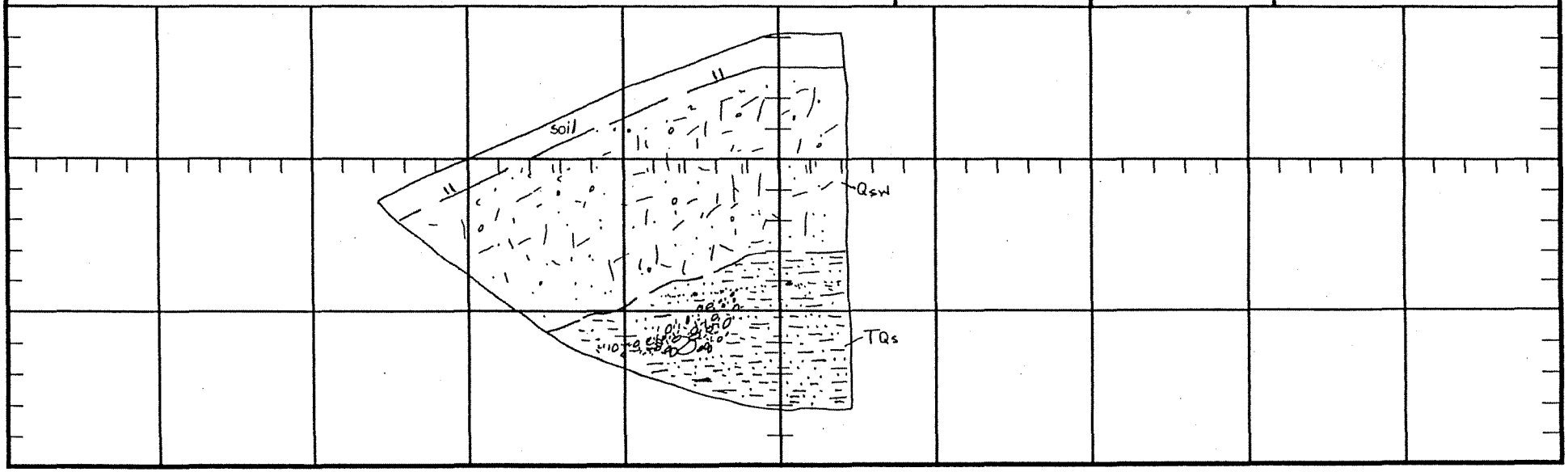
Trench Log No. T-63

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 6' SLOPEWASH; Qsw, Yellowish- to medium-brown silt to sandy silt with scattered pebbles; loose; damp 6 - 12' BEDROCK; TQs?, Yellowish-brown siltstone to sandy siltstone, with lenses of fine- to medium-grained sandstone and channel of pebbly cobbly sandstone; dense; slightly damp	Apx:N60W,5NE		Lithology and bedding attitude are transitional between TQs and Qt Upper 4' of bedrock highly weathered No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 10 E



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

PROJECT Magic Mountain Entertainment

LOGGED BY DGG

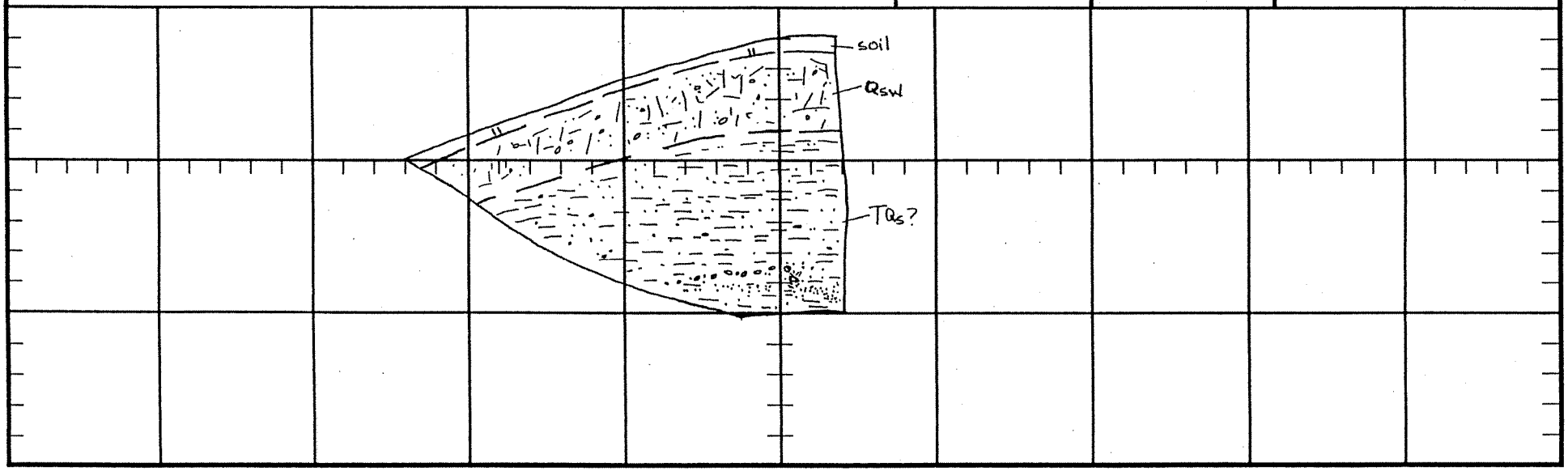
Trench Log No. T-64

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - .5' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist .5 - 3' SLOPEWASH: Qsw, Yellowish- to light-brown silt to sandy silt with scattered pebbles; loose; damp 3 - 9' BEDROCK; TQs?, Yellowish- to light-brown siltstone with scattered pebbles, sandy siltstone; fine-grained sandstone and pebbly sandstone; moderately dense to moderately hard; damp	Apx: N61W,13NE		Lithology transitional between TQs and Qt but bedding attitude indicates TQs Upper 2' of bedrock weathered No Ground Water No Caving TOTAL DEPTH 9 Ft.

N 74 W

SCALE 1" = 5'



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

PROJECT Magic Mountain Entertainment

LOGGED BY DGG

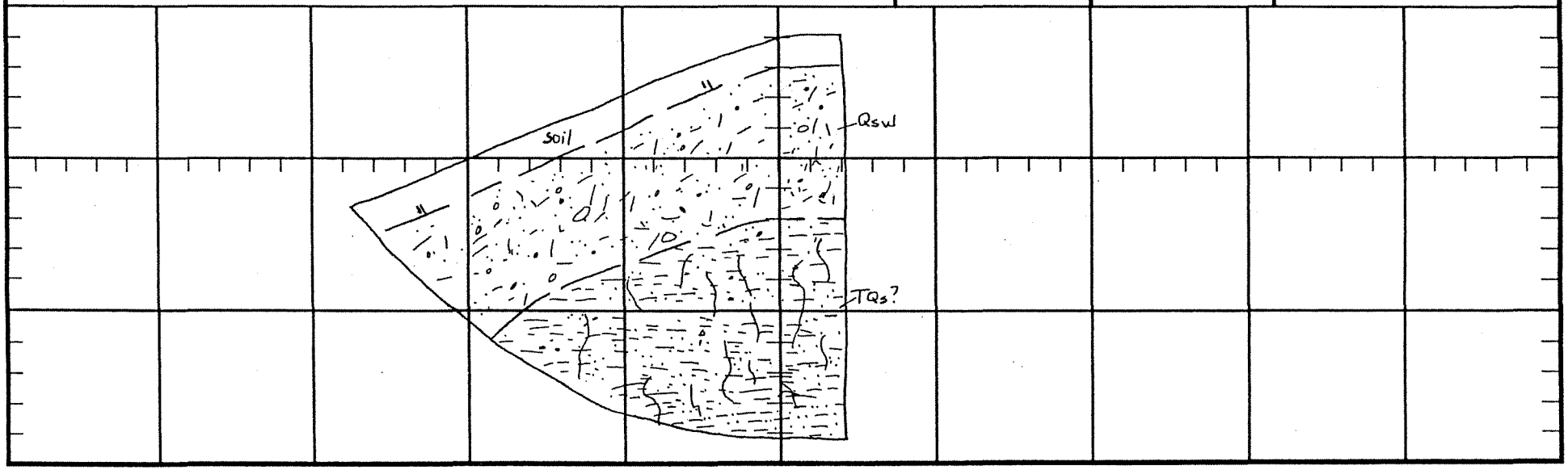
Trench Log No. T-65

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 6' SLOPEWASH; Qsw, Yellowish- to medium-brown silt to sandy silt with scattered pebbles and a few cobbles; loose to dense; slightly damp			
6 - 13' BEDROCK; TQs?, Yellowish- to light-brown siltstone and sandy siltstone with scattered pebbles; upper 6 ft. moderately dense, weathered and fractured, but bottom ft. moderately hard; damp; caliche along fractures	Apx:N66W,11NE		Lithology is transitional between TQs and Qt but bedding attitude indicates TQs No Ground Water No Caving TOTAL DEPTH 13 Ft.

N 14 E

SCALE 1" = 5'



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-66

PROJECT Magic Mountain Entertainment

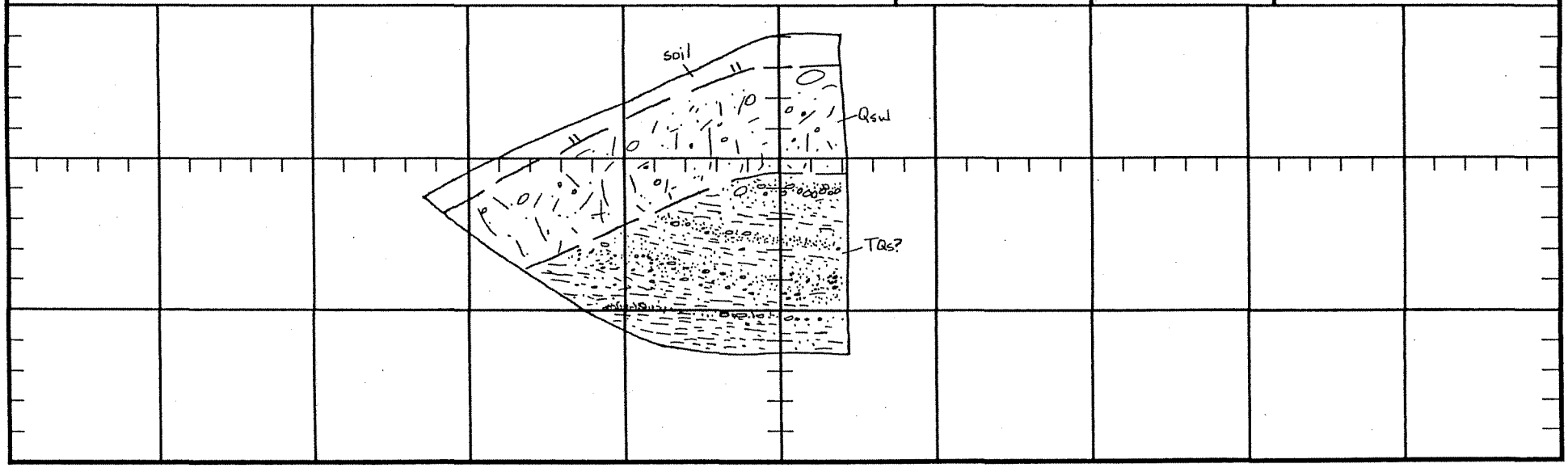
DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 4.5' SLOPEWASH: Qsw, Yellowish- to medium brown silt to sandy silt with scattered pebbles and cobbles			
4.5 - 10.5' BEDROCK; TQs?, Light-brown to light-gray fine- to coarse-grained sandstone, silty sandstone and pebbly sandstone with cobbles; dense but moderately friable; slightly damp	N63W,11NE		Lithology is transitional between TQs and Qt but bedding attitude indicates TQs

SCALE 1" = 5'

N 57 E

TOTAL DEPTH 10.5 Ft.



ALLAN E. SEWARD

JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-67

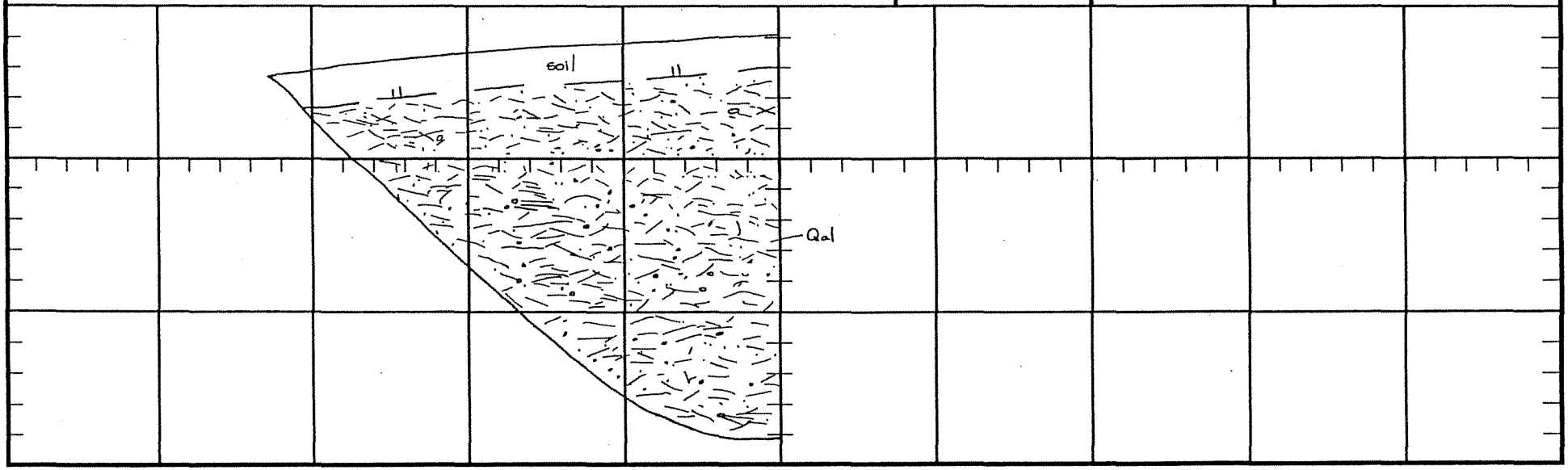
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 13' QUATERNARY ALLUVIUM; Qal, Medium-brown, locally yellowish-brown silt to sandy silt with scattered pebbles and local cobbles; loose to moderately dense; slightly damp to damp			2-3% voids; 1/4" to 3/8" diameter to bottom of trench
			No Ground Water No Caving
			TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 78 E



ALLAN E. SEWARD

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

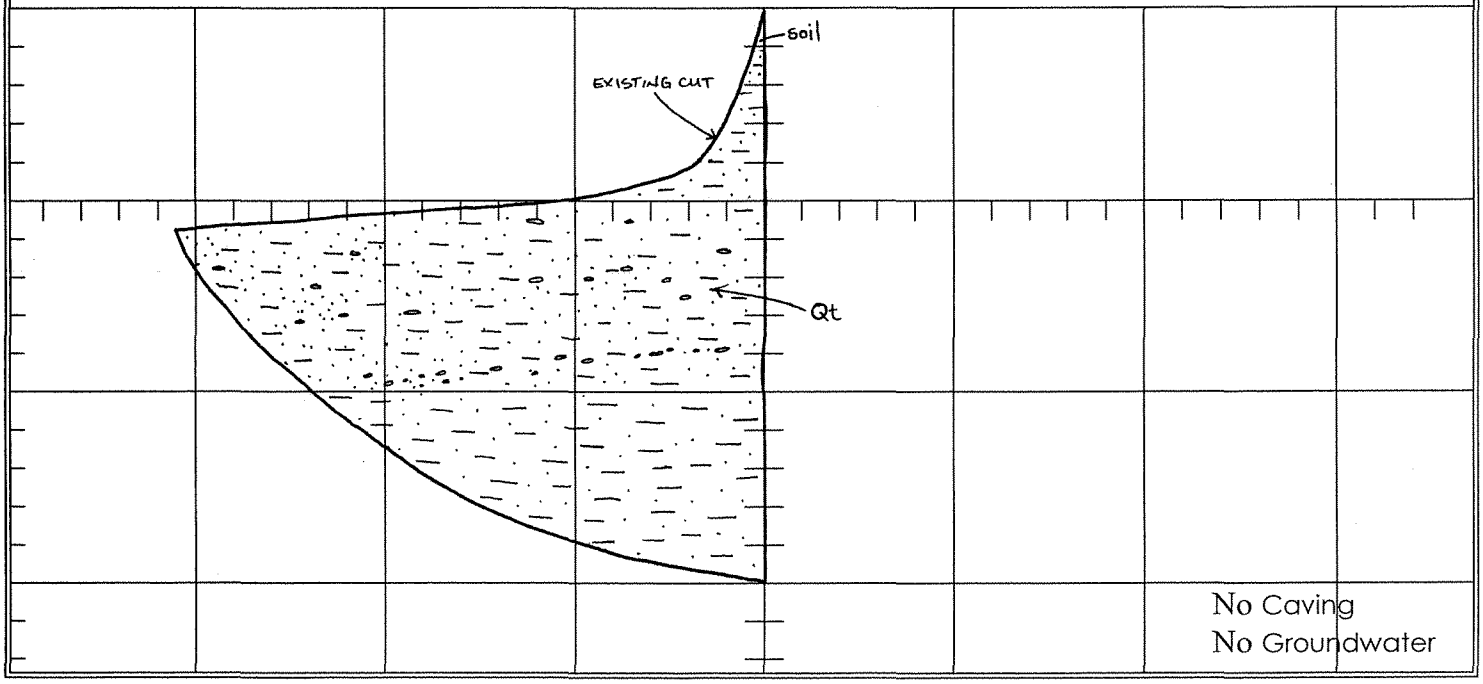
ELEVATION: 1099 EXCAVATED: 5/16/01

TRENCH LOG

NO. T-1M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL; (0-0.5 ft.) @ 0' Medium grayish-brown silt; stiff; dry to slightly damp QUATERNARY TERRACE DEPOSITS; Qt, (0.5-15 ft.) @ 0.5' Medium orangish-brown siltstone to sandy siltstone to pebbly sandstone with locally abundant pebbles and local small cobbles; moderately dense; damp; no bedding				
5									
10									
15									
20									

TOTAL DEPTH: 15 feet ←N73E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

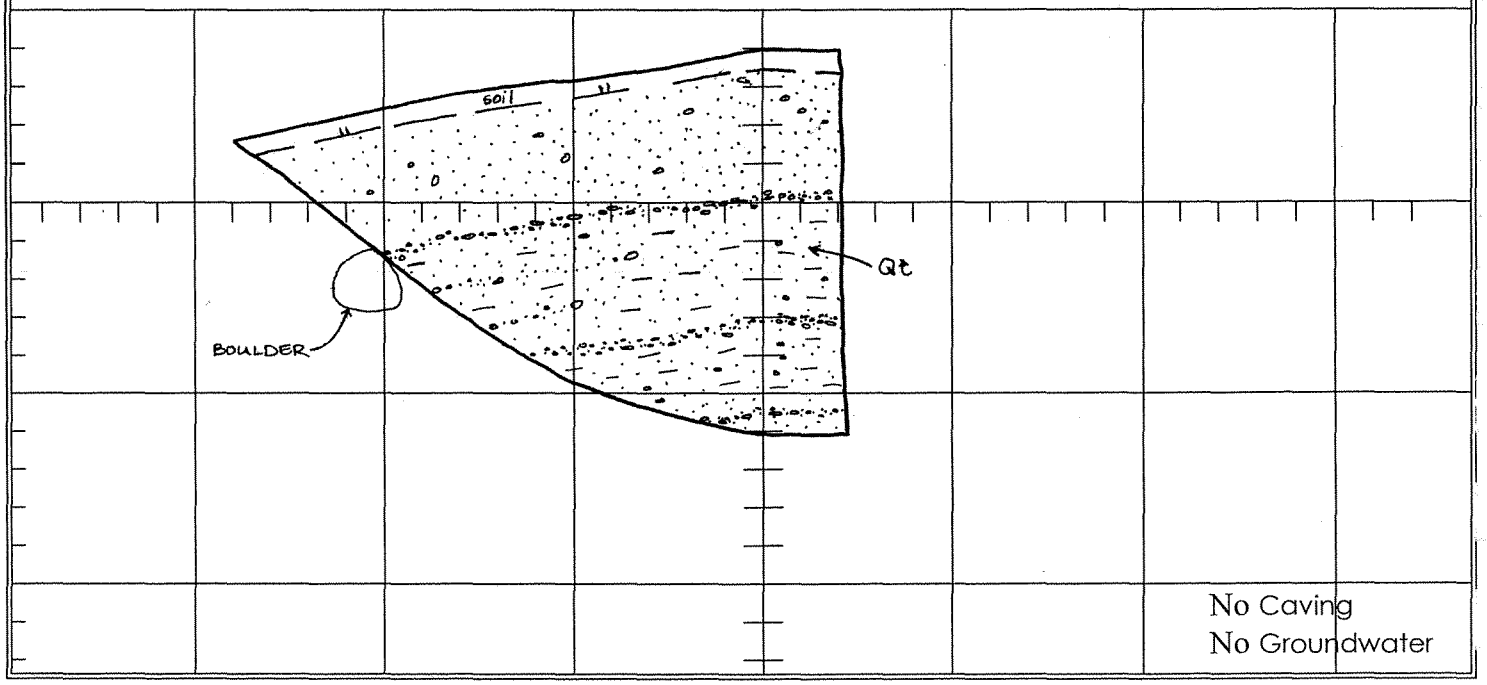
ELEVATION: 1092 EXCAVATED: 5/16/01

TRENCH LOG

NO. T-2M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL; (0-0.5 ft.) @ 0' Medium grayish-brown silt to sandy silt; stiff; dry to slightly damp QUATERNARY TERRACE DEPOSITS; Qt, (0.5- 10 ft.) @ 0.5' Orangish-brown to orangish-gray sandy siltstone to fine- to coarse-grained pebbly sandstone with local cobbles and 1 boulder; moderately dense to friable; damp; roots to 8 ft.	Apx. B:N6E,12SE			
5									
10									
15									
20									

TOTAL DEPTH: 10 feet ←N72E SCALE: 1 inch = 5 feet



No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

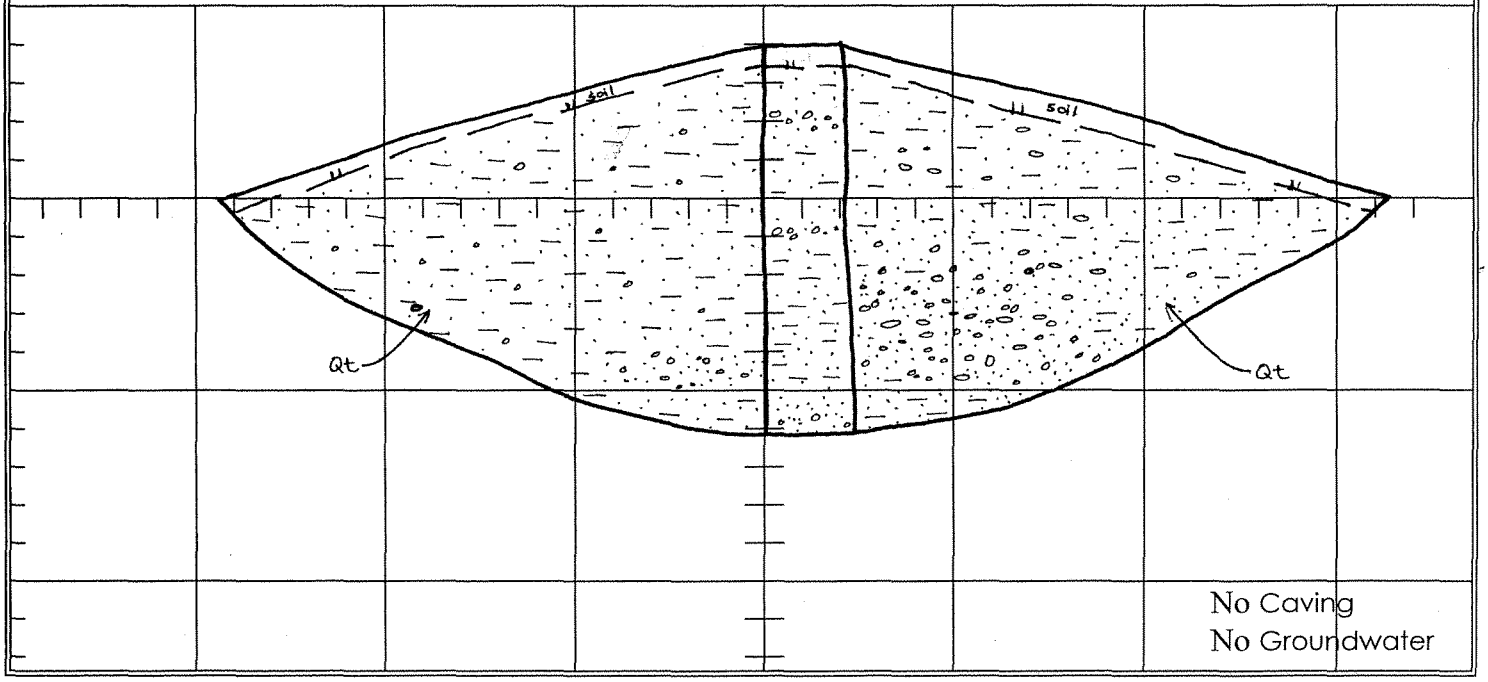
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1116 EXCAVATED: 5/16/01

TRENCH LOG NO. T-3M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL; (0-0.5 ft.) @ 0' Medium grayish-brown silt to sandy silt; stiff; dry to slightly damp QUATERNARY TERRACE DEPOSITS; Qt, (0.5-10 ft.) @ 0.5' Yellowish-brown to olive-gray siltstone, sandy siltstone and pebbly sandstone; moderately dense to friable; damp				
5									
10					COMMENTS: -Northern wall coarser-grained				
15									
20									

TOTAL DEPTH: 10 feet ←N35E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG/BJS

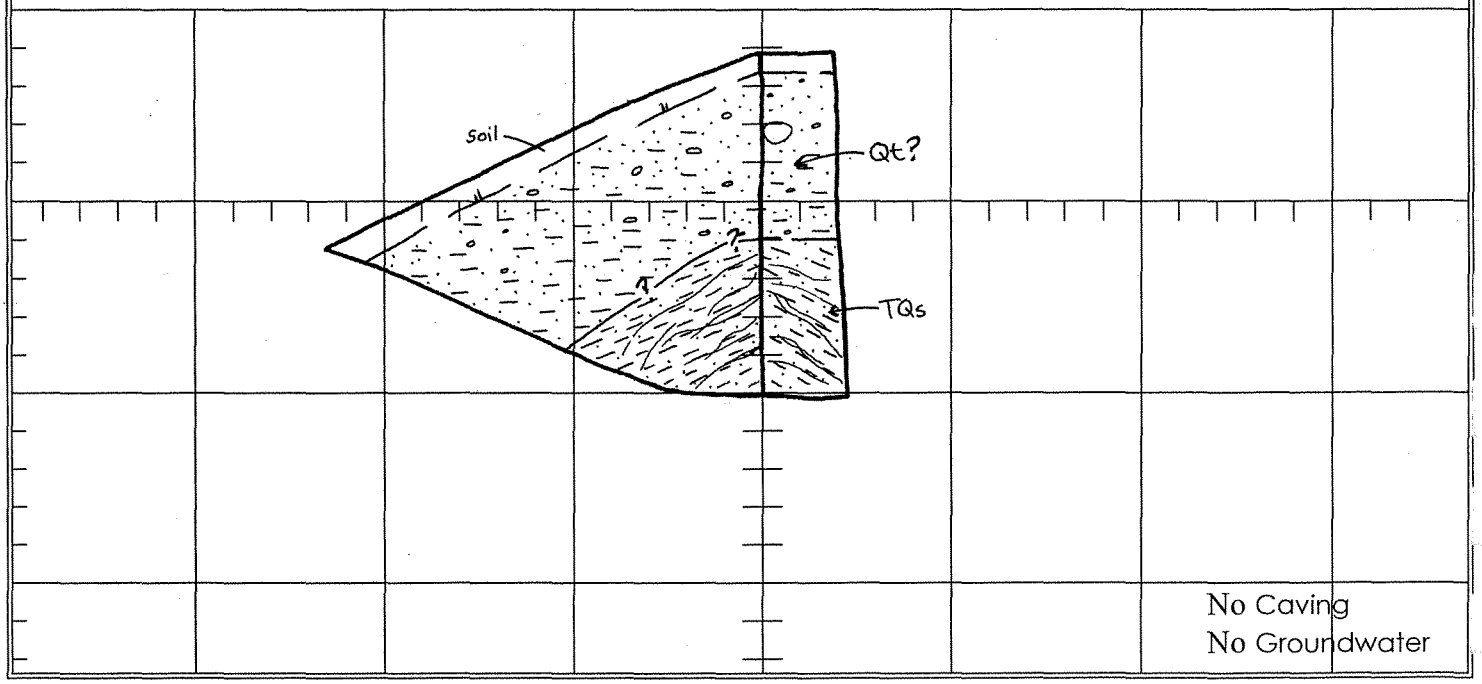
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1110 EXCAVATED: 5/16/01

TRENCH LOG NO. T-4M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL; (0-0.5 ft.) @ 0' Grayish-brown silt to sandy silt; stiff; dry QUATERNARY TERRACE DEPOSITS?; Qt?, (0.5 - 5 ft.) @ 0.5' Medium orangish-brown siltstone; sandy siltstone and pebbly sandstone; moderately friable but dense; damp				
5					BEDROCK; TQs, (5-9 ft.) @ 5' Yellowish-gray siltstone; dense; moderately fractured with caliche; damp	Apx.B/f:N65W,21NE			
10					COMMENTS: -TQs possibly creep affected				
15									
20									

TOTAL DEPTH: 9 feet ←N56E SCALE: 1 inch = 5 feet

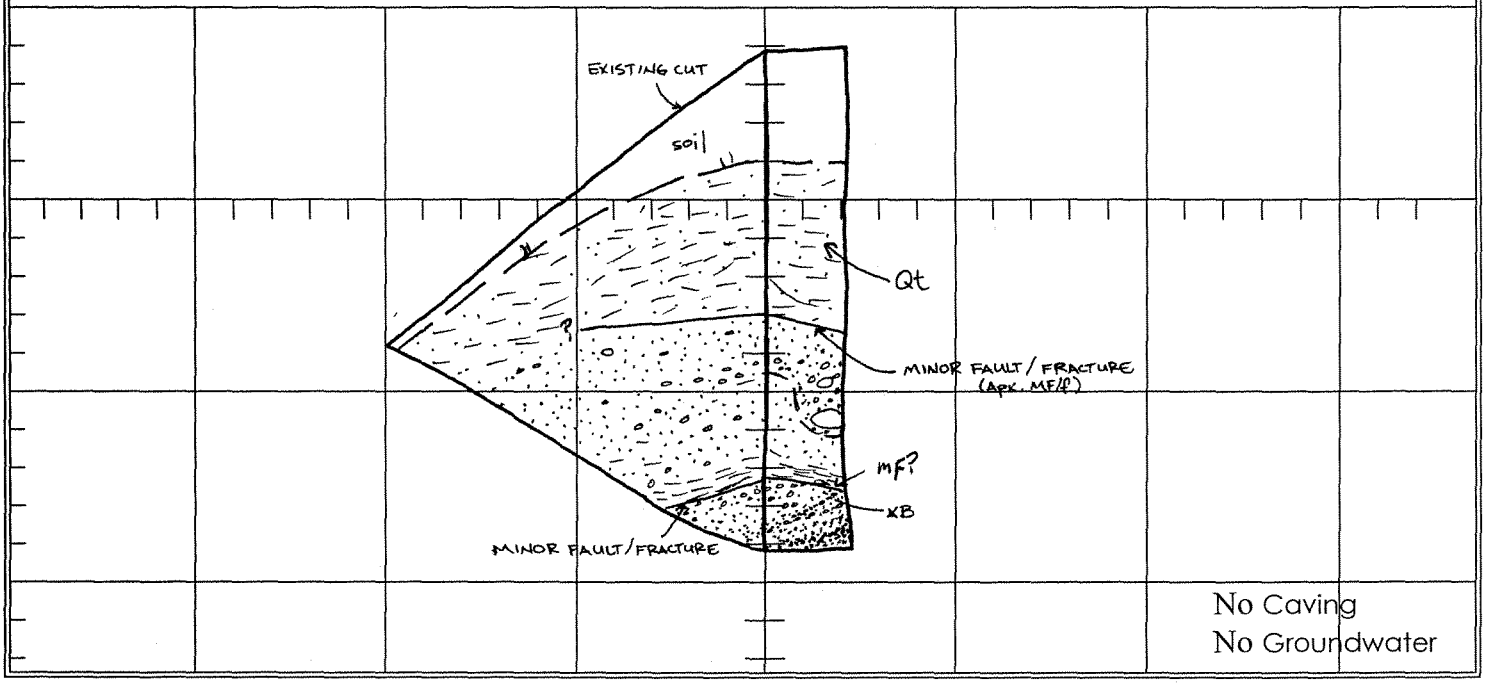


CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1
PROJECT: Mesas Entertainment DATE: 7/22/04
LOGGED BY: DGG/BJS
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket
ELEVATION: 1088 EXCAVATED: 5/16/01

TRENCH LOG NO. T-5M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL; (0-3 ft.) @ 0' Grayish-brown silt; firm to stiff; dry				
					QUATERNARY TERRACE DEPOSITS; Qt, (3-13 ft.) @ 3' Light yellowish-brown to yellowish-gray interbedded sandstone, pebbly sandstone, sandy siltstone and silty pebbly sandstone with scattered cobbles; moderately dense to dense; coarse materials friable; slightly damp to damp; cross-bedding common	XB:N68E,17SE Apx.MF/f: N50W,15NE			
5									
10									
15					COMMENTS: -Upper 3-4 ft. of Qt weathered -Minor faults/fractures and tilted bedding observed in Qt suggest proximity of trench to fault zone and/or suficial creep -Coarse material probably represents basal Qt layer				
20									

TOTAL DEPTH: 13 feet N58W→ SCALE: 1 inch = 5 feet



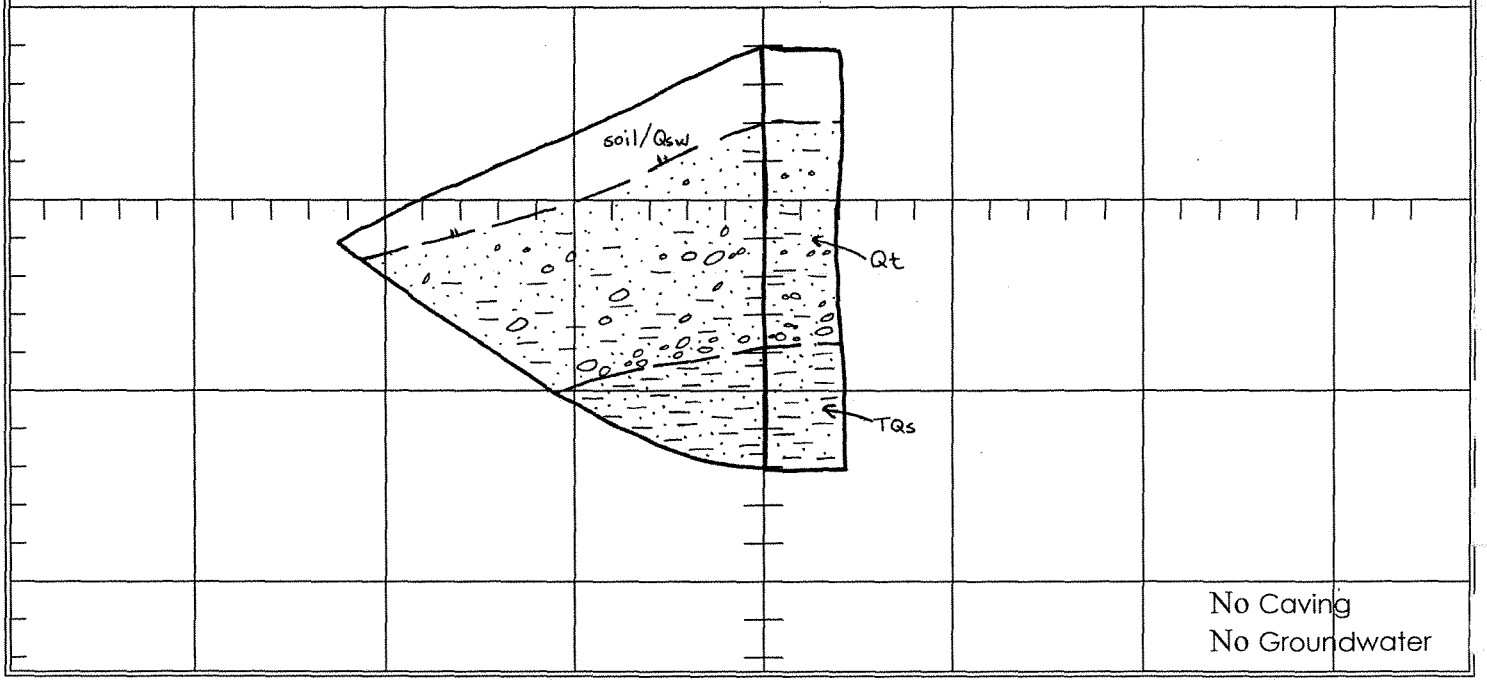
No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1
PROJECT: Mesas Entertainment DATE: 7/22/04
LOGGED BY: DGG
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket
ELEVATION: 1089 EXCAVATED: 5/16/01

TRENCH LOG NO. T-6M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-2 ft.) @ 0' Grayish-brown silt; stiff; dry to slightly damp; abundant voids up to ¼" diameter QUATERNARY TERRACE DEPOSITS; Qt, (2-8 ft.) @ 2' Orangish-brown to medium-brown siltstone, sandy siltstone and pebbly sandstone with a basal cobble zone; loose to moderately dense and locally friable; damp				
5									
10					BEDROCK; TQs, (8-11 ft.) @ 8' Tan to light-gray to olive-gray siltstone to sandy siltstone; moderately dense; damp	TQs massive			
15									
20									

TOTAL DEPTH: 11 feet ←N46E SCALE: 1 inch = 5 feet

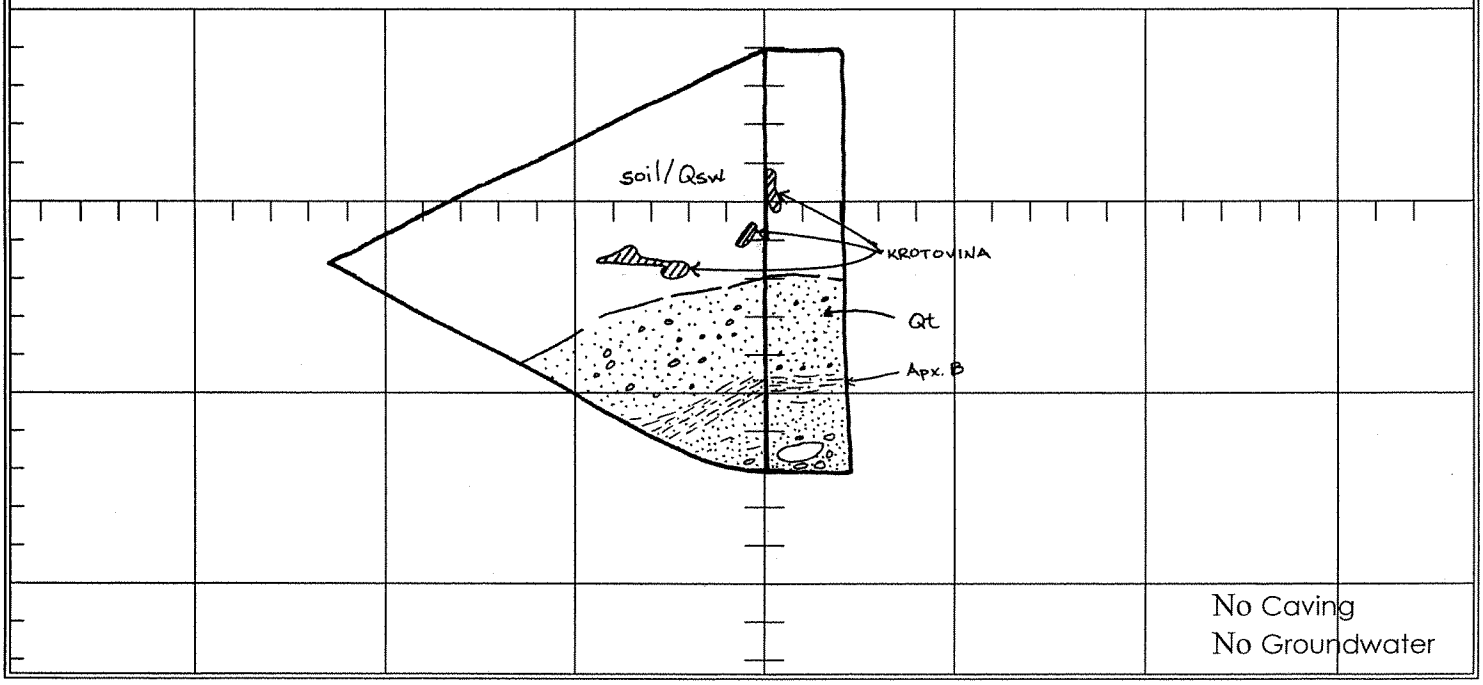


CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1
PROJECT: Mesas Entertainment DATE: 7/22/04
LOGGED BY: DGG/BJS
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket
ELEVATION: 1078 EXCAVATED: 5/16/01

TRENCH LOG NO. T-7M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-6 ft.) @ 0' Grayish-brown silt to sandy silt; stiff; damp; scattered pebbles; pinhole voids				
5					QUATERNARY TERRACE DEPOSITS; Qt, (6-11 ft.) @ 6' Interbedded orangish- to medium-brown, blackish, and tan to light gray Fe02 stained siltstone, sandy siltstone, and fine- to coarse-grained cobbly pebbly sandstone; loose and friable to moderately dense; damp	Apx. B:N88E,21NW			
10									
15					COMMENTS: -Roots to 8 ft. -Qt appears slightly disturbed; possible landslide movement				
20									

TOTAL DEPTH: 11 feet ←N4W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

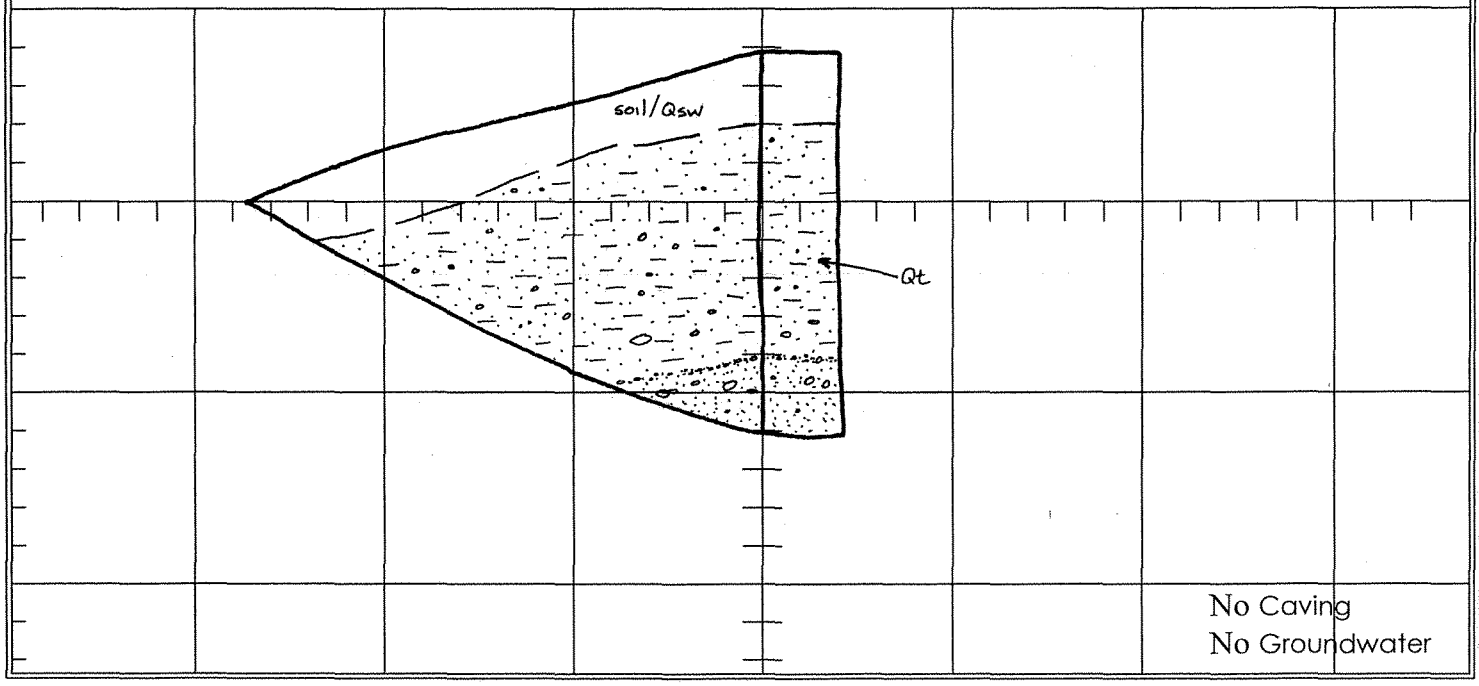
ELEVATION: 1141 EXCAVATED: 5/16/01

TRENCH LOG

NO. T-8M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-2.5 ft.) @ 0' Grayish-brown silt to sandy silt with scattered pebbles; stiff; dry to slightly damp QUATERNARY TERRACE DEPOSITS; Qt, (2.5-10 ft.) @ 2.5' Orangish- to grayish-brown siltstone; sandy siltstone and pebbly sandstone with local cobbles; loose to moderately dense; locally friable; damp	Apx.B:N47W,6NE			
5									
10									
15									
20									

TOTAL DEPTH: 10 feet ←N44E SCALE: 1 inch = 5 feet

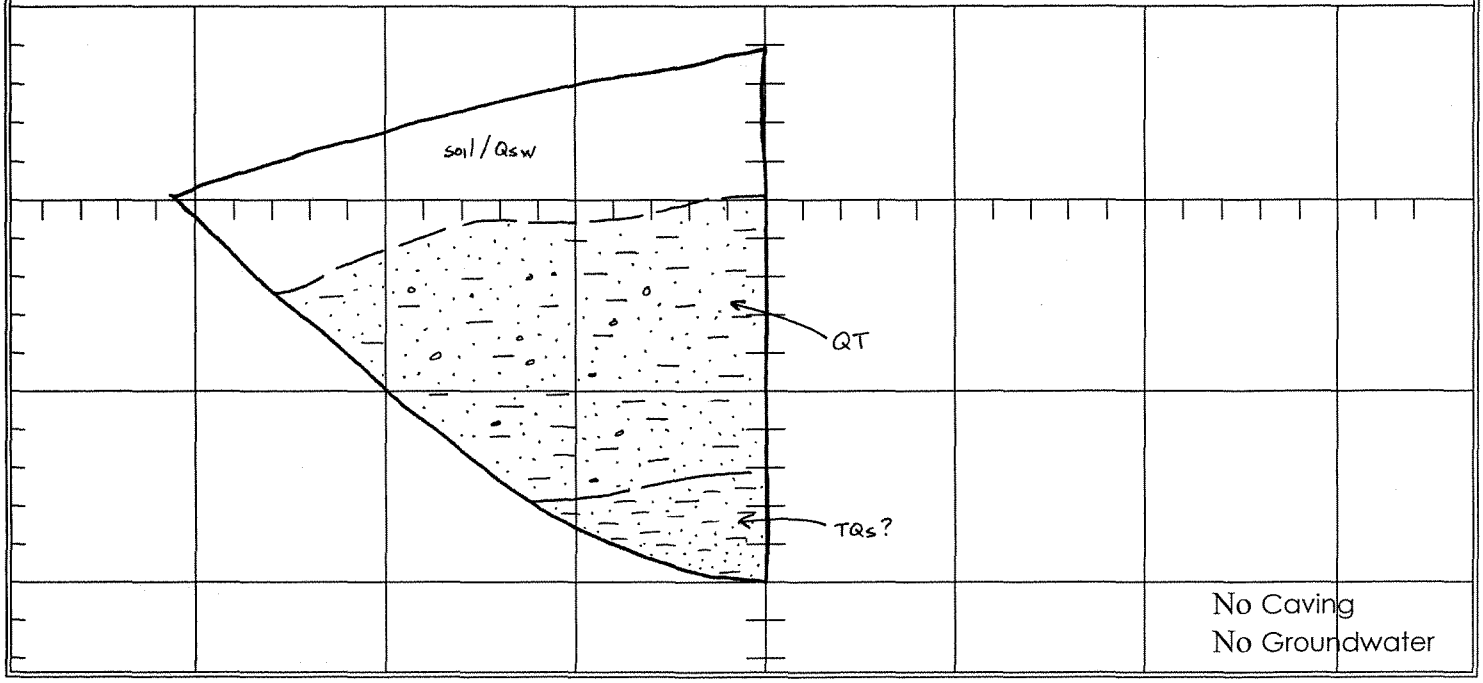


CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1
PROJECT: Mesas Entertainment DATE: 7/22/04
LOGGED BY: DGG
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket
ELEVATION: 1120 EXCAVATED: 5/16/01

TRENCH LOG
NO. T-9M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-4 ft.) @ 0' Grayish-brown silt; firm to stiff; dry to slightly damp				
5					QUATERNARY TERRACE DEPOSITS; Qt, (4-11 ft.) @ 4' Orangish- to medium-brown siltstone and sandy siltstone with scattered pebbles; loose to moderately dense; damp				
10					BEDROCK?; TQs?, (11-14 ft.) @ 11' Light grayish-brown siltstone to slightly sandy siltstone; damp				
15					COMMENTS: -Lower portion of trench not entered due to loose conditions				
20									

TOTAL DEPTH: 14 feet ←N87E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

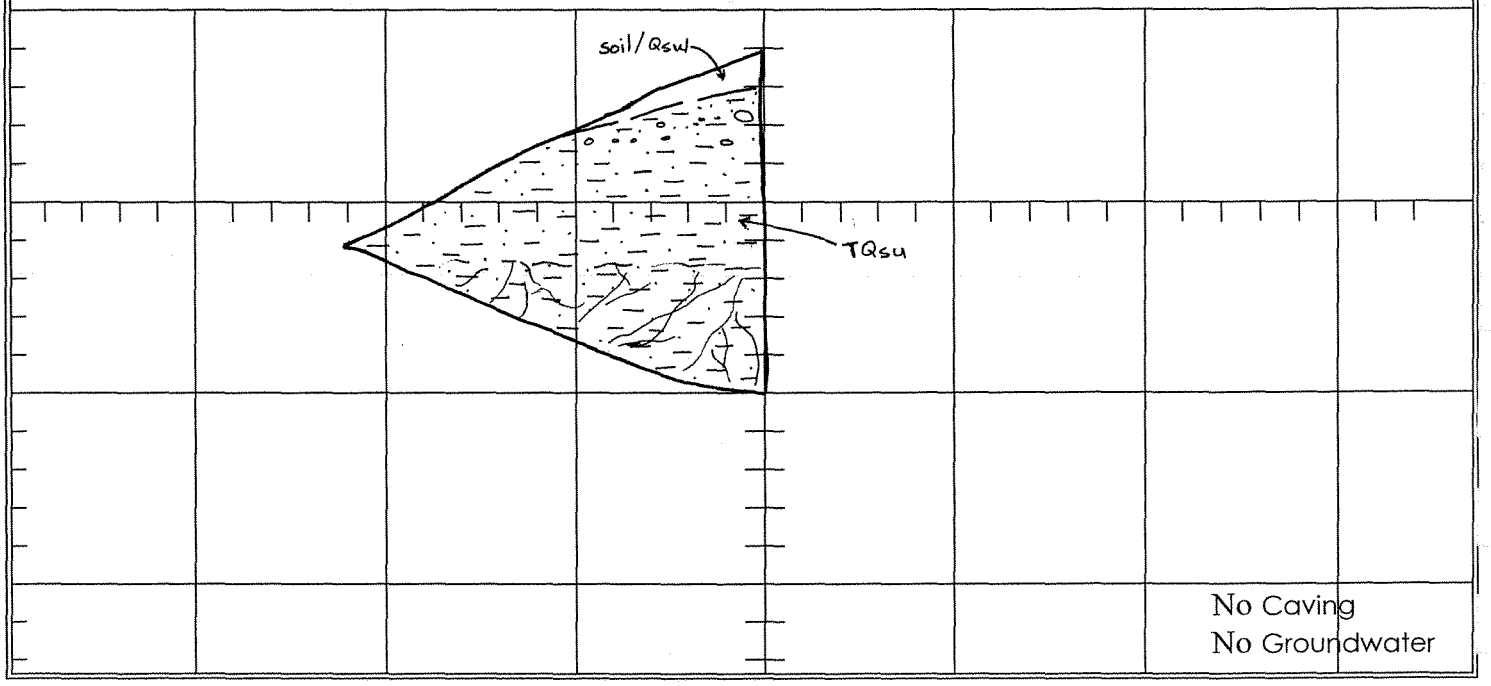
ELEVATION: 1171 EXCAVATED: 5/16/01

TRENCH LOG

NO. T-10M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-1 ft.) @ 0' Grayish-brown silt to sandy silt; firm to stiff; dry to slightly damp BEDROCK; TQsu, (1-9 ft.) @ 1' Orangish-brown sandy siltstone to pebbly sandstone @ 2.5' Medium-brown siltstone; moderately dense; damp; and medium brownish-gray siltstone; dense; moderately fractured with caliche; damp	TQs - Massive			
5									
10									
15									
20									

TOTAL DEPTH: 9 feet ←N6W SCALE: 1 inch = 5 feet



No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

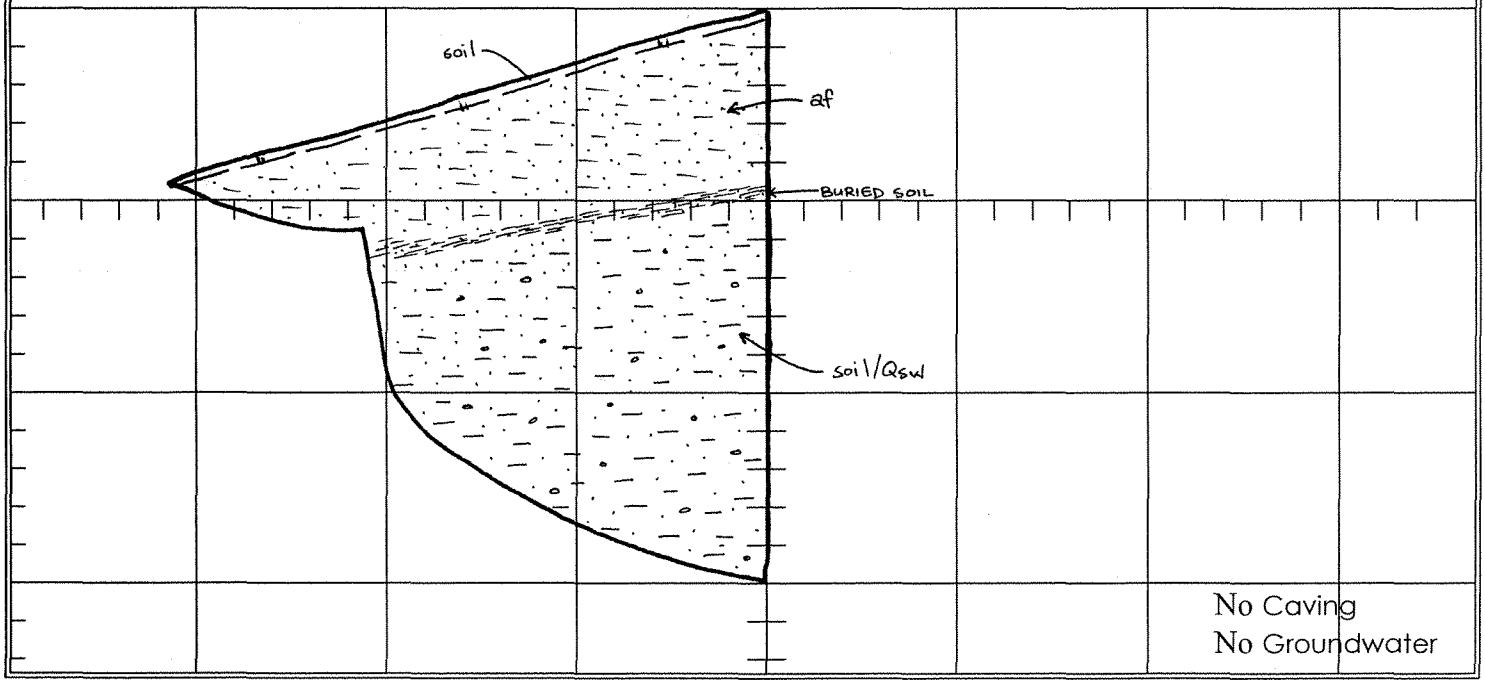
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1138 EXCAVATED: 5/16/01

TRENCH LOG NO. T-11M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL; (0-0.25 ft.) @ 0' Grayish-brown silt; firm; dry ARTIFICIAL FILL; af, (0.25-4.5 ft.) @ 0.25' Grayish-brown siltstone; moderately dense; damp				
5					SOIL/SLOPEWASH?; Soil/Qsw?, (4.5-15 ft.) @ 4.5' Dark grayish-brown silt; firm; damp; pinhoe voids @ 5' Slightly orangish-brown siltstone to sandy siltstone with scattered pebbles; moderately dense; damp				
10									
15					COMMENTS: -Logged from surface -Buried soil layer @ 4.5 ft.				
20									

TOTAL DEPTH: 15 feet ←N10E SCALE: 1 inch = 5 feet



No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

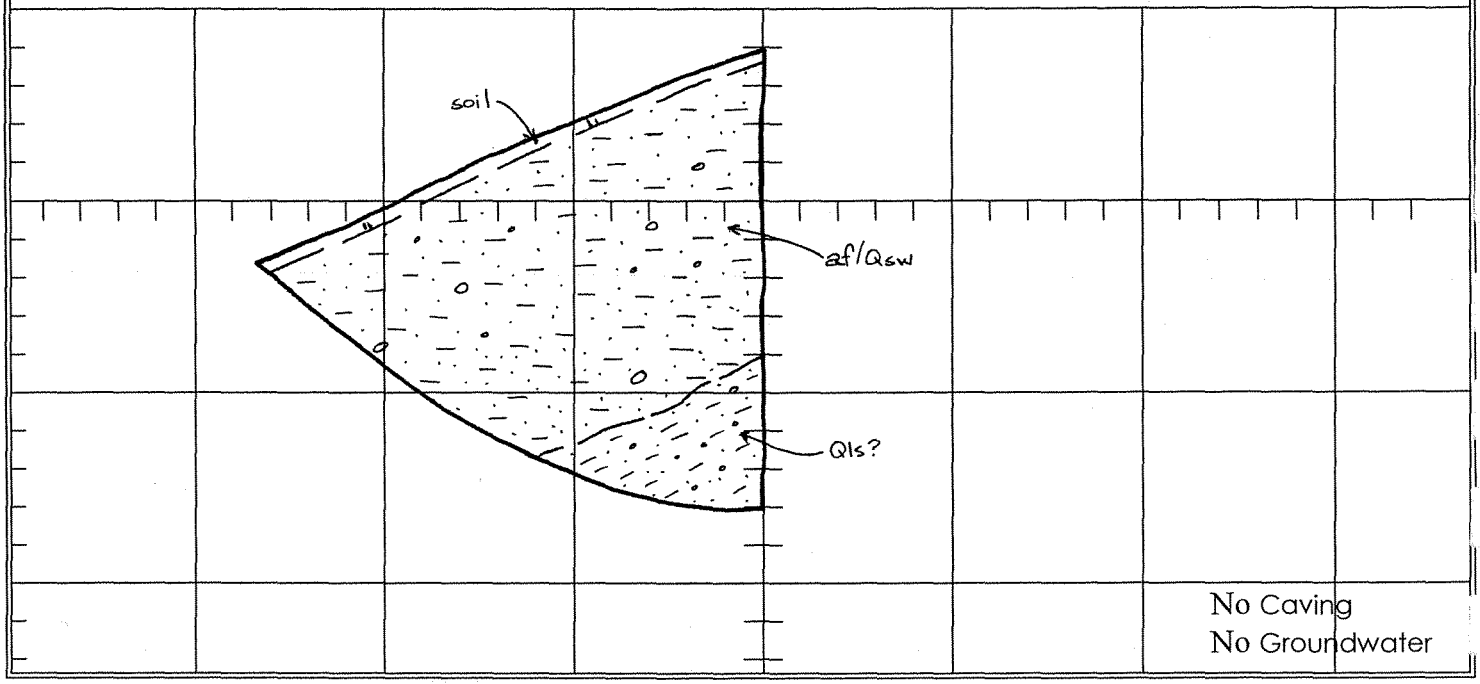
ELEVATION: 1153 EXCAVATED: 5/16/01

TRENCH LOG

NO. T-12M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL; (0-0.25 ft.) @ 0' Grayish-brown silt; firm; dry ARTIFICIAL FILL/SLOPEWASH; af/Qsw, (0.25-8 ft.) @ 0.25' Medium-brown silt to sandy silt with scattered pebbles and a few cobbles; fairly soft to hard at bottom; damp				
5									
10					QUATERNARY LANDSLIDE?; Qls?, (8-12 ft.) @ 8' Yellowish-brown siltstone to sandy siltstone with scattered pebbles; moderately dense; damp; no bedding; appears slightly disturbed				
15									
20									

TOTAL DEPTH: 12 feet ←N27E SCALE: 1 inch = 5 feet



No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

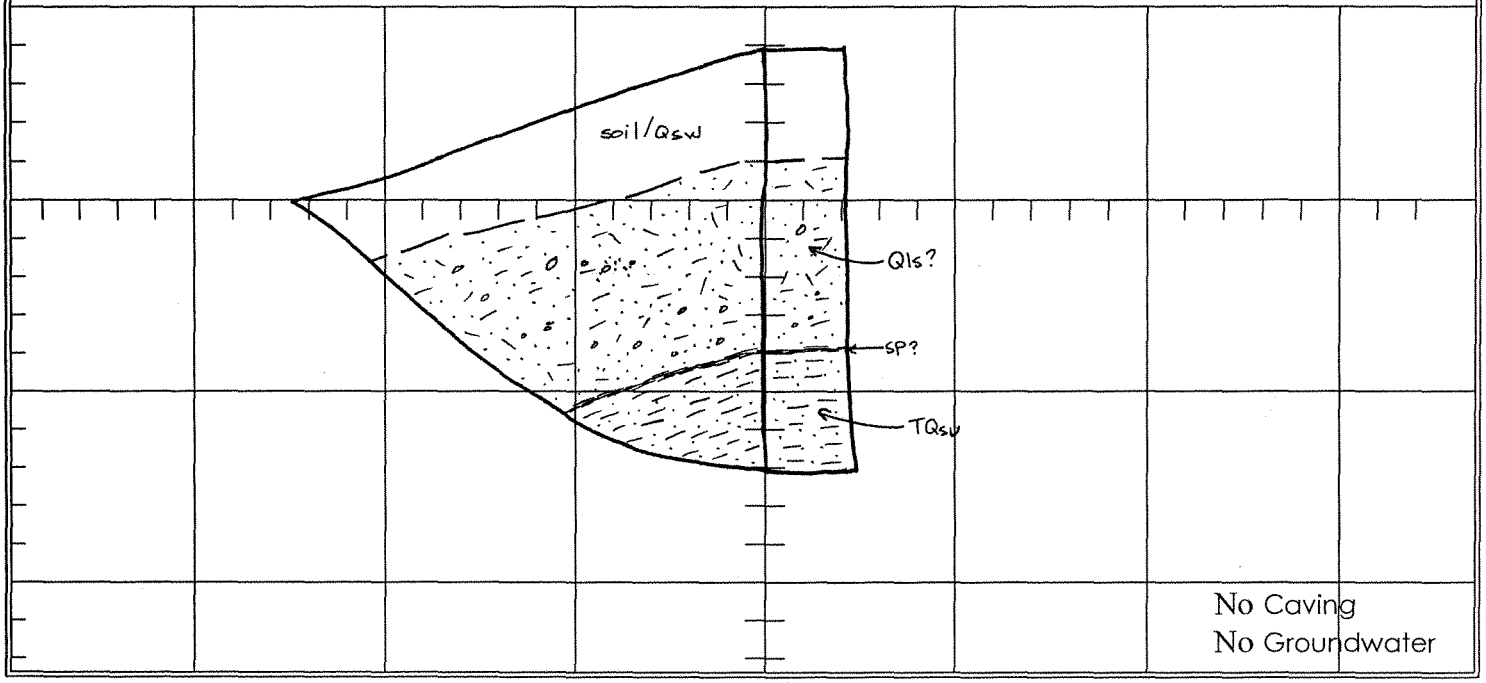
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1255 EXCAVATED: 5/17/01

TRENCH LOG NO. T-13M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-3 ft.) @ 0' Medium grayish-brown silt to sandy silt with scattered pebbles and a few cobbles; firm to stiff; dry to slightly damp QUATERNARY LANDSLIDE?; Qls?, (3-8 ft.) @ 3' Light grayish-brown/browish-gray assemblage of siltstone; sandy siltstone and pebbly sandstone; loose to moderately dense; damp; punky; 1"-thick medium-brown clayey siltstone at base BEDROCK; TQsu, (8-11 ft.) @ 8' Light grayish-brown siltstone to sandy siltstone; moderately dense; damp	SP?:N46W,18NE			
5									
10									
15									
20									

TOTAL DEPTH: 11 feet ←Due N SCALE: 1 inch = 5 feet

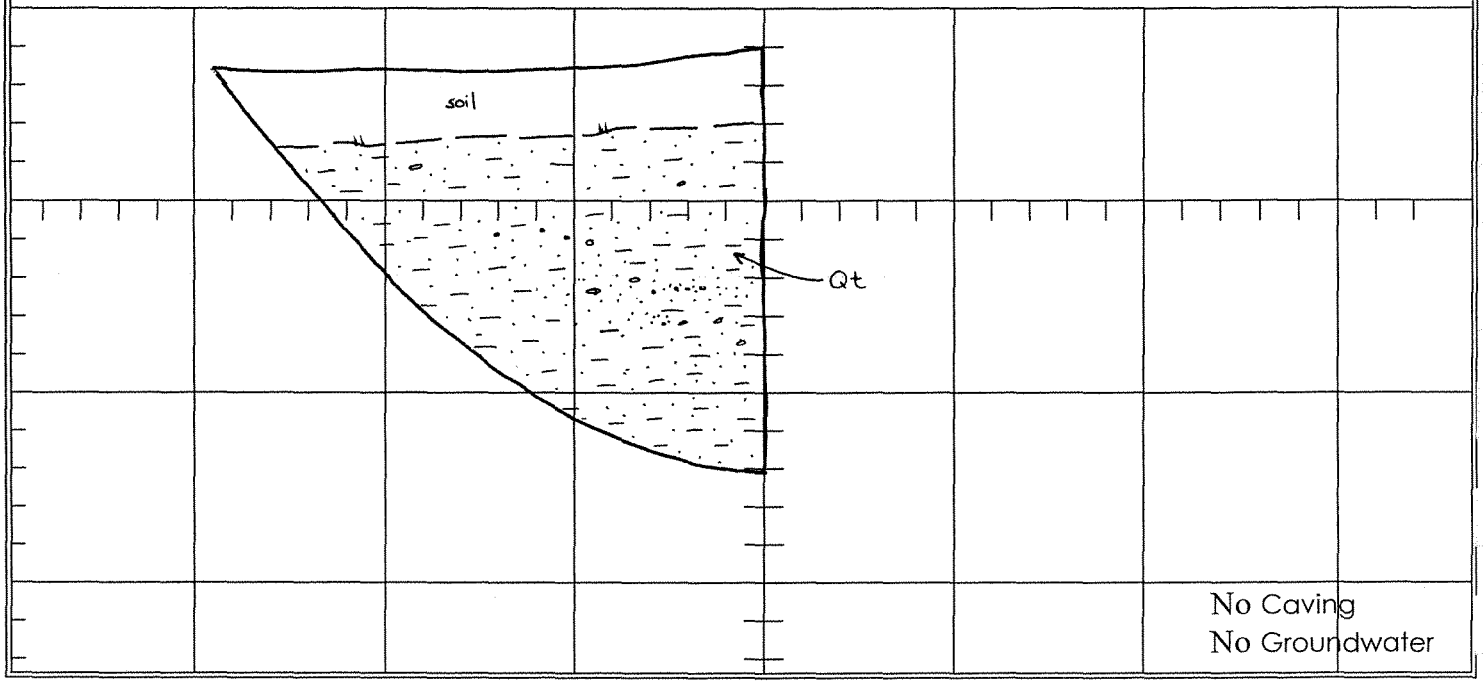


CLIENT: Newhall Ranch Co.
JOB NO: 01-1703M-1
PROJECT: Mesas Entertainment
DATE: 7/22/04
LOGGED BY: DGG
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket
ELEVATION: 1280
EXCAVATED: 5/17/01

TRENCH LOG
NO. T-14M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL; (0-2 ft.) @ 0' Medium- to dark grayish-brown silt to sandy silt with scattered pebbles; firm to stiff; damp QUATERNARY TERRACE DEPOSITS; Qt, (2-11 ft.) @ 2' Grayish-brown siltstone, sandy siltstone and pebbly sandstone and light yellowish-gray siltstone with scattered pebbles; moderately dense; damp; caliche surfaces; no laminations or distinct bedding COMMENTS: -Soil has vague columnar structure				
5									
10									
15									
20									

TOTAL DEPTH: 11 feet ←N14W SCALE: 1 inch = 5 feet

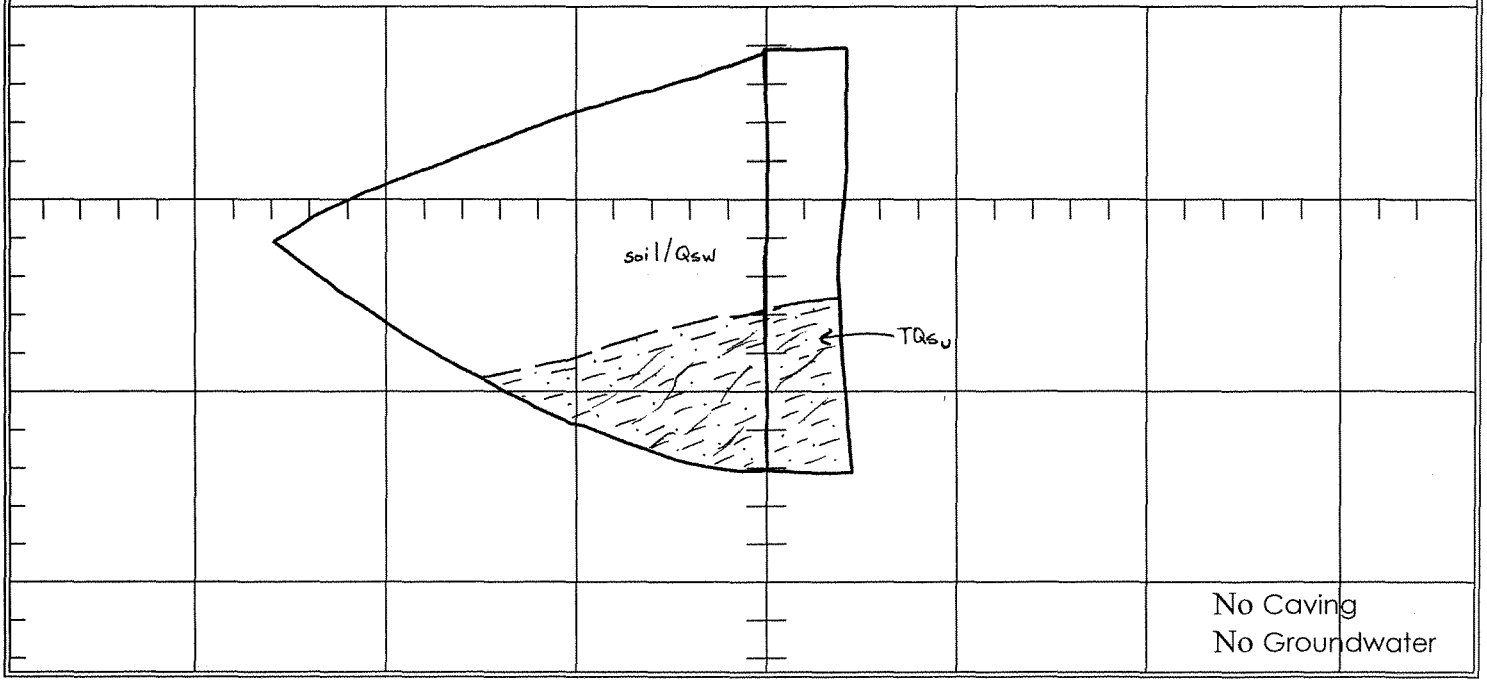


CLIENT: Newhall Ranch Co.
PROJECT: Mesas Entertainment
JOB NO: 01-1703M-1
DATE: 7/22/04
LOGGED BY: DGG
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket
ELEVATION: 1145
EXCAVATED: 5/17/01

TRENCH LOG NO. T-15M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-7 ft.) @ 0' Medium- to yellowish-brown silt to sandy silt with some scattered pebbles; soft to firm; damp; bottom 2 ft. fractured with caliche				
5									
					BEDROCK; TQsu, (7-11 ft.) @ 7' Medium grayish-brown siltstone; moderately dense; damp; moderately fractured with caliche linings	Apx.B:N47W,31NE			
10					COMMENTS: -From 2-7' material appears disturbed - some fractures; caliche surfaces; Possible Qls?				
15									
20									

TOTAL DEPTH: 11 feet ←N13W SCALE: 1 inch = 5 feet



No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

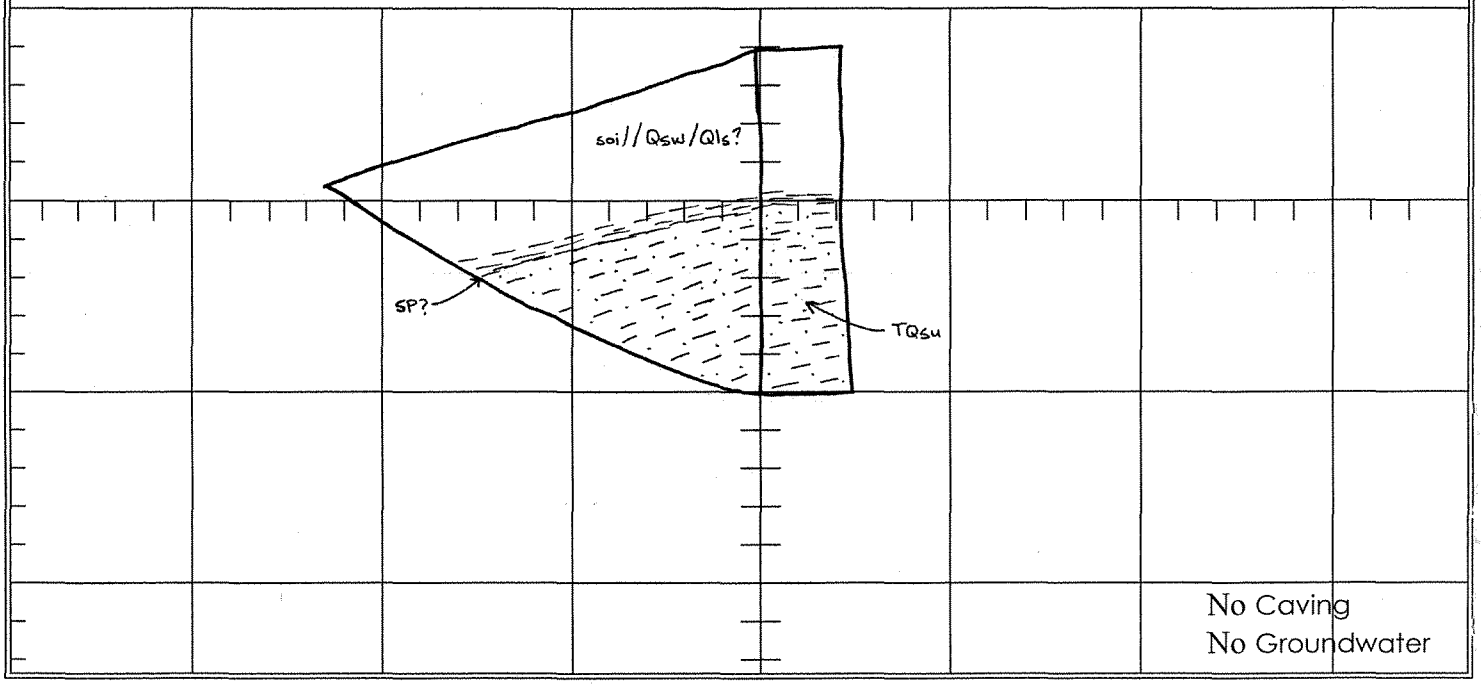
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1233 EXCAVATED: 5/17/01

TRENCH LOG NO. T-16M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH/QUATERNARY LANDSLIDE?; Soil/ Qsw/Qls?, (0-4 ft.) @ 0' Yellowish-brown to yellowish-gray silt to sandy silt with scattered pebbles; loose to moderately dense; damp; 2 to 3"-thick layer of medium gray clayey siltstone at base				
5					BEDROCK; TQsu, (4-9 ft.) @ 4' Medium to dark grayish-brown siltstone; moderately dense to dense; damp; some fracturing with caliche	SP?:N26W,15NE			
10					COMMENTS: -@ 4' SP?				
15									
20									

TOTAL DEPTH: 9 feet ←N14E SCALE: 1 inch = 5 feet



No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

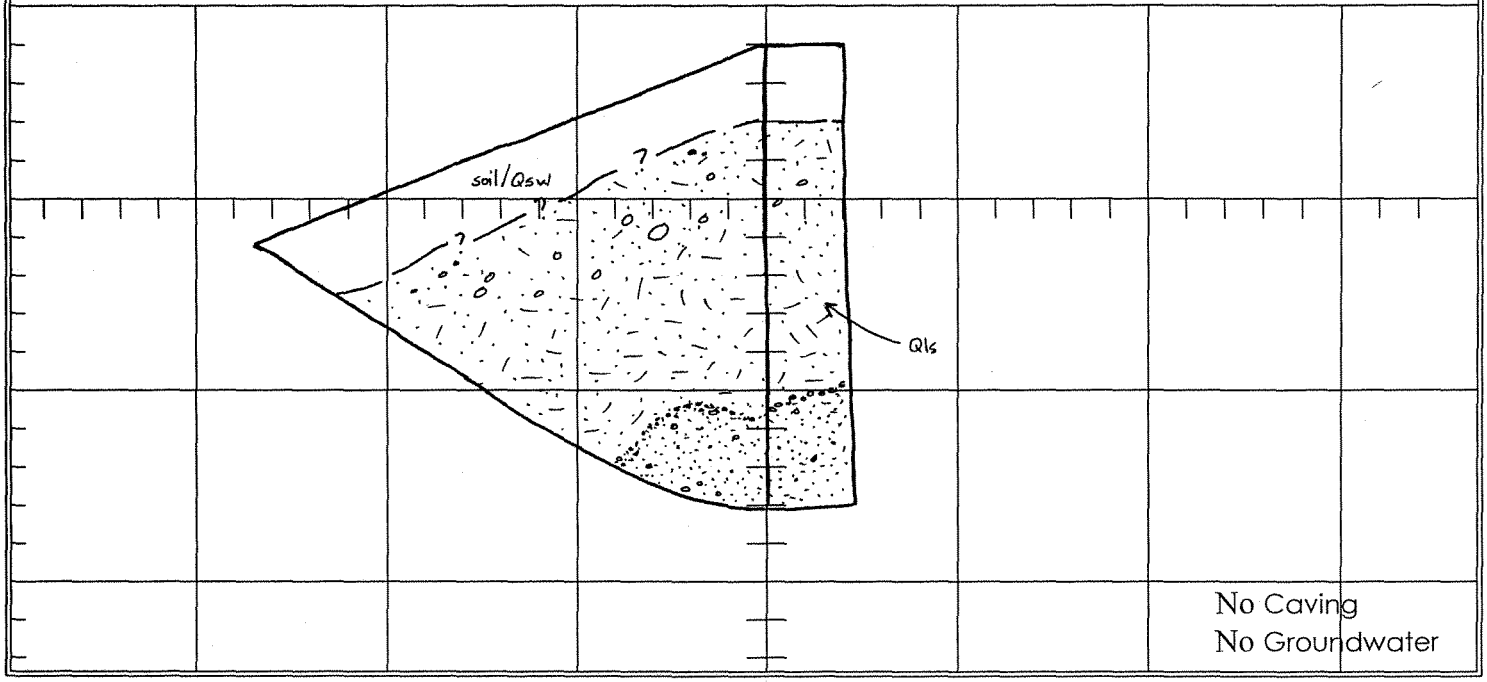
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1317 EXCAVATED: 5/17/01

TRENCH LOG NO. T-17M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-2 ft.) @ 0' Grayish-brown silt to sandy silt; firm to stiff; dry to slightly damp QUATERNARY LANDSLIDE; Qls, (2-12 ft.) @ 2' Yellowish- to grayish-brown siltstone to sandy siltstone with some scattered pebbles and cobbles in upper 3-4 ft. and medium brownish-gray to gray fine- to coarse-grained pebbly sandstone (bottom 3 ft.); siltstone is moderately dense; damp; sandstone is loose (friable); damp; some fracturing with caliche surfaces in siltstone				
5									
10									
15									
20									

TOTAL DEPTH: 12 feet ←N23E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

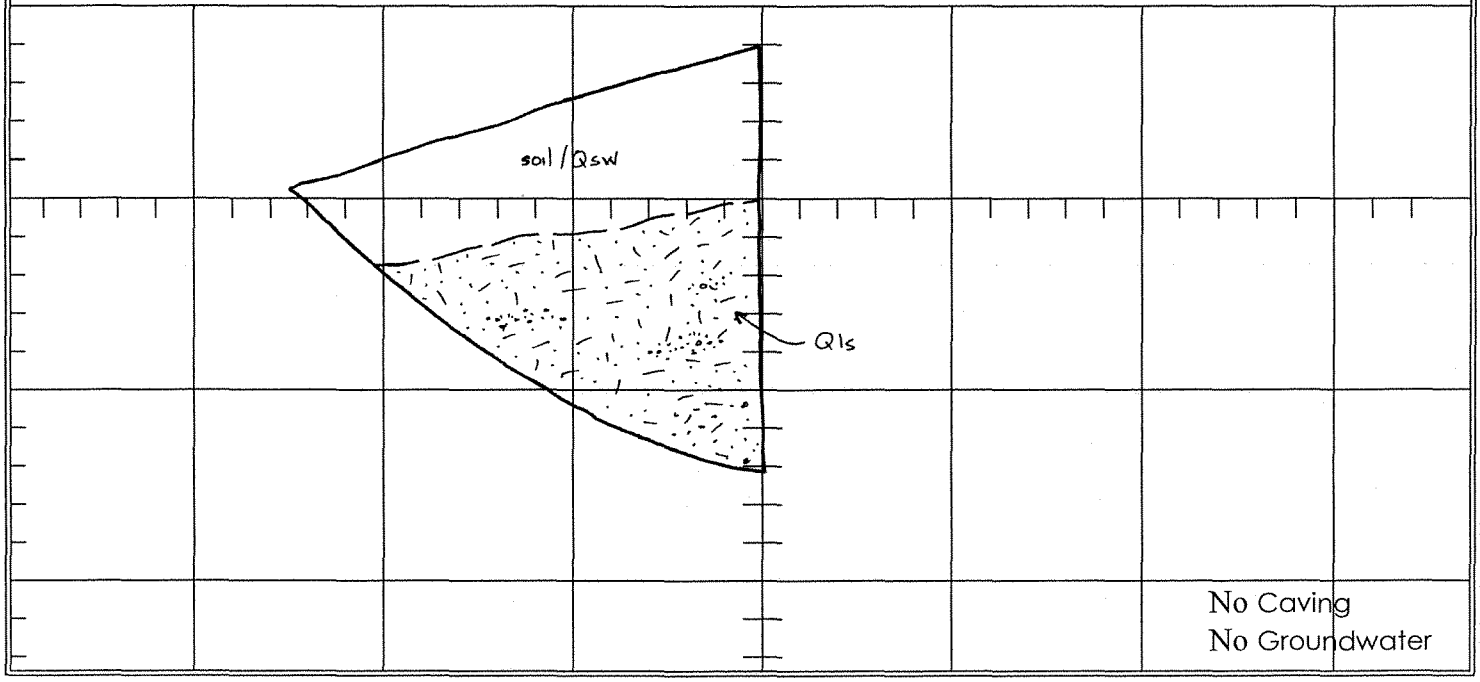
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1364 EXCAVATED: 5/17/01

TRENCH LOG NO. T-18M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-4 ft.) @ 0' Medium grayish-brown silt to sandy silt; firm to stiff; dry to slightly damp				
5					QUATERNARY LANDSLIDE; Qls, (4-11 ft.) @ 4' Chaotic assemblage of grayish-brown to olive-gray siltstone, sandy siltstone and pebbly sandstone; loose to moderately dense; damp; locally punky				
10									
15									
20									

TOTAL DEPTH: 11 feet ←N44E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

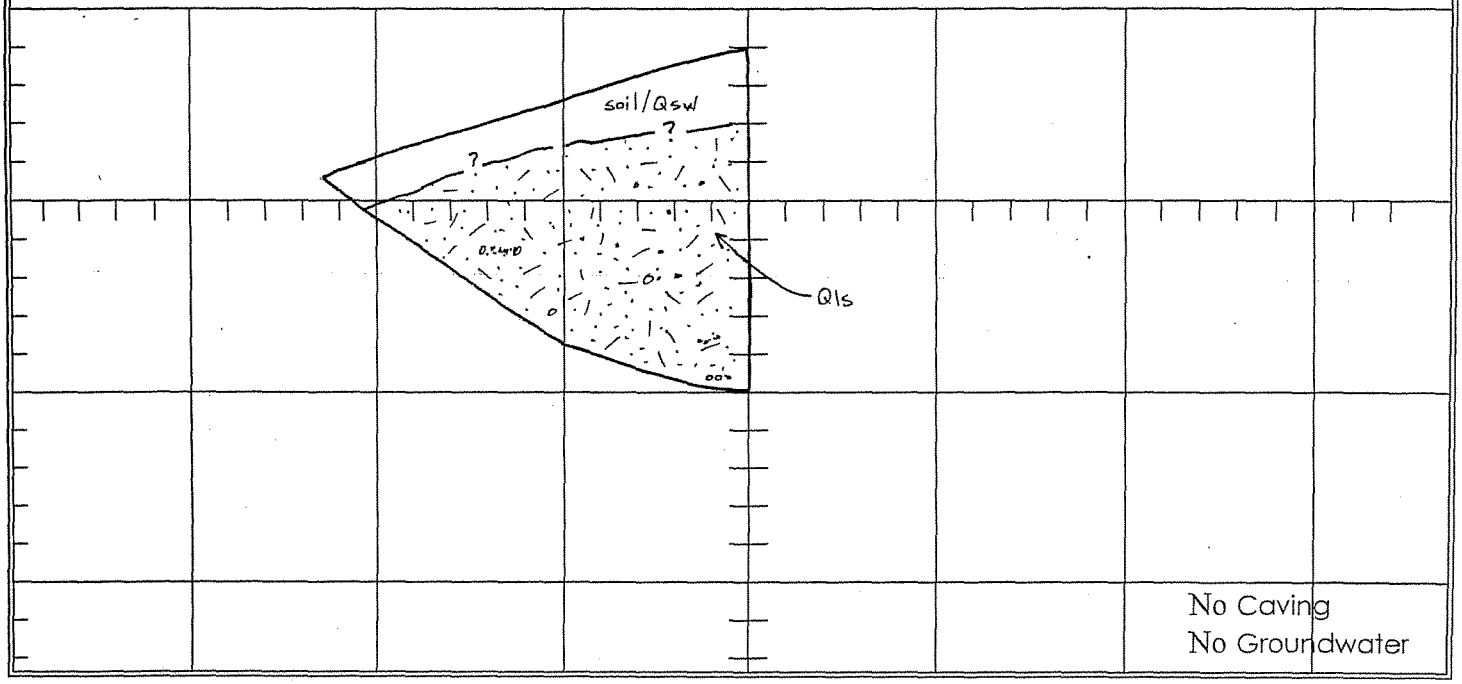
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1320 EXCAVATED: 5/17/01

TRENCH LOG NO. T-19M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-2 ft.) @ 0' Medium grayish-brown silt to sandy silt; firm to stiff; dry to slightly damp QUATERNARY LANDSLIDE; Qls, (2-9 ft.) @ 2' Chaotic assemblage of medium grayish-brown to gray siltstone, sandy siltstone with scattered pebbles, and pebbly sandstone; moderately dense; damp; sandstone is friable				
5									
10									
15									
20									

TOTAL DEPTH: 9 feet ←N22E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

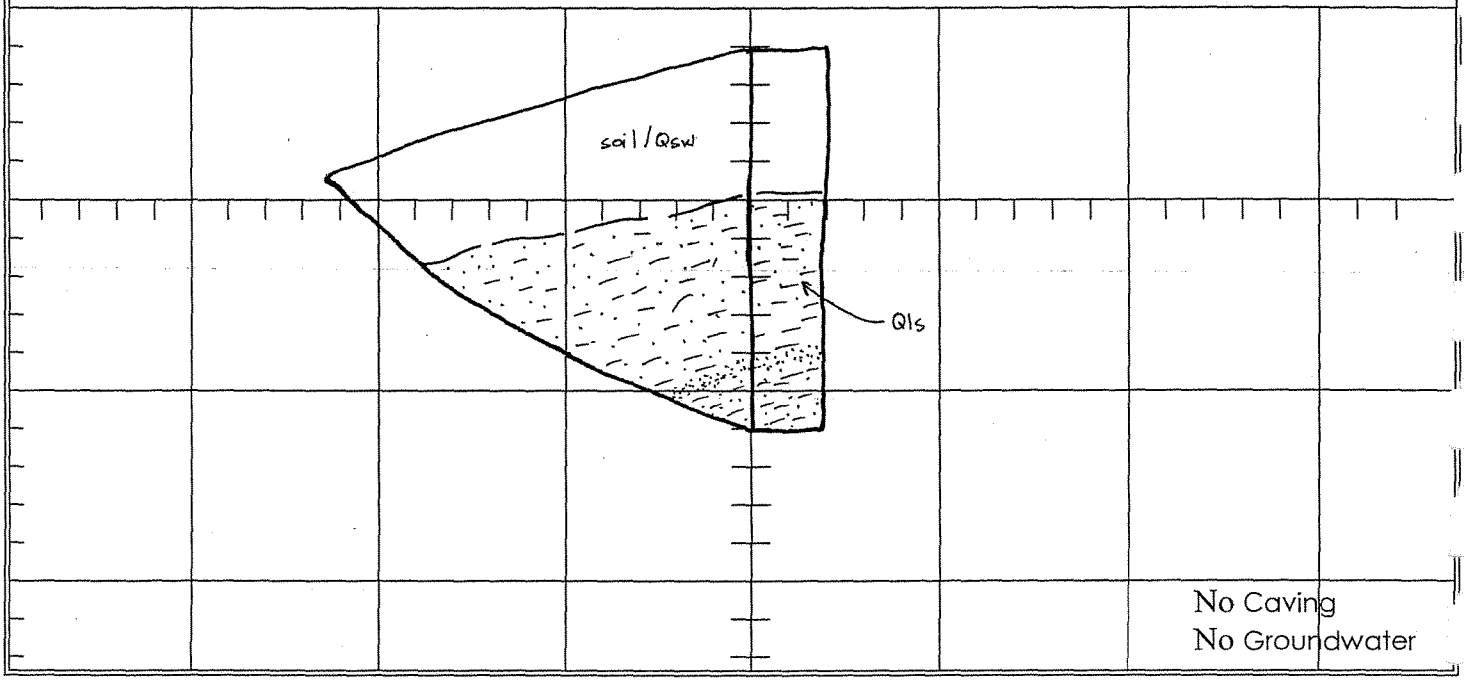
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

ELEVATION: 1263 EXCAVATED: 5/17/01

TRENCH LOG NO. T-20M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-4 ft.) @ 0' Medium grayish-brown silt and sandy silt with scattered pebbles and cobbles; firm to stiff; dry to slightly damp				
5					QUATERNARY LANDSLIDE; Qls, (4-10 ft.) @ 4' Olive-gray to brownish-gray siltstone, sandy siltstone and fine- to medium-grained sandstone; moderately dense; sandstone friable; damp	Apx.B:N29W,15NE			
10					COMMENTS: -Bottom 1' relatively tighter -Possible TQs? -Qls material not as chaotic as in previous trenches				
15									
20									

TOTAL DEPTH: 10 feet ←N3W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

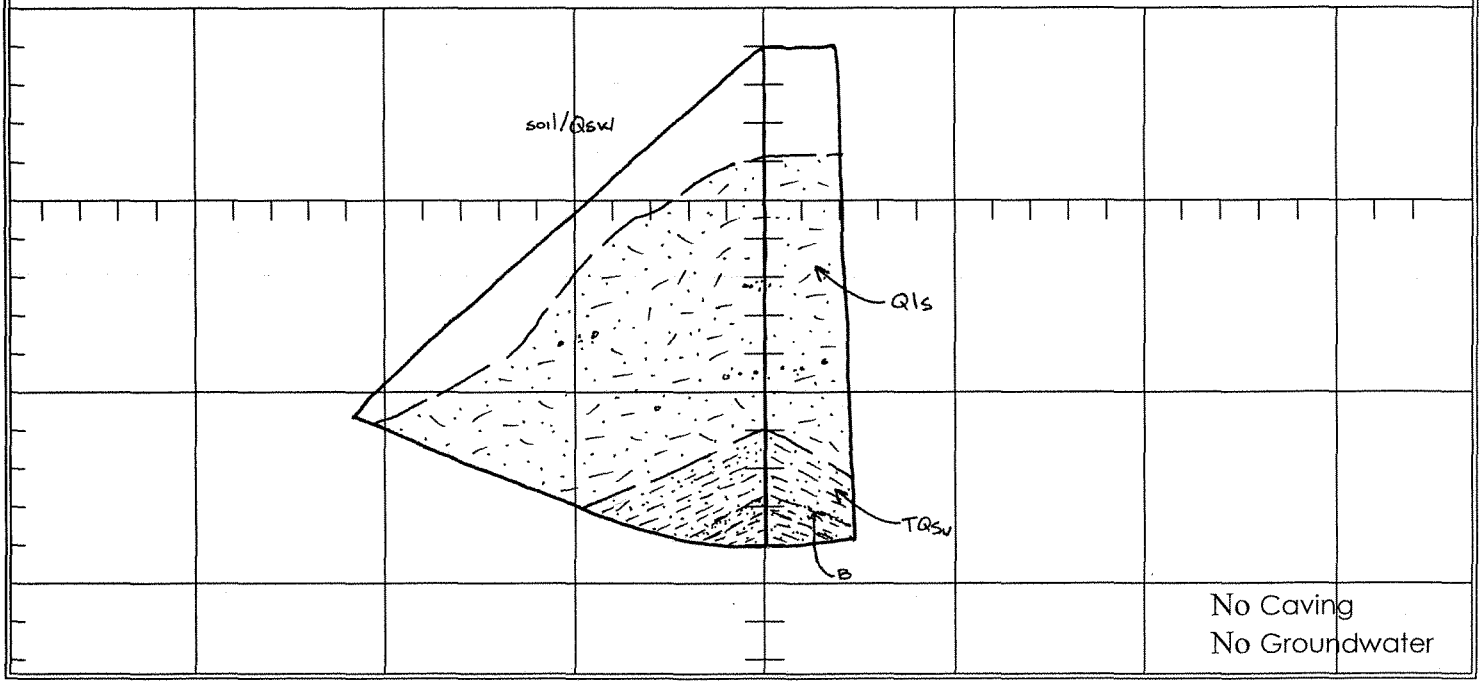
ELEVATION: 1198 EXCAVATED: 5/17/01

TRENCH LOG

NO. T-21M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-3 ft.) @ 0' Medium grayish-brown silt to sandy silt with scattered pebbles; firm to stiff; dry to slightly damp QUATERNARY LANDSLIDE; Qls, (3-10 ft.) @ 3' Chaotic assemblage of light-gray to olive-gray to dark orange-brown (Fe02?) siltstone, sandy siltstone and fine- to medium-grained sandstone; loose to moderately dense; damp; punky; caliche surfaces				
10					BEDROCK; TQsu, (10-13 ft.) @ 10' Medium-brown to olive-gray siltstone; moderately dense to dense; damp	B:N46W,12NE			
15									
20									

TOTAL DEPTH: 13 feet N81W→ SCALE: 1 inch = 5 feet

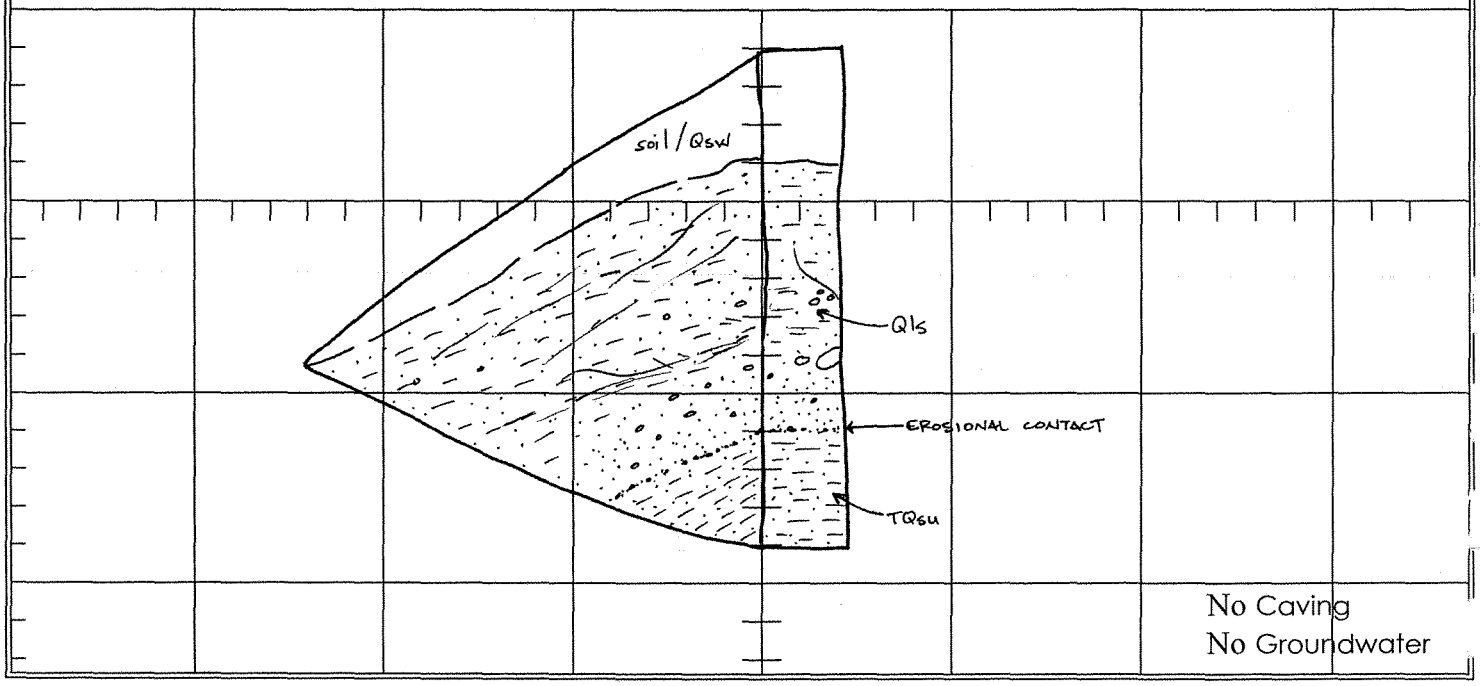


CLIENT: Newhall Ranch Co.
PROJECT: Mesas Entertainment
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket
ELEVATION: 1181
JOB NO: 01-1703M-1
DATE: 7/22/04
LOGGED BY: DGG
EXCAVATED: 5/17/01

TRENCH LOG NO. T-22M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-3 ft.) @ 0' Medium- to dark grayish-brown silt to sandy silt with scattered pebbles; firm to stiff; dry to damp QUATERNARY LANDSLIDE; Qls, (3-10 ft.) @ 3' Medium- to yellowish-brown to light-gray siltstone, sandy siltstone and pebbly sandstone with few scattered cobbles; loose to moderately dense; damp; sandstone friable; punky				
5									
10					BEDROCK; TQsu, (10-13 ft.) @ 10' Light to medium grayish-brown siltstone to sandy siltstone; moderately dense to dense; damp COMMENTS: -Qls material is stratified but disrupted	Erosional contact: N35W,30NE			
15									
20									

TOTAL DEPTH: 13 feet ←N66E SCALE: 1 inch = 5 feet



No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

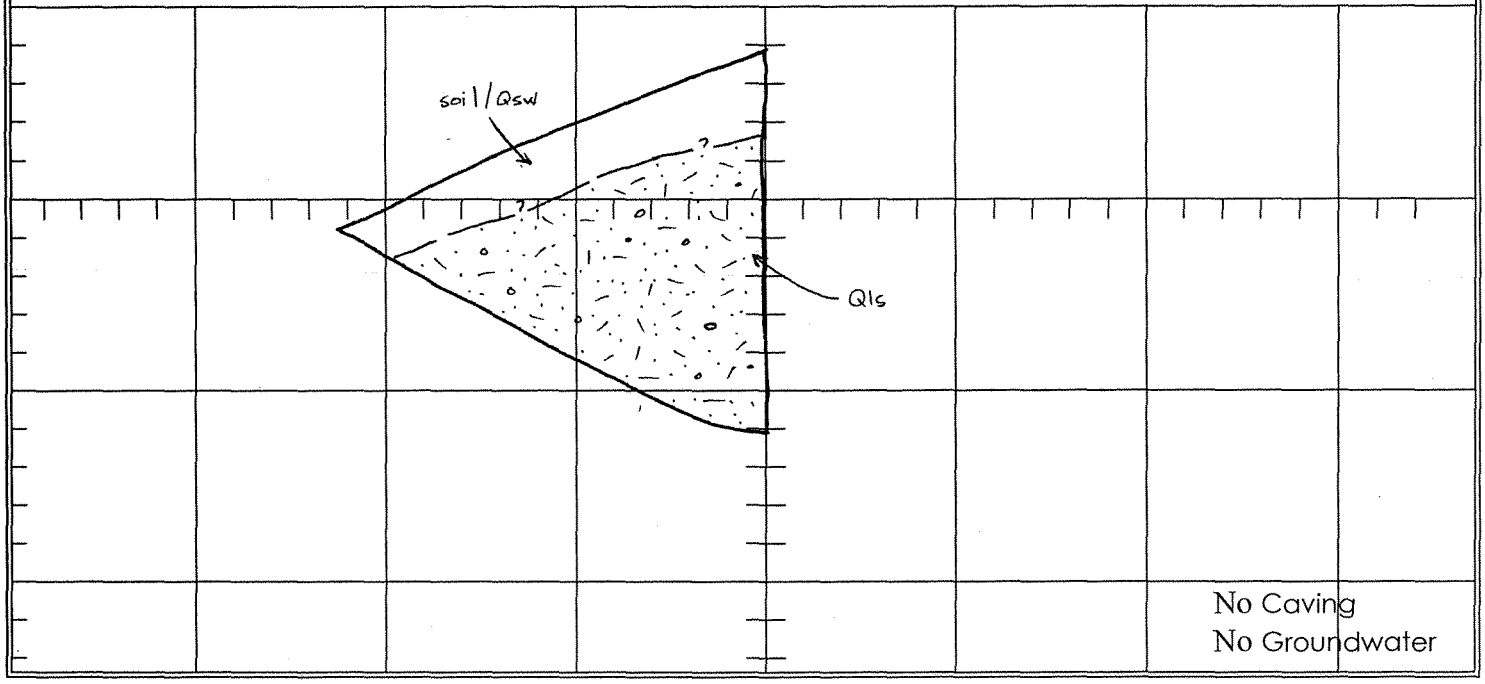
ELEVATION: 1250 EXCAVATED: 5/17/01

TRENCH LOG

NO. T-23M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-2.5 ft.) @ 0' Medium grayish-brown silt to sandy silt with scattered pebbles; firm to stiff; dry to slightly damp QUATERNARY LANDSLIDE; Qls, (2.5-10 ft.) @ 2.5' Chaotic assemblage of medium to grayish-brown siltstone, sandy siltstone and pebbly sandstone with scattered cobbles; loose to moderately dense; damp; abundant caliche				
5									
10									
15									
20									

TOTAL DEPTH: 10 feet ←N88E SCALE: 1 inch = 5 feet



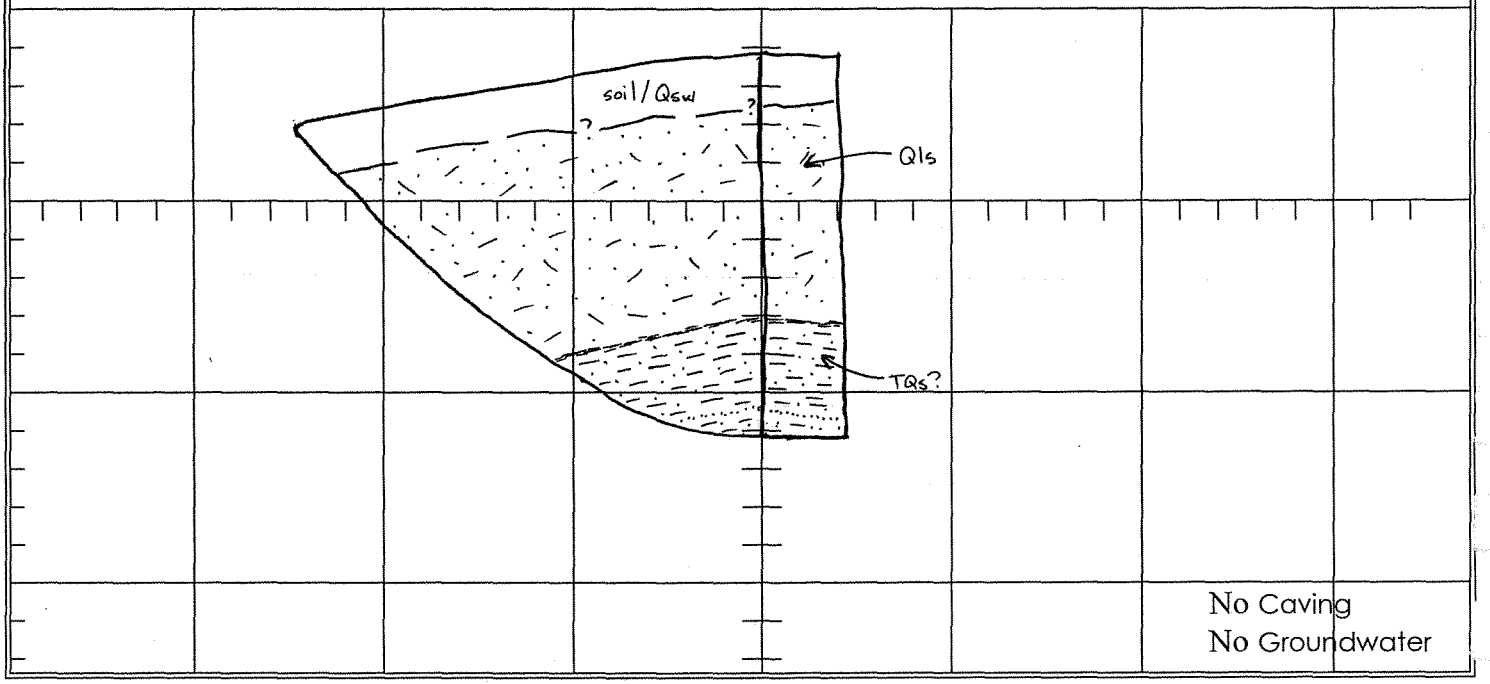
CLIENT: Newhall Ranch Co.
PROJECT: Mesas Entertainment
EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket
ELEVATION: 1167

JOB NO: 01-1703M-1
DATE: 7/22/04
LOGGED BY: DGG
EXCAVATED: 5/17/01

TRENCH LOG NO. T-24M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-1.5 ft.) @ 0' Light grayish-brown silt to sandy silt; firm to stiff; dry to slightly damp QUATERNARY LANDSLIDE; Qls, (1.5-7 ft.) @ 1.5' Chaotic assemblage of TQs lithologies; loose to moderately dense; damp; caliche surfaces				
5					BEDROCK?; TQs?, (7-10 ft.) @ 7' Medium to light grayish-brown siltstone, sandy siltstone and fine- to medium-grained sandstone; moderately dense to dense; damp	B/SP?:N33W,14NE			
10									
15									
20									

TOTAL DEPTH: 10 feet ←N60E SCALE: 1 inch = 5 feet



No Caving
No Groundwater

CLIENT: Newhall Ranch Co. JOB NO: 01-1703M-1

PROJECT: Mesas Entertainment DATE: 7/22/04

LOGGED BY: DGG

EXCAVATION METHOD: Track-Mounted Backhoe w/24" bucket

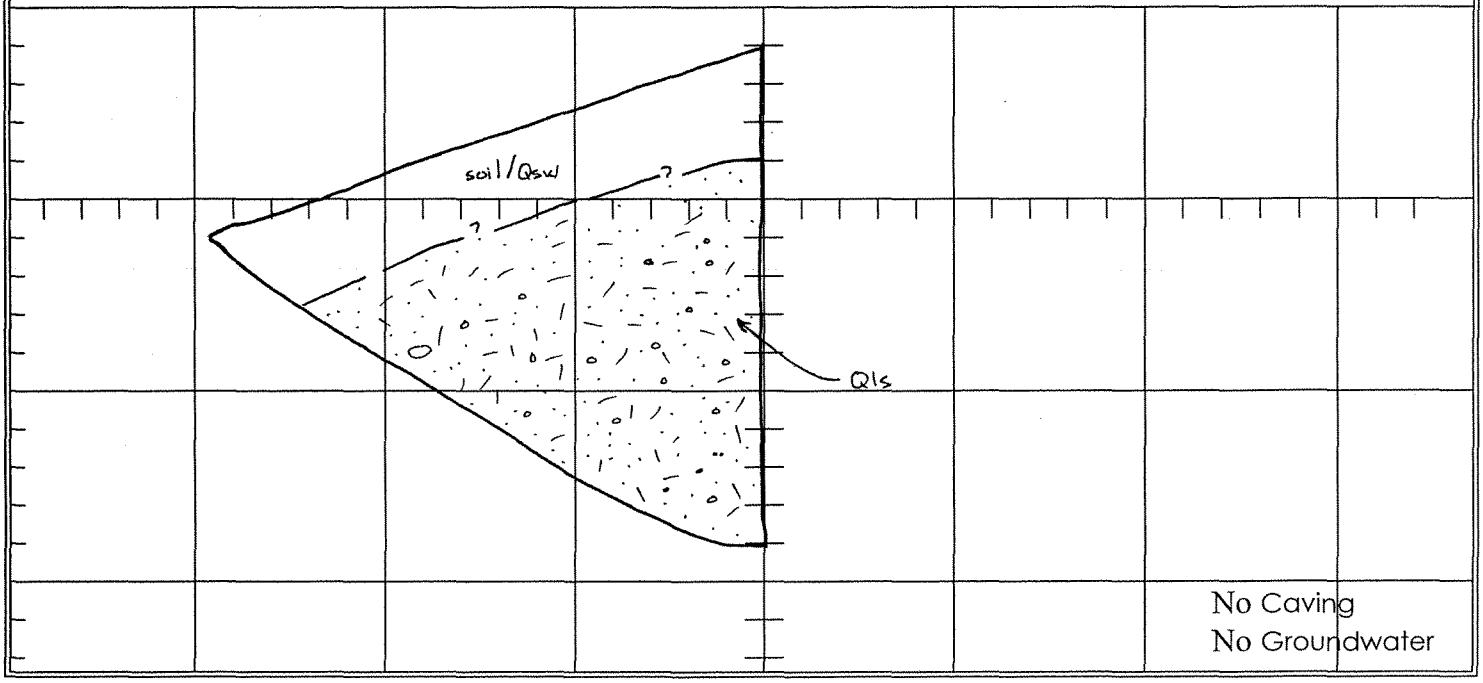
ELEVATION: 1234 EXCAVATED: 5/17/01

TRENCH LOG

NO. T-25M

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					SOIL/SLOPEWASH; Soil/Qsw, (0-3 ft.) @ 0' Medium grayish-brown silt to sandy silt; firm to stiff; dry to slightly damp QUATERNARY LANDSLIDE; Qls, (3-13 ft.) @ 3' Medium to grayish-brown siltstone to sandy siltstone with scattered pebbles and cobbles; loose to moderately dense; damp; grades sandier with depth; structureless				
5									
10									
15									
20									

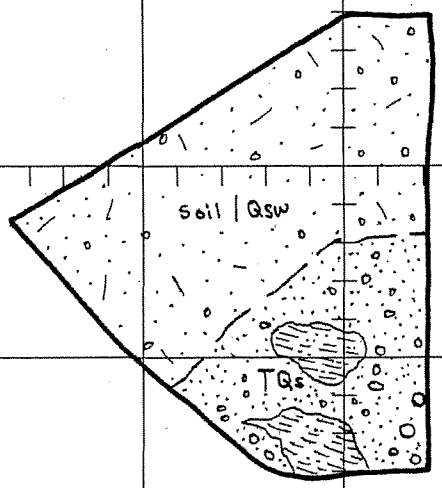
TOTAL DEPTH: 13 feet ←N65E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 1703W-1	**TRENCH LOG NO. T-7MW**
PROJECT: Mesas West	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/20/03	
EXCAVATION METHOD: Trackhoe with 24" Bucket	ELEVATION: 1134'	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw (0-6')** @ 0' Sandy, silty clay with gravel; soft to firm; damp; grayish-brown				
5					**BEDROCK; TQs (6-12')** @ 6' Light-gray and grayish-brown silty sandstone, pebbly silty sandstone, and siltstone; moderately hard to hard; damp; channel deposit with rip-ups				
10									
15									
20									

TOTAL DEPTH: 12 feet ←N20E SCALE: 1 inch = 5 feet

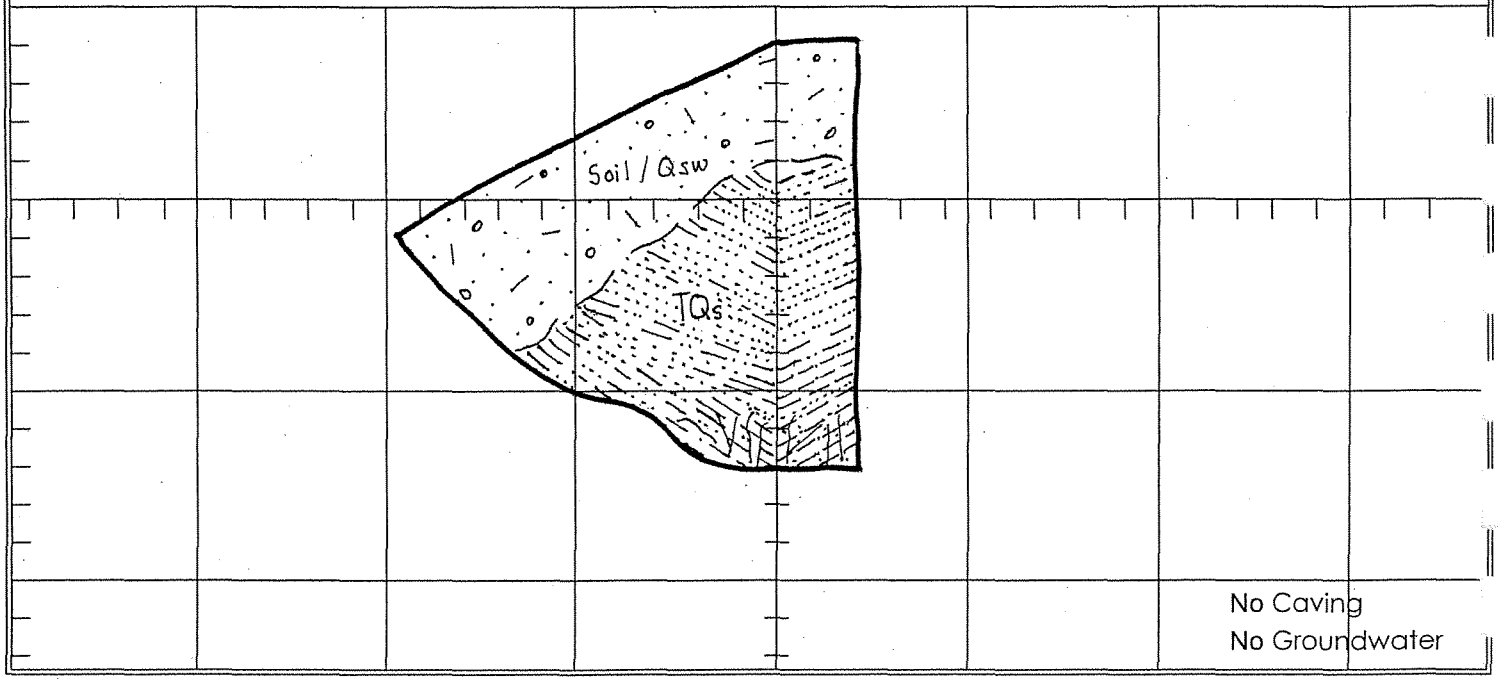


No Caving
No Groundwater

CLIENT: Newhall Ranch Co.	JOB NO: 1703W-1	**TRENCH LOG NO. T-12MW**
PROJECT: Mesas West	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/20/03	
EXCAVATION METHOD: Trackhoe with 24" Bucket	ELEVATION: 1022'	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw (0-3')** @ 0' Sandy, silty clay; soft to firm; damp; grayish-brown				
					BEDROCK; TQs (3-11') @ 3' Light-gray to grayish-brown silty laminated sandstone, fine-grained sandstone and siltstone; moderately hard; damp; some fractures with caliche	B: E-W, 25S			
5									
10									
15									
20									

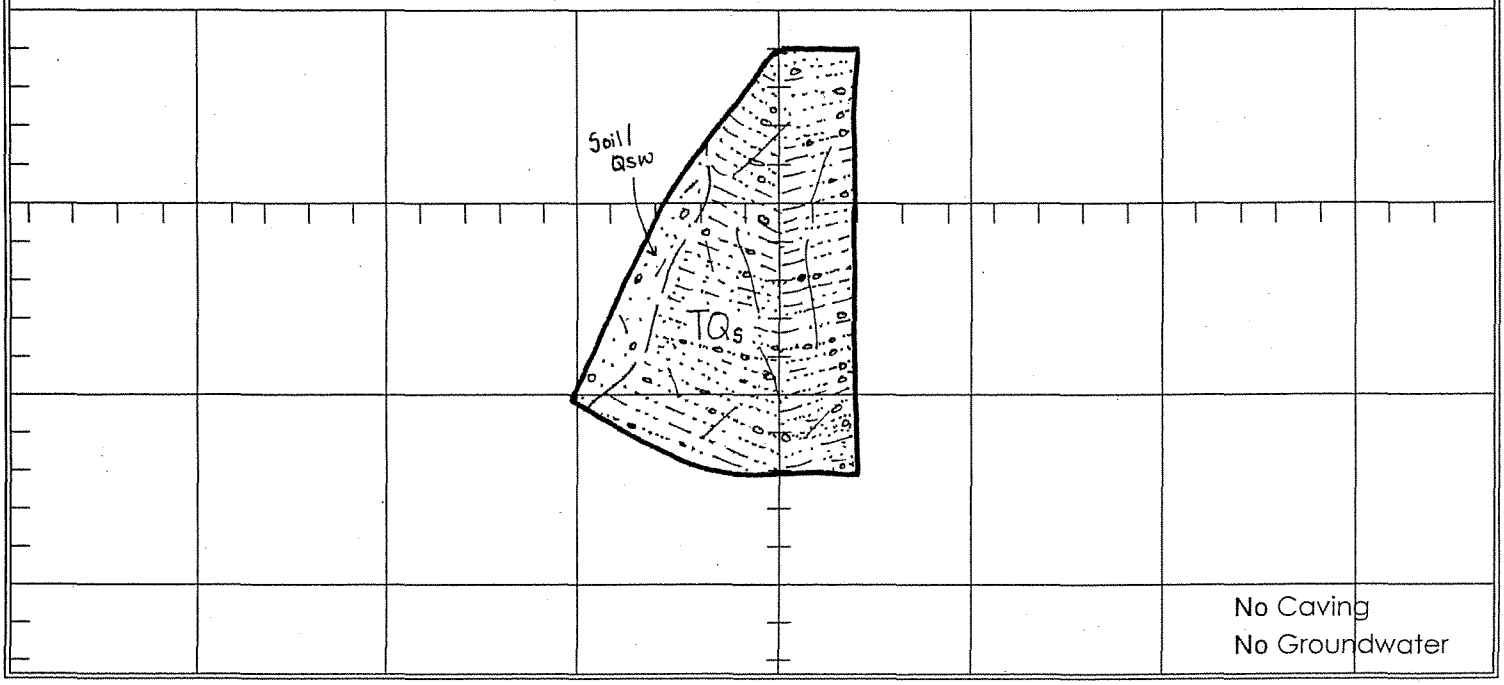
TOTAL DEPTH: 11 feet ←N35E SCALE: 1 inch = .5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 1703W-1	**TRENCH LOG NO. T-13MW**
PROJECT: Mesas West	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/21/03	
EXCAVATION METHOD: Trackhoe with 24" Bucket	ELEVATION: 1026'	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-11')** @ 0' Light-gray to grayish-brown silty sandstone and pebbly, silty sandstone; moderately hard; damp; fractures; slightly to moderately friable	Apx B: N85W, 15SW			
5									
10									
15									
20									

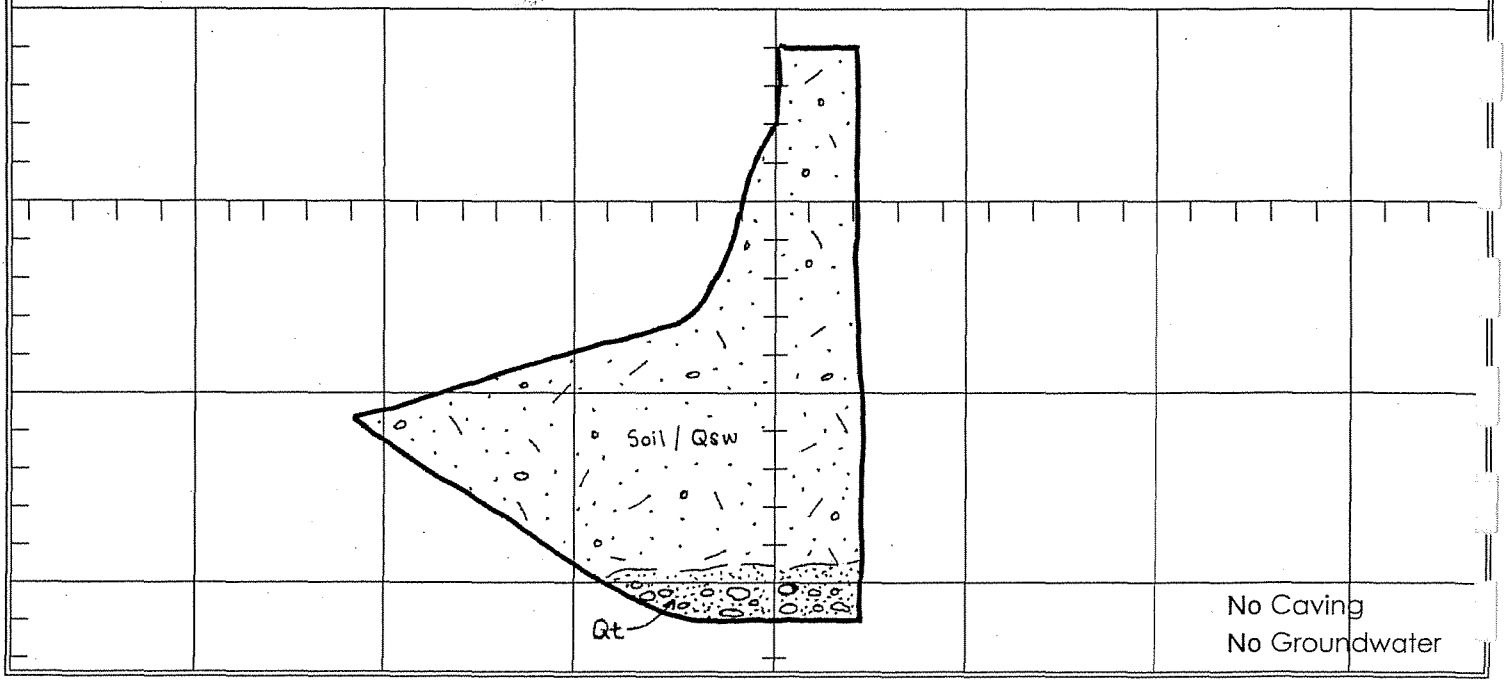
TOTAL DEPTH: 11 feet ←N38E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 1703W-1	**TRENCH LOG NO. T-14MW**
PROJECT: Mesas West	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/21/03	
EXCAVATION METHOD: Trackhoe with 24" Bucket	ELEVATION: 998'	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw (0-14'?)** @ 0' Sandy, silty clay with gravel (cobbles); firm to stiff; damp; yellowish- to grayish-brown; horizontal lensing of gravels				
5									
10									
15					**QUATERNARY TERRACE DEPOSITS?; Qt? (14-15')** @ 14' Cobbly, pebbly, silty sand NOTES Surface logged	Apx.B:Horizontal			
20									

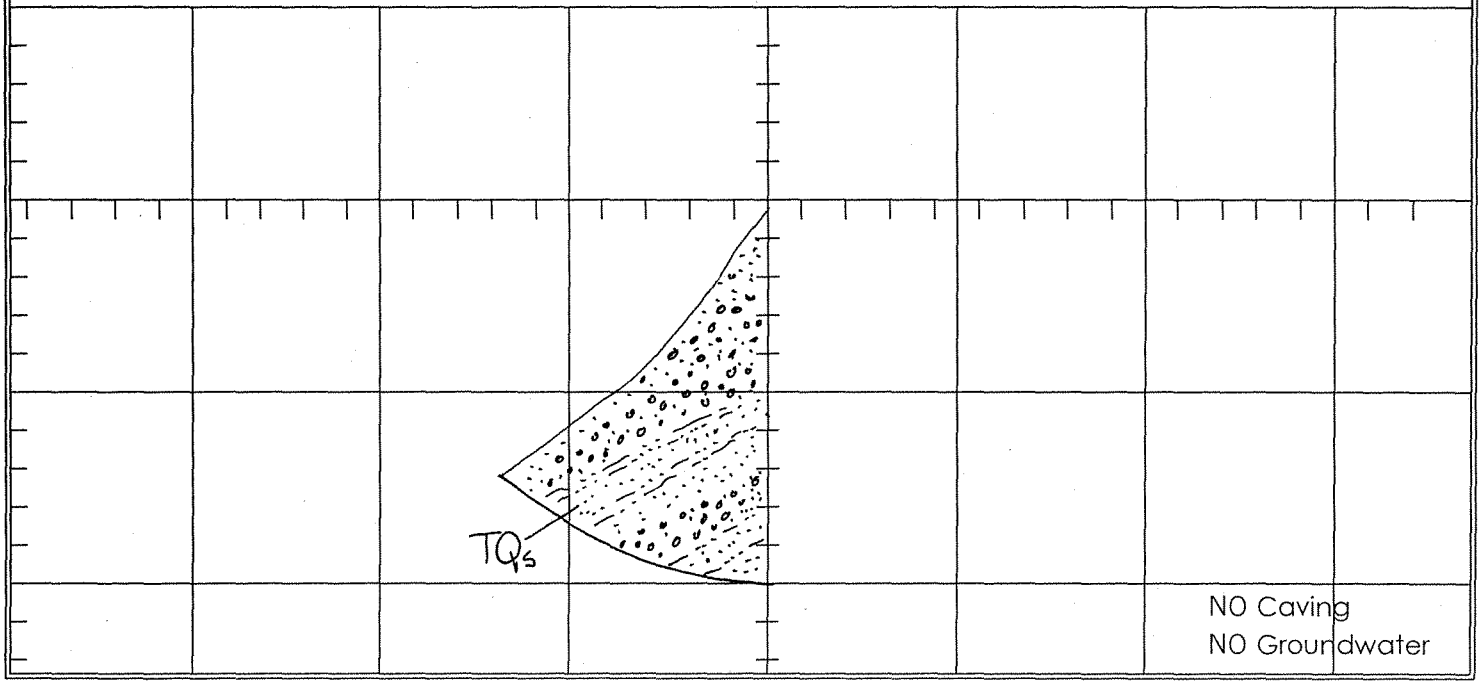
TOTAL DEPTH: 15 feet ←N23E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-40SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1108	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SP-SM	**BEDROCK; TQs, (0-10 ft.)** @ 0' Sandstone, silty sandstone and conglomerate; moderately hard to hard; dry to damp; yellowish gray; Fe02 laminations	B:N79W,63SW			% fines=7.4
5									
10					COMMENTS: -Bulk sample from pile 0-10'				
15									
20									

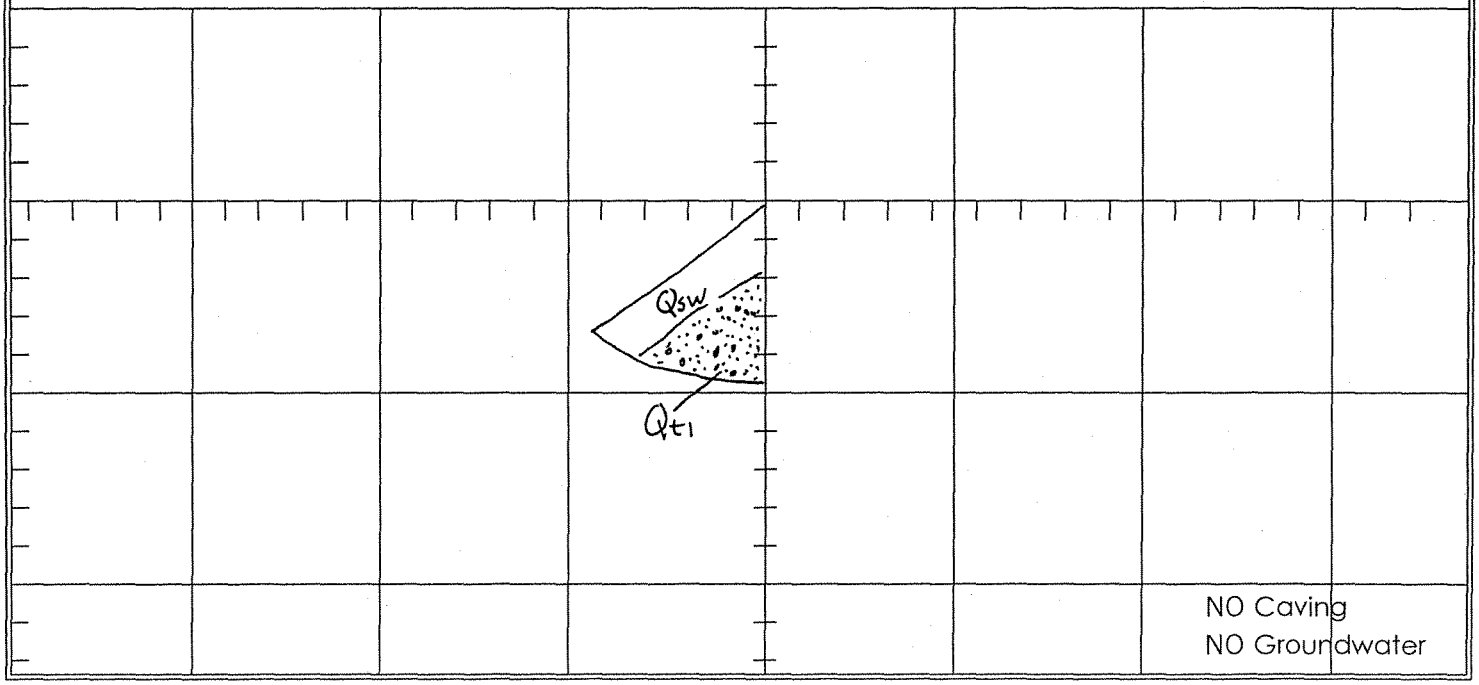
TOTAL DEPTH: 10 feet N58W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-41SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1175	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SW-SM	**SLOPEWASH; Qsw, (0-2 ft.)** @ 0' Silty pebbly sand; dry to damp; light brown				% fines=9.0
					QUATERNARY TERRACE DEPOSITS; Qt1, (2-5 ft.) @ 2' Sand with gravel; damp; light yellowish gray	B:N85W,5SW			
5					COMMENTS: -Bulk sample @ 0-5'				
10									
15									
20									

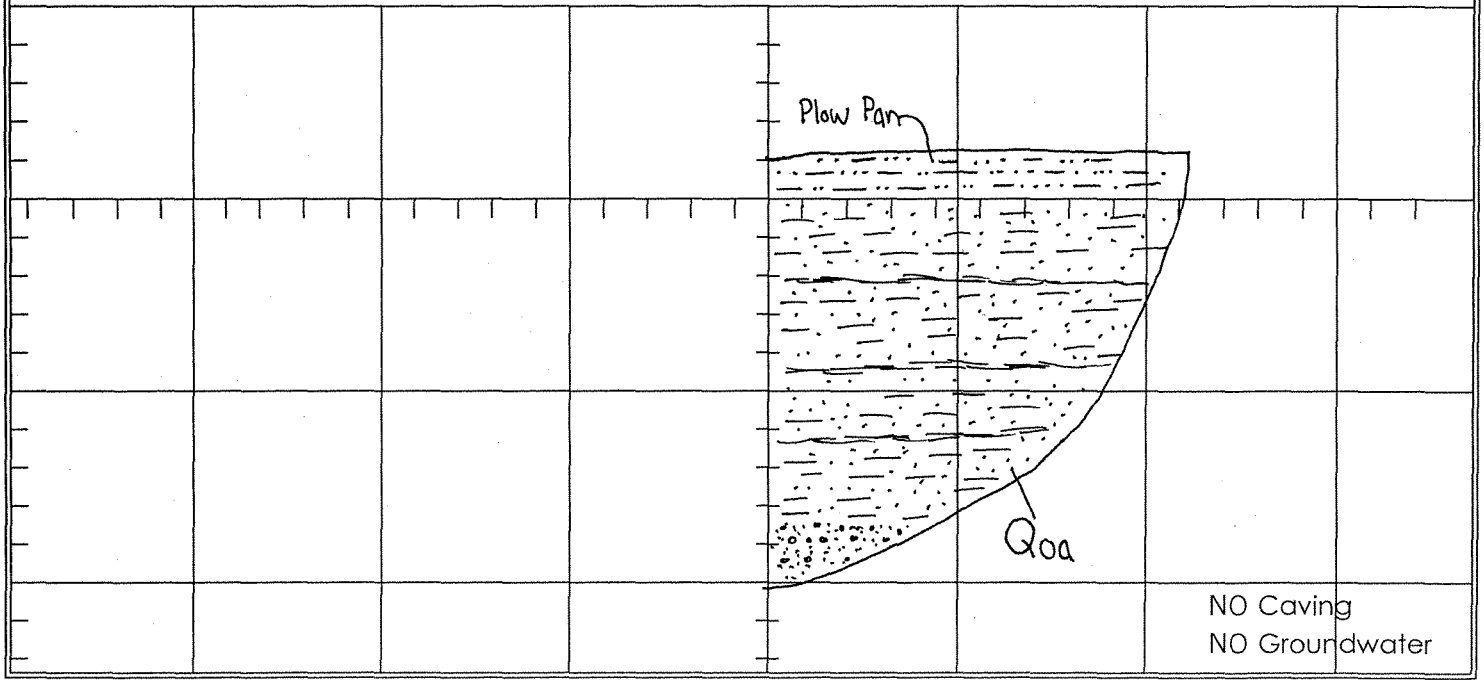
TOTAL DEPTH: 5 feet ←N78W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-42SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1055	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**PLOW PAN, (0-1.5 ft.)** @ 0' Sandy silt; damp to moist; light to medium brown **QUATERNARY OLDER ALLUVIUM; Qoa, (1.5-11 ft.)** @ 1.5' Silt with sand; moist; dark brown				
5					@ 4' Silt with sand and clay; medium brown				
10				SP-SM	@ 9.5' Sand and silty sand with gravel; yellowish gray COMMENTS: -Bulk sample @ 10'				% fines=11.1
15									
20									

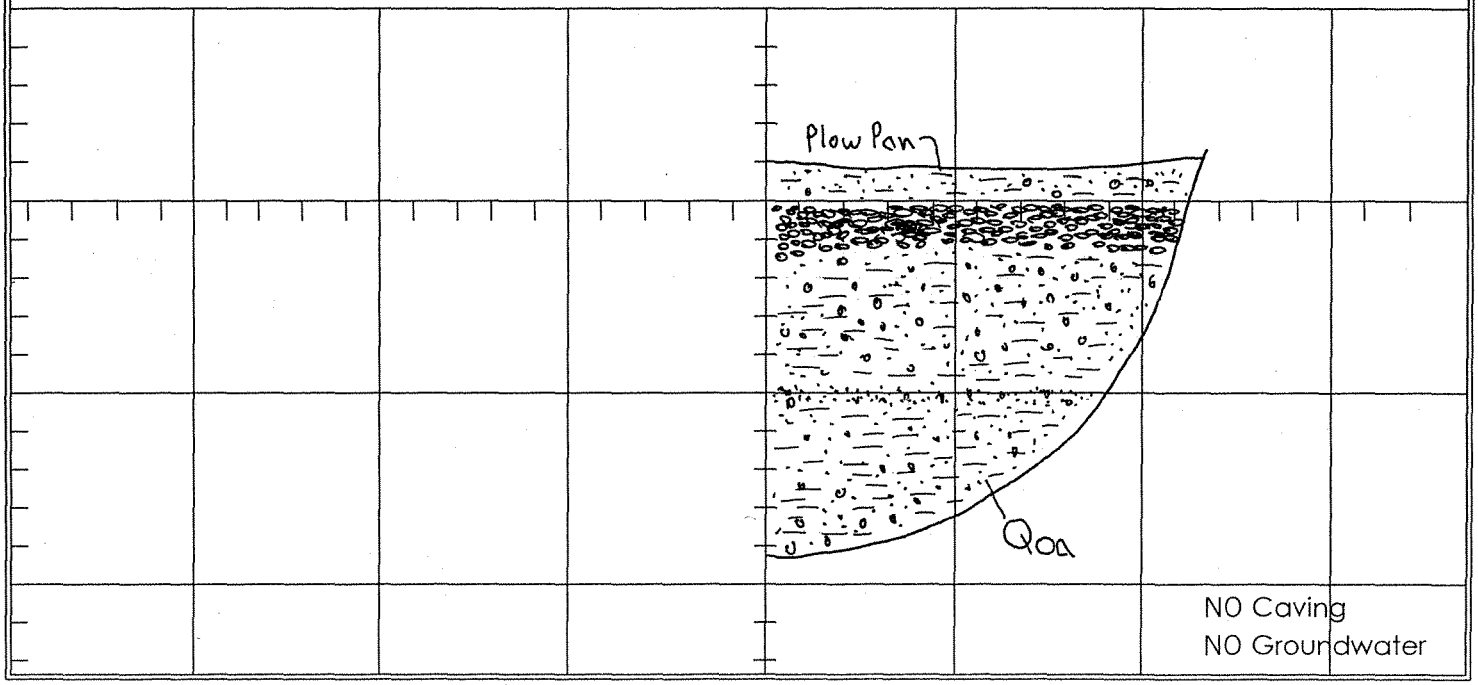
TOTAL DEPTH: 11 feet ←N55W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-43SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1057	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**PLOW PAN; (0-1 ft.)** @ 0' Silty sand; damp to moist; light grayish brown **QUATERNARY OLDER ALLUVIUM; Qoa, (1-10.5 ft.)** @ 1' Sandy pebbly silt; moist; dark brown @ 2.5' Sandy, silty gravel; damp; grayish brown; locally clast supported				
5				SM	@ 3.5' Pebbly silty sand; dark brown @ 5.5' Interbedded sandy pebbly silt and silty sand with gravel; moist; grayish brown to medium brown; scattered cobbles				% fines=43.3
10					COMMENTS: -Bulk sample from pile @ 5-10'				
15									
20									

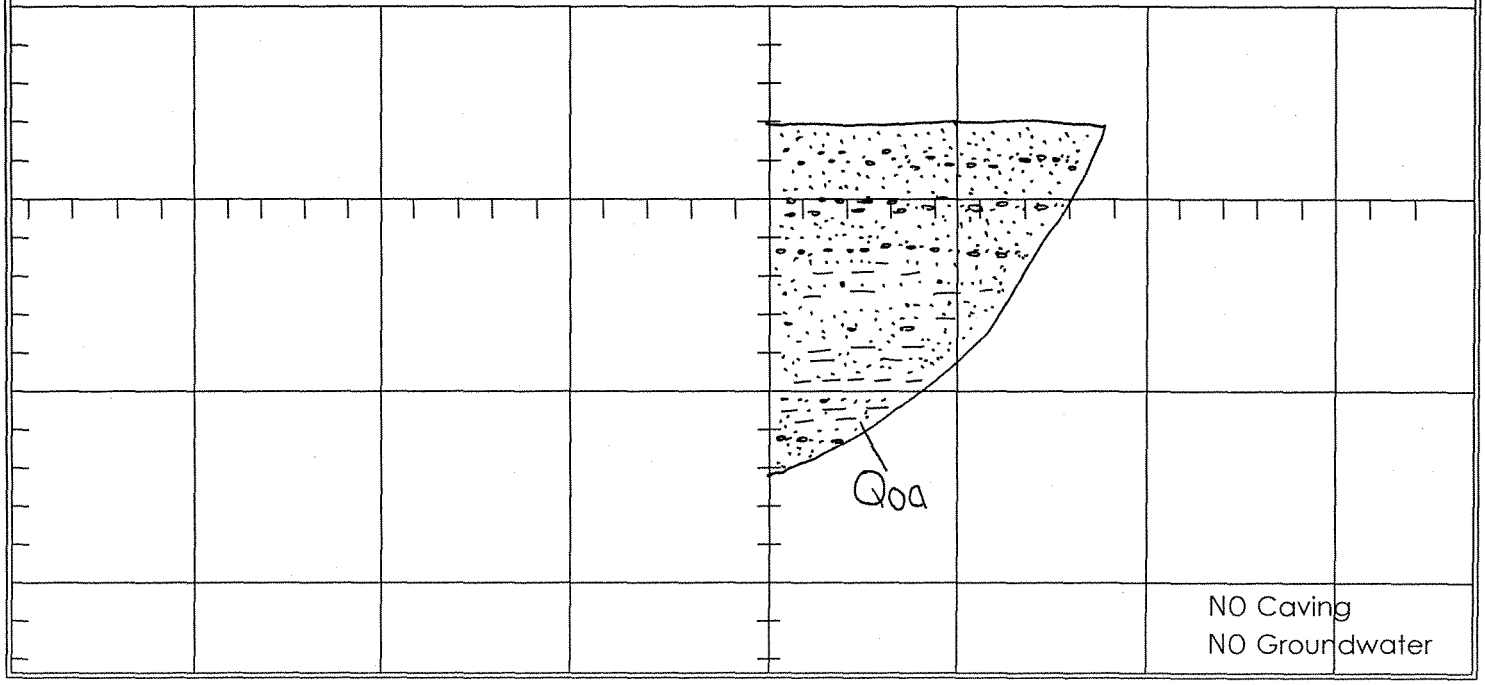
TOTAL DEPTH: 10.5 feet N52W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-44SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1123	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**QUATERNARY OLDER ALLUVIUM; Qoa, (0-9.5 ft.)** @ 0' Interbedded silty sand and sand with gravel; dry to damp; yellowish gray; scattered cobbles				
				SM					% fines=13.3
5					@ 6' Interbedded silty sandy (-6"-thick); damp to moist; yellowish brown				
10					COMMENTS: -Bulk sample @ 4'				
15									
20									

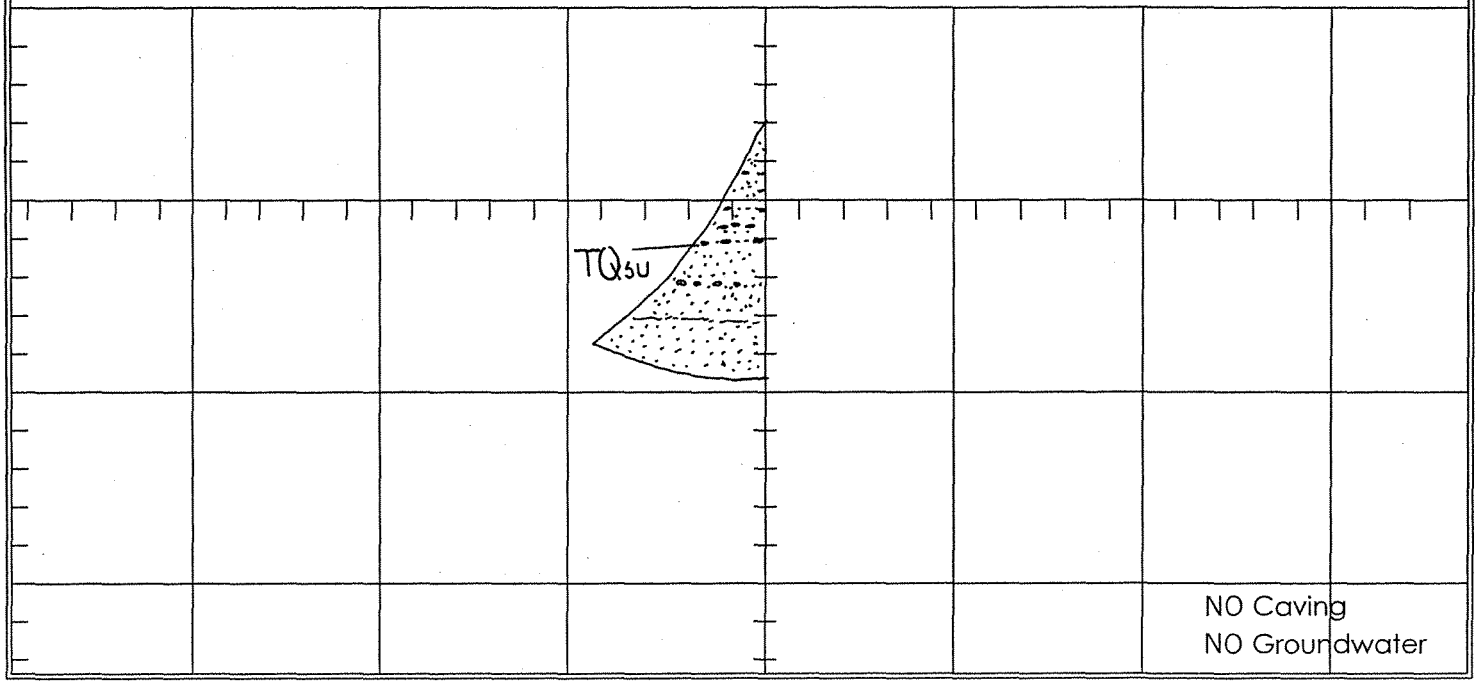
TOTAL DEPTH: 9.5 feet N6E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-45SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1150	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**BEDROCK; TQsu, (0-7 ft.)** @ 0' Silty sandstone and pebbly sandstone; moderately hard; slightly friable; dry to moist; yellowish gray; well bedded; Fe02 laminations				
5				SP-SM		B:N28W,23NE			% fines=7.1
10					COMMENTS: -Bulk sample @ 5'				
15									
20									

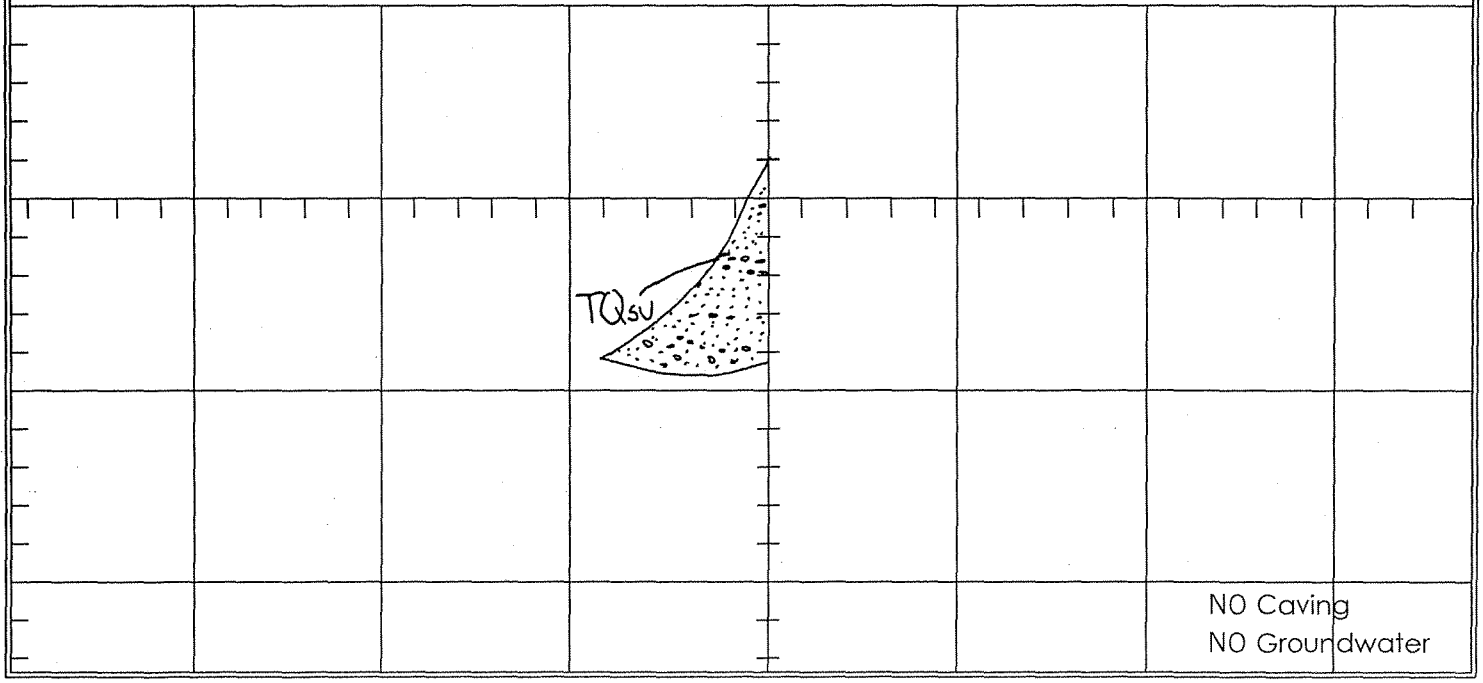
TOTAL DEPTH: 7 feet ←N48W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-46SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1108	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**BEDROCK; TQsu, (0-6 ft.)** @ 0' Silty sandstone and pebbly sandstone; moderately hard; slightly friable; dry to moist; yellowish gray; well bedded; Fe02 laminations				
5				SP-SM		B:N64W,14NE			% fines=10.4
10									
15									
20									

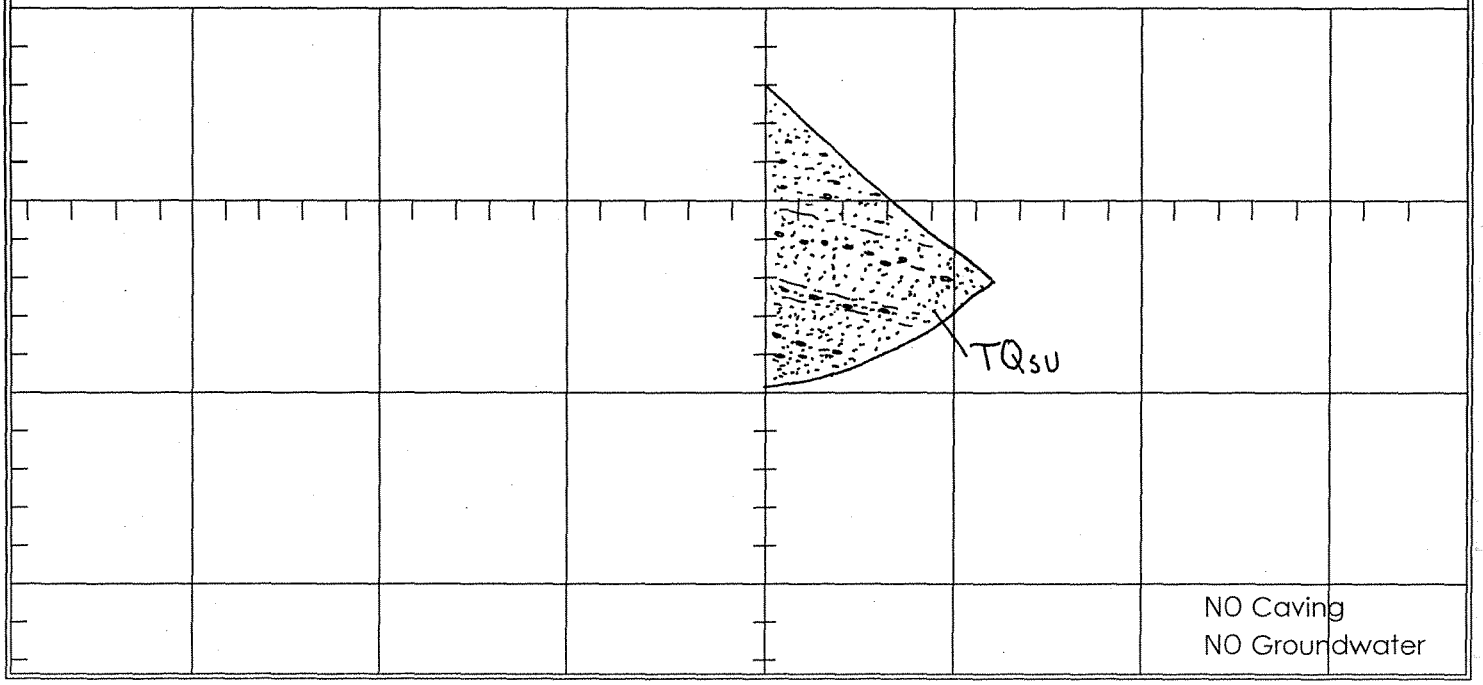
TOTAL DEPTH: 6 feet N64W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-47SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1168	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**BEDROCK; TQsu, (0-8 ft.)** @ 0' Silty sandstone and pebbly sandstone; moderately hard; slightly friable; dry to moist; yellowish gray; well bedded; Fe02 laminations				
5				SP-SM		B:N50W,16NE			% fines=11.0
10					COMMENTS: -Bulk sample 5'				
15									
20									

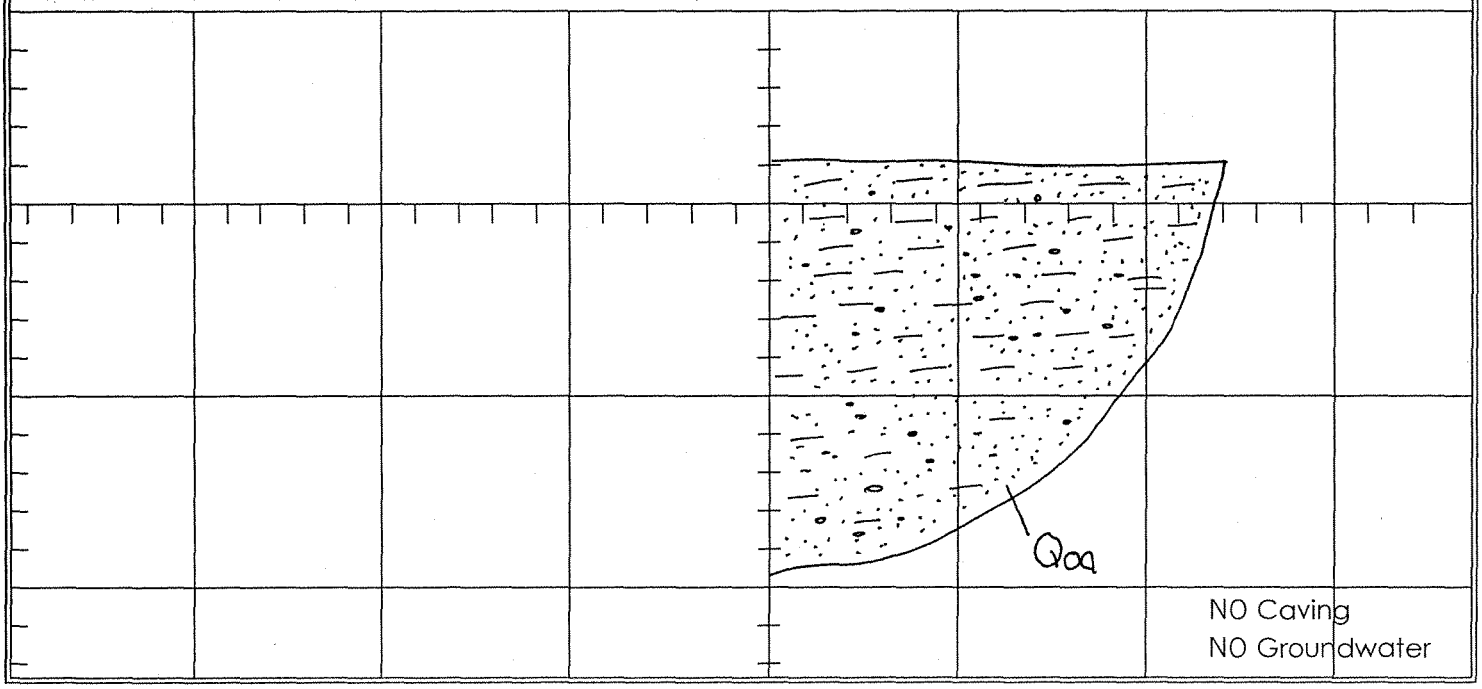
TOTAL DEPTH: 8 feet N34E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-48SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1083	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**QUATERNARY OLDER ALLUVIUM; Qoa, (0-11 ft.)** @ 0' Sandy silt/silty sand with gravel; damp to moist; medium to dark brown				
5					@ 6' Silty sand with gravel; moist; medium brown to yellowish brown				
10				SM					% fines=34.0
15					COMMENTS: -Bulk sample @ 9' -Top 1' Plow Pan				
20									

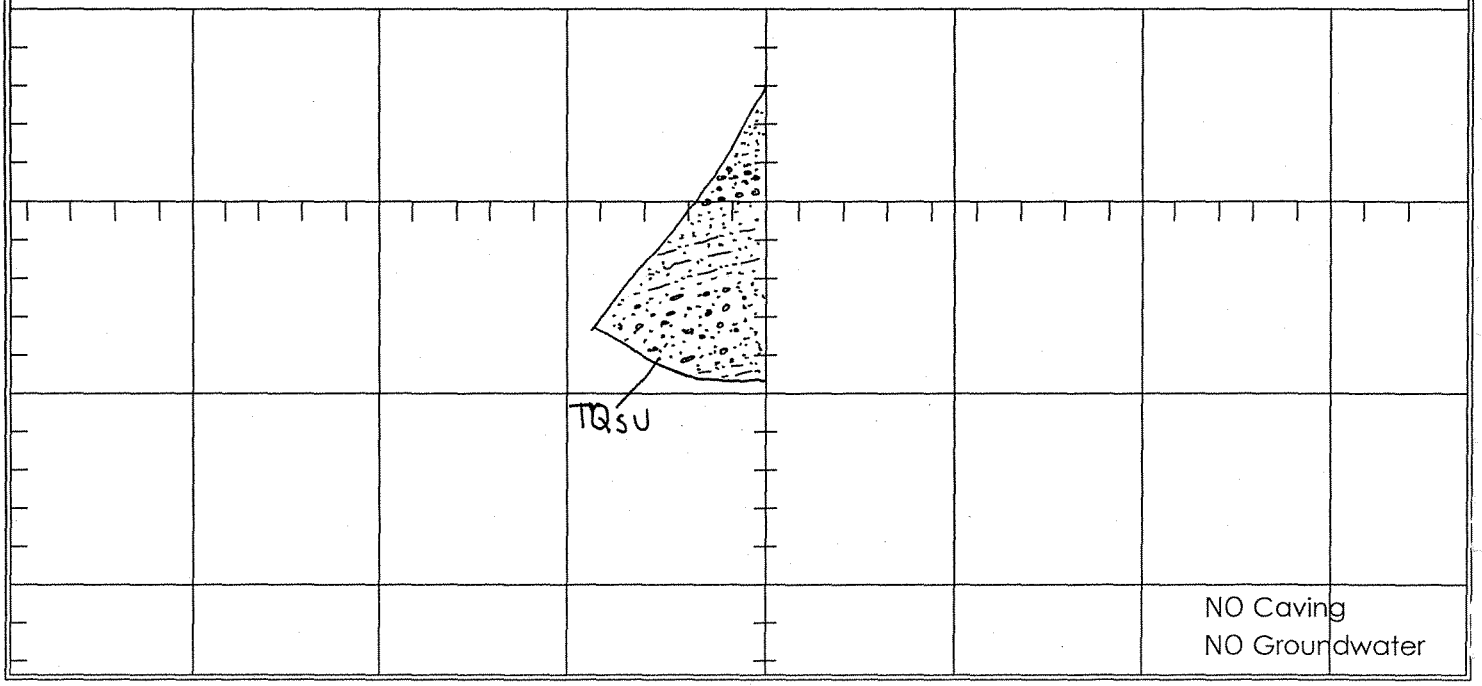
TOTAL DEPTH: 11 feet N6W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-49SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1080	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SP	**BEDROCK; TQsu, (0-8 ft.)** @ 0' Sandstone and pebbly sandstone; moderately hard; slightly friable; dry to moist; yellowish gray; well bedded; Fe02 laminations	B:N43W,20NE			% fines=3.1
5									
10					COMMENTS: -Bulk sample off pile @ 0-8'				
15									
20									

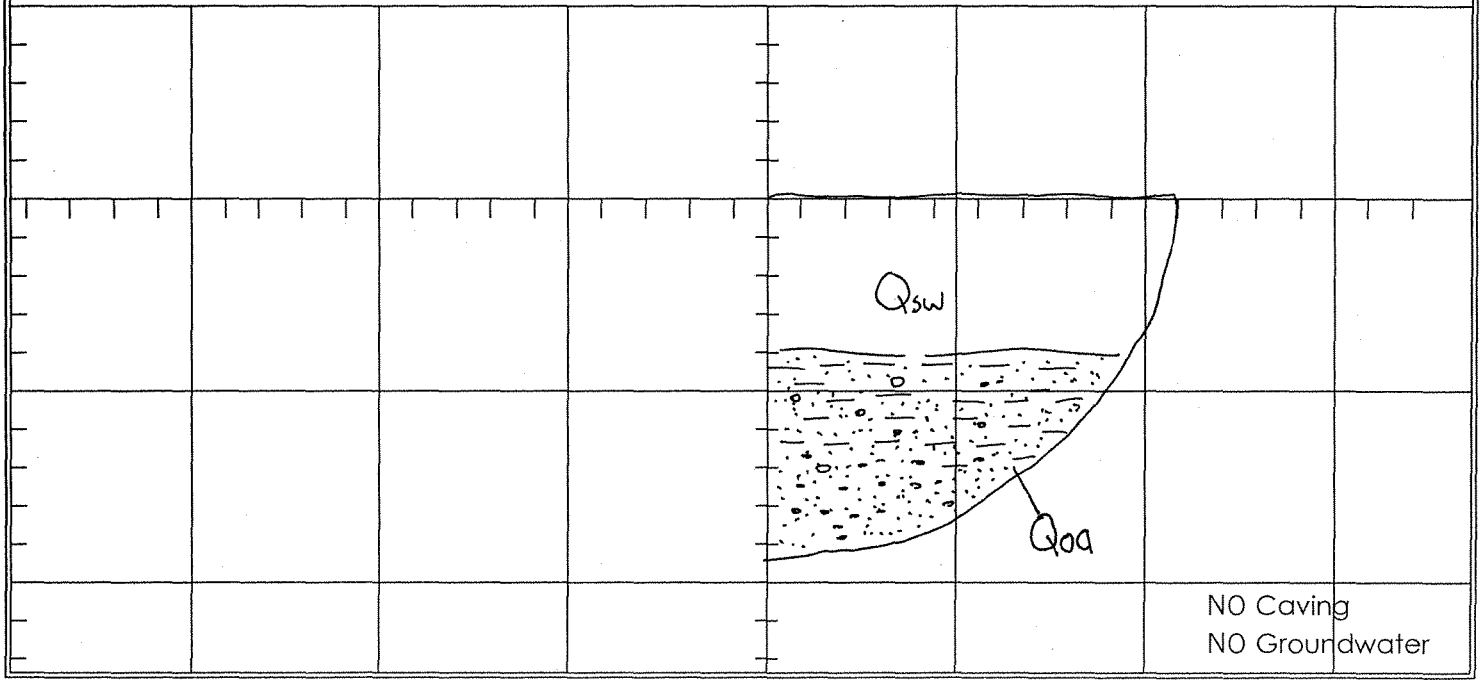
TOTAL DEPTH: 8 feet ←N50E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-50SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1025	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw, (0-4 ft.)** @ 0' Sandy, pebbly silt; dry to damp; grayish brown; scattered cobbles; roots/voids				
5					**QUATERNARY OLDER ALLUVIUM; Qoa, (4-9.5 ft.)** @ 4' Silty, pebbly sand; damp; yellowish brown; scattered cobbles; no bedding observed @ 6.5' Silty sand with gravel; yellowish gray; scattered cobbles; vaguely bedded				
10				SM					% fines=16.0
15					COMMENTS: -Bulk sample @ 8'				
20									

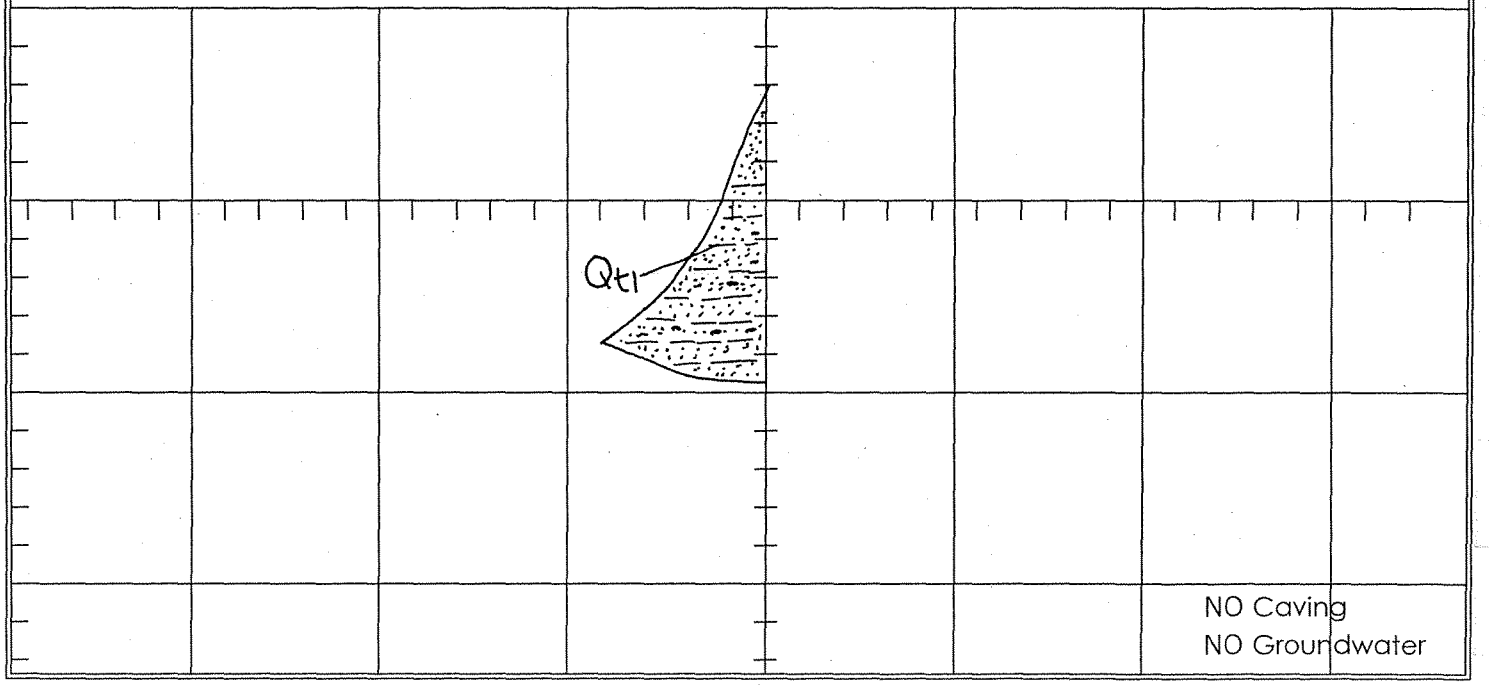
TOTAL DEPTH: 9.5 feet N30W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-51SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1140	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SM	**QUATERNARY TERRACE DEPOSITS; Qt1, (0-8 ft.)** @ 0' Interbedded sand and silty sand; dry to damp; light yellowish brown; locally pebbly				% fines=48.4
5									
10					COMMENTS: -Bulk sample off pile @ 0-8'				
15									
20									

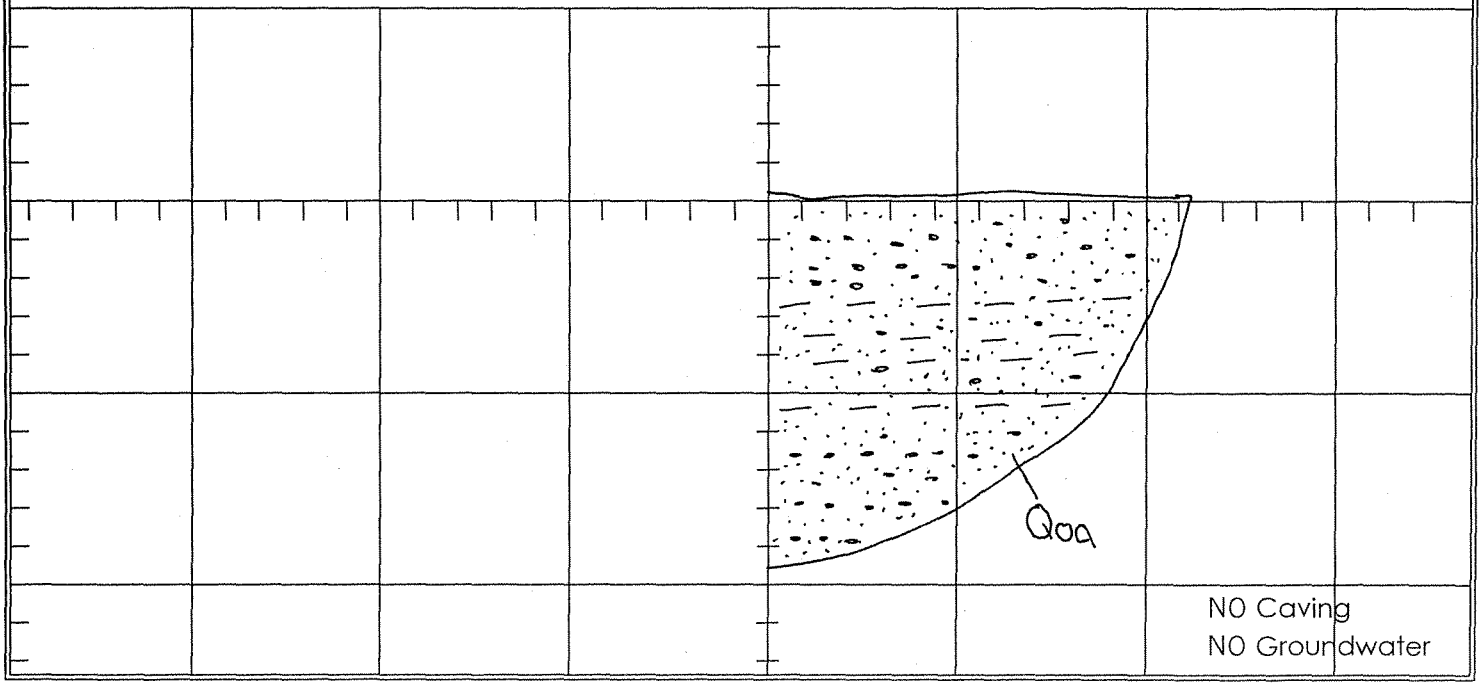
TOTAL DEPTH: 8 feet N63E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-52SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1003	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**QUATERNARY OLDER ALLUVIUM; Qoa, (0-10 ft.)** @ 0' Sand with gravel; dry to damp; yellowish gray; scattered cobbles @ 3' Silty sand with gravel; moist; medium brown; scattered cobbles @ 6' Silty sand with gravel; yellowish gray				
5									
10				SM					% fines=48.4
15					COMMENTS: -Bulk sample @ 9'				
20									

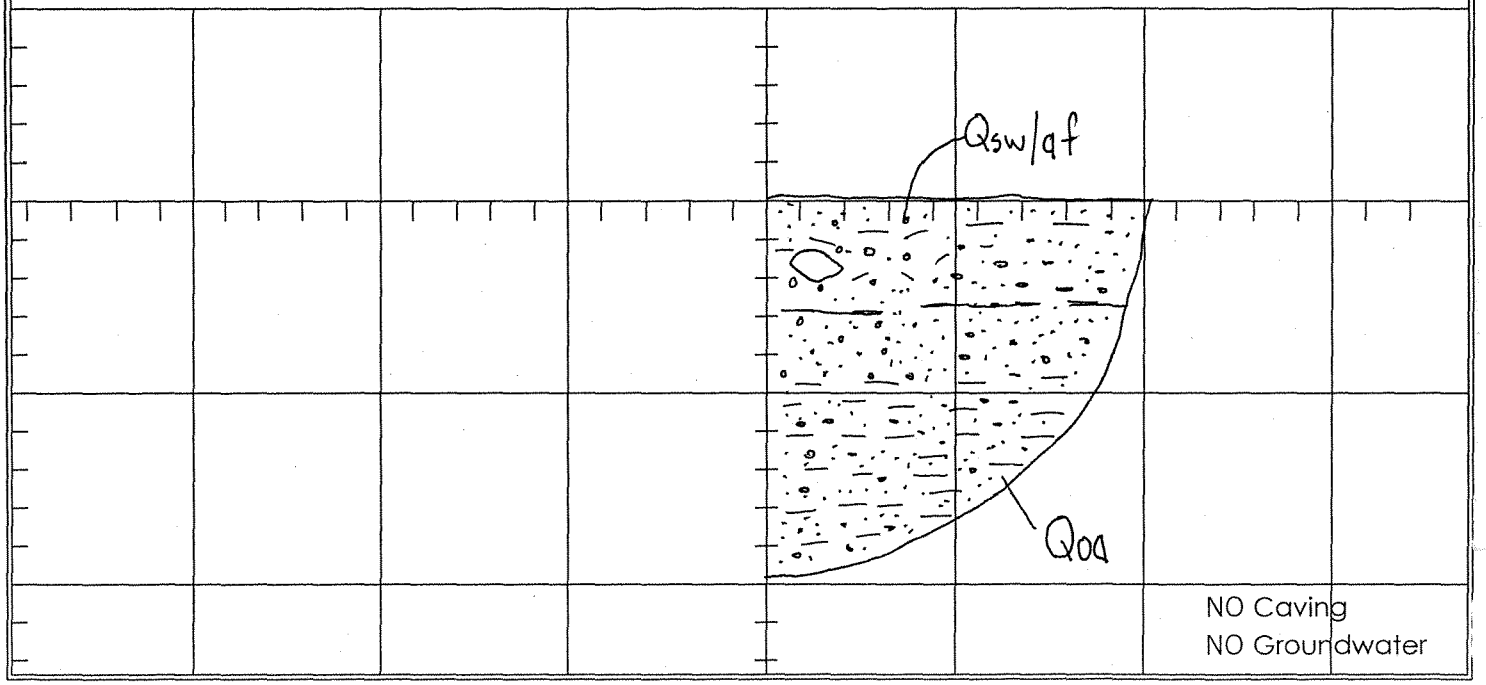
TOTAL DEPTH: 10 feet ←N40W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-53SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1037	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SM	**SLOPEWASH/ARTIFICIAL FILL; Qsw/af, (0-3 ft.)** @ 0' Silty, pebbly sand; dry to damp; medium brown; no bedding; scattered cobbles and boulders				% fines=28.3
					QUATERNARY OLDER ALLUVIUM; Qoa, (3-10 ft .) @ 3' Sand with gravel; damp; yellowish gray				
5					@ 5' Silty sand with gravel; medium brown to yellowish brown				
10					COMMENTS: -Bulk sample off pile @ 0-10'				
15									
20									

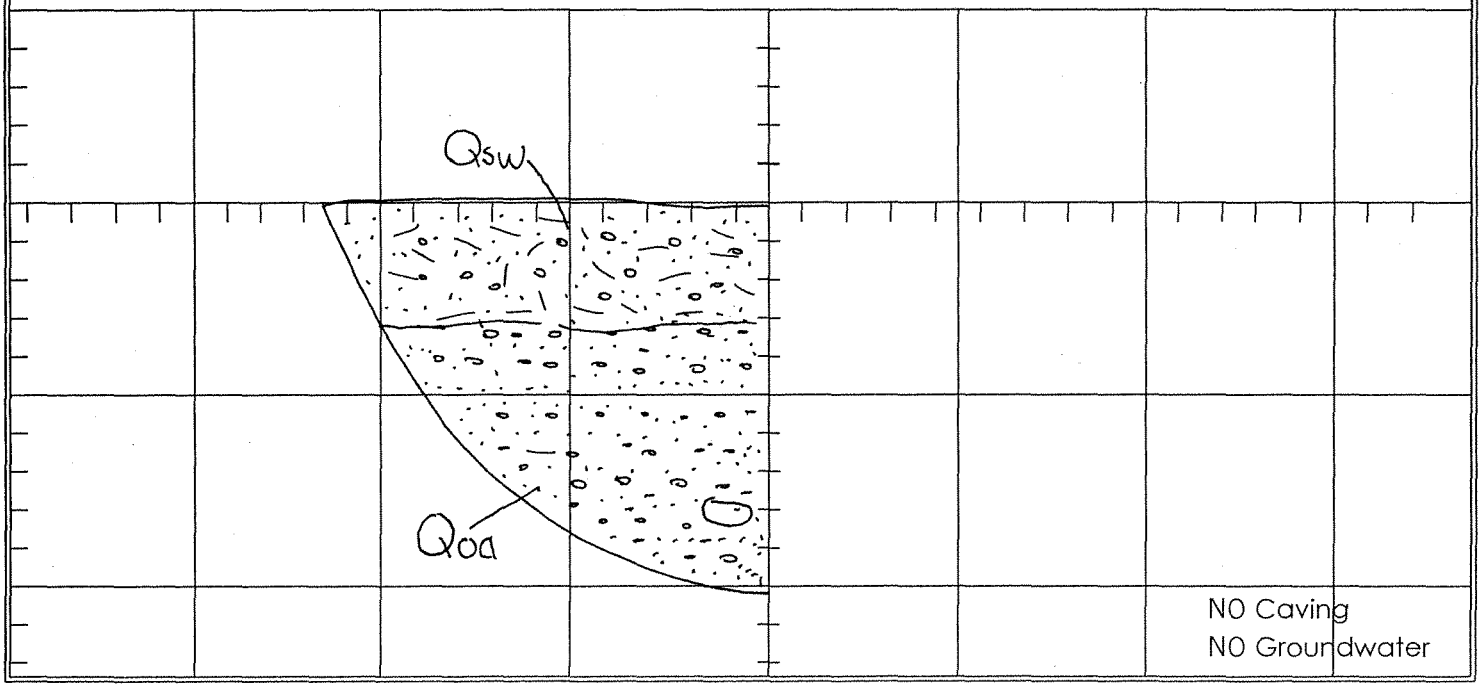
TOTAL DEPTH: 10 feet ←N2W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-54SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1094	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw, (0-3 ft.)** @ 0' Silty sand with gravel; dry to damp; medium brown; scattered cobbles **QUATERNARY OLDER ALLUVIUM; Qoa, (3-10 ft.)** @ 3' Silty sand with gravel and cobbles; damp; yellowish gray; scattered boulders				
5				SM					% fines=15.5
10					COMMENTS: -Bulk sample @ 5'				
15									
20									

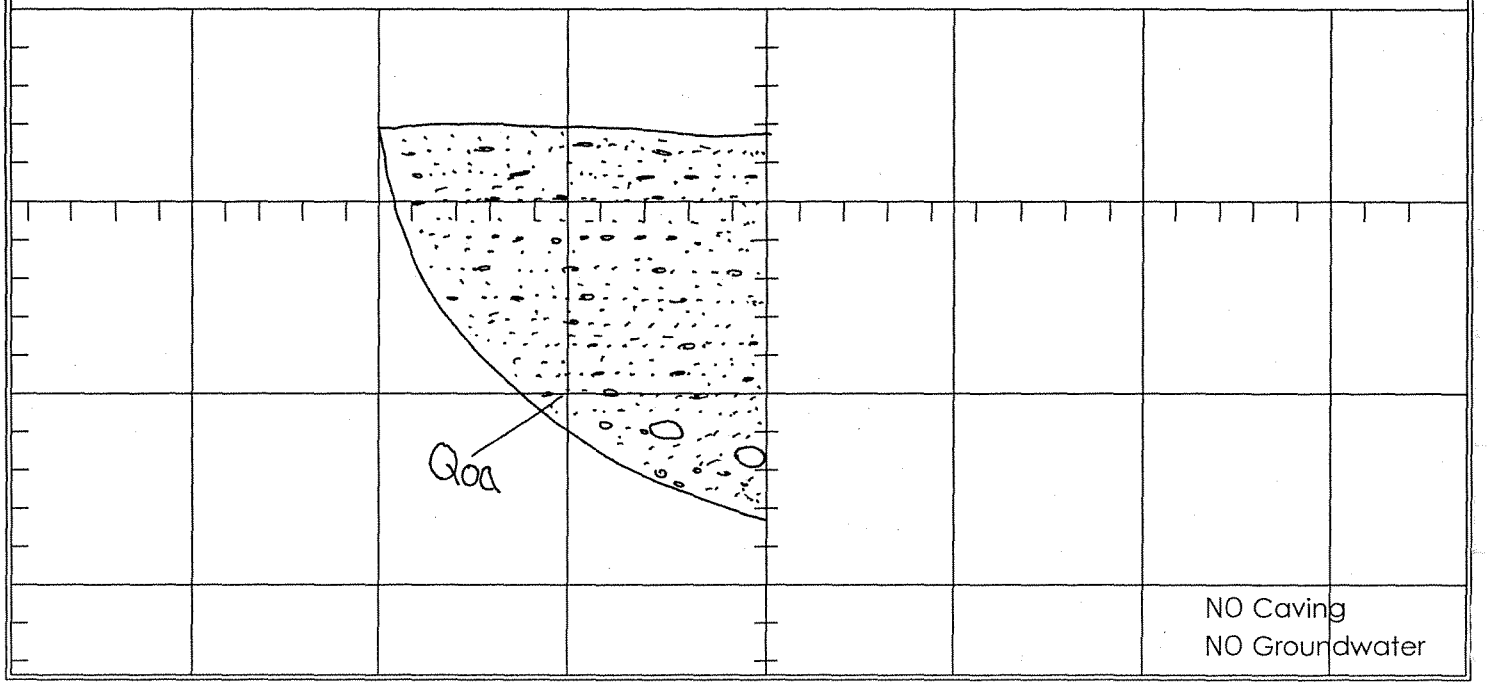
TOTAL DEPTH: 10 feet N17E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 02-1155SA-9	**TRENCH LOG NO. T-55SA**
PROJECT: Evaluation of Aggregate Potential Newhall Ranch		DATE: Sept. 18, 2002	
		LOGGED BY: MJD	
		EXCAVATED: 4/9/02	
EXCAVATION METHOD: Rubber-Tired Backhoe (4WD)		ELEVATION: 1067	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**QUATERNARY OLDER ALLUVIUM; Qoa, (0-10 ft.)** @ 0' Sand with gravel; dry to moist; yellowish gray; scattered cobbles				
5				SW-SM					% fines=5.5
					@ 7' - scattered boulders				
10					COMMENTS: -Bulk sample @ 4'				
15									
20									

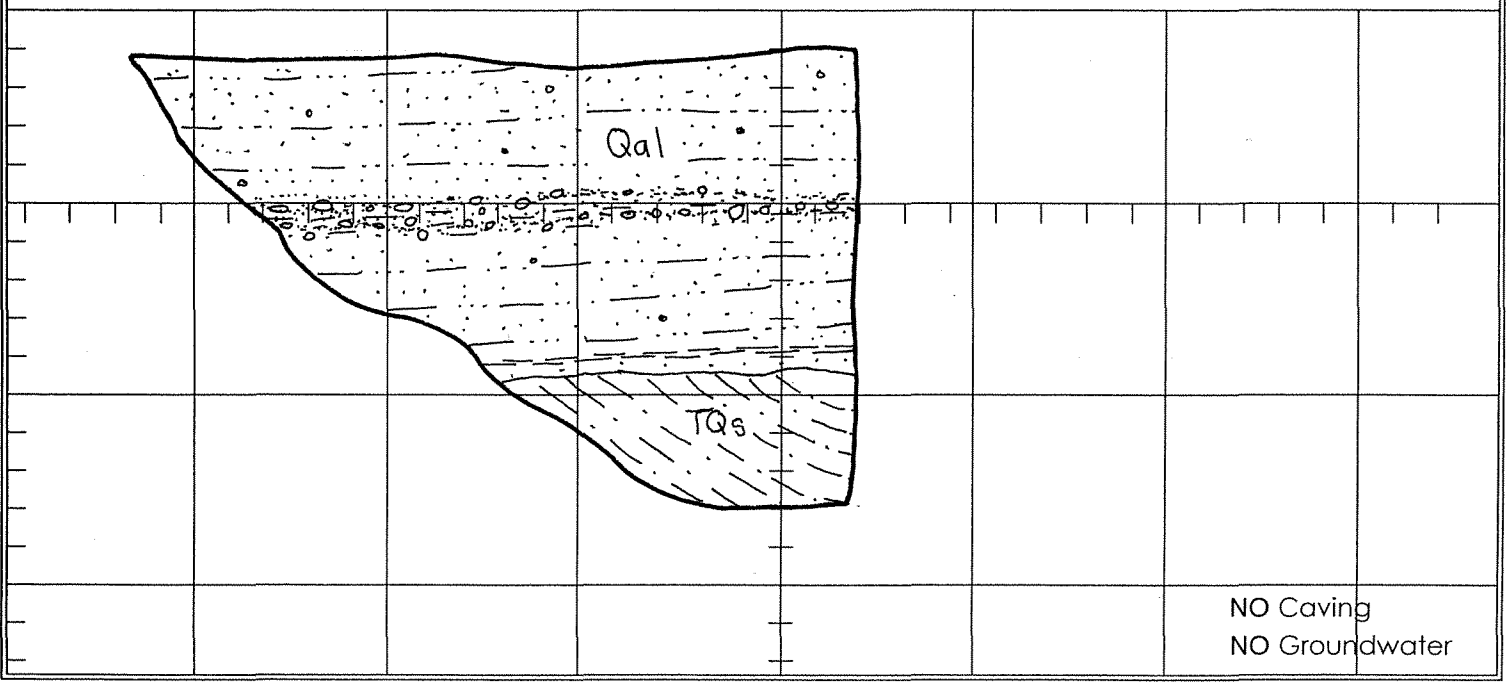
TOTAL DEPTH: 10 feet ←N62W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-1T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/16/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1278	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**QUATERNARY ALLUVIUM; Qal (0-7')** @ 0' Interbedded silty clayey sand with gravel and pebbly, cobbly silty sand; firm to stiff; damp to moist; brown to light brown; voids to ~6'	B:Horizontal			
5									
					BEDROCK; TQs (7-12') @ 7' Brown silty mudstone; moderately hard to hard; moist; highly weathered to 9'	B/Fr:N41W,48NE			
10									
15									
20									

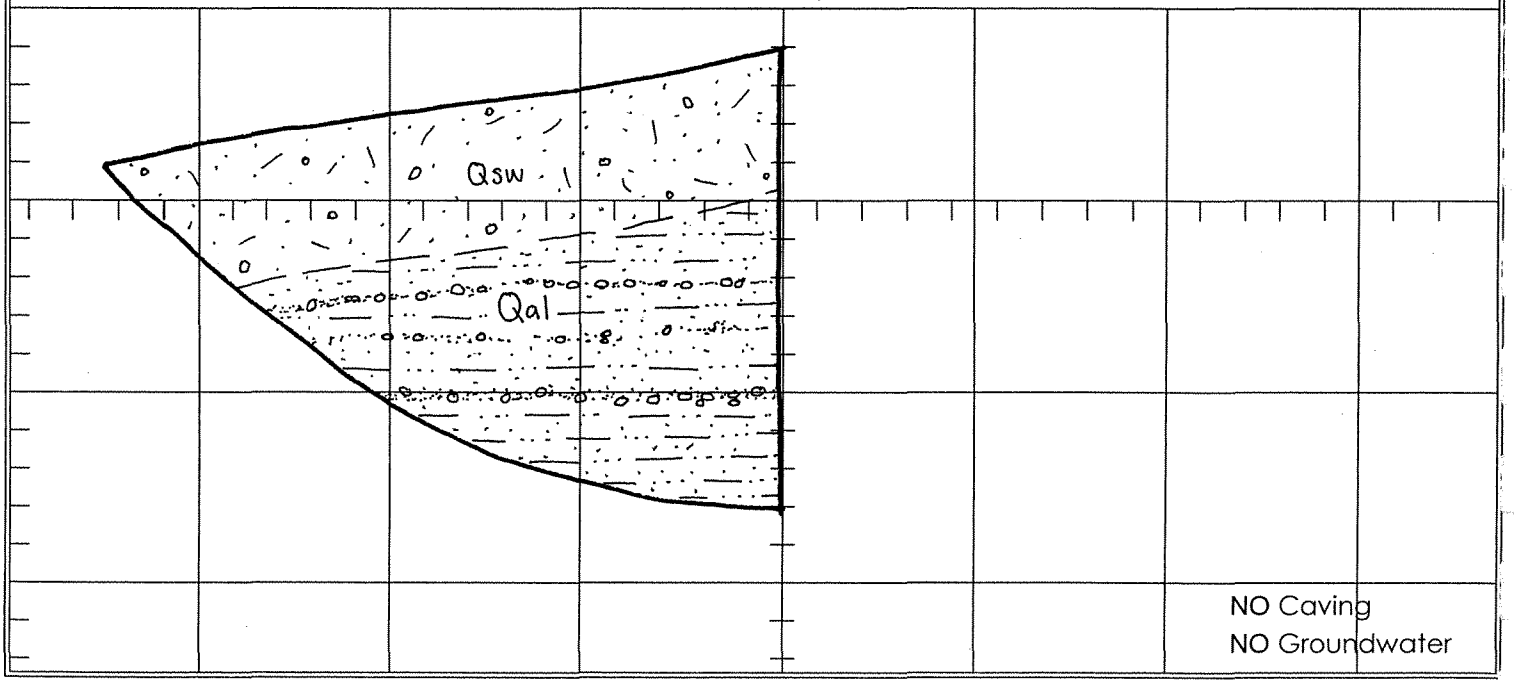
TOTAL DEPTH: 12 feet N47E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-2T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/16/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1279	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL	**SOIL/SLOPEWASH; soil/Qsw (0-4')** @ 0' Silty clay; stiff; dry to damp; grayish- to medium-brown; abundant rootless				
5				CL-ML SM	**QUATERNARY ALLUVIUM; Qal (4-12')** @ 4' Silty clay to clayey silt interbedded with silty sand with gravel and cobbles; clay/silt is firm to stiff; silty sand is medium dense and slightly friable; damp; grayish- to yellowish-brown; voids to 12' decreasing in size from ~1/8" to pinhole with depth	~Horizontal			
10									
15									
20									

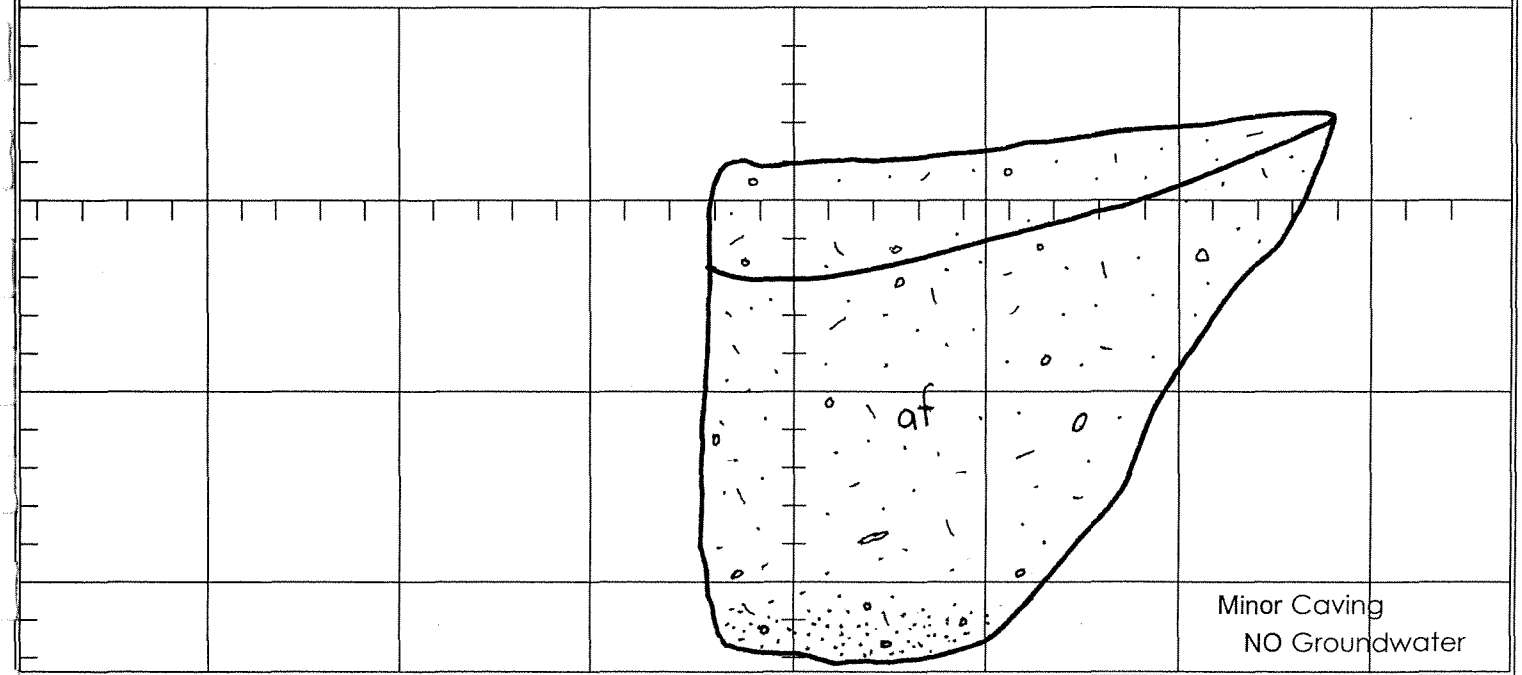
TOTAL DEPTH: 12 feet N71W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-3T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/16/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1254	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**ARTIFICIAL FILL; af (0-13')** Silty clay with sand and gravel; soft; dry; brown; excavation was widened 2' both sides from 0-3'; minor caving				
5					@ 4' Soft; moist to wet; brown to dark brown				
					@ 7.5' Bottom and sides soft; 1" diameter cable				
10					@ 10' Broken roots and branches @ 11' Silty clay with sand and gravel; loose; moist; yellowish-brown				
15									
20									

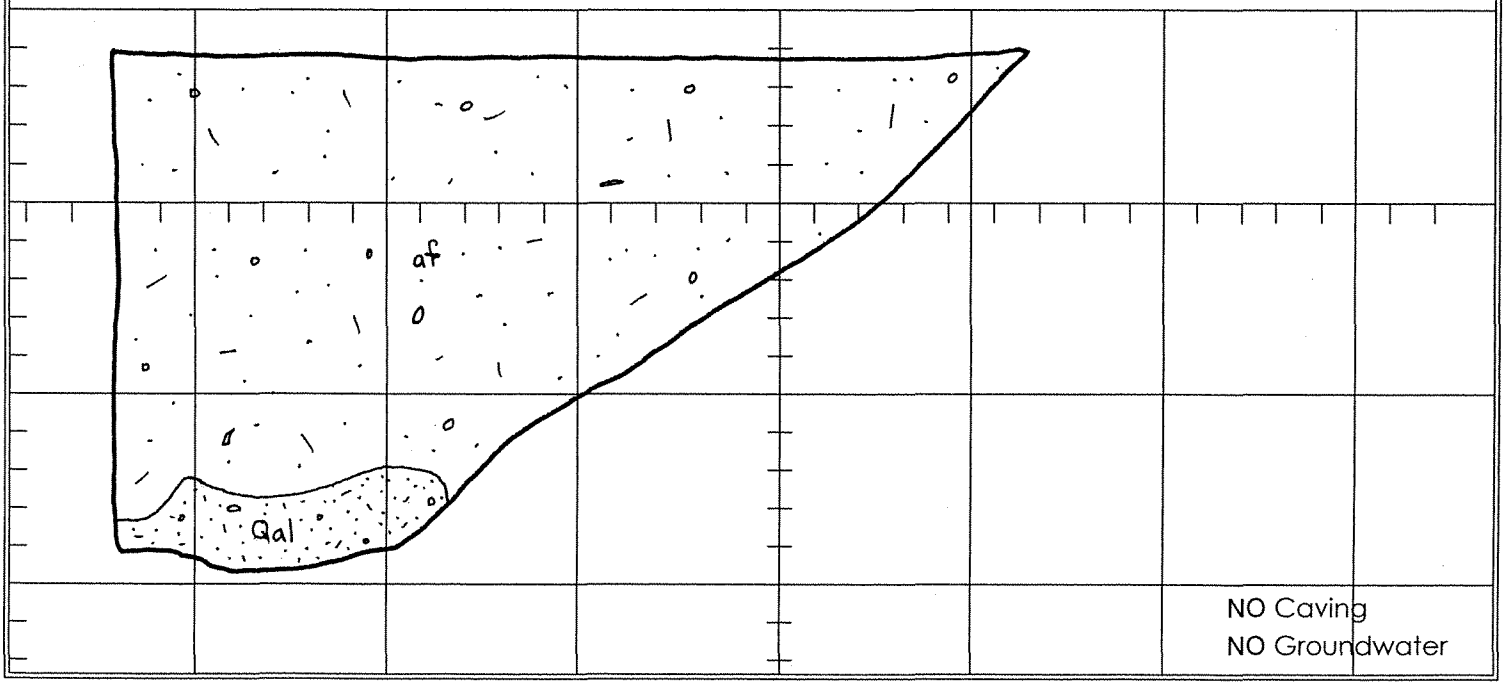
TOTAL DEPTH: 13 feet N62E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-4T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/16/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1294	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/ARTIFICIAL FILL; Soil/af (0-11')** @ 0' Sandy silty clay with gravel; soft; moist; brown to dark brown; scattered cobbles				
10				CL-ML	**QUATERNARY ALLUVIUM; Qal (11-13')** @ 11' Sandy silty clay with gravel; soft to firm; damp to moist; pinhole voids				

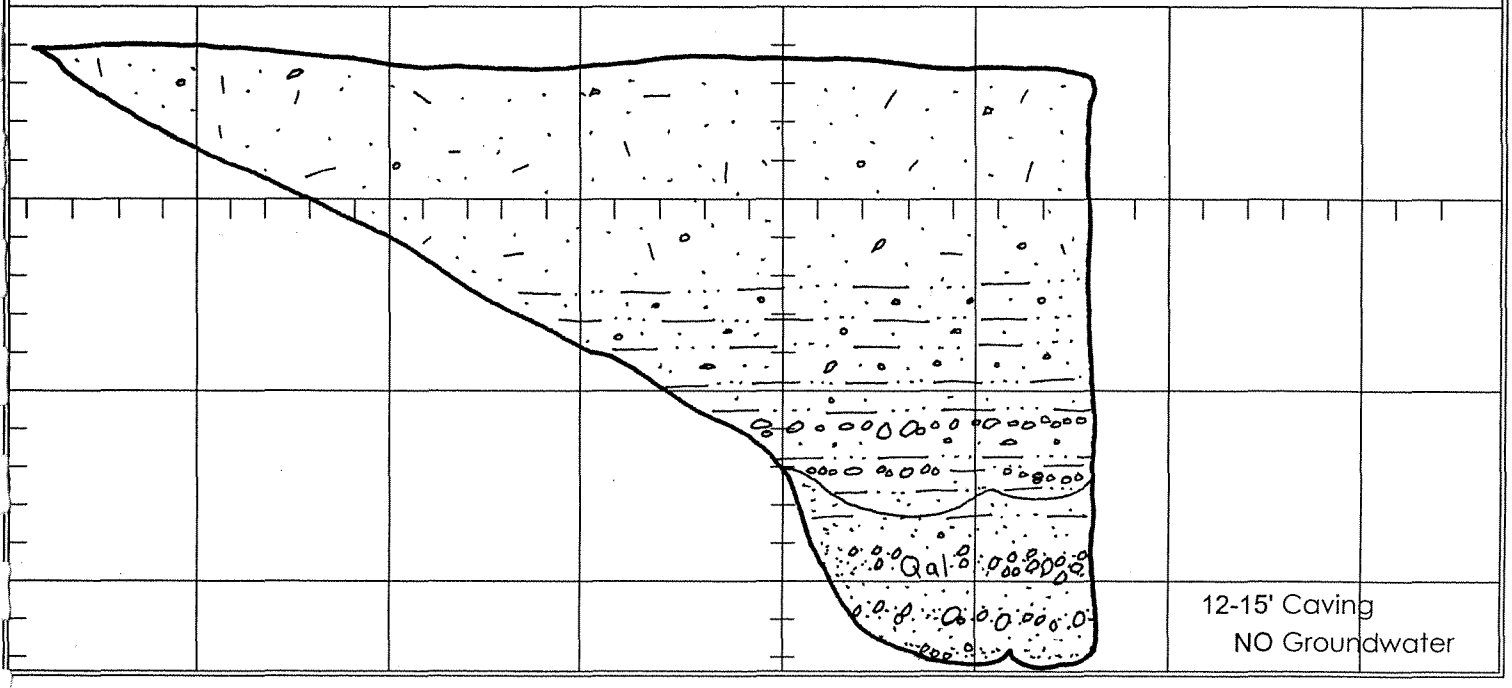
TOTAL DEPTH: 13 feet N68E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-5T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/16/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1215	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL; (0-9')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown to light brown; voids ≤1/2" diameter; roots, rootlets @ 2' Damp to moist; brown; voids ≤1/4" diameter, roots, rootlets				
5									
10				SP-SC	**QUATERNARY ALLUVIUM; Qal (9-15')** @ 9' Interbedded coarse-grained sand with gravel and cobbles; loose; dry to damp; yellowish-brown to yellowish-gray @ 12' Coarse-grained sand with gravel and cobbles; dense; damp; yellowish-gray to light gray	Apx. B:Horizontal			
15									
20									

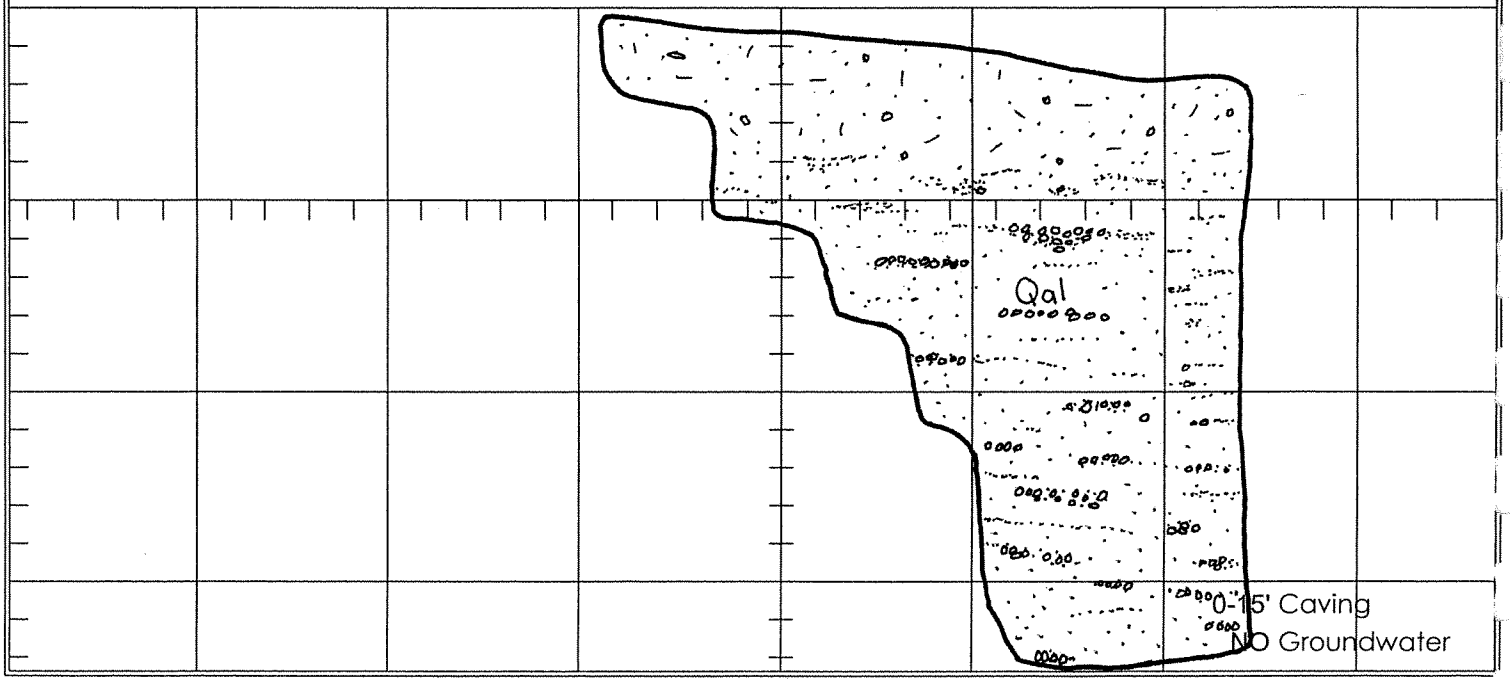
TOTAL DEPTH: 15 feet ←N4W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-6T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/16/03	
EXCAVATION METHOD:	ELEVATION: 1191	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL;(0-3')** @ 0' Sandy silty clay with gravel; firm; dry ; brown; pinhole voids; roots, rootlets				
				SM	**QUATERNARY ALLUVIUM; Qal (3-15')** @ 3' Silty sand with gravel and cobbles; dense; dry to damp; yellowish-gray; small scours/channels, lenses; local cross bedding	Apx. B:Horizontal			
5									
10									
15					COMMENTS: Surface logged				
20									

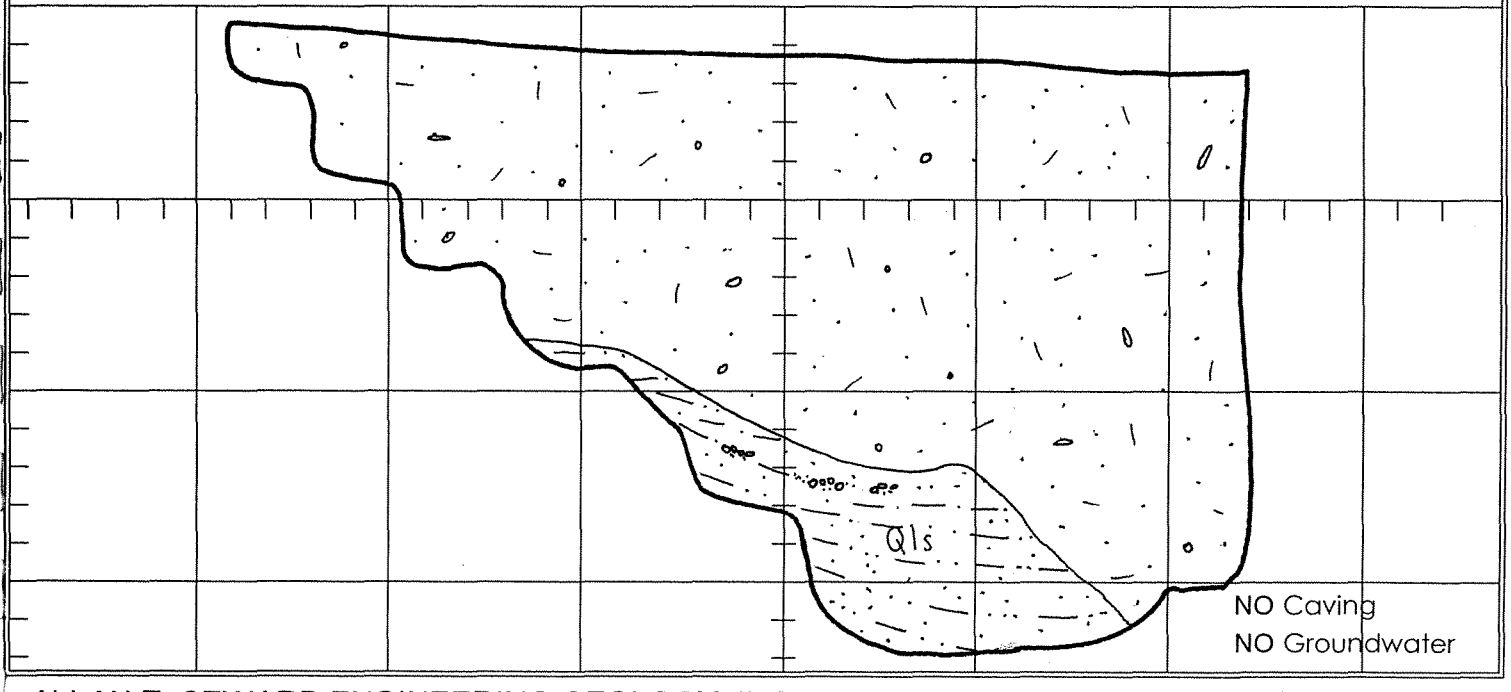
TOTAL DEPTH: 15 feet N77E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-7T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/16/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1178	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL; (0-11')** @ 0' Clayey sandy silt with gravel; firm; dry; light brown; roots, voids ≤1/2" in diameter, rootlets; @ 3' Damp to moist; brown; rootlets, pinhole voids **LANDSLIDE; Qls (8-15')** @ 8' Light yellowish-brown siltstone with local discontinuous pebbly sand lenses; loose to dense; moderately hard; dry to damp; caliche; massive; weathered				
5									
10									
15									
20									

TOTAL DEPTH: 15 feet ←N46W SCALE: 1 inch = 5 feet



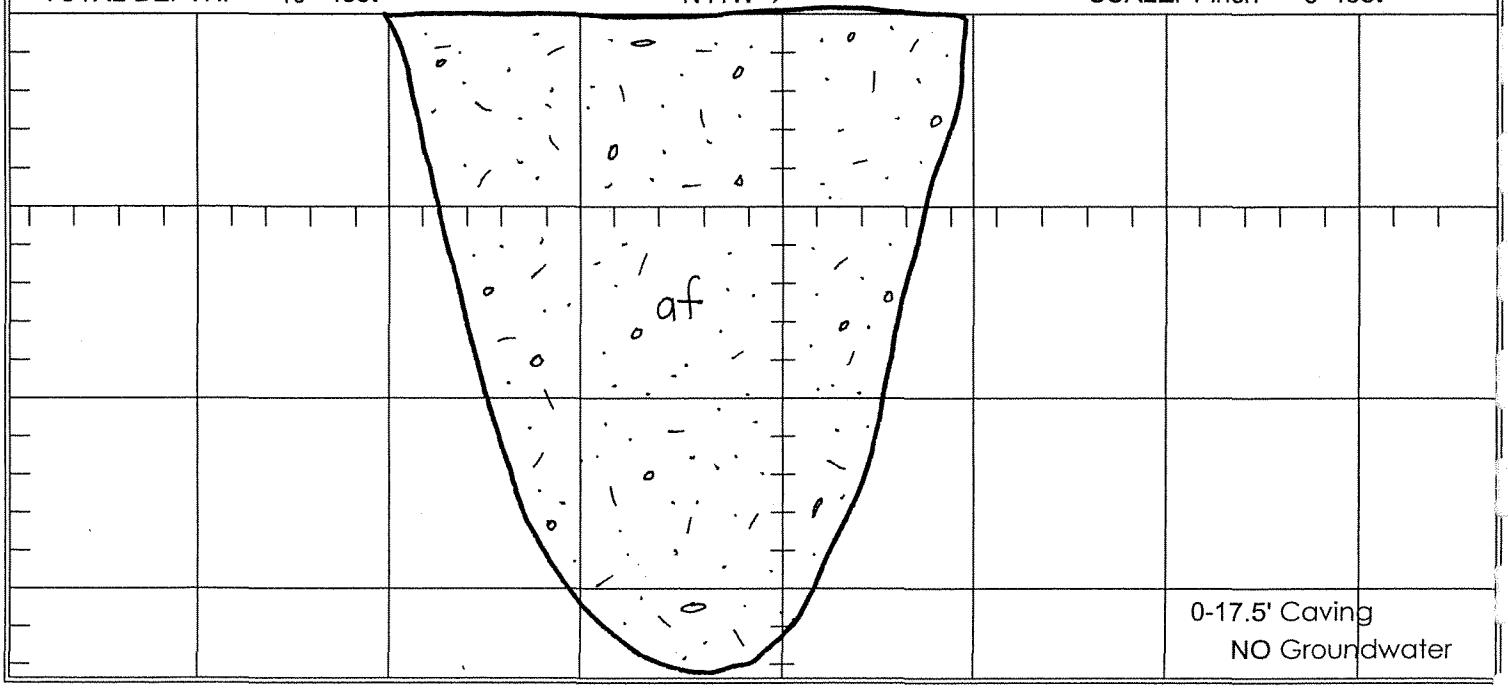
CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-8T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/16/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1200	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**ARTIFICIAL FILL; af (0-17.5')** @ 0' Sandy silty clay with local gravel; soft; moist; brown to dark brown				
5					@ 5' 1/2" diamter rusted steel cable ~4' long				
10									
15				CL-ML	**SOIL; (13-17.5)** @ 13' Sandy silty clay; soft; moist; dark brown COMMENTS: -Operator indicated there was no change in density from 0-17.5' -Surface logged				
20									

TOTAL DEPTH: 19 feet

N41W→

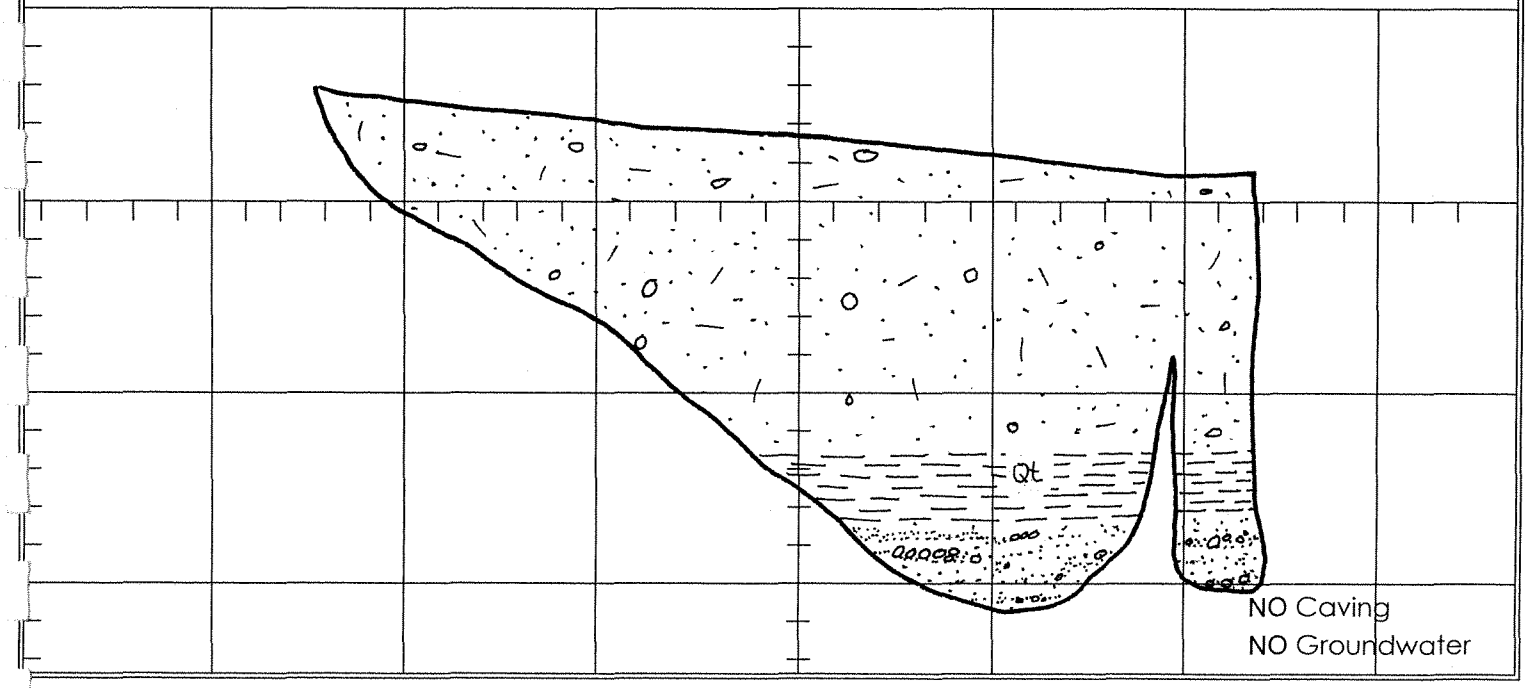
SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-9T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/16/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1162	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL; (0-7.5')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown to light brown; void space ≤1/2" in diameter, roots and rootlets				
5				ML	**QUATERNARY TERRACE DEPOSITS; Qt (7.5-11')** @ 7.5' Sandy silt; firm to stiff; dry to damp; light yellowish-gray to light brown; caliche filled fractures; massive				
10				SP	@ 9.5' Medium to coarse-grained sand with gravels; medium dense; damp; light yellowish-gray to light gray	Contact: Horizontal Apx: B:Horizontal			
15									
20									

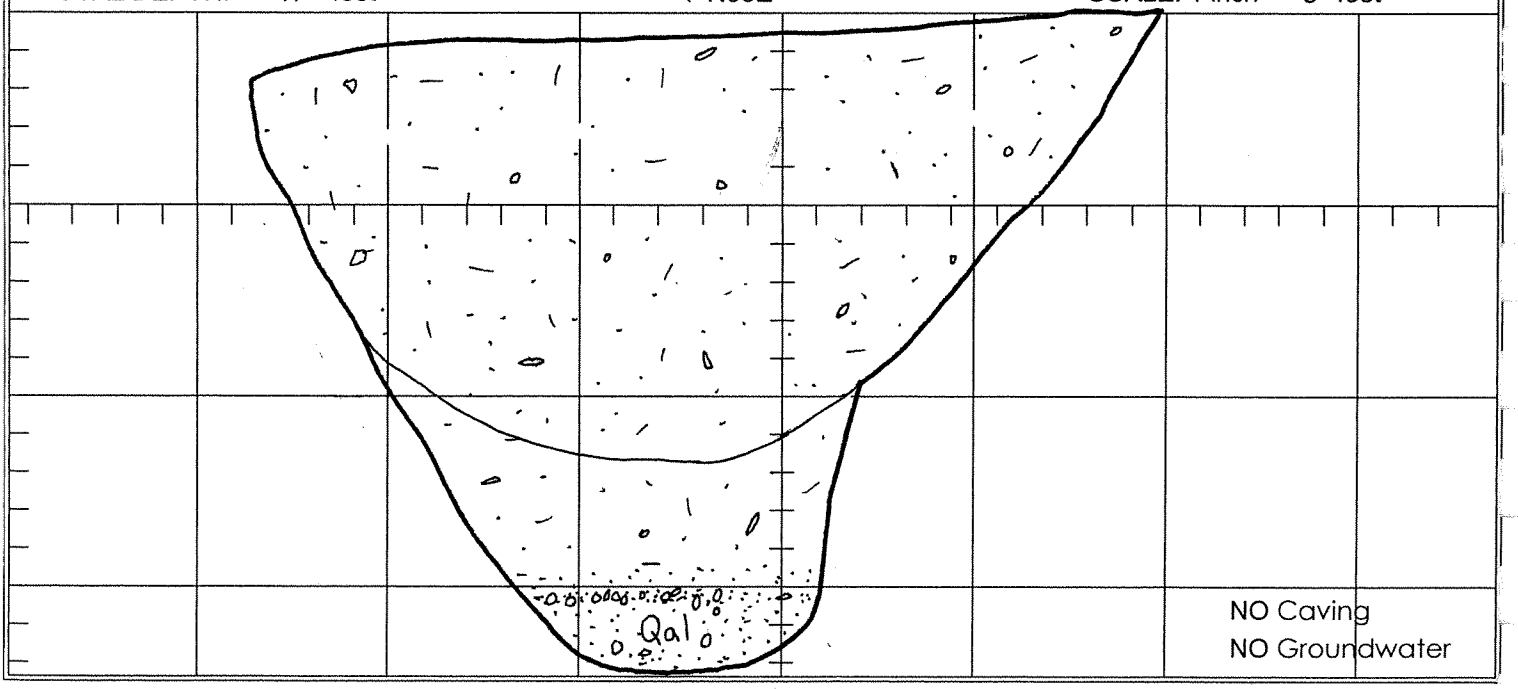
TOTAL DEPTH: 11 feet ←N85W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-10T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1156	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL; (0-15')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; rootlets, voids ≤1/4"				
15				SM	**QUATERNARY ALLUVIUM; Qal (15-17')** @ 15' Silty sand with gravel and cobbles; medium dense; damp; yellowish-brown COMMENTS: -Bottom 6' surface logged				

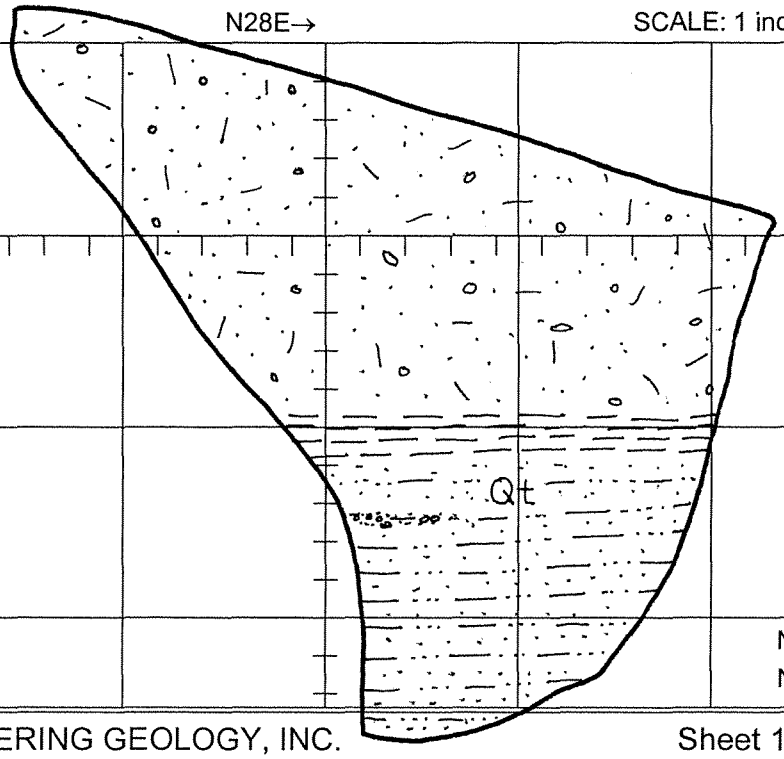
TOTAL DEPTH: 17 feet ←N65E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-11T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1156	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL; (0-8')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; voids ≤1/2", roots and rootlets				
5									
				CL-ML	**QUATERNARY TERACE DEPOSIT; Qt (8-17')** @ 8' Silty clay; firm; damp; light brown to yellow; pinhole voids, rootlets				
10				ML	@ 10' Sandy silt; firm; damp; light brown to yellow; pinhole voids, rootlets, local gravelly channels	Apx. B:Horizontal			
15									
				CL-ML	@ 17' Sandy silty clay; firm; damp to moist; light brown; pinhole voids, rootlets				
20									

TOTAL DEPTH: 17 feet



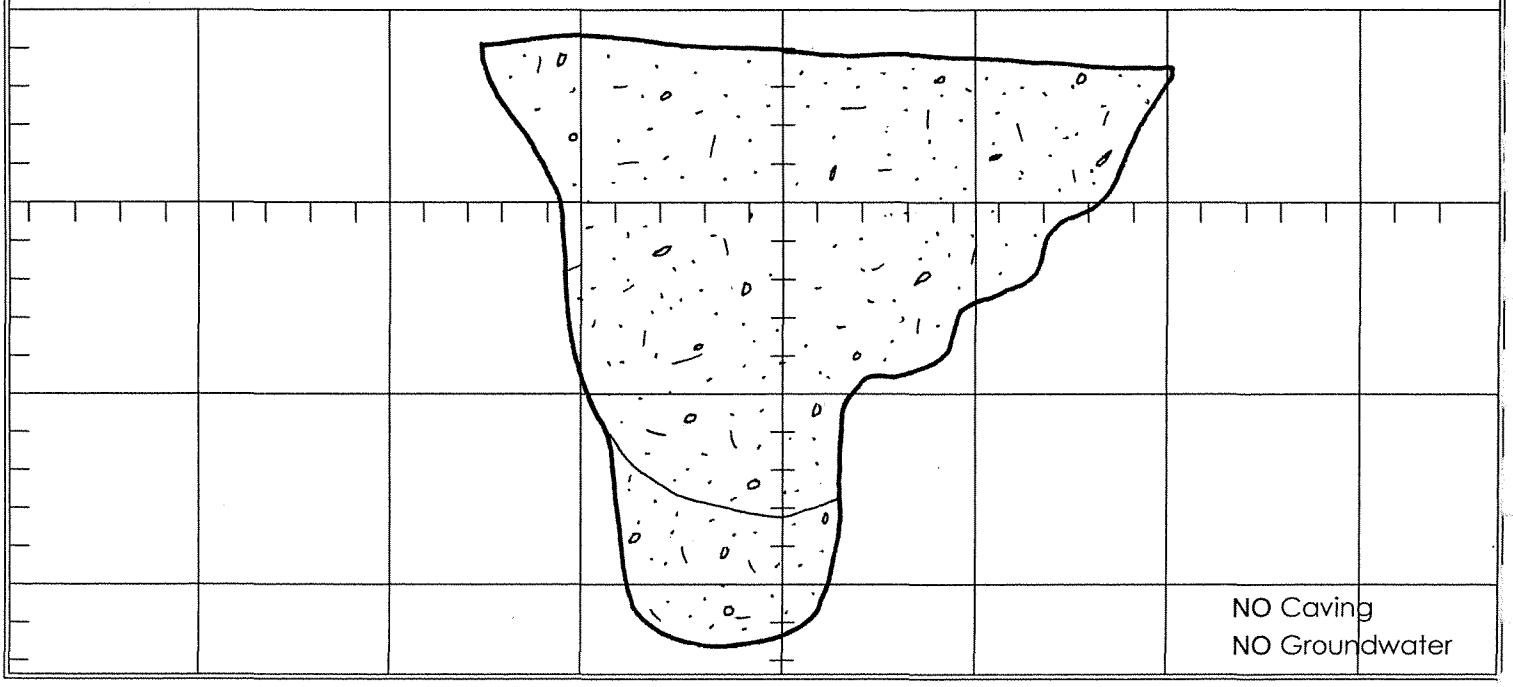
SCALE: 1 inch = 5 feet

NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-12T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/17/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1172	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC	**SOIL; (0-16')** @ 0' Silty clayey sand with gravel; medium dense; dry ; brown to light brown; void ≤1/4" diameter, rootlets @ 4' Damp to moist; brown to dark brown; voids ≤1/8" diameter, rootlets @ 16' Same; voids ≤1/4" in diameter COMMENTS: -Bottom 4' surface logged				
5									
10									
15									
20									

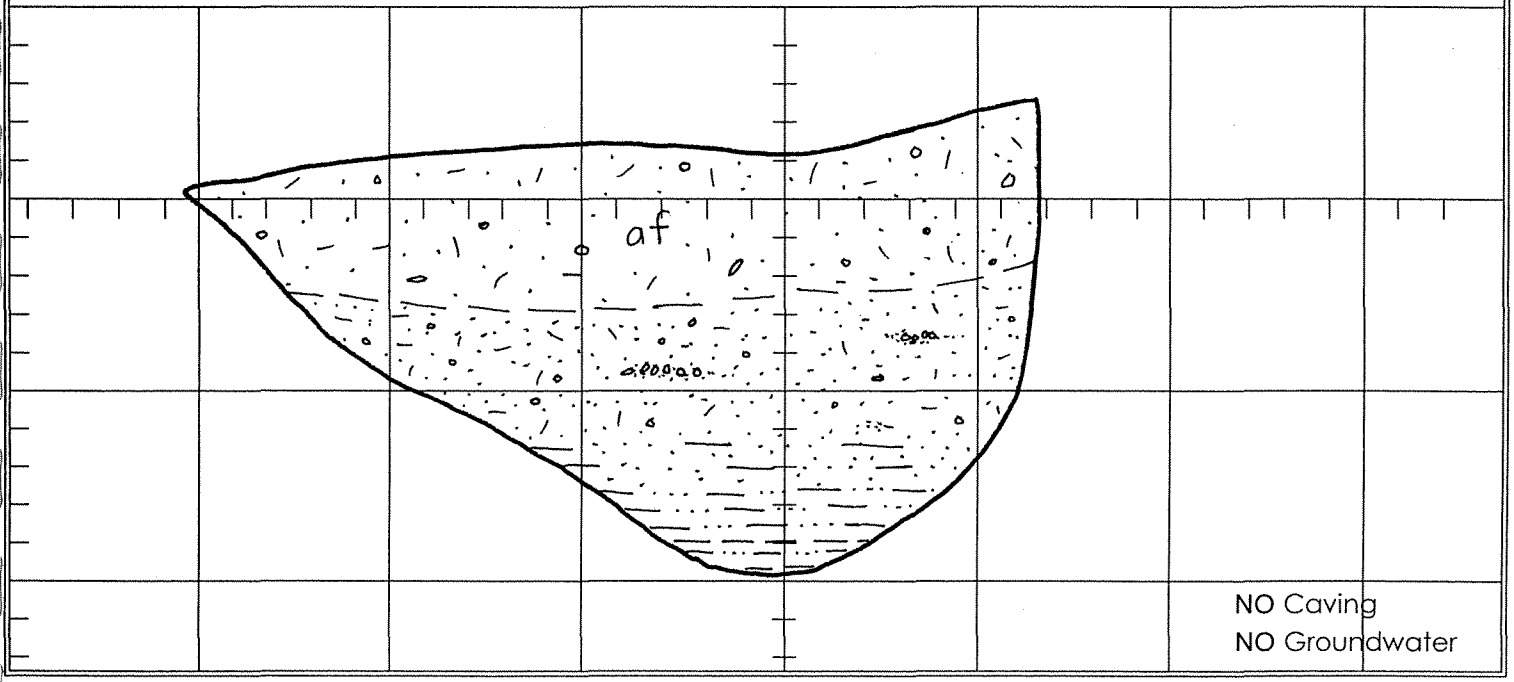
TOTAL DEPTH: 16 feet N26W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-13T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1160	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**ARTIFICIAL FILL; af (0-3.5')** @ 0' Silty clayey sand; medium dense; moist; light yellow to brown to dark brown				
				SC-SM	**SOIL; (3.5-11')** @ 3.5' Silty clayey sand with gravel; medium dense; moist; light brown; voids ≤1/8", roots, rootlets; local channels of coarse-grained sand with gravels, loose to medium dense, damp, light yellow to gray				
5				ML	@ 7' Sandy silt; firm; moist; light brown; local roots				
10									
15									
20									

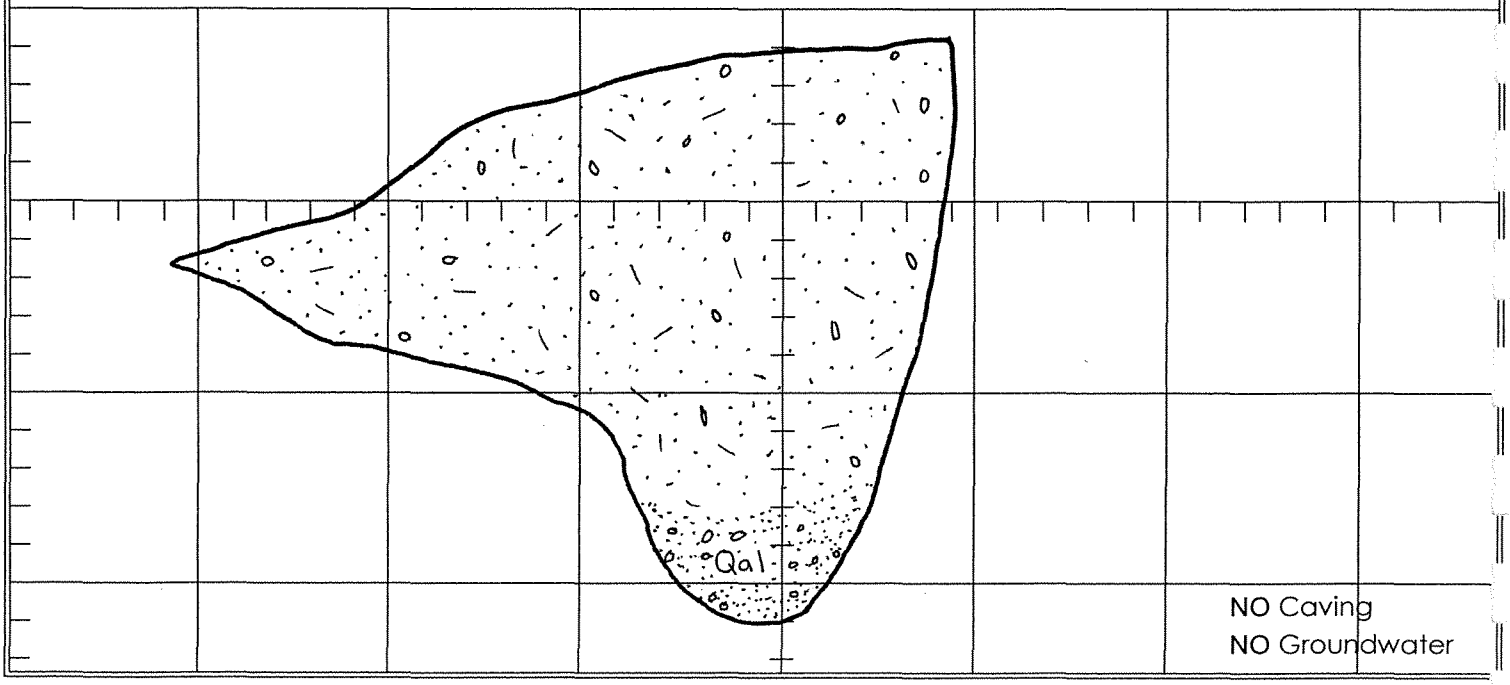
TOTAL DEPTH: 11 feet ←N48W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-14T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1154	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL; (0-12')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown to light brown; voids ≤1/4" roots, rootlets				
5									
10					@ 10' Dense; dry to damp; brown; local pinhole voids				
				SM	**QUATERNARY ALLUVIUM; Qal (12-15')** @ 12' Silty coarse-grained sand with gravel and cobbles; dense; damp; yellowish-brown to yellow				
15									
20									

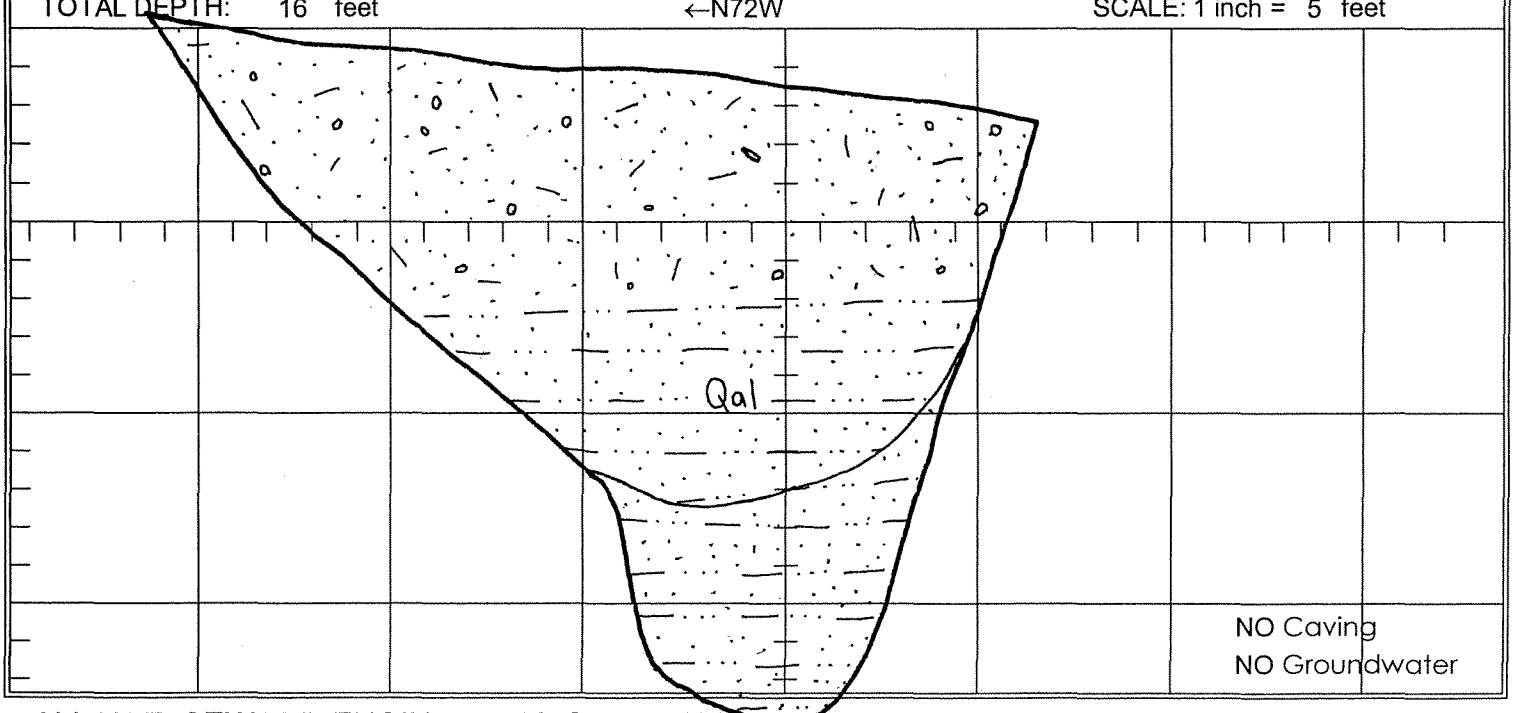
TOTAL DEPTH: 15 feet N50E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-15T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/17/03	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1144	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL; (0-7')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; voids ≤1/8" diameter; roots and rootlets				
5				ML	**QUATERNARY ALLUVIUM; Qal (7-16')** @ 7' Sandy silt; firm; damp; light brown to yellow; voids <1/8" in diameter, rootlets				
10									
15					@ 16' Same; no voids; clumps of dirt out of bucket				
20					COMMENTS: -Last 5' was surface logged				

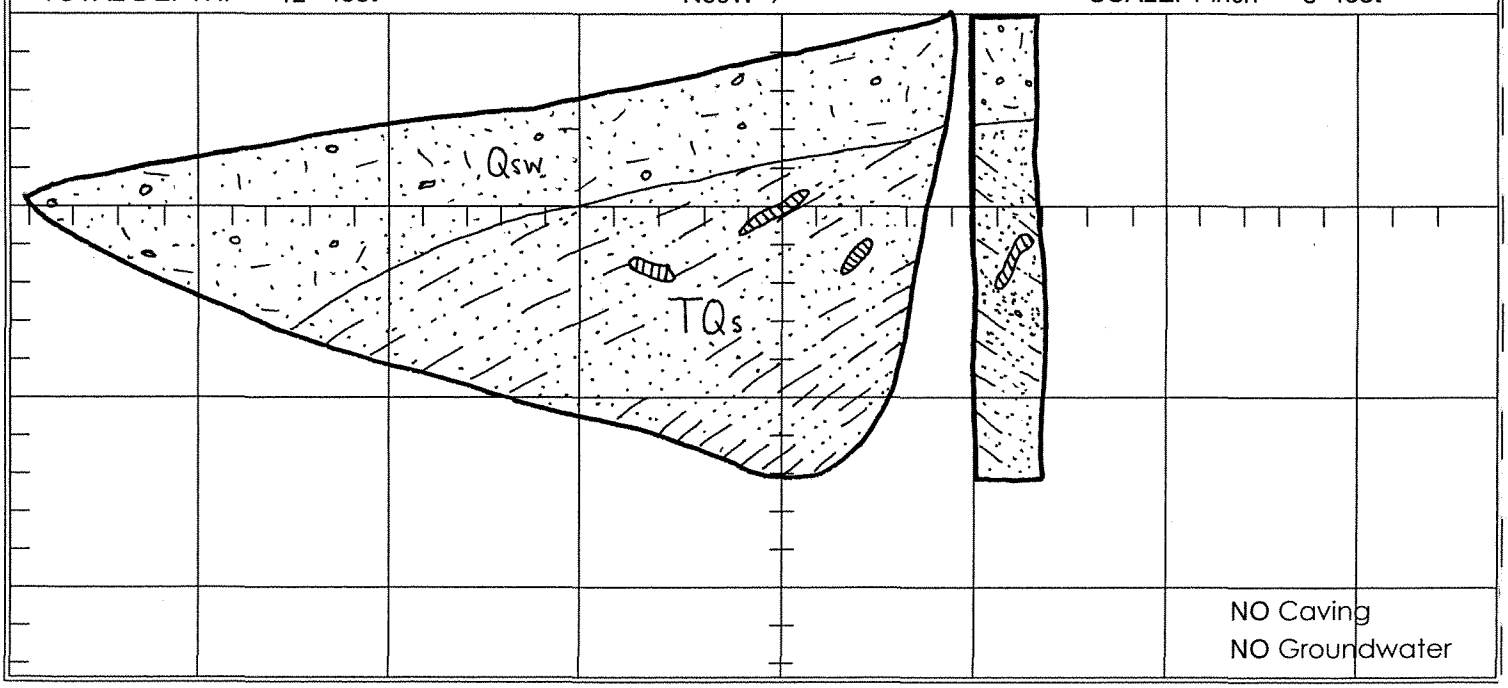
TOTAL DEPTH: 16 feet ←N72W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-16T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1167	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-3')** @ 0' Silty clayey sand with gravel; medium dense; dry ; brown; voids ≤1/8", roots and rootlets				
					BEDROCK; TQs (3-12') @ 3' Light brown to brown sandy siltstone; soft; damp to moist; weathered; krotovina				
5									
					@ 8' Light brown to brown sandy siltstone; moderately hard; moist with interbedded yellowish brown medium-grained sandstone; friable; damp	Apx. B:N38W,41NE			
10									
15									
20									

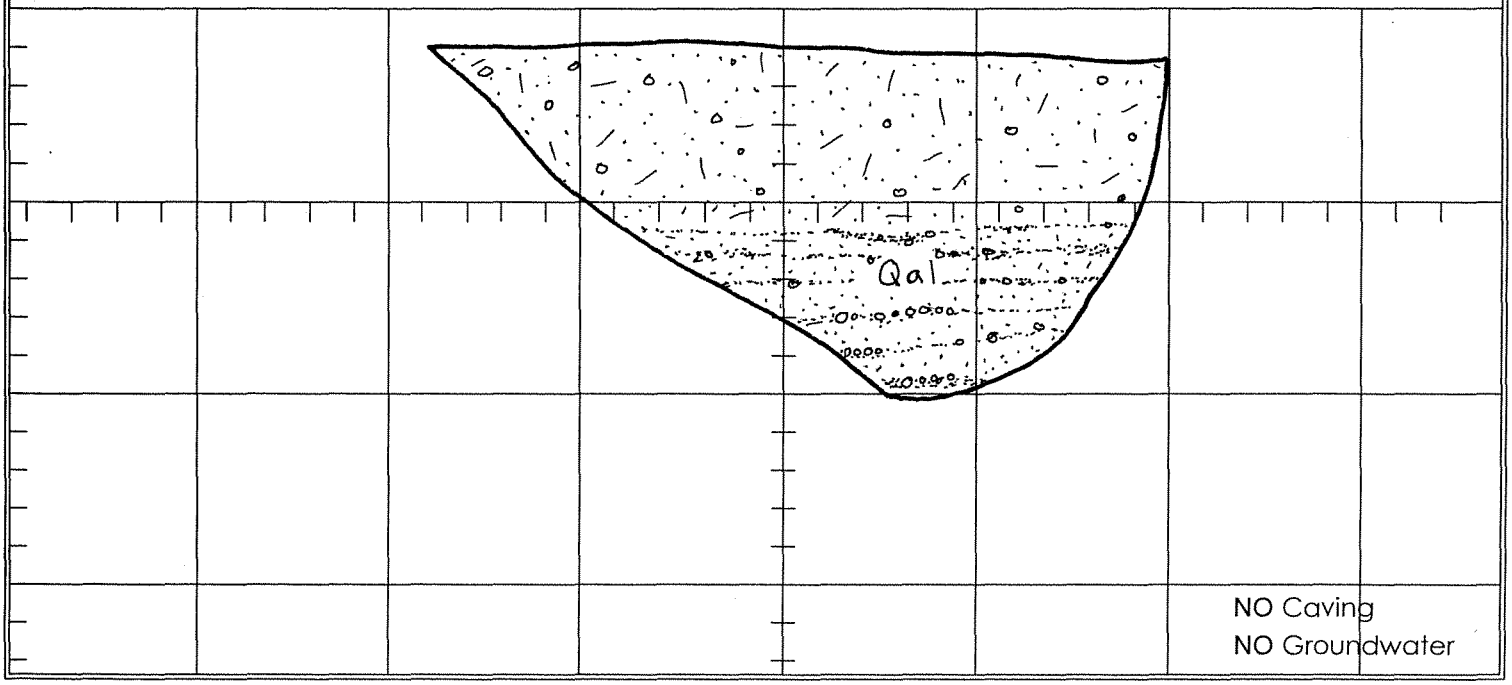
TOTAL DEPTH: 12 feet N89W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-17T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1115	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL; (0-6')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown; voids ≤1/8", rootlets				
5				SM	@ 5' Same; channels of medium-grained sand; loose; dry; yellowish-brown				
					QUATERNARY ALLUVIUM; Qal (6-9') @ 6' Silty sand with gravel; dense; damp; yellowish-brown to yellow	Apx. B:Horizontal			
10									
15									
20									

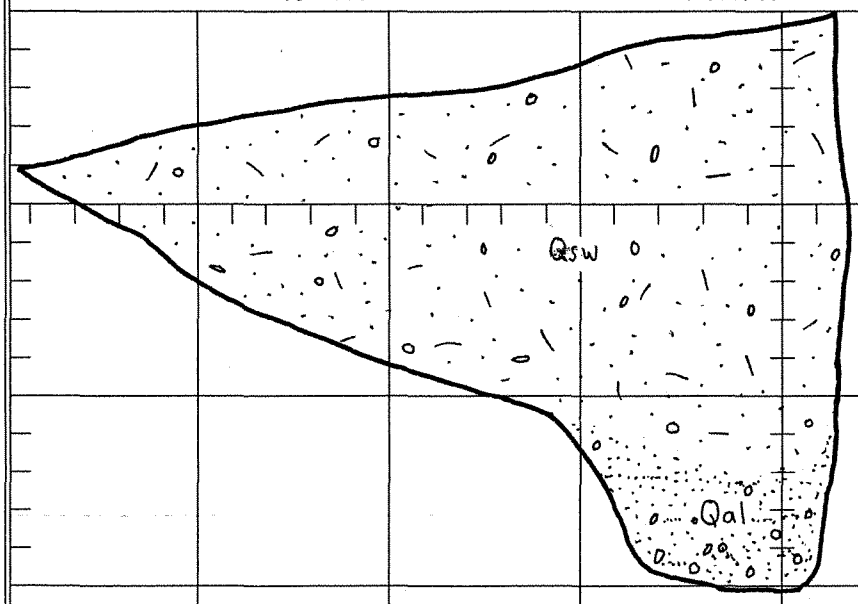
TOTAL DEPTH: 9 feet ←N67W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-18T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1125	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SLOPE/SLOPEWASH; Soil/Qsw (0-12')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; voids ≤1/8" diameter roots and rootlets				
5									
10									
				SM	**QUATERNARY ALLUVIUM; Qal (12-15')** @ 12' Silty sand with gravel; dense; damp; light brown to yellow; pinhole voids				
15									
20									

TOTAL DEPTH: 15 feet ←N47W SCALE: 1 inch = 5 feet

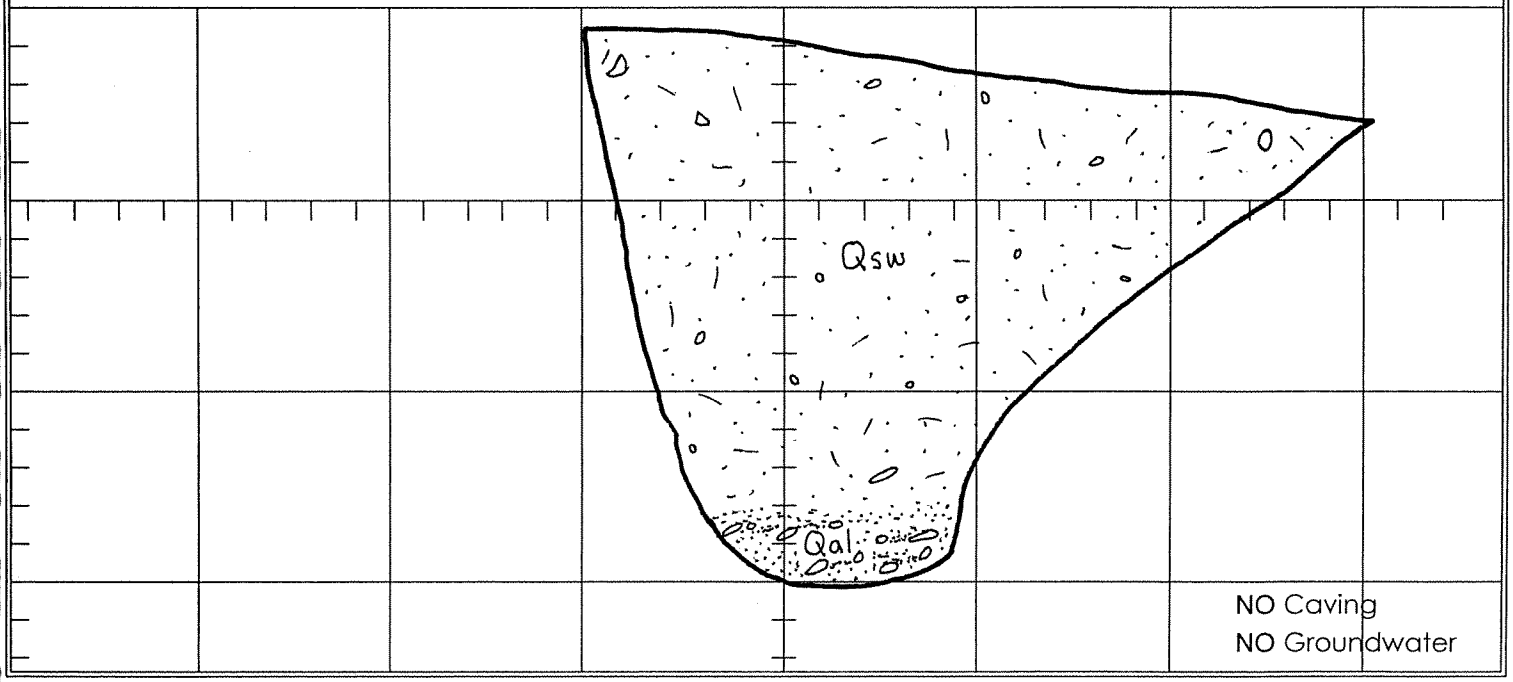


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-19T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1117	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-12')** @ 0' Silty-clayey sand with gravel and cobbles; medium dense to dense; dry to damp; brown; voids ≤1/8" in diamter, roots and rootlets				
5									
					@ 8' Same; pinhole voids, rootlets				
10									
				SM	**QUATERNARY ALLUVIUM; Qal (12-14')** @ 12' Silty sand with gravel and cobbles; dense; damp to moist; yellowish brown to yellow				
15					COMMENTS: -Last 3' were logged from surface				
20									

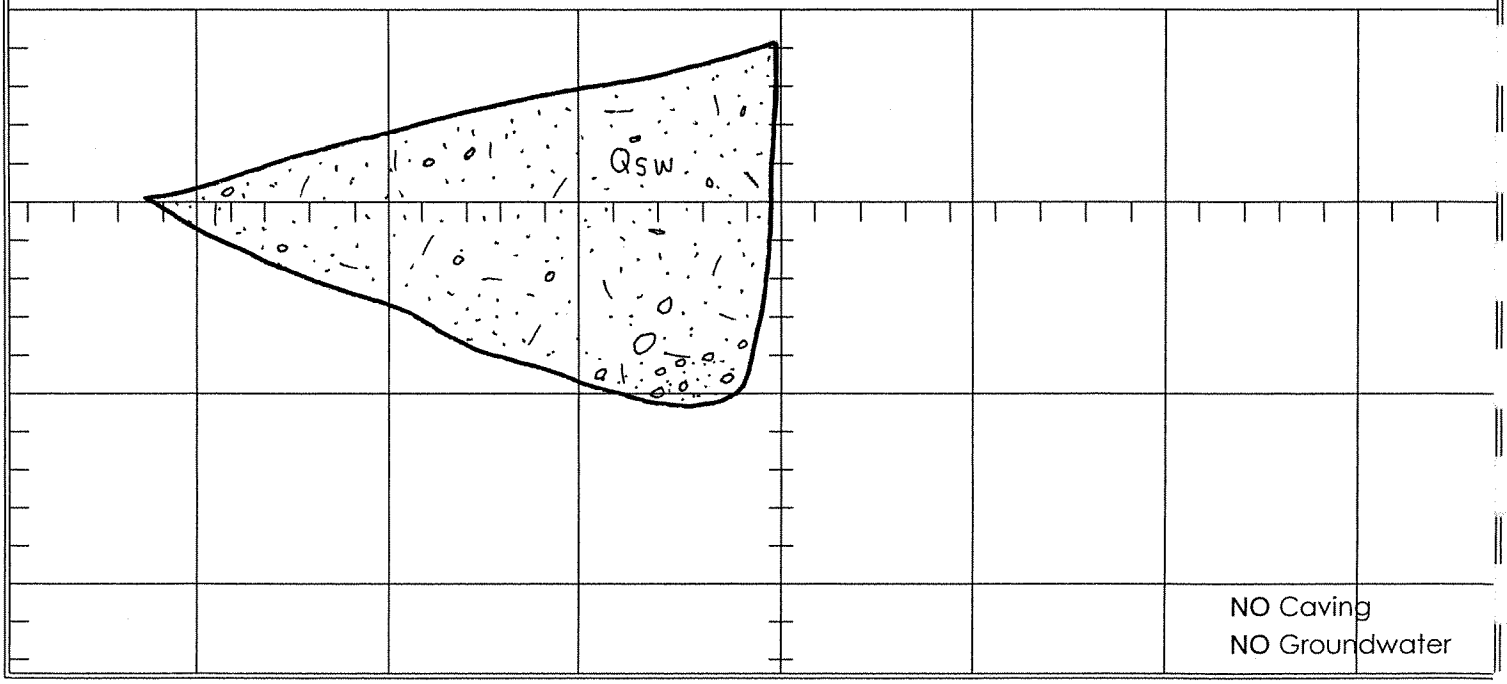
TOTAL DEPTH: 14 feet N75W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-20T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/17/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1130	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-9')** @ 0' Silty clayey sand with gravel and cobbles; medium dense to dense; damp to moist; brown to dark brown; voids ≤1/16", roots and rootlets				
5				GC-GM	@ 6' More gravel				
10									
15									
20									

TOTAL DEPTH: 9 feet N80W→ SCALE: 1 inch = 5 feet



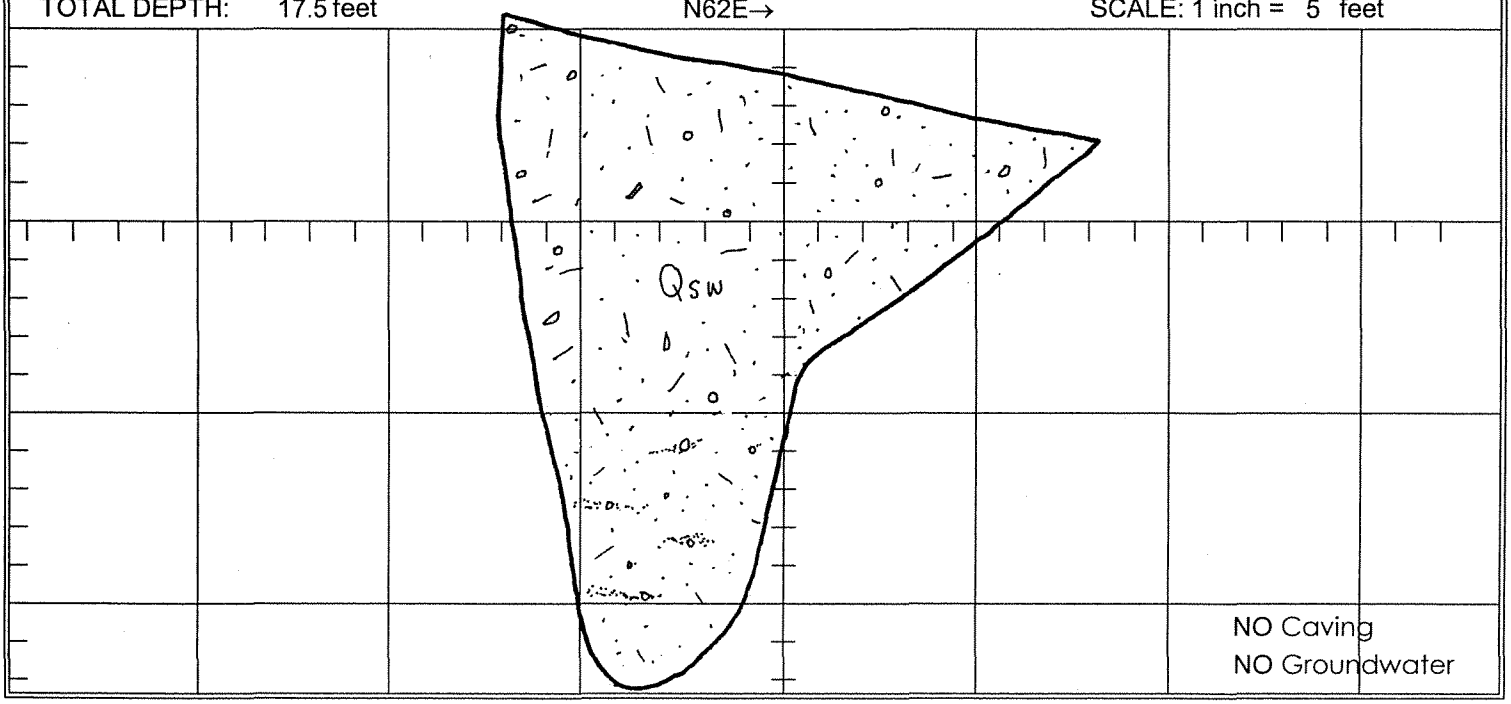
CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-21T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1169	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-17.5')** @ 0' Silty clayey sand with gravel; firm; dry; brown; pinhole voids, rootlets				
5									
10					@ 9' Same; local gravelly channels				
15					COMMENTS: -Bottom 5.5' surface logged				
20									

TOTAL DEPTH: 17.5 feet

N62E→

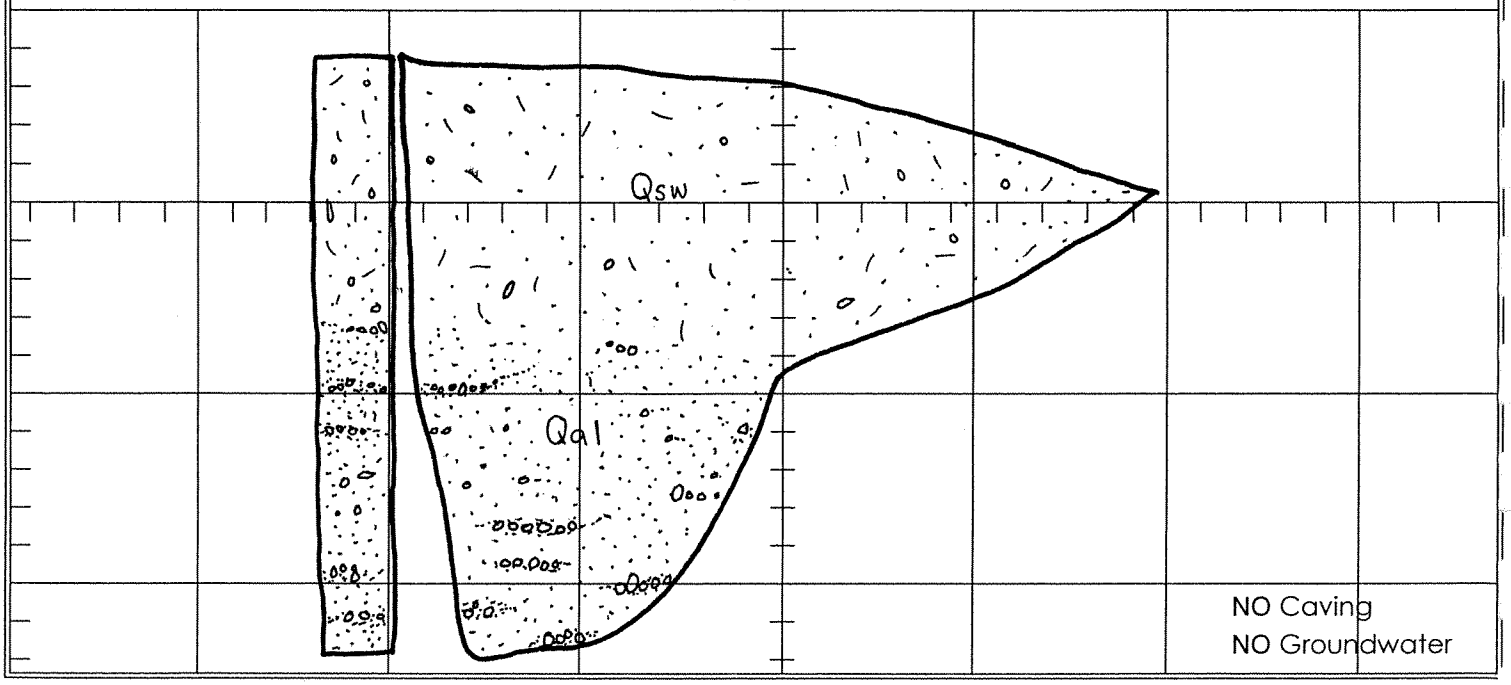
SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-22T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1180	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw (0-12')** @ 0' Silty clayey sand with gravel and cobbles; firm; dry; brown; roots, rootlets, voids ≤1/8"				
					@ 4' Same; local gravel channels				
5									
10				SM	**QUATERNARY ALLUVIUM; Qal (12-15')** @ 12' Silty sand with gravel and cobbles; dense; damp; yellow to yellowish-brown	Apx. B:Horizontal			
15									
20									

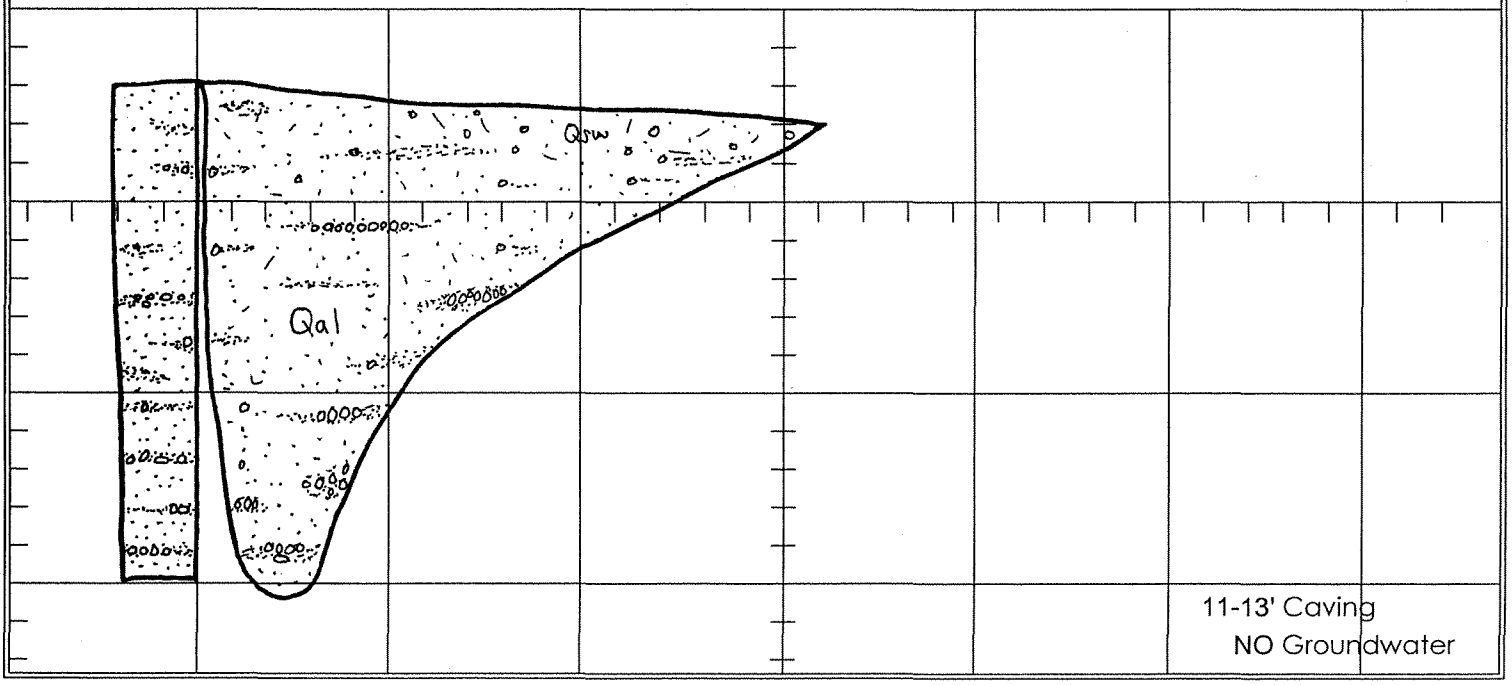
TOTAL DEPTH: 15 feet ←N89W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-23T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1226	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SLOPEWASH/QUATERNARY ALLUVIUM; Qsw/Qal (0-9')** @ 0' Silty clayey sand with gravel; dense; dry; brown to dark brown; pinhole voids; rootlets; gravelly channels				
5									
10				SM	**QUARTERNARY ALLUVIUM; Qal (9-15')** @ 9' Silty sand with gravel and cobbles; loose to medium dense; damp; yellowish-brown to yellow				
15					COMMENTS: -Bottom 5' surface logged				
20									

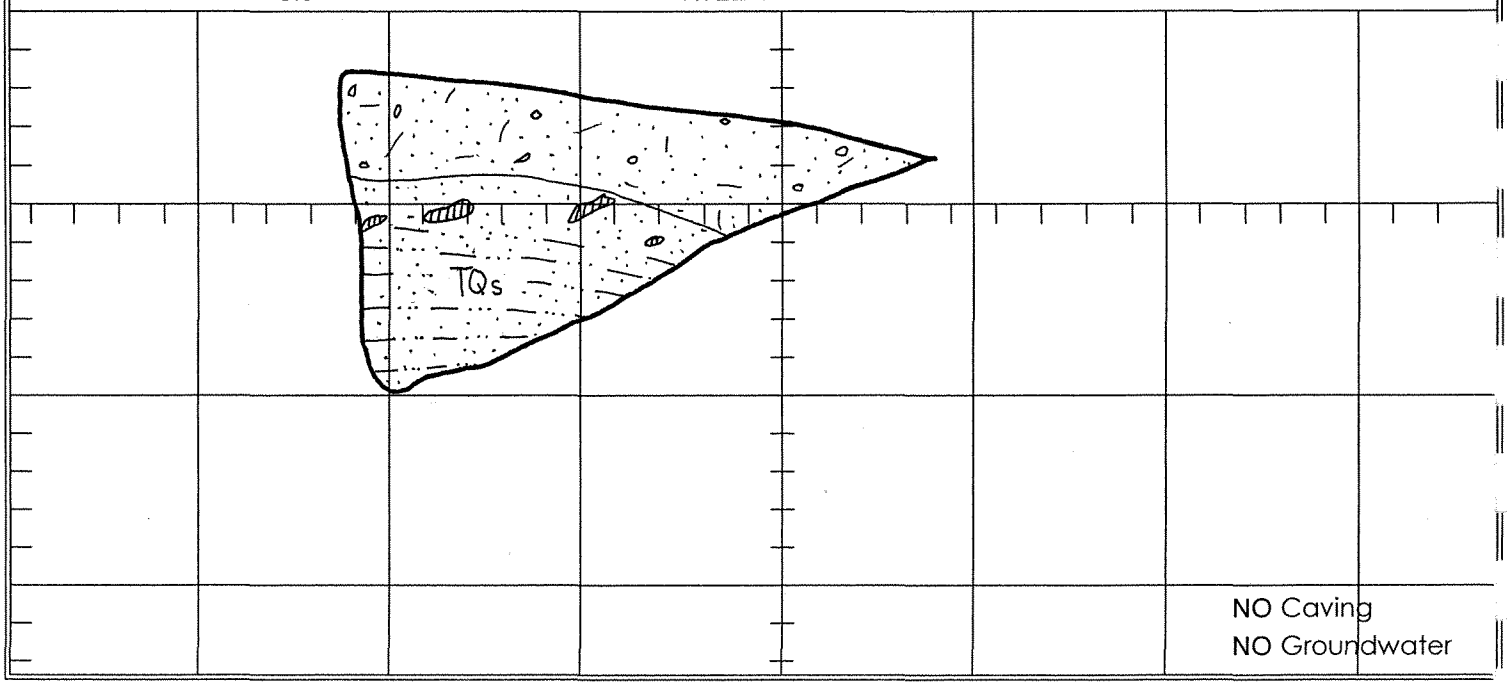
TOTAL DEPTH: 13 feet ←N80W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-24T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1220	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-3')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown; voids ≤1/8" diameter, rootlets				
					BEDROCK; TQs (3-8.5') @ 3' Yellow to light brown sandy siltstone; moderately hard; damp; weathered; krotovina; massive @ 5.5' Hard				
5									
10									
15									
20									

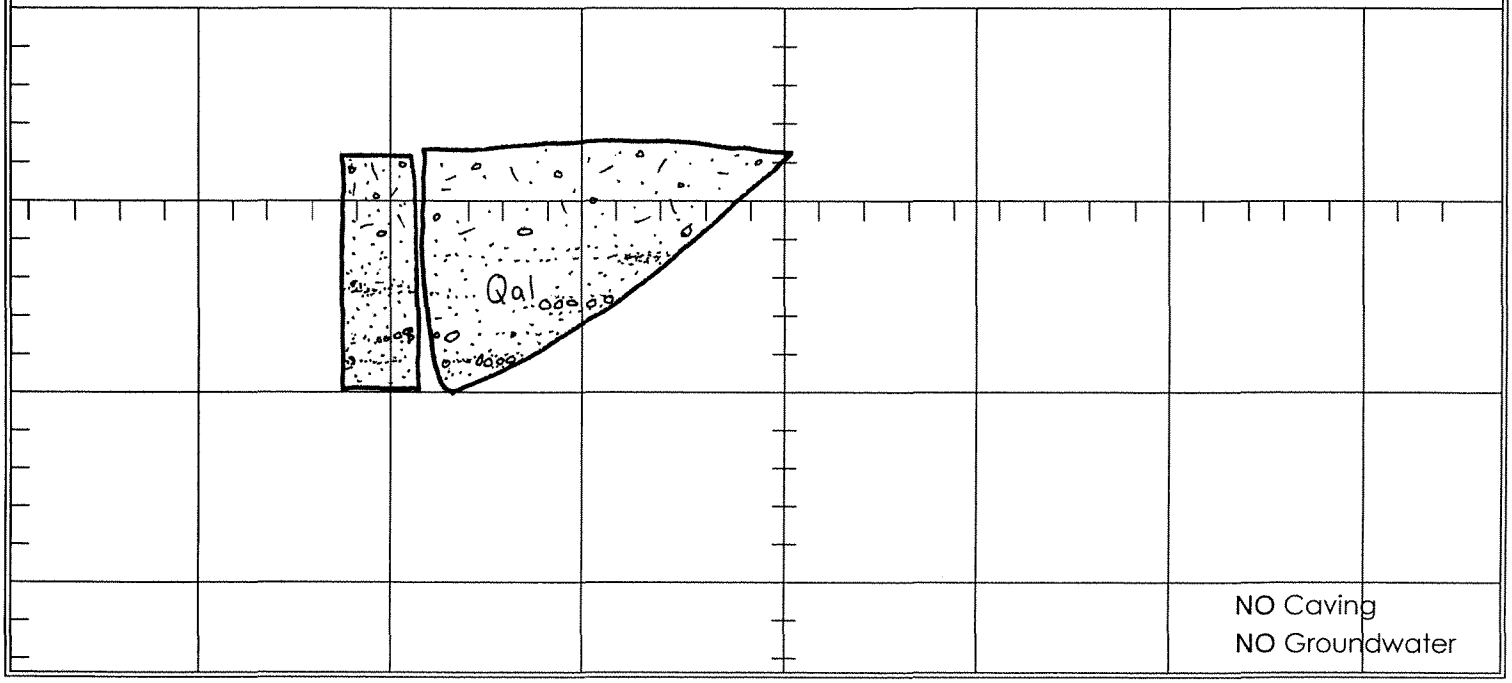
TOTAL DEPTH: 8.5 feet N72E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-25T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1245	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL; (0-3')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown; pinhole voids, rootlets				
				SM	**QUATERNARY ALLUVIUM; Qal (3-6')** @ 3' Silty sand with gravel; medium dense; damp; yellow to yellowish-brown; rootlets	Apx. B:Horizontal			
5									
10									
15									
20									

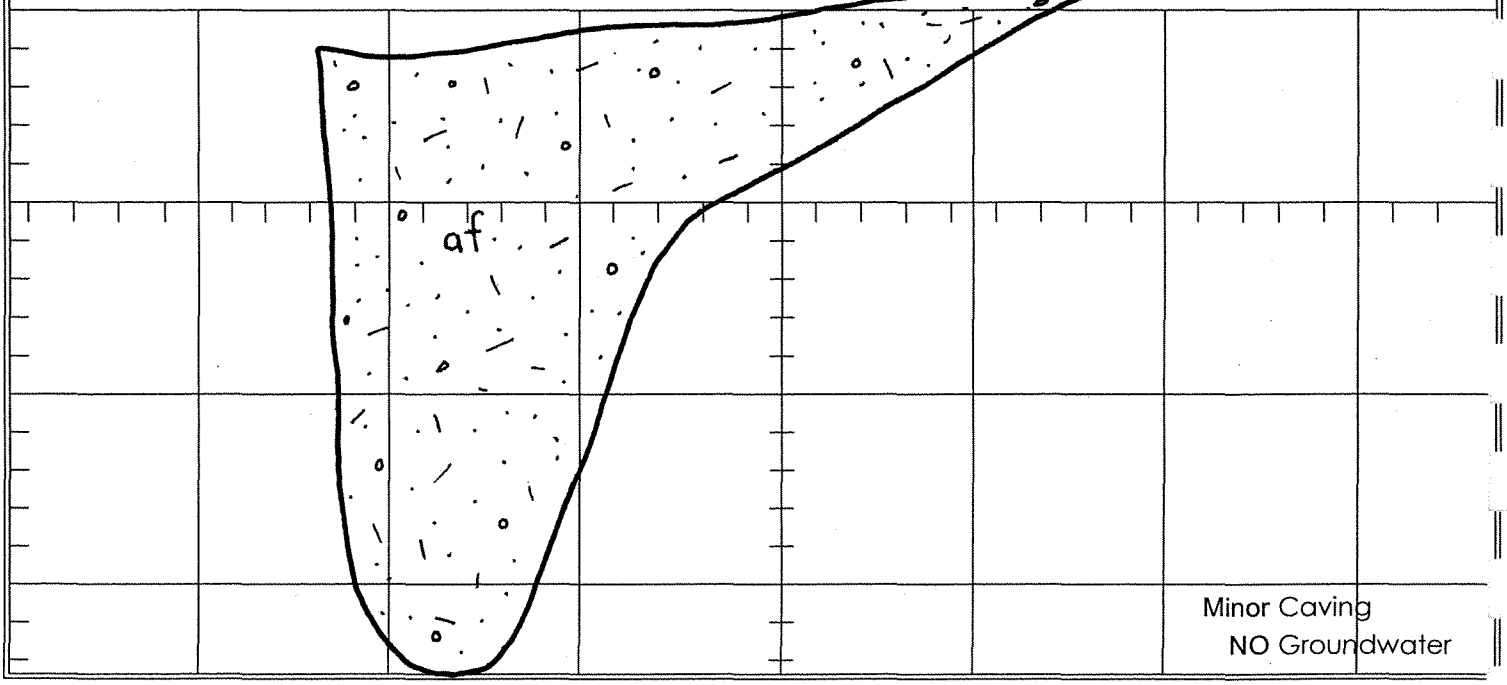
TOTAL DEPTH: 6 feet ←N52W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-26T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1272	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**ARTIFICIAL FILL; af (0-15')** @ 0' Silty clayey sand with gravel; loose to moderately dense; damp; brown to dark brown; clasts ~2- 4" in diameter of light brown siltstone; stiff; damp; minor caving				
5									
10									
15									
20									

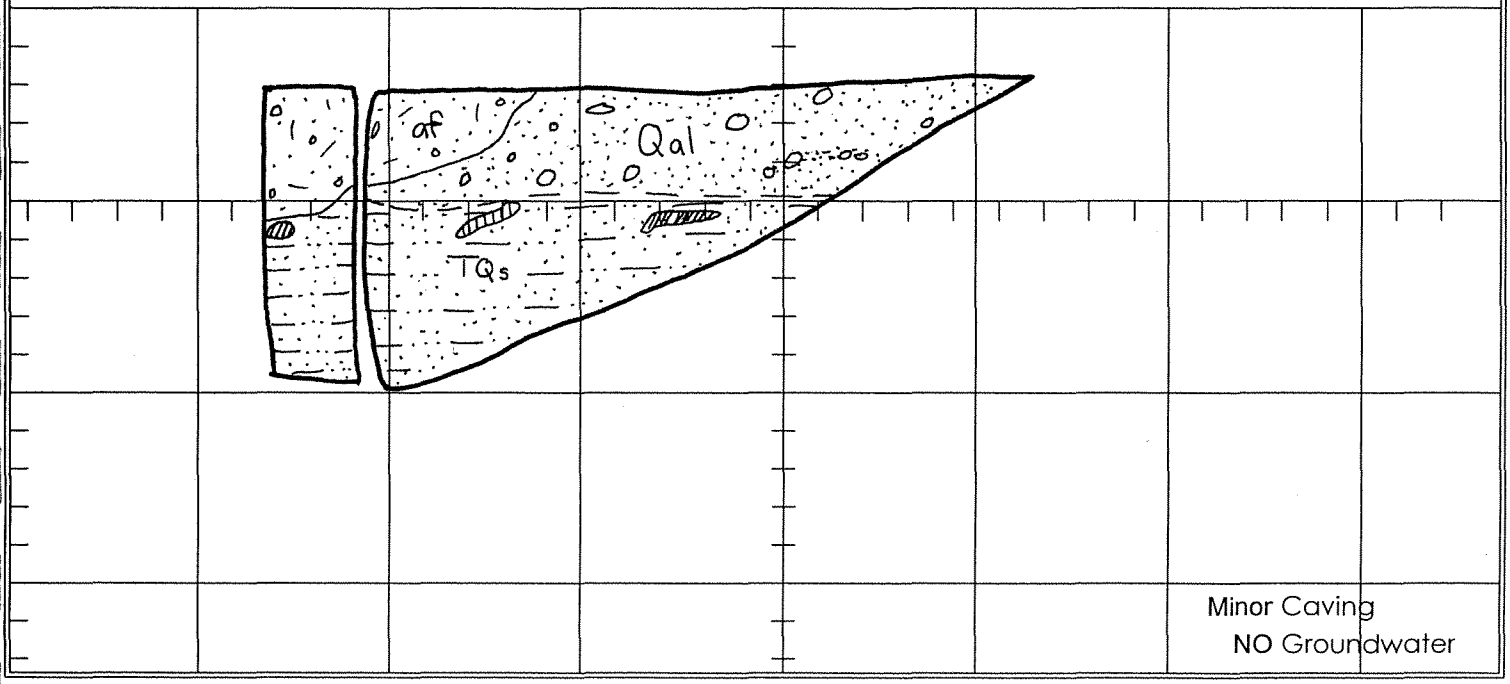
TOTAL DEPTH: 15 feet ←N75E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-27T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1306	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**ARTIFICIAL FILL; af (0-3')** @ 0' Silty clayey sand with gravel; loose; dry; brown; minor caving				
				SM	**QUATERNARY ALLUVIUM; Qal (0-3')** @ 0' Silty sand with gravel; loose to medium dense; dry; yellowish-brown to brown; caving; massive **BEDROCK; TQs (3-8')** @ 3' Light brown sandy siltstone; moderately hard; damp; weathered with krotovina and rootlets @ 6' Hard				
5									
10									
15									
20									

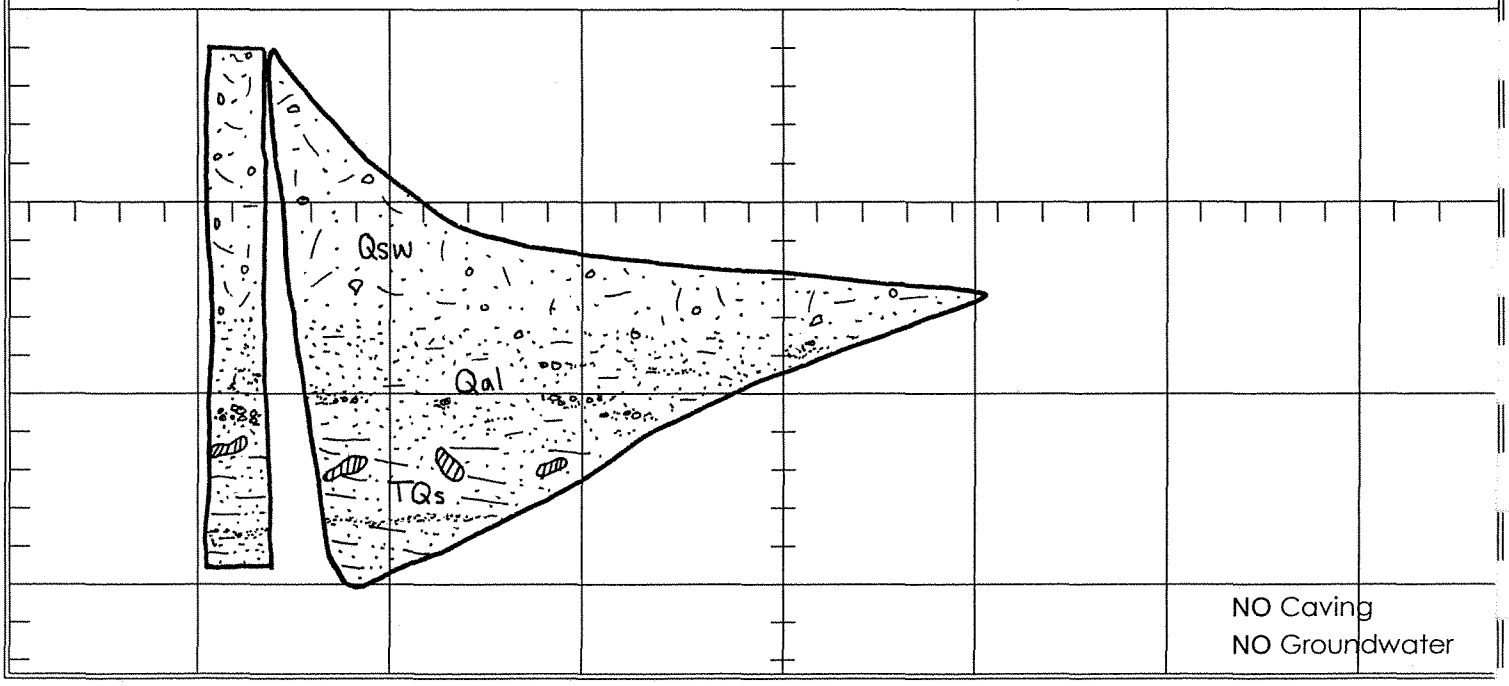
TOTAL DEPTH: 8 feet ←N53W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-28T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1220	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-8')** @ 0' Silty clayey sand with gravel; medium dense; dry ; brown to dark brown; voids ≤1/8", roots and rootlets				
5									
				SM	**QUATERNARY ALLUVIUM; Qal (8-10')** @ 8' Silty sand with gravel; medium dense; dry; yellow to yellowish brown	Apx. B:Horizontal			
10					**BEDROCK; TQs (10-14')** @ 10' Light brown sandy siltstone; moderately hard to hard; damp; krotovina; rootlets; weathered @ 12' Hard; no krotovina; with interbedded light brown silty sandstone	Contact: Horizontal B:N25W,28NE			
15									
20									

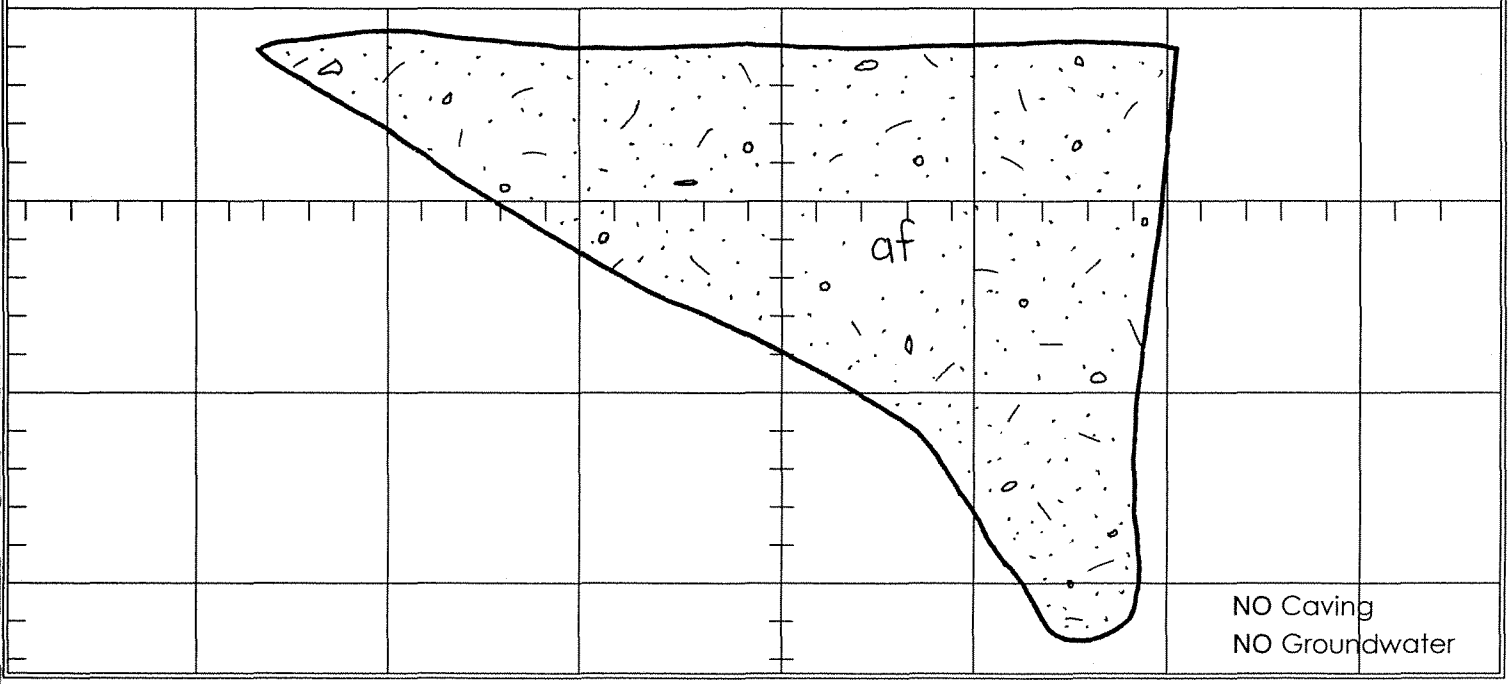
TOTAL DEPTH: 14 feet N64W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-29T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1249	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/ARTIFICIAL FILL; Soil/af (0-16')** @ 0' Silty clayey sand with gravel; medium dense to dense; dry; brown; rootlets				
5									
10					@ 11' Same; no voids				
15					COMMENTS: Bottom 4' surface logged				
20									

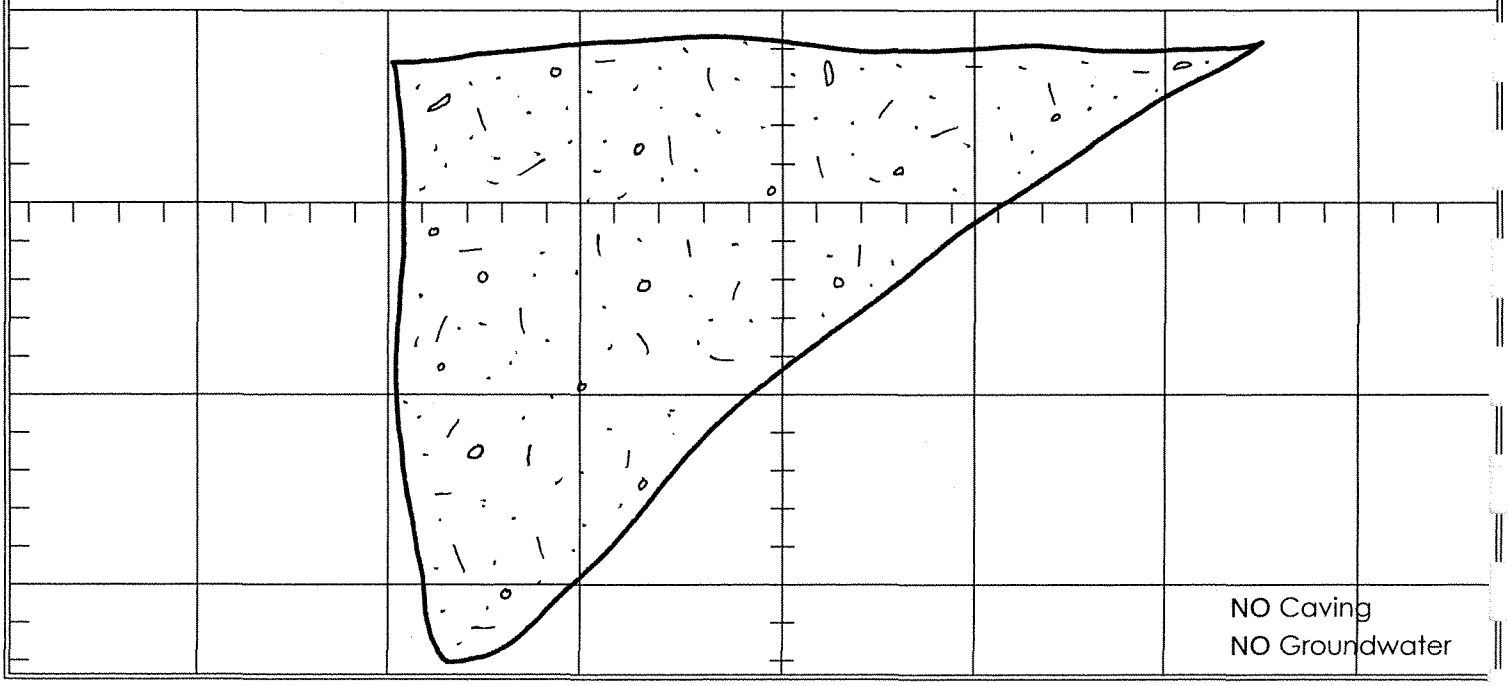
TOTAL DEPTH: 16 feet ←N28E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-30T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1264	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL; (0-16')** @ 0' Silty clayey sand with gravel; medium dense; damp to moist; brown to dark brown; pinhole voids; roots and rootlets				
5									
10					@ 11' Same; no voids, rootlets				
15					COMMENTS: -Bottom 5' surface logged				
20									

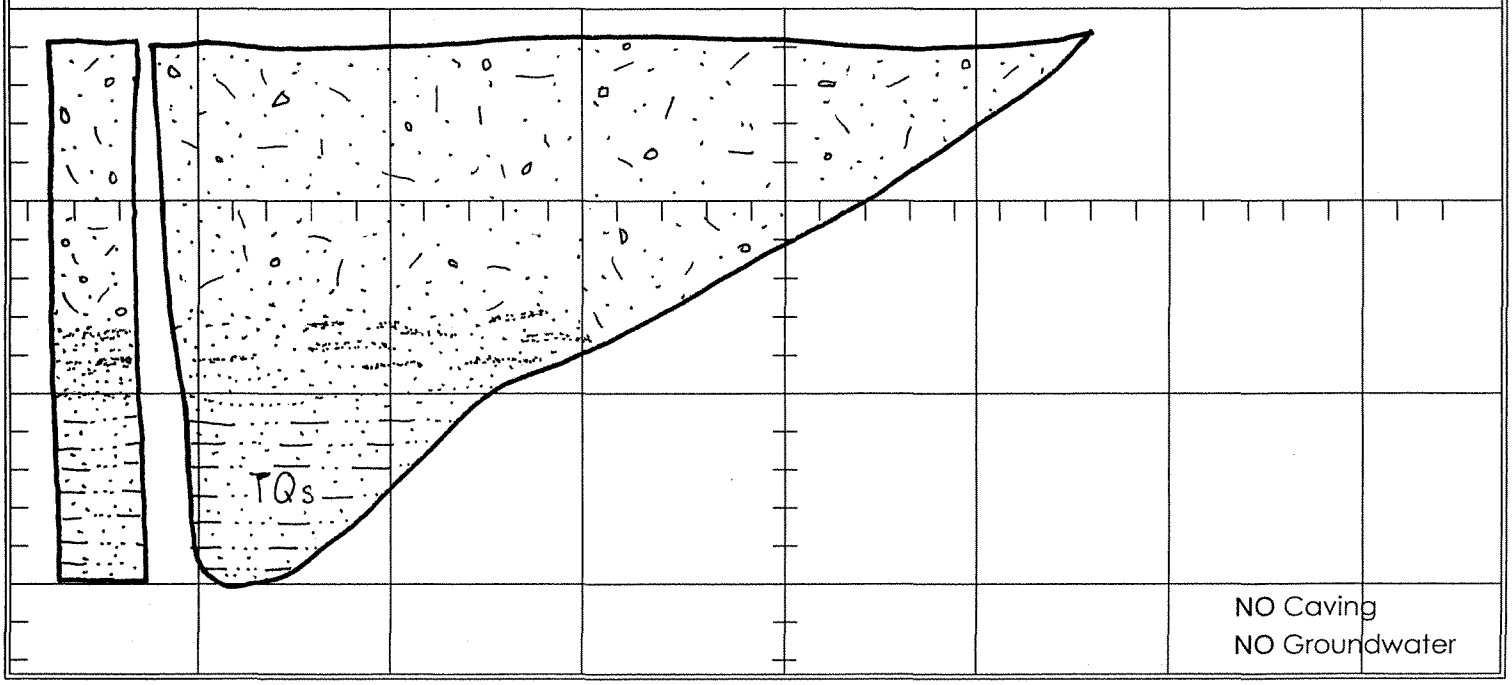
TOTAL DEPTH: 16 feet ←N32E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-31T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1228	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL; (0-7')** @ 0' Silty clayey sand with gravel; medium dense; damp to moist; brown; voids ≤1/8" diameter, roots, rootlets				
5				SM	**QUATERNARY ALLUVIUM; Qal (7-9')** @ 7' Silty sand; loose to medium dense; damp; yellowish-brown	B:Horizontal			
10					**BEDROCK; TQs (9-14')** @ 9' Light brown silty sandstone; moderately hard to hard; damp; weathered	C:Horizontal			
15					COMMENTS: -Bottom 3' surface logged				
20									

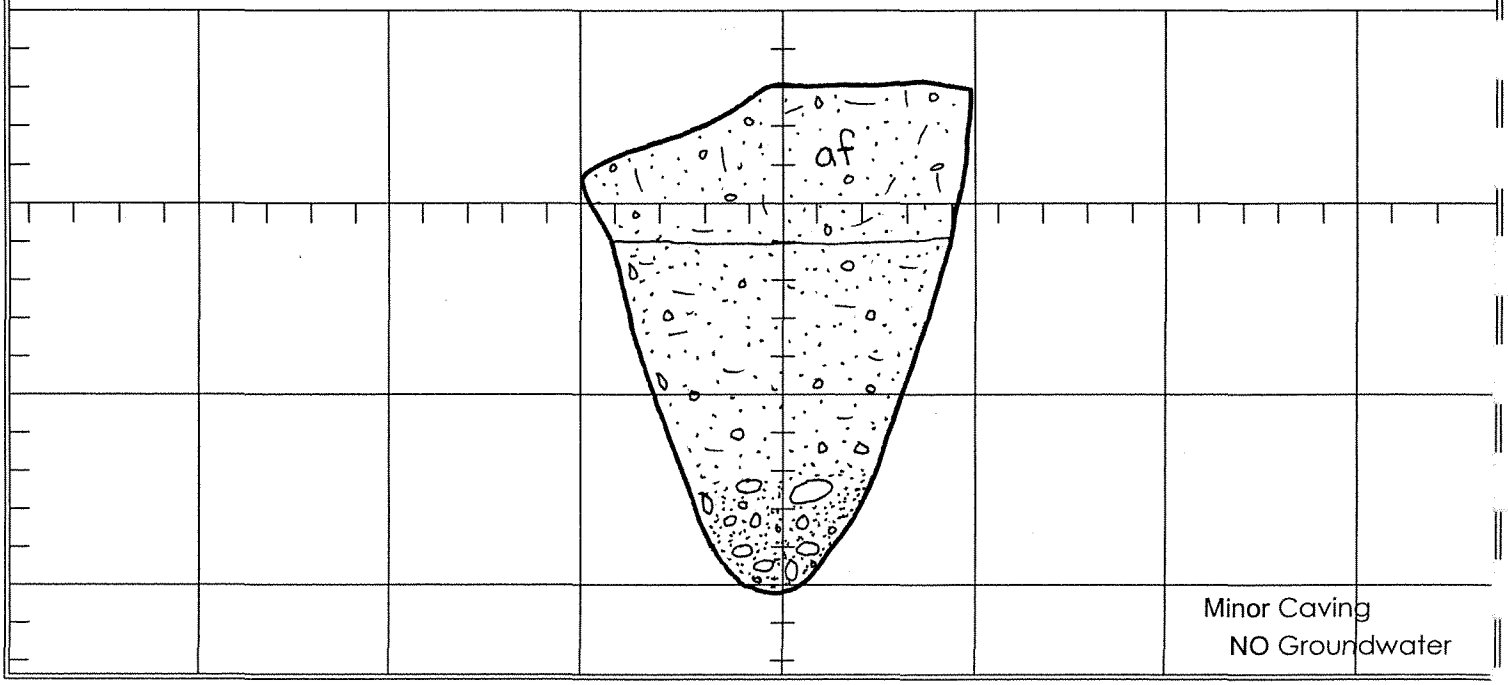
TOTAL DEPTH: 14 feet ←N74E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-32T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/20/03	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1076	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**ARTIFICIAL FILL; af (0-4')** @ 0' Silty clayey sand with gravel; loose to medium dense; damp to moist; brown to dark brown; wire, cloth, broken roots; minor caving				
5					**SOIL; (4-13')** @ 4' Silty clayey sand with gravel; medium dense; moist; brown to dark brown; roots, pinhole voids in clumps from bucket, rootlets				
10					@ 10' Silty clayey sand with gravel and cobbles; medium dense to dense; damp to moist; yellowish-brown; no voids in clumps from bucket				
15					COMMENTS: -Operator indicated digging was more difficult @ 10' -Logged from surface				
20									

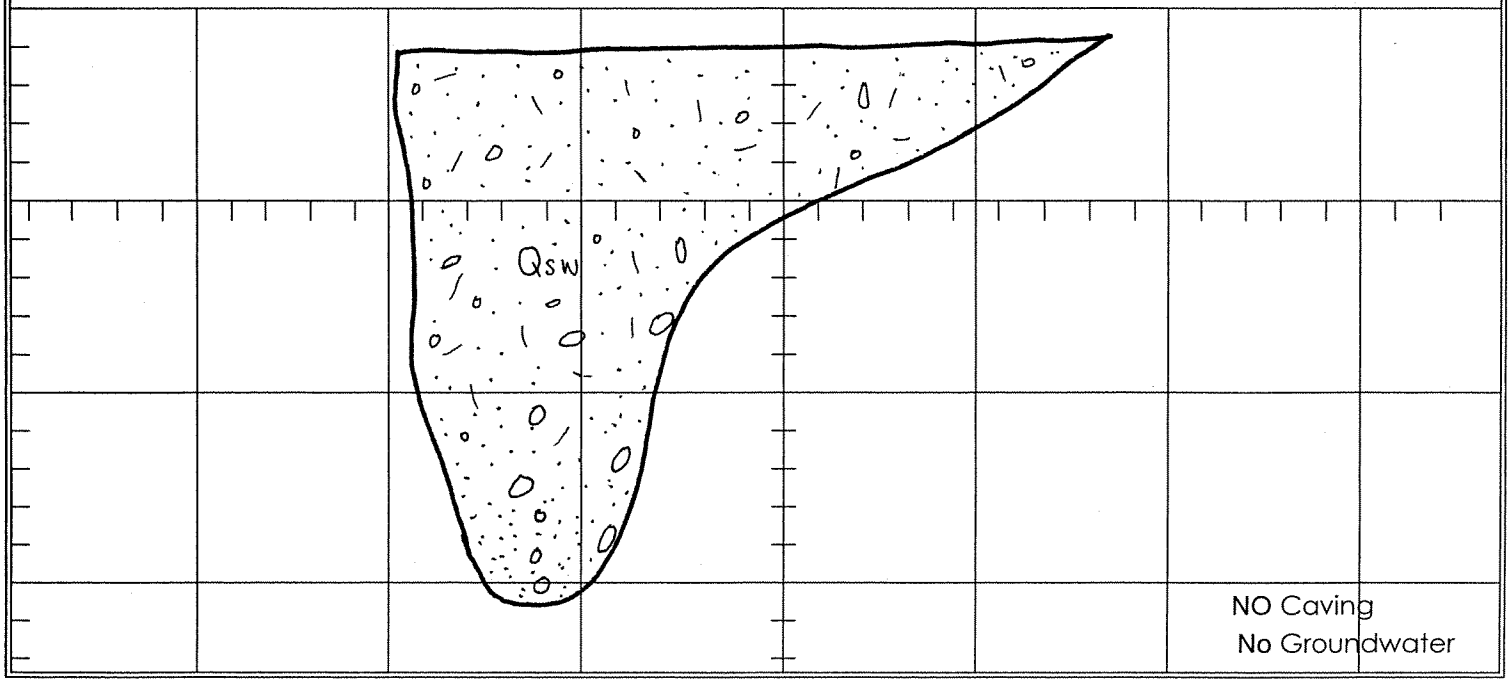
TOTAL DEPTH: 13 feet N75W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-33T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1007	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-15')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown to dark brown; voids ≤1/4", roots, rootlets				
5					@ 4' Silty clayey sand with gravel and cobbles; medium dense to dense; damp; dark brown; no voids, rootlets				
10									
15					@ 14' Silty clayey sand with gravel and cobbles; loose to medium dense; wet; brown COMMENTS: -Last 6' logged from surface				
20									

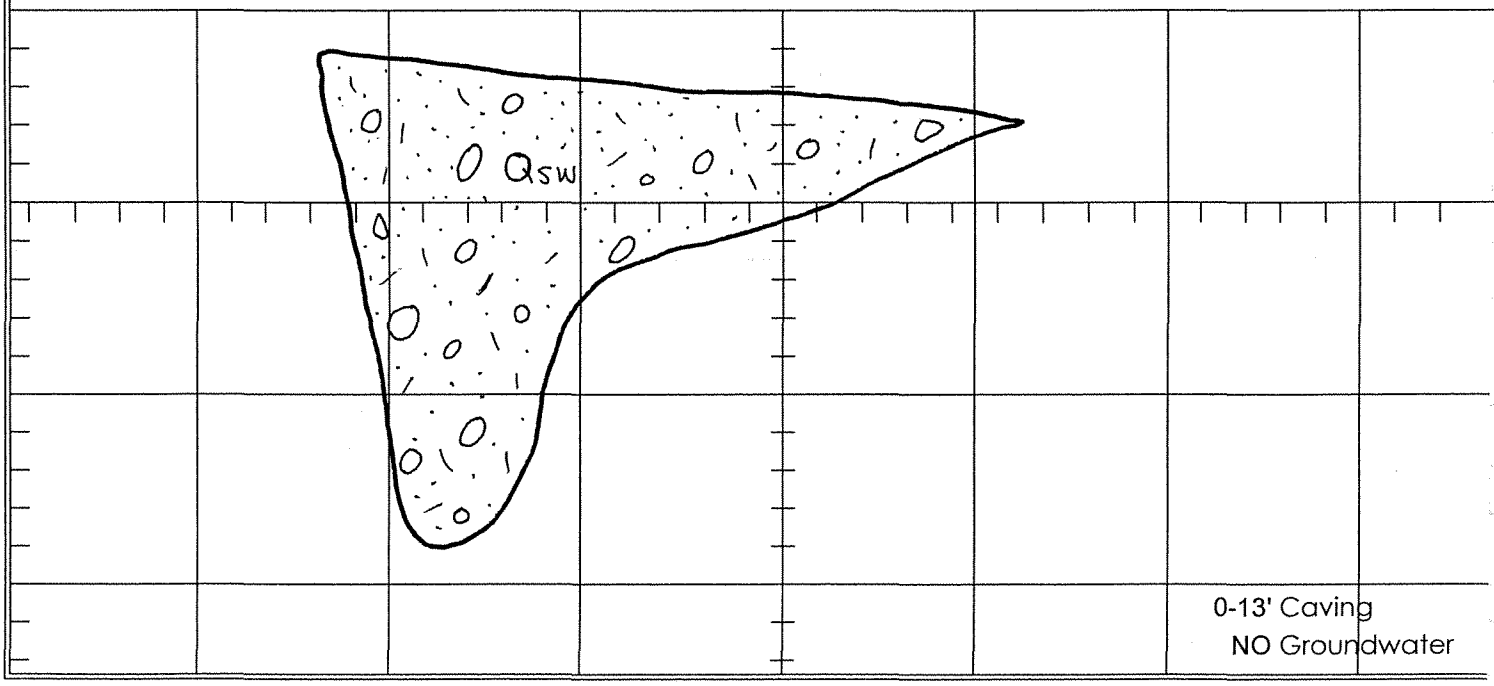
TOTAL DEPTH: 15 feet ←N62E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-34T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1060	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-13')** @ 0' Silty clayey sand with gravel and cobbles; loose; dry; light brown to brown; roots and rootlets; caving				
5									
10									
15					COMMENTS: -Last 6' logged from surface				
20									

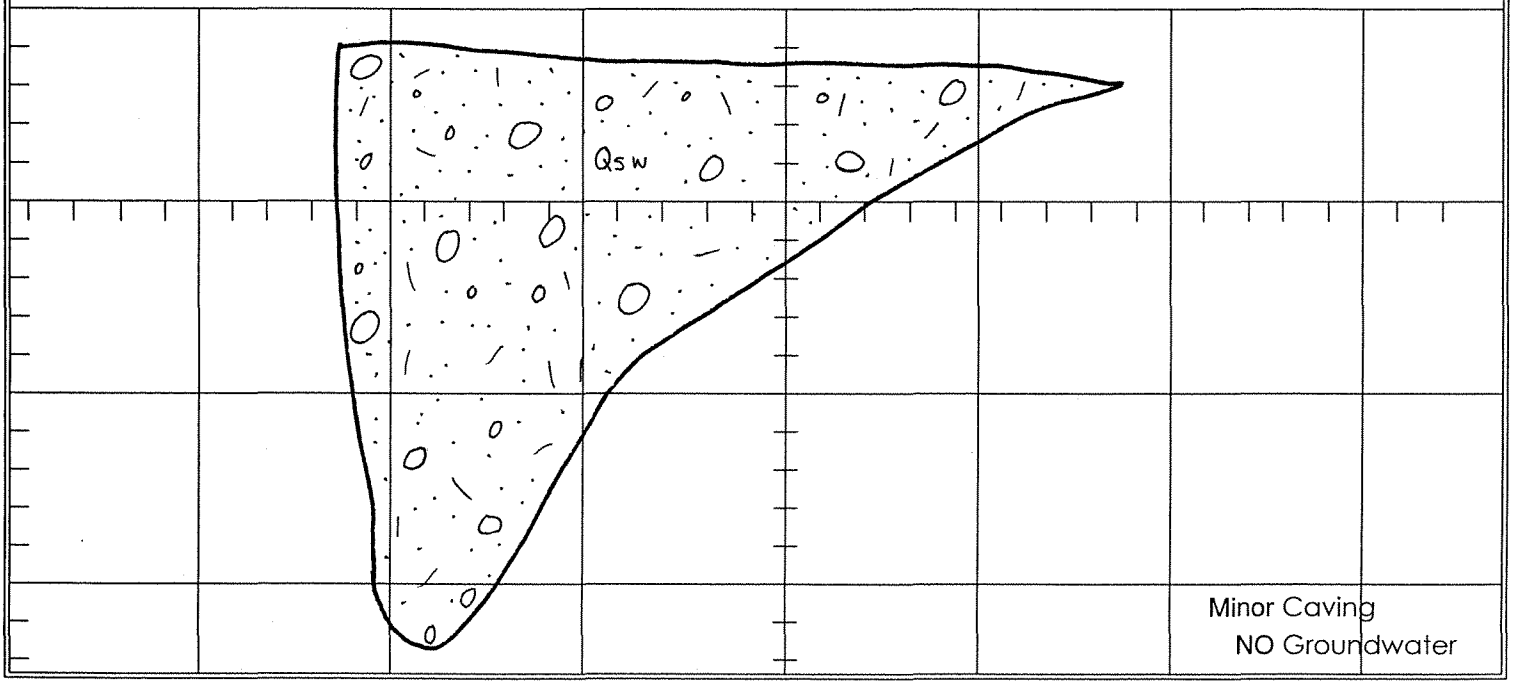
TOTAL DEPTH: 13 feet ←N51E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-35T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1068	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SM	**SOIL/SLOPEWASH; Soil/Qsw (0-16')** @ 0' Silty sand with gravel; loose to medium dense; dry; light gray to light yellowish-gray; minor caving; rootlets, roots				
5									
10									
15					COMMENTS: -Last 6' logged from surface				
20									

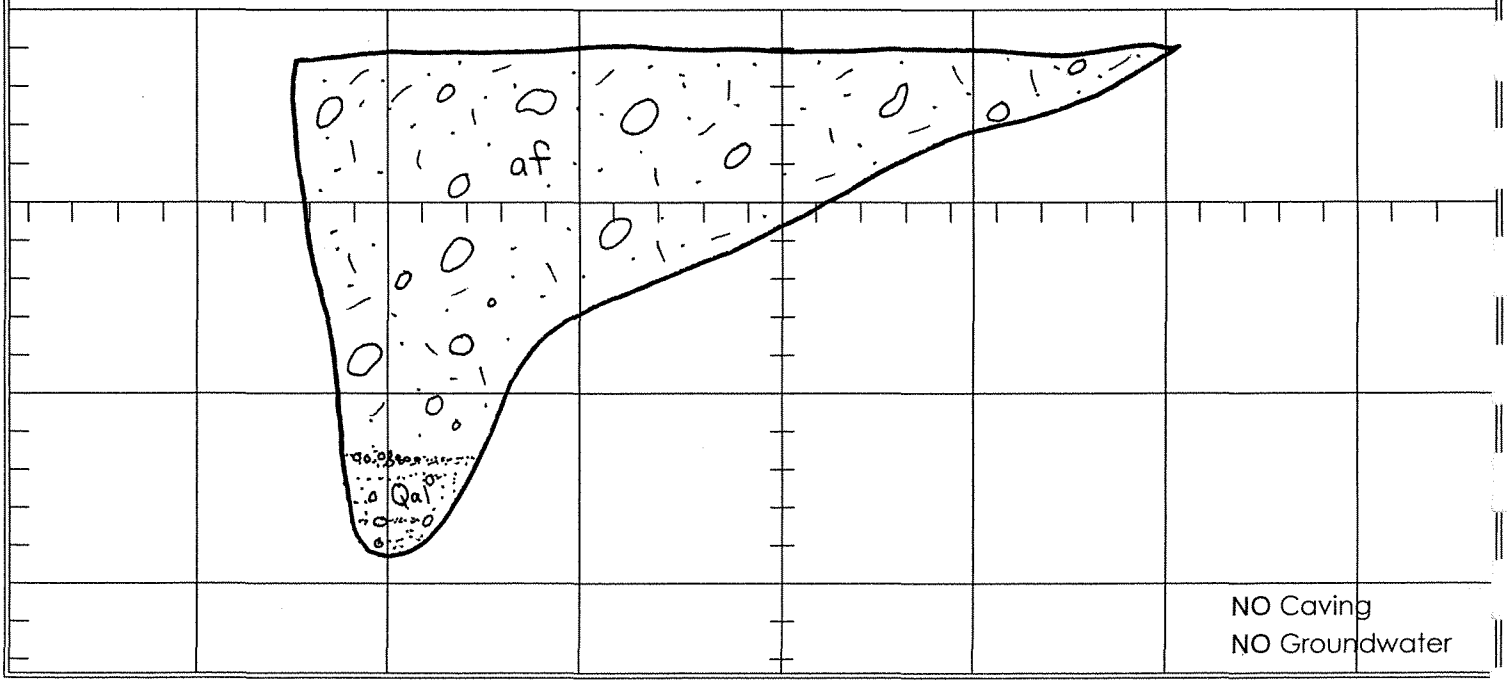
TOTAL DEPTH: 16 feet ←N8E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-36T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1118	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SM	**SOIL/ARTIFICIAL FILL; Soil/af (0-9')** @ 0' Silty sandy gravel with cobbles; medium dense; damp; yellow to yellowish-brown; rootlets				
5									
10				SP	**QUATERNARY ALLUVIUM; Qal (9-13')** @ 9' Sand with gravel and cobbles; medium dense; damp; yellow	Apx. B:Horizontal			
15					COMMENTS: -Last 4' logged from surface				
20									

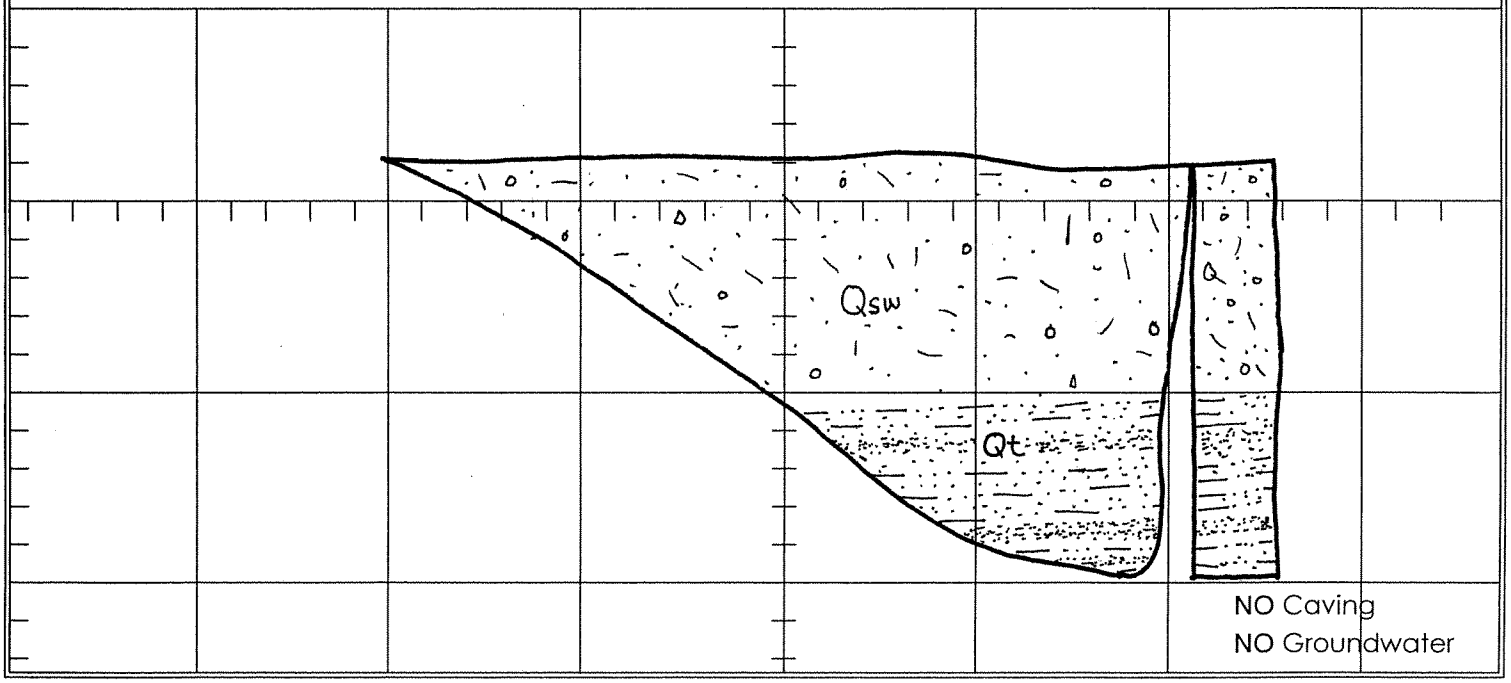
TOTAL DEPTH: 13 feet ←N10W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-37T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1155	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-7')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; voids ≤1/4", roots, rootlets				
5				ML	**QUATERNARY TERRACE DEPOSITS; Qt (7-11')** @ 7' Sandy silt; firm to stiff; damp; light yellowish-brown; interbedded with fine-grained sand; medium dense; damp; light yellowish-brown to light yellow				
10									
15									
20									

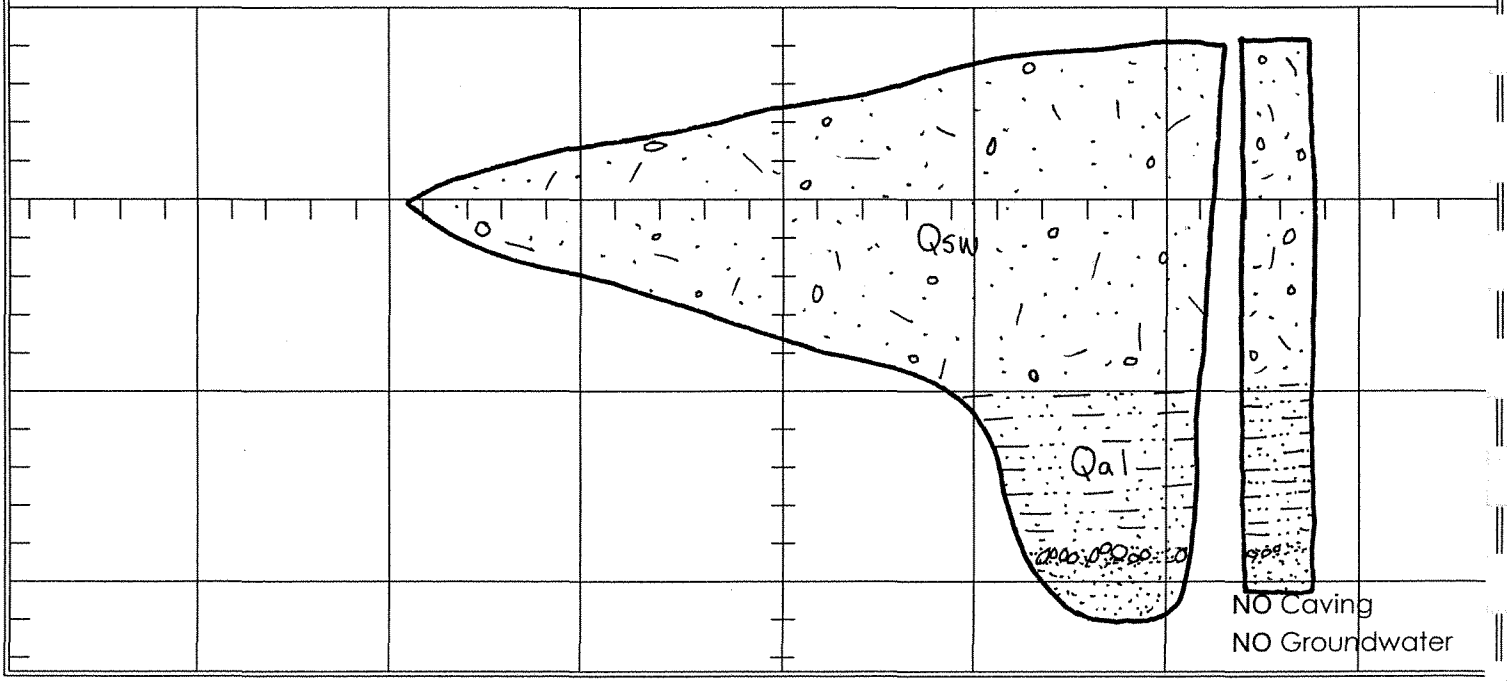
TOTAL DEPTH: 11 feet N42W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-38T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1097	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-9')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown to dark brown; voids ≤1/4" diameter, roots, rootlets				
5									
10				ML	**QUATERNARY ALLUVIUM; Qal (9-11')** @ 9' Sandy silt; firm to stiff; damp; light brown to yellow				
				SM	@ 13' Silty sand with gravel; medium dense; damp to moist; yellowish-brown to light brown	Apx. B:Horizontal			
15									
20									

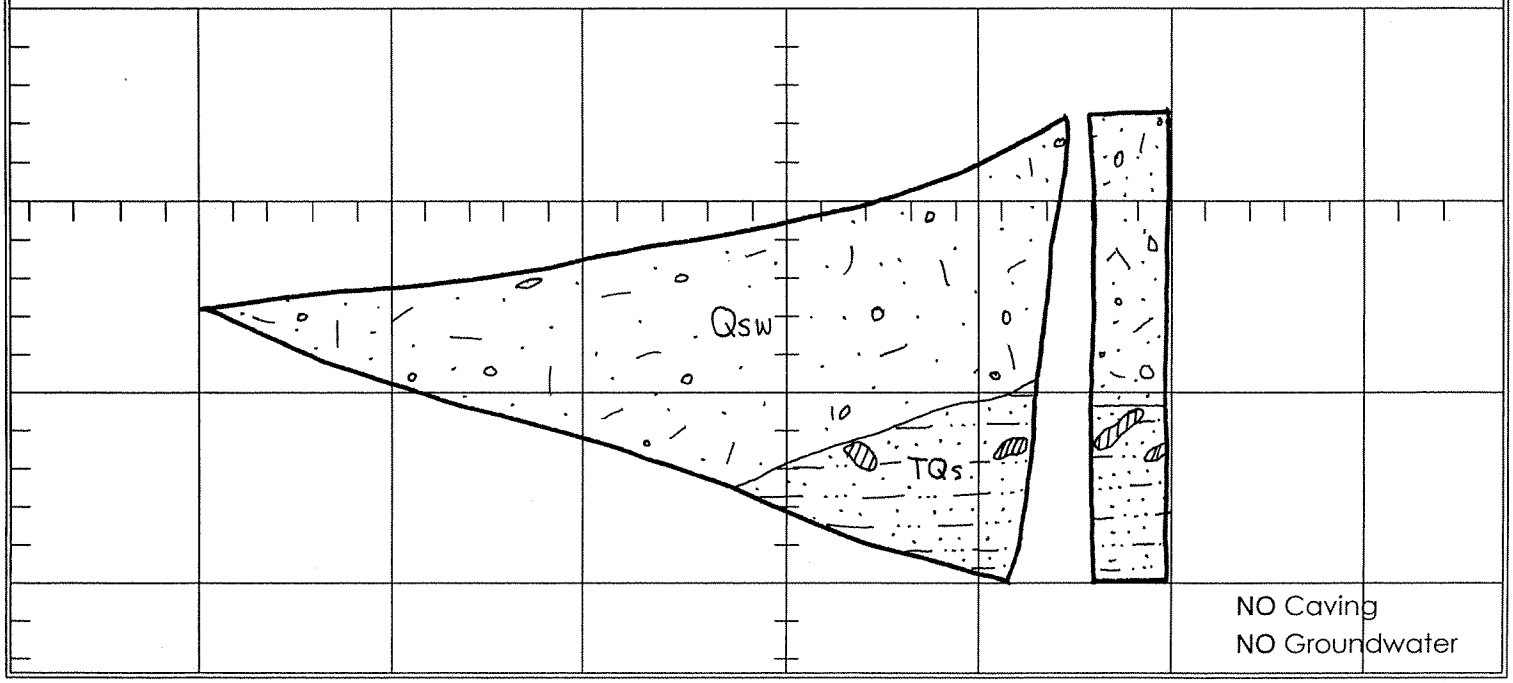
TOTAL DEPTH: 15 feet ←N47E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-39T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1065	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-8')** @ 0' Silty clayey sand with gravel; medium dense; damp to moist; brown to dark brown; voids ≤1/4" diameter, roots, rootlets				
5									
10					**BEDROCK; TQs (8-12')** @ 8' Light brown sandy siltstone; hard; moist; krotovina; weathered; rootlets @ 10' Light brown sandy siltstone; hard; moist				
15									
20									

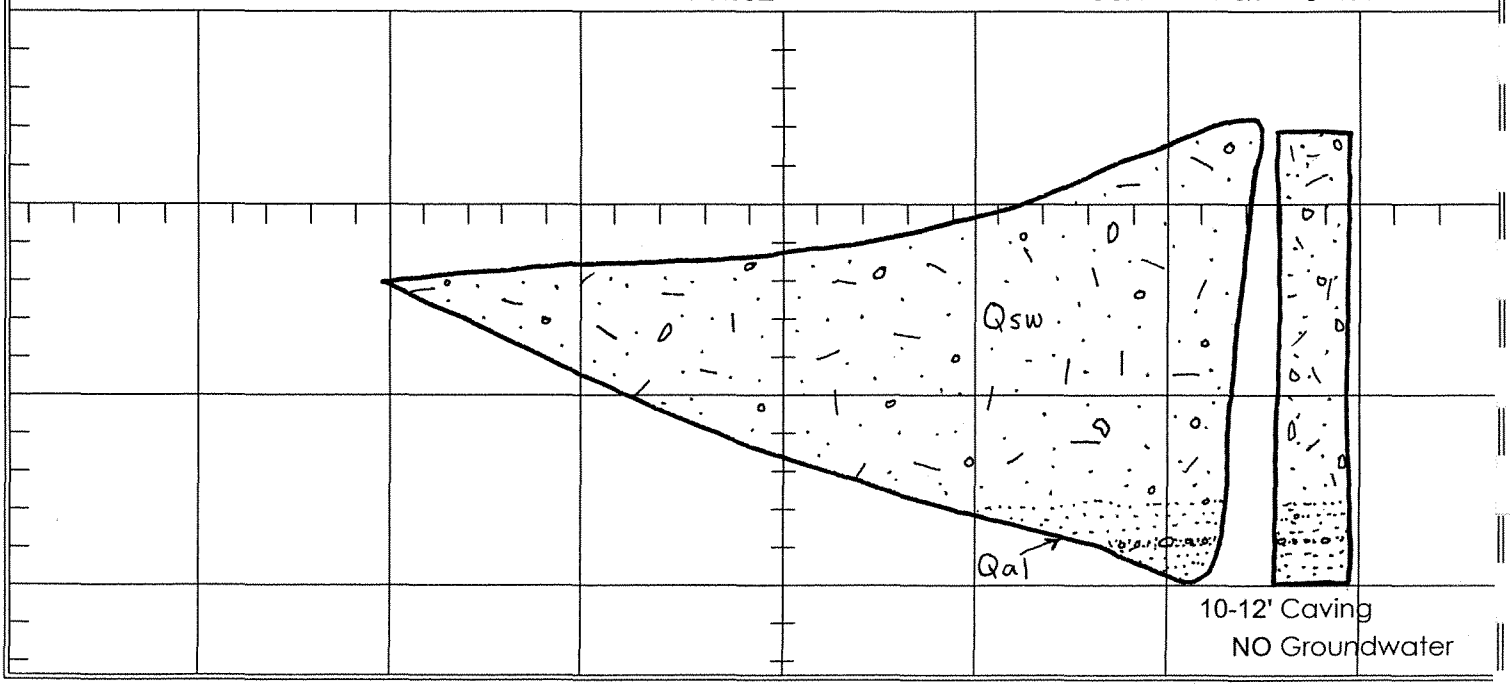
TOTAL DEPTH: 12 feet ←N39E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-40T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1043	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-10')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown to dark brown; voids ≤1/8", roots, rootlets				
10				SP	**QUATERNARY ALLUVIUM; Qal (10-12')** @ 10' Medium-to coarse grained sand; loose to medium dense; light gray; caving				

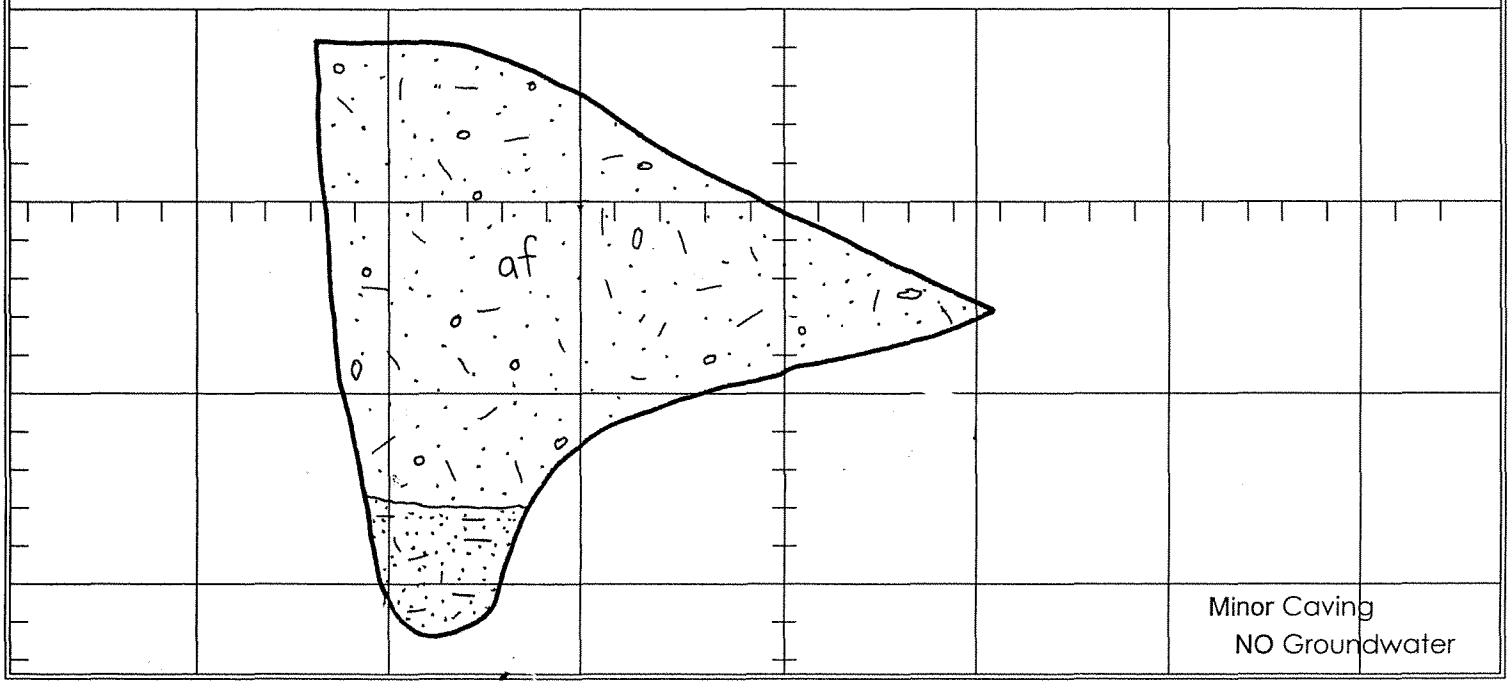
TOTAL DEPTH: 12 feet ←N35E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-41T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1006	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**ARTIFICIAL FILL; af (0-13')** @ 0' Silty clayey sand with gravel; loose to medium dense; dry; brown; no voids; minor caving 0-11'; miscellaneous trash (plastic, cloth, plywood, orange ribbon)				
5									
10									
15				CL-ML	**SOIL; Soil (13-16')** @ 13' Silty clay with sand; firm; damp to moist; light brown to yellowish-brown; voids COMMENTS: -Last 5' were logged from surface				
20									

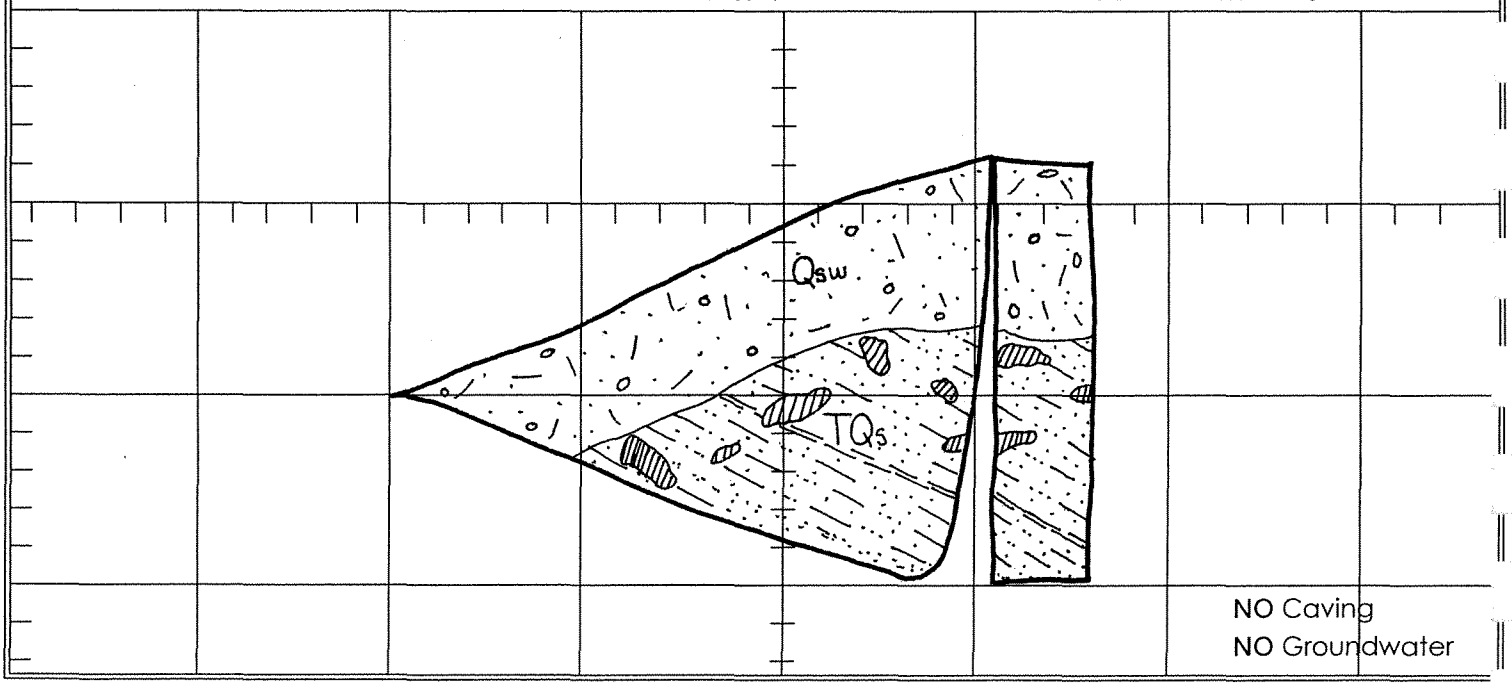
TOTAL DEPTH: 16 feet ←N10E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-42T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1056	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-5')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; pinhole voids, roots, rootlets				
5					**BEDROCK; TQs (5-11')** @ 5' Light brown sandy siltstone; soft to moderately hard; damp; krotovina; weathered; rootlets				
10					@ 8' Moderately hard to hard; damp to moist; with local light reddish-brown silty claystone	B:N65W,32NE			
15									
20									

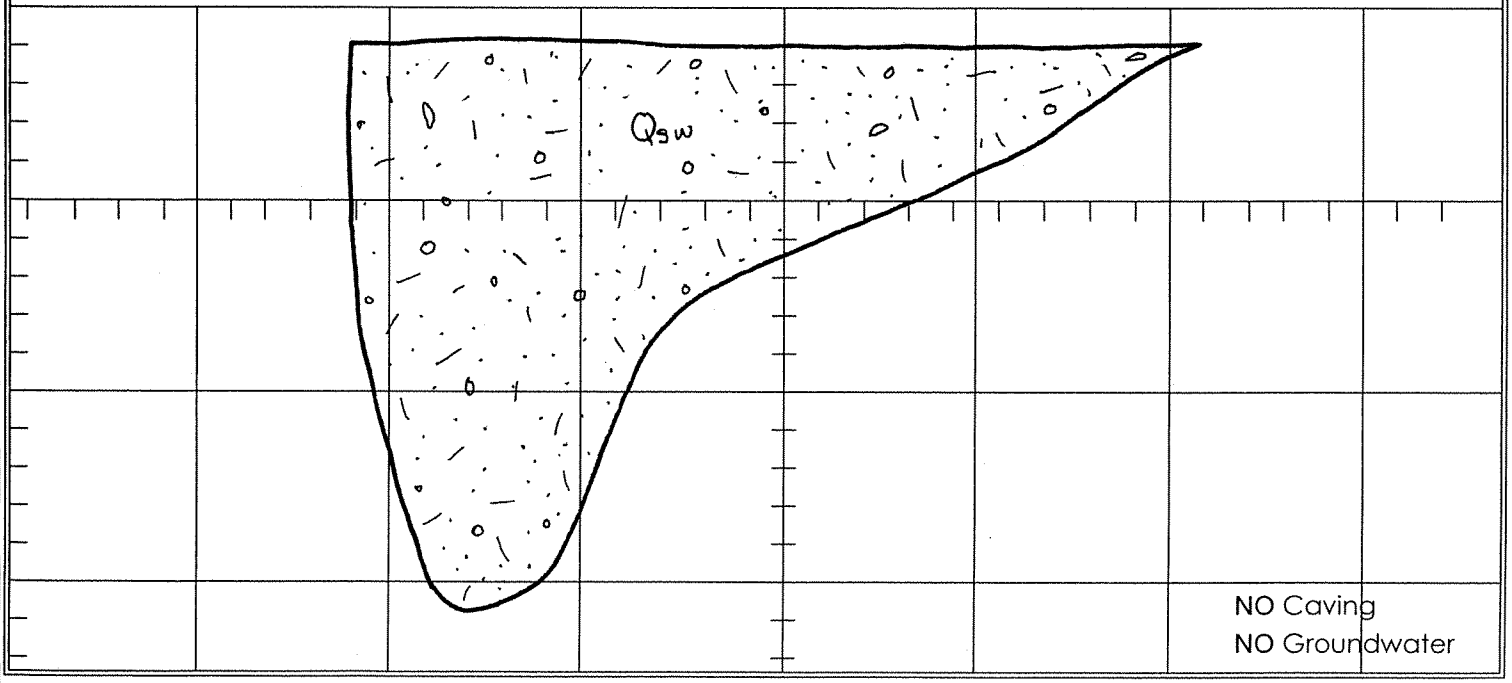
TOTAL DEPTH: 11 feet N32W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-43T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1065	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw (0-15')** @ 0' Sandy silty clay with gravel; firm; dry to damp; light yellowish-brown; pinhole voids, rootlets				
5									
10									
15					COMMENTS: -Last 4' were logged from surface				
20									

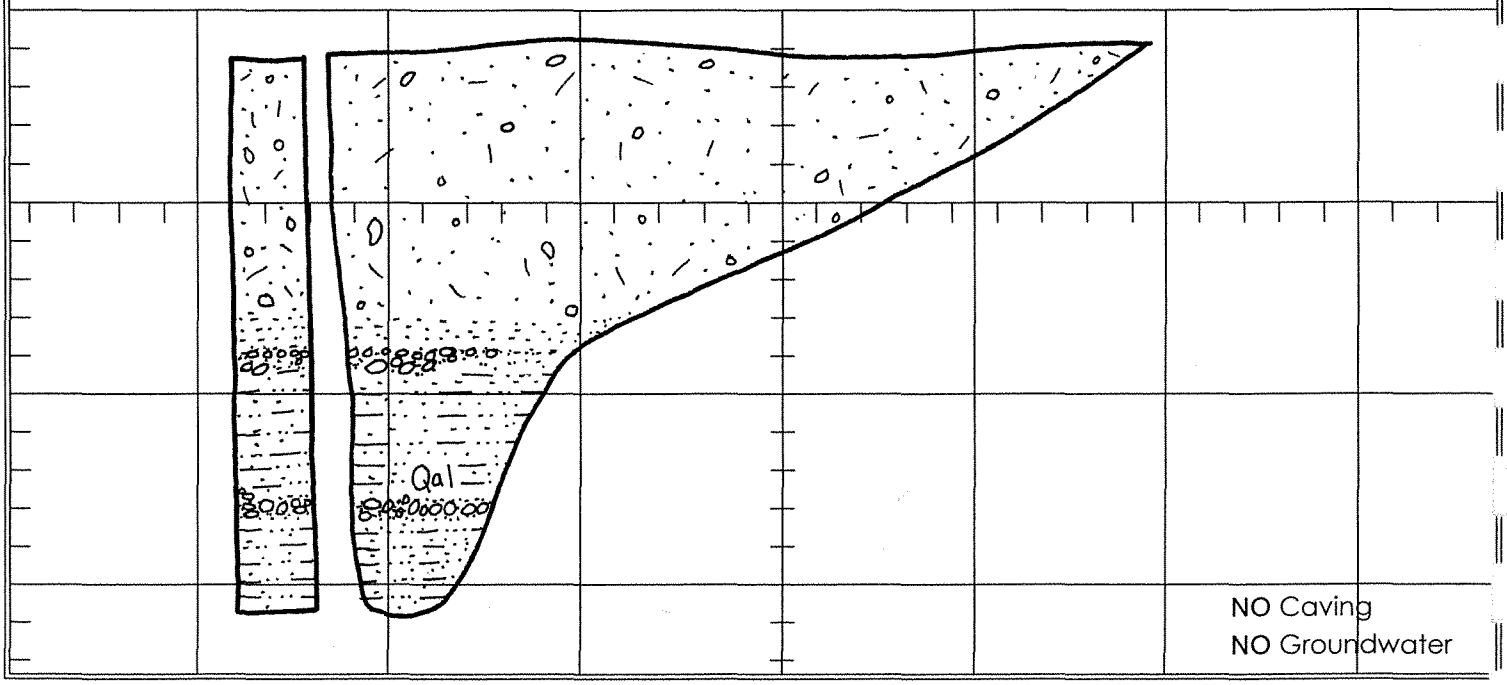
TOTAL DEPTH: 15 feet ←N72E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-44T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/21/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1036	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL; (0-7')** @ 0' Silty clayey sand with gravel; medium dense; damp; brown; pinhole voids, roots, rootlets				
5				SP	**QUATERNARY ALLUVIUM; Qal (7-10')** @ 7' Sand with gravel; loose to medium dense; damp; yellowish-brown to gray	Apx. B:Horizontal			
				ML	@ 9' Sandy silt with gravel; firm; damp to moist; light yellowish-brown				
10				SP	@ 12' Sand with gravel and cobbles; medium dense; damp; gray	Apx. B:Horizontal			
				ML	@ 13' Sandy silty with gravel; firm; damp to moist; light yellowish-brown				
15					COMMENTS: -Last 5' were logged from surface				
20									

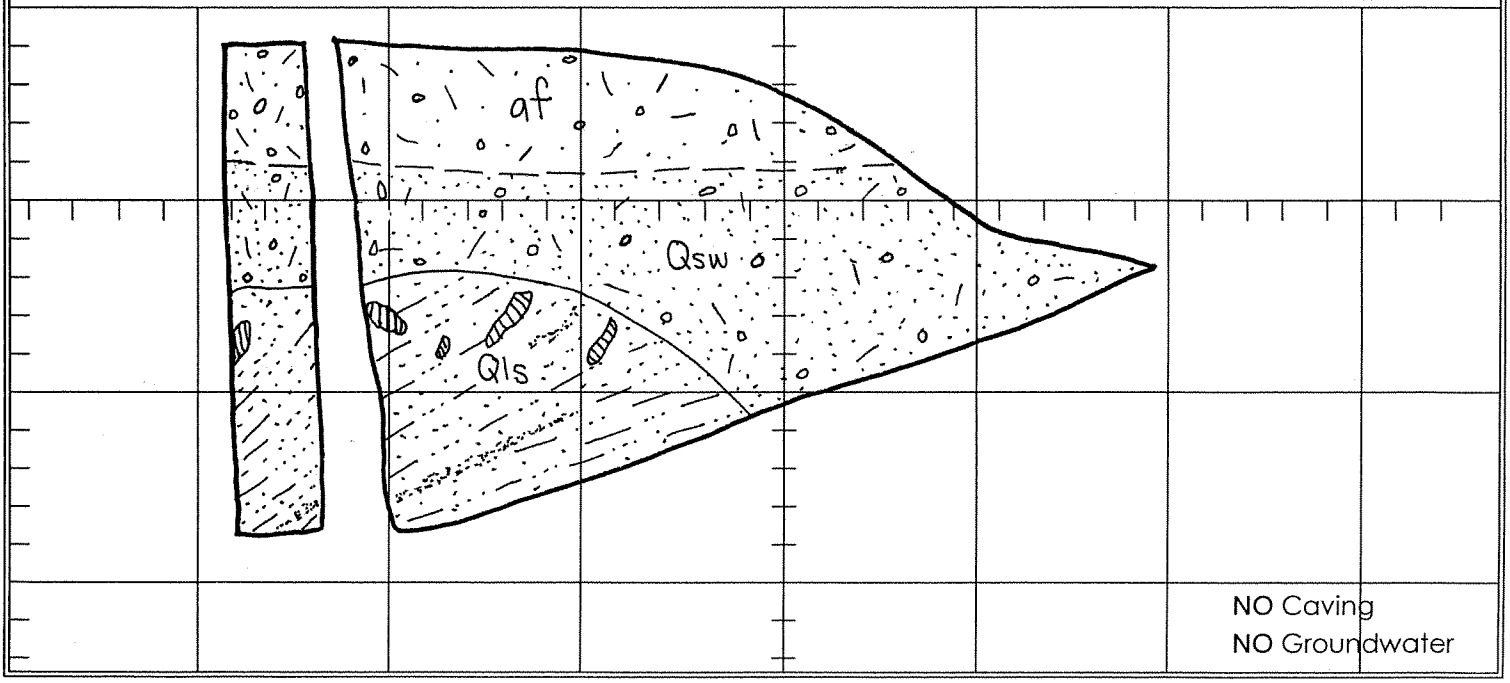
TOTAL DEPTH: 15 feet ←N70E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-45T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1028	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**ARTIFICIAL FILL; af (0-3')** @ 0' Silty clayey sand with gravel; medium dense to dense; dry; brown; no voids				
5					**SOIL/SLOPEWASH; Soil/Qsw (3-6')** @ 3' Silty clayey sand with gravel; medium dense; dry to damp; brown to dark brown; pinhole voids				
10					**QUATERNARY LANDSLIDE; Qls (6-13')** @ 6' Light yellowish-brown sandy siltstone; moderately hard; damp; with interbedded yellowish-brown silty sandstone beds are discontinuouse; krotovina	B:N8W,49SW			
15									
20									

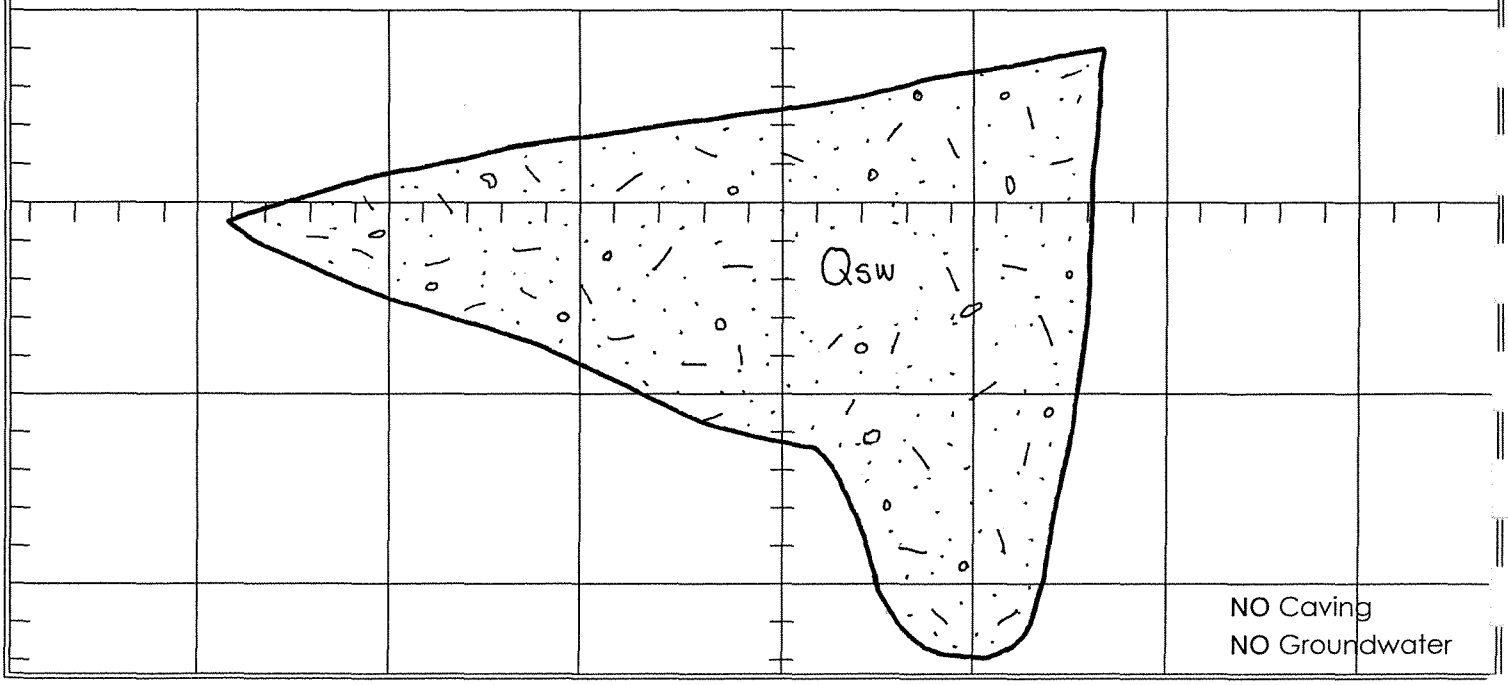
TOTAL DEPTH: 13 feet N53E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-46T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1037	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-16')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown; voids ≤1/4", rootlets				
5				ML	@ 6' Sandy silt; soft to firm; damp; light yellowish-brown; voids ≤1/8", rootlets				
10									
15					@ 16' Same; clumps from bucket contained pinhole voids and rootlets				
20					COMMENTS: -Last 4' logged from surface				

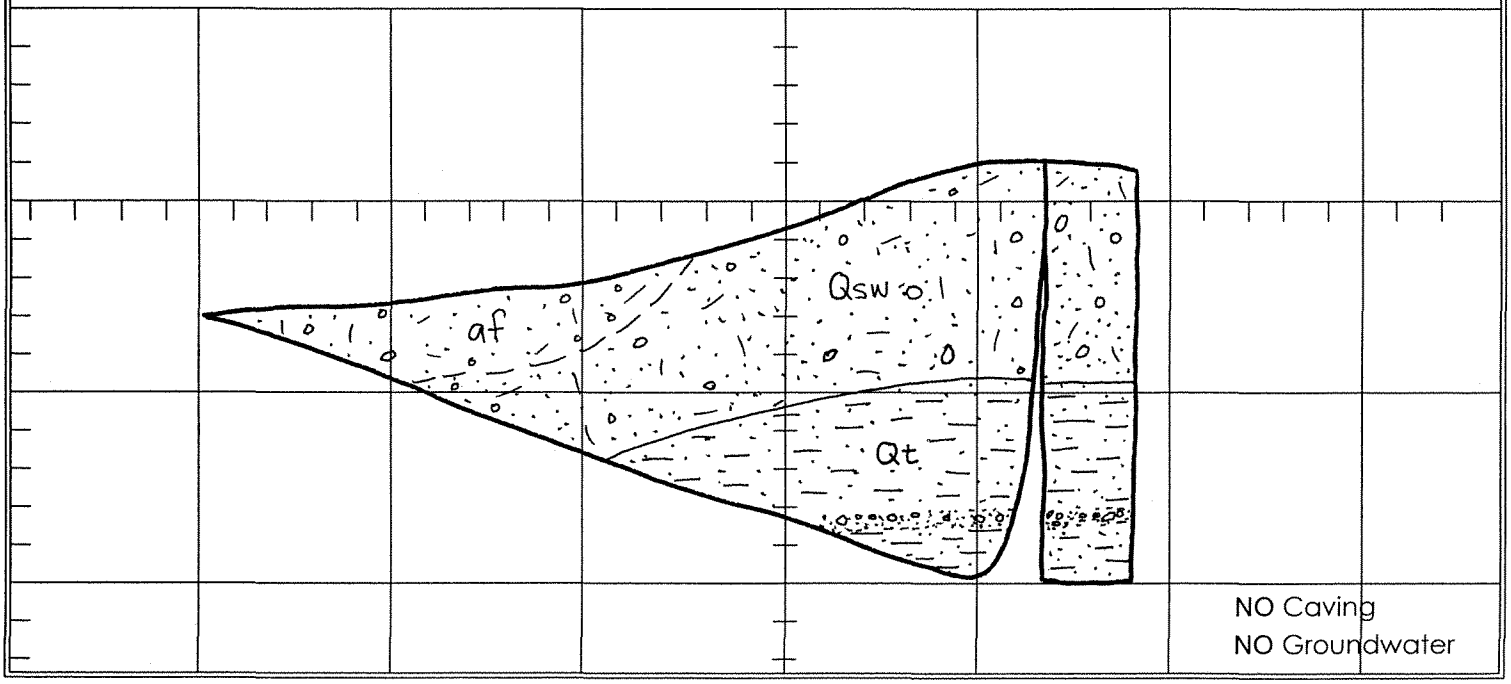
TOTAL DEPTH: 16 feet N89E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-47T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1086	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-6')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; voids ≤1/8", roots, rootlets				
5				CL-ML	**QUATERNARY TERRACE; Qt (6-11')** @ 6' Sandy clayey silt; soft to firm; damp; light yellowish-brown; pinhole voids, rootlets				
				SM	@ 9' Silty sand with gravel; medium dense; damp; gray to light brown				
10				CL-ML	@ 10' Sandy clayey silt; firm; damp; light yellowish brown				
15									
20									

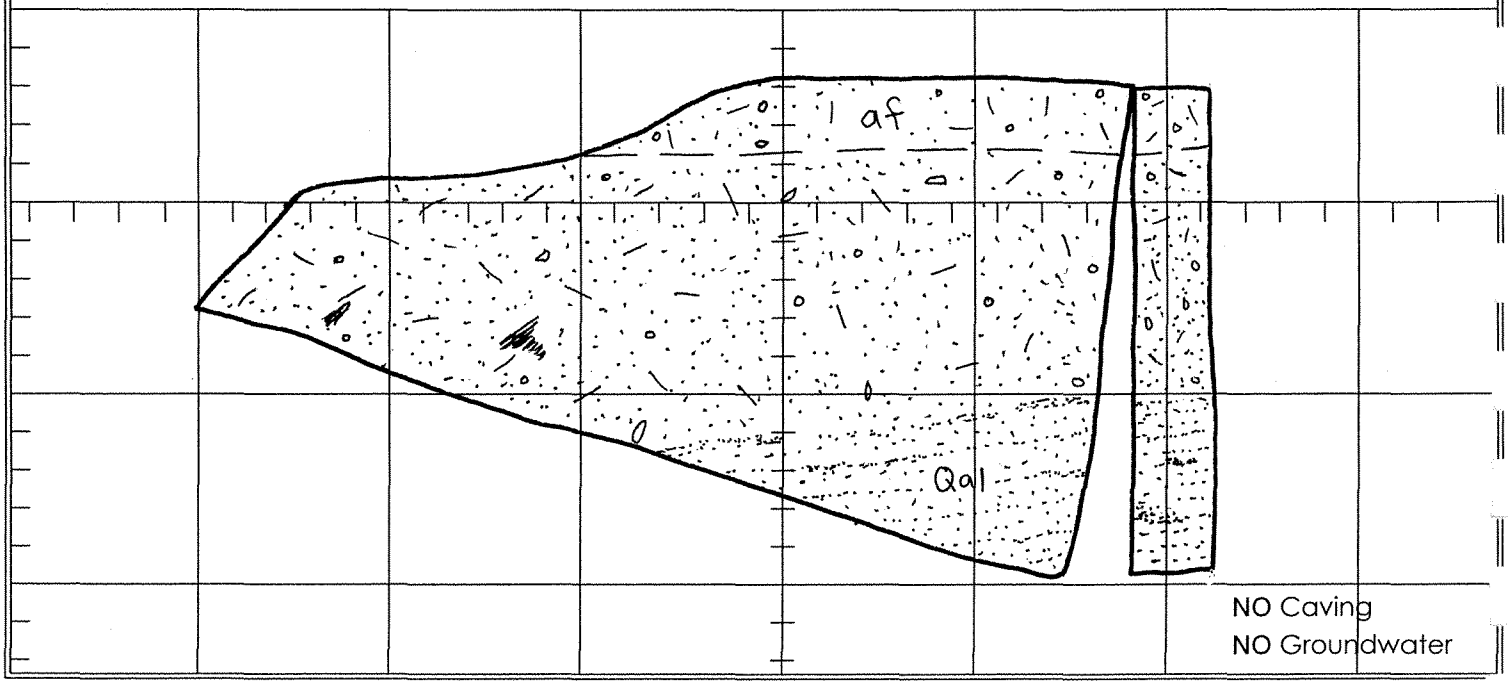
TOTAL DEPTH: 11 feet N48E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-48T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1098	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**ARTIFICIAL FILL; af (0-2')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown **SOIL; Soil (2-8')** @ 2' Silty clayey sand with gravel; medium dense; dry to damp; brown to dark brown ; voids ≤2" in diameter (burrows to 8'), roots, rootlets				
5				SM	@ 7' Same; Coarse sand channels; loose to medium dense; yellowish-brown **QUATERNARY ALLUVIUM; Qal (8-13')** @ 8' Silty sand with gravel; loose to medium dense; damp; yellowish-brown	Contact: Horizontal			
10									
15									
20									

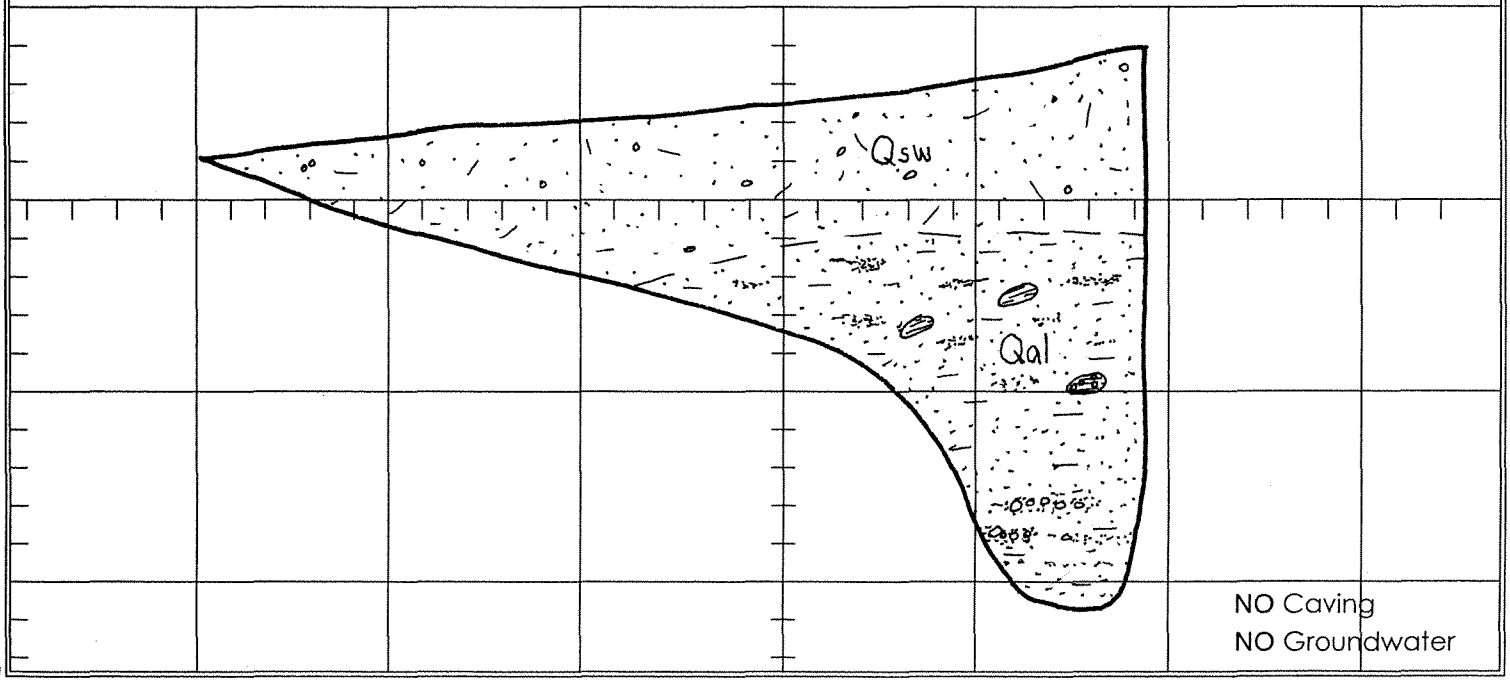
TOTAL DEPTH: 13 feet N55E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-49T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1120	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-12')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; voids ≤1/8", rootlets				
5					@ 5' Same; with channels of silty coarse-grained sand; loose to medium dense; yellowish-brown; rootlets; clast of light brown sandy siltstone, pebbly sandstone, yellowish brown to yellow; clast supported conglomerate				
10				SM	**QUATERNARY ALLUVIUM; Qal (12-16')** @ 12' Silty sand with gravel; medium dense; damp; light yellowish-brown				
15					COMMENTS: -Last 6' logged from surface				
20									

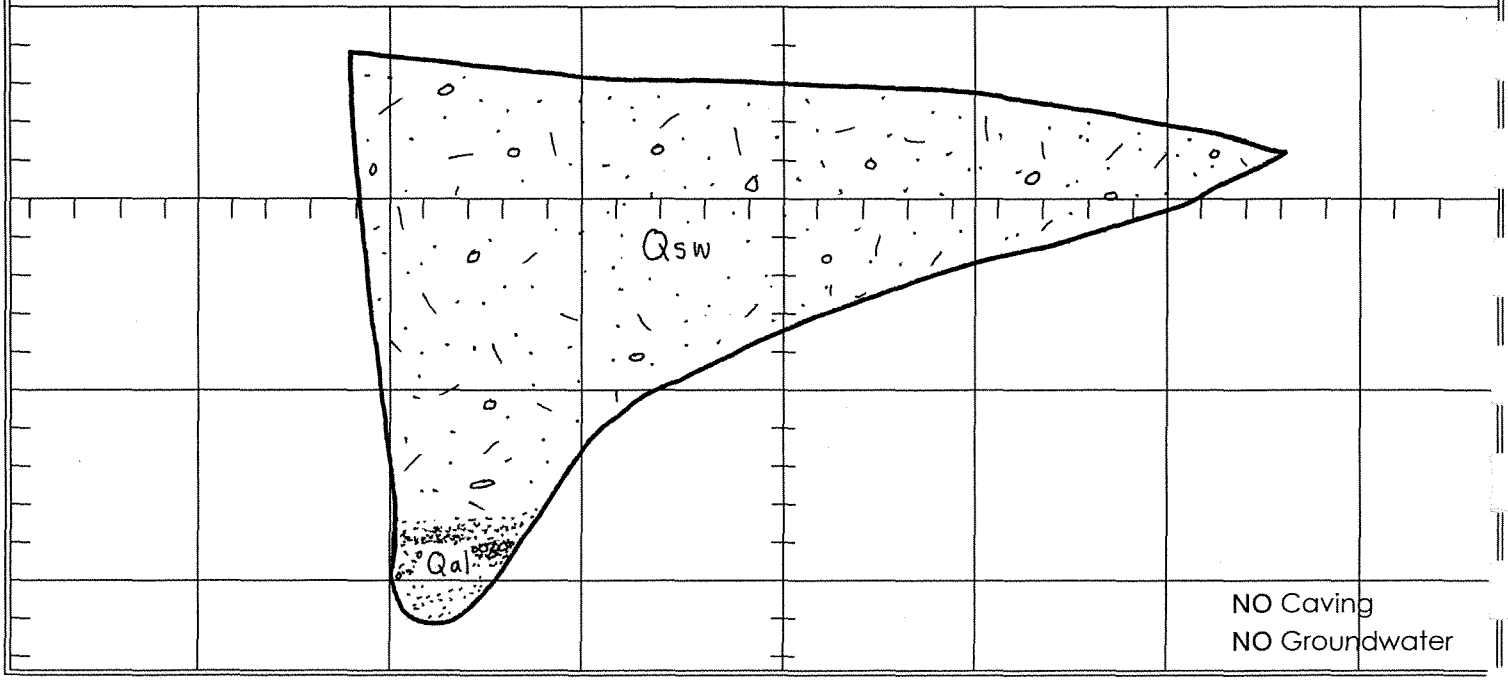
TOTAL DEPTH: 16 feet N34E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-50T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1128	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-12')** @ 0' Silty clayey sand with gravel to silty sandy gravel; medium dense; dry; brown; roots, rootlets; voids ≤1/2"				
10				SM	**QUATERNARY ALLUVIUM; Qal (12-15')** @ 12' Silty sand with gravel; medium dense; dry to damp; light yellowish-brown COMMENTS: -Last 4' logged from surface				
20									

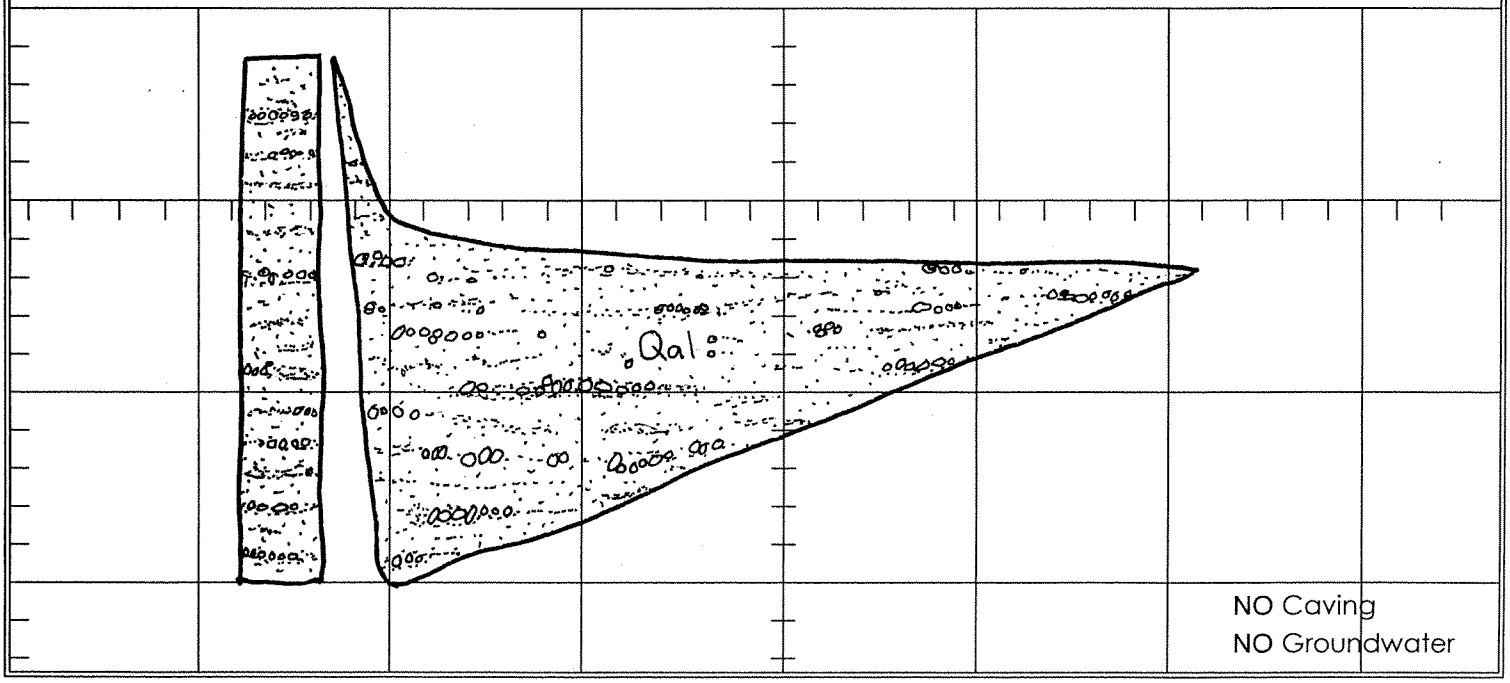
TOTAL DEPTH: 15 feet N42W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-51T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1130	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SP	**QUATERNARY ALLUVIUM; Qal (0-14')** @ 0' Silty sand with gravel to sandy gravel; medium dense; dry to damp; roots, rootlets	B:Horizontal			
5					@ 8' Same; no roots or rootlets				
10									
15									
20									

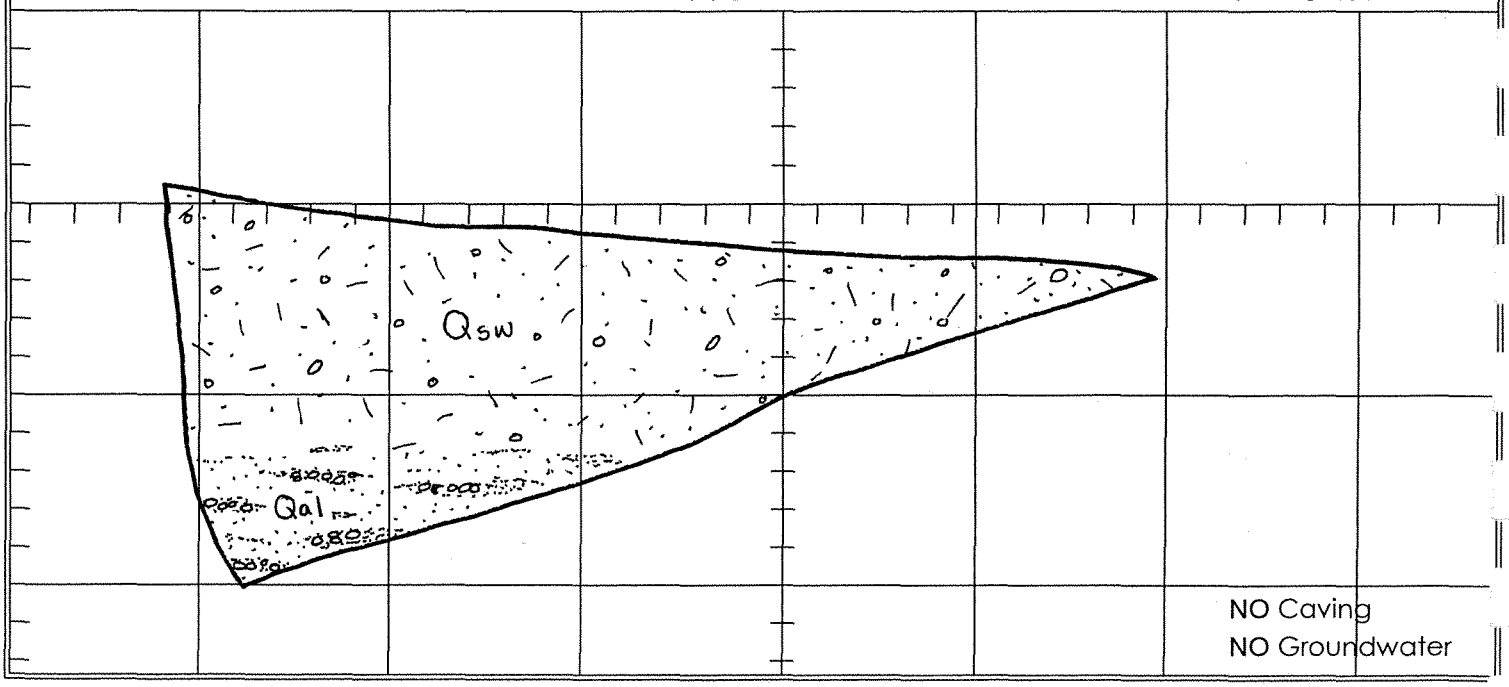
TOTAL DEPTH: 14 feet N72W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-52T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1160	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-7')** @ 0' Silty clayey sand with gravel; medium dense; dry to damp; brown; voids <1/8", roots, rootlets				
5				SM	**QUATERNARY ALLUVIUM; Qal (7-11')** @ 7' Silty sand with gravel and cobbles; medium dense; damp; yellowish-brown to light gray				
10									
15									
20									

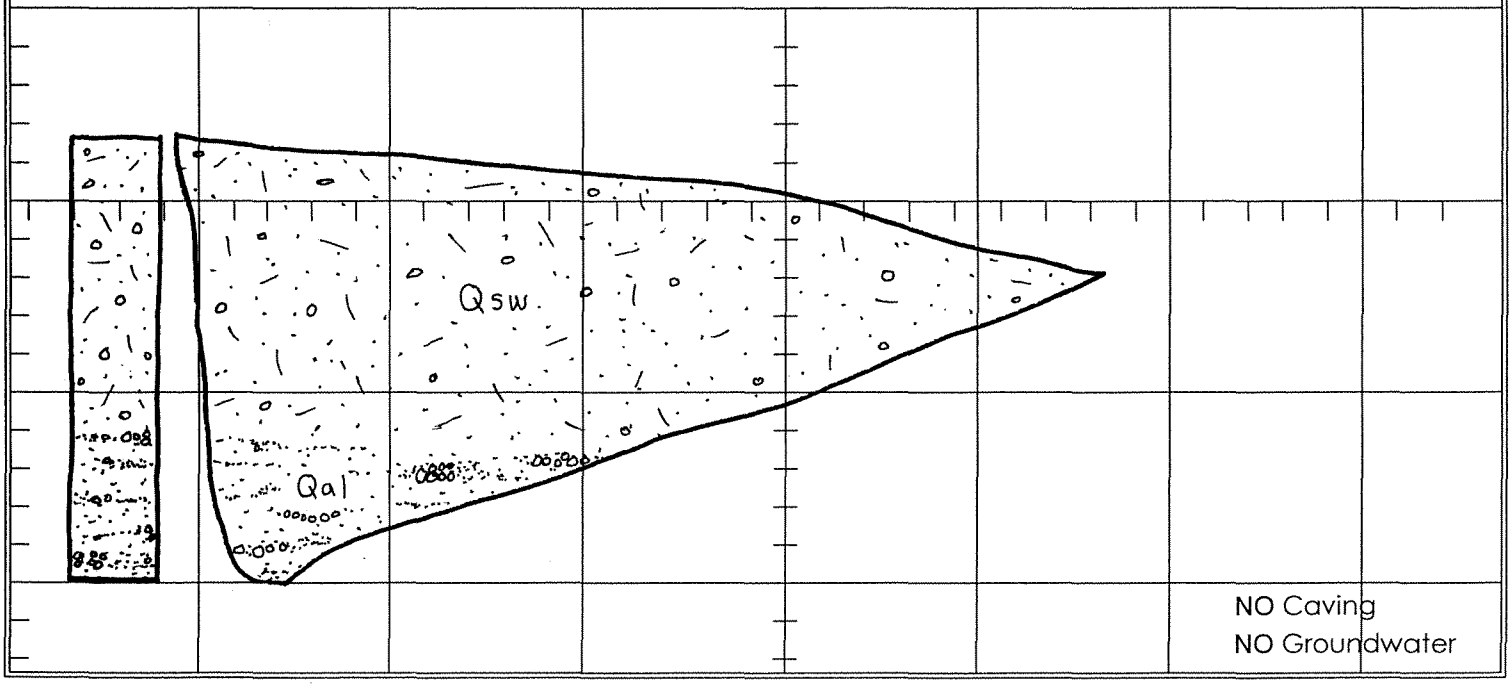
TOTAL DEPTH: 11 feet ←N82E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-53T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1263	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-7')** @ 0' Silty clayey sandy with gravel; medium dense; dry; brown; voids ≤1/8" diameter, roots, rootlets				
5				SM	**QUATERNARY ALLUVIUM; Qal (7-12')** @ 7' Silty sand with gravel to sandy gravel; medium dense; dry to damp; light brown to yellowish-brown; gravel channels	B:Horizontal			
10									
15									
20									

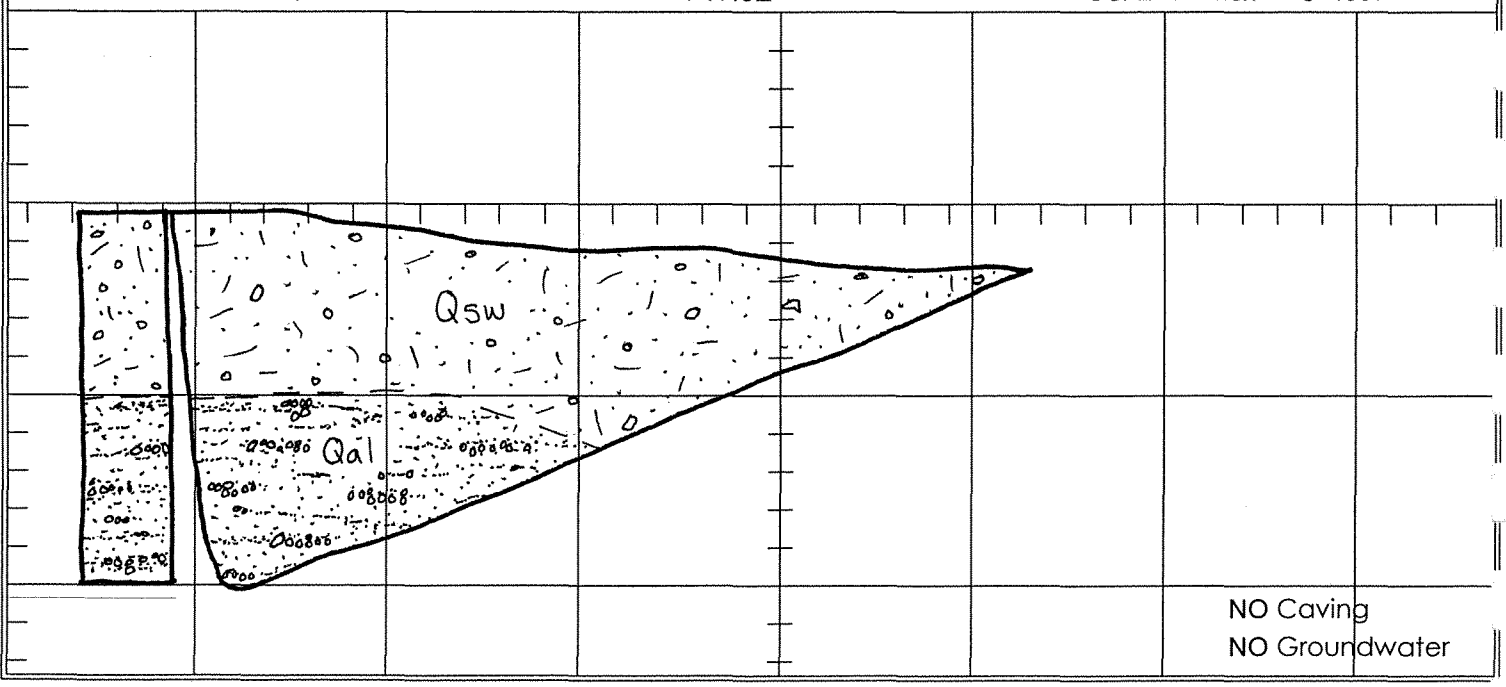
TOTAL DEPTH: 12 feet ←N21E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-54T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1232	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**SOIL/SLOPEWASH; Soil/Qsw (0-5')** @ 0' Silty clayey sand with gravel; medium dense; dry; brown; voids ≤1/4", roots, rootlets				
5				SM	**QUATERNARY ALLUVIUM; Qal (5-10')** @ 5' Silty sand with gravel; medium dense; dry; yellowish-brown to silty sandy gravel; medium dense; dry; light gray; channels; rootlets				
10									
15									
20									

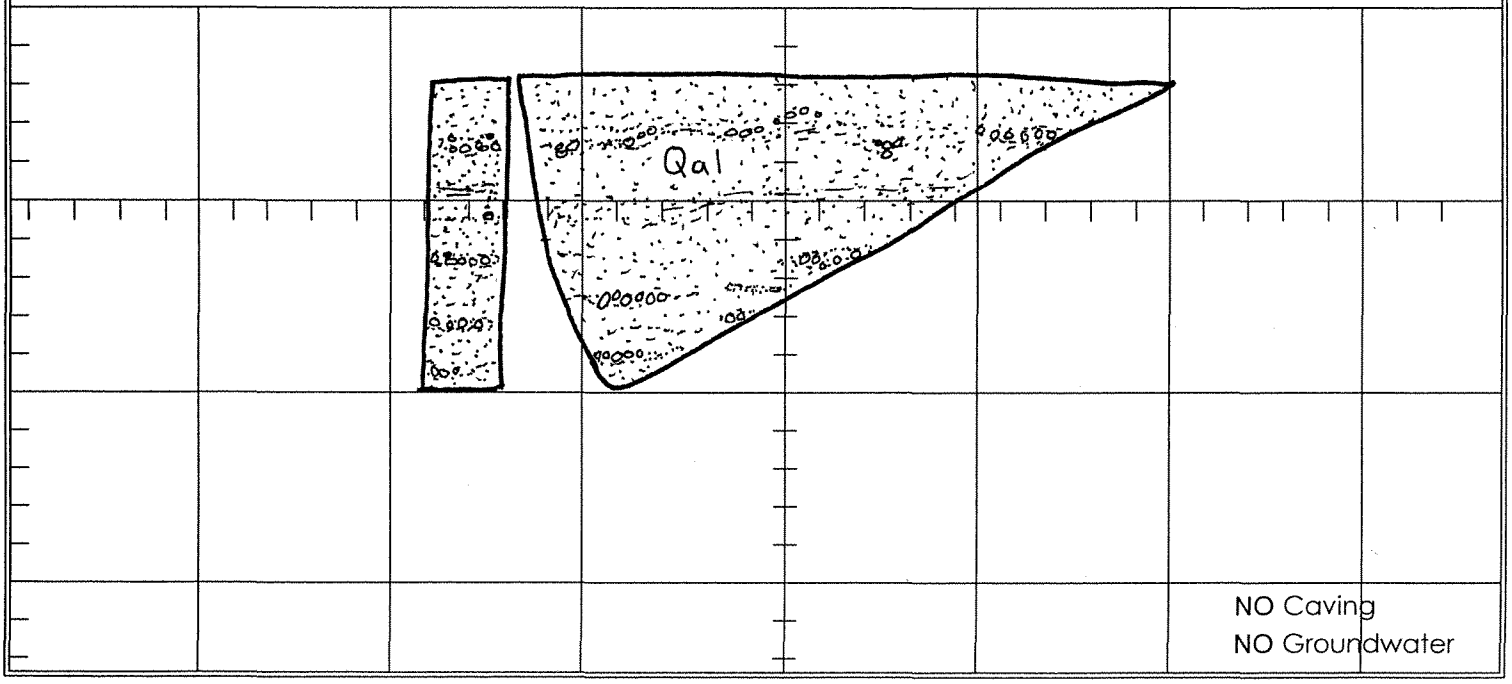
TOTAL DEPTH: 10 feet ←N45E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-55T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1202	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**QUATERNARY ALLUVIUM; Qal (0-8')** @ 0' Silty sand with gravel to sandy gravel; medium dense; dry; light gray to light brown; rootlets, roots interbedded with sandy silt, soft to firm, dry to damp, light brown; pinhole voids @ 5' Same; operator indicated digging was harder; cobbles; no voids, roots, or rootlets				
5									
10									
15									
20									

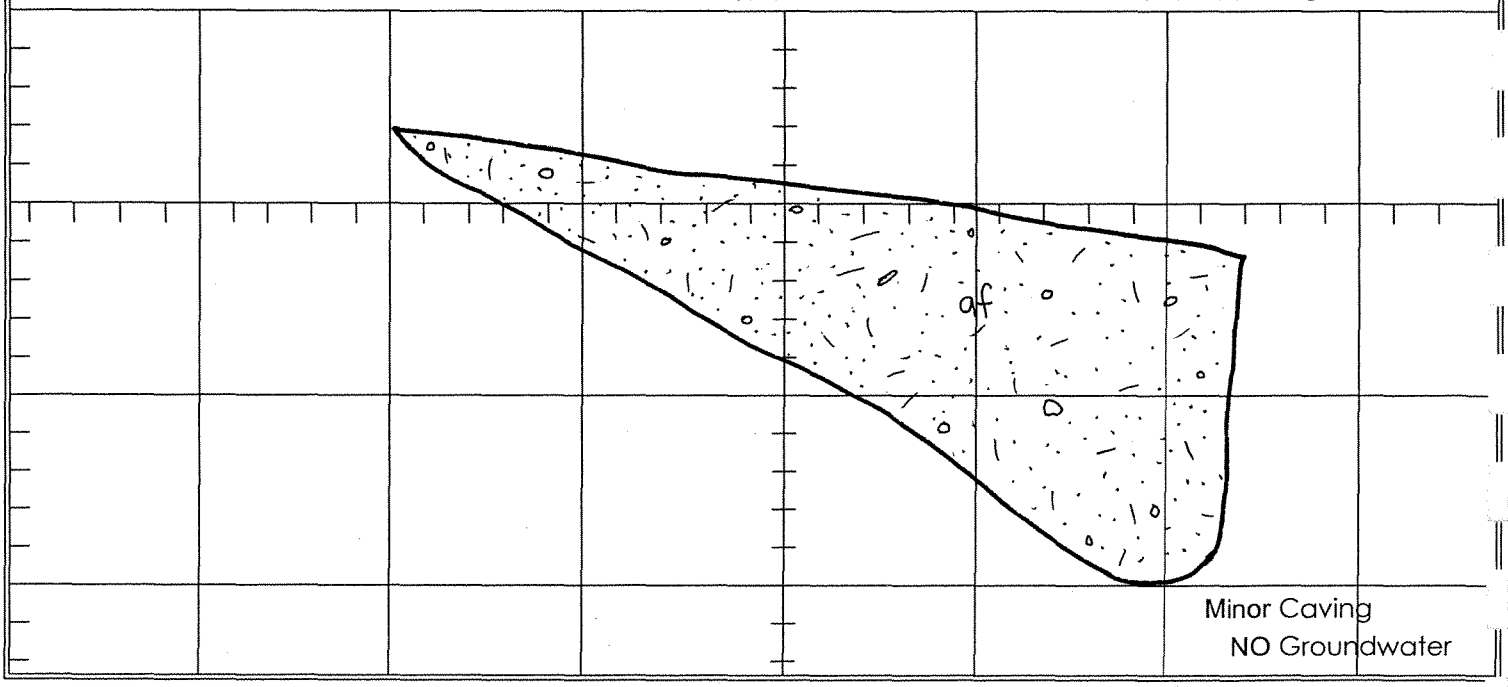
TOTAL DEPTH: 8 feet ←N65E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-56T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MAS	
		EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe		ELEVATION: 1260	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				SC-SM	**ARTIFICIAL FILL; af (0-12')** @ 0' Silty clayey sand; loose to medium dense; damp to moist; brown to light yellowish-brown; minor caving				

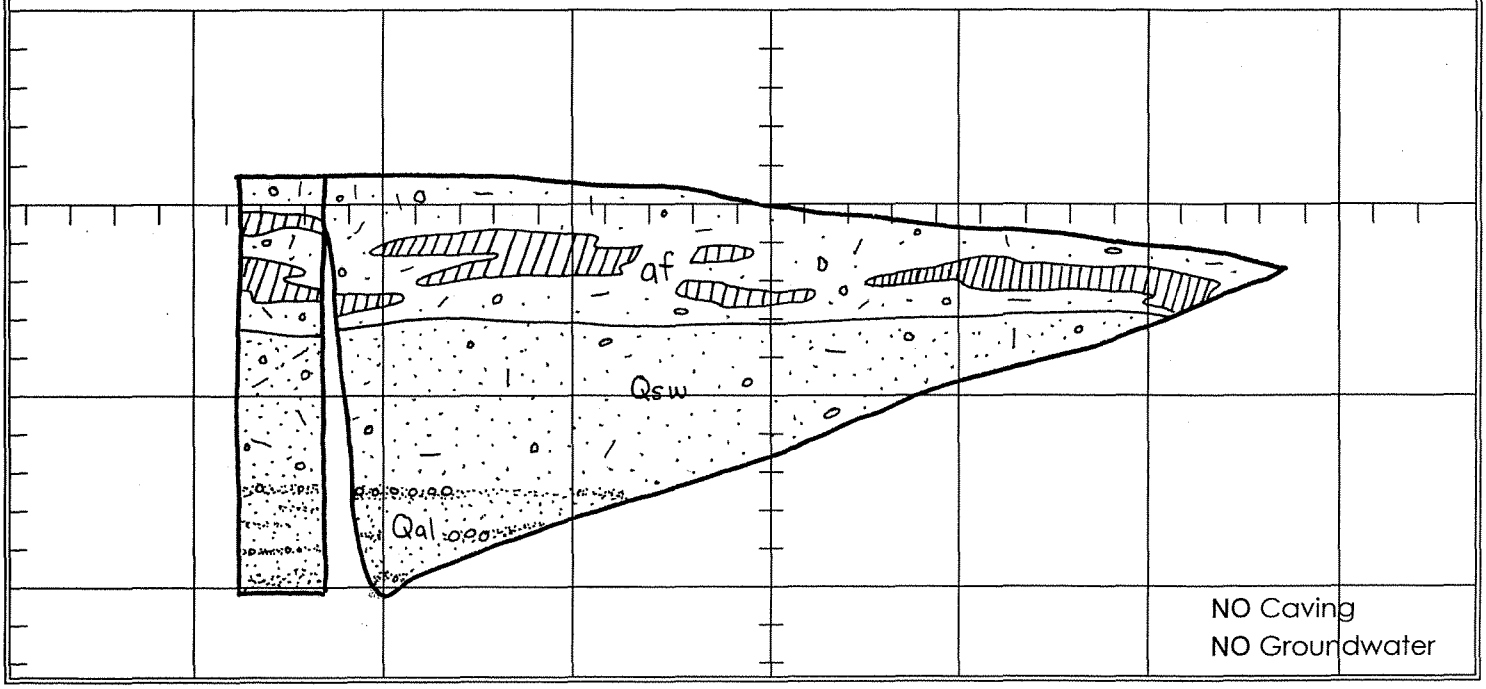
TOTAL DEPTH: 12 feet N77W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-57T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 10/22/03	
EXCAVATION METHOD: Rubber Tire Backhoe	ELEVATION: 1192	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				SC-SM	**ARTIFICIAL FILL; af (0-4')** @ 0' Silty clayey sand with gravel; loose to medium dense; dry; brown to dark brown; miscellaneous trash				
5					**SOIL/SLOPEWASH; Soil/Qsw (4-8')** @ 4' Silty clayey sand with gravel; medium dense; damp; brown to light brown; pinhole voids, rootlets				
10				SM	**QUATERNARY ALLUVIUM; Qal (8-11')** @ 8' Silty sand with gravel; loose to medium dense; damp; light yellowish-brown to light gray; gravel channels	B:Horizontal			
15									
20									

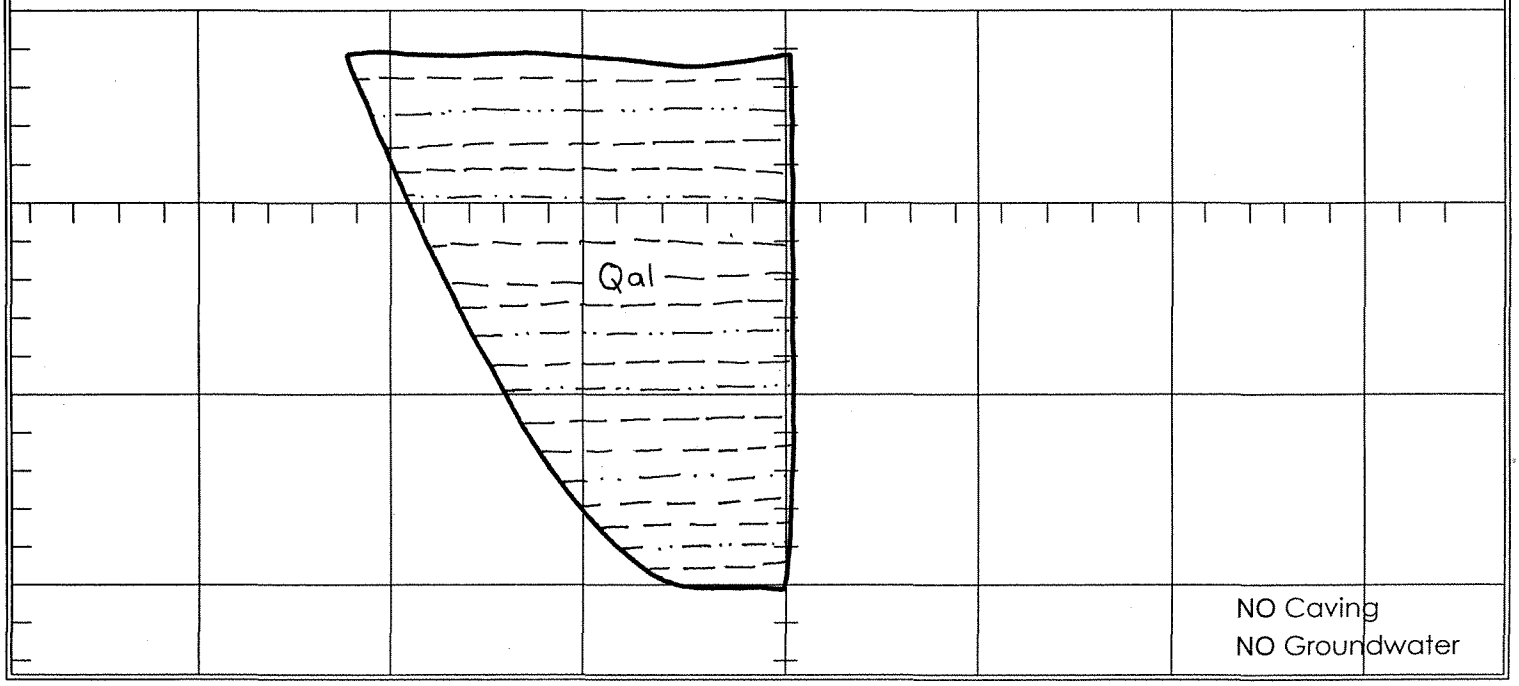
TOTAL DEPTH: 11 feet ←N58E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-58T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/10/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1002	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**QUATERNARY ALLUVIUM; Qal (0-15')** @ 0' Silty clay; soft to stiff; damp; grayish-brown				
15					@ 15' Wet COMMENTS: -Surface logged				

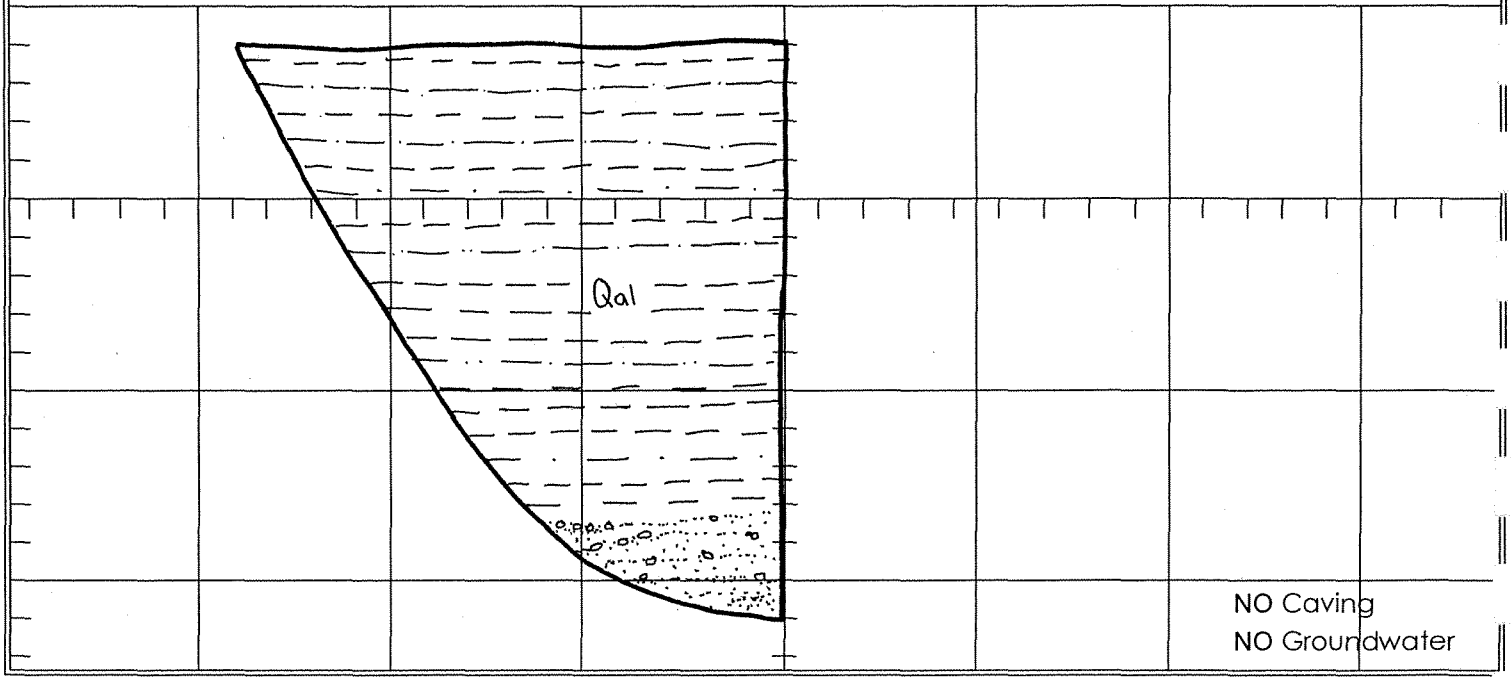
TOTAL DEPTH: 15 feet N44W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-59T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/10/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1000	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**QUATERNARY ALLUVIUM; Qal (0-15')** @ 0' Silty clay; soft to stiff; damp; grayish-brown				
5									
10				SP	@ 12' Poorly graded sand with gravel; medium dense; moist; grayish-brown				
15					@ 15' Wet COMMENTS: -Surface logged				
20									

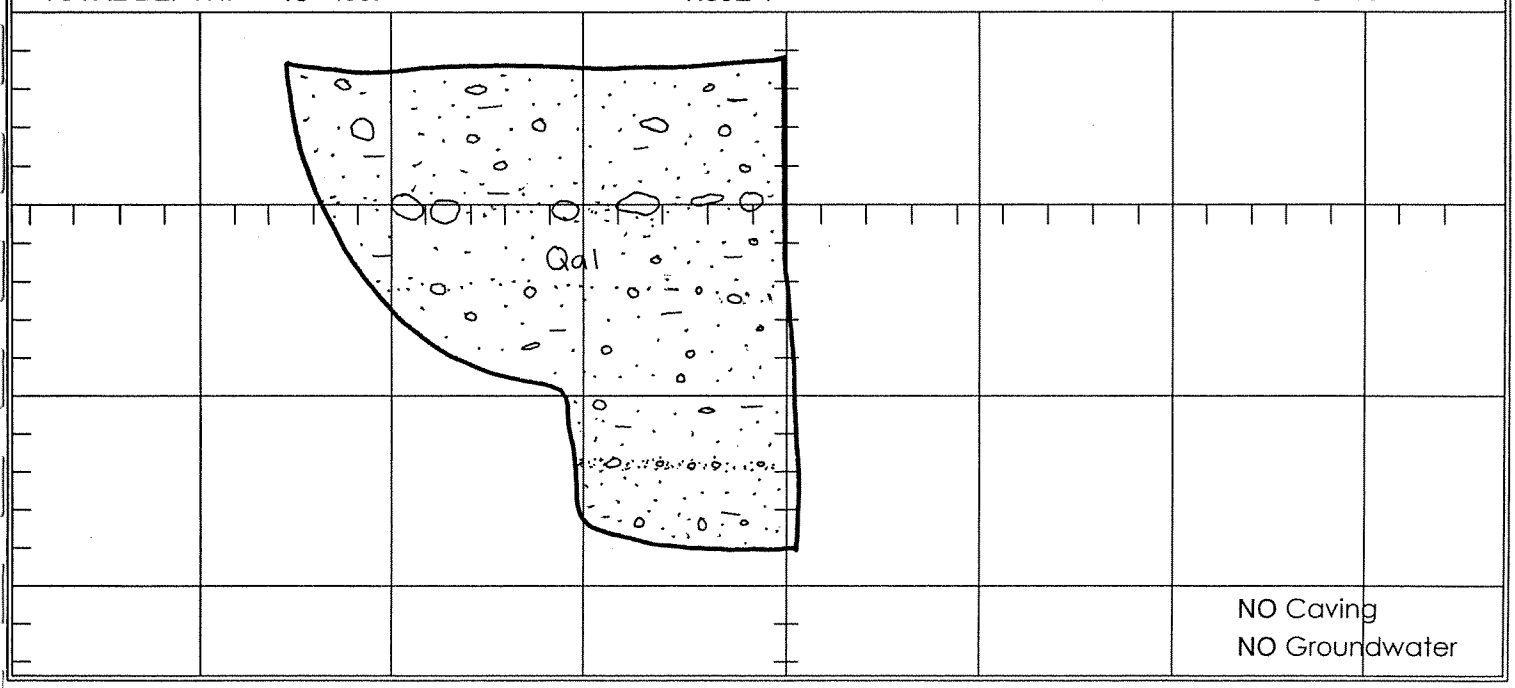
TOTAL DEPTH: 15 feet N62E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-62T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/13/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1120	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-13')** @ 0' Poorly graded sand with silt and gravel; medium dense; damp; yellowish- to grayish-brown; moderately friable; local cobbles to boulders	~Horizontal			
5									
10									
15					COMMENTS: -Surface logged below 6'				
20									

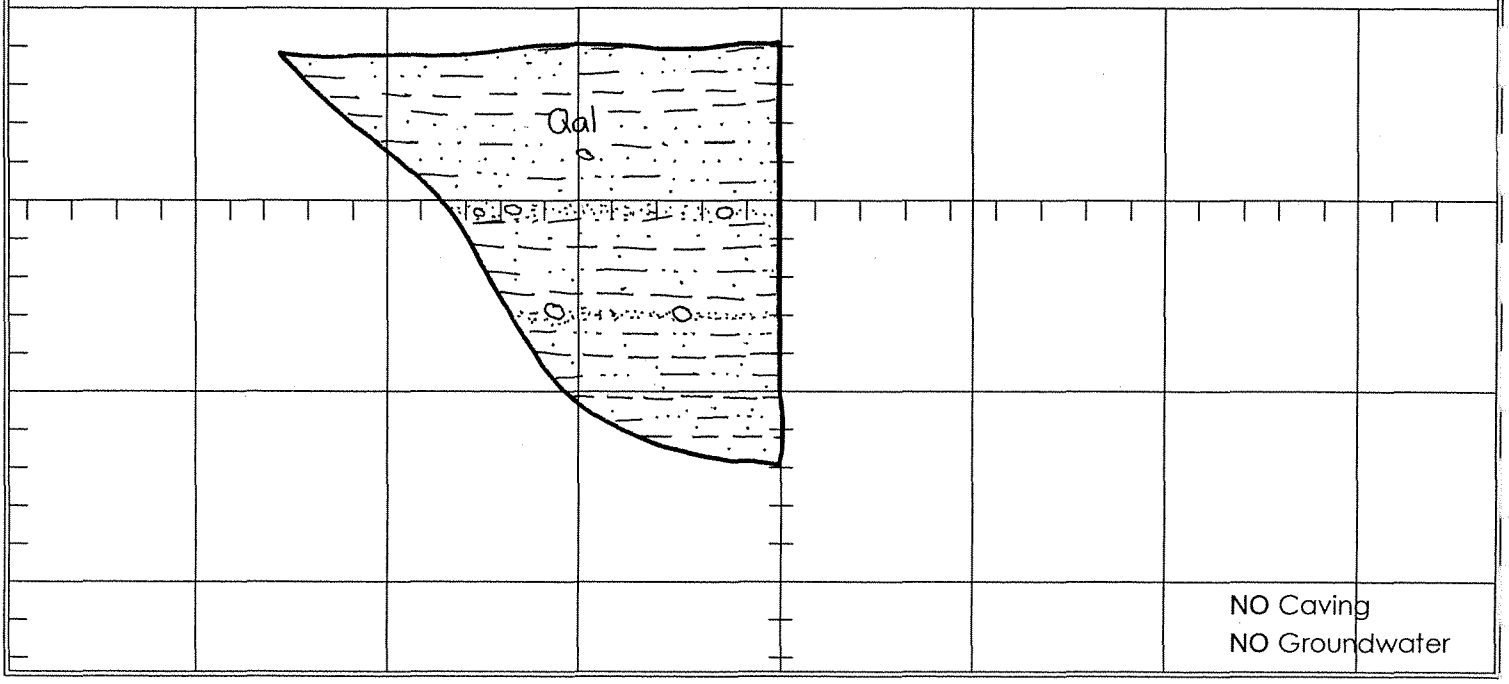
TOTAL DEPTH: 13 feet N80E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-63T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/13/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1118	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**QUATERNARY ALLUVIUM; Qal (0-11')** @ 0' Sandy silty clay with gravel; stiff to very stiff; damp; yellowish- to grayish-brown; sandier with depth; pinhole voids to at least 8; scattered cobbles	Horizontal			
5									
10									
15									
20									

TOTAL DEPTH: 11 feet N78E→ SCALE: 1 inch = 5 feet

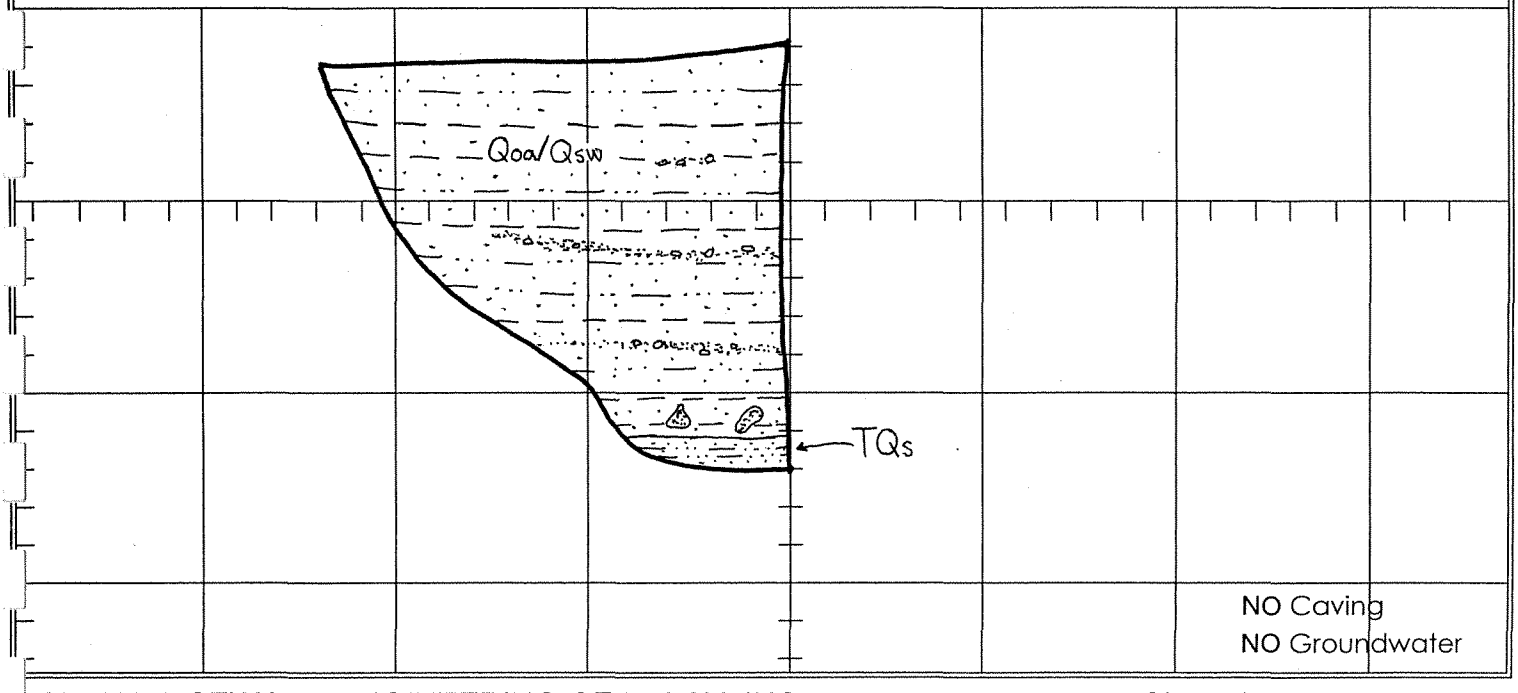


CLIENT: Newhall Ranch Company
PROJECT: Mesas East
JOB NO: 04-2023-4
DATE: 7/22/04
LOGGED BY: DGG
EXCAVATED: 11/13/03
EXCAVATION METHOD: Trackhoe w/24" Bucket
ELEVATION: 1145

TRENCH LOG NO. T-64T

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**QUATERNARY OLDER ALLUVIUM/SLOPEWASH; Qoa/Qsw (0-10')** @ 0' Sandy silty clay with gravel; stiff to very stiff; damp; yellowish- to grayish-brown; pin hole voids to at least 6'; @ 9-10' pieces of weathered TQs; scattered cobbles				
10					**BEDROCK; TQs (10-11')** @ 10' Light gray silty sandstone/sandy siltstone; moderately hard; weathered				
20									

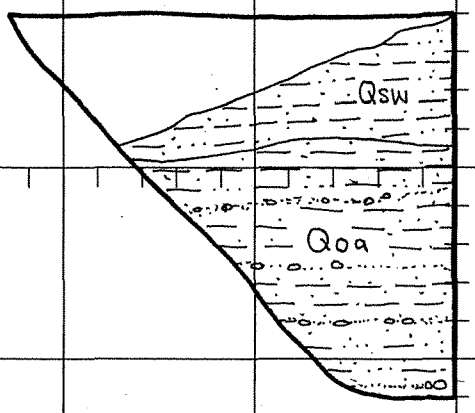
TOTAL DEPTH: 11 feet N27E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-65T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/13/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket		ELEVATION: 1198	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**QUATERNARY SLOPEWASH; Qsw (0-4')** @ 0' Sandy silty clay; stiff; damp; yellowish- to grayish-brown				
5					**QUATERNARY OLDER ALLUVIUM; Qoa (4-10')** @ 4' Interbedded sandy silty clay and poorly graded sand with silt and gravel; fine-grained are stiff, coarse-grained are medium dense; damp; yellowish to grayish-brown; sands are moderately friable; scattered cobbles	~Horizontal			
10									
15									
20									

TOTAL DEPTH: 10 feet N10E→ SCALE: 1 inch = 5 feet

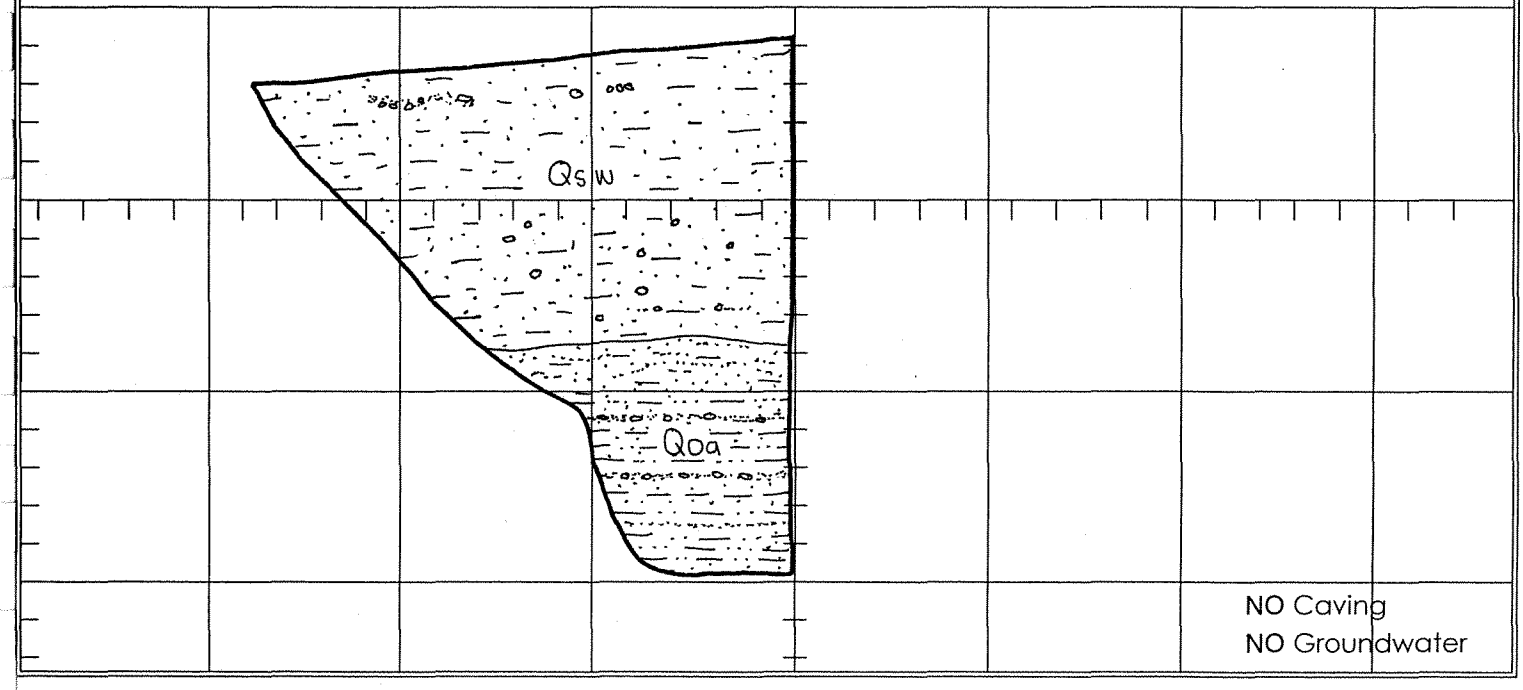


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-66T**	
PROJECT: Mesas East	DATE: 7/22/04		
	LOGGED BY: DGG		
	EXCAVATED: 11/13/04		
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1230		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SLOPEWASH; Qsw (0-8')** @ 0' Sandy silty clay with gravel; very stiff to hard; damp; yellowish- to grayish-brown				
5					@ 5' Brown to dark brown				
				SP-SM	**QUATERNARY OLDER ALLUVIUM; Qoa (8-14')** @ 8' Poorly graded sand with silt and gravel; medium dense; damp; light grayish-brown; friable upper 1'; below 9' siltier				
10									
15									
20									

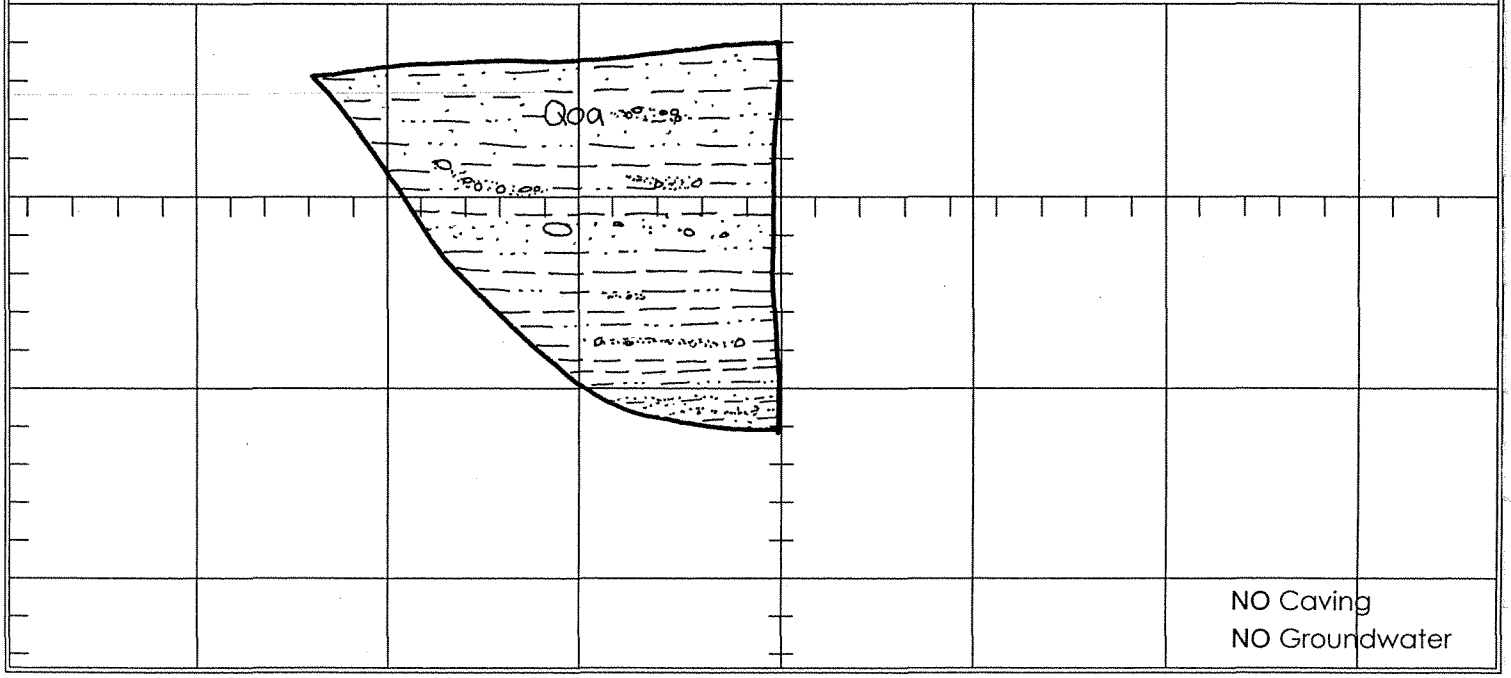
TOTAL DEPTH: 8 feet N78E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-67T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/13/03	
EXCAVATION METHOD: Trackhoe w/24' Bucket		ELEVATION: 1172	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**QUATERNARY OLDER ALLUVIUM; Qoa (0-10')** @ 0' Sandy silty clay with gravel; firm to stiff; damp; yellowish- to grayish-brown to brown @ 6' Less gravel; stiff to very stiff; brown @ 9' Poorly graded sand with silt and gravel; medium dense to dense; grayish-brown COMMENTS: -Bulk sample @ 0-10'				
5									
10									
15									
20									

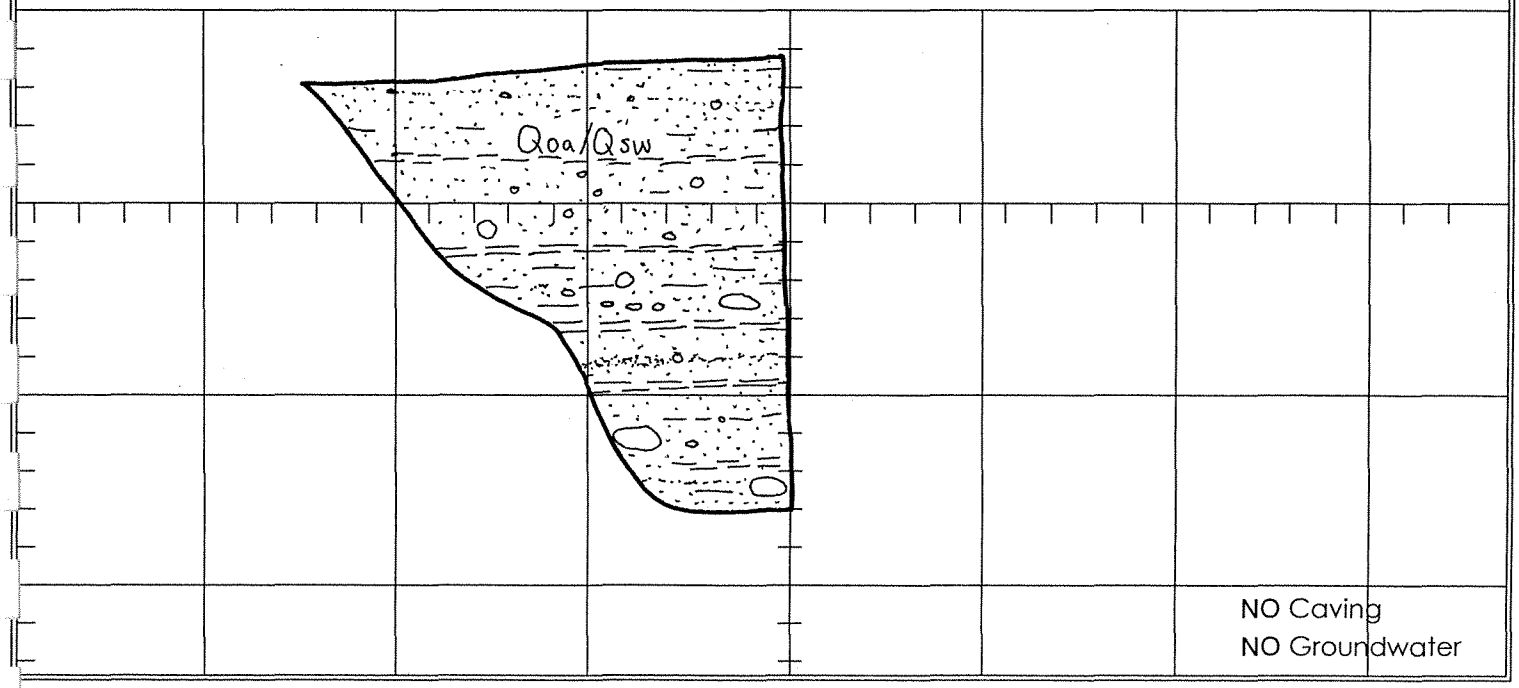
TOTAL DEPTH: 10 feet ←N33W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-68T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/13/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket		ELEVATION: 1080	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**QUATERNARY OLDER ALLUVIUM/SLOPEWASH; Qoa/Qsw (0-12')** @ 0' Sandy silty clay with gravel and poorly graded sand with silt and gravel; stiff to medium dense; damp; yellowish- to grayish-brown; sands are moderately friable; pinhole voids to at least 6'; local boulders to 24" diameter COMMENTS: -Surface logged below 8'				
5									
10									
15									
20									

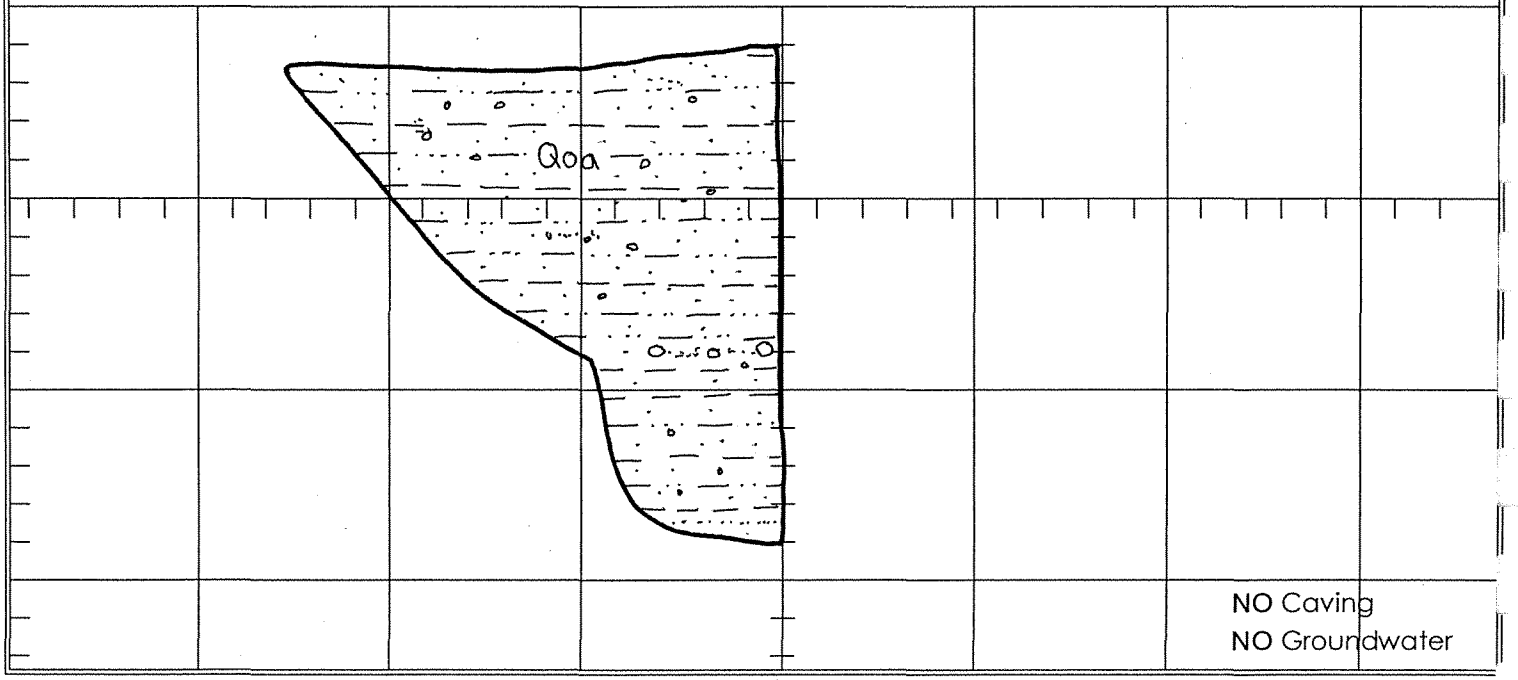
TOTAL DEPTH: 12 feet N65E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-69T**	
PROJECT: Mesas East	DATE: 7/22/04		
	LOGGED BY: DGG		
	EXCAVATED: 11/13/03		
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1104		

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML SM	**QUATERNARY OLDER ALLUVIUM; Qoa (0-13')** @ 0' Sandy silty clay with gravel; firm; damp; yellowish- to grayish-brown; and silty sand with gravel; loose to medium dense; damp; yellowish- to grayish-brown COMMENTS: -Surface logged below 9' -Bulk sample @ 0-13'				
5									
10									
15									
20									

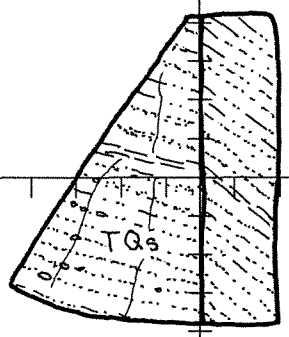
TOTAL DEPTH: 13 feet ←N53W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-70T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/14/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1100	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**BEDROCK; TQs (0-8')** @ 0' Light gray interbedded silty sandstone; fine- to medium-grained pebbly sandstone; moderately hard to hard; damp; some fractures	B:N66W,44SW B:N67W,50SW			
5									
10									
15									
20									

TOTAL DEPTH: 8 feet ←N70W SCALE: 1 inch = 5 feet

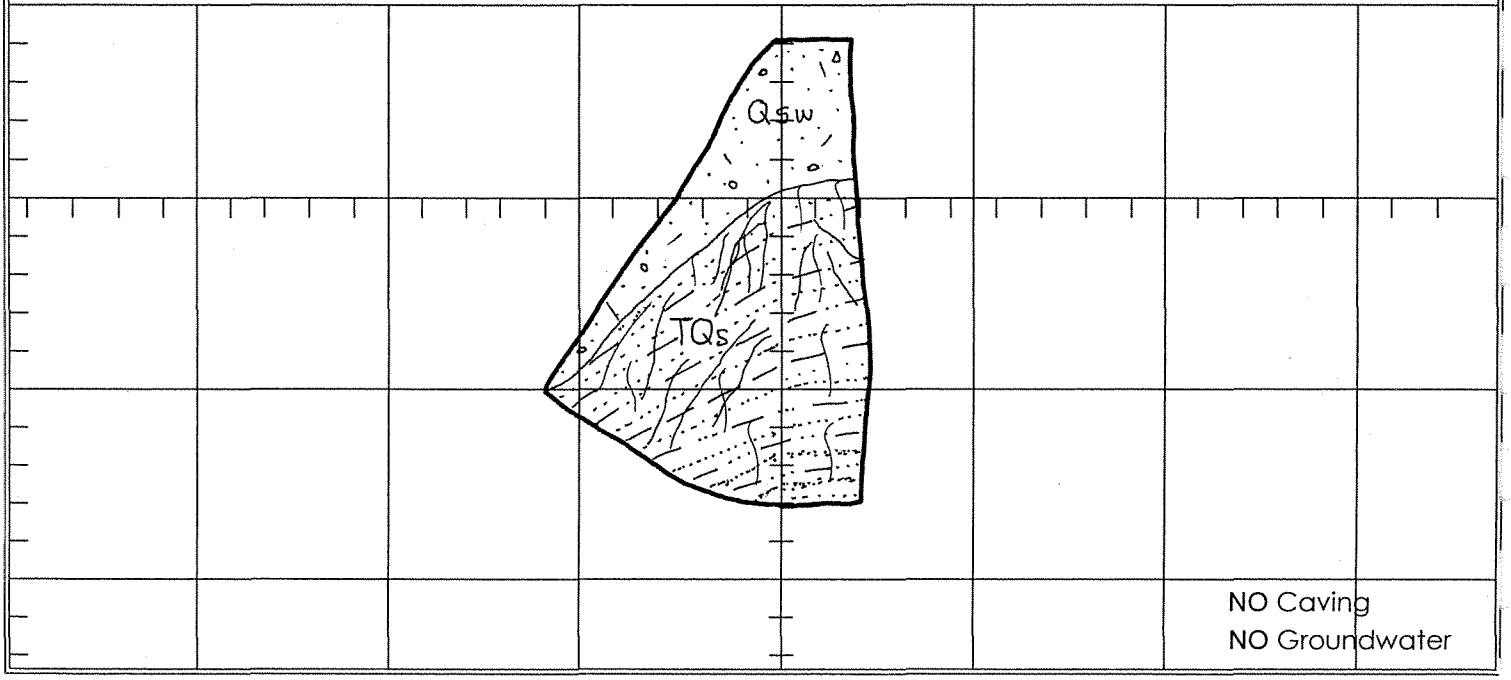


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-71T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/14/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1148	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SLOPEWASH; Qsw (0-4')** @ 0' Silty clay; firm; damp; grayish-brown				
5					**BEDROCK; TQs (4-12')** @ 4' Grayish-brown to light-gray silty sandstone/sandy siltstone, mudstone, and fine-grained sandstone; moderately hard; damp; weathered and fractured; caliche	B:N47W,26NE B:N57W,24NE			
10									
15									
20									

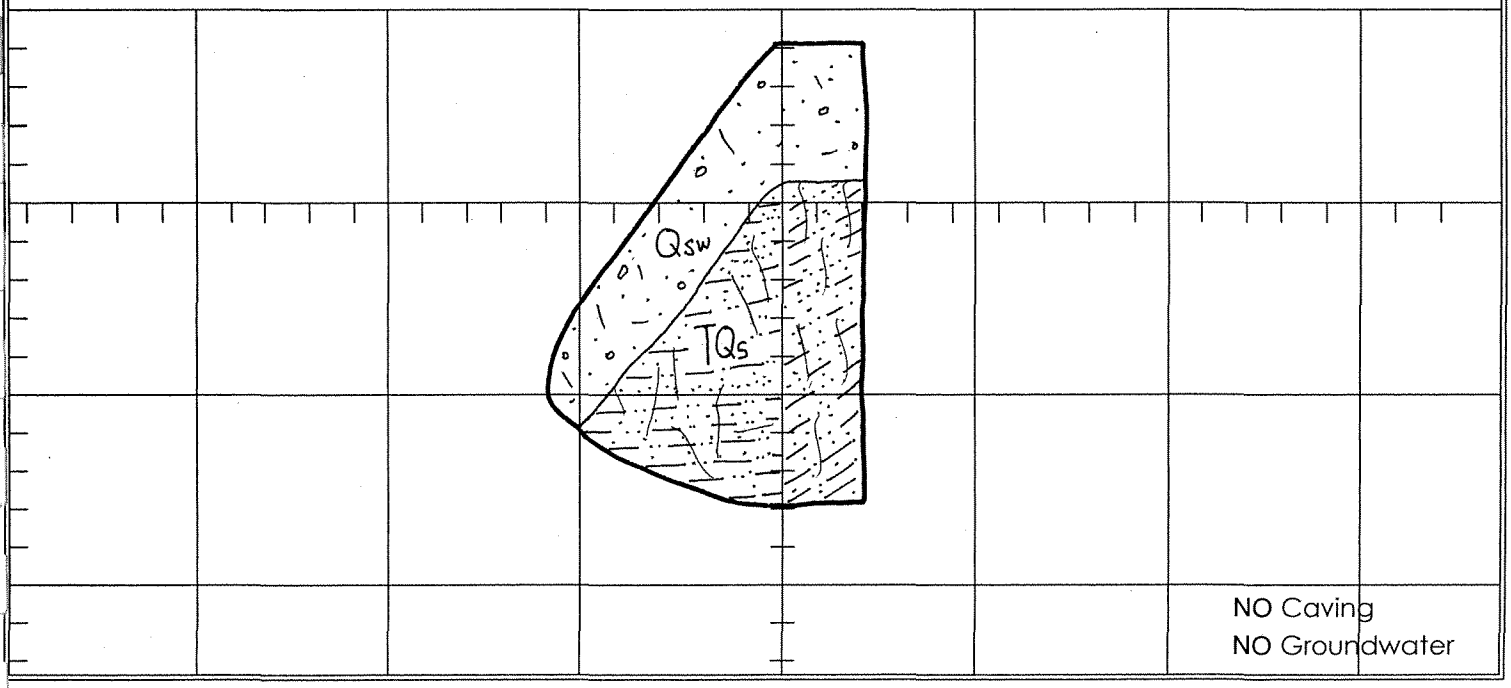
TOTAL DEPTH: 12 feet ←N17E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-72T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/14/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1324	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SLOPEWASH; Qsw (0-3.5')** @ 0' Sandy silty clay; firm; damp; brown to grayish-brown				
5					**BEDROCK; TQs (3.5-12')** @ 3.5' Light gray silty sandstone/sandy siltstone to fine-grained sandstone and gray mudstone; hard; damp; highly weathered in sidewalls to ~8"; fractured	B:N34W,25NE B:N44W,26NE			
10									
15									
20									

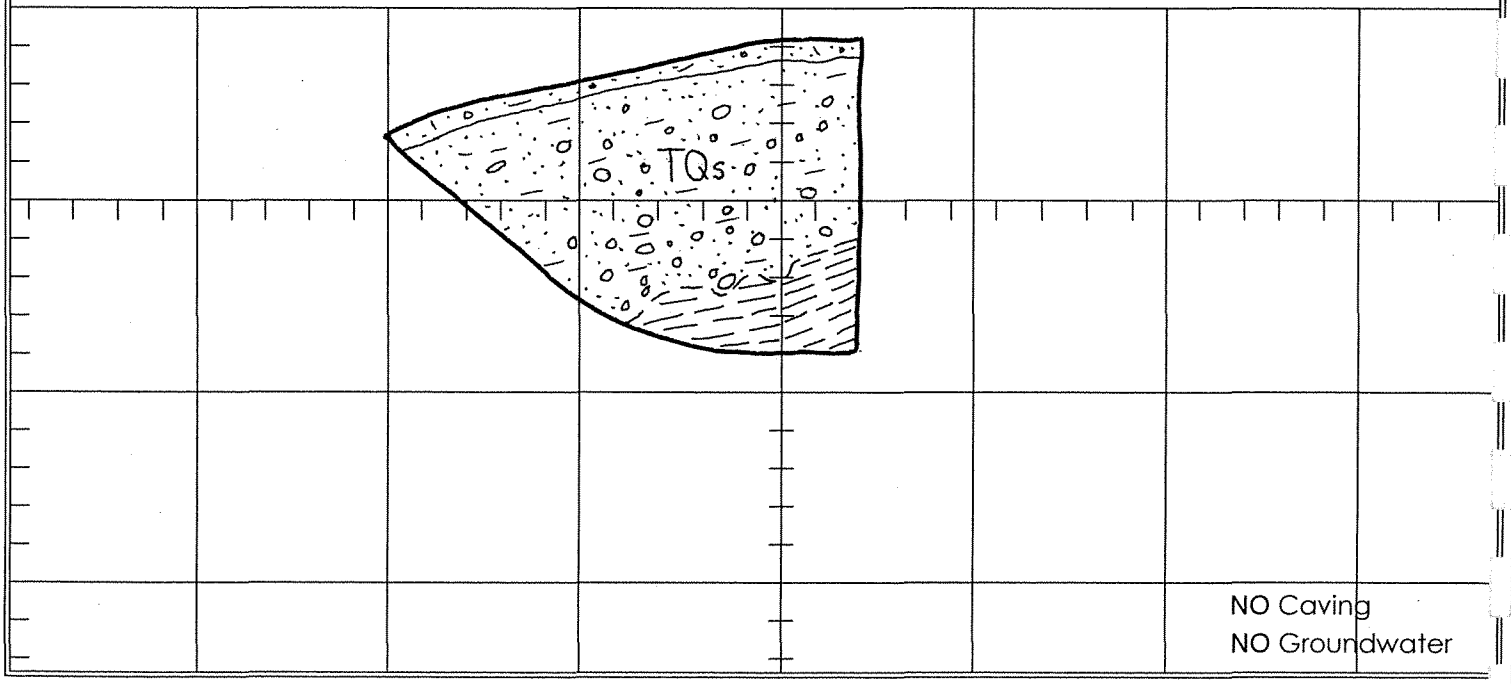
TOTAL DEPTH: 12 feet ←N52W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-73T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/14/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket		ELEVATION: 1197	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SOIL; (0-0.5')** @ 0' Sandy silty clay; firm; damp; grayish-brown **BEDROCK; TQs (0.5-8')** @ 0.5' Light-gray cobble pebble conglomerate and medium-grained mudstone; moderately hard to hard; damp; erosional contact; cobbles up to 6" diameter	Apx. B:N82W,15NE			
5									
10									
15									
20									

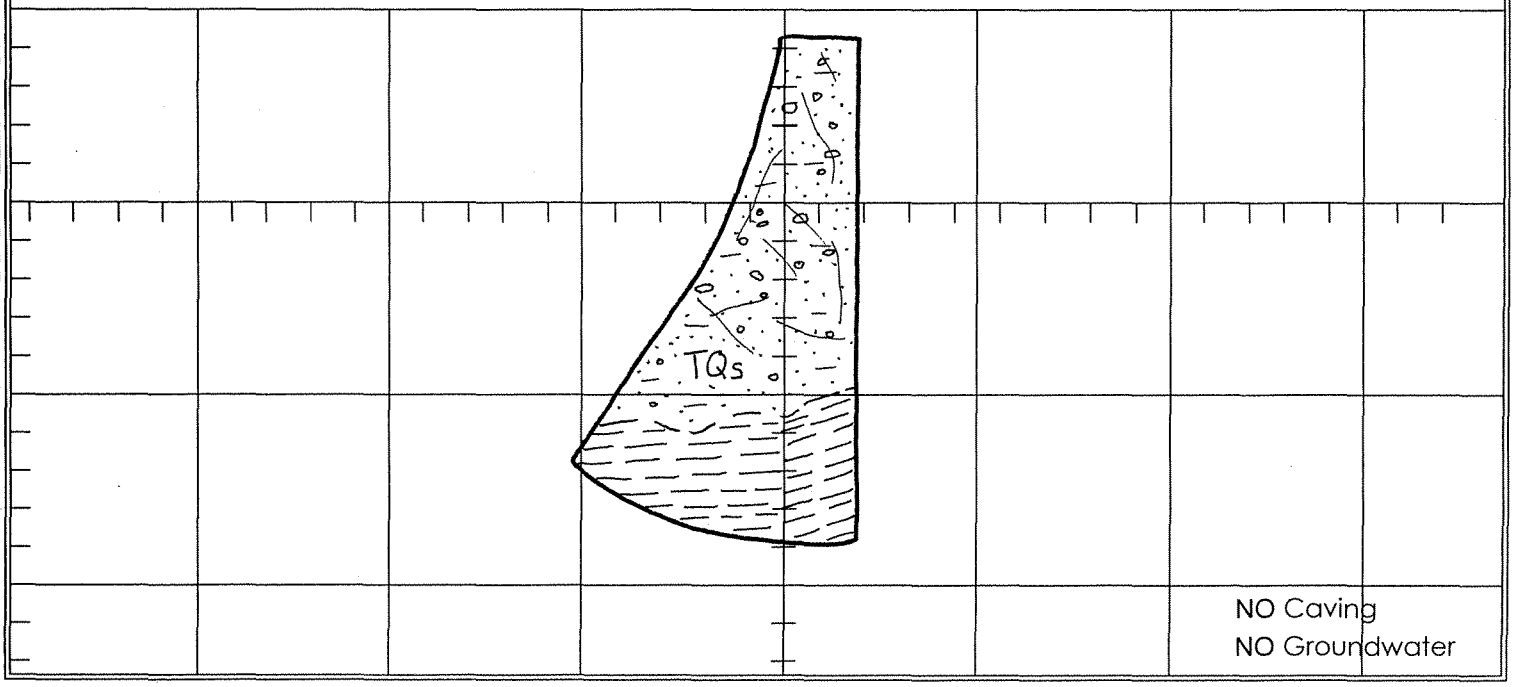
TOTAL DEPTH: 8 feet ←N75W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-74T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/14/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1236	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-12')** @ 0' Light gray pebble conglomerate; fine- to medium-grained sandstone and brown siltstone/mudstone; moderately hard; damp; upper 8-9' fractured; some caliche in fine-grained units	Apx. B:N60W,22NE			
5									
10									
15									
20									

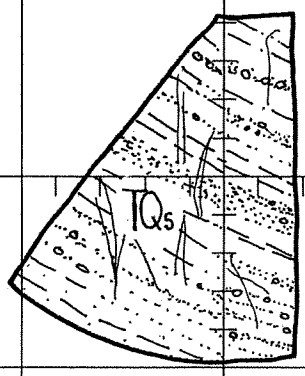
TOTAL DEPTH: 12 feet ←N46W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-75T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe w/24"Bucket	ELEVATION: 1245	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-9')** @ 0' Light gray fine- to medium-grained sandstone, pebbly sandstone and silty sandstone; moderately hard to hard; damp; fractured	B:N28W,24NE			
5									
10									
15									
20									

TOTAL DEPTH: 9 feet N32E→ SCALE: 1 inch = 5 feet

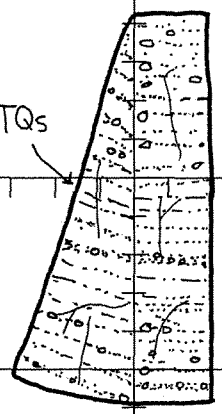


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-76T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1235	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-10')** @ 0' Light gray silty sandstone; fine- to medium-grained sandstone and pebbly sandstone; moderately hard to hard; damp; fractured	Apx. B:N62W,13SW			
5									
10									
15									
20									

TOTAL DEPTH: 10 feet ←N7E SCALE: 1 inch = 5 feet

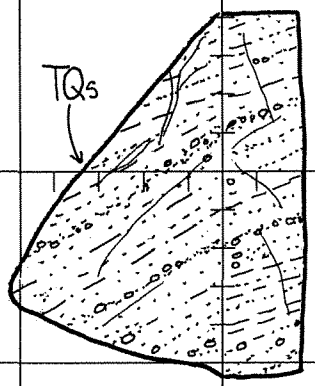


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-77T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1188	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-9')** @ 0' Light gray silty sandstone, fine- to medium-grained sandstone and pebbly sandstone; moderately hard to hard; damp; fractured	Apx. B:N74W,47SW			
5									
10									
15									
20									

TOTAL DEPTH: 9 feet N18W→ SCALE: 1 inch = 5 feet

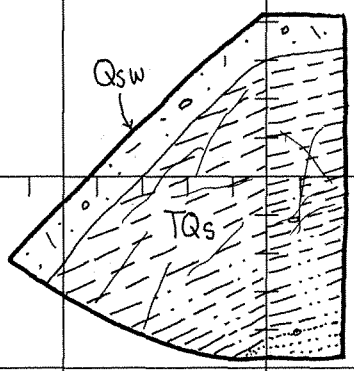


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-78T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1120	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-1')** @ 0' Sandy silty clay; soft to firm; damp; light grayish-brown **BEDROCK; TQs (1-9')** @ 1' Light grayish-brown mudstone to siltstone; moderately hard to hard; damp; fractured upper 5-6'; highly weathered-punky; bottom 1' pebbly silty sandstone				
5									
10									
15									
20									

TOTAL DEPTH: 9 feet ←N45E SCALE: 1 inch = 5 feet

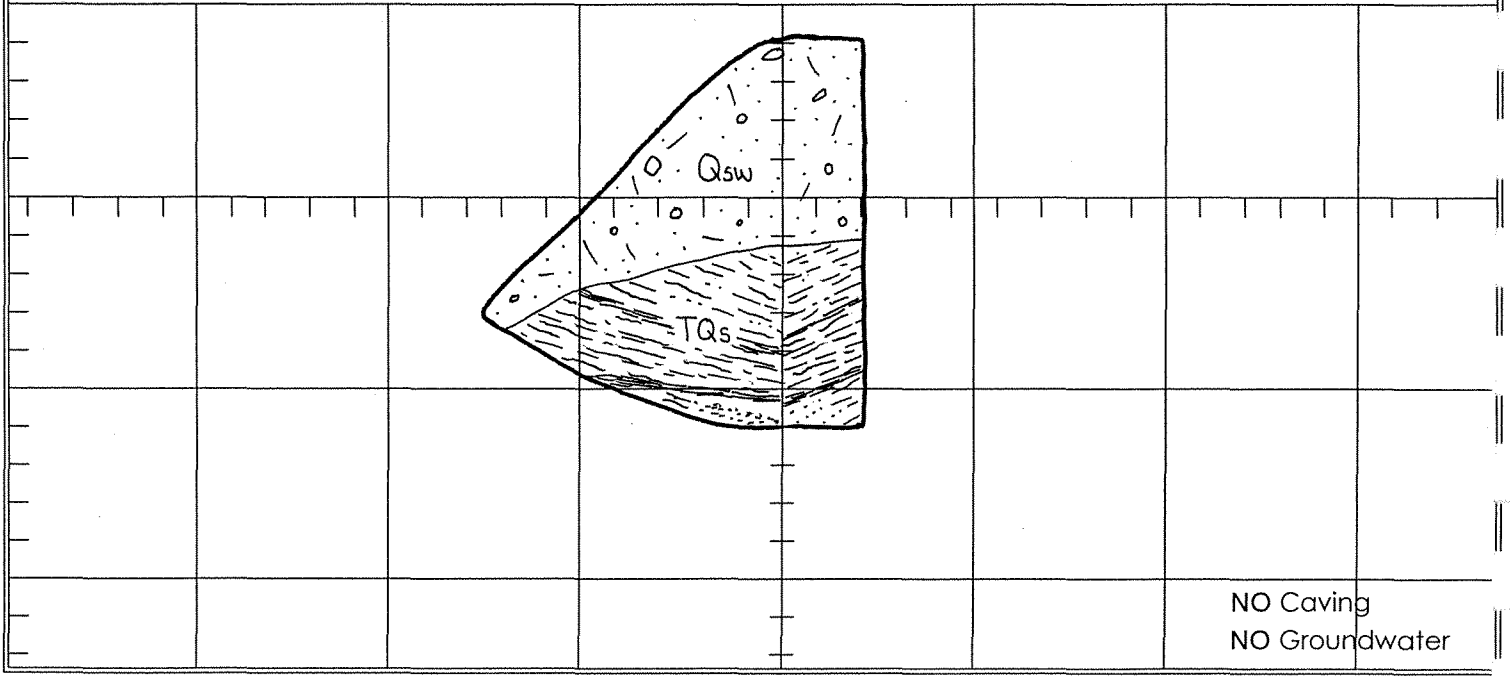


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-79T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1205	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-5.5')** @ 0' Sandy silty clay; soft to firm; damp; medium- to grayish-brown; with scattered pebbles/cobbles				
5					**BEDROCK; TQs (5.5-10')** @ 5.5' Grayish-brown mudstone, gray claystone, and grayish-brown silty mudstone; hard; damp; upper 2-2.5' highly weathered; clay is sheared-slightly plastic/sticky; bottom ~1' hard with caliche	B:N40W,30NE			
10									
15									
20									

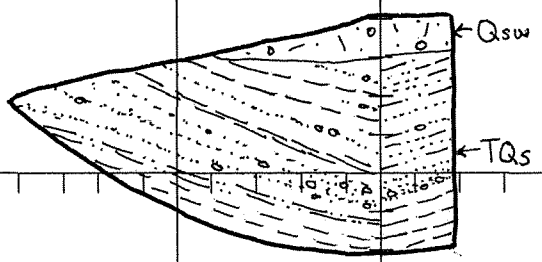
TOTAL DEPTH: 10 feet ←N76W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-80T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1285	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-1')** @ 0' Sandy silty clay with gravel; soft to firm; damp; grayish-brown **BEDROCK; TQs (1-6')** @ 1' Grayish-brown fine- to medium-grained sandstone, pebbly sandstone, silty sandstone, and siltstone; moderately hard to hard; damp	B:N41W,25NE			
5									
10									
15									
20									

TOTAL DEPTH: 6 feet ←Due W SCALE: 1 inch = 5 feet

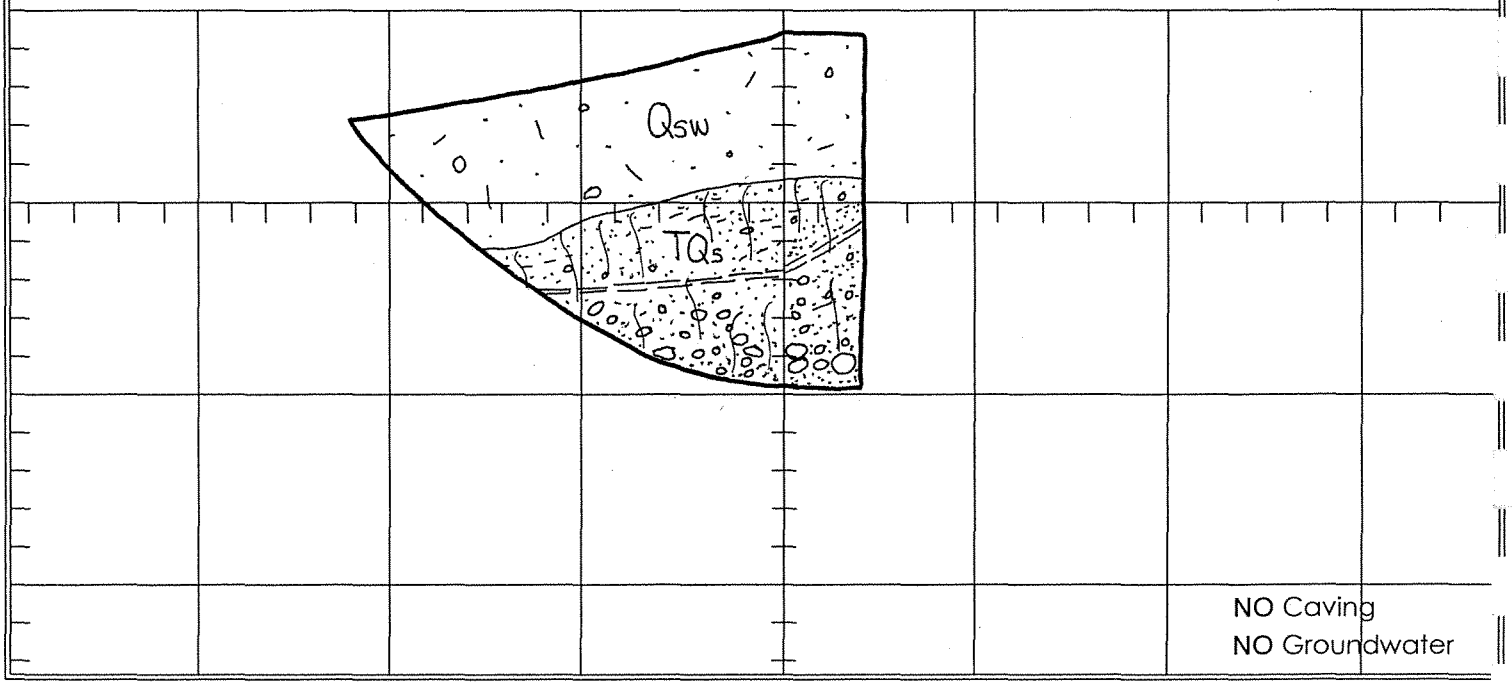


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-81T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1080	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-4')** @ 0' Sandy silty clay with gravel; soft to firm; damp; yellowish- to grayish-brown				
5					**BEDROCK; TQs (4-9')** @ 4' Yellowish- to grayish-brown siltstone, light gray silty sandstone, fine- to medium-grained sandstone, and pebble cobble conglomerate; moderately hard; damp; highly weathered	Apx. B:N28W,26NE			
10									
15									
20									

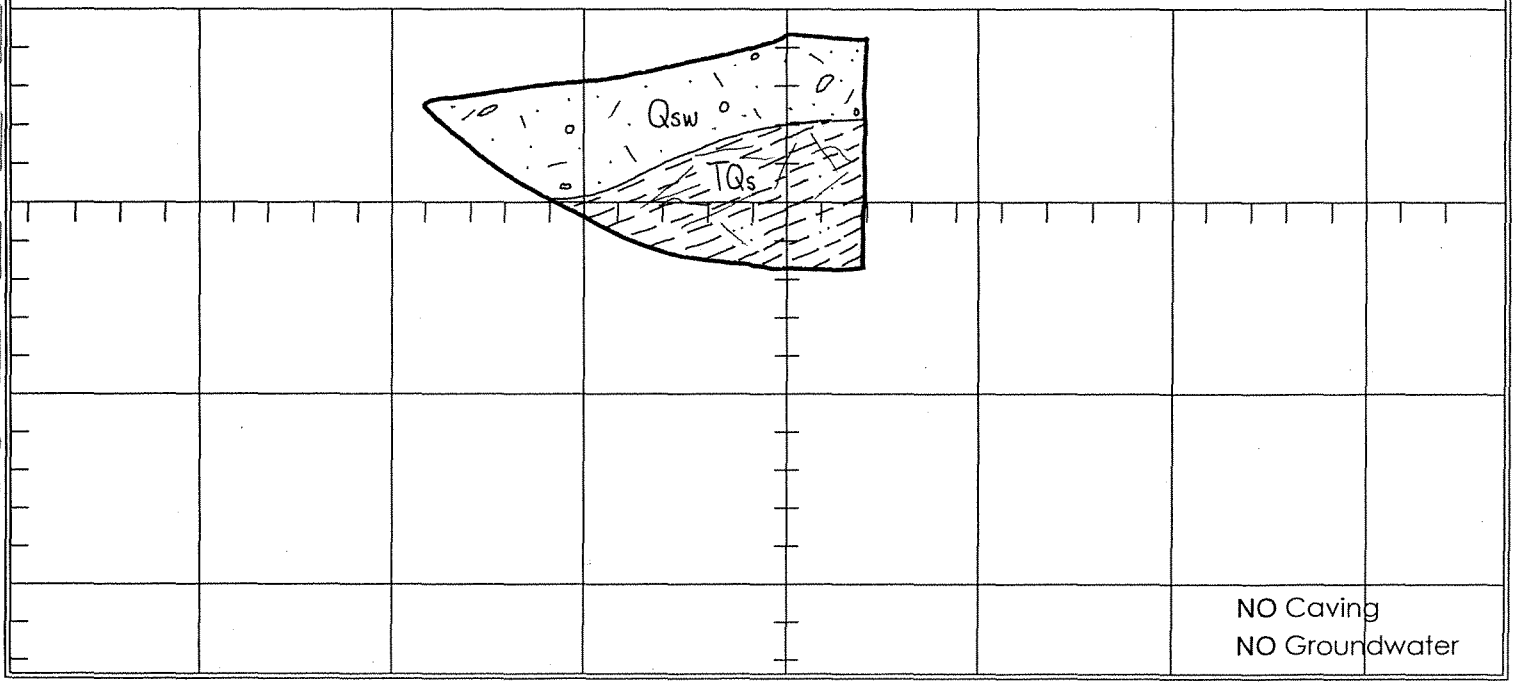
TOTAL DEPTH: 9 feet ←N8W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-82T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1115	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-2.5')** @ 0' Sandy silty clay; firm; damp; grayish-brown				
					BEDROCK; TQs (2.5-6') @ 2.5' Grayish-brown to FeO2 stained silty mudstone to siltstone; moderately hard to hard; damp; upper 1-1.5' highly fractured/weathered with caliche	B:N34W,27NE			
5									
10									
15									
20									

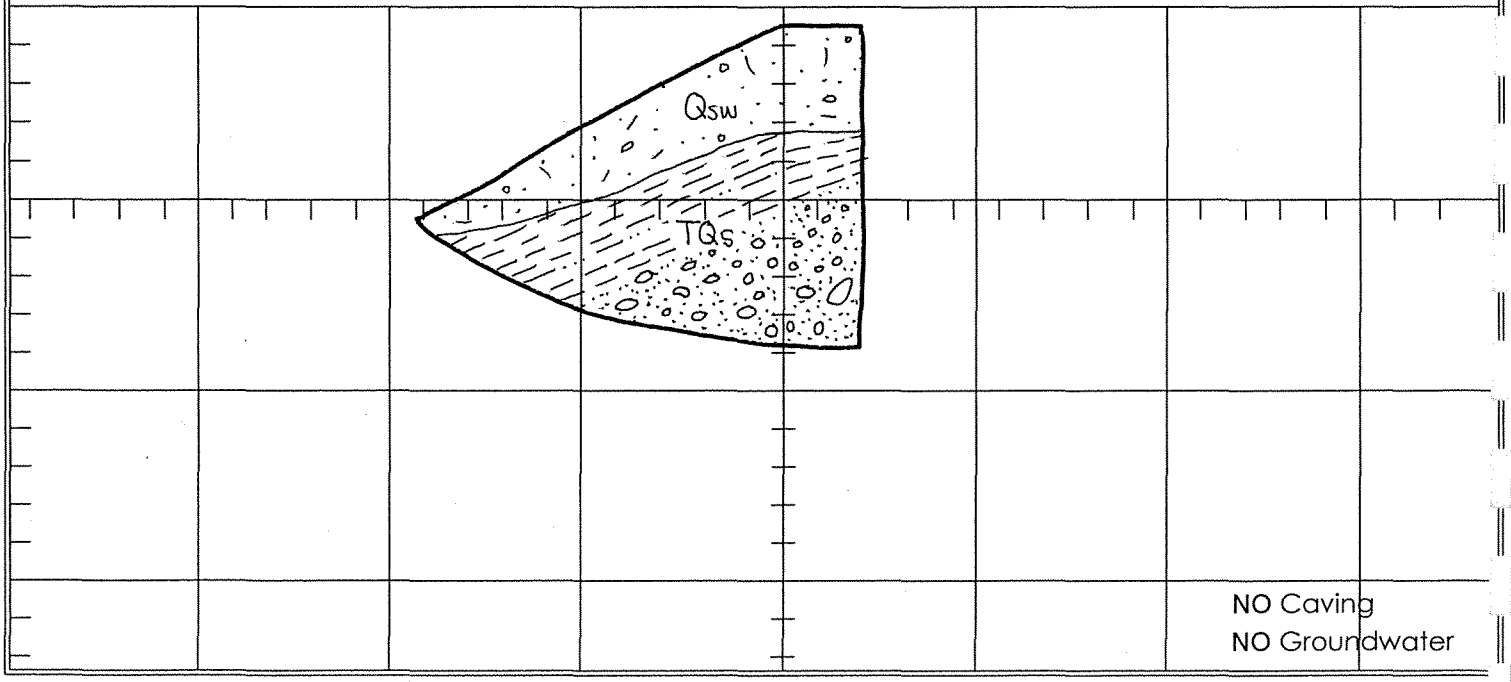
TOTAL DEPTH: 6 feet ←N2W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-83T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/17/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1162	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-2.5')** @ 0' Silty clay; soft to firm; damp; yellowish- to grayish-brown				
					BEDROCK; TQs (2.5-8') @ 2.5' Yellowish-gray silty mudstone and grayish-brown to light gray siltstone, silty sandstone and fine- to medium-grained sandstone and pebble cobble conglomerate; moderately hard; damp; weathered/fractured	B:N45W,28NE			
5									
10									
15									
20									

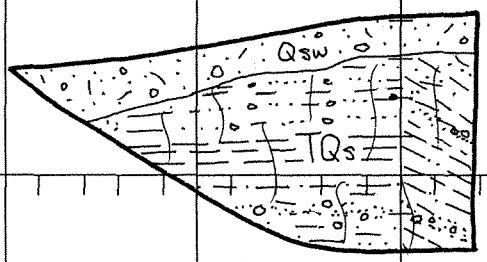
TOTAL DEPTH: 8 feet ←N13W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-84T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1478	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-1')** @ 0' Sandy silty clay; soft to firm; damp; yellowish- to grayish-brown **BEDROCK; TQs (1-6')** @ 1' Yellowish- to grayish-brown pebbly silty sandstone and siltstone; moderately hard; damp; highly weathered; sandstone is slightly to moderately friable	B:N46W,26NE			
5									
10									
15									
20									

TOTAL DEPTH: 6 feet N40W→ SCALE: 1 inch = 5 feet

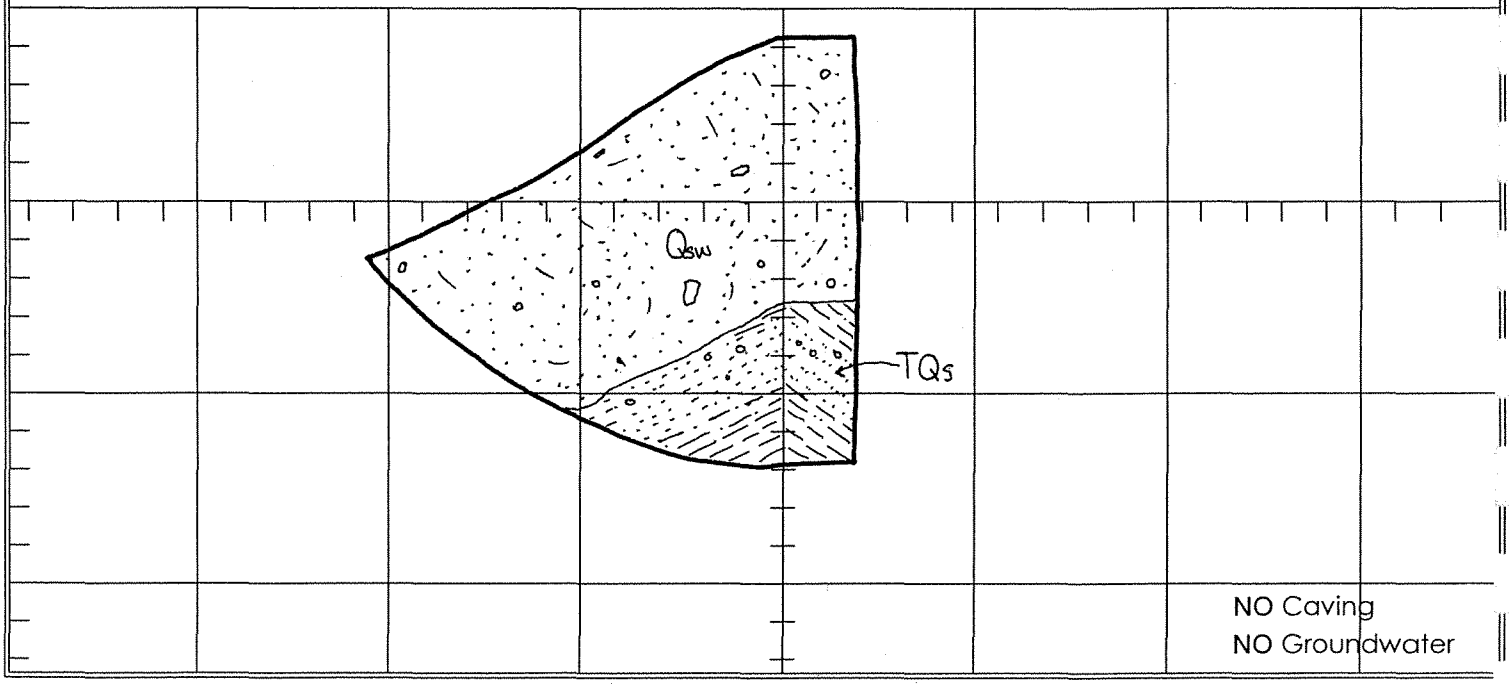


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-85T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1458	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-7')** @ 0' Sandy silty clay with gravel; firm to stiff; damp; yellowish- to grayish-brown				
5					**BEDROCK; TQs (7-11')** @ 7' Grayish-brown pebbly silty sandstone/sandy siltstone and siltstone; moderately hard to hard; damp; upper 2' highly weathered-locally soft	B:N50W,35NE			
10									
15									
20									

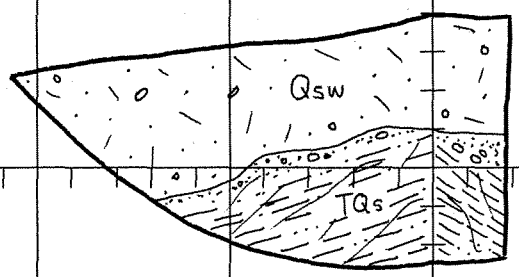
TOTAL DEPTH: 11 feet ←N81E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-86T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1384	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-3')** @ 0' Sandy silty clay with gravel; soft to firm; damp; yellowish- to grayish-brown				
					BEDROCK; TQs (3-6.5') @ 3' Yellowish- to grayish-brown silty mudstone to siltstone; moderately hard to hard; damp; fractured with caliche	Apx. B:N38W,34NE			
5									
10									
15									
20									

TOTAL DEPTH: 6.5 feet N68W→ SCALE: 1 inch = 5 feet

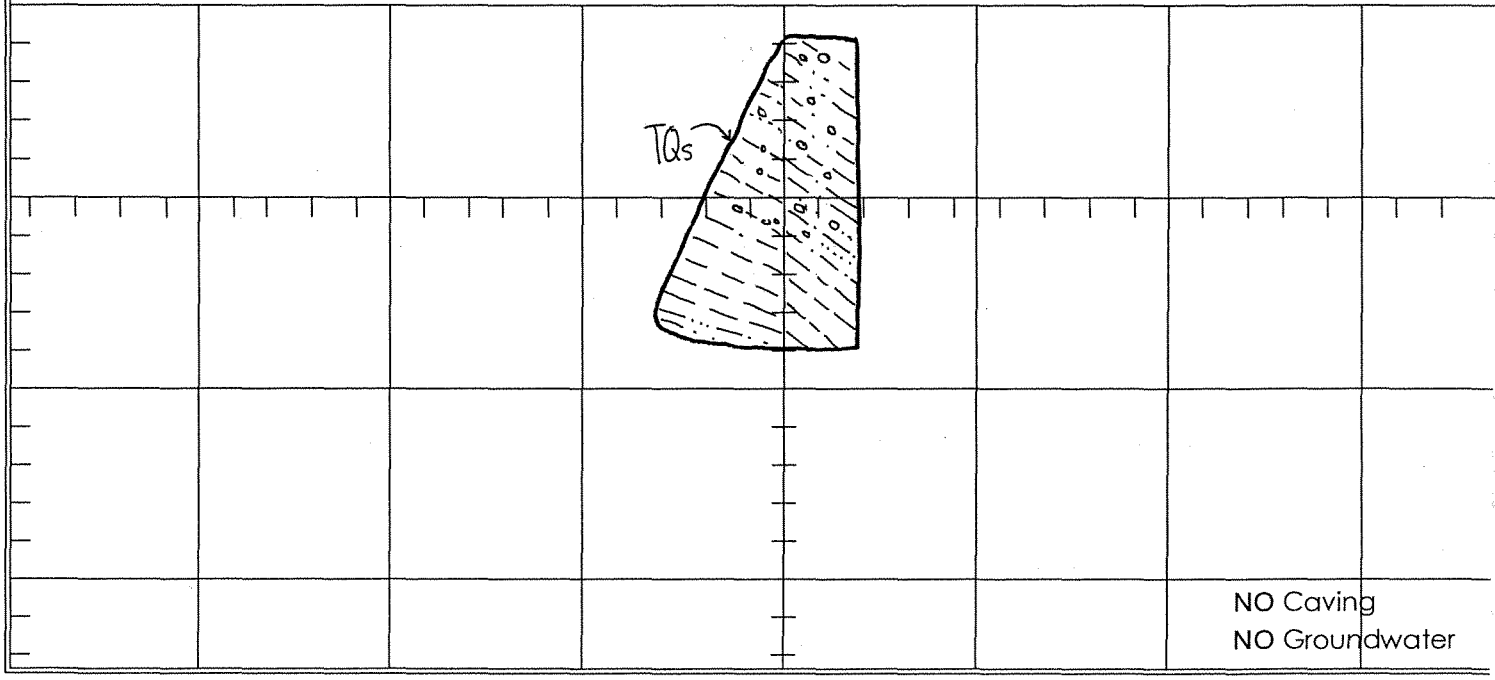


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-87T**
PROJECT: Mesas East	DATE: 7/12/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1384	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-8')** @ 0' Light gray pebbly silty sandstone and yellowish-brown silty mudstone; moderately hard to hard; damp; sidewalls exhibit weathering	B:N42W,34NE			
5									
10									
15									
20									

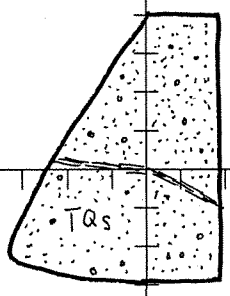
TOTAL DEPTH: 8 feet N26W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-88T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/04	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1392	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-4')** @ 0' Light gray silty sandstone; fine- to medium-grained sandstone and pebbly sandstone; moderately hard to hard; damp	B:N46W,31NE			
5									
10									
15									
20									

TOTAL DEPTH: 7 feet N44W→ SCALE: 1 inch = 5 feet

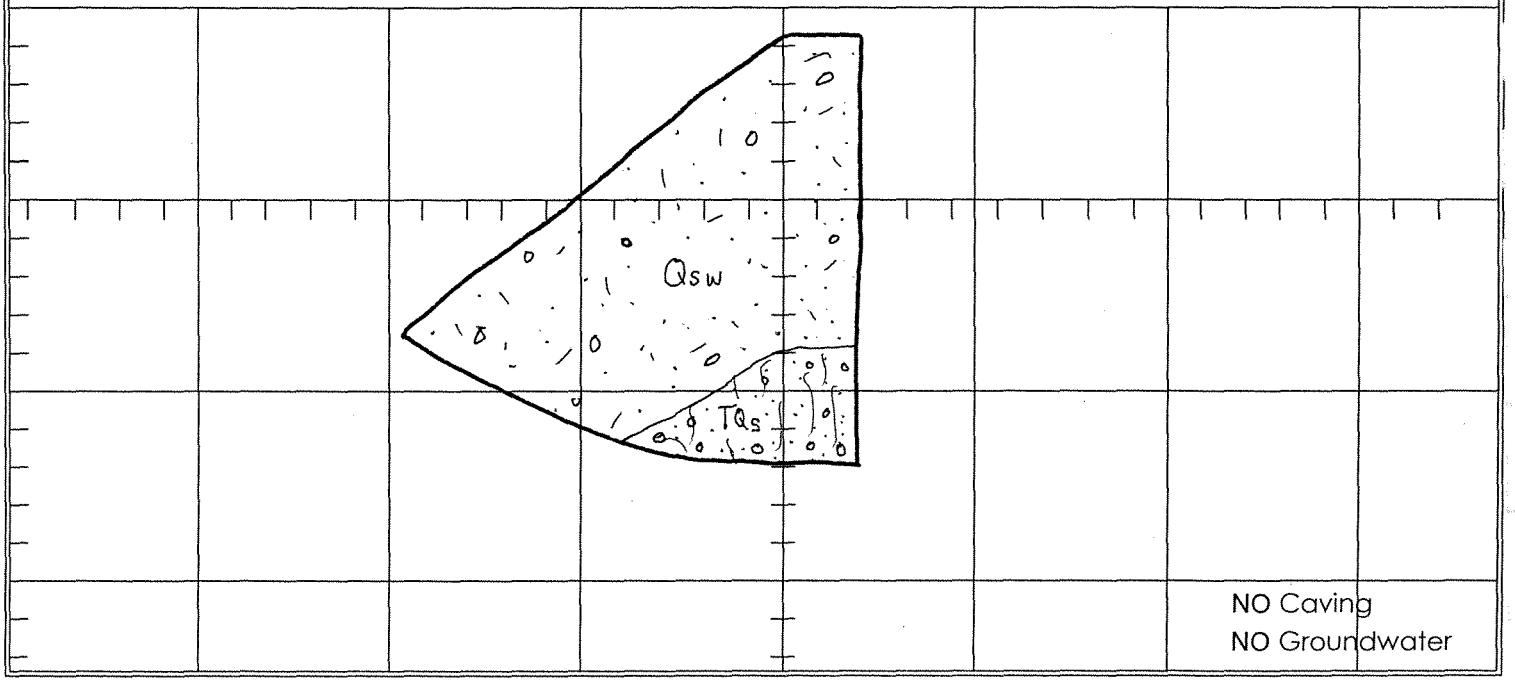


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-89T**
PROJECT: Mesas East	DATE:	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1400	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-8')** @ 0' Sandy silty clay with gravel; firm; damp; grayish-brown				
5									
10					**BEDROCK; TQs (8-11')** @ 8' Grayish-brown pebbly sandy siltstone; slightly to moderately hard; damp; highly weathered				
15									
20									

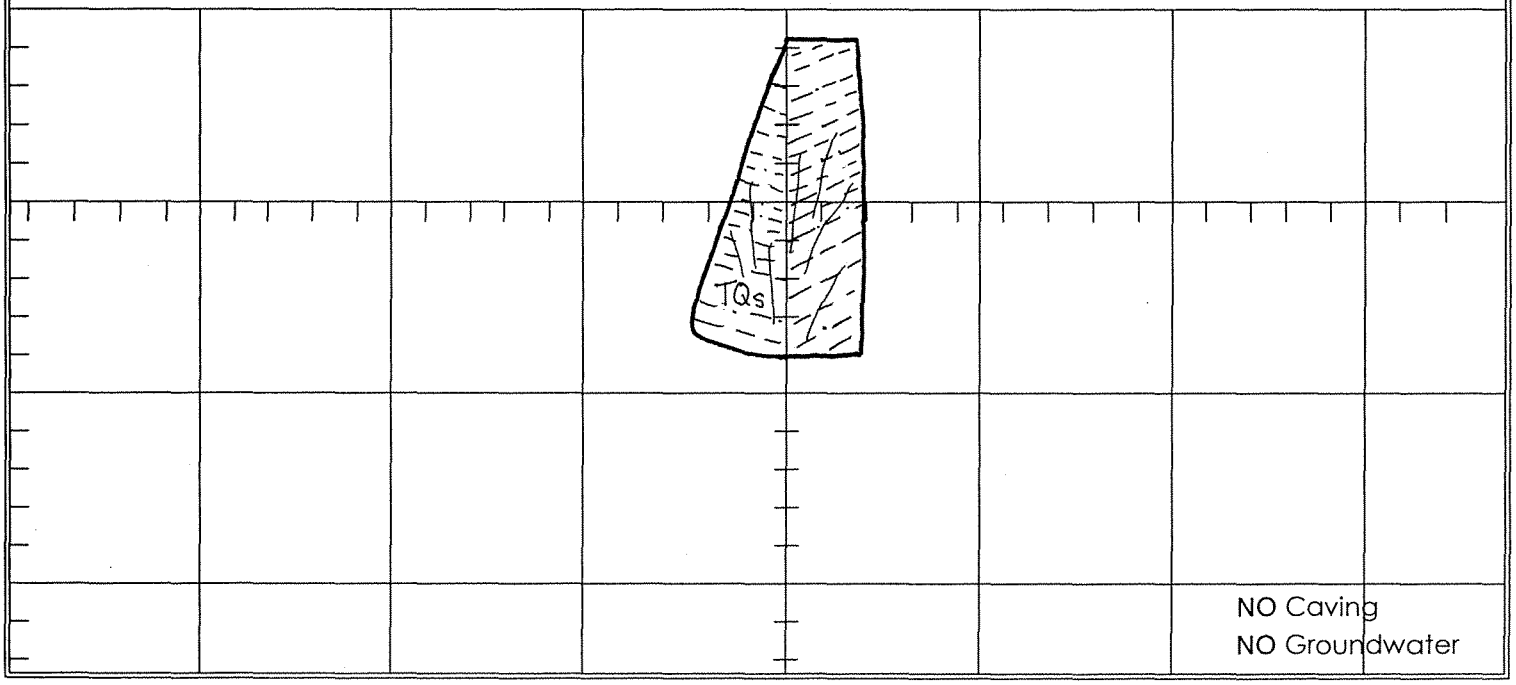
TOTAL DEPTH: 11 feet ←N47W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-90T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1375	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**BEDROCK; TQs (0-8')** @ 0' Grayish-brown laminated silty mudstone; moderately hard to hard; damp; fractured	B:N47W,40NE			
5									
10									
15									
20									

TOTAL DEPTH: 8 feet ←N50W SCALE: 1 inch = 5 feet



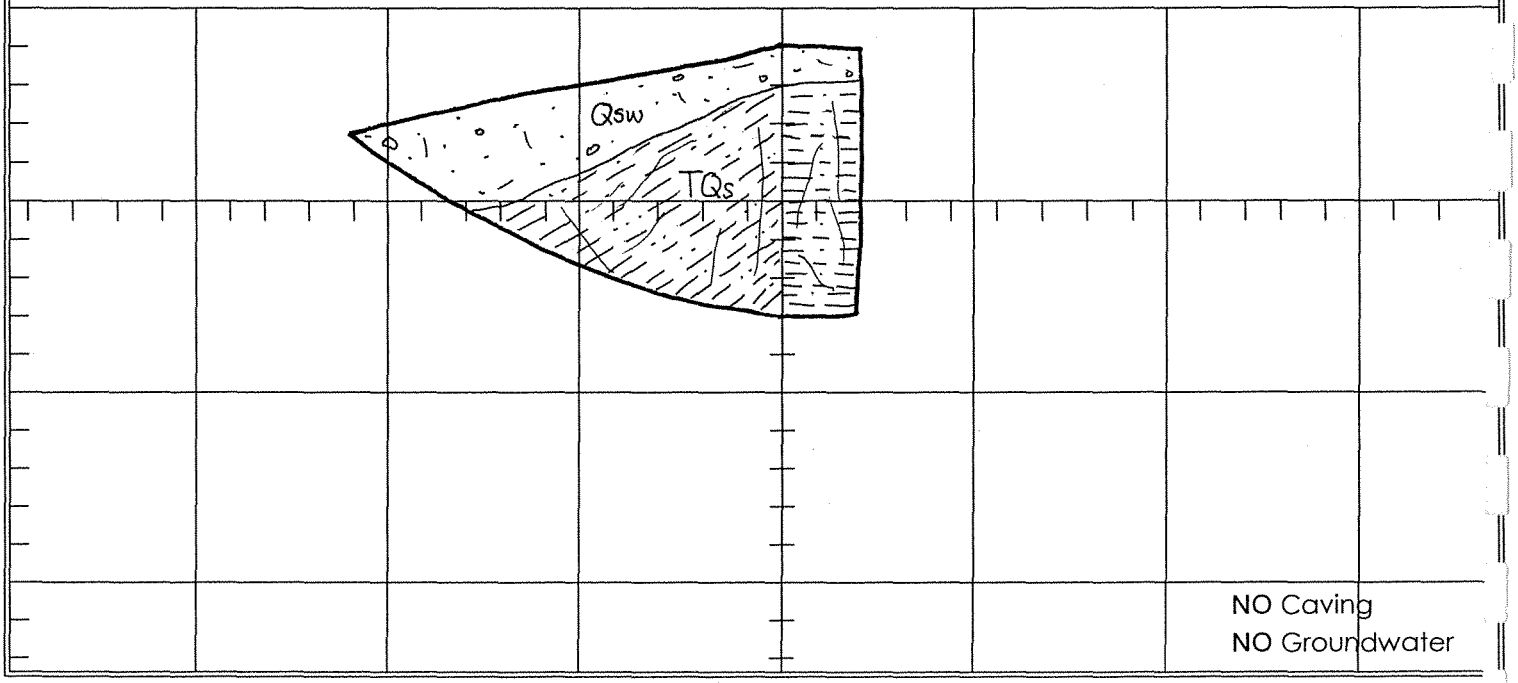
CLIENT: Newhall Ranch Company
PROJECT: Mesas East
EXCAVATION METHOD: Trackhoe

JOB NO: 04-2023-4
DATE: 7/22/04
LOGGED BY: DGG
EXCAVATED: 11/18/03
ELEVATION: 1402

TRENCH LOG NO. T-91T

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-1')** @ 0' Silty clay; firm; damp; grayish-brown **BEDROCK; TQs (1-7')** @ 1' Grayish-brown silty mudstone; moderately hard; damp; highly fractured with caliche	Apx. B:N52W,34NE			
5									
10									
15									
20									

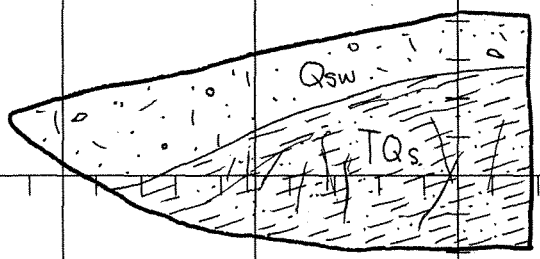
TOTAL DEPTH: 7 feet ←N55E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-92T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1345	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-1.5')** @ 0' Silty clay; firm; damp; grayish-brown **BEDROCK; TQs (1.5-6')** @ 1.5' Grayish-brown to brown silty mudstone; moderately hard to hard; damp; fractured with caliche	B:N35W,29NE			
5									
10									
15									
20									

TOTAL DEPTH: 6 feet ←N2W SCALE: 1 inch = 5 feet

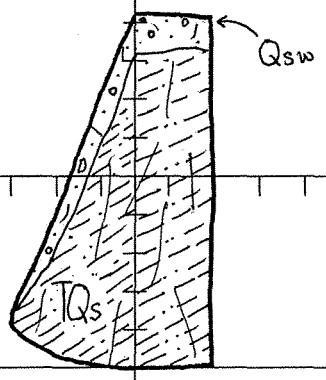


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-93T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1010	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-1')** @ 0' Silty clay; firm; damp; grayish-brown **BEDROCK; TQs (1-9')** @ 1' Grayish brown silty mudstone; moderately hard; damp; fractured	Apx. B:N49W,34NE			
5									
10									
15									
20									

TOTAL DEPTH: 9 feet ←N24W SCALE: 1 inch = 5 feet

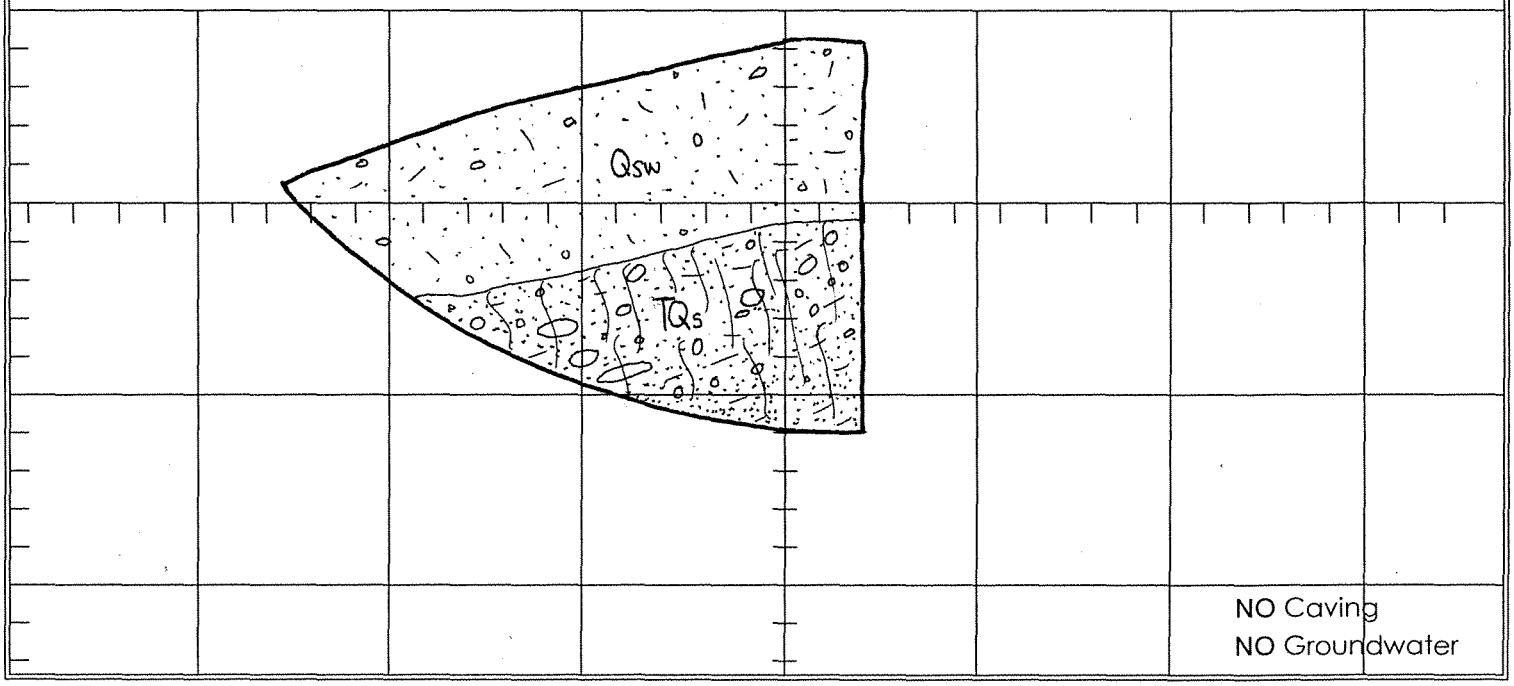


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-94T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1278	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-5')** @ 0' Sandy silty damp with gravel(cobbles); firm; damp; grayish-brown				
5					**BEDROCK; TQs (5-10')** @ 5' Grayish-brown pebbly cobbly silty sandstone and fine- to medium-grained sandstone; hard; damp; upper 2.5' highly weathered-punky; bottom 2.5' moderately friable				
10									
15									
20									

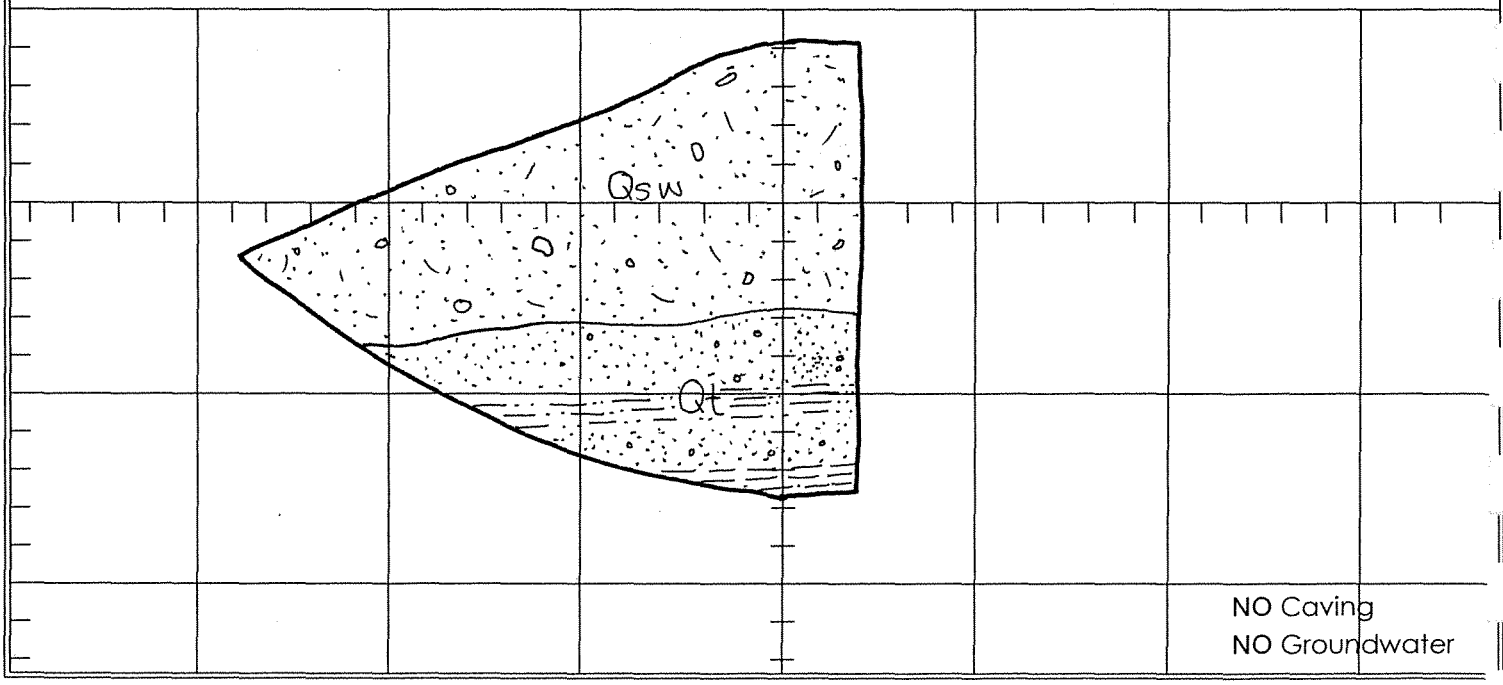
TOTAL DEPTH: 10 feet ←N23W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-95T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1180	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-7')** @ 0' Sandy silty clay with gravel; firm; damp; grayish-brown				
5					**QUATERNARY TERRACE DEPOSITS; Qt (7-12')** @ 7' Interbedded grayish-brown pebbly silty sandstone; fine- to medium-grained sandstone and siltstone; hard; damp; friable	~Horizontal			
10									
15									
20									

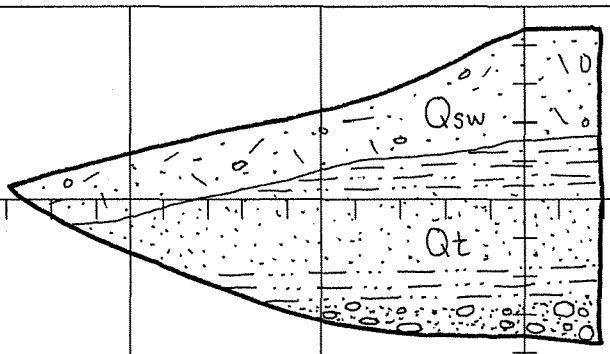
TOTAL DEPTH: 12 feet ←N37E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-96T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1190	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw (0-3')** @ 0' Tan to grayish-brown silty clay to mudstone; soft; damp; crumbly				
5					**QUATERNARY TERRACE DEPOSITS; Qt (3-8')** @ 3' Grayish-brown pebbly silty sandstone; silty mudstone and cobble pebble conglomerate; hard; damp; punky; friable	B~Horizontal			
10									
15									
20									

TOTAL DEPTH: 8 feet ←N29E SCALE: 1 inch = 5 feet

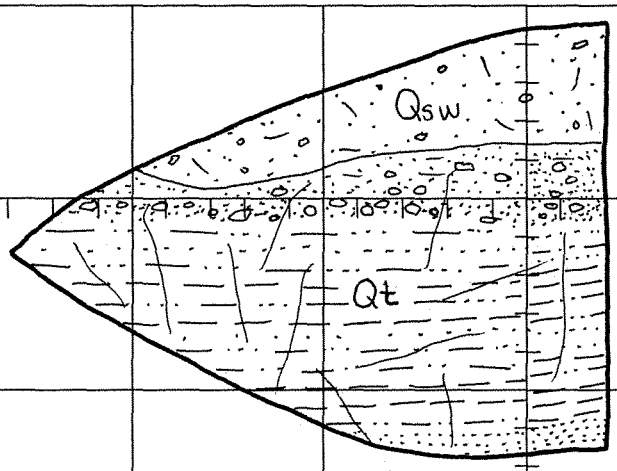


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-97T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1155	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-3')** @ 0' Sandy silty clay; firm; damp; grayish-brown				
					QUATERNARY TERRACE DEPOSITS; Qt (3-11') @ 3' Yellowish- to grayish-brown cobbley silty sand/sandy silt and sitly mud; moderately hard; damp; fractured; caliche; locally crumbly; bottom 1' sand-friable	B:~Horizontal			
5									
10									
15									
20									

TOTAL DEPTH: 11 feet ←N27E SCALE: 1 inch = 5 feet

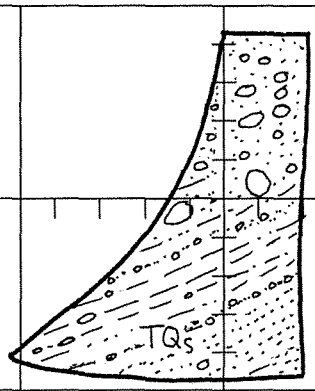


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-98T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1135	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**BEDROCK; TQs (0-9')** @ 0' Grayish-brown silty sandstone; fine- to medium-grained sandstone and pebble cobble conglomerate; loose to slightly hard; damp; friable	Apx. B:N60W,25NE			
5									
10									
15									
20									

TOTAL DEPTH: 9 feet ←N2E SCALE: 1 inch = 5 feet

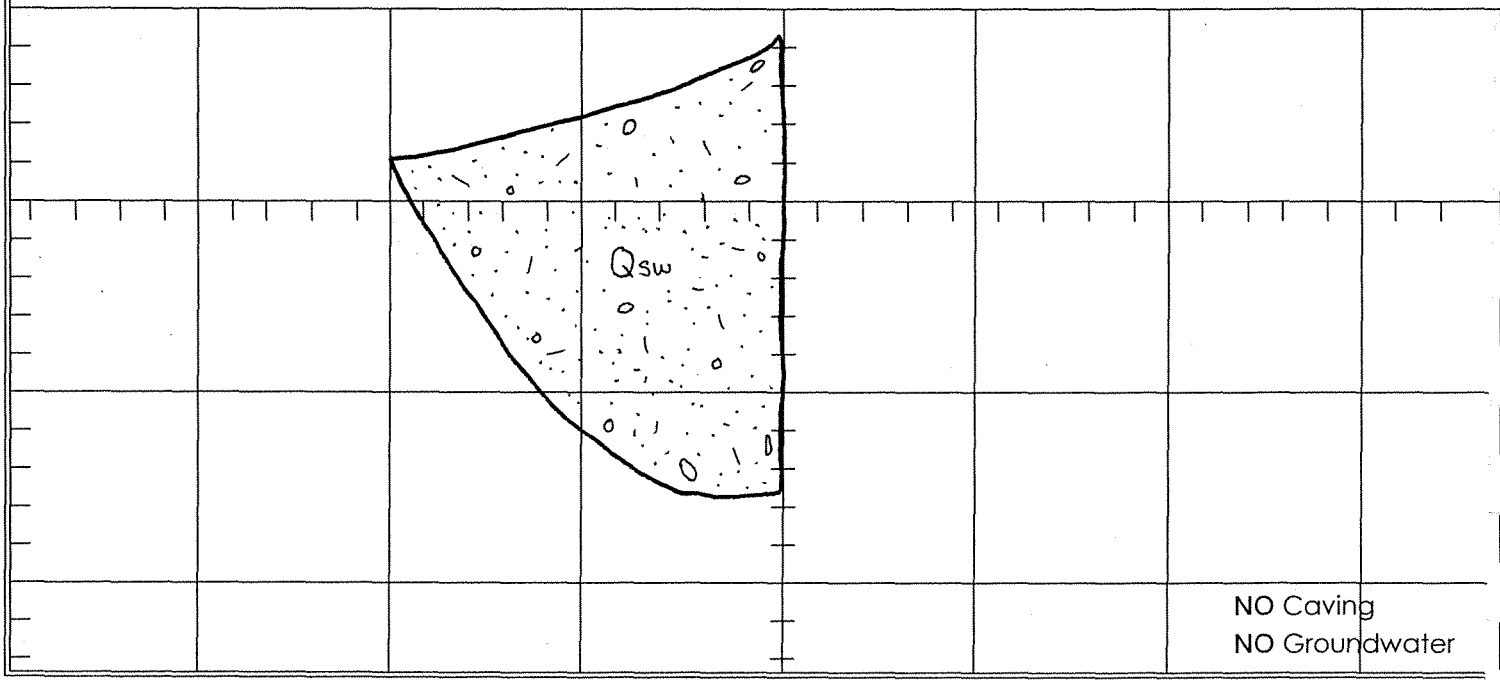


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-99T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/18/03	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1062	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-12')** @ 0' Sandy silty clay with gravel (cobbles/boulders); soft; damp; grayish-brown				
5									
10									
15					COMMENTS: -Surface logged				
20									

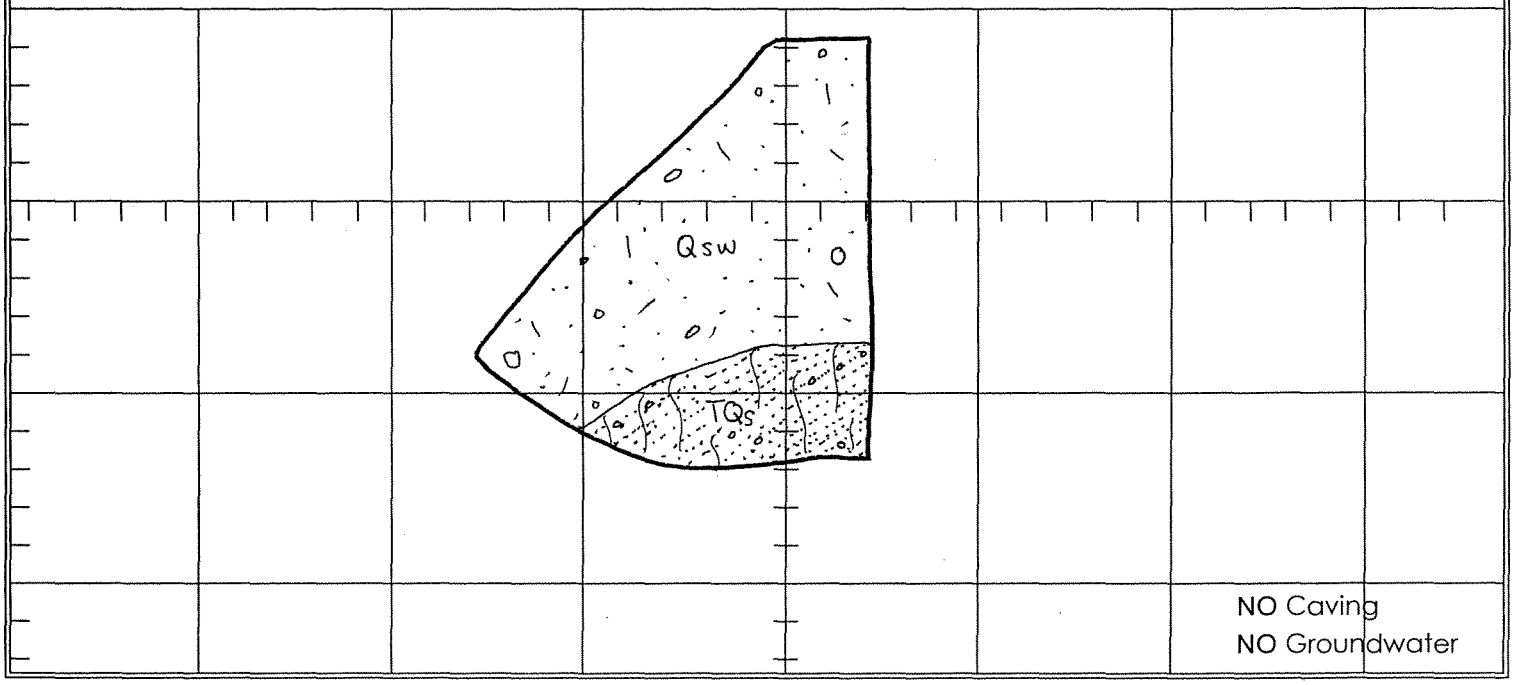
TOTAL DEPTH: 12 feet N35W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-100T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1010	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-8')** @ 0' Sandy silty clay with gravel; soft to firm; damp; grayish-brown				
5									
10					**BEDROCK; TQs (8-11')** @ 8' Grayish-brown silty to pebbly sandstone; moderately hard; damp; moderately friable; weathered	Apx. B:N45W,26NE			
15									
20									

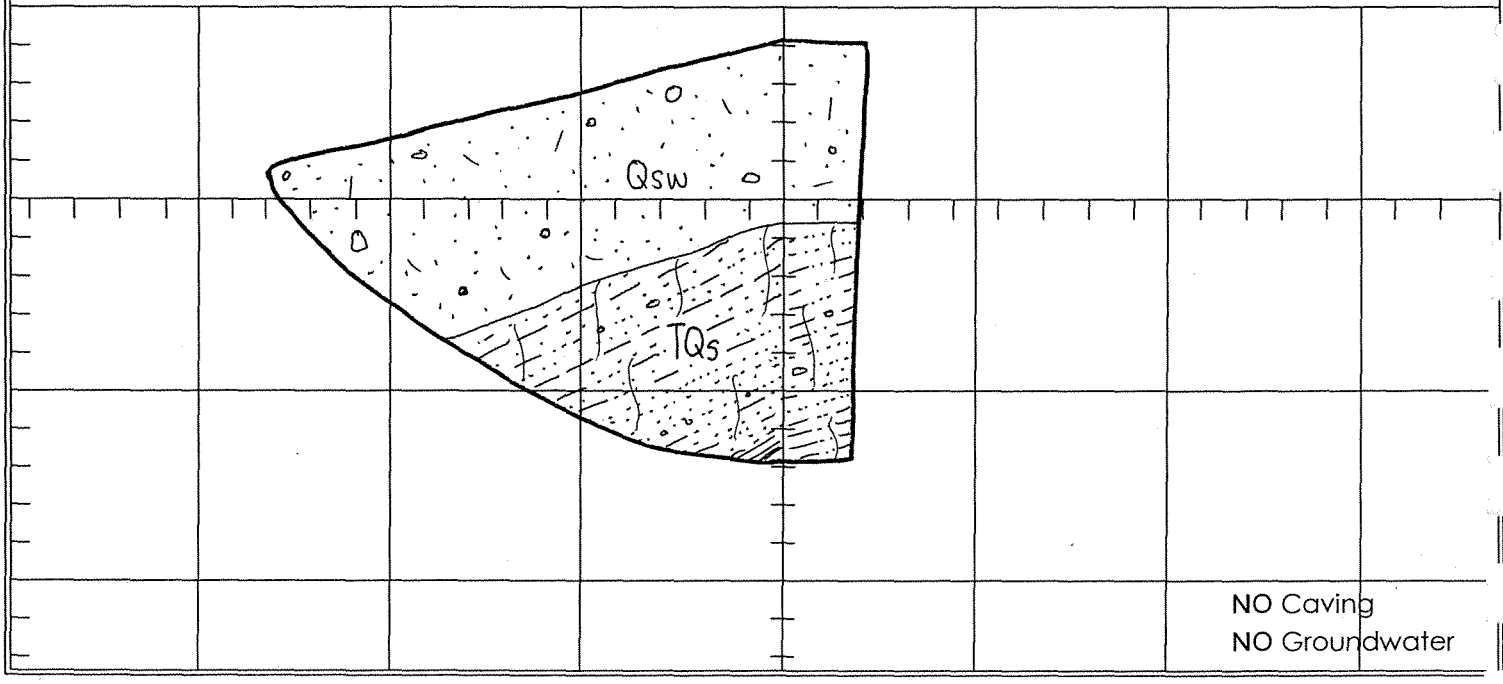
TOTAL DEPTH: 11 feet ←N55E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-101T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1491	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-5')** @ 0' Sandy silty clay with gravel; firm; damp; grayish-brown				
5					**BEDROCK; TQs (5-11')** @ 5' Grayish-brown silty sandstone, pebbly silty sandstone and silty mudstone; moderately hard; damp; weathered; moderately friable	Apx. B:N59W,24NE			
10									
15									
20									

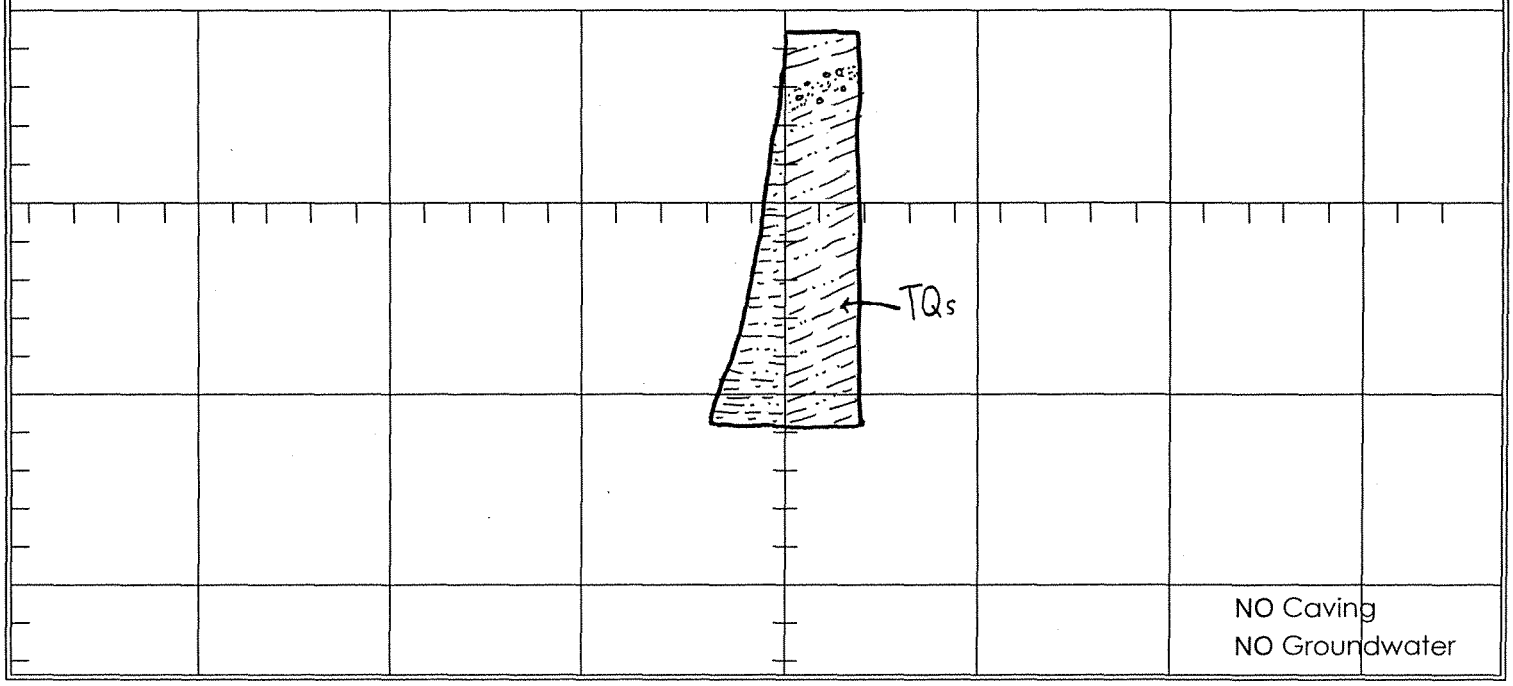
TOTAL DEPTH: 11 feet ←N2W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-102T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1280	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-10')** @ 0' Yellowish- to grayish-brown pebbly sandy siltstone and silty mudstone; moderately hard to hard; damp				

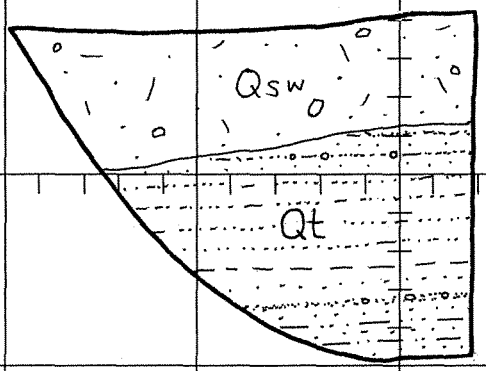
TOTAL DEPTH: 10 feet ←N22W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-103T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1305	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-3')** @ 0' Sandy silty clay with gravel; soft to firm; damp; grayish-brown				
					QUATERNARY TERRACE DEPOSITS; Qt (3-9') @ 3' Grayish-brown silty sandstone, pebbly silty sandstone and siltstone; hard; damp; friable	~Horizontal			
5									
10									
15									
20									

TOTAL DEPTH: 9 feet N40W→ SCALE: 1 inch = 5 feet

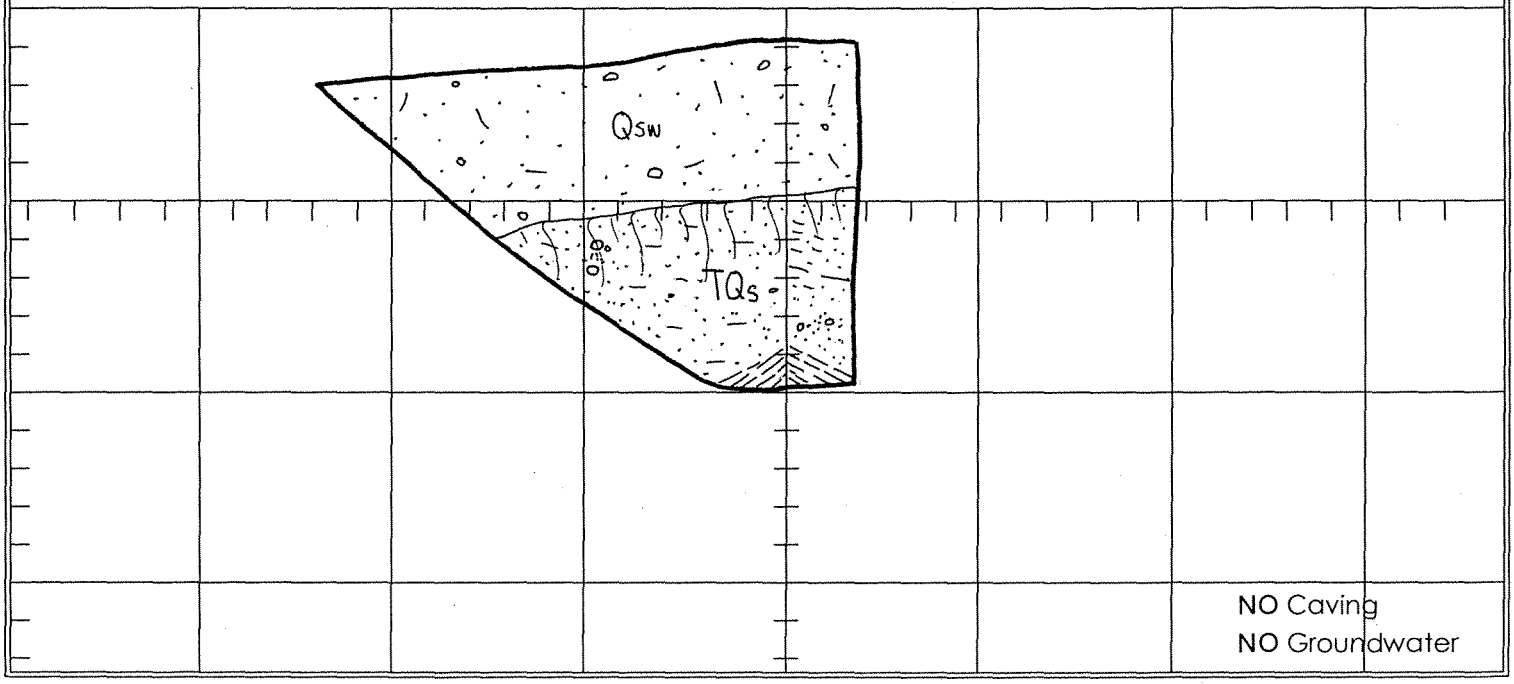


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-104T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1309	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw (0-4')** @ 0' Sandy silty clay with gravel; soft to firm; damp; grayish-brown				
5					**BEDROCK; TQs (4-9')** @ 4' Yellowish-brown to light gray silty sandstone, pebbly silty sandstone and siltstone; hard; damp; upper 4' highly weathered; bottom 1'-caliche	Apx. B:N12W,24NE			
10									
15									
20									

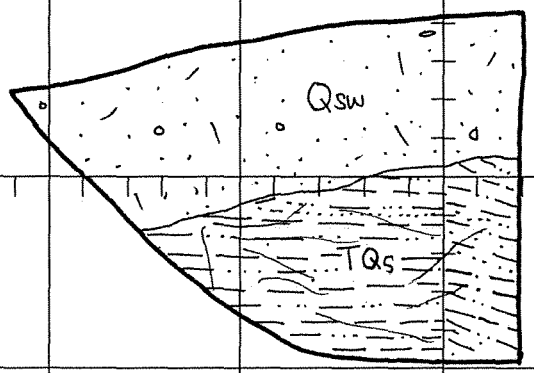
TOTAL DEPTH: 9 feet N43W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-105T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1326	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-4')** @ 0' Silty clay; soft to firm; damp; yellowish- to grayish-brown				
5					**BEDROCK; TQs (4-9')** @ 4' Yellowish- to grayish-brown silty mudstone; moderately hard; damp; fractured with caliche	B:N23W,21NE			
10									
15									
20									

TOTAL DEPTH: 9 feet N16W→ SCALE: 1 inch = 5 feet



NO Caving
NO Groundwater

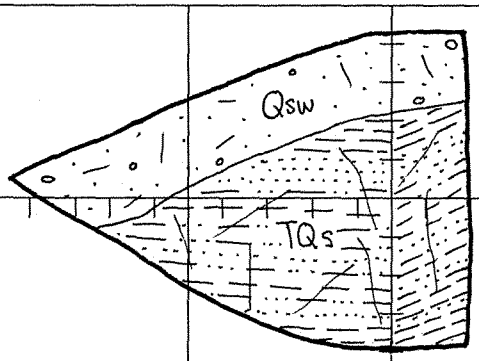
CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-106T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1343	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-2')** @ 0' Silty clay; firm; damp; yellowish- to grayish-brown				
					BEDROCK; TQs (2-8') @ 2' Yellowish- to grayish-brown silty sandstone and siltstone; hard; damp; fractured-locally crumbly	B:N38W,26NE			
5									
10									
15									
20									

TOTAL DEPTH: 8 feet

Due E→

SCALE: 1 inch = 5 feet



NO Caving
NO Groundwater

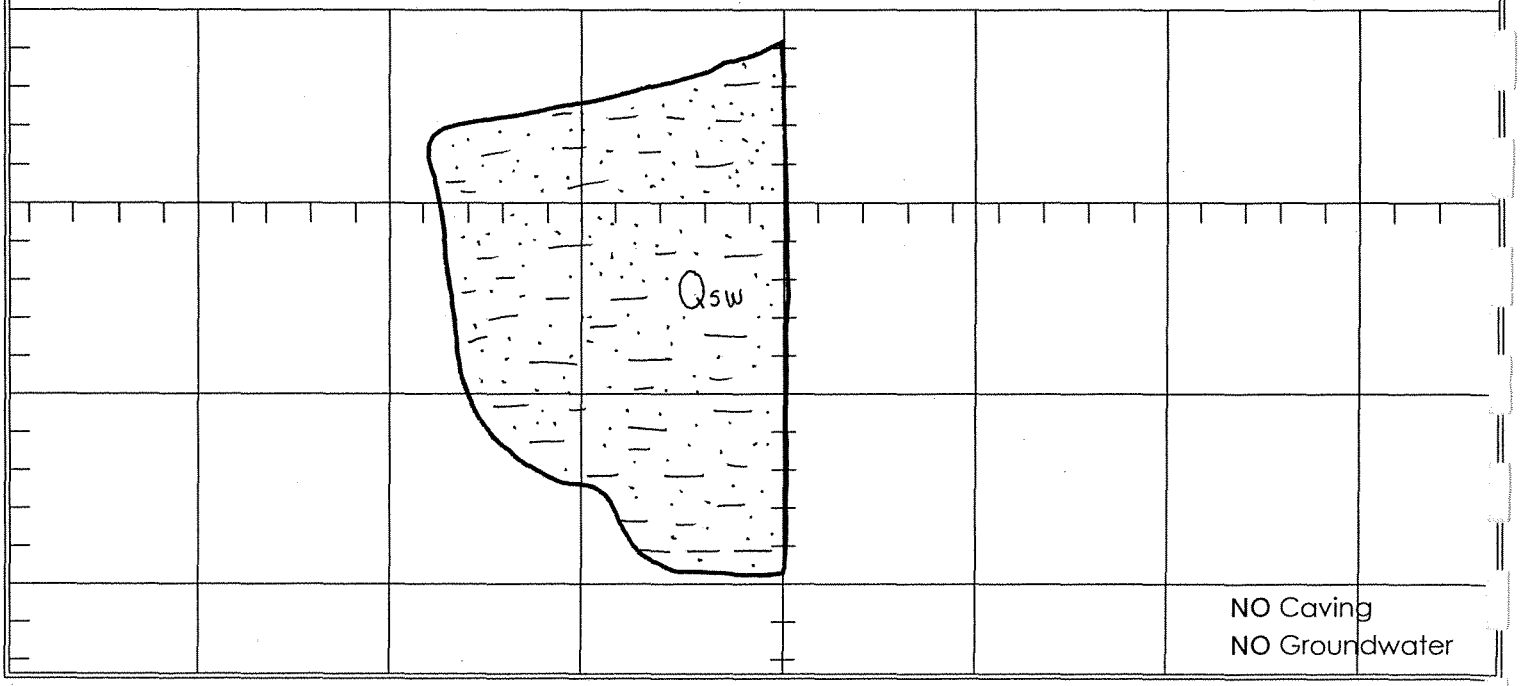
CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-107T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1404	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-14')** @ 0' Sandy silty clay; firm to stiff; damp; yellowish- to grayish-brown				
5									
10									
15					COMMENTS: -Surface logged				
20									

TOTAL DEPTH: 14 feet

N48W→

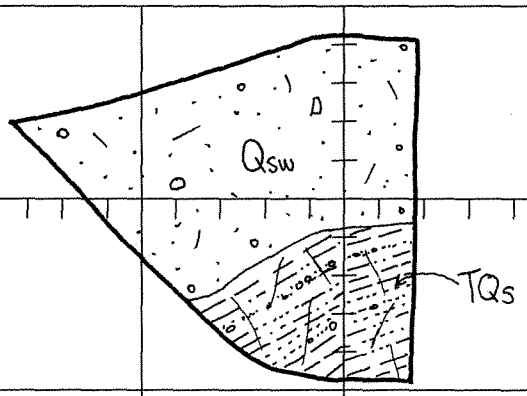
SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-108T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1425	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-5')** @ 0' Sandy silty clay with gravel; firm; damp; yellowish- to grayish-brown				
5					**BEDROCK; TQs (5-9')** @ 5' Yellowish- to grayish-brown sandy siltstone, siltstone and pebbly silty sandstone; moderately hard to hard; damp; fractured with caliche	B:N37W,38NE			
10									
15									
20									

TOTAL DEPTH: 9 feet ←N32E SCALE: 1 inch = 5 feet

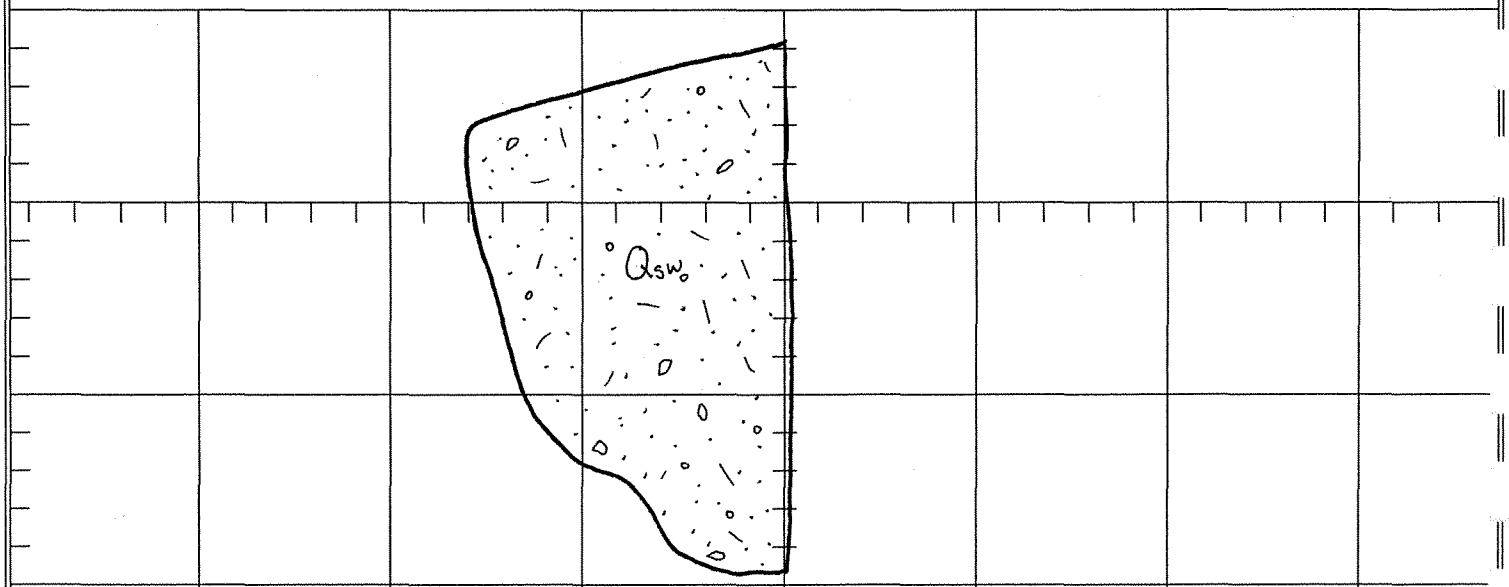


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-109T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1382	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-14')** @ 0' Sandy silty clay with gravel; soft to stiff; damp; yellowish- to grayish-brown				
5									
10									
15									
20									

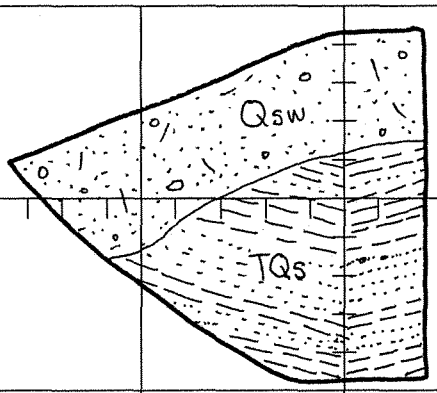
TOTAL DEPTH: 14 feet ←N34E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-110T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/19/03	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1354	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-3')** @ 0' Sandy silty clay with gravel; soft to firm; damp; yellowish- to grayish-brown **BEDROCK; TQs (3-9')** @ 3' Yellowish- to grayish-brown silty sandstone; pebbly silty sandstone and siltstone; moderately hard; damp; moderately friable	B:N49W,18NE			
5									
10									
15									
20									

TOTAL DEPTH: 9 feet N59E→ SCALE: 1 inch = 5 feet

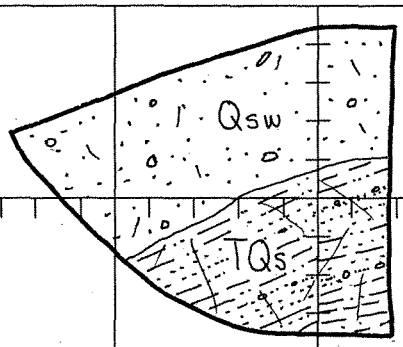


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-111T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 11/20/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1412	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-3.5')** @ 0' Sandy silty clay; soft to firm; damp; yellowish- to grayish-brown				
5					**BEDROCK; TQs (3.5-8')** @ 3.5' Yellowish- to grayish-brown fine- to medium-grained sandstone and siltstone; moderately hard to hard; damp; locally fractured	B:N43W,25NE			
10									
15									
20									

TOTAL DEPTH: 8 feet ←N43E SCALE: 1 inch = 5 feet

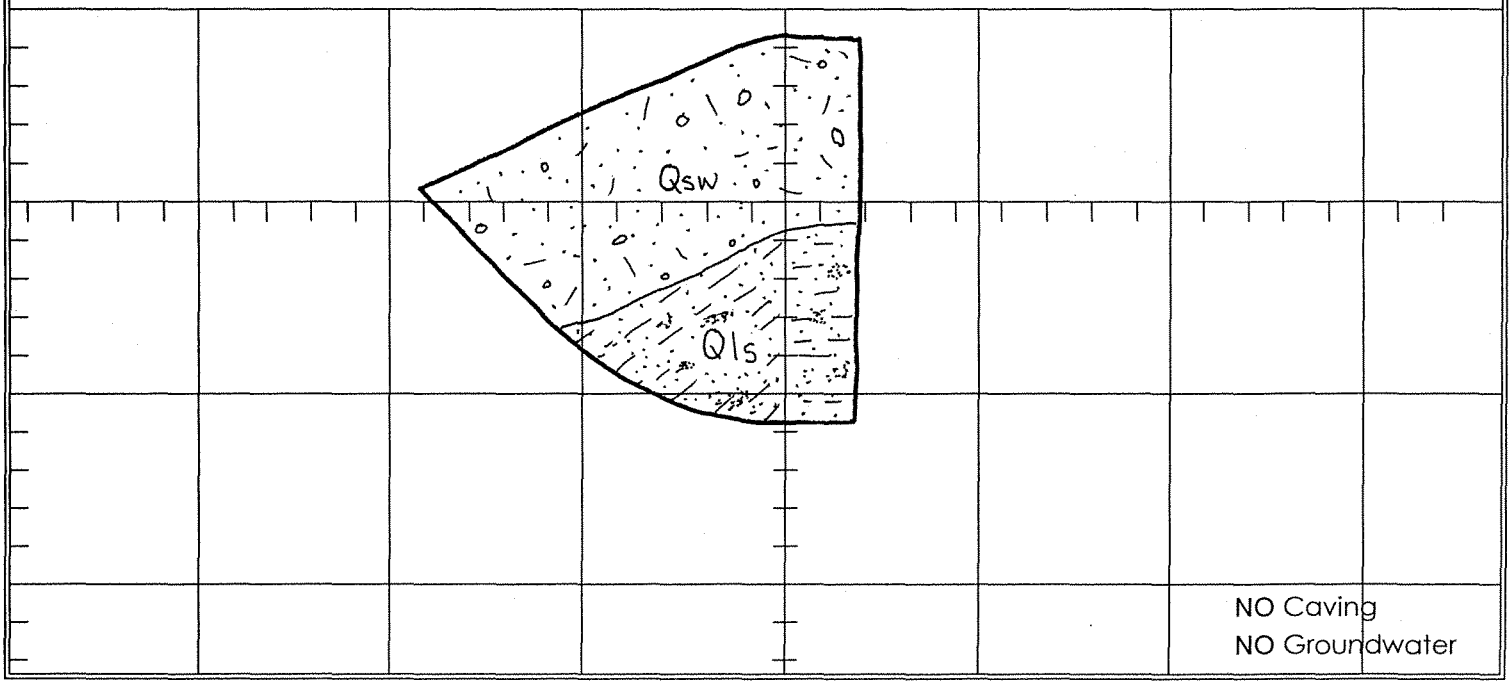


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-112T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 11/20/03	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1404	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0				CL-ML	**SOIL/SLOPEWASH; Soil/Qsw (0-5')** @ 0' Sandy silty clay; soft to firm; damp; yellowish- to grayish-brown				
5					**QUATERNARY LANDSLIDE; Qls (5-10')** @ 5' Yellowish- to grayish-brown silty mudstone with patches of pebbly sandstone; moderately hard; caliche				
10									
15									
20									

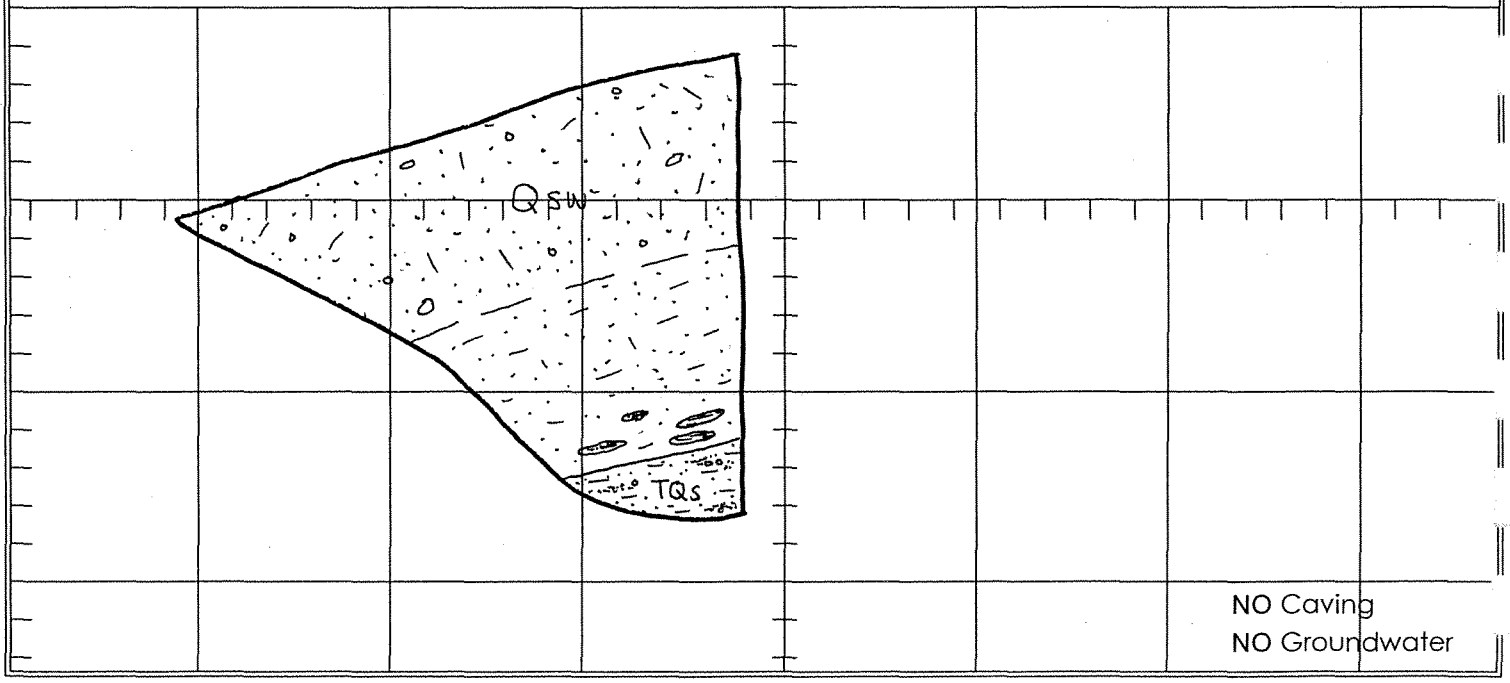
TOTAL DEPTH: 10 feet ←N53E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-114T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: SKM	
	EXCAVATED: 11/25/03	
EXCAVATION METHOD: Trackhoe	ELEVATION: 14??	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Soil/Qsw (0-5')** @ 0' Medium brown to reddish-brown clayey; sandy silt with pebbles; stiff; dry to damp				
5					**SURFICIAL FAILURE (5-10.5')** @ 5' Light yellowish-brown sandy silty matrix with pieces of mudstone				
10					**BEDROCK; TQs (10.5-12')** @ 10.5' Medium brown sandy siltstone with local pebbles; massive; moderately hard to hard; dry to damp	Slip surface N50W, 14NE			
15					COMMENTS: -Highly weathered down to 10.5' -Excavated below T-61T to check depth for furture dozer/trench excavation				
20									

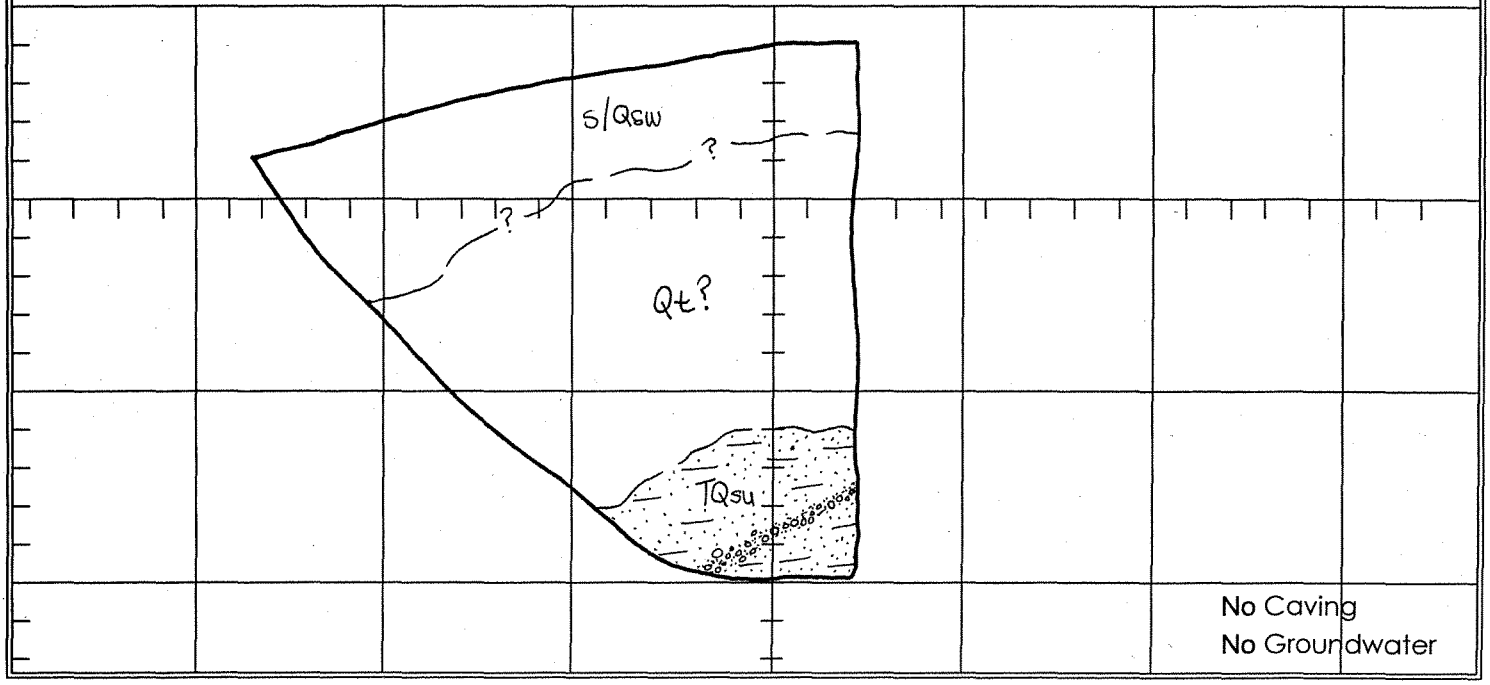
TOTAL DEPTH: 12 feet ←N20E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 04-2023A-4	**TRENCH LOG NO. T-115T**
PROJECT: Mesas East Access Road	DATE: 12/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe	ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-2.5')** @ 0' Sandy, silty clay; soft to firm; damp; medium brown **QUATERNARY TERRACE DEPOSITS?; Qt? (2.5-10')** @ 2.5' Pebbly, sandy silt to clay; stiff; damp; yellowish to medium brown; scattered cobbles				
5									
10					**BEDROCK; TQsu (10-14')** @ 10' Yellowish- to grayish-brown mudstone, siltstone, and pebbly silty sandstone; soft to moderately hard; damp; punky; sands are friable	(Very Apx.) B: N85W, 38NE			
15					**COMMENTS** Highly weathered to 13'				
20									

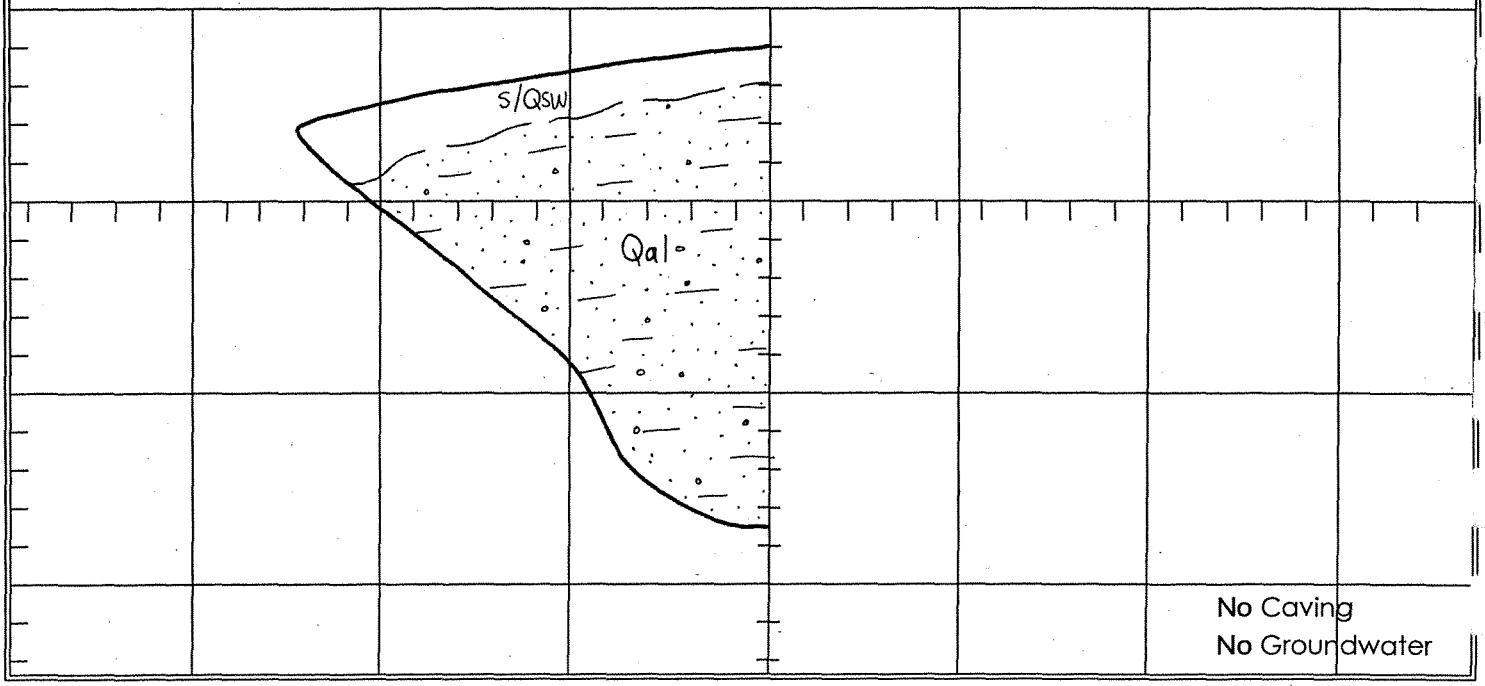
TOTAL DEPTH: 14 feet ←N21W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 04-2023A-4	**TRENCH LOG NO. T-116T**
PROJECT: Mesas East Access Road	DATE: 12/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe	ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-1')** @ 0' Pebbly sandy silt to clay; soft; damp; grayish brown **QUATERNARY ALLUVIUM; Qal (1-12.5')** @ 1' Sandy silty clay with scattered pebbles; stiff; damp; yellowish to grayish brown				
5									
10									
15					**COMMENTS** Surface logged below 5' Weathered down to 8'				
20									

TOTAL DEPTH: 12.5 feet N71E→ SCALE: 1 inch = 5 feet

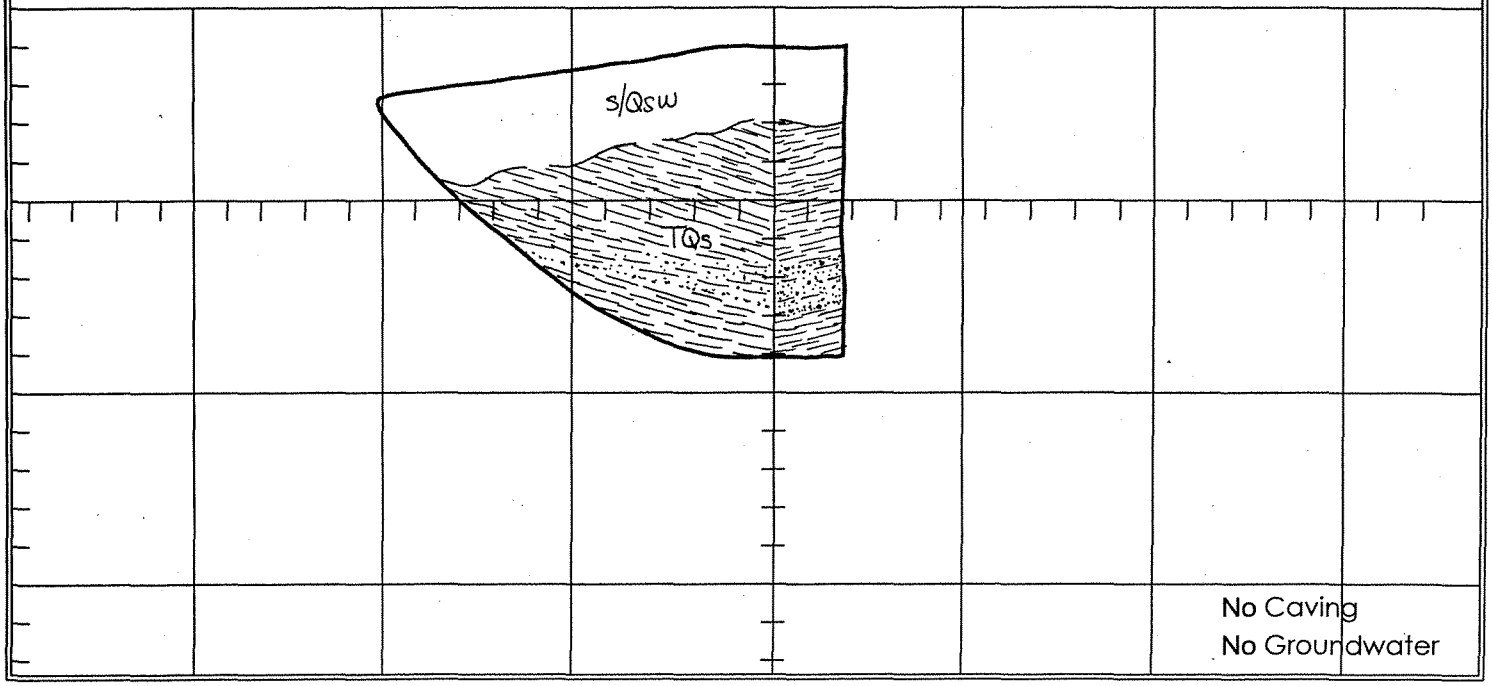


No Caving
No Groundwater

CLIENT: Newhall Ranch Co.	JOB NO: 04-2023A-4	**TRENCH LOG NO. T-117T**
PROJECT: Mesas East Access Road	DATE: 12/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe	ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-2')** @ 0' Silty clay; soft; damp; yellowish brown **BEDROCK; TQs (2-8')** @ 2' Yellowish- to grayish-brown mudstone, siltstone, and silty sandstone; soft to moderately hard; damp	XB: N26W, 18NE			
5									
					COMMENTS Highly weathered to 5'				
10									
15									
20									

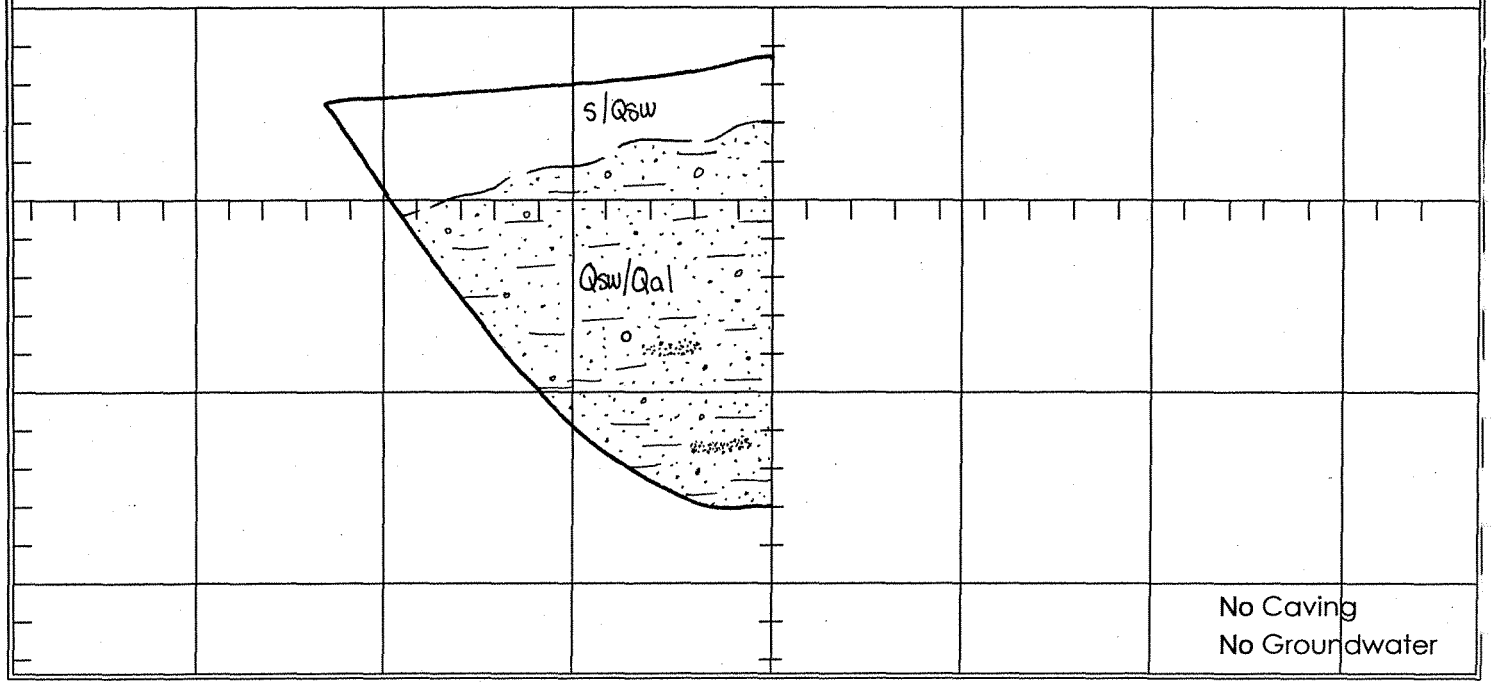
TOTAL DEPTH: 8 feet ←N79W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 04-2023A-4	**TRENCH LOG NO. T-118T**
PROJECT: Mesas East Access Road		DATE: 12-22-04	
		LOGGED BY: DGG	
		EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe		ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-2')** @ 0' Pebbly silty clay; soft; damp; grayish brown **SLOPEWASH/QUATERNARY ALLUVIUM; Qsw/Qal (2 12')** @ 2' Pebbly, sandy, silt to clay with pebbly sand lenses; firm to stiff; damp; yellowish to grayish brown; few scattered cobbles **COMMENTS** Highly weathered down to 7'				
5									
10									
15									
20									

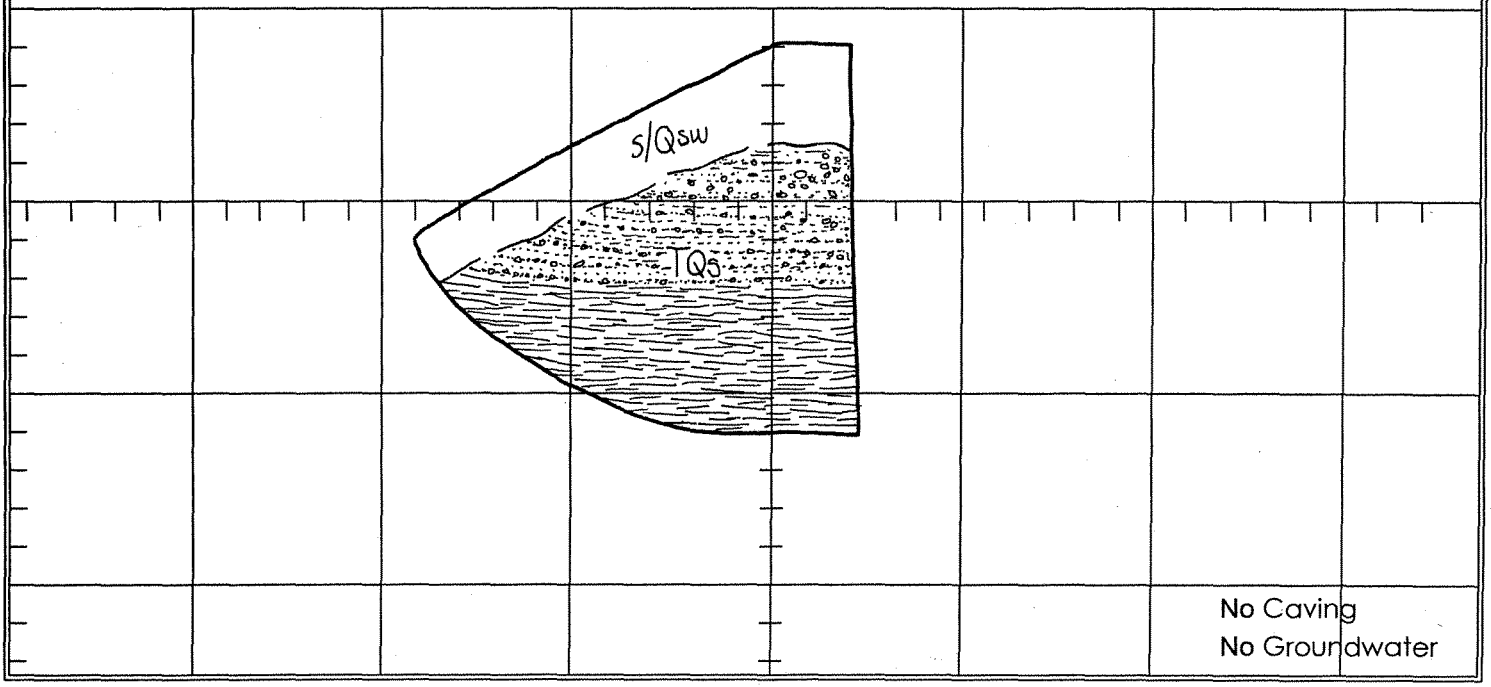
TOTAL DEPTH: 12 feet N52W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 04-2023A-4	**TRENCH LOG NO. T-119T**
PROJECT: Mesas East Access Road	DATE: 12/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe	ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-2.5')** @ 0' Pebbly silty clay; soft; damp; grayish brown **BEDROCK; TQs (2.5-10')** @ 2.5' Yellowish- to grayish-brown pebbly, silty sandstone and mudstone; sandstone is friable; mudstone is moderately hard to hard; damp; some fracture surfaces with caliche **COMMENTS** Highly weathered to 6'	Apx. B: N20W, 5NE			
5									
10									
15									
20									

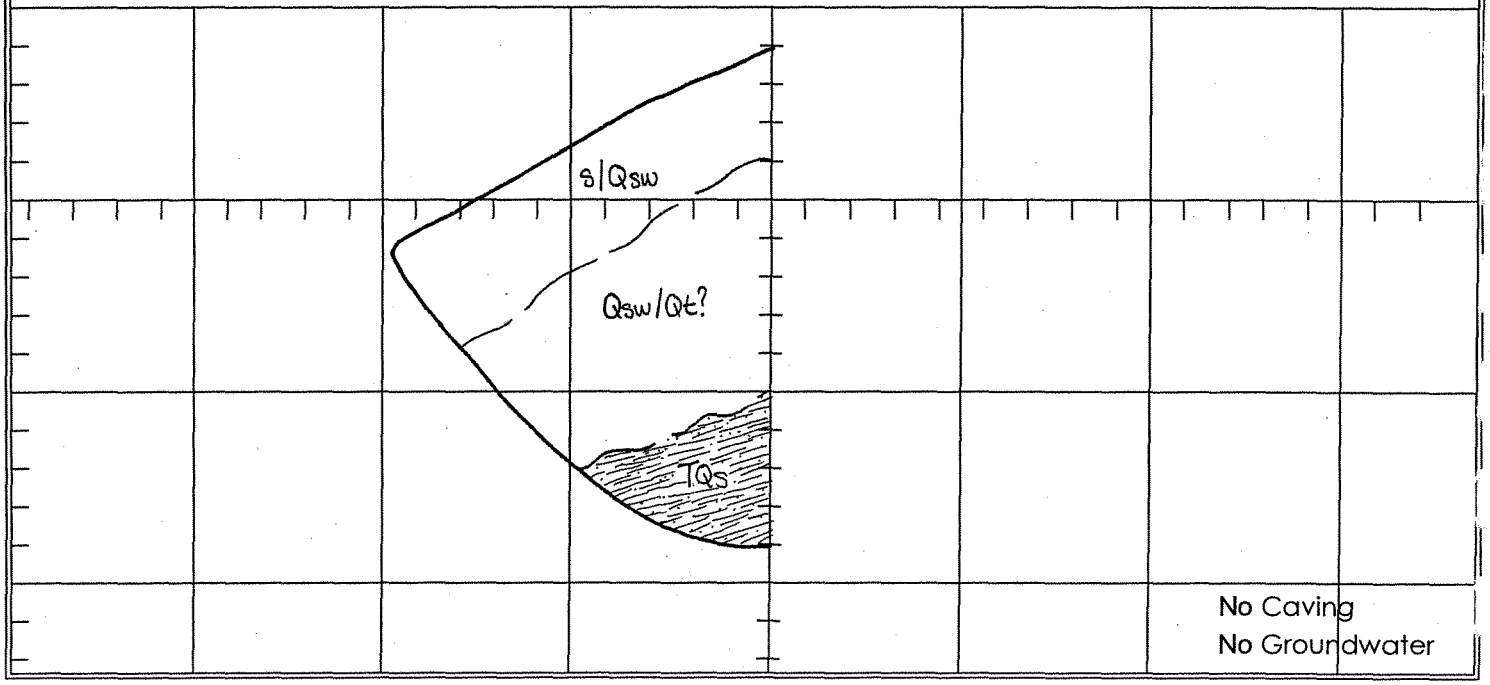
TOTAL DEPTH: 10 feet N55W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 04-2023A-4	**TRENCH LOG NO. T-120T**
PROJECT: Mesas East Access Road	DATE: 12/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe	ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-3')** @ 0' Pebbly, sandy silt to clay; soft to firm; damp; dark grayish brown				
5					**SLOPEWASH?/QUATERNARY TERRACE DEPOSITS?; Qsw?/ Qt? (3-9')** @ 3' Silty clay; hard; damp; grayish-brown				
10					**BEDROCK; TQs (9-13')** @ 9' Yellowish- to grayish-brown mudstone; hard; damp				
15					**COMMENTS** Highly weathered to 3'				
20									

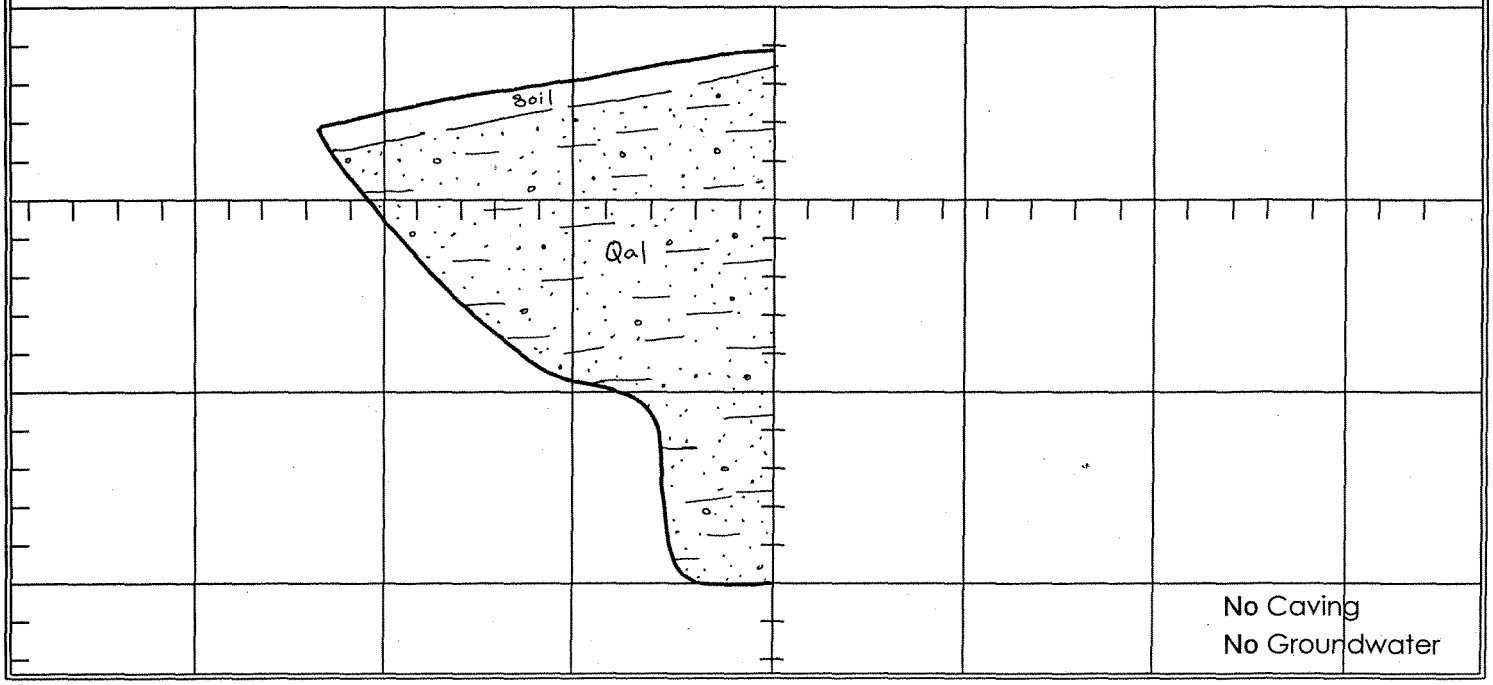
TOTAL DEPTH: 13 feet ←N62W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 04-2023A-4	**TRENCH LOG NO. T-121T**
PROJECT: Mesas East Access Road		DATE: 12/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe		ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL; s (0-0.5')** @ 0' Sandy silt to clay; soft to firm; damp; grayish- brown **QUATERNARY ALLUVIUM; Qal (0.5-14')** @ 0.5' Pebbly, sandy silt to clay; stiff to very stiff; damp; yellowish to grayish brown				
5									
10									
15					**COMMENTS** Surface logged below 6'				
20									

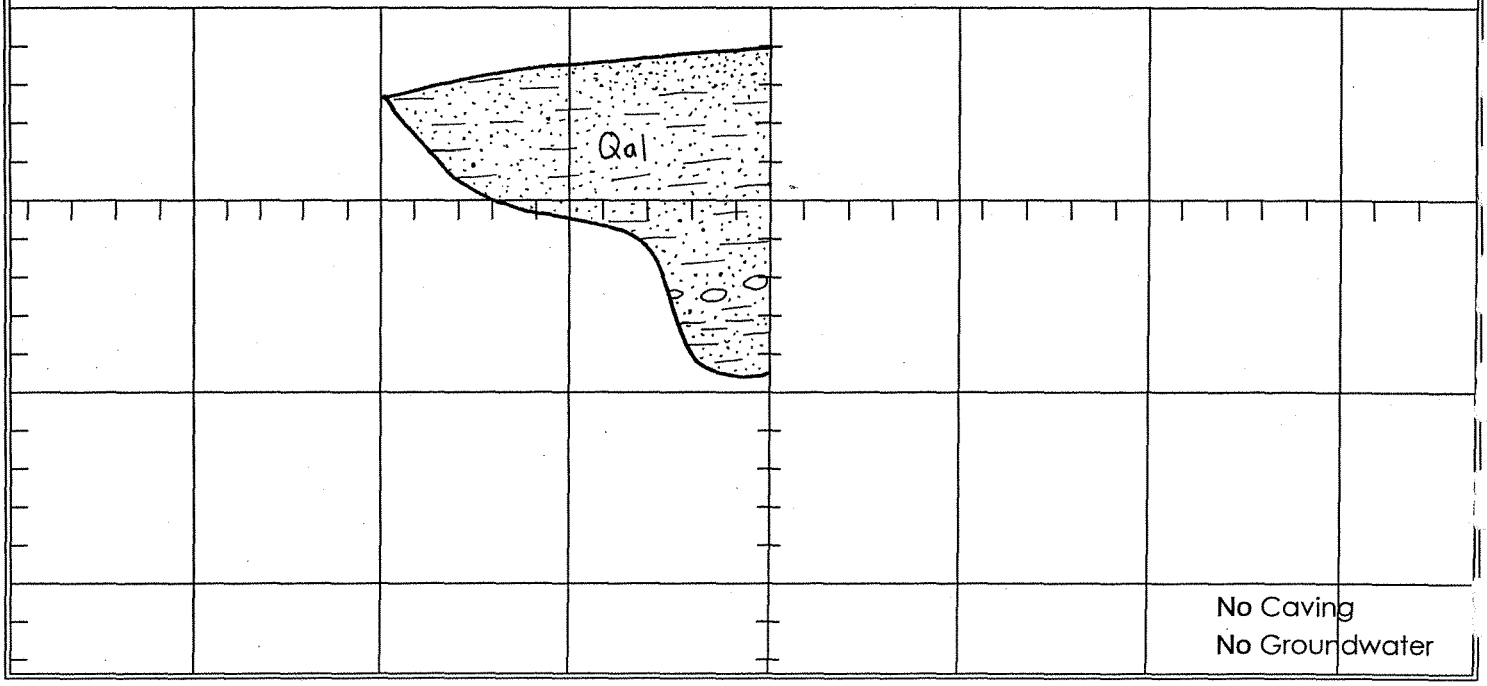
TOTAL DEPTH: 14 feet N38W→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 04-2023A-4	**TRENCH LOG NO. T-122T**
PROJECT: Mesas East Access Road		DATE: 12/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe		ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-8.5')** @ 0' Clay to silt to sandy silt; soft to very stiff; damp; yellowish to grayish brown; some large cobbles	B: Horiz			
5									
10									
15									
20									

TOTAL DEPTH: 8.5 feet ←N16W SCALE: 1 inch = 5 feet

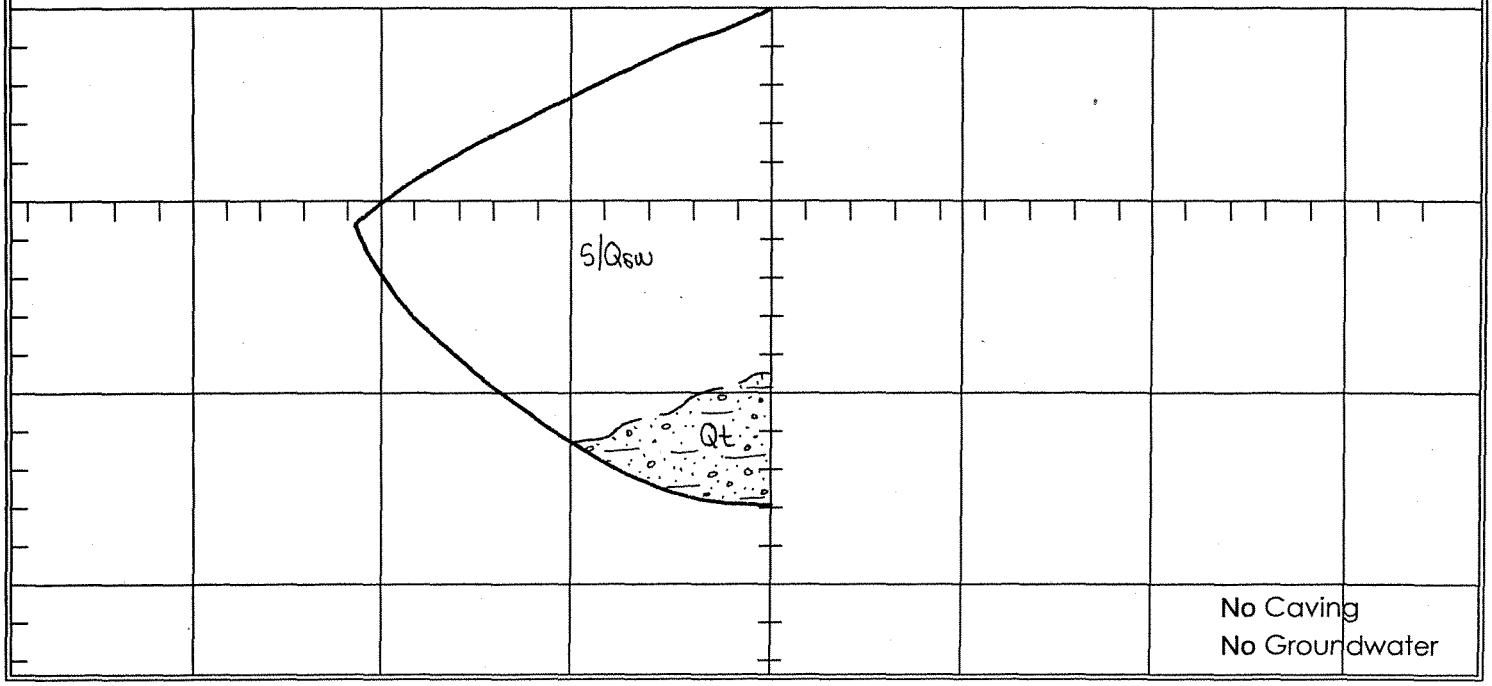


No Caving
No Groundwater

CLIENT: Newhall Ranch Co.		JOB NO: 04-2023A-4	**TRENCH LOG NO. T-123T**
PROJECT: Mesas East Access Road		DATE: 12/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe		ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-9.5')** @ 0' Pebbly, sandy silt to clay; firm to stiff; damp; yellowish to grayish brown				
5									
10					**QUATERNARY TERRACE DEPOSITS; Qt (9.5-13')** @ 9.5' Pebbly, sandy silt to clay; hard; damp; grayish brown				
15									
20									

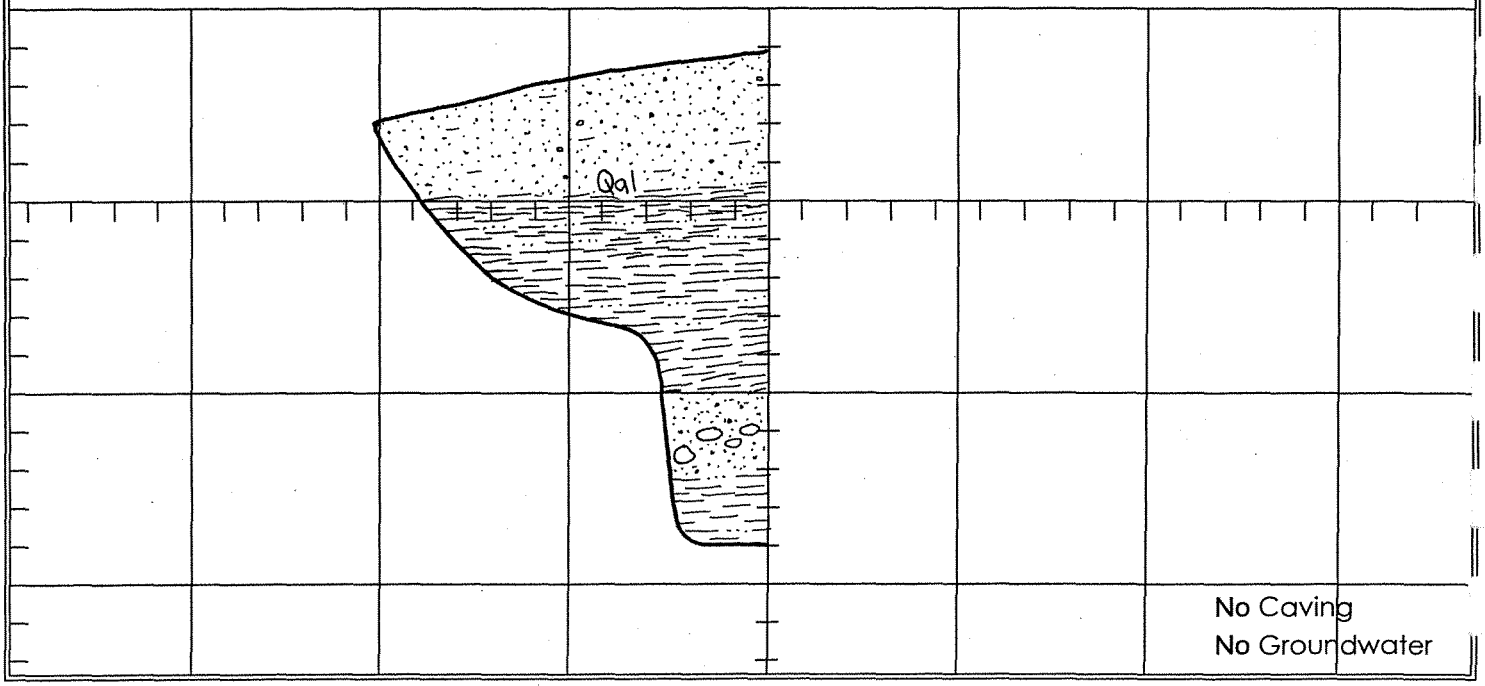
TOTAL DEPTH: 13 feet ←N60W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 04-2023A-4	**TRENCH LOG NO. T-124T**
PROJECT: Mesas East Access Road	DATE: 12/22/04	
	LOGGED BY: DGG	
	EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe	ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**QUATERNARY ALLUVIUM; Qal (0-13')** @ 0' Poorly graded sand with silt and gravel, silt and sandy, silty clay; firm to very stiff; damp; light grayish brown to medium to dark brown; some large cobbles; minor belling 9-11' @ 4-8' -stiff to very stiff; friable below 8' @ 12' -tighter/harder **COMMENTS** Surface logged below 6'				
5									
10									
15									
20									

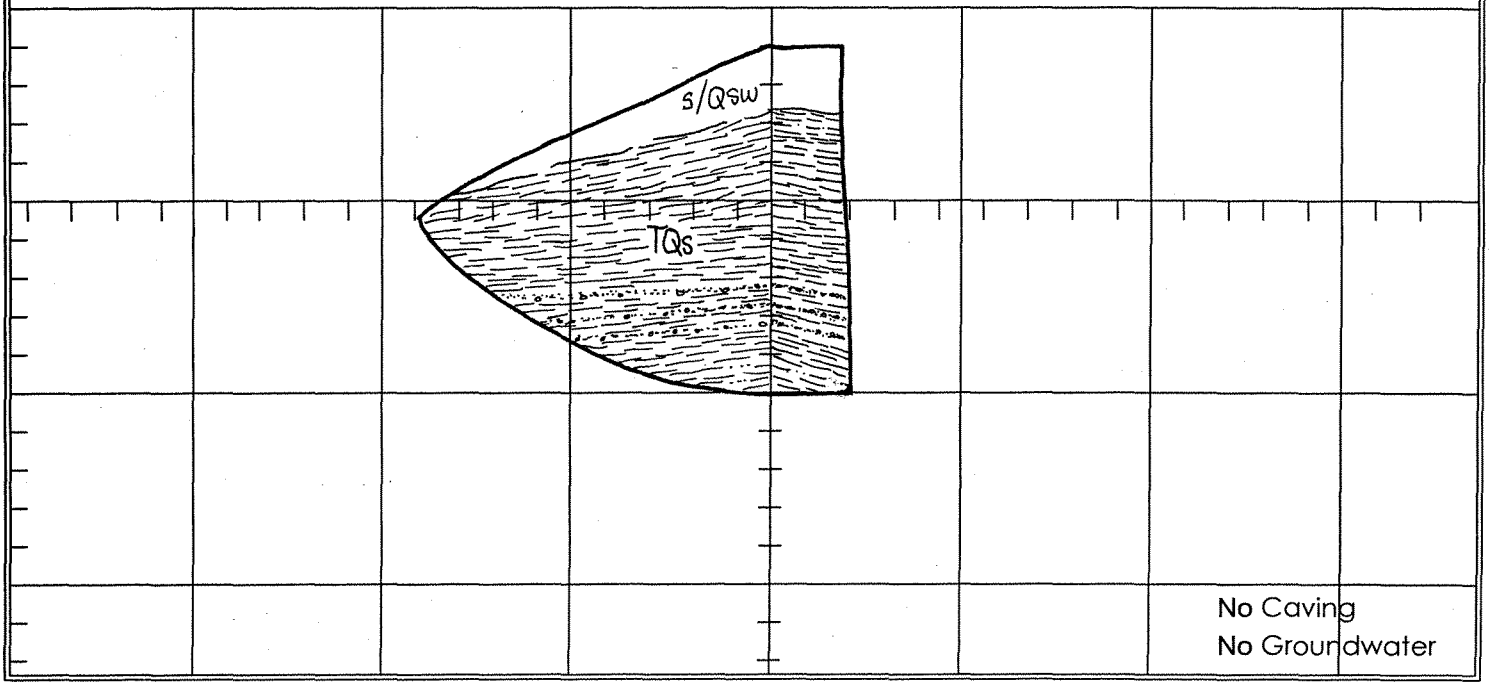
TOTAL DEPTH: 13 feet ←N11E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 04-2023A-4	**TRENCH LOG NO. T-125T**
PROJECT: Mesas East Access Road		DATE: 12/22/04	
		LOGGED BY: DGG	
		EXCAVATED: 1/12/04	
EXCAVATION METHOD: Trackhoe		ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-1.5')** @ 0' Sandy, silty clay; firm; damp; medium to dark brown **BEDROCK; TQs (1.5-9')** @ 1.5' Grayish-brown mudstone, siltstone and pebbly, silty sandstone to sandy siltstone; slightly to moderately hard; sandstones are friable; damp; caliche surfaces **COMMENTS** Highly weathered to 9'	B: N33W, 13NE			
5									
10									
15									
20									

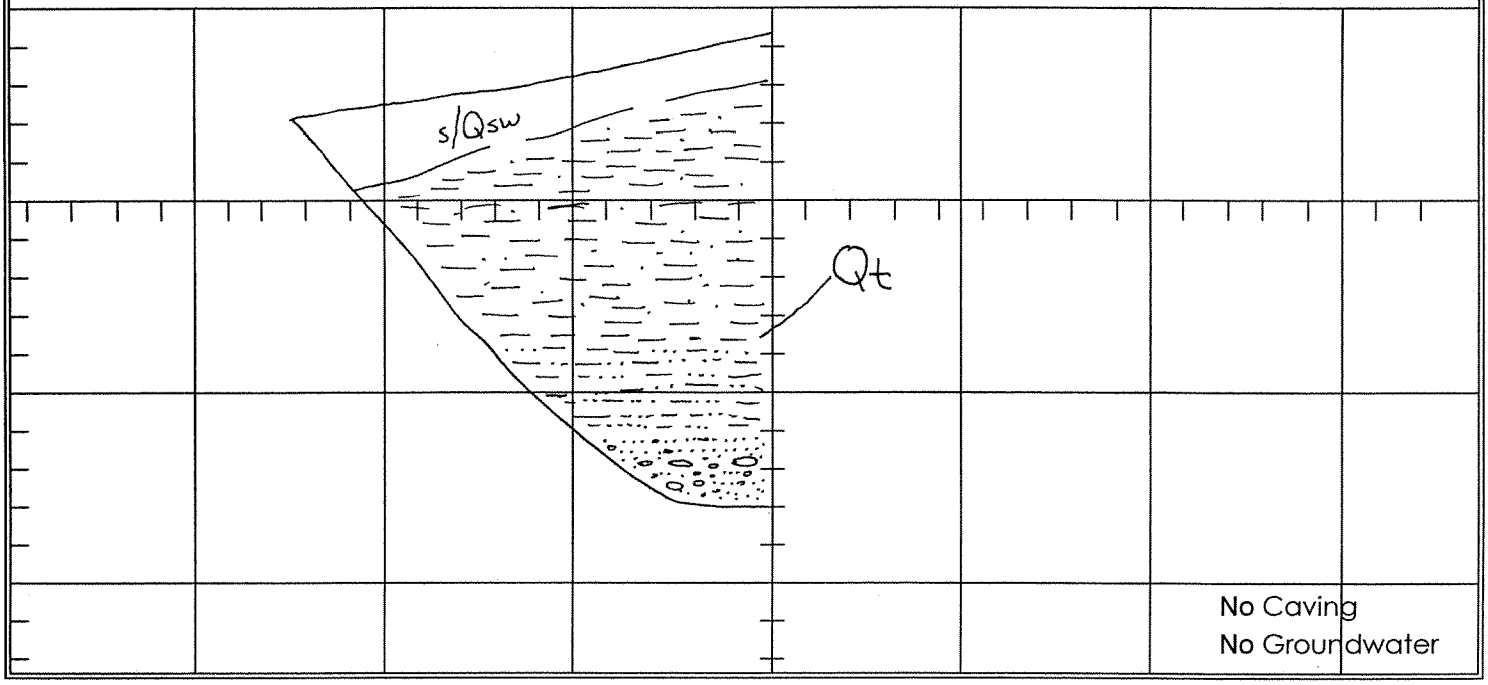
TOTAL DEPTH: 9 feet ←N81E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.	JOB NO: 04-2023A-4	**TRENCH LOG NO. T-126T**
PROJECT: Mesas East Access Road	DATE: 9/1/2004	
	LOGGED BY: DGG	
	EXCAVATED: 1/13/04	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1203'	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-1')** @ 0' Sandy, silty clay; stiff to very stiff; damp; reddish- to grayish- to medium brown **QUATERNARY TERRACE DEPOSITS; Qt (1-12')** @ 1' Silty clay, silt, and poorly graded sand with gravel; soft to stiff/loose; damp; yellowish- to grayish- brown and medium gray; some large cobbles; abundant caliche at 8'; punky, disturbed above 8'; minor belling below 10' **COMMENTS** Highly weathered to 8'	B: Horizontal			
5									
10									
15									
20									

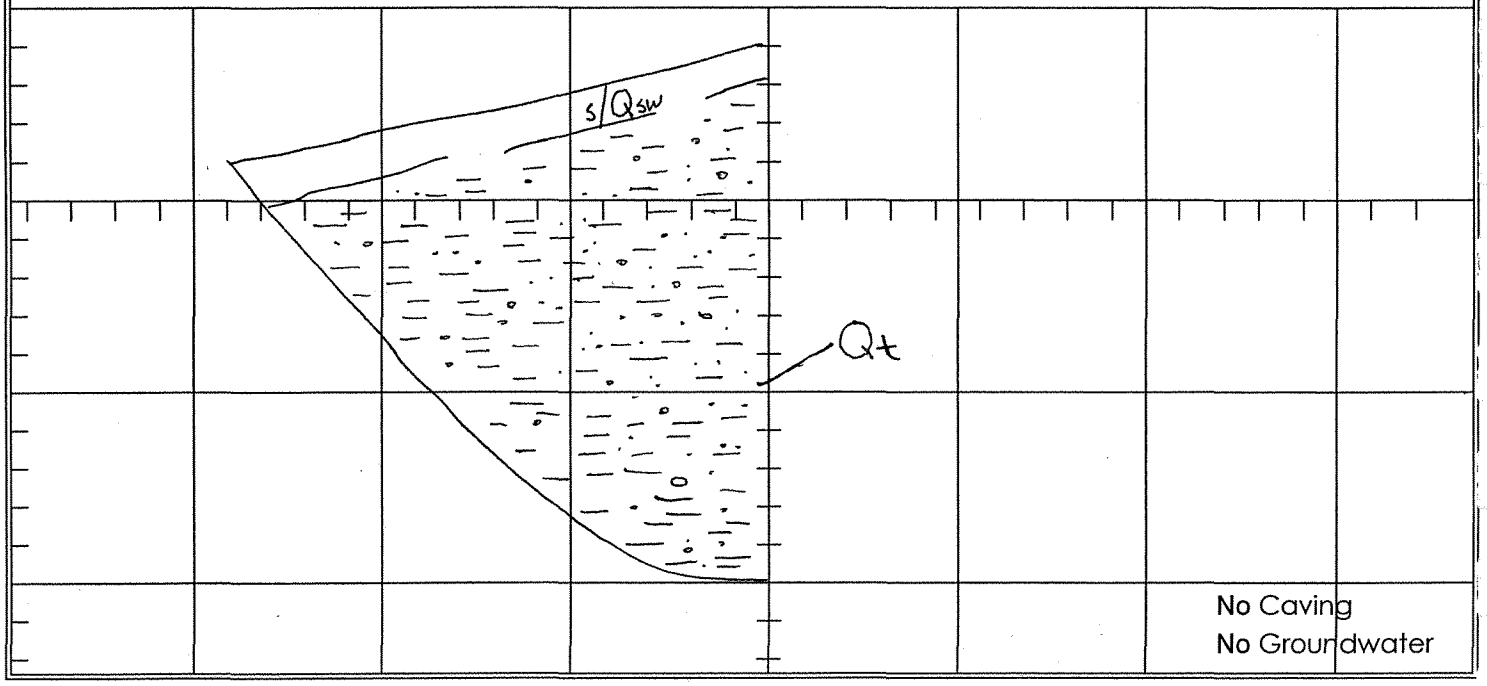
TOTAL DEPTH: 12 feet N55E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Co.		JOB NO: 04-2023A-4	**TRENCH LOG NO. T-127T**
PROJECT: Mesas East Access Road		DATE: 9/1/2004	
		LOGGED BY: DGG	
		EXCAVATED: 1/13/04	
EXCAVATION METHOD: Trackhoe		ELEVATION: 1178'	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; s/Qsw (0-1')** @ 0' Sandy, silty clay; firm; damp; medium to dark brown **QUATERNARY TERRACE DEPOSITS; Qt (1-14')** @ 1' Sandy, silty clay with gravel; stiff to locally very stiff; damp; medium brown				
5									
10									
15									
20									

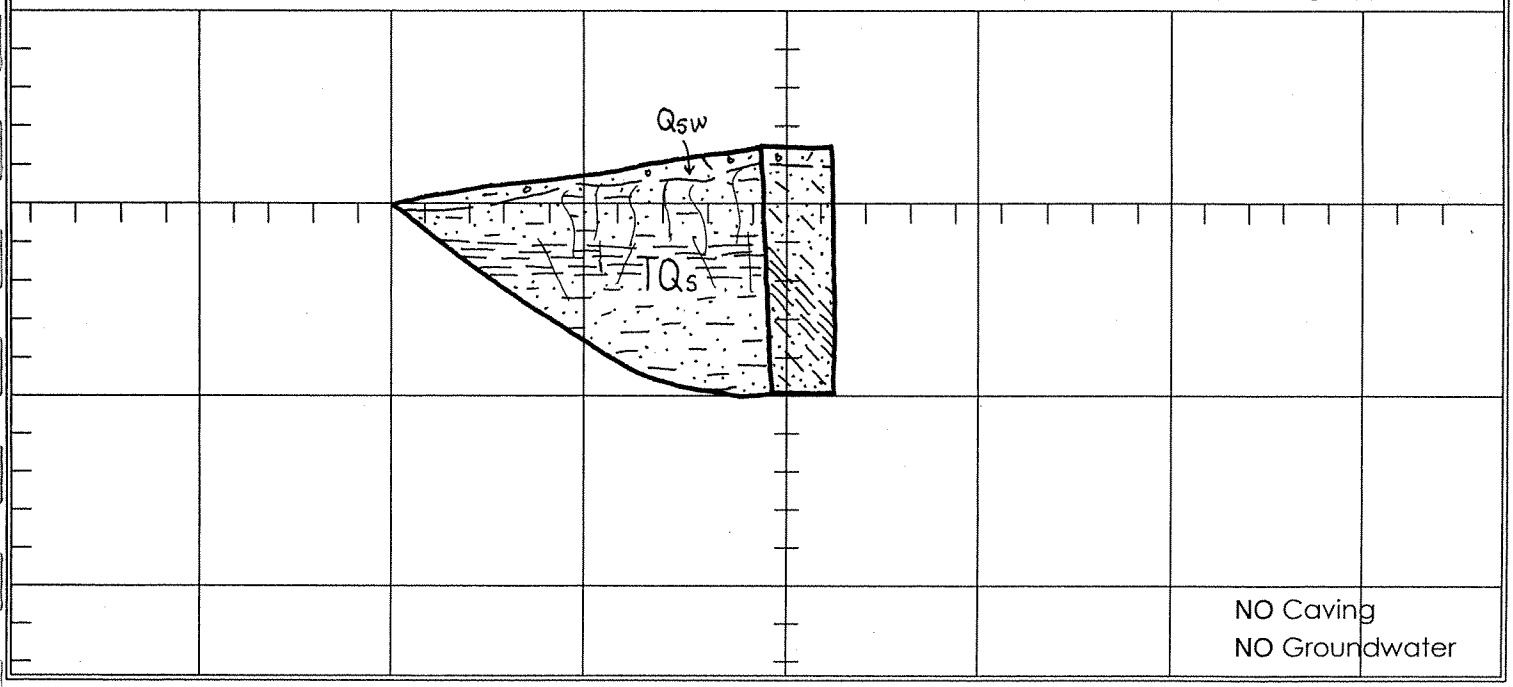
TOTAL DEPTH: 14 feet N82E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-128T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24' Bucket	ELEVATION: 1206	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SLOPEWASH; Qsw (0-0.5')** @ 0' Light brown silty sand; soft; moist; roots, voids **BEDROCK; TQs (0.5-6.5')** @ 0.5' Light brown sandy siltstone, brown siltstone and mudstone, and light gray fine-grained sandstone; moderately hard to hard; moist to damp; well-bedded; laminated; caliche in mudstone; highly to moderately fractured and weathered	Exc. B:N65W,52SW			
5									
10									
15					COMMENTS: -Highly weathered down to 4'				
20									

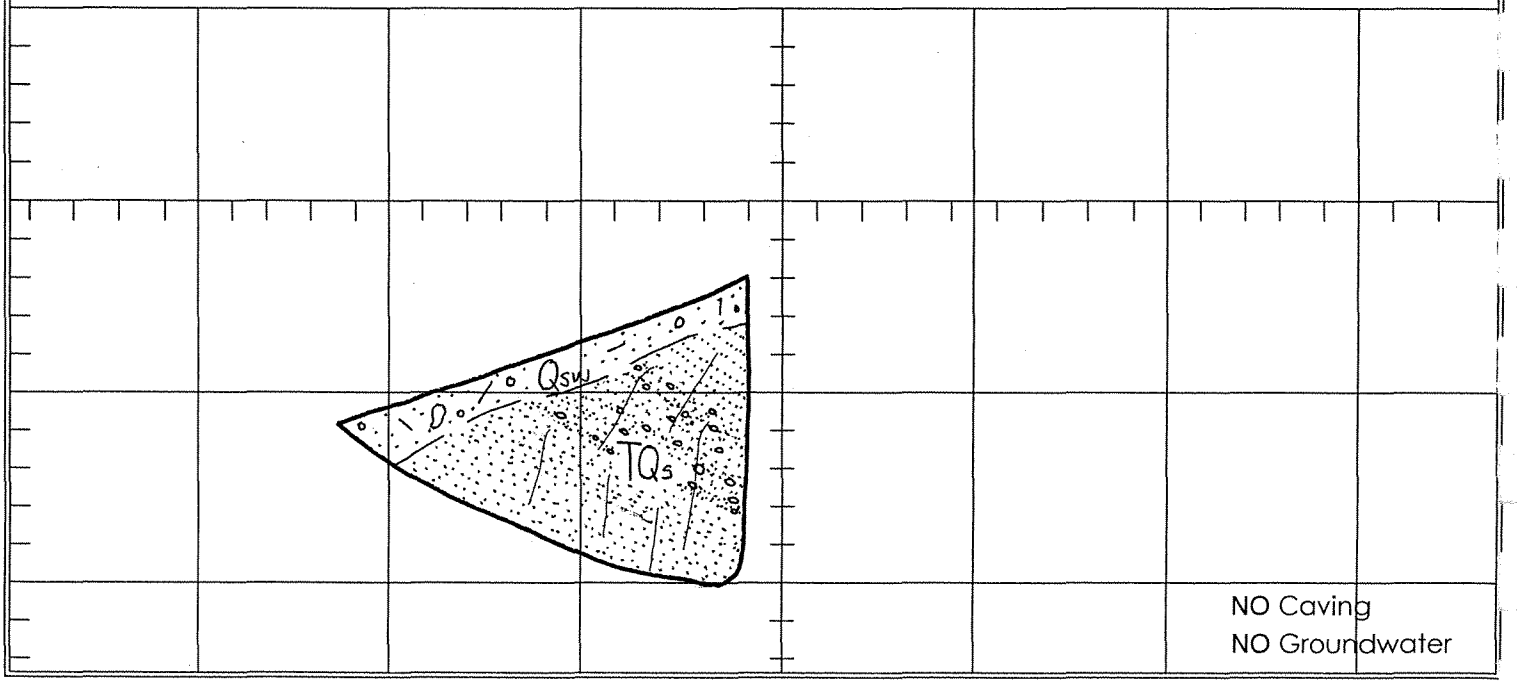
TOTAL DEPTH: 6.5 feet ←N51W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-129T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1222	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-1')** @ 0' Brown silty sand; soft; moist; roots, voids **BEDROCK; TQs (1-8')** @ 1' Light gray fine- to medium-grained sandstone and pebbly sandstone; moderately hard to hard; moist to damp; local laminations; moderately fractured	B:N78W,36SW Lamin.			
5									
10									
15					COMMENTS: -Highly weathered down to 4'				
20									

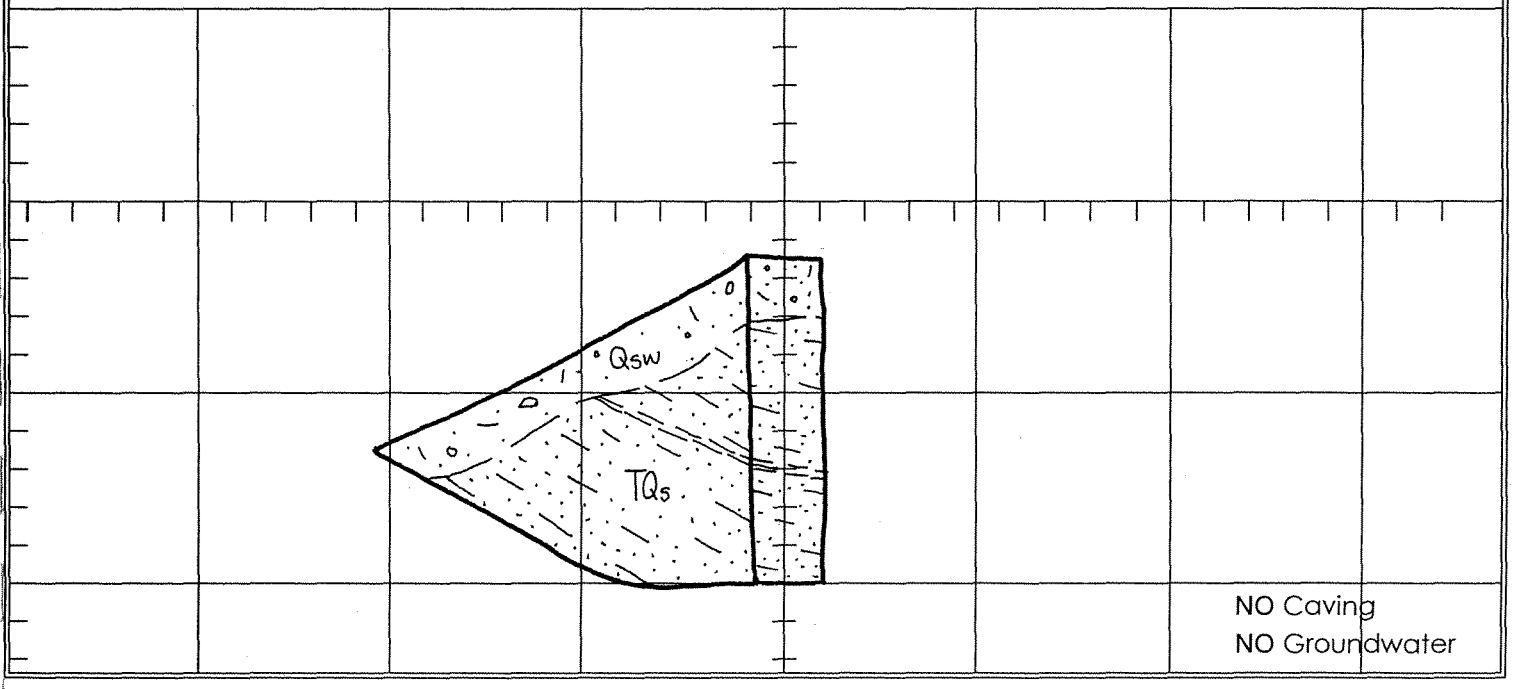
TOTAL DEPTH: 8 feet ←N24W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-130T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1260	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**<u>SLOPEWASH</u>; Qsw (0-1.5')** @ 0' Brown silty sand; soft; moist; roots, voids **<u>BEDROCK</u>; TQs (1.5-8.5')** @ 1.5' Light grayish-brown to light yellowish-brown sandy siltstone, silty sandstone, and sandstone with brown mudstone interbed; moderately hard to hard; moist to slightly damp; gradational contact; slightly fractured; caliche to 4'	Exc. B:N76W,29SW Mudstone			
5									
10									
15					<u>COMMENTS</u>: -Highly weathered down to 4.5'				
20									

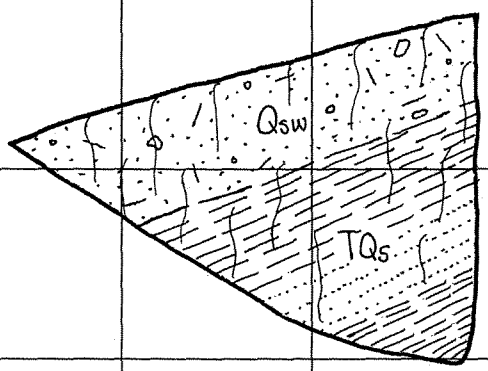
TOTAL DEPTH: 8.5 feet ←N21W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-131T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1230	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-3')** @ 0' Grayish-brown sandy silt; soft; moist; roots, voids				
					BEDROCK; TQs (3-9') @ 3' Grayish-brown siltstone, brown mudstone, and light gray sandstone; moderately hard; moist to damp; highly to moderately fractured; caliche in siltstone and mudstone	B:N67E,35SE			
5									
10									
15					COMMENTS: -Highly weathered down to 7.5'				
20									

TOTAL DEPTH: 9 feet N33E→ SCALE: 1 inch = 5 feet

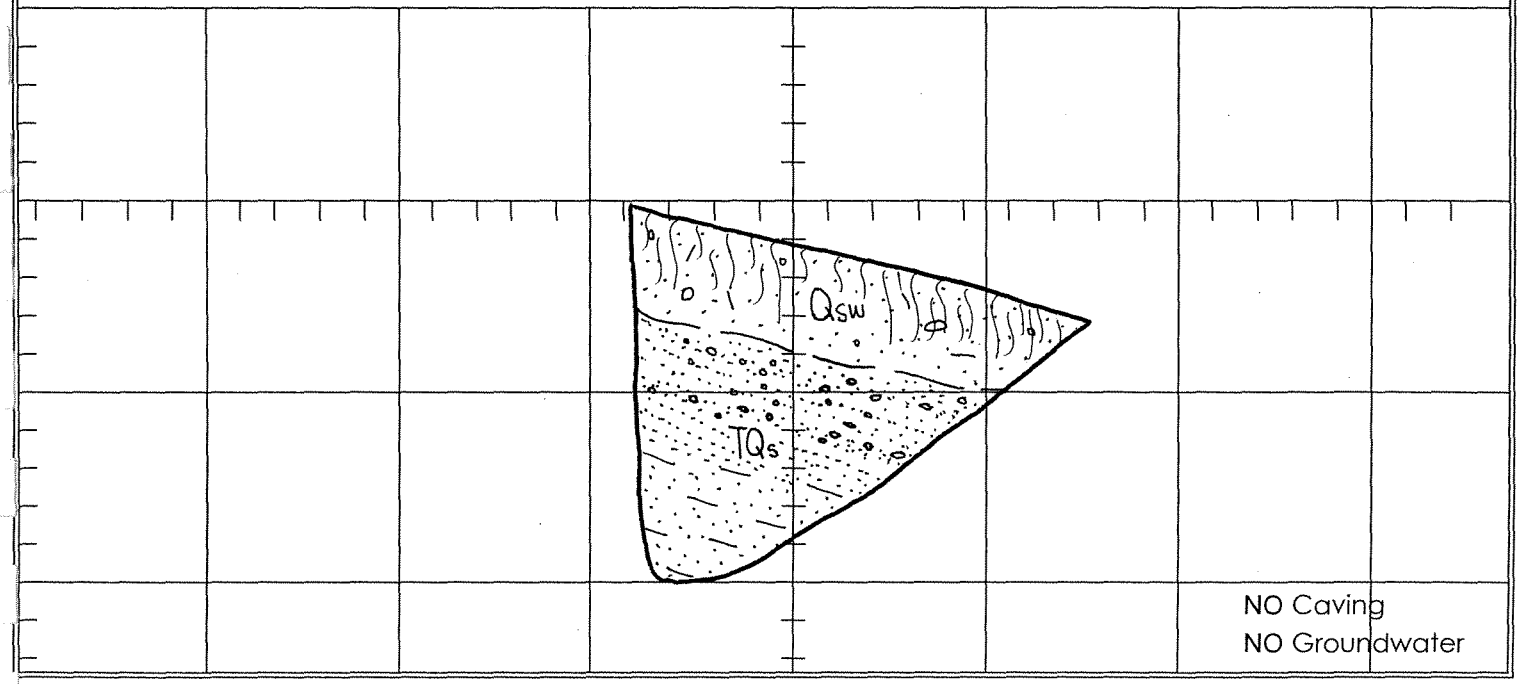


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-132T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1195	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SLOPEWASH; Qsw (0-3')** @ 0' Brown silty sand with pebbles and cobbles; soft; moist; roots, voids				
5					**BEDROCK; TQs (3-10')** @ 3' Light gray sandstone and pebbly sandstone, and yellowish-brown to light yellowish-brown fine-grained sandstone and silty sandstone; moderately hard to hard; moist to damp; locally laminated; local erosional scours; moderately fractured	a) B:N83E,19SE b) B:N85E,25SE			
10									
15					COMMENTS: -Highly weathered down to 6'				
20									

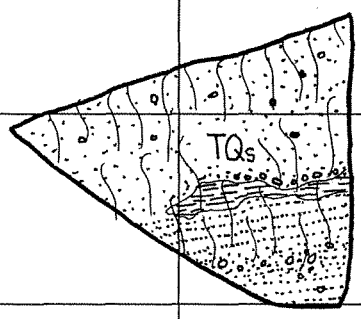
TOTAL DEPTH: 10 feet ←N68E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-133T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe	ELEVATION: 1175	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-7.5')** @ 0' Light gray sandstone and pebbly sandstone; moderately hard to hard; moist to damp; brown siltstone interbed 2-4" thick is discontinuous, eroded, channeled; sandstone locally laminated; scattered cobbles	B:N48E,10SE			
5									
10									
15					COMMENTS: -Highly weathered down to 1'				
20									

TOTAL DEPTH: 7.5 feet N25E→ SCALE: 1 inch = 5 feet

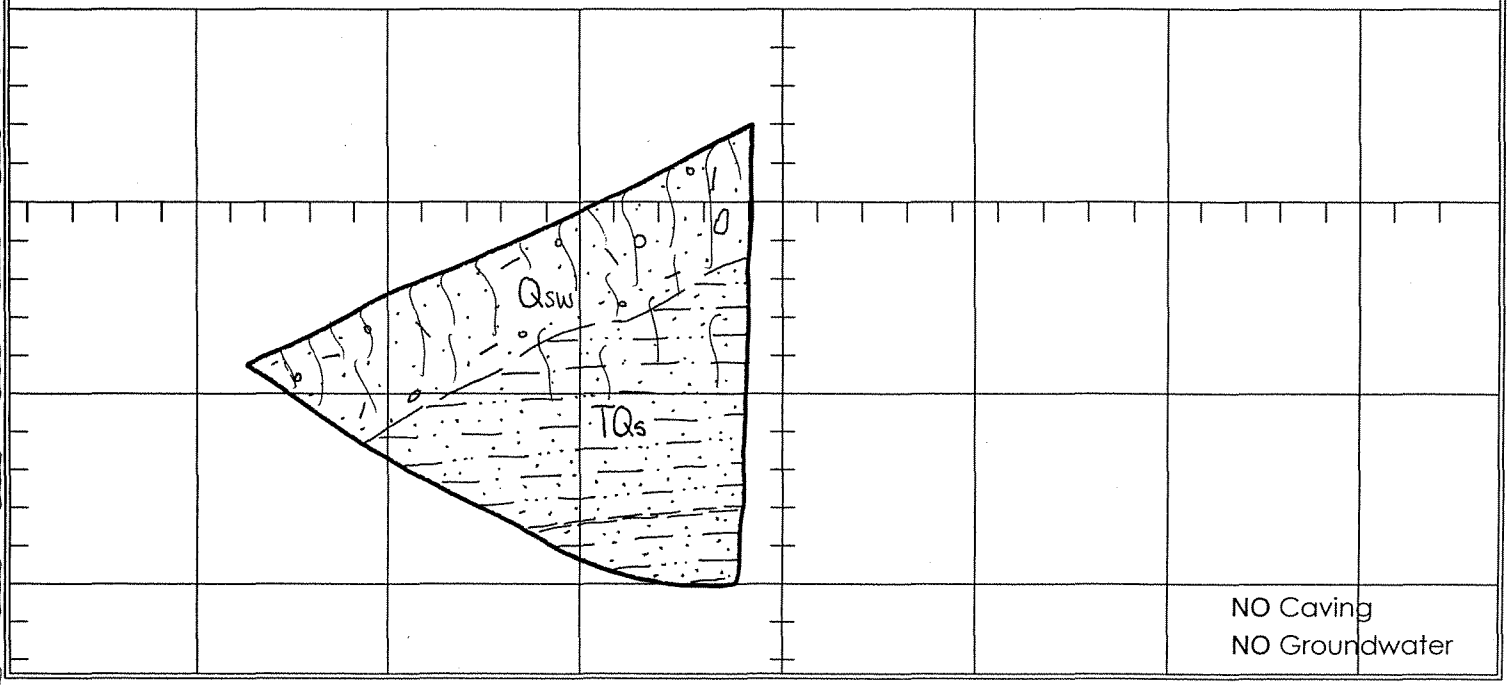


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-134T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1152	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SLOPEWASH; Qsw (0-3.5')** @ 0' Grayish-brown sandy silt; soft; moist; roots, voids				
5					**BEDROCK; TQs (3.5-12')** @ 3.5' Light grayish-brown to grayish-brown sandy siltstone/silty sandstone; moderately hard to hard; moist to damp; local caliche; massive; structureless; highly to moderately fractured	B:N76W,40SW			
10					@ 10' 1" thick brown mudstone interbed				
15					COMMENTS: -Highly weathered down to 7'				
20									

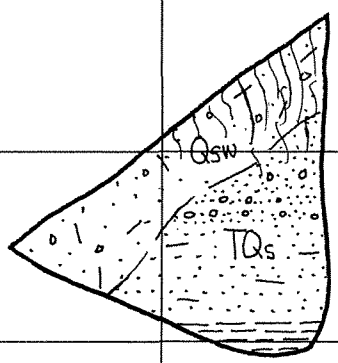
TOTAL DEPTH: 12 feet ←N85W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-135T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1150	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SLOPEWASH; Qsw (0-3')** @ 0' Grayish-brown silty, pebbly sand with scattered cobbles; soft; moist; roots, voids				
					BEDROCK; TQs (3-9') @ 3' Light gray to gray sandstone, pebbly sandstone and silty sandstone; moderately hard to hard; moist to damp; vaguely bedded	B:N83E,15SE			
5									
					@ 8.5' Brown siltstone; hard				
10									
					COMMENTS: -Highly weathered down to 5'				
15									
20									

TOTAL DEPTH: 9 feet N83E→ SCALE: 1 inch = 5 feet

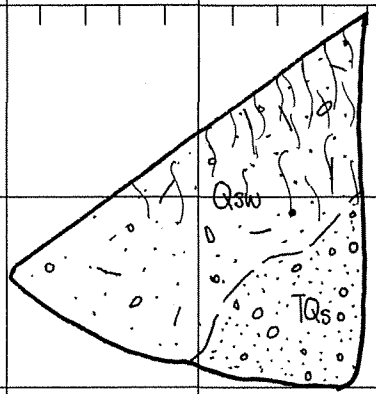


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-136T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1142	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SLOPEWASH; Qsw (0-5')** @ 0' Grayish-brown silty, pebbly sand with scattered cobbles; soft; moist; roots, voids				
5					**BEDROCK; TQs (5-10')** @ 5' Light gray sandstone and pebbly sandstone; moderately hard to hard; moist to damp; crudely bedded; scattered cobbles; local mudstone rip-ups	Apx. B:N83E,22SE			
10					COMMENTS: -Highly weathered down to 6'				
15									
20									

TOTAL DEPTH: 10 feet ←N85W SCALE: 1 inch = 5 feet

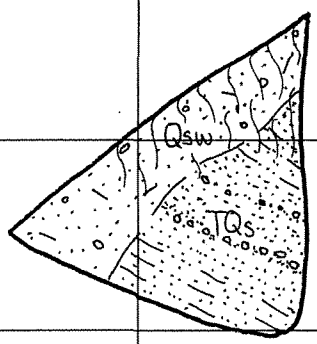


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-137T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MJD	
		EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket		ELEVATION: 1135	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-2')** @ 0' Brown silty, pebbly, sand; soft; moist; roots, voids **BEDROCK; TQs (2-8.5')** @ 2' Interbedded yellowish-brown siltstone and sandy siltstone and light yellowish-brown sandstone and pebbly sandstone; moderately hard to hard; moist; well-bedded; locally thinly bedded COMMENTS: -Highly weathered down to 3.5'	B:N83E,21SE			
5									
10									
15									
20									

TOTAL DEPTH: 8.5 feet ←N30E SCALE: 1 inch = 5 feet

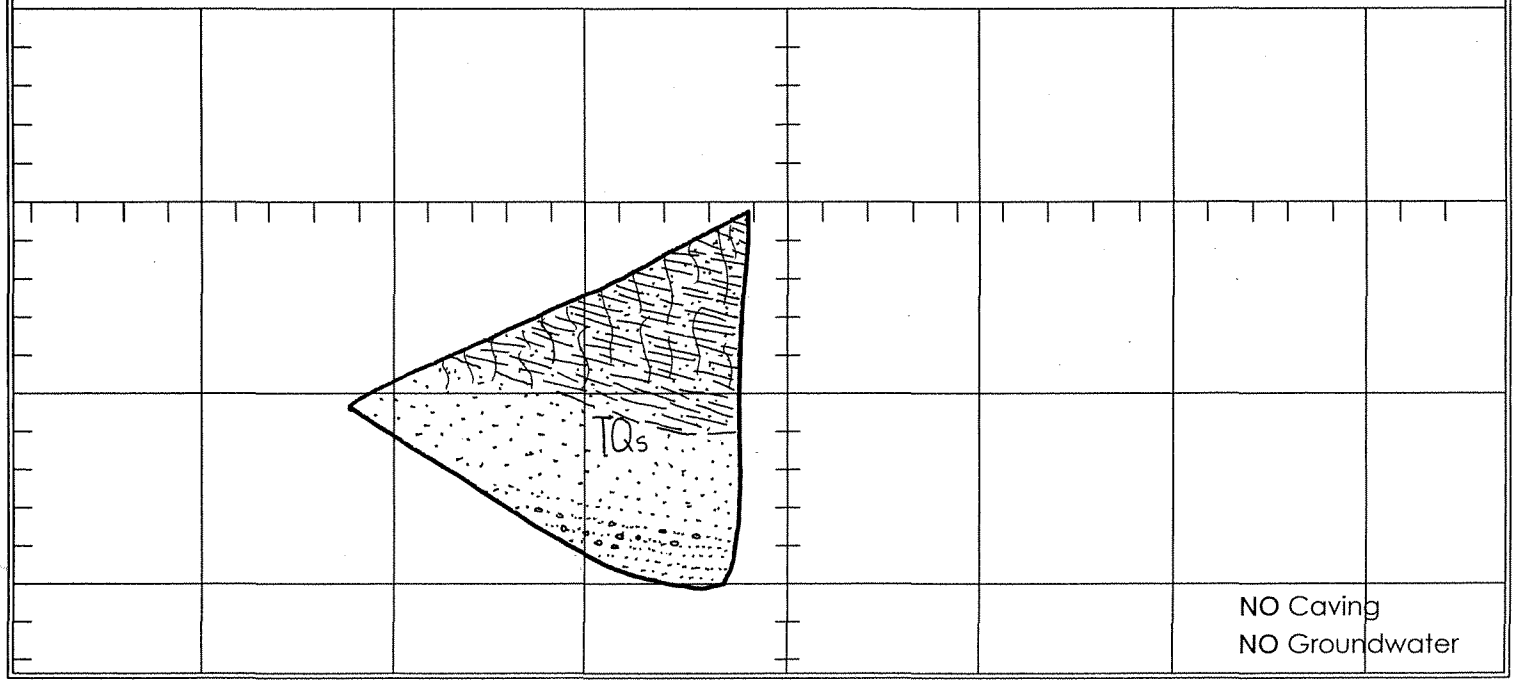


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-138T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MJD	
		EXCAVATED: 3/3/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket		ELEVATION: 1134	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-10')** @ 0' Brown siltstone and light-gray sandstone and pebbly sandstone; soft to hard; moist to damp; local laminations	B:N86W,21SW			
5									
10									
15					COMMENTS: -Highly weathered down to 5'				
20									

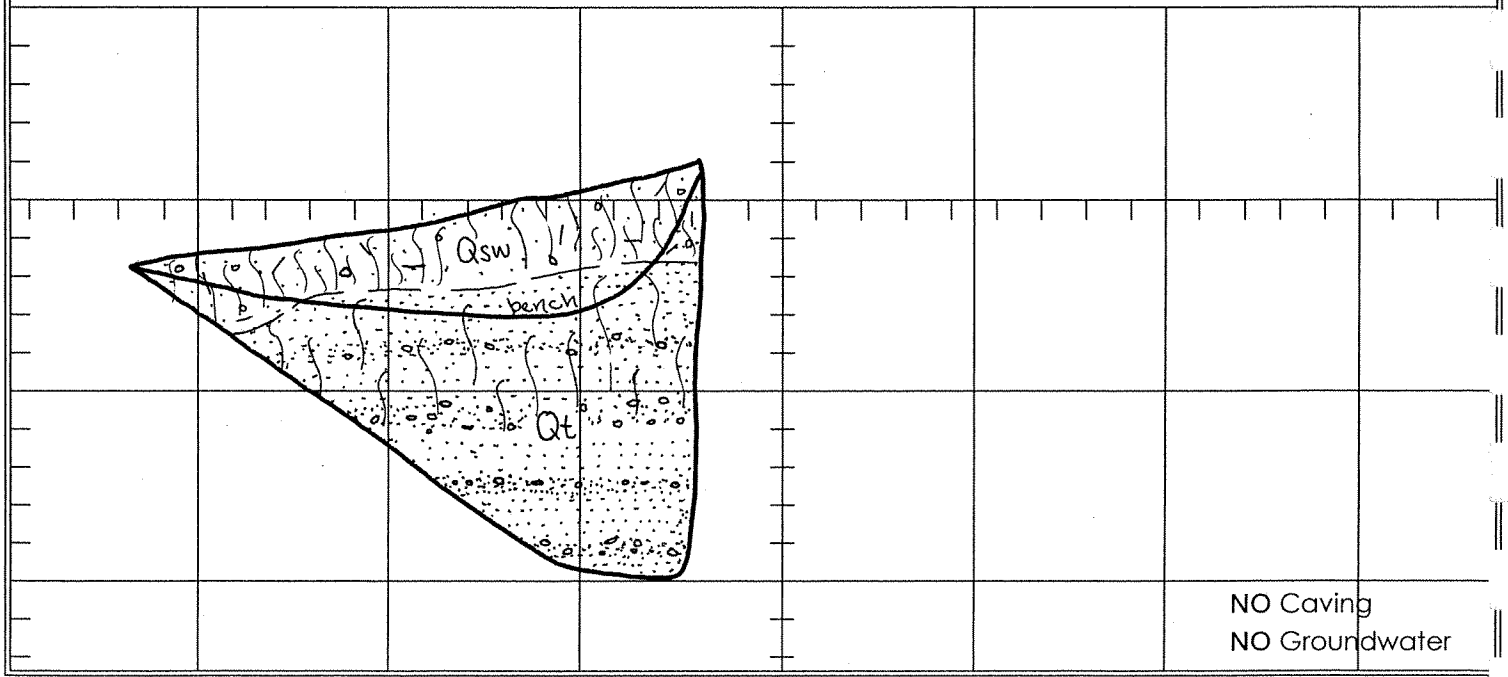
TOTAL DEPTH: 10 feet ←84E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-139T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1143	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-2.5')** @ 0' Brown silty, pebbly sand with scattered cobbles; loose; moist; roots; voids **QUATERNARY TERRACE DEPOSITS; Qt (2.5-11')** @ 2.5' Light yellowish-gray to light-gray sand and pebbly sand with scattered cobbles; loose to medium dense; slightly friable to friable; moist to slightly damp; well-bedded; roots to 8'	B:Horizontal			
5									
10									
15					COMMENTS: -Highly weathered down to 8'				
20									

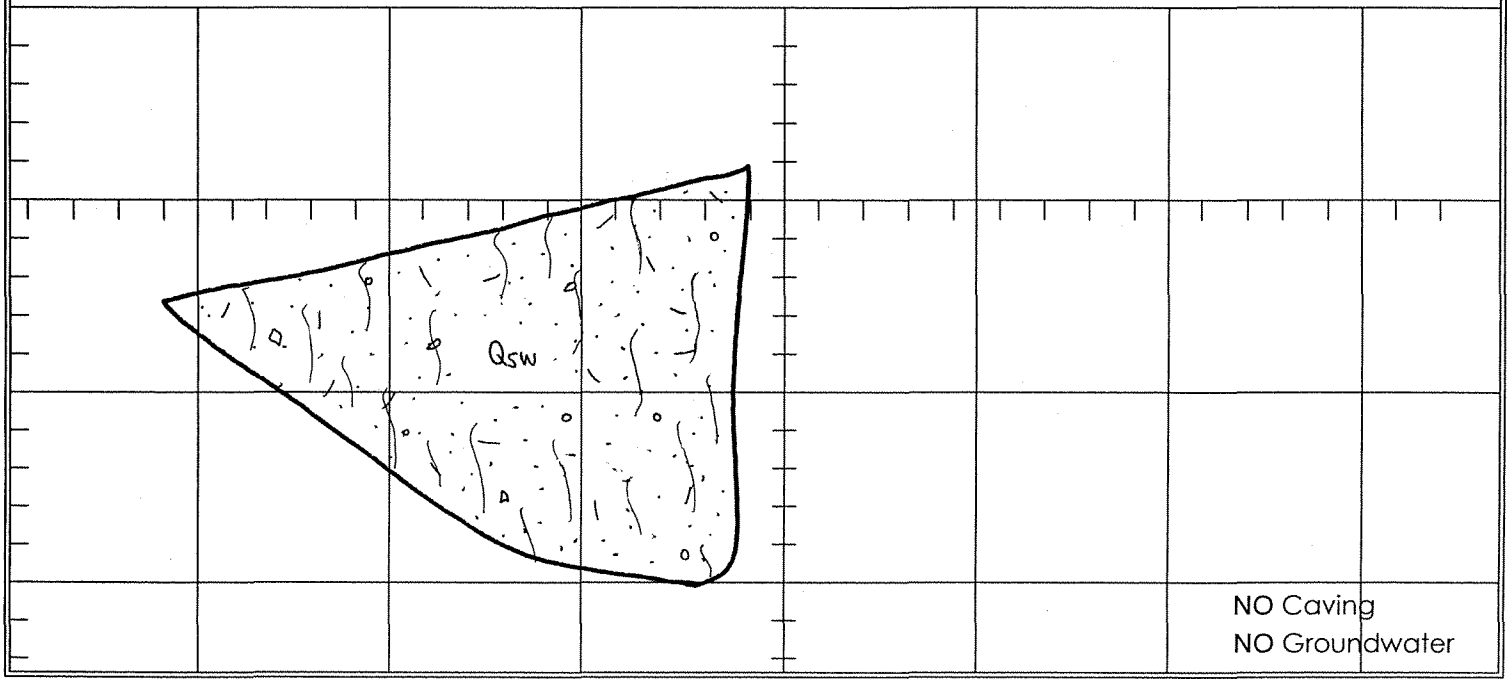
TOTAL DEPTH: 11 feet N8E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-140T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1151	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-11')** @ 0' Brown to light grayish-brown silty pebbly sand with cobbles; loose to medium dense; moist to damp; roots and voids to bottom; massive; structureless; friable COMMENTS: -Highly weathered down to 11' -Weathered Qt?				
5									
10									
15									
20									

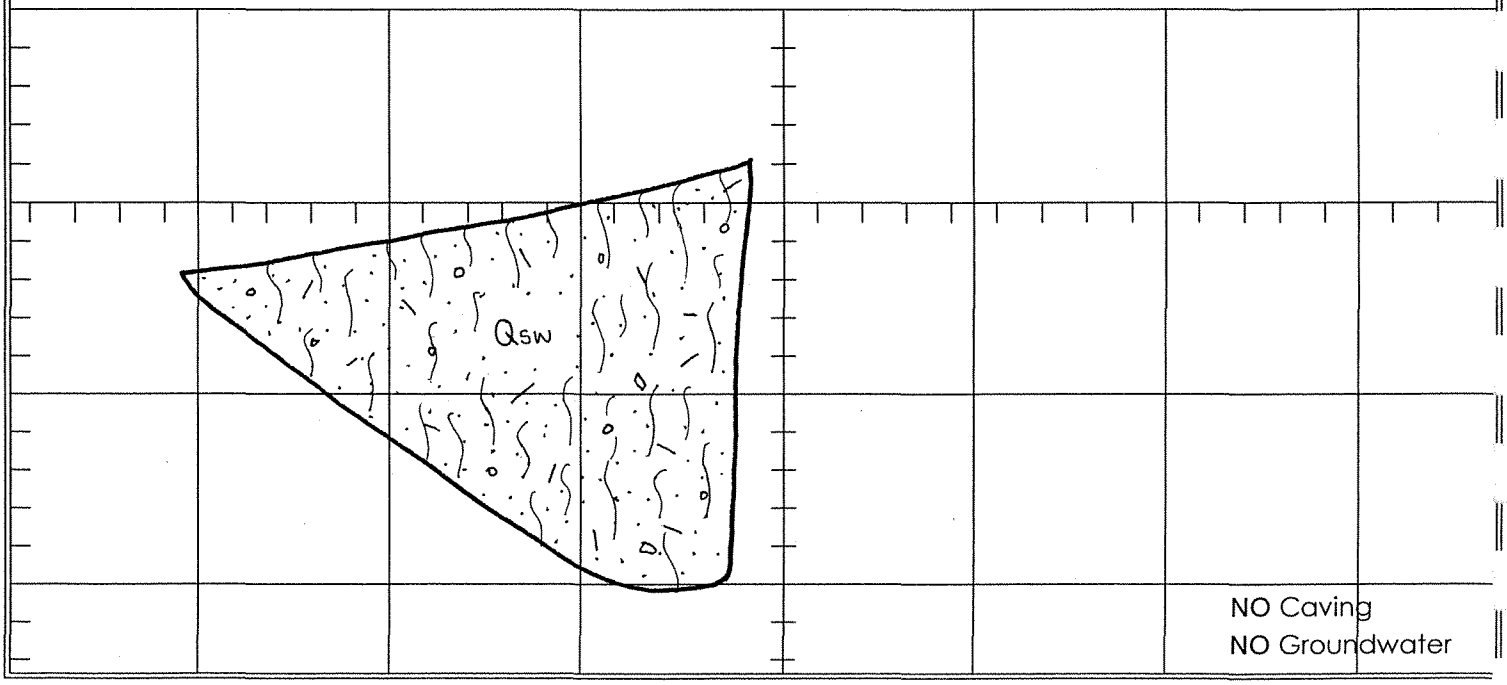
TOTAL DEPTH: 11 feet N3E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-141T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1172	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-11.5')** @ 0' Brown to light grayish-brown silty pebbly sand with cobbles; loose to medium dense; friable; moist to damp; roots, voids to 11.5'; massive; structureless				
5									
10									
15					COMMENTS: -Highly weathered down to 11.5' -Weathered Qt?				
20									

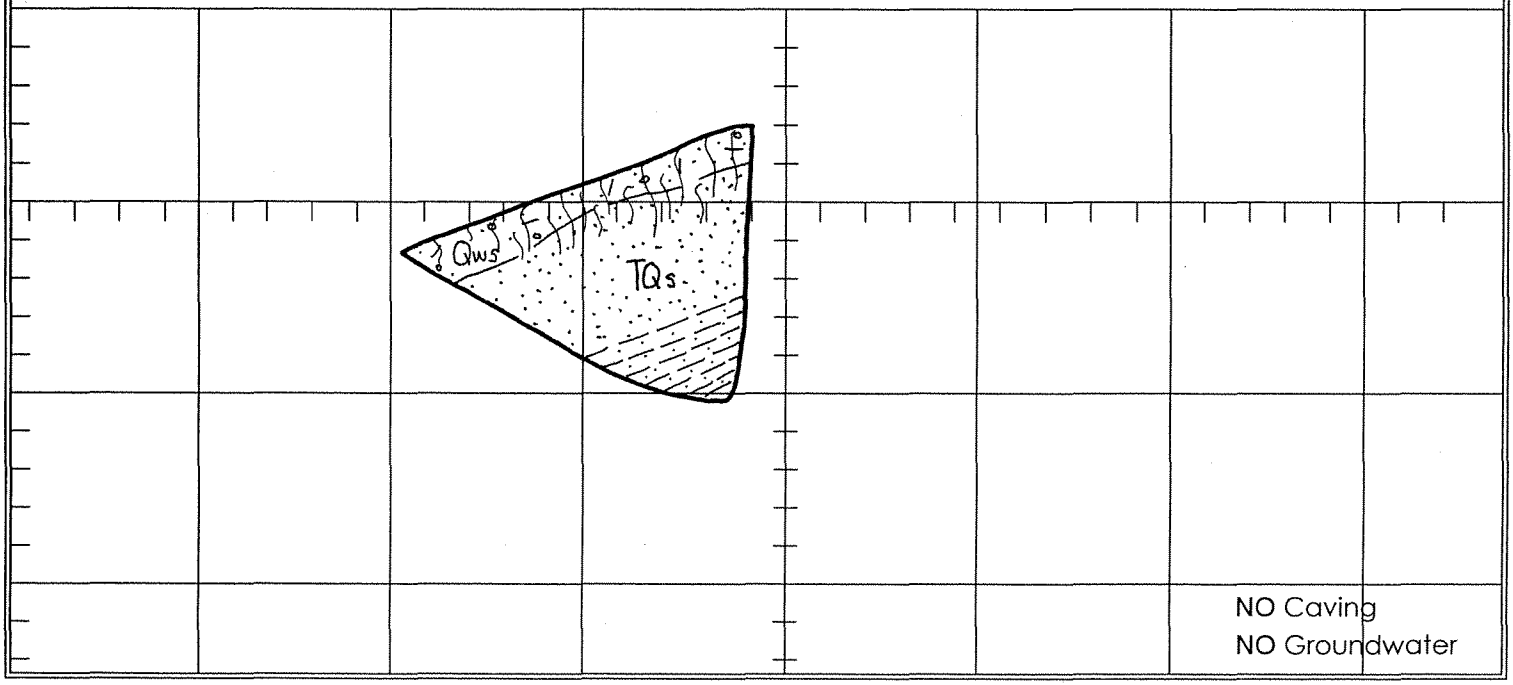
TOTAL DEPTH: 11.5 feet N10E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-142T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1255	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-1')** @ 0' Brown silty sand; loose; moist; roots, voids **BEDROCK; TQs (1-7')** @ 1' Light gray fine- to medium-grained sandstone and brown siltstone and sandy siltstone; moderately hard to hard; moist to slightly damp; local laminations; moderately fractured; local caliche	B:N26W,45SW			
5									
10					COMMENTS: -Highly weathered down to 5'				
15									
20									

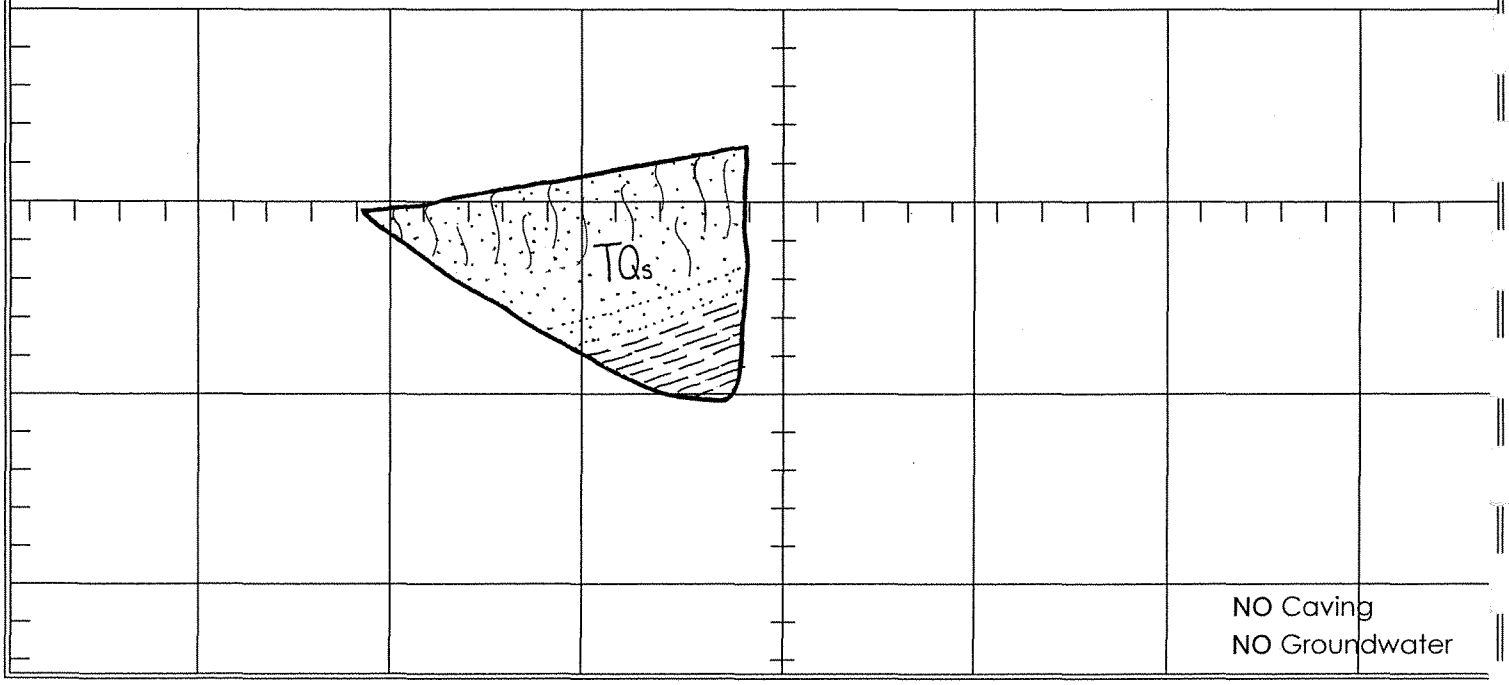
TOTAL DEPTH: 7 feet ←N79W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-143T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1228	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**BEDROCK; TQs (0-6.5')** @ 0' Light gray sandstone and pebbly sandstone and brown siltstone and mudstone; moderately hard to hard; moist to damp; mudstone slightly sheared; plastic, sticky, caliche; sandstone locally laminated	B:N70W,42SW			
5									
10									
15					COMMENTS: -Highly weathered down to 3' -Moist from rain to 4'				
20									

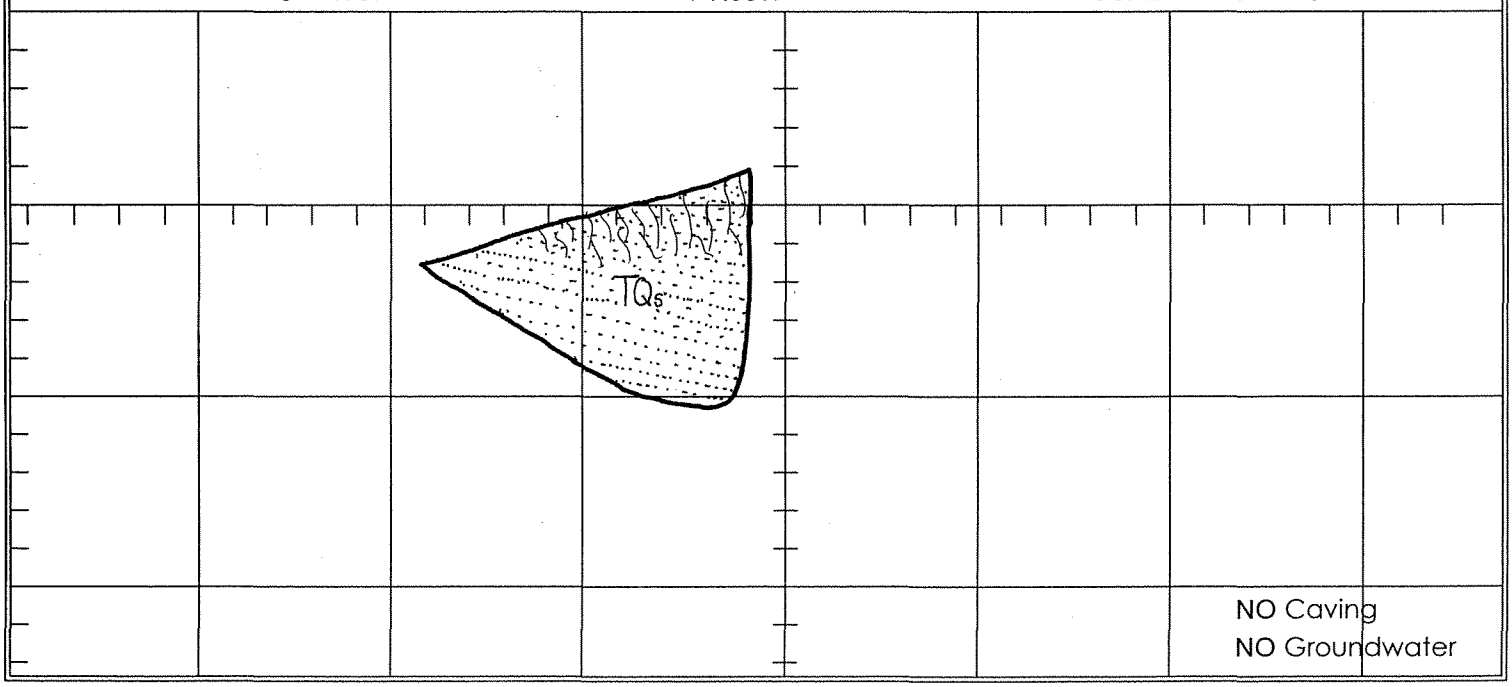
TOTAL DEPTH: 6.5 feet ←N79W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-144T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1205	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-6')** @ 0' Light gray fine- to medium-grained sandstone; moderately hard to hard; moist to damp; locally pebbly; laminated	B:N71W,44SW			
5									
10									
15					COMMENTS: -Highly weathered down to 2'				
20									

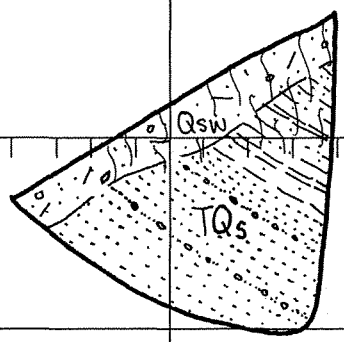
TOTAL DEPTH: 6 feet ←N55W SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-145T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1231	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-1')** @ 0' Brown silty sand/sandy silt; soft; moist; roots, voids **BEDROCK; TQs (1-8')** @ 1' Interbedded gray and brown siltstone, mudstone, and sandy siltstone; soft to moderately hard; damp; well-bedded; highly weathered, fractured, creep-affected @ 5' Light gray laminated sandstone and pebbly sandstone; moderately hard to hard; damp COMMENTS: -Highly weathered down to 4.5'	B:N72W,38SW (Laminated)			
5									
10									
15									
20									

TOTAL DEPTH: 8 feet ←N16E SCALE: 1 inch = 5 feet

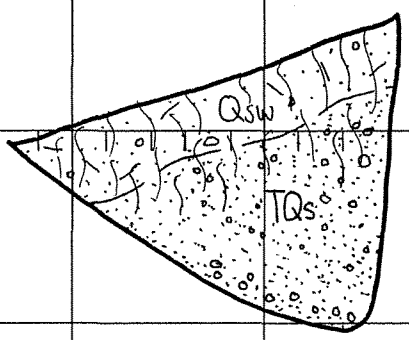


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-146T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MJD	
		EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket		ELEVATION: 2024	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SLOPEWASH; Qsw (0-1.5')** @ 0' Brown silty, pebbly sand with cobbles; loose; moist; roots, voids **BEDROCK; TQs (1.5-8')** @ 1.5' Light-gray sandstone and pebbly sandstone with scattered cobbles; moderately hard to hard; moist to damp; crudely bedded	B:N63W,34SW			
5									
10									
15					COMMENTS: -Highly weathered down to 5'				
20									

TOTAL DEPTH: 8 feet ←N23E SCALE: 1 inch = 5 feet

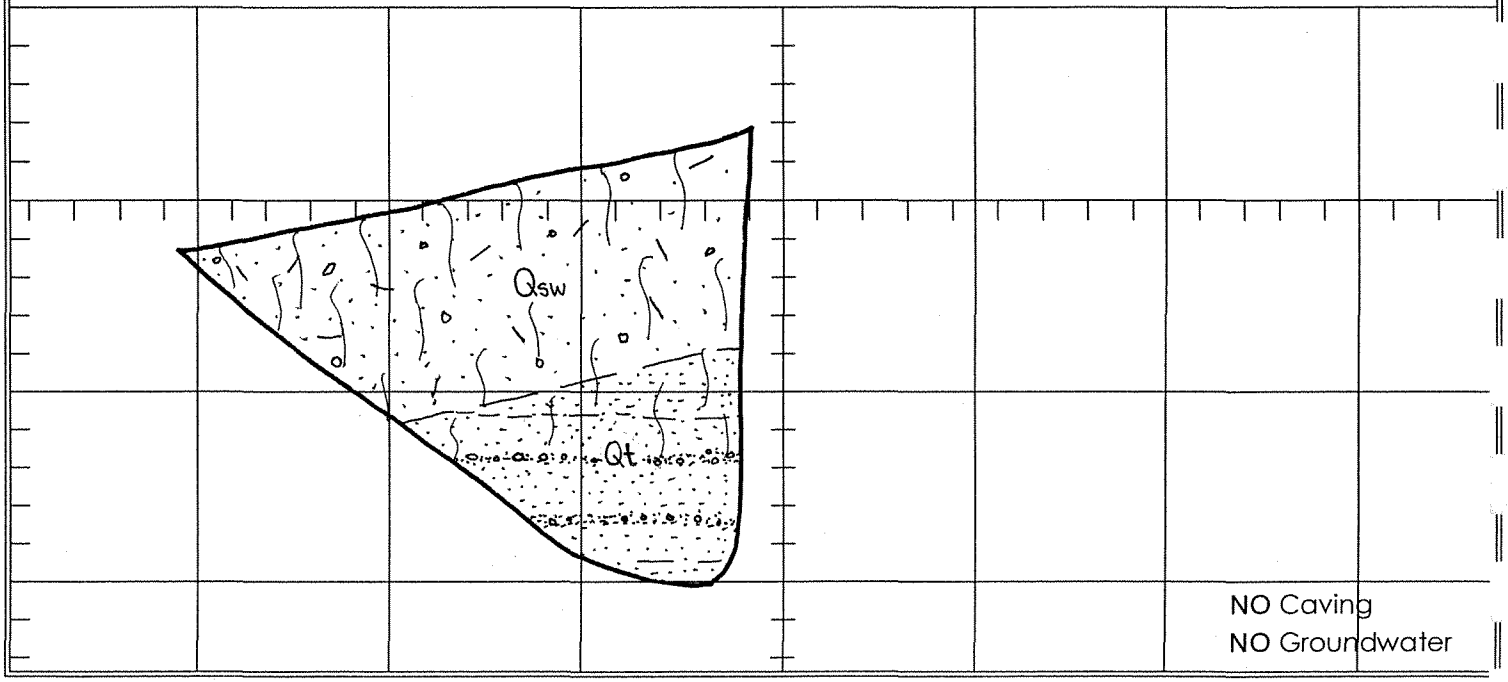


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-147T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 2005	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-6')** @ 0' Brown to light-brown silty pebbly sand with cobbles; loose; moist to damp; roots, voids				
5					**QUATERNARY TERRACE DEPOSITS; Qt (6-12')** @ 6' Light-brown to light-gray sand, pebbly sand and silty sand; loose to firm; damp; moderately bedded	B: Horizontal			
10									
15					COMMENTS: -Highly weathered down to 9'				
20									

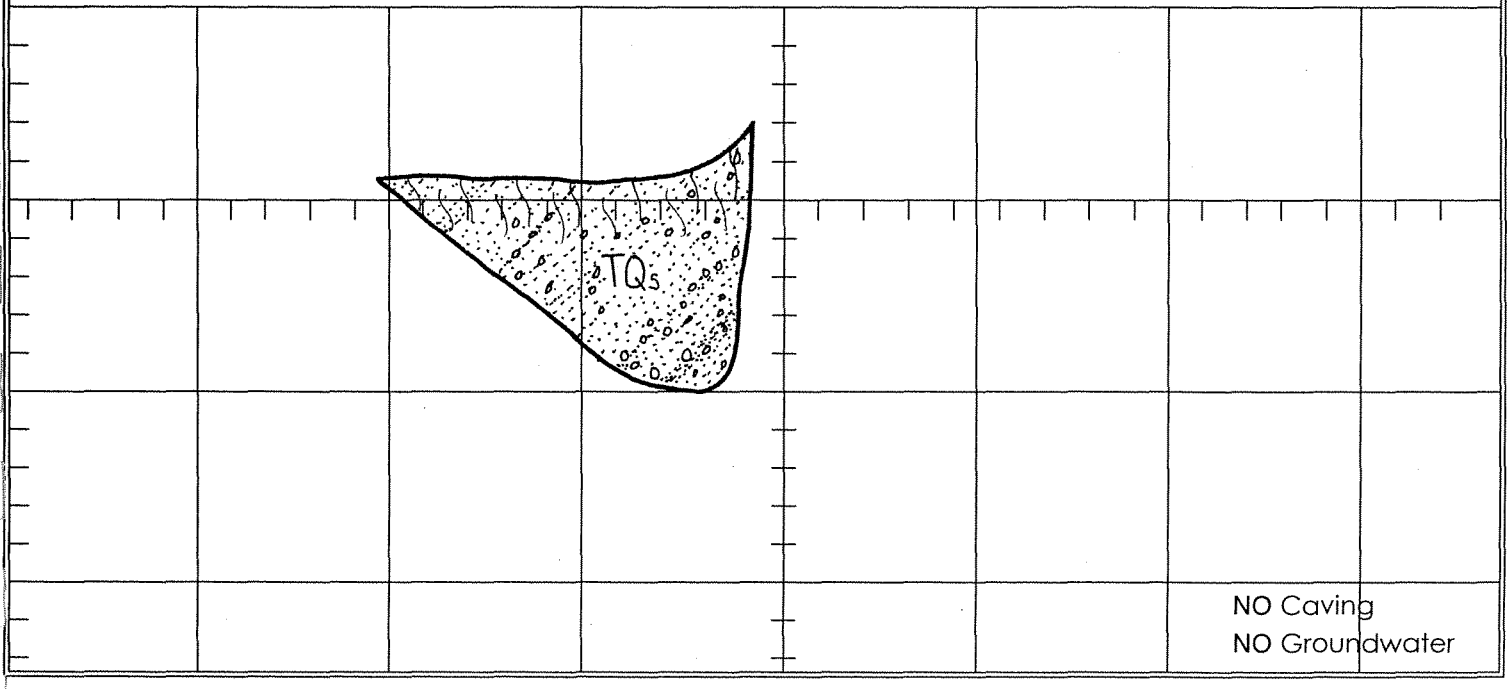
TOTAL DEPTH: 12 feet ←N13E SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company		JOB NO: 04-2023-4	**TRENCH LOG NO. T-148T**
PROJECT: Mesas East		DATE: 7/22/04	
		LOGGED BY: MJD	
		EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket		ELEVATION: 1170	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-7')** @ 0' Light-gray sandstone and conglomerate; hard; moist to damp; crudely bedded; vague laminations	B:N59W,39SW (Coarse-grained)			
5									
10									
15					COMMENTS: -Highly weathered down to 1'				
20									

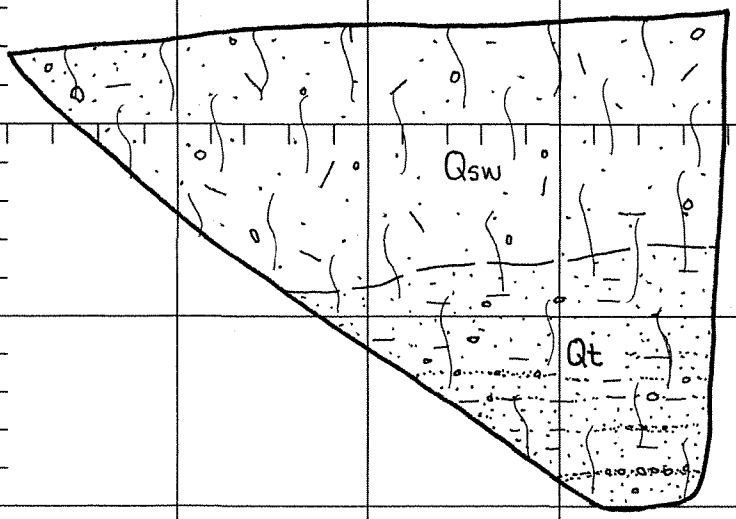
TOTAL DEPTH: 7 feet N23E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-149T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1155	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SOIL/SLOPEWASH; Qsw (0-6')** @ 0' Moderately to light-brown silty pebbly sand with cobbles; loose; moist to 4', damp to 6'; roots, voids				
5					**QUATERNARY TERRACE DEPOSITS; Qt (6-13')** @ 6' Grades to silty pebbly sand with scattered cobbles; loose to medium dense; damp; local lenses of pebbly, friable sand; very crudely bedded; mostly massive, structureless				
10									
15					COMMENTS: -Highly weathered down to 13' -Does not look like af				
20									

TOTAL DEPTH: 13 feet N80W→ SCALE: 1 inch = 5 feet

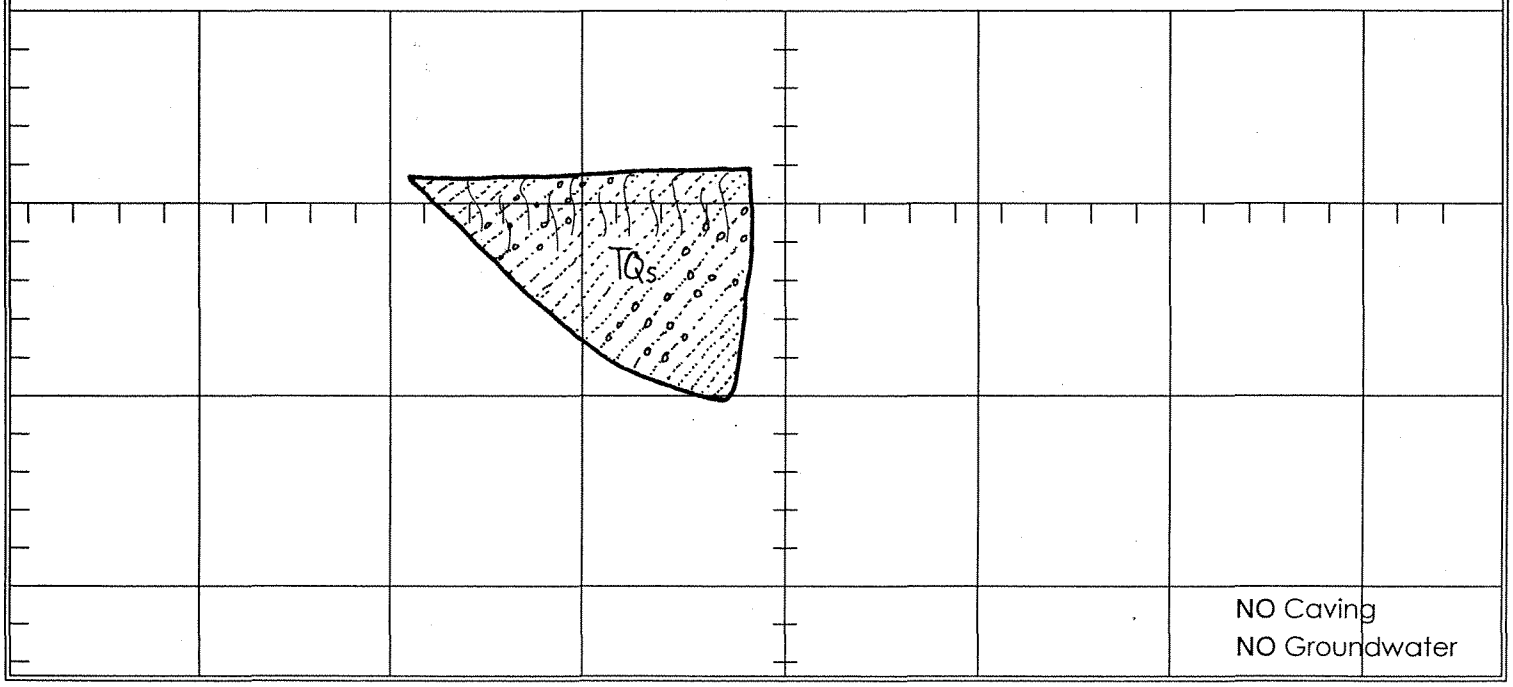


NO Caving
NO Groundwater

CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-150T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MJD	
	EXCAVATED: 3/5/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION: 1188	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**BEDROCK; TQs (0-6')** @ 0' Light-gray sandstone and pebbly sandstone; hard; moist; laminated, well-bedded COMMENTS: -Highly weathered down to 0'	B:N81W,45SW Lamin.			
5									
10									
15									
20									

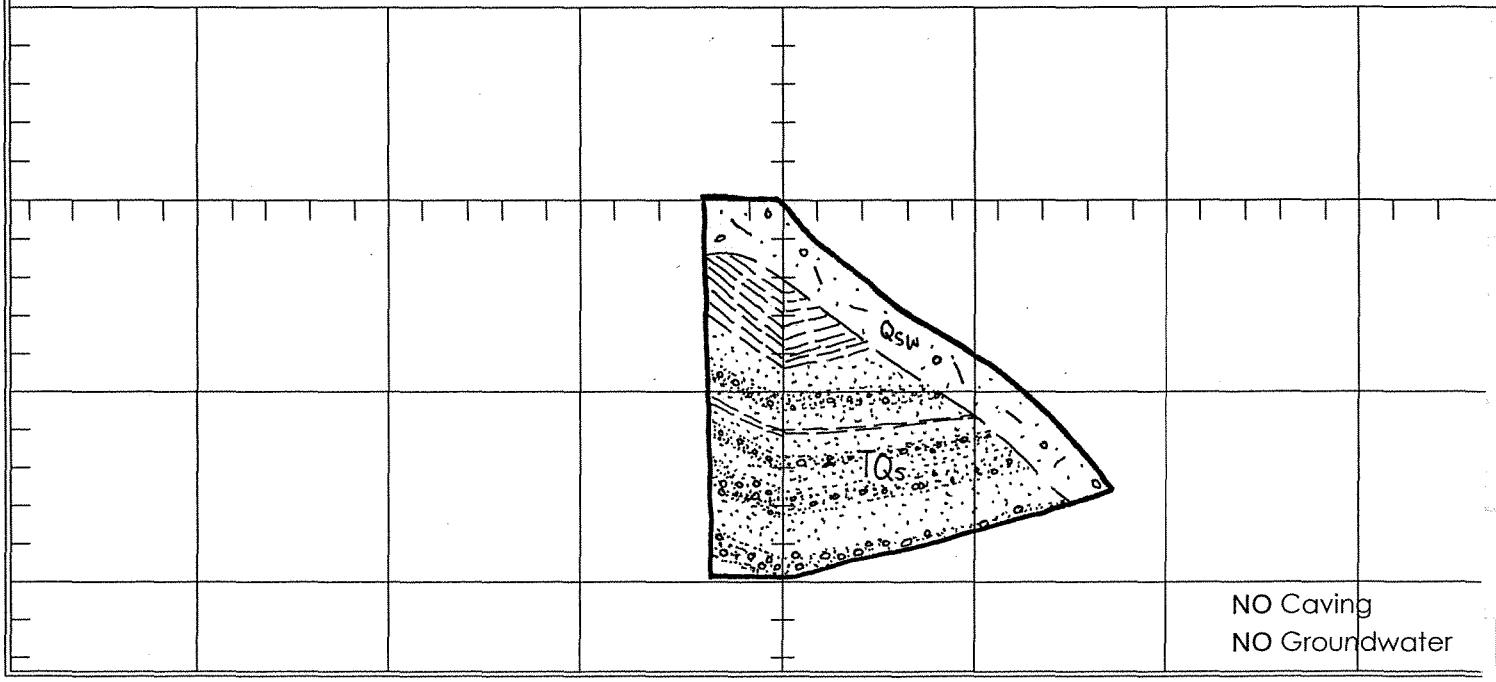
TOTAL DEPTH: 6 feet N25E→ SCALE: 1 inch = 5 feet



CLIENT: Newhall Ranch Company	JOB NO: 04-2023-4	**TRENCH LOG NO. T-158T**
PROJECT: Mesas East	DATE: 7/22/04	
	LOGGED BY: MAS	
	EXCAVATED: 3/25/04	
EXCAVATION METHOD: Trackhoe w/24" Bucket	ELEVATION:	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**SLOPEWASH; Qsw (0-2')** @ 0' Brown silty clayey sand with gravel; loose to moderately dense; dry; voids≤ 1/8", roots and rootlets **BEDROCK; TQs (2-10')** @ 2' Light-brown to pale yellowish-brown sandstone; moderately hard to hard; dry to damp @ 4' Pale gray silty sandstone to pebbly conglomerate; moderately hard to hard; dry to damp	B:N75E,18SE			
5									
10									
15									
20									

TOTAL DEPTH: 10 feet N80W→ SCALE: 1 inch = 5 feet



CPT LOGS

CPT INTERPRETATIONS

SOUNDING : CPT-1M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 13:33
PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	308.41	2.19	SAND to SILTY SAND	77	100	100		
.300	.98	165.39	2.95	SILTY SAND to SANDY SILT	55	88	91		
.450	1.48	119.86	2.50	SILTY SAND to SANDY SILT	40	64	82		
.600	1.97	144.21	1.88	SILTY SAND to SANDY SILT	48	77	87		
.750	2.46	184.13	1.11	SAND to SILTY SAND	46	74	94		
.900	2.95	139.26	1.61	SAND to SILTY SAND	35	56	86		49.0
1.050	3.44	113.83	2.00	SILTY SAND to SANDY SILT	38	61	80		48.0
1.200	3.94	79.22	3.33	SANDY SILT to CLAYEY SILT	32	51		4.6	
1.350	4.43	98.55	2.09	SILTY SAND to SANDY SILT	33	53	76		46.0
1.500	4.92	109.56	1.47	SAND to SILTY SAND	27	44	79		46.0
1.650	5.41	99.70	2.68	SANDY SILT to CLAYEY SILT	40	64		5.8	
1.800	5.91	124.22	1.50	SAND to SILTY SAND	31	50	83		46.0
1.950	6.40	61.89	3.31	SANDY SILT to CLAYEY SILT	25	40		3.6	
2.100	6.89	41.07	2.59	SANDY SILT to CLAYEY SILT	16	26		2.7	
2.250	7.38	47.35	2.29	SANDY SILT to CLAYEY SILT	19	28		3.1	
2.400	7.87	47.61	2.23	SANDY SILT to CLAYEY SILT	19	28		3.1	
2.550	8.37	79.86	2.61	SANDY SILT to CLAYEY SILT	32	45		5.3	
2.700	8.86	127.55	1.66	SILTY SAND to SANDY SILT	43	58	83		44.5
2.850	9.35	120.65	.91	SAND to SILTY SAND	30	40	81		44.0
3.000	9.84	111.71	1.90	SILTY SAND to SANDY SILT	37	48	78		43.5
3.150	10.33	105.23	2.12	SILTY SAND to SANDY SILT	35	45	75		43.0
3.300	10.83	76.84	3.69	CLAYEY SILT to SILTY CLAY	38	48		4.5	
3.450	11.32	74.25	4.24	CLAYEY SILT to SILTY CLAY	37	45		4.3	
3.600	11.81	64.41	4.68	CLAY to SILTY CLAY	43	51		3.7	
3.750	12.30	46.57	5.16	CLAY	47	54		2.7	
3.900	12.80	61.06	4.95	CLAY to SILTY CLAY	41	46		3.5	
4.050	13.29	69.22	6.03	*VERY STIFF FINE GRAINED	69	78			
4.200	13.78	81.60	4.06	CLAYEY SILT to SILTY CLAY	41	45		4.8	
4.350	14.27	219.35	1.53	SAND to SILTY SAND	55	59	92		44.5
4.500	14.76	267.94	1.81	SAND to SILTY SAND	67	71	97		45.5
4.650	15.26	401.17	1.62	SAND to SILTY SAND	100	100	100		47.0
4.800	15.75	293.48	1.76	SAND to SILTY SAND	73	75	99		45.5
4.950	16.24	190.91	2.52	SILTY SAND to SANDY SILT	64	64	86		43.5
5.100	16.73	214.49	2.38	SILTY SAND to SANDY SILT	71	71	89		44.0
5.250	17.22	165.94	2.88	SILTY SAND to SANDY SILT	55	54	81		42.5
5.400	17.72	173.95	2.38	SILTY SAND to SANDY SILT	58	56	82		43.0
5.550	18.21	416.95	1.79	SAND to SILTY SAND	100	100	100		46.5
5.700	18.70	430.70	1.38	SAND	86	81	100		46.5
5.850	19.19	129.61	2.64	SILTY SAND to SANDY SILT	43	40	72		41.0
6.000	19.69	113.91	3.28	SANDY SILT to CLAYEY SILT	46	42		6.6	
6.150	20.18	111.34	3.43	SANDY SILT to CLAYEY SILT	45	40		6.5	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 25.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

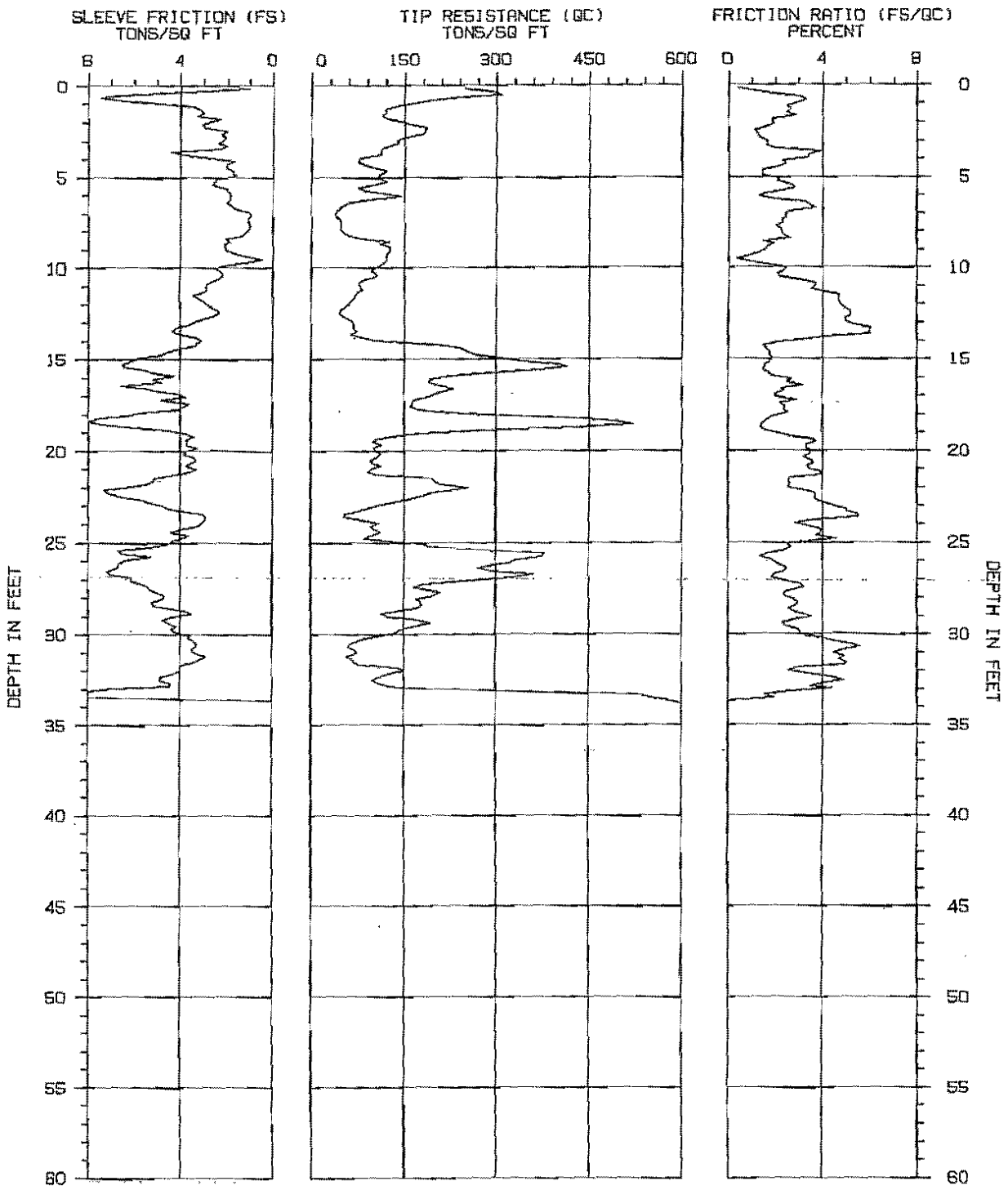
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-1 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	99.72	3.62	SANDY SILT to CLAYEY SILT	40	36		5.8	
6.450	21.16	91.29	3.94	CLAYEY SILT to SILTY CLAY	46	41		5.3	
6.600	21.65	200.89	2.56	SILTY SAND to SANDY SILT	67	59	83		42.5
6.750	22.15	235.01	3.09	SILTY SAND to SANDY SILT	78	68	87		43.0
6.900	22.64	160.25	3.65	SANDY SILT to CLAYEY SILT	64	55		9.3	
7.050	23.13	90.18	4.97	*VERY STIFF FINE GRAINED	90	77			
7.200	23.62	53.37	5.50	CLAY	53	45		3.1	
7.350	24.11	96.41	3.41	SANDY SILT to CLAYEY SILT	39	32		5.6	
7.500	24.61	97.28	3.72	CLAYEY SILT to SILTY CLAY	49	40		5.6	
7.650	25.10	180.22	2.50	SILTY SAND to SANDY SILT	60	49	78		41.5
7.800	25.59	376.50	1.73	SAND to SILTY SAND	94	76	99		44.5
7.950	26.08	322.45	2.04	SAND to SILTY SAND	81	65	94		44.0
8.100	26.57	292.73	2.43	SILTY SAND to SANDY SILT	98	78	92		43.5
8.250	27.07	252.60	2.41	SILTY SAND to SANDY SILT	84	67	87		42.5
8.400	27.56	181.96	2.91	SILTY SAND to SANDY SILT	61	48	78		41.0
8.550	28.05	170.94	2.78	SILTY SAND to SANDY SILT	57	45	76		40.5
8.700	28.54	169.49	2.57	SILTY SAND to SANDY SILT	56	45	75		40.5
8.850	29.04	124.20	3.50	SANDY SILT to CLAYEY SILT	50	39		7.2	
9.000	29.53	168.34	2.47	SILTY SAND to SANDY SILT	56	44	75		40.0
9.150	30.02	115.42	3.09	SANDY SILT to CLAYEY SILT	46	36		6.7	
9.300	30.51	63.29	5.18	CLAY to SILTY CLAY	42	33		3.6	
9.450	31.00	73.27	4.51	CLAYEY SILT to SILTY CLAY	37	28		4.2	
9.600	31.50	70.17	5.02	*VERY STIFF FINE GRAINED	70	54			
9.750	31.99	151.09	2.60	SILTY SAND to SANDY SILT	50	39	71		39.5
9.900	32.48	99.30	4.89	*VERY STIFF FINE GRAINED	99	76			
10.050	32.97	158.30	4.41	*VERY STIFF FINE GRAINED	100	100			
10.200	33.46	549.24	1.98	SAND to SILTY SAND	100	100	100		

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 25.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-1 M

PROJECT NAME : AES-NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 408\#1 JH.GO

DATE/TIME: 09-07-99 13:33

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-2^M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 08:52
PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	302.84	.79	SAND	61	97	100		
.300	.98	181.66	1.32	SAND to SILTY SAND	45	73	93		
.450	1.48	143.51	1.44	SAND to SILTY SAND	36	57	87		
.600	1.97	100.89	.85	SAND to SILTY SAND	25	40	77		49.5
.750	2.46	76.82	1.47	SILTY SAND to SANDY SILT	26	41	69		47.5
.900	2.95	71.57	1.42	SILTY SAND to SANDY SILT	24	38	67		46.5
1.050	3.44	65.86	1.06	SILTY SAND to SANDY SILT	22	35	64		45.5
1.200	3.94	60.25	1.39	SILTY SAND to SANDY SILT	20	32	62		44.5
1.350	4.43	69.00	1.11	SILTY SAND to SANDY SILT	23	37	66		44.5
1.500	4.92	56.17	2.14	SANDY SILT to CLAYEY SILT	22	36		3.7	
1.650	5.41	38.64	2.52	SANDY SILT to CLAYEY SILT	15	25		2.6	
1.800	5.91	39.90	2.46	SANDY SILT to CLAYEY SILT	16	26		2.6	
1.950	6.40	43.30	2.62	SANDY SILT to CLAYEY SILT	17	28		2.9	
2.100	6.89	50.84	2.86	SANDY SILT to CLAYEY SILT	20	32		3.4	
2.250	7.38	52.01	5.29	CLAY	52	78		3.0	
2.400	7.87	52.47	5.62	CLAY	52	76		3.1	
2.550	8.37	51.52	5.81	CLAY	52	73		3.0	
2.700	8.86	47.57	5.92	CLAY	48	65		2.8	
2.850	9.35	41.66	5.42	CLAY	42	56		2.4	
3.000	9.84	38.11	5.41	CLAY	38	50		2.2	
3.150	10.33	35.67	5.03	CLAY	36	45		2.1	
3.300	10.83	34.59	5.05	CLAY	35	43		2.0	
3.450	11.32	34.74	5.17	CLAY	35	42		2.0	
3.600	11.81	30.80	4.63	CLAY to SILTY CLAY	21	25		1.8	
3.750	12.30	27.21	4.95	CLAY	27	33		1.6	
3.900	12.80	25.09	4.74	CLAY	25	30		1.4	
4.050	13.29	23.92	4.40	CLAY to SILTY CLAY	16	19		1.5	
4.200	13.78	22.24	4.57	CLAY	22	26		1.4	
4.350	14.27	20.88	4.33	CLAY	21	24		1.3	
4.500	14.76	18.10	3.71	CLAY to SILTY CLAY	12	14		1.1	
4.650	15.26	18.27	4.41	CLAY	18	21		1.2	
4.800	15.75	16.72	3.72	CLAY to SILTY CLAY	11	12		1.1	
4.950	16.24	14.98	3.75	CLAY to SILTY CLAY	10	11		.9	
5.100	16.73	12.53	3.70	CLAY	13	14		.8	
5.250	17.22	11.92	3.36	CLAY to SILTY CLAY	8	9		.7	
5.400	17.72	12.28	3.35	CLAY to SILTY CLAY	8	9		.7	
5.550	18.21	30.91	3.55	CLAYEY SILT to SILTY CLAY	15	17		2.0	
5.700	18.70	16.66	2.51	CLAYEY SILT to SILTY CLAY	8	9		1.0	
5.850	19.19	14.26	3.07	CLAY to SILTY CLAY	10	10		.9	
6.000	19.69	13.64	3.15	CLAY to SILTY CLAY	9	10		.8	
6.150	20.18	16.44	2.85	CLAYEY SILT to SILTY CLAY	8	9		1.0	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 11.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

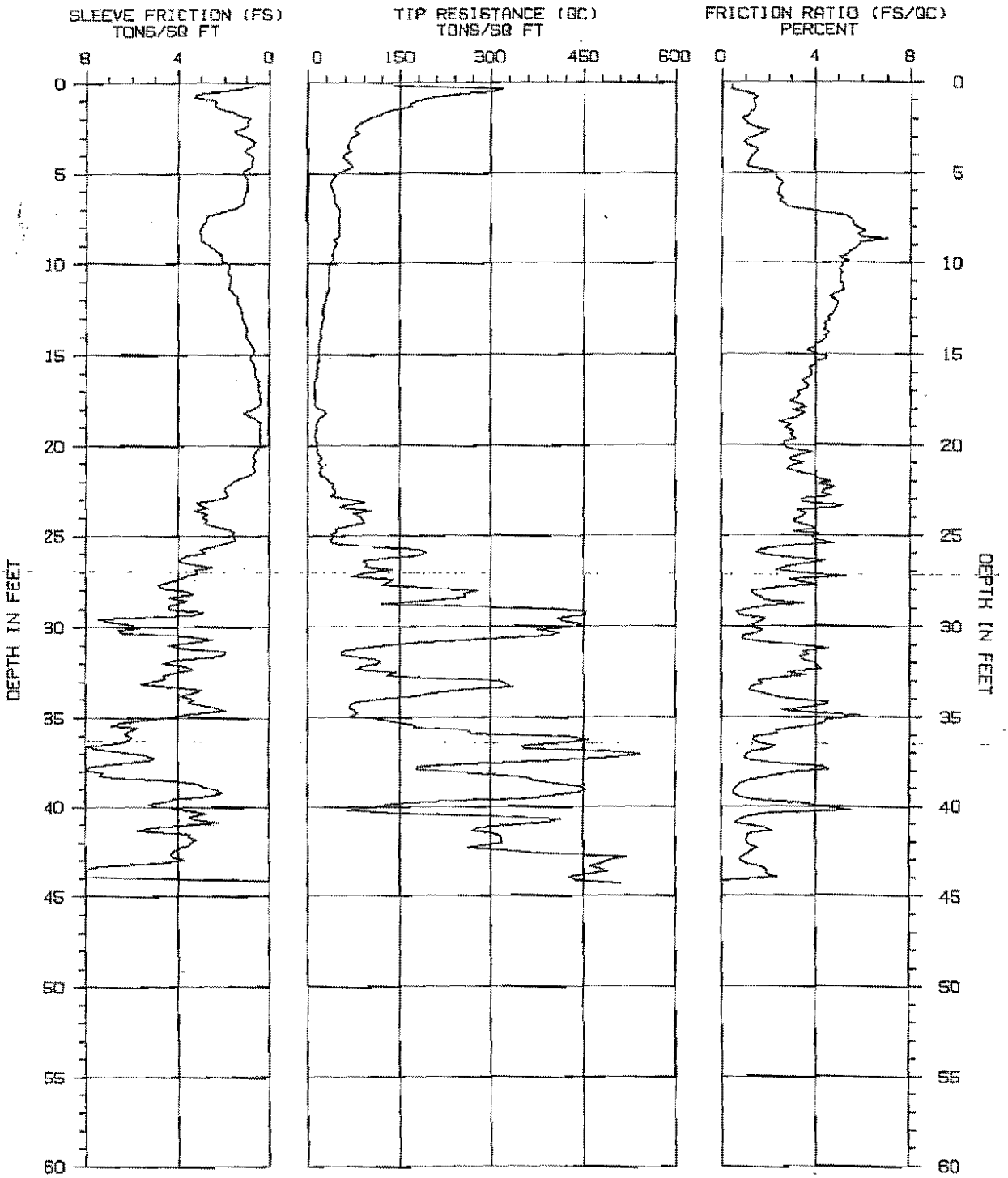
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-2 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	23.54	2.97	CLAYEY SILT to SILTY CLAY	12	12		1.5	
6.450	21.16	23.67	2.95	CLAYEY SILT to SILTY CLAY	12	12		1.5	
6.600	21.65	22.43	3.93	CLAY to SILTY CLAY	15	15		1.4	
6.750	22.15	41.75	4.16	CLAY to SILTY CLAY	28	28		2.4	
6.900	22.64	44.85	4.27	CLAY to SILTY CLAY	30	30		2.6	
7.050	23.13	91.99	3.47	SANDY SILT to CLAYEY SILT	37	37		5.3	
7.200	23.62	101.49	3.24	SANDY SILT to CLAYEY SILT	41	40		5.9	
7.350	24.11	88.42	3.10	SANDY SILT to CLAYEY SILT	35	35		5.1	
7.500	24.61	46.14	4.02	CLAYEY SILT to SILTY CLAY	23	22		2.6	
7.650	25.10	41.49	3.81	CLAYEY SILT to SILTY CLAY	21	20		2.4	
7.800	25.59	91.14	2.78	SANDY SILT to CLAYEY SILT	36	35		5.3	
7.950	26.08	183.68	1.98	SILTY SAND to SANDY SILT	61	59	83		43.0
8.100	26.57	95.09	3.60	SANDY SILT to CLAYEY SILT	38	36		5.5	
8.250	27.07	92.41	3.43	SANDY SILT to CLAYEY SILT	37	35		5.3	
8.400	27.56	135.31	3.21	SANDY SILT to CLAYEY SILT	54	51		7.9	
8.550	28.05	278.73	1.29	SAND	56	52	94		44.5
8.700	28.54	195.41	1.87	SAND to SILTY SAND	49	45	84		43.0
8.850	29.04	394.56	1.10	SAND	79	73	100		46.0
9.000	29.53	408.39	1.82	SAND to SILTY SAND	100	93	100		46.0
9.150	30.02	427.17	1.32	SAND	85	78	100		46.0
9.300	30.51	395.47	.90	SAND	79	72	100		46.0
9.450	31.00	130.38	3.37	SANDY SILT to CLAYEY SILT	52	47		7.6	
9.600	31.50	54.73	3.68	CLAYEY SILT to SILTY CLAY	27	24		3.1	
9.750	31.99	117.06	3.98	CLAYEY SILT to SILTY CLAY	59	52		6.8	
9.900	32.48	143.30	2.86	SILTY SAND to SANDY SILT	48	42	74		41.0
10.050	32.97	314.78	1.57	SAND to SILTY SAND	79	69	96		44.5
10.200	33.46	259.08	1.16	SAND	52	45	90		43.5
10.350	33.96	116.63	2.84	SANDY SILT to CLAYEY SILT	47	41		6.7	
10.500	34.45	66.56	3.81	CLAYEY SILT to SILTY CLAY	33	29		3.8	
10.650	34.94	67.98	6.23	*VERY STIFF FINE GRAINED	68	59			
10.800	35.43	176.31	3.87	*SAND to CLAYEY SAND	88	75			
10.950	35.93	268.70	2.34	SILTY SAND to SANDY SILT	90	76	91		43.5
11.100	36.42	421.20	1.56	SAND to SILTY SAND	100	89	100		45.5
11.250	36.91	485.40	1.36	SAND	97	82	100		46.0
11.400	37.40	412.62	1.28	SAND	83	69	100		45.5
11.550	37.89	178.92	4.58	*VERY STIFF FINE GRAINED	100	100			
11.700	38.39	357.15	1.87	SAND to SILTY SAND	89	74	98		44.5
11.850	38.88	441.85	.65	GRAVELLY SAND to SAND	74	61	100		45.5
12.000	39.37	397.43	.67	GRAVELLY SAND to SAND	66	55	100		45.0
12.150	39.86	142.55	3.68	SANDY SILT to CLAYEY SILT	57	47		8.2	
12.300	40.35	141.47	1.99	SILTY SAND to SANDY SILT	47	38	71		39.5
12.450	40.85	392.60	.59	GRAVELLY SAND to SAND	65	53	100		44.5
12.600	41.34	270.00	2.13	SAND to SILTY SAND	68	55	89		43.0
12.750	41.83	316.02	1.02	SAND	63	51	94		44.0
12.900	42.32	261.04	1.53	SAND to SILTY SAND	65	52	88		43.0
13.050	42.81	520.18	.81	GRAVELLY SAND to SAND	87	69	100		46.0
13.200	43.31	461.16	1.60	SAND to SILTY SAND	100	91	100		45.0
13.350	43.80	454.24	1.92	SAND to SILTY SAND	100	90	100		45.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 11.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-2M

PROJECT NAME : AES-NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 408\#1 JH.GD

DATE/TIME: 09-07-99 08:52

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-3 M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 07:47

PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	173.12	1.31	SAND to SILTY SAND	43	69	92		
.300	.98	242.42	.86	SAND	48	78	100		
.450	1.48	225.28	1.64	SAND to SILTY SAND	56	90	100		
.600	1.97	83.98	1.84	SILTY SAND to SANDY SILT	28	45	71		48.5
.750	2.46	34.03	1.33	SILTY SAND to SANDY SILT	11	18	45		44.5
.900	2.95	22.97	1.44	SANDY SILT to CLAYEY SILT	9	15		1.8	
1.050	3.44	21.50	.57	SILTY SAND to SANDY SILT	7	11	32		40.0
1.200	3.94	20.80	.73	SANDY SILT to CLAYEY SILT	8	13		1.6	
1.350	4.43	19.69	1.67	SANDY SILT to CLAYEY SILT	8	13		1.6	
1.500	4.92	18.55	.87	SANDY SILT to CLAYEY SILT	7	12		1.5	
1.650	5.41	18.23	1.01	SANDY SILT to CLAYEY SILT	7	12		1.4	
1.800	5.91	19.42	.78	SANDY SILT to CLAYEY SILT	8	12		1.5	
1.950	6.40	16.63	2.71	CLAYEY SILT to SILTY CLAY	8	13		1.1	
2.100	6.89	82.90	2.14	SILTY SAND to SANDY SILT	28	43	71		44.0
2.250	7.38	40.28	2.19	SANDY SILT to CLAYEY SILT	16	24		2.7	
2.400	7.87	53.92	2.19	SANDY SILT to CLAYEY SILT	22	31		3.6	
2.550	8.37	18.40	4.35	CLAY	18	26		1.2	
2.700	8.86	17.76	3.21	CLAYEY SILT to SILTY CLAY	9	12		1.1	
2.850	9.35	18.25	4.18	CLAY	18	24		1.2	
3.000	9.84	19.65	4.05	CLAY to SILTY CLAY	13	17		1.3	
3.150	10.33	32.87	3.52	CLAYEY SILT to SILTY CLAY	16	21		2.1	
3.300	10.83	66.26	2.42	SANDY SILT to CLAYEY SILT	27	33		4.4	
3.450	11.32	98.41	1.86	SILTY SAND to SANDY SILT	33	40	72		42.5
3.600	11.81	122.16	2.04	SILTY SAND to SANDY SILT	41	48	78		43.0
3.750	12.30	136.77	2.89	SANDY SILT to CLAYEY SILT	55	64		8.0	
3.900	12.80	50.86	3.84	CLAYEY SILT to SILTY CLAY	25	29		2.9	
4.050	13.29	43.11	3.11	CLAYEY SILT to SILTY CLAY	22	24		2.8	
4.200	13.78	41.02	3.21	CLAYEY SILT to SILTY CLAY	21	23		2.7	
4.350	14.27	30.87	4.87	CLAY	31	33		1.8	
4.500	14.76	35.86	4.65	CLAY to SILTY CLAY	24	25		2.1	
4.650	15.26	81.94	2.44	SANDY SILT to CLAYEY SILT	33	34		5.4	
4.800	15.75	66.24	3.26	SANDY SILT to CLAYEY SILT	26	27		3.8	
4.950	16.24	17.38	4.90	CLAY	17	18		1.1	
5.100	16.73	10.64	1.99	CLAYEY SILT to SILTY CLAY	5	5		.8	
5.250	17.22	13.83	3.93	CLAY	14	14		.9	
5.400	17.72	17.04	4.34	CLAY	17	17		1.1	
5.550	18.21	26.51	3.80	CLAY to SILTY CLAY	18	17		1.7	
5.700	18.70	28.55	4.20	CLAY to SILTY CLAY	19	19		1.6	
5.850	19.19	55.36	4.36	CLAYEY SILT to SILTY CLAY	28	27		3.2	
6.000	19.69	45.44	3.97	CLAYEY SILT to SILTY CLAY	23	22		2.6	
6.150	20.18	12.39	6.70	CLAY	12	12		.7	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 16.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

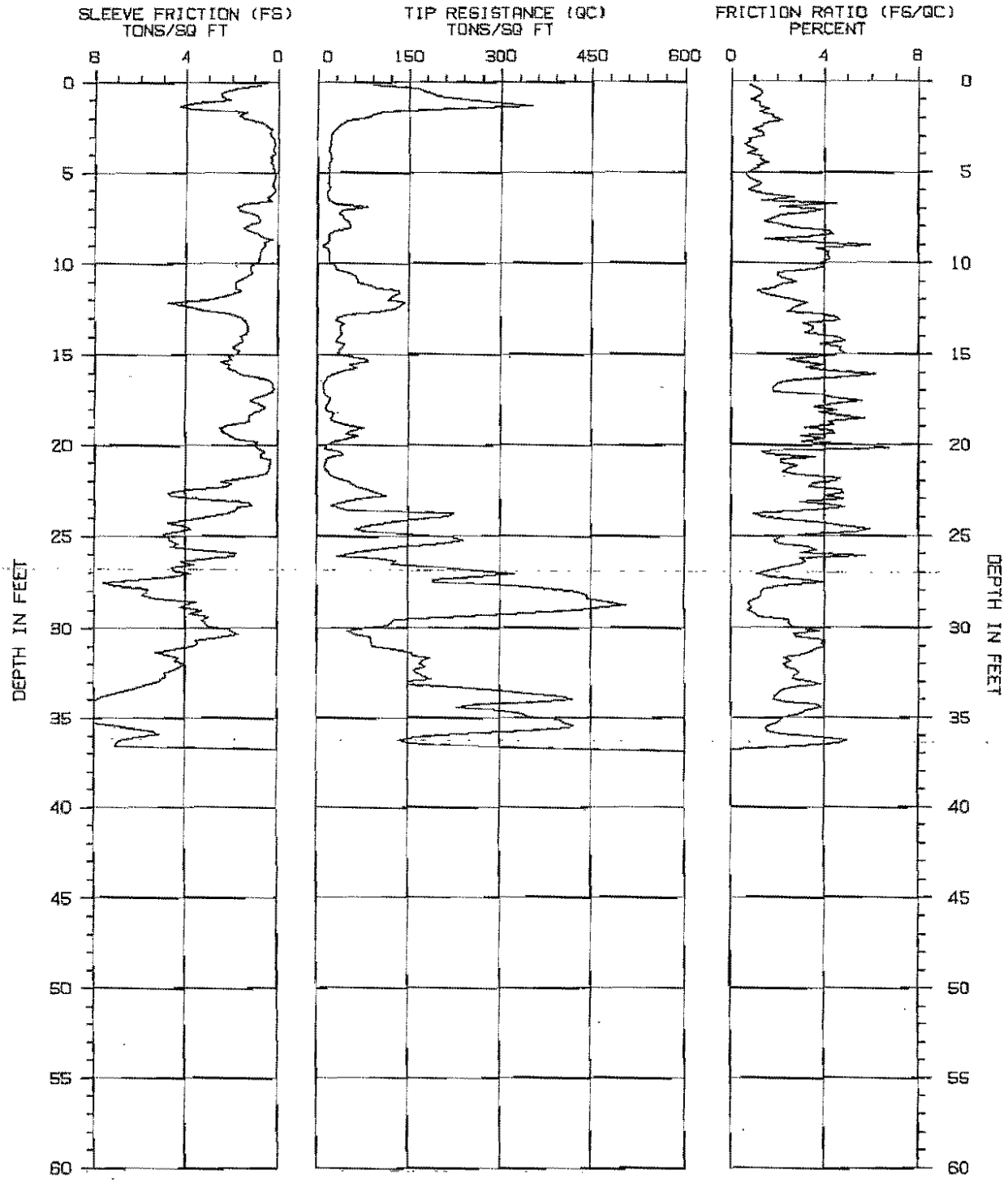
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-3M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	19.33	3.61	CLAY to SILTY CLAY	13	12		1.2	
6.450	21.16	12.07	2.87	CLAY to SILTY CLAY	8	8		.7	
6.600	21.65	21.92	2.90	CLAYEY SILT to SILTY CLAY	11	10		1.4	
6.750	22.15	56.30	3.52	CLAYEY SILT to SILTY CLAY	28	26		3.2	
6.900	22.64	99.06	4.80	*VERY STIFF FINE GRAINED	99	92			
7.050	23.13	41.79	3.01	CLAYEY SILT to SILTY CLAY	21	19		2.7	
7.200	23.62	52.75	3.45	CLAYEY SILT to SILTY CLAY	26	24		3.0	
7.350	24.11	156.87	2.46	SILTY SAND to SANDY SILT	52	48	77		42.0
7.500	24.61	63.63	5.90	CLAY	64	58		3.7	
7.650	25.10	220.50	2.15	SILTY SAND to SANDY SILT	74	66	87		43.0
7.800	25.59	140.07	3.29	SANDY SILT to CLAYEY SILT	56	50		8.1	
7.950	26.08	33.44	5.75	CLAY	33	30		1.9	
8.100	26.57	124.43	2.94	SANDY SILT to CLAYEY SILT	50	44		7.2	
8.250	27.07	323.52	1.16	SAND	65	57	97		44.5
8.400	27.56	193.03	3.92	*SAND to CLAYEY SAND	97	85			
8.550	28.05	427.13	1.34	SAND	85	75	100		46.0
8.700	28.54	472.40	.75	GRAVELLY SAND to SAND	79	68	100		46.0
8.850	29.04	431.59	.76	GRAVELLY SAND to SAND	72	62	100		46.0
9.000	29.53	129.21	2.52	SILTY SAND to SANDY SILT	43	37	70		39.5
9.150	30.02	68.26	3.05	SANDY SILT to CLAYEY SILT	27	23		3.9	
9.300	30.51	88.40	2.84	SANDY SILT to CLAYEY SILT	35	30		5.1	
9.450	31.00	92.18	4.06	CLAYEY SILT to SILTY CLAY	46	39		5.3	
9.600	31.50	158.44	2.92	SILTY SAND to SANDY SILT	53	45	75		41.0
9.750	31.99	170.11	2.32	SILTY SAND to SANDY SILT	57	48	77		41.5
9.900	32.48	166.07	2.96	SILTY SAND to SANDY SILT	55	46	76		41.0
10.050	32.97	150.84	3.37	SANDY SILT to CLAYEY SILT	60	50		8.8	
10.200	33.46	297.09	2.22	SILTY SAND to SANDY SILT	99	82	93		44.0
10.350	33.96	419.12	1.89	SAND to SILTY SAND	100	86	100		45.0
10.500	34.45	231.84	3.87	*SAND to CLAYEY SAND	100	95			
10.650	34.94	345.48	2.40	SILTY SAND to SANDY SILT	100	94	97		44.0
10.800	35.43	420.82	1.66	SAND to SILTY SAND	100	85	100		45.0
10.950	35.93	229.59	2.23	SILTY SAND to SANDY SILT	77	62	85		42.5
11.100	36.42	153.37	4.57	*VERY STIFF FINE GRAINED	100	100			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 16.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-3M

PROJECT NAME : AES-NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 408\#1 JH.GD

DATE/TIME: 09-07-99 07:47

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-4 M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 14:20
PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	181.01	2.05	SILTY SAND to SANDY SILT	60	96	93		
.300	.98	199.09	2.87	SILTY SAND to SANDY SILT	66	100	96		
.450	1.48	262.69	.69	SAND	53	84	100		
.600	1.97	84.34	3.97	CLAYEY SILT to SILTY CLAY	42	67		5.0	
.750	2.46	70.83	2.46	SANDY SILT to CLAYEY SILT	28	45		4.7	
.900	2.95	56.43	2.18	SANDY SILT to CLAYEY SILT	23	36		3.8	
1.050	3.44	44.47	1.89	SANDY SILT to CLAYEY SILT	18	28		3.0	
1.200	3.94	62.46	2.75	SANDY SILT to CLAYEY SILT	25	40		4.1	
1.350	4.43	83.47	2.41	SILTY SAND to SANDY SILT	28	44	71		45.5
1.500	4.92	90.14	1.49	SILTY SAND to SANDY SILT	30	48	73		45.5
1.650	5.41	90.46	5.31	*VERY STIFF FINE GRAINED	90	100			
1.800	5.91	63.22	3.02	SANDY SILT to CLAYEY SILT	25	40		4.2	
1.950	6.40	49.93	3.02	SANDY SILT to CLAYEY SILT	20	32		3.3	
2.100	6.89	87.40	2.52	SANDY SILT to CLAYEY SILT	35	54		5.8	
2.250	7.38	87.59	4.19	CLAYEY SILT to SILTY CLAY	44	66		5.1	
2.400	7.87	88.70	3.99	CLAYEY SILT to SILTY CLAY	44	65		5.2	
2.550	8.37	116.34	2.92	SANDY SILT to CLAYEY SILT	47	66		6.8	
2.700	8.86	123.58	3.47	SANDY SILT to CLAYEY SILT	49	68		7.2	
2.850	9.35	121.20	2.77	SANDY SILT to CLAYEY SILT	48	65		7.1	
3.000	9.84	139.85	2.38	SILTY SAND to SANDY SILT	47	61	84		44.5
3.150	10.33	144.36	2.80	SILTY SAND to SANDY SILT	48	61	84		44.5
3.300	10.83	135.78	3.65	SANDY SILT to CLAYEY SILT	54	67		7.9	
3.450	11.32	144.97	2.57	SILTY SAND to SANDY SILT	48	59	83		44.0
3.600	11.81	148.73	2.55	SILTY SAND to SANDY SILT	50	59	83		44.0
3.750	12.30	134.86	3.06	SANDY SILT to CLAYEY SILT	54	63		7.9	
3.900	12.80	119.03	3.49	SANDY SILT to CLAYEY SILT	48	54		7.0	
4.050	13.29	124.20	3.39	SANDY SILT to CLAYEY SILT	50	56		7.3	
4.200	13.78	192.33	1.66	SAND to SILTY SAND	48	53	88		44.5
4.350	14.27	143.23	2.46	SILTY SAND to SANDY SILT	48	52	79		43.0
4.500	14.76	112.02	2.53	SILTY SAND to SANDY SILT	37	40	72		42.0
4.650	15.26	80.77	2.98	SANDY SILT to CLAYEY SILT	32	34		4.7	
4.800	15.75	68.58	4.23	CLAYEY SILT to SILTY CLAY	34	35		4.0	
4.950	16.24	128.23	2.48	SILTY SAND to SANDY SILT	43	43	74		42.0
5.100	16.73	134.46	2.27	SILTY SAND to SANDY SILT	45	45	75		42.0
5.250	17.22	138.66	2.94	SANDY SILT to CLAYEY SILT	55	55		8.1	
5.400	17.72	109.79	2.81	SANDY SILT to CLAYEY SILT	44	43		6.4	
5.550	18.21	82.05	3.66	CLAYEY SILT to SILTY CLAY	41	39		4.8	
5.700	18.70	90.40	3.83	CLAYEY SILT to SILTY CLAY	45	43		5.3	
5.850	19.19	134.82	2.33	SILTY SAND to SANDY SILT	45	42	74		41.0
6.000	19.69	166.01	1.99	SILTY SAND to SANDY SILT	55	51	79		42.0
6.150	20.18	121.80	3.19	SANDY SILT to CLAYEY SILT	49	44		7.1	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

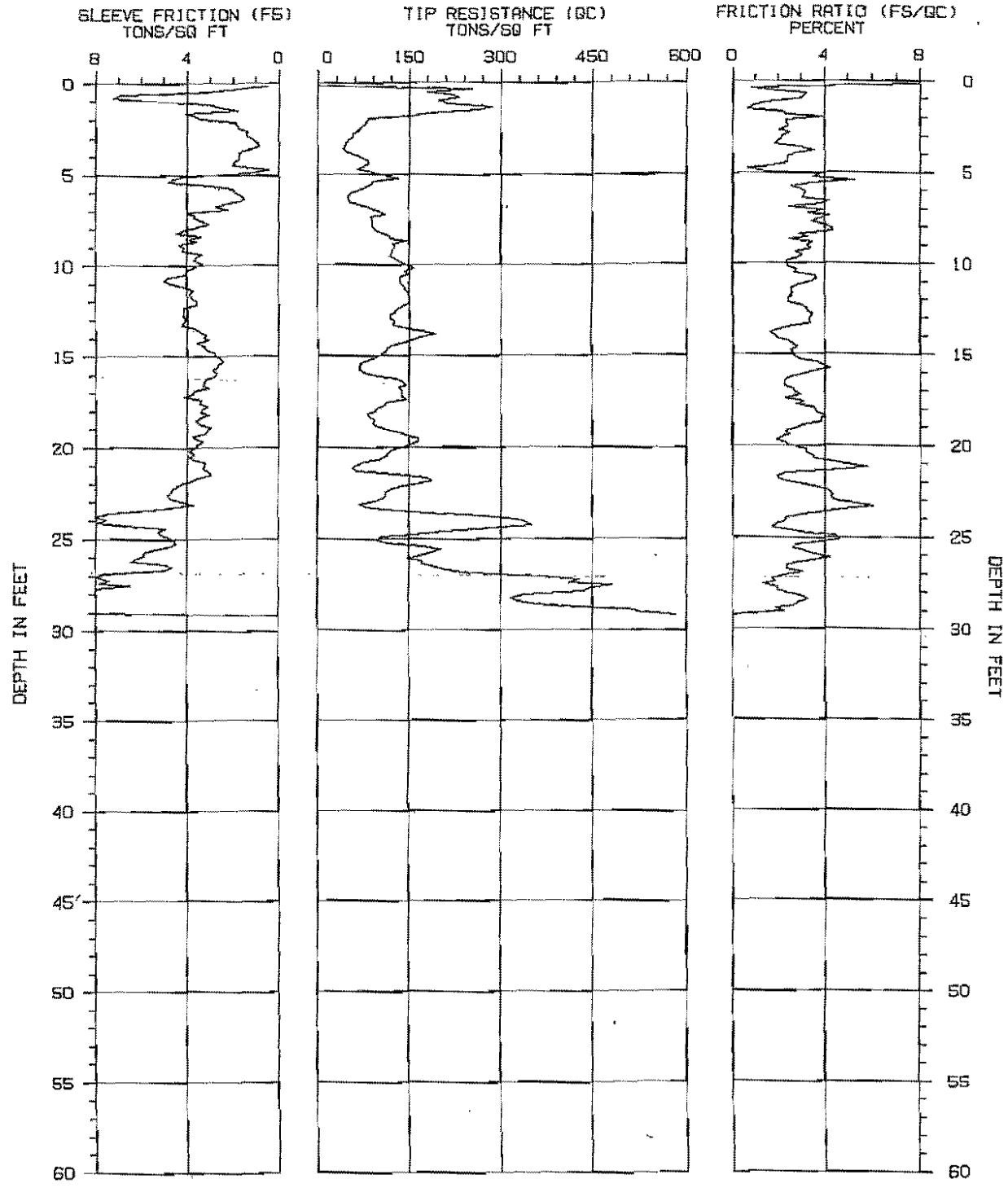
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-4 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	100.83	3.54	SANDY SILT to CLAYEY SILT	40	36		5.9	
6.450	21.16	56.72	5.77	CLAY	57	50		3.3	
6.600	21.65	180.45	1.95	SILTY SAND to SANDY SILT	60	53	80		42.0
6.750	22.15	142.40	3.13	SANDY SILT to CLAYEY SILT	57	49		8.3	
6.900	22.64	112.41	4.30	*VERY STIFF FINE GRAINED	100	96			
7.050	23.13	69.56	5.35	*VERY STIFF FINE GRAINED	70	59			
7.200	23.62	179.07	4.10	*VERY STIFF FINE GRAINED	100	100			
7.350	24.11	341.91	2.31	SILTY SAND to SANDY SILT	100	95	97		44.5
7.500	24.61	208.26	2.50	SILTY SAND to SANDY SILT	69	57	82		42.0
7.650	25.10	95.28	4.80	*VERY STIFF FINE GRAINED	95	78			
7.800	25.59	202.00	2.65	SILTY SAND to SANDY SILT	67	54	81		42.0
7.950	26.08	148.59	4.21	*VERY STIFF FINE GRAINED	100	100			
8.100	26.57	195.62	2.38	SILTY SAND to SANDY SILT	65	52	80		41.5
8.250	27.07	370.32	2.21	SAND to SILTY SAND	93	73	98		44.0
8.400	27.56	480.35	1.35	SAND	96	75	100		45.5
8.550	28.05	338.05	2.51	SILTY SAND to SANDY SILT	100	87	94		44.0
8.700	28.54	359.44	2.80	*SAND to CLAYEY SAND	100	100			
8.850	29.04	530.50	2.22	*SAND to CLAYEY SAND	100	100			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-4 M

PROJECT NAME : AES-NEWHALL RNCH

PROJECT NUMBER : 98-A893

CONE/RIG : 408\#1 JH.GO

DATE/TIME: 09-07-99 14:20

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-5 M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 14:51
PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	121.73	1.31	SAND to SILTY SAND	30	49	82		
.300	.98	95.84	2.56	SANDY SILT to CLAYEY SILT	38	61		6.4	
.450	1.48	83.02	1.68	SILTY SAND to SANDY SILT	28	44	71		
.600	1.97	25.37	7.45	CLAY	25	41		1.5	
.750	2.46	34.52	3.93	CLAYEY SILT to SILTY CLAY	17	28		2.0	
.900	2.95	38.98	3.32	CLAYEY SILT to SILTY CLAY	19	31		2.6	
1.050	3.44	40.81	3.55	CLAYEY SILT to SILTY CLAY	20	33		2.4	
1.200	3.94	4.82	5.03	CLAY	5	8		.3	
1.350	4.43	.81	31.44	ORGANIC MATERIAL	1	1		.1	
1.500	4.92	38.81	2.98	CLAYEY SILT to SILTY CLAY	19	31		2.6	
1.650	5.41	49.33	2.67	SANDY SILT to CLAYEY SILT	20	32		3.3	
1.800	5.91	60.97	2.60	SANDY SILT to CLAYEY SILT	24	39		4.0	
1.950	6.40	72.34	1.52	SILTY SAND to SANDY SILT	24	39	67		43.5
2.100	6.89	161.97	2.08	SILTY SAND to SANDY SILT	54	84	90		46.5
2.250	7.38	137.65	1.49	SAND to SILTY SAND	34	52	85		45.5
2.400	7.87	183.94	1.43	SAND to SILTY SAND	46	67	94		46.5
2.550	8.37	150.99	1.59	SAND to SILTY SAND	38	53	88		45.5
2.700	8.86	62.42	1.73	SILTY SAND to SANDY SILT	21	29	63		41.0
2.850	9.35	41.49	3.29	CLAYEY SILT to SILTY CLAY	21	28		2.7	
3.000	9.84	38.86	3.36	CLAYEY SILT to SILTY CLAY	19	25		2.6	
3.150	10.33	46.29	2.72	SANDY SILT to CLAYEY SILT	19	24		3.0	
3.300	10.83	175.35	1.51	SAND to SILTY SAND	44	54	89		45.0
3.450	11.32	68.88	1.46	SILTY SAND to SANDY SILT	23	28	62		40.0
3.600	11.81	36.69	3.81	CLAYEY SILT to SILTY CLAY	18	22		2.1	
3.750	12.30	46.19	3.32	CLAYEY SILT to SILTY CLAY	23	27		3.0	
3.900	12.80	57.72	2.88	SANDY SILT to CLAYEY SILT	23	26		3.8	
4.050	13.29	67.20	2.26	SANDY SILT to CLAYEY SILT	27	30		4.4	
4.200	13.78	72.85	2.19	SILTY SAND to SANDY SILT	24	27	61		39.5
4.350	14.27	42.96	3.63	CLAYEY SILT to SILTY CLAY	21	23		2.5	
4.500	14.76	32.04	5.09	CLAY	32	34		1.8	
4.650	15.26	33.18	4.75	CLAY	33	35		1.9	
4.800	15.75	34.27	4.89	CLAY	34	35		2.0	
4.950	16.24	32.74	5.02	CLAY	33	33		1.9	
5.100	16.73	32.57	4.82	CLAY	33	33		1.9	
5.250	17.22	57.57	2.49	SANDY SILT to CLAYEY SILT	23	23		3.8	
5.400	17.72	79.31	2.51	SANDY SILT to CLAYEY SILT	32	31		5.2	
5.550	18.21	81.60	3.82	CLAYEY SILT to SILTY CLAY	41	39		4.7	
5.700	18.70	50.63	3.50	CLAYEY SILT to SILTY CLAY	25	24		2.9	
5.850	19.19	36.84	4.60	CLAY to SILTY CLAY	25	23		2.1	
6.000	19.69	36.39	4.65	CLAY to SILTY CLAY	24	22		2.1	
6.150	20.18	30.53	5.85	CLAY	31	28		1.7	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

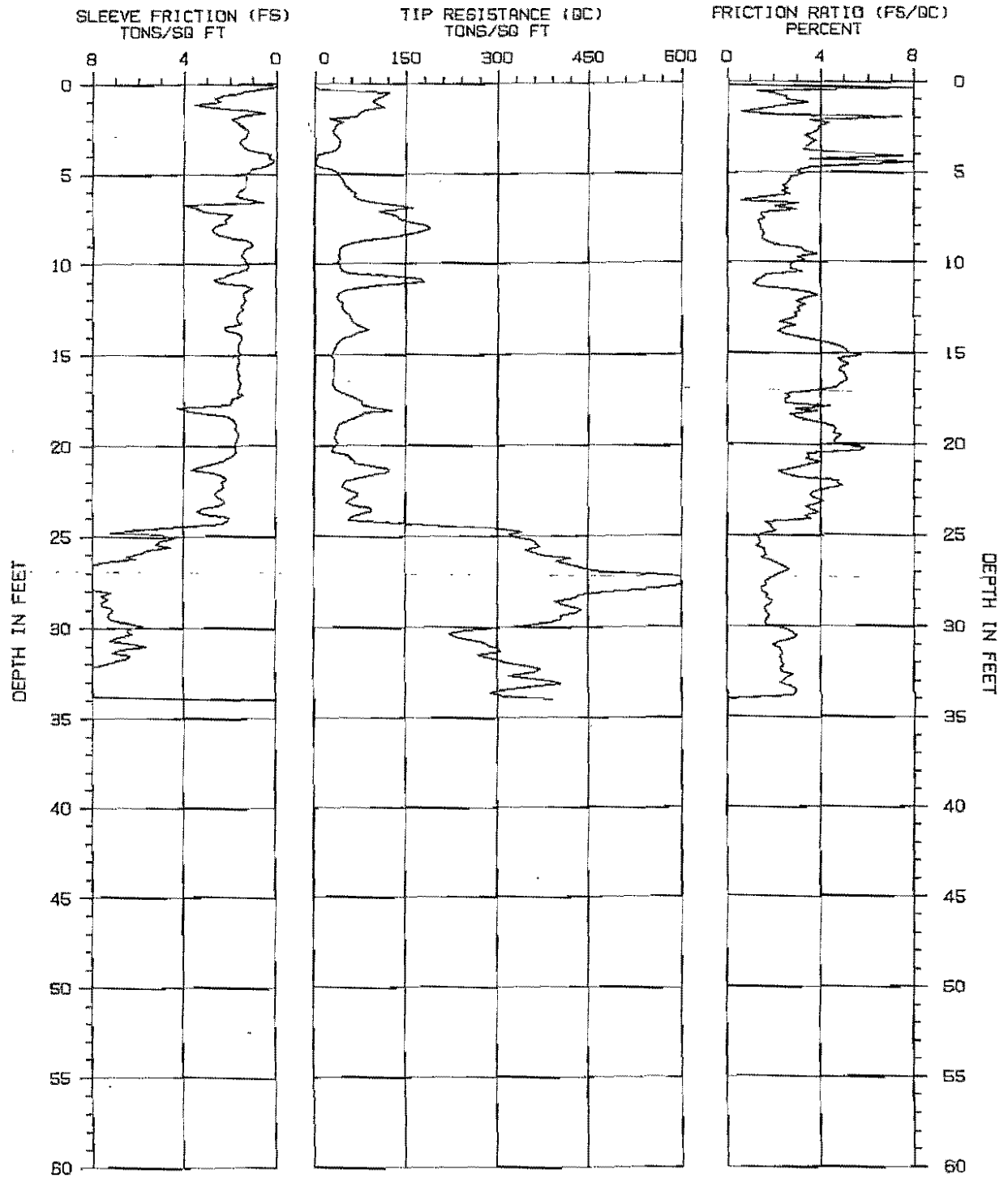
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-5 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	60.08	3.51	CLAYEY SILT to SILTY CLAY	30	27		3.5	
6.450	21.16	96.81	3.38	SANDY SILT to CLAYEY SILT	39	34		5.6	
6.600	21.65	94.16	2.45	SILTY SAND to SANDY SILT	31	28	61		38.5
6.750	22.15	49.08	4.71	CLAY to SILTY CLAY	33	28		2.8	
6.900	22.64	71.91	3.71	CLAYEY SILT to SILTY CLAY	36	31		4.2	
7.050	23.13	53.73	4.14	CLAYEY SILT to SILTY CLAY	27	23		3.1	
7.200	23.62	94.94	3.61	SANDY SILT to CLAYEY SILT	38	32		5.5	
7.350	24.11	57.51	3.60	CLAYEY SILT to SILTY CLAY	29	24		3.3	
7.500	24.61	311.05	1.94	SAND to SILTY SAND	78	64	94		44.0
7.650	25.10	331.06	1.32	SAND	66	54	95		44.0
7.800	25.59	370.11	1.24	SAND	74	60	98		44.5
7.950	26.08	380.35	1.70	SAND to SILTY SAND	95	76	99		44.5
8.100	26.57	418.06	2.18	SAND to SILTY SAND	100	83	100		45.0
8.250	27.07	522.37	2.31	*SAND to CLAYEY SAND	100	100			
8.400	27.56	710.02	1.67	SAND	100	100	100		
8.550	28.05	477.24	1.50	SAND	95	74	100		45.0
8.700	28.54	394.03	1.93	SAND to SILTY SAND	99	75	99		44.5
8.850	29.04	437.24	1.62	SAND to SILTY SAND	100	83	100		44.5
9.000	29.53	407.07	1.75	SAND to SILTY SAND	100	76	99		44.0
9.150	30.02	294.13	2.16	SAND to SILTY SAND	74	55	89		43.0
9.300	30.51	229.83	3.00	SILTY SAND to SANDY SILT	77	57	82		42.0
9.450	31.00	284.89	1.98	SAND to SILTY SAND	71	53	88		42.5
9.600	31.50	269.04	2.35	SILTY SAND to SANDY SILT	90	66	87		42.5
9.750	31.99	319.10	2.31	SILTY SAND to SANDY SILT	100	78	91		43.0
9.900	32.48	359.46	2.33	SAND to SILTY SAND	90	66	95		43.5
10.050	32.97	384.66	2.42	SILTY SAND to SANDY SILT	100	93	96		44.0
10.200	33.46	307.35	2.93	*SAND to CLAYEY SAND	100	100			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-5 M

PROJECT NAME : AES-NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 408\#1 JH.GD

DATE/TIME: 09-07-99 14:51

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-6 M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 09:50

PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	78.99	2.25	SILTY SAND to SANDY SILT	26	42	70		
.300	.98	66.71	3.80	CLAYEY SILT to SILTY CLAY	33	53		3.9	
.450	1.48	55.05	3.52	CLAYEY SILT to SILTY CLAY	28	44		3.2	
.600	1.97	157.83	1.99	SILTY SAND to SANDY SILT	53	84	89		
.750	2.46	135.84	1.80	SILTY SAND to SANDY SILT	45	72	85		
.900	2.95	99.77	2.05	SILTY SAND to SANDY SILT	33	53	76		48.0
1.050	3.44	64.78	2.74	SANDY SILT to CLAYEY SILT	26	41		4.3	
1.200	3.94	74.23	1.71	SILTY SAND to SANDY SILT	25	40	68		45.5
1.350	4.43	126.77	1.60	SAND to SILTY SAND	32	51	83		47.0
1.500	4.92	130.57	1.32	SAND to SILTY SAND	33	52	84		47.0
1.650	5.41	186.21	1.20	SAND to SILTY SAND	47	74	94		48.0
1.800	5.91	246.59	3.55	*SAND to CLAYEY SAND	100	100			
1.950	6.40	191.10	1.51	SAND to SILTY SAND	48	76	95		47.5
2.100	6.89	150.39	1.62	SAND to SILTY SAND	38	58	88		46.0
2.250	7.38	92.10	1.25	SAND to SILTY SAND	23	35	74		44.0
2.400	7.87	76.16	1.12	SAND to SILTY SAND	19	28	69		42.5
2.550	8.37	90.69	1.19	SAND to SILTY SAND	23	32	74		43.0
2.700	8.86	367.56	.79	SAND	74	100	100		48.5
2.850	9.35	426.32	.96	SAND	85	100	100		49.0
3.000	9.84	367.71	.78	SAND	74	96	100		48.0
3.150	10.33	220.39	1.22	SAND	44	56	96		46.0
3.300	10.83	75.46	2.34	SANDY SILT to CLAYEY SILT	30	37		5.0	
3.450	11.32	50.46	2.58	SANDY SILT to CLAYEY SILT	20	24		3.3	
3.600	11.81	76.52	1.85	SILTY SAND to SANDY SILT	26	30	64		40.5
3.750	12.30	133.08	1.74	SILTY SAND to SANDY SILT	44	52	80		43.0
3.900	12.80	287.46	1.26	SAND	57	66	100		46.0
4.050	13.29	134.69	2.33	SILTY SAND to SANDY SILT	45	50	79		43.0
4.200	13.78	432.44	1.42	SAND	86	95	100		47.5
4.350	14.27	311.90	1.25	SAND	62	67	100		46.0
4.500	14.76	419.46	1.13	SAND	84	89	100		47.0
4.650	15.26	164.54	2.84	SILTY SAND to SANDY SILT	55	57	83		43.0
4.800	15.75	234.93	1.20	SAND	47	48	92		44.5
4.950	16.24	206.84	.99	SAND	41	42	88		44.0
5.100	16.73	131.61	1.16	SAND to SILTY SAND	33	33	75		42.0
5.250	17.22	135.44	1.47	SAND to SILTY SAND	34	33	75		42.0
5.400	17.72	120.67	.60	SAND	24	23	71		41.0
5.550	18.21	87.38	.99	SAND to SILTY SAND	22	21	62		39.0
5.700	18.70	42.30	2.08	SANDY SILT to CLAYEY SILT	17	16		2.7	
5.850	19.19	100.70	.73	SAND to SILTY SAND	25	23	65		39.5
6.000	19.69	116.40	.80	SAND to SILTY SAND	29	27	69		40.0
6.150	20.18	127.00	1.68	SILTY SAND to SANDY SILT	42	38	71		40.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

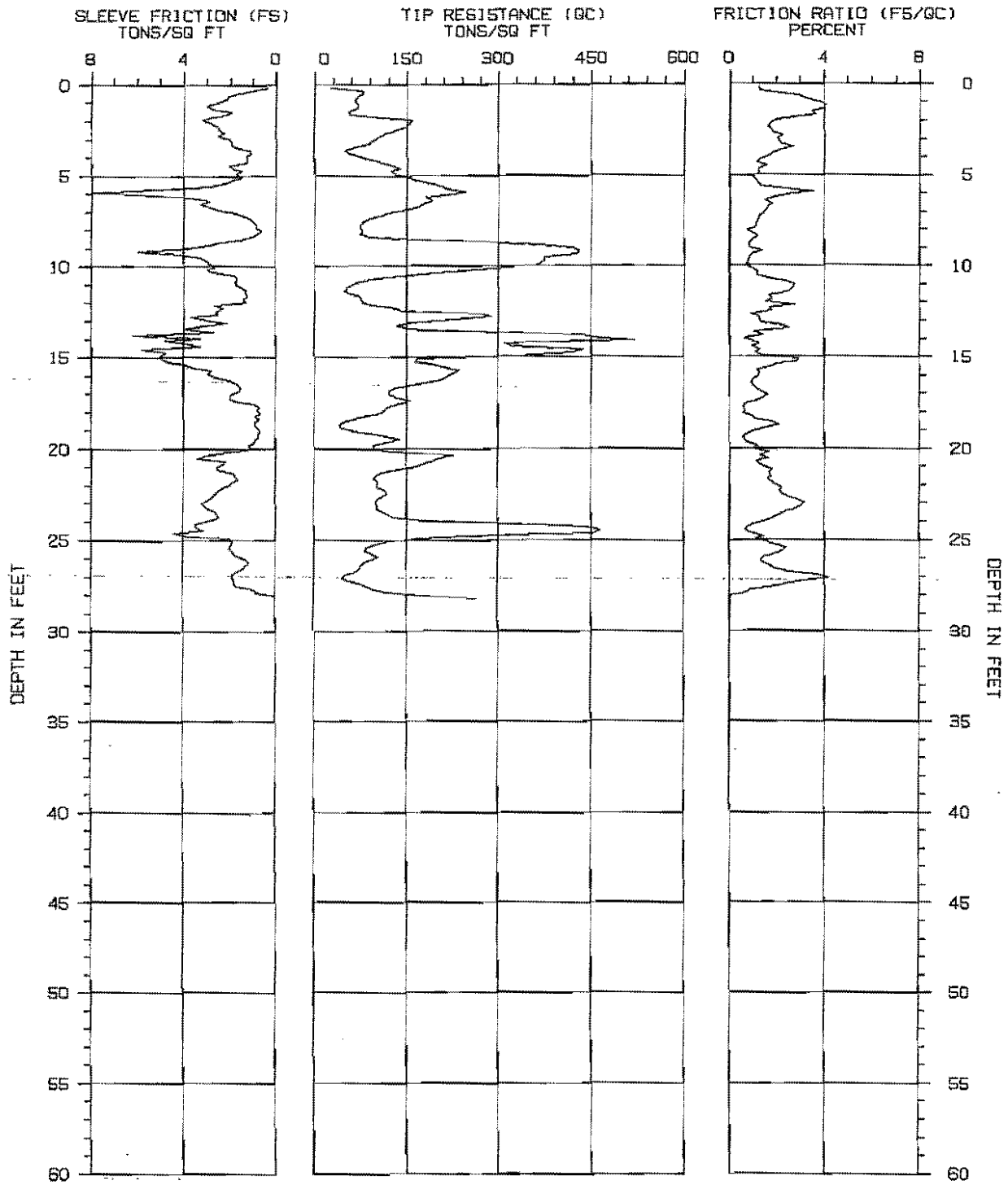
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-6 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	192.10	1.16	SAND to SILTY SAND	48	43	83		42.5
6.450	21.16	137.77	1.84	SILTY SAND to SANDY SILT	46	41	73		40.5
6.600	21.65	97.30	1.66	SILTY SAND to SANDY SILT	32	28	62		38.5
6.750	22.15	102.78	2.23	SILTY SAND to SANDY SILT	34	30	64		39.0
6.900	22.64	110.64	2.47	SILTY SAND to SANDY SILT	37	32	65		39.0
7.050	23.13	101.36	3.02	SANDY SILT to CLAYEY SILT	41	34		5.9	
7.200	23.62	119.20	2.13	SILTY SAND to SANDY SILT	40	33	67		39.0
7.350	24.11	318.18	1.08	SAND	64	53	95		44.0
7.500	24.61	453.53	.97	SAND	91	75	100		45.5
7.650	25.10	121.39	1.55	SAND to SILTY SAND	30	25	67		39.0
7.800	25.59	84.04	2.26	SILTY SAND to SANDY SILT	28	23	56		38.0
7.950	26.08	91.80	1.36	SAND to SILTY SAND	23	18	58		38.0
8.100	26.57	74.59	1.91	SILTY SAND to SANDY SILT	25	20	52		37.0
8.250	27.07	45.17	4.19	CLAYEY SILT to SILTY CLAY	23	18		2.6	
8.400	27.56	85.26	2.02	SILTY SAND to SANDY SILT	28	22	55		37.5
8.550	28.05	173.10	*****		0	0			45.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-6 M

PROJECT NAME : AES-NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 408\#1 JH.GD

DATE/TIME: 09-07-99 09:50

HFA

CPT INTERPRETATIONS

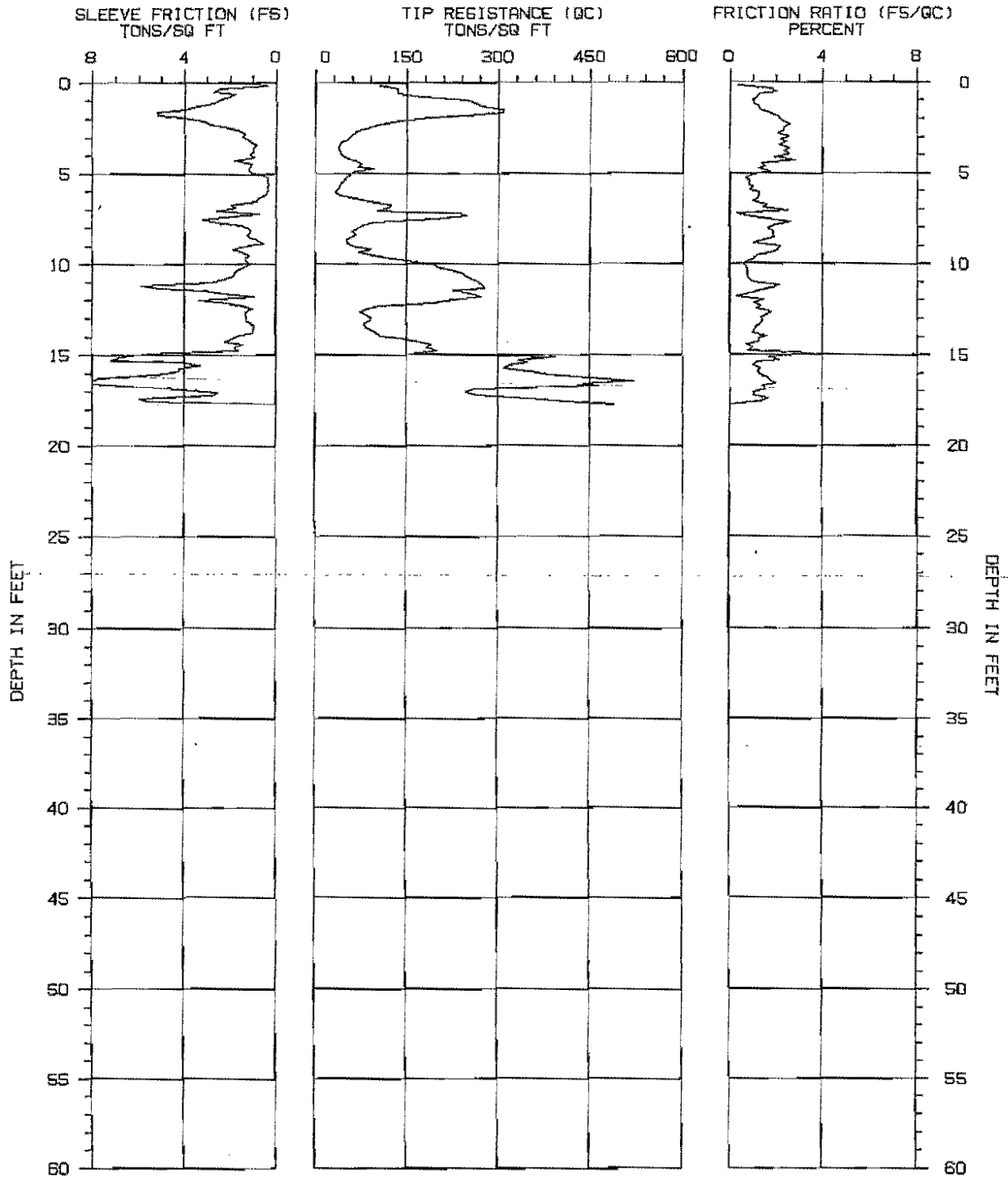
SOUNDING : CPT-7 M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 10:34
PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	135.48	1.99	SILTY SAND to SANDY SILT	45	72	85		
.300	.98	247.65	1.00	SAND	50	79	100		
.450	1.48	307.35	1.29	SAND	61	98	100		
.600	1.97	186.42	2.16	SILTY SAND to SANDY SILT	62	99	94		
.750	2.46	88.99	2.32	SILTY SAND to SANDY SILT	30	47	73		48.0
.900	2.95	56.87	2.55	SANDY SILT to CLAYEY SILT	23	36		3.8	
1.050	3.44	39.58	2.16	SANDY SILT to CLAYEY SILT	16	25		2.6	
1.200	3.94	42.26	2.60	SANDY SILT to CLAYEY SILT	17	27		2.8	
1.350	4.43	76.06	1.40	SILTY SAND to SANDY SILT	25	41	68		45.0
1.500	4.92	63.44	1.78	SILTY SAND to SANDY SILT	21	34	63		44.0
1.650	5.41	44.91	.86	SILTY SAND to SANDY SILT	15	24	53		42.0
1.800	5.91	33.65	.88	SILTY SAND to SANDY SILT	11	18	45		39.5
1.950	6.40	65.18	1.21	SILTY SAND to SANDY SILT	22	35	64		43.0
2.100	6.89	122.67	1.43	SAND to SILTY SAND	31	48	82		45.5
2.250	7.38	248.67	.74	SAND	50	75	100		48.0
2.400	7.87	76.59	1.98	SILTY SAND to SANDY SILT	26	37	69		42.5
2.550	8.37	66.88	1.86	SILTY SAND to SANDY SILT	22	31	65		42.0
2.700	8.86	52.50	1.01	SILTY SAND to SANDY SILT	18	24	58		40.0
2.850	9.35	72.89	1.93	SILTY SAND to SANDY SILT	24	32	66		42.0
3.000	9.84	163.67	.79	SAND	33	43	89		45.0
3.150	10.33	222.22	.76	SAND	44	56	97		46.0
3.300	10.83	258.61	.87	SAND	52	64	100		46.5
3.450	11.32	277.95	1.82	SAND to SILTY SAND	69	84	100		46.5
3.600	11.81	271.83	.33	GRAVELLY SAND to SAND	45	54	100		46.5
3.750	12.30	104.16	1.35	SAND to SILTY SAND	26	30	72		42.0
3.900	12.80	80.50	1.66	SILTY SAND to SANDY SILT	27	31	65		40.0
4.050	13.29	80.90	1.32	SILTY SAND to SANDY SILT	27	30	64		40.0
4.200	13.78	99.79	1.00	SAND to SILTY SAND	25	27	70		41.5
4.350	14.27	171.36	1.29	SAND to SILTY SAND	43	46	85		44.0
4.500	14.76	200.42	.82	SAND	40	43	89		44.0
4.650	15.26	333.12	2.16	SAND to SILTY SAND	83	87	100		46.0
4.800	15.75	310.54	1.34	SAND	62	64	100		46.0
4.950	16.24	449.05	1.70	SAND to SILTY SAND	100	100	100		47.0
5.100	16.73	462.41	1.43	SAND	92	92	100		47.0
5.250	17.22	267.03	1.01	SAND	53	53	95		44.5
5.400	17.72	489.42	*****		0	0			41.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-7 M

PROJECT NAME : AES-NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 408\#1 JH.00

DATE/TIME: 09-07-99 10:34

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-8 M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 11:05
PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	132.91	2.27	SILTY SAND to SANDY SILT	44	71	84		
.300	.98	192.80	4.86	*VERY STIFF FINE GRAINED	100	100			
.450	1.48	113.34	6.20	*VERY STIFF FINE GRAINED	100	100			
.600	1.97	86.55	5.67	*VERY STIFF FINE GRAINED	87	100			
.750	2.46	79.77	5.19	*VERY STIFF FINE GRAINED	80	100			
.900	2.95	88.42	5.00	*VERY STIFF FINE GRAINED	88	100			
1.050	3.44	85.98	5.68	*VERY STIFF FINE GRAINED	86	100			
1.200	3.94	65.18	5.65	*VERY STIFF FINE GRAINED	65	100			
1.350	4.43	44.32	5.65	CLAY	44	71		2.6	
1.500	4.92	35.50	4.81	CLAY	36	57		2.1	
1.650	5.41	42.09	4.53	CLAY to SILTY CLAY	28	45		2.5	
1.800	5.91	45.68	4.11	CLAYEY SILT to SILTY CLAY	23	37		2.7	
1.950	6.40	30.49	4.34	CLAY to SILTY CLAY	20	33		1.8	
2.100	6.89	32.84	5.94	CLAY	33	51		1.9	
2.250	7.38	41.17	6.78	CLAY	41	62		2.4	
2.400	7.87	50.39	6.24	CLAY	50	73		2.9	
2.550	8.37	65.69	5.31	*VERY STIFF FINE GRAINED	66	93			
2.700	8.86	82.03	5.46	*VERY STIFF FINE GRAINED	82	100			
2.850	9.35	52.77	4.48	CLAY to SILTY CLAY	35	47		3.1	
3.000	9.84	59.10	5.88	CLAY	59	77		3.4	
3.150	10.33	59.76	5.45	CLAY	60	76		3.5	
3.300	10.83	70.49	5.26	*VERY STIFF FINE GRAINED	70	87			
3.450	11.32	60.17	5.71	CLAY	60	73		3.5	
3.600	11.81	80.73	5.09	*VERY STIFF FINE GRAINED	81	96			
3.750	12.30	79.12	4.93	*VERY STIFF FINE GRAINED	79	92			
3.900	12.80	72.42	4.29	CLAYEY SILT to SILTY CLAY	36	41		4.2	
4.050	13.29	53.88	4.94	CLAY to SILTY CLAY	36	40		3.1	
4.200	13.78	71.15	4.92	*VERY STIFF FINE GRAINED	71	78			
4.350	14.27	66.31	5.16	*VERY STIFF FINE GRAINED	66	72			
4.500	14.76	76.35	4.84	*VERY STIFF FINE GRAINED	76	81			
4.650	15.26	80.22	4.65	*VERY STIFF FINE GRAINED	80	84			
4.800	15.75	71.43	5.24	*VERY STIFF FINE GRAINED	71	73			
4.950	16.24	50.84	6.56	CLAY	51	52		2.9	
5.100	16.73	70.45	4.43	CLAYEY SILT to SILTY CLAY	35	35		4.1	
5.250	17.22	87.21	3.03	SANDY SILT to CLAYEY SILT	35	34		5.1	
5.400	17.72	136.50	1.97	SILTY SAND to SANDY SILT	46	44	75		42.0
5.550	18.21	152.96	3.07	SANDY SILT to CLAYEY SILT	61	59		8.9	
5.700	18.70	227.04	3.27	*SAND to CLAYEY SAND	100	100			
5.850	19.19	226.17	5.36	*VERY STIFF FINE GRAINED	100	100			
6.000	19.69	280.24	4.33	*VERY STIFF FINE GRAINED	100	100			
6.150	20.18	328.00	3.70	*SAND to CLAYEY SAND	100	100			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

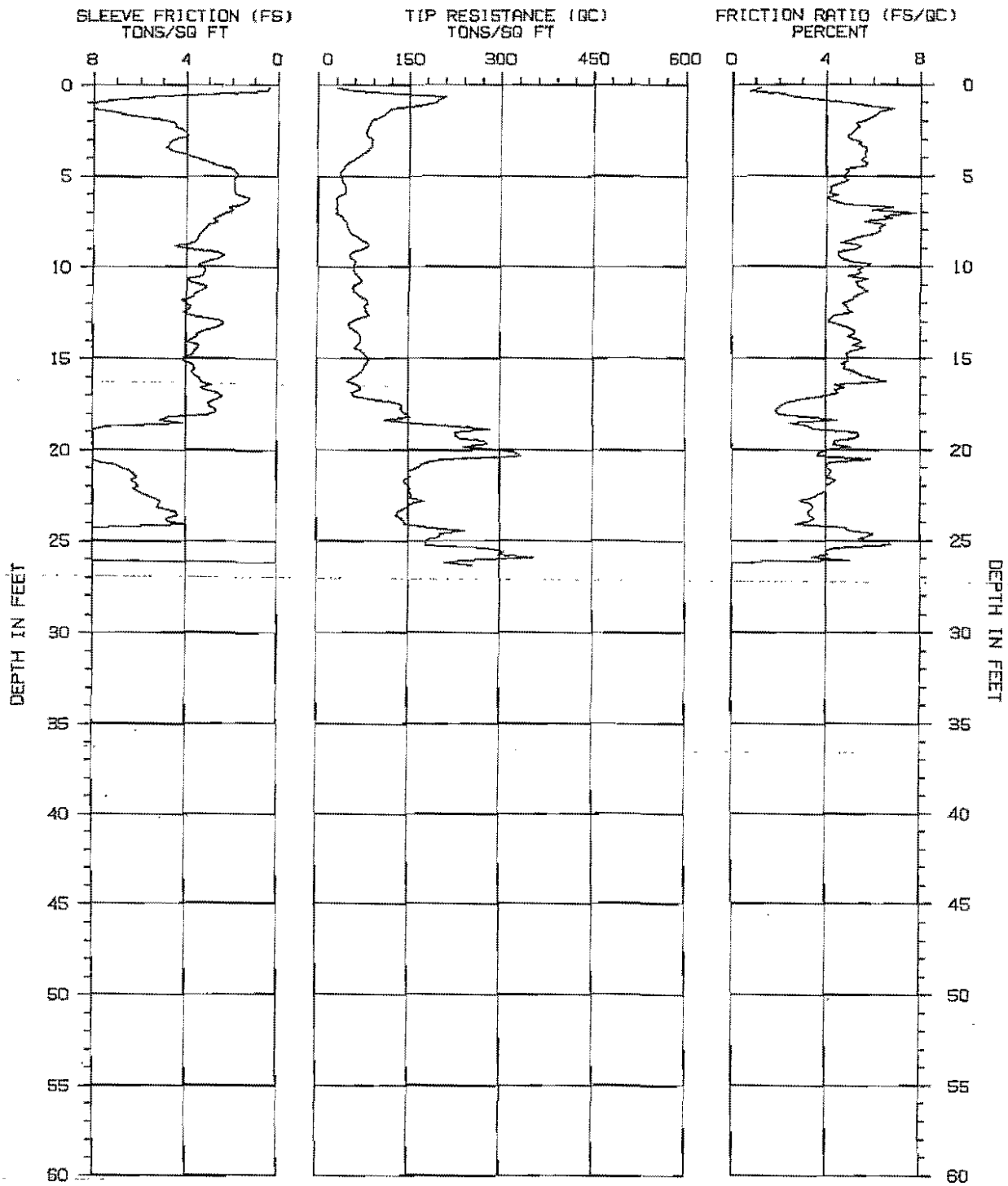
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-8 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	180.71	4.19	*VERY STIFF FINE GRAINED	100	100			
6.450	21.16	151.45	4.21	*VERY STIFF FINE GRAINED	100	100			
6.600	21.65	143.85	4.39	*VERY STIFF FINE GRAINED	100	100			
6.750	22.15	154.07	4.05	*VERY STIFF FINE GRAINED	100	100			
6.900	22.64	153.47	3.53	SANDY SILT to CLAYEY SILT	61	53		8.9	
7.050	23.13	149.84	3.49	SANDY SILT to CLAYEY SILT	60	51		8.7	
7.200	23.62	129.98	3.29	SANDY SILT to CLAYEY SILT	52	44		7.6	
7.350	24.11	144.44	2.73	SILTY SAND to SANDY SILT	48	40	72		40.0
7.500	24.61	202.91	5.98	*VERY STIFF FINE GRAINED	100	100			
7.650	25.10	180.13	6.69	*VERY STIFF FINE GRAINED	100	100			
7.800	25.59	305.97	3.96	*SAND to CLAYEY SAND	100	100			
7.950	26.08	240.75	5.04	*VERY STIFF FINE GRAINED	100	100			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST SOUNDING NUMBER: CPT-8 M

PROJECT NAME : AES-NEWHALL RNCH CONE/RIG : 408\#1 JH.GO

PROJECT NUMBER : 99-A893 DATE/TIME: 09-07-99 11:05

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-9 M
PROJECT : AES-NEWHALL RNCH
DATE/TIME: 09-07-99 12:59

PROJECT No.: 99-A893
CONE/RIG : 408\#1 JH,GO

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	171.55	3.91	*SAND to CLAYEY SAND	86	100			
.300	.98	188.65	4.42	*VERY STIFF FINE GRAINED	100	100			
.450	1.48	132.06	2.40	SILTY SAND to SANDY SILT	44	70	84		
.600	1.97	285.64	2.70	SILTY SAND to SANDY SILT	95	100	100		
.750	2.46	95.07	3.32	SANDY SILT to CLAYEY SILT	38	61		5.6	
.900	2.95	92.69	2.52	SILTY SAND to SANDY SILT	31	49	74		47.5
1.050	3.44	62.14	3.13	SANDY SILT to CLAYEY SILT	25	40		3.6	
1.200	3.94	29.89	4.57	CLAY to SILTY CLAY	20	32		1.7	
1.350	4.43	29.45	3.98	CLAY to SILTY CLAY	20	31		1.9	
1.500	4.92	53.07	2.20	SANDY SILT to CLAYEY SILT	21	34		3.5	
1.650	5.41	24.71	2.02	SANDY SILT to CLAYEY SILT	10	16		2.0	
1.800	5.91	8.33	3.82	CLAY	8	13		.5	
1.950	6.40	8.58	3.38	CLAY	9	14		.5	
2.100	6.89	11.58	3.11	CLAY to SILTY CLAY	8	12		.7	
2.250	7.38	9.96	3.87	CLAY	10	15		.6	
2.400	7.87	8.20	4.18	CLAY	8	12		.5	
2.550	8.37	9.03	5.77	CLAY	9	13		.6	
2.700	8.86	33.33	3.04	CLAYEY SILT to SILTY CLAY	17	23		2.2	
2.850	9.35	24.30	4.36	CLAY to SILTY CLAY	16	22		1.6	
3.000	9.84	30.83	3.28	CLAYEY SILT to SILTY CLAY	15	20		2.0	
3.150	10.33	34.52	3.53	CLAYEY SILT to SILTY CLAY	17	22		2.3	
3.300	10.83	43.45	3.74	CLAYEY SILT to SILTY CLAY	22	27		2.5	
3.450	11.32	48.99	3.33	CLAYEY SILT to SILTY CLAY	24	30		2.8	
3.600	11.81	38.81	5.26	CLAY	39	46		2.2	
3.750	12.30	68.39	4.98	*VERY STIFF FINE GRAINED	68	80			
3.900	12.80	62.61	3.18	SANDY SILT to CLAYEY SILT	25	29		3.6	
4.050	13.29	103.44	2.51	SILTY SAND to SANDY SILT	34	39	71		42.0
4.200	13.78	149.58	2.25	SILTY SAND to SANDY SILT	50	55	81		43.0
4.350	14.27	194.67	2.25	SILTY SAND to SANDY SILT	65	70	88		44.0
4.500	14.76	251.41	2.35	SILTY SAND to SANDY SILT	84	89	95		45.0
4.650	15.26	289.18	1.84	SAND to SILTY SAND	72	76	99		45.5
4.800	15.75	375.48	1.74	SAND to SILTY SAND	94	97	100		46.5
4.950	16.24	313.25	1.80	SAND to SILTY SAND	78	79	100		46.0
5.100	16.73	280.03	1.72	SAND to SILTY SAND	70	70	96		45.0
5.250	17.22	173.19	1.44	SAND to SILTY SAND	43	43	82		43.0
5.400	17.72	192.80	1.96	SILTY SAND to SANDY SILT	64	62	85		43.0
5.550	18.21	247.03	1.43	SAND to SILTY SAND	62	59	92		44.0
5.700	18.70	256.72	1.35	SAND to SILTY SAND	64	61	92		44.0
5.850	19.19	274.21	2.31	SILTY SAND to SANDY SILT	91	85	94		44.5
6.000	19.69	458.44	1.36	SAND	92	84	100		46.5
6.150	20.18	692.75	1.39	SAND	100	100	100		

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 25.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

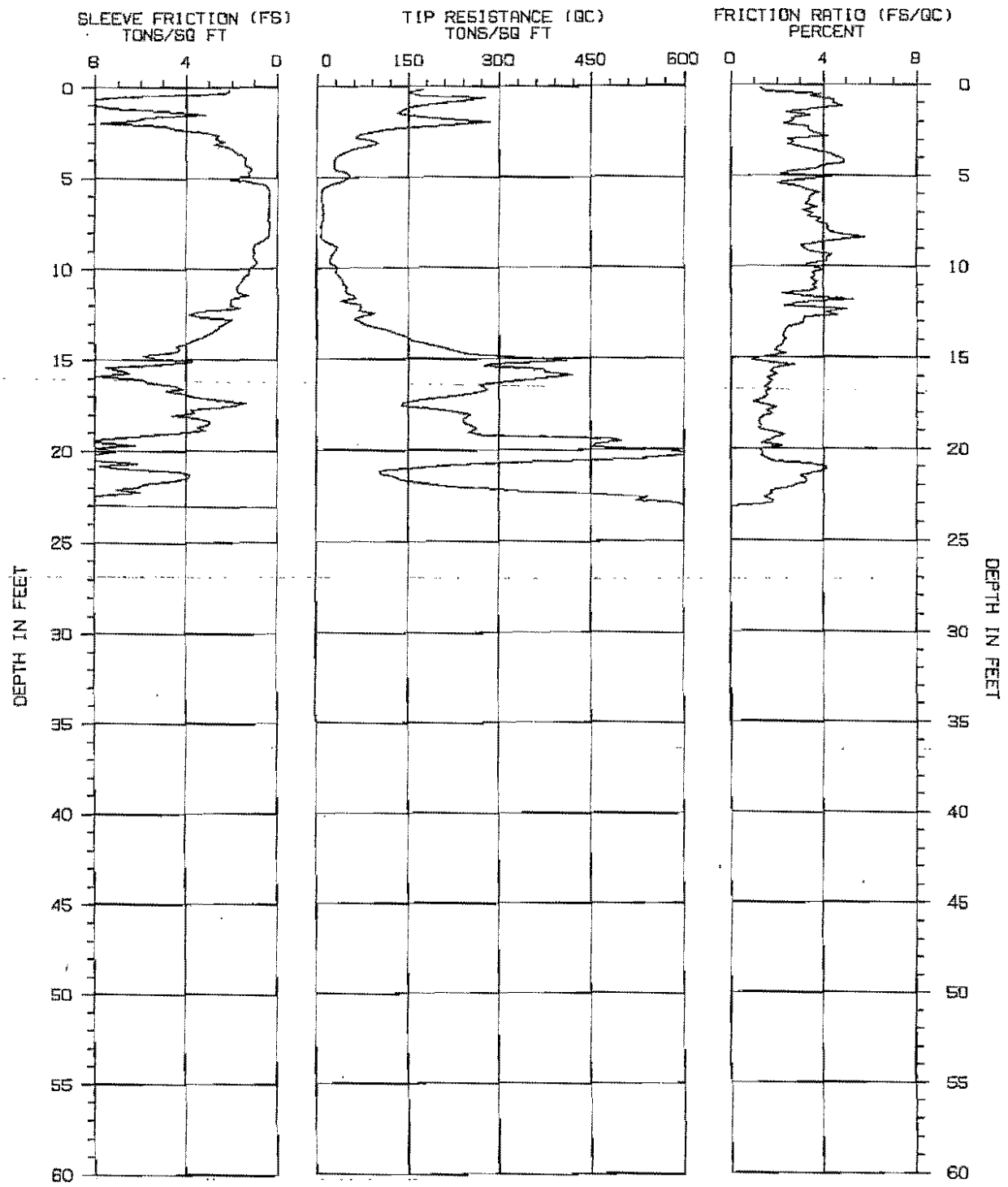
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-9 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	321.05	1.91	SAND to SILTY SAND	80	72	97		44.5
6.450	21.16	103.99	4.14	CLAYEY SILT to SILTY CLAY	52	46		6.0	
6.600	21.65	138.94	3.25	SANDY SILT to CLAYEY SILT	56	49		8.1	
6.750	22.15	271.87	2.60	SILTY SAND to SANDY SILT	91	79	92		44.0
6.900	22.64	540.81	1.47	SAND	100	93	100		
7.050	23.13	627.08	*****		0	0			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 25.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-9 M

PROJECT NAME : AES-NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 408\#1 JH.GD

DATE/TIME: 09-07-99 12:59

HFA

CPT INTERPRETATIONS

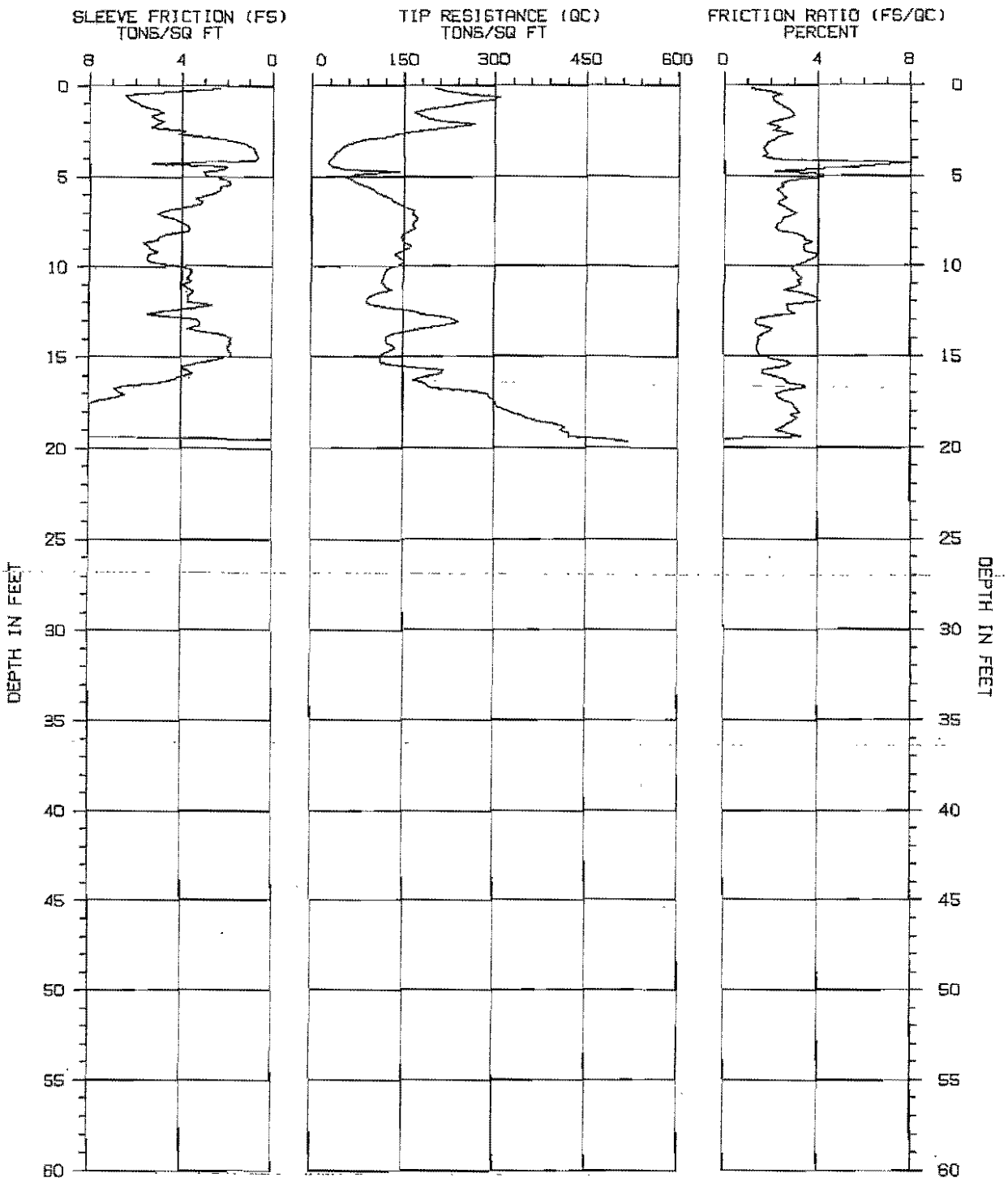
SOUNDING : CPT-10 M
PROJECT : AES/NEWHALL RNCH
DATE/TIME: 09-22-99 08:46
PROJECT No.: 99-A893
CONE/RIG : 473,GO,MR,R#4

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	260.99	2.47	SILTY SAND to SANDY SILT	87	100	100		
.300	.98	254.83	2.29	SILTY SAND to SANDY SILT	85	100	100		
.450	1.48	166.71	2.88	SILTY SAND to SANDY SILT	56	89	91		
.600	1.97	213.83	2.21	SILTY SAND to SANDY SILT	71	100	98		
.750	2.46	182.30	2.11	SILTY SAND to SANDY SILT	61	97	94		
.900	2.95	84.41	2.16	SILTY SAND to SANDY SILT	28	45	71		47.0
1.050	3.44	48.95	1.72	SILTY SAND to SANDY SILT	16	26	56		44.5
1.200	3.94	36.24	1.66	SANDY SILT to CLAYEY SILT	14	23		2.9	
1.350	4.43	33.42	6.16	CLAY	33	53		2.0	
1.500	4.92	70.81	4.21	CLAYEY SILT to SILTY CLAY	35	57		4.1	
1.650	5.41	74.93	2.47	SANDY SILT to CLAYEY SILT	30	48		5.0	
1.800	5.91	107.29	2.40	SILTY SAND to SANDY SILT	36	57	78		45.5
1.950	6.40	131.27	2.36	SILTY SAND to SANDY SILT	44	70	84		46.0
2.100	6.89	166.67	2.78	SILTY SAND to SANDY SILT	56	86	91		46.5
2.250	7.38	172.47	2.50	SILTY SAND to SANDY SILT	57	86	92		46.5
2.400	7.87	168.30	2.20	SILTY SAND to SANDY SILT	56	82	91		46.0
2.550	8.37	145.55	3.40	SANDY SILT to CLAYEY SILT	58	82		8.5	
2.700	8.86	161.52	3.38	SANDY SILT to CLAYEY SILT	65	89		9.5	
2.850	9.35	135.58	4.03	*VERY STIFF FINE GRAINED	100	100			
3.000	9.84	146.84	3.29	SANDY SILT to CLAYEY SILT	59	76		8.6	
3.150	10.33	118.42	3.03	SANDY SILT to CLAYEY SILT	47	60		6.9	
3.300	10.83	113.17	3.13	SANDY SILT to CLAYEY SILT	45	56		6.6	
3.450	11.32	132.48	2.60	SILTY SAND to SANDY SILT	44	54	81		43.5
3.600	11.81	92.58	3.95	CLAYEY SILT to SILTY CLAY	46	55		5.4	
3.750	12.30	128.53	2.72	SILTY SAND to SANDY SILT	43	50	79		43.0
3.900	12.80	209.03	2.26	SILTY SAND to SANDY SILT	70	80	92		45.0
4.050	13.29	217.16	1.48	SAND to SILTY SAND	54	61	92		45.0
4.200	13.78	130.04	1.66	SILTY SAND to SANDY SILT	43	48	77		42.5
4.350	14.27	123.26	1.46	SAND to SILTY SAND	31	33	75		42.0
4.500	14.76	123.47	1.47	SAND to SILTY SAND	31	33	75		42.0
4.650	15.26	111.28	2.74	SANDY SILT to CLAYEY SILT	45	47		6.5	
4.800	15.75	216.02	1.69	SAND to SILTY SAND	54	56	90		44.0
4.950	16.24	166.62	2.61	SILTY SAND to SANDY SILT	56	56	82		43.0
5.100	16.73	198.07	3.48	*SAND to CLAYEY SAND	99	99			
5.250	17.22	292.50	2.34	SILTY SAND to SANDY SILT	98	96	97		45.0
5.400	17.72	304.10	2.97	*SAND to CLAYEY SAND	100	100			
5.550	18.21	344.12	2.85	*SAND to CLAYEY SAND	100	100			
5.700	18.70	401.31	2.66	*SAND to CLAYEY SAND	100	100			
5.850	19.19	422.09	2.75	*SAND to CLAYEY SAND	100	100			
6.000	19.69	518.76	*****		0	0			.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 35.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-10 M

PROJECT NAME : AES/NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 473.GO.MR.R=4

DATE/TIME: 09-22-99 08:46

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-11 M
PROJECT : AES/NEWHALL RNCH
DATE/TIME: 09-22-99 08:14

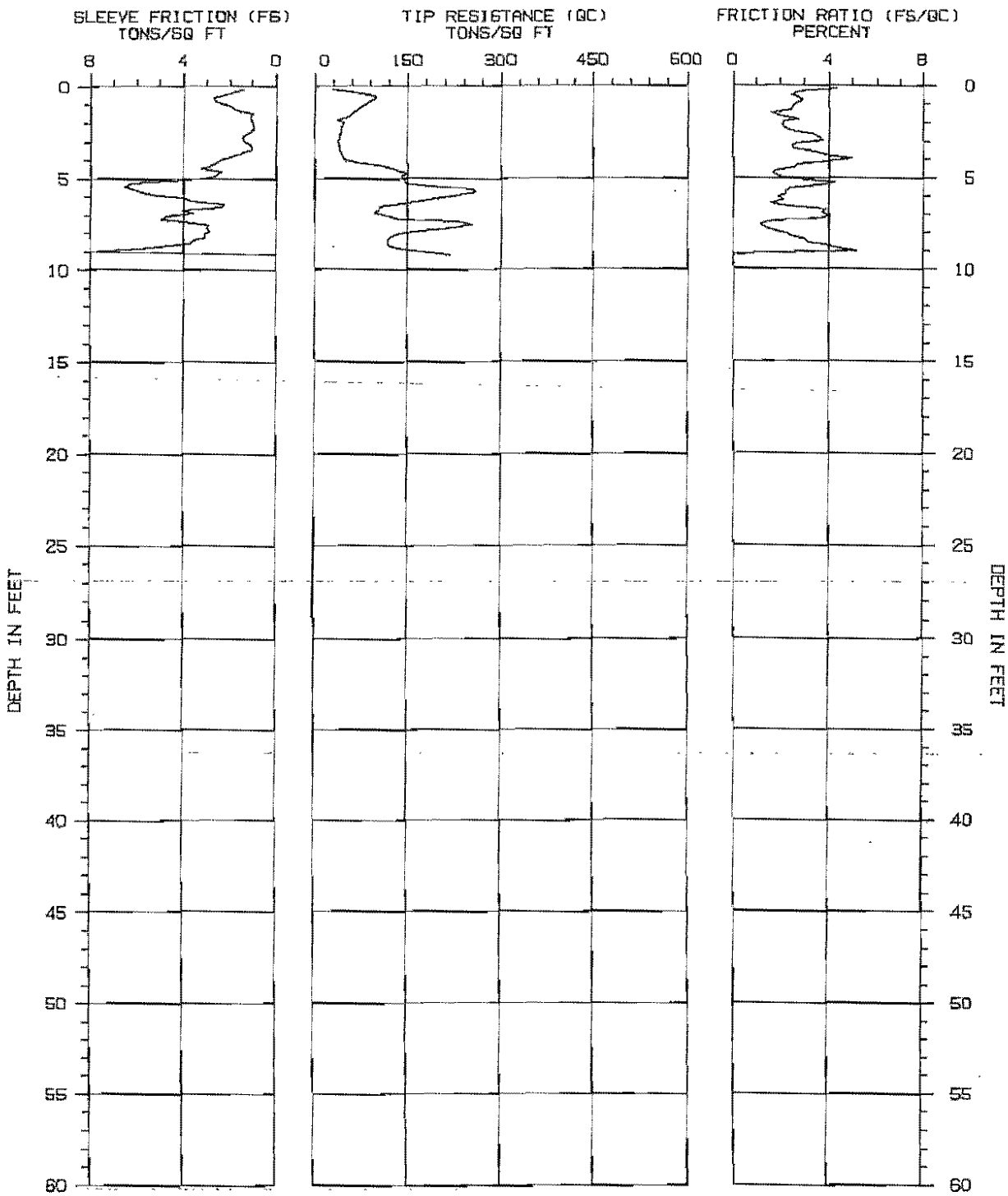
PROJECT No.: 99-A893
CONE/RIG : 473,GO,MR,R#4

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	94.92	2.52	SILTY SAND to SANDY SILT	32	51	75		
.300	.98	83.51	2.68	SANDY SILT to CLAYEY SILT	33	53		5.6	
.450	1.48	60.23	1.63	SILTY SAND to SANDY SILT	20	32	62		48.5
.600	1.97	46.80	2.19	SANDY SILT to CLAYEY SILT	19	30		3.1	
.750	2.46	42.17	2.50	SANDY SILT to CLAYEY SILT	17	27		2.8	
.900	2.95	36.77	3.75	CLAYEY SILT to SILTY CLAY	18	29		2.2	
1.050	3.44	39.77	2.61	SANDY SILT to CLAYEY SILT	16	25		2.6	
1.200	3.94	47.55	4.94	CLAY to SILTY CLAY	32	51		2.8	
1.350	4.43	125.64	2.58	SILTY SAND to SANDY SILT	42	67	83		47.0
1.500	4.92	139.85	1.94	SILTY SAND to SANDY SILT	47	75	86		47.0
1.650	5.41	183.45	3.56	*SAND to CLAYEY SAND	92	100			
1.800	5.91	229.74	2.22	SILTY SAND to SANDY SILT	77	100	100		48.5
1.950	6.40	140.68	1.61	SAND to SILTY SAND	35	56	86		46.0
2.100	6.89	97.53	3.68	CLAYEY SILT to SILTY CLAY	49	76		5.7	
2.250	7.38	228.32	1.72	SAND to SILTY SAND	57	86	100		47.5
2.400	7.87	173.06	1.67	SAND to SILTY SAND	43	63	92		46.0
2.550	8.37	119.27	3.01	SANDY SILT to CLAYEY SILT	48	67		7.0	
2.700	8.86	132.91	4.44	*VERY STIFF FINE GRAINED	100	100			

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-11M

PROJECT NAME : AES/NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 473.GO.MR.R#4

DATE/TIME: 09-22-99 08:14

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-12M
PROJECT : AES/NEWHALL RNCH
DATE/TIME: 09-22-99 12:12

PROJECT No.: 99-A893
CONE/RIG : 473,GO,MR,R#4

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	.00	-4.23		0	0			
.300	.98	.00	-2.20		0	0			
.450	1.48	.00	-6.85		0	0			
.600	1.97	8.46	14.32	CLAY	8	14		.6	
.750	2.46	139.45	1.58	SAND to SILTY SAND	35	56	86		
.900	2.95	180.56	2.58	SILTY SAND to SANDY SILT	60	96	93		
1.050	3.44	172.10	.87	SAND	34	55	92		49.5
1.200	3.94	88.44	.91	SAND to SILTY SAND	22	35	73		46.0
1.350	4.43	103.23	1.25	SAND to SILTY SAND	26	41	77		46.5
1.500	4.92	92.08	.97	SAND to SILTY SAND	23	37	74		45.5
1.650	5.41	70.28	3.13	SANDY SILT to CLAYEY SILT	28	45		4.1	
1.800	5.91	68.85	1.90	SILTY SAND to SANDY SILT	23	37	66		43.5
1.950	6.40	82.54	1.75	SILTY SAND to SANDY SILT	28	44	71		44.0
2.100	6.89	80.41	1.67	SILTY SAND to SANDY SILT	27	42	70		43.5
2.250	7.38	81.30	1.08	SAND to SILTY SAND	20	31	70		43.5
2.400	7.87	67.62	1.40	SILTY SAND to SANDY SILT	23	33	65		42.0
2.550	8.37	70.11	1.49	SILTY SAND to SANDY SILT	23	33	66		42.0
2.700	8.86	107.12	1.25	SAND to SILTY SAND	27	37	78		44.0
2.850	9.35	94.54	1.01	SAND to SILTY SAND	24	32	74		43.0
3.000	9.84	88.95	1.79	SILTY SAND to SANDY SILT	30	39	71		42.5
3.150	10.33	76.55	1.88	SILTY SAND to SANDY SILT	26	32	66		41.5
3.300	10.83	89.08	1.65	SILTY SAND to SANDY SILT	30	37	70		42.0
3.450	11.32	109.52	1.69	SILTY SAND to SANDY SILT	37	44	75		42.5
3.600	11.81	157.98	1.21	SAND to SILTY SAND	39	47	85		44.0
3.750	12.30	202.85	1.05	SAND	41	47	92		45.0
3.900	12.80	237.05	1.26	SAND	47	54	95		45.5
4.050	13.29	217.19	1.15	SAND	43	49	92		45.0
4.200	13.78	282.87	1.33	SAND	57	62	99		46.0
4.350	14.27	333.90	1.52	SAND to SILTY SAND	83	90	100		46.5
4.500	14.76	390.56	1.74	SAND to SILTY SAND	98	100	100		47.0
4.650	15.26	382.73	1.32	SAND	77	80	100		46.5
4.800	15.75	419.65	1.86	SAND to SILTY SAND	100	100	100		47.0
4.950	16.24	479.98	1.38	SAND	96	97	100		47.5
5.100	16.73	386.61	1.37	SAND	77	77	100		46.5
5.250	17.22	416.99	1.15	SAND	83	82	100		46.5
5.400	17.72	305.78	1.51	SAND to SILTY SAND	76	74	98		45.0
5.550	18.21	152.39	1.75	SAND to SILTY SAND	38	36	78		42.0
5.700	18.70	161.16	2.84	SILTY SAND to SANDY SILT	54	51	79		42.0
5.850	19.19	181.15	1.48	SAND to SILTY SAND	45	42	82		42.5
6.000	19.69	232.08	1.57	SAND to SILTY SAND	58	53	89		43.5
6.150	20.18	202.87	1.13	SAND	41	37	85		43.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 35.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

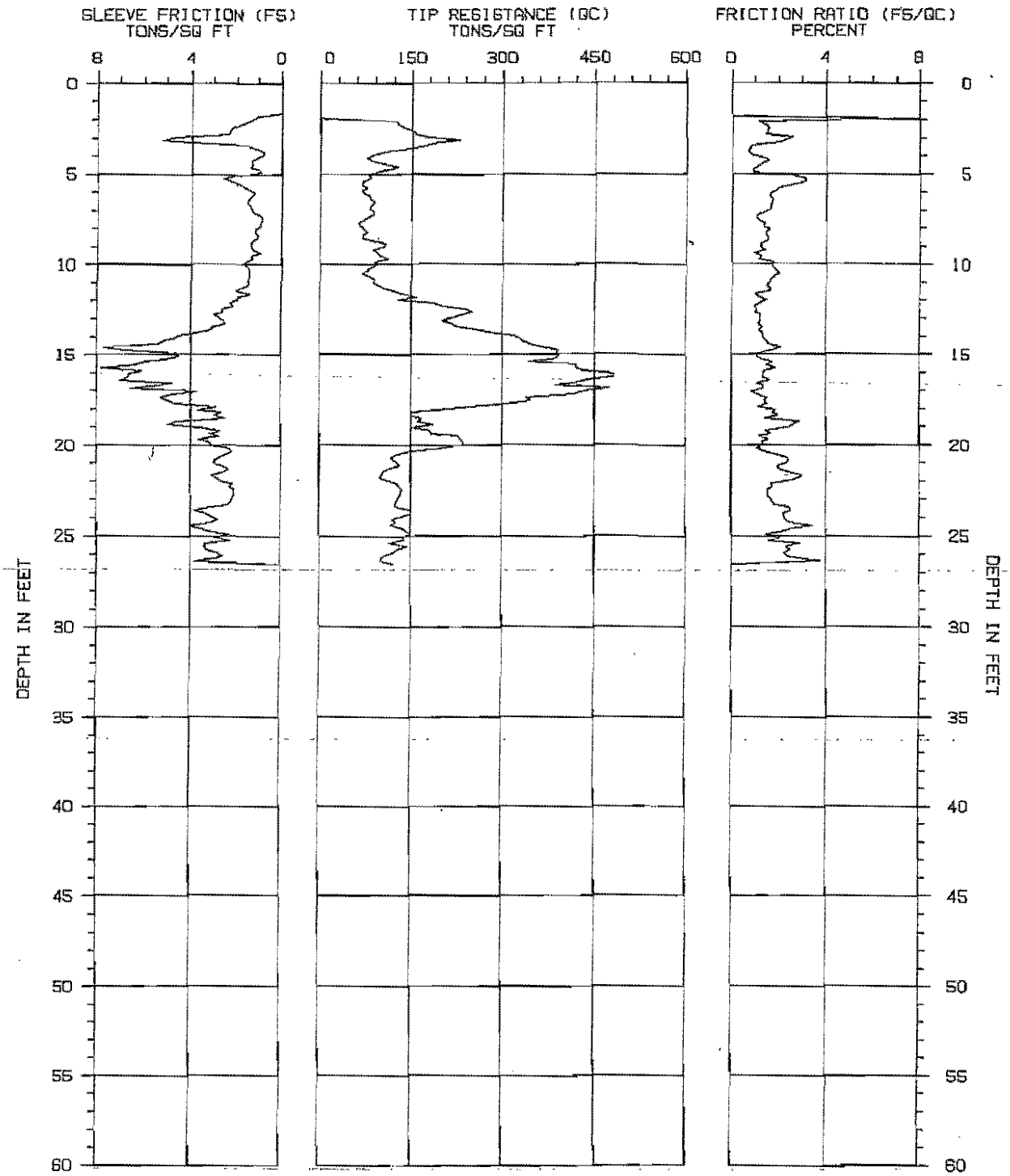
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-12 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	117.04	2.35	SILTY SAND to SANDY SILT	39	35	68		39.5
6.450	21.16	132.14	1.97	SILTY SAND to SANDY SILT	44	39	72		40.0
6.600	21.65	102.70	2.98	SANDY SILT to CLAYEY SILT	41	36		6.0	
6.750	22.15	126.60	1.69	SILTY SAND to SANDY SILT	42	37	70		39.5
6.900	22.64	133.52	1.57	SAND to SILTY SAND	33	29	71		40.0
7.050	23.13	127.07	1.74	SILTY SAND to SANDY SILT	42	36	69		39.5
7.200	23.62	149.18	2.53	SILTY SAND to SANDY SILT	50	42	73		40.5
7.350	24.11	120.99	2.31	SILTY SAND to SANDY SILT	40	34	67		39.0
7.500	24.61	136.18	2.55	SILTY SAND to SANDY SILT	45	37	70		39.5
7.650	25.10	136.39	2.13	SILTY SAND to SANDY SILT	45	37	70		39.5
7.800	25.59	144.17	2.32	SILTY SAND to SANDY SILT	48	39	71		39.5
7.950	26.08	107.52	2.38	SILTY SAND to SANDY SILT	36	29	63		38.5
8.100	26.57	120.82	*****		0	0			.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 35.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-12 M

PROJECT NAME : AES/NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 473.GO.MR.R#4

DATE/TIME: 09-22-99 12:12

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-13 M
PROJECT : AES/NEWHALL RNCH
DATE/TIME: 09-22-99 11:41

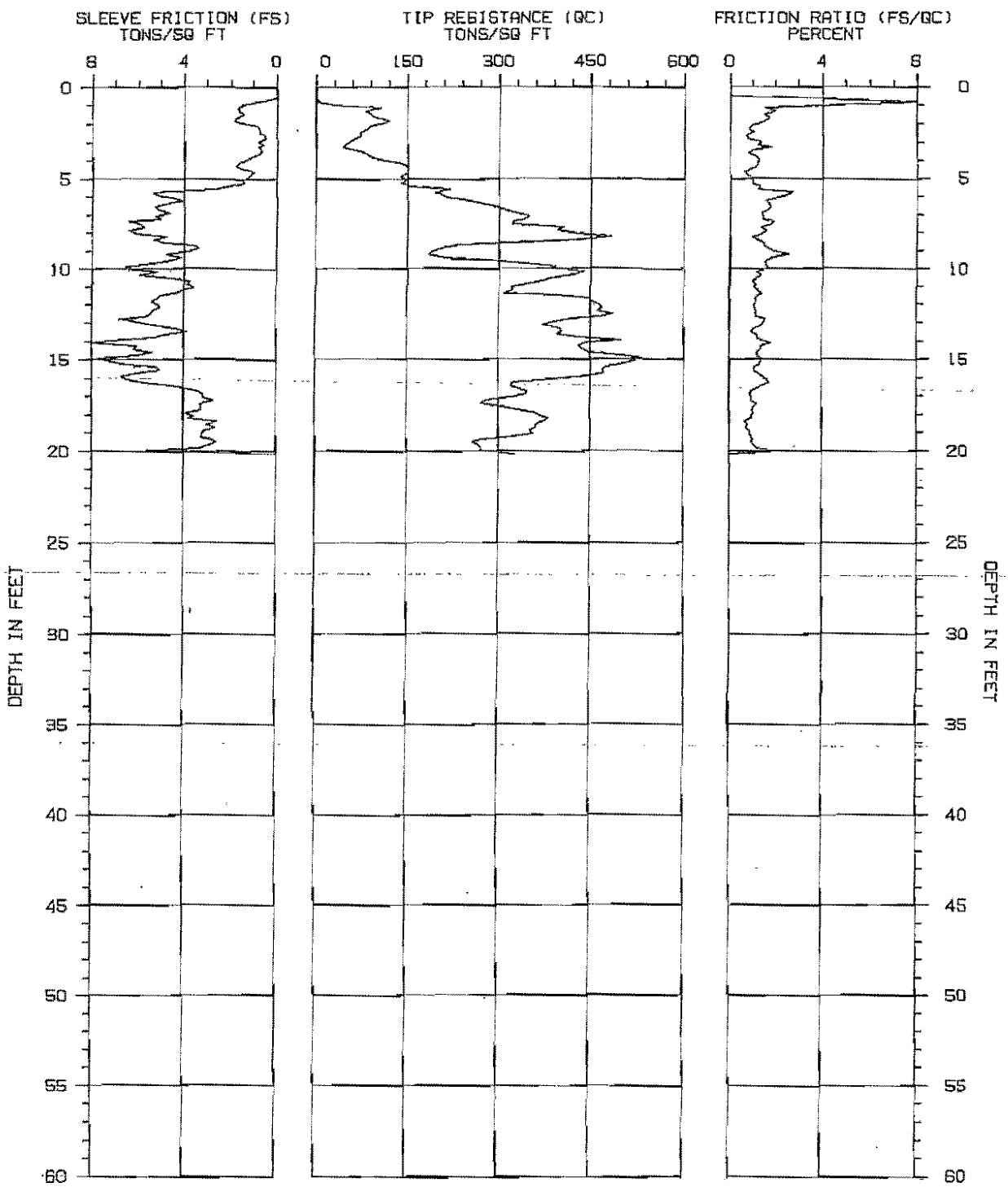
PROJECT No.: 99-A893
CONE/RIG : 473,GO,MR,R#4

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	1.85	.00		0	0			
.300	.98	30.97	4.84	CLAY	31	50		1.8	
.450	1.48	89.91	1.57	SILTY SAND to SANDY SILT	30	48	73		
.600	1.97	113.49	1.32	SAND to SILTY SAND	28	45	80		
.750	2.46	73.32	1.02	SAND to SILTY SAND	18	29	67		47.5
.900	2.95	56.19	1.41	SILTY SAND to SANDY SILT	19	30	60		45.5
1.050	3.44	66.11	1.00	SILTY SAND to SANDY SILT	22	35	64		45.5
1.200	3.94	103.82	1.24	SAND to SILTY SAND	26	42	77		47.0
1.350	4.43	150.63	1.00	SAND to SILTY SAND	38	60	88		48.0
1.500	4.92	137.90	.91	SAND to SILTY SAND	34	55	86		47.0
1.650	5.41	152.92	1.34	SAND to SILTY SAND	38	61	89		47.0
1.800	5.91	209.45	2.45	SILTY SAND to SANDY SILT	70	100	98		48.0
1.950	6.40	270.89	1.76	SAND to SILTY SAND	68	100	100		48.5
2.100	6.89	328.57	1.41	SAND	66	100	100		49.0
2.250	7.38	323.90	1.97	SAND to SILTY SAND	81	100	100		49.0
2.400	7.87	393.82	1.62	SAND to SILTY SAND	98	100	100		49.5
2.550	8.37	431.95	1.23	SAND	86	100	100		49.5
2.700	8.86	206.31	1.64	SAND to SILTY SAND	52	71	97		46.5
2.850	9.35	211.77	1.94	SAND to SILTY SAND	53	71	97		46.0
3.000	9.84	393.01	1.66	SAND to SILTY SAND	98	100	100		48.5
3.150	10.33	420.86	1.40	SAND	84	100	100		48.5
3.300	10.83	344.80	1.12	SAND	69	86	100		47.5
3.450	11.32	310.62	1.42	SAND	62	75	100		47.0
3.600	11.81	451.79	1.18	SAND	90	100	100		48.5
3.750	12.30	460.50	1.17	SAND	92	100	100		48.0
3.900	12.80	417.91	1.62	SAND to SILTY SAND	100	100	100		47.5
4.050	13.29	399.72	1.08	SAND	80	90	100		47.5
4.200	13.78	431.29	1.22	SAND	86	95	100		47.5
4.350	14.27	431.61	1.40	SAND	86	93	100		47.5
4.500	14.76	499.32	1.21	SAND	100	100	100		48.0
4.650	15.26	499.83	1.28	SAND	100	100	100		47.5
4.800	15.75	472.08	1.28	SAND	94	97	100		47.5
4.950	16.24	323.30	1.77	SAND to SILTY SAND	81	82	100		46.0
5.100	16.73	345.70	.96	SAND	69	69	100		46.0
5.250	17.22	282.26	.97	SAND	56	56	96		45.0
5.400	17.72	331.12	.98	SAND	66	64	100		45.5
5.550	18.21	382.05	.98	SAND	76	73	100		46.0
5.700	18.70	362.12	.74	SAND	72	68	100		46.0
5.850	19.19	323.35	1.01	SAND	65	60	99		45.0
6.000	19.69	266.05	1.10	SAND	53	49	93		44.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 35.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-13 M

PROJECT NAME : AES/NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 473.GO.MR,R#4

DATE/TIME: 09-22-99 11:41

HLA

CPT INTERPRETATIONS

SOUNDING : CPT-14 M
PROJECT : AES/NEWHALL RNCH
DATE/TIME: 09-22-99 09:45

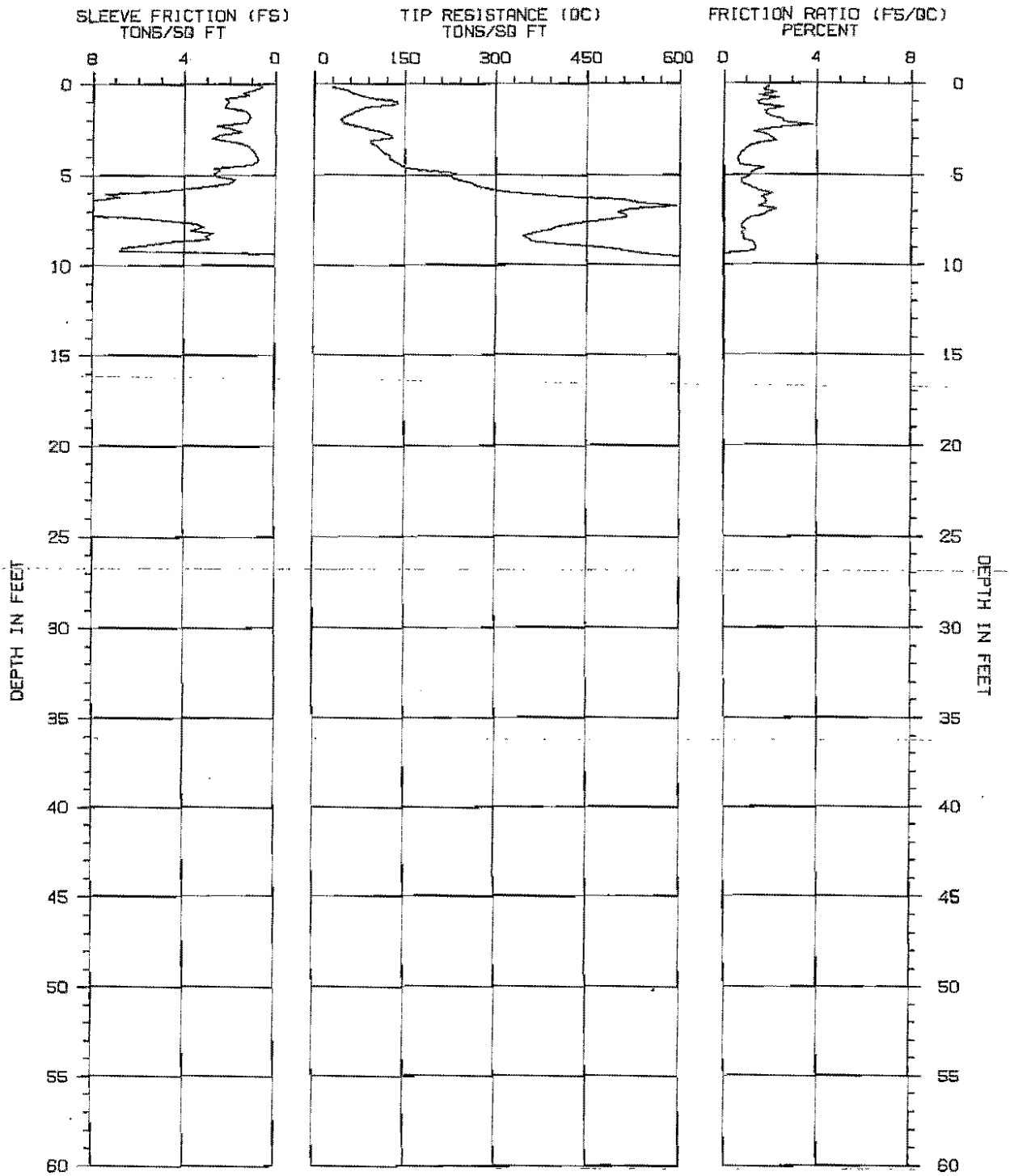
PROJECT No.: 99-A893
CONE/RIG : 473,GO,MR,R#4

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	63.03	2.27	SANDY SILT to CLAYEY SILT	25	40		4.2	
.300	.98	136.56	1.49	SAND to SILTY SAND	34	55	85		
.450	1.48	71.96	1.78	SILTY SAND to SANDY SILT	24	38	67		49.5
.600	1.97	44.34	2.57	SANDY SILT to CLAYEY SILT	18	28		2.9	
.750	2.46	87.74	2.18	SILTY SAND to SANDY SILT	29	47	73		48.0
.900	2.95	129.93	2.10	SILTY SAND to SANDY SILT	43	69	84		49.0
1.050	3.44	104.44	1.10	SAND to SILTY SAND	26	42	78		47.5
1.200	3.94	125.79	.67	SAND	25	40	83		47.5
1.350	4.43	141.96	.70	SAND	28	45	86		47.5
1.500	4.92	234.50	1.16	SAND	47	75	100		49.0
1.650	5.41	255.58	.75	SAND	51	82	100		49.0
1.800	5.91	312.38	1.70	SAND to SILTY SAND	78	100	100		49.5
1.950	6.40	507.60	1.85	SAND to SILTY SAND	100	100	100		
2.100	6.89	521.43	2.27	*SAND to CLAYEY SAND	100	100			
2.250	7.38	514.38	1.18	SAND	100	100	100		
2.400	7.87	401.99	.78	SAND	80	100	100		49.5
2.550	8.37	346.16	.89	SAND	69	98	100		48.5
2.700	8.86	406.46	1.33	SAND	81	100	100		49.0
2.850	9.35	541.00	*****		0	0			46.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 35.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-14 M

PROJECT NAME : AES/NEWHALL RNCH

PROJECT NUMBER : 99-AB93

CONE/RIG : 473.GO.MR.R#4

DATE/TIME: 09-22-99 09:45

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-15 M
PROJECT : AES/NEWHALL RNCH
DATE/TIME: 09-22-99 10:33

PROJECT No.: 99-A893
CONE/RIG : 473,GO,MR,R#4

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	194.20	.61	SAND	39	62	95		
.300	.98	171.32	1.45	SAND to SILTY SAND	43	68	92		
.450	1.48	259.55	1.31	SAND	52	83	100		
.600	1.97	271.87	.75	SAND	54	87	100		
.750	2.46	196.47	1.05	SAND	39	63	96		
.900	2.95	117.82	.93	SAND to SILTY SAND	29	47	81		48.5
1.050	3.44	108.43	.89	SAND to SILTY SAND	27	43	79		47.5
1.200	3.94	121.39	.95	SAND to SILTY SAND	30	49	82		47.5
1.350	4.43	112.81	.96	SAND to SILTY SAND	28	45	80		46.5
1.500	4.92	127.85	.90	SAND to SILTY SAND	32	51	83		46.5
1.650	5.41	205.10	1.57	SAND to SILTY SAND	51	82	97		48.0
1.800	5.91	258.17	1.76	SAND to SILTY SAND	65	100	100		49.0
1.950	6.40	244.70	.85	SAND	49	78	100		48.5
2.100	6.89	216.93	.79	SAND	43	67	99		47.5
2.250	7.38	199.89	.63	SAND	40	60	96		47.0
2.400	7.87	155.00	2.06	SILTY SAND to SANDY SILT	52	75	89		46.0
2.550	8.37	315.59	1.64	SAND to SILTY SAND	79	100	100		48.0
2.700	8.86	467.17	.83	GRAVELLY SAND to SAND	78	100	100		49.5
2.850	9.35	485.19	.84	GRAVELLY SAND to SAND	81	100	100		49.5
3.000	9.84	292.09	1.25	SAND	58	76	100		47.5
3.150	10.33	449.37	.88	SAND	90	100	100		49.0
3.300	10.83	497.09	1.00	SAND	99	100	100		49.0
3.450	11.32	542.02	1.23	SAND	100	100	100		
3.600	11.81	565.92	1.12	SAND	100	100	100		
3.750	12.30	482.32	1.60	SAND to SILTY SAND	100	100	100		48.5
3.900	12.80	600.42	.85	GRAVELLY SAND to SAND	100	100	100		
4.050	13.29	429.93	1.78	SAND to SILTY SAND	100	100	100		47.5
4.200	13.78	341.98	1.05	SAND	68	75	100		46.5
4.350	14.27	280.69	.51	SAND	56	61	99		46.0
4.500	14.76	153.73	1.52	SAND to SILTY SAND	38	41	81		43.0
4.650	15.26	132.48	1.97	SILTY SAND to SANDY SILT	44	46	76		42.5
4.800	15.75	133.57	2.37	SILTY SAND to SANDY SILT	45	46	76		42.0
4.950	16.24	152.77	2.29	SILTY SAND to SANDY SILT	51	52	79		42.5
5.100	16.73	285.59	.99	SAND	57	57	97		45.0
5.250	17.22	178.20	1.90	SILTY SAND to SANDY SILT	59	58	83		43.0
5.400	17.72	420.54	1.12	SAND	84	82	100		46.5
5.550	18.21	462.69	1.18	SAND	93	89	100		46.5
5.700	18.70	266.90	1.09	SAND	53	50	93		44.5
5.850	19.19	134.33	3.10	SANDY SILT to CLAYEY SILT	54	50		7.8	
6.000	19.69	116.12	4.08	CLAYEY SILT to SILTY CLAY	58	53		6.8	
6.150	20.18	134.37	3.27	SANDY SILT to CLAYEY SILT	54	49		7.8	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

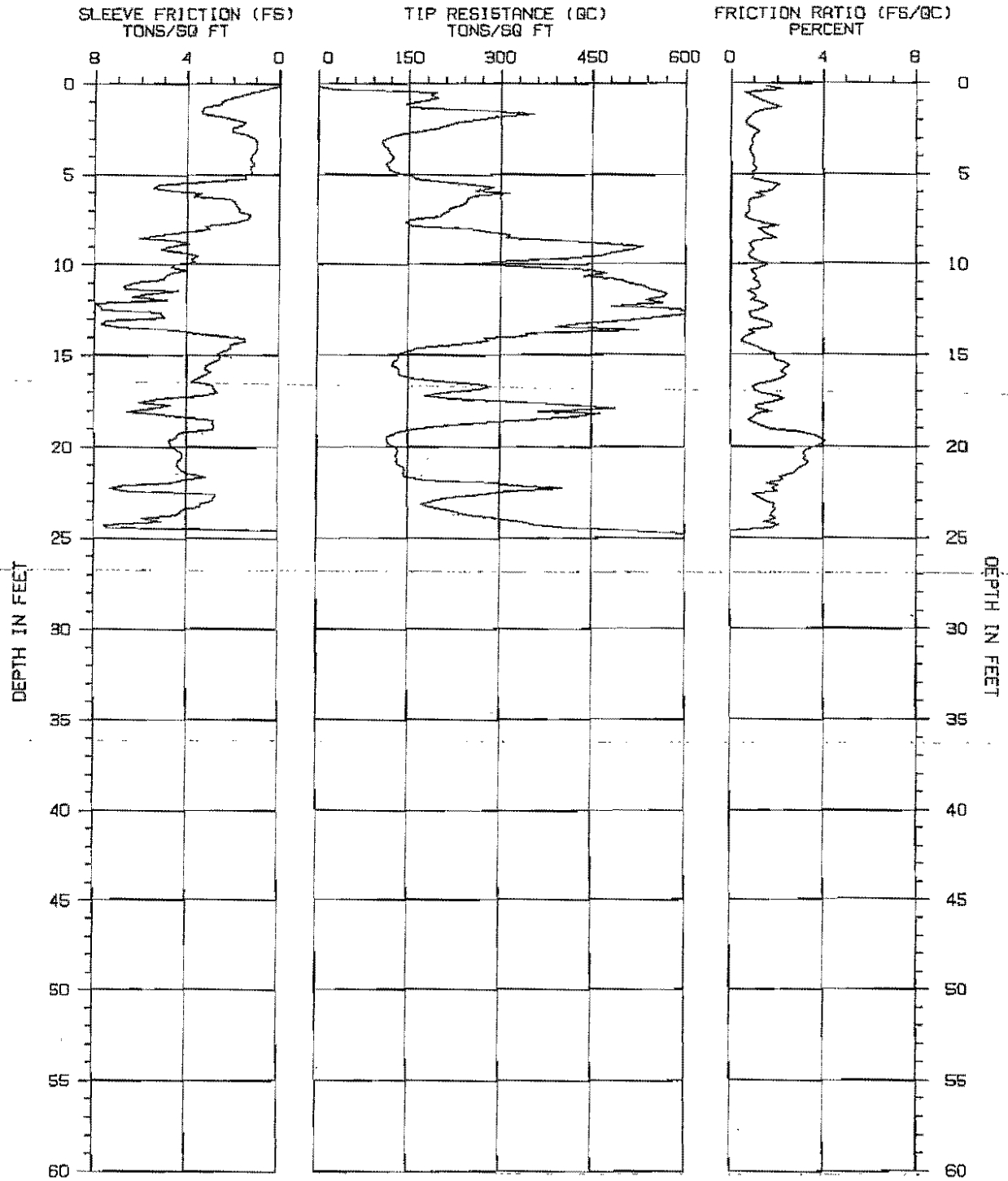
Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-15 M

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	131.97	3.18	SANDY SILT to CLAYEY SILT	53	47		7.7	
6.450	21.16	143.19	3.00	SANDY SILT to CLAYEY SILT	57	51		8.3	
6.600	21.65	147.50	2.14	SILTY SAND to SANDY SILT	49	43	74		41.0
6.750	22.15	321.50	2.06	SAND to SILTY SAND	80	70	96		44.5
6.900	22.64	273.61	.98	SAND	55	47	91		44.0
7.050	23.13	173.40	1.94	SILTY SAND to SANDY SILT	58	49	78		41.5
7.200	23.62	230.85	1.82	SAND to SILTY SAND	58	48	86		42.5
7.350	24.11	334.82	1.51	SAND to SILTY SAND	84	70	96		44.5
7.500	24.61	512.79	*****		0	0			.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 30.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-15 M

PROJECT NAME : AES/NEWHALL RNCH

PROJECT NUMBER : 99-A893

CONE/RIG : 473.GG.MR.R#4

DATE/TIME: 09-22-99 10:33

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-18 M
PROJECT : AES/NEWHALL RNCH
DATE/TIME: 09-22-99 14:45

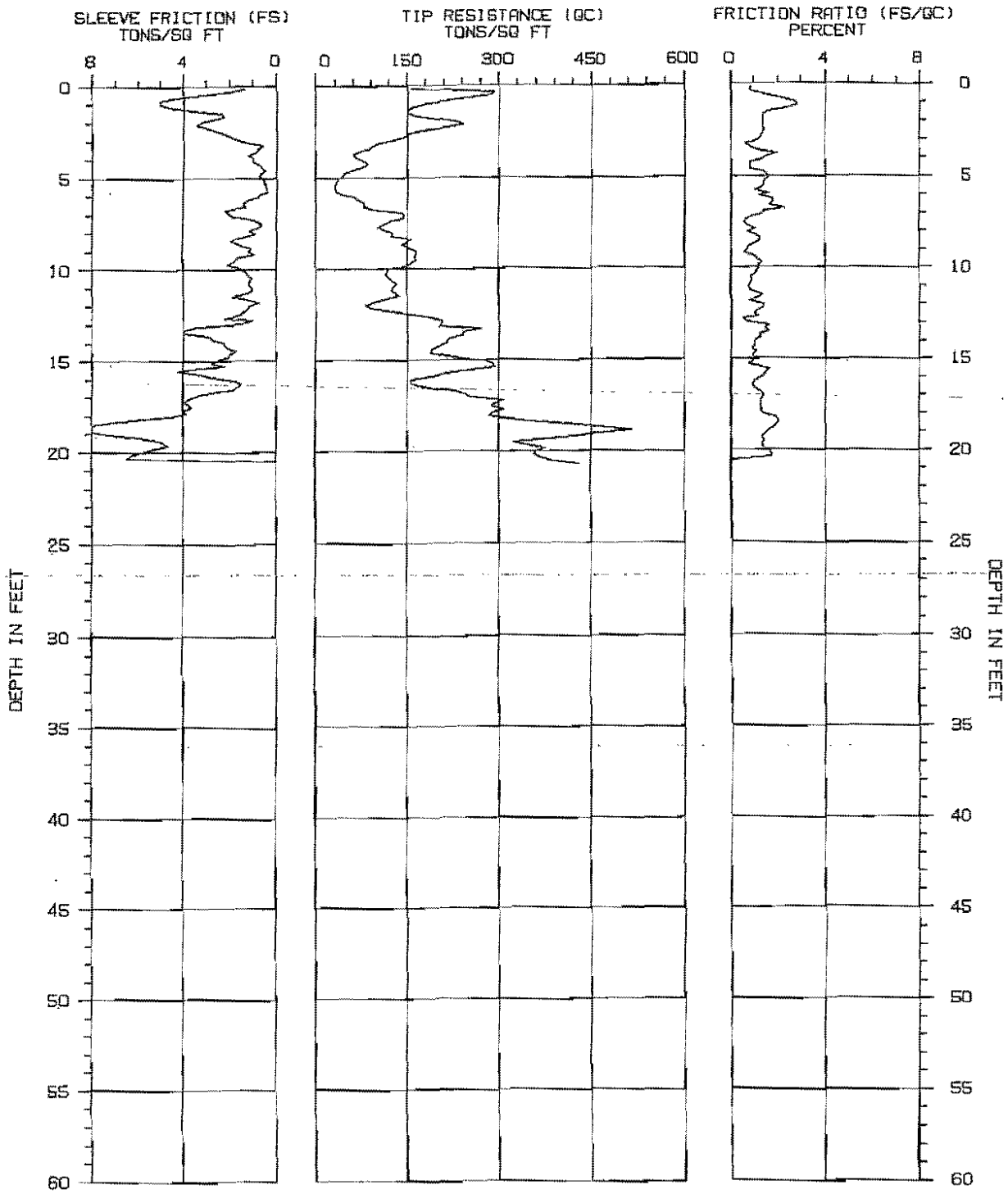
PROJECT No.: 99-A893
CONE/RIG : 473,GO,MR,R#4

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	287.00	1.25	SAND	57	92	100		
.300	.98	182.90	2.75	SILTY SAND to SANDY SILT	61	97	94		
.450	1.48	149.44	1.57	SAND to SILTY SAND	37	60	88		
.600	1.97	226.15	1.41	SAND to SILTY SAND	57	90	100		
.750	2.46	174.40	1.44	SAND to SILTY SAND	44	70	92		
.900	2.95	130.23	1.22	SAND to SILTY SAND	33	52	84		49.0
1.050	3.44	89.08	.83	SAND to SILTY SAND	22	36	73		46.5
1.200	3.94	64.92	1.52	SILTY SAND to SANDY SILT	22	35	64		45.0
1.350	4.43	73.27	.82	SAND to SILTY SAND	18	29	67		45.0
1.500	4.92	43.45	1.59	SILTY SAND to SANDY SILT	14	23	52		42.5
1.650	5.41	30.40	1.41	SANDY SILT to CLAYEY SILT	12	19		2.4	
1.800	5.91	45.32	1.68	SILTY SAND to SANDY SILT	15	24	54		42.0
1.950	6.40	78.29	1.80	SILTY SAND to SANDY SILT	26	42	69		44.0
2.100	6.89	140.64	1.44	SAND to SILTY SAND	35	55	86		46.0
2.250	7.38	125.94	.63	SAND	25	38	83		45.0
2.400	7.87	113.87	1.03	SAND to SILTY SAND	28	41	80		44.5
2.550	8.37	156.26	1.24	SAND to SILTY SAND	39	55	89		45.5
2.700	8.86	152.16	.71	SAND	30	42	88		45.0
2.850	9.35	162.03	1.01	SAND to SILTY SAND	41	54	89		45.0
3.000	9.84	148.16	1.15	SAND to SILTY SAND	37	48	86		44.5
3.150	10.33	115.53	1.04	SAND to SILTY SAND	29	37	78		43.5
3.300	10.83	134.29	.84	SAND to SILTY SAND	34	42	82		44.0
3.450	11.32	131.91	1.03	SAND to SILTY SAND	33	40	80		43.5
3.600	11.81	97.26	.77	SAND to SILTY SAND	24	29	71		42.0
3.750	12.30	125.60	1.12	SAND to SILTY SAND	31	37	78		43.0
3.900	12.80	205.05	.49	SAND	41	47	91		45.0
4.050	13.29	269.68	1.46	SAND to SILTY SAND	67	76	99		46.0
4.200	13.78	220.82	1.25	SAND to SILTY SAND	55	61	92		45.0
4.350	14.27	198.92	1.05	SAND	40	43	89		44.5
4.500	14.76	214.28	.95	SAND	43	46	91		44.5
4.650	15.26	292.26	.76	SAND	58	61	99		45.5
4.800	15.75	214.96	1.53	SAND to SILTY SAND	54	55	90		44.0
4.950	16.24	155.26	.99	SAND to SILTY SAND	39	39	80		42.5
5.100	16.73	229.13	1.13	SAND	46	46	91		44.0
5.250	17.22	306.61	1.29	SAND	61	60	99		45.5
5.400	17.72	307.26	1.29	SAND	61	60	98		45.0
5.550	18.21	302.57	1.90	SAND to SILTY SAND	76	72	97		45.0
5.700	18.70	461.12	1.88	SAND to SILTY SAND	100	100	100		46.5
5.850	19.19	421.94	1.39	SAND	84	79	100		46.0
6.000	19.69	343.44	1.36	SAND	69	63	100		45.5
6.150	20.18	356.89	1.77	SAND to SILTY SAND	89	81	100		45.5

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 35.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-18 M

PROJECT NAME : AES/NEWHALL RNCH

PROJECT NUMBER : 99-AB93

CONE/RIG : 473.GO.MR.R=4

DATE/TIME: 09-22-99 14:45

HFA

CPT INTERPRETATIONS

SOUNDING : CPT-04 SEIS
PROJECT : AES/MAGIC MTN
DATE/TIME: 04-08-00 10:46
PROJECT No.: 00-1729-1
CONE/RIG : 722/BH,JH/R#3

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	42.53	2.05	SANDY SILT to CLAYEY SILT	17	27		2.8	
.300	.98	48.18	2.32	SANDY SILT to CLAYEY SILT	19	31		3.2	
.450	1.48	30.51	3.15	CLAYEY SILT to SILTY CLAY	15	24		2.0	
.600	1.97	10.35	4.93	CLAY	10	17		.7	
.750	2.46	8.24	4.25	CLAY	8	13		.5	
.900	2.95	9.67	4.34	CLAY	10	15		.6	
1.050	3.44	9.96	4.32	CLAY	10	16		.7	
1.200	3.94	11.20	4.38	CLAY	11	18		.7	
1.350	4.43	20.10	4.13	CLAY to SILTY CLAY	13	21		1.3	
1.500	4.92	36.14	2.30	SANDY SILT to CLAYEY SILT	14	23		2.4	
1.650	5.41	73.85	.91	SAND to SILTY SAND	18	30	68		44.0
1.800	5.91	97.03	1.12	SAND to SILTY SAND	24	39	75		45.0
1.950	6.40	104.12	1.07	SAND to SILTY SAND	26	42	77		45.0
2.100	6.89	145.63	1.03	SAND to SILTY SAND	36	57	87		46.0
2.250	7.38	215.68	1.21	SAND	43	65	98		47.0
2.400	7.87	199.17	1.45	SAND to SILTY SAND	50	72	96		46.5
2.550	8.37	211.64	1.25	SAND to SILTY SAND	53	75	98		46.5
2.700	8.86	164.77	1.74	SAND to SILTY SAND	41	57	90		45.5
2.850	9.35	203.55	1.67	SAND to SILTY SAND	51	68	96		46.0
3.000	9.84	221.16	1.36	SAND to SILTY SAND	55	72	97		46.0
3.150	10.33	201.85	1.08	SAND	40	51	94		46.0
3.300	10.83	193.20	1.59	SAND to SILTY SAND	48	60	92		45.5
3.450	11.32	311.17	1.77	SAND to SILTY SAND	78	94	100		47.0
3.600	11.81	315.61	1.42	SAND	63	75	100		47.0
3.750	12.30	307.24	.90	SAND	61	72	100		46.5
3.900	12.80	208.05	1.92	SAND to SILTY SAND	52	59	92		45.0
4.050	13.29	117.12	2.25	SILTY SAND to SANDY SILT	39	44	75		42.5
4.200	13.78	117.63	3.36	SANDY SILT to CLAYEY SILT	47	52		6.9	
4.350	14.27	178.78	1.81	SAND to SILTY SAND	45	48	86		44.0
4.500	14.76	201.49	1.54	SAND to SILTY SAND	50	54	89		44.0
4.650	15.26	211.58	1.55	SAND to SILTY SAND	53	55	90		44.5
4.800	15.75	287.25	1.35	SAND	57	59	98		45.5
4.950	16.24	276.61	1.11	SAND	55	56	96		45.0
5.100	16.73	314.21	2.08	SAND to SILTY SAND	79	78	100		45.5
5.250	17.22	225.51	1.25	SAND	45	44	90		44.0
5.400	17.72	191.37	1.17	SAND to SILTY SAND	48	46	85		43.0
5.550	18.21	115.85	1.76	SILTY SAND to SANDY SILT	39	37	70		40.5
5.700	18.70	108.77	3.27	SANDY SILT to CLAYEY SILT	44	41		6.3	
5.850	19.19	107.73	3.12	SANDY SILT to CLAYEY SILT	43	40		6.3	
6.000	19.69	165.22	2.32	SILTY SAND to SANDY SILT	55	51	79		42.0
6.150	20.18	194.11	2.39	SILTY SAND to SANDY SILT	65	59	83		42.5

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 36.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

HOLGUIN, FAHAN & ASSOCIATES, INC.

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-04 SEIS

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	109.20	3.59	SANDY SILT to CLAYEY SILT	44	39		6.4	
6.450	21.16	100.00	3.42	SANDY SILT to CLAYEY SILT	40	35		5.8	
6.600	21.65	96.88	3.03	SANDY SILT to CLAYEY SILT	39	34		5.6	
6.750	22.15	103.14	8.32	*VERY STIFF FINE GRAINED	100	89			
6.900	22.64	173.06	2.76	SILTY SAND to SANDY SILT	58	49	78		42.0
7.050	23.13	218.55	1.67	SAND to SILTY SAND	55	46	85		42.5
7.200	23.62	204.31	2.23	SILTY SAND to SANDY SILT	68	57	82		42.0
7.350	24.11	266.24	2.25	SILTY SAND to SANDY SILT	89	74	90		43.5
7.500	24.61	286.04	2.57	SILTY SAND to SANDY SILT	95	78	92		43.5
7.650	25.10	337.37	2.63	SILTY SAND to SANDY SILT	100	92	96		44.0
7.800	25.59	360.01	1.88	SAND to SILTY SAND	90	73	98		44.5
7.950	26.08	395.71	2.03	SAND to SILTY SAND	99	79	100		44.5
8.100	26.57	384.53	1.42	SAND	77	61	99		44.5
8.250	27.07	177.03	1.23	SAND to SILTY SAND	44	35	76		40.5
8.400	27.56	152.11	1.87	SILTY SAND to SANDY SILT	51	39	72		39.5
8.550	28.05	172.23	2.92	SILTY SAND to SANDY SILT	57	44	75		40.0
8.700	28.54	419.52	1.89	SAND to SILTY SAND	100	80	100		44.5
8.850	29.04	401.89	1.44	SAND	80	61	99		44.5
9.000	29.53	366.47	1.21	SAND	73	55	96		44.0
9.150	30.02	337.73	2.28	SAND to SILTY SAND	84	63	93		43.5
9.300	30.51	510.92	1.58	SAND	100	76	100		45.0
9.450	31.00	658.48	1.43	SAND	100	97	100		
9.600	31.50	533.52	1.39	SAND	100	78	100		
9.750	31.99	354.89	1.34	SAND	71	51	94		43.5
9.900	32.48	341.45	1.23	SAND	68	49	93		43.0
10.050	32.97	457.42	1.64	SAND to SILTY SAND	100	81	100		44.5
10.200	33.46	513.95	1.68	SAND to SILTY SAND	100	91	100		44.5
10.350	33.96	415.93	1.60	SAND to SILTY SAND	100	73	98		44.0
10.500	34.45	366.22	1.72	SAND to SILTY SAND	92	64	94		43.0
10.650	34.94	450.92	1.97	SAND to SILTY SAND	100	78	100		44.0
10.800	35.43	597.26	1.79	SAND to SILTY SAND	100	100	100		

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 36.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.

CPT INTERPRETATIONS

SOUNDING : CPT-06 PROJECT No.: 00-1729-1
PROJECT : AES/MAGIC MTN. CONE/RIG : 473/BH,VO/R#3
DATE/TIME: 03-21-00 09:24

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	17.91	1.79	SANDY SILT to CLAYEY SILT	7	11		1.4	
.300	.98	11.81	1.71	CLAYEY SILT to SILTY CLAY	6	9		.9	
.450	1.48	14.13	1.54	CLAYEY SILT to SILTY CLAY	7	11		1.1	
.600	1.97	16.06	1.73	CLAYEY SILT to SILTY CLAY	8	13		1.3	
.750	2.46	17.40	1.51	SANDY SILT to CLAYEY SILT	7	11		1.4	
.900	2.95	10.01	2.26	CLAYEY SILT to SILTY CLAY	5	8		.8	
1.050	3.44	9.39	2.64	CLAY to SILTY CLAY	6	10		.7	
1.200	3.94	25.73	2.12	SANDY SILT to CLAYEY SILT	10	16		1.7	
1.350	4.43	27.51	2.52	CLAYEY SILT to SILTY CLAY	14	22		1.8	
1.500	4.92	33.67	1.59	SANDY SILT to CLAYEY SILT	13	22		2.7	
1.650	5.41	33.14	1.87	SANDY SILT to CLAYEY SILT	13	21		2.6	
1.800	5.91	29.76	1.61	SANDY SILT to CLAYEY SILT	12	19		2.4	
1.950	6.40	35.54	1.92	SANDY SILT to CLAYEY SILT	14	23		2.3	
2.100	6.89	44.19	1.52	SILTY SAND to SANDY SILT	15	23	53		40.5
2.250	7.38	61.48	2.05	SILTY SAND to SANDY SILT	20	31	62		42.0
2.400	7.87	79.56	1.75	SILTY SAND to SANDY SILT	27	39	70		43.0
2.550	8.37	88.31	1.82	SILTY SAND to SANDY SILT	29	42	73		43.0
2.700	8.86	88.06	1.54	SILTY SAND to SANDY SILT	29	40	72		43.0
2.850	9.35	87.66	1.67	SILTY SAND to SANDY SILT	29	39	71		42.5
3.000	9.84	48.37	2.01	SANDY SILT to CLAYEY SILT	19	25		3.2	
3.150	10.33	33.80	2.90	CLAYEY SILT to SILTY CLAY	17	21		2.2	
3.300	10.83	35.10	2.02	SANDY SILT to CLAYEY SILT	14	17		2.3	
3.450	11.32	44.61	1.94	SANDY SILT to CLAYEY SILT	18	22		2.9	
3.600	11.81	63.73	1.09	SILTY SAND to SANDY SILT	21	25	59		39.5
3.750	12.30	64.01	1.61	SILTY SAND to SANDY SILT	21	25	59		39.0
3.900	12.80	54.07	1.79	SILTY SAND to SANDY SILT	18	21	53		38.5
4.050	13.29	43.34	2.15	SANDY SILT to CLAYEY SILT	17	19		2.8	
4.200	13.78	34.46	2.21	SANDY SILT to CLAYEY SILT	14	15		2.2	
4.350	14.27	31.25	2.32	SANDY SILT to CLAYEY SILT	13	14		2.0	
4.500	14.76	32.82	2.19	SANDY SILT to CLAYEY SILT	13	14		2.1	
4.650	15.26	38.84	1.95	SANDY SILT to CLAYEY SILT	16	16		2.5	
4.800	15.75	37.94	2.58	SANDY SILT to CLAYEY SILT	15	16		2.5	
4.950	16.24	34.31	2.45	SANDY SILT to CLAYEY SILT	14	14		2.2	
5.100	16.73	38.37	2.36	SANDY SILT to CLAYEY SILT	15	15		2.5	
5.250	17.22	42.04	2.08	SANDY SILT to CLAYEY SILT	17	17		2.7	
5.400	17.72	61.52	2.34	SANDY SILT to CLAYEY SILT	25	24		4.0	
5.550	18.21	43.32	2.90	SANDY SILT to CLAYEY SILT	17	17		2.8	
5.700	18.70	33.33	2.73	CLAYEY SILT to SILTY CLAY	17	16		2.1	
5.850	19.19	29.49	2.63	CLAYEY SILT to SILTY CLAY	15	14		1.9	
6.000	19.69	30.42	3.05	CLAYEY SILT to SILTY CLAY	15	14		1.9	
6.150	20.18	29.72	2.93	CLAYEY SILT to SILTY CLAY	15	14		1.9	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 26.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-06

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	30.44	3.08	CLAYEY SILT to SILTY CLAY	15	14		1.9	
6.450	21.16	33.25	2.93	CLAYEY SILT to SILTY CLAY	17	15		2.1	
6.600	21.65	35.86	3.19	CLAYEY SILT to SILTY CLAY	18	16		2.3	
6.750	22.15	39.66	3.73	CLAYEY SILT to SILTY CLAY	20	17		2.3	
6.900	22.64	46.53	3.48	CLAYEY SILT to SILTY CLAY	23	20		2.7	
7.050	23.13	37.07	3.12	CLAYEY SILT to SILTY CLAY	19	16		2.4	
7.200	23.62	439.66	.86	SAND	88	74	100		45.5
7.350	24.11	618.73	1.10	SAND	100	100	100		
7.500	24.61	712.51	1.12	SAND	100	100	100		
7.650	25.10	697.34	1.33	SAND	100	100	100		

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 26.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.

CPT INTERPRETATIONS

SOUNDING : CPT-16 SEIS
PROJECT : AES/MAGIC MTN
DATE/TIME: 04-05-90 16:36

PROJECT No.: 00-1729-1
CONE/RIG : 722/BH.GO/R#3

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	69.68	2.62	SANDY SILT to CLAYEY SILT	28	45		4.6	
.300	.98	114.59	3.24	SANDY SILT to CLAYEY SILT	46	73		6.7	
.450	1.48	47.63	4.71	CLAY to SILTY CLAY	32	51		2.8	
.600	1.97	31.91	4.31	CLAY to SILTY CLAY	21	34		1.9	
.750	2.46	27.70	4.28	CLAY to SILTY CLAY	18	30		1.6	
.900	2.95	44.61	2.22	SANDY SILT to CLAYEY SILT	18	29		3.0	
1.050	3.44	28.09	2.30	SANDY SILT to CLAYEY SILT	11	18		1.9	
1.200	3.94	38.50	2.30	SANDY SILT to CLAYEY SILT	15	25		2.6	
1.350	4.43	28.96	1.38	SANDY SILT to CLAYEY SILT	12	19		2.3	
1.500	4.92	64.84	1.90	SILTY SAND to SANDY SILT	22	35	64		44.0
1.650	5.41	86.74	.80	SAND to SILTY SAND	22	35	72		45.0
1.800	5.91	93.26	.94	SAND to SILTY SAND	23	37	74		45.0
1.950	6.40	110.41	1.29	SAND to SILTY SAND	28	44	79		45.0
2.100	6.89	173.25	.96	SAND	35	54	92		46.5
2.250	7.38	130.89	1.21	SAND to SILTY SAND	33	49	84		45.5
2.400	7.87	73.19	1.09	SAND to SILTY SAND	18	27	67		42.5
2.550	8.37	59.44	2.34	SANDY SILT to CLAYEY SILT	24	34		3.9	
2.700	8.86	44.57	3.04	CLAYEY SILT to SILTY CLAY	22	31		2.9	
2.850	9.35	57.93	2.81	SANDY SILT to CLAYEY SILT	23	31		3.8	
3.000	9.84	62.37	2.33	SANDY SILT to CLAYEY SILT	25	32		4.1	
3.150	10.33	53.64	2.10	SANDY SILT to CLAYEY SILT	21	27		3.5	
3.300	10.83	187.34	2.20	SILTY SAND to SANDY SILT	62	77	91		45.0
3.450	11.32	230.89	1.56	SAND to SILTY SAND	58	70	96		46.0
3.600	11.81	97.43	1.69	SILTY SAND to SANDY SILT	32	39	71		42.0
3.750	12.30	73.70	2.07	SILTY SAND to SANDY SILT	25	29	63		40.0
3.900	12.80	68.54	2.37	SANDY SILT to CLAYEY SILT	27	31		4.5	
4.050	13.29	71.93	2.21	SILTY SAND to SANDY SILT	24	27	61		39.5
4.200	13.78	71.00	2.03	SILTY SAND to SANDY SILT	24	26	60		39.0
4.350	14.27	96.81	1.67	SILTY SAND to SANDY SILT	32	35	68		41.0
4.500	14.76	97.15	1.14	SAND to SILTY SAND	24	26	68		40.5
4.650	15.26	128.64	2.75	SILTY SAND to SANDY SILT	43	45	75		42.0
4.800	15.75	245.61	1.48	SAND to SILTY SAND	61	63	94		44.5
4.950	16.24	278.63	1.37	SAND	56	56	97		45.0
5.100	16.73	404.65	1.36	SAND	81	81	100		46.5
5.250	17.22	335.73	1.13	SAND	67	66	100		46.0
5.400	17.72	305.59	1.57	SAND to SILTY SAND	76	74	98		45.0
5.550	18.21	342.64	1.25	SAND	69	66	100		45.5
5.700	18.70	298.51	.99	SAND	60	56	97		45.0
5.850	19.19	224.30	.88	SAND	45	42	88		43.5
6.000	19.69	81.75	3.05	SANDY SILT to CLAYEY SILT	33	30		4.7	
6.150	20.18	75.76	2.87	SANDY SILT to CLAYEY SILT	30	28		4.4	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 40.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-16 SEIS

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	79.03	3.34	SANDY SILT to CLAYEY SILT	32	28		4.6	
6.450	21.16	74.59	3.50	CLAYEY SILT to SILTY CLAY	37	33		4.3	
6.600	21.65	65.92	3.44	CLAYEY SILT to SILTY CLAY	33	29		3.8	
6.750	22.15	77.69	2.83	SANDY SILT to CLAYEY SILT	31	27		5.1	
6.900	22.64	80.94	3.41	SANDY SILT to CLAYEY SILT	32	28		4.7	
7.050	23.13	74.87	3.76	CLAYEY SILT to SILTY CLAY	37	32		4.3	
7.200	23.62	88.85	3.38	SANDY SILT to CLAYEY SILT	36	30		5.1	
7.350	24.11	87.29	2.87	SANDY SILT to CLAYEY SILT	35	29		5.0	
7.500	24.61	119.82	2.23	SILTY SAND to SANDY SILT	40	33	67		39.0
7.650	25.10	152.30	2.40	SILTY SAND to SANDY SILT	51	41	73		40.0
7.800	25.59	126.56	2.92	SANDY SILT to CLAYEY SILT	51	41		7.4	
7.950	26.08	139.24	3.08	SANDY SILT to CLAYEY SILT	56	45		8.1	
8.100	26.57	118.42	3.52	SANDY SILT to CLAYEY SILT	47	38		6.9	
8.250	27.07	144.51	2.71	SILTY SAND to SANDY SILT	48	38	71		39.5
8.400	27.56	120.12	3.53	SANDY SILT to CLAYEY SILT	48	37		7.0	
8.550	28.05	159.97	2.57	SILTY SAND to SANDY SILT	53	41	73		39.5
8.700	28.54	252.41	1.34	SAND to SILTY SAND	63	48	86		42.5
8.850	29.04	248.33	1.46	SAND to SILTY SAND	62	47	85		42.0
9.000	29.53	153.88	1.64	SAND to SILTY SAND	38	29	71		39.0
9.150	30.02	94.69	3.36	SANDY SILT to CLAYEY SILT	38	28		5.5	
9.300	30.51	78.12	3.50	SANDY SILT to CLAYEY SILT	31	23		4.5	
9.450	31.00	72.23	3.80	CLAYEY SILT to SILTY CLAY	36	26		4.1	
9.600	31.50	92.16	3.42	SANDY SILT to CLAYEY SILT	37	27		5.3	
9.750	31.99	82.34	3.86	CLAYEY SILT to SILTY CLAY	41	30		4.7	
9.900	32.48	57.08	5.27	CLAY	57	41		3.2	
10.050	32.97	71.26	3.62	CLAYEY SILT to SILTY CLAY	36	25		4.1	
10.200	33.46	71.81	4.12	CLAYEY SILT to SILTY CLAY	36	25		4.1	
10.350	33.96	77.97	3.52	CLAYEY SILT to SILTY CLAY	39	27		4.5	
10.500	34.45	89.59	3.35	SANDY SILT to CLAYEY SILT	36	25		5.1	
10.650	34.94	80.39	3.41	SANDY SILT to CLAYEY SILT	32	22		4.6	
10.800	35.43	83.32	2.79	SANDY SILT to CLAYEY SILT	33	23		4.8	
10.950	35.93	99.32	2.53	SILTY SAND to SANDY SILT	33	23	56		37.0
11.100	36.42	130.91	3.96	*VERY STIFF FINE GRAINED	100	89			
11.250	36.91	61.67	4.35	CLAYEY SILT to SILTY CLAY	31	21		3.5	
11.400	37.40	65.90	3.97	CLAYEY SILT to SILTY CLAY	33	22		3.7	
11.550	37.89	34.01	5.06	CLAY	34	23		1.9	
11.700	38.39	29.59	6.36	CLAY	30	19		1.6	
11.850	38.88	38.45	6.77	CLAY	38	25		2.1	
12.000	39.37	298.00	2.66	SILTY SAND to SANDY SILT	99	65	86		42.0
12.150	39.86	560.10	1.73	SAND to SILTY SAND	100	91	100		
12.300	40.35	499.00	1.23	SAND	100	64	100		44.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 40.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.

CPT INTERPRETATIONS

SOUNDING : CPT-18 PROJECT No.: 00-1729-1
PROJECT : AES/MAGIC MTN. CONE/RIG : 473/BH,VO/R#3
DATE/TIME: 03-23-00 04:37

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
.150	.49	18.70	4.03	CLAY to SILTY CLAY	12	20		1.2	
.300	.98	8.24	4.84	CLAY	8	13		.5	
.450	1.48	3.25	5.13	CLAY	3	5		.2	
.600	1.97	9.03	3.57	CLAY	9	14		.6	
.750	2.46	9.82	2.55	CLAY to SILTY CLAY	7	10		.8	
.900	2.95	6.71	3.94	CLAY	7	11		.4	
1.050	3.44	11.17	2.80	CLAY to SILTY CLAY	7	12		.7	
1.200	3.94	14.83	2.81	CLAYEY SILT to SILTY CLAY	7	12		1.0	
1.350	4.43	37.96	3.03	CLAYEY SILT to SILTY CLAY	19	30		2.5	
1.500	4.92	53.09	2.62	SANDY SILT to CLAYEY SILT	21	34		3.5	
1.650	5.41	47.65	3.65	CLAYEY SILT to SILTY CLAY	24	38		2.8	
1.800	5.91	33.04	2.75	CLAYEY SILT to SILTY CLAY	17	26		2.2	
1.950	6.40	54.20	2.76	SANDY SILT to CLAYEY SILT	22	35		3.6	
2.100	6.89	42.87	2.78	SANDY SILT to CLAYEY SILT	17	27		2.8	
2.250	7.38	47.31	3.18	CLAYEY SILT to SILTY CLAY	24	36		3.1	
2.400	7.87	26.85	3.36	CLAYEY SILT to SILTY CLAY	13	20		1.8	
2.550	8.37	44.98	2.78	SANDY SILT to CLAYEY SILT	18	25		3.0	
2.700	8.86	48.76	2.64	SANDY SILT to CLAYEY SILT	20	27		3.2	
2.850	9.35	46.67	3.08	CLAYEY SILT to SILTY CLAY	23	31		3.1	
3.000	9.84	49.78	3.47	CLAYEY SILT to SILTY CLAY	25	32		2.9	
3.150	10.33	46.70	3.34	CLAYEY SILT to SILTY CLAY	23	30		3.1	
3.300	10.83	49.37	3.96	CLAYEY SILT to SILTY CLAY	25	31		2.9	
3.450	11.32	59.74	3.71	CLAYEY SILT to SILTY CLAY	30	36		3.5	
3.600	11.81	75.23	3.18	SANDY SILT to CLAYEY SILT	30	36		4.4	
3.750	12.30	110.41	2.07	SILTY SAND to SANDY SILT	37	43	74		42.5
3.900	12.80	155.13	2.02	SILTY SAND to SANDY SILT	52	59	83		44.0
4.050	13.29	163.46	1.08	SAND to SILTY SAND	41	46	84		44.0
4.200	13.78	78.20	1.33	SILTY SAND to SANDY SILT	26	29	63		39.5
4.350	14.27	45.68	2.98	SANDY SILT to CLAYEY SILT	18	20		3.0	
4.500	14.76	48.10	4.03	CLAYEY SILT to SILTY CLAY	24	26		2.8	
4.650	15.26	57.15	3.29	CLAYEY SILT to SILTY CLAY	29	30		3.3	
4.800	15.75	70.96	1.66	SILTY SAND to SANDY SILT	24	24	58		38.5
4.950	16.24	48.29	3.14	CLAYEY SILT to SILTY CLAY	24	24		3.2	
5.100	16.73	57.42	2.23	SANDY SILT to CLAYEY SILT	23	23		3.8	
5.250	17.22	55.87	2.79	SANDY SILT to CLAYEY SILT	22	22		3.7	
5.400	17.72	62.23	2.22	SANDY SILT to CLAYEY SILT	25	24		4.1	
5.550	18.21	65.97	3.02	SANDY SILT to CLAYEY SILT	26	25		3.8	
5.700	18.70	55.19	2.41	SANDY SILT to CLAYEY SILT	22	21		3.6	
5.850	19.19	49.29	3.28	CLAYEY SILT to SILTY CLAY	25	23		3.2	
6.000	19.69	50.88	3.24	CLAYEY SILT to SILTY CLAY	25	23		3.3	
6.150	20.18	49.39	3.37	CLAYEY SILT to SILTY CLAY	25	22		2.8	

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 42.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.

SOUNDING : CPT-18

DEPTH (m)	DEPTH (ft)	TIP RESISTANCE (tsf)	FRICTION RATIO (%)	SOIL BEHAVIOR TYPE	N(60)	N1(60)	Dr (%)	Su (tsf)	PHI (Degrees)
6.300	20.67	50.12	2.83	SANDY SILT to CLAYEY SILT	20	18		3.3	
6.450	21.16	43.40	2.88	SANDY SILT to CLAYEY SILT	17	15		2.8	
6.600	21.65	49.14	2.53	SANDY SILT to CLAYEY SILT	20	17		3.2	
6.750	22.15	39.75	2.93	CLAYEY SILT to SILTY CLAY	20	17		2.6	
6.900	22.64	53.81	2.55	SANDY SILT to CLAYEY SILT	22	18		3.5	
7.050	23.13	68.96	2.24	SILTY SAND to SANDY SILT	23	20	52		37.5
7.200	23.62	77.35	2.29	SILTY SAND to SANDY SILT	26	22	55		38.0
7.350	24.11	84.43	2.44	SANDY SILT to CLAYEY SILT	34	28		5.5	
7.500	24.61	64.01	2.62	SANDY SILT to CLAYEY SILT	26	21		4.2	
7.650	25.10	79.58	3.12	SANDY SILT to CLAYEY SILT	32	26		4.6	
7.800	25.59	282.62	2.01	SAND to SILTY SAND	71	57	91		43.5
7.950	26.08	501.19	2.46	*SAND to CLAYEY SAND	100	100			
8.100	26.57	716.42	1.76	SAND to SILTY SAND	100	100	100		
8.250	27.07	570.49	2.53	*SAND to CLAYEY SAND	100	100			
8.400	27.56	496.07	2.27	*SAND to CLAYEY SAND	100	100			
8.550	28.05	282.87	2.06	SAND to SILTY SAND	71	55	89		43.0
8.700	28.54	164.92	3.59	SANDY SILT to CLAYEY SILT	66	50		9.6	
8.850	29.04	152.24	3.60	SANDY SILT to CLAYEY SILT	61	46		8.9	
9.000	29.53	118.14	2.16	SILTY SAND to SANDY SILT	39	30	64		38.5
9.150	30.02	135.67	1.96	SILTY SAND to SANDY SILT	45	34	67		38.5
9.300	30.51	129.32	2.22	SILTY SAND to SANDY SILT	43	32	66		38.5
9.450	31.00	150.60	2.24	SILTY SAND to SANDY SILT	50	37	70		39.0
9.600	31.50	199.85	2.64	SILTY SAND to SANDY SILT	67	48	78		40.5
9.750	31.99	157.49	4.92	*VERY STIFF FINE GRAINED	100	100			
9.900	32.48	269.89	5.56	*VERY STIFF FINE GRAINED	100	100			
10.050	32.97	282.73	5.62	*VERY STIFF FINE GRAINED	100	100			
10.200	33.46	254.58	5.56	*VERY STIFF FINE GRAINED	100	100			
10.350	33.96	333.90	4.68	*VERY STIFF FINE GRAINED	100	100			
10.500	34.45	156.32	4.23	*VERY STIFF FINE GRAINED	100	100			
10.650	34.94	119.67	3.29	SANDY SILT to CLAYEY SILT	48	33		6.9	
10.800	35.43	130.15	3.14	SANDY SILT to CLAYEY SILT	52	36		7.5	
10.950	35.93	96.22	3.33	SANDY SILT to CLAYEY SILT	38	26		5.5	
11.100	36.42	110.58	3.01	SANDY SILT to CLAYEY SILT	44	30		6.4	
11.250	36.91	92.69	2.57	SANDY SILT to CLAYEY SILT	37	25		6.0	
11.400	37.40	95.05	3.22	SANDY SILT to CLAYEY SILT	38	25		5.5	
11.550	37.89	91.54	2.52	SANDY SILT to CLAYEY SILT	37	24		6.0	
11.700	38.39	91.80	3.71	CLAYEY SILT to SILTY CLAY	46	30		5.3	
11.850	38.88	115.89	6.32	*VERY STIFF FINE GRAINED	100	76			
12.000	39.37	76.14	5.60	*VERY STIFF FINE GRAINED	76	50			
12.150	39.86	82.00	5.69	*VERY STIFF FINE GRAINED	82	53			
12.300	40.35	107.58	4.89	*VERY STIFF FINE GRAINED	100	69			
12.450	40.85	107.44	4.58	*VERY STIFF FINE GRAINED	100	69			
12.600	41.34	83.92	4.92	*VERY STIFF FINE GRAINED	84	53			
12.750	41.83	267.71	6.33	*VERY STIFF FINE GRAINED	100	100			
12.900	42.32	203.16	7.55	*VERY STIFF FINE GRAINED	100	100			
13.050	42.81	256.62	*****		0	0			.0

*INDICATES OVERCONSOLIDATED OR CEMENTED MATERIAL
ASSUMED TOTAL UNIT WT = 120 pcf
ASSUMED DEPTH OF WATER TABLE = 42.0 ft
N(60) = EQUIVALENT SPT VALUE (60% Energy)
N1(60) = OVERBURDEN NORMALIZED EQUIVALENT SPT VALUE (60% Energy)
Dr = OVERBURDEN NORMALIZED EQUIVALENT RELATIVE DENSITY
Su = OVERBURDEN NORMALIZED UNDRAINED SHEAR STRENGTH
PHI = OVERBURDEN NORMALIZED EQUIVALENT FRICTION ANGLE

Interpretations based on: Robertson and Campanella, 1989.

APPENDIX C

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

GEOLOGIC AND GEOTECHNICAL REPORT

Review of Vesting Tentative Tract Map (Dated June 14, 2004)

Vesting Tentative Tract 61105
Mesas East
Newhall Ranch, California

VOLUME III OF VI

Prepared for:

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

Job No: 04-2023-4
Dated July 22, 2004

27825 Smyth Drive, Valencia, California 91355 661-294-0065 FAX 661-294-0833

Appendix B

APPENDIX B

GEOTECHNICAL LABORATORY INVESTIGATION

1. General

a. The purpose of the laboratory investigation was to evaluate the geotechnical engineering characteristics of the various materials encountered during the field investigation. The investigation program was carried out employing, wherever practical, currently accepted test procedures of the American Society of Testing and Materials (ASTM) and California Test Standards.

b. Relatively undisturbed ring samples and bag samples were obtained during the course of the field investigation. Laboratory sample identification is by project name and number, drill hole number or trench number and depth. Laboratory testing was completed entirely by this firm.

c. The results of the laboratory testing are organized into the following three major subgroups:

- Index Properties Tests
- Geotechnical Engineering Properties Tests, and
- Corrosion Tests

2. Index Properties Tests

The following Index Properties test were performed on native soils collected during the field exploration.

TEST TYPE	NO. OF TESTS PERFORMED	TESTING STANDARD
Moisture Content	725	ASTM D 2216
Dry Unit Weight	677	ASTM D 2937
Percent-Finer than #200 Sieve	150	ASTM D 1140
Particle-Size Analysis (sieve only)	12	ASTM D 422
Particle-Size with Hydrometer	11	ASTM D 422
Expansion Index	4	ASTM D 4829
Atterberg Limits	62	ASTM D 4318

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The purpose of each test is briefly described below.

a. The in-situ water content and dry unit weight of native soils provided an indication of their strength before additional testing was performed. These data, in conjunction with field blow count data, served in the selection of samples for additional testing. Test results are presented on the Drill Hole Logs within **Appendix A**.

b. Wash-sieve analyses were performed on selected samples to evaluate only the percentage of fine particles finer than the No. 200 sieve (75 microns in diameter) within the soil. These tests were conducted to aid in classifying the soils in accordance with the Unified Soil Classification System (USCS). Test results are presented on the Drill Hole Logs within **Appendix A** and in other test reports within this Appendix.

c. Complete mechanical particle-size analyses of soil fractions larger and smaller than the No. 200 sieve (75 microns) were conducted on selected critical samples to aid in classifying the soils in accordance with the Unified Soil Classification System (USCS). Test results are presented on Lab Report **Figures B1.1** through **B1.8** within this **Appendix**.

d. Liquid and plastic limit tests (Atterberg limits) were conducted on selected samples to evaluate soil plasticity and aid in classifying the soils in accordance with USCS. Test results are presented on Lab Report **Figures B2.1** through **B2.14** within this **Appendix** and on the Drill Hole Logs presented in **Appendix A**.

e. Expansion Index Tests provided an index to the expansion potential of soils when inundated with water. This test method controls variables that influence the expansive characteristics of soils. Results are summarized in **Table B-1** of this **Appendix.**

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3. Geotechnical Engineering Properties Tests

The following Geotechnical Engineering Property Tests were performed on bulk samples or relatively undisturbed ring samples, as applicable, collected at this site.

TEST TYPE	NO. OF TESTS PERFORMED	TESTING STANDARD
Compaction (Modified Proctor)	21	ASTM D 1557
Consolidation	69	ASTM D 2435
Direct Shear and Reshear	66	ASTM D 3080

The purpose of each test is briefly described below.

a. Modified proctor tests were performed on selected bulk samples to assess the moisture-density relationship of materials for future use in defining compaction parameters during grading operations. Proctor tests were also completed on samples utilized for remolded direct shear testing. Test results are presented on Lab Report **Figures B3.1** through **B3.21** within this **Appendix**.

b. One-dimensional consolidation tests were performed on selected ring samples to assess the soils compressibility characteristics by subjecting the specimens to loads ranging from as low as 50 psf to as high as 25,600 psf. High loads were used for this project in order to produce adequate curves for a reliable determination of the virgin curve portion and past pressure (Pp), needed to explore over-consolidation (or under-consolidation) conditions of some fine-grained soils. The specimens were allowed to consolidate under each load increment until the rate of settlement was less than 0.0002 inches per hour. Time was recorded for readings under some selected loads to produce time-settlement curves. Final readings under each load increment were used to generate load-compression relationships. Hydroconsolidation was assessed on separate specimens by inundating the sample with water after consolidation had been achieved under a load, which approximately equals the overburden pressure at the sample depth plus the expected effect from the structural load to that depth. The percent settlement due to the addition of water is identified as "Hydroconsolidation". Test results are plotted on Lab Report **Figures B4.1** through **B4.69** within this **Appendix**.

c. Direct shear tests were performed on relatively undisturbed or remolded test specimens using a displacement-controlled direct shear machine. Samples were

tested at normal pressures ranging from approximately 1000 psf to 12,000 psf in order to define the peak, ultimate and residual shear strength parameters. The samples were consolidated under the normal load at saturated conditions and then sheared horizontally at a controlled displacement rate until a residual strength was attained. For remolded specimens, material passing the no. 4 sieve was used. Reshears were conducted on selected fine-grained ring samples to obtain along-bedding shear strength parameters. Individual test results are plotted on Lab Report **Figures B5.1** through **B5.66** within this **Appendix** and the shear strength parameters used for slope stability analysis are summarized in **Table B-1**, organized by material type.

d. Family shear plots based on individual shear strength test data were constructed to illustrate how shear strength parameters were developed for each material type encountered at the site. Peak shear strengths were utilized for seismic slope stability analyses. For static slope stability analyses, ultimate shear strengths were generally used for coarse-grained materials and residual shear strengths were used for fine-grained materials and landslide debris. For bedding plane and landslide plane, residual shear strengths were utilized for all stability analyses. Family shear plots are shown on **Figures B6.1** through **B6.8** within this **Appendix**, organized by material type.

4. Corrosion Tests

The following corrosion tests were performed on native soil samples collected at the site.

TEST TYPE	NO. OF TESTS PERFORMED	TESTING STANDARD
Sulfate-Content	5	Caltrans Test 417
Chloride-Content	5	Caltrans Test 422
Resistivity	5	Caltrans Test 643
pH	5	LaMotte

a. Representative bulk samples were obtained from the field and tested for soluble sulfate and chloride contents, electrical resistivity and pH. Sulfate content was tested to assess potential corrosion to exposed concrete. Chloride content, electrical resistivity, and pH were tested to evaluate the potential corrosive characteristics of the site materials to steel reinforcement and buried metal utilities.

APPENDIX B

b. Sulfate test results classify concrete exposure to sulfates as negligible per 1997 UBC. The UBC (1997) provides the following recommendation for negligible exposure of concrete to sulfates: either Type I or Type II Portland Cement may be used in concrete for structures and concrete pipe that will be in contact with near finish grade soils. Final recommendations for concrete should be in accordance with the latest UBC requirements. Chloride content and pH test results indicate no significant acidity of the soils. Resistivity test results indicate that the on-site soils are moderately to severely corrosive towards ferrous metals. Additional grading on the site may warrant revisions to these findings. All test results are summarized in **Table B-3** within this **Appendix.**

The following attachments completed this Appendix.

• Expansion Index Summary	Table B1
• Direct Shear Strength Parameters used in Analysis	Table B2
• Corrosion Test Results on Soil Samples	Table B3
• Particle-Size Distribution Test Reports	Figures B1.1 through B1.8
• Liquid and Plastic Limits Test Reports	Figures B2.1 through B2.14
• Compaction (Modified Proctor) Test Reports	Figures B3.1 through B3.21
• Consolidation Test Reports	Figures B4.1 through B4.69
• Direct Shear Test Results	Figures B5.1 through B5.66
• Family Shear Plots	Figures B6.1 through B6.8

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EXPANSION TEST SUMMARY

SAMPLES	USCS	EXPANSION INDEX (UBC)	EXPANSION CLASSIFICATION (UBC)
B-15E @ 19'	CL	85	Medium
B-54E @ 0-10'	CL	51	Medium
B-65E @ 5-6'	CL	29	Low
B-3B @ 28'	CL	92	Medium

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DIRECT SHEAR STRENGTH PARAMETERS USED IN ANALYSIS

MATERIAL	PEAK		ULTIMATE		RESIDUAL	
	COHESION (PSF)	PHI ø	COHESION (PSF)	PHI ø	COHESION (PSF)	PHI ø
Bedrock (TQs), Cross-bedding Upper Saugus Formation	400	38°	-	-	300	31°
Bedrock (TQs), Cross-bedding Lower Saugus Formation	600	38°	500	35°	-	-
Bedrock (TQs), Along-bedding	-	-	-	-	200	20°
Terrace Deposits (Qt)	300	31°	200	30°	-	-
Alluvium (Qal)	300	31°	200	29°	-	-
Slopewash (Qsw)	300	28°	250	28°	-	-
Landslide Debris (Qls)	200	29°	-	-	140	25°
Slide Plane (Sp)	200	15°	200	15°	200	15°
Qls Back Calculation*	200	15°	200	15°	200	15°
Artificial Fill (Cef),	300	30°	300	30°	300	30°

*See Slope Stability Analyses, **Appendix F**, Run No. 27.

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CORROSION TEST RESULTS ON SOIL SAMPLES

Sample Location	B-1E @ 5'	B-15E @ 19'	B-54E @0-10'	B-57E @16'	B-65E @5-6'
Bedrock or Soil Type (USCS)	SM	TQs	TQs	ML	ML

Resistivity (Ω- cm)	1329	1256	897	644	3089
Corrosivity Potentia[1]	Corrosive	Corrosive	Severely Corrosive	Severely Corrosive	Moderately Corrosive

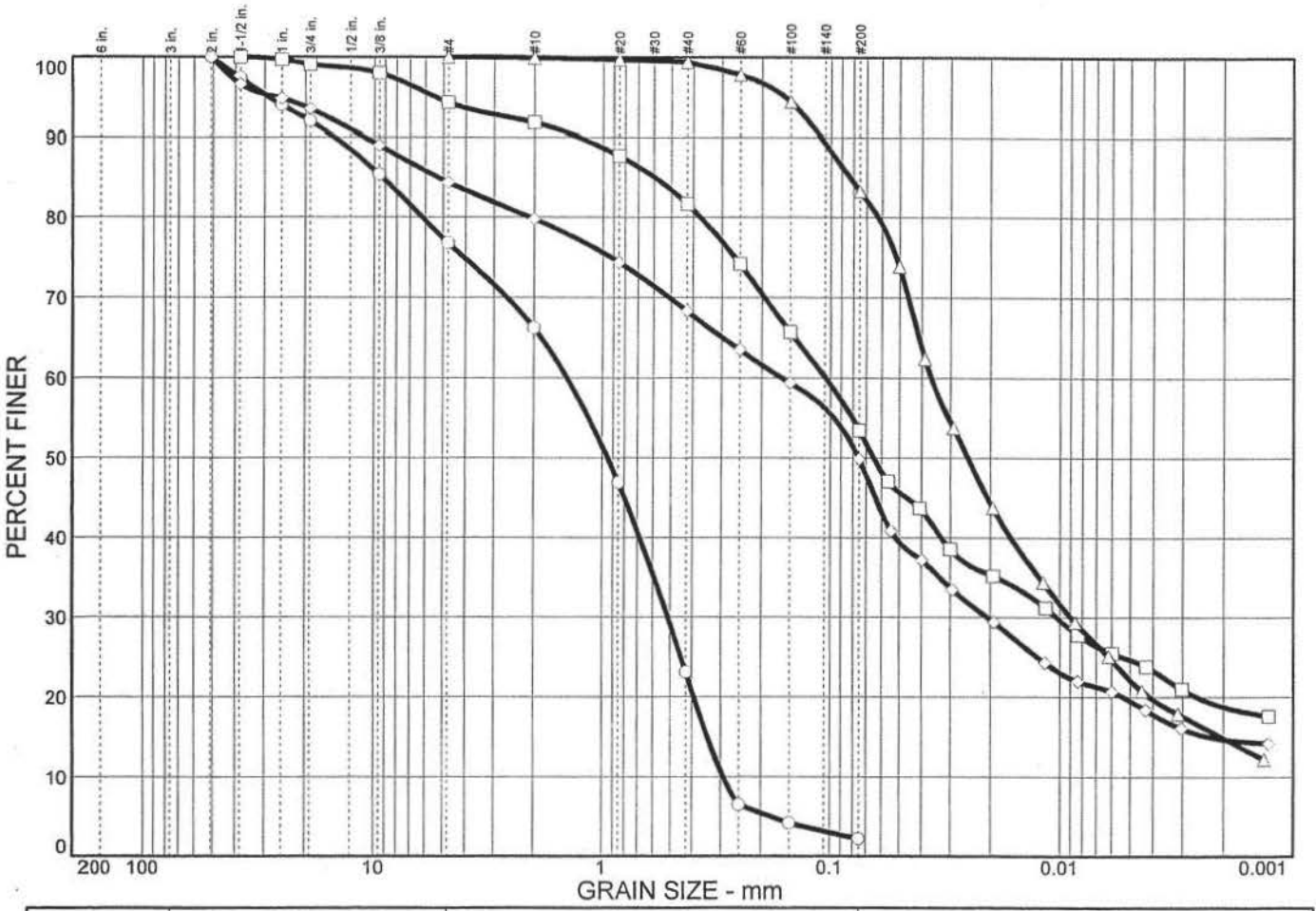
Chemical Analyses

pH	7.9	8.2	8.2	7.6	6.6
Chloride Cl_2 (ppm)	ND	8.1	3.6	2.7	27
Sulfate SO_4 (%)	.002	.001	.005	.001	.001
Concrete exposure to sulfate[2]	Negligible	Negligible	Negligible	Negligible	Negligible

ND = not detected

[1] Per County of Los Angeles Classification
[2] Per 1997 UBC- Table 19-A-4

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	8.0	15.2	10.5	43.2	20.9	2.2	
□	0.0	0.9	4.8	2.5	10.1	28.2	28.8	24.7
△	0.0	0.0	0.0	0.1	0.5	16.1	61.1	22.2
◇	0.0	6.5	9.1	4.6	11.5	18.4	30.4	19.5

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	B-2E		3	Poorly graded SAND with gravel	SP
□	B-10E		5,11	Yellowish brown sandy lean CLAY	CL
△	B-16E		20	Lean clay with sand	CL
◇	B-20E		0-10	Yellowish brown sandy lean CLAY with gravel	SC

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

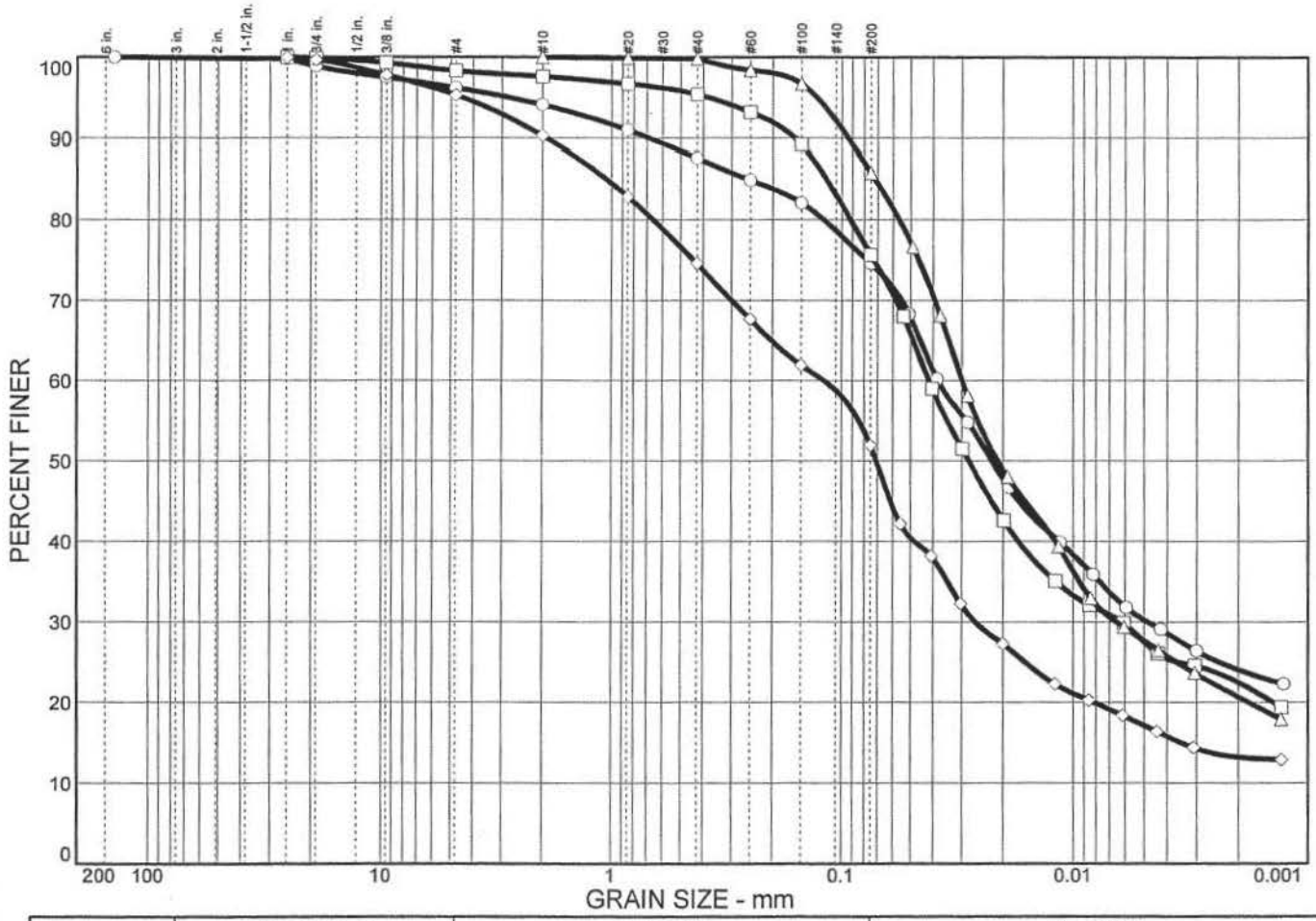
Client: Newhall Ranch Co.

Project: Newhall Ranch, Mesas-East

Project No.: 00-1703CM-1

Figure B1.1

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.1	1.0	2.7	2.1	6.5	13.0	44.3	30.3
□	0.0	0.1	1.6	0.7	2.2	19.7	48.1	27.6
△	0.0	0.0	0.0	0.0	0.2	14.0	58.1	27.7
◇	0.0	0.3	4.4	5.0	15.7	22.7	34.7	17.2

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	B-33E		3, 10	Yellowish brown lean CLAY with sand	CL
□	B-36E		20	Yellowish brown lean CLAY with sand	CL
△	B-39E		30	Lean CLAY	CL
◇	B-48E		0-10	Yellowish brown sandy lean CLAY	CL

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

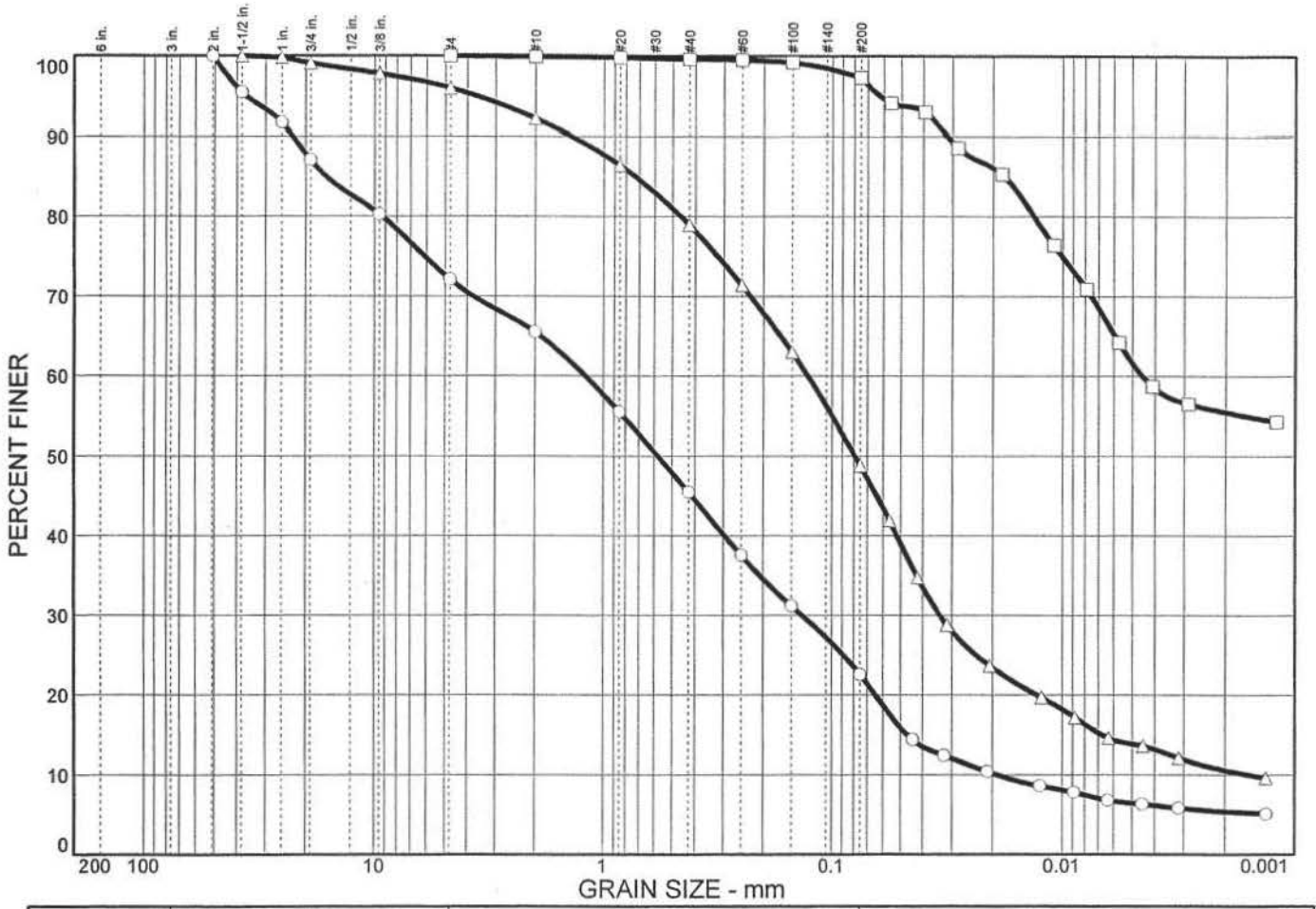
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B1.2

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	12.9	15.0	6.6	20.0	22.9	16.2	6.4
□	0.0	0.0	0.0	0.1	0.3	2.3	35.7	61.6
△	0.0	0.9	3.1	3.8	13.2	30.2	34.9	13.9

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	B-57E		5, 10	Yellowish brown clayey SAND with gravel	SC
□	B-58E		43.5	Fat clay	CH
△	B-61E		0-10	Yellowish brown clayey SAND	SC

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

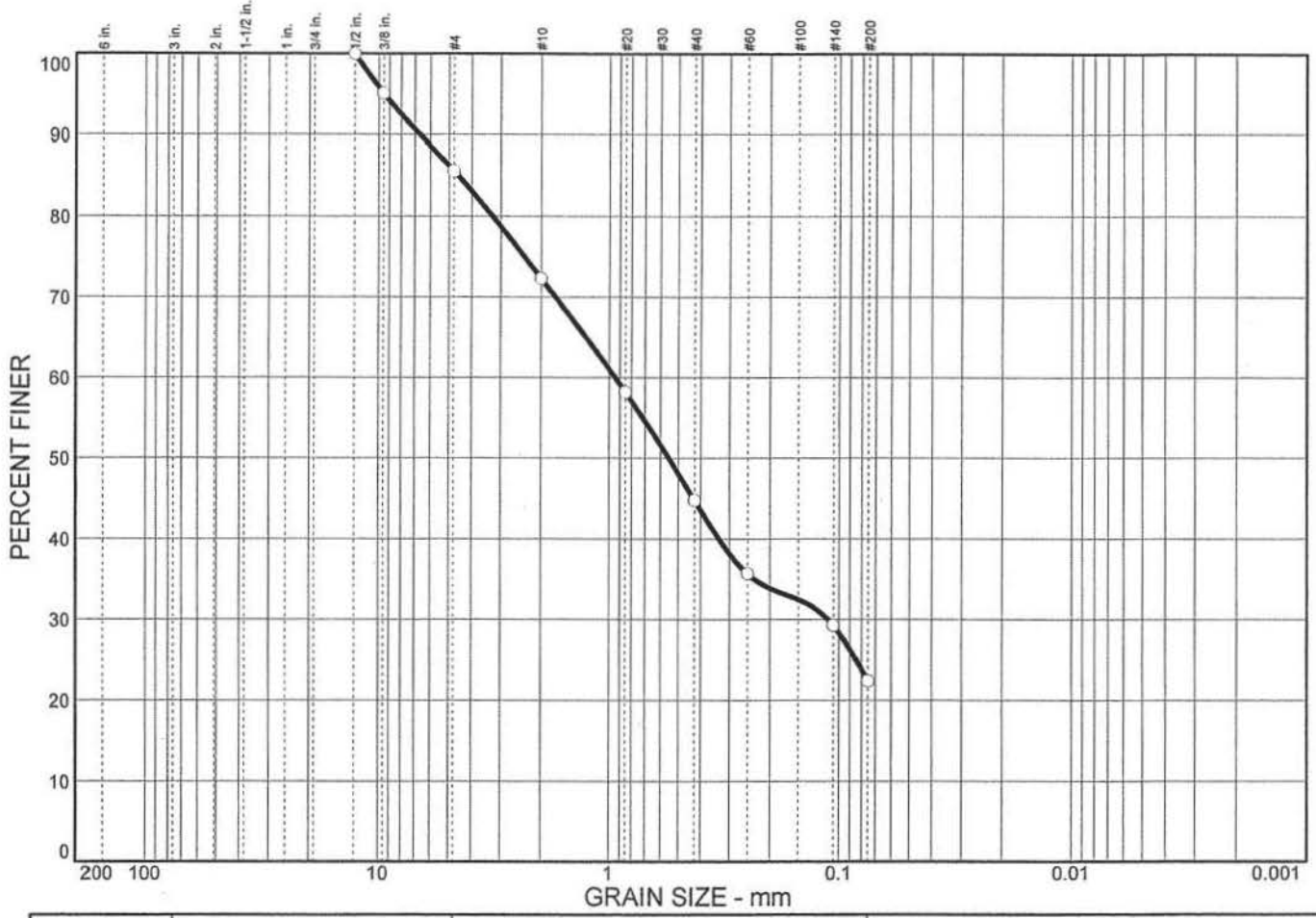
Client: Newhall Ranch Co.

Project: Newhall Ranch, Mesas-East

Project No.: 00-1703CM-1

Figure B1.3

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	14.4	13.3	27.5	22.4	22.4	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	HS-27T		0-25	Silty SAND	SM

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

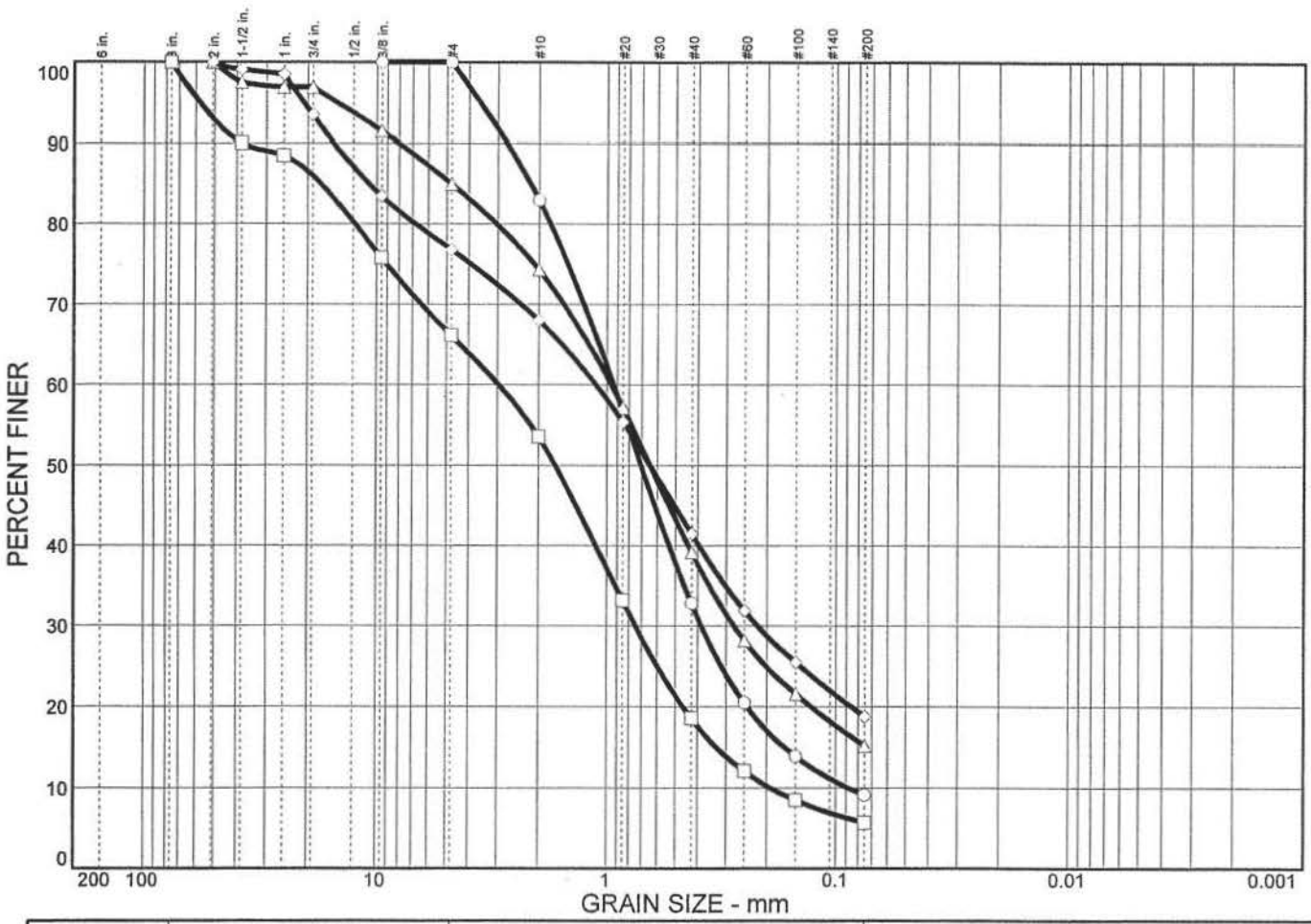
Client: Newhall Ranch Co.

Project: Mesas East

Project No.: 04-1703E-1

Figure B1.4

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	17.0	50.2	23.7	9.1	
□	0.0	13.9	20.0	12.5	35.0	12.9	5.7	
△	0.0	3.1	11.9	10.7	35.1	24.0	15.2	
◇	0.0	6.5	16.7	8.8	26.5	22.7	18.8	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	B-1B		12	Poorly graded SAND with silt	SP-SM
□	B-3B		16	Poorly graded sand with silt and gravel	SP-SM
△	B-6B		19	Silty SAND with gravel	SM
◇	B-7B		19	Silty SAND with gravel	SM

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

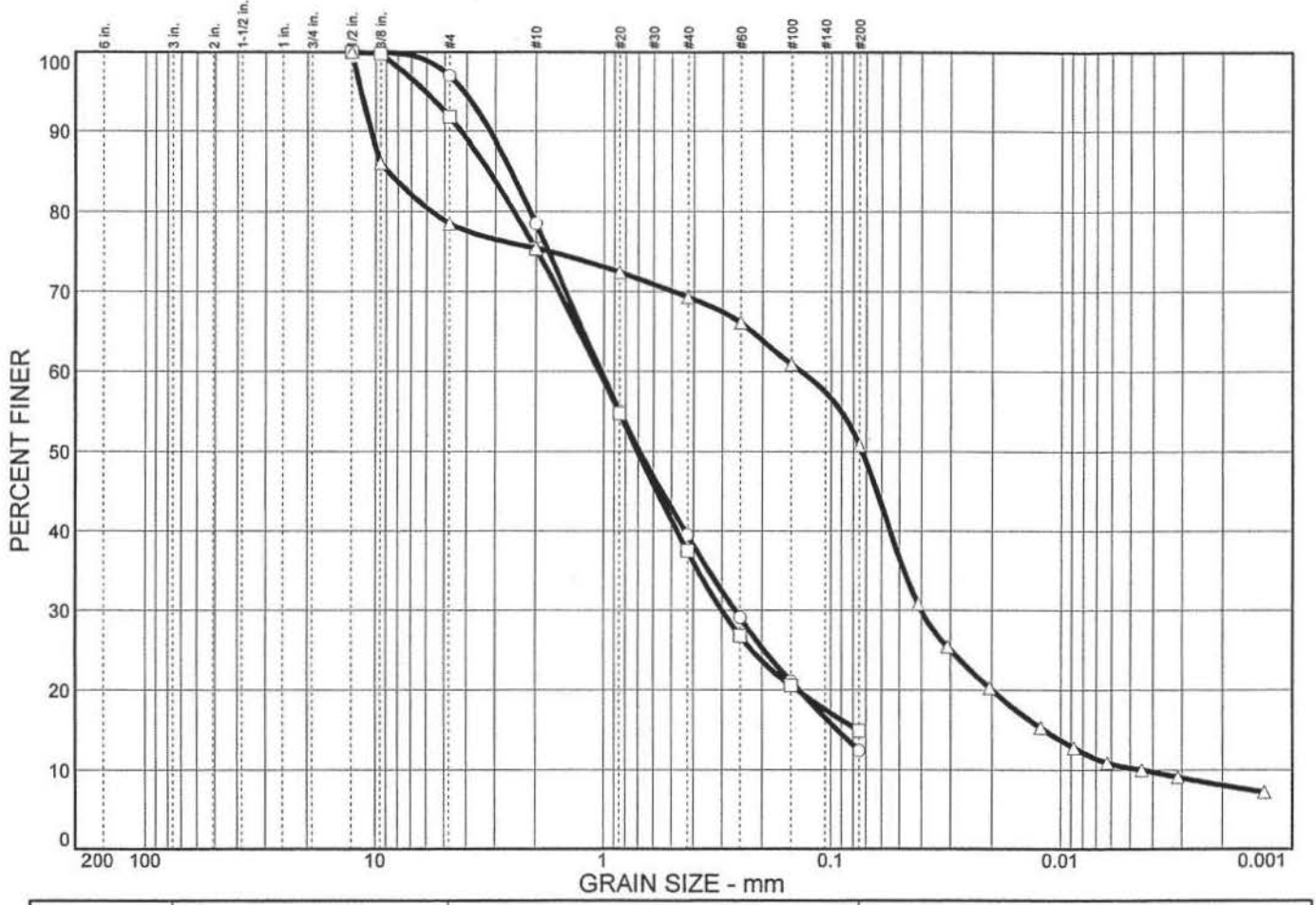
Client: Newhall Ranch Co.

Project: Cobble/Boulder Assessment
Airport and Exxon Mesas

Project No.: 02-1703B-1

Figure B1.5

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	3.0	18.5	39.0	27.1	12.4	
□	0.0	0.0	8.2	16.5	37.8	22.6	14.9	
△	0.0	0.0	21.5	3.1	6.1	18.5	40.6	10.2

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	RW-1		0-15	Brown to grayish-brown silty SAND	SM
□	RW-2		0-15	Brown to grayish-brown silty SAND	SM
△	RW-3		25	Brown sandy, silty CLAY with gravel	CL-ML

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

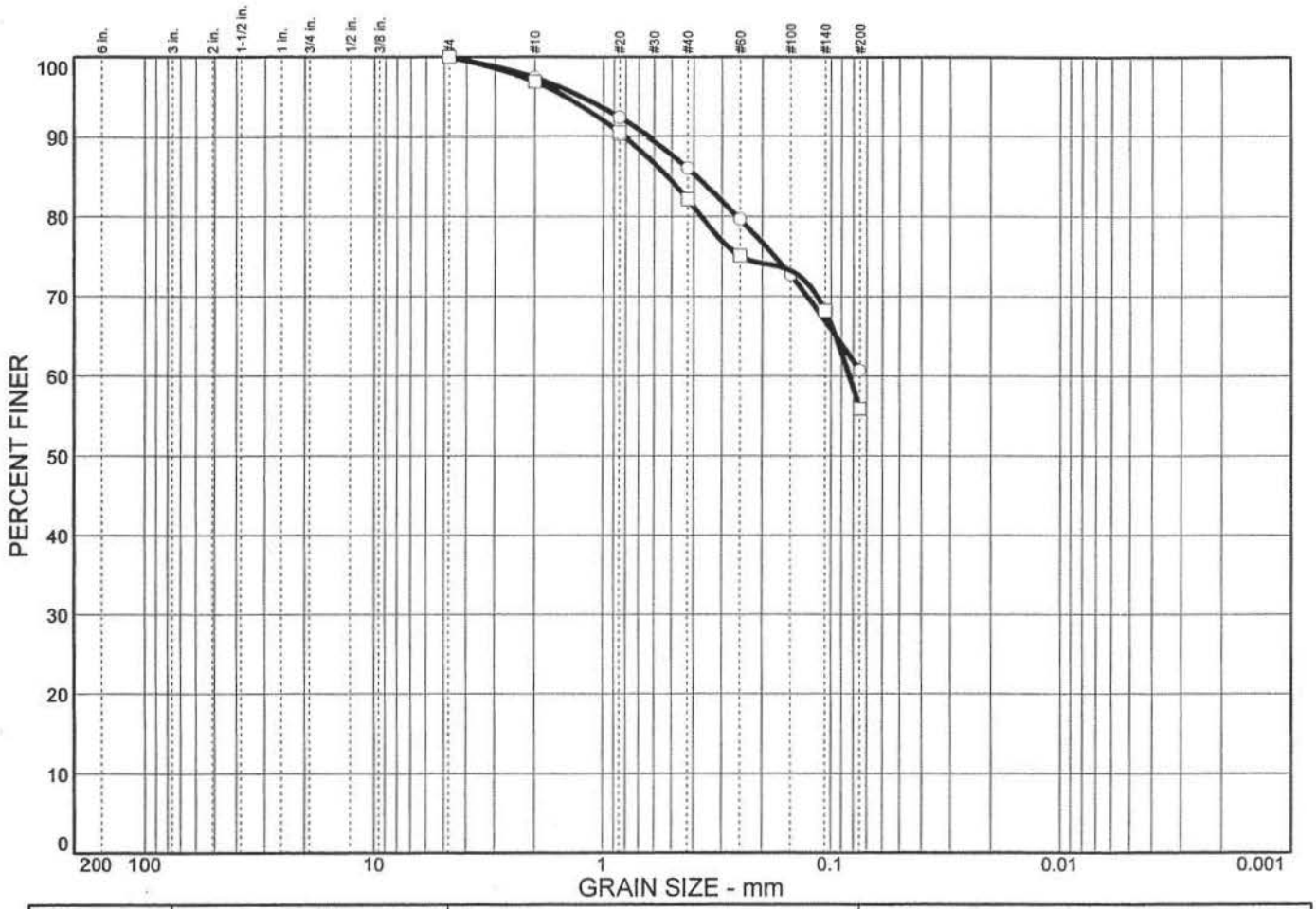
Client: Newhall Ranch Co.

Project: Newhall Ranch
Mesas Area

Project No.: 99-1703L-1

Figure B1.6

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.0	2.6	11.3	25.4	60.7	
□	0.0	0.0	0.0	3.1	14.7	26.3	55.9	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	B-1M		25	Brown sandy lean CLAY	CL
□	B-4M		2, 10	Brown sandy SILT	ML

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

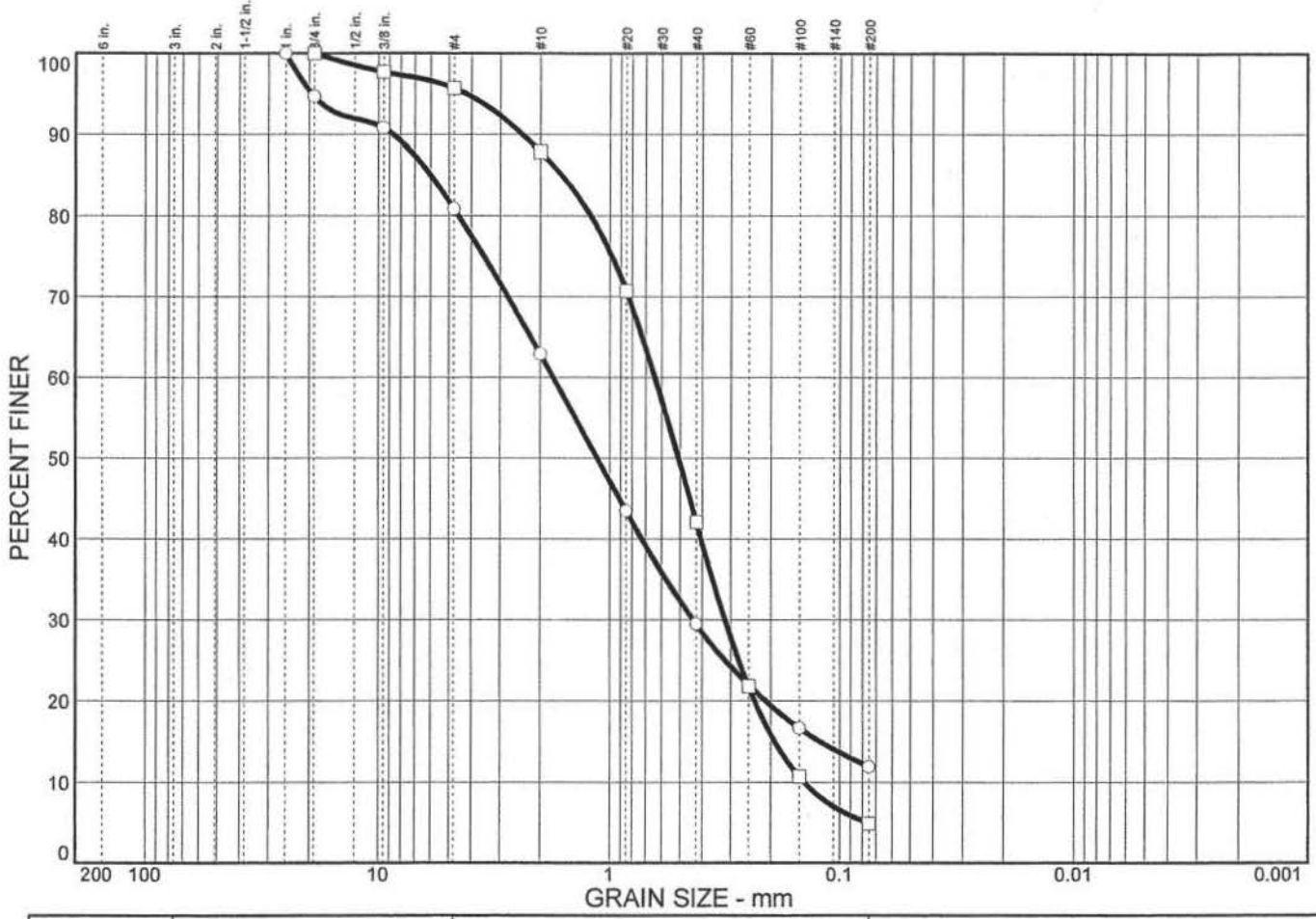
Client: Newhall Ranch Co.

Project: Mesas Entertainment

Project No.: 01-1703M-1

Figure B1.7

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	5.3	13.8	18.0	33.4	17.6	11.9	
□	0.0	0.0	4.3	7.8	45.8	37.2	4.9	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	HS-12I		15	Poorly graded SAND with silt and gravel	SP-SM
□	HS-14I		11	Poorly graded SAND	SP

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

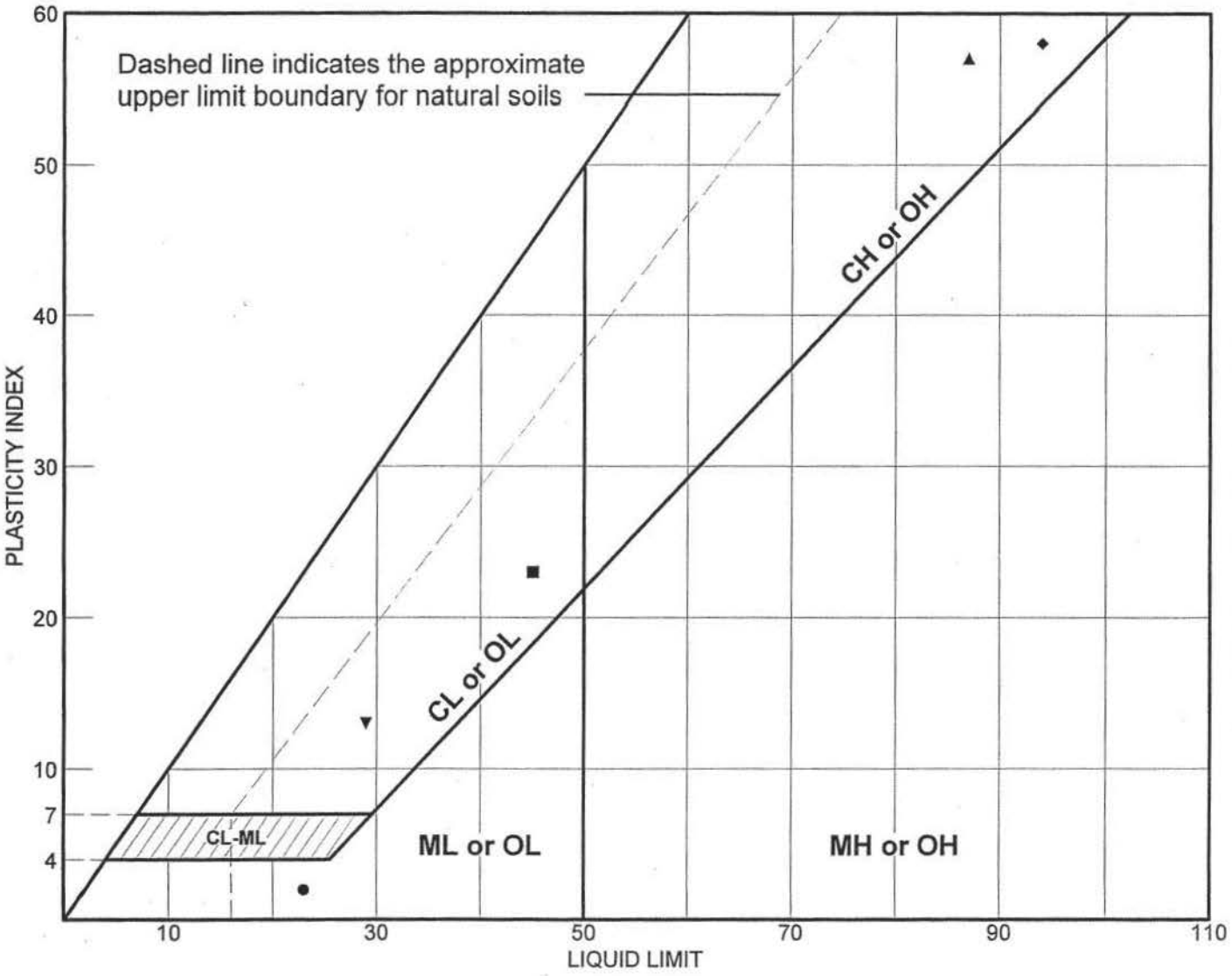
Client: Newhall Ranch

Project: Newhall Ranch Infrastructure

Project No.: 00-1155I-1

Figure B1.8

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-1E		10		21	23	2	SM
■	B-3E		5		22	45	23	CL
▲	B-10E		20	19.1	30	87	57	CH
◆	B-10E		23		36	94	58	CH
▼	B-10E		5,11		16	29	13	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

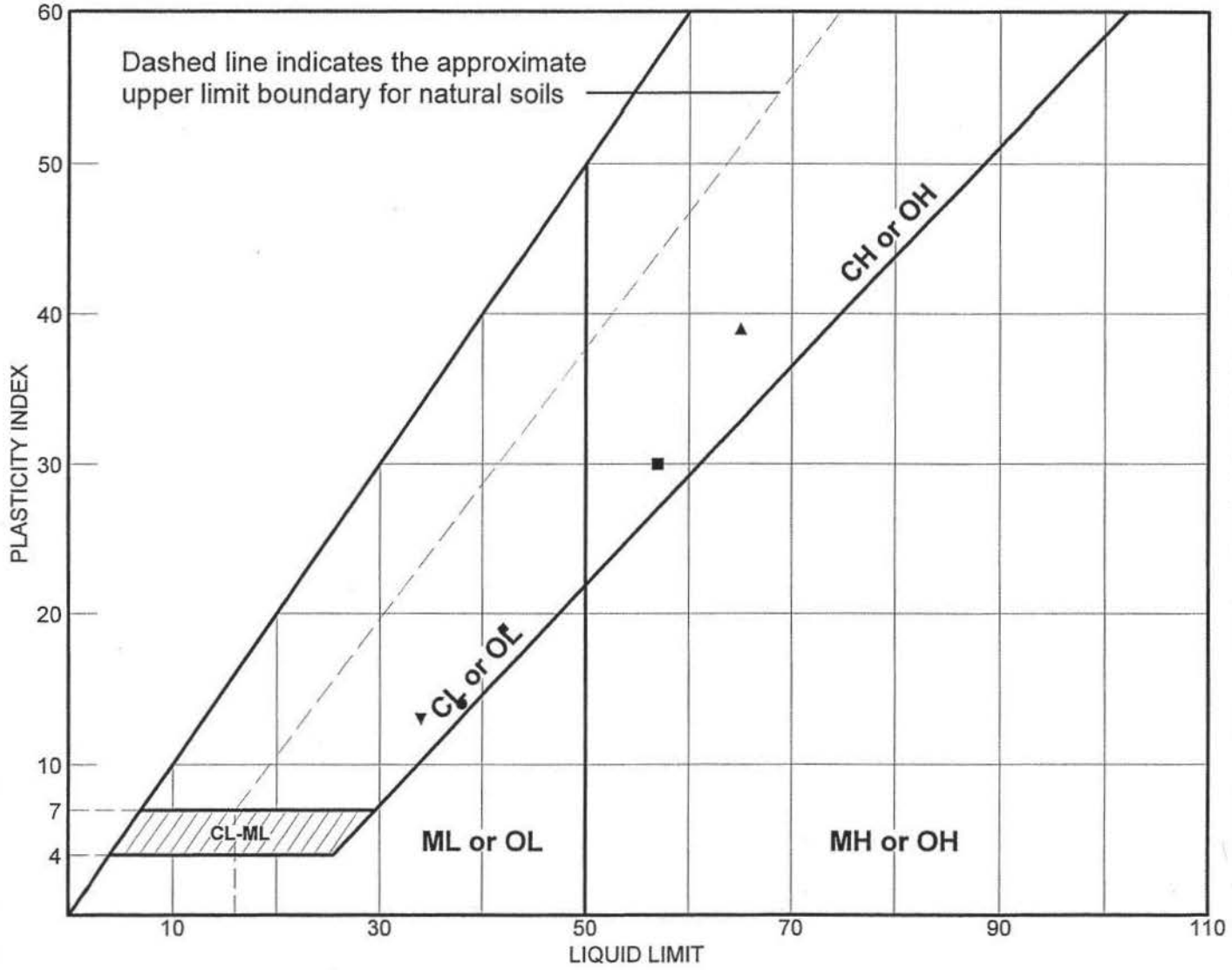
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B2.1

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-11E		25		24	38	14	CL
■	B-12E		20		27	57	30	CH
▲	B-13E		15.5		26	65	39	CH
◆	B-14E		15		23	42	19	CL
▼	B-16E		20	11.0	21	34	13	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

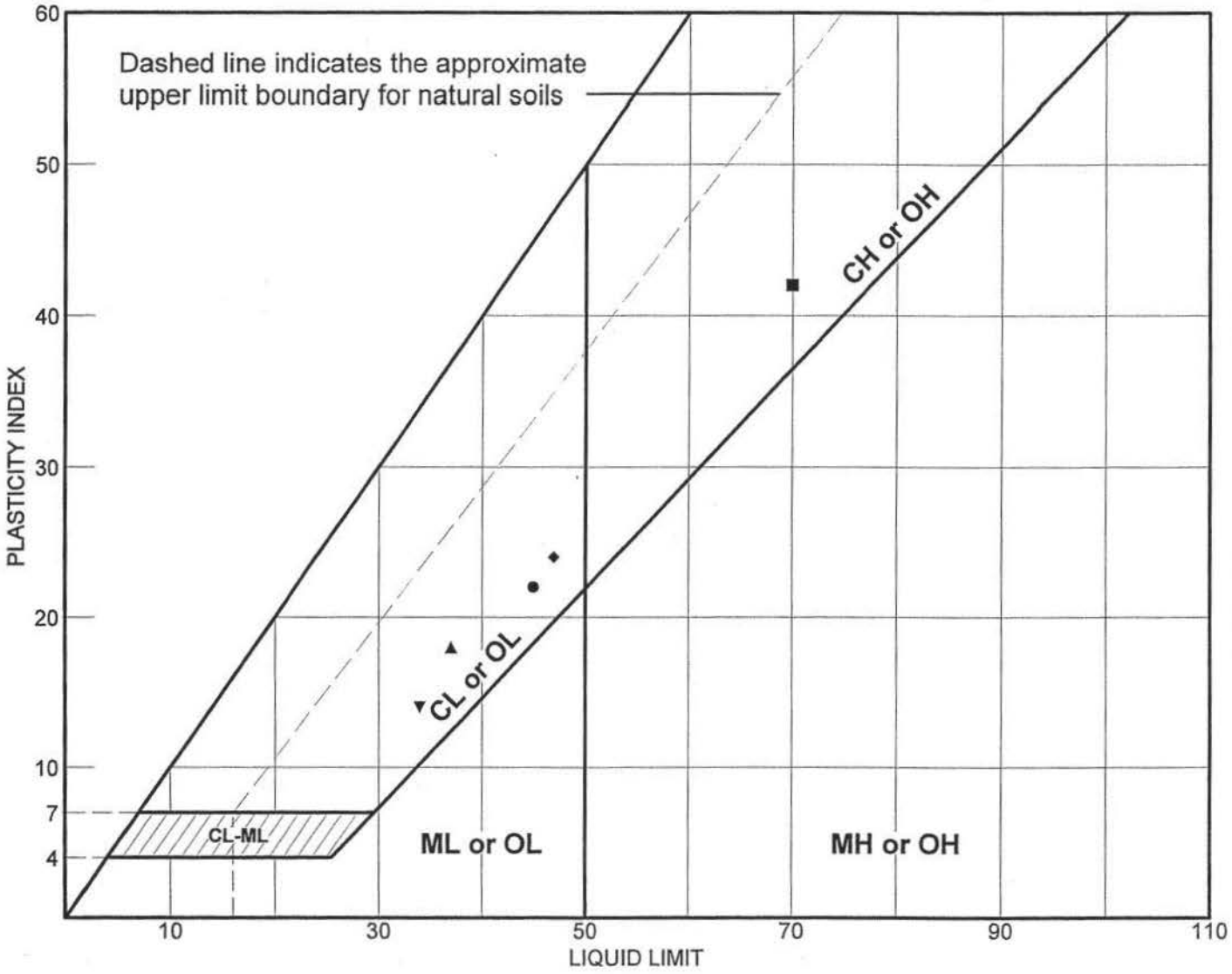
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B2.2

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-19E		10		23	45	22	CL
■	B-19E		21		28	70	42	CH
▲	B-20E		0-10		19	37	18	CL
◆	B-21E		69-70		23	47	24	CL
▼	B-22E		5		20	34	14	SC

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

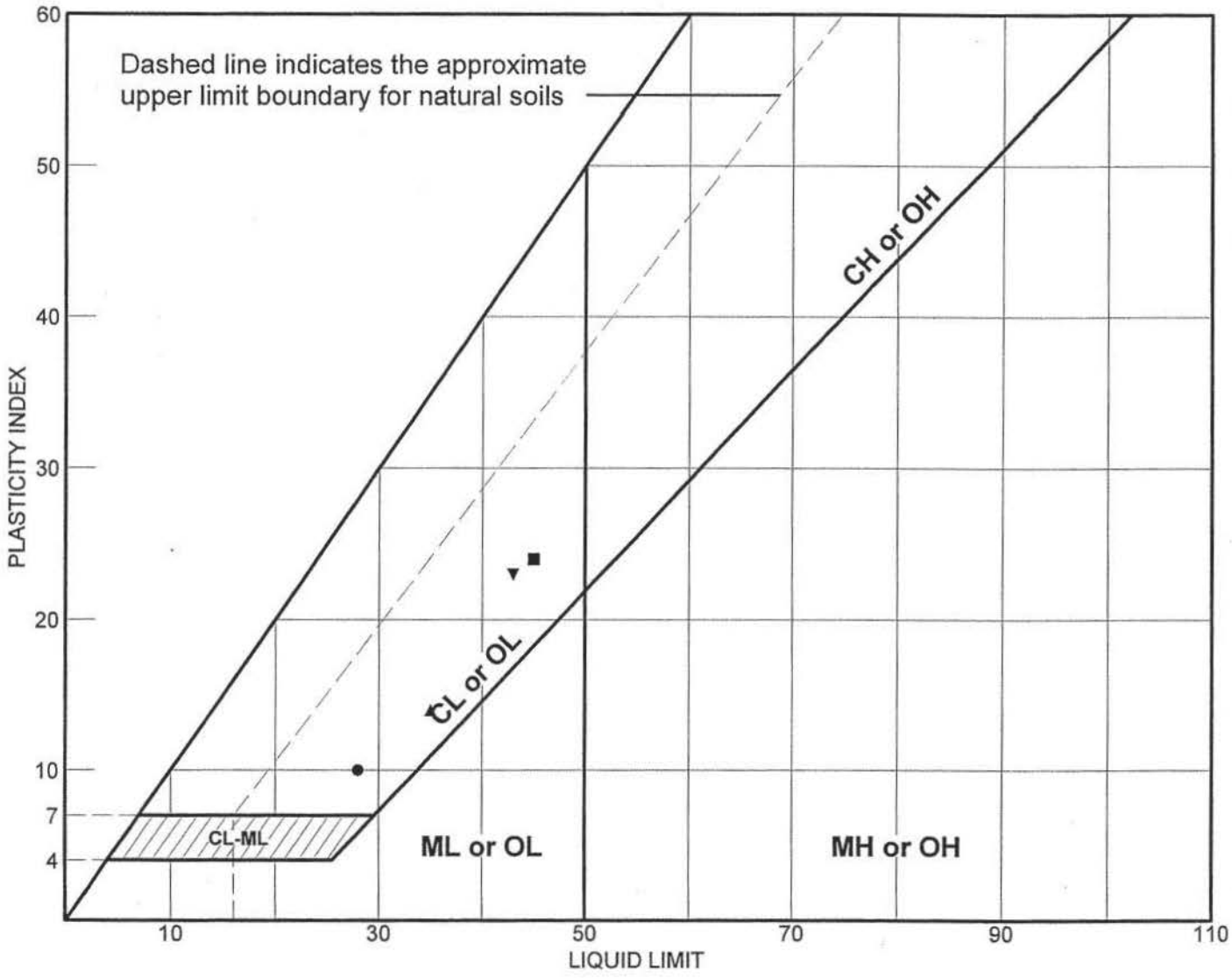
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B2.3

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-25E		1		18	28	10	SC
■	B-26E		30		21	45	24	CL
▲	B-27E		5		21	35	14	CL
◆	B-30E		10		18	28	10	SC
▼	B-32E		5		20	43	23	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

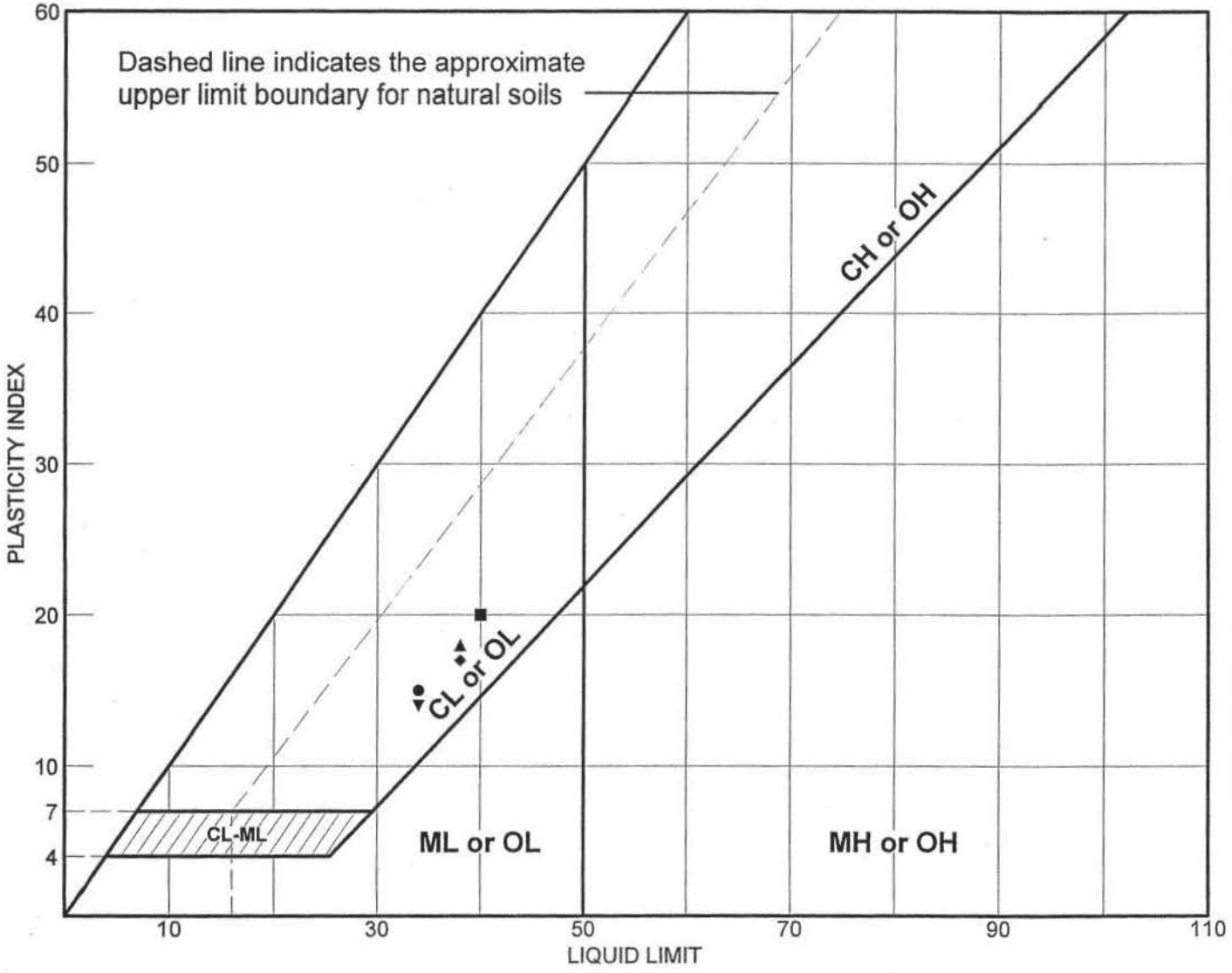
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1 **Figure** B2.4

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-32E		20		19	34	15	CL
■	B-33E		3, 10		20	40	20	CL
▲	B-35E		5		20	38	18	CL
◆	B-35E		10		21	38	17	CL
▼	B-36E		20		20	34	14	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

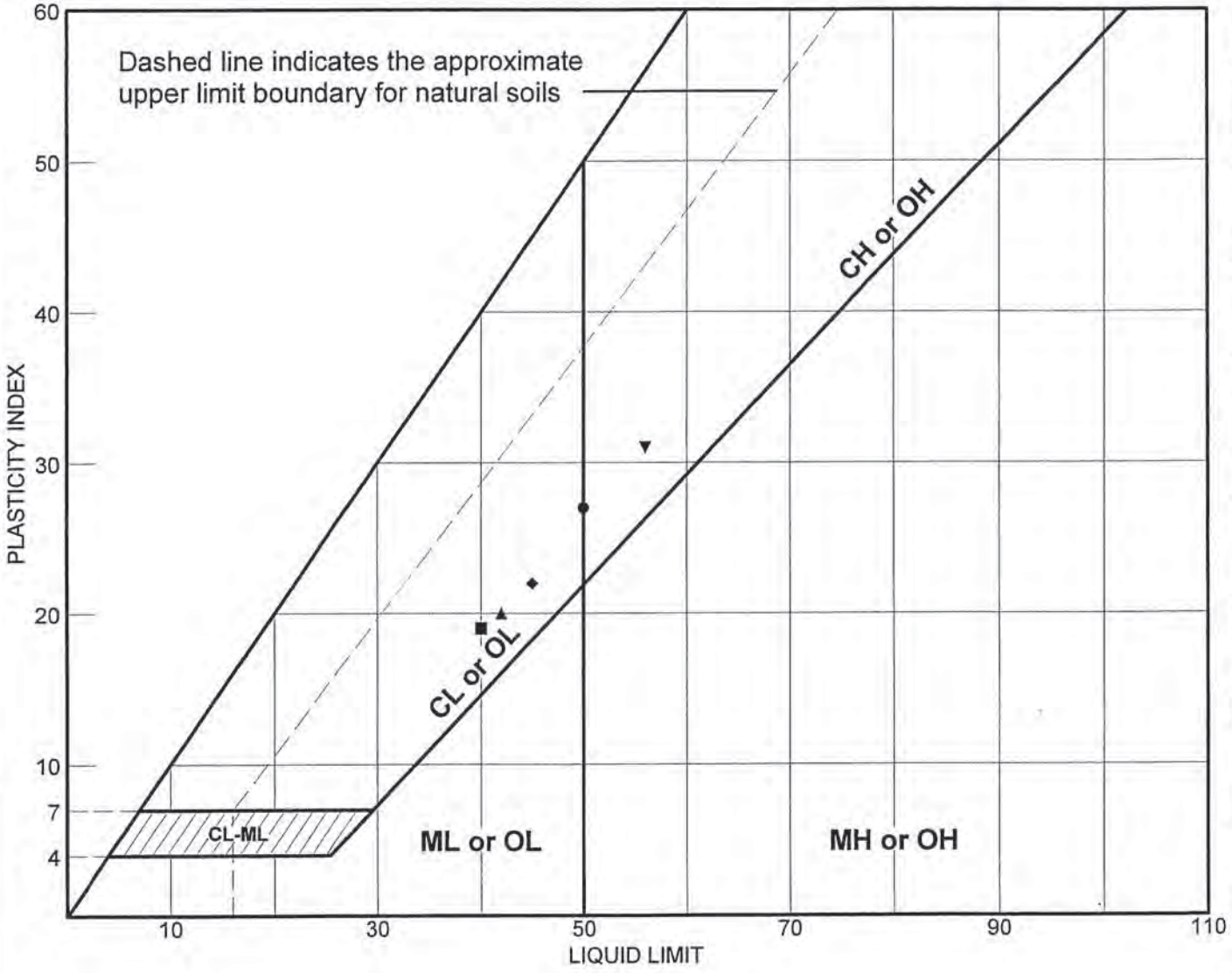
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B2.5

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-36E		25		23	50	27	CL-CH
■	B-39E		30		21	40	19	CL
▲	B-41E		10	14.0	22	42	20	CL
◆	B-42E		27		23	45	22	CL
▼	B-43E		20	16.4	25	56	31	CH

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

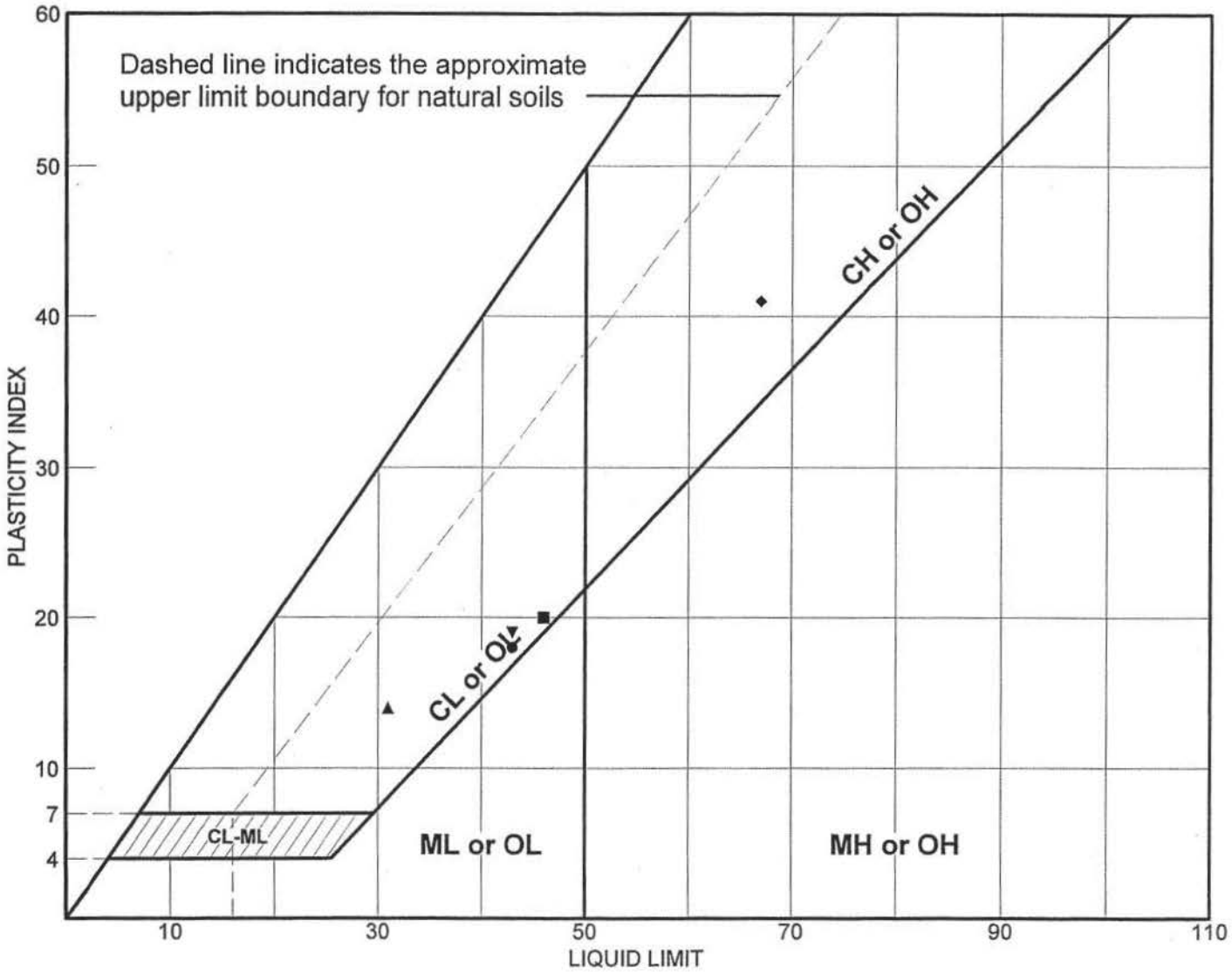
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B2.6

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-44E		10	11.4	25	43	18	CL
■	B-44E		27	16.8	26	46	20	CL
▲	B-48E		0-10		17	31	14	CL
◆	B-53E		25		26	67	41	CH
▼	B-56E		30		24	43	19	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

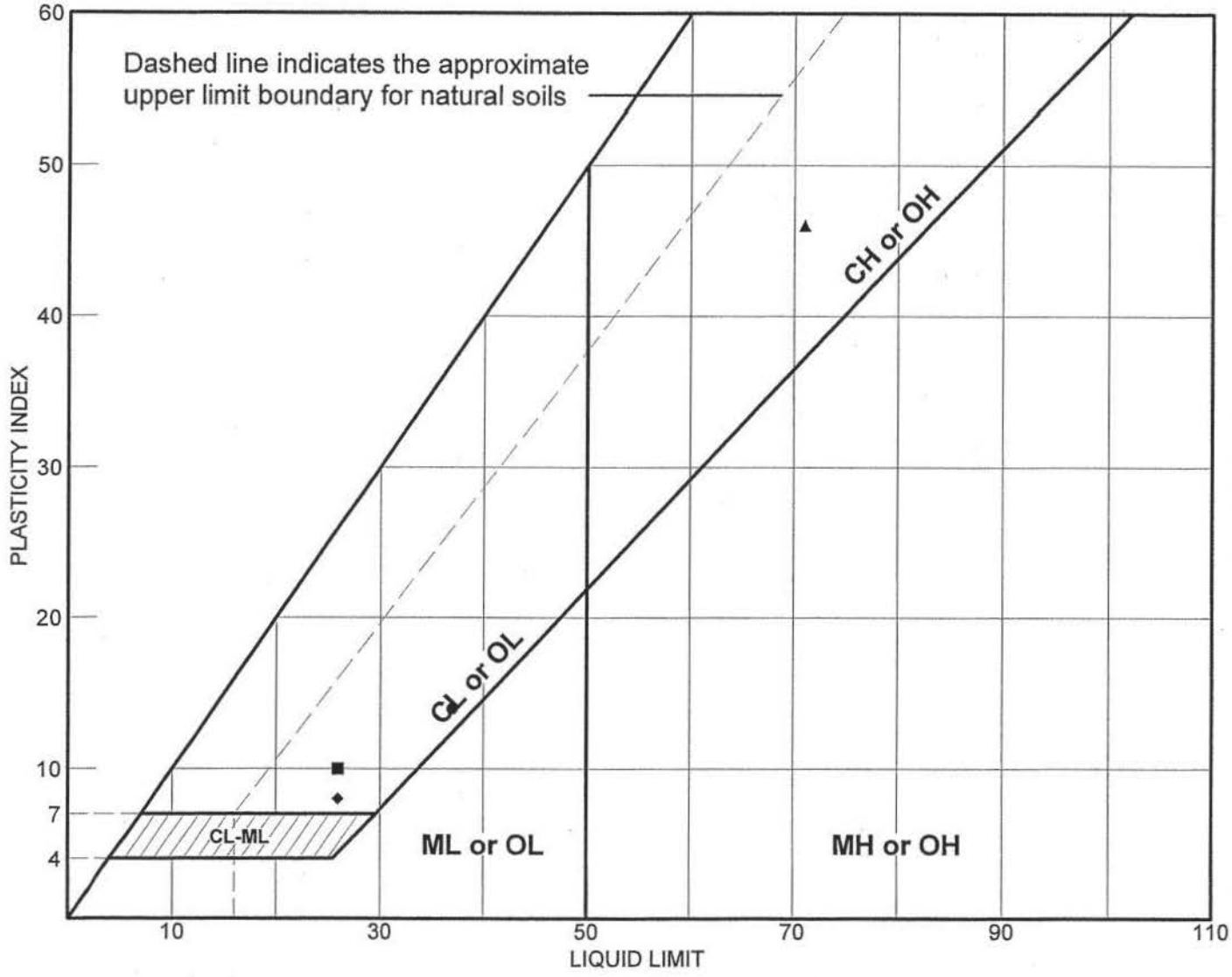
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B2.7

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-56E		60		23	37	14	CL
■	B-57E		5, 10		16	26	10	SC
▲	B-58E		43.5		25	71	46	CH
◆	B-60E		17		18	26	8	SC

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

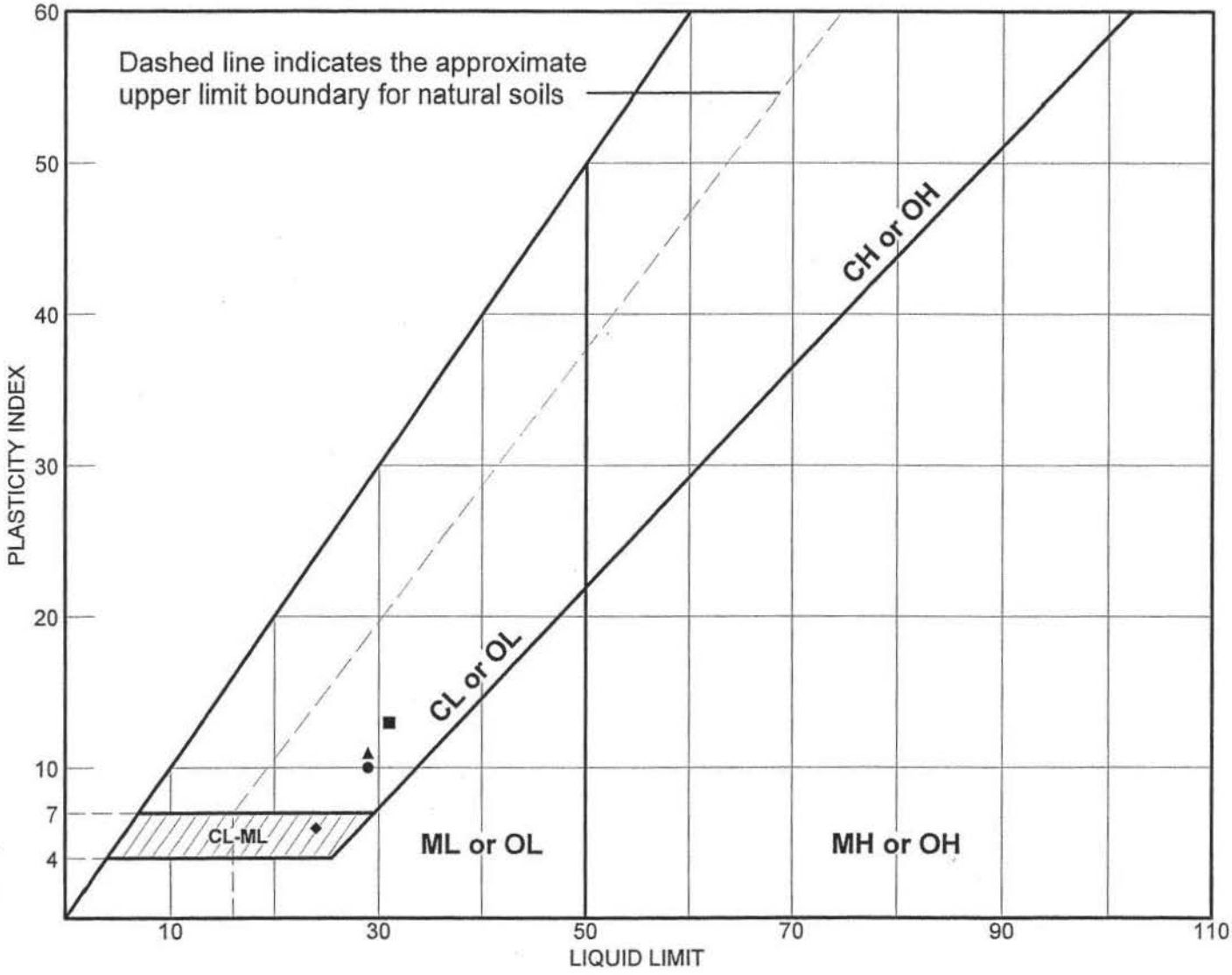
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B2.8

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-61E		10		19	29	10	CL
■	B-61E		40	11.0	18	31	13	CL
▲	B-61E		0-10		18	29	11	SC
◆	B-62E		20		18	24	6	CL-ML

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

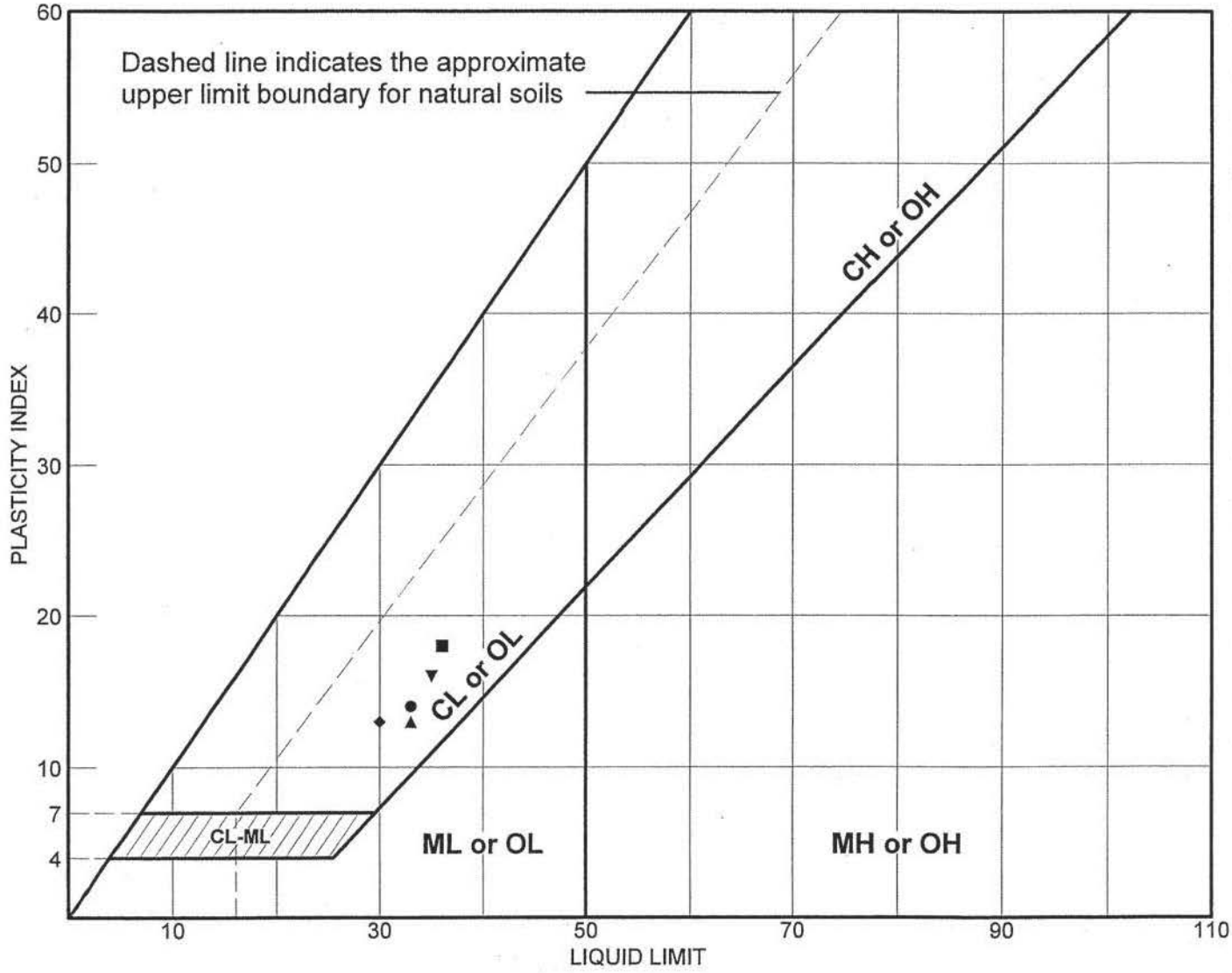
Client: Newhall Ranch Co.

Project: Mesas East - Phase II Landslide Investigation

Project No.: 00-1703QlsII-1

Figure B2.9

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	HS-21T		20	14.8	19	33	14	CL
■	HS-23T		2	11.5	18	36	18	CL
▲	HS-23T		10	8.9	20	33	13	CL
◆	HS-24T		5	4.1	17	30	13	CL
▼	RW-1T		30	27.6	19	35	16	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

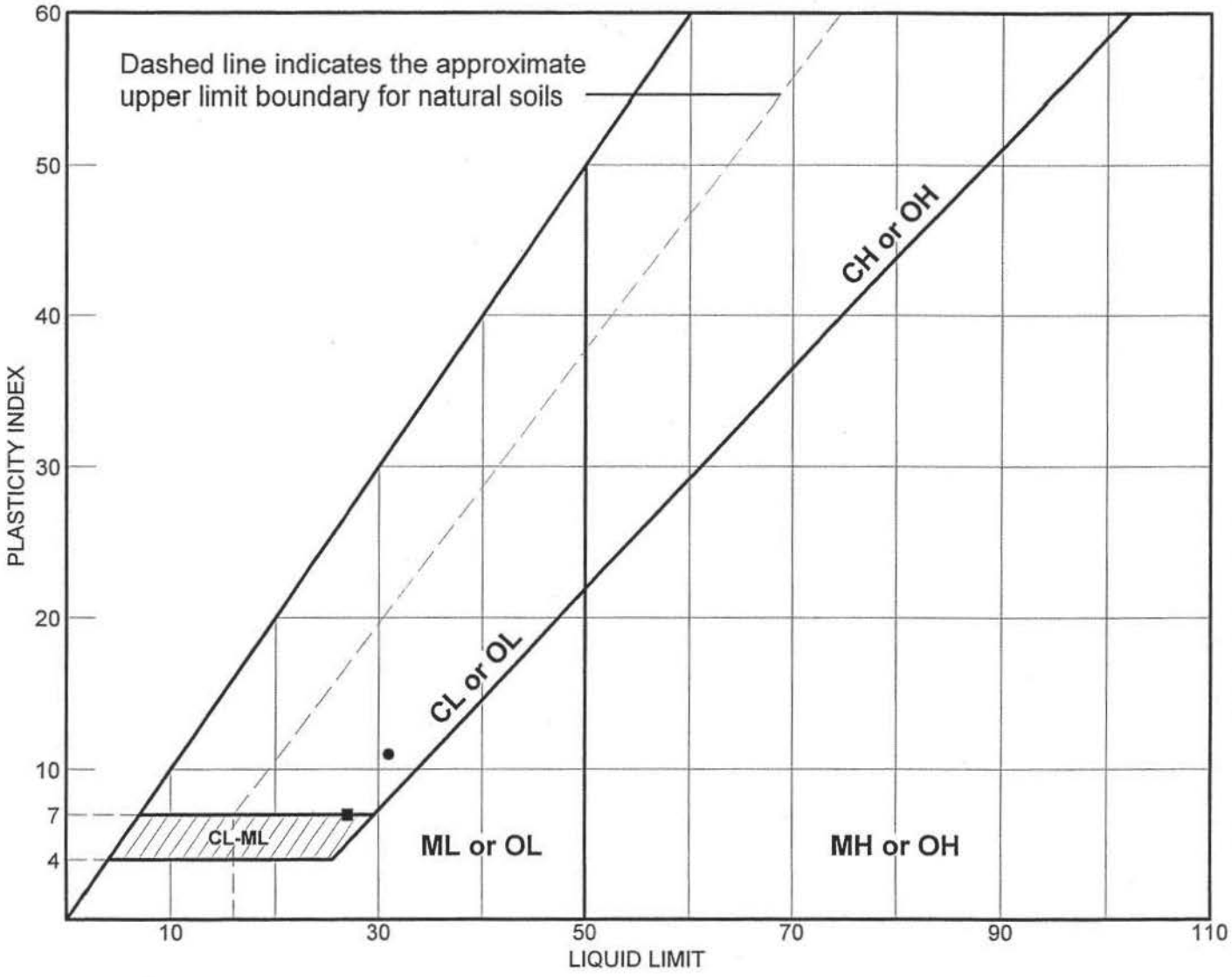
Client: Newhall Ranch Co.

Project: Mesas East

Project No.: 04-1703E-1

Figure B2.10

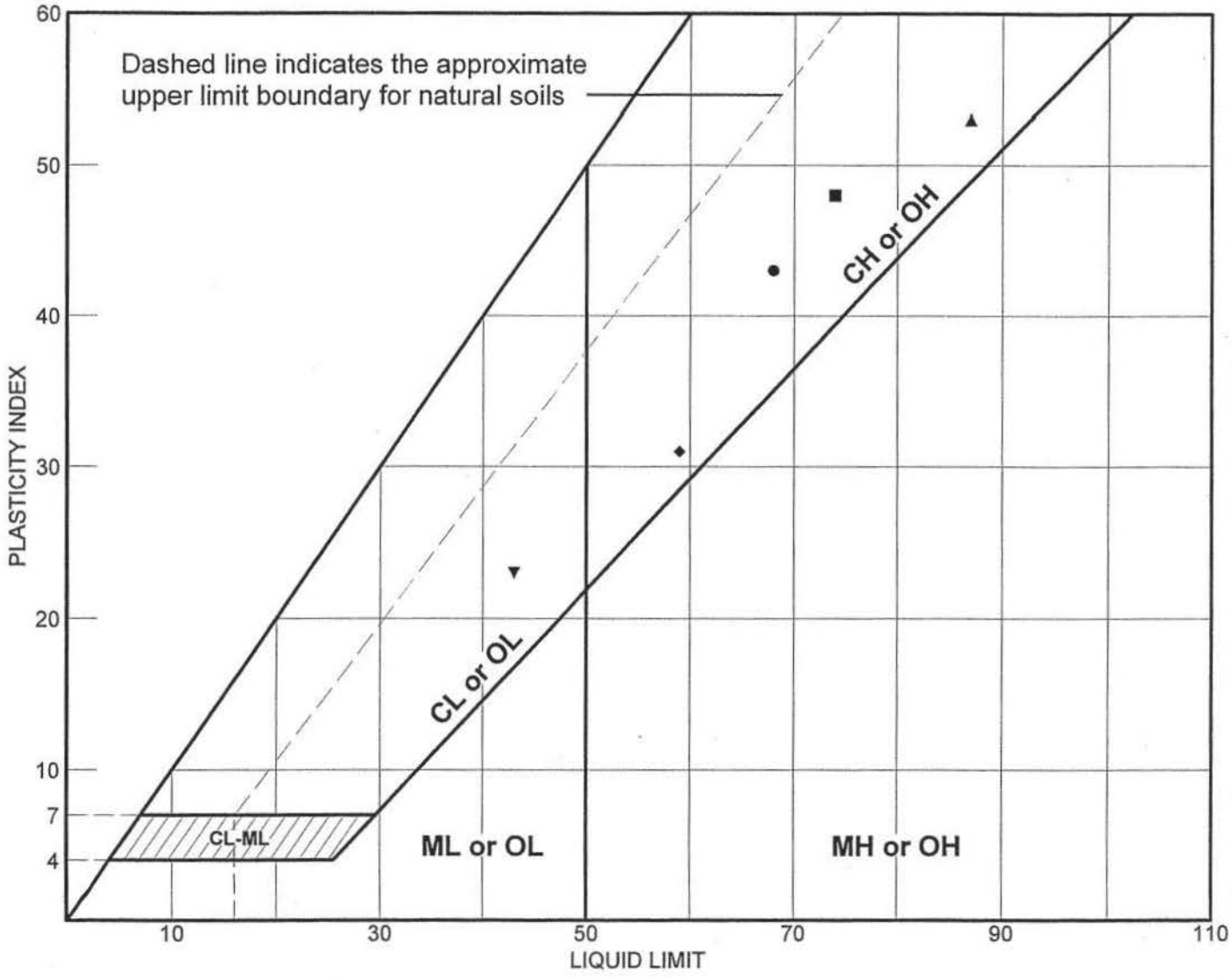
LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	RW-2		10		20	31	11	CL
■	RW-3		25		20	27	7	CL-ML

LIQUID AND PLASTIC LIMITS TEST REPORT **ALLAN E. SEWARD** **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Newhall Ranch Mesas Area **Project No.:** 99-1703L-1 **Figure** B2.11

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-3M		6		25	68	43	CH
■	B-4M		15.5		26	74	48	CH
▲	B-6M		28		34	87	53	CH
◆	B-7M		47.5		28	59	31	CH
▼	B-14M		10		20	43	23	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

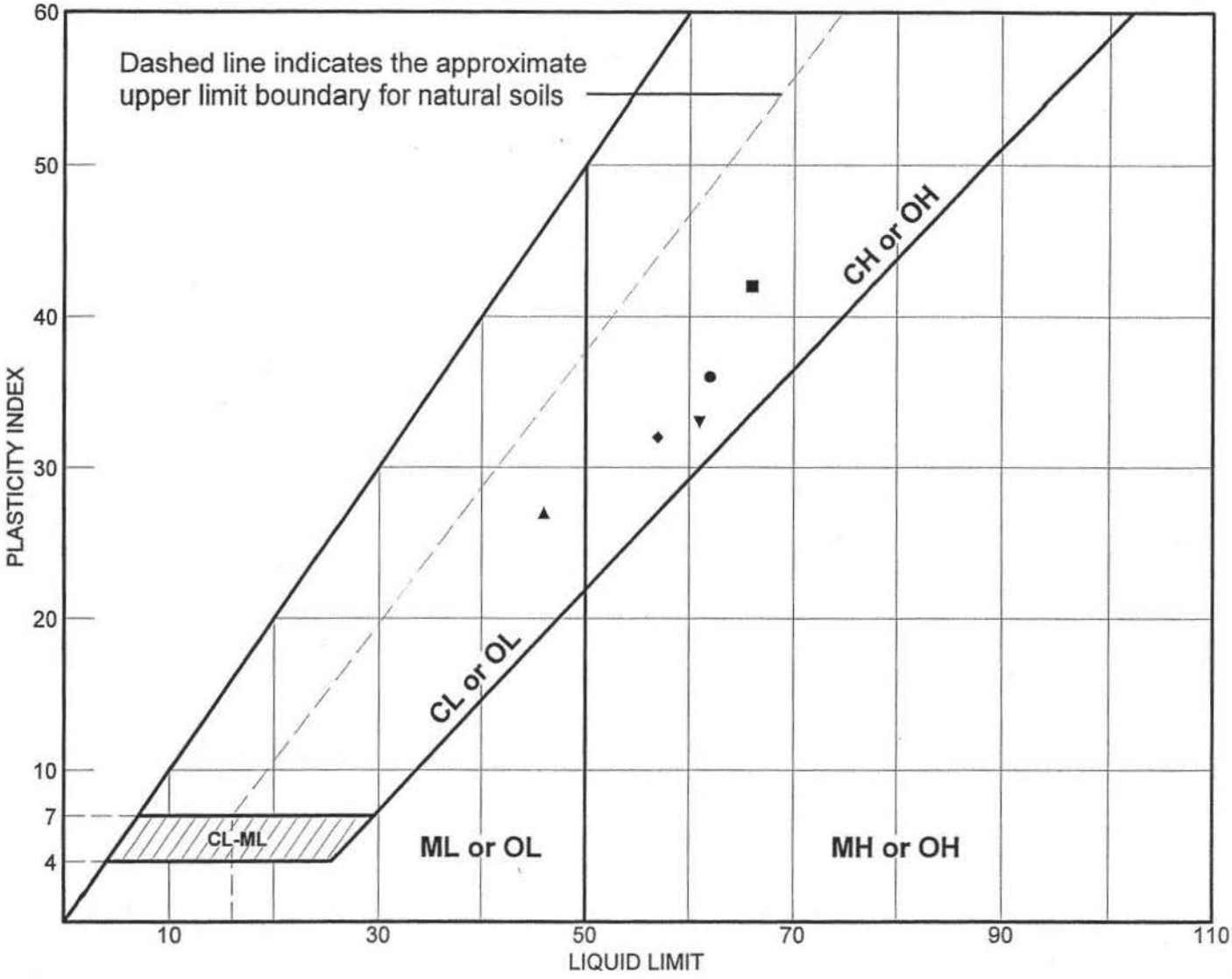
Client: Newhall Ranch Co.

Project: Mesas Entertainment

Project No.: 01-1703M-1

Figure B2.12

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-16M		34.5		26	62	36	CH
■	B-17M		14.5		24	66	42	CH
▲	B-18M		42		19	46	27	CL
◆	B-20M		54		25	57	32	CH
▼	B-21M		42		28	61	33	CH

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

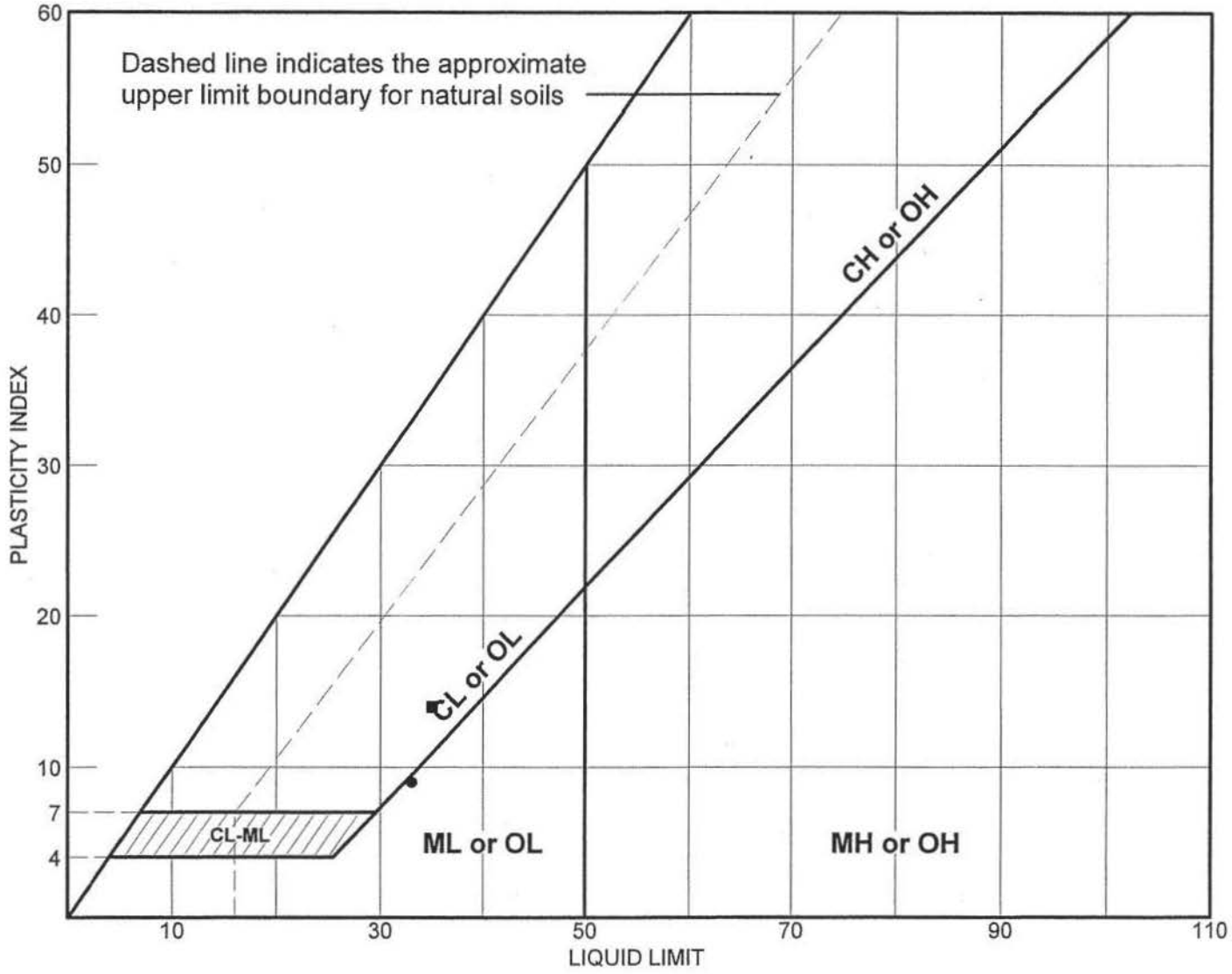
Client: Newhall Ranch Co.

Project: Mesas Entertainment

Project No.: 01-1703M-1

Figure B2.13

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-72E		30	16.7	24	33	9	CL-ML
■	B-73E		14	17.7	21	35	14	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

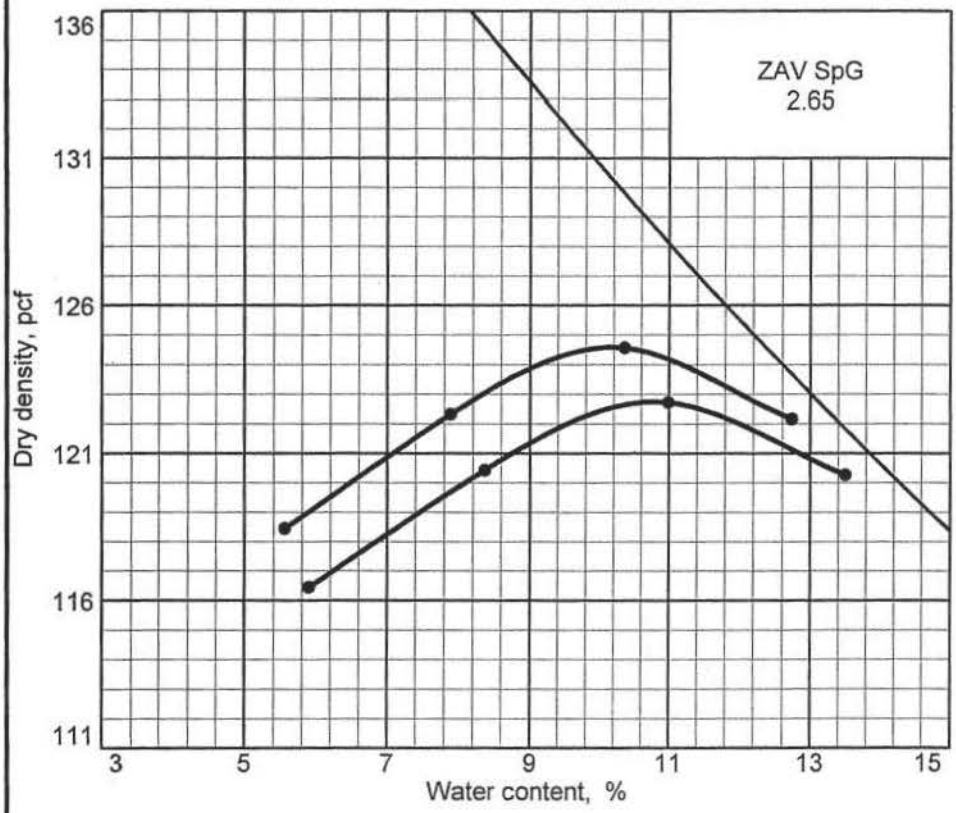
Client: Newhall Ranch Company□Symbol\b

Project: Mesas East - Tentative Map

Project No.: 04-2023-4

Figure B2.14

COMPACTION TEST REPORT



Curve No.
A

Test Specification:
ASTM D 1557-91 Procedure A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL 29 **PI** 13
%>No.4 5.7 **%<#200** 53.5
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.60	8.84	9.03	9.04		
WM	4.49	4.49	4.49	4.49		
WW + T #1	212.76	222.51	234.48	238.04		
WD + T #1	202.68	207.58	214.42	213.30		
TARE #1	31.79	29.22	31.86	30.16		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	5.6	7.9	10.4	12.7		
DRY DENSITY	118.4	122.3	124.6	122.2		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 124.5 pcf

Optimum moisture = 10 %

Material Description

Yellowish brown sandy lean CLAY

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

● **Source:** B-10E **Elev./Depth:** 5,11

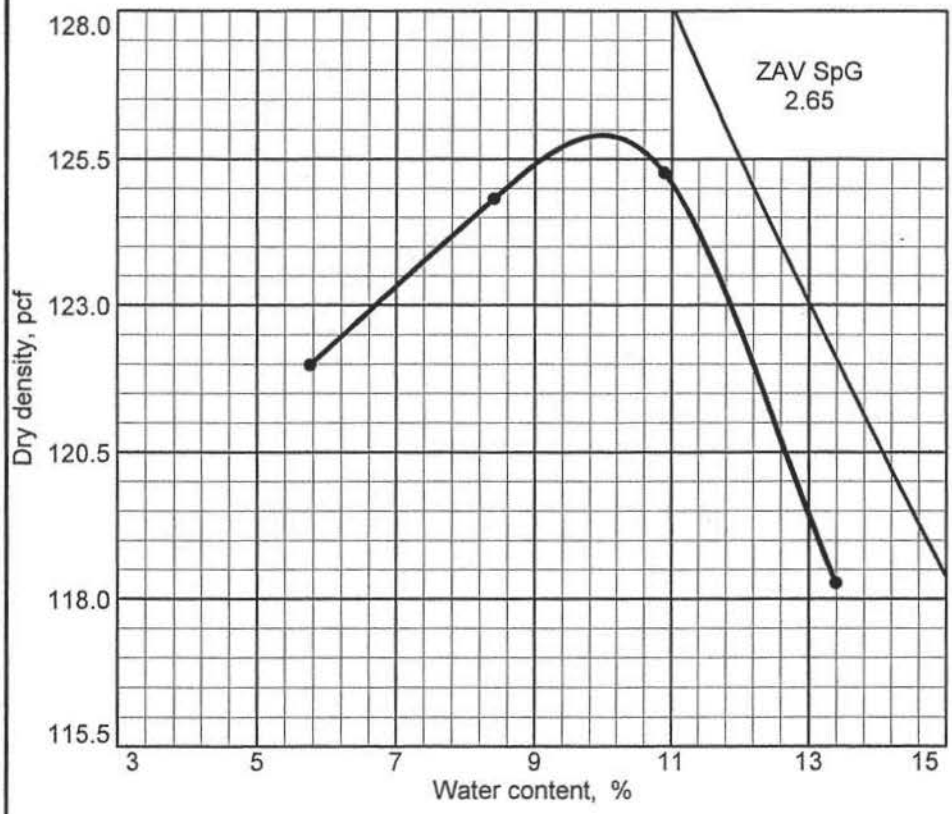
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.1

COMPACTION TEST REPORT



Curve No.
B

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 2.6 **%<#200** 45.1
USCS SC **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.79	9.00	9.12	8.96		
WM	4.49	4.49	4.49	4.49		
WW + T #1	270.39	324.16	336.47	342.26		
WD + T #1	257.38	301.48	306.33	305.32		
TARE #1	31.38	31.62	29.62	29.54		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	5.8	8.4	10.9	13.4		
DRY DENSITY	122.0	124.8	125.3	118.3		

TEST RESULTS

Maximum dry density = 126 pcf

Optimum moisture = 10 %

Material Description

Yellowish brown clayey SAND with gravel

Project No. 00-1703CM-1 **Client:** Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

• **Source:** B-11E **Elev./Depth:** 5, 15

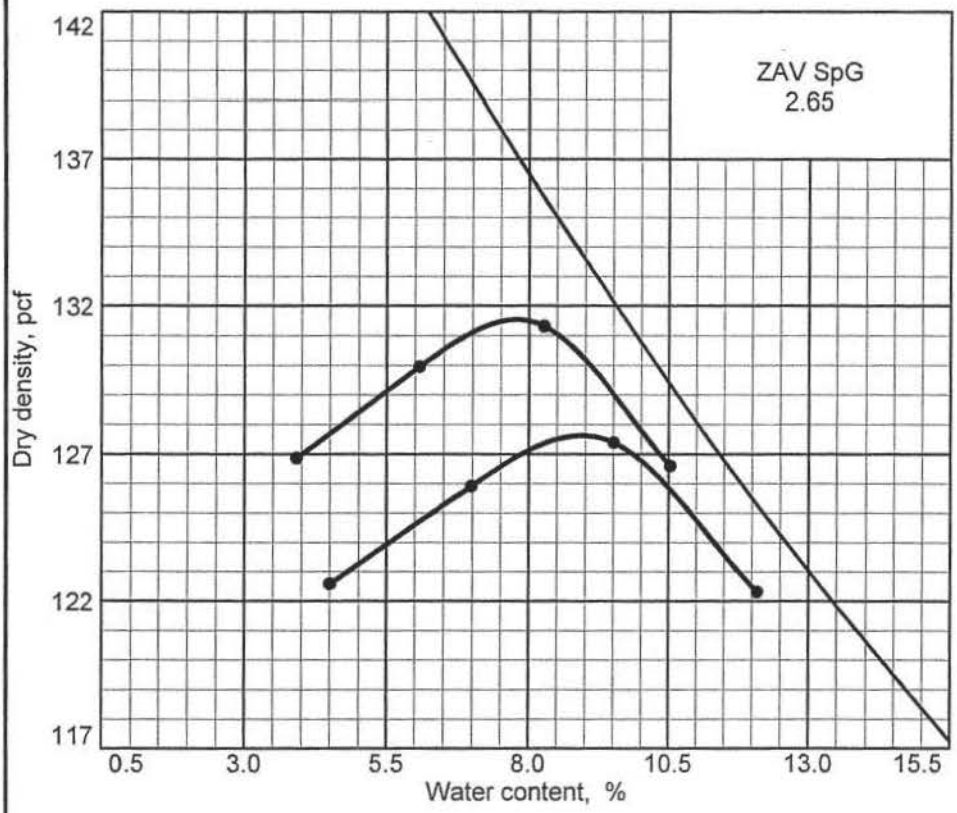
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.2

COMPACTION TEST REPORT



Curve No.
C

Test Specification:
ASTM D 1557-91 Procedure A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 13.0 **%<#200** 53.0
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.76	8.98	9.14	9.06		
WM	4.49	4.49	4.49	4.49		
WW + T #1	314.72	324.11	331.50	343.30		
WD + T #1	302.54	305.15	305.51	309.86		
TARE #1	32.12	33.74	32.29	33.45		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	3.9	6.1	8.3	10.5		
DRY DENSITY	126.9	130.0	131.3	126.6		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 131.5 pcf

Optimum moisture = 8 %

Material Description

Yellowish brown sandy lean CLAY

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

• **Source:** B-18E **Elev./Depth:** 5

Remarks:

COMPACTION TEST REPORT

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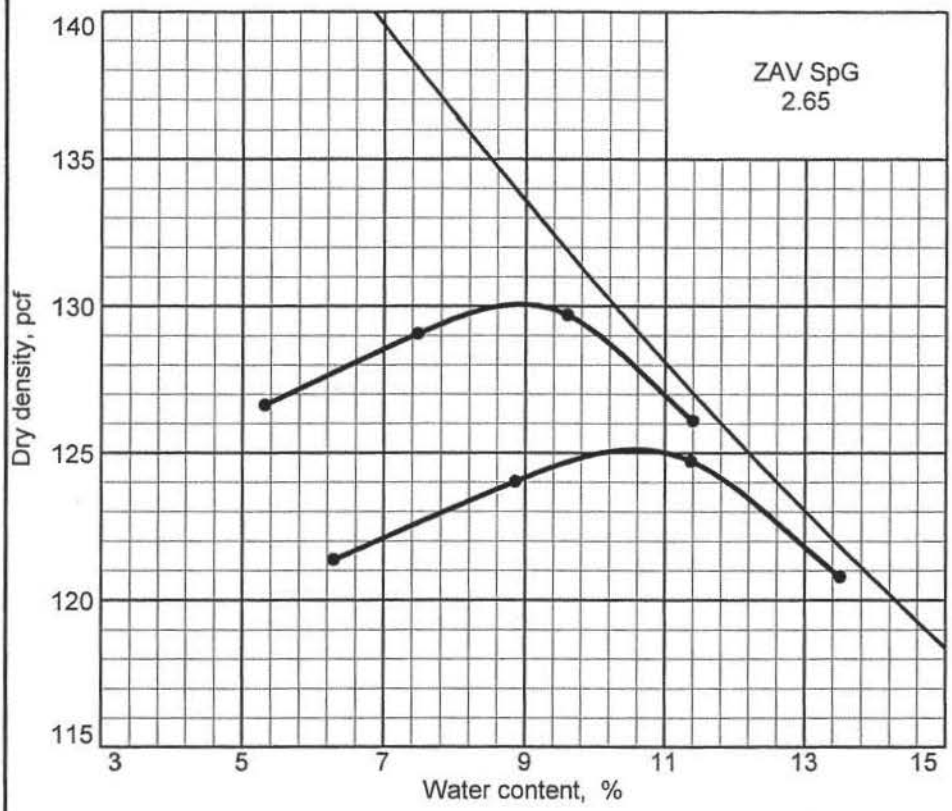
Figure B3.3

COMPACTION TEST REPORT



Curve No.
D

Test Specification:
ASTM D 1557-91 Procedure A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL 37 **PI** 18
%>No.4 15.6 **%<#200** 52.3
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.79	8.99	9.12	9.06		
WM	4.49	4.49	4.49	4.49		
WW + T #1	215.18	221.39	227.56	234.21		
WD + T #1	204.34	206.00	207.30	209.30		
TARE #1	32.18	32.29	29.17	24.91		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	5.3	7.5	9.6	11.4		
DRY DENSITY	126.6	129.1	129.7	126.1		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 130 pcf

Optimum moisture = 9 %

Material Description

Yellowish brown sandy lean CLAY with gravel

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

• **Source:** B-20E **Elev./Depth:** 0-10

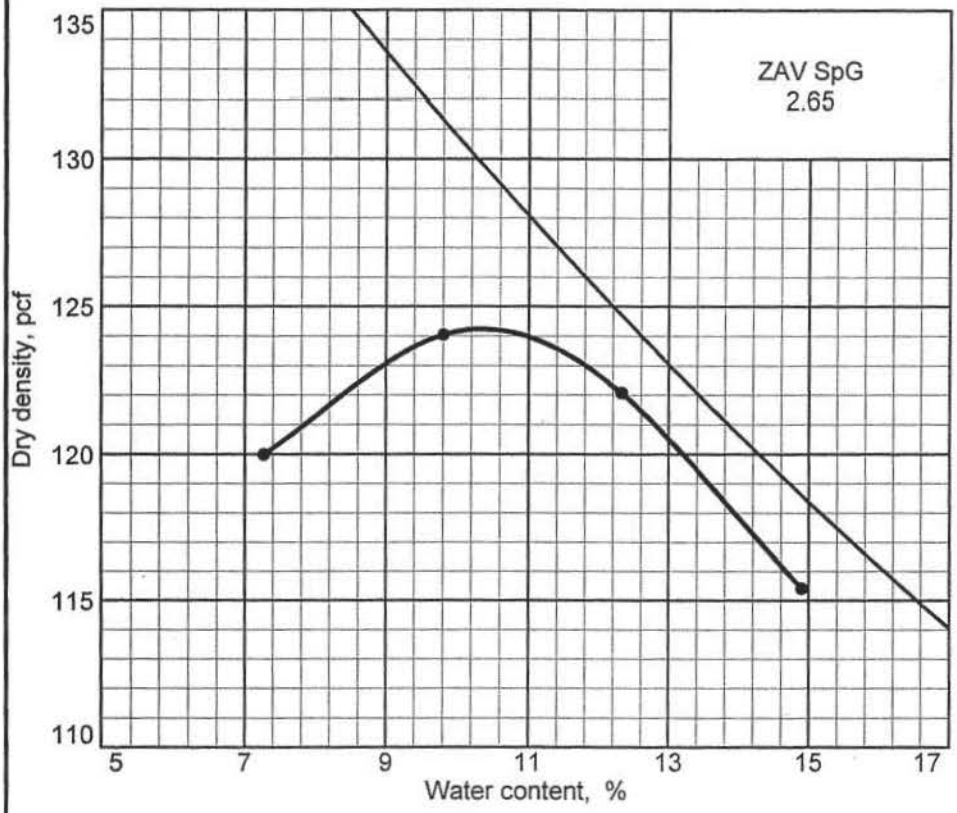
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.4

COMPACTION TEST REPORT



Curve No.
E

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 4.4 **%<#200** 71.4
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.78	9.03	9.06	8.91		
WM	4.49	4.49	4.49	4.49		
WW + T #1	215.53	223.70	237.52	249.70		
WD + T #1	203.05	206.56	214.94	221.39		
TARE #1	31.41	31.84	31.72	31.39		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	7.3	9.8	12.3	14.9		
DRY DENSITY	120.0	124.0	122.1	115.4		

TEST RESULTS

Maximum dry density = 124 pcf

Optimum moisture = 10.5 %

Material Description

Yellowish brown lean CLAY with sand

Project No. 00-1703CM-1 **Client:** Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

● **Source:** B-29E **Elev./Depth:** 0-10

Remarks:

COMPACTION TEST REPORT

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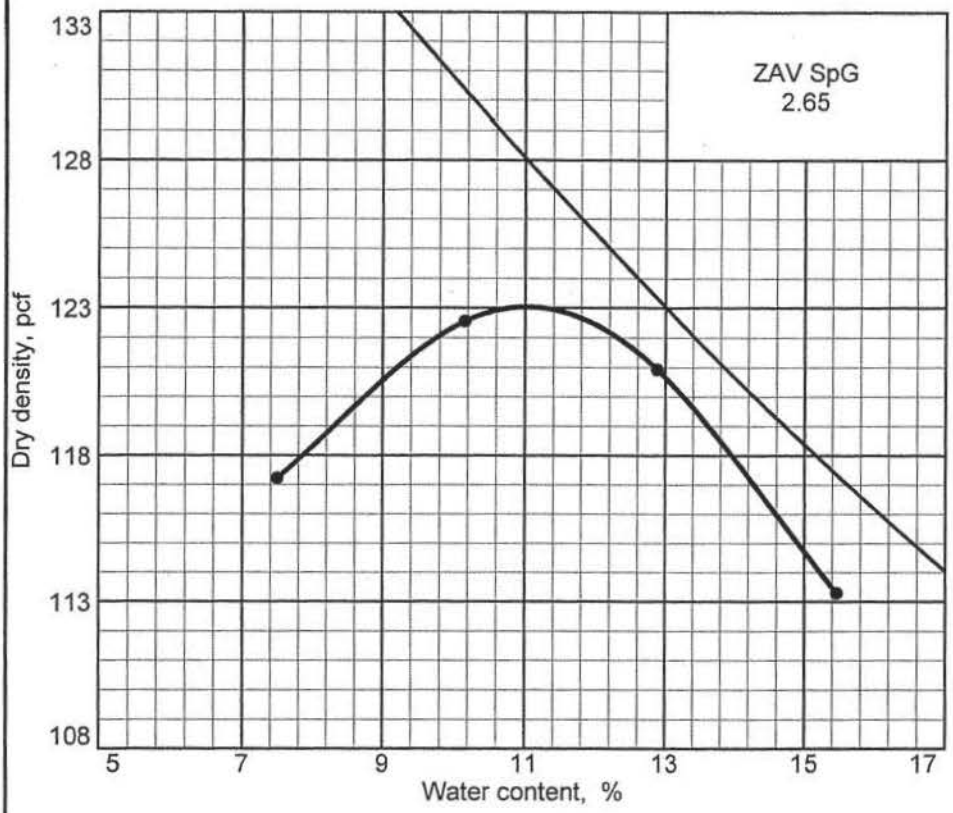
Figure B3.5

COMPACTION TEST REPORT



Curve No.
F

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 2.8 **%<#200** 70.0
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.69	8.99	9.04	8.85		
WM	4.49	4.49	4.49	4.49		
WW + T #1	254.09	355.79	367.26	374.95		
WD + T #1	238.44	325.87	329.02	328.65		
TARE #1	29.64	31.44	32.20	29.30		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	7.5	10.2	12.9	15.5		
DRY DENSITY	117.2	122.6	120.9	113.3		

TEST RESULTS

Maximum dry density = 123 pcf

Optimum moisture = 11 %

Material Description

Yellowish brown lean CLAY with sand

Project No. 00-1703CM-1 **Client:** Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

• **Source:** B-30E **Elev./Depth:** 0-10

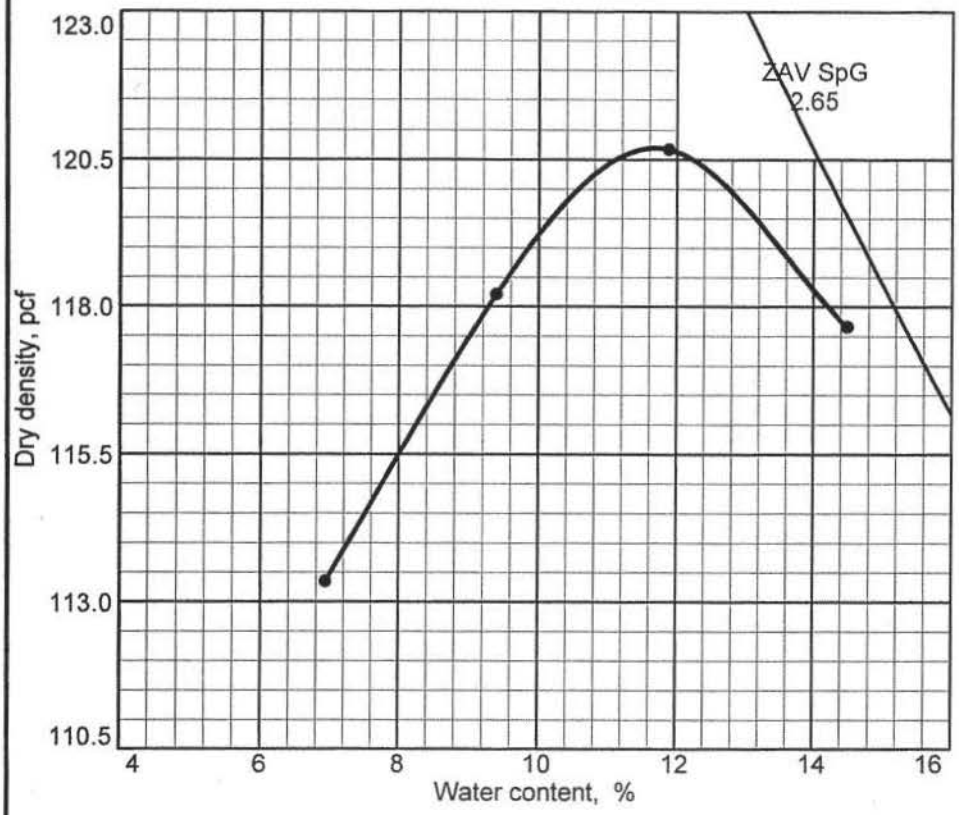
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.6

COMPACTION TEST REPORT



Curve No.
G

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL 40 **PI** 20
%>No.4 3.8 **%<#200** 74.6
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.53	8.80	8.99	8.98		
WM	4.49	4.49	4.49	4.49		
WW + T #1	217.18	221.75	232.11	236.40		
WD + T #1	205.02	205.46	210.87	210.44		
TARE #1	29.73	32.03	32.12	31.28		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	6.9	9.4	11.9	14.5		
DRY DENSITY	113.3	118.2	120.7	117.7		

TEST RESULTS

Maximum dry density = 120.5 pcf

Optimum moisture = 11.5 %

Material Description

Yellowish brown lean CLAY with sand

Project No. 00-1703CM-1 **Client:** Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

● **Source:** B-33E **Elev./Depth:** 3, 10

Remarks:

COMPACTION TEST REPORT

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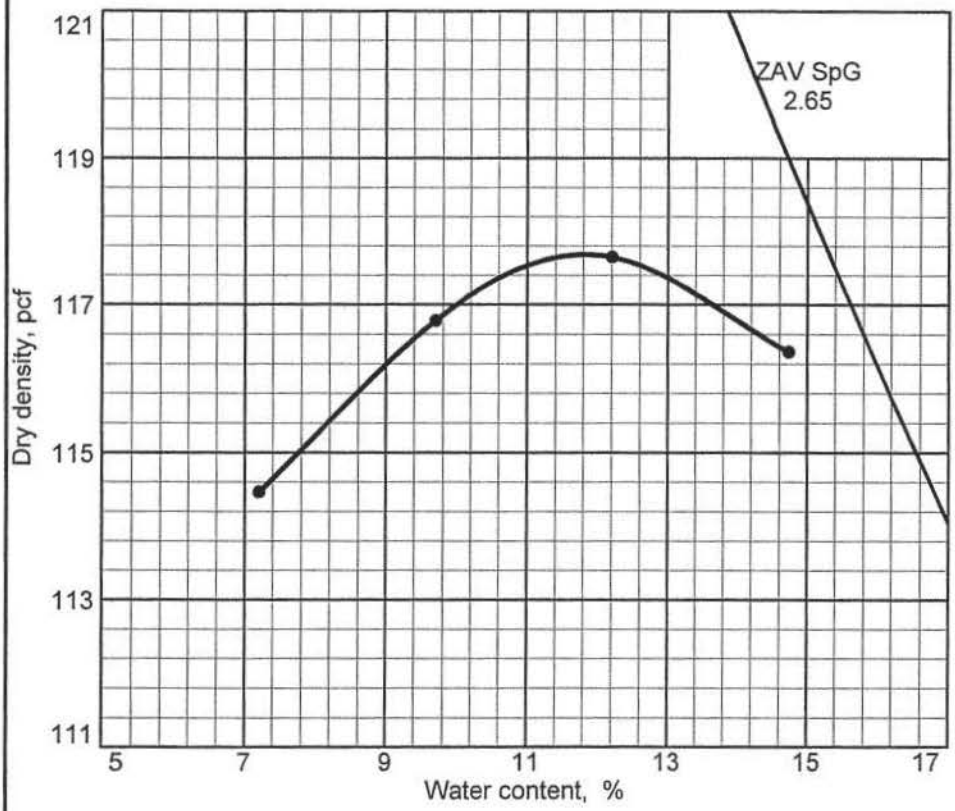
Figure B3.7

COMPACTION TEST REPORT



Curve No.
H

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL 34 **PI** 14
%>No.4 1.7 **%<#200** 75.7
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.58	8.76	8.89	8.94		
WM	4.49	4.49	4.49	4.49		
WW + T #1	237.55	246.62	251.14	254.67		
WD + T #1	223.75	227.62	227.32	225.34		
TARE #1	32.21	31.75	32.25	26.31		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	7.2	9.7	12.2	14.7		
DRY DENSITY	114.5	116.8	117.6	116.4		

TEST RESULTS

Maximum dry density = 117.5 pcf

Optimum moisture = 12 %

Material Description

Yellowish brown lean CLAY with sand

Project No. 00-1703CM-1 **Client:** Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

• **Source:** B-36E **Elev./Depth:** 20

Remarks:

COMPACTION TEST REPORT

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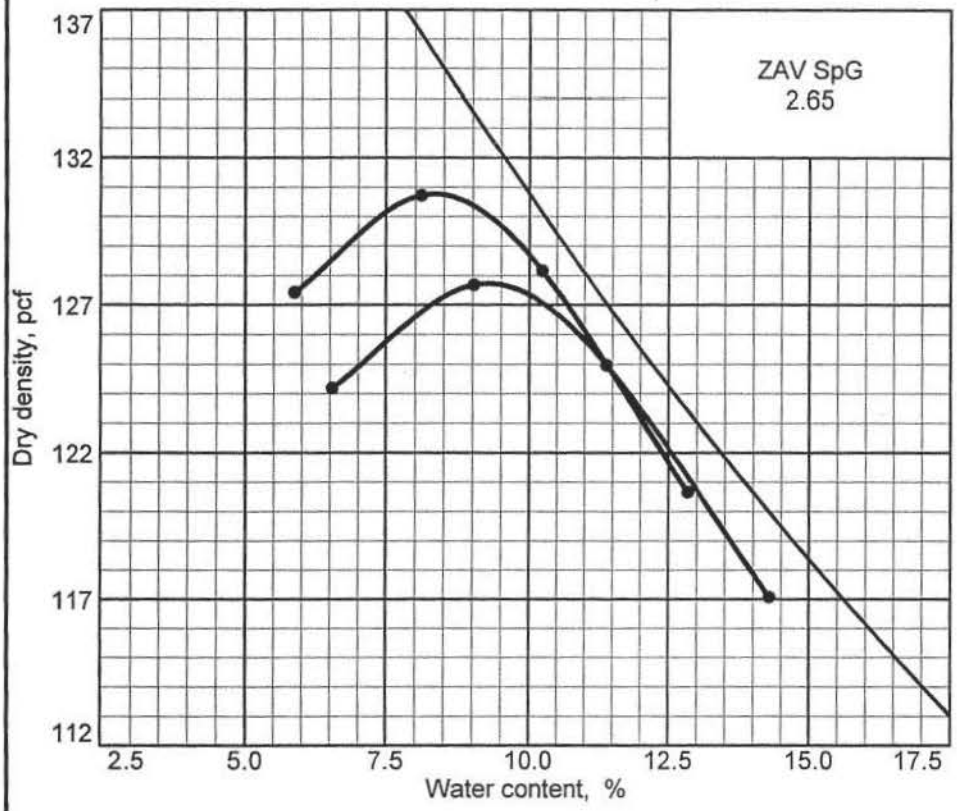
Figure B3.8

COMPACTION TEST REPORT



Curve No.
I

Test Specification:
ASTM D 1557-91 Procedure A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 10.2 **%<#200** 53.5
USCS _____ **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.90	9.13	9.13	8.95		
WM	4.49	4.49	4.49	4.49		
WW + T #1	286.15	354.45	367.05	375.44		
WD + T #1	270.40	327.88	332.74	332.70		
TARE #1	29.75	33.63	31.81	33.83		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	5.9	8.1	10.2	12.8		
DRY DENSITY	127.4	130.7	128.2	120.7		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 131 pcf

Optimum moisture = 8.5 %

Material Description

Yellowish brown sandy lean CLAY

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

• **Source:** B-38E **Elev./Depth:** 0-10

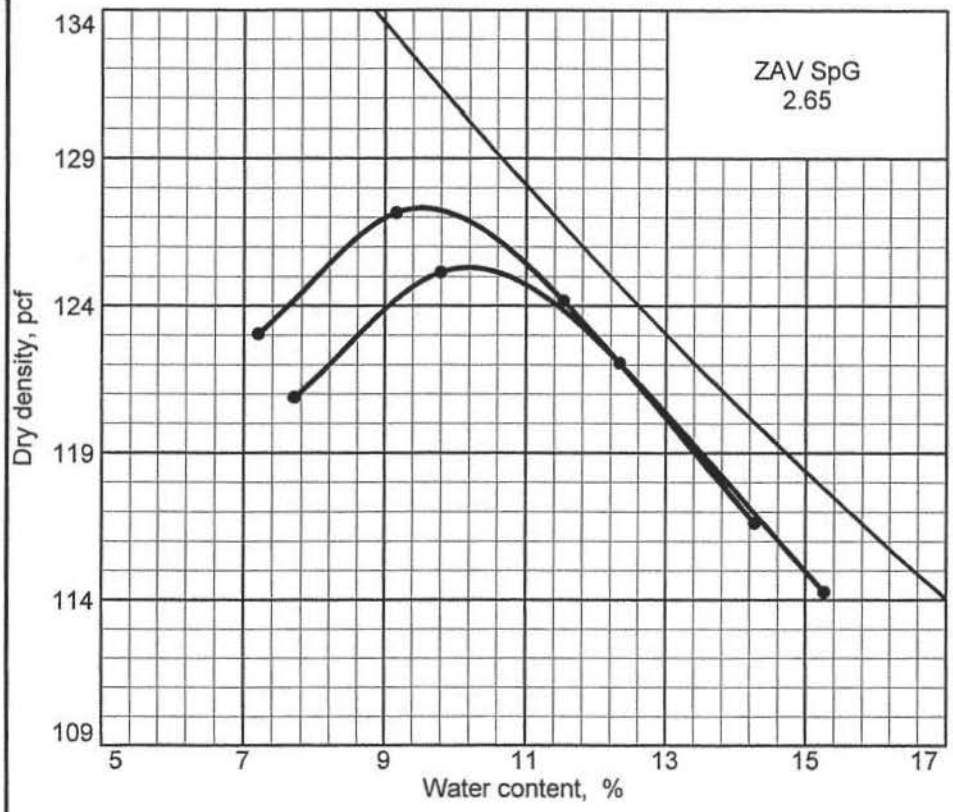
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.9

COMPACTION TEST REPORT



Curve No.
J

Test Specification:
ASTM D 1557-91 Procedure A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 6.5 **%<#200** 62.5
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.83	9.07	9.06	8.88		
WM	4.49	4.49	4.49	4.49		
WW + T #1	215.88	357.15	365.00	378.53		
WD + T #1	202.54	328.06	328.23	332.26		
TARE #1	29.41	31.22	30.05	29.14		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	7.2	9.2	11.5	14.3		
DRY DENSITY	123.1	127.2	124.2	116.6		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 127.5 pcf

Optimum moisture = 9.5 %

Material Description

Yellowish sandy lean CLAY

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

● **Source:** B-42E **Elev./Depth:** 0-10

Remarks:

COMPACTION TEST REPORT

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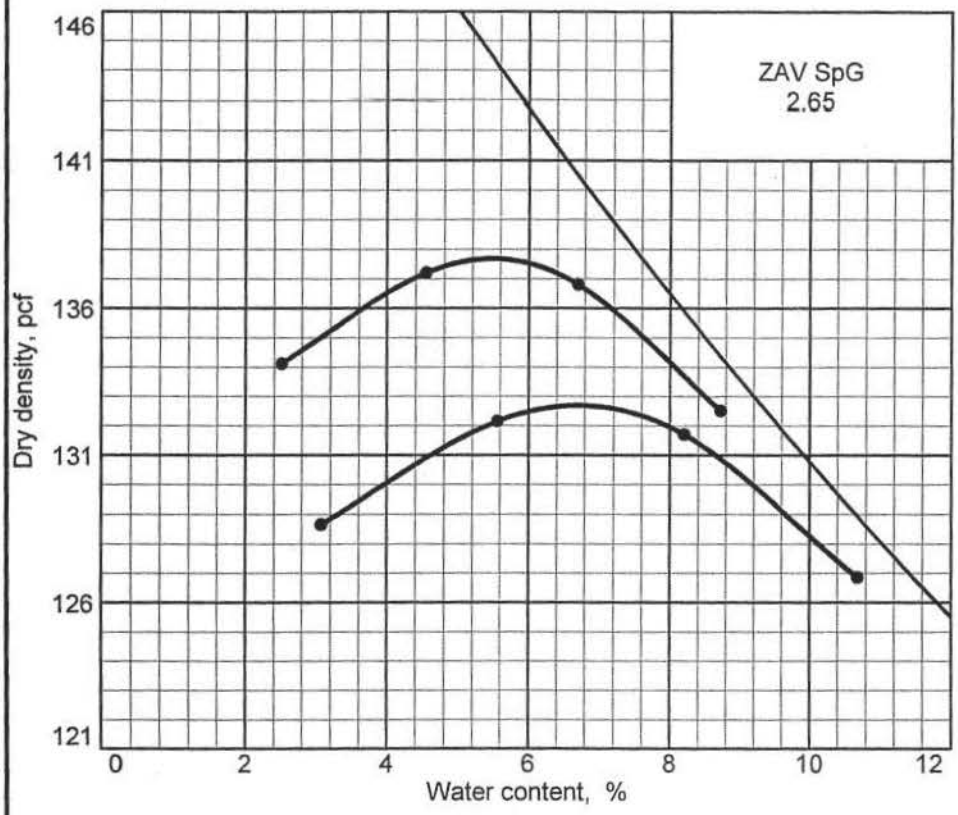
Figure B3.10

COMPACTION TEST REPORT



Curve No.
K

Test Specification:
ASTM D 1557-91 Procedure A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 18.3 **%<#200** 19.8
USCS SM **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.91	9.14	9.24	9.17		
WM	4.49	4.49	4.49	4.49		
WW + T #1	217.87	343.50	355.57	360.51		
WD + T #1	212.25	327.07	331.05	328.72		
TARE #1	29.26	32.05	32.20	31.18		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	2.5	4.5	6.7	8.7		
DRY DENSITY	134.1	137.2	136.8	132.5		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 137.5 pcf

Optimum moisture = 5.5 %

Material Description

Silty SAND with gravel

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

• **Source:** B-45E **Elev./Depth:** 0-10

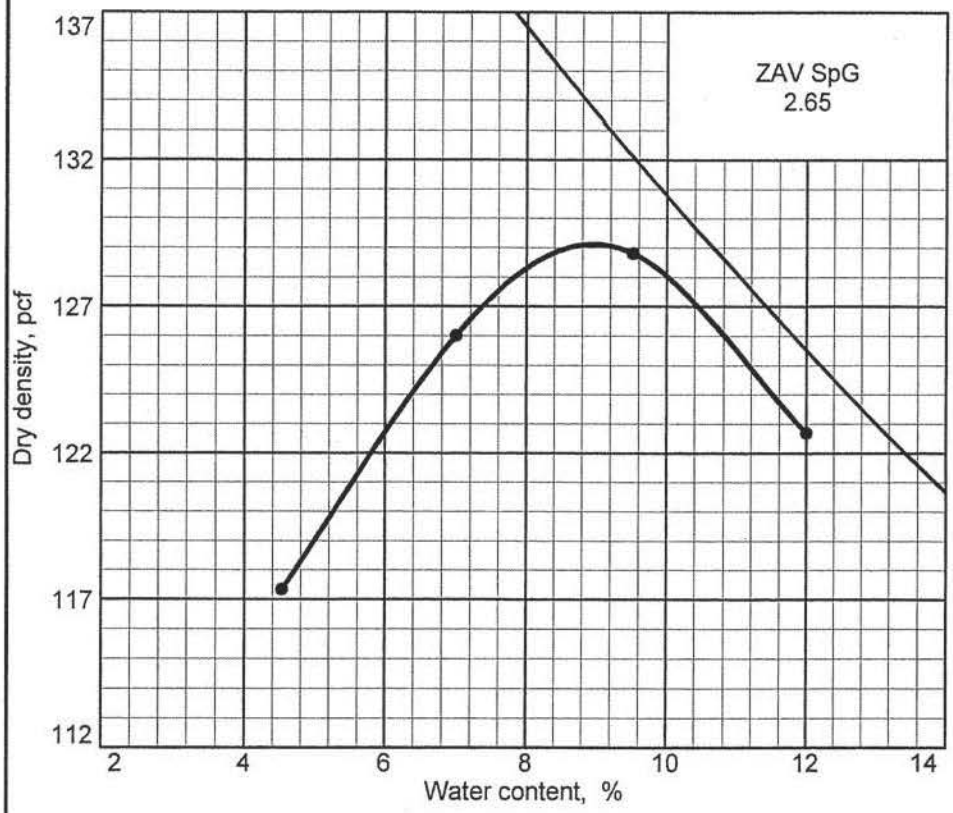
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.11

COMPACTION TEST REPORT



Curve No.
L

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL 31 **PI** 14
%>No.4 4.7 **%<#200** 51.9
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.58	8.98	9.19	9.07		
WM	4.49	4.49	4.49	4.49		
WW + T #1	240.33	249.61	258.55	261.74		
WD + T #1	231.30	235.36	238.88	237.13		
TARE #1	32.03	31.79	32.37	32.03		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	4.5	7.0	9.5	12.0		
DRY DENSITY	117.3	126.0	128.8	122.7		

TEST RESULTS

Maximum dry density = 129 pcf

Optimum moisture = 9 %

Material Description

Yellowish brown sandy lean CLAY

Project No. 00-1703CM-1 **Client:** Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

● **Source:** B-48E **Elev./Depth:** 0-10

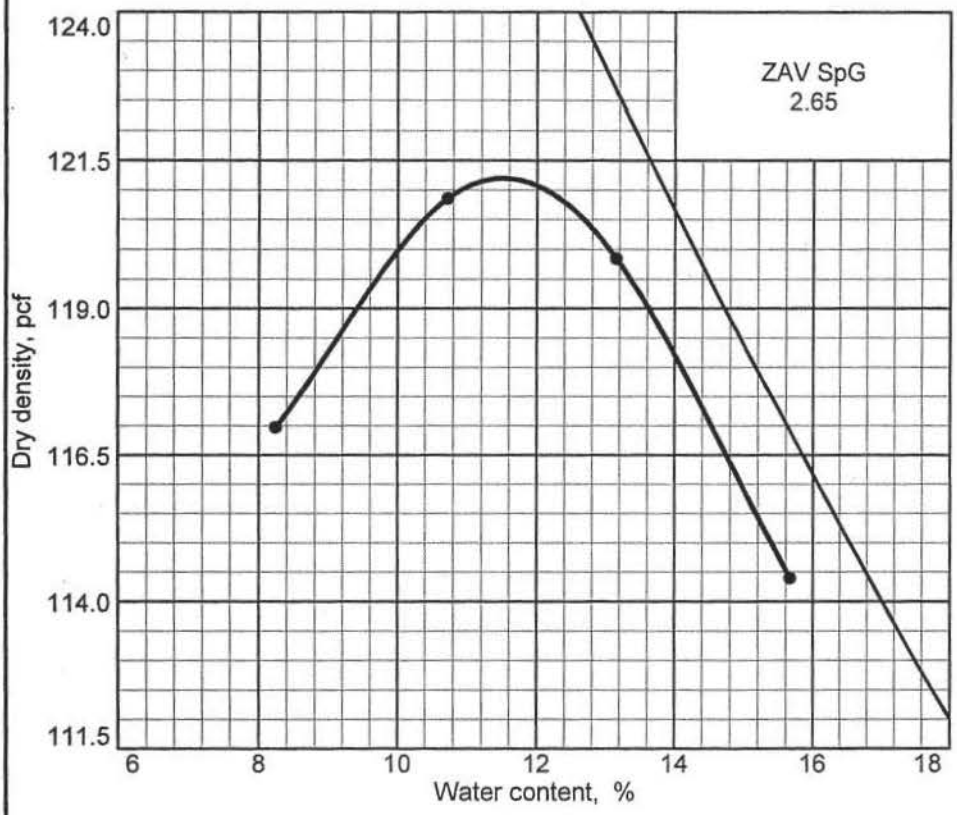
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.12

COMPACTION TEST REPORT



Curve No.
M

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 0.7 **%<#200** 74.8
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.71	8.95	9.01	8.90		
WM	4.49	4.49	4.49	4.49		
WW + T #1	199.16	204.39	214.96	222.51		
WD + T #1	186.33	187.45	193.40	196.80		
TARE #1	30.68	29.44	29.49	32.65		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	8.2	10.7	13.2	15.7		
DRY DENSITY	117.0	120.9	119.8	114.4		

TEST RESULTS

Maximum dry density = 121 pcf

Optimum moisture = 11.5 %

Material Description

Yellowish brown lean CLAY with sand

Project No. 00-1703CM-1 **Client:** Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

• **Source:** B-55E **Elev./Depth:** 0-10

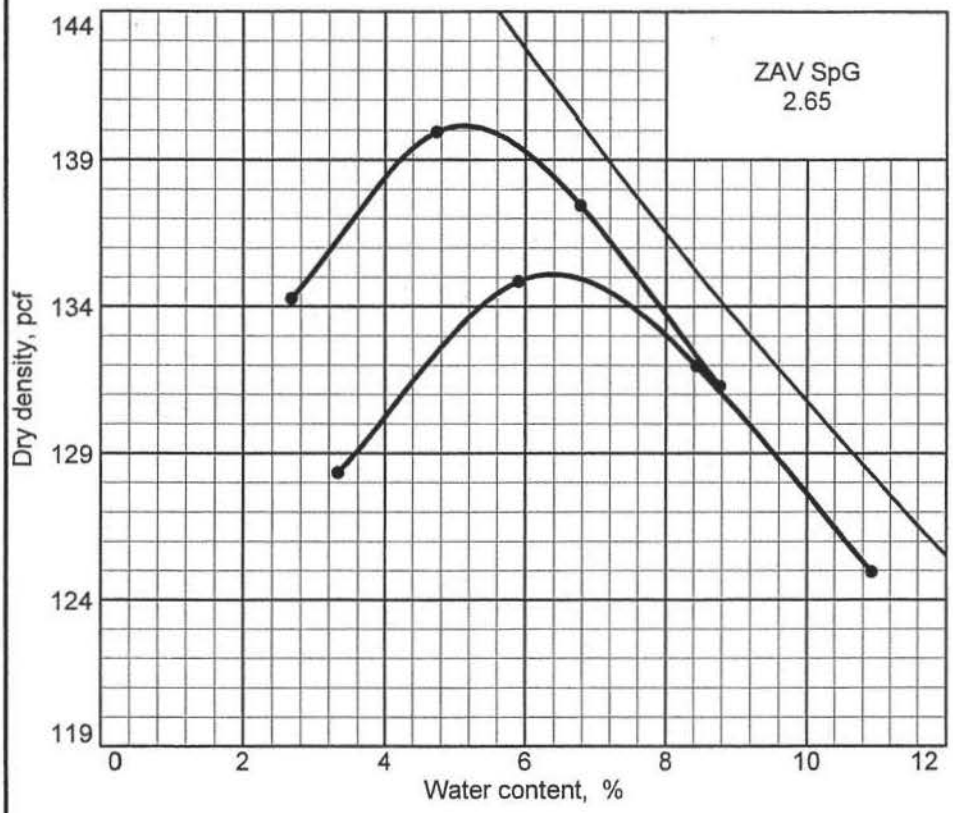
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.13

COMPACTION TEST REPORT



Curve No.
N

Test Specification:
ASTM D 1557-91 Procedure B Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing 3/8 in. **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL 26 **PI** 10
%>3/8 in. 19.7 **%<#200** 22.6
USCS SC **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.91	9.25	9.26	9.11		
WM	4.49	4.49	4.49	4.49		
WW + T #1	226.47	240.09	264.84	266.10		
WD + T #1	220.19	228.35	246.72	242.98		
TARE #1	31.31	29.44	32.05	31.41		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	2.7	4.7	6.8	8.8		
DRY DENSITY	134.3	140.0	137.5	131.3		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 140 pcf

Optimum moisture = 5 %

Material Description

Yellowish brown clayey SAND with gravel

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

• **Source:** B-57E **Elev./Depth:** 5, 10

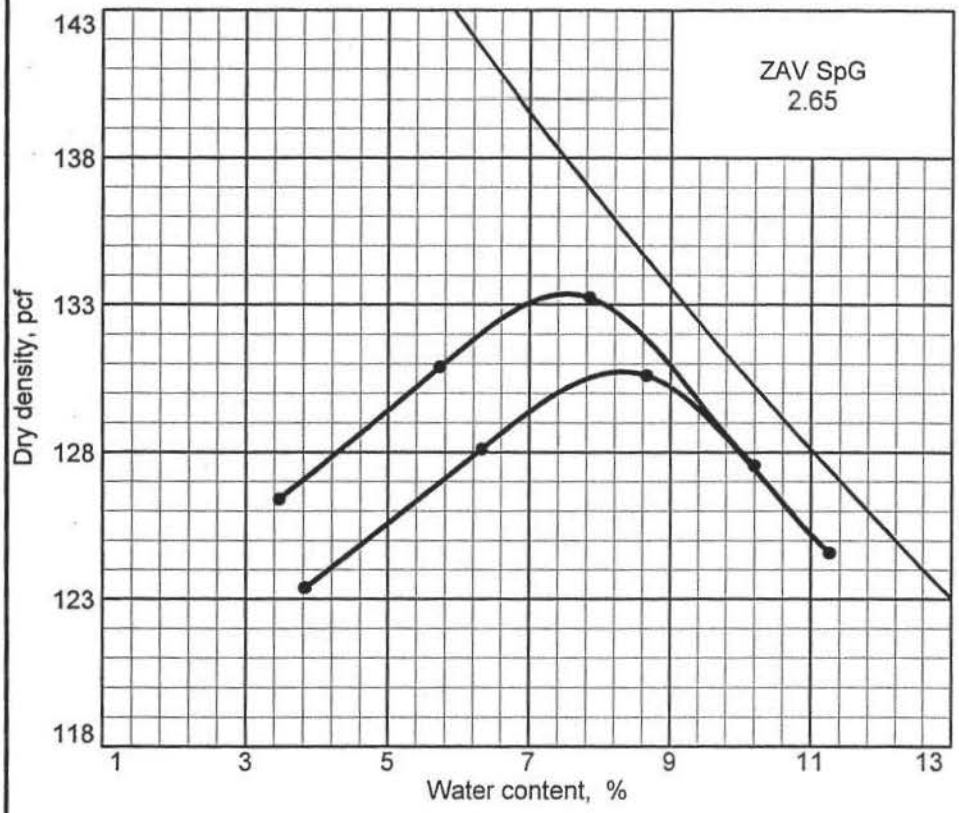
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.14

COMPACTION TEST REPORT



Curve No.
O

Test Specification:
ASTM D 1557-91 Procedure A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 9.4 **%<#200** 44.1
USCS SC **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.76	9.03	9.22	9.11		
WM	4.49	4.49	4.49	4.49		
WW + T #1	230.60	235.31	362.49	372.60		
WD + T #1	223.28	223.20	336.23	338.12		
TARE #1	32.14	31.78	33.01	31.89		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	3.5	5.7	7.8	10.2		
DRY DENSITY	126.4	130.9	133.2	127.5		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 133.5 pcf

Optimum moisture = 7.5 %

Material Description

Yellowish clayey SAND

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

● **Source:** B-58E **Elev./Depth:** 0-10

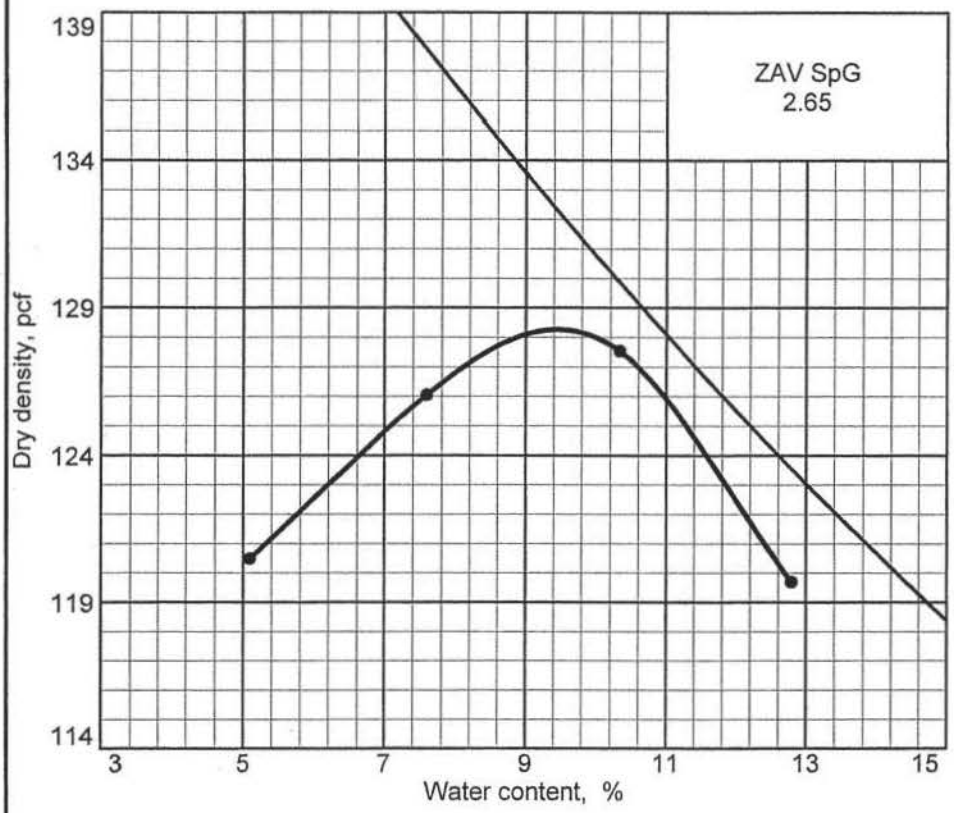
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.15

COMPACTION TEST REPORT



Curve No.
P

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL 29 **PI** 11
%>No.4 4.0 **%<#200** 48.8
USCS SC **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.71	9.01	9.18	8.99		
WM	4.49	4.49	4.49	4.49		
WW + T #1	220.00	227.27	234.20	245.24		
WD + T #1	210.92	213.48	215.00	221.07		
TARE #1	32.52	31.85	29.24	32.13		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	5.1	7.6	10.3	12.8		
DRY DENSITY	120.5	126.0	127.5	119.7		

TEST RESULTS

Maximum dry density = 128.5 pcf

Optimum moisture = 9.5 %

Material Description

Yellowish brown clayey SAND

Project No. 00-1703CM-1 **Client:** Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

• **Source:** B-61E **Elev./Depth:** 0-10

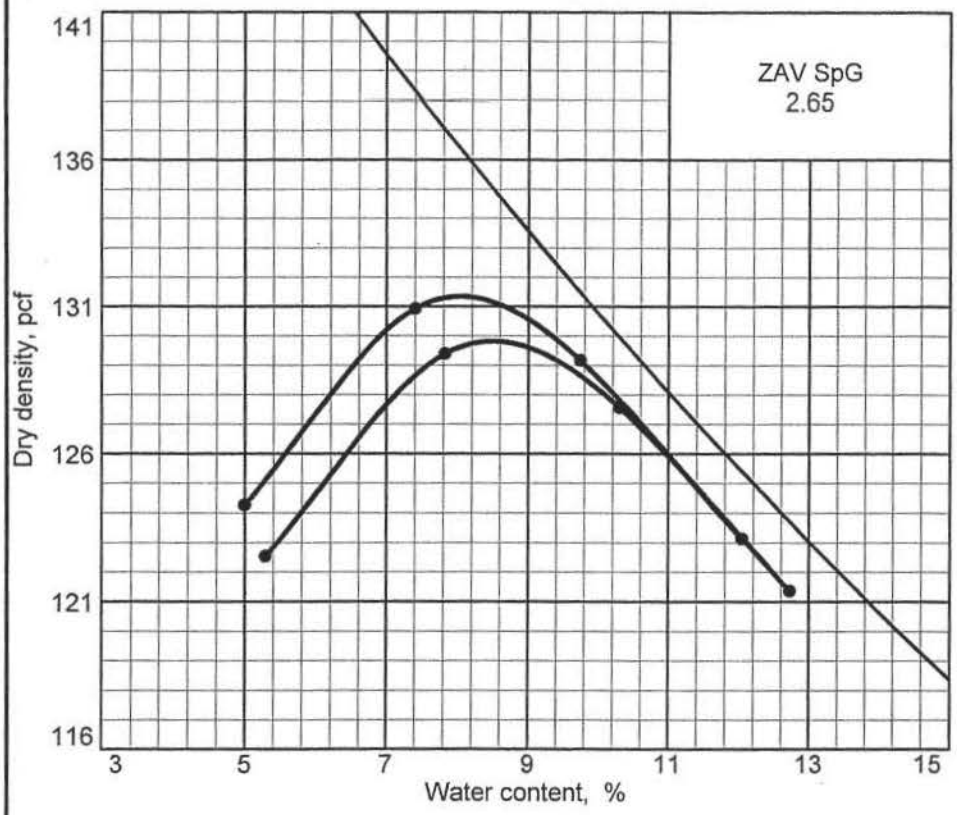
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.16

COMPACTION TEST REPORT



Curve No.
Q

Test Specification:
ASTM D 1557-91 Procedure A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 5.4 **%<#200** 50.0
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.79	9.14	9.18	9.05		
WM	4.49	4.49	4.49	4.49		
WW + T #1	244.35	252.99	263.88	267.58		
WD + T #1	233.68	237.00	242.23	240.96		
TARE #1	31.86	32.70	32.05	31.82		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	5.0	7.4	9.7	12.0		
DRY DENSITY	124.3	130.9	129.2	123.1		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 131.5 pcf

Optimum moisture = 8 %

Material Description

Yellowish brown sandy lean CLAY

Project No. 00-1703QlsII- **Client:** Newhall Ranch Co.
Project: Mesas East - Phase II Landslide Investigation

• **Source:** B-62E **Elev./Depth:** 0-10

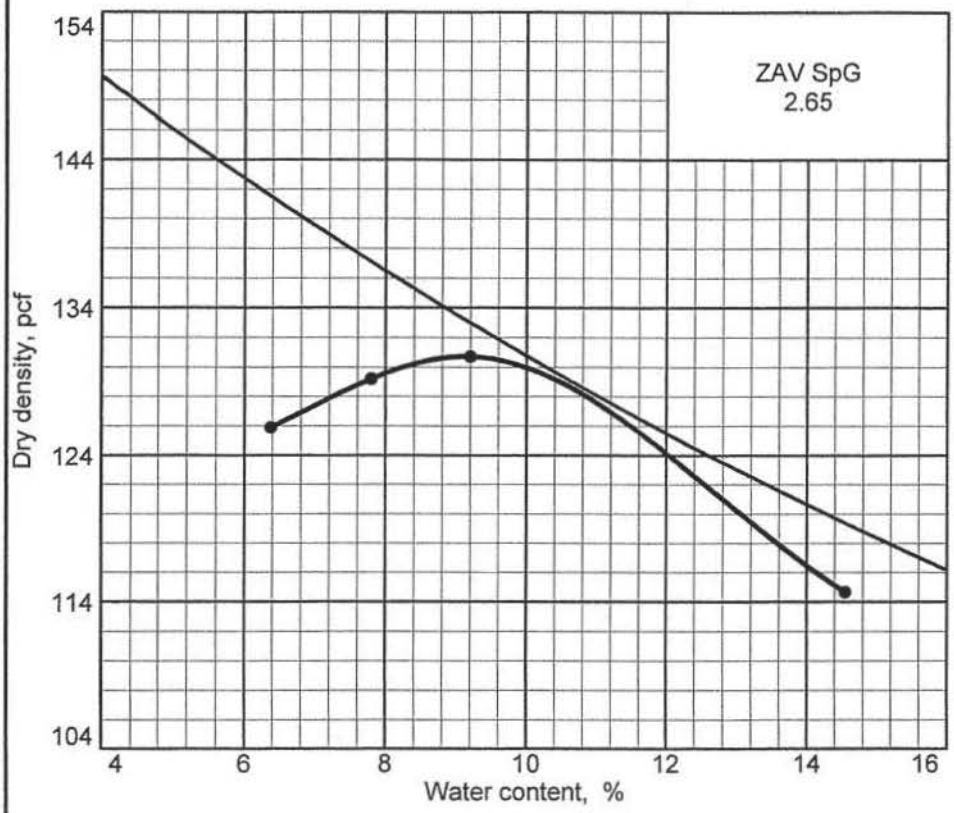
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.17

COMPACTION TEST REPORT



Curve No.
R

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 0.0 **%<#200** 41.9
USCS SC **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.94	9.12	9.23	8.85		
WM	4.48	4.48	4.48	4.48		
WW + T #1	318.85	350.41	360.08	340.20		
WD + T #1	301.64	327.21	332.45	300.70		
TARE #1	31.92	29.59	32.25	29.28		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	6.4	7.8	9.2	14.6		
DRY DENSITY	125.9	129.2	130.7	114.7		

TEST RESULTS

Maximum dry density = 130.5 pcf

Optimum moisture = 9 %

Material Description

Clayey SAND

Project No. 02-1703B-1 **Client:** Newhall Ranch Co.
Project: Cobble/Boulder Assessment
Airport and Exxon Mesas
• **Source:** B-2B **Elev./Depth:** 15

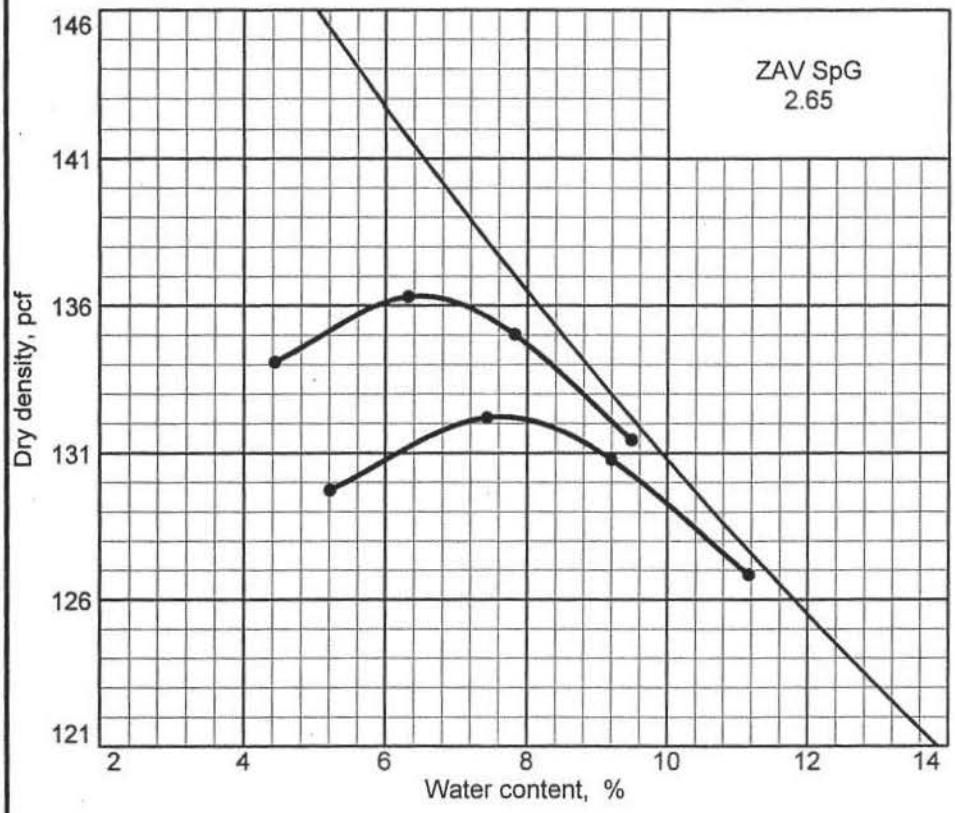
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.18

COMPACTION TEST REPORT



Curve No.
S

Test Specification:
ASTM D 1557-00 Method A Modified
Oversize correction applied to each point

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 15.0 **%<#200** 15.2
USCS SM **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	9.02	9.20	9.23	9.17		
WM	4.47	4.47	4.47	4.47		
WW + T #1	386.15	419.82	436.96	451.69		
WD + T #1	368.59	392.78	402.60	409.56		
TARE #1	31.85	29.34	29.36	32.25		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	4.4	6.3	7.8	9.5		
DRY DENSITY	134.1	136.3	135.0	131.4		

ROCK CORRECTED TEST RESULTS

Maximum dry density = 136.5 pcf

Optimum moisture = 6.5 %

Material Description

Silty SAND with gravel

Project No. 02-1703B-1 **Client:** Newhall Ranch Co.
Project: Cobble/Boulder Assessment
Airport and Exxon Mesas
• **Source:** B-6B **Elev./Depth:** 19

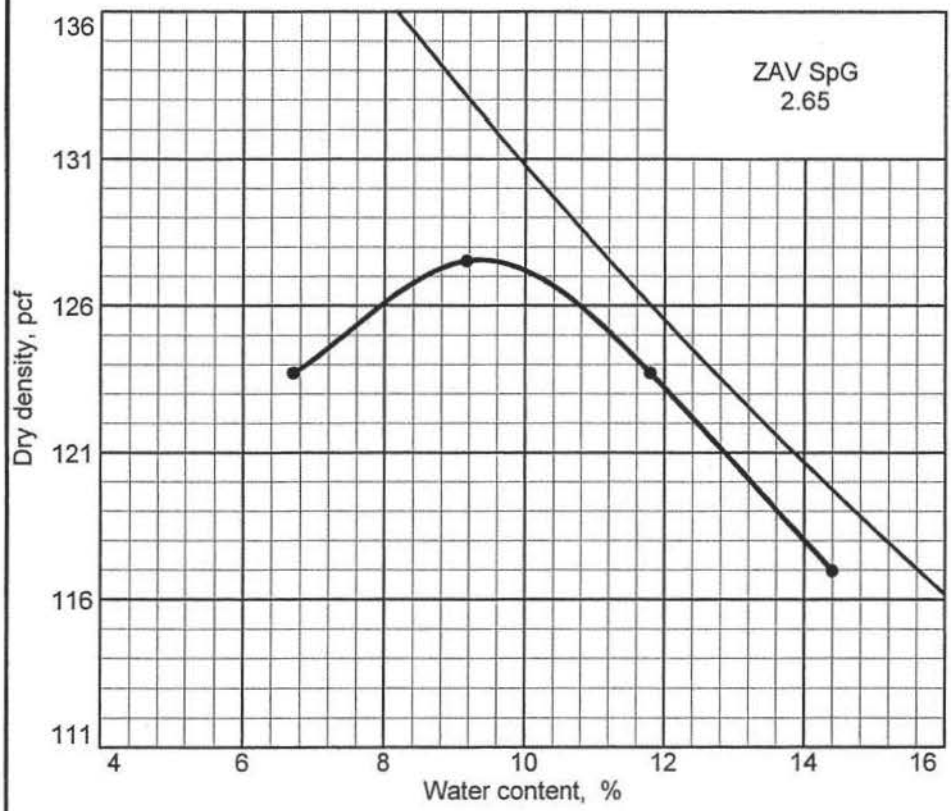
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.19

COMPACTION TEST REPORT



Curve No.
T

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 0.0 **%<#200** 60.7
USCS CL **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.86	9.10	9.07	8.92		
WM	4.46	4.46	4.46	4.46		
WW + T #1	170.65	176.82	187.97	193.22		
WD + T #1	161.79	164.46	171.25	172.67		
TARE #1	29.74	29.60	29.52	29.96		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	6.7	9.2	11.8	14.4		
DRY DENSITY	123.7	127.5	123.7	117.0		

TEST RESULTS

Maximum dry density = 127.5 pcf

Optimum moisture = 9.5 %

Material Description

Brown sandy lean CLAY

Project No. 01-1703M-1 **Client:** Newhall Ranch Co.
Project: Mesas Entertainment

● **Source:** B-1M **Elev./Depth:** 25

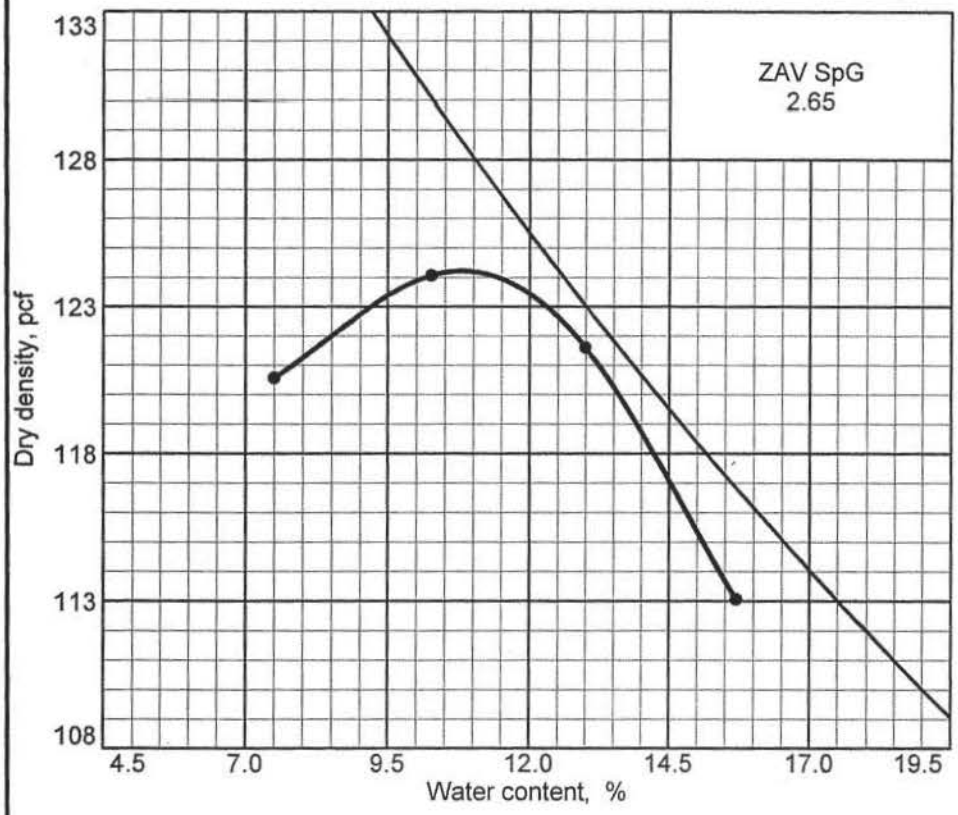
Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.20

COMPACTION TEST REPORT



Curve No.
U

Test Specification:
ASTM D 1557-91 Procedure A Modified

Hammer Wt.: 10 lb.
Hammer Drop: 18 in.
Number of Layers: five
Blows per Layer: 25
Mold Size: .03333 cu.ft.

Test Performed on Material Passing No.4 **Sieve**

Soil Data

NM _____ **Sp.G.** 2.65
LL _____ **PI** _____
%>No.4 0.0 **%<#200** 55.9
USCS ML **AASHTO** _____

TESTING DATA

	1	2	3	4	5	6
WM + WS	8.81	9.05	9.07	8.85		
WM	4.49	4.49	4.49	4.49		
WW + T #1	186.30	207.35	215.57	221.98		
WD + T #1	176.82	191.04	194.21	196.07		
TARE #1	50.41	32.18	29.92	31.02		
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	7.5	10.3	13.0	15.7		
DRY DENSITY	120.6	124.1	121.6	113.1		

TEST RESULTS

Maximum dry density = 124 pcf

Optimum moisture = 11 %

Material Description

Brown sandy SILT

Project No. 01-1703M-1 **Client:** Newhall Ranch Co.
Project: Mesas Entertainment

• **Source:** B-4M **Elev./Depth:** 2, 10

Remarks:

COMPACTION TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Figure B3.21

CONSOLIDATION TEST REPORT

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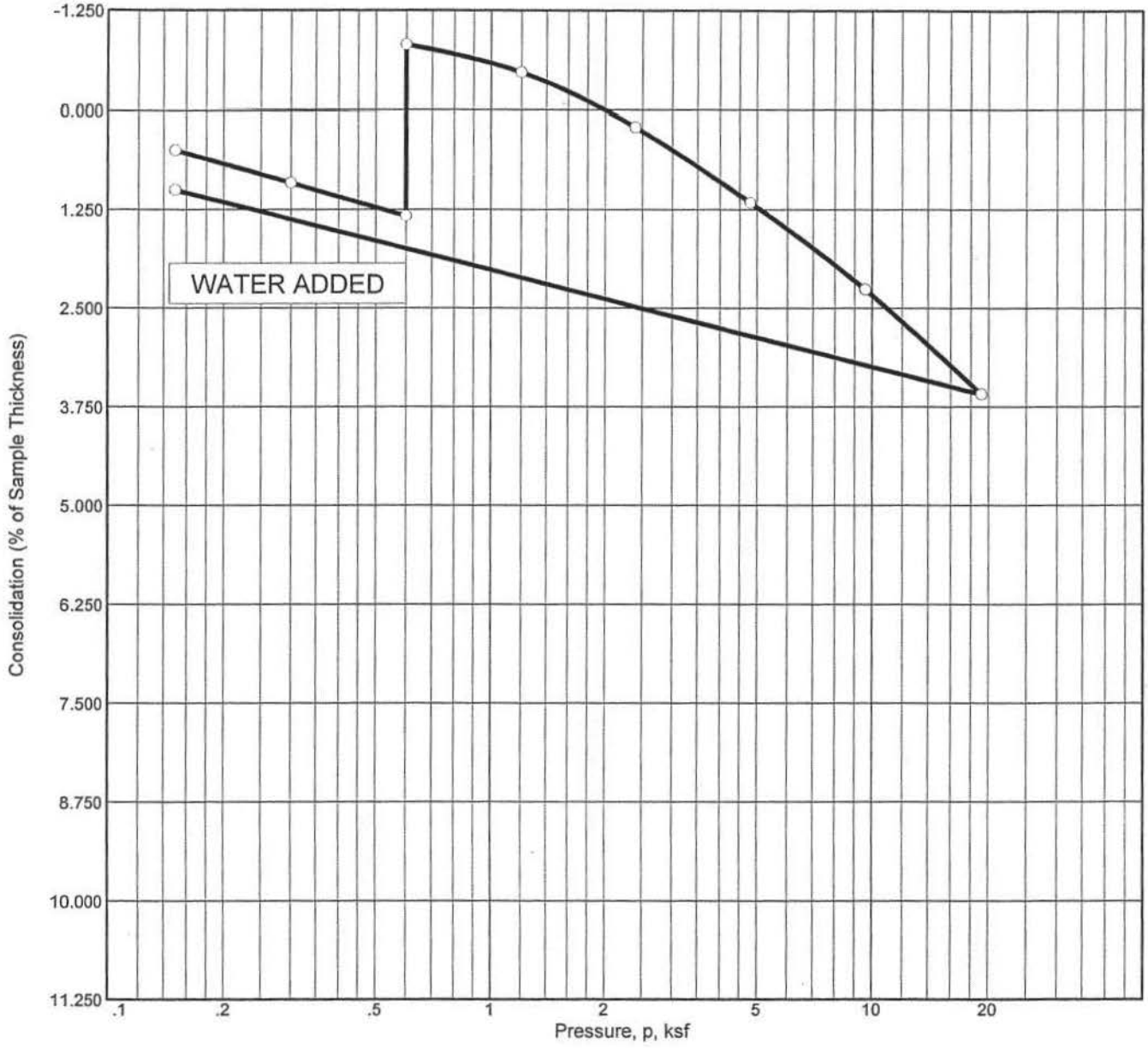
DATE | APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	109.3	14.1	72.7	1.000	0.513	2.65	0.07	0.60	2.78	ML
FINAL	110.4	20.0	100.0	0.990	0.498					

Source: B-14E **Elev./Depth:** 5'
Material Description: Yellowish-brown sandy SILT
Remarks:

ALLAN E. SEWARD

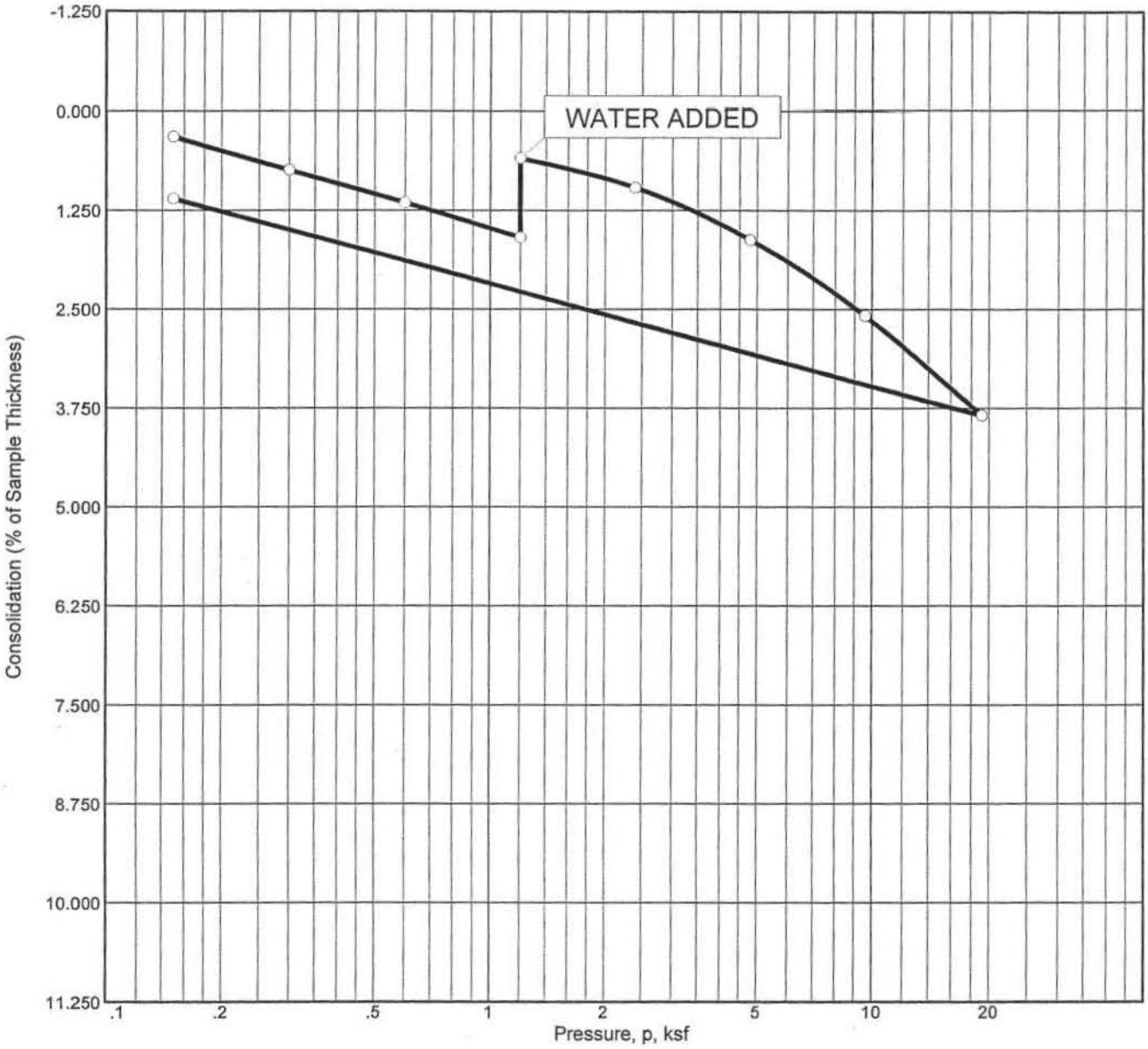
ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.1

CONSOLIDATION TEST REPORT

DRAWN BY | CHECKED BY
DATE | APPROVED BY



SUMMARY OF TEST RESULTS

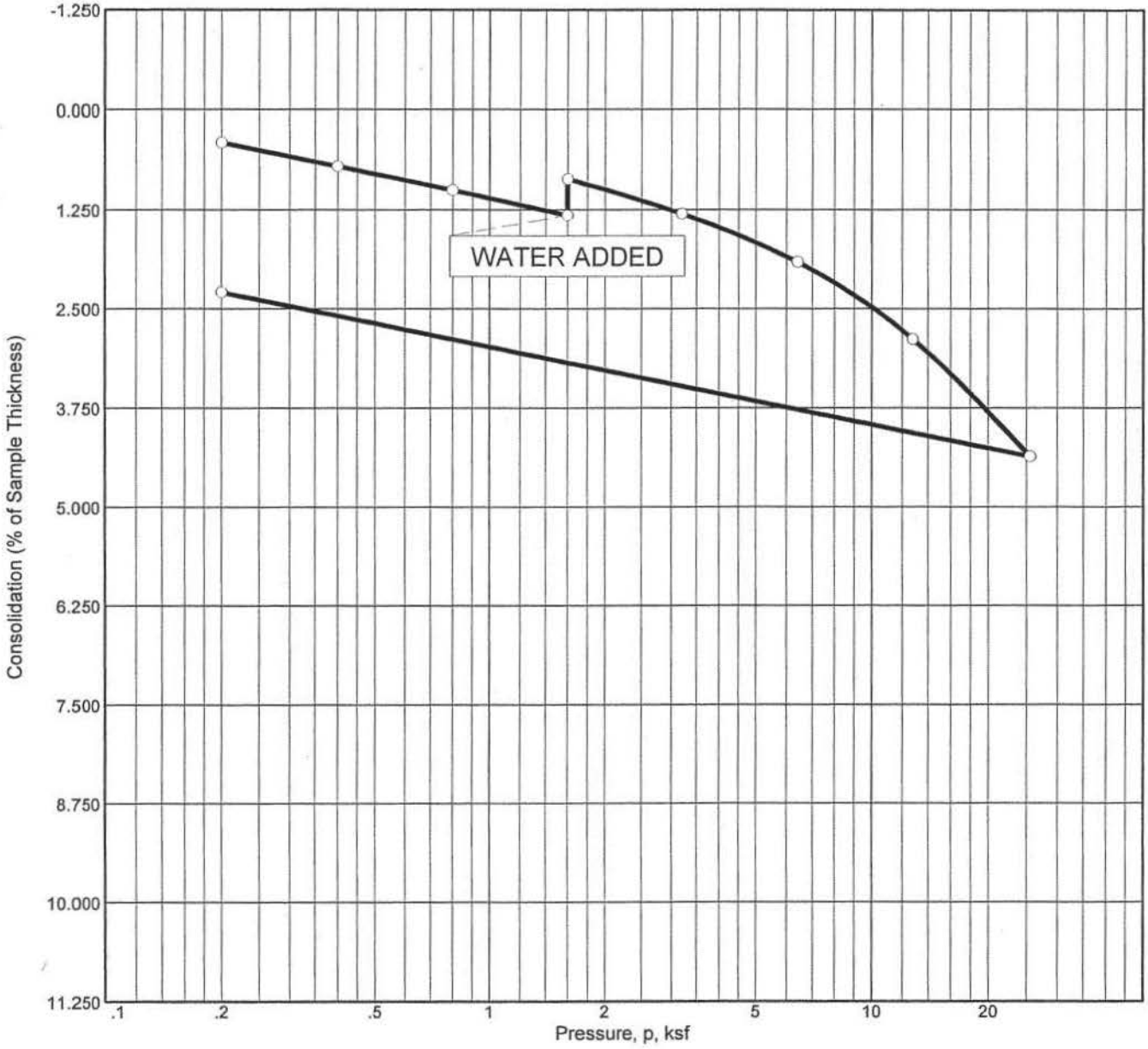
	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	109.9	15.2	79.8	1.000	0.506	2.65	0.06	1.20	4.59	ML
FINAL	111.1	19.8	100.0	0.989	0.489					

Source: B-14E **Elev./Depth:** 10'
Material Description: Yellowish-brown sandy SILT
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Newhall Ranch, Mesas-East **Job No.:** 00-1703CM-1 **Figure** B4.2

CONSOLIDATION TEST REPORT

DRAWN BY	CHECKED BY
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	110.5	13.4	71.7	1.000	0.497	2.65	0.07	1.80	11.54	CL
FINAL	113.1	17.7	100.0	0.977	0.462					

Source: B-14E **Elev./Depth:** 15'
Material Description: Lean CLAY with sand
Remarks:

ALLAN E. SEWARD

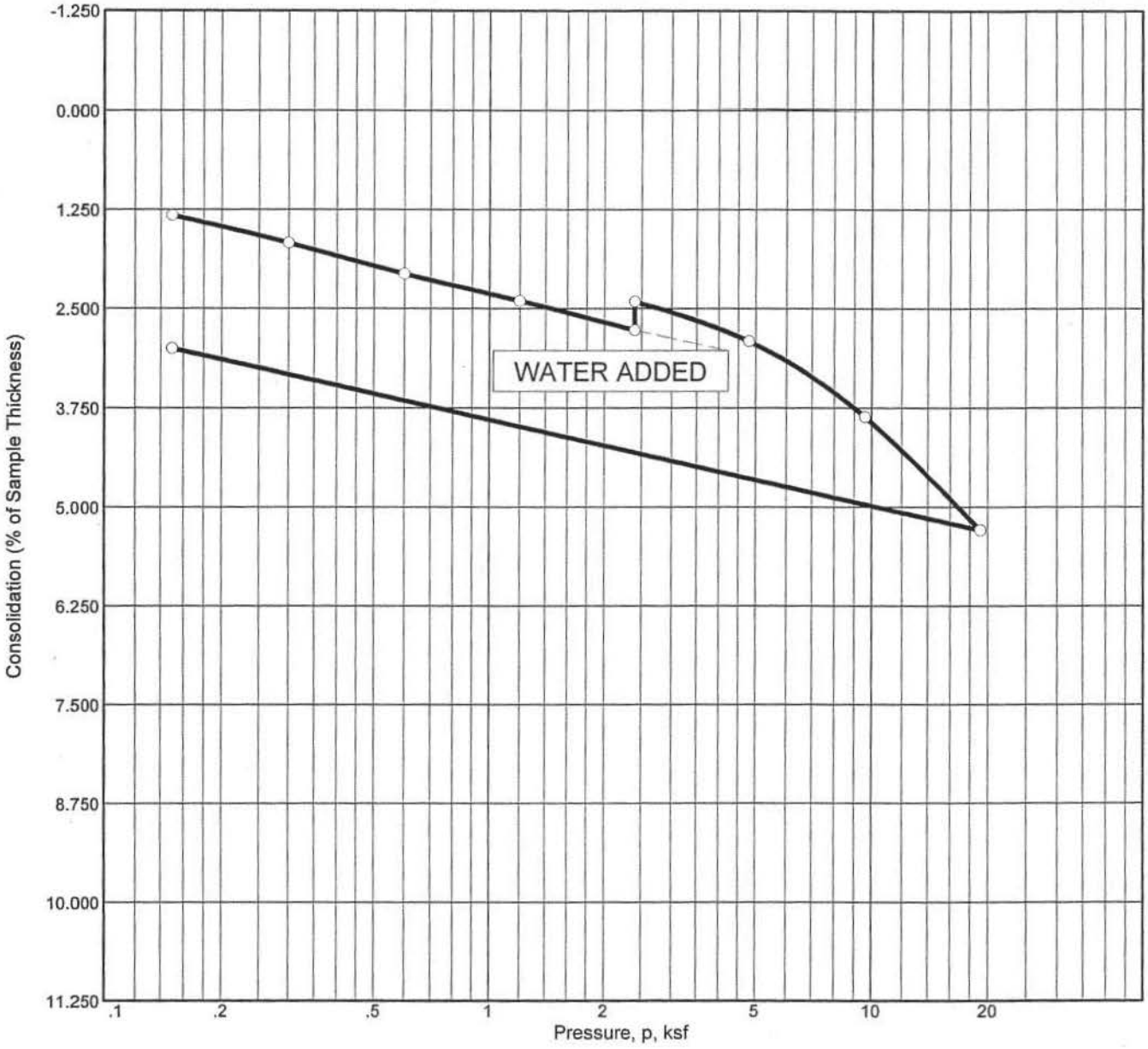
ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.3

CONSOLIDATION TEST REPORT

DRAWN BY	CHECKED BY
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

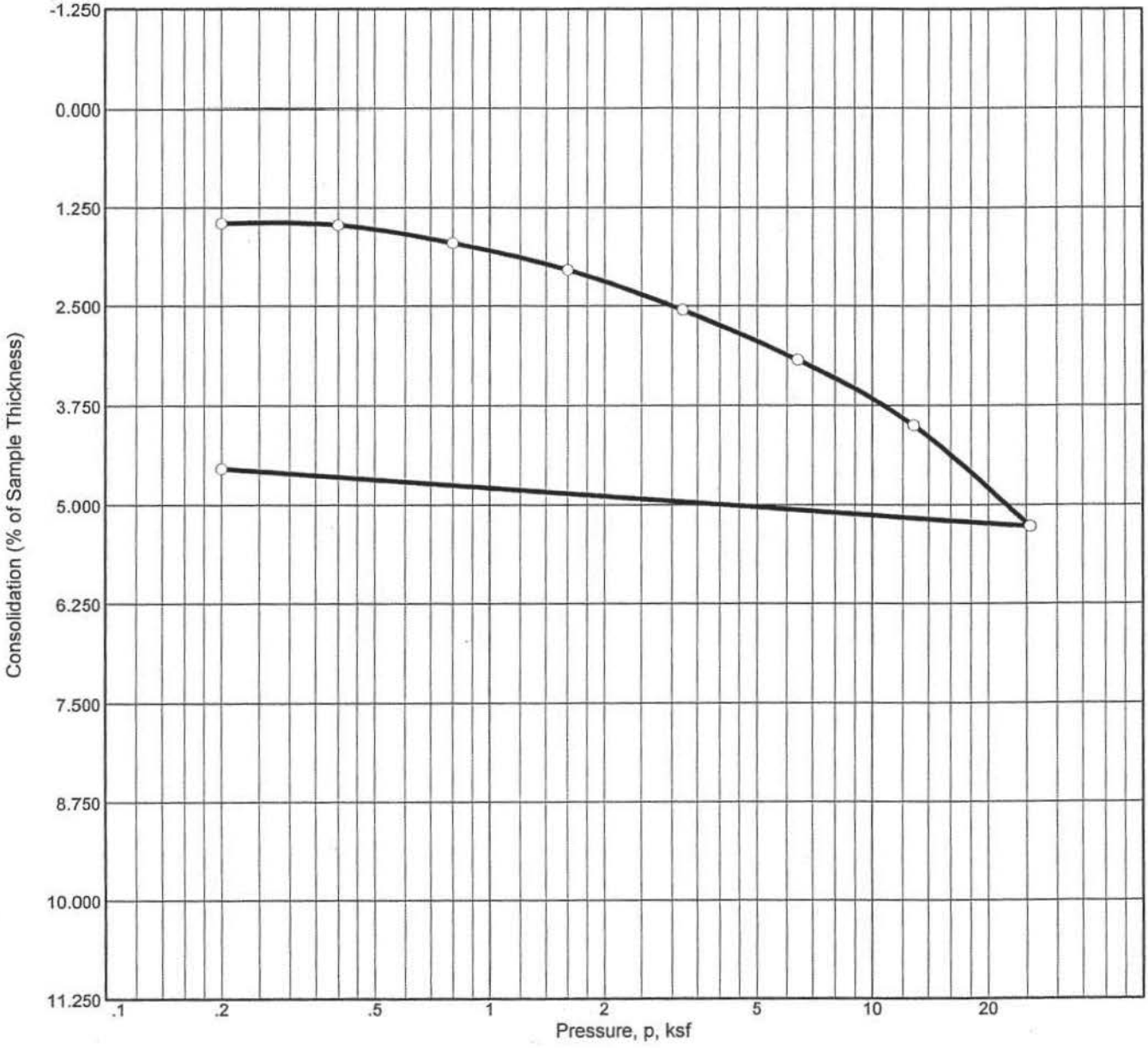
	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	105.4	17.8	82.7	1.000	0.570	2.65	0.08	2.40	6.77	CL
FINAL	108.7	22.2	100.0	0.970	0.523					

Source: B-14E **Elev./Depth:** 20'
Material Description: Sandy lean CLAY
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Newhall Ranch, Mesas-East **Job No.:** 00-1703CM-1 **Figure** B4.4

CONSOLIDATION TEST REPORT

DRAWN BY | CHECKED BY
DATE | APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	112.0	17.6	97.7	1.000	0.478	2.65	0.06	3.60	13.44	CL
FINAL	117.3	15.4	99.6	0.955	0.410					

Source: B-14E **Elev./Depth:** 30'
Material Description: Sandy lean CLAY
Remarks:

ALLAN E. SEWARD

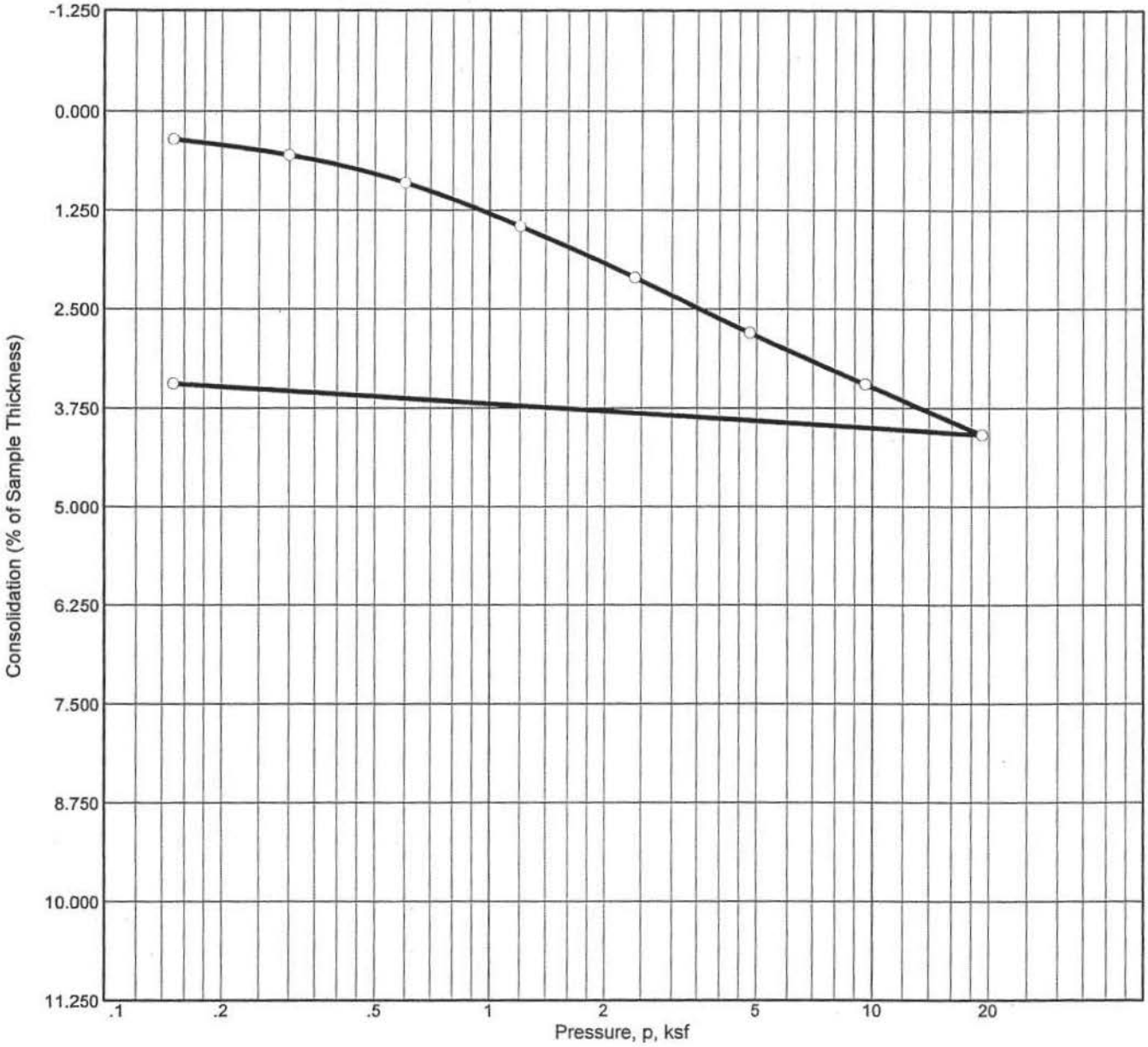
ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.5

CONSOLIDATION TEST REPORT

DRAWN BY | CHECKED BY
DATE | APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	103.9	21.7	97.3	1.000	0.592	2.65	0.03	1.20	0.61	ML
FINAL	107.6	20.1	98.9	0.966	0.538					

Source: B-17E **Elev./Depth:** 10'
Material Description: Sandy SILT
Remarks:

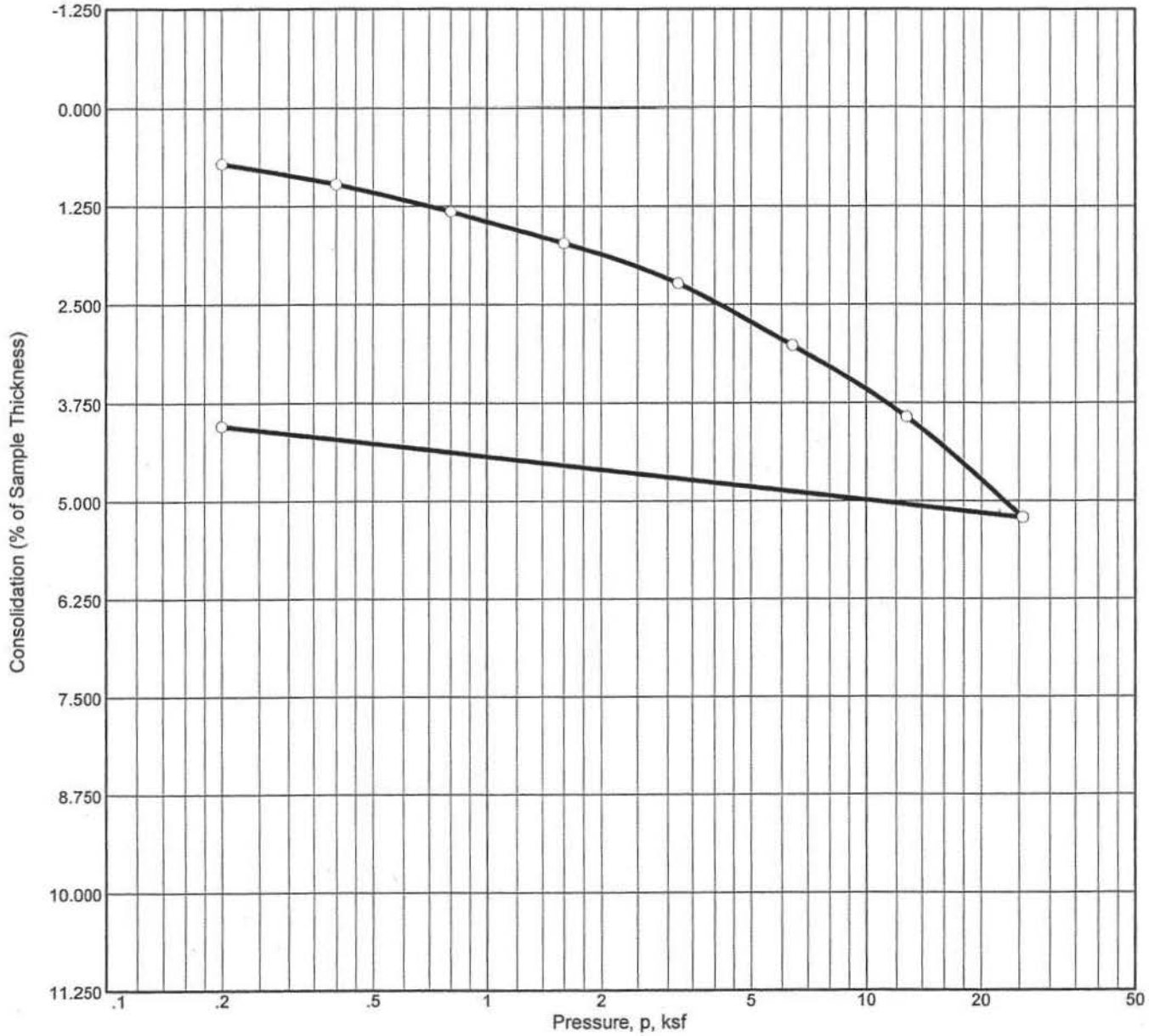
ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East
Job No.: 00-1703CM-1 **Figure** B4.6

CONSOLIDATION TEST REPORT

DRAWN BY	CHECKED BY
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	107.3	17.7	86.3	1.000	0.542	2.65	0.07	3.00	6.32	CL-ML
FINAL	111.8	27.8	100.0	0.960	0.480					

Source: B-17E **Elev./Depth:** 25'
Material Description: Sandy, silty CLAY
Remarks:

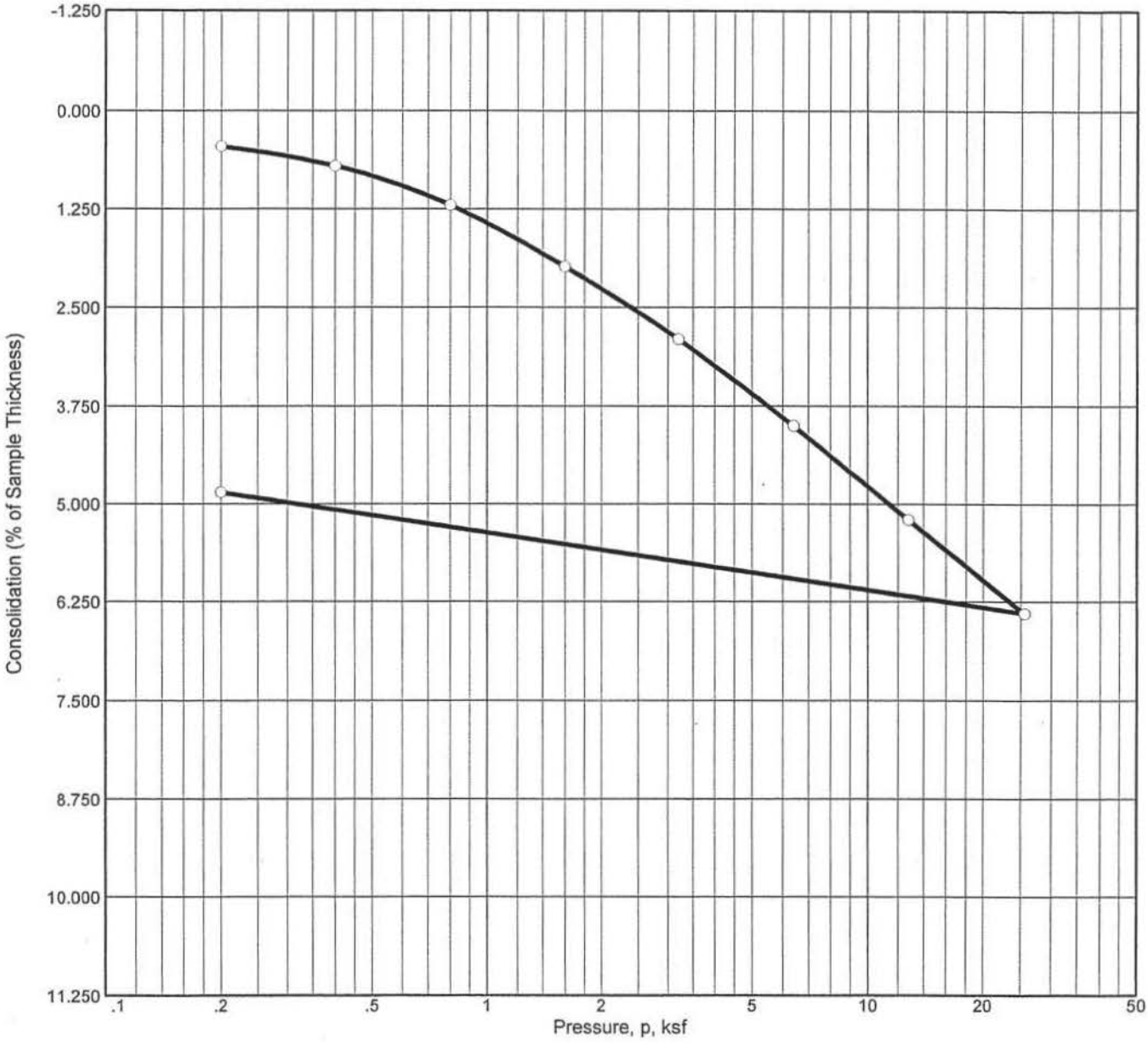
ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.7

CONSOLIDATION TEST REPORT



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	105.9	21.0	99.0	1.000	0.563	2.65	0.06	3.60	1.26	CL-ML
FINAL	111.3	22.2	100.0	0.951	0.487					

Source: B-17E **Elev./Depth:** 30'
Material Description: Silty CLAY
Remarks:

ALLAN E. SEWARD

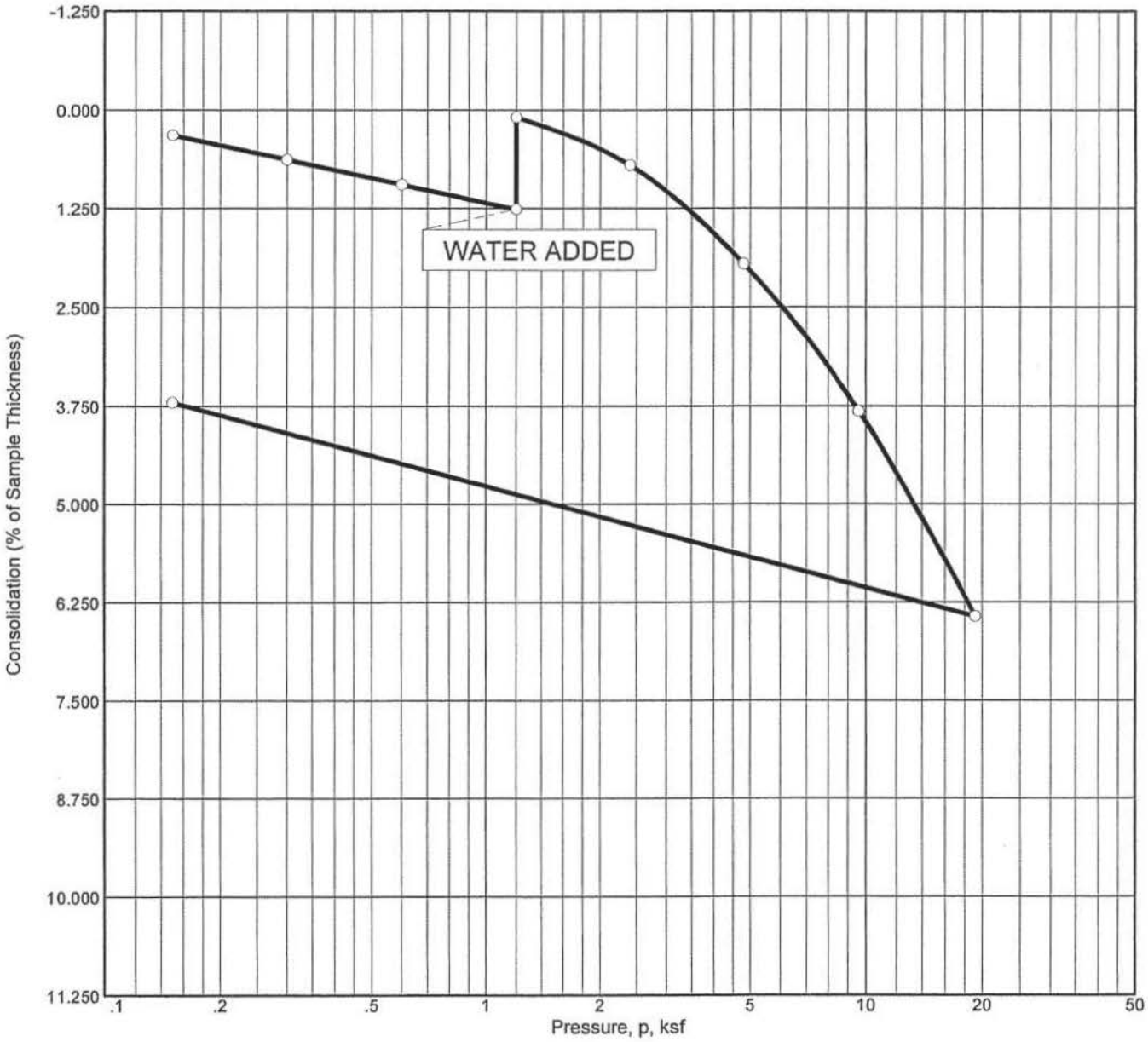
ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.8

CONSOLIDATION TEST REPORT

DRAWN BY	CHECKED BY
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	106.9	10.3	49.8	1.000	0.547	2.65	0.14	1.20	4.93	CL
FINAL	111.0	18.8	100.0	0.963	0.490					

Source: B-19E **Elev./Depth:** 10'
Material Description: Lean CLAY
Remarks:

ALLAN E. SEWARD

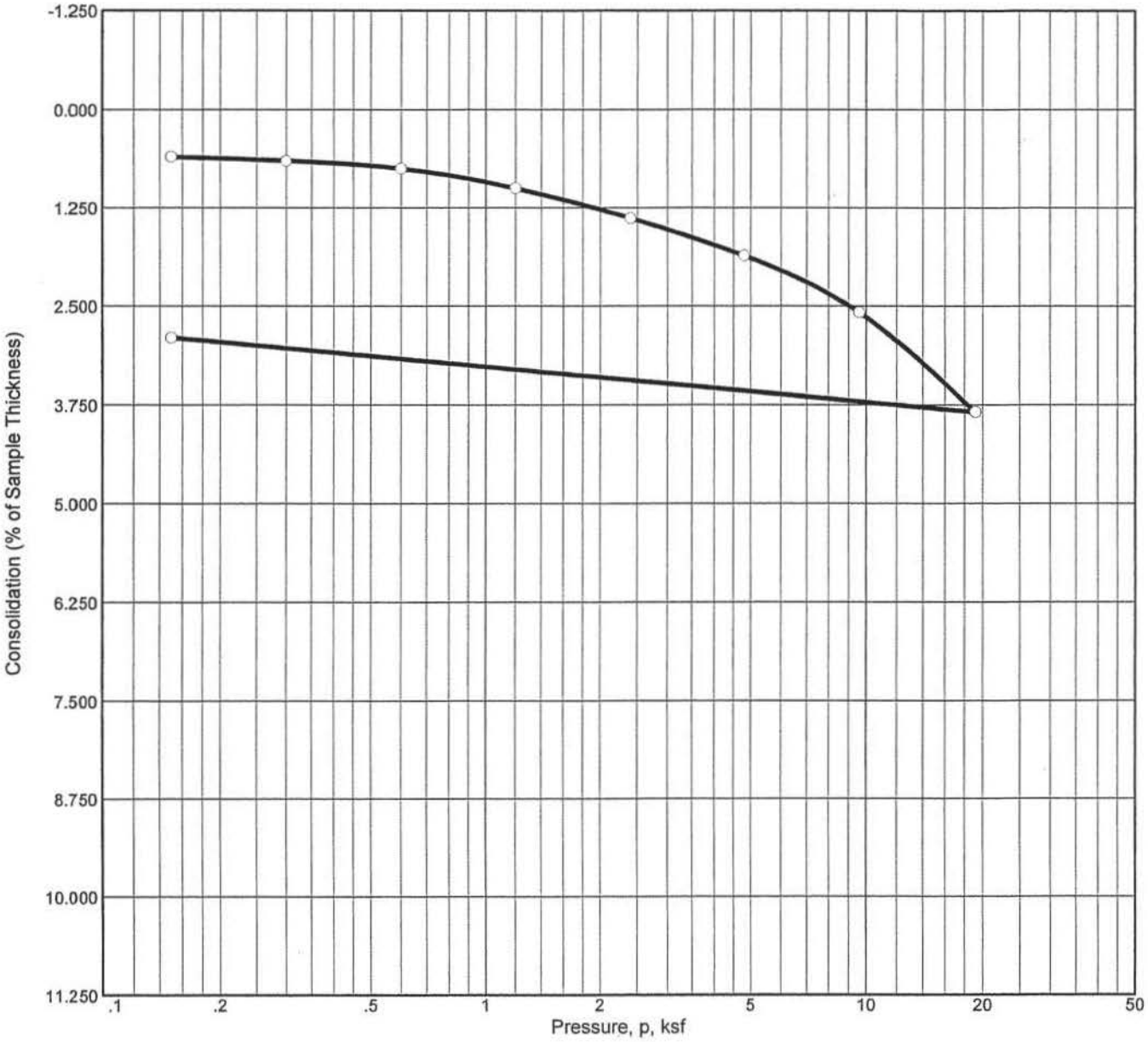
ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.9

CONSOLIDATION TEST REPORT

DRAWN BY	CHECKED BY
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	105.5	17.8	83.1	1.000	0.569	2.65	0.07	2.40	9.67	CL-ML
FINAL	108.6	22.2	100.0	0.971	0.523					

Source: B-19E **Elev./Depth:** 20'
Material Description: Silty CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.10

CONSOLIDATION TEST REPORT

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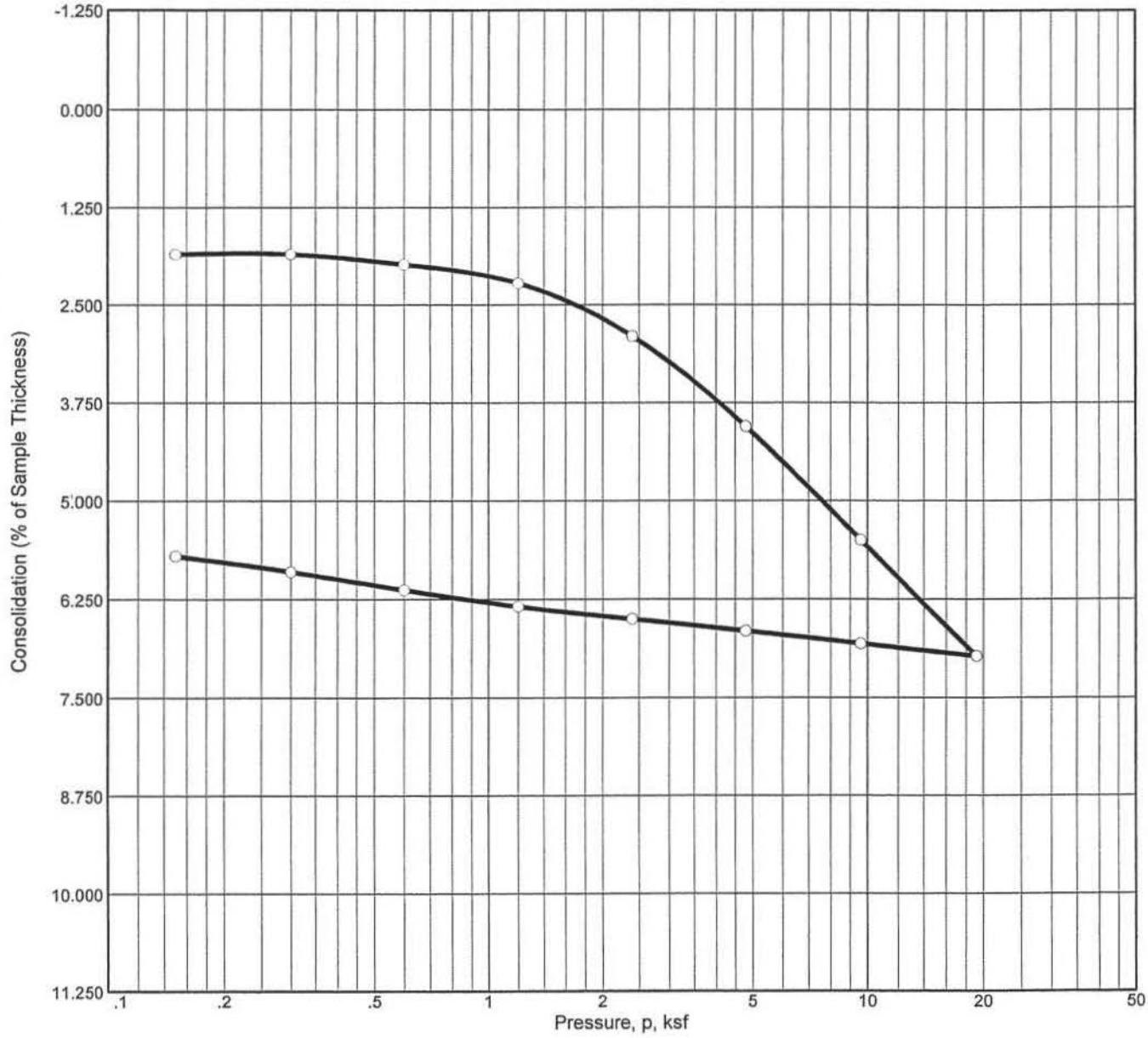


SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	114.7	16.3	97.9	1.000	0.442	2.65	0.07	4.80	2.22	CL-ML
FINAL	121.6	23.8	100.0	0.943	0.360					

Source: B-19E **Elev./Depth:** 40'
Material Description: Sandy, silty CLAY
Remarks:

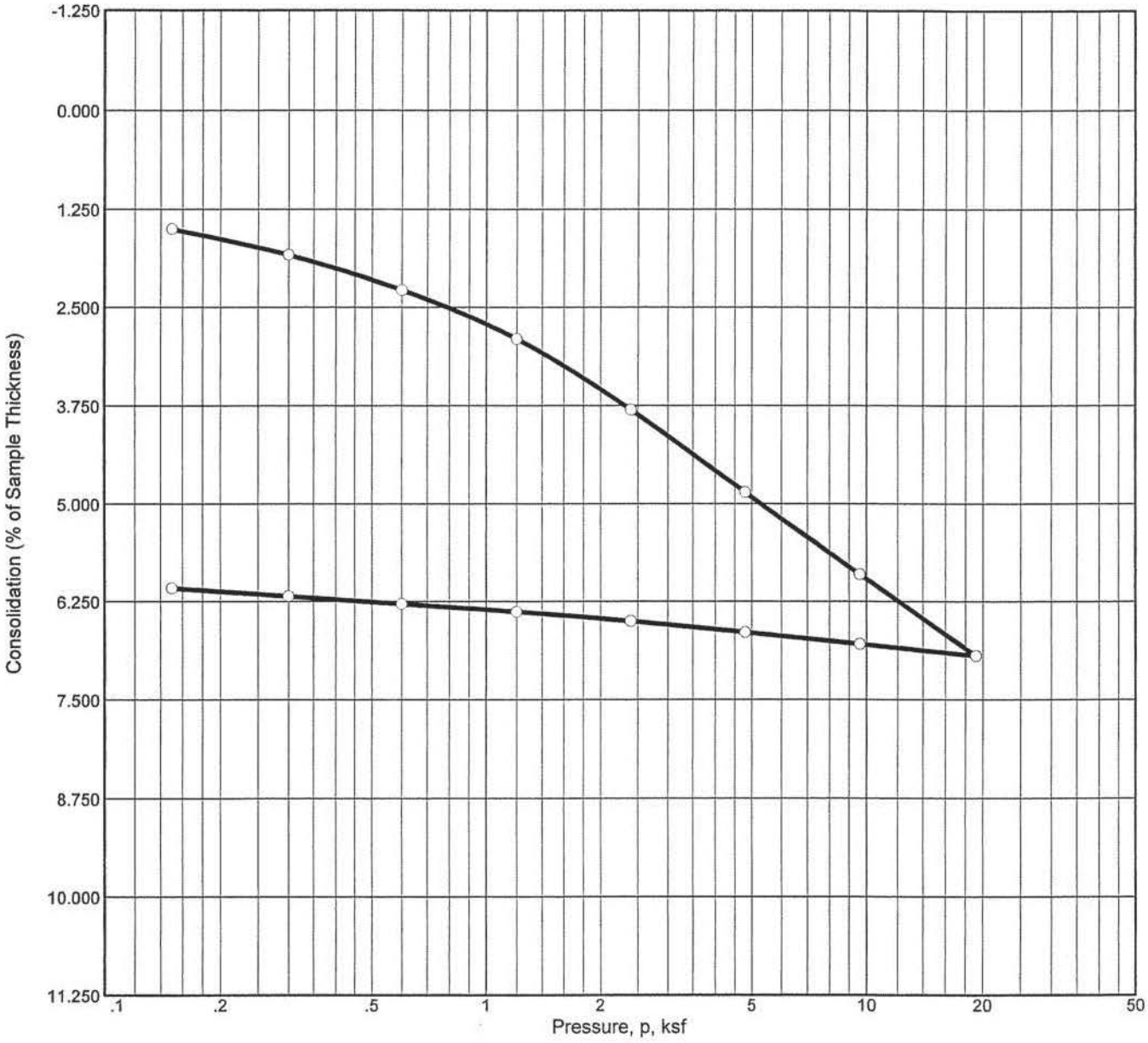
ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.11

CONSOLIDATION TEST REPORT



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SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	106.6	20.2	97.3	1.000	0.551	2.65	0.05	1.20	1.36	CL
FINAL	113.5	27.5	100.0	0.939	0.457					

Source: B-20E **Elev./Depth:** 10'
Material Description: Sandy lean CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.12

CONSOLIDATION TEST REPORT

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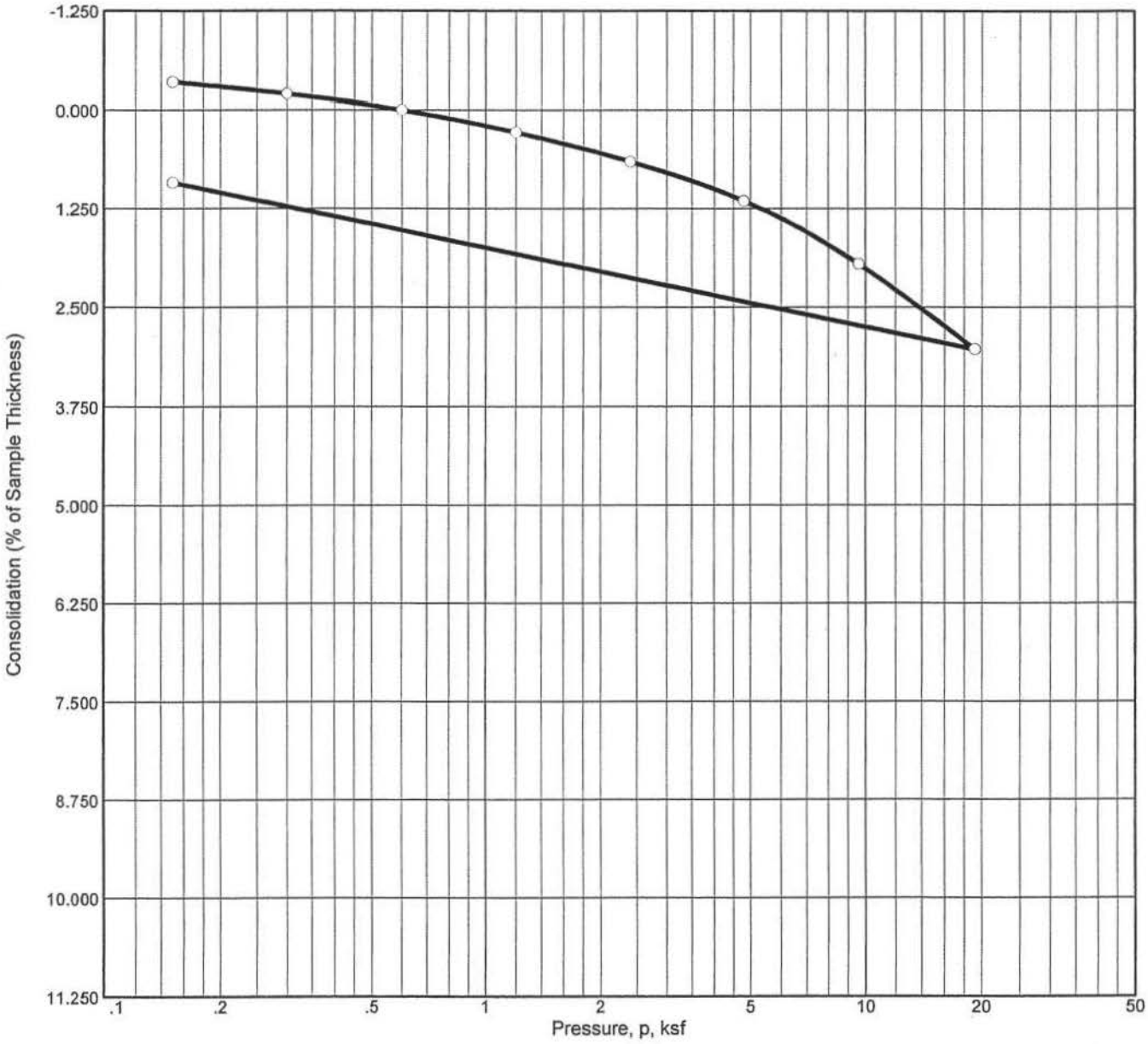

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	106.9	19.6	94.8	1.000	0.547	2.65	0.06	1.20	6.39	ML
FINAL	107.9	20.5	100.0	0.991	0.533					

Source: B-21E **Elev./Depth:** 10'
Material Description: Sandy SILT
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East
Job No.: 00-1703CM-1 **Figure** B4.13

CONSOLIDATION TEST REPORT

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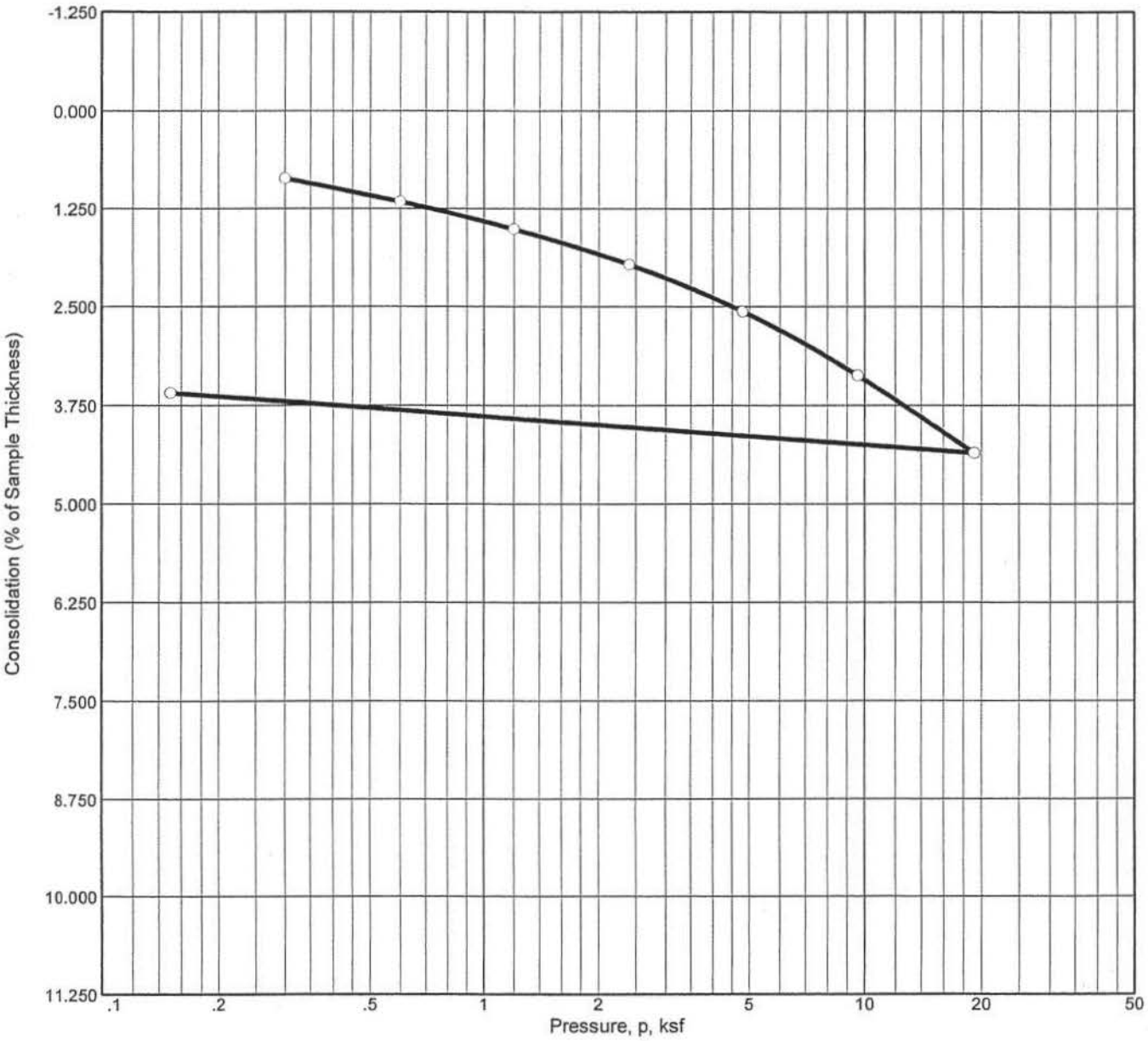

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	114.0	17.0	99.6	1.000	0.452	2.65	0.05	4.80	5.93	ML
FINAL	118.2	19.0	100.0	0.964	0.399					

Source: B-21E **Elev./Depth:** 40'
Material Description: Sandy SILT
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.14

CONSOLIDATION TEST REPORT

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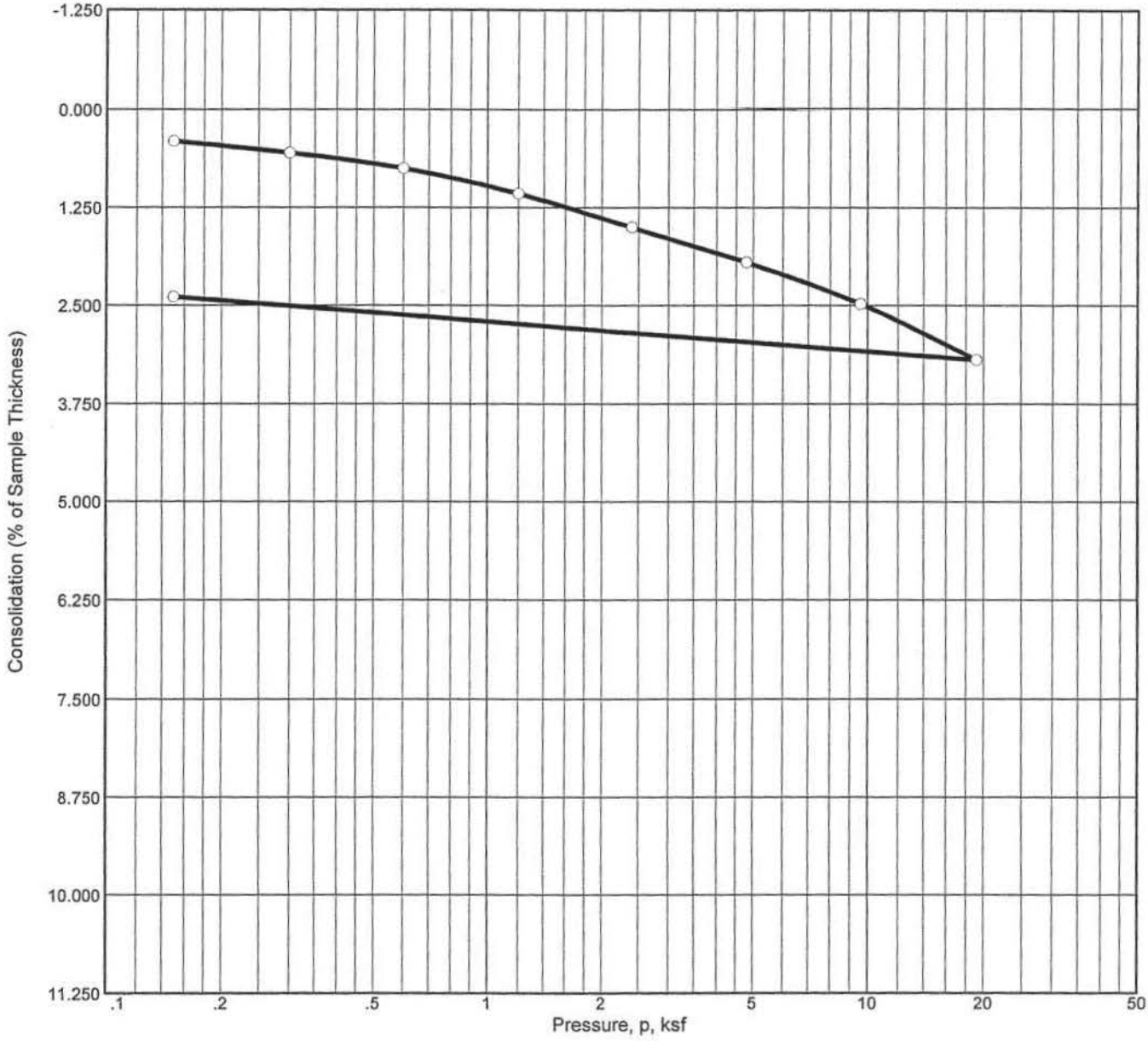

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	107.0	19.9	96.4	1.000	0.547	2.65	0.04	1.20	9.95	SM
FINAL	109.6	19.8	100.0	0.976	0.510					

Source: B-23E **Elev./Depth:** 10'
Material Description: Silty SAND with pebbles
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.15

CONSOLIDATION TEST REPORT

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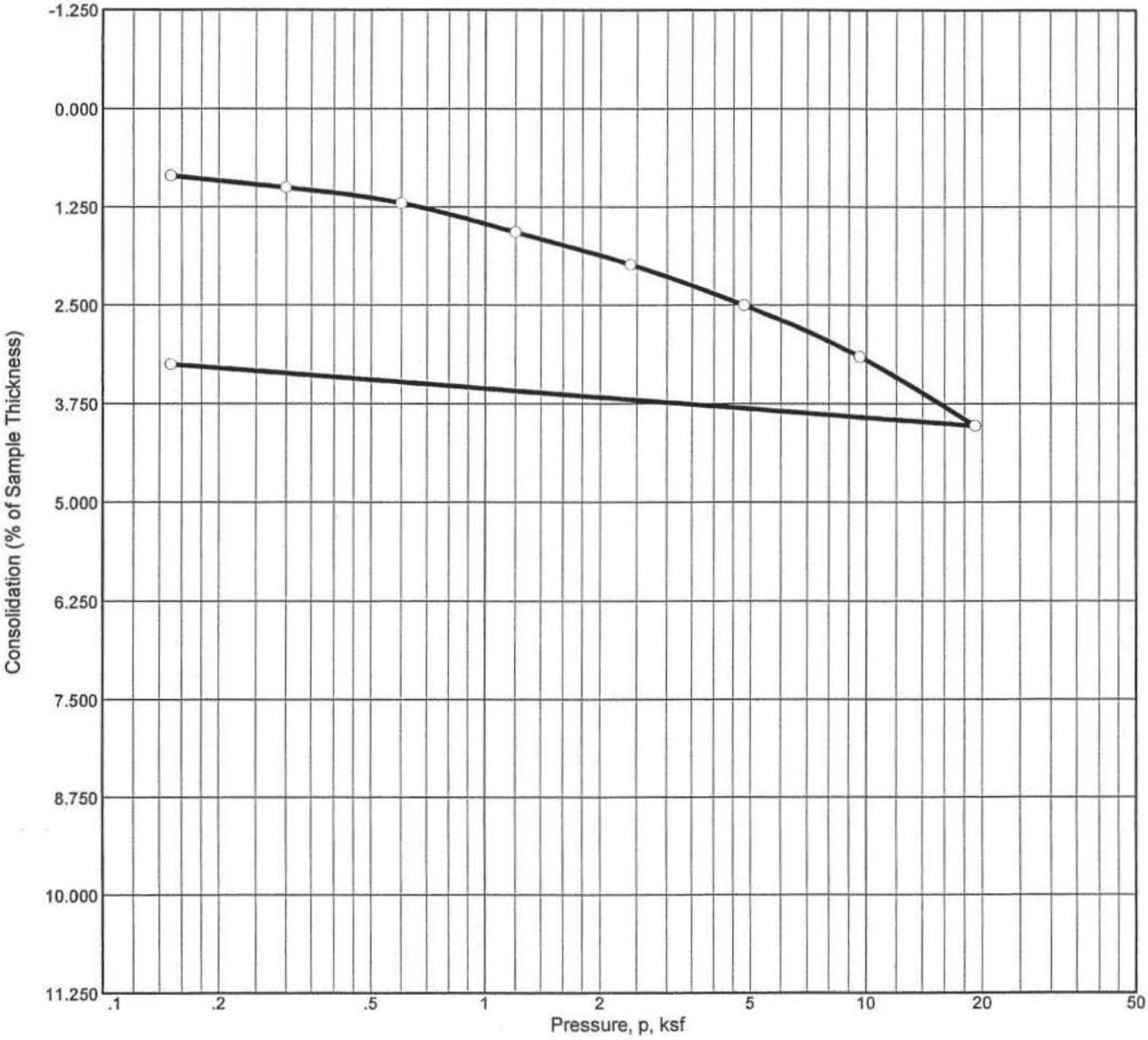

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	124.2	11.8	94.3	1.000	0.332	2.65	0.04	2.40	2.77	SM
FINAL	128.4	14.8	100.0	0.967	0.288					

Source: B-23E **Elev./Depth:** 20'
Material Description: Silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.16

CONSOLIDATION TEST REPORT

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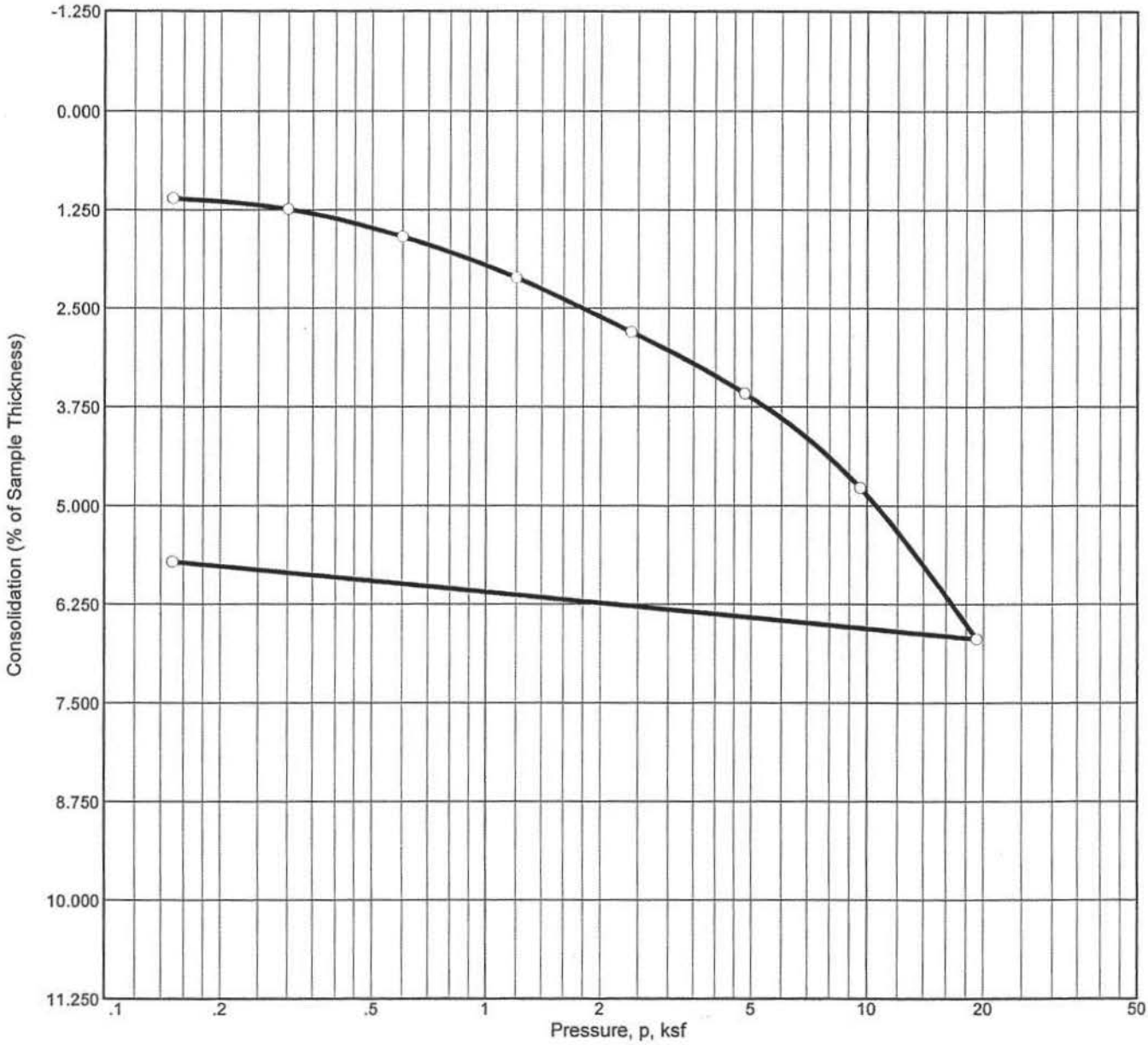

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	112.4	17.5	98.1	1.000	0.471	2.65	0.10	3.60	9.65	SM
FINAL	119.2	17.2	100.0	0.943	0.387					

Source: B-23E **Elev./Depth:** 30'
Material Description: Silty SAND with pebbles
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East
Job No.: 00-1703CM-1 **Figure** B4.17

CONSOLIDATION TEST REPORT

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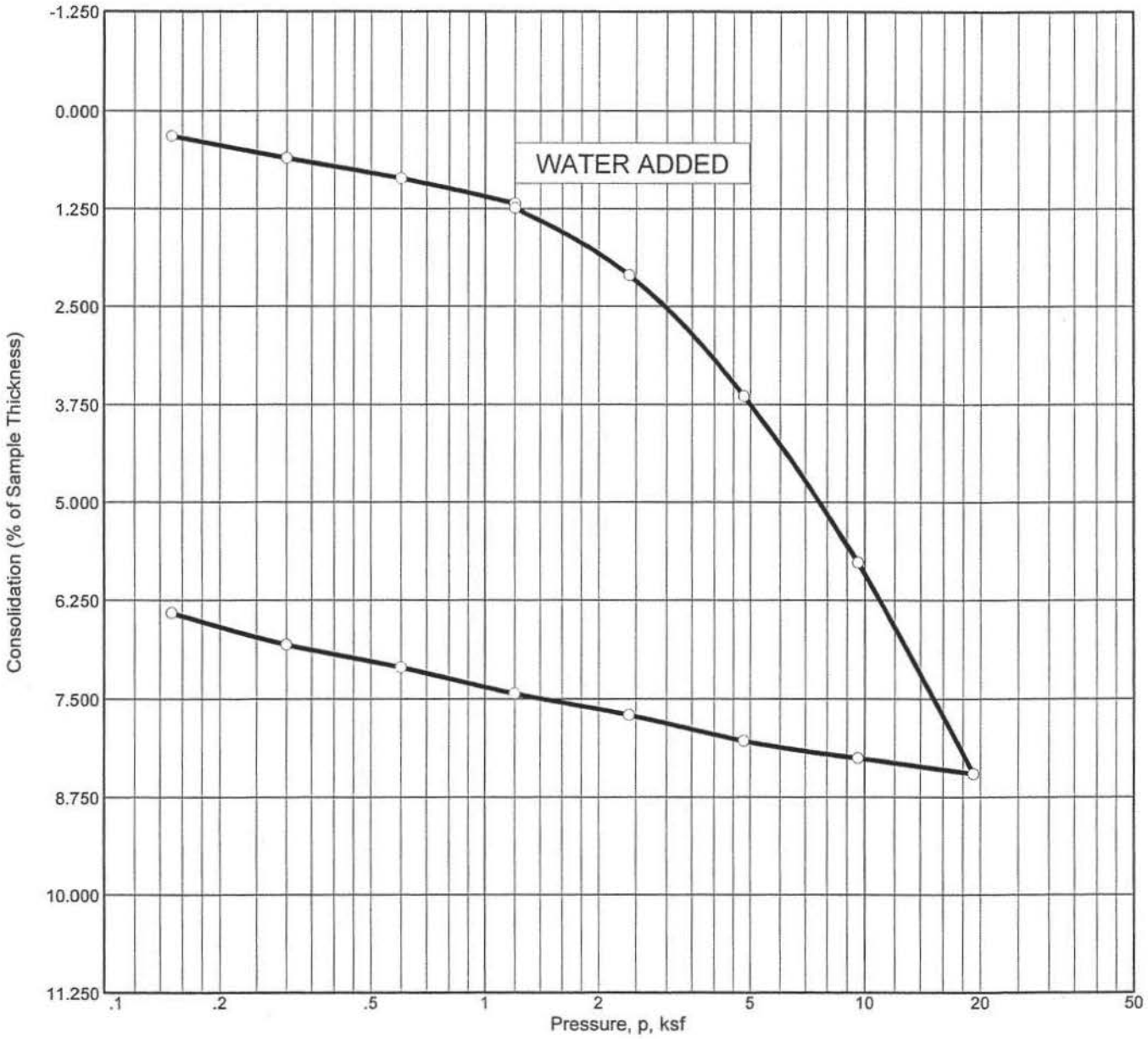

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	107.2	5.8	28.5	1.000	0.543	2.65	0.14	1.20	4.32	ML
FINAL	114.6	16.8	100.0	0.936	0.444					

Source: B-48E **Elev./Depth:** 10'
Material Description: Sandy SILT
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.18

CONSOLIDATION TEST REPORT

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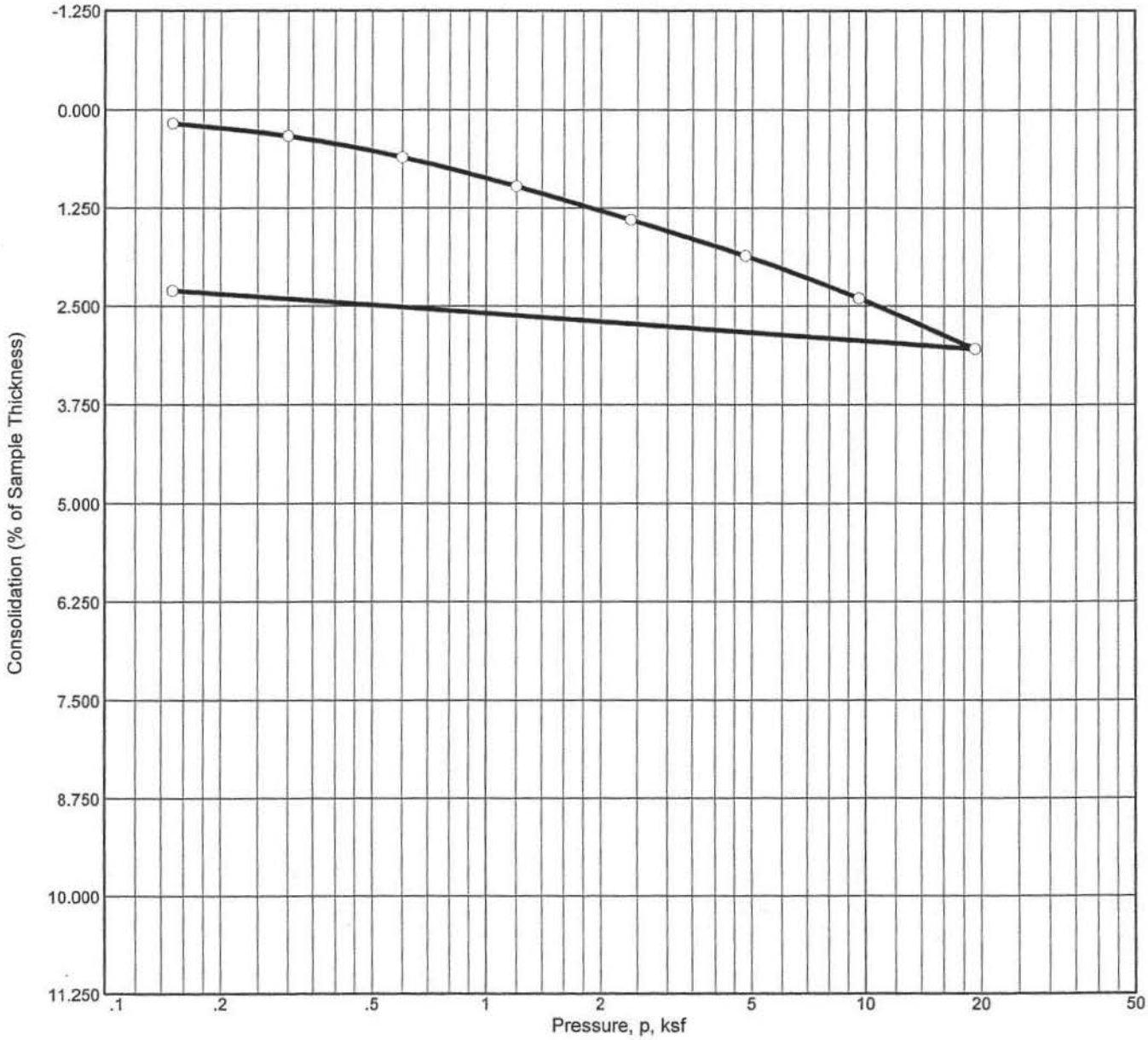
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	110.8	9.8	52.9	1.000	0.493	2.65	0.03	1.80	1.34	SM
FINAL	113.4	5.7	32.7	0.977	0.458					

Source: B-48E **Elev./Depth:** 15'
Material Description: Silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.19

CONSOLIDATION TEST REPORT

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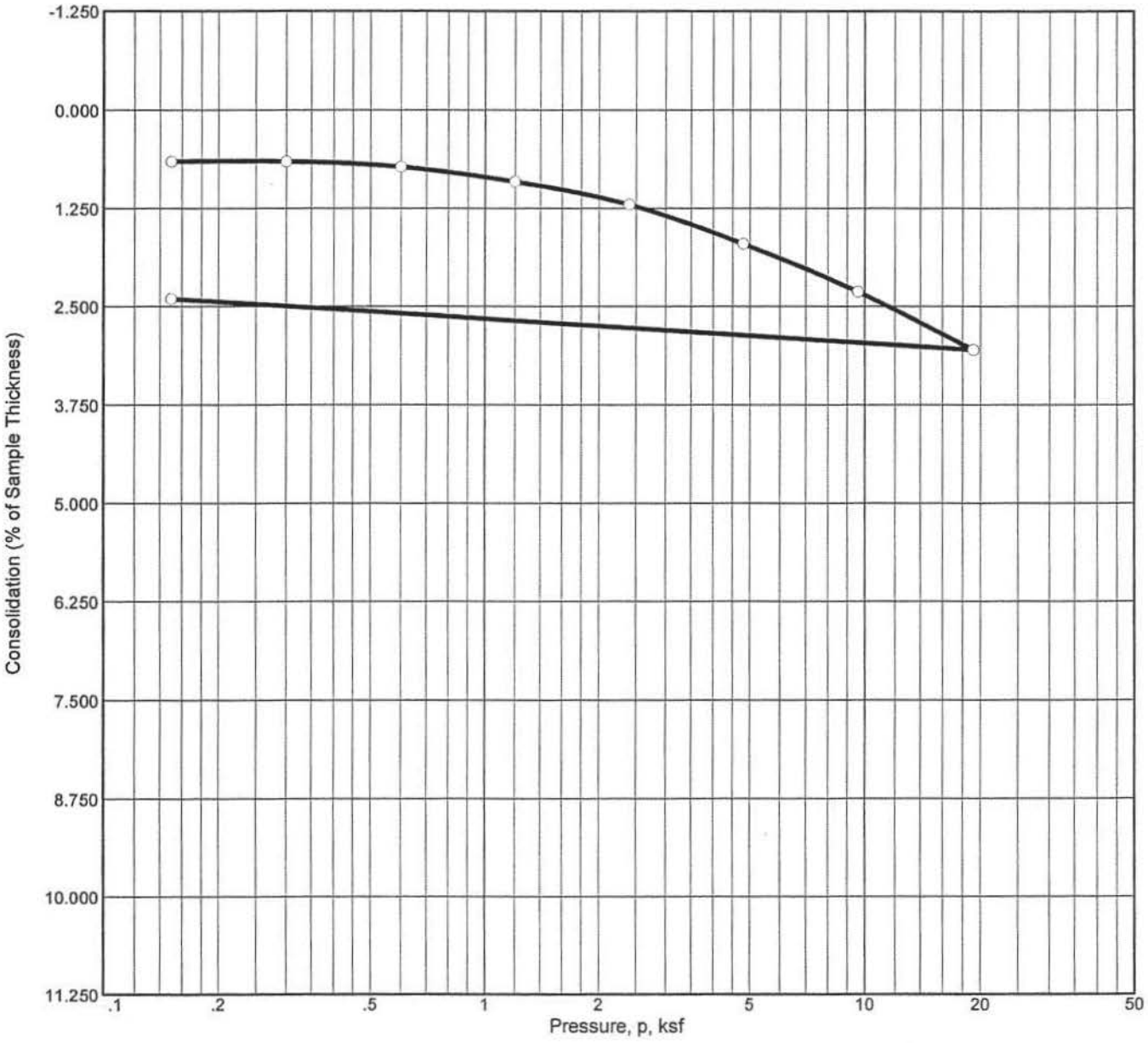

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	106.5	20.4	97.5	1.000	0.554	2.65	0.04	1.80	3.97	CL-ML
FINAL	109.1	20.5	100.0	0.976	0.517					

Source: B-50E **Elev./Depth:** 10'
Material Description: Sandy, silty CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.20

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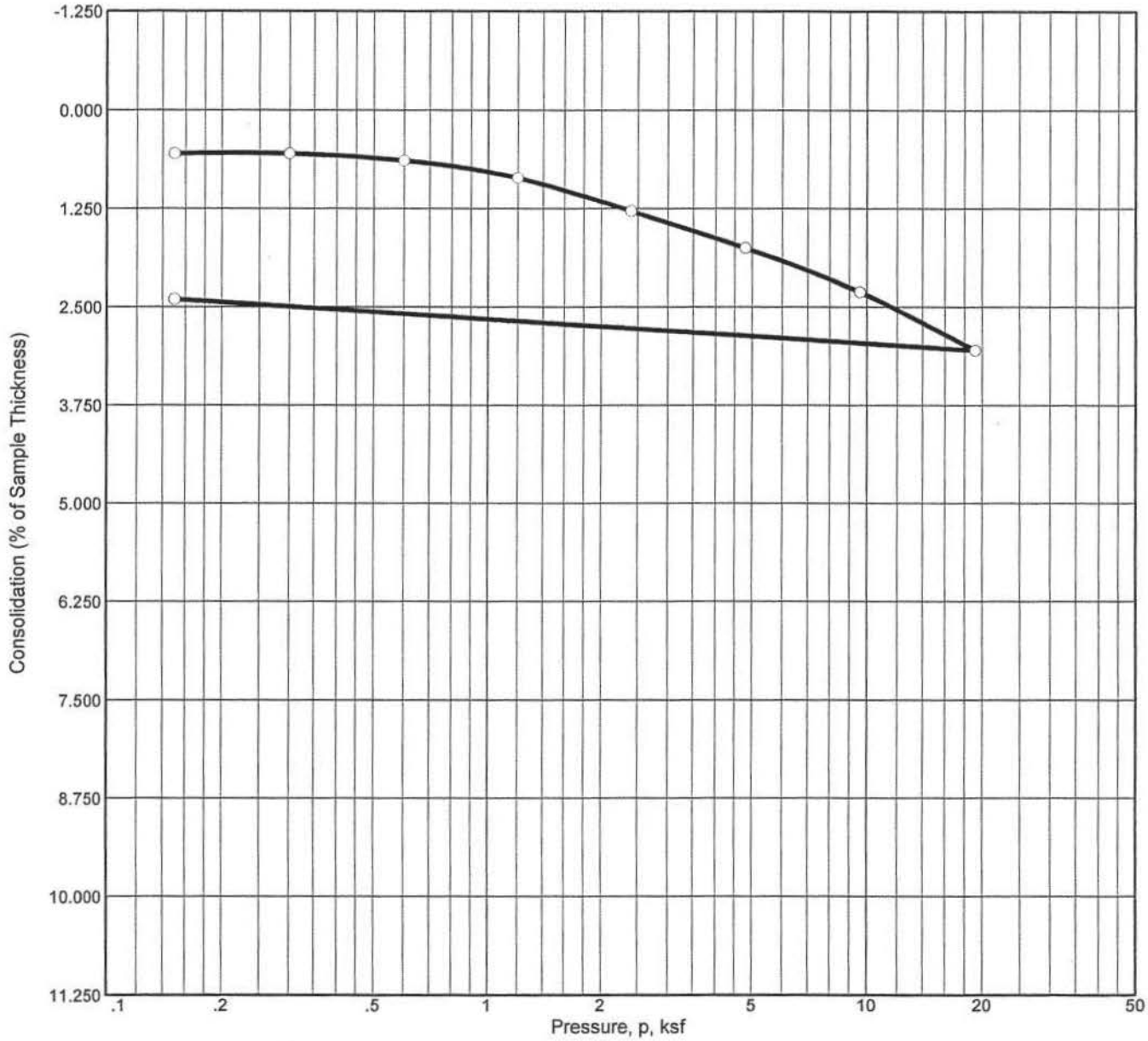

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	125.0	9.2	75.6	1.000	0.324	2.65	0.03	1.80	3.17	CL-ML
FINAL	128.1	4.5	40.5	0.976	0.292					

Source: B-50E **Elev./Depth:** 15'
Material Description: Sandy, silty CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East
Job No.: 00-1703CM-1 **Figure** B4.21

CONSOLIDATION TEST REPORT

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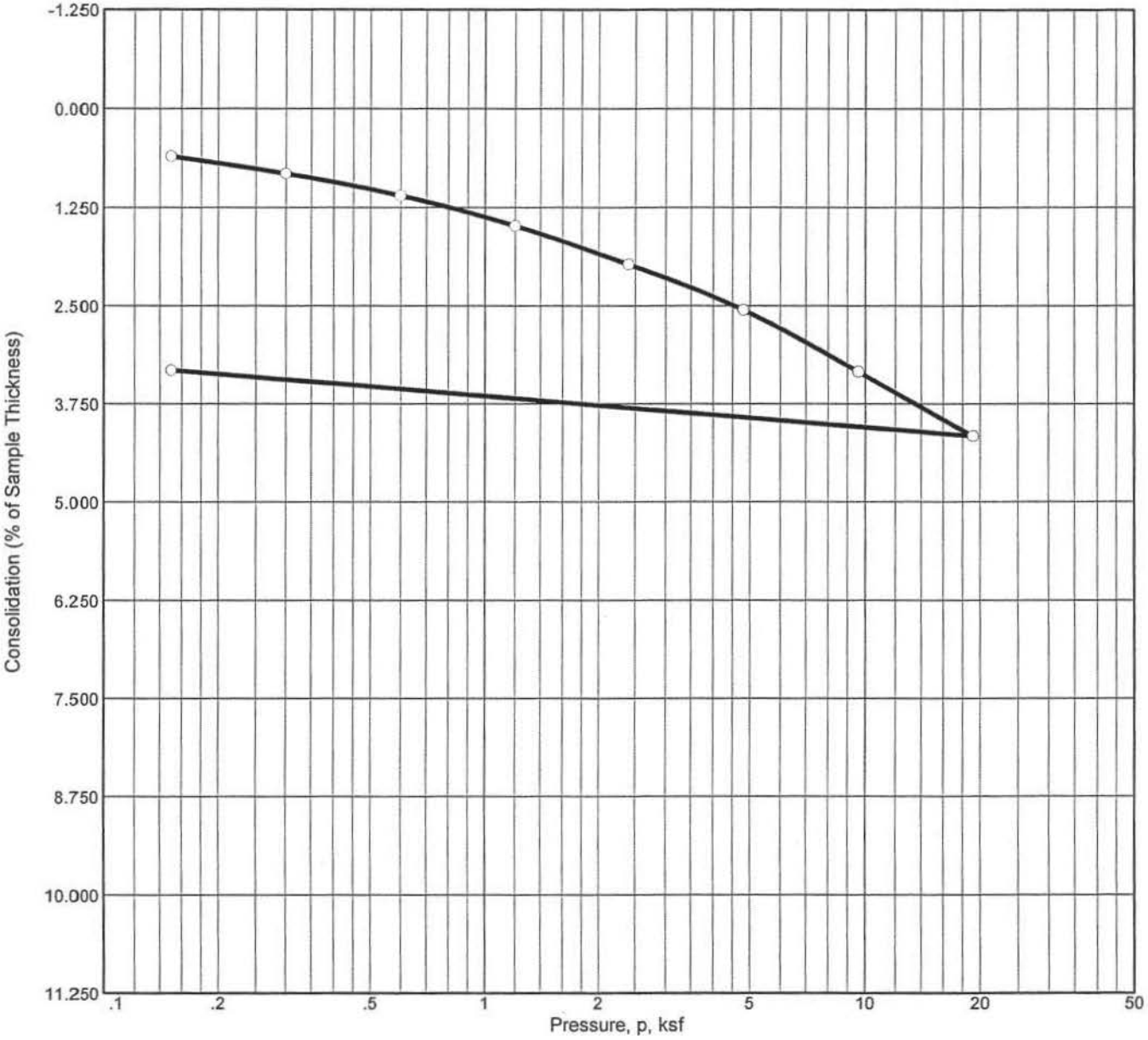

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	117.2	16.0	100.0	1.000	0.411	2.65	0.04	2.40	4.98	SC-SM
FINAL	121.3	10.0	72.9	0.967	0.364					

Source: B-50E **Elev./Depth:** 20'
Material Description: Clayey, silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.22

CONSOLIDATION TEST REPORT

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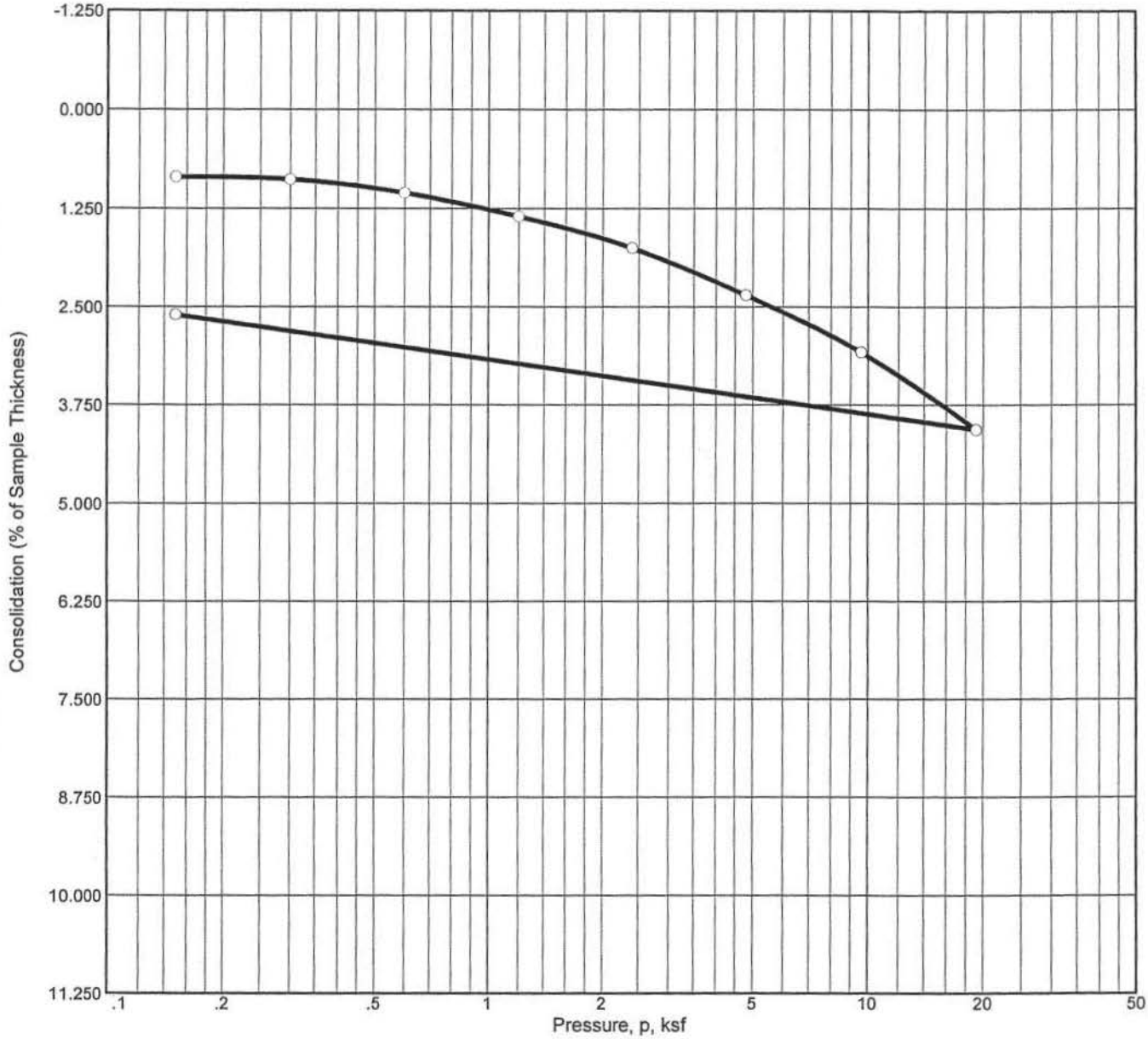

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	107.7	19.8	97.6	1.000	0.536	2.65	0.05	3.60	4.57	SC-SM
FINAL	110.6	21.4	100.0	0.974	0.496					

Source: B-56E **Elev./Depth:** 30'
Material Description: Silty, clayey SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.23

CONSOLIDATION TEST REPORT

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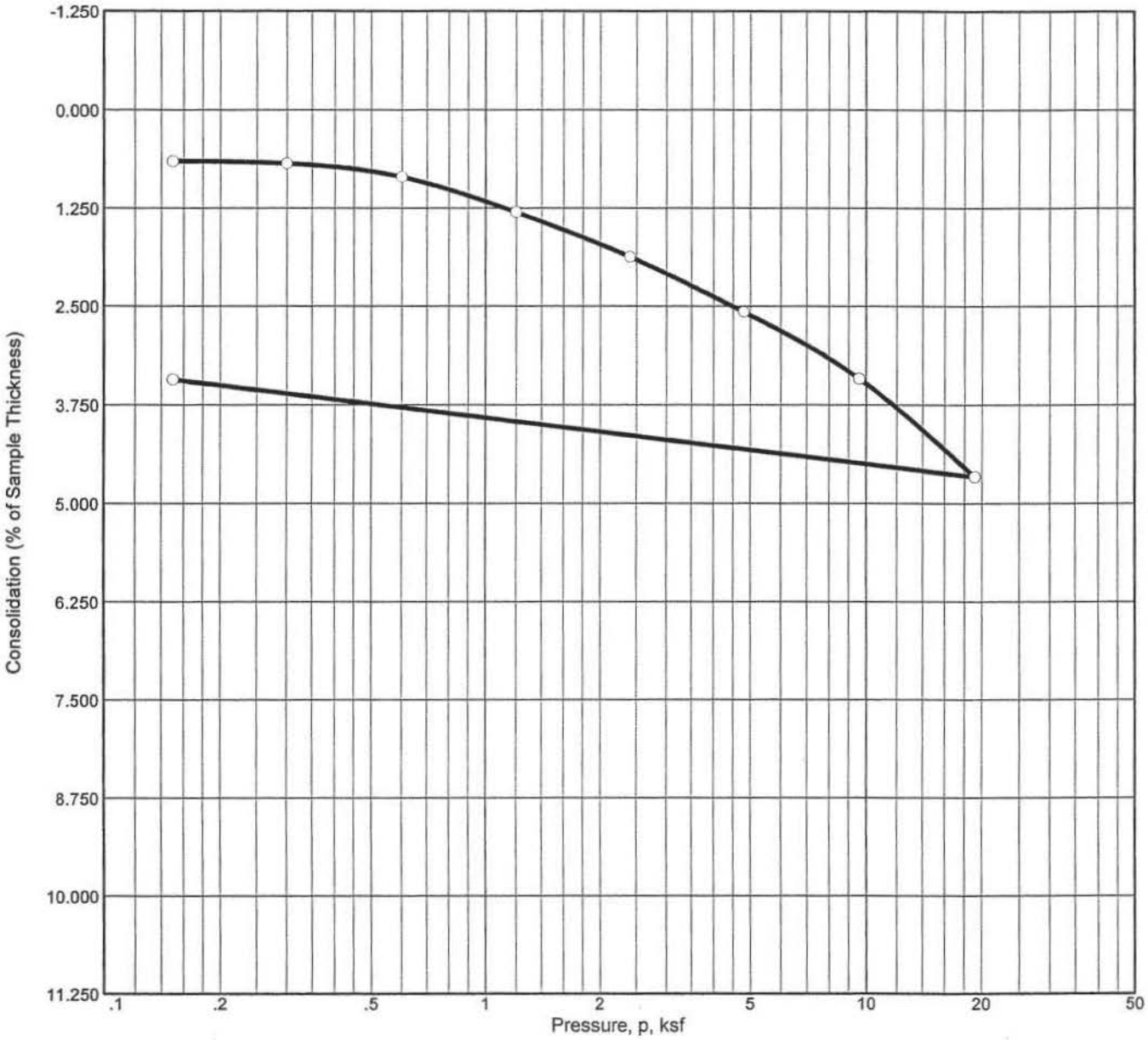

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	102.3	23.1	99.3	1.000	0.617	2.65	0.07	6.00	2.94	SM
FINAL	106.0	14.8	70.1	0.966	0.561					

Source: B-56E **Elev./Depth:** 50'
Material Description: Silty SAND with pebbles
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.24

CONSOLIDATION TEST REPORT

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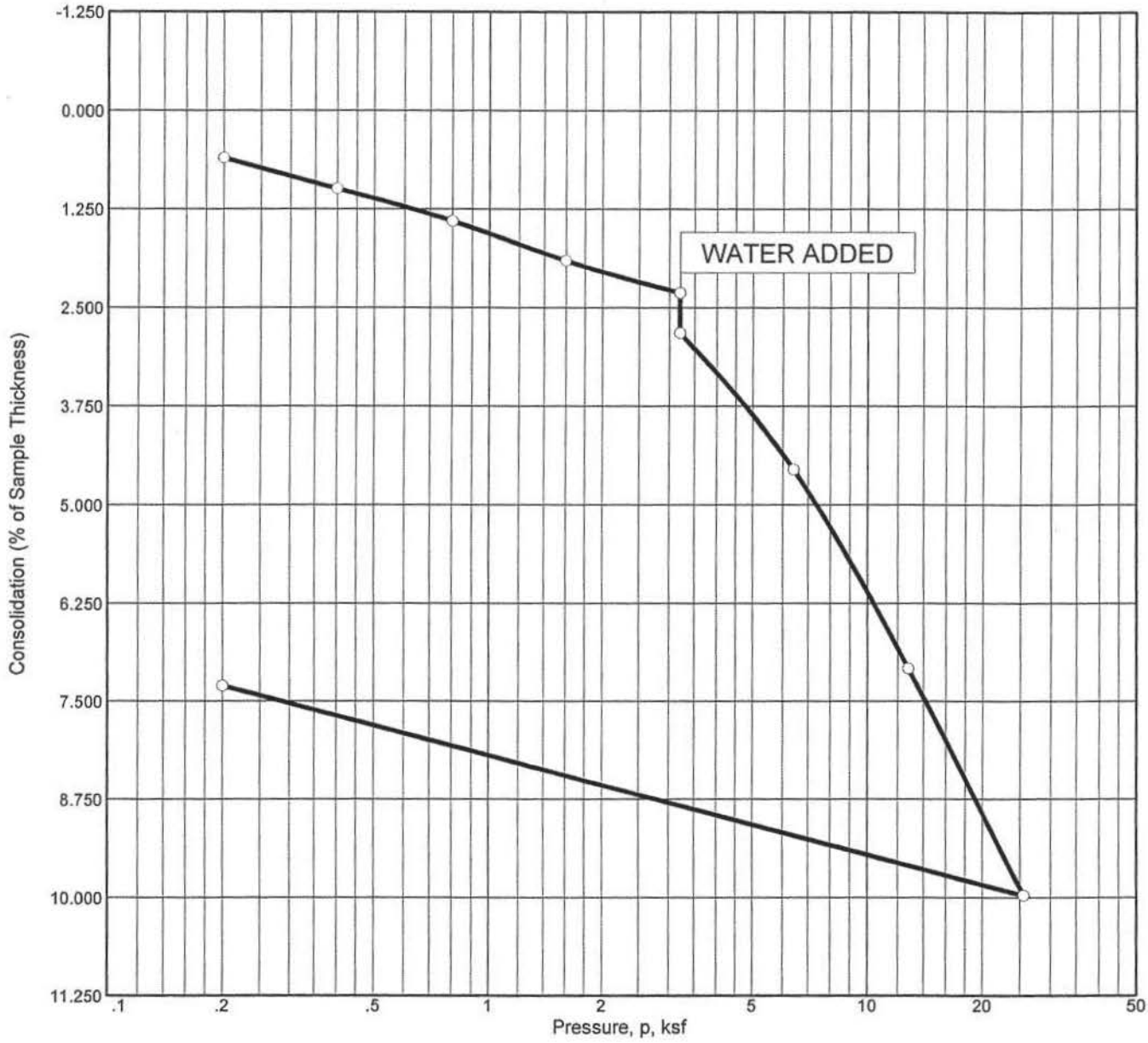

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	111.7	11.4	62.5	1.000	0.482	2.65	0.14	1.44	7.41	ML
FINAL	120.4	14.8	100.0	0.927	0.374					

Source: B-57E **Elev./Depth:** 12'
Material Description: Sandy SILT with pebbles
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Newhall Ranch, Mesas-East **Job No.:** 00-1703CM-1 **Figure** B4.25

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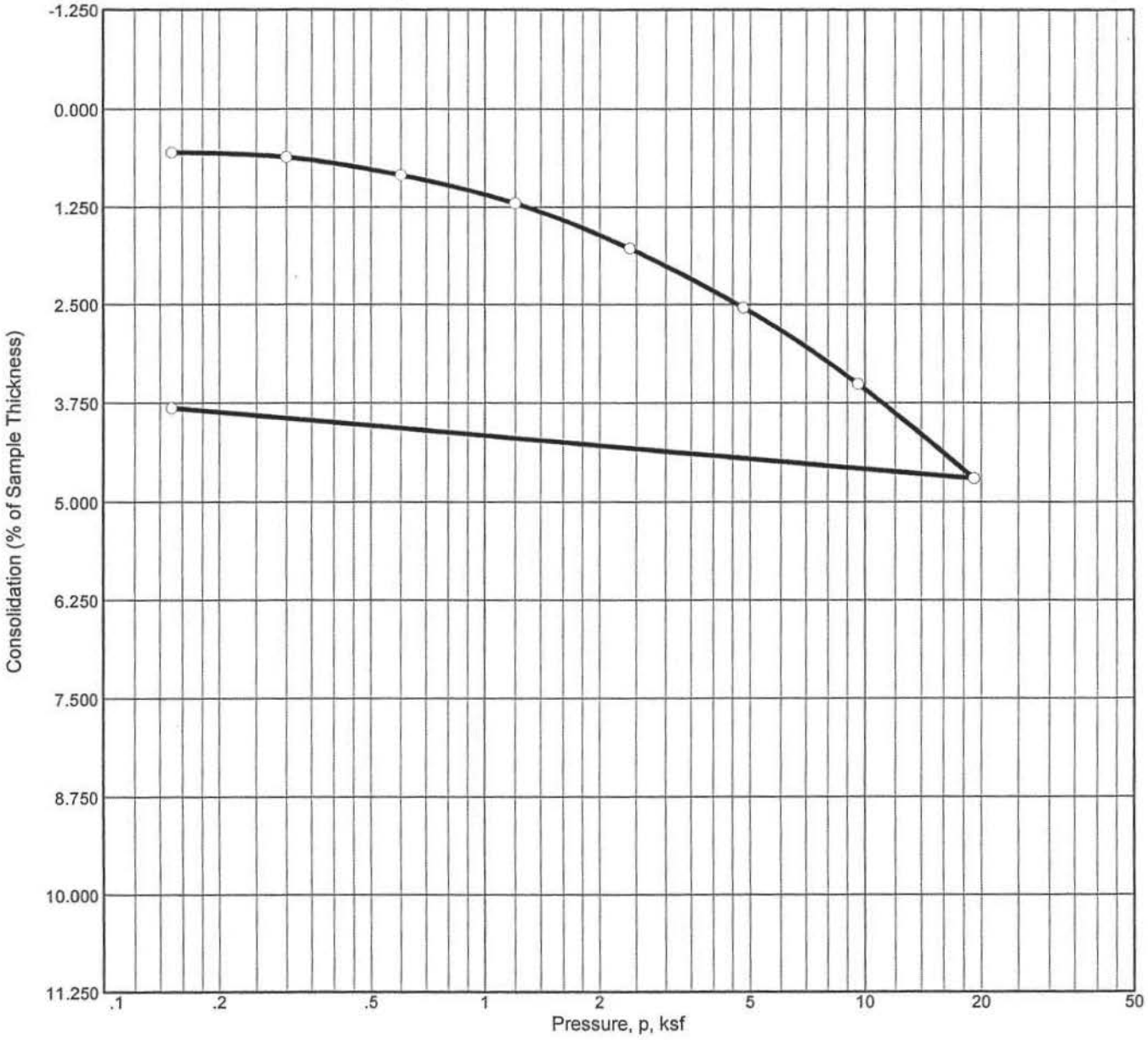

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	98.7	25.1	98.4	1.000	0.675	2.65	0.07	1.80	3.08	ML
FINAL	102.7	24.5	100.0	0.962	0.612					

Source: B-57E **Elev./Depth:** 15'
Material Description: SILT
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.26

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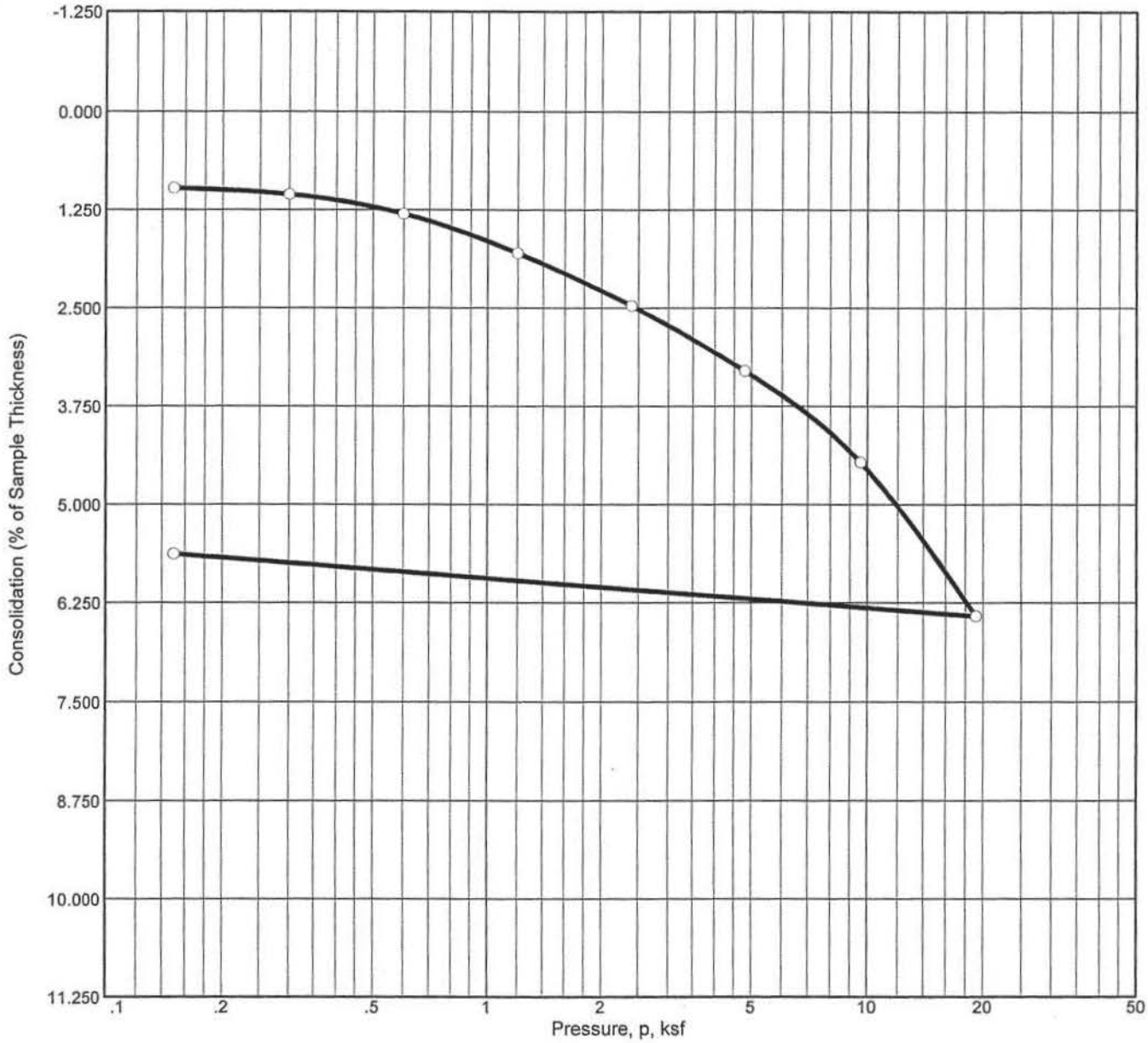

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	112.7	17.2	97.2	1.000	0.468	2.65	0.10	3.00	10.07	CL-ML
FINAL	119.4	23.5	100.0	0.944	0.386					

Source: B-57E **Elev./Depth:** 25'
Material Description: Sandy, silty CLAY
Remarks:

ALLAN E. SEWARD	**Client:** Newhall Ranch Co.
ENGINEERING GEOLOGY, INC.	**Project:** Newhall Ranch, Mesas-East
	Job No.: 00-1703CM-1 **Figure** B4.27

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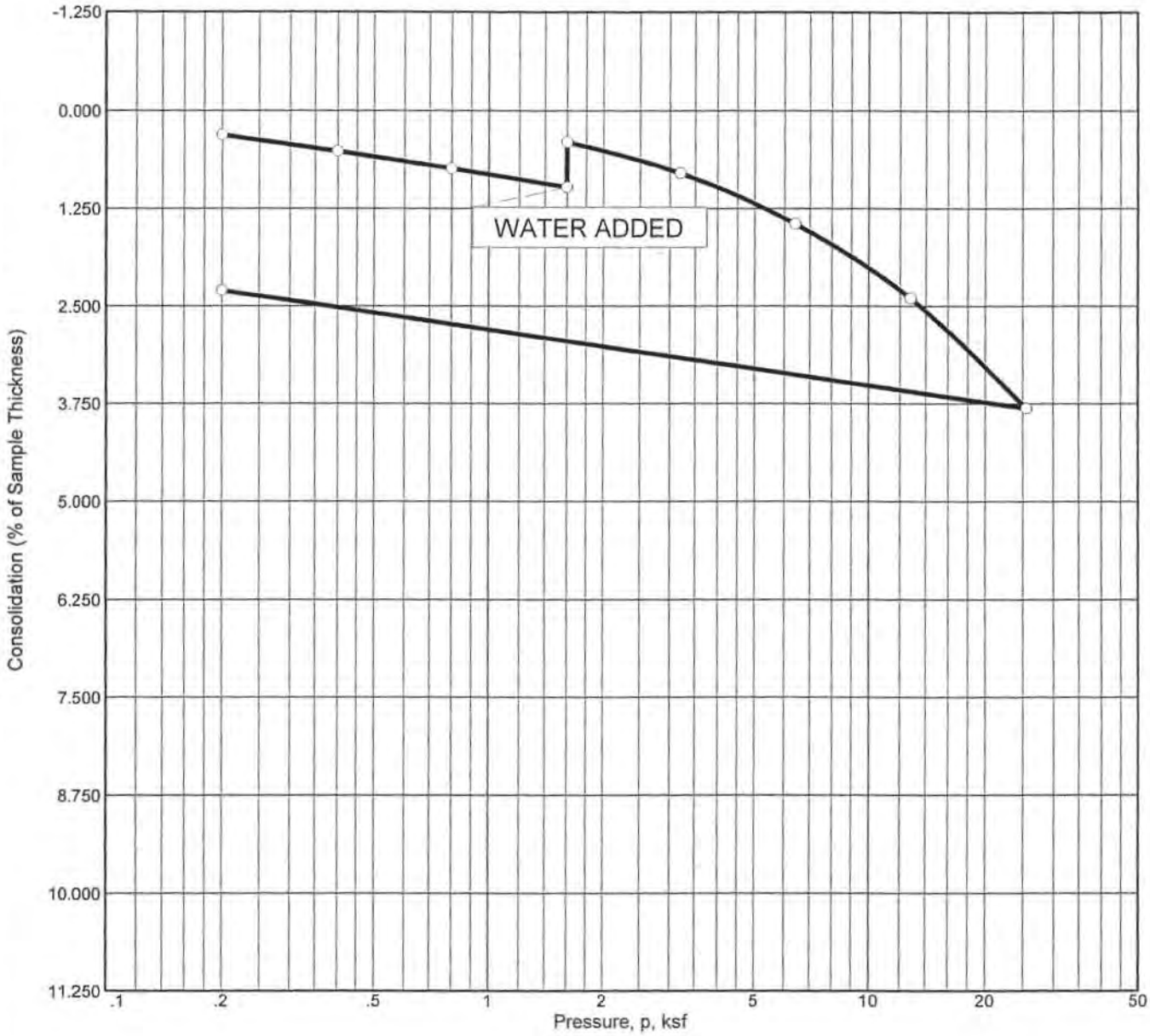

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	126.4	9.1	77.9	1.000	0.309	2.65	0.06	1.20	6.96	SC
FINAL	129.3	12.2	100.0	0.977	0.279					

Source: B-58E **Elev./Depth:** 10'
Material Description: Clayey SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.28

CONSOLIDATION TEST REPORT

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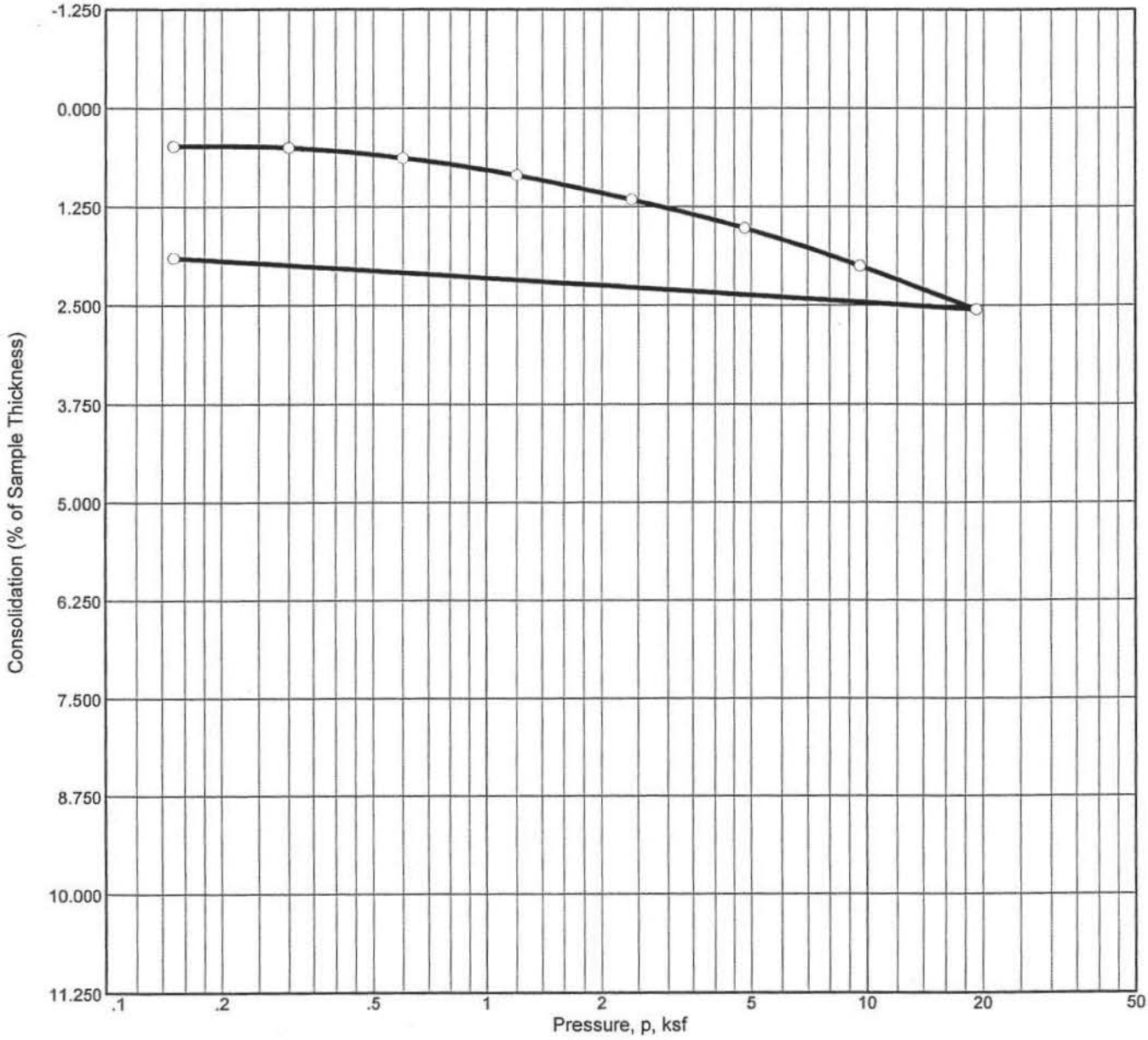

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	130.4	8.4	83.0	1.000	0.269	2.65	0.02	1.80	1.64	SM
FINAL	132.9	9.7	100.0	0.981	0.245					

Source: B-58E **Elev./Depth:** 15'
Material Description: Silty SAND with gravel
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.29

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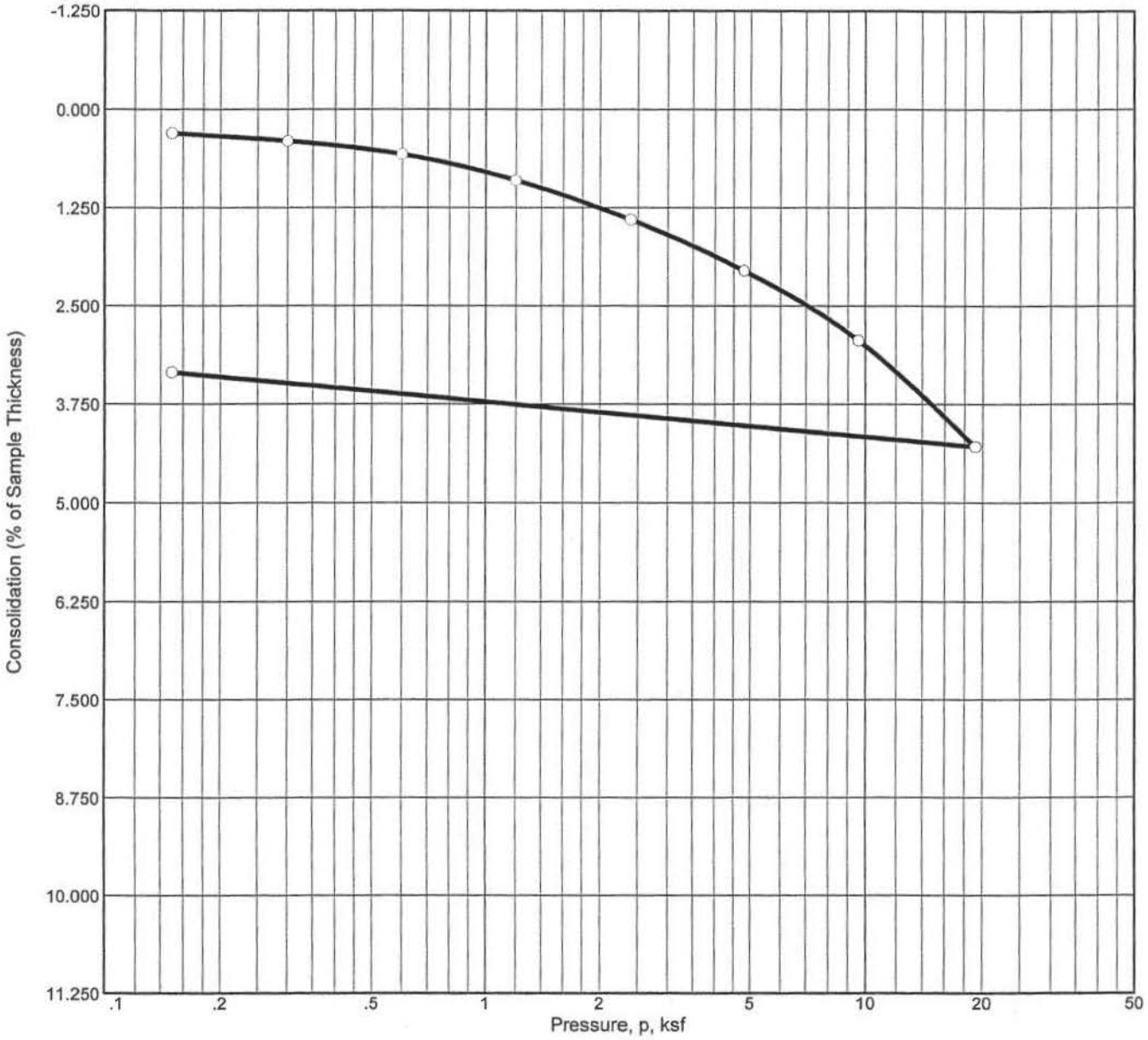

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	107.4	14.9	73.1	1.000	0.541	2.65	0.07	1.20	10.05	SM
FINAL	111.1	14.5	78.4	0.966	0.489					

Source: B-59E **Elev./Depth:** 10'
Material Description: Silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.30

CONSOLIDATION TEST REPORT

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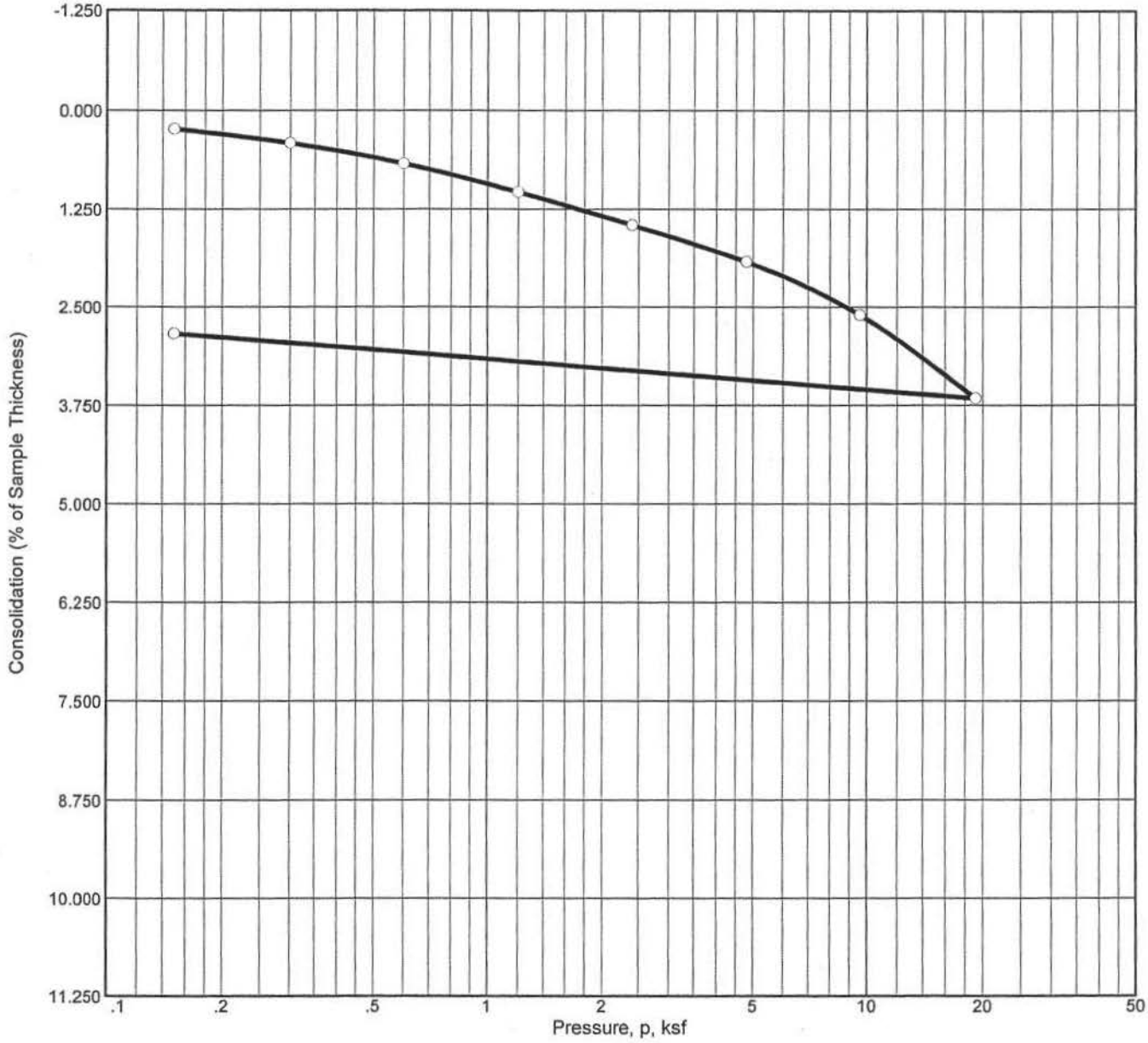

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	109.4	11.3	58.6	1.000	0.513	2.65	0.05	1.80	9.86	SM
FINAL	112.6	14.6	82.4	0.972	0.470					

Source: B-59E **Elev./Depth:** 15'
Material Description: Silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.31

CONSOLIDATION TEST REPORT

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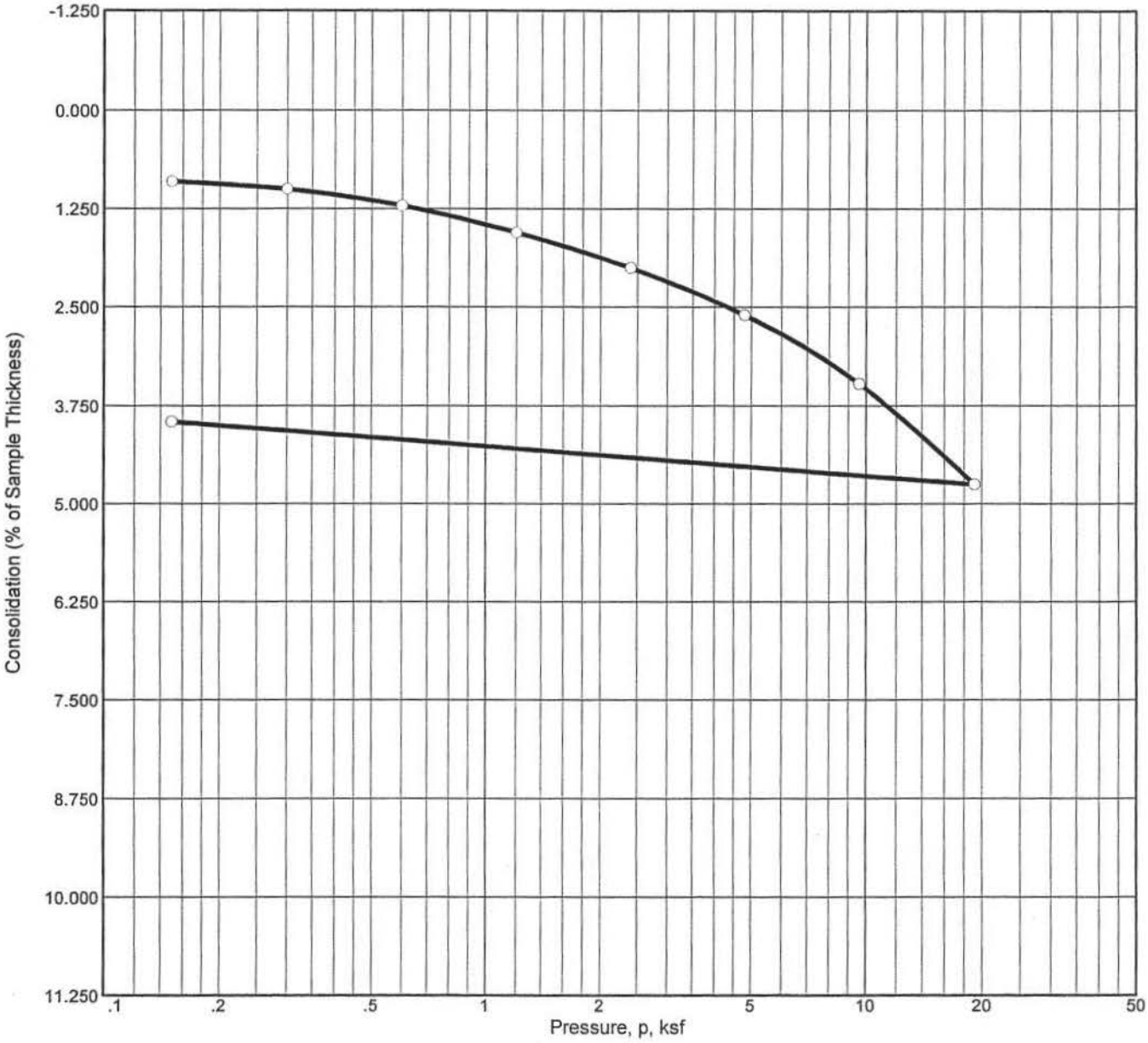

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	120.4	13.6	96.4	1.000	0.375	2.65	0.06	2.40	10.02	ML
FINAL	125.3	9.3	77.1	0.960	0.320					

Source: B-59E **Elev./Depth:** 20'
Material Description: Sandy SILT
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.32

CONSOLIDATION TEST REPORT

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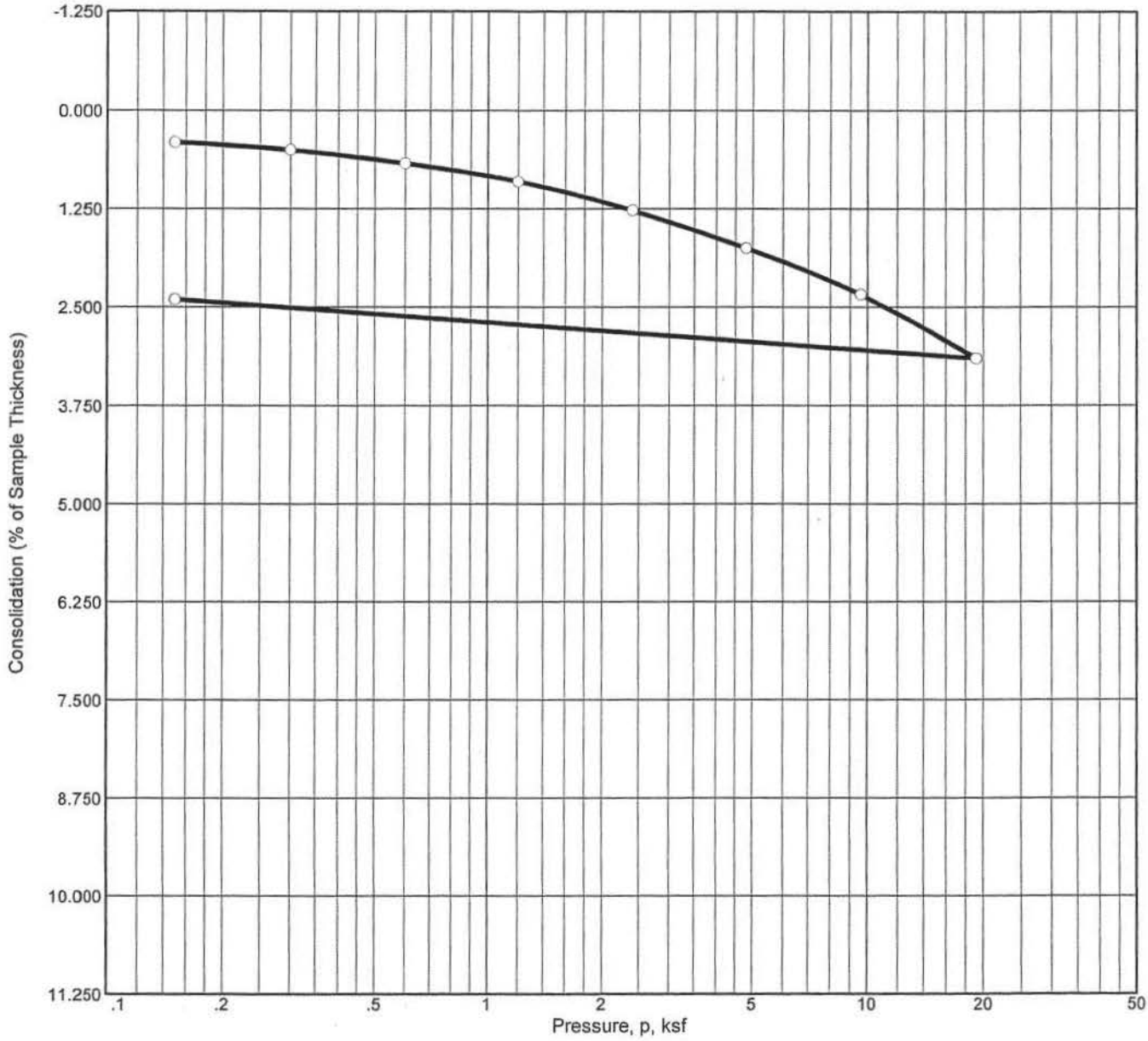

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	94.2	21.9	76.7	1.000	0.755	2.65	0.05	0.60	9.98	ML
FINAL	96.6	28.3	100.0	0.976	0.713					

Source: B-60E **Elev./Depth:** 5'
Material Description: SILT
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Newhall Ranch, Mesas-East **Job No.:** 00-1703CM-1 **Figure** B4.33

CONSOLIDATION TEST REPORT

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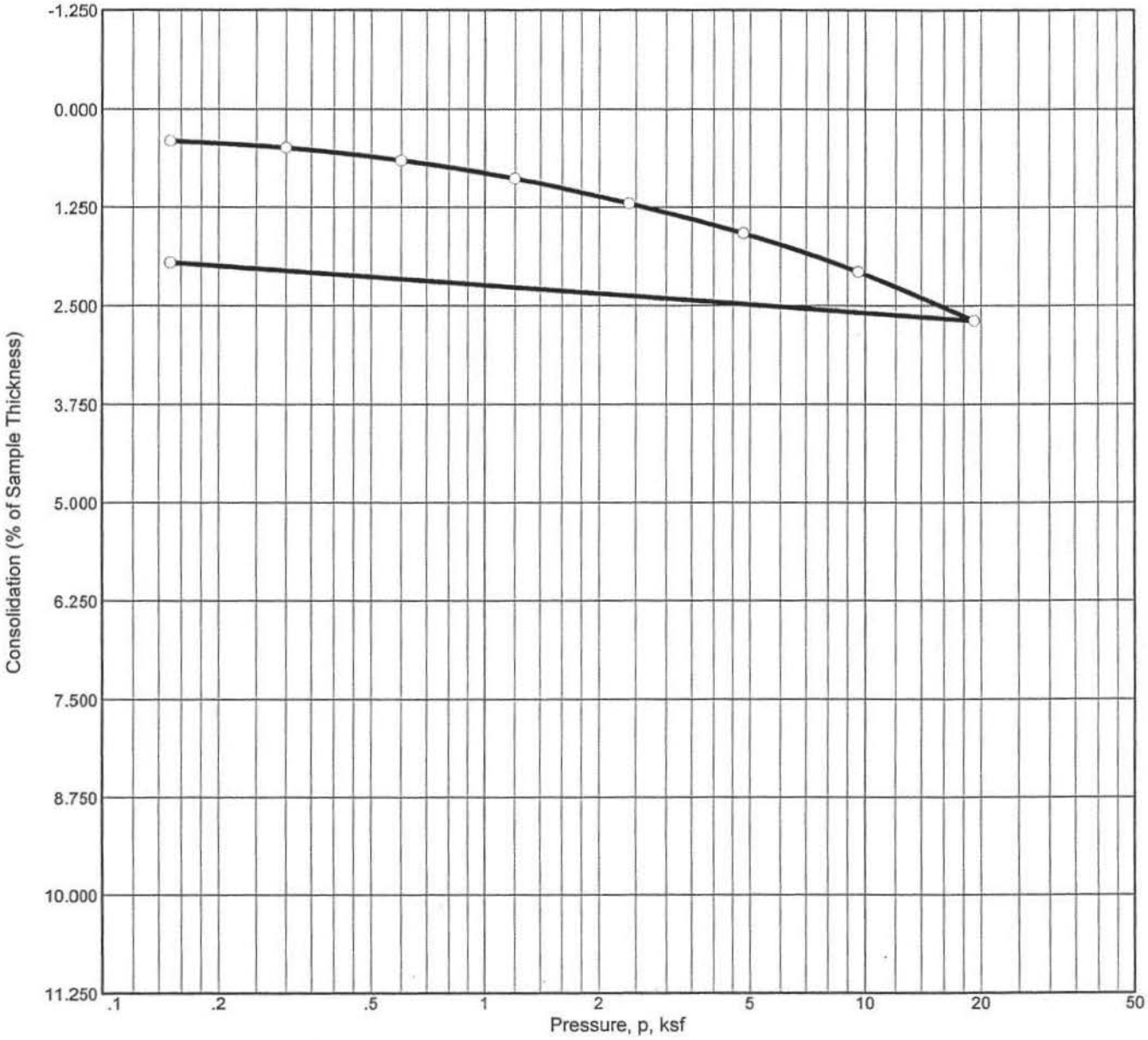

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	116.0	10.2	63.3	1.000	0.426	2.65	0.03	1.20	3.26	SM
FINAL	118.3	1.2	8.0	0.980	0.398					

Source: B-60E **Elev./Depth:** 10'
Material Description: Silty SAND with gravel
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.34

CONSOLIDATION TEST REPORT

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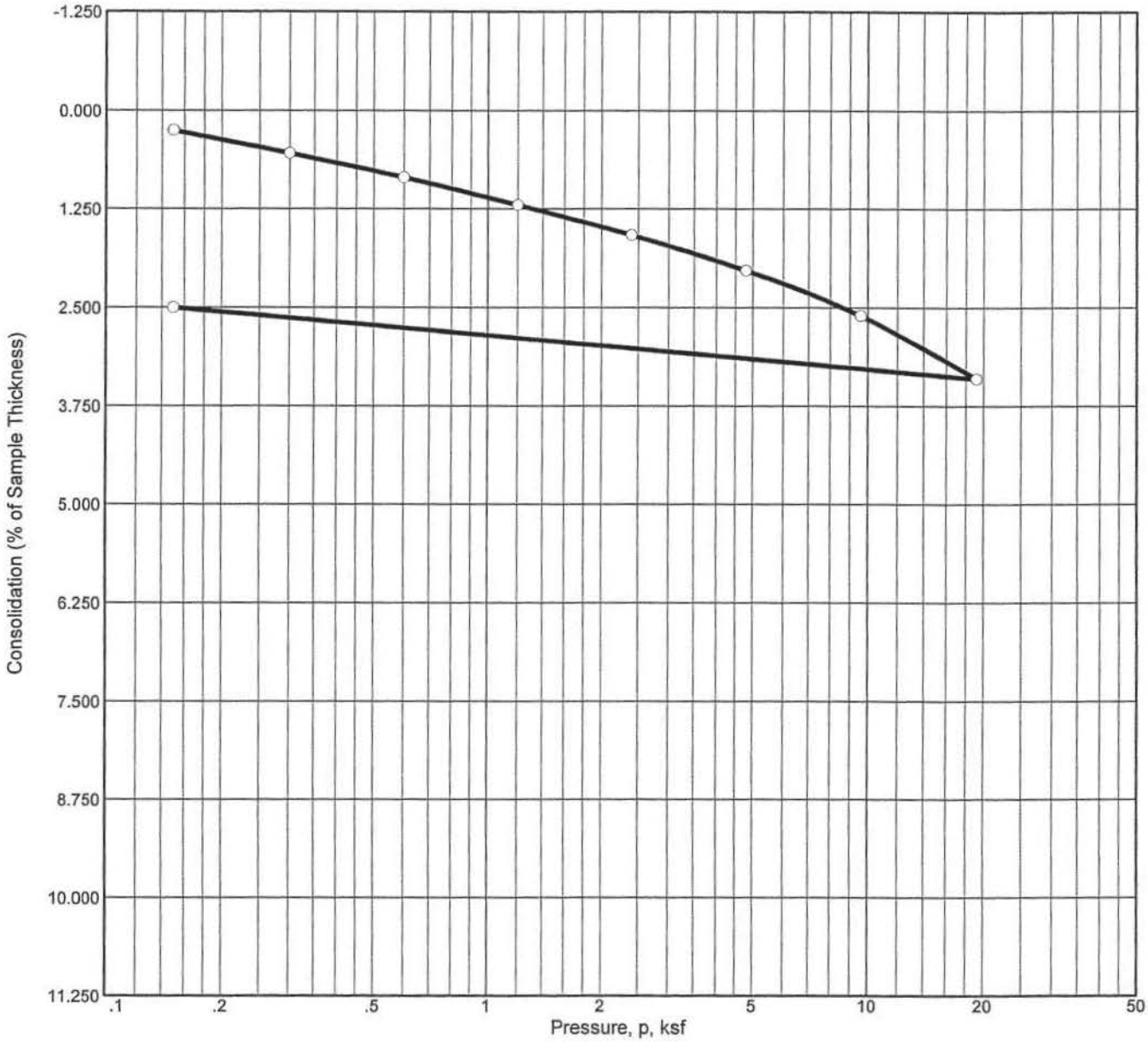
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	119.0	9.2	62.5	1.000	0.391	2.65	0.04	2.04	9.99	ML
FINAL	122.0	5.5	40.6	0.975	0.356					

Source: B-60E **Elev./Depth:** 17'
Material Description: Sandy SILT
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1 **Figure** B4.35

CONSOLIDATION TEST REPORT

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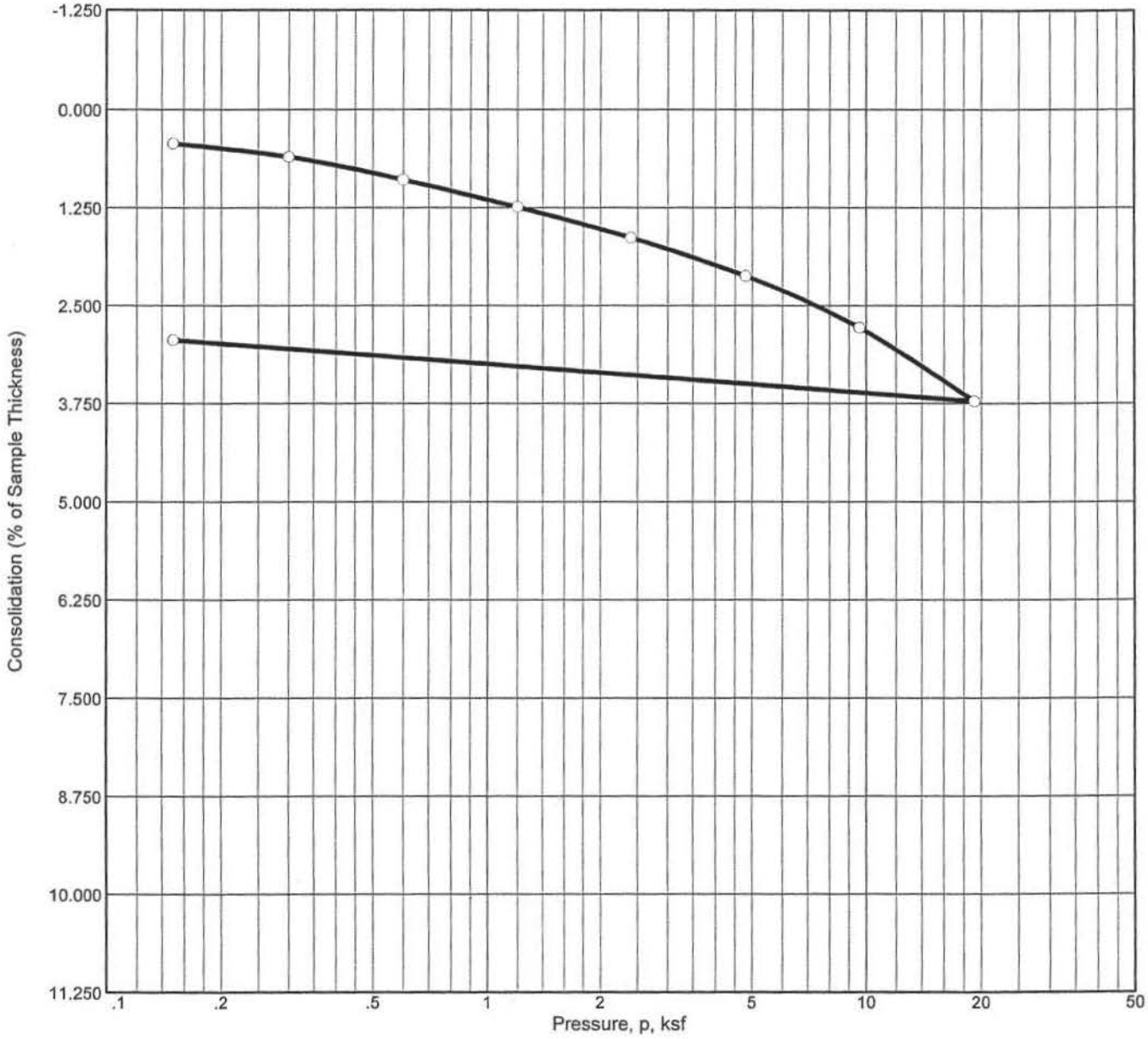

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	115.4	13.0	79.3	1.000	0.434	2.65	0.05	3.60	10.00	ML
FINAL	118.9	8.1	54.8	0.971	0.392					

Source: B-60E
Material Description: Sandy SILT
Remarks:

Elev./Depth: 30'

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch, Mesas-East

Job No.: 00-1703CM-1

Figure B4.36

CONSOLIDATION TEST REPORT

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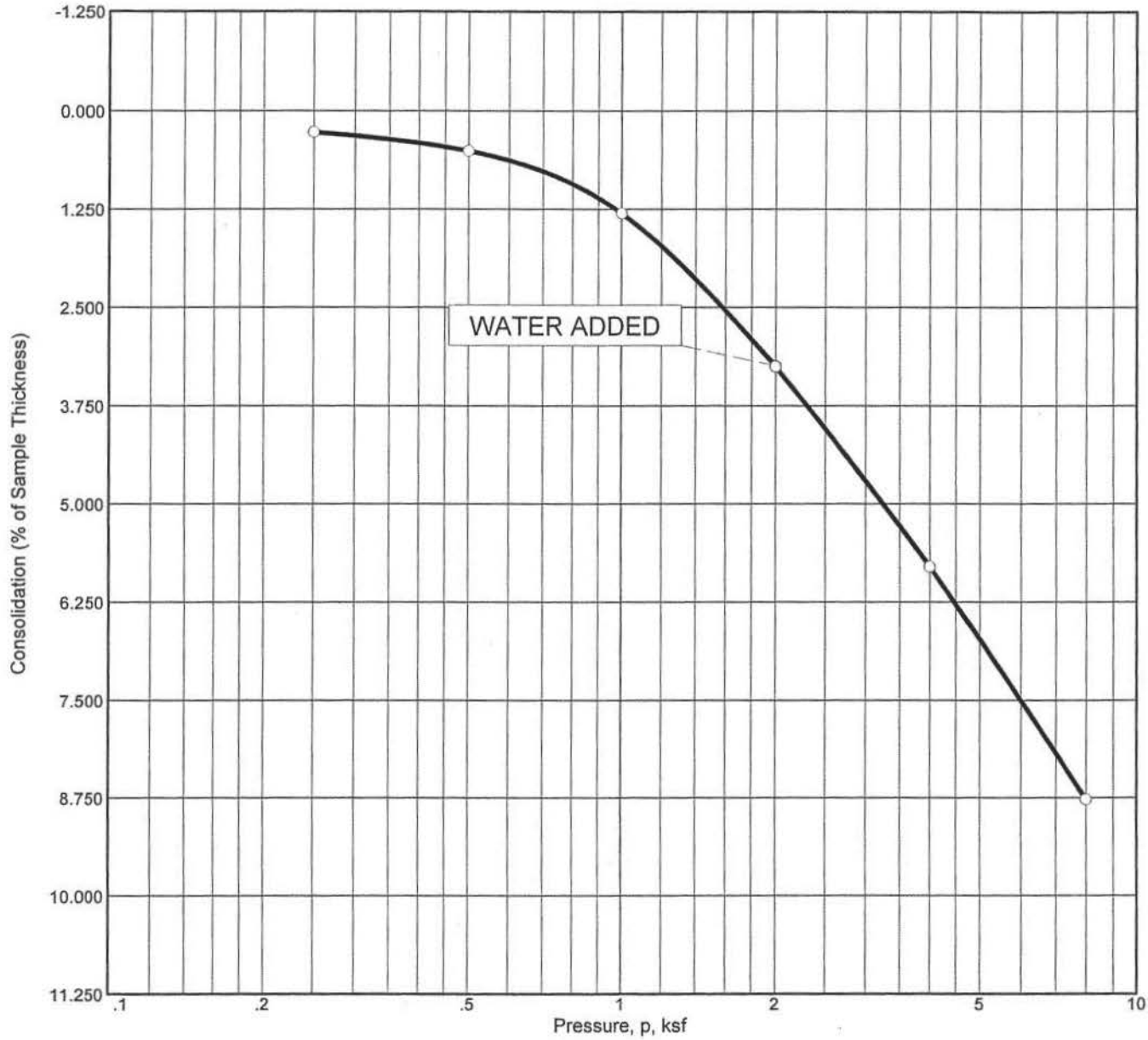

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	82.9	15.8	42.0	1.000	0.996	2.65	0.20	1.20	1.59	CL-ML
FINAL	90.9	31.0	100.0	0.912	0.821					

Source: HS-1T **Elev./Depth:** 10'
Material Description: Brown to dark brown silty CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East
Job No.: 04-1703E-1 **Figure** B4.37

CONSOLIDATION TEST REPORT

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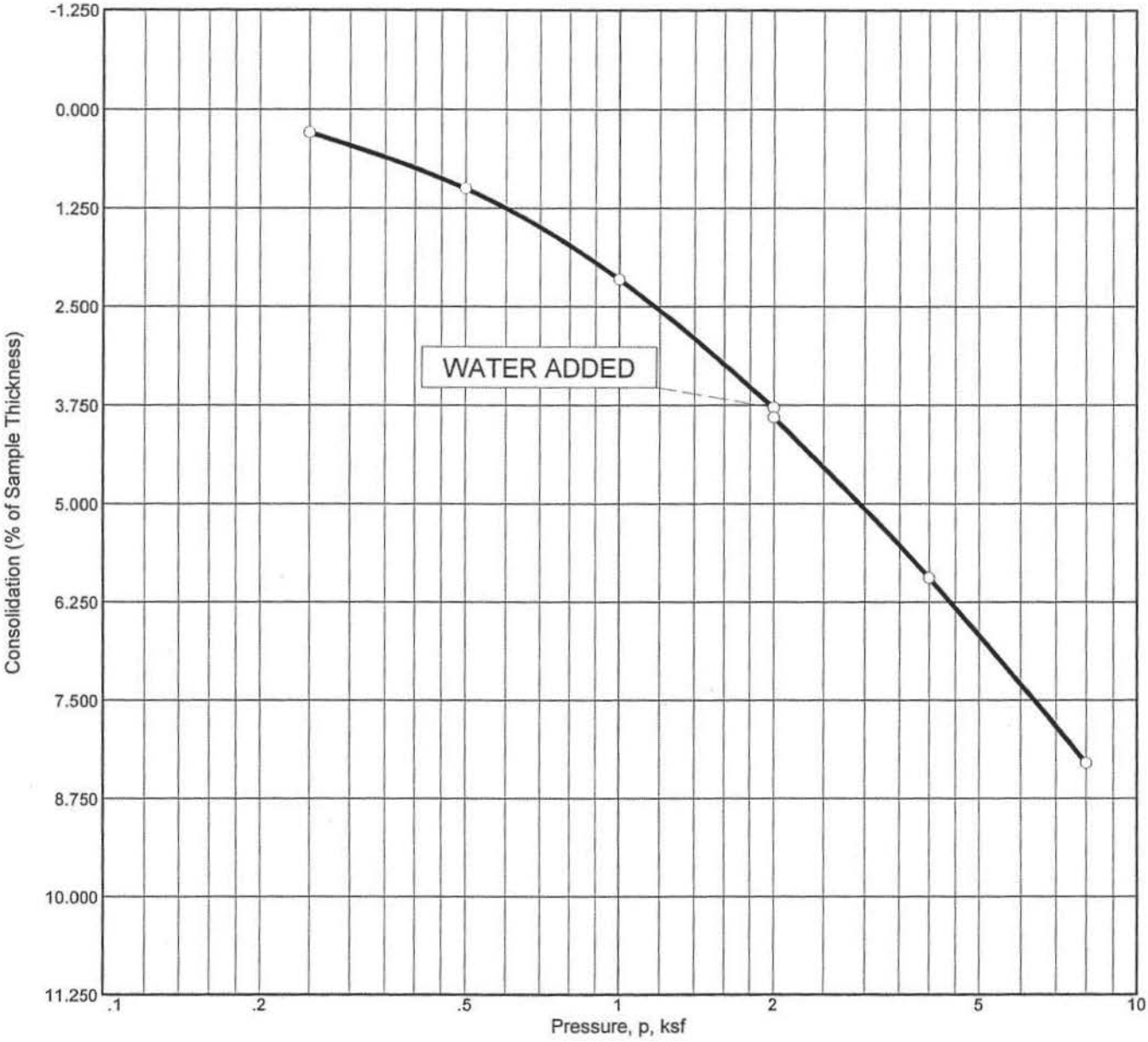

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	104.5	6.1	27.8	1.000	0.583	2.65	0.13	0.60	1.11	CL
FINAL	114.0	17.0	100.0	0.917	0.451					

Source: HS-3T **Elev./Depth:** 5'
Material Description: Brown to dark brown sandy lean CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1 **Figure** B4.38

CONSOLIDATION TEST REPORT

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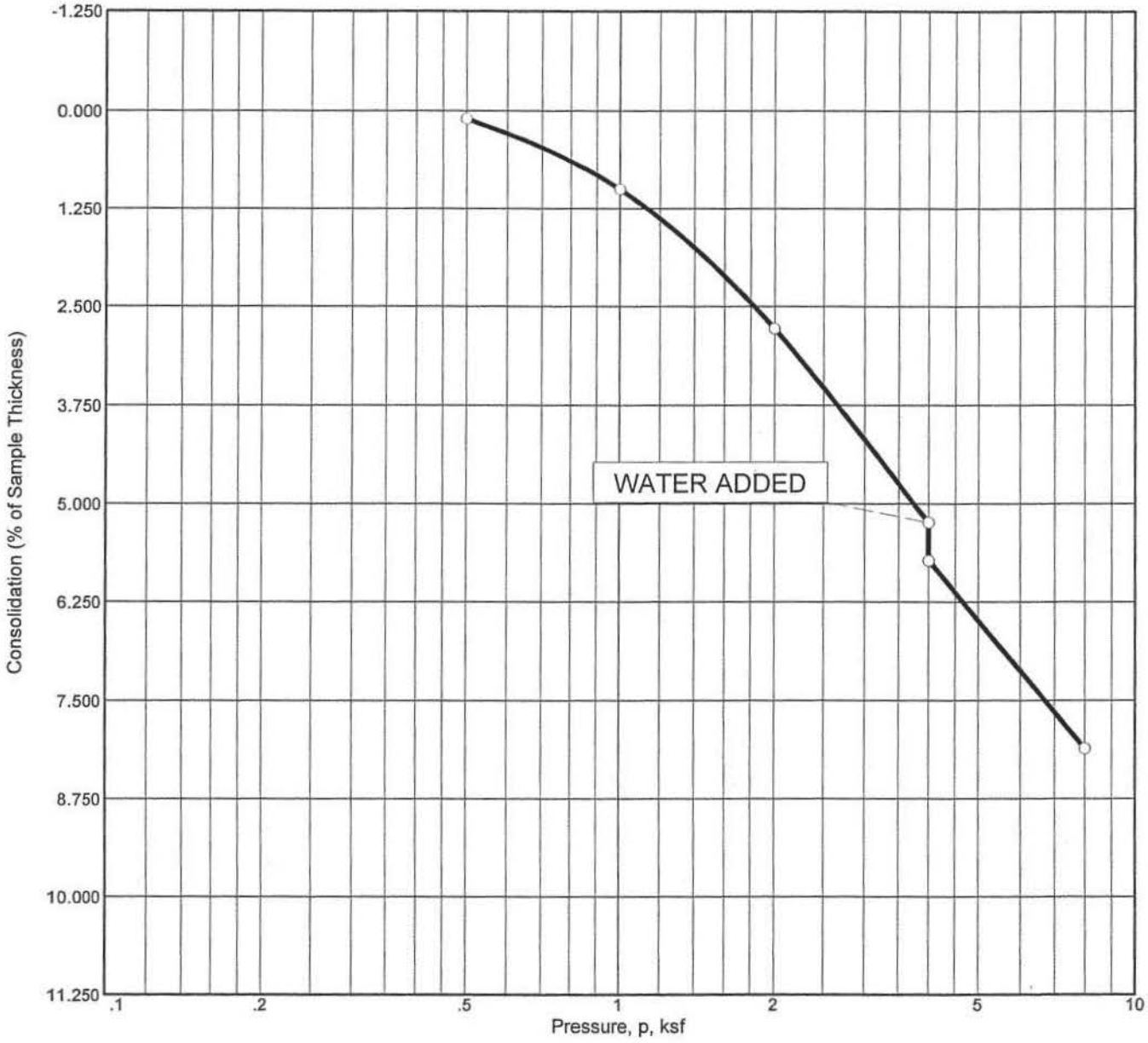

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	84.1	15.1	41.5	1.000	0.967	2.65	0.16	3.60	1.02	CL
FINAL	91.5	30.5	100.0	0.919	0.807					

Source: HS-3T **Elev./Depth:** 30'
Material Description: Mottled brown silty CLAY with sand
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Mesas East **Job No.:** 04-1703E-1 **Figure** B4.39

CONSOLIDATION TEST REPORT

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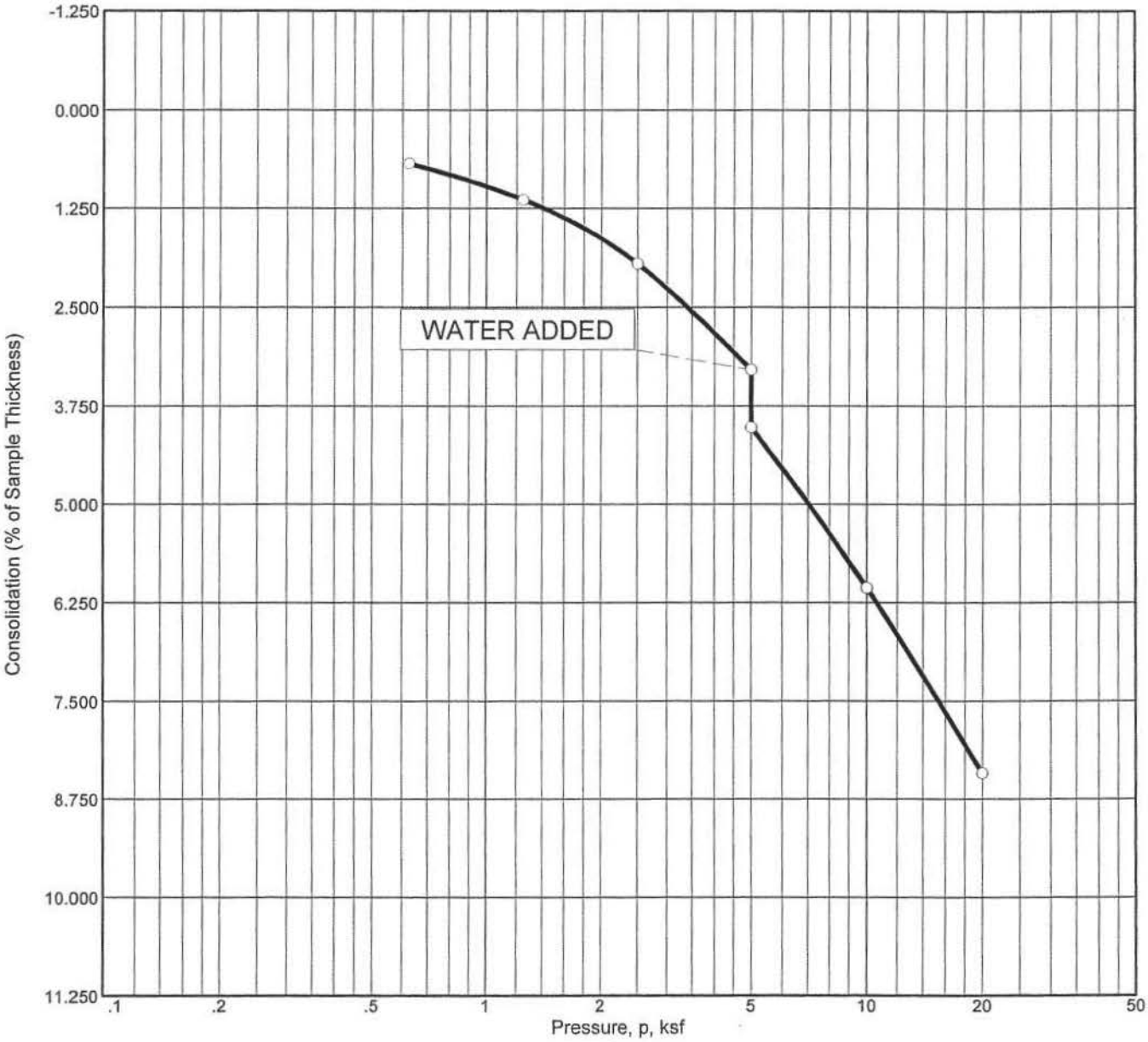

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	76.9	13.7	31.6	1.000	1.152	2.65	0.17	4.20	3.25	CL
FINAL	83.9	36.6	100.0	0.916	0.971					

Source: HS-3T **Elev./Depth:** 35
Material Description: Mottled brown silty CLAY
Remarks:

ALLAN E. SEWARD

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Client: Newhall Ranch Co.
Project: Mesas East
Job No.: 04-1703E-1 **Figure** B4.40

CONSOLIDATION TEST REPORT

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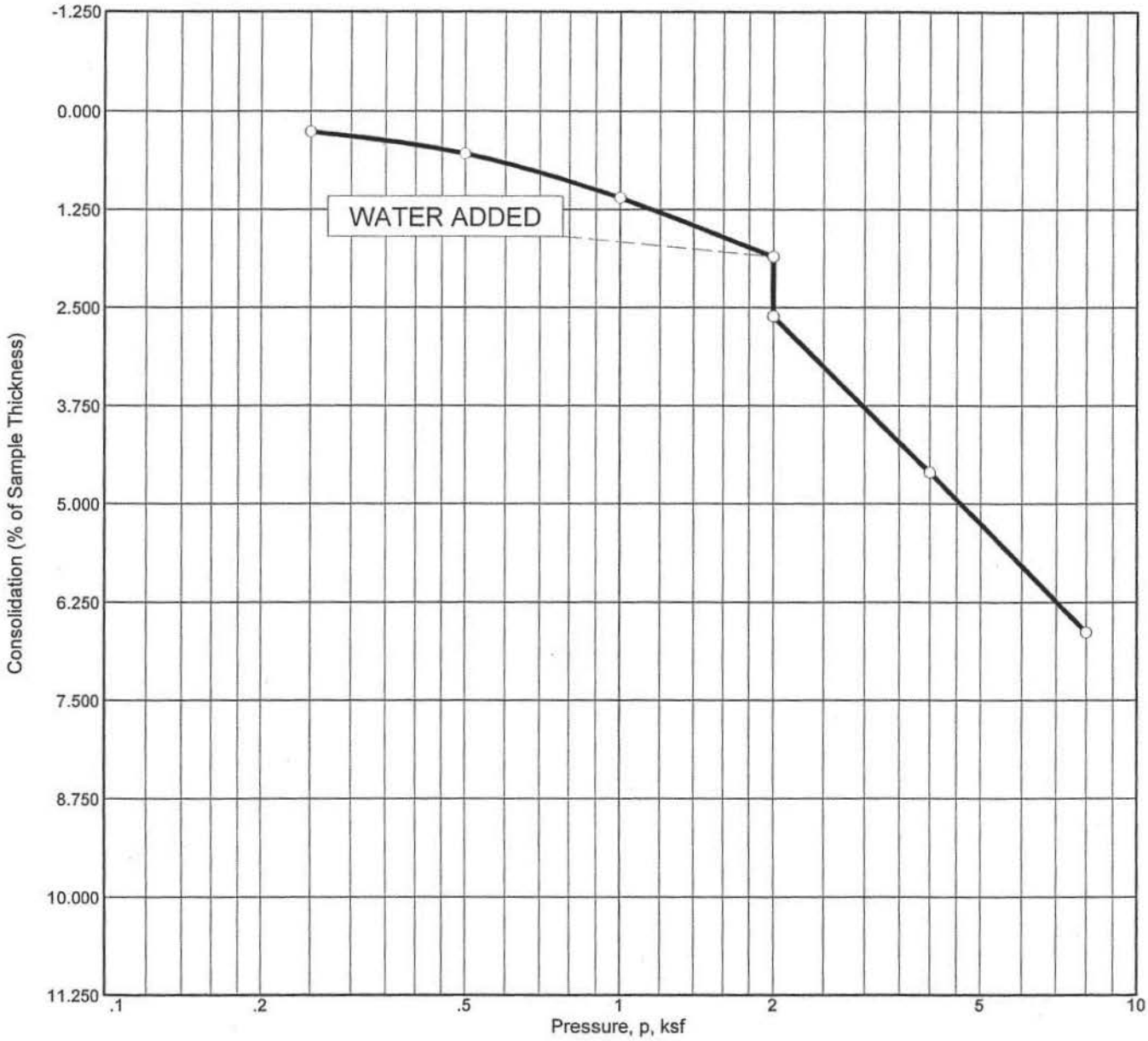

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	103.7	3.8	16.9	1.000	0.595	2.65	0.11	0.24	1.08	SM
FINAL	111.1	18.5	100.0	0.934	0.489					

Source: HS-12T **Elev./Depth:** 2'
Material Description: Silty SAND with gravel
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Mesas East **Job No.:** 04-1703E-1 **Figure** B4.41

CONSOLIDATION TEST REPORT

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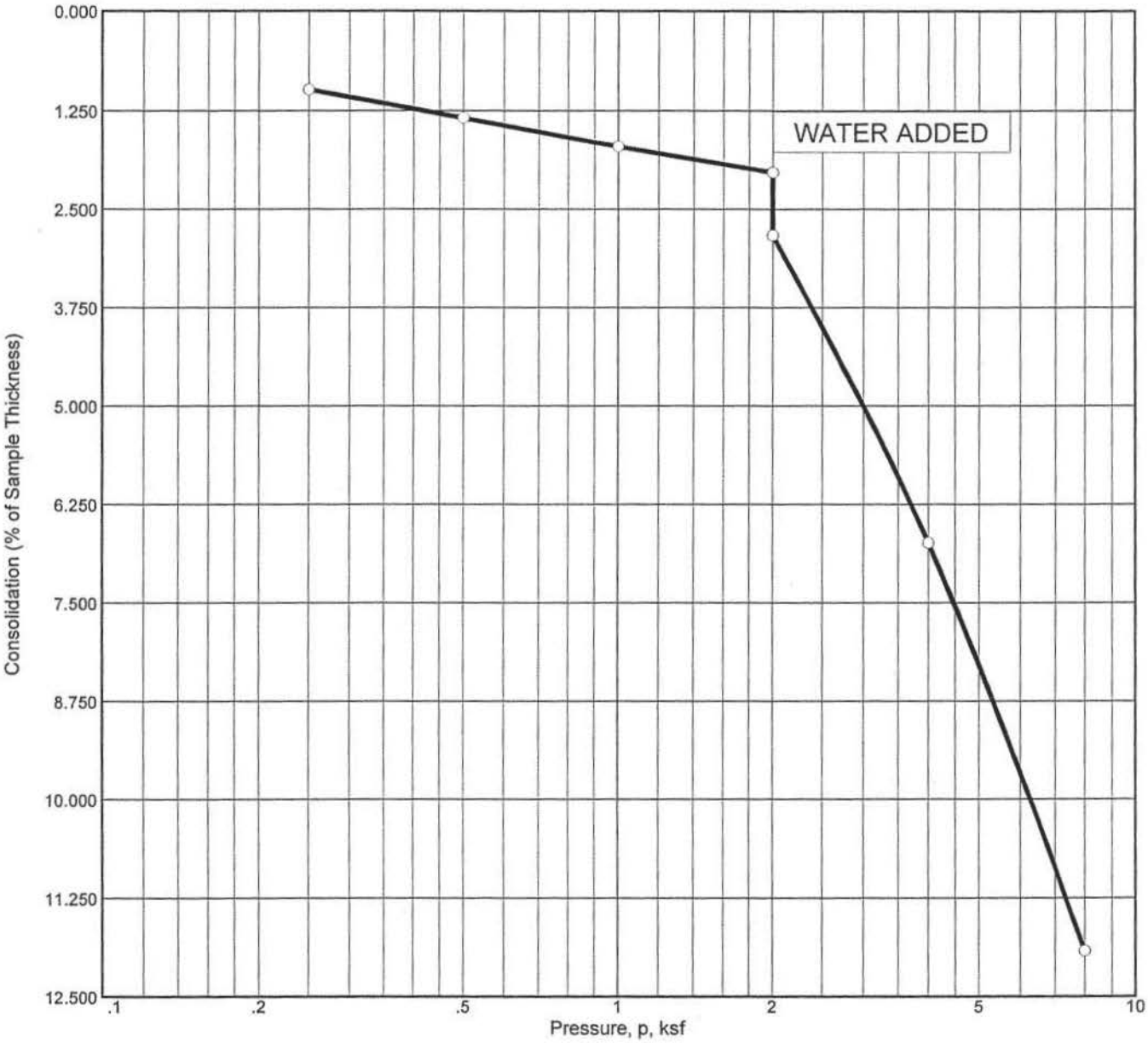

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	87.5	9.2	27.2	1.000	0.891	2.65	0.33	1.00	4.15	CL
FINAL	99.3	25.1	100.0	0.881	0.666					

Source: HS-16T **Elev./Depth:** 10'
Material Description: Light brown lean CLAY with sand
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1 **Figure** B4.42

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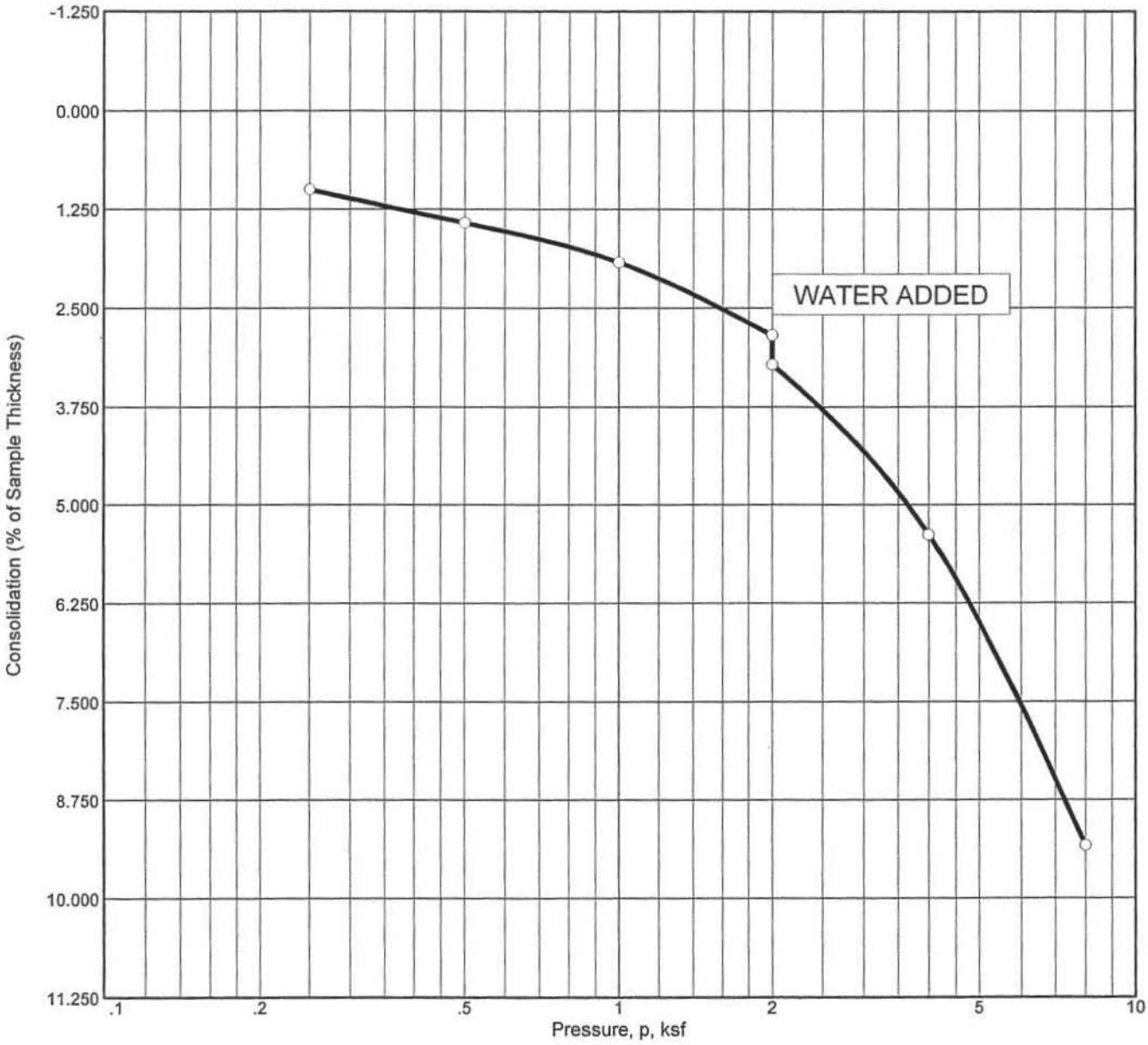

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	85.1	12.8	35.9	1.000	0.945	2.65	0.26	1.80	3.97	CL
FINAL	93.8	28.8	100.0	0.907	0.763					

Source: HS-16T **Elev./Depth:** 15'
Material Description: Lean CLAY with sand
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Mesas East **Job No.:** 04-1703E-1 **Figure** B4.43

CONSOLIDATION TEST REPORT

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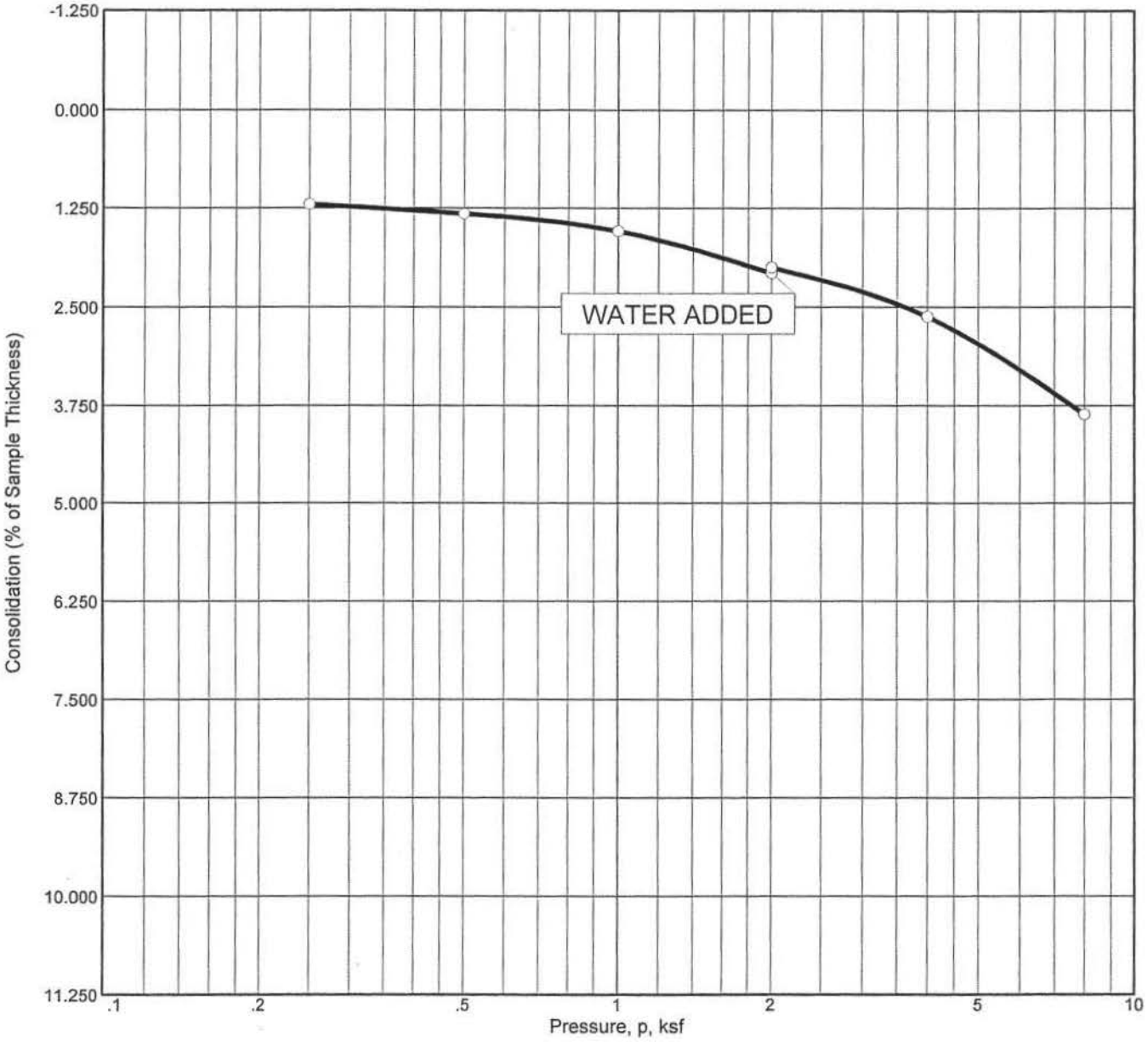

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	87.0	14.8	43.3	1.000	0.903	2.65	0.08	0.24	4.15	CL-ML
FINAL	90.4	31.3	100.0	0.961	0.829					

Source: HS-17T **Elev./Depth:** 2'
Material Description: Light brown silty CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East
Job No.: 04-1703E-1 **Figure** B4.44

CONSOLIDATION TEST REPORT

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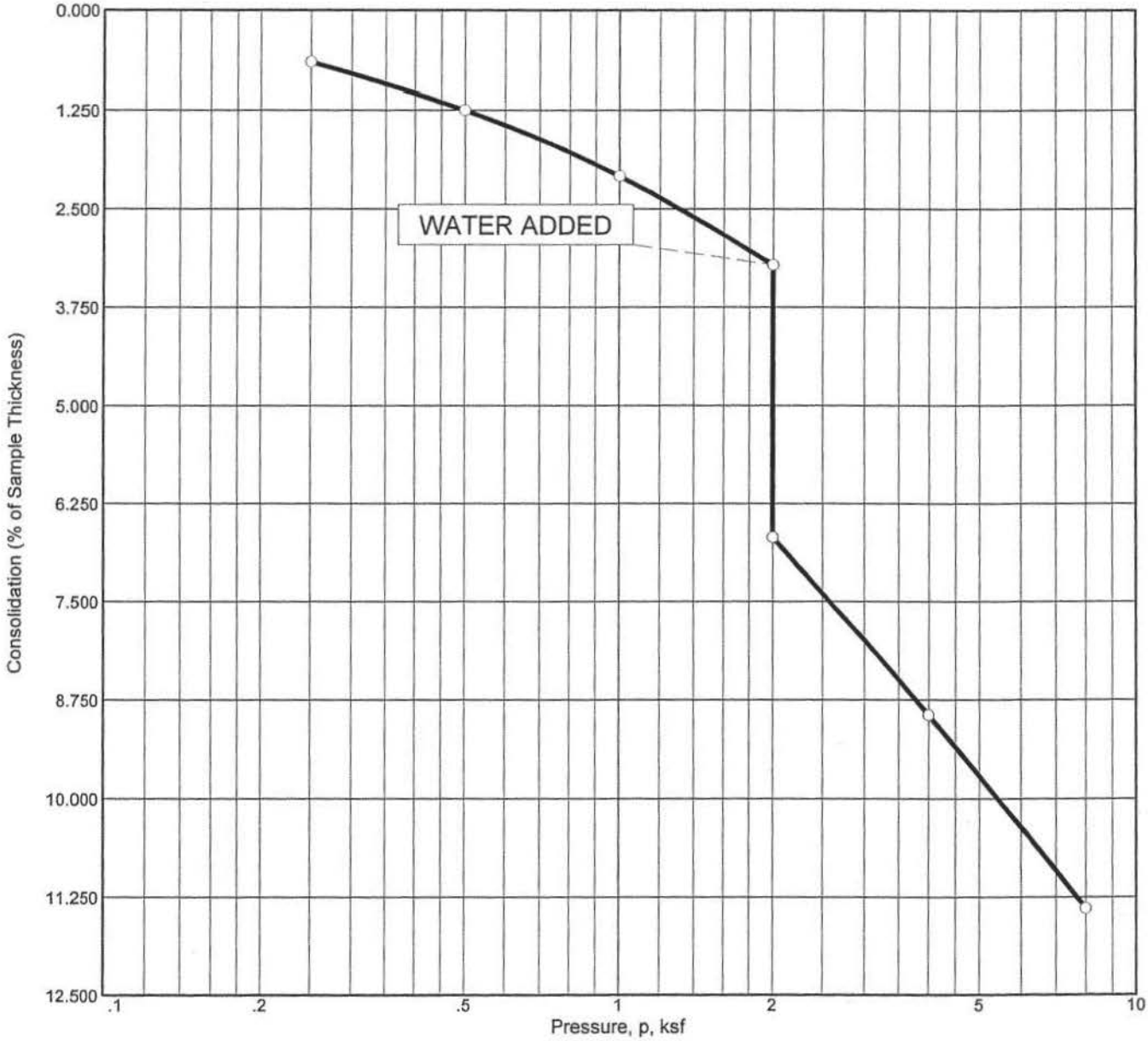

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	90.5	9.1	29.2	1.000	0.828	2.65	0.15	1.20	0.51	CL
FINAL	102.1	23.4	100.0	0.886	0.620					

Source: HS-17T **Elev./Depth:** 10'
Material Description: Light yellowish brown sandy lean CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East
Job No.: 04-1703E-1 **Figure** B4.45

CONSOLIDATION TEST REPORT

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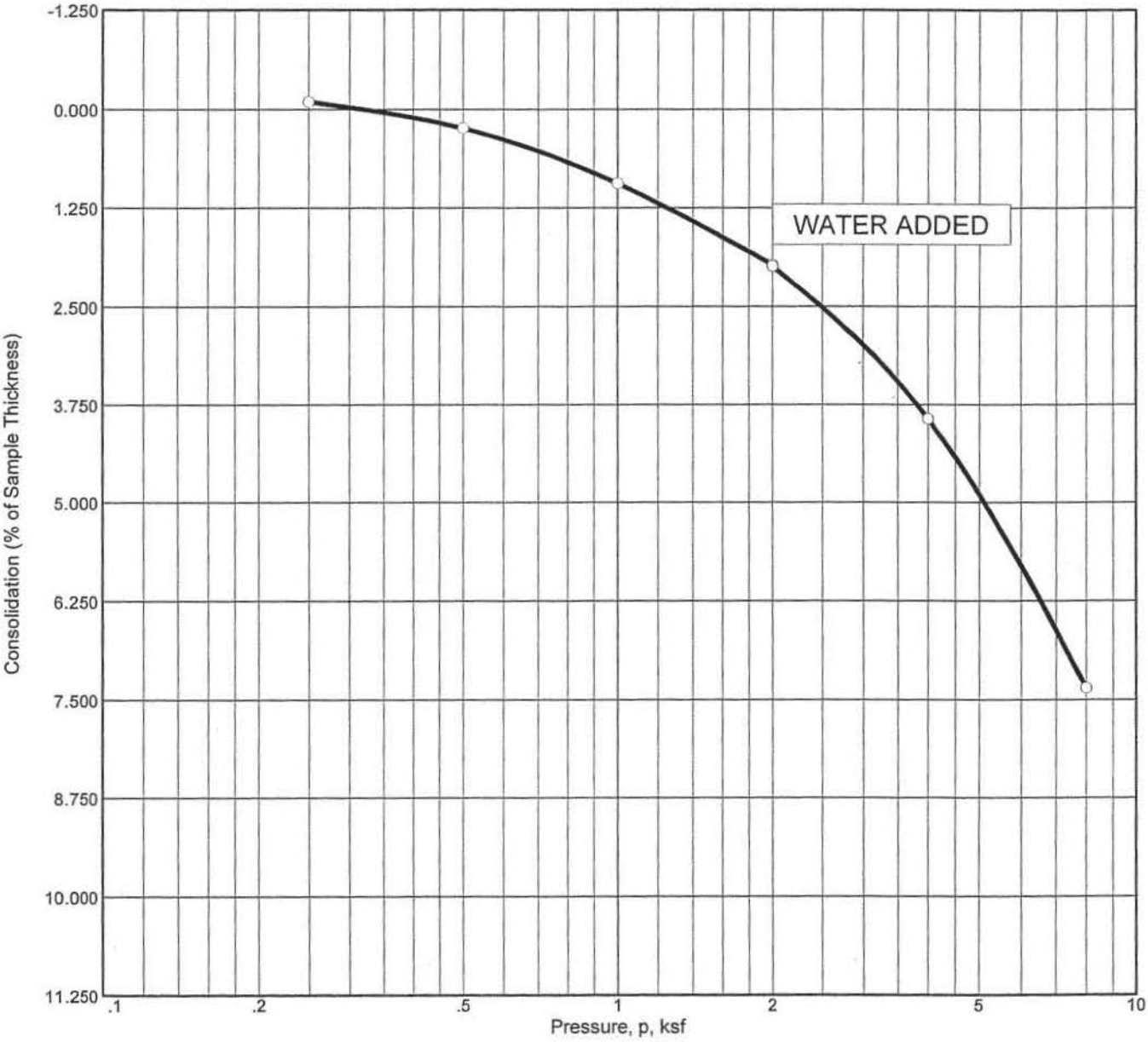

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	100.9	6.9	28.5	1.000	0.640	2.65	0.19	0.60	3.93	CL
FINAL	108.9	19.6	100.0	0.926	0.519					

Source: HS-20T
Material Description: Sandy lean CLAY
Remarks:

Elev./Depth: 5'

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1

Figure B4.46

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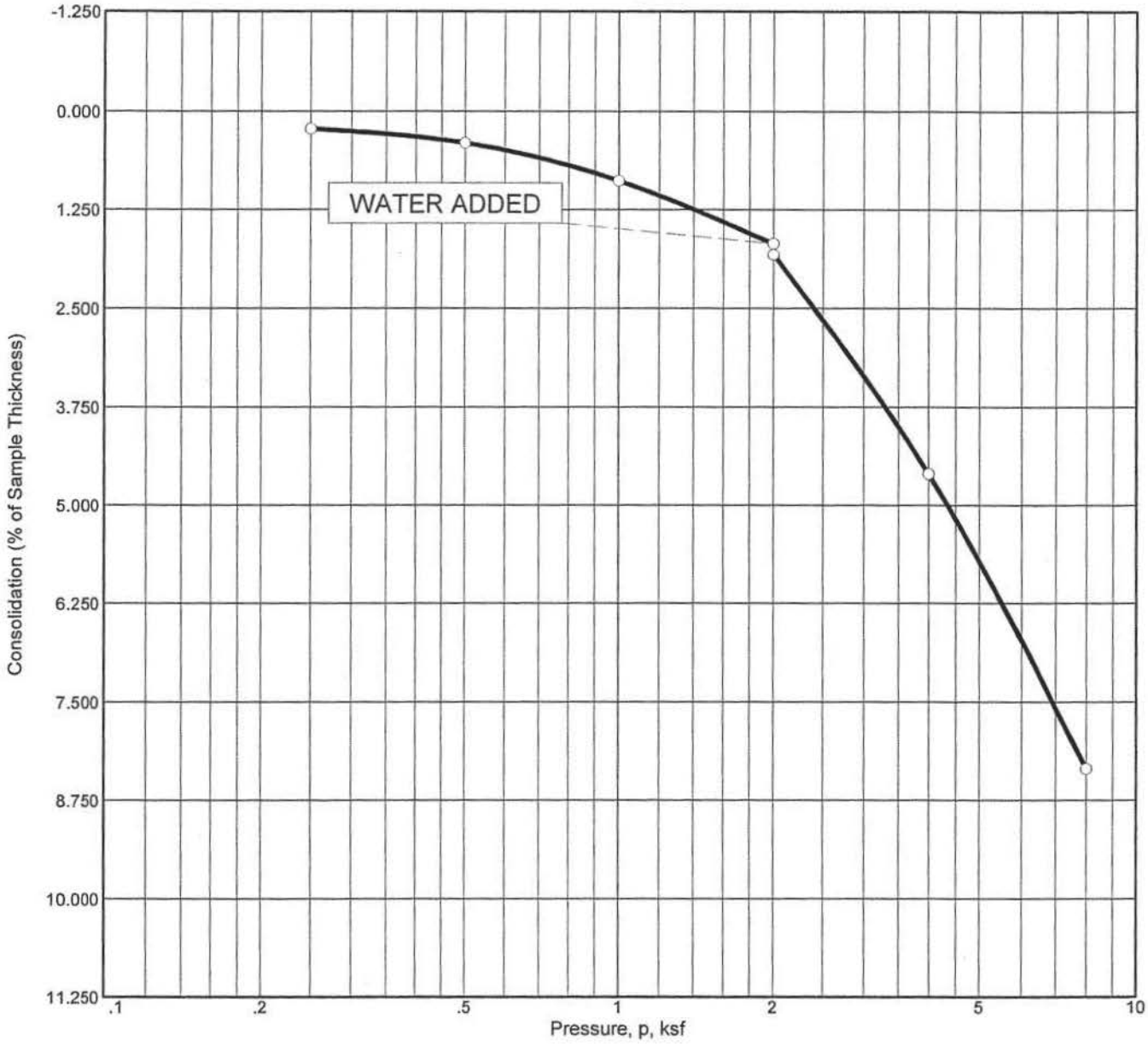

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	95.3	9.1	32.8	1.000	0.736	2.65	0.22	1.20	2.19	CL
FINAL	104.0	22.3	100.0	0.916	0.591					

Source: HS-20T **Elev./Depth:** 10'
Material Description: Sandy lean CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1 **Figure** B4.47

CONSOLIDATION TEST REPORT

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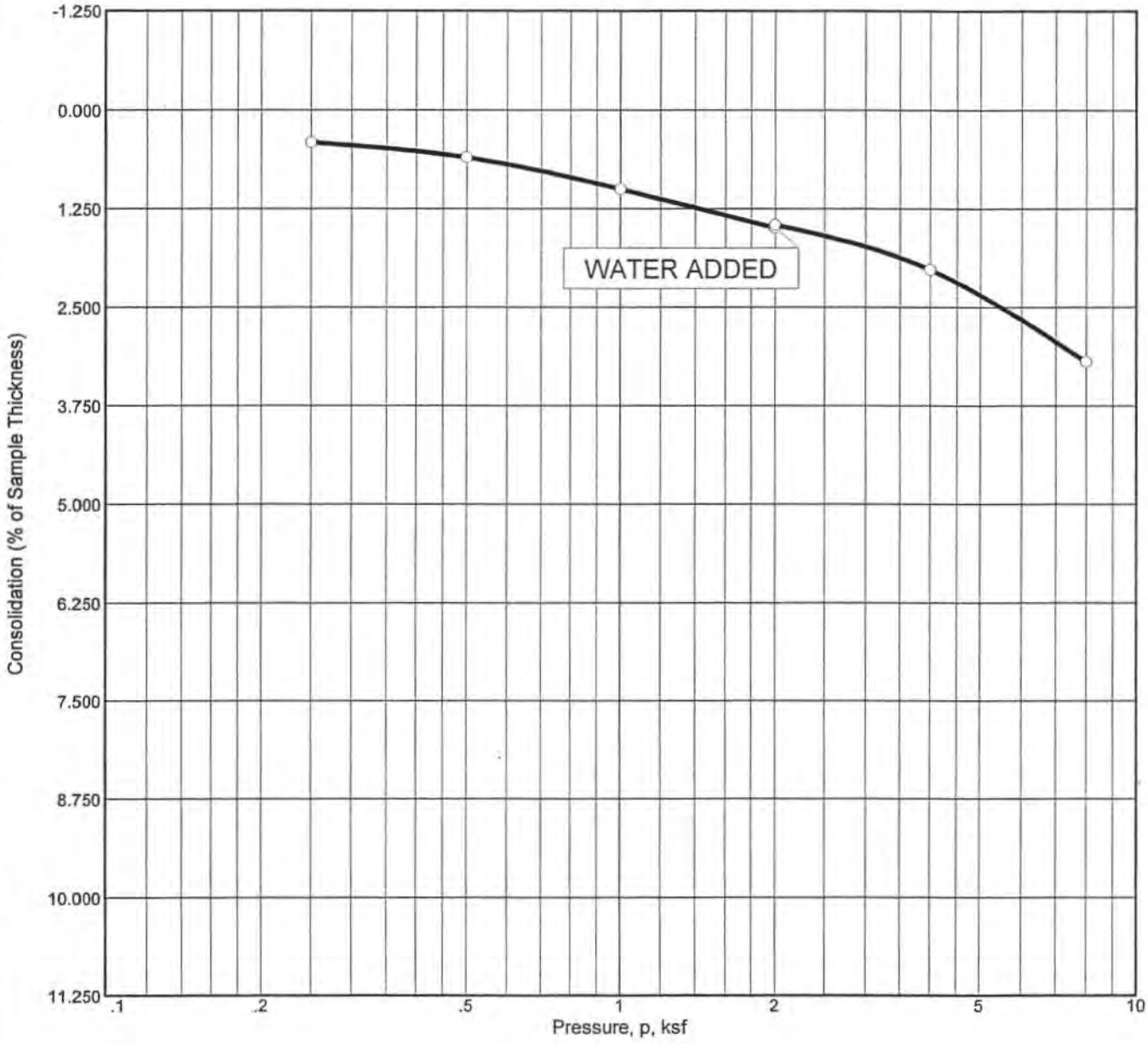

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	100.3	12.2	49.6	1.000	0.650	2.65	0.07	0.24	4.04	CL
FINAL	103.6	22.5	100.0	0.968	0.597					

Source: HS-23T **Elev./Depth:** 2'
Material Description: Sandy lean CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1 **Figure** B4.48

CONSOLIDATION TEST REPORT

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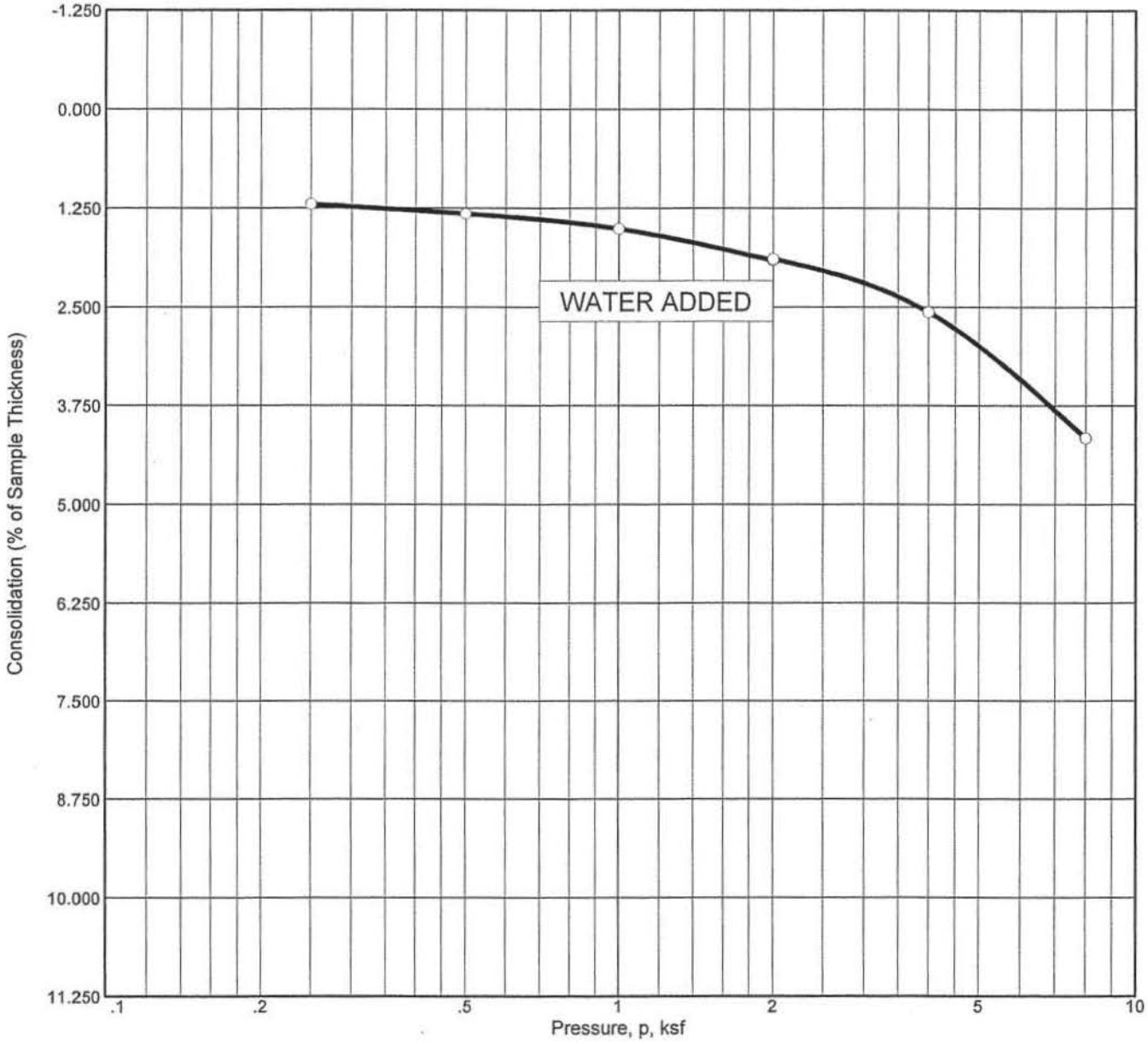

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	96.6	12.5	46.4	1.000	0.712	2.65	0.09	0.60	4.00	CL-ML
FINAL	100.8	24.2	100.0	0.958	0.641					

Source: HS-23T **Elev./Depth:** 5
Material Description: Light brown silty CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1 **Figure** B4.49

CONSOLIDATION TEST REPORT

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SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	95.6	4.2	15.3	1.000	0.730	2.65	0.19	0.24	3.85	SM
FINAL	112.0	18.0	100.0	0.854	0.477					

Source: HS-24T **Elev./Depth:** 2'
Material Description: Brown silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1 **Figure** B4.50

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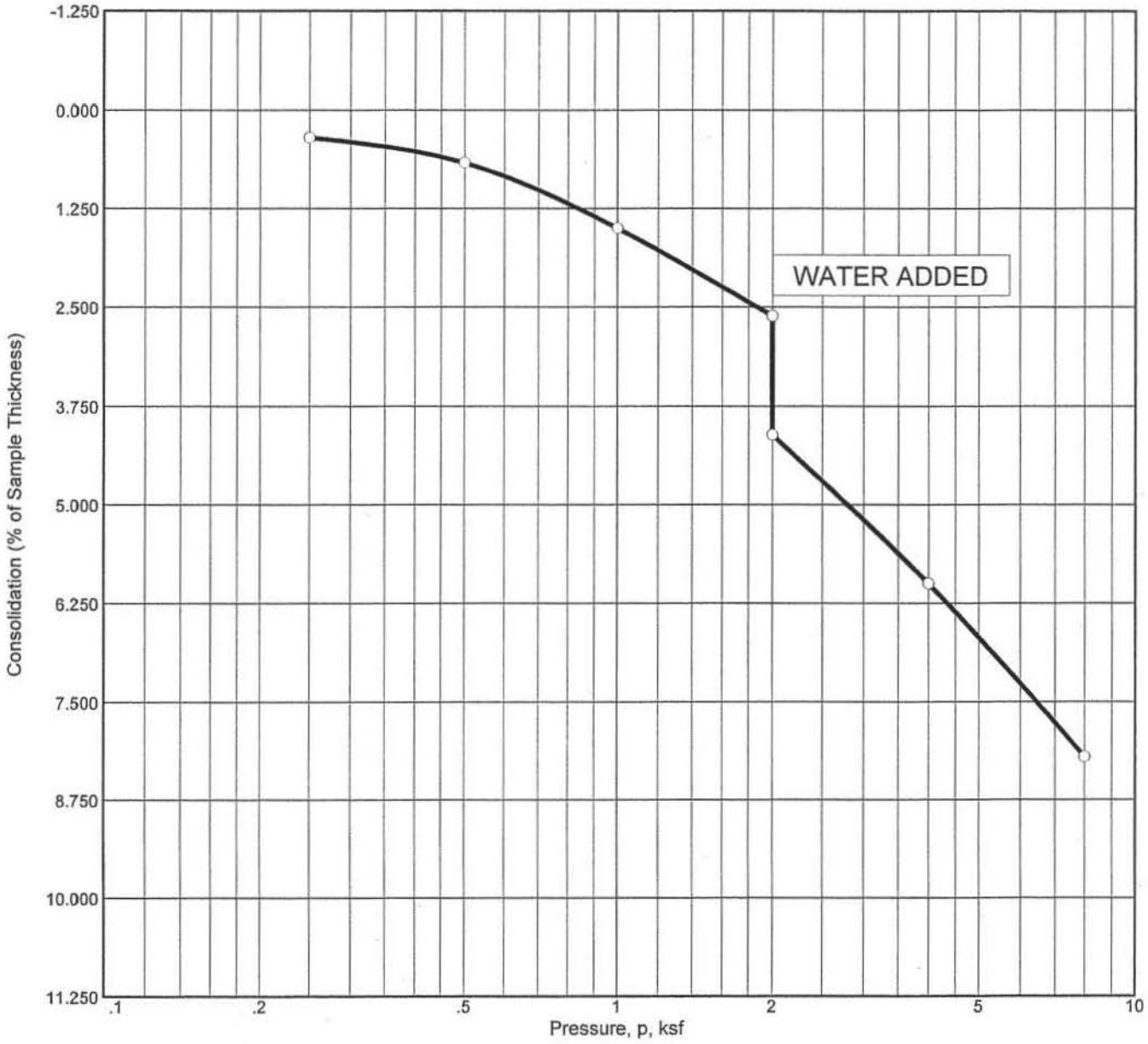

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	98.4	5.6	21.7	1.000	0.681	2.65	0.12	0.60	0.81	CL
FINAL	107.2	18.6	90.7	0.918	0.543					

Source: HS-24T **Elev./Depth:** 5'
Material Description: Brown sandy lean CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1 **Figure** B4.51

CONSOLIDATION TEST REPORT

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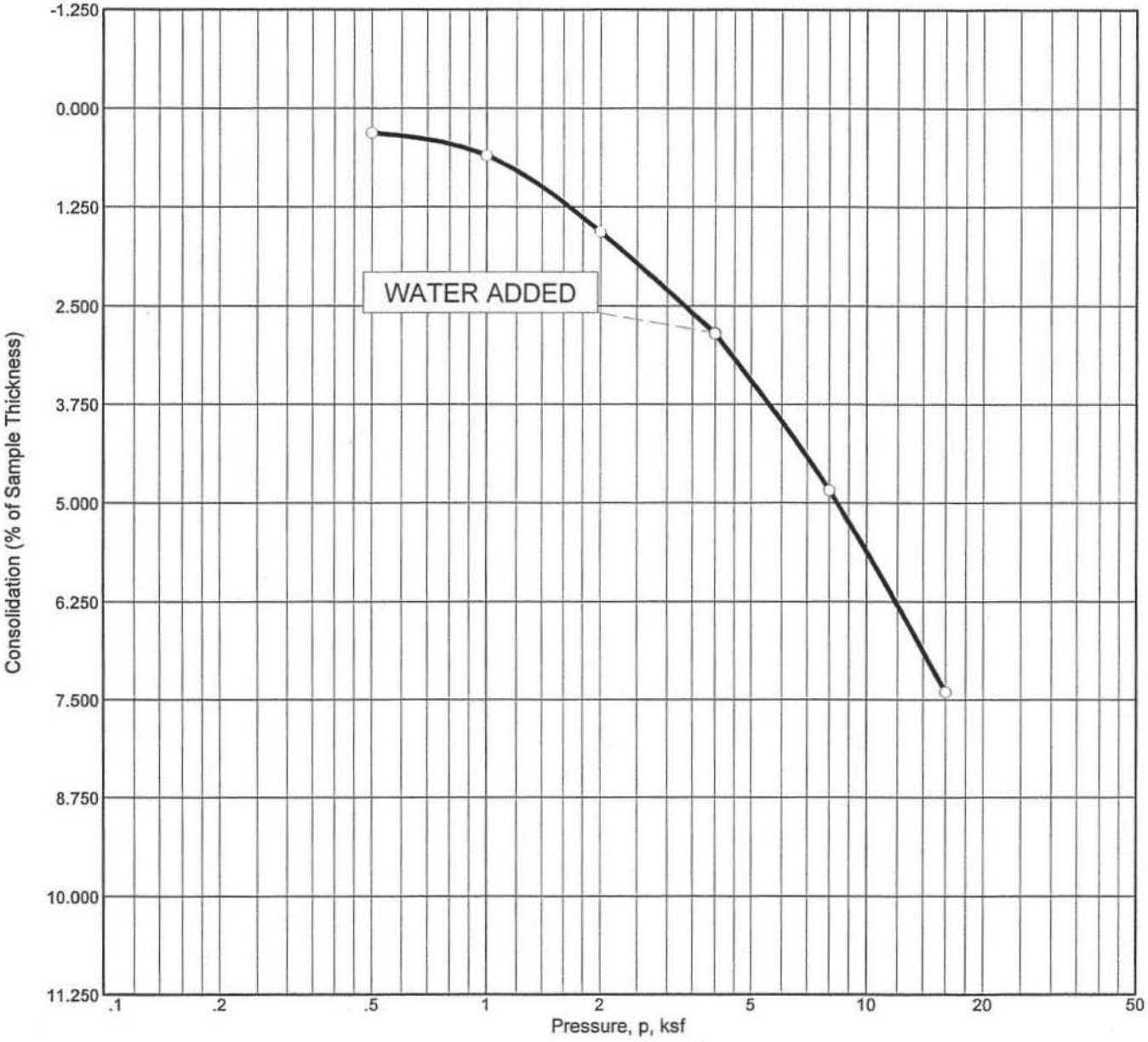
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	80.4	22.4	56.2	1.000	1.057	2.65	0.18	3.00	2.99	CL-ML
FINAL	86.9	34.2	100.0	0.926	0.905					

Source: HS-29T **Elev./Depth:** 25'
Material Description: Silty CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East
Job No.: 04-1703E-1 **Figure** B4.52

CONSOLIDATION TEST REPORT

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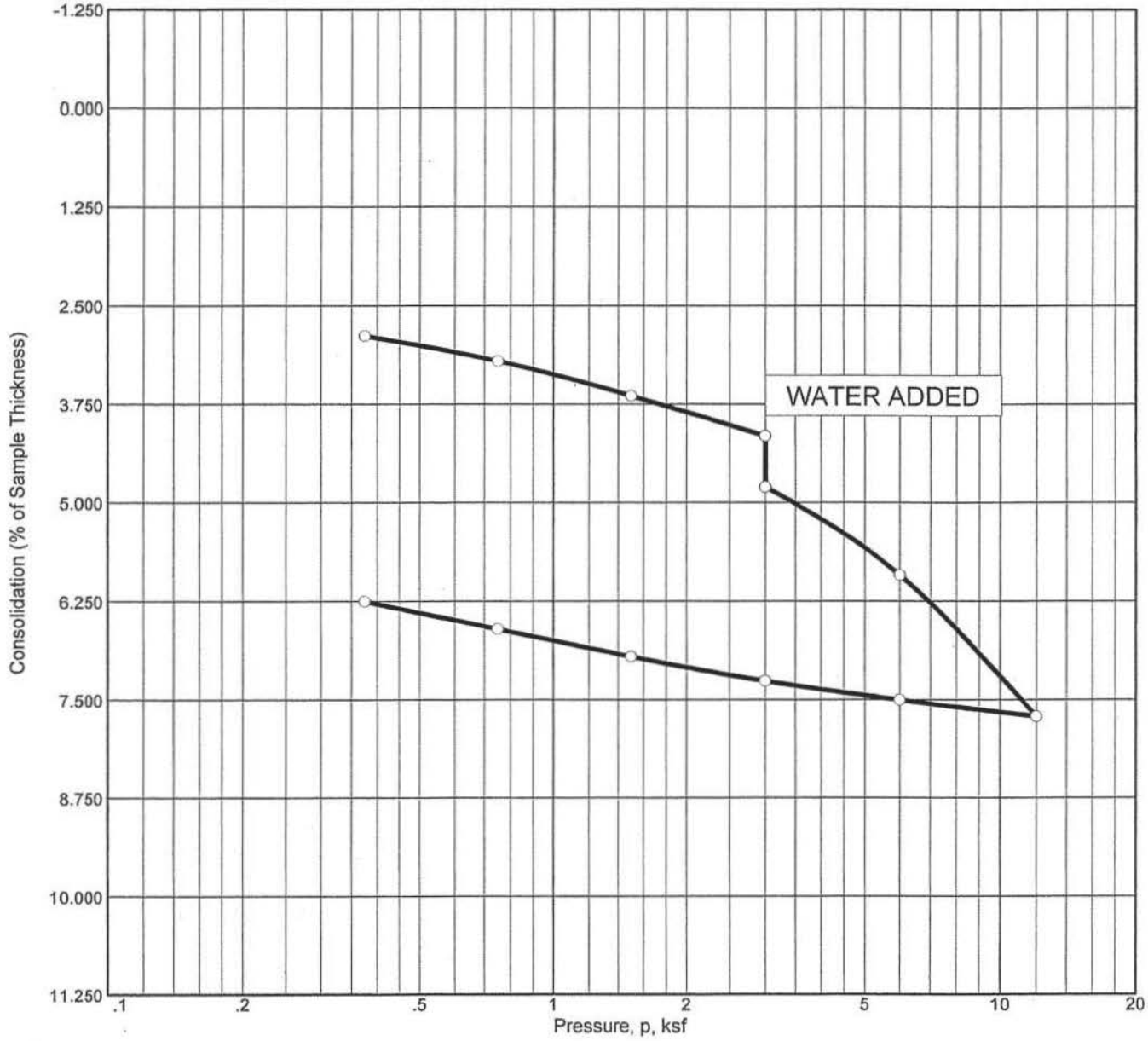

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	91.5	19.1	62.5	1.000	0.809	2.65	0.11	2.40	6.32	CL
FINAL	97.6	26.3	100.0	0.937	0.696					

Source: RW-1T **Elev./Depth:** 20'
Material Description: Sandy lean CLAY with gravel
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas East

Job No.: 04-1703E-1 **Figure** B4.53

CONSOLIDATION TEST REPORT

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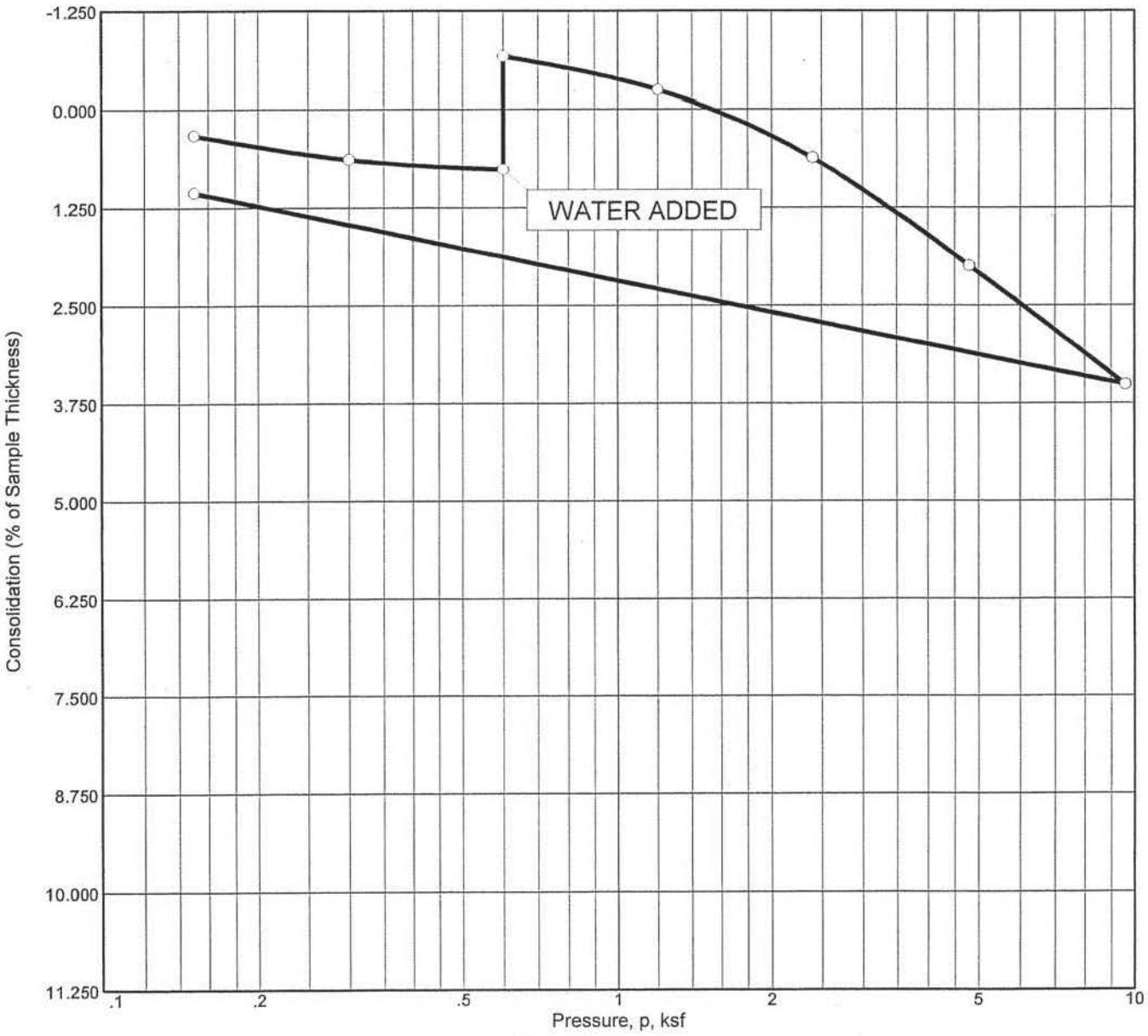

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	119.2	10.8	74.2	1.000	0.388	2.65	0.07	0.36	1.91	SC-SM
FINAL	120.5	15.7	100.0	0.989	0.373					

Source: B-3B **Elev./Depth:** 3'
Material Description: Silty, clayey SAND to sandy CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Cobble/Boulder Assessment
Airport and Exxon Mesas
Job No.: 02-1703B-1 **Figure** B4.54

CONSOLIDATION TEST REPORT

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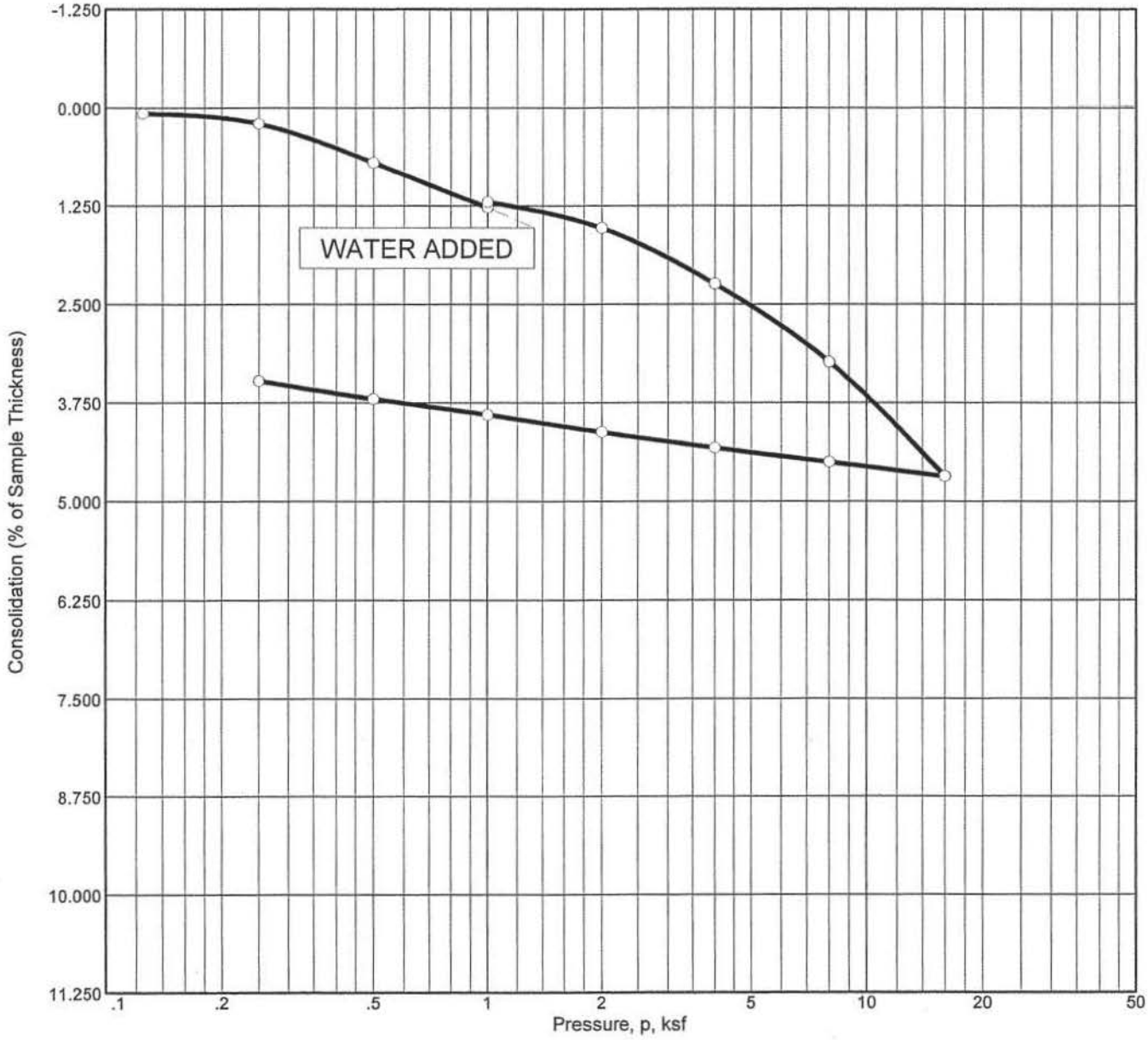

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	112.1	9.7	54.0	1.000	0.476	2.65	0.07	0.84	2.54	SP
FINAL	116.1	16.2	100.0	0.965	0.425					

Source: B-3B **Elev./Depth:** 7'
Material Description: Poorly graded SAND with gravel
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Cobble/Boulder Assessment
Airport and Exxon Mesas
Job No.: 02-1703B-1 **Figure** B4.55

CONSOLIDATION TEST REPORT

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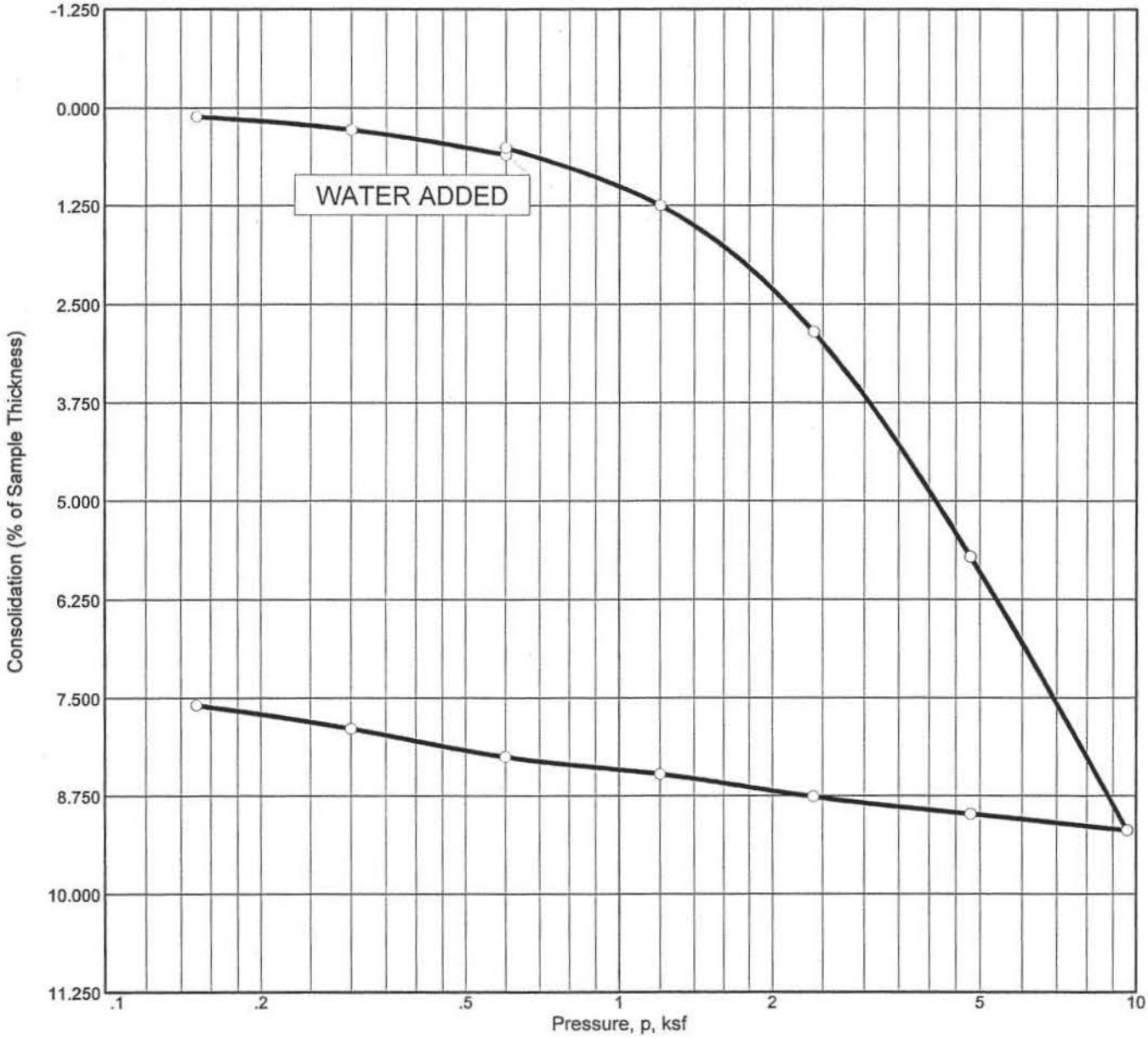
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	109.3	9.3	48.0	1.000	0.513	2.65	0.18	0.36	2.43	SM
FINAL	118.3	16.0	100.0	0.924	0.398					

Source: B-4B **Elev./Depth:** 3'
Material Description: Silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Cobble/Boulder Assessment
Airport and Exxon Mesas
Job No.: 02-1703B-1 **Figure** B4.56

CONSOLIDATION TEST REPORT

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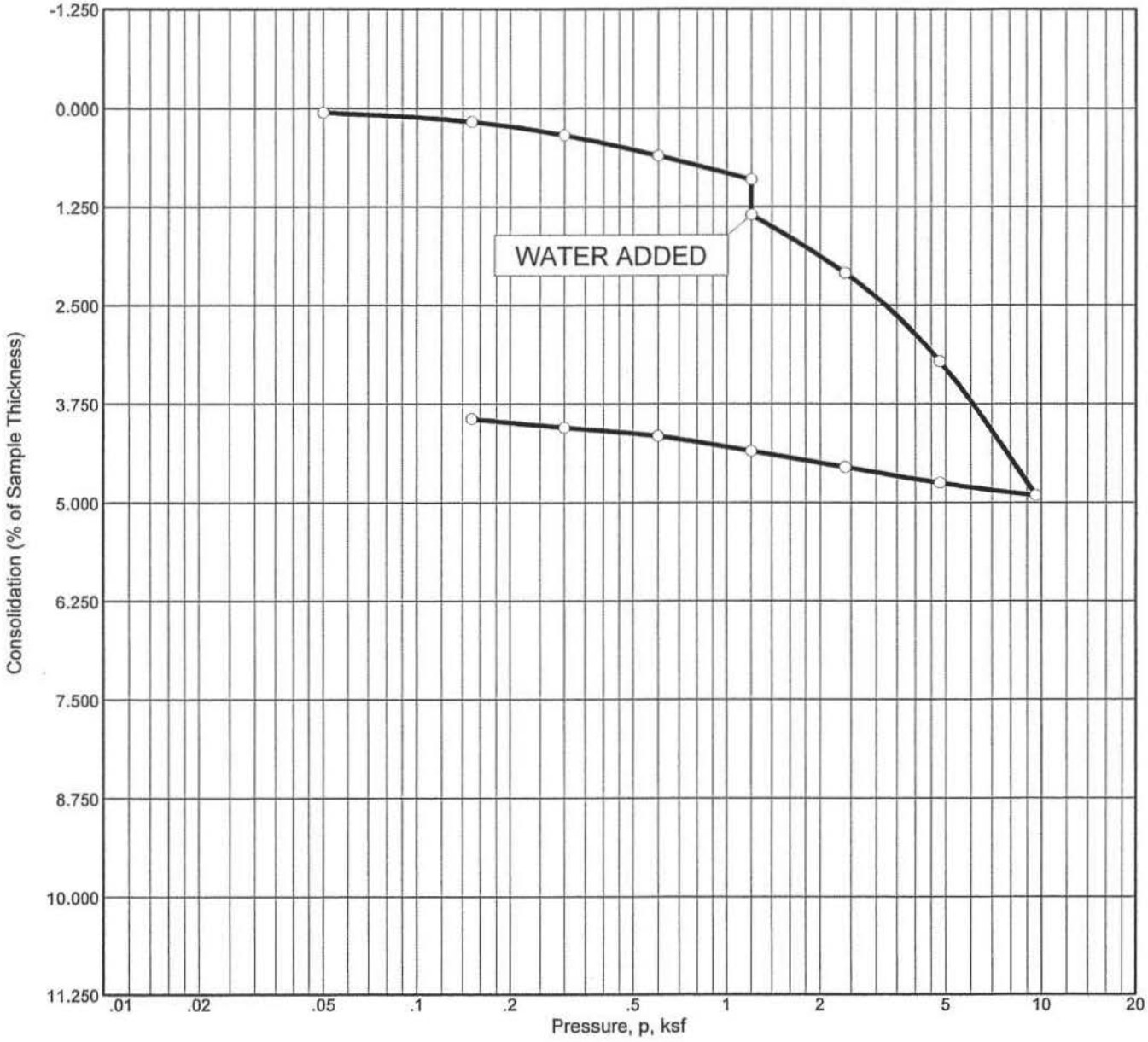

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	115.2	10.0	61.0	1.000	0.436	2.65	0.08	0.84	4.28	SM
FINAL	120.0	14.3	100.0	0.961	0.379					

Source: B-6B **Elev./Depth:** 7'
Material Description: Pebbly, silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Cobble/Boulder Assessment
Airport and Exxon Mesas
Job No.: 02-1703B-1 **Figure** B4.57

CONSOLIDATION TEST REPORT

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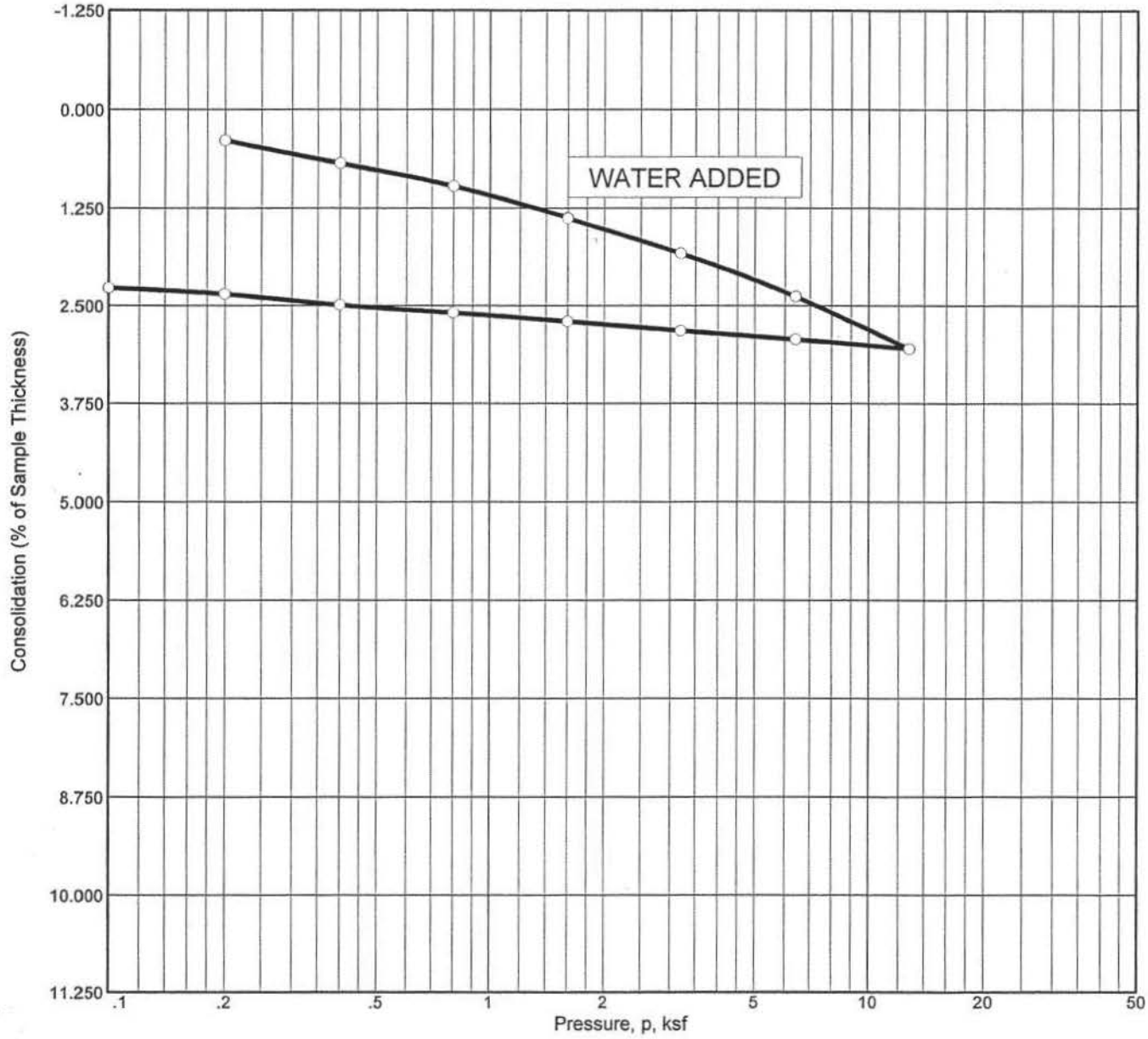
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	110.0	9.9	52.1	1.000	0.504	2.65	0.03	0.96	1.90	SP-SM
FINAL	112.6	22.0	100.0	0.977	0.470					

Source: RW-1 **Elev./Depth:** 8'
Material Description: Grayish brown poorly graded SAND with silt and gravel
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch Mesas Area
Job No.: 99-1703L-1 **Figure** B4.58

CONSOLIDATION TEST REPORT

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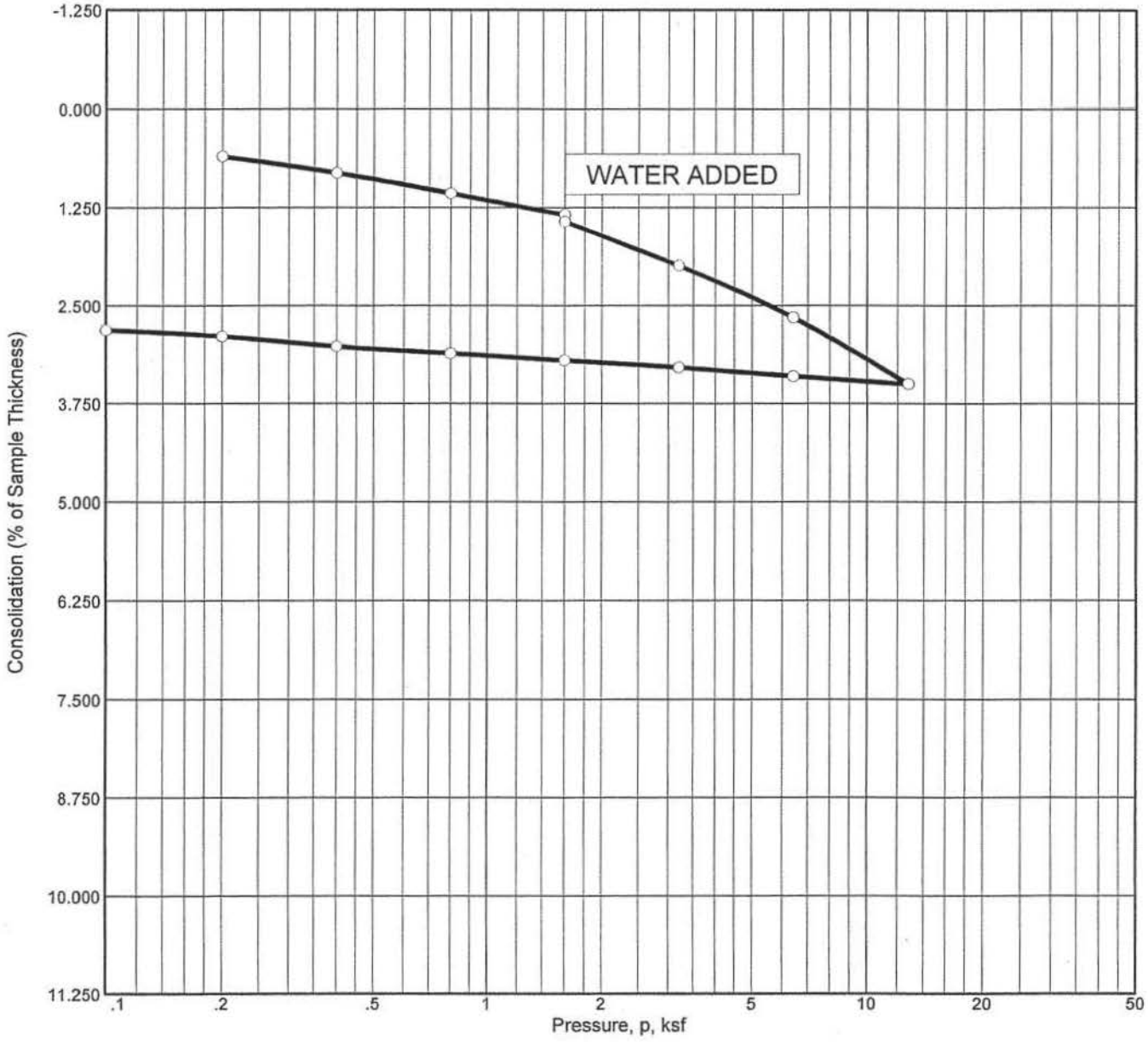
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	113.9	6.3	37.2	1.000	0.452	2.65	0.04	1.32	6.61	SP-SM
FINAL	117.2	16.4	100.0	0.972	0.411					

Source: RW-1 **Elev./Depth:** 11'
Material Description: Grayish brown poorly graded SAND with silt and gravel
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch Mesas Area
Job No.: 99-1703L-1 **Figure** B4.59

CONSOLIDATION TEST REPORT

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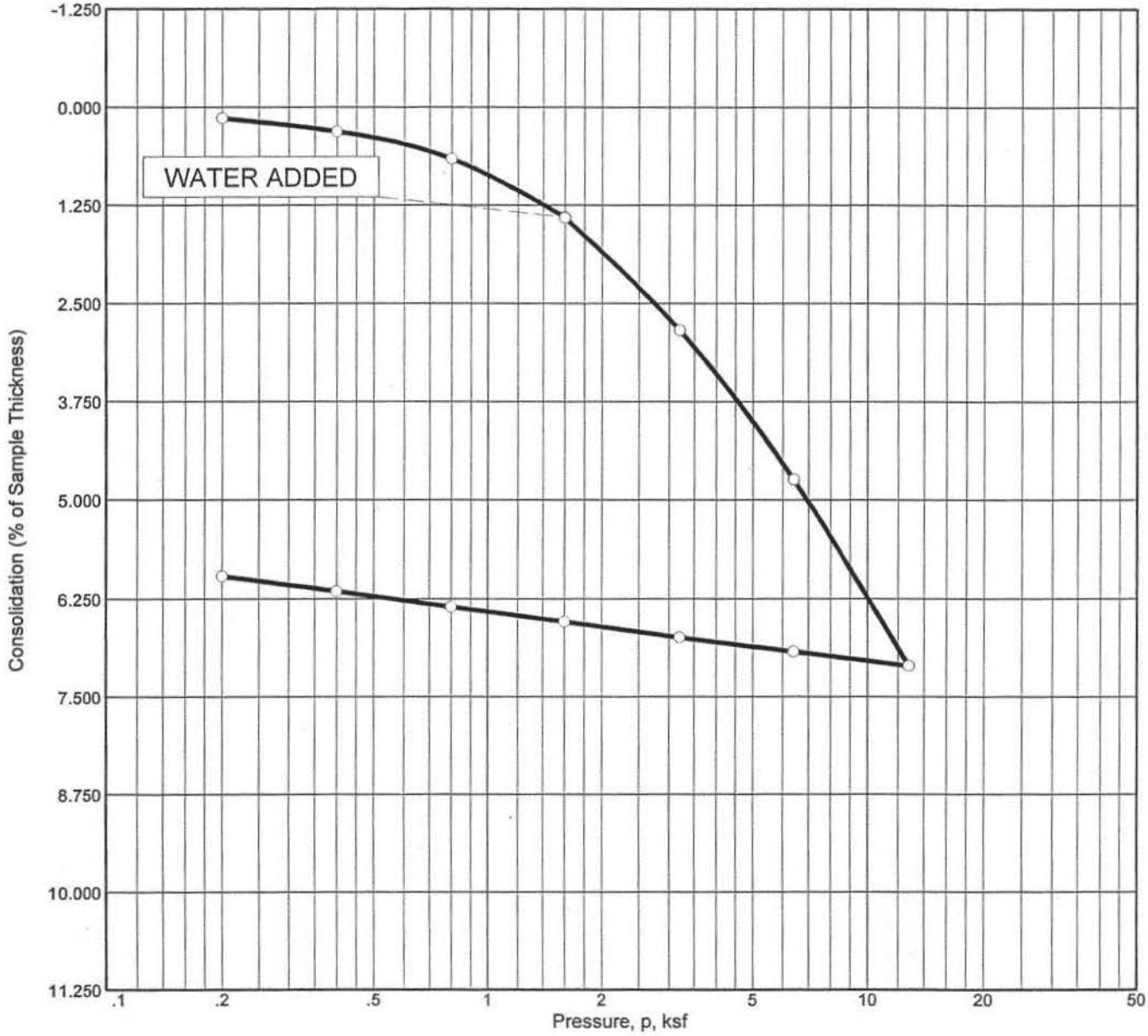
DATE | APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	112.3	5.0	28.0	1.000	0.473	2.65	0.12	0.48	2.23	SM
FINAL	119.4	14.6	100.0	0.940	0.385					

Source: RW-2 **Elev./Depth:** 4'
Material Description: Brown silty SAND with gravel
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Ranch Co. **Project:** Newhall Ranch Mesas Area **Job No.:** 99-1703L-1 **Figure** B4.60

CONSOLIDATION TEST REPORT

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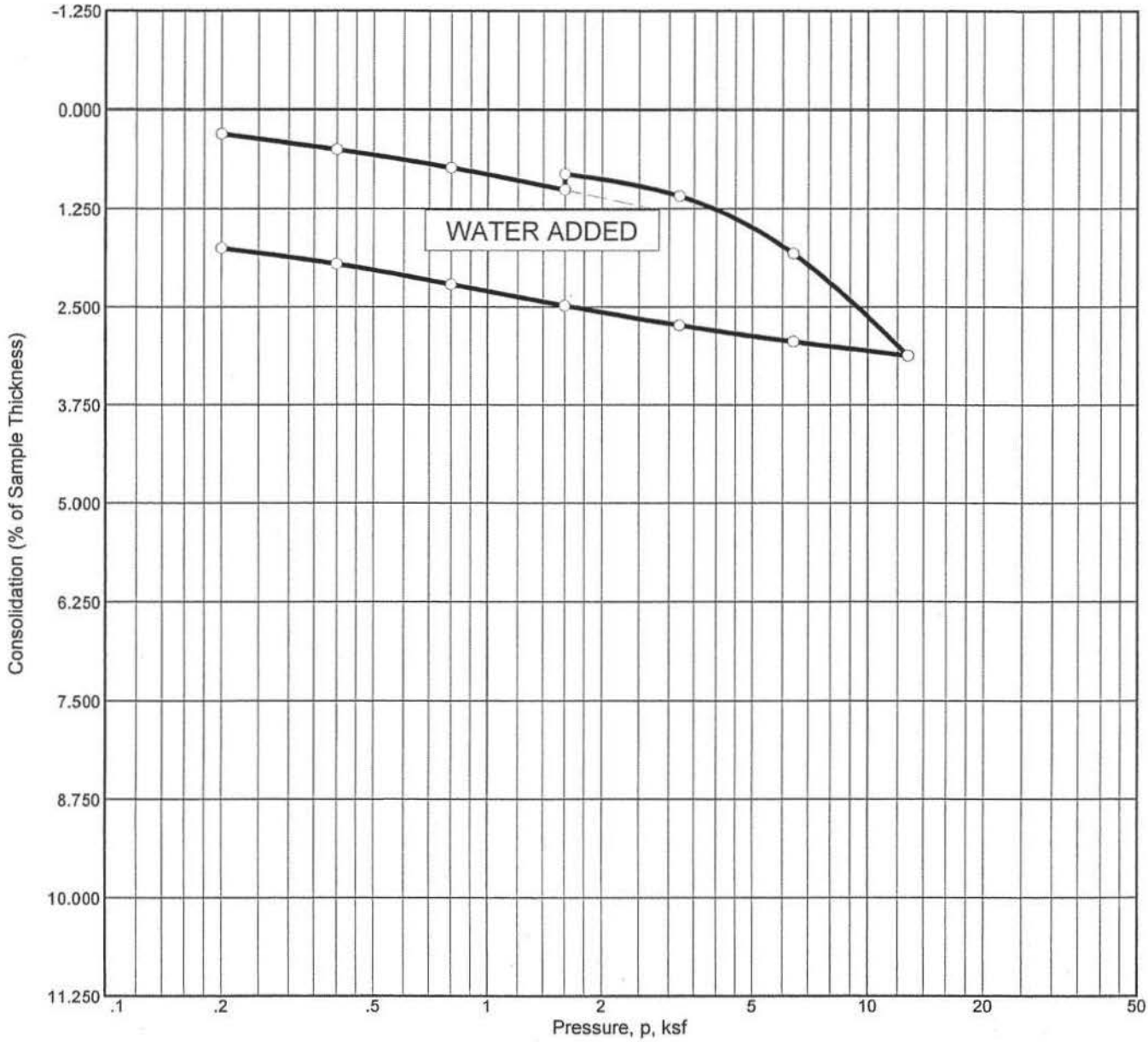

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	113.1	6.4	36.7	1.000	0.463	2.65	0.06	1.20	4.84	CL
FINAL	115.1	16.2	98.1	0.982	0.437					

Source: RW-2 **Elev./Depth:** 10'
Material Description: Brown sandy lean CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch
Mesas Area
Job No.: 99-1703L-1 **Figure** B4.61

CONSOLIDATION TEST REPORT

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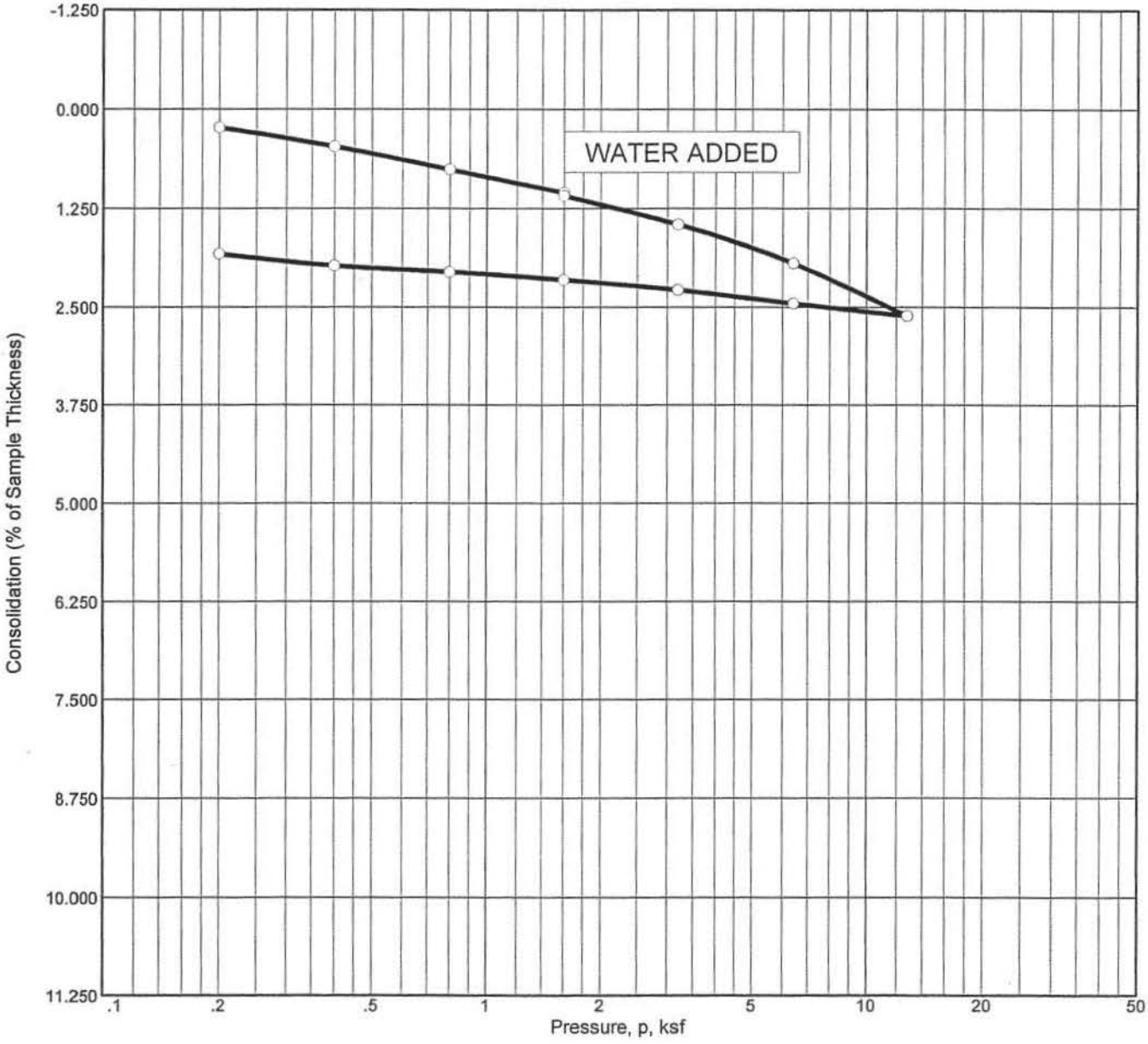
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	117.3	8.5	54.8	1.000	0.410	2.65	0.03	0.60	6.55	SW
FINAL	119.5	14.5	100.0	0.982	0.385					

Source: RW-3 **Elev./Depth:** 5'
Material Description: Grayish brown well-graded SAND with gravel
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch Mesas Area
Job No.: 99-1703L-1 **Figure** B4.62

CONSOLIDATION TEST REPORT

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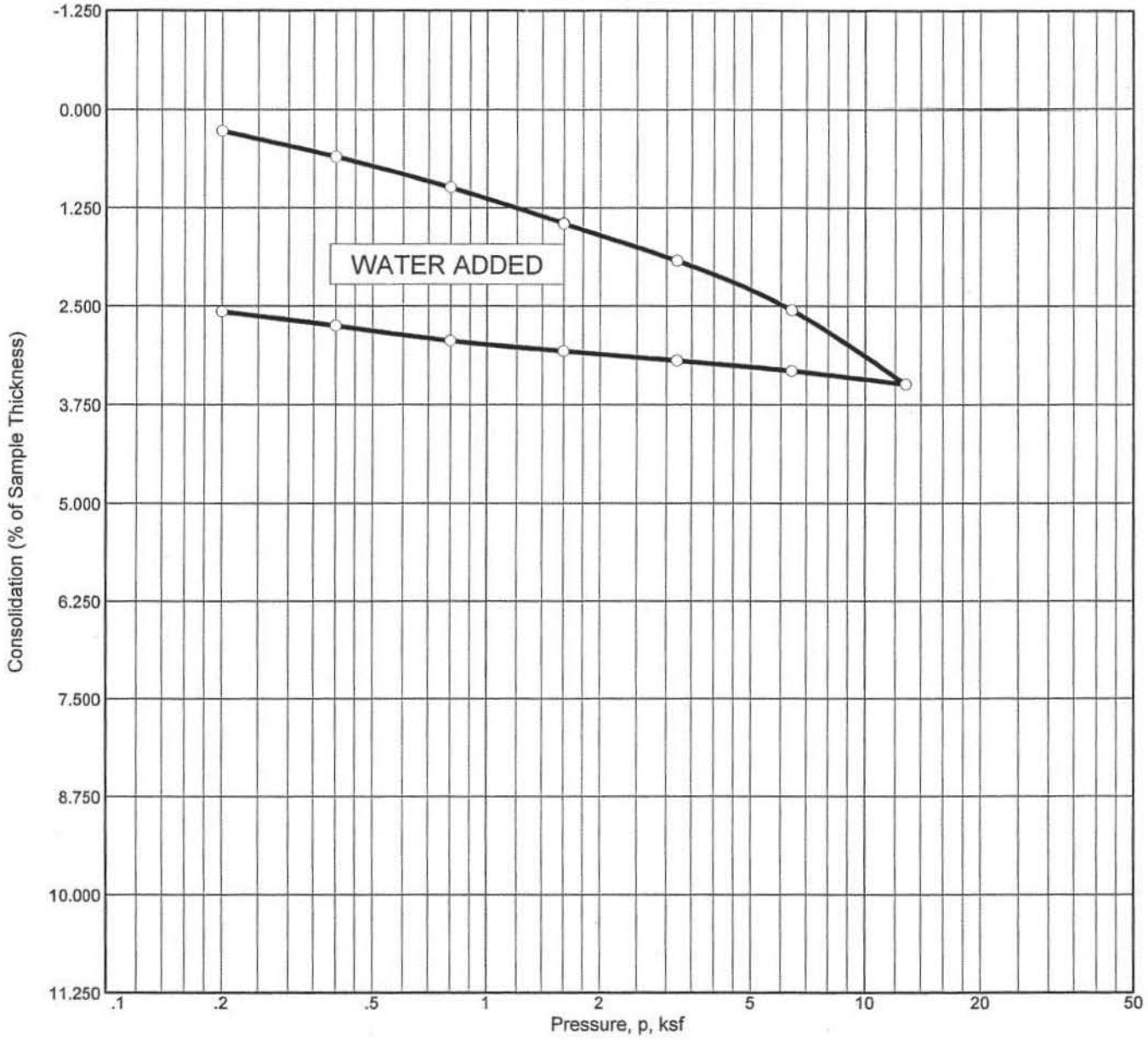
DATE	APPROVED BY



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	118.7	11.1	74.7	1.000	0.394	2.65	0.04	0.96	6.69	SM
FINAL	121.8	16.2	100.0	0.974	0.358					

Source: RW-3 **Elev./Depth:** 8'
Material Description: Grayish brown silty SAND
Remarks: with gravel

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Newhall Ranch
Mesas Area
Job No.: 99-1703L-1

Figure B4.63

CONSOLIDATION TEST REPORT

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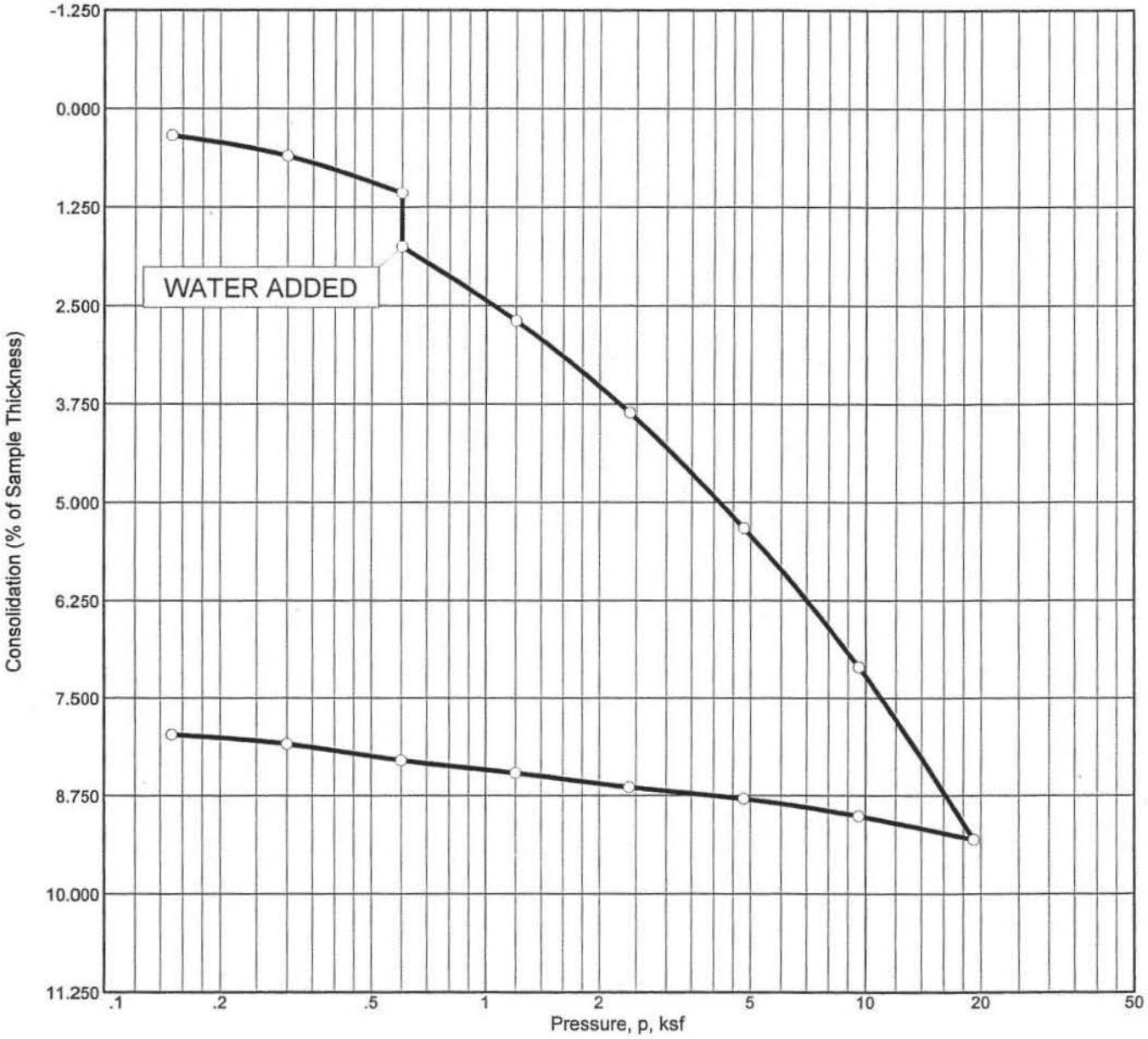

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	111.6	4.4	24.4	1.000	0.482	2.65	0.11	0.60	9.88	SM
FINAL	121.3	20.3	100.0	0.920	0.364					

Source: B-4M **Elev./Depth:** 5'
Material Description: Silty SAND
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas Entertainment

Job No.: 01-1703M-1 **Figure** B4.64

CONSOLIDATION TEST REPORT

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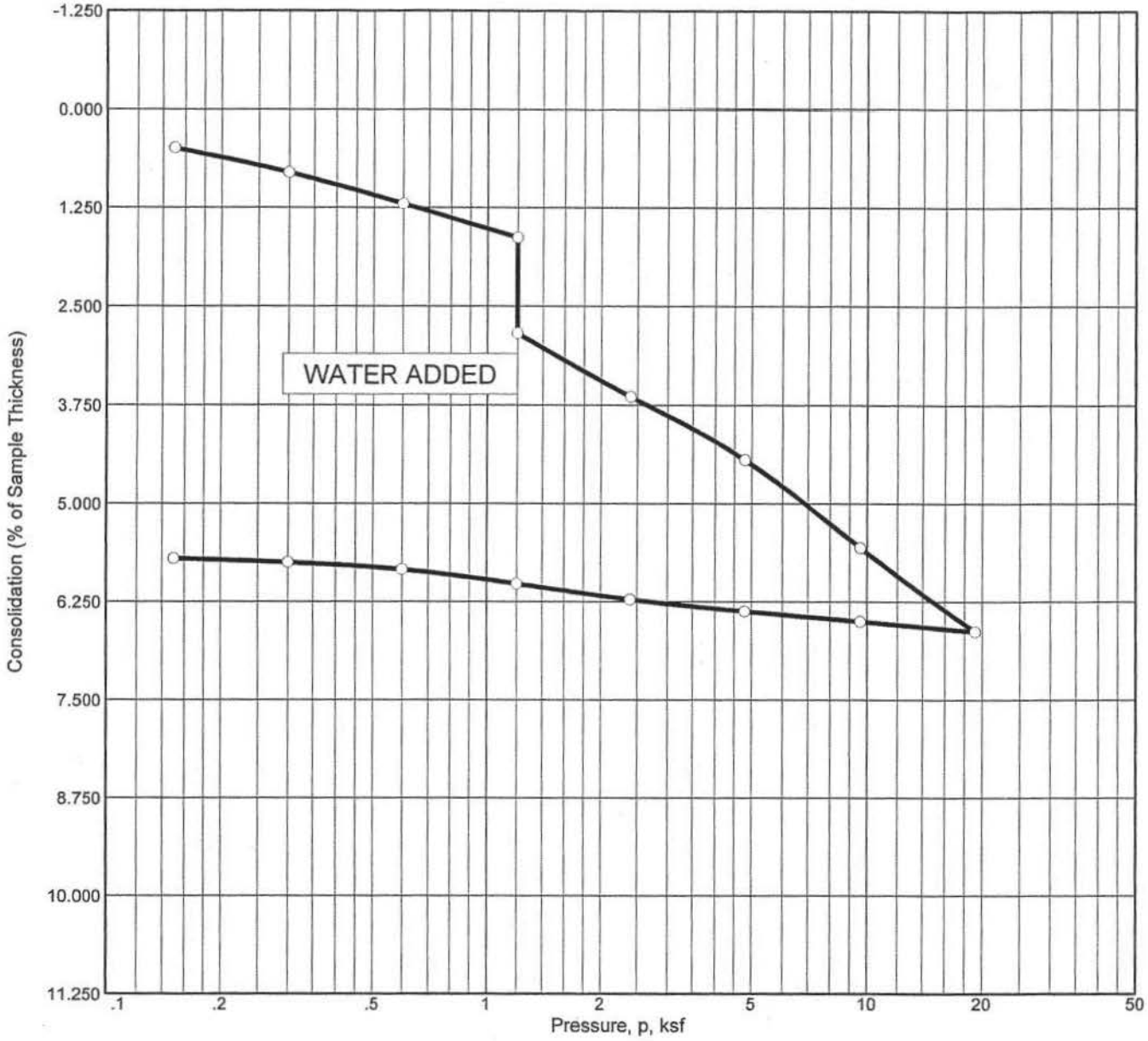

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	107.3	3.3	15.9	1.000	0.542	2.65	0.05	1.20	4.38	SP-SM
FINAL	113.8	21.8	100.0	0.943	0.454					

Source: B-6M **Elev./Depth:** 10'
Material Description: Poorly graded SAND with silt
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas Entertainment

Job No.: 01-1703M-1 **Figure** B4.65

CONSOLIDATION TEST REPORT

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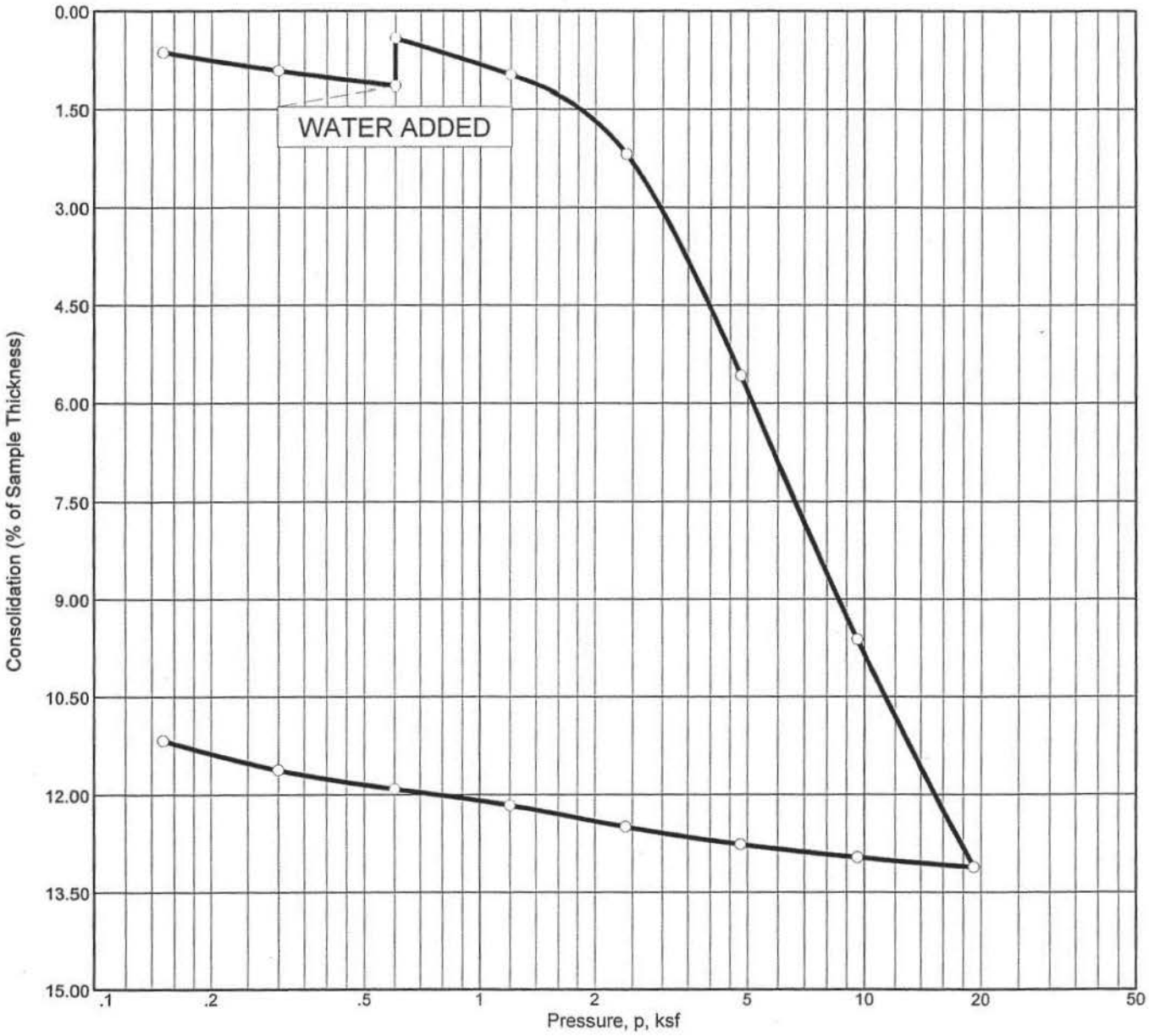

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	105.6	7.1	33.0	1.000	0.566	2.65	0.18	0.60	1.98	CL
FINAL	118.9	21.0	100.0	0.888	0.391					

Source: B-16M **Elev./Depth:** 5'
Material Description: Sandy lean CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas Entertainment

Job No.: 01-1703M-1 **Figure** B4.66

CONSOLIDATION TEST REPORT

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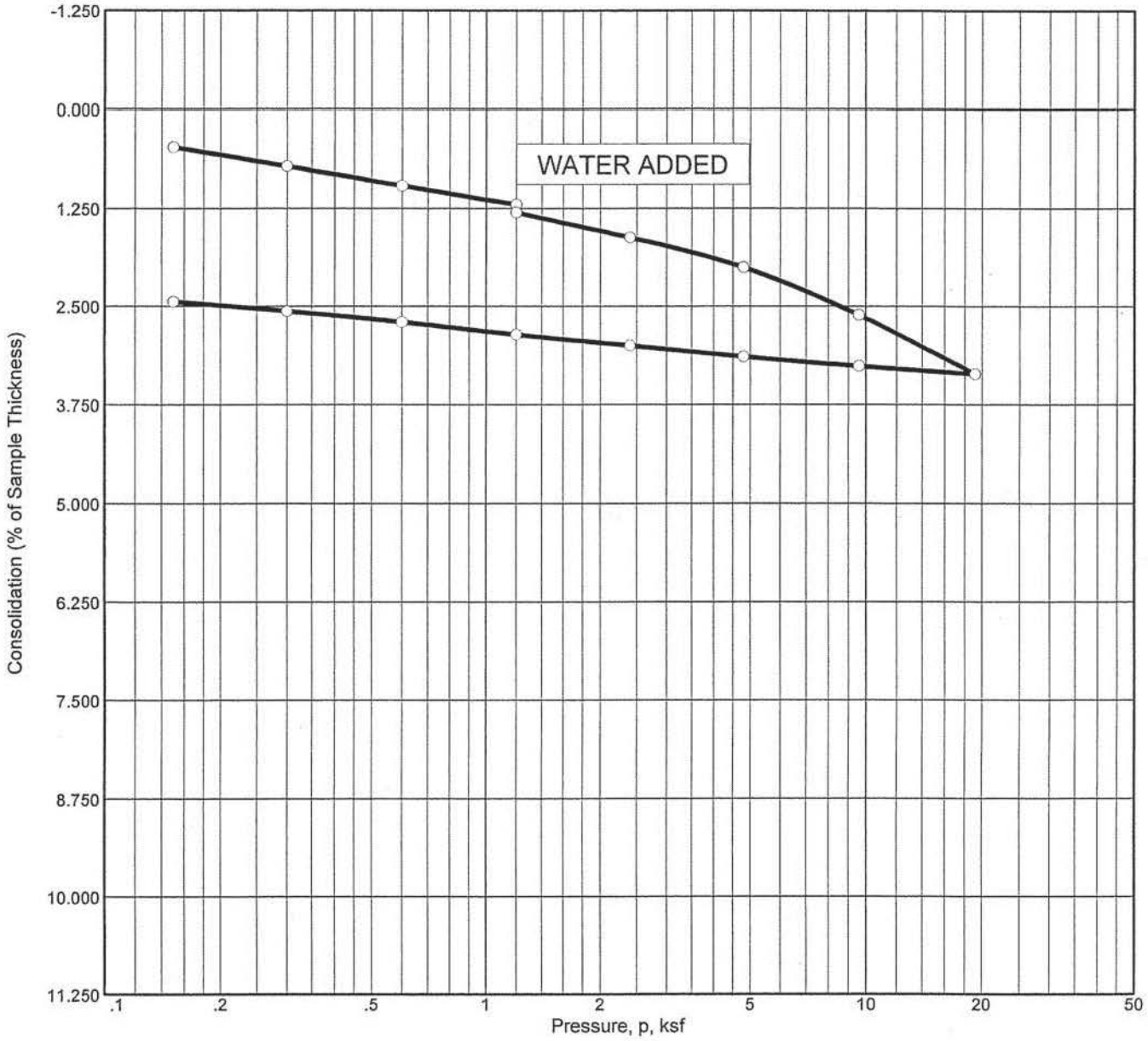

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	118.6	9.2	61.8	1.000	0.395	2.65	0.04	1.20	5.93	ML
FINAL	121.5	22.7	100.0	0.976	0.361					

Source: B-22M **Elev./Depth:** 10'
Material Description: Sandy SILT
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Ranch Co.
Project: Mesas Entertainment

Job No.: 01-1703M-1 **Figure** B4.67

CONSOLIDATION TEST REPORT

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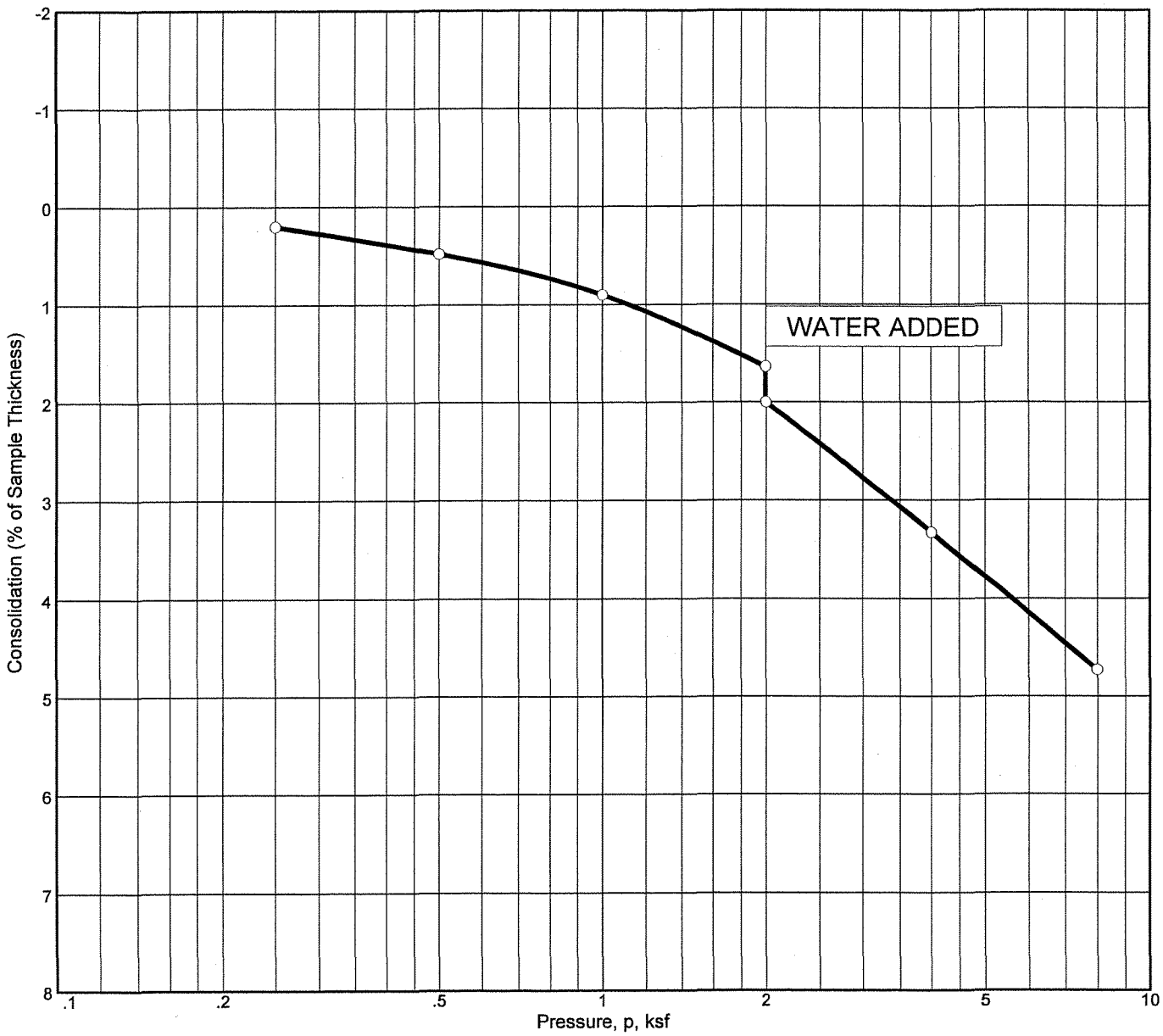

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	92.1	6.1	20.3	1.000	0.796	2.65	0.08	1.44	1.27	ML
FINAL	96.7	26.9	100.0	0.953	0.711					

Source: HS-34T **Elev./Depth:** 12
Material Description: Sandy SILT with gravel
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Land and Farming Co.
Project: Mesas East Access Road

Job No.: 04-2023A-4 **Figure** B1.3

CONSOLIDATION TEST REPORT

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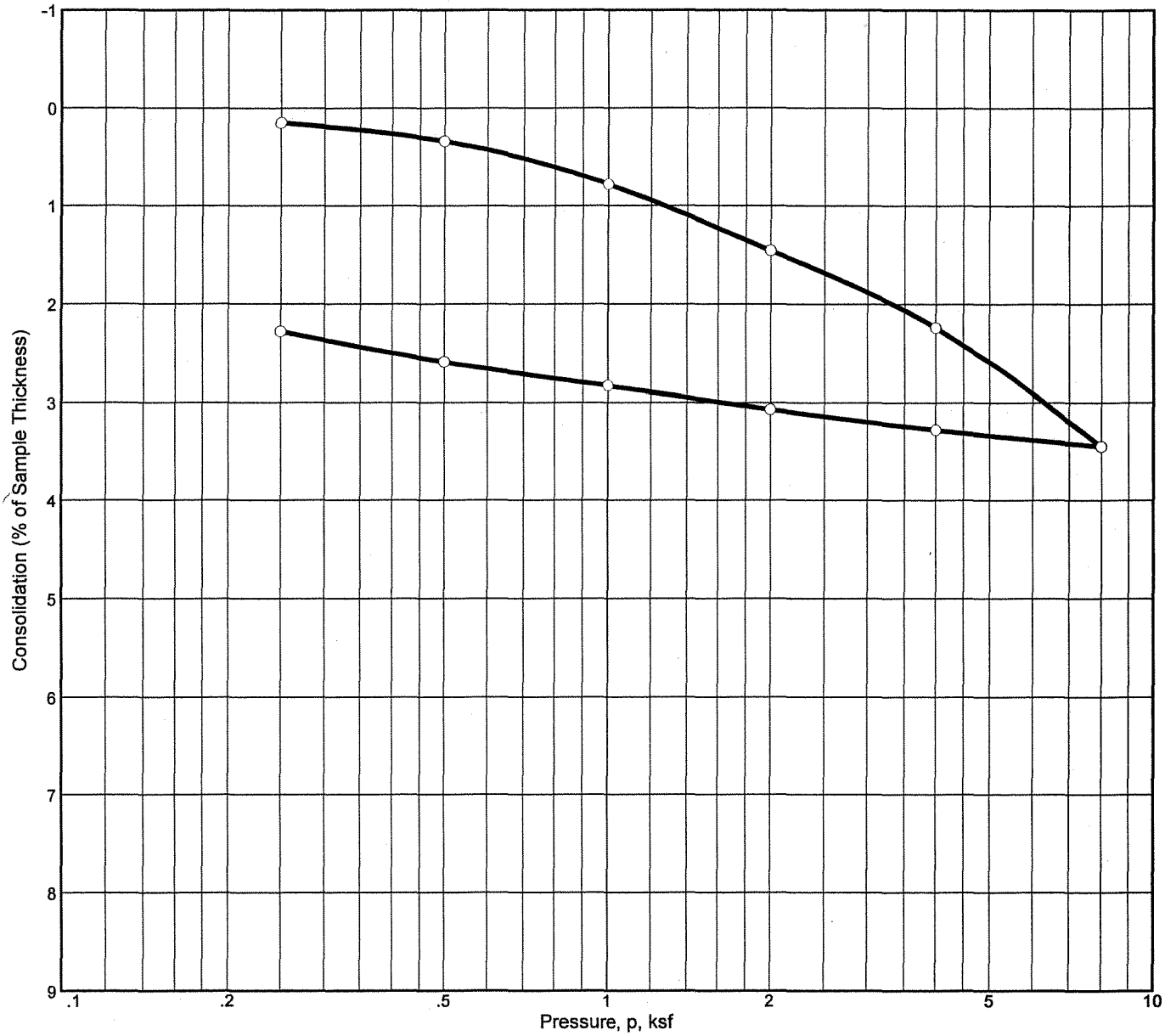

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	99.1	10.4	41.2	1.000	0.670	2.65	0.07	1.80	1.64	CL-ML
FINAL	101.4	23.9	100.0	0.977	0.632					

Source: HS-33T **Elev./Depth:** 15
Material Description: Sandy, silty CLAY
Remarks:

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Newhall Land and Farming Co.
Project: Mesas East Access Road

Job No.: 04-2023A-4 **Figure** B1.2

CONSOLIDATION TEST REPORT

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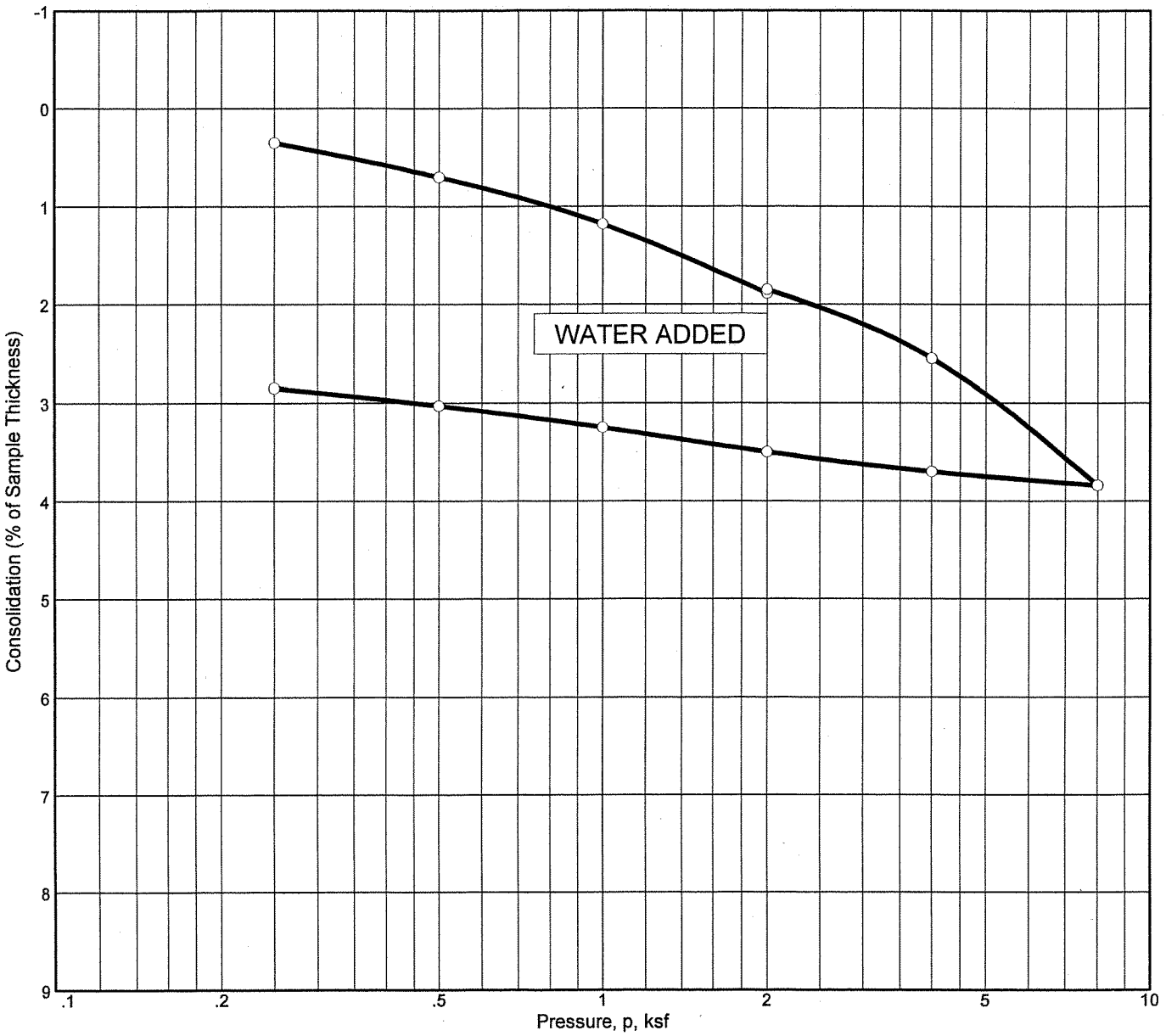
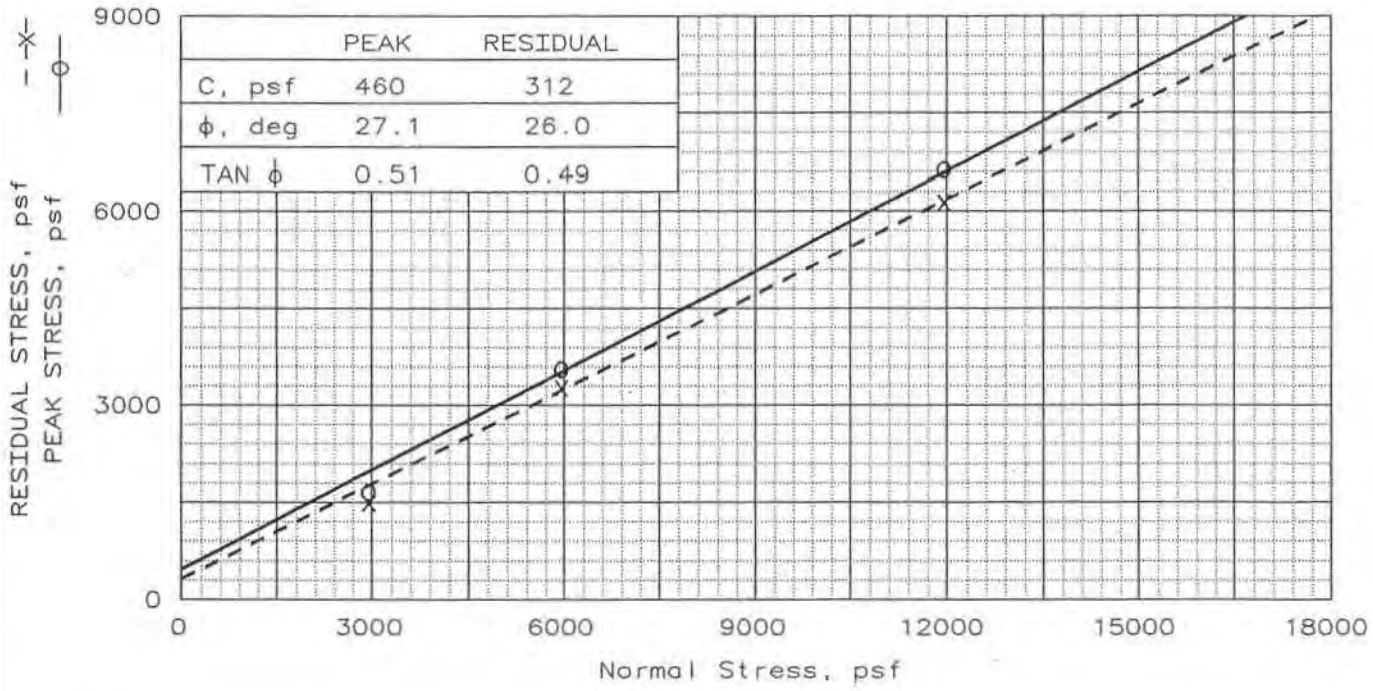


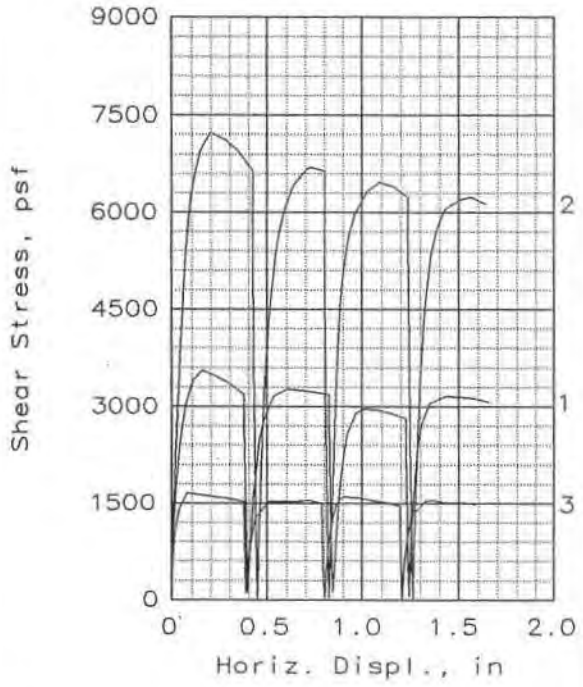
SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	101.8	10.5	44.6	1.000	0.625	2.65	0.07	1.08	4.15	CL-ML
FINAL	104.8	21.8	100.0	0.971	0.579					

Source: HS-33T **Elev./Depth:** 9
Material Description: Sandy, silty CLAY with gravel
Remarks:

ALLAN E. SEWARD **ENGINEERING GEOLOGY, INC.**	**Client:** Newhall Land and Farming Co. **Project:** Mesas East Access Road **Job No.:** 04-2023A-4 **Figure** B1.1





Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	15.5	10.8	15.5
	DRY DENSITY, pcf	100.1	101.4	100.0
	SATURATION, %	63.1	45.2	63.0
	VOID RATIO	0.653	0.632	0.654
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	20.4	18.6	24.6
	DRY DENSITY, pcf	107.4	110.8	100.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.541	0.493	0.652
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.93	0.92	1.00
NORMAL STRESS, psf		6000	12000	3000
PEAK STRESS, psf		3552	6623	1656
DISPLACEMENT, in		0.16	0.12	0.08
RESIDUAL STRESS, psf		3264	6131	1488
DISPLACEMENT, in		0.61	1.64	1.59
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Silty CLAYSTONE (CL-ML)

SPECIFIC GRAVITY= 2.65
REMARKS: Bedrock (TQs) Along-bedding

Fig. No.: B5.21

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East/Bluff Erosion

SAMPLE LOCATION: B-66E @ 65 ft

PROJ. NO.: 04-2023-4 DATE: 7/22/04

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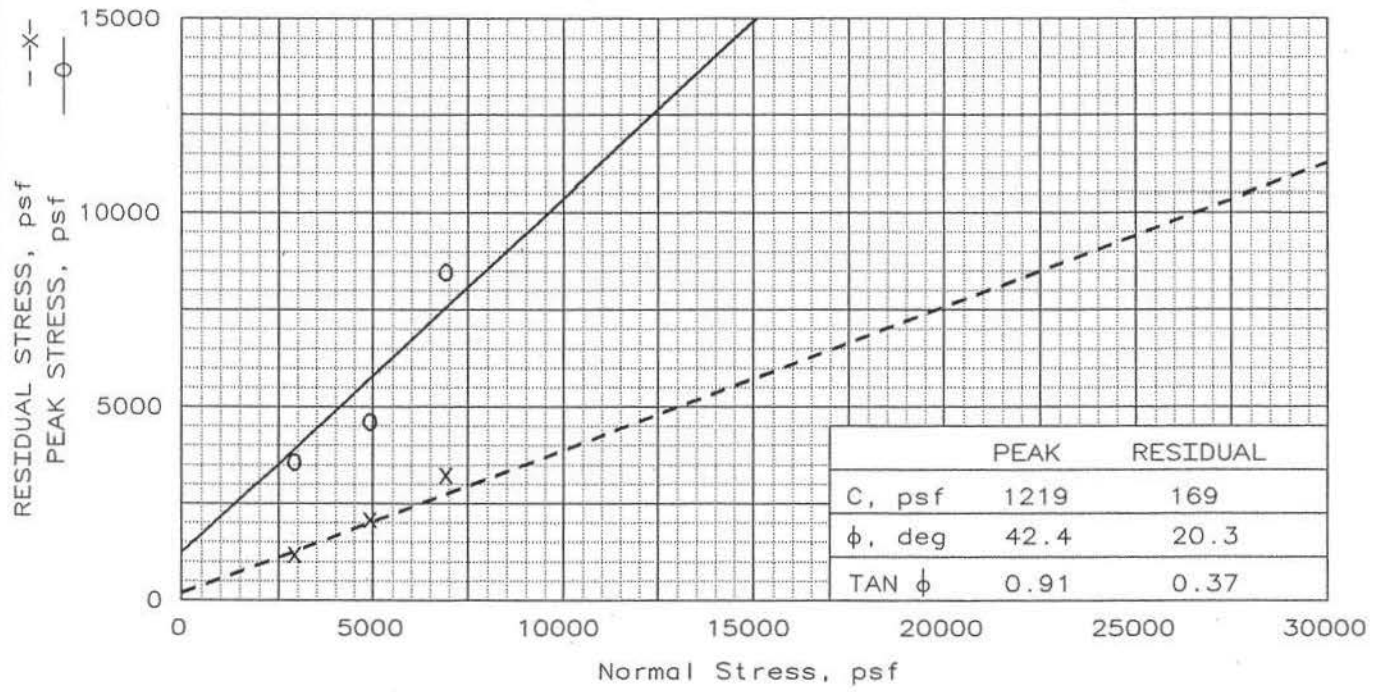

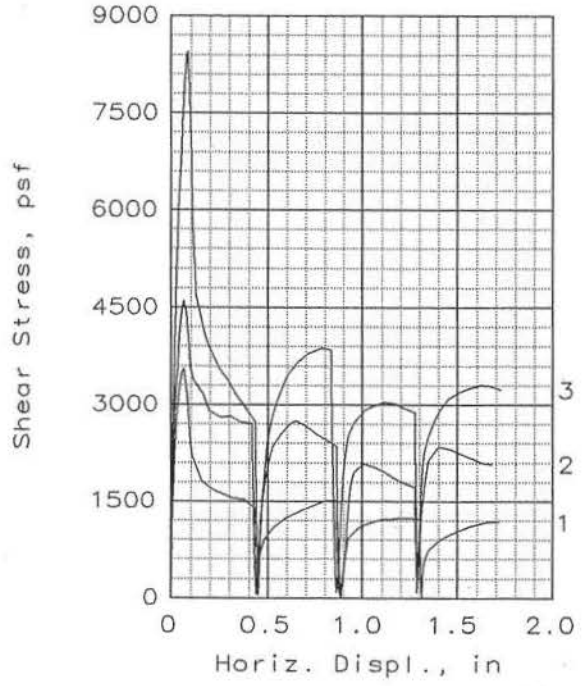

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	15.9	13.3	13.4
	DRY DENSITY, pcf	114.1	119.3	119.3
	SATURATION, %	93.4	90.8	91.7
	VOID RATIO	0.450	0.387	0.386
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	17.3	16.0	15.4
	DRY DENSITY, pcf	113.4	116.1	117.4
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.459	0.425	0.409
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.01	1.03	1.02
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		3564	4608	8459
DISPLACEMENT, in		0.07	0.07	0.09
RESIDUAL STRESS, psf		1176	2076	3228
DISPLACEMENT, in		1.72	1.68	1.73
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Lean CLAYSTONE (CL)
LL= 45 PL= 27 PI= 18
SPECIFIC GRAVITY= 2.65
REMARKS: Bedrock (TQs)
Along-bedding
% fines = 89.2

Fig. No.: B5.22

CLIENT: Newhall Ranch Co.

PROJECT: Mesas West

SAMPLE LOCATION: B-9W @ 32 ft

PROJ. NO.: 04-1703W-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT

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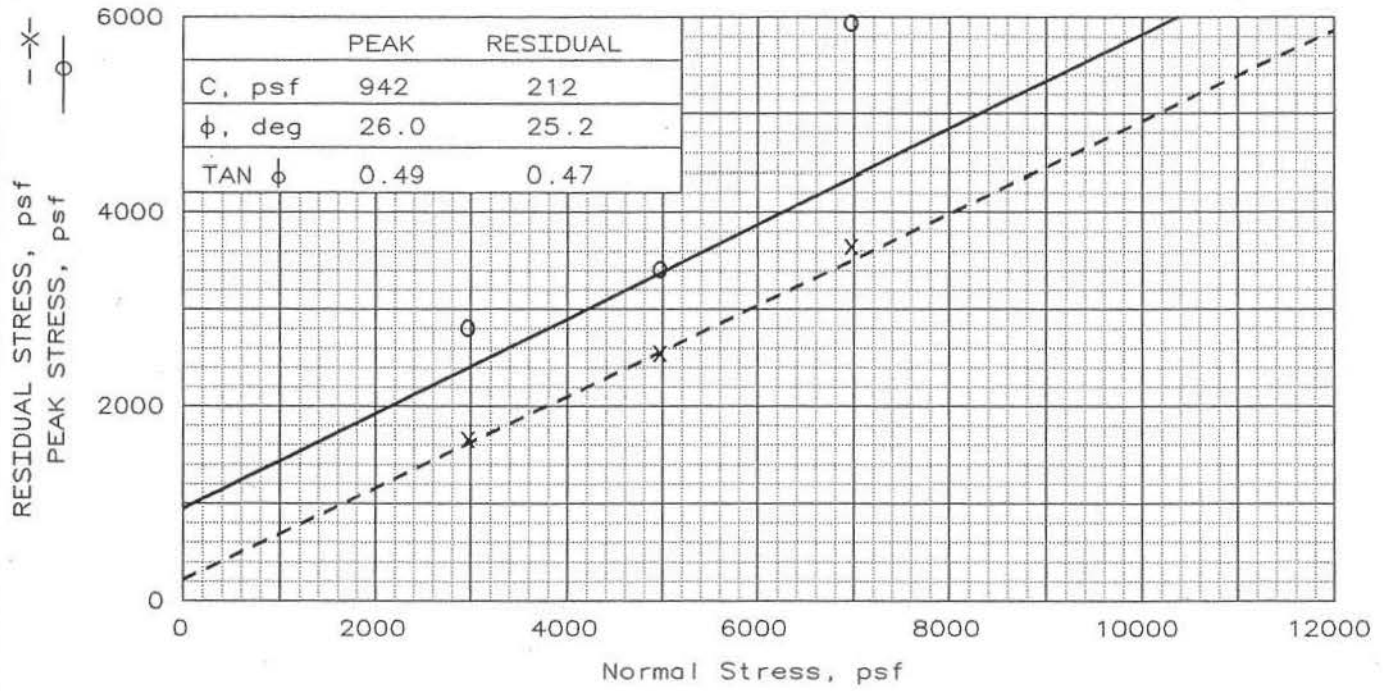

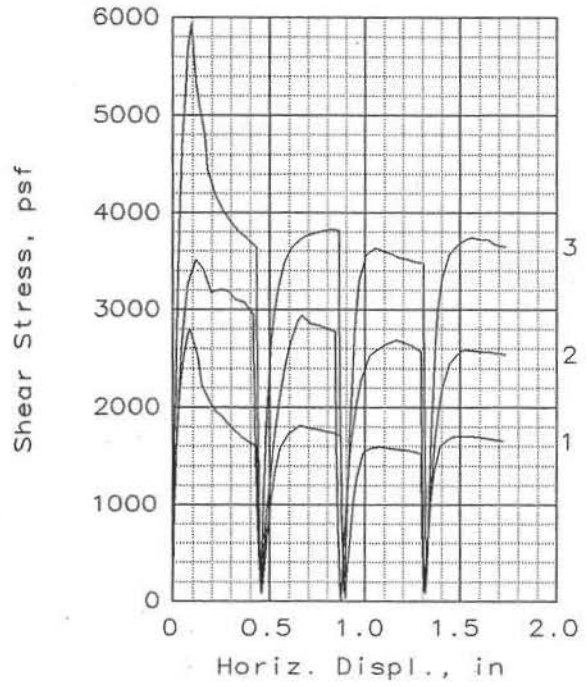

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	12.7	13.1	12.3
	DRY DENSITY, pcf	120.4	119.0	121.9
	SATURATION, %	89.8	88.7	91.2
	VOID RATIO	0.374	0.391	0.357
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	14.7	15.8	14.1
	DRY DENSITY, pcf	119.1	116.5	120.4
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.389	0.420	0.374
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.01	1.02	1.01
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		2808	3408	5939
DISPLACEMENT, in		0.09	0.16	0.10
RESIDUAL STRESS, psf		1656	2544	3648
DISPLACEMENT, in		1.73	1.74	1.74
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Silty CLAYSTONE
(CL-ML)
LL= 41 PL= 25 PI= 16
SPECIFIC GRAVITY= 2.65
REMARKS: Bedrock (TQs)
Along-bedding
% fines = 89.7

Fig. No.: B5.23

CLIENT: Newhall Ranch Co.

PROJECT: Mesas West

SAMPLE LOCATION: B-10W @ 60 ft

PROJ. NO.: 04-1703W-1 DATE: 7/22/04

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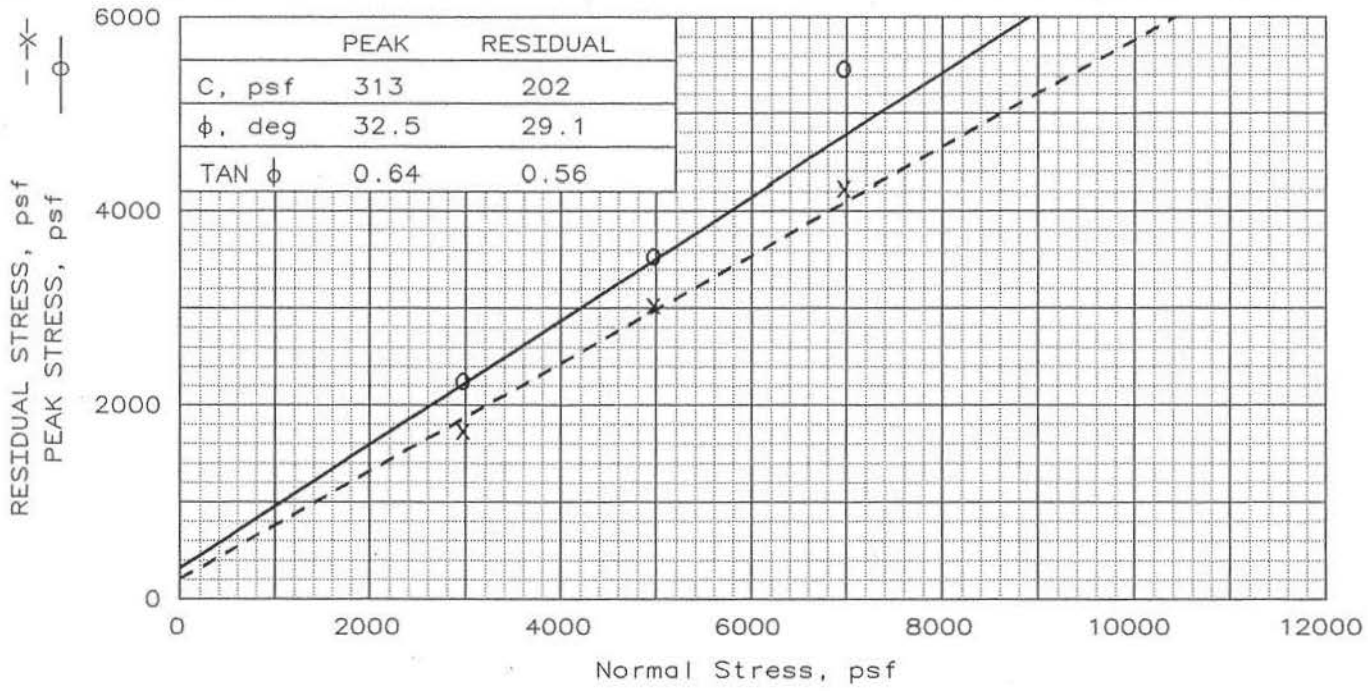

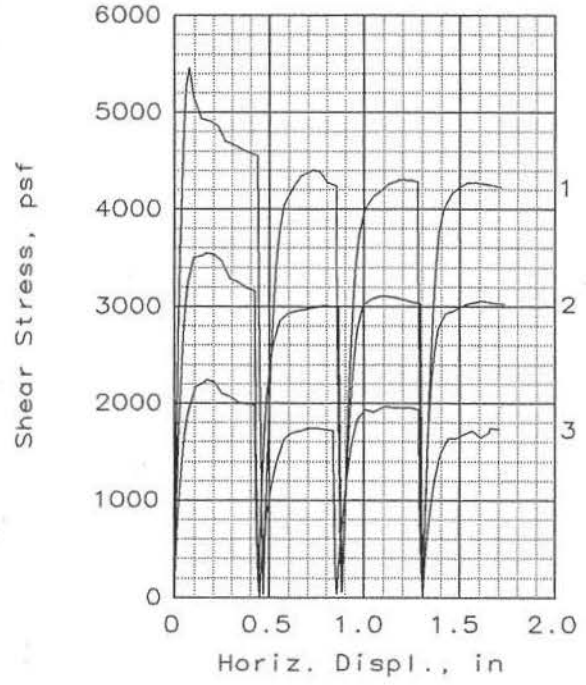

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	10.2	9.6	8.1
	DRY DENSITY, pcf	118.6	109.9	107.2
	SATURATION, %	68.8	50.5	39.8
	VOID RATIO	0.394	0.505	0.543
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	14.8	17.3	19.2
	DRY DENSITY, pcf	118.9	113.5	109.6
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.391	0.458	0.510
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.97	0.98
NORMAL STRESS, psf		7000	5000	3000
PEAK STRESS, psf		5459	3528	2244
DISPLACEMENT, in		0.08	0.21	0.17
RESIDUAL STRESS, psf		4224	3024	1728
DISPLACEMENT, in		1.72	1.74	1.71
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Sandy SILTSTONE (ML)

SPECIFIC GRAVITY= 2.65
REMARKS: Bedrock (TQs)
Along-bedding
% fines = 54.6

Fig. No.: B5.24

CLIENT: Newhall Ranch Co.

PROJECT: Mesas West

SAMPLE LOCATION: B-15W @ 35 ft

PROJ. NO.: 04-1703W-1 DATE: 7/22/04

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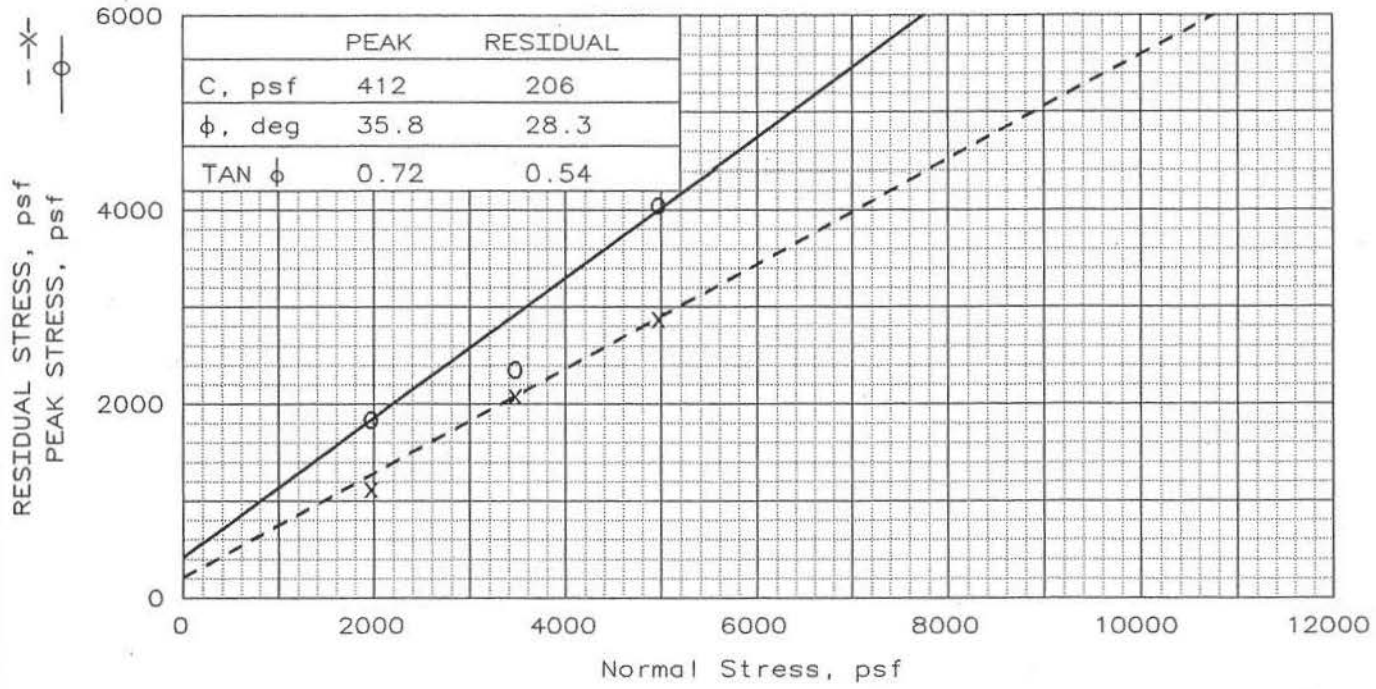

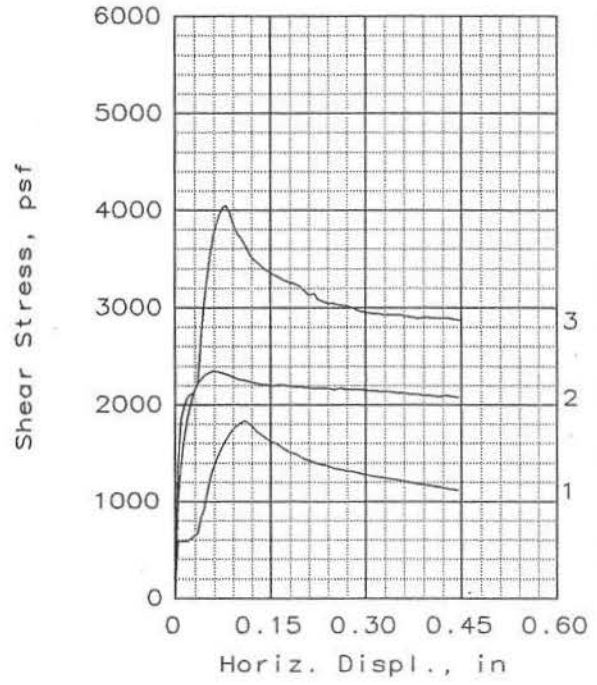

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	18.2	31.5	14.3
	DRY DENSITY, pcf	103.8	88.6	113.5
	SATURATION, %	81.2	96.1	83.1
	VOID RATIO	0.594	0.868	0.457
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	21.8	31.8	16.2
	DRY DENSITY, pcf	104.8	89.8	115.7
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.579	0.843	0.430
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.99	0.98
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1836	2352	4044
DISPLACEMENT, in		0.11	0.06	0.08
RESIDUAL STRESS, psf		1116	2076	2868
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: SILT with sand (ML)
LL= 35 PL= 21 PI= 14
SPECIFIC GRAVITY= 2.65
REMARKS: Terrace Deposit (Qt)
% fines = 75.3

Fig. No.: B5.25

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-27E @ 5 ft

PROJ. NO.: 00-1703QLSII-1 DATE: 7/22/04

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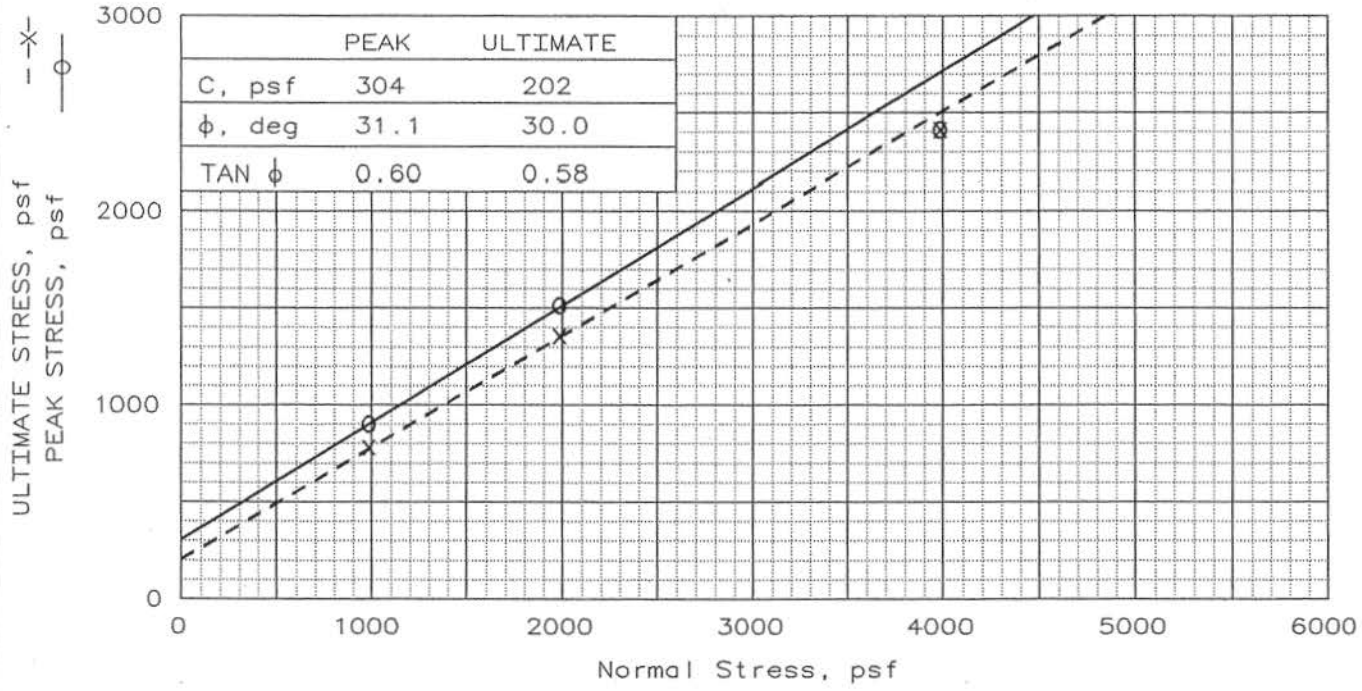

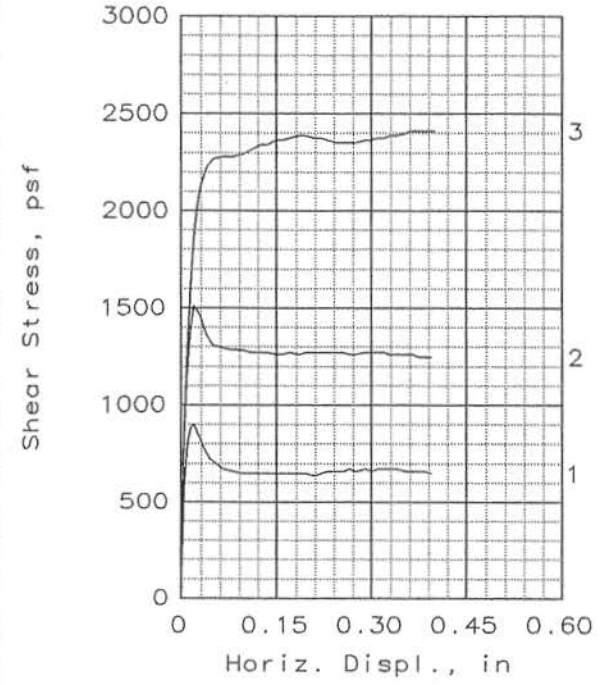

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	8.9	8.4	9.5
	DRY DENSITY, pcf	118.0	118.1	117.5
	SATURATION, %	58.6	55.6	61.9
	VOID RATIO	0.402	0.401	0.408
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	15.1	14.6	14.6
	DRY DENSITY, pcf	118.2	119.3	119.3
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.399	0.386	0.387
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.99	0.98
NORMAL STRESS, psf		1000	2000	4000
PEAK STRESS, psf		900	1512	2412
DISPLACEMENT, in		0.02	0.02	0.36
ULTIMATE STRESS, psf		780	1356	2412
DISPLACEMENT, in		0.04	0.04	0.40
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Silty SAND with clay (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Terrace Deposit (Qt)
% fines = 41.9

Fig. No.: B5.26

CLIENT: Newhall Ranch Co.

PROJECT: Cobble/Boulder Assessment
Airport and Exxon Mesas
SAMPLE LOCATION: B-2B @ 15 ft

PROJ. NO.: 02-1703B-1 DATE: 7/22/04

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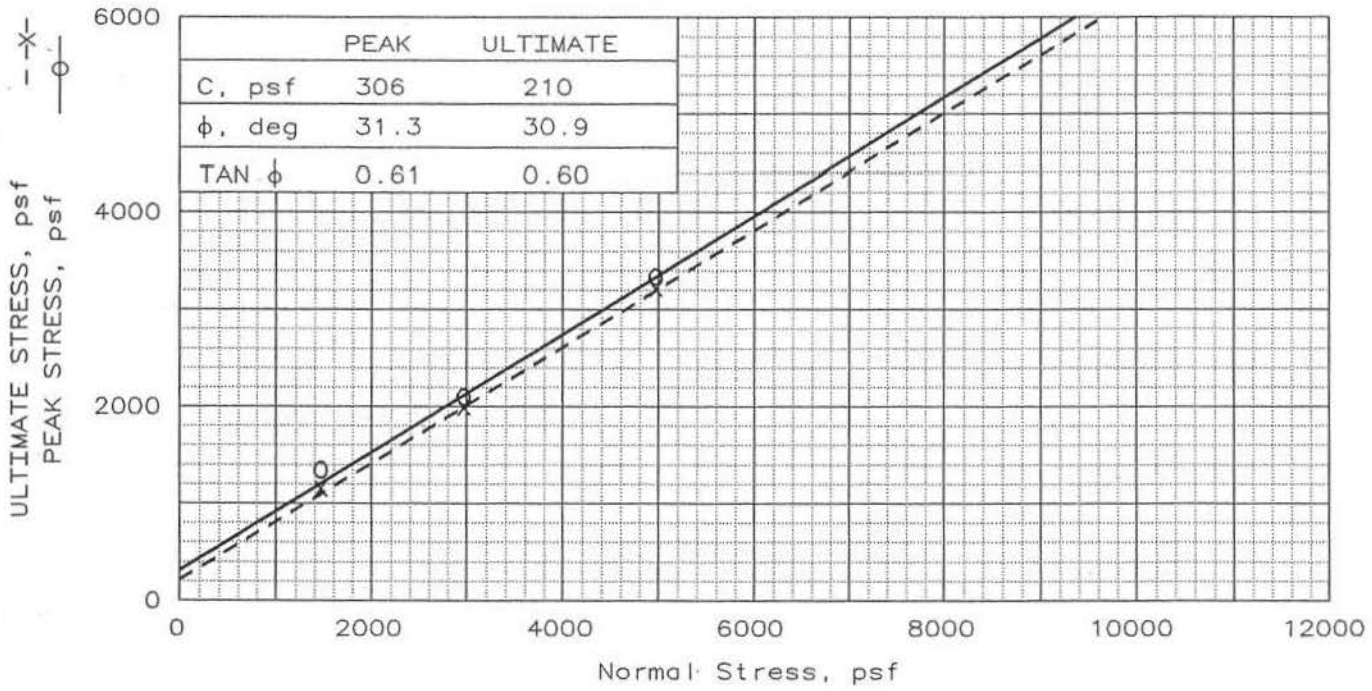

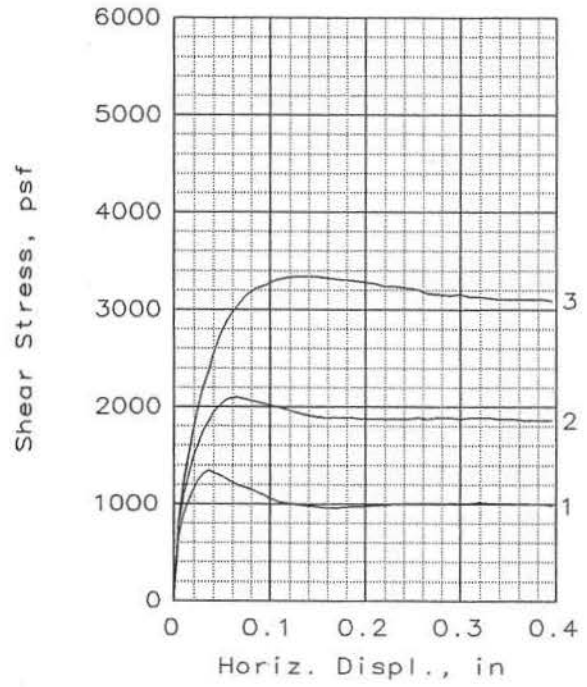

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	15.4	15.7	16.3
	DRY DENSITY, pcf	112.0	112.5	115.0
	SATURATION, %	85.3	88.3	98.3
	VOID RATIO	0.477	0.471	0.438
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	17.7	17.1	15.5
	DRY DENSITY, pcf	112.6	113.8	117.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.469	0.453	0.412
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.99	0.98
NORMAL STRESS, psf		1500	3000	5000
PEAK STRESS, psf		1344	2100	3336
DISPLACEMENT, in		0.04	0.07	0.13
ULTIMATE STRESS, psf		1152	1992	3216
DISPLACEMENT, in		0.08	0.11	0.25
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Silty SAND (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Terrace Deposit (Qt)

Fig. No.: B5.27

CLIENT: Newhall Ranch Co.

PROJECT: Cobble/Boulder Assessment
Airport and Exxon Mesas
SAMPLE LOCATION: B-6B @ 15 ft

PROJ. NO.: 02-1703B-1 DATE: 7/22/04

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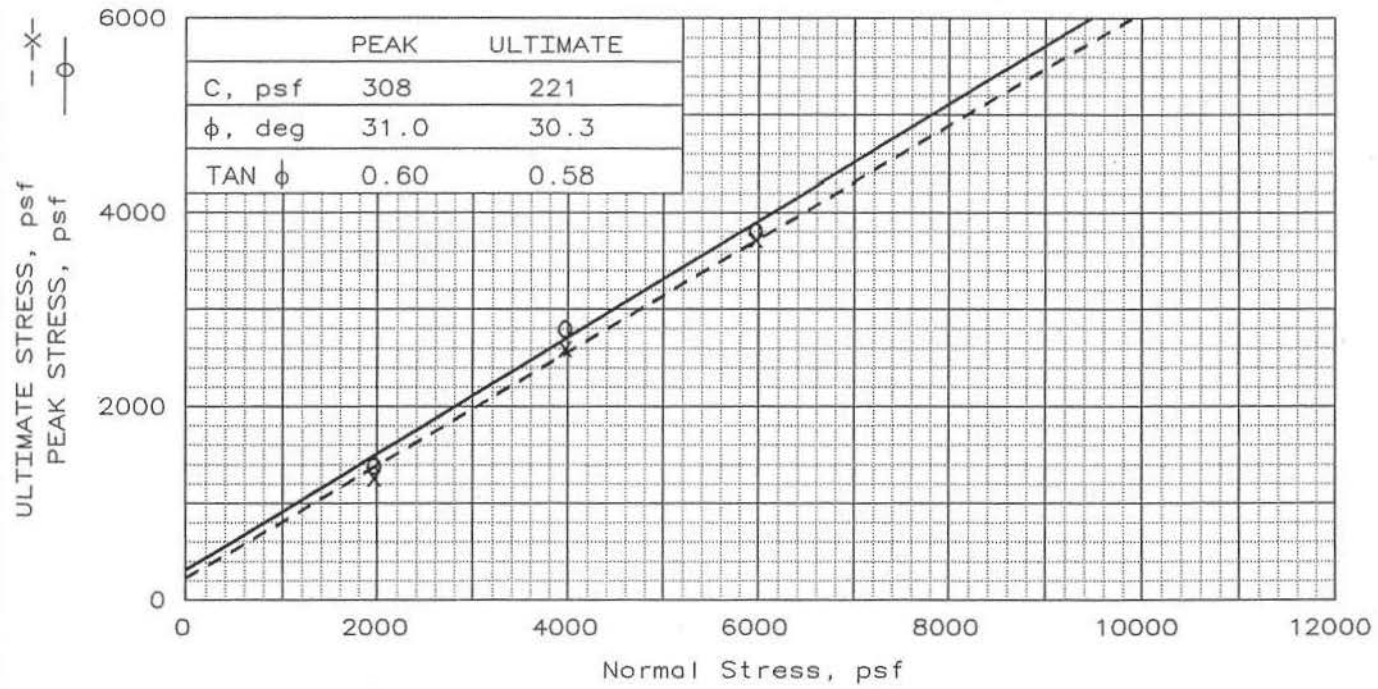

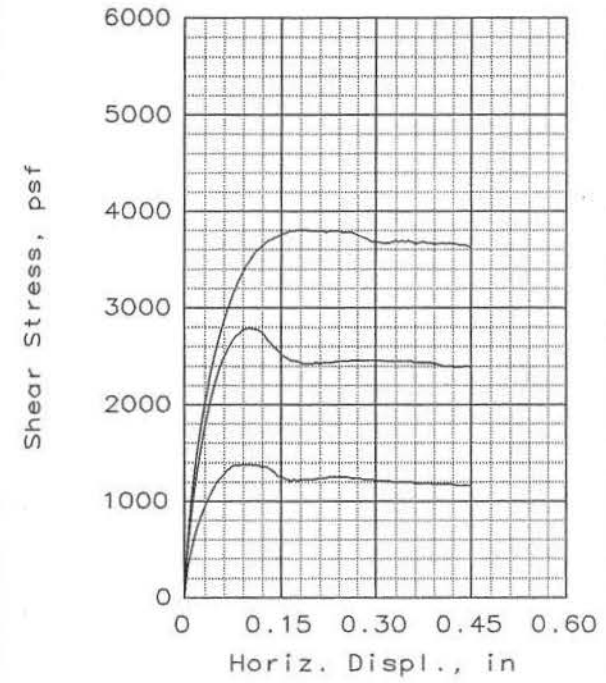

SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	11.2	6.3	7.5
	DRY DENSITY, pcf	105.9	107.5	109.6
	SATURATION, %	53.0	31.1	38.8
	VOID RATIO	0.562	0.538	0.509
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	22.2	19.1	21.0
	DRY DENSITY, pcf	104.2	109.8	106.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.588	0.506	0.558
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.02	0.98	1.03
NORMAL STRESS, psf		2000	4000	6000
PEAK STRESS, psf		1380	2796	3804
DISPLACEMENT, in		0.09	0.10	0.18
ULTIMATE STRESS, psf		1260	2592	3720
DISPLACEMENT, in		0.15	0.14	0.29
Strain rate, %/min		0.01	0.01	0.01

SAMPLE TYPE: Undisturbed
DESCRIPTION: Silty SAND (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Terrace Deposit (Qt)
% fines = 38.3

Fig. No.: B5.28

CLIENT: Newhall Ranch Co.

PROJECT: Mesas West

SAMPLE LOCATION: B-6W @ 45 ft

PROJ. NO.: 04-1703W-1 DATE: 7/22/04

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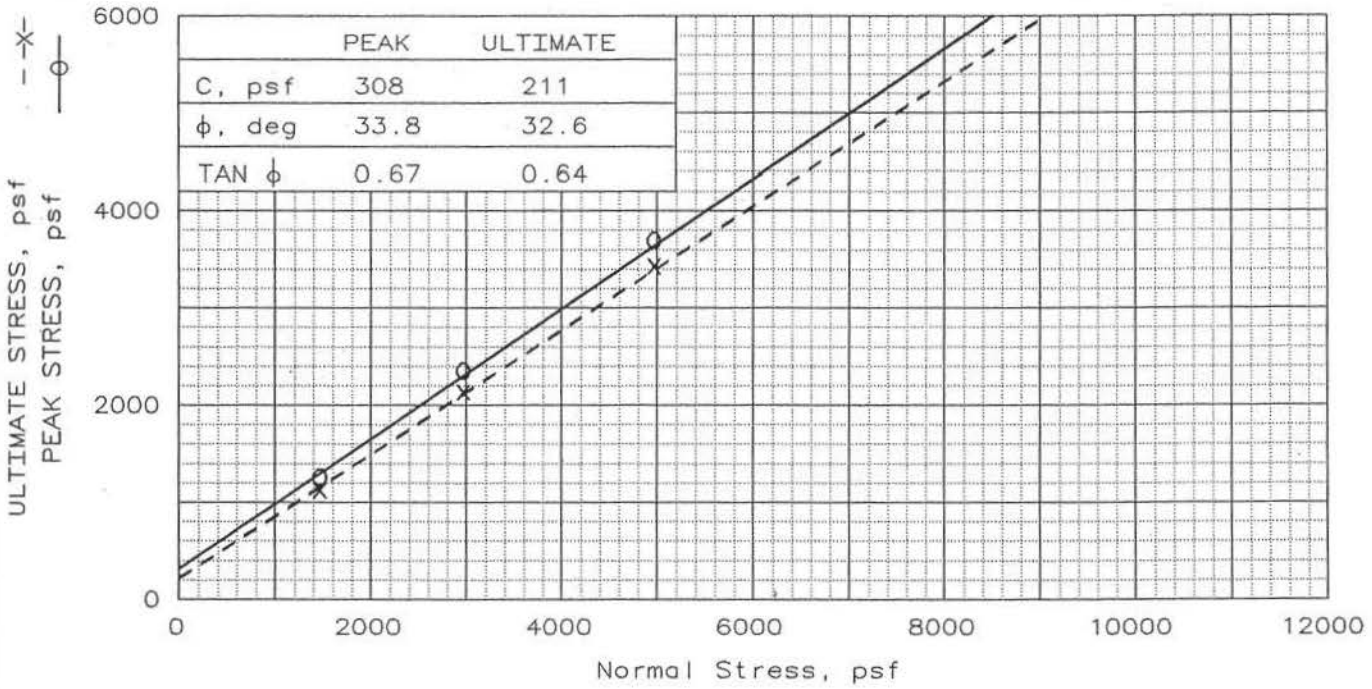

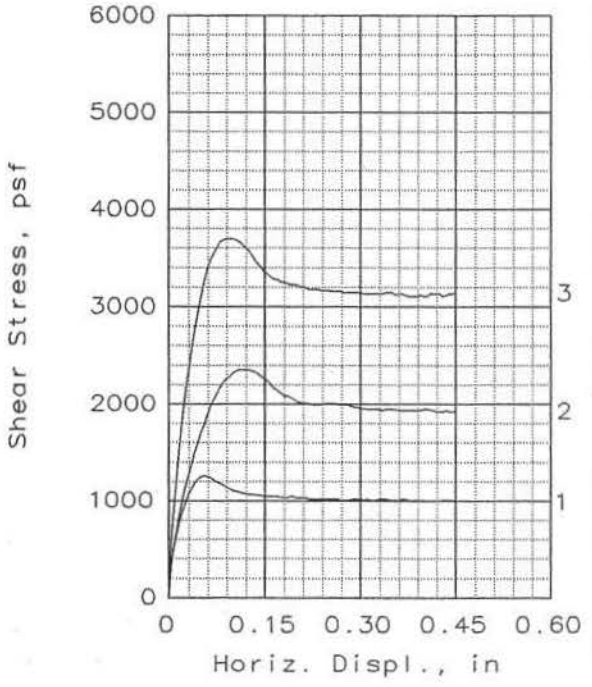

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	9.7	10.4	9.6
	DRY DENSITY, pcf	116.7	120.1	121.7
	SATURATION, %	61.5	73.1	70.5
	VOID RATIO	0.418	0.378	0.359
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	14.9	13.4	12.6
	DRY DENSITY, pcf	118.7	122.2	124.1
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.394	0.354	0.334
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.98	0.98	0.98
NORMAL STRESS, psf		1500	3000	5000
PEAK STRESS, psf		1260	2352	3696
DISPLACEMENT, in		0.06	0.11	0.09
ULTIMATE STRESS, psf		1128	2136	3432
DISPLACEMENT, in		0.10	0.17	0.14
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Clayey SAND (SC)

SPECIFIC GRAVITY= 2.65
REMARKS: Terrace Deposit (Qt)

Fig. No.: B5.29

CLIENT: Newhall Ranch Co.

PROJECT: Mesas West

SAMPLE LOCATION: B-11W @ 20 ft

PROJ. NO.: 04-1703W-1 DATE: 7/22/04

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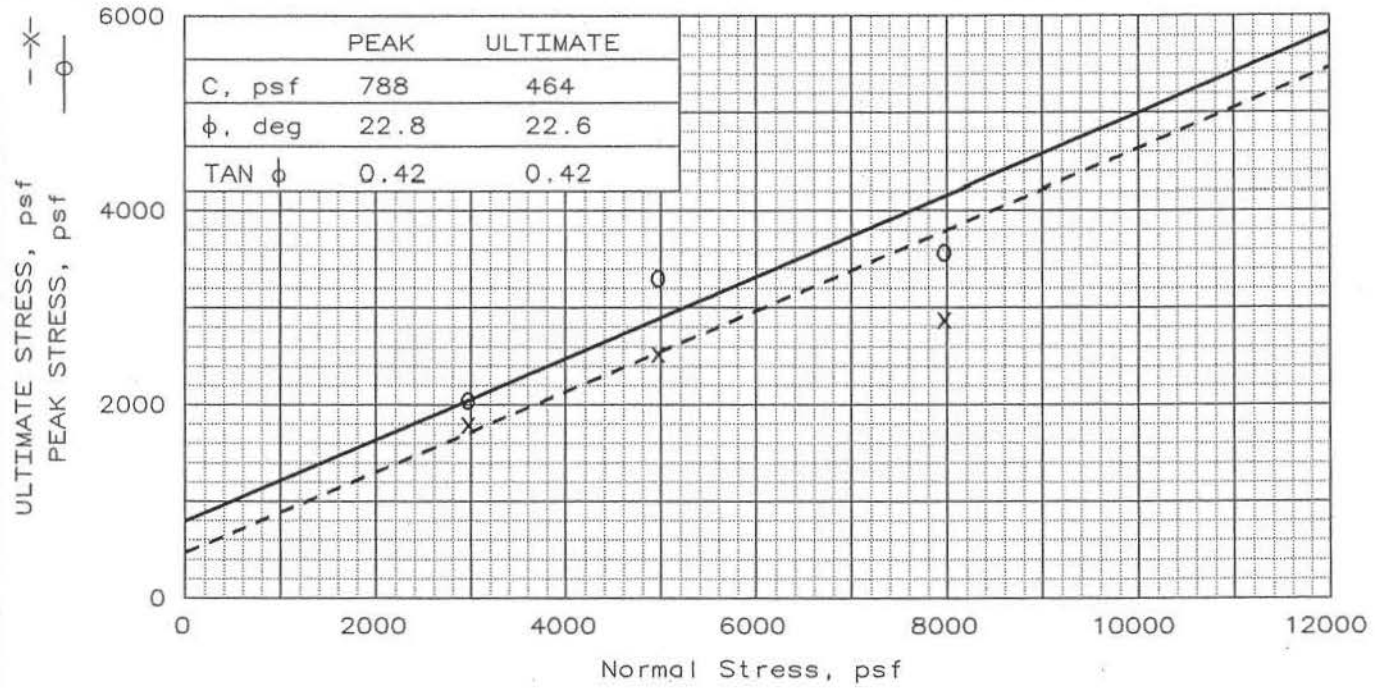

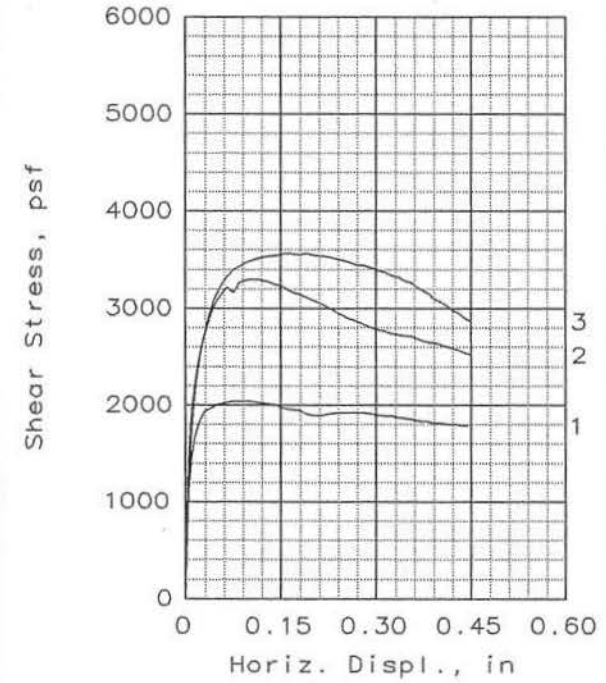

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	27.9	26.8	26.3
	DRY DENSITY, pcf	95.0	96.7	97.5
	SATURATION, %	99.7	99.9	99.9
	VOID RATIO	0.742	0.710	0.697
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	28.4	27.2	25.9
	DRY DENSITY, pcf	94.4	96.1	98.1
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.753	0.722	0.687
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.01	1.01	0.99
NORMAL STRESS, psf		3000	5000	8000
PEAK STRESS, psf		2040	3300	3564
DISPLACEMENT, in		0.08	0.10	0.16
ULTIMATE STRESS, psf		1788	2520	2868
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undistubed
DESCRIPTION: CLAYSTONE (CH)

LL= 94 PL= 36 PI= 58
SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)
% fines = 99.5

Fig. No.: B5.30

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-10E @ 23 ft

PROJ. NO.: 00-1703QlsII-1 DATE: 7/22/04

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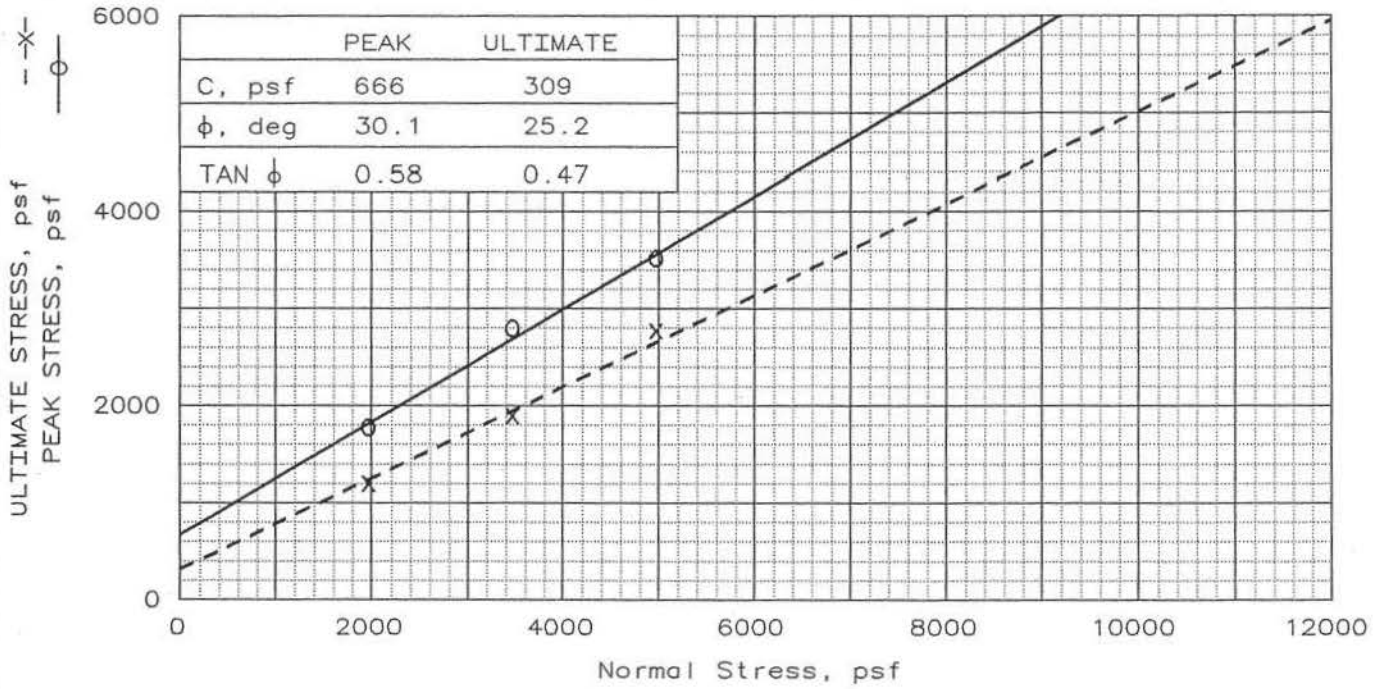

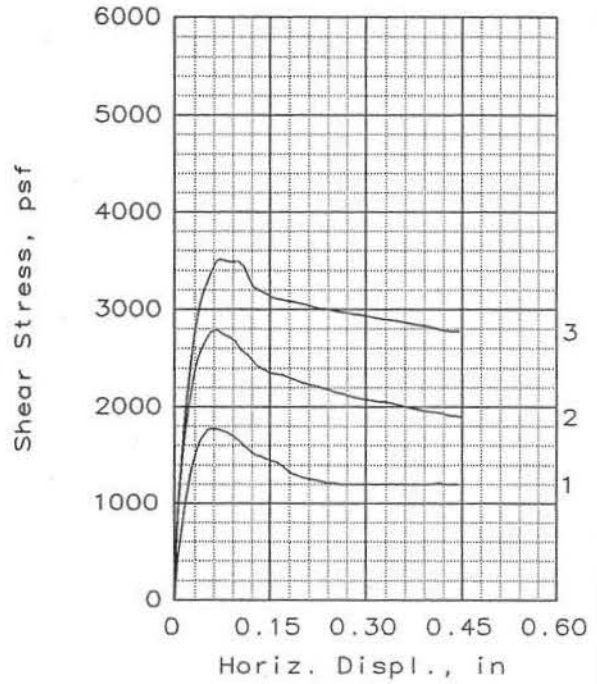

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	18.5	17.9	17.3
	DRY DENSITY, pcf	105.6	106.3	106.6
	SATURATION, %	86.6	85.5	83.0
	VOID RATIO	0.567	0.556	0.552
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	20.8	19.8	19.3
	DRY DENSITY, pcf	106.6	108.4	109.4
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.551	0.526	0.512
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.98	0.97
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1776	2796	3516
DISPLACEMENT, in		0.06	0.07	0.07
ULTIMATE STRESS, psf		1200	1896	2772
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: MUDSTONE with sand (CL)
LL= 42 PL= 23 PI= 19
SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)
% fines = 83.8

Fig. No.: B5.31

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-14E @ 15 ft

PROJ. NO.: 99-1703QlsII-1 DATE: 7/22/04

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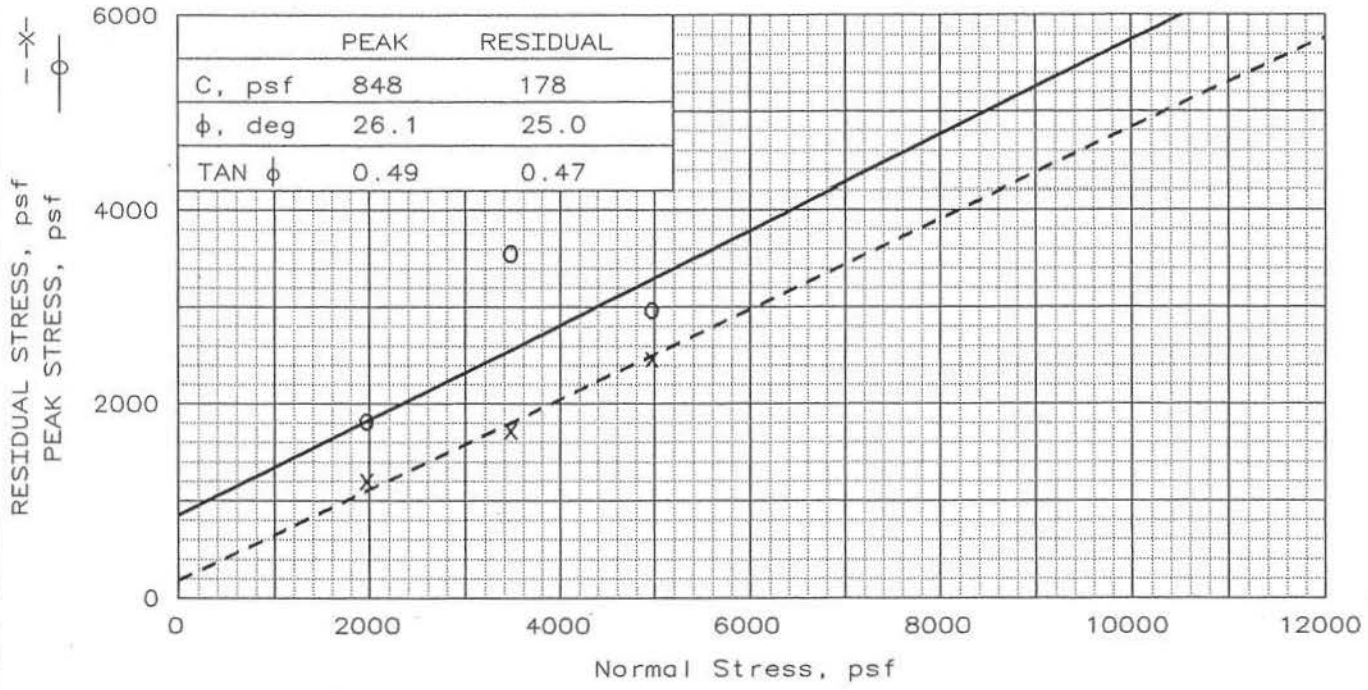

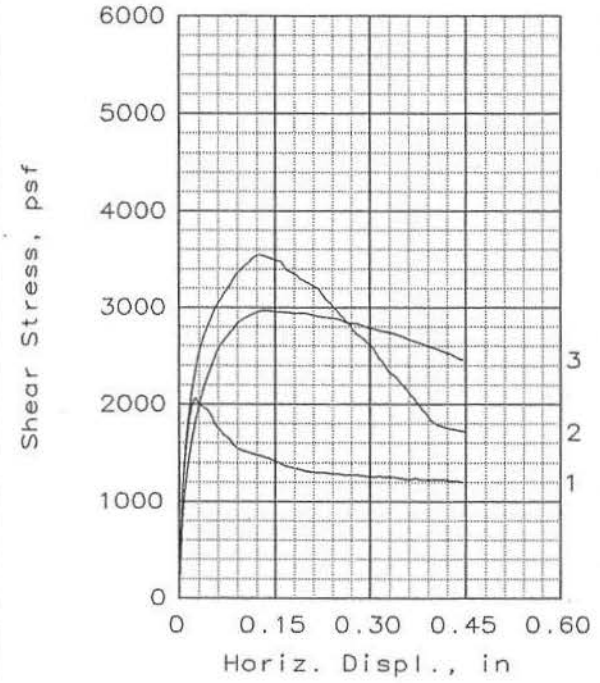

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	14.5	16.0	15.2
	DRY DENSITY, pcf	108.7	105.2	105.2
	SATURATION, %	73.9	74.1	70.2
	VOID RATIO	0.522	0.573	0.573
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	19.7	21.6	21.6
	DRY DENSITY, pcf	108.7	105.2	105.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.522	0.573	0.573
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1812	3552	2964
DISPLACEMENT, in		0.06	0.13	0.13
RESIDUAL STRESS, psf		1200	1716	2460
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: MUDSTONE and SILTSTONE (CL-ML)
LL= 45 PL= 23 PI= 22
SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)
% fines = 87.2

Fig. No.: B5.32

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-19E @ 10 ft

PROJ. NO.: 00-1703QLSII-1 DATE: 7/22/04

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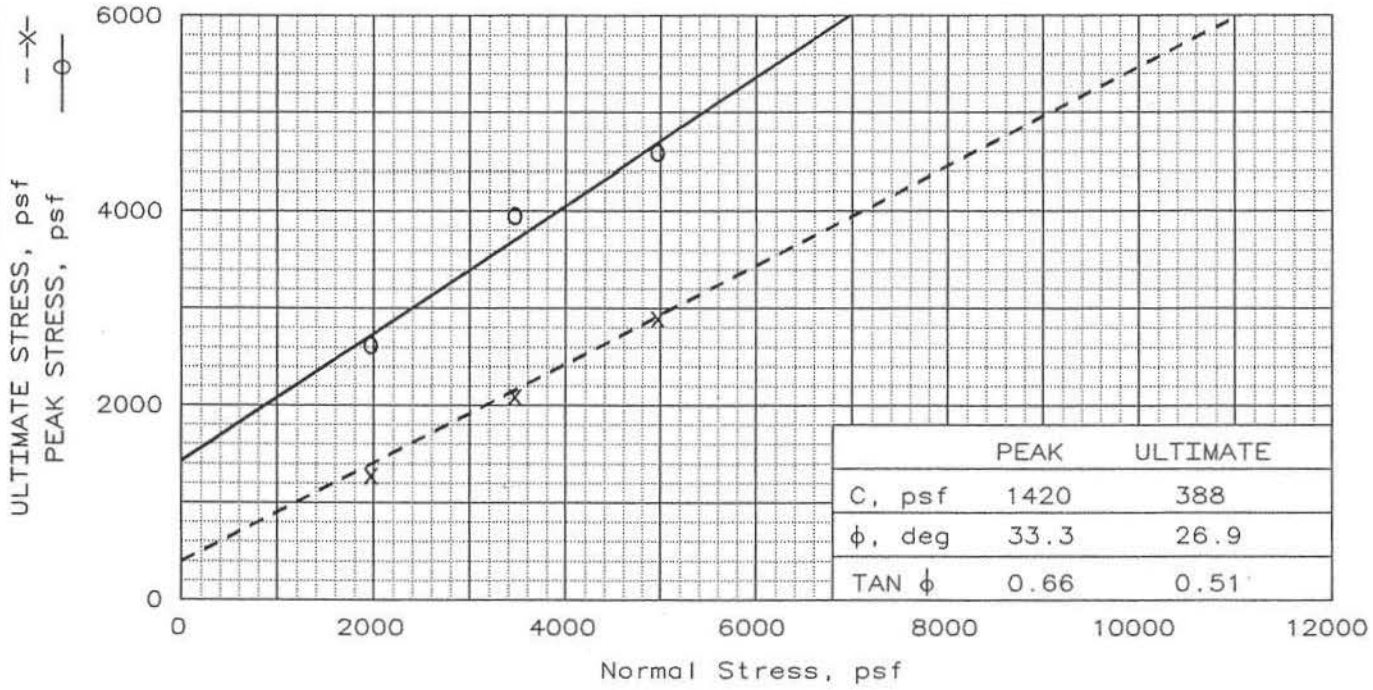

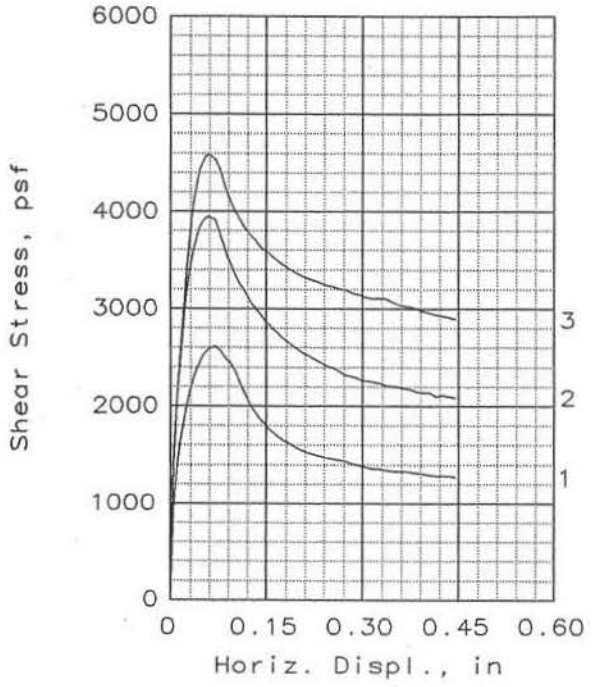

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	12.7	10.6	15.2
	DRY DENSITY, pcf	121.6	122.0	117.0
	SATURATION, %	93.0	79.2	97.7
	VOID RATIO	0.361	0.356	0.413
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	13.6	12.8	15.1
	DRY DENSITY, pcf	121.7	123.6	118.3
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.360	0.338	0.399
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.99	0.99
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		2616	3948	4584
DISPLACEMENT, in		0.07	0.06	0.06
ULTIMATE STRESS, psf		1272	2088	2892
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Lean CLAYSTONE with sand (CL)
LL= 34 PL= 19 PI= 15
SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)
% fines = 73.7

Fig. No.: B5.33

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-32E @ 20 ft

PROJ. NO.: 00-1703QLSII-1 DATE: 7/22/04

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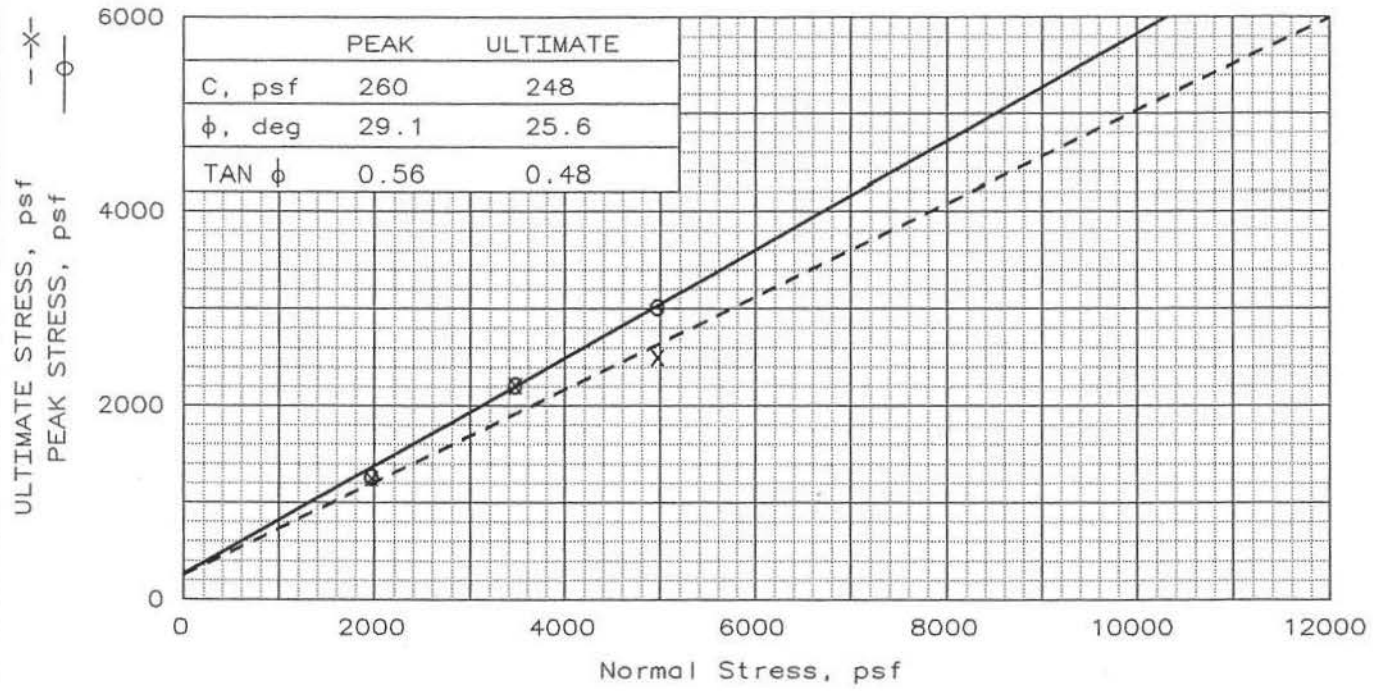

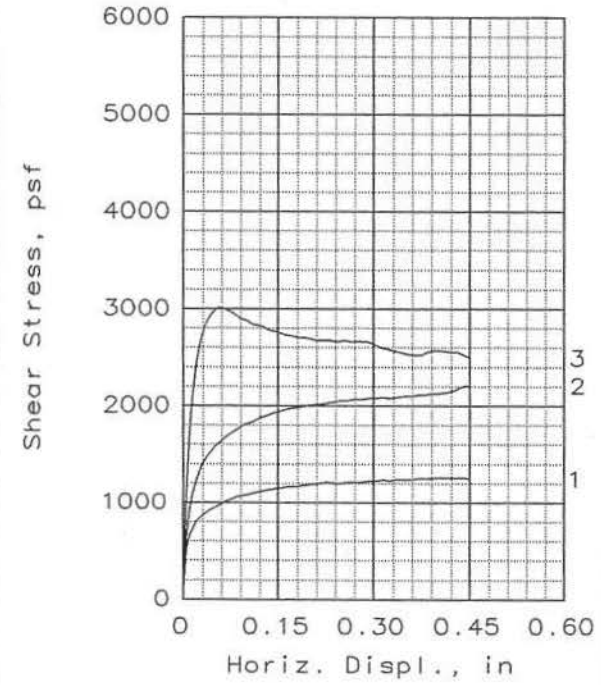

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	7.2	6.7	8.2
	DRY DENSITY, pcf	107.1	107.5	114.7
	SATURATION, %	35.0	32.9	49.3
	VOID RATIO	0.545	0.538	0.443
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	20.1	18.8	16.1
	DRY DENSITY, pcf	108.0	110.4	115.9
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.532	0.498	0.428
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.97	0.99
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1260	2208	3012
DISPLACEMENT, in		0.40	0.44	0.06
ULTIMATE STRESS, psf		1248	2208	2496
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Sandy CLAYSTONE (CL)
LL= 38 PL= 21 PI= 17
SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)
% fines = 66.0

Fig. No.: B5.34

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-35E @ 10 ft

PROJ. NO.: 00-1703QLSII-1 DATE: 7/22/04

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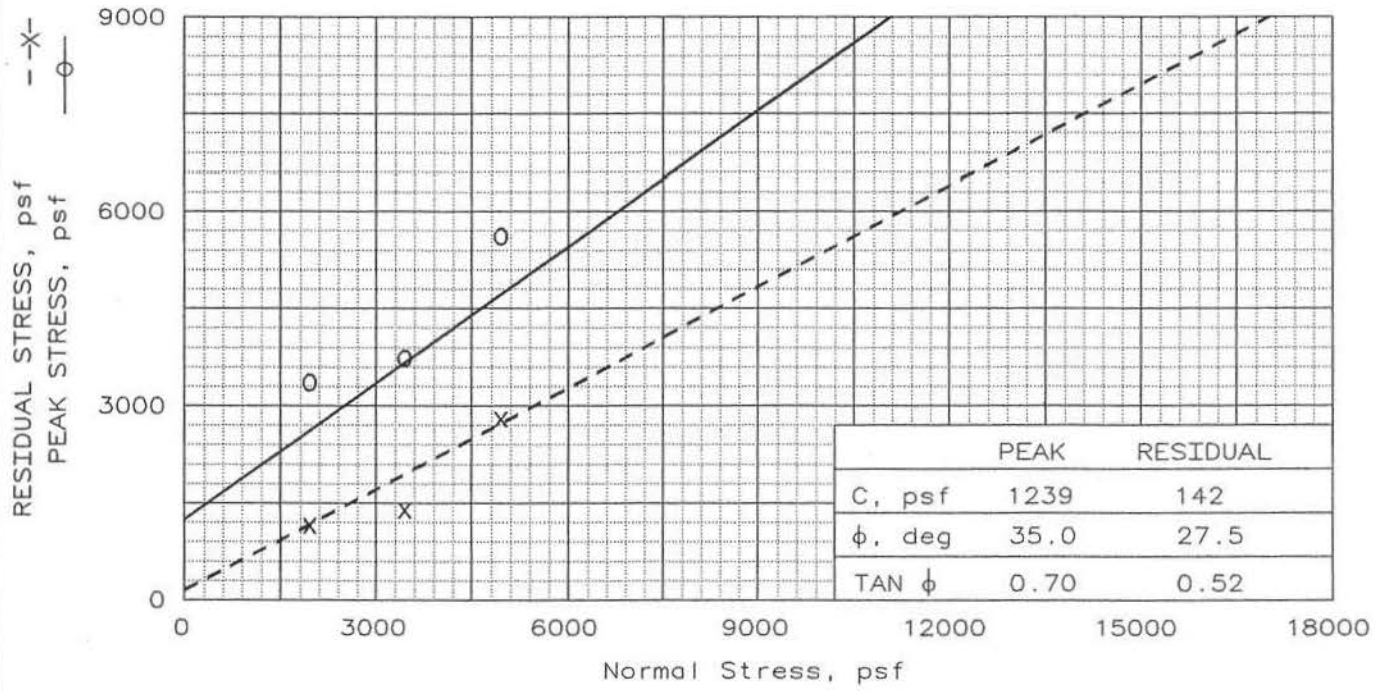

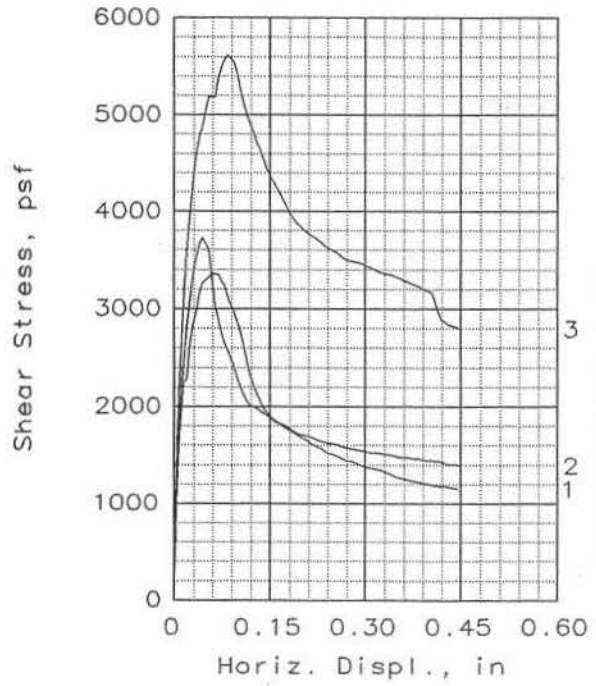

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	16.8	17.8	16.5
	DRY DENSITY, pcf	113.4	110.2	115.2
	SATURATION, %	97.1	93.9	100.0
	VOID RATIO	0.459	0.501	0.436
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	19.0	19.6	16.3
	DRY DENSITY, pcf	110.1	108.8	115.4
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.503	0.520	0.433
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.03	1.01	1.00
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		3360	3732	5615
DISPLACEMENT, in		0.06	0.05	0.09
RESIDUAL STRESS, psf		1152	1392	2796
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: MUDSTONE, sandy SILTSTONE and fat CLAY (CH)
LL= 56 PL= 25 PI= 31
SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)
% fines = 88.4

Fig. No.: B5.35

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-43E @ 20 ft

PROJ. NO.: 00-1703QLSII-1 DATE: 7/22/04

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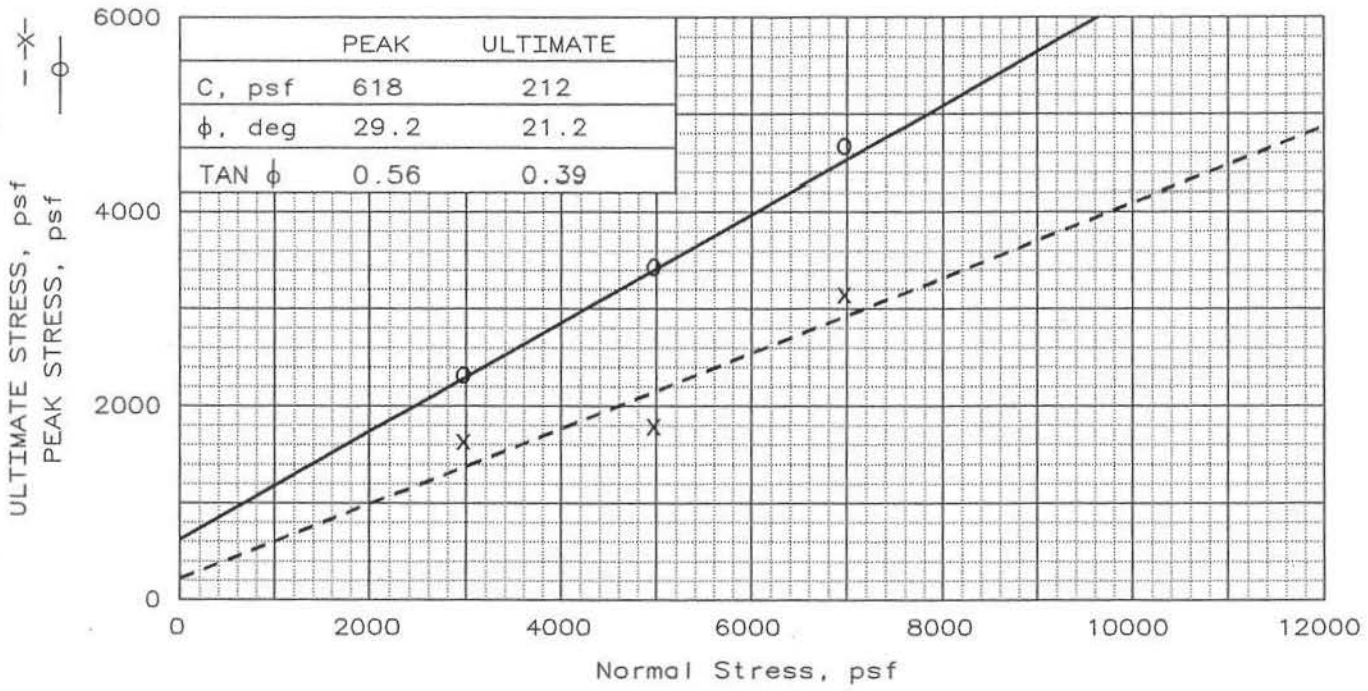

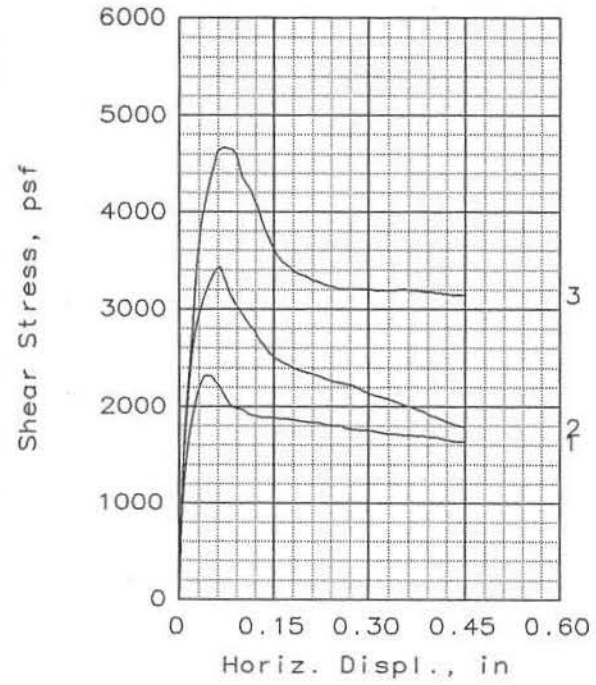

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	16.0	22.3	20.5
	DRY DENSITY, pcf	108.8	103.6	106.5
	SATURATION, %	81.4	99.0	98.3
	VOID RATIO	0.521	0.596	0.554
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	19.2	21.7	19.8
	DRY DENSITY, pcf	109.7	105.0	108.5
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.508	0.575	0.525
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.99	0.98
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		2316	3432	4668
DISPLACEMENT, in		0.04	0.07	0.07
ULTIMATE STRESS, psf		1632	1788	3144
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: CLAYSTONE (CL)

LL= 43 PL= 24 PI= 19
SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)
% fines = 84.4

Fig. No.: B5.36

CLIENT: Newhall Ranch Co.

PROJECT: Newhall Ranch - Mesas East

SAMPLE LOCATION: B-56E @ 30 ft

PROJ. NO.: 00-1703CM-1 DATE: 7/22/04

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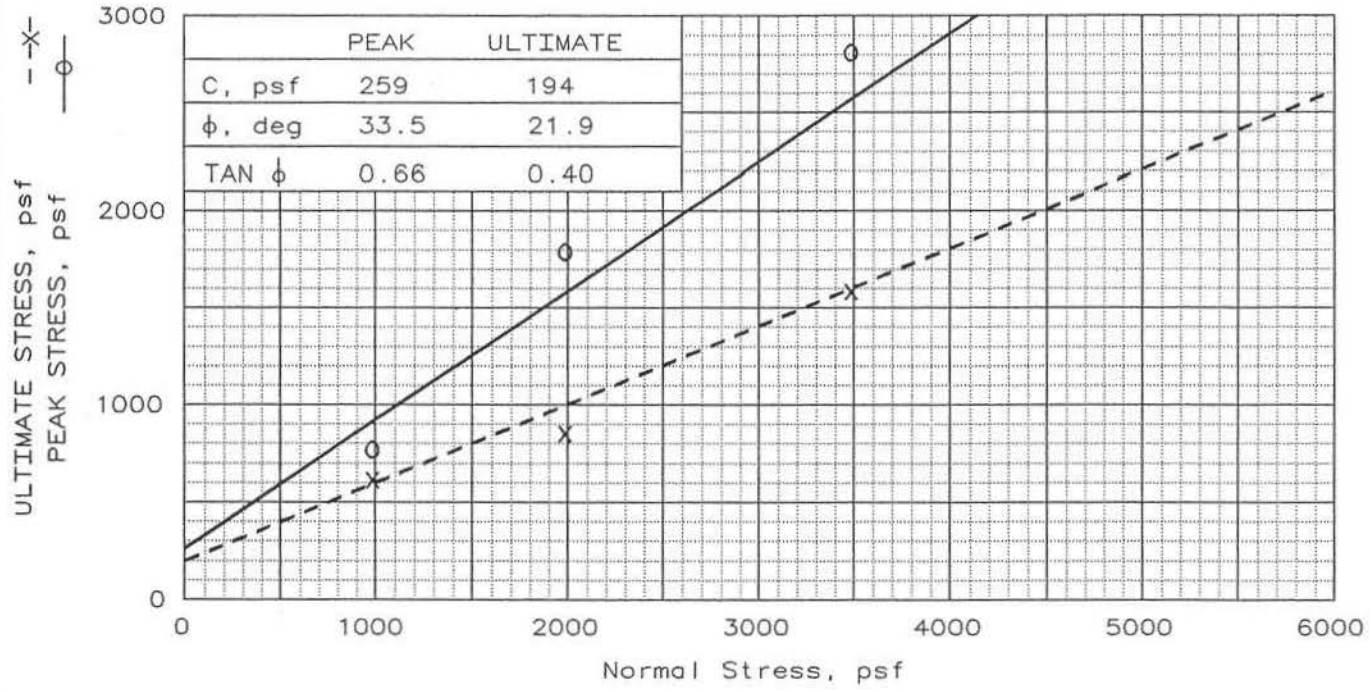

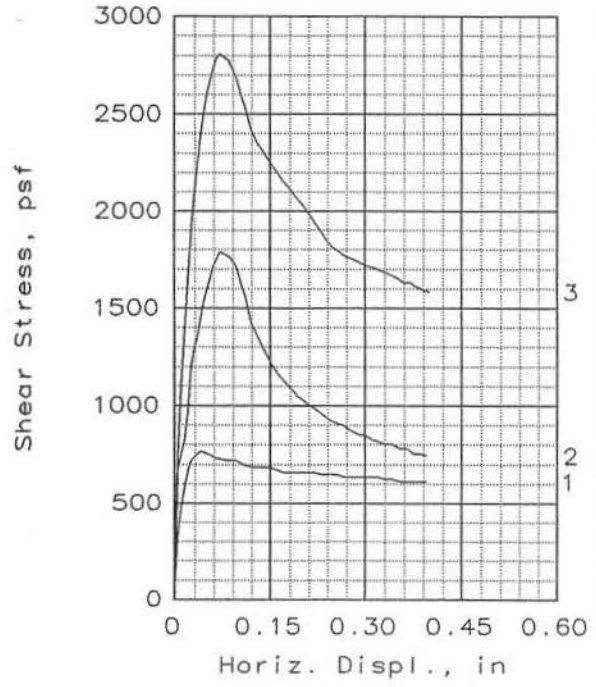

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	10.2	19.7	21.6
	DRY DENSITY, pcf	104.2	99.4	100.5
	SATURATION, %	46.0	78.7	88.5
	VOID RATIO	0.588	0.664	0.646
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	22.4	26.3	24.2
	DRY DENSITY, pcf	103.9	97.5	100.8
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.593	0.697	0.641
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.02	1.00
NORMAL STRESS, psf		1000	2000	3500
PEAK STRESS, psf		768	1788	2808
DISPLACEMENT, in		0.04	0.07	0.07
ULTIMATE STRESS, psf		612	852	1584
DISPLACEMENT, in		0.40	0.30	0.40
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: SILTSTONE with sand (ML)

SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)
% fines = 83.4

Fig. No.: B5.37

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-6M @ 15 ft

PROJ. NO.: 01-1703M-1 DATE: 7/22/04

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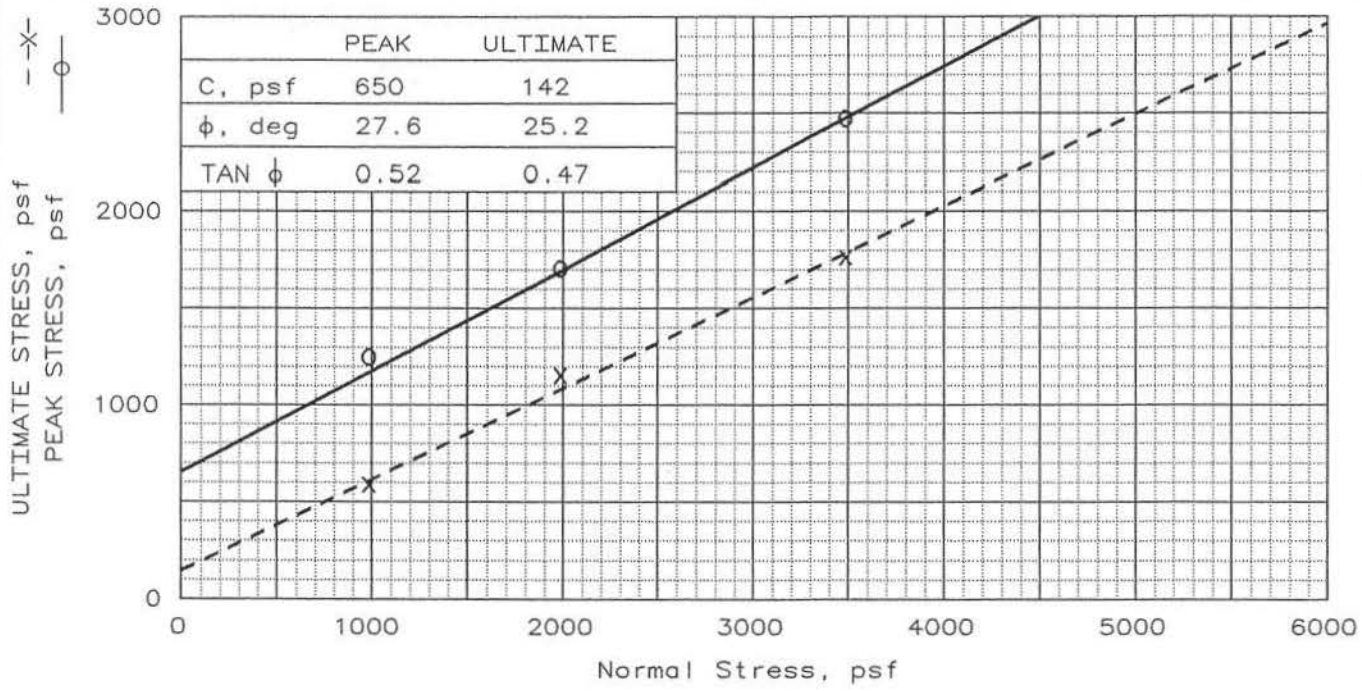

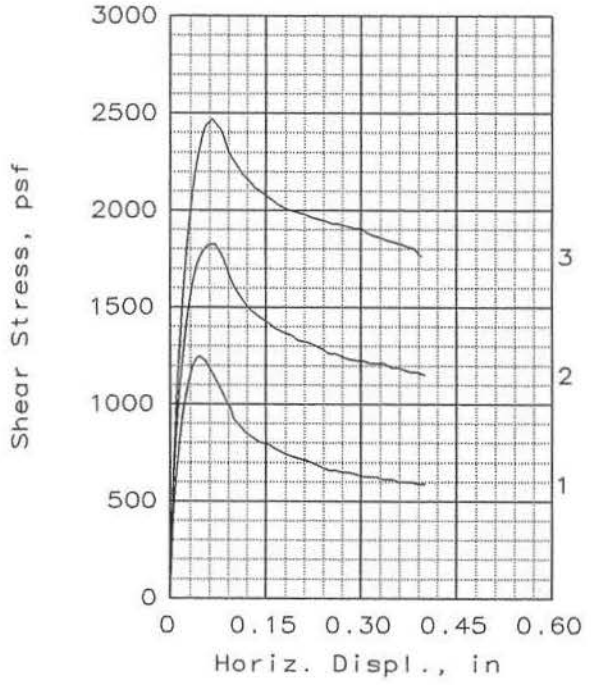

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	15.9	18.1	17.3
	DRY DENSITY, pcf	108.4	106.2	106.9
	SATURATION, %	80.1	85.9	83.6
	VOID RATIO	0.526	0.557	0.547
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	19.6	20.1	19.4
	DRY DENSITY, pcf	108.9	107.9	109.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.519	0.534	0.515
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.98	0.98
NORMAL STRESS, psf		1000	2000	3500
PEAK STRESS, psf		1248	1704	2472
DISPLACEMENT, in		0.05	0.04	0.07
ULTIMATE STRESS, psf		588	1152	1764
DISPLACEMENT, in		0.40	0.40	0.40
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Silty SANDSTONE with pebbles (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Landslide Debris (Qls)

Fig. No.: B5.38

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-8M @ 15 ft

PROJ. NO.: 01-1703M-1 DATE: 7/22/04

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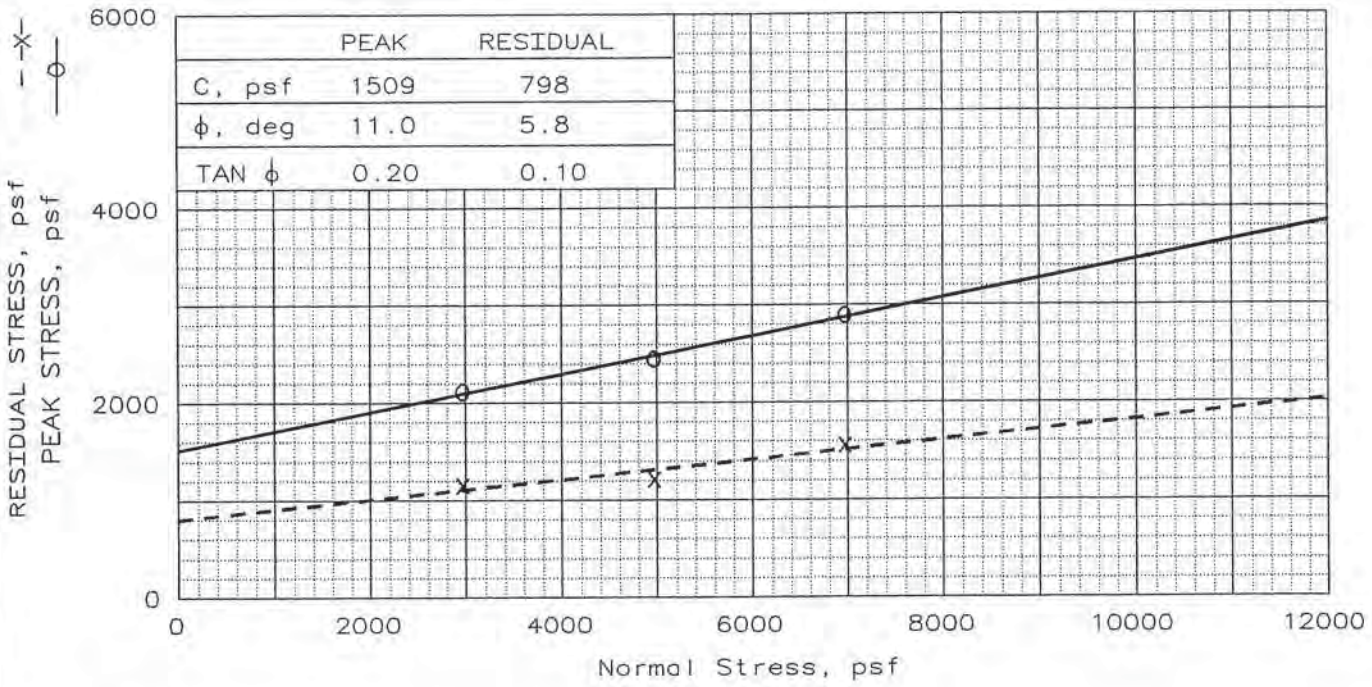

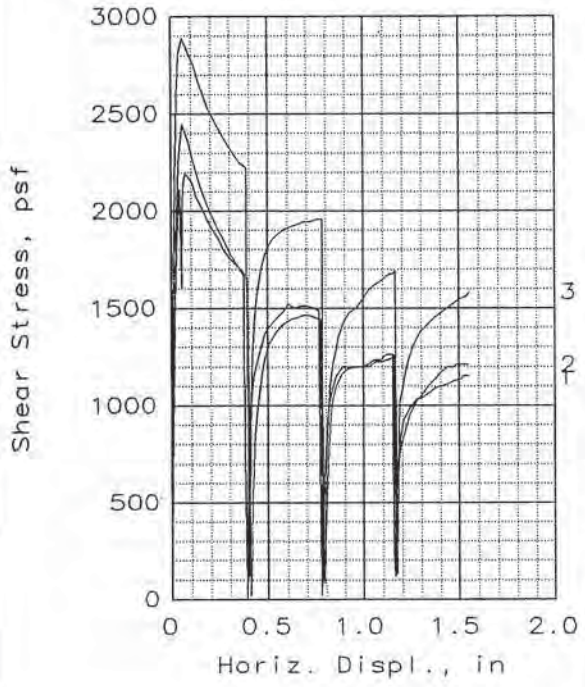

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	21.0	22.0	22.2
	DRY DENSITY, pcf	102.8	101.7	101.9
	SATURATION, %	91.3	92.9	94.2
	VOID RATIO	0.609	0.627	0.624
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	22.7	22.6	22.1
	DRY DENSITY, pcf	103.4	103.4	104.4
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.601	0.599	0.585
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.98	0.98
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		2112	2448	2892
DISPLACEMENT, in		0.05	0.06	0.06
RESIDUAL STRESS, psf		1152	1212	1560
DISPLACEMENT, in		1.55	1.55	1.54
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Moderate brown fat CLAY (CH)
LL= 71 PL= 25 PI= 46
SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane (Sp)
Hand-driven rings

Fig. No.: B5.39

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-4M @ 15.5 ft

PROJ. NO.: 01-1703M-1 DATE: 7/22/04

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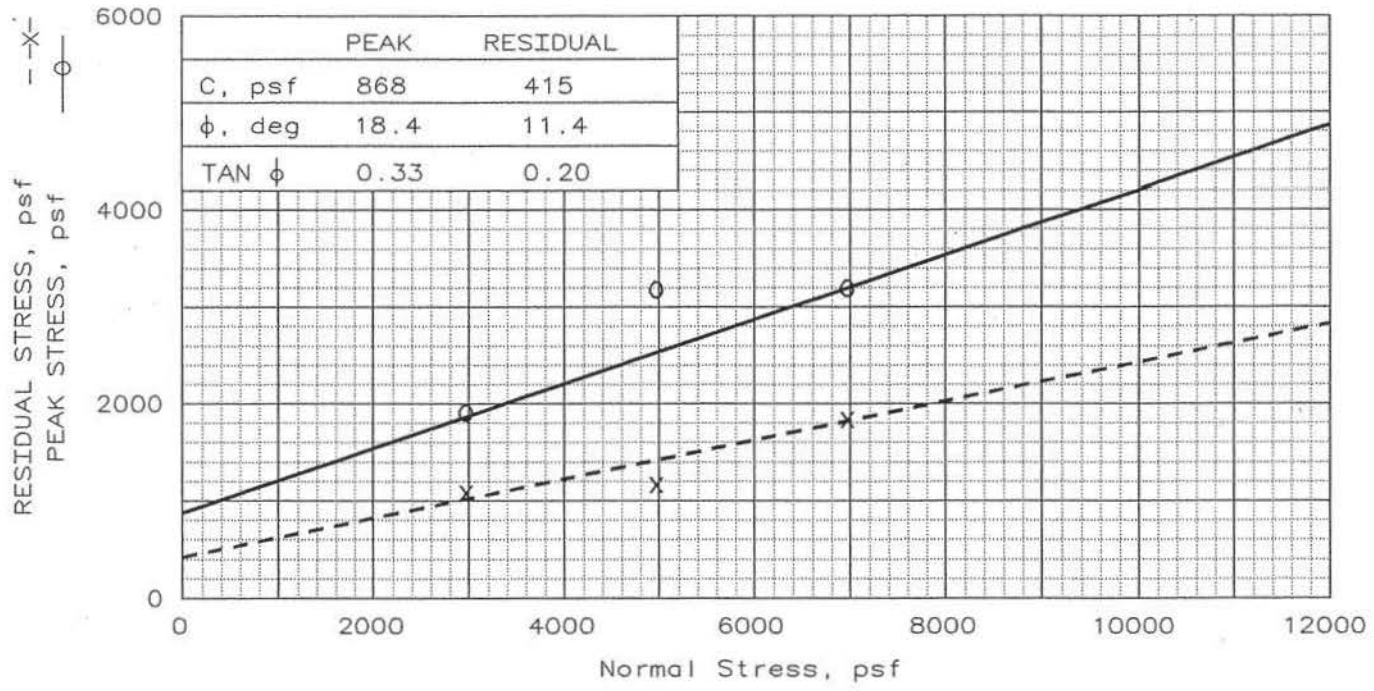

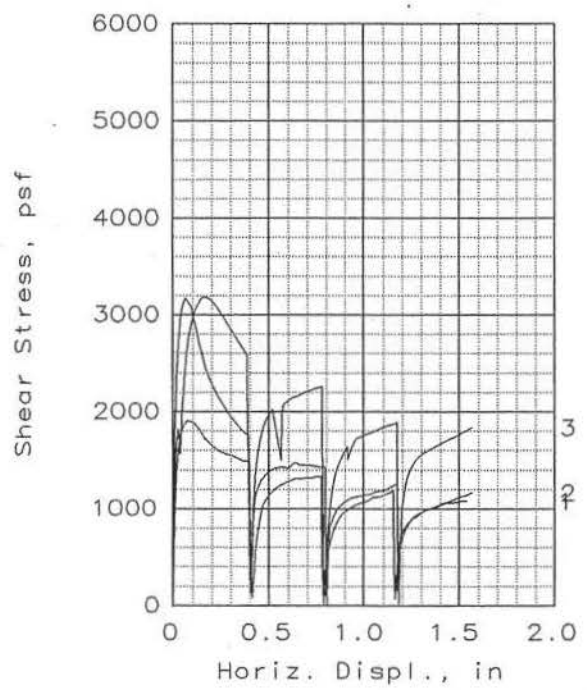

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	26.4	30.2	29.6
	DRY DENSITY, pcf	97.3	89.2	89.8
	SATURATION, %	100.0	93.5	93.2
	VOID RATIO	0.700	0.855	0.842
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	26.8	31.7	30.3
	DRY DENSITY, pcf	96.7	89.9	91.7
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.711	0.840	0.804
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.01	0.99	0.98
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		1908	3180	3192
DISPLACEMENT, in		0.08	0.07	0.16
RESIDUAL STRESS, psf		1080	1164	1836
DISPLACEMENT, in		1.54	1.57	1.57
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Dark-yellowish-brown to olive-gray fat CLAY
LL= 87 PL= 34 PI= 53
SPECIFIC GRAVITY= 2.65
REMARKS: Slide plane (Sp)
Hand-driven rings

Fig. No.: B5.40

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-6M @ 28 ft

PROJ. NO.: 01-1703M-1 DATE: 7/22/04

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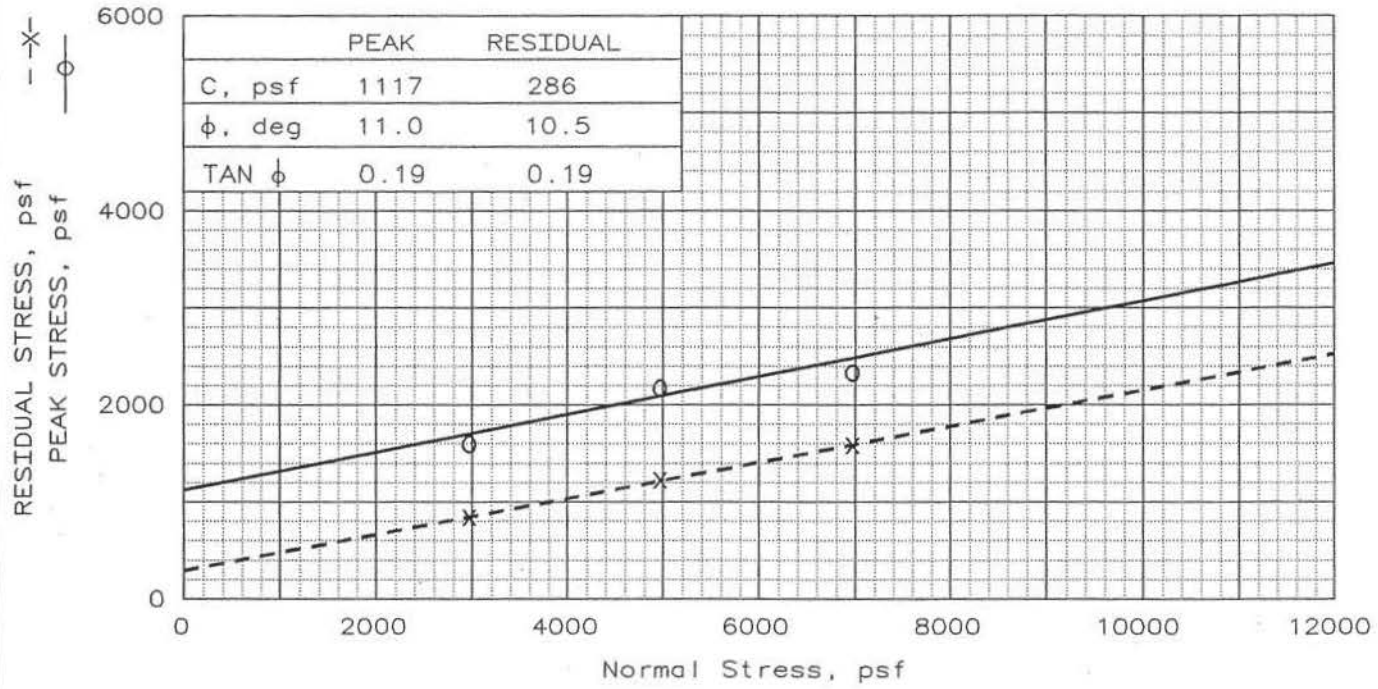
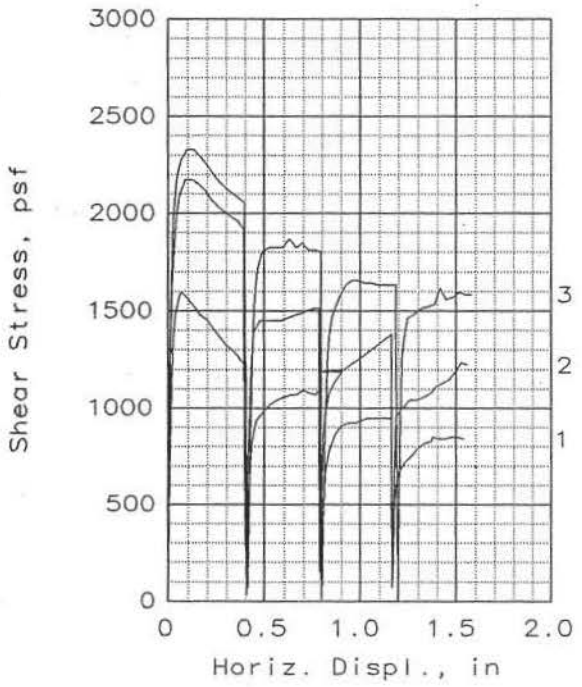




Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	23.8	23.8	22.3
	DRY DENSITY, pcf	101.0	101.4	103.5
	SATURATION, %	99.0	100.0	98.6
	VOID RATIO	0.638	0.631	0.599
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	23.5	22.8	21.1
	DRY DENSITY, pcf	101.9	103.1	106.1
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.623	0.604	0.559
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.98	0.98
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		1596	2172	2328
DISPLACEMENT, in		0.07	0.09	0.10
RESIDUAL STRESS, psf		840	1224	1584
DISPLACEMENT, in		1.54	1.56	1.58
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Moderate-brown fat CLAY (CH)
LL= 62 PL= 26 PI= 36
SPECIFIC GRAVITY= 2.65
REMARKS: Slide plane (Sp)
Hand-driven rings

Fig. No.: B5.41

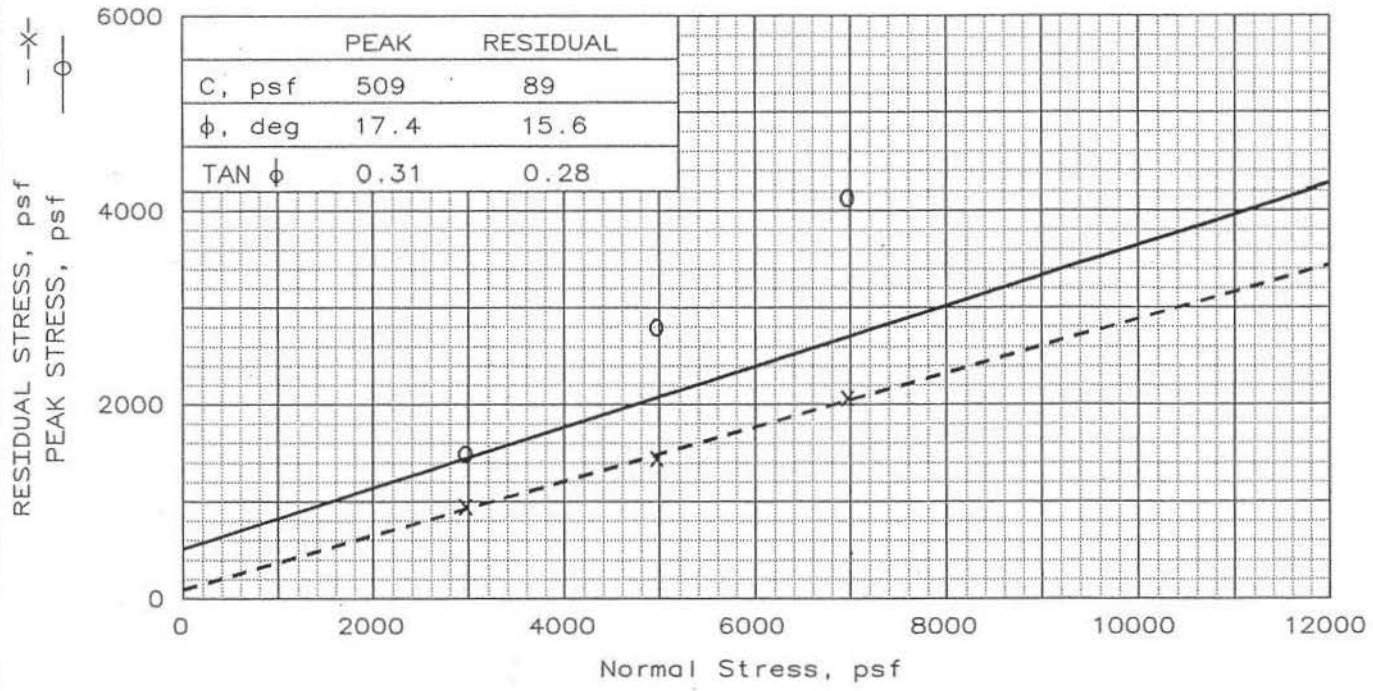
CLIENT: Newhall Ranch Co.

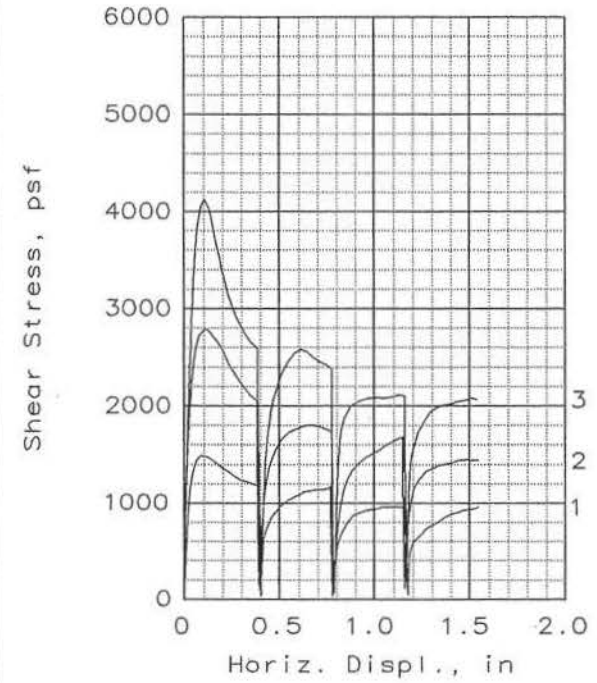
PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-16M @ 34.5 ft

PROJ. NO.: 01-1703M-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.





Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	24.4	26.4	25.9
	DRY DENSITY, pcf	98.1	96.6	97.4
	SATURATION, %	94.3	98.4	98.3
	VOID RATIO	0.687	0.712	0.698
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	25.2	25.5	24.5
	DRY DENSITY, pcf	99.1	98.7	100.3
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.669	0.676	0.650
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.98	0.97
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		1488	2796	4128
DISPLACEMENT, in		0.09	0.11	0.11
RESIDUAL STRESS, psf		948	1440	2064
DISPLACEMENT, in		1.54	1.55	1.54
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Fat CLAY with silt (CH)

SPECIFIC GRAVITY= 2.65
REMARKS: Slide plane (Sp)
Hand-driven rings

Fig. No.: B5.42

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-19M @ 34' ft

PROJ. NO.: 01-1703M-1 DATE: 7/22/04

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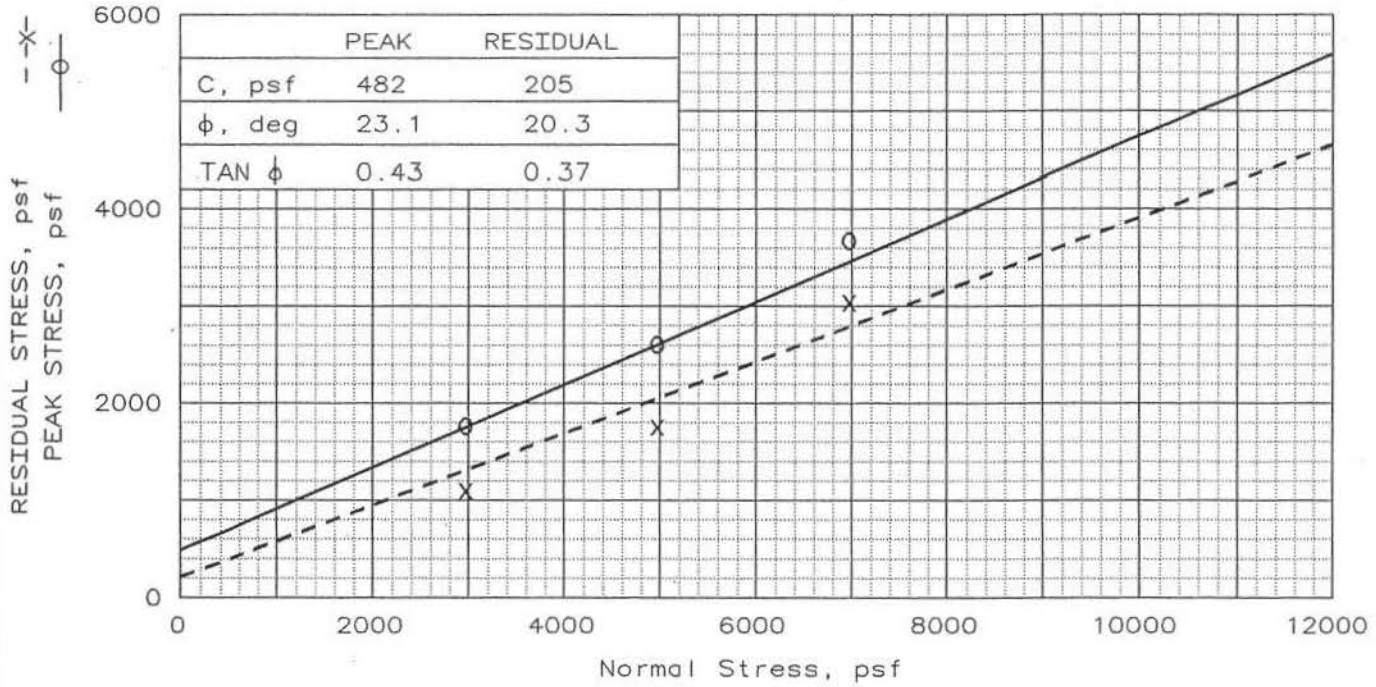

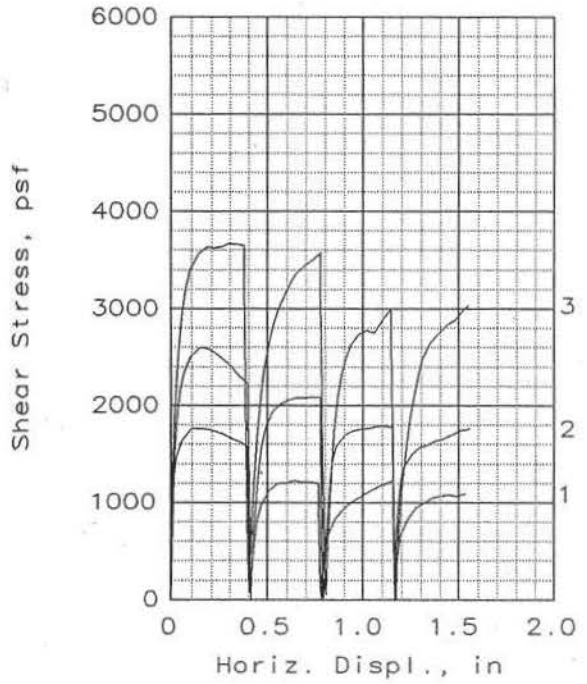

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	24.9	21.1	20.0
	DRY DENSITY, pcf	99.2	101.6	103.7
	SATURATION, %	98.9	88.8	89.0
	VOID RATIO	0.667	0.629	0.596
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	25.2	23.7	20.6
	DRY DENSITY, pcf	99.2	101.6	107.1
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.667	0.629	0.545
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	0.97
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		1764	2604	3672
DISPLACEMENT, in		0.11	0.15	0.30
RESIDUAL STRESS, psf		1092	1752	3036
DISPLACEMENT, in		1.54	1.55	1.55
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Olive-gray fat CLAY (CH)

SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane (Sp)
Hand-driven rings
% fines = 98

Fig. No.: B5.43

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-10E @ 29 ft

PROJ. NO.: 00-17030IsII-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
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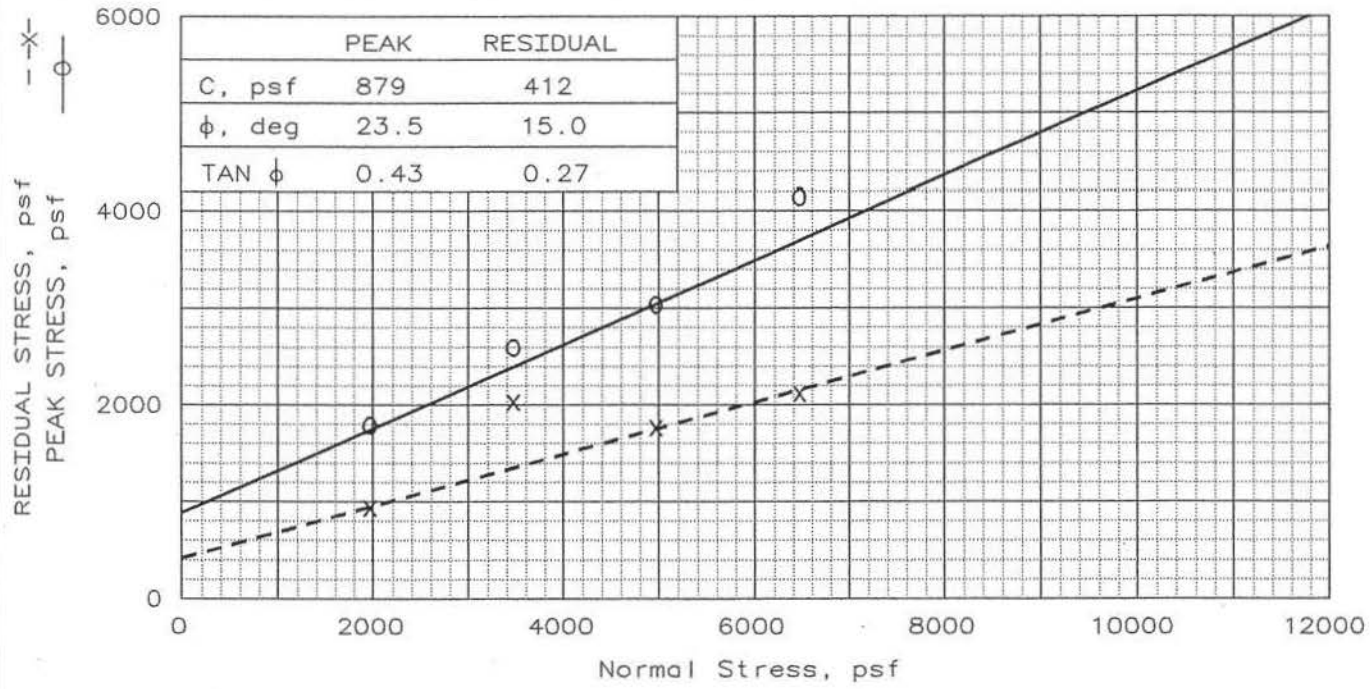

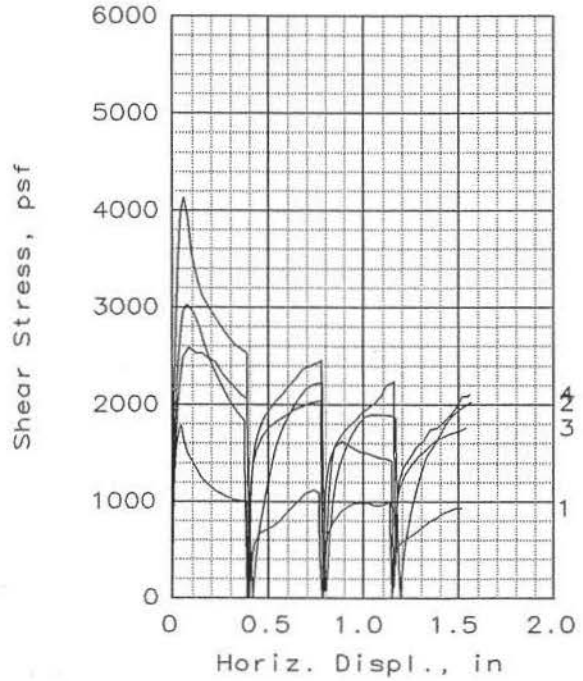

Sample No.:		1	2	3	4
INITIAL	WATER CONTENT, %	22.3	19.9	23.1	18.5
	DRY DENSITY, pcf	99.4	102.9	99.6	107.3
	SATURATION, %	89.0	86.8	92.8	90.7
	VOID RATIO	0.664	0.607	0.661	0.542
	DIAMETER, in	2.42	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	25.0	22.9	24.9	20.4
	DRY DENSITY, pcf	99.4	102.9	99.6	107.3
	SATURATION, %	100.0	100.0	100.0	100.0
	VOID RATIO	0.664	0.607	0.661	0.542
	DIAMETER, in	2.42	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00	1.00
NORMAL STRESS, psf		2000	3500	5000	6500
PEAK STRESS, psf		1788	2592	3036	4140
DISPLACEMENT, in		0.05	0.09	0.08	0.06
RESIDUAL STRESS, psf		936	2028	1764	2112
DISPLACEMENT, in		1.52	1.57	1.54	1.56
Strain rate, in/min		0.0050	0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Moderate-brown fat CLAY (CH)
LL= 57 PL= 27 PI= 30
SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane
Hand-driven rings
% fines = 86.6

Fig. No.: B5.44

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-12E @ 20.5 ft

PROJ. NO.: 00-1703QIsII-1 DATE: 7/22/04

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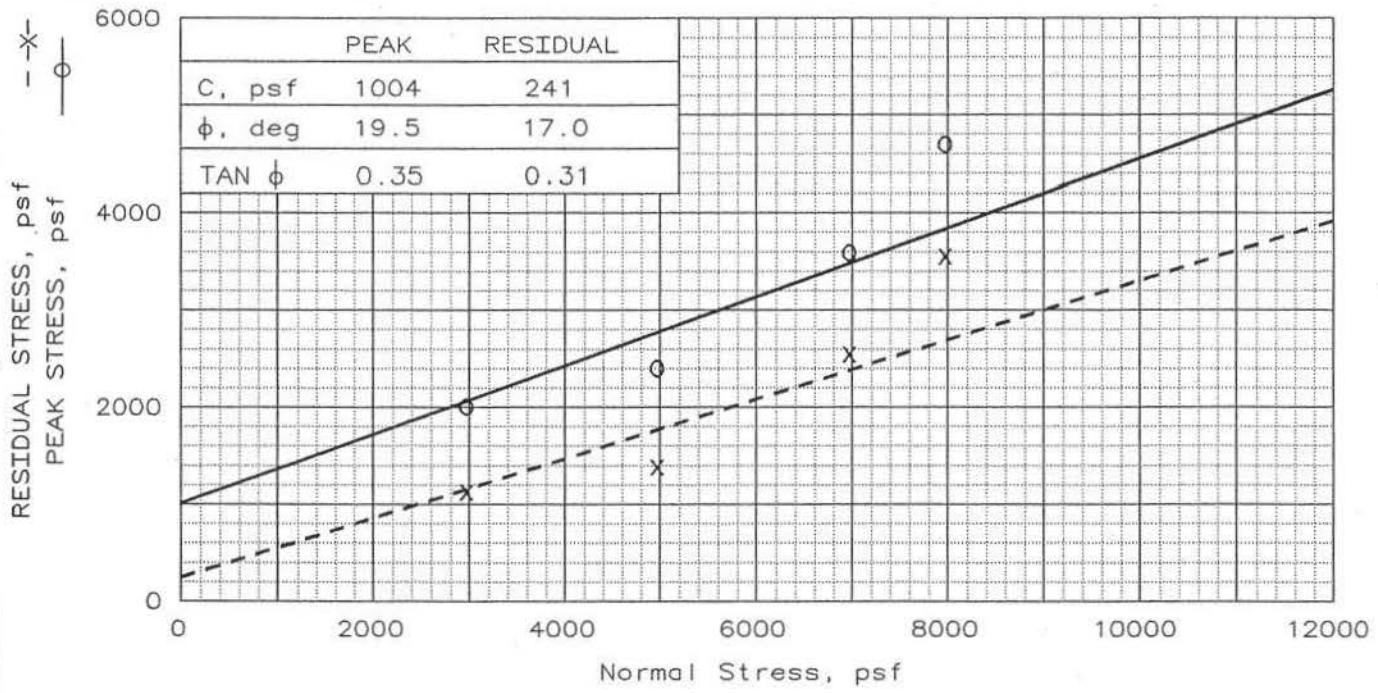

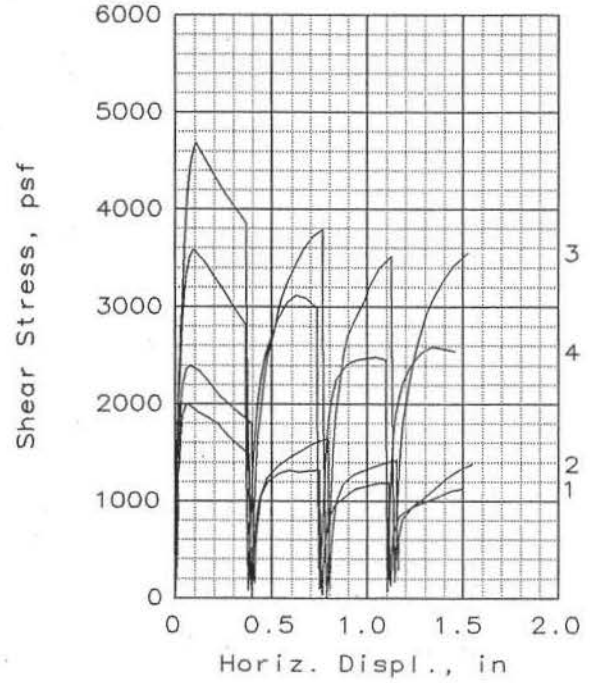

Sample No.:		1	2	3	4
INITIAL	WATER CONTENT, %	24.2	22.8	20.5	23.2
	DRY DENSITY, pcf	99.7	101.5	103.5	99.8
	SATURATION, %	97.1	95.7	90.8	93.6
	VOID RATIO	0.660	0.630	0.598	0.658
	DIAMETER, in	2.42	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	24.9	23.8	22.6	23.1
	DRY DENSITY, pcf	99.7	101.5	103.5	102.5
	SATURATION, %	100.0	100.0	100.0	100.0
	VOID RATIO	0.660	0.630	0.598	0.613
	DIAMETER, in	2.42	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00	0.97
NORMAL STRESS, psf		3000	5000	8000	7000
PEAK STRESS, psf		2004	2400	4692	3588
DISPLACEMENT, in		0.06	0.08	0.11	0.10
RESIDUAL STRESS, psf		1128	1380	3552	2544
DISPLACEMENT, in		1.50	1.55	1.53	1.46
Strain rate, in/min		0.0050	0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Moderate-brown fat CLAY (CH)

SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane
Hand-driven rings
% fines = 96.4

Fig. No.: B5.45

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-16E @ 14.5 ft

PROJ. NO.: 00-1703-1 DATE: 7/22/04

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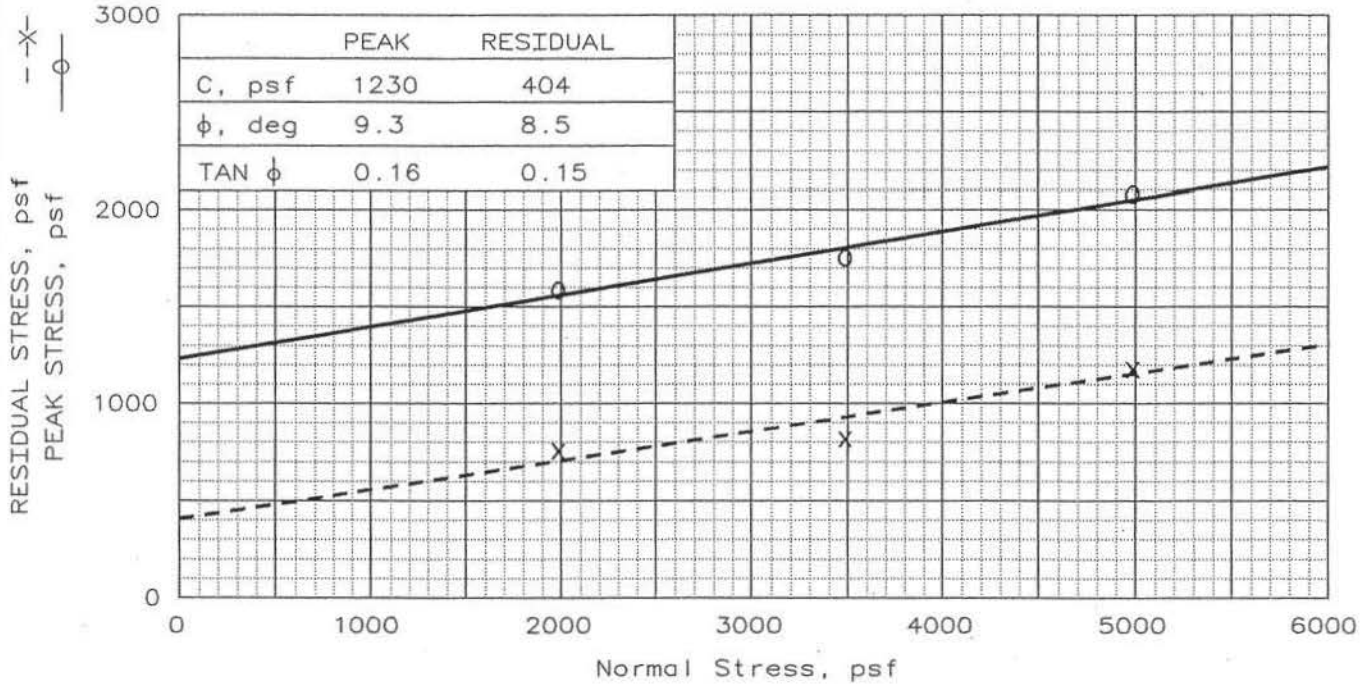
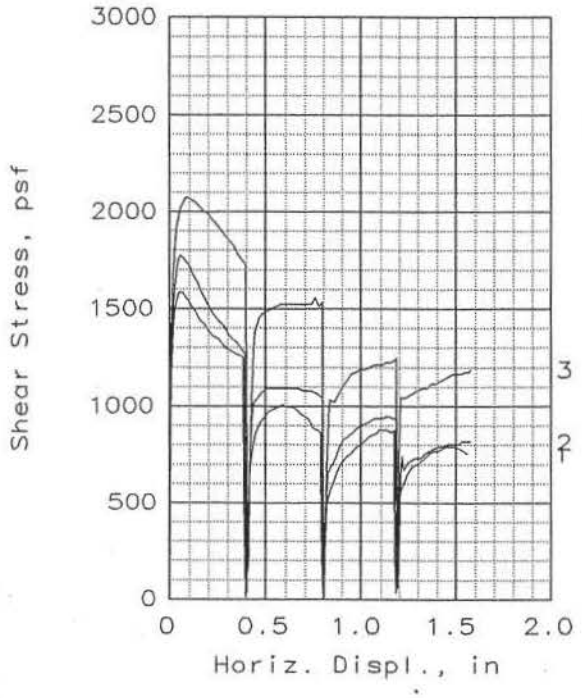




Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	30.8	30.3	24.4
	DRY DENSITY, pcf	89.2	90.1	96.3
	SATURATION, %	95.6	95.9	90.1
	VOID RATIO	0.855	0.837	0.718
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	33.1	31.6	17.1
	DRY DENSITY, pcf	88.2	90.0	113.8
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.877	0.838	0.454
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.01	1.00	0.85
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1584	1752	2076
DISPLACEMENT, in		0.05	0.05	0.09
RESIDUAL STRESS, psf		756	816	1176
DISPLACEMENT, in		1.56	1.58	1.57
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Moderate-brown fat CLAY (CH)
LL= 70 PL= 28 PI= 42
SPECIFIC GRAVITY= 2.65
REMARKS: Slide plane (Sp)
Hand-driven rings
% fines = 96.1

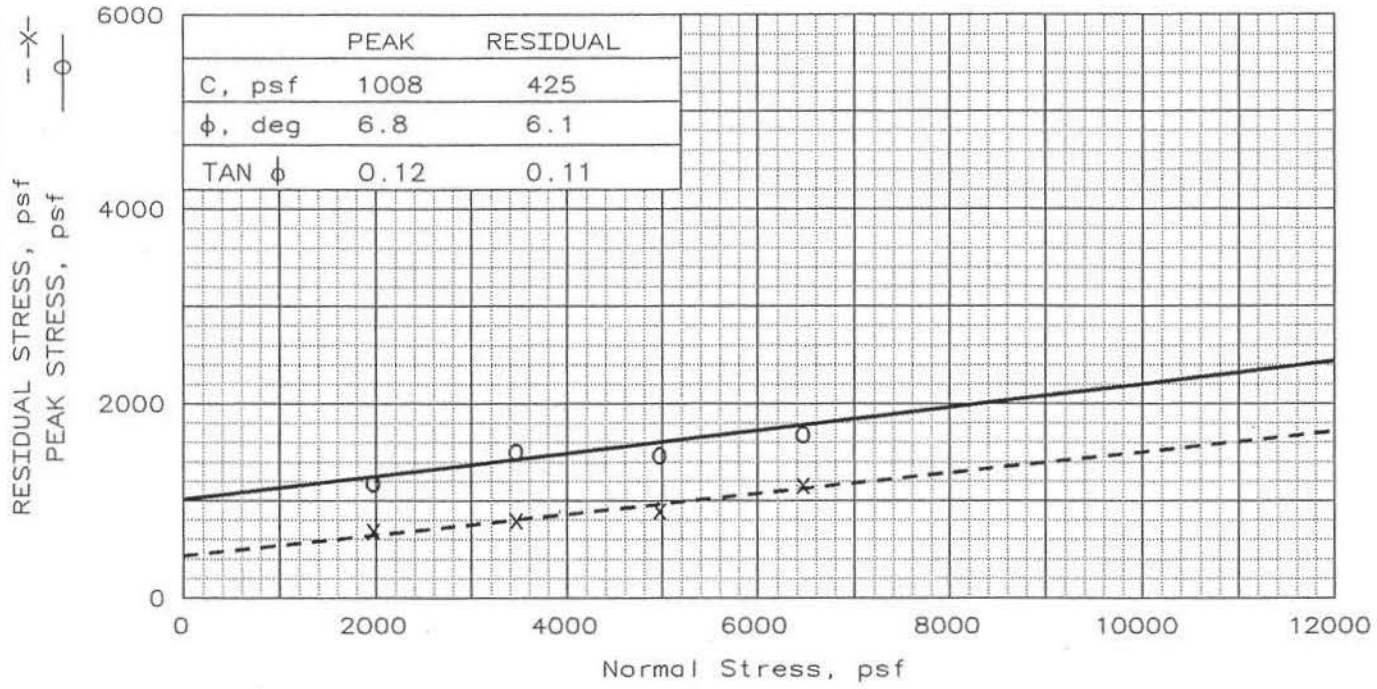
Fig. No.: B5.46

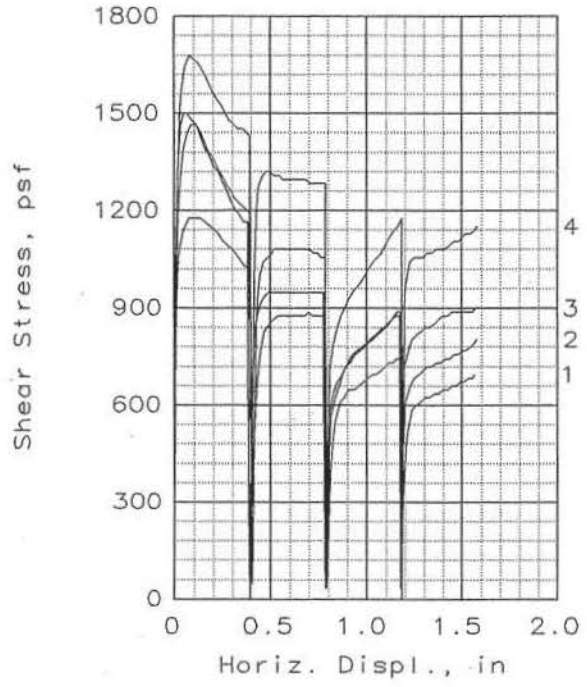
CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-19E @ 21 ft

PROJ. NO.: 99-17030isII-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.





Sample No.:		1	2	3	4
INITIAL	WATER CONTENT, %	27.6	28.0	31.0	28.8
	DRY DENSITY, pcf	94.1	94.3	90.8	93.8
	SATURATION, %	96.6	98.4	99.9	99.9
	VOID RATIO	0.757	0.754	0.822	0.764
	DIAMETER, in	2.42	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	28.6	28.5	31.0	26.7
	DRY DENSITY, pcf	94.1	94.3	90.8	96.9
	SATURATION, %	100.0	100.0	100.0	100.0
	VOID RATIO	0.757	0.754	0.822	0.707
	DIAMETER, in	2.42	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00	0.97
NORMAL STRESS, psf		2000	3500	5000	6500
PEAK STRESS, psf		1176	1500	1464	1680
DISPLACEMENT, in		0.08	0.05	0.09	0.08
RESIDUAL STRESS, psf		684	792	888	1152
DISPLACEMENT, in		1.56	1.57	1.56	1.58
Strain rate, in/min		0.0050	0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Moderate reddish-brown fat CLAY (CH)

SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane (Sp)
Hand-driven rings
% fines = 99.0

Fig. No.: B5.47

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-34E @ 19.5 ft

PROJ. NO.: 00-1703QLSII-1 DATE: 7/22/04

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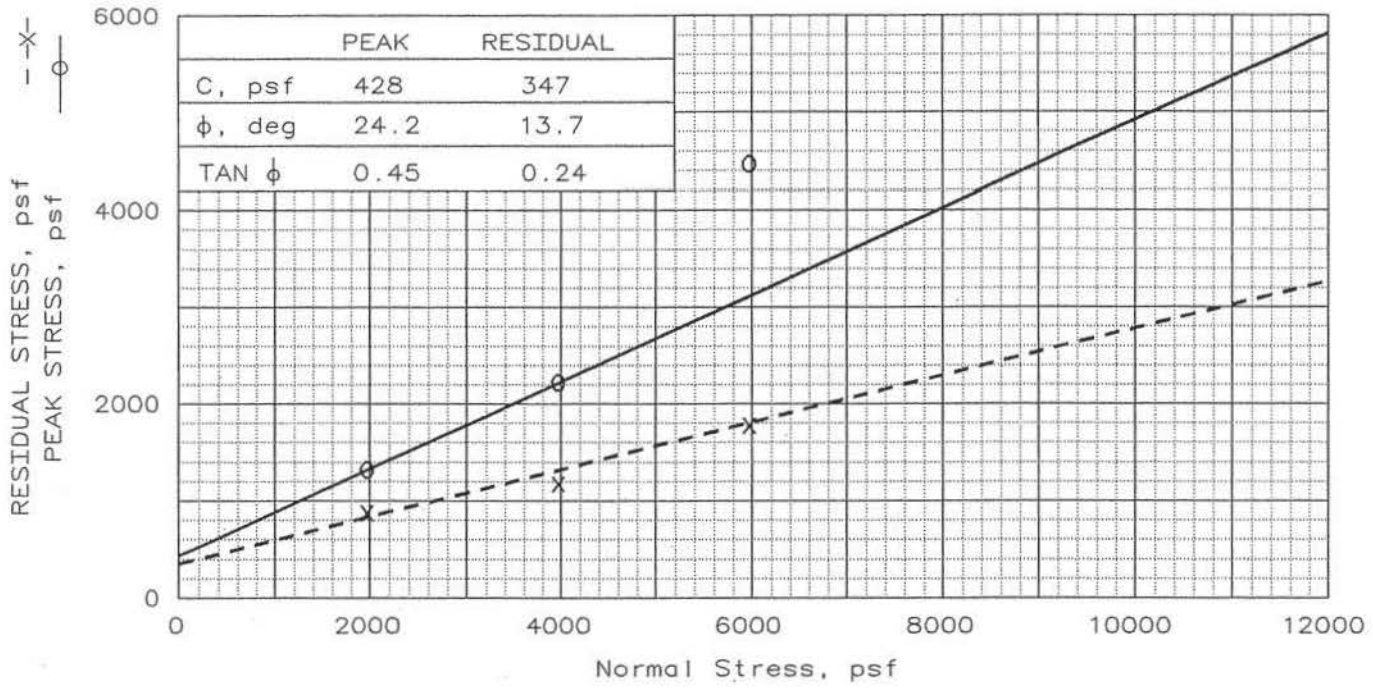

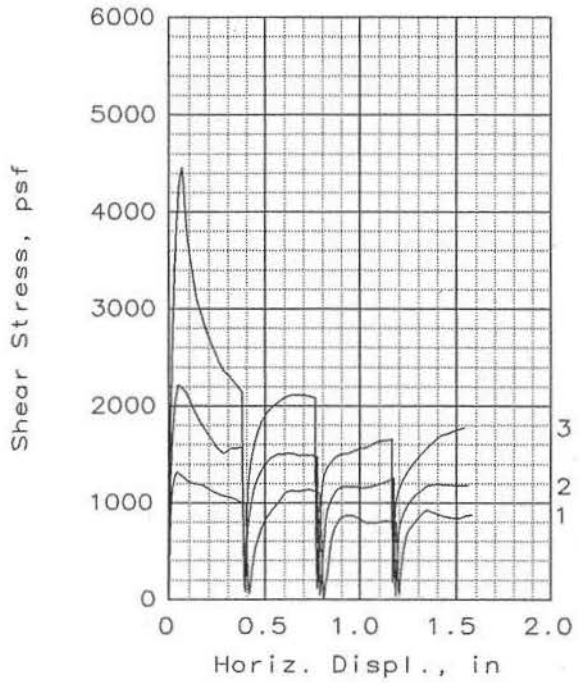

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	21.5	24.2	23.5
	DRY DENSITY, pcf	99.0	97.7	100.9
	SATURATION, %	85.1	92.5	97.3
	VOID RATIO	0.671	0.692	0.640
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	25.1	25.5	23.3
	DRY DENSITY, pcf	99.3	98.8	102.2
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.666	0.675	0.619
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.99	0.99
NORMAL STRESS, psf		2000	4000	6000
PEAK STRESS, psf		1320	2220	4464
DISPLACEMENT, in		0.04	0.05	0.07
RESIDUAL STRESS, psf		876	1176	1776
DISPLACEMENT, in		1.58	1.56	1.54
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Fat CLAY (CH)

LL= 45 PL= 23 PI= 22
SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane (Sp)
Hand-driven rings
% fines = 95.7

Fig. No.: B5.48

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-42E @ 27 ft

PROJ. NO.: 00-17030LSII-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
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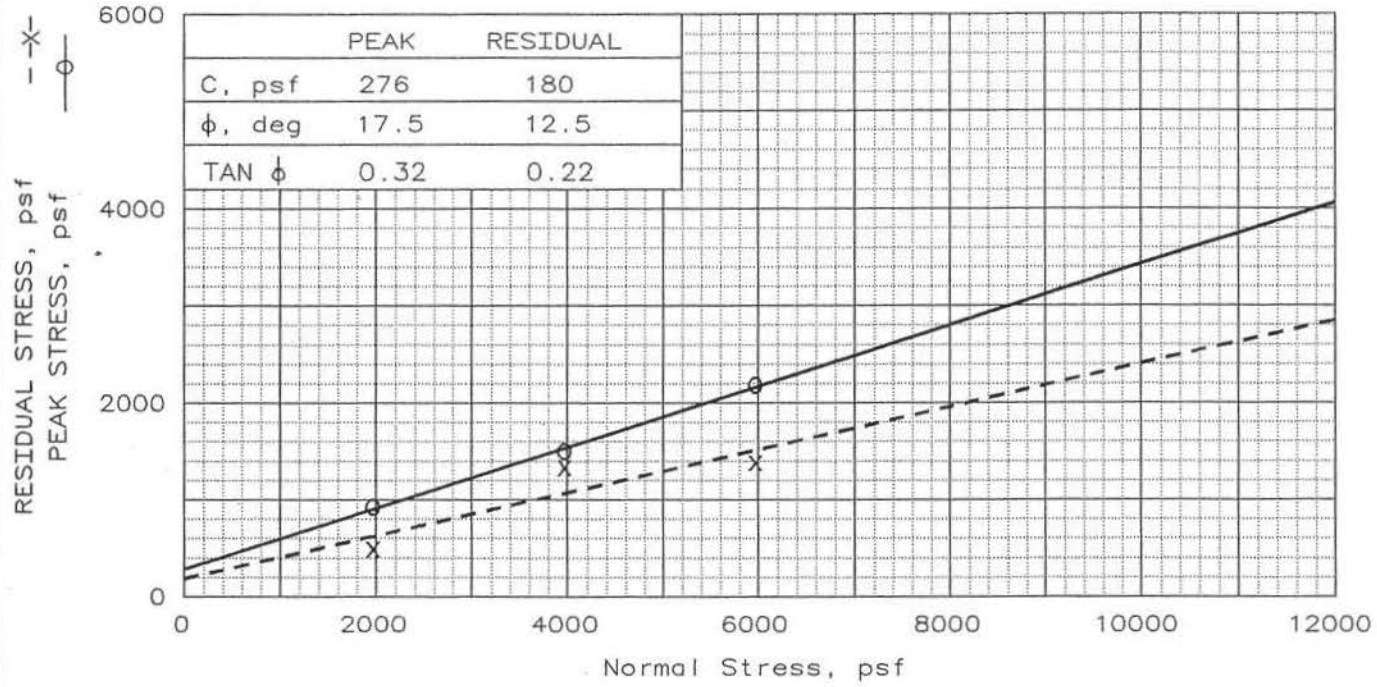

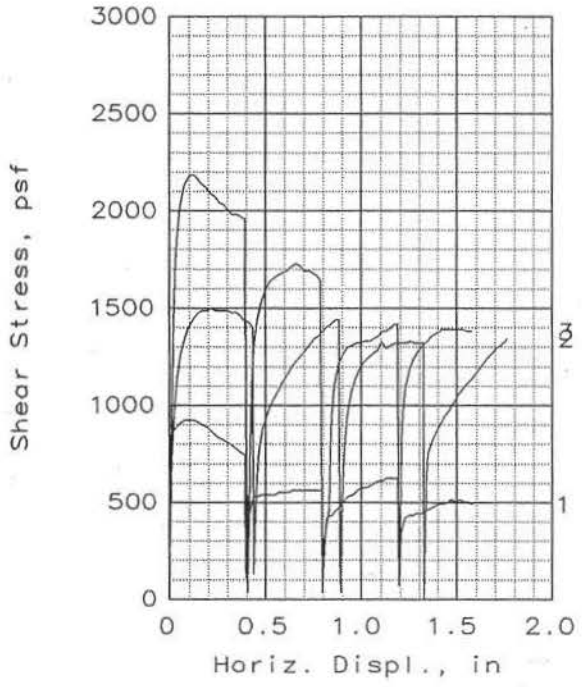

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	24.9	24.4	24.7
	DRY DENSITY, pcf	98.4	99.1	98.3
	SATURATION, %	96.9	96.5	96.0
	VOID RATIO	0.681	0.669	0.683
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	25.6	24.2	24.2
	DRY DENSITY, pcf	98.5	100.8	100.7
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.679	0.642	0.642
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.98	0.98
NORMAL STRESS, psf		2000	4000	6000
PEAK STRESS, psf		924	1500	2184
DISPLACEMENT, in		0.08	0.22	0.11
RESIDUAL STRESS, psf		492	1332	1380
DISPLACEMENT, in		1.58	1.76	1.58
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Moderate-brown fat CLAY (CH)

SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane (Sp)

Fig. No.: B5.49

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-48E @ 45 ft

PROJ. NO.: 00-1703QlsII-1 DATE: 7/22/04

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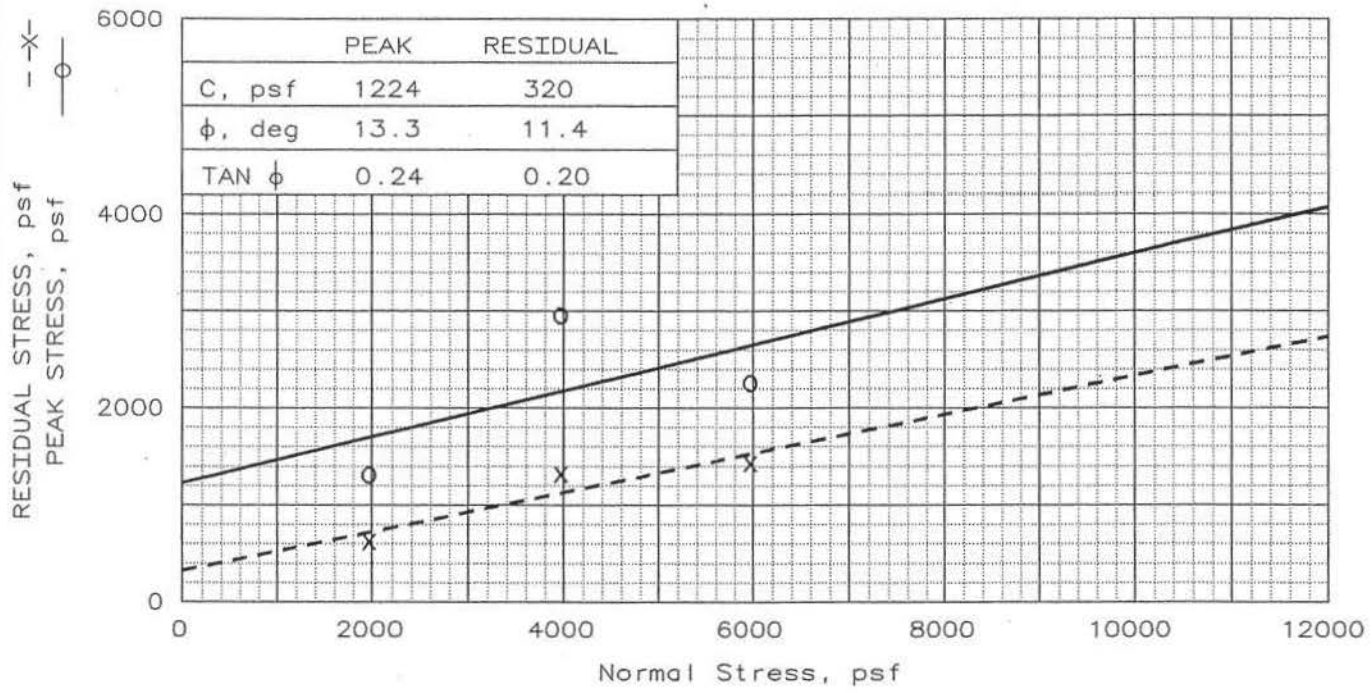

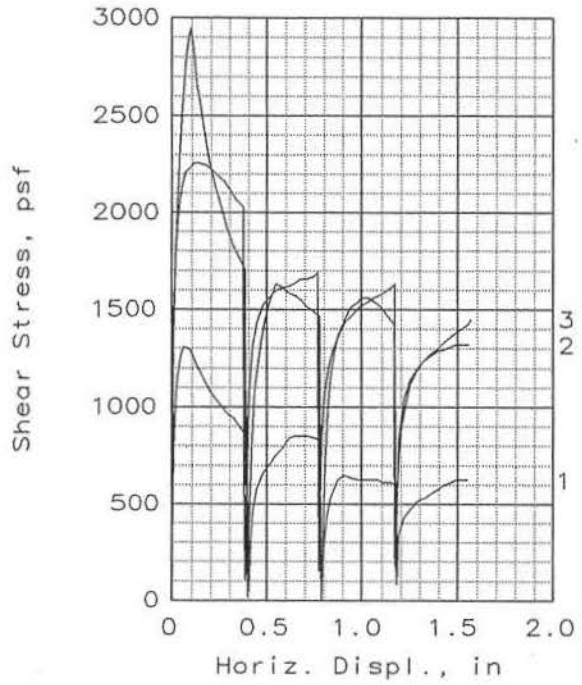

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	22.6	19.5	21.6
	DRY DENSITY, pcf	102.2	107.6	104.1
	SATURATION, %	96.7	96.3	96.9
	VOID RATIO	0.618	0.537	0.590
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	23.0	19.3	21.0
	DRY DENSITY, pcf	102.7	109.5	106.4
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.611	0.511	0.556
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.98	0.98
NORMAL STRESS, psf		2000	4000	6000
PEAK STRESS, psf		1308	2952	2256
DISPLACEMENT, in		0.06	0.10	0.11
RESIDUAL STRESS, psf		624	1320	1428
DISPLACEMENT, in		1.55	1.56	1.56
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Disturbed
DESCRIPTION: Moderate-brown fat CLAY (CH)
LL= 67 PL= 26 PI= 41
SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane (Sp)
Bag sample

Fig. No.: B5.50

CLIENT: Newhall Ranch Co.

PROJECT: Newhall Ranch, Mesas-East

SAMPLE LOCATION: B-53E @ 25 ft

PROJ. NO.: 00-1703CM-1 DATE: 7/22/04

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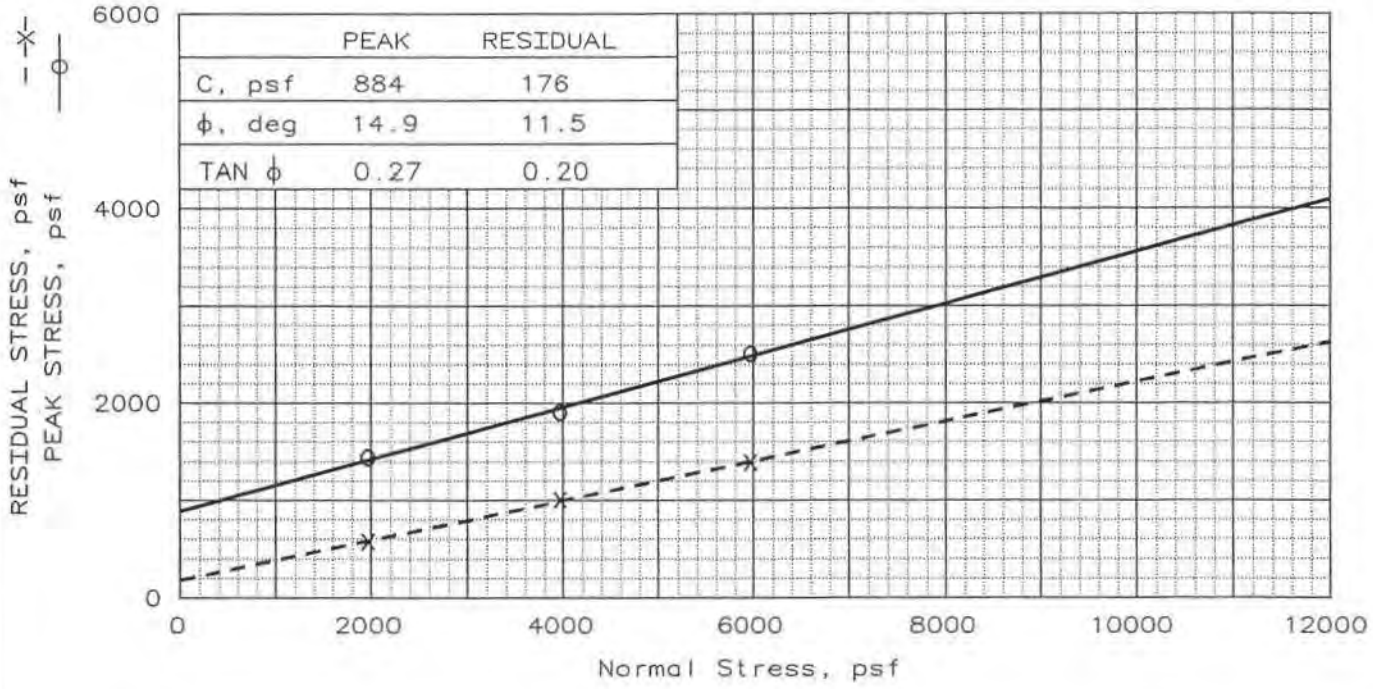

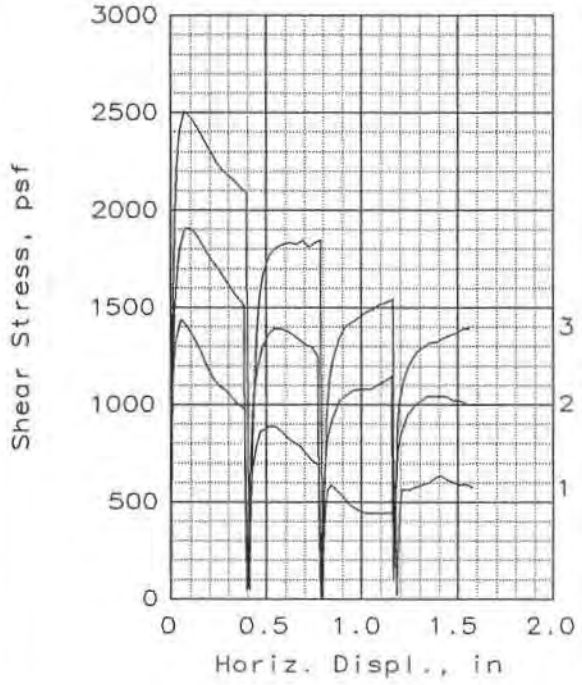

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	25.7	25.8	24.8
	DRY DENSITY, pcf	97.0	96.6	98.1
	SATURATION, %	96.4	96.1	96.0
	VOID RATIO	0.706	0.712	0.686
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	26.8	26.2	24.8
	DRY DENSITY, pcf	96.8	97.6	99.9
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.709	0.695	0.657
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.99	0.98
NORMAL STRESS, psf		2000	4000	6000
PEAK STRESS, psf		1440	1908	2508
DISPLACEMENT, in		0.06	0.08	0.07
RESIDUAL STRESS, psf		576	1008	1392
DISPLACEMENT, in		1.58	1.54	1.56
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Undisturbed
DESCRIPTION: Fat CLAY (CH)

LL= 71 PL= 25 PI= 46
SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane (Sp)
Hand-driven rings

Fig. No.: B5.51

CLIENT: Newhall Ranch Co.

PROJECT: Newhall Ranch, Mesas-East

SAMPLE LOCATION: B-58E @ 43.5 ft

PROJ. NO.: 00-1703CM-1 DATE: 7/22/04

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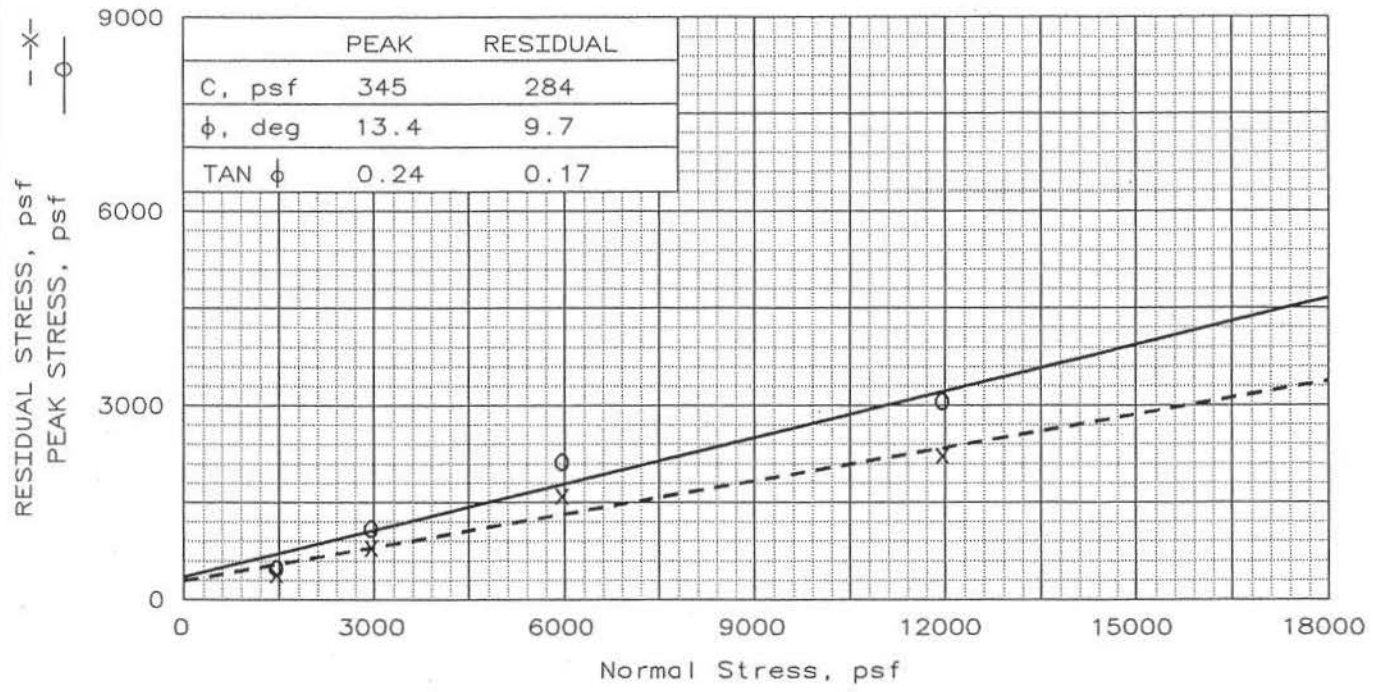

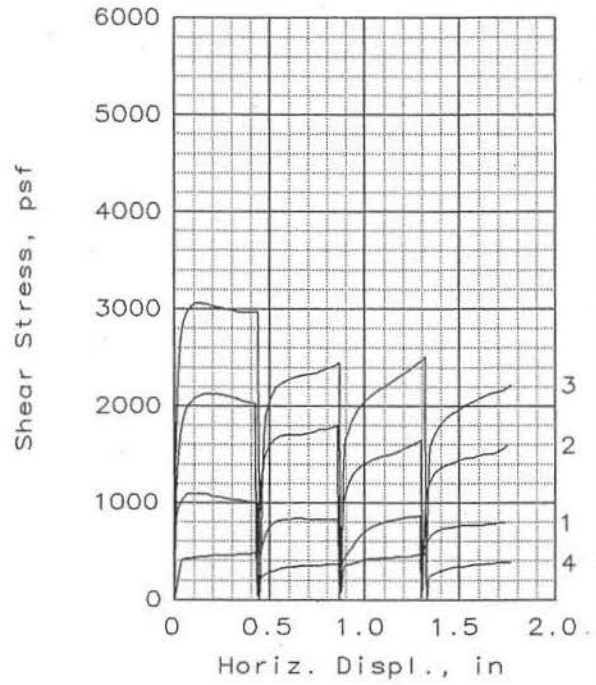

Sample No.:		1	2	3	4
INITIAL	WATER CONTENT, %	25.2	26.1	26.9	25.2
	DRY DENSITY, pcf	99.3	95.8	96.4	99.2
	SATURATION, %	100.0	95.0	99.3	100.0
	VOID RATIO	0.667	0.727	0.717	0.667
	DIAMETER, in	2.42	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	25.7	29.0	29.0	24.8
	DRY DENSITY, pcf	98.4	93.6	93.5	99.8
	SATURATION, %	100.0	100.0	100.0	100.0
	VOID RATIO	0.682	0.768	0.769	0.658
	DIAMETER, in	2.42	2.42	2.42	2.42
	HEIGHT, in	1.01	1.02	1.03	0.99
NORMAL STRESS, psf		3000	6000	12000	1500
PEAK STRESS, psf		1092	2124	3060	480
DISPLACEMENT, in		0.07	0.16	0.11	0.4
RESIDUAL STRESS, psf		792	1596	2220	384
DISPLACEMENT, in		1.74	1.75	1.77	1.77
Strain rate, in/min		0.0050	0.0050	0.0050	0.005

SAMPLE TYPE: Undisturbed
DESCRIPTION: Greenish-gray fat CLAY (CH)
LL= 83 PL= 34 PI= 49
SPECIFIC GRAVITY= 2.65
REMARKS: Basal slide plane (Sp)

Fig. No.: B5.52

CLIENT: Newhall Ranch Co.

PROJECT: Mesas West

SAMPLE LOCATION: B-13W @ 30 ft

PROJ. NO.: 03-1703W-1 DATE: 7/22/04

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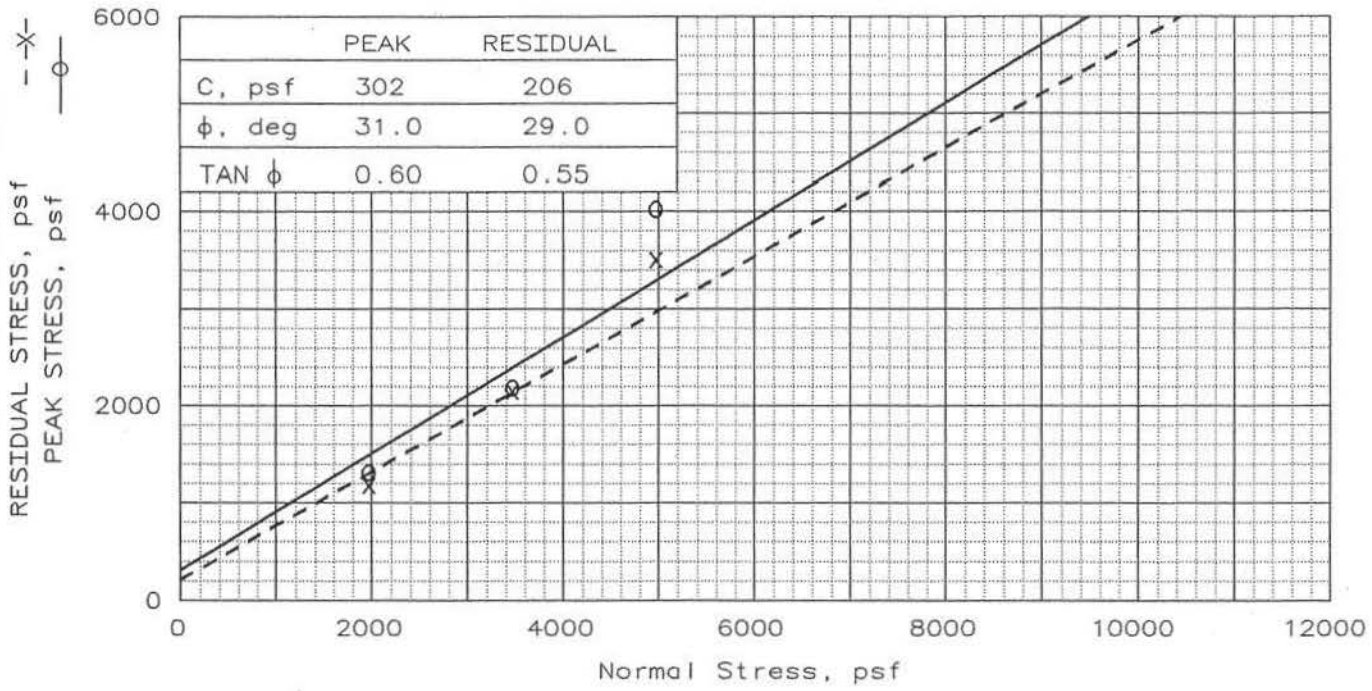

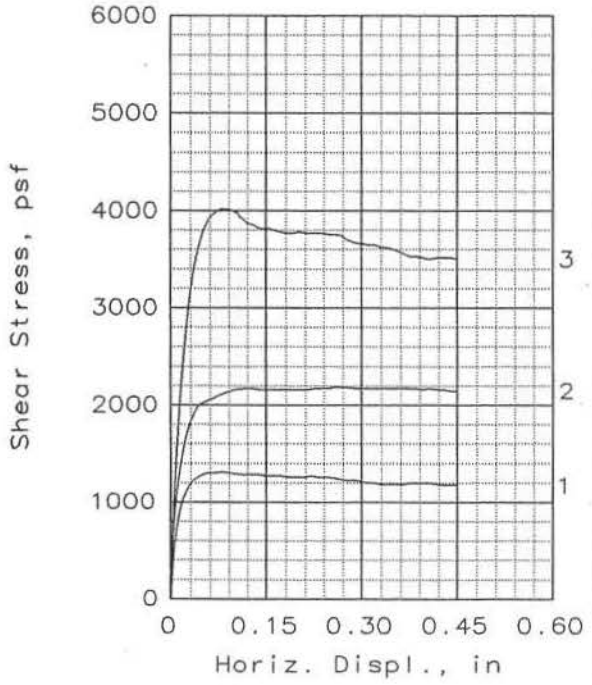

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	8.4	9.6	7.1
	DRY DENSITY, pcf	110.8	113.8	122.4
	SATURATION, %	45.0	56.4	53.6
	VOID RATIO	0.493	0.453	0.351
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	17.8	16.2	12.2
	DRY DENSITY, pcf	112.3	115.7	124.9
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.473	0.429	0.324
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.98	0.98
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1308	2184	4020
DISPLACEMENT, in		0.08	0.26	0.08
RESIDUAL STRESS, psf		1176	2148	3504
DISPLACEMENT, in		0.44	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Clayey SAND (SC)

LL= 26 PL= 18 PI= 8
SPECIFIC GRAVITY= 2.65
REMARKS: Alluvium (Qal)
% fines = 47.6

Fig. No.: B5.53

CLIENT: Newhall Ranch Co.

PROJECT: Newhall Ranch, Mesas-East

SAMPLE LOCATION: B-60E @ 17 ft

PROJ. NO.: 00-1703CM-1 DATE: 7/22/04

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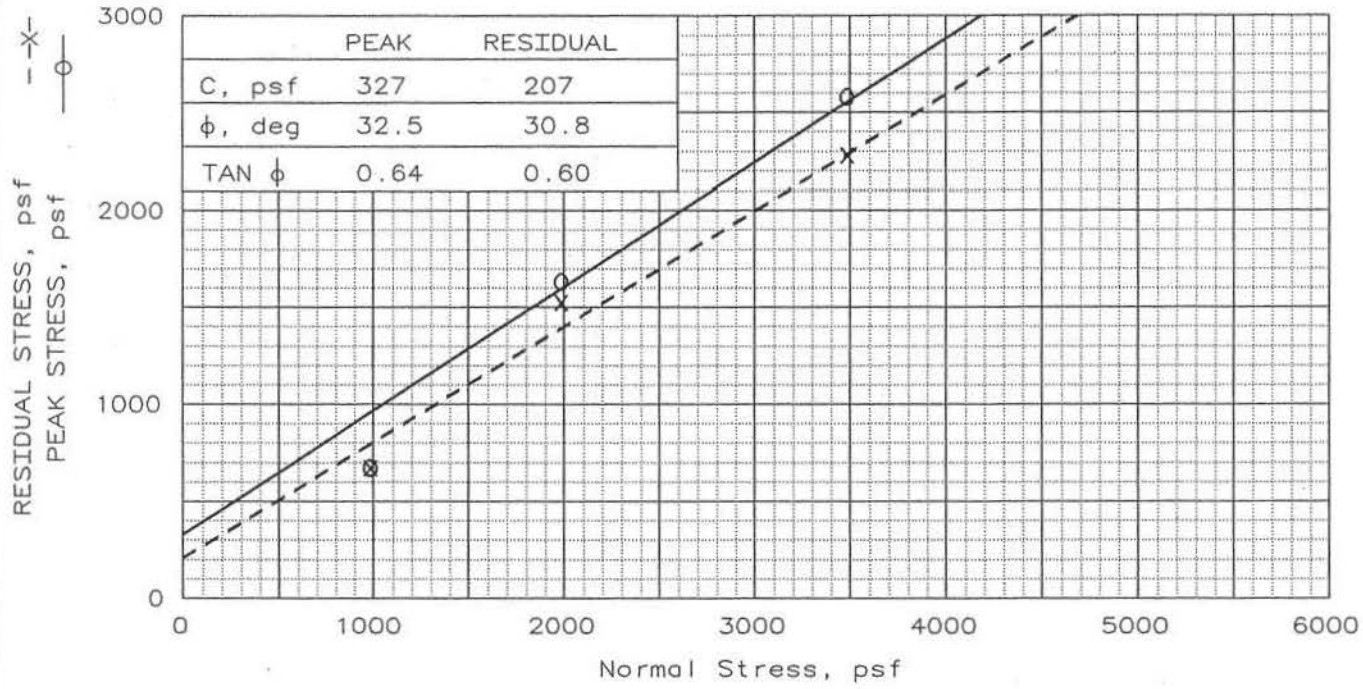
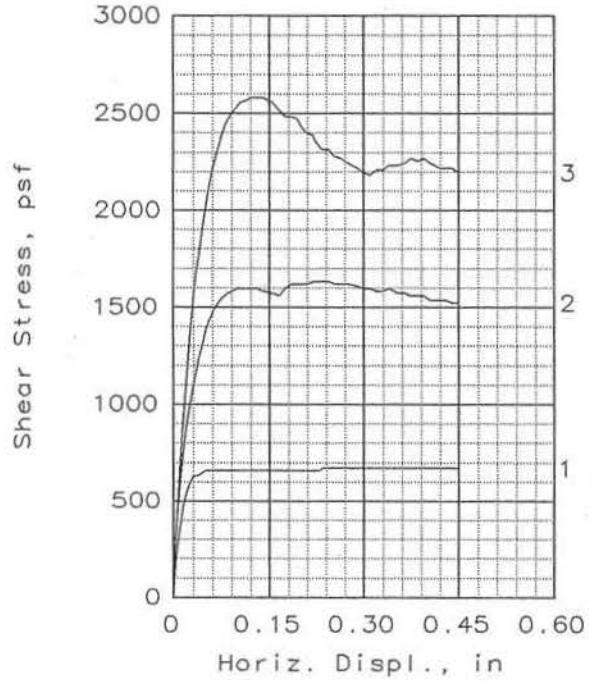


	PEAK	RESIDUAL
C, psf	327	207
ϕ, deg	32.5	30.8
TAN ϕ	0.64	0.60



Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	8.9	6.9	6.6
	DRY DENSITY, pcf	100.6	102.0	102.4
	SATURATION, %	36.5	29.6	28.4
	VOID RATIO	0.644	0.622	0.616
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	23.3	22.1	21.0
	DRY DENSITY, pcf	102.3	104.3	106.3
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.618	0.586	0.557
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.98	0.98	0.96
NORMAL STRESS, psf		1000	2000	3500
PEAK STRESS, psf		672	1632	2580
DISPLACEMENT, in		0.24	0.22	0.12
RESIDUAL STRESS, psf		672	1524	2280
DISPLACEMENT, in		0.45	0.45	0.26
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Silty Sand (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Alluvium (Qal)
% fines = 32.2

Fig. No.: B5.54

CLIENT: Newhall Ranch Co.

PROJECT: Newhall Ranch Infrastructure

SAMPLE LOCATION: HS-1I @ 5 ft

PROJ. NO.: 00-1155I-1 DATE: 7/22/04

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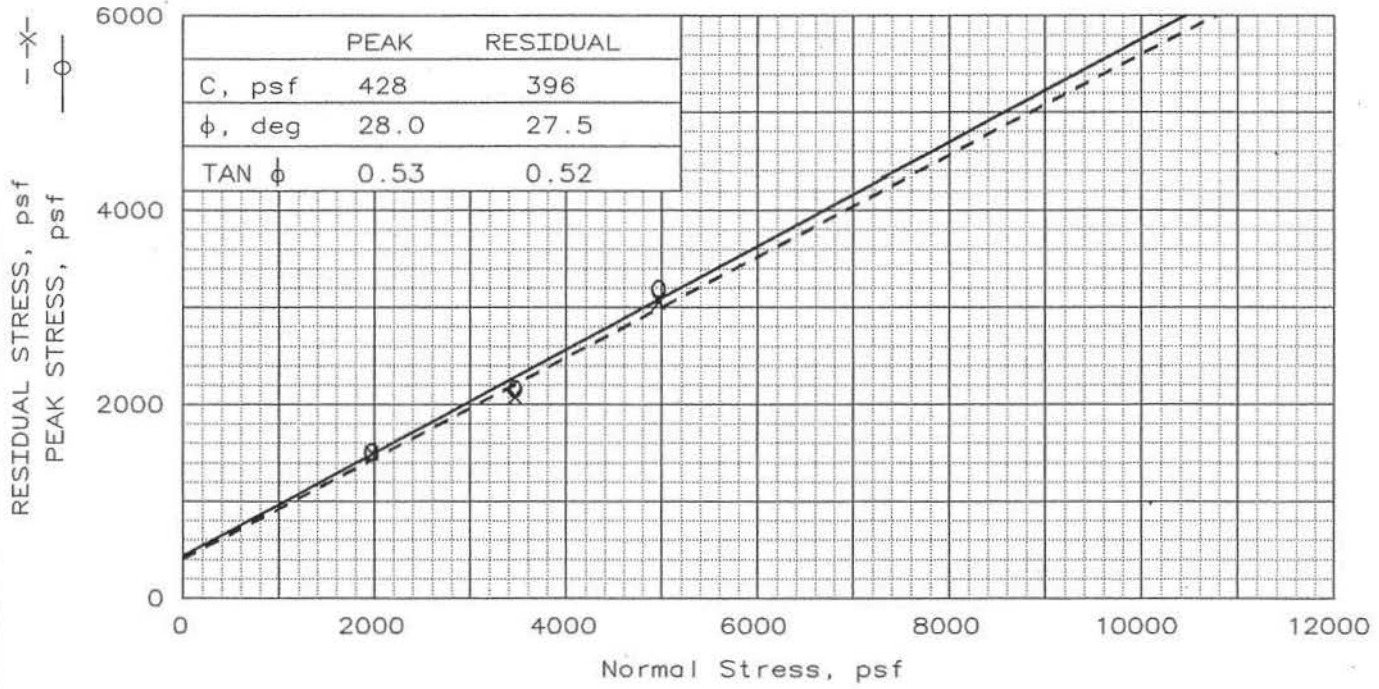

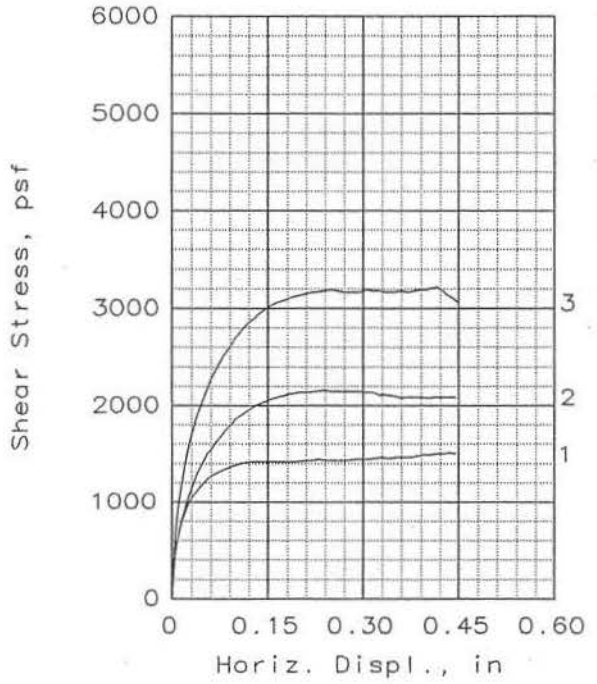

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	6.4	25.9	23.2
	DRY DENSITY, pcf	117.9	96.6	101.2
	SATURATION, %	41.7	96.5	96.7
	VOID RATIO	0.403	0.713	0.634
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	14.5	26.0	23.1
	DRY DENSITY, pcf	119.5	97.9	102.6
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.385	0.689	0.612
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.99	0.99
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1512	2160	3192
DISPLACEMENT, in		0.44	0.24	0.25
RESIDUAL STRESS, psf		1500	2088	3060
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Silty SAND (SM)

LL= 34 PL= 20 PI= 14
SPECIFIC GRAVITY= 2.65
REMARKS: Slopewash (Qsw)
% fines = 43.3

Fig. No.: B5.55

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-22E @ 5 ft

PROJ. NO.: 00-17030IsII-1 DATE: 7/22/04

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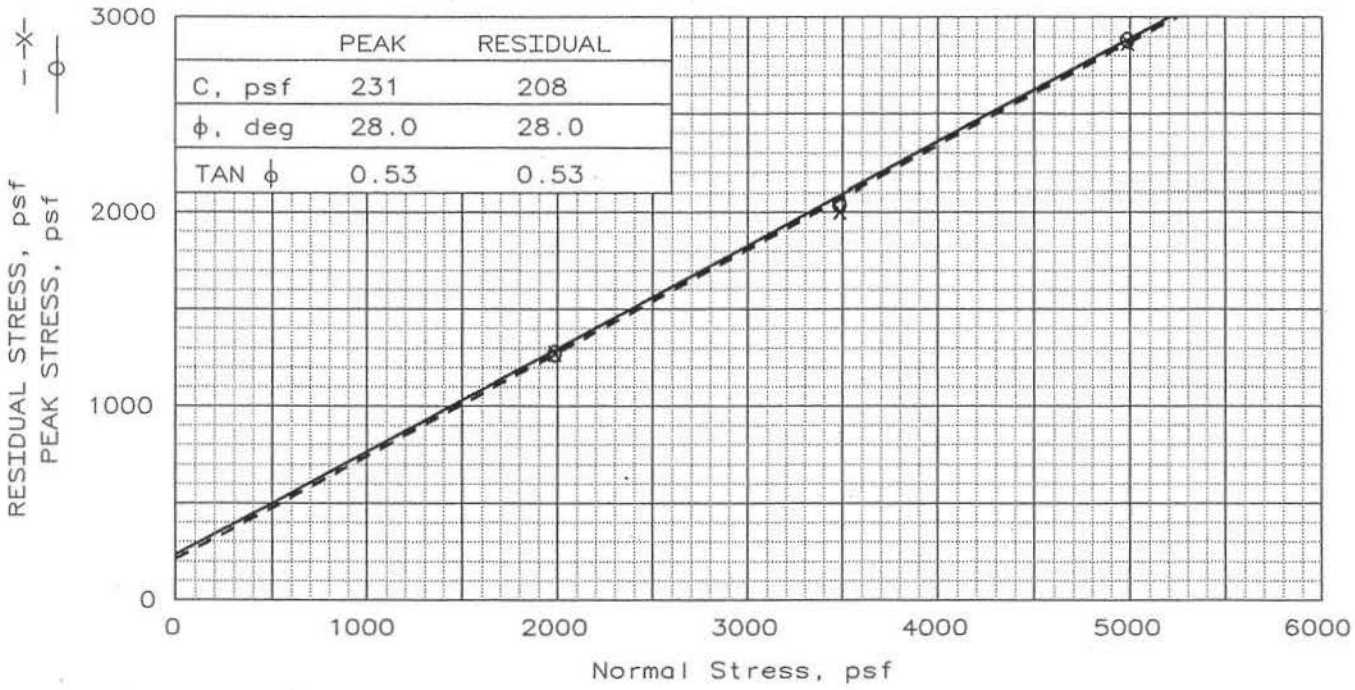

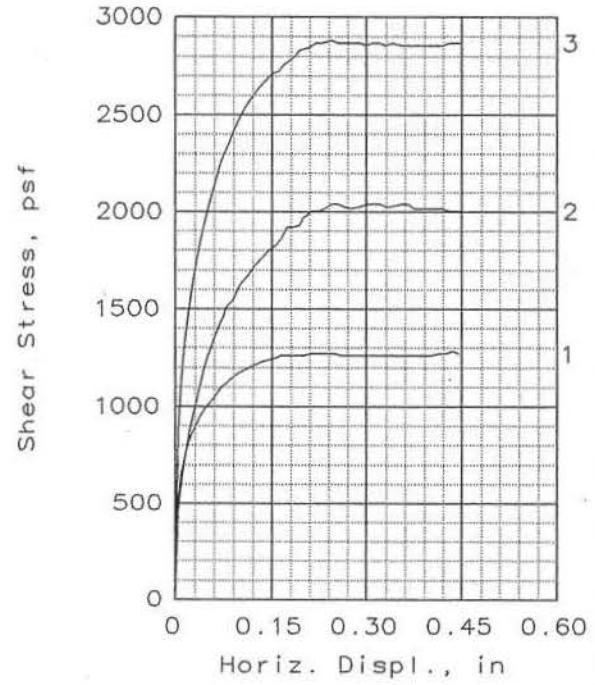

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	46.0	42.3	36.4
	DRY DENSITY, pcf	72.2	76.3	82.6
	SATURATION, %	94.3	96.1	96.1
	VOID RATIO	1.291	1.168	1.003
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	46.4	41.0	34.5
	DRY DENSITY, pcf	74.2	79.2	86.4
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	1.230	1.088	0.914
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.97	0.96	0.96
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1272	2040	2880
DISPLACEMENT, in		0.22	0.25	0.25
RESIDUAL STRESS, psf		1272	2004	2868
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: Sandy lean CLAY (CL)
LL= 38 PL= 20 PI= 18
SPECIFIC GRAVITY= 2.65
REMARKS: Slopewash (Qsw)
% fines = 68.7

Fig. No.: B5.56

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-35E @ 5 ft

PROJ. NO.: 00-17030lsII-1 DATE: 7/22/04

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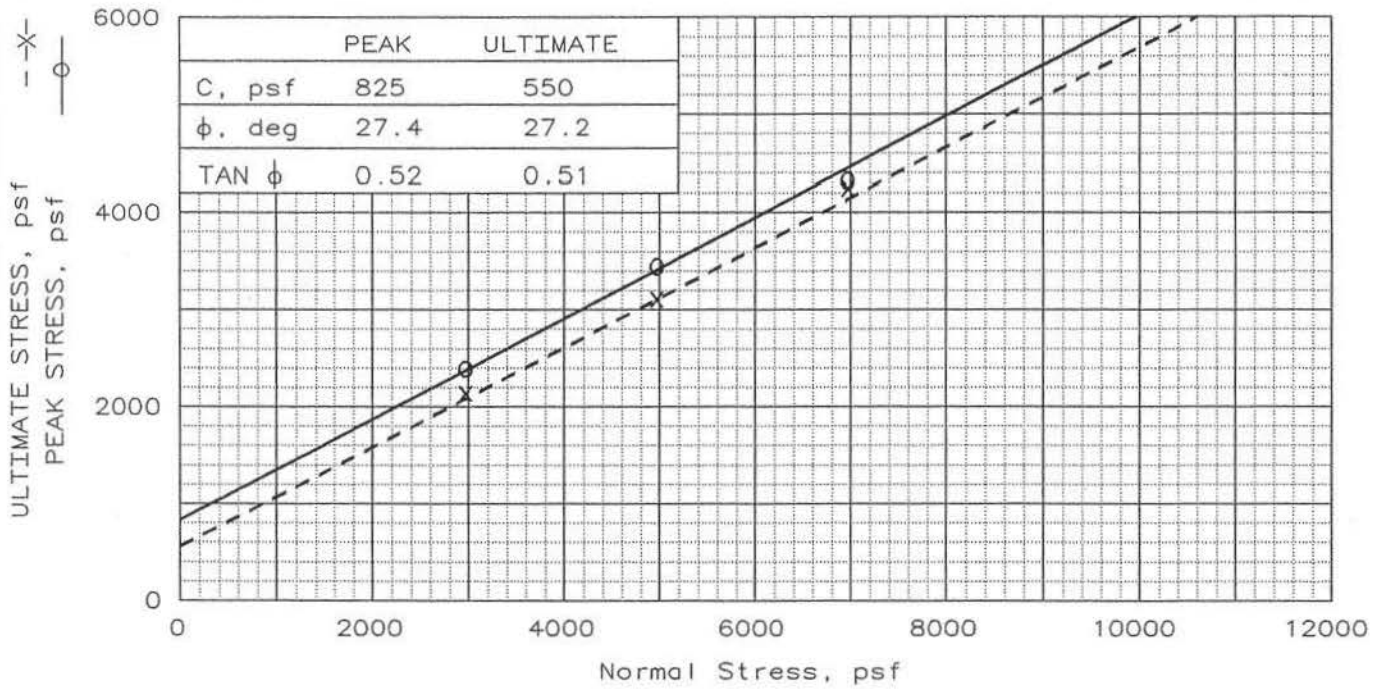

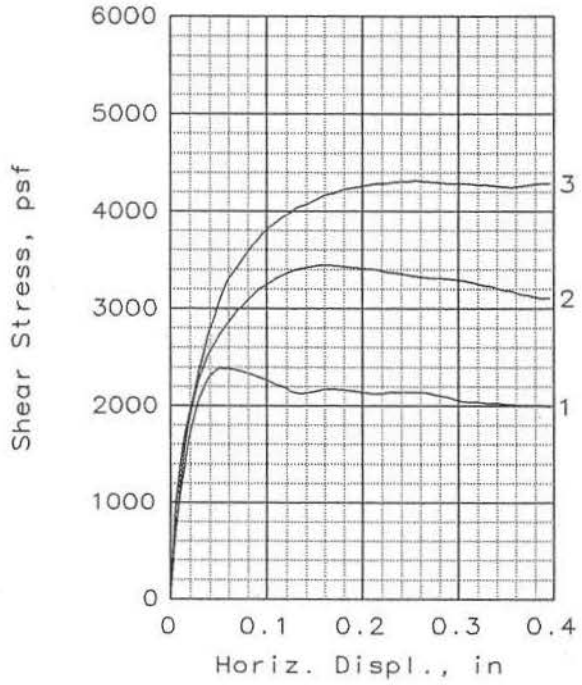

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	10.1	10.4	9.9
	DRY DENSITY, pcf	116.5	116.2	116.8
	SATURATION, %	64.0	65.2	63.1
	VOID RATIO	0.419	0.423	0.417
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	14.9	14.6	13.8
	DRY DENSITY, pcf	118.6	119.2	121.1
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.395	0.388	0.366
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.98	0.98	0.96
NORMAL STRESS, psf		3000	5000	7000
PEAK STRESS, psf		2388	3444	4320
DISPLACEMENT, in		0.05	0.16	0.26
ULTIMATE STRESS, psf		2136	3108	4248
DISPLACEMENT, in		0.27	0.40	0.36
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Remold
DESCRIPTION: Sandy SILT (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD
(TQs derived)
% fines = 53.6

Fig. No.: B5.57

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-1M @ 25 ft

PROJ. NO.: 00-1703M-1 DATE: 7/22/04

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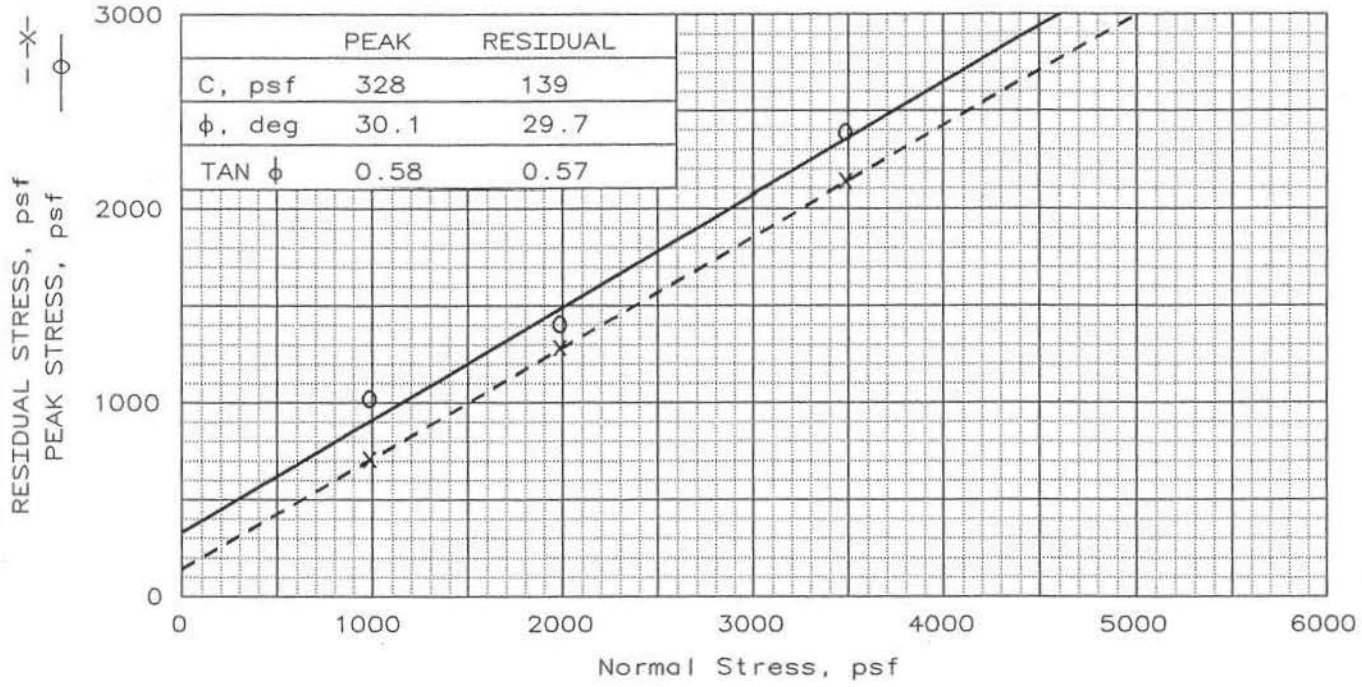

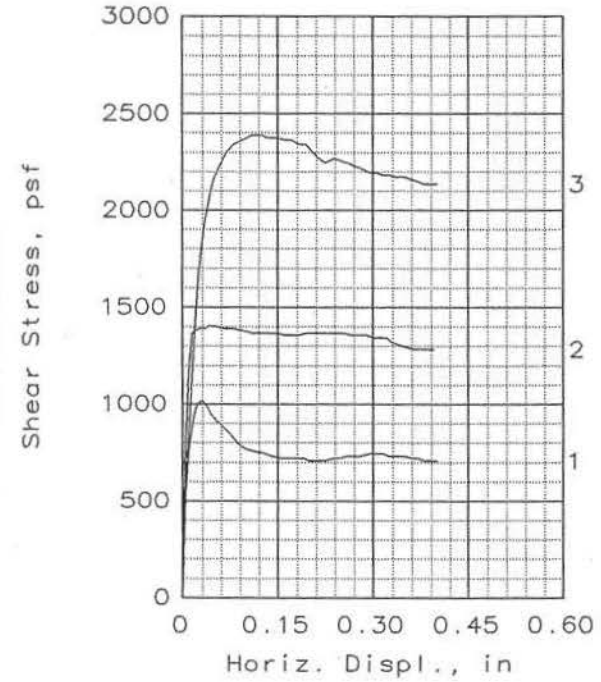

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	11.9	11.9	11.9
	DRY DENSITY, pcf	111.2	111.3	111.2
	SATURATION, %	64.5	64.5	64.5
	VOID RATIO	0.488	0.487	0.488
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	18.3	17.9	17.5
	DRY DENSITY, pcf	111.5	112.2	113.1
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.484	0.474	0.462
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.99	0.98
NORMAL STRESS, psf		1000	2000	3500
PEAK STRESS, psf		1020	1404	2388
DISPLACEMENT, in		0.03	0.04	0.11
RESIDUAL STRESS, psf		708	1284	2136
DISPLACEMENT, in		0.40	0.40	0.40
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Remold
DESCRIPTION: Sandy, silty CLAY (CL-ML)

SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD (Qsw/Qdf/Qls derived)
% fines = 57.9

Fig. No.: B5.58

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-4M @ 2,10 & 15 ft Mix

PROJ. NO.: 01-1703M-1 DATE: 7/22/04

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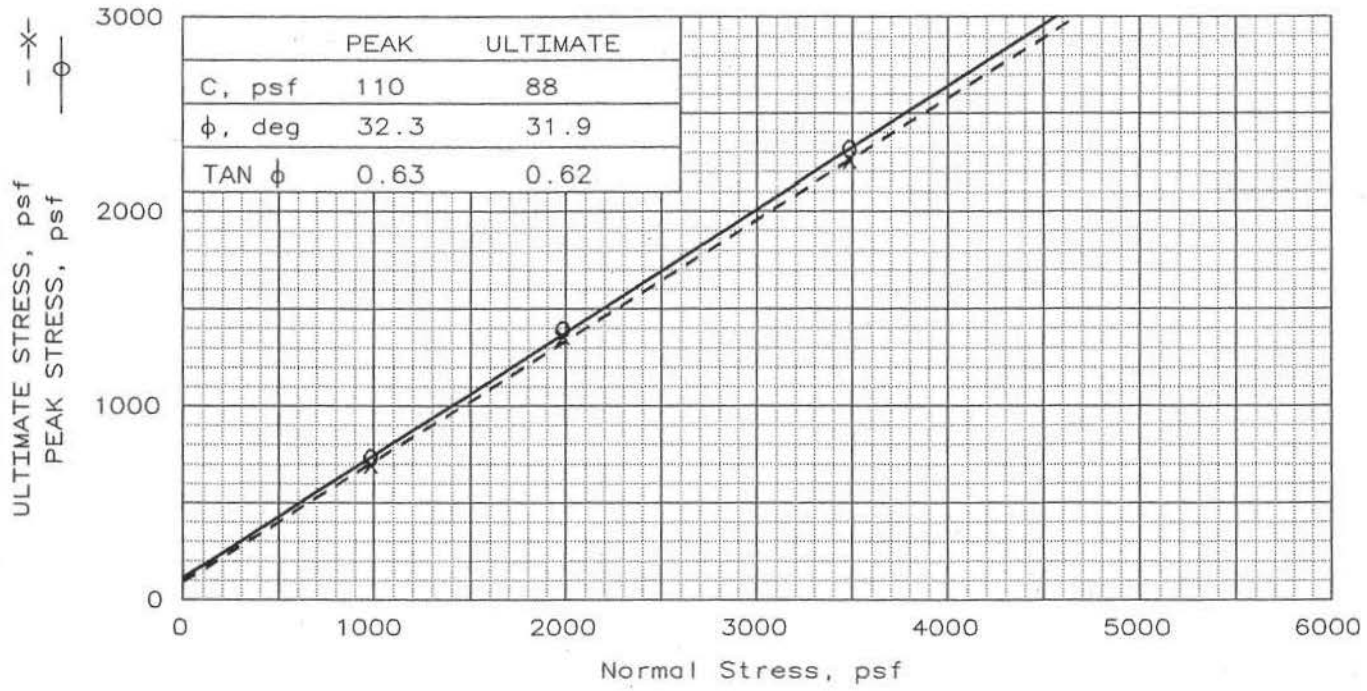

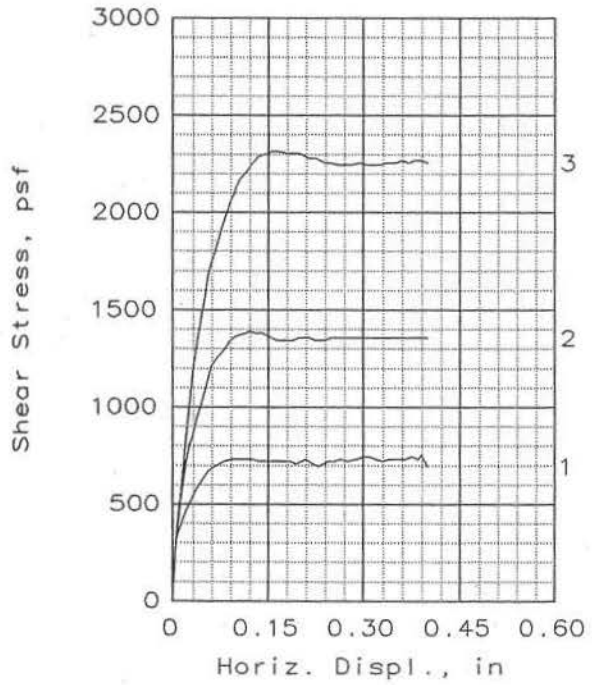

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	3.1	3.4	4.6
	DRY DENSITY, pcf	109.1	110.6	109.4
	SATURATION, %	15.7	18.3	23.7
	VOID RATIO	0.516	0.496	0.512
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	18.4	17.1	16.7
	DRY DENSITY, pcf	111.2	113.9	114.6
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.488	0.453	0.443
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.98	0.97	0.95
NORMAL STRESS, psf		1000	2000	3500
PEAK STRESS, psf		732	1392	2316
DISPLACEMENT, in		0.10	0.12	0.16
ULTIMATE STRESS, psf		696	1356	2256
DISPLACEMENT, in		0.40	0.40	0.40
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Remold
DESCRIPTION: Silty SAND (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD
(Qsw derived)
% fines = 20.8

Fig. No.: B5.59

CLIENT: Newhall Ranch Co.

PROJECT: Mesas Entertainment

SAMPLE LOCATION: B-4M @ 5 ft

PROJ. NO.: 00-1703M-1 DATE: 7/22/04

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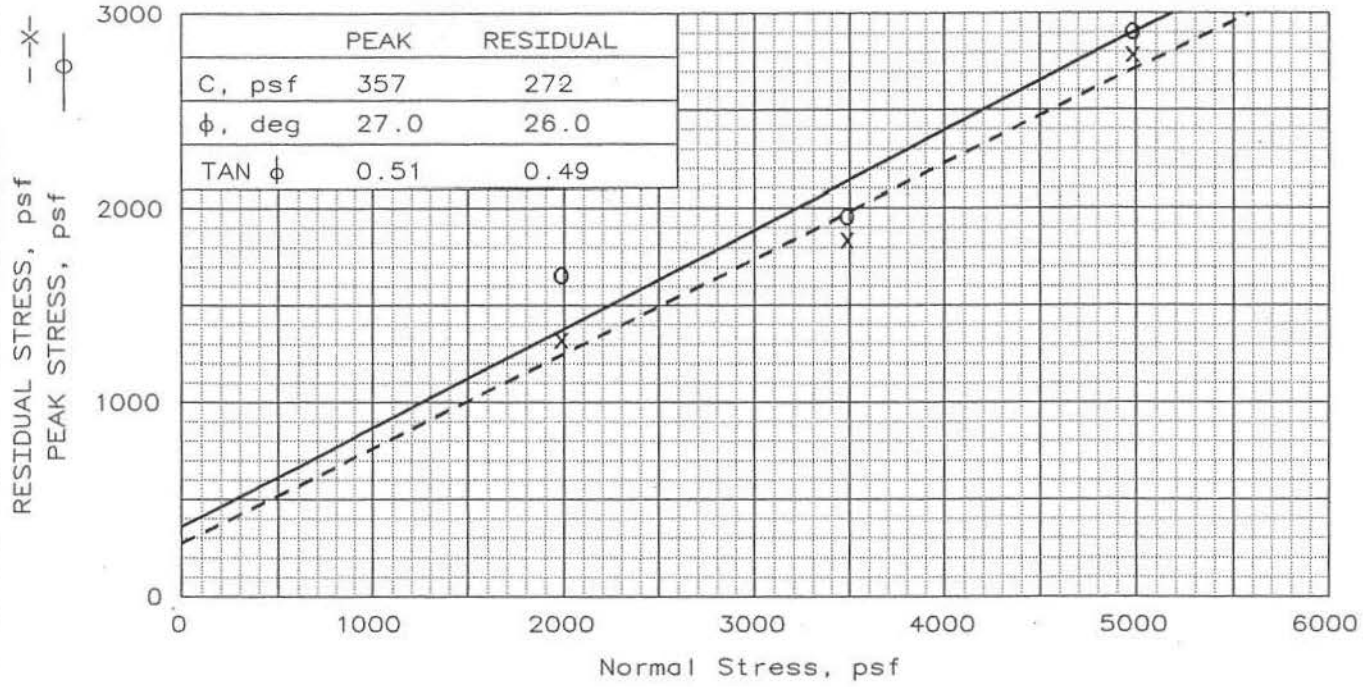

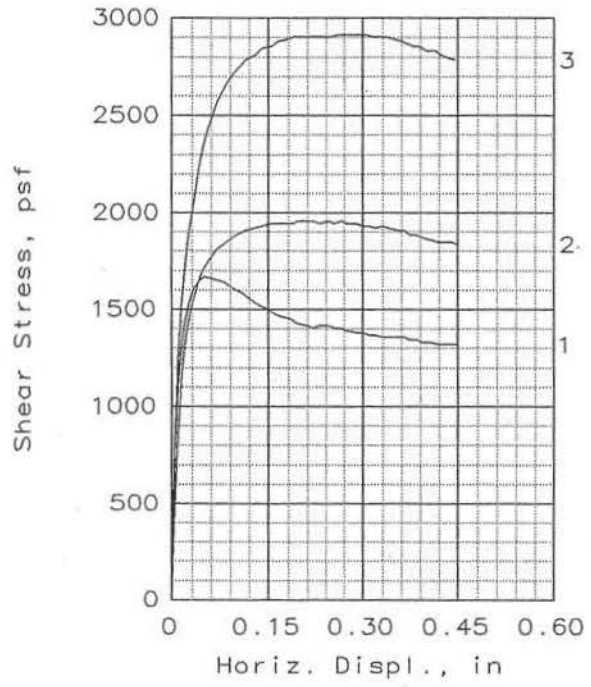

Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	9.3	9.5	9.5
	DRY DENSITY, pcf	118.1	117.9	117.9
	SATURATION, %	61.3	62.4	62.4
	VOID RATIO	0.401	0.404	0.404
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	15.8	14.4	14.5
	DRY DENSITY, pcf	116.6	119.8	119.6
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.418	0.380	0.383
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.01	0.98	0.99
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1656	1956	2904
DISPLACEMENT, in		0.07	0.20	0.19
RESIDUAL STRESS, psf		1320	1836	2784
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Remold
DESCRIPTION: Sandy lean CLAY (CL)
LL= 37 PL= 19 PI= 18
SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD (Qls derived)
% fines = 52.9

Fig. No.: B5.60

CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-20E @ 0-10 ft

PROJ. NO.: 00-1703QLSII-1 DATE: 7/22/04

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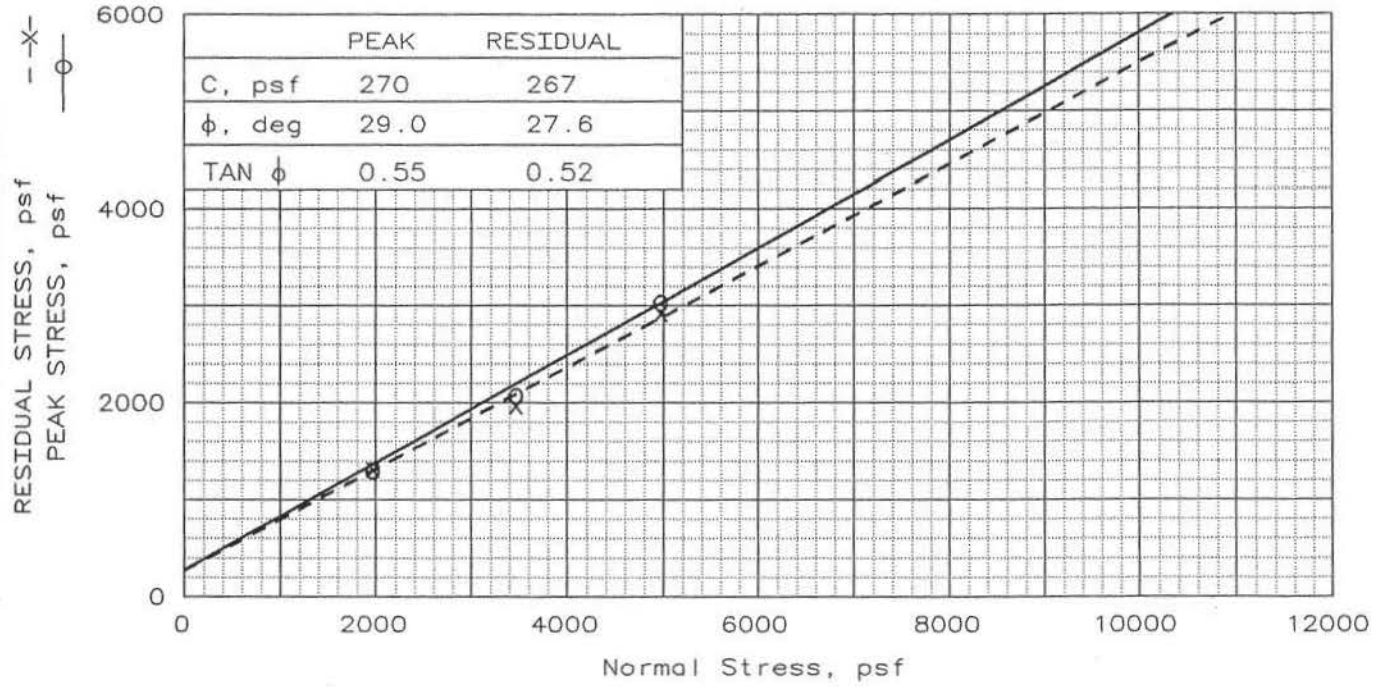
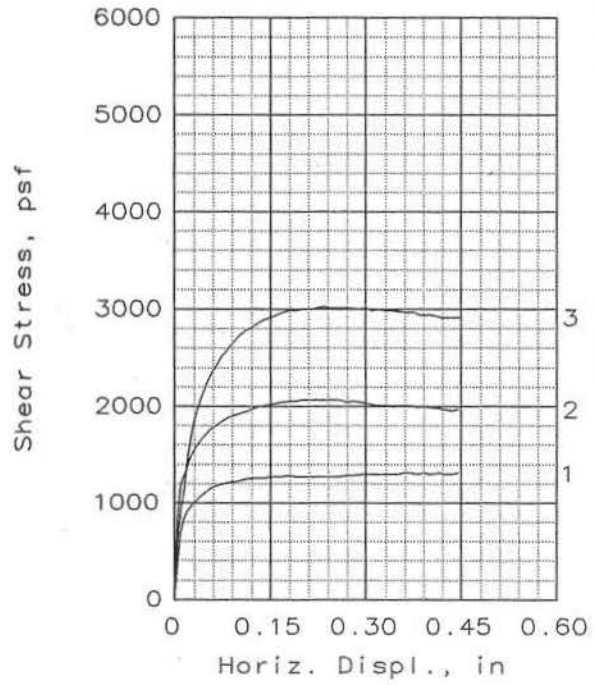




Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	19.2	19.6	19.4
	DRY DENSITY, pcf	108.4	108.1	108.2
	SATURATION, %	96.8	97.6	97.1
	VOID RATIO	0.527	0.531	0.528
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	19.4	19.3	18.7
	DRY DENSITY, pcf	109.2	109.5	110.6
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.515	0.511	0.495
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.99	0.98
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1296	2064	3024
DISPLACEMENT, in		0.30	0.20	0.24
RESIDUAL STRESS, psf		1308	1968	2916
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0050	0.0050	0.0050

SAMPLE TYPE: Remold
DESCRIPTION: Silty, clayey SAND with pebbles (SC-SM)
LL= 31 PL= 17 PI= 14
SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD (Qsw/Qdf derived)
% fines = 51.9

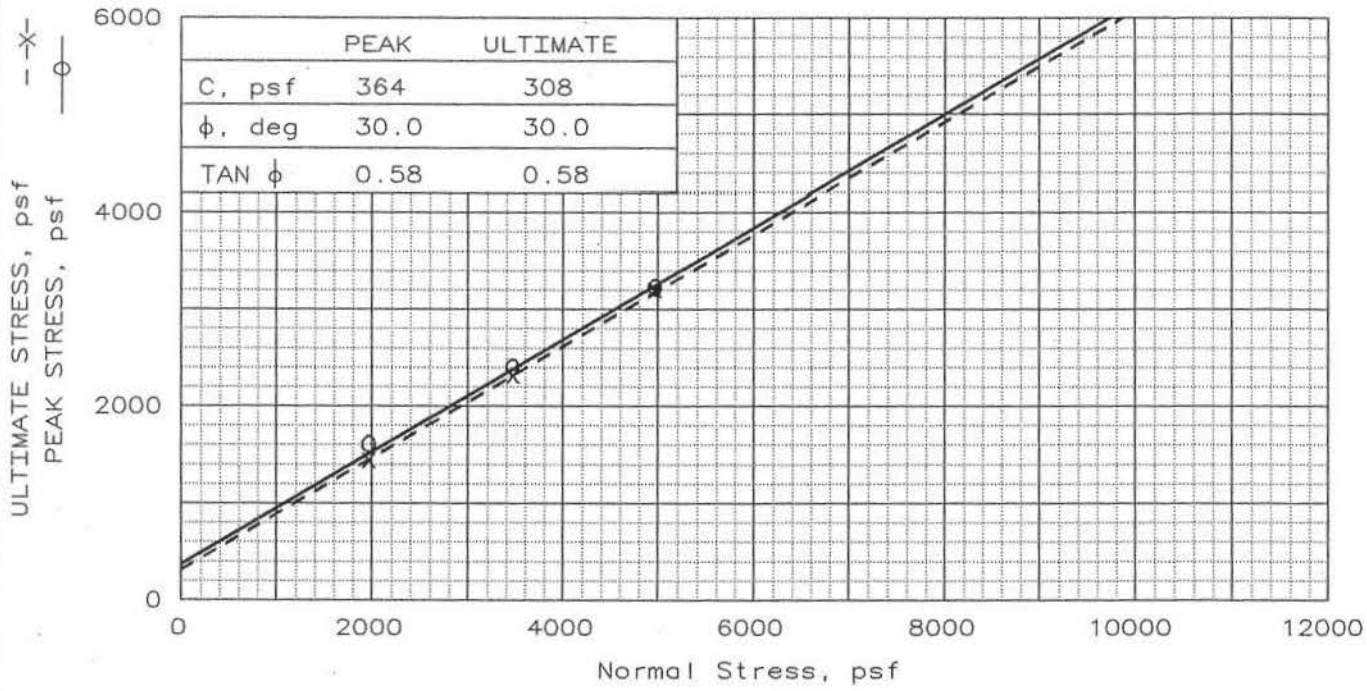
Fig. No.: B5.61

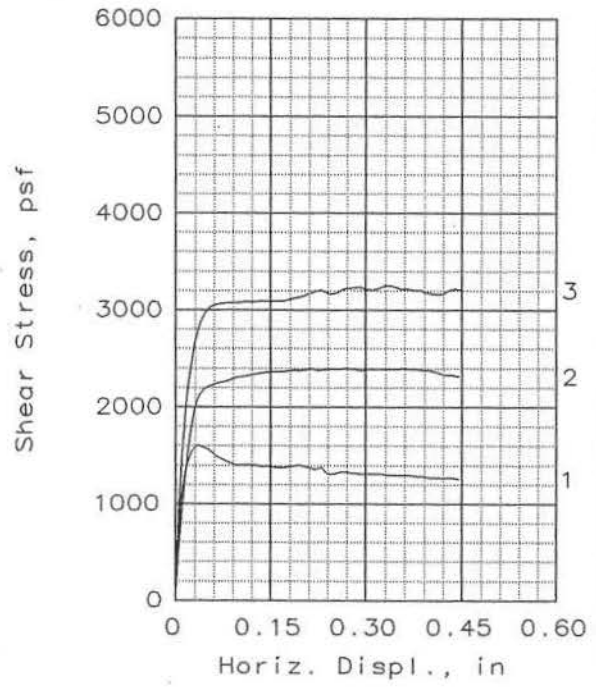
CLIENT: Newhall Ranch Co.

PROJECT: Mesas East - Phase II Landslide Investigation
SAMPLE LOCATION: B-48E @ 0-10 ft

PROJ. NO.: 00-1703QlsII-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.





Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	15.5	15.4	15.5
	DRY DENSITY, pcf	116.3	116.3	116.3
	SATURATION, %	97.1	96.9	97.1
	VOID RATIO	0.423	0.422	0.422
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	15.3	15.2	15.2
	DRY DENSITY, pcf	117.7	118.0	118.0
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.406	0.403	0.401
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.99	0.99
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1608	2400	3228
DISPLACEMENT, in		0.04	0.22	0.28
ULTIMATE STRESS, psf		1440	2316	3204
DISPLACEMENT, in		0.08	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Remold
DESCRIPTION: Clayey Sand (SC)

LL= 26 PL= 16 PI= 10
SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD (Qal derived)
% fines = 22.6

Fig. No.: B5.62

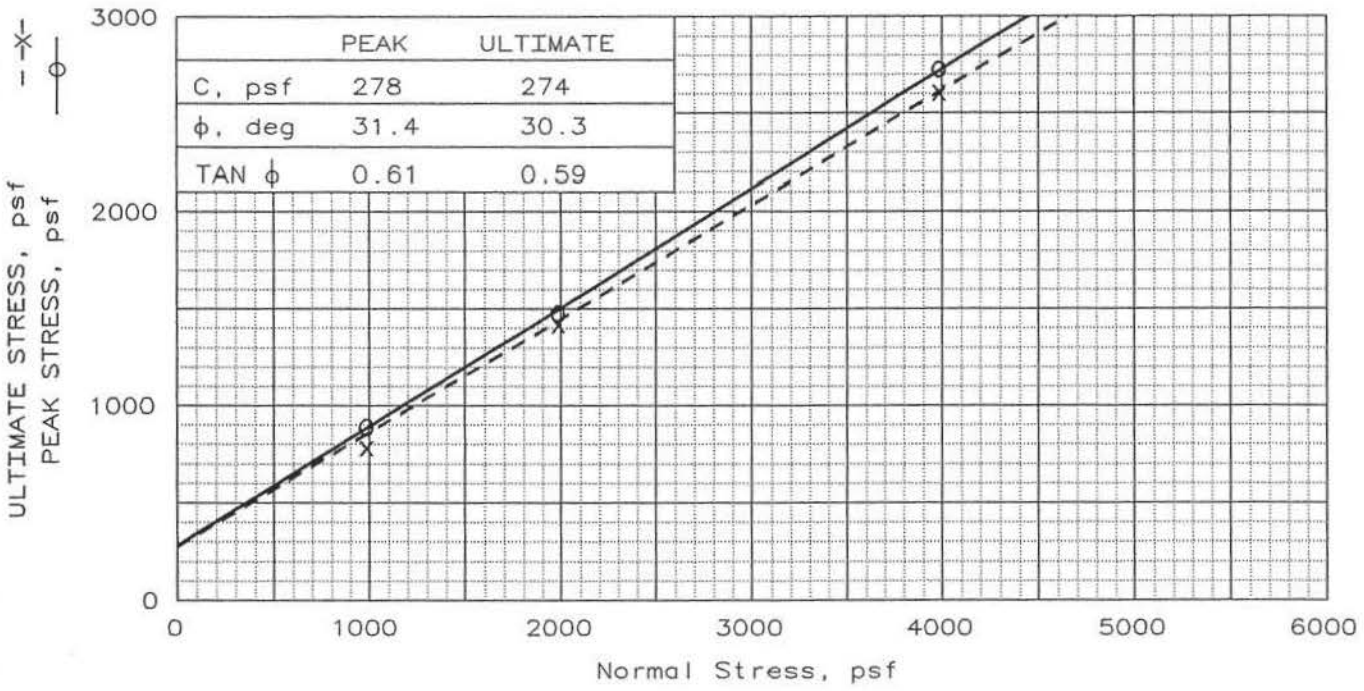
CLIENT: Newhall Ranch Co.

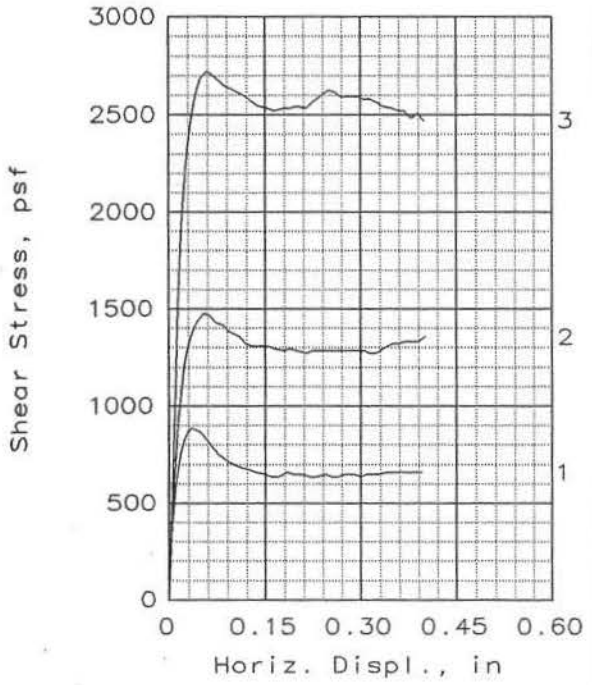
PROJECT: Newhall Ranch, Mesas-East

SAMPLE LOCATION: B-57E @ 5 & 10 ft

PROJ. NO.: 00-1703CM-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.





Sample No.:		1	2	3
INITIAL	WATER CONTENT, %	9.1	8.0	8.0
	DRY DENSITY, pcf	117.4	118.6	117.9
	SATURATION, %	58.8	53.8	52.7
	VOID RATIO	0.409	0.395	0.403
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	15.1	14.5	14.6
	DRY DENSITY, pcf	118.2	119.4	119.4
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.400	0.385	0.386
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.99	0.99
NORMAL STRESS, psf		1000	2000	4000
PEAK STRESS, psf		888	1476	2724
DISPLACEMENT, in		0.04	0.06	0.06
ULTIMATE STRESS, psf		780	1416	2604
DISPLACEMENT, in		0.07	0.09	0.12
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Remold
DESCRIPTION: Silty SAND (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD
(Qt derived)
% fines = 16.2

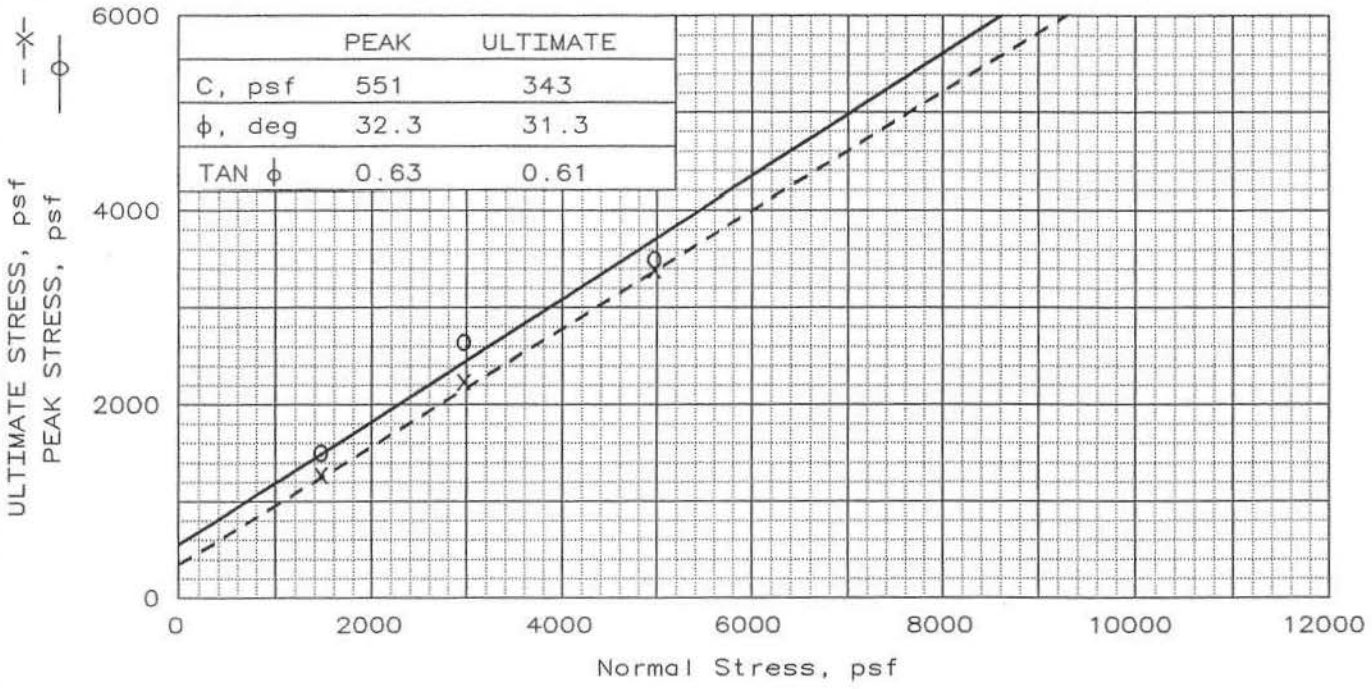
Fig. No.: B5.63

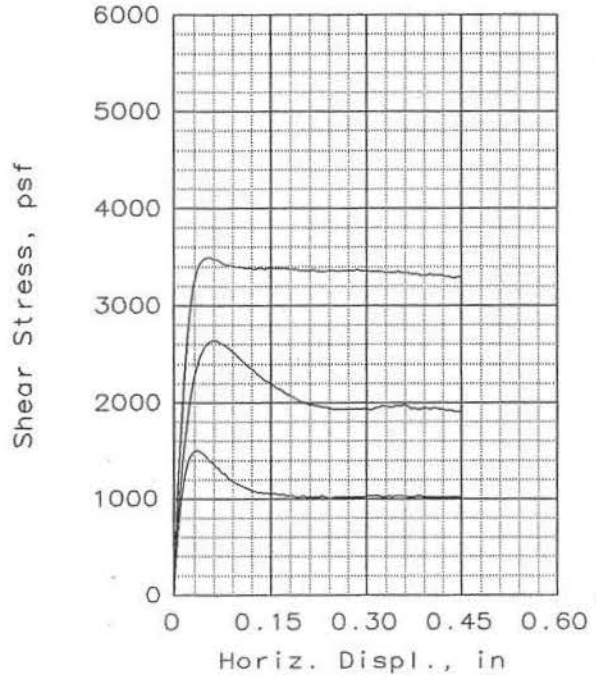
CLIENT: Newhall Ranch Co.

PROJECT: Cobble/Boulder Assessment
Airport and Exxon Mesas
SAMPLE LOCATION: B-6B @ 19 ft

PROJ. NO.: 02-1703B-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	8.8	9.0	7.6
	DRY DENSITY, pcf	128.6	128.5	128.5
	SATURATION, %	80.9	82.9	69.9
	VOID RATIO	0.287	0.287	0.287
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	11.2	11.6	11.4
	DRY DENSITY, pcf	127.7	126.7	127.0
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.296	0.306	0.303
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.01	1.01	1.01
NORMAL STRESS, psf		1500	3000	5000
PEAK STRESS, psf		1500	2640	3492
DISPLACEMENT, in		0.04	0.06	0.05
ULTIMATE STRESS, psf		1272	2232	3384
DISPLACEMENT, in		0.08	0.14	0.11
Strain rate, %/min		0.01	0.01	0.01

SAMPLE TYPE: Remold
DESCRIPTION: Clayey SAND (SC)

SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD
(Qt derived)
% fines = 30.6

Fig. No.: B5.64

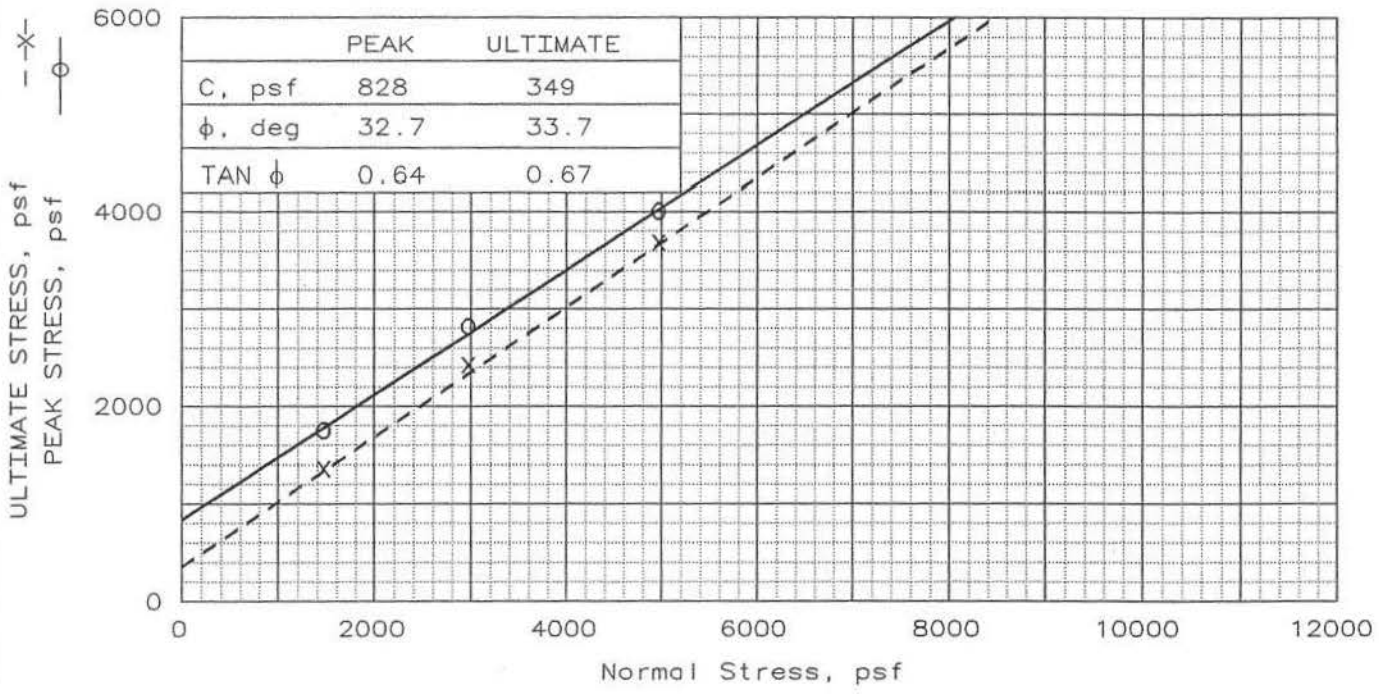
CLIENT: Newhall Ranch Co.

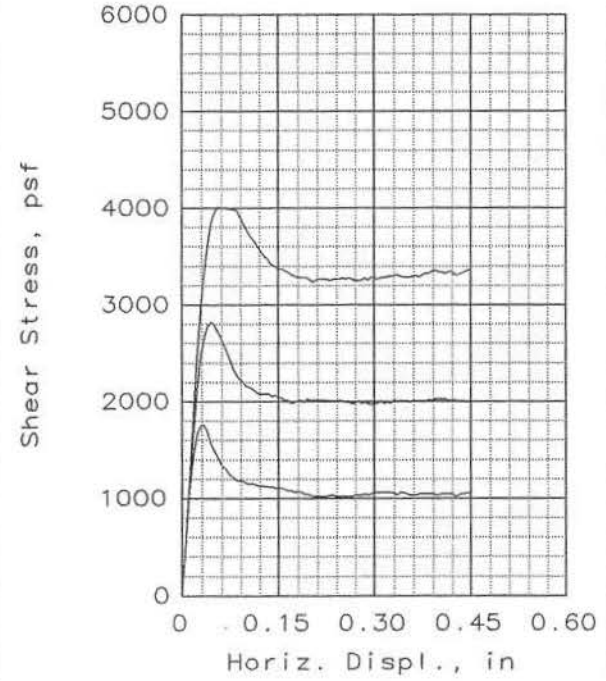
PROJECT: Mesas West

SAMPLE LOCATION: B-1W @ 10-15 ft

PROJ. NO.: 04-1703W-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	6.1	5.4	6.4
	DRY DENSITY, pcf	129.0	129.6	128.4
	SATURATION, %	57.3	51.5	59.2
	VOID RATIO	0.282	0.276	0.288
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	10.7	11.1	11.6
	DRY DENSITY, pcf	128.9	127.9	126.6
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.284	0.293	0.306
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.01	1.01
NORMAL STRESS, psf		1500	3000	5000
PEAK STRESS, psf		1752	2820	4008
DISPLACEMENT, in		0.03	0.05	0.06
ULTIMATE STRESS, psf		1356	2424	3684
DISPLACEMENT, in		0.06	0.08	0.11
Strain rate, %/min		0.01	0.01	0.01

SAMPLE TYPE: Remold
DESCRIPTION: Silty SAND with gravel (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD (TQs derived)
% fines = 19.6

Fig. No.: B5.65

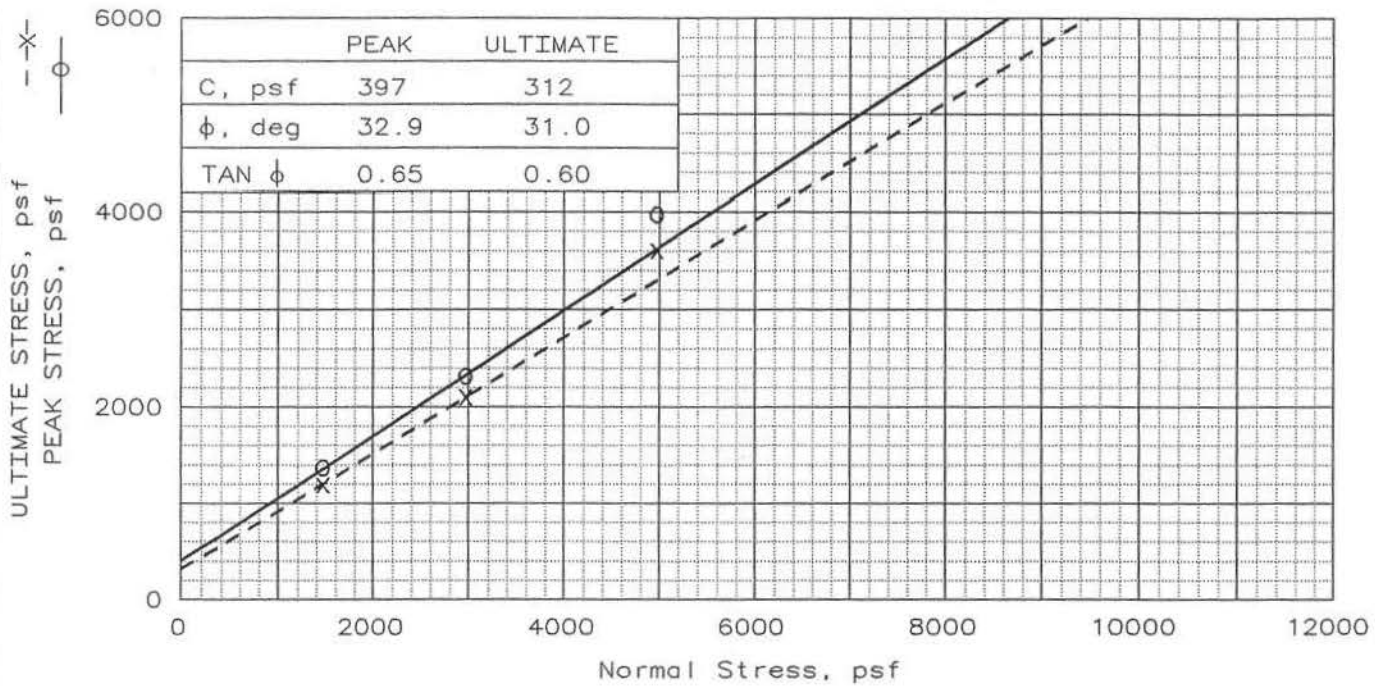
CLIENT: Newhall Ranch Co.

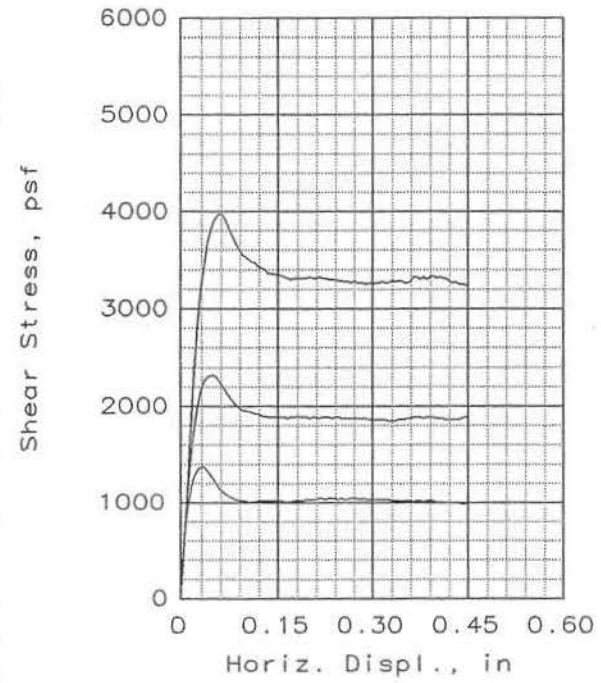
PROJECT: Mesas West

SAMPLE LOCATION: B-2W @ 10-15 ft

PROJ. NO.: 04-1703W-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.





SAMPLE NO.:		1	2	3
INITIAL	WATER CONTENT, %	8.2	8.2	8.7
	DRY DENSITY, pcf	123.7	123.7	123.5
	SATURATION, %	64.3	64.3	67.9
	VOID RATIO	0.337	0.338	0.339
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	12.5	12.1	11.9
	DRY DENSITY, pcf	124.3	125.2	125.8
	SATURATION, %	100.0	100.0	100.0
	VOID RATIO	0.331	0.322	0.315
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	0.99	0.98
NORMAL STRESS, psf		1500	3000	5000
PEAK STRESS, psf		1368	2316	3972
DISPLACEMENT, in		0.03	0.05	0.06
ULTIMATE STRESS, psf		1188	2100	3600
DISPLACEMENT, in		0.06	0.08	0.09
Strain rate, %/min		0.01	0.01	0.01

SAMPLE TYPE: Remold
DESCRIPTION: Silty SAND with gravel (SM)

SPECIFIC GRAVITY= 2.65
REMARKS: Remolded to 90% of MDD (TQs derived)
% fines = 18.8

Fig. No.: B5.66

CLIENT: Newhall Ranch Co.

PROJECT: Mesas West

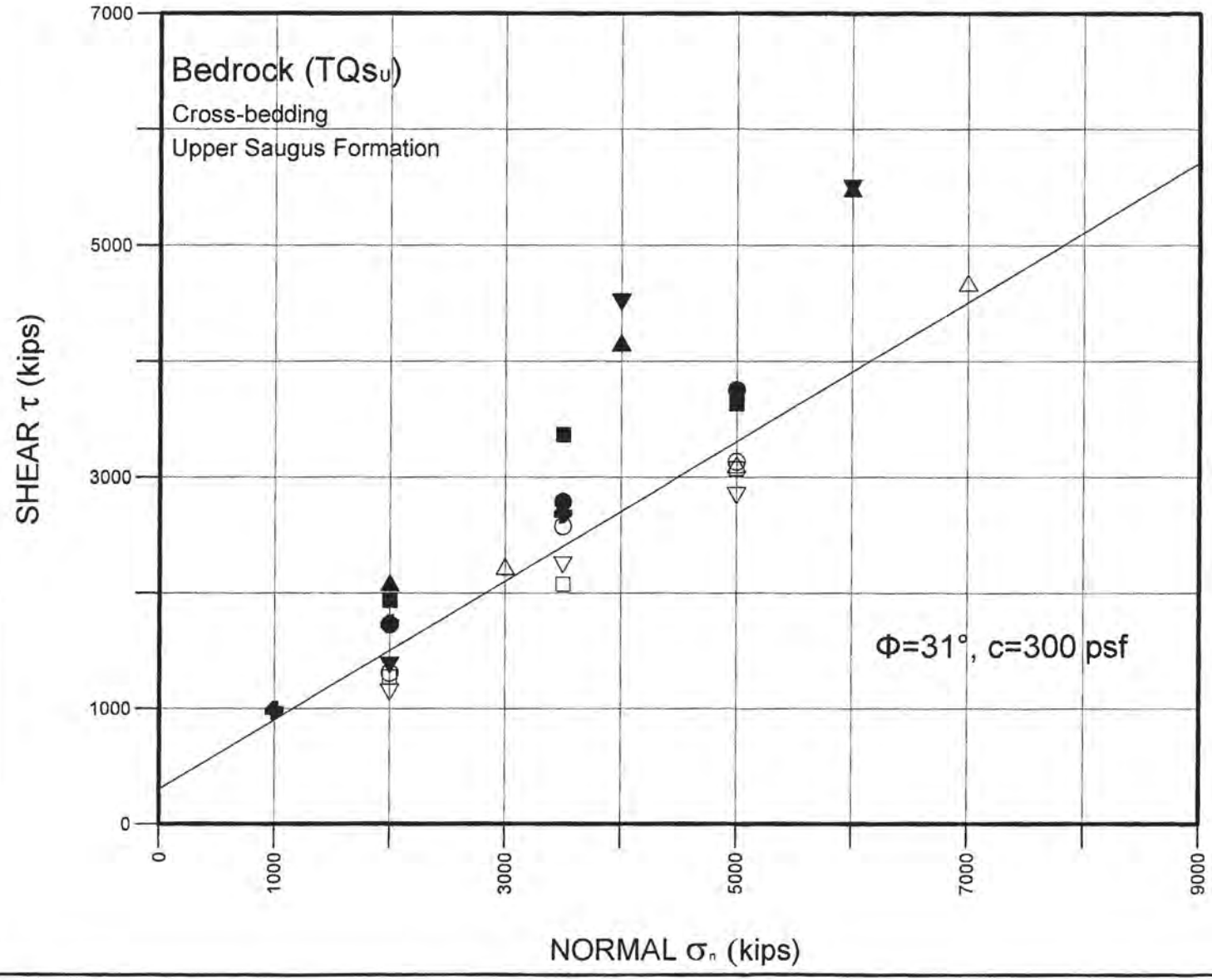
SAMPLE LOCATION: B-9W @ 6-8 ft

PROJ. NO.: 04-1703W-1 DATE: 7/22/04

DIRECT SHEAR TEST REPORT

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.

SUMMARY OF SHEAR TEST DATA



Residual (fine-grained)

- ▽ B-3E @ 5'
- ○ B-41E @ 10'
- □ B-61E @ 10'
- △ B-2M @ 30'

Ultimate (coarse-grained)

- ● B-1E @ 10'
- ■ B-30E @ 10'
- ▲ B-30E @ 30'
- ▼ B-53E @ 40'
- ◆ B-1M @ 18'

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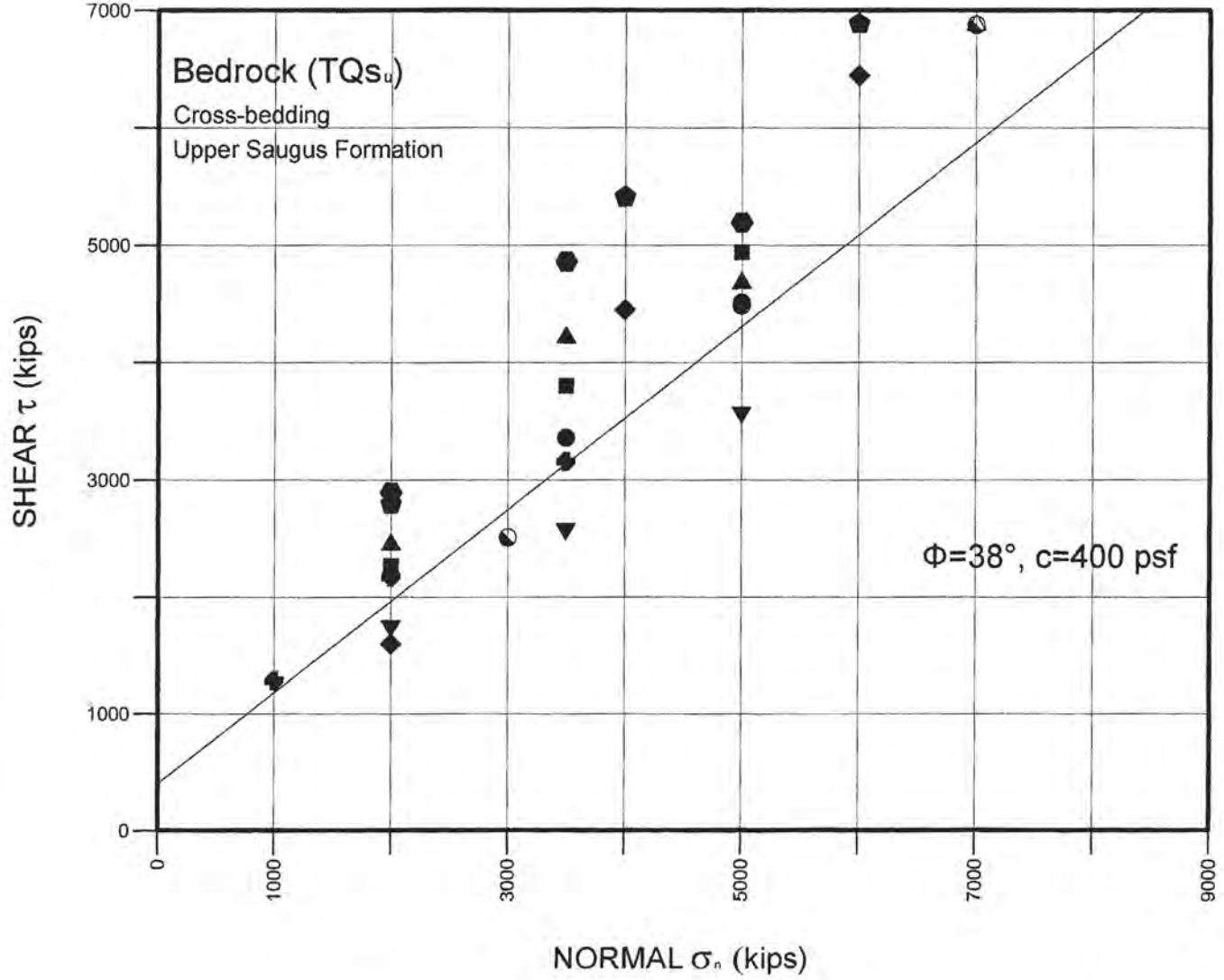
Geological and Geotechnical Consultants

Family Shear Plot
Upper Saugus Formation (TQsu)

Job No.: 04-2023-4
Date: 7/22/04 | *Figure:* B6.1

SUMMARY OF SHEAR TEST DATA



Peak

- B-1E @ 10'
- B-3E @ 5'
- B-30E @ 10'
- B-30E @ 30'
- B-41E @ 10'
- B-53E @ 40'
- B-61E @ 10'
- B-1M @ 18'
- B-2M @ 30'

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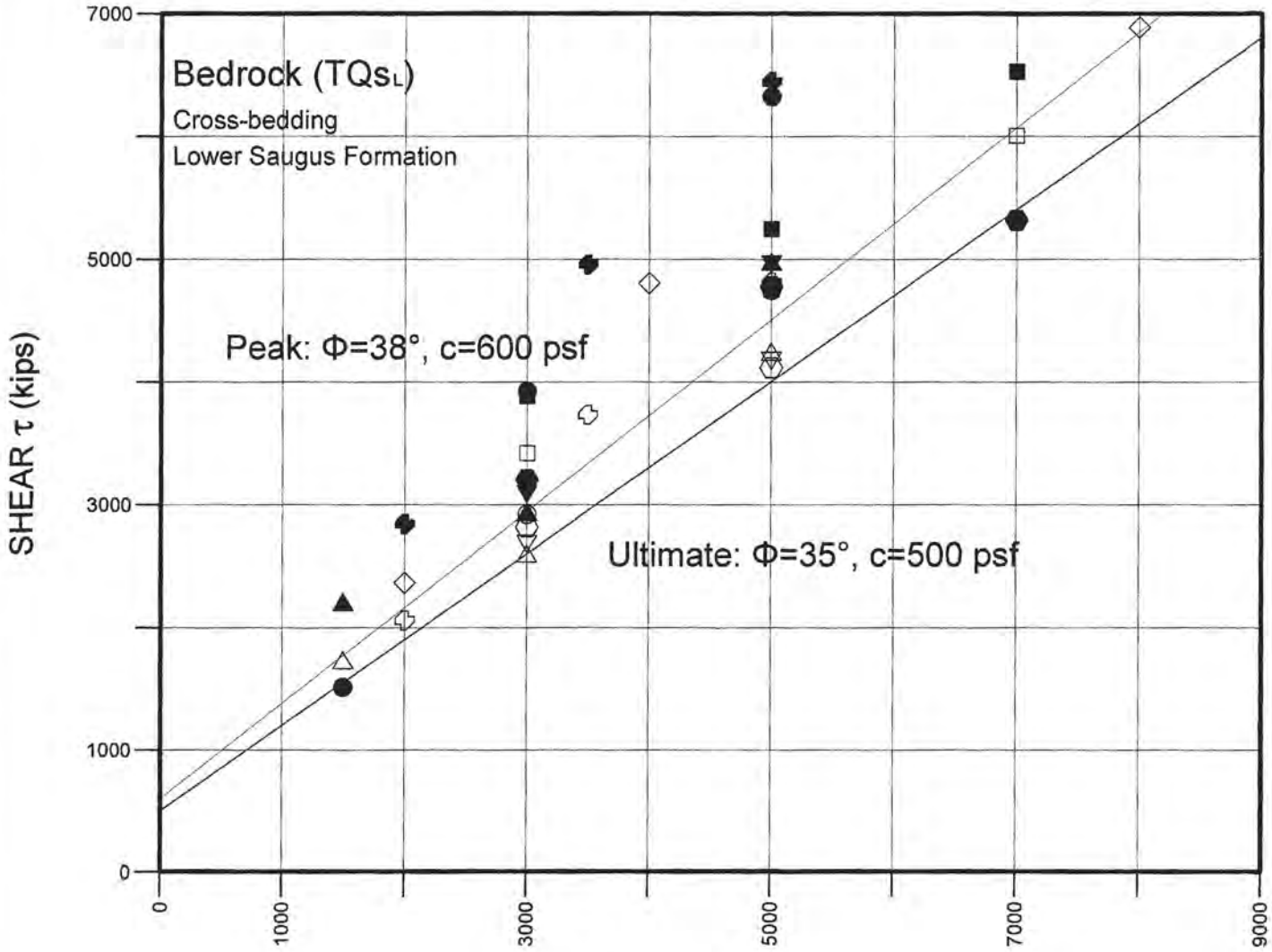
Geological and Geotechnical Consultants

Family Shear Plot
Upper Saugus Formation (TQsu)

Job No.: 04-2023-4

Date: 7/22/04 | *Figure:* B6.2

SUMMARY OF SHEAR TEST DATA



Peak	Ultimate	
●	○	B-2W @ 15'
■	□	B-2W @ 25'
▲	△	B-9W @ 10'
⬢	⬡	B-14W @ 25'
▼	▽	B-16W @ 20'
⬬	⬭	B-44E @ 20'
◆	◇	B-6B @ 83'

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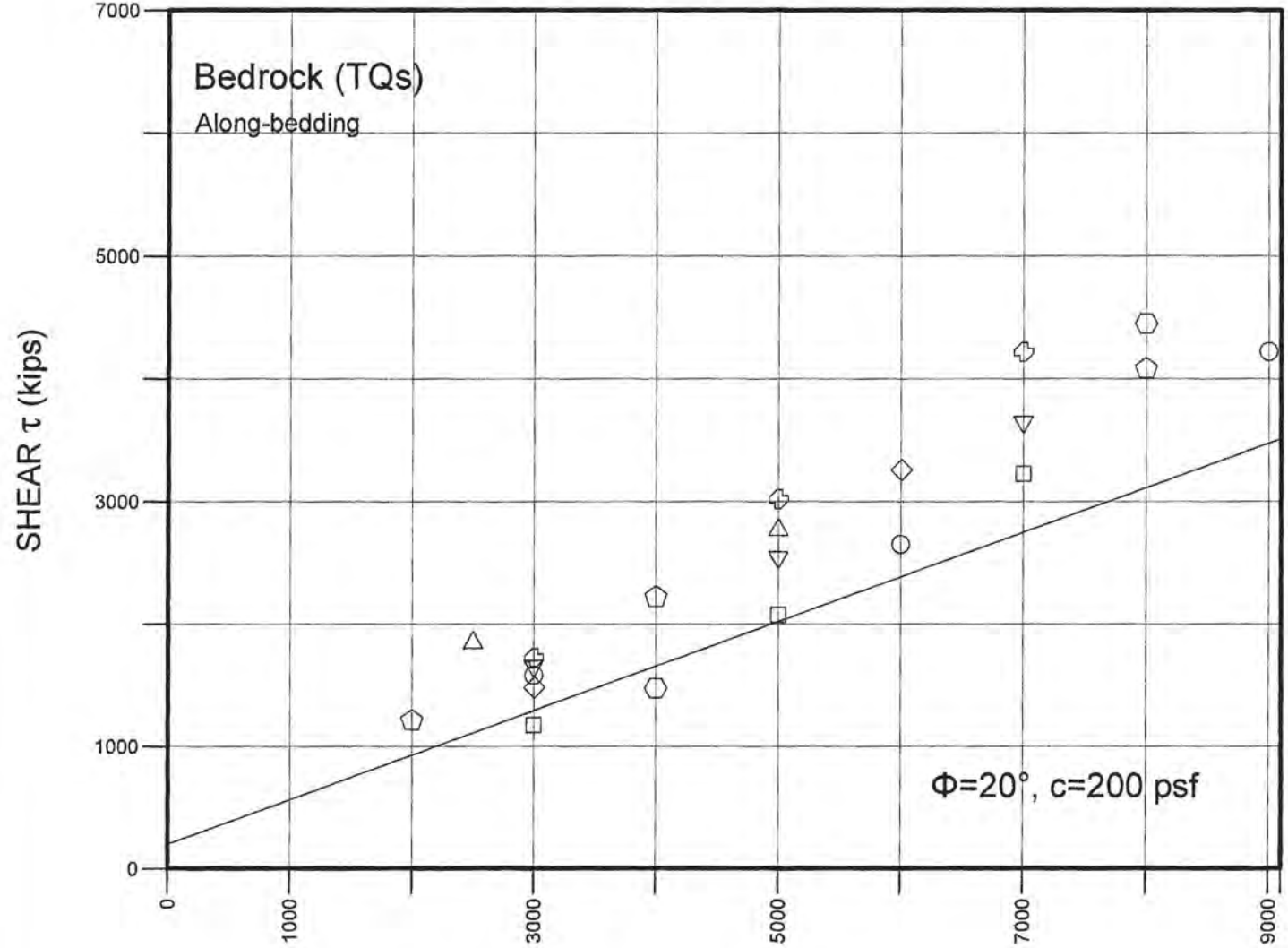
Family Shear Plot
Lower Saugus Formation (TQsL)

Job No.: 04-2023-4
Date: 7/22/04 | *Figure:* B6.3

SUMMARY OF SHEAR TEST DATA



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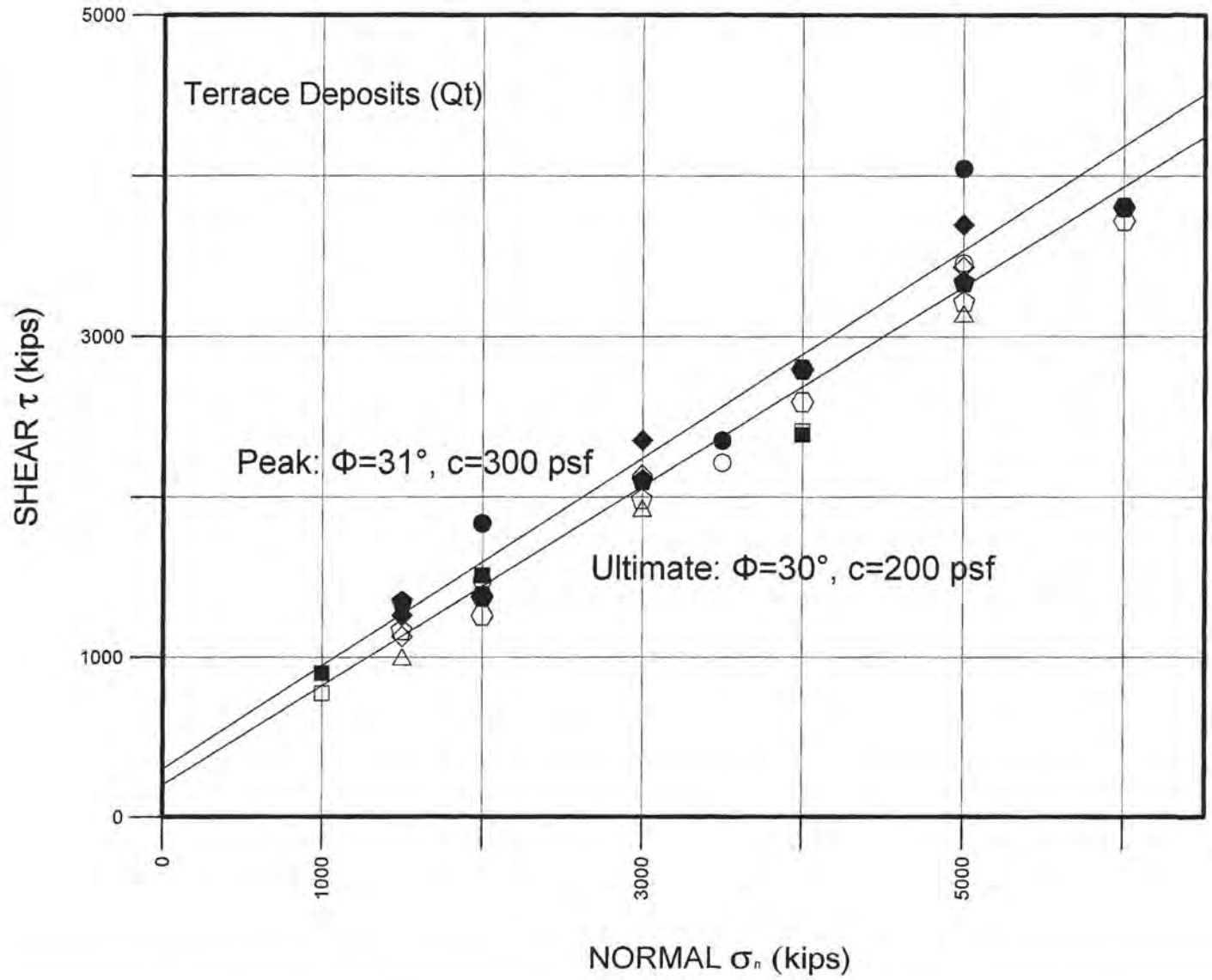
Geological and Geotechnical Consultants

Family Shear Plot
Bedrock (TQs) Along-bedding

Job No.: 04-2023-4

Date: 7/22/04 | *Figure:* B6.4

SUMMARY OF SHEAR TEST DATA



Peak	Ultimate	
●	○	B-27E @ 5'
■	□	B-2B @ 15'
⬟	⬠	B-6B @ 15'
⬢	⬡	B-6W @ 45'
◆	◇	B-11W @ 20'

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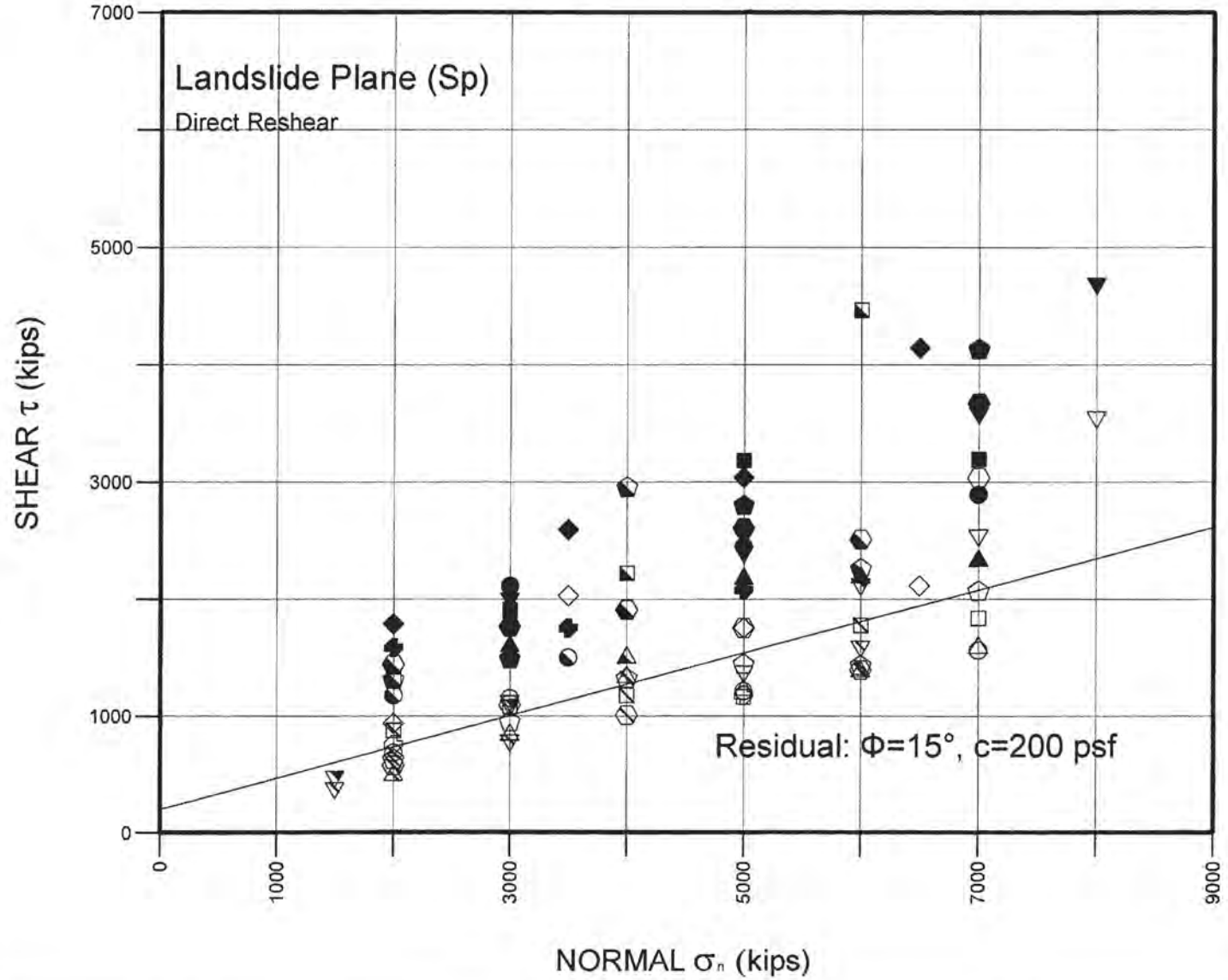
Family Shear Plot
Terrace Deposits (Qt)

Job No.: 04-2023-4
Date: 7/22/04 | *Figure:* B6.5

SUMMARY OF SHEAR TEST DATA



Peak Residual

- B-4M @ 15.5'
- B-6M @ 28'
- B-16M @ 34.5'
- B-19M @ 34'
- B-10E @ 29'
- B-12E @ 20.5'
- B-16E @ 14.5'
- B-19E @ 21'
- B-34E @ 19.5'
- B-42E @ 27'
- B-48E @ 45'
- B-53E @ 25'
- B-58E @ 43.5'
- B-13W @ 30'

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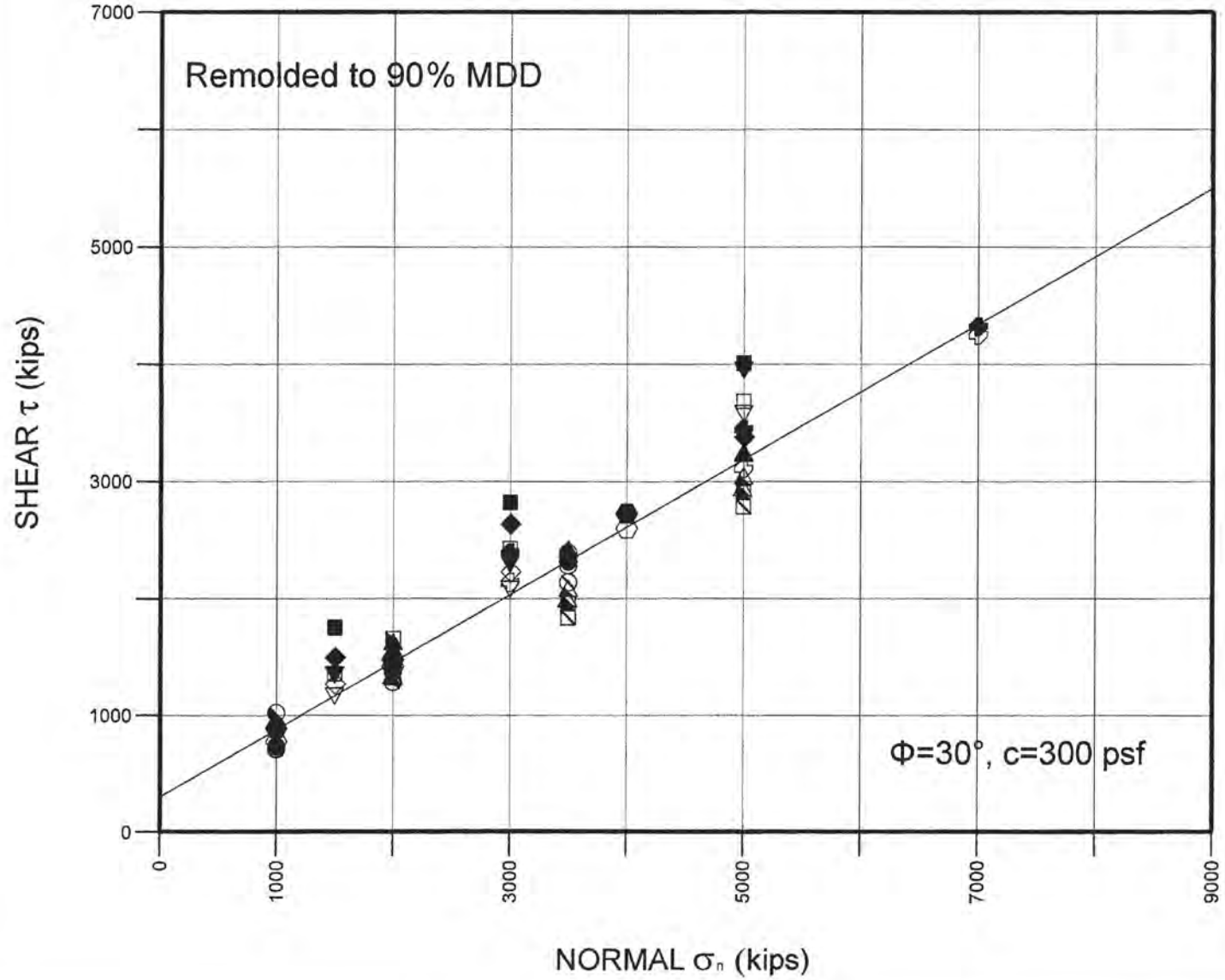
Family Shear Plot
Landslide Plane (Sp)

Job No.: 04-2023-4
Date: 7/22/04 | *Figure:* B6.7

SUMMARY OF SHEAR TEST DATA



Peak Ultimate (coarse-grained)

- B-4M @ 5'
- B-57E @ 5-10'
- B-6B @ 19'
- B-1W @ 10-15'
- B-2W @ 10-15'
- B-9W @ 6-8'

Peak Residual (fine-grained)

- B-1M @ 25'
- B-4M @ 2, 10 & 15'
- B-20E @ 0-10'
- B-48E @ 0-10'

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Family Shear Plot
Remolded Specimens

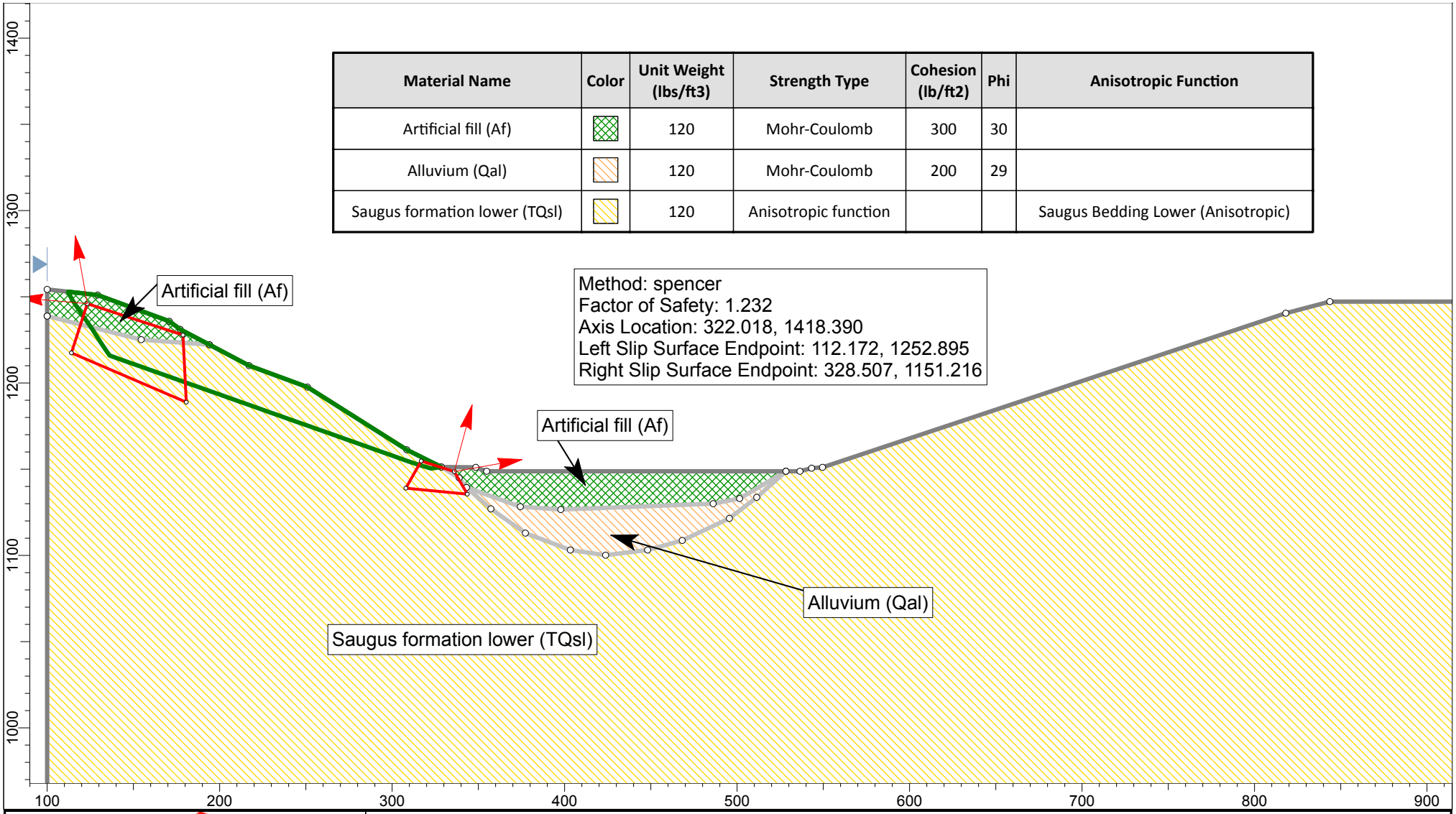
Job No.: 04-2023-4
Date: 7/22/04 | *Figure:* B6.8

APPENDIX D

Cut-Slope 42: Section LA-3 - LA-3': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-3 - LA-3'_1.5 Angles.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Artificial fill (Af)		120	Mohr-Coulomb	300	30	
Alluvium (Qal)		120	Mohr-Coulomb	200	29	
Saugus formation lower (TQsl)		120	Anisotropic function			Saugus Bedding Lower (Anisotropic)



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105**

Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:960	**062580-100**

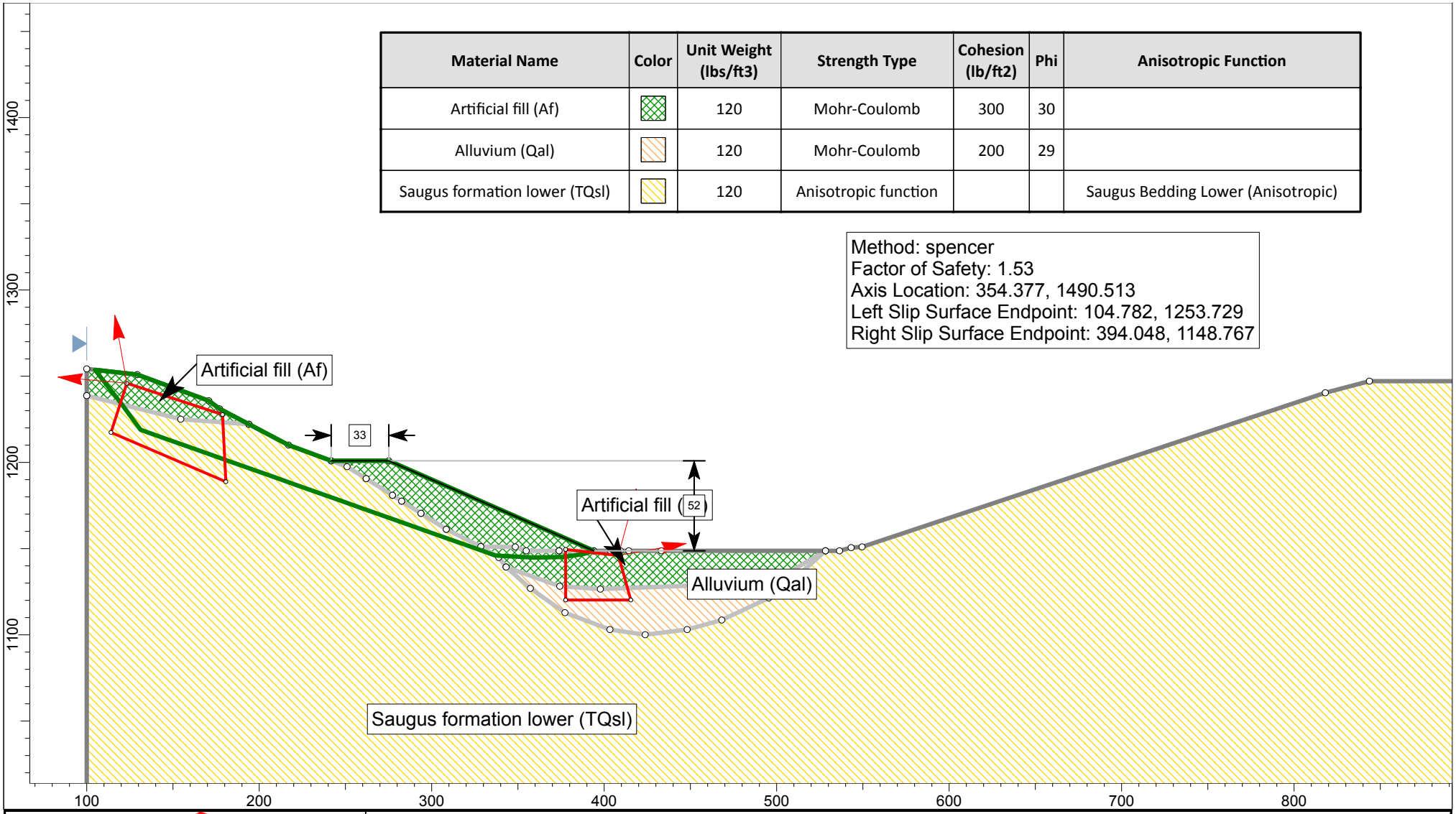
Date	*Condition*
April 30, 2012	**Static**

Cut-Slope 42: Section LA-3 - LA-3': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-3 - LA-3'_50 foot Surcharge at Toe 3 to 1_ch.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Artificial fill (Af)		120	Mohr-Coulomb	300	30	
Alluvium (Qal)		120	Mohr-Coulomb	200	29	
Saugus formation lower (TQsl)		120	Anisotropic function			Saugus Bedding Lower (Anisotropic)

Method: spencer
Factor of Safety: 1.53
Axis Location: 354.377, 1490.513
Left Slip Surface Endpoint: 104.782, 1253.729
Right Slip Surface Endpoint: 394.048, 1148.767



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105**

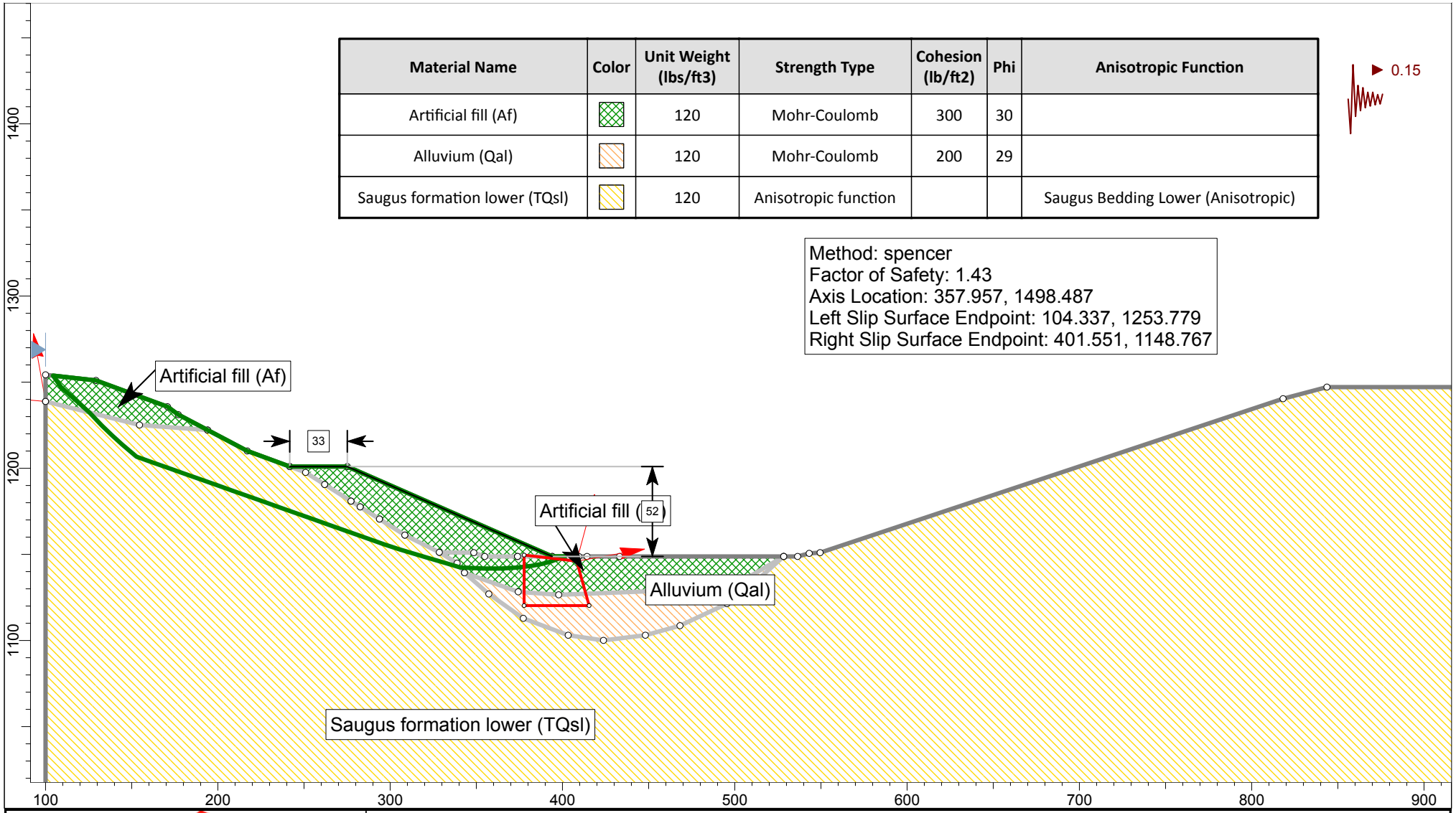
Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:960	**062580-100**

Date	*Condition*
April 30, 2012	**Static**

Cut-Slope 42: Section LA-3 - LA-3': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-3 - LA-3'_50 foot Surcharge at Toe 3 to 1_ch_1 PS.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Artificial fill (Af)		120	Mohr-Coulomb	300	30	
Alluvium (Qal)		120	Mohr-Coulomb	200	29	
Saugus formation lower (TQsl)		120	Anisotropic function			Saugus Bedding Lower (Anisotropic)



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project
Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105

Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:960	**062580-100**

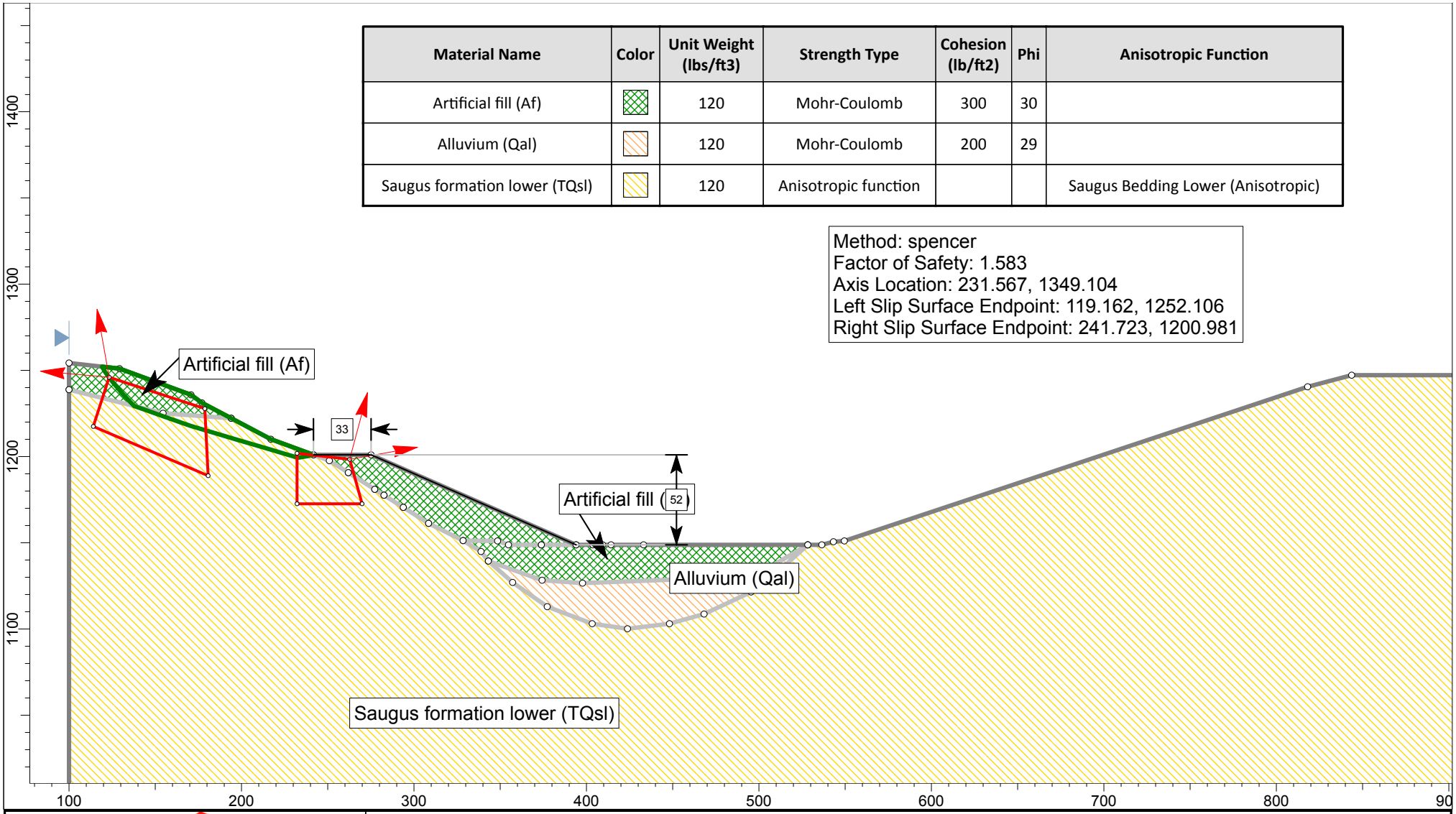
Date	*Condition*
April 30, 2012	**Pseudostatic**

Cut-Slope 42: Section LA-3 - LA-3': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-3 - LA-3'_50 foot Surcharge at Toe 3 to 1.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Artificial fill (Af)		120	Mohr-Coulomb	300	30	
Alluvium (Qal)		120	Mohr-Coulomb	200	29	
Saugus formation lower (TQsl)		120	Anisotropic function			Saugus Bedding Lower (Anisotropic)

Method: spencer
Factor of Safety: 1.583
Axis Location: 231.567, 1349.104
Left Slip Surface Endpoint: 119.162, 1252.106
Right Slip Surface Endpoint: 241.723, 1200.981



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project
Newhall Ranch - Mission Village - Bulk Grading Analysis

Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:960	**062580-113**

Date	*Condition*
April 30, 2012	**Static**

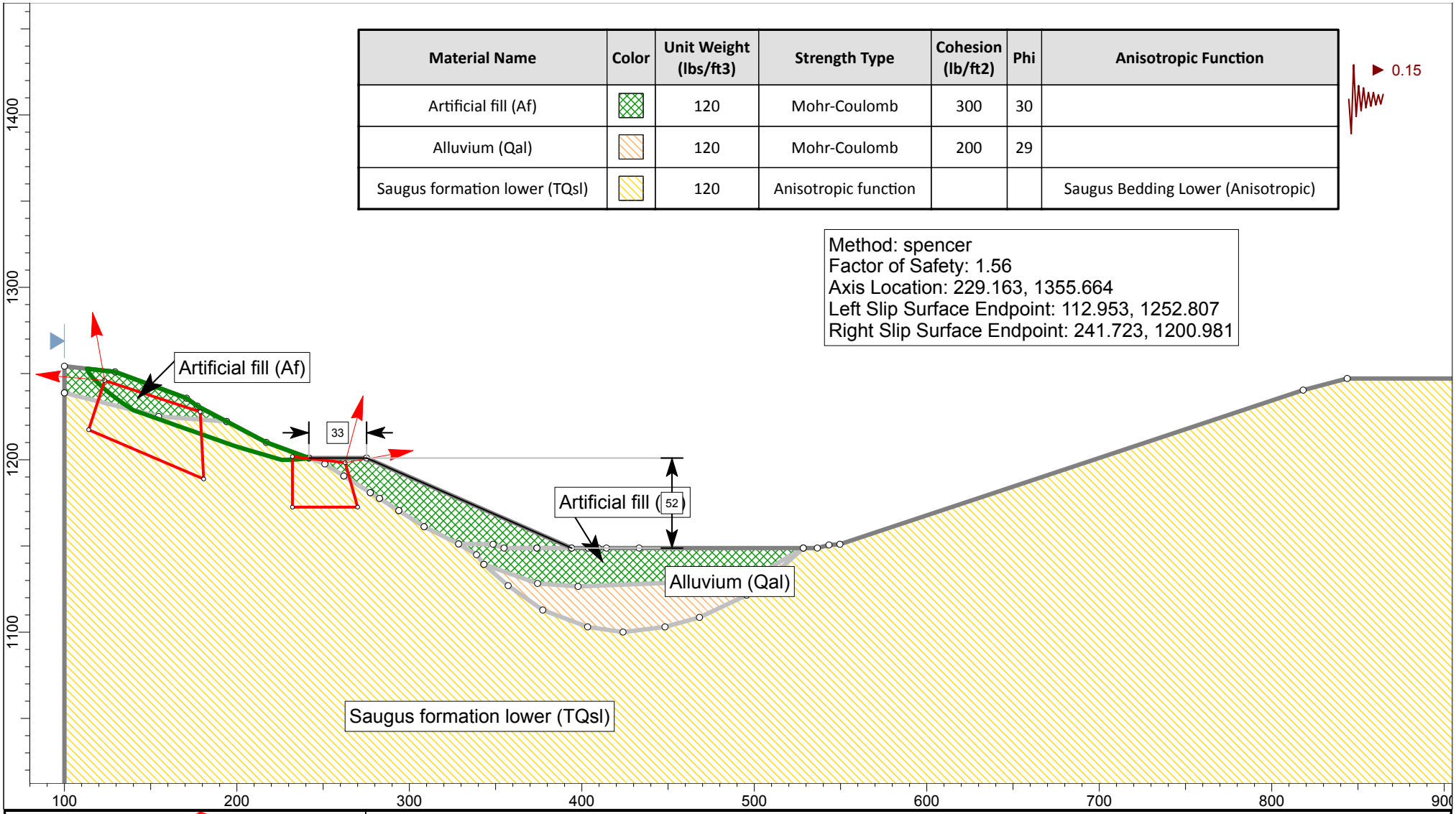
Cut-Slope 42: Section LA-3 - LA-3': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-3 - LA-3'_50 foot Surcharge at Toe 3 to 1 PS.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Artificial fill (Af)		120	Mohr-Coulomb	300	30	
Alluvium (Qal)		120	Mohr-Coulomb	200	29	
Saugus formation lower (TQsl)		120	Anisotropic function			Saugus Bedding Lower (Anisotropic)

0.15

Method: spencer
Factor of Safety: 1.56
Axis Location: 229.163, 1355.664
Left Slip Surface Endpoint: 112.953, 1252.807
Right Slip Surface Endpoint: 241.723, 1200.981



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project
Newhall Ranch - Mission Village - Bulk Grading Analysis

Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:960	**062580-113**

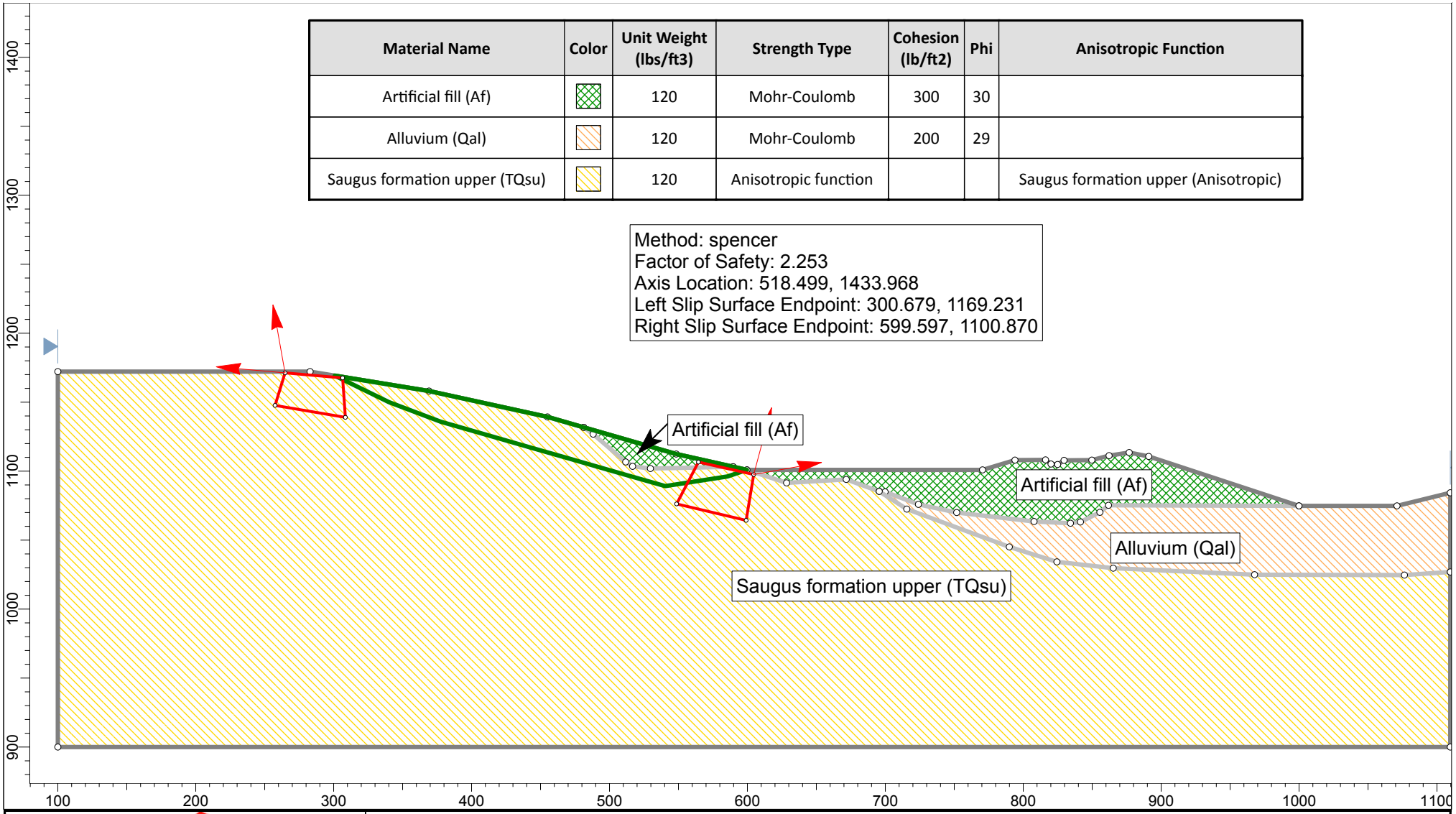
Date	*Condition*
April 30, 2012	**Pseudostatic**

Section LA-5 - LA-5': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-5 - LA-5'.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Artificial fill (Af)		120	Mohr-Coulomb	300	30	
Alluvium (Qal)		120	Mohr-Coulomb	200	29	
Saugus formation upper (TQsu)		120	Anisotropic function			Saugus formation upper (Anisotropic)

Method: spencer
Factor of Safety: 2.253
Axis Location: 518.499, 1433.968
Left Slip Surface Endpoint: 300.679, 1169.231
Right Slip Surface Endpoint: 599.597, 1100.870



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project
Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105

Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:1200	**062580-100**

Date	*Condition*
April 30, 2012	**Static**

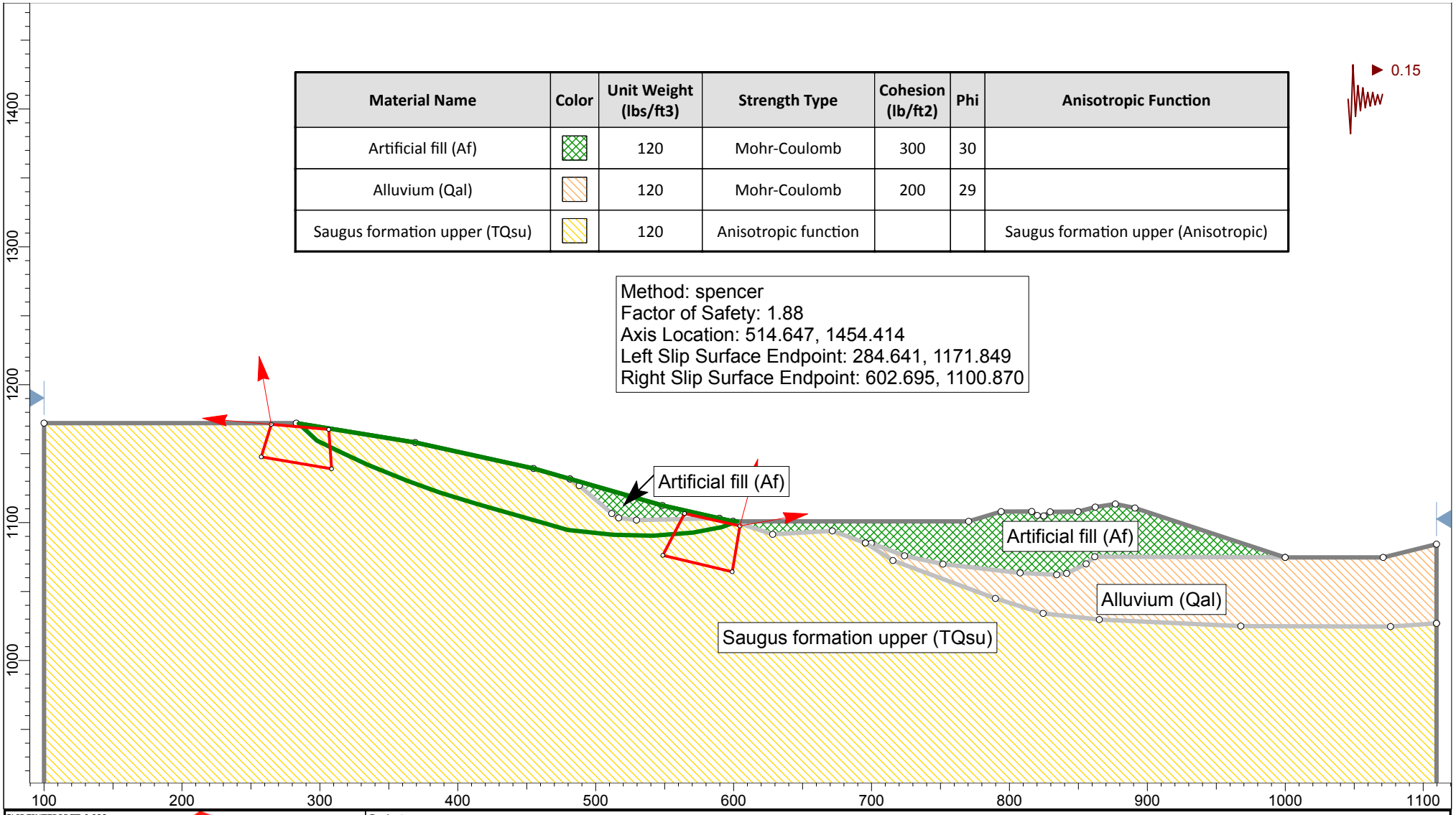
Section LA-5 - LA-5': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-5 - LA-5' PS.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Artificial fill (Af)		120	Mohr-Coulomb	300	30	
Alluvium (Qal)		120	Mohr-Coulomb	200	29	
Saugus formation upper (TQsu)		120	Anisotropic function			Saugus formation upper (Anisotropic)

0.15

Method: spencer
Factor of Safety: 1.88
Axis Location: 514.647, 1454.414
Left Slip Surface Endpoint: 284.641, 1171.849
Right Slip Surface Endpoint: 602.695, 1100.870



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105**

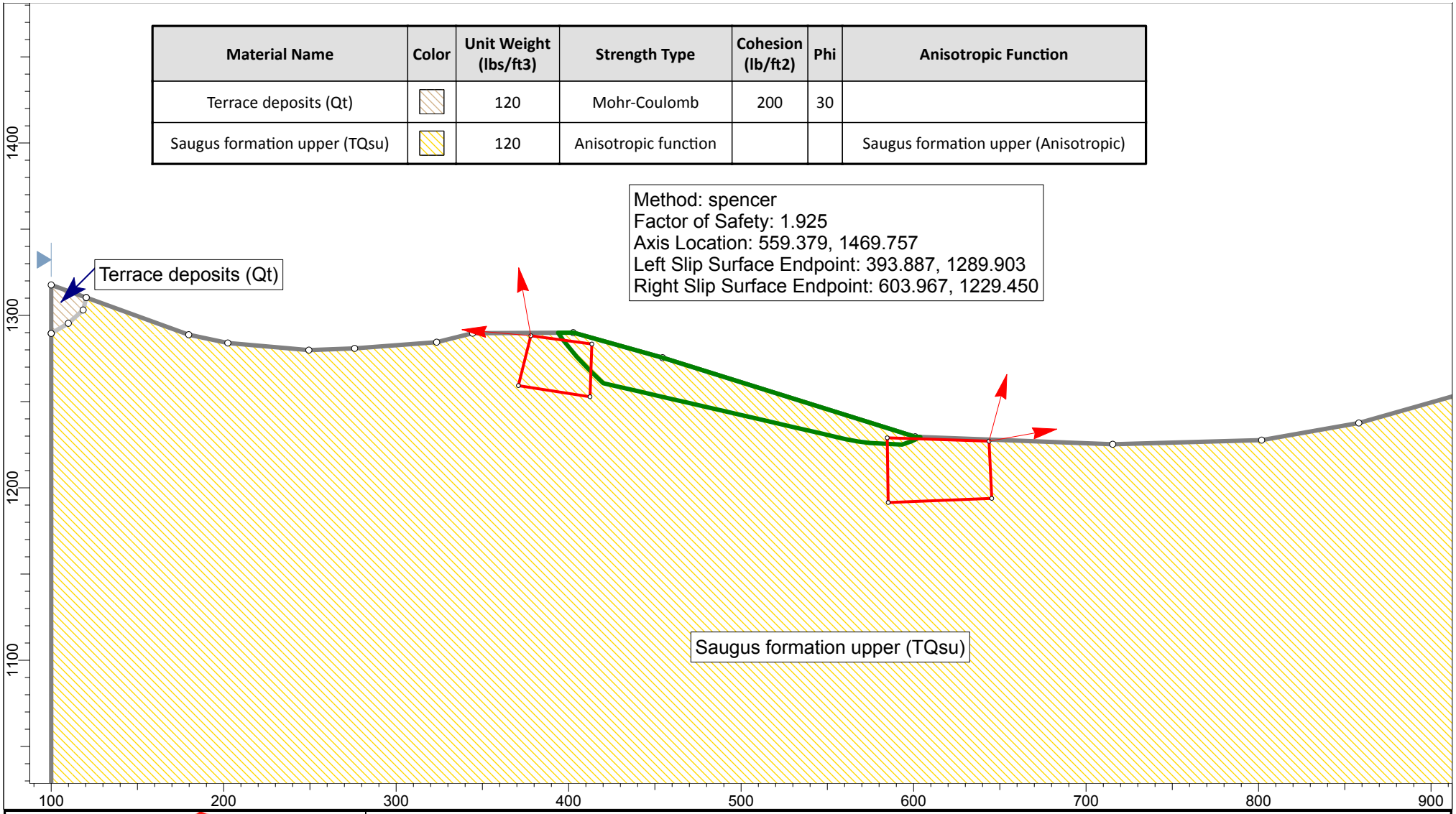
Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:1200	**062580-100**

Date	*Condition*
April 30, 2012	**Pseudostatic**

Section LA-7 - LA-7': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-7 - LA-7'.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Terrace deposits (Qt)		120	Mohr-Coulomb	200	30	
Saugus formation upper (TQsu)		120	Anisotropic function			Saugus formation upper (Anisotropic)



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project
Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105

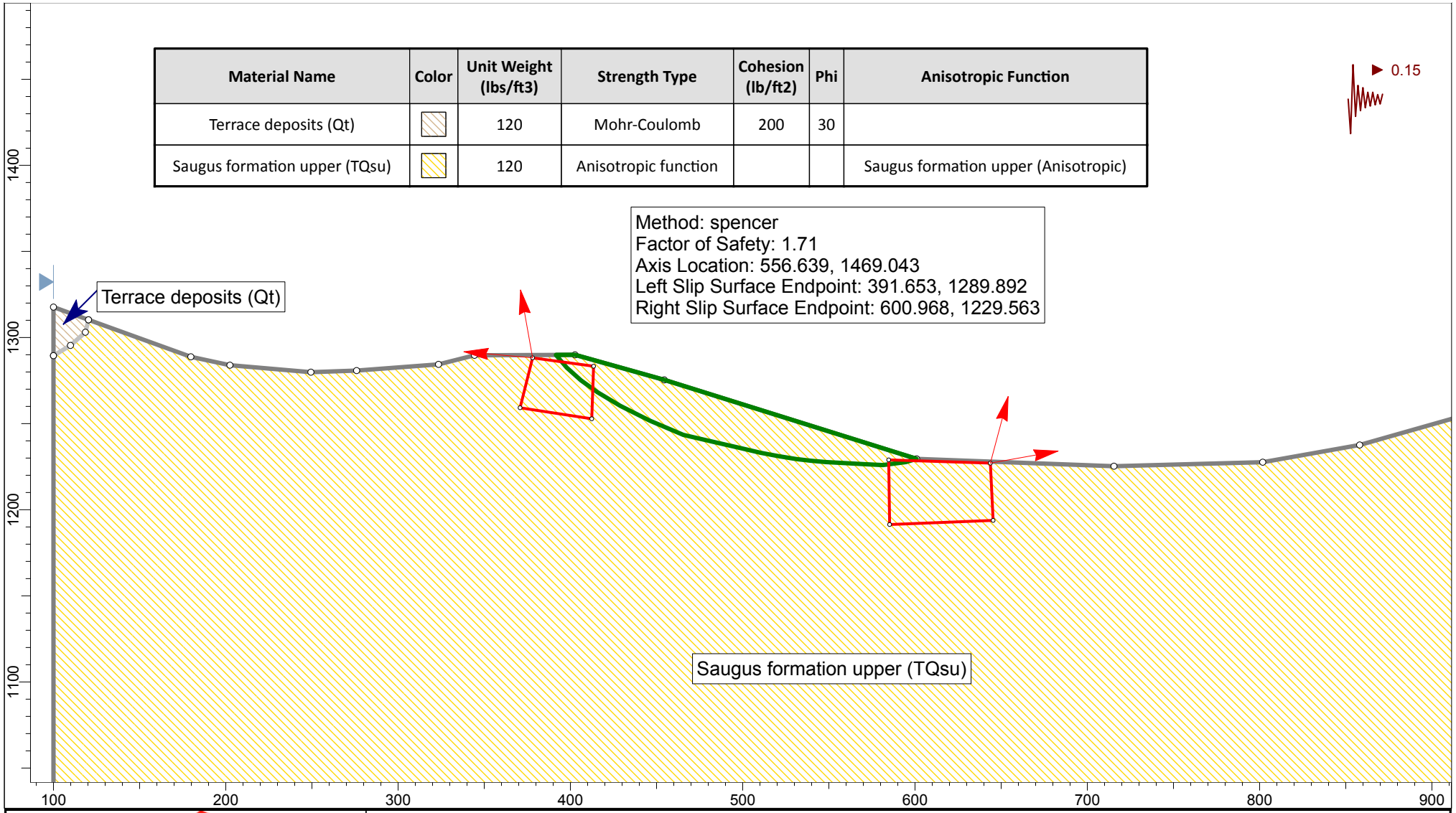
Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:960	**062580-100**

Date	*Condition*
April 30, 2012	**Static**

Section LA-7 - LA-7': Interim Grade Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Sections LA-1 thru LA-7'\Section LA-7 - LA-7' PS.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Anisotropic Function
Terrace deposits (Qt)		120	Mohr-Coulomb	200	30	
Saugus formation upper (TQsu)		120	Anisotropic function			Saugus formation upper (Anisotropic)



SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

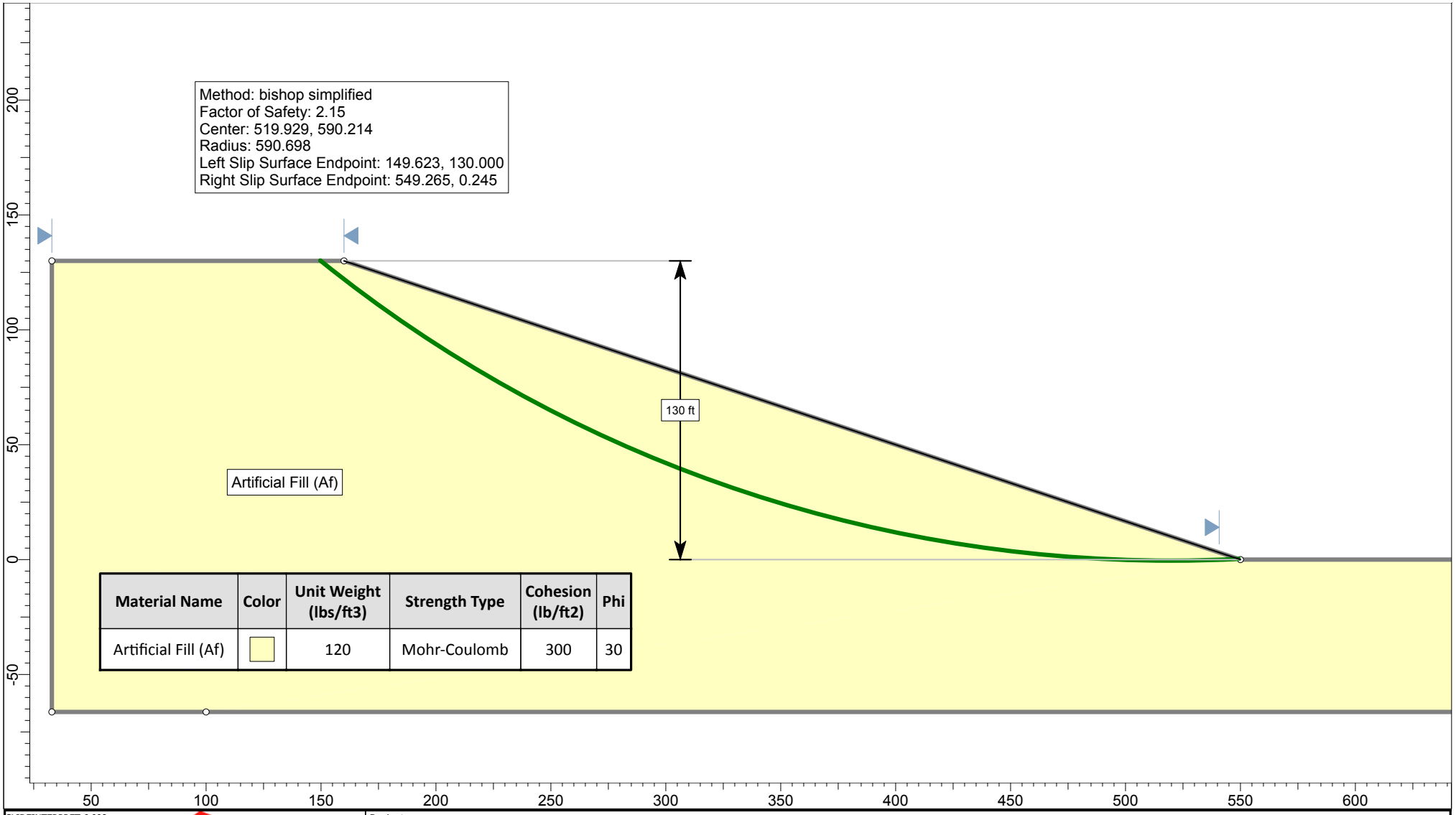
Project
Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105

Analyzed By	*Units*	*Scale*	*Project No.:*
JWJ/SP	feet	1:960	**062580-100**

Date	*Condition*
April 30, 2012	**Pseudostatic**

Fill Slope Analysis - Maximum Height - 130feet - 3H:1V Slope

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\130ft High Fill Slope.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
Artificial Fill (Af)		120	Mohr-Coulomb	300	30

SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

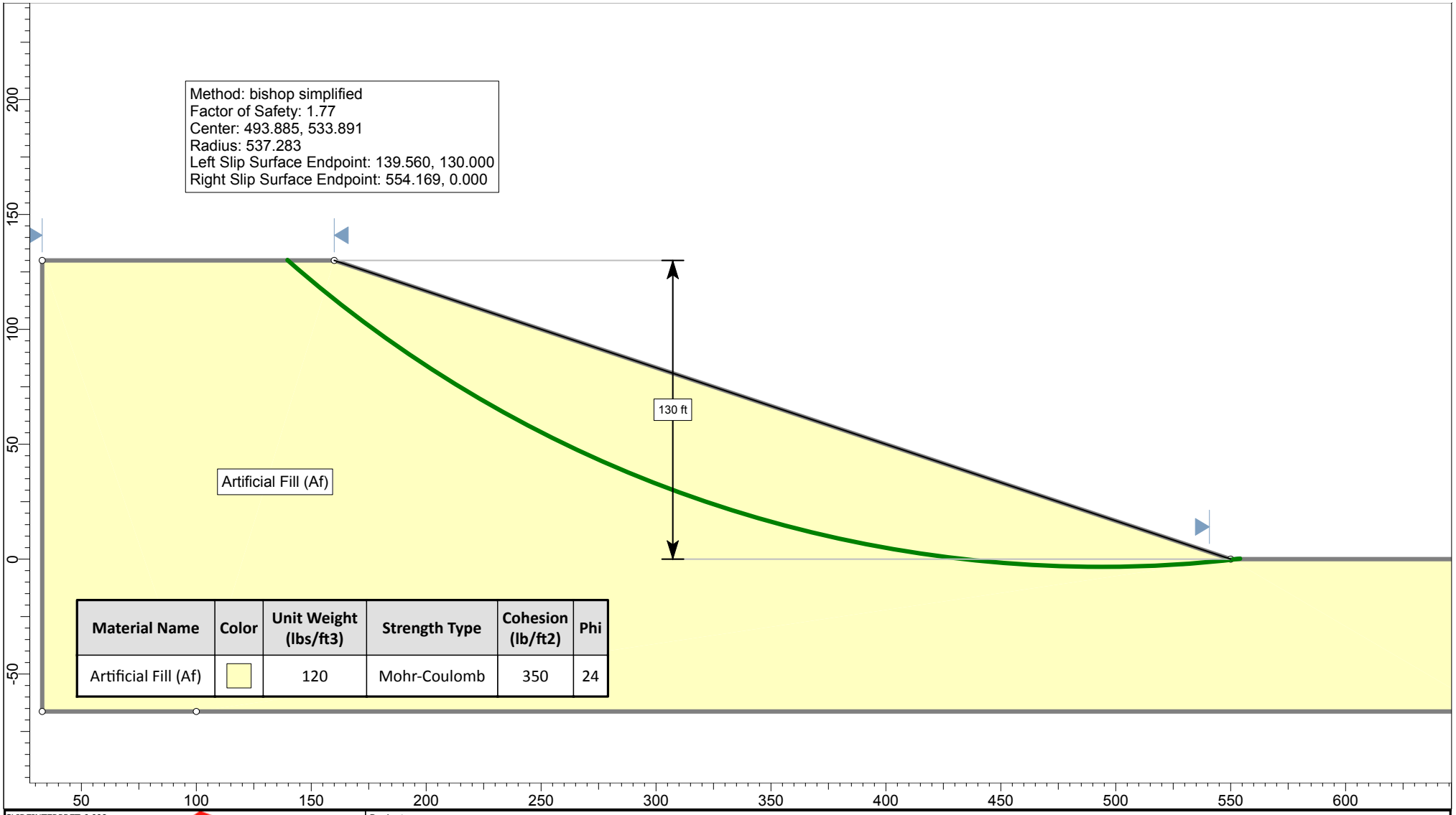
Project
Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105

Analyzed By	*Units*	*Scale*	*Project No.:*
SP	feet	1:720	**062580-100**

Date	*Condition*
May 04, 2012	**Static**

Fill Slope Analysis - Maximum Height - 130feet - 3H:1V Slope

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\130ft High Fill Slope Fine Grained.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
Artificial Fill (Af)		120	Mohr-Coulomb	350	24

SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

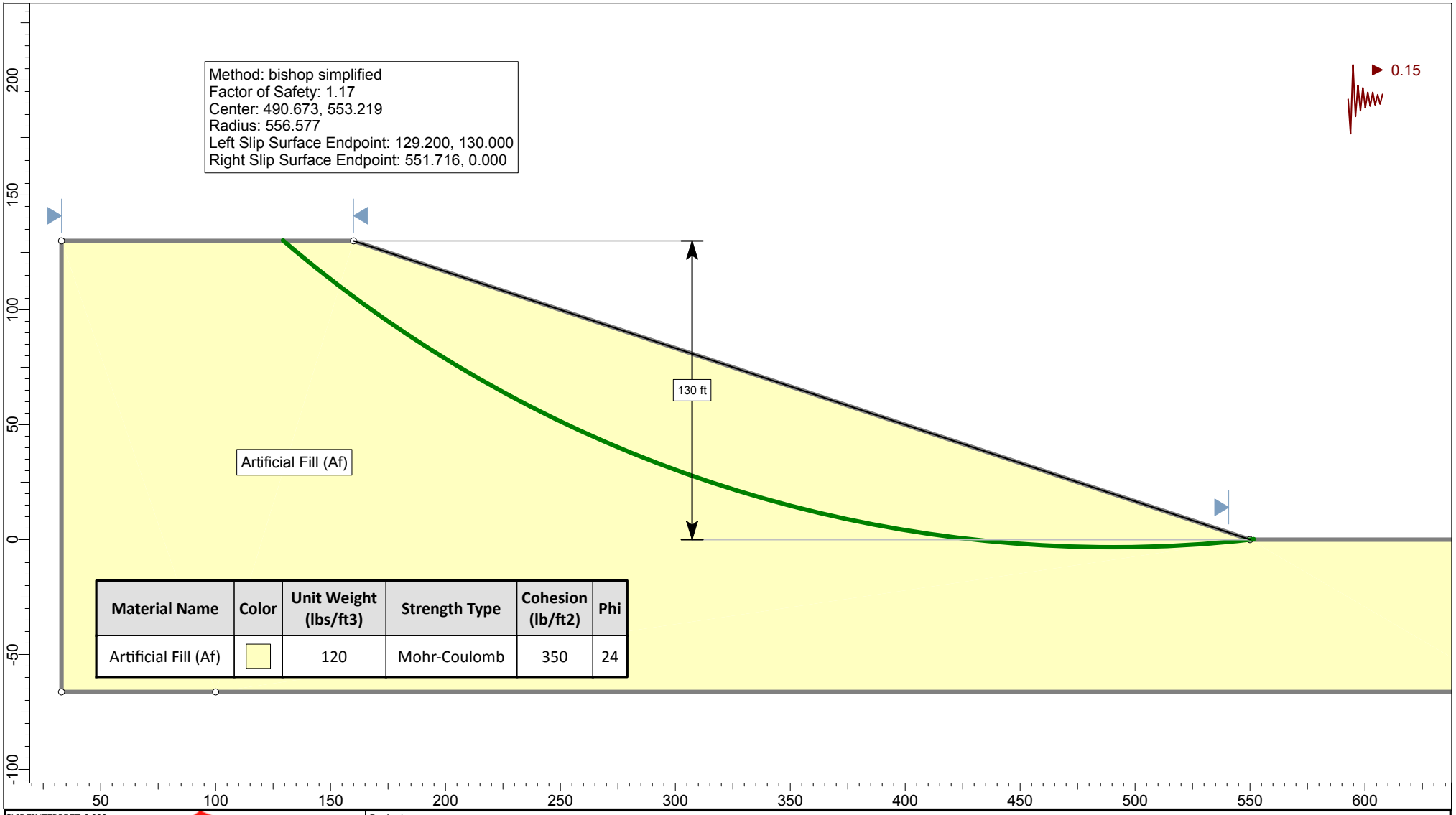
Project
Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105

Analyzed By	*Units*	*Scale*	*Project No.:*
SP	feet	1:720	**062580-100**

Date	*Condition*
May 04, 2012	**Static**

Fill Slope Analysis - Maximum Height - 130feet - 3H:1V Slope

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\130ft High Fill Slope Fine Grained PS.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
Artificial Fill (Af)		120	Mohr-Coulomb	350	24

SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

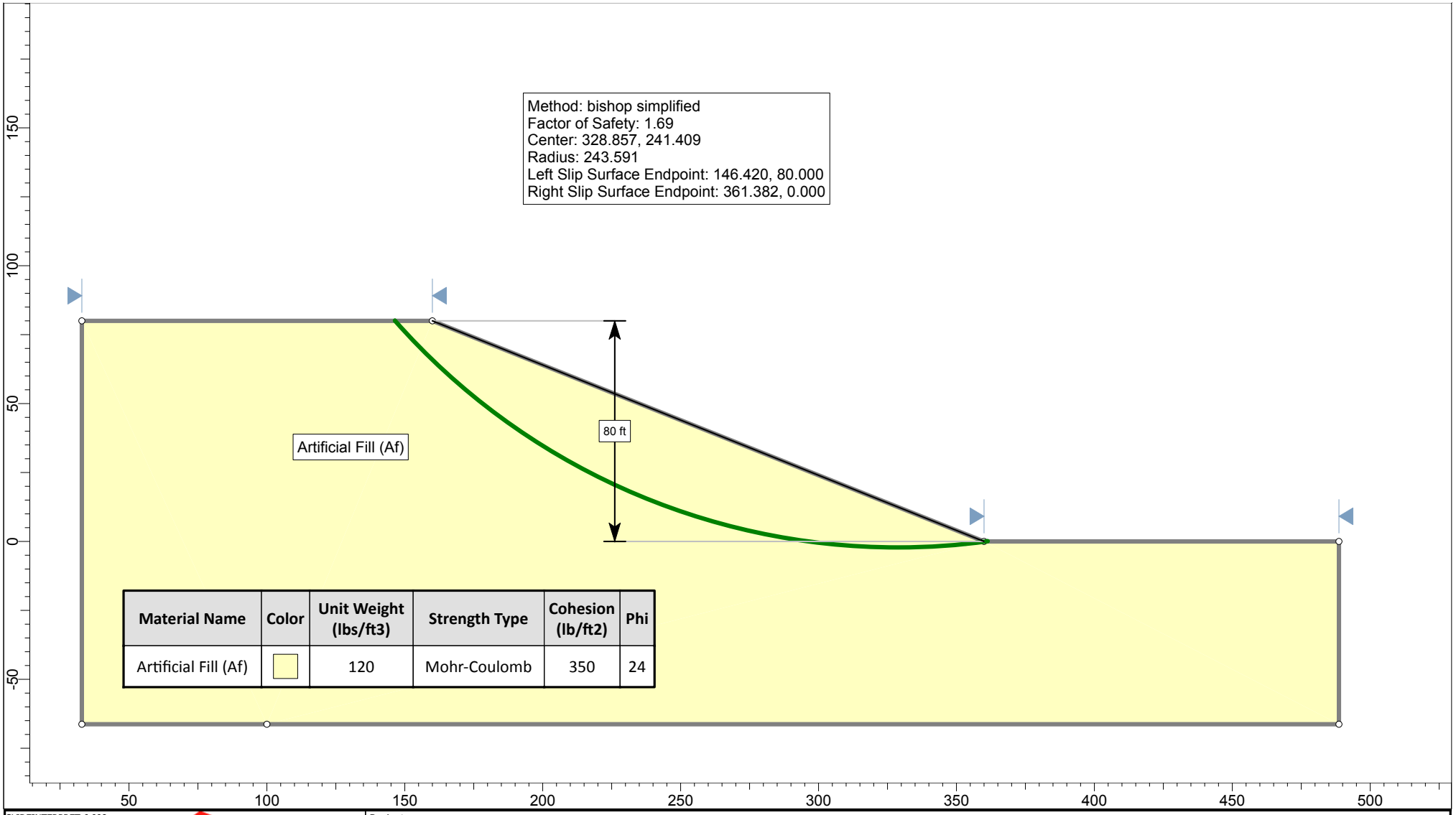
Project: **Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105**

Analyzed By	*Units*	*Scale*	*Project No.:*
SP	feet	1:720	**062580-100**

Date	*Condition*
May 04, 2012	**Pseudostatic**

Fill Slope Analysis - Maximum Height - 80feet - 2.5H:1V

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\80ft High Fill Slope Fine Grained.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
Artificial Fill (Af)		120	Mohr-Coulomb	350	24

SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

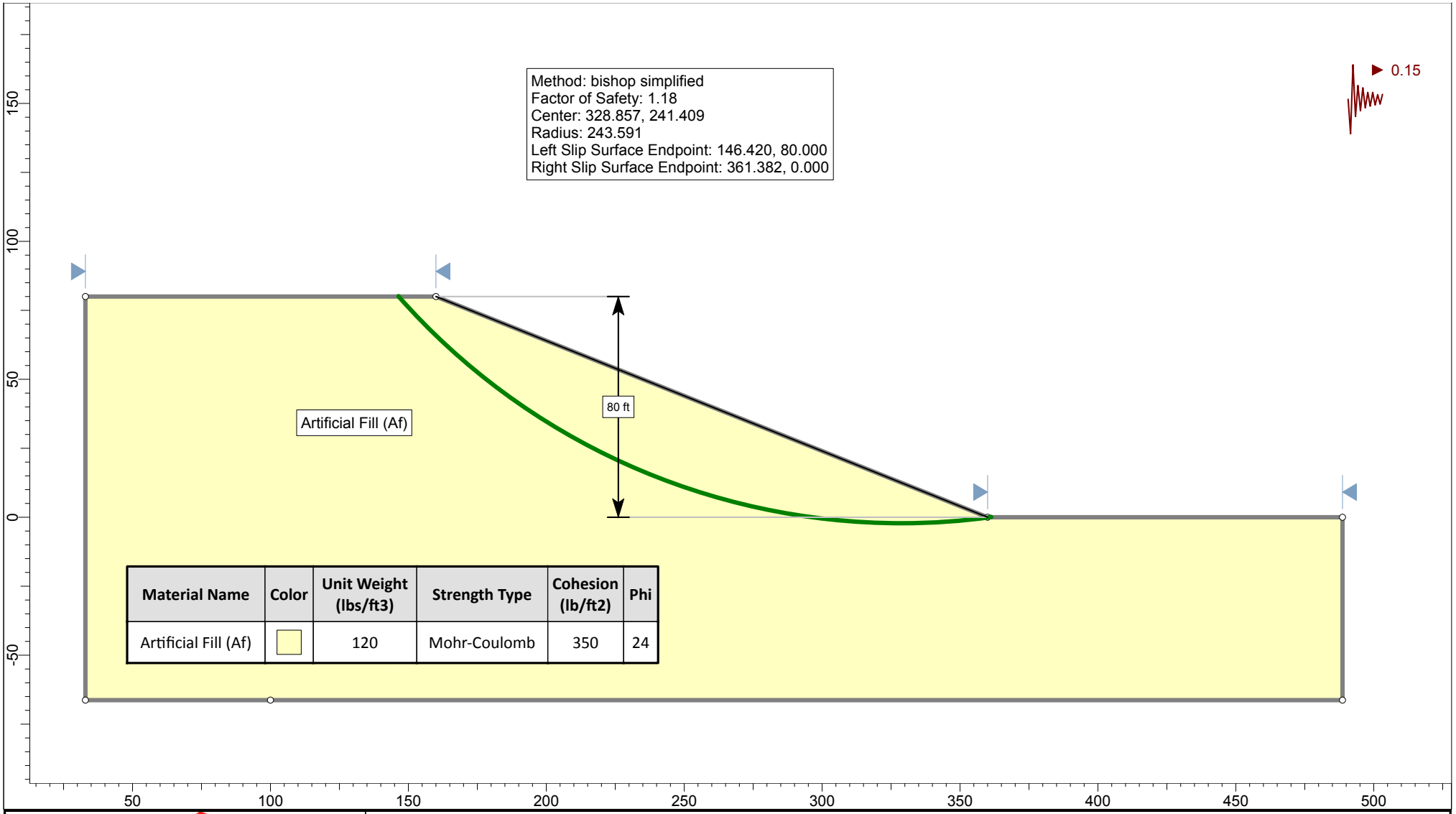
Project: **Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105**

Analyzed By	*Units*	*Scale*	*Project No.:*
SP	feet	1:600	**062580-100**

Date	*Condition*
May 04, 2012	**Static**

Fill Slope Analysis - Maximum Height - 80feet - 2.5H:1V

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\80ft High Fill Slope Fine Grained PS.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi
Artificial Fill (Af)		120	Mohr-Coulomb	350	24

SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

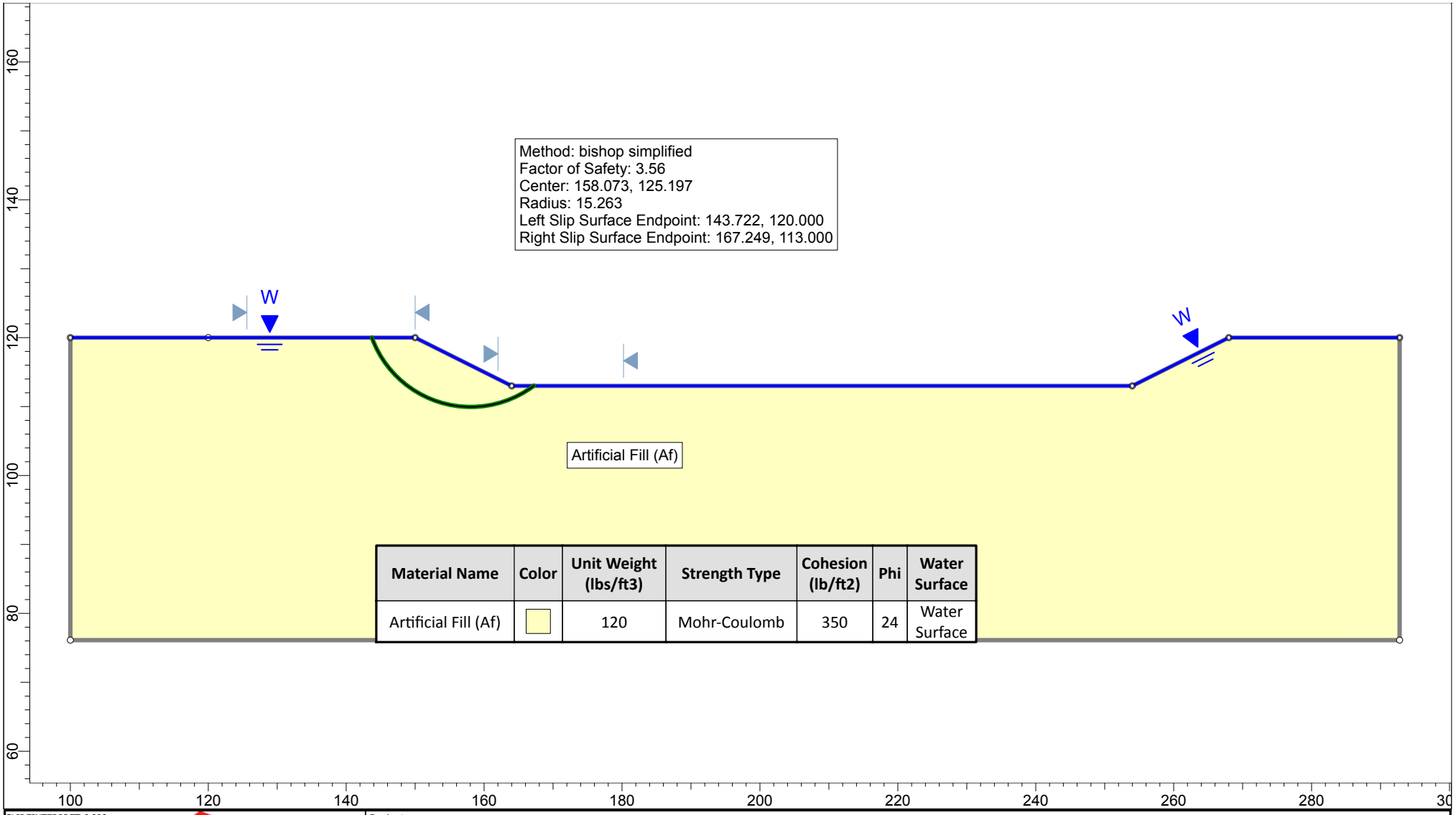
Project: **Newhall Ranch - Mission Village - Bulk Grading - Tract No. 61105**

Analyzed By	*Units*	*Scale*	*Project No.:*
SP	feet	1:600	**062580-100**

Date	*Condition*
May 04, 2012	**Pseudostatic**

Desilting Basin - Rapid Drawdown Analysis

P:\Leighton\062500-062999\062580-100 Mission Village Bulk Grading\Slope Stability\Desilting Basin Rapid Drawdown.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (lb/ft2)	Phi	Water Surface
Artificial Fill (Af)		120	Mohr-Coulomb	350	24	Water Surface

SLIDEINTERPRET 6.008

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Newhall Land - Mission Village - Bulk Grading - Tract No. 61105**

Analyzed By	*Units*	*Scale*	*Project No.:*
SP	feet	1:240	**062580-100**

Date	*Condition*
May 07, 2012	**Static**

APPENDIX E

APPENDIX E
LEIGHTON AND ASSOCIATES, INC.
GENERAL EARTHWORK AND GRADING SPECIFICATIONS FOR ROUGH GRADING

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1.0 General

1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ the Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultants shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction.

The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor

The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications.

The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Overexcavation

In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical

Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D155791).

4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D155791). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D155791.

4.5 Compaction Testing

Field-tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to

inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 Safety

The Contractor shall follow all OSHA and Cal/OSHA requirements for safety of trench excavations.

7.2 Bedding and Backfill

All bedding and backfill of utility trenches shall be performed in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of relative compaction from 1 foot above the top of the conduit to the surface.

The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

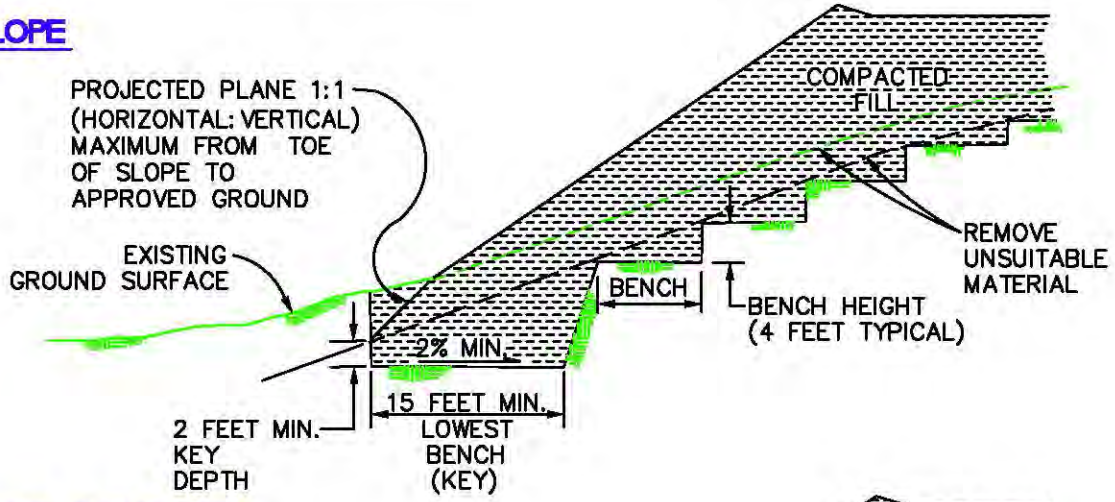
7.3 Lift Thickness

Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

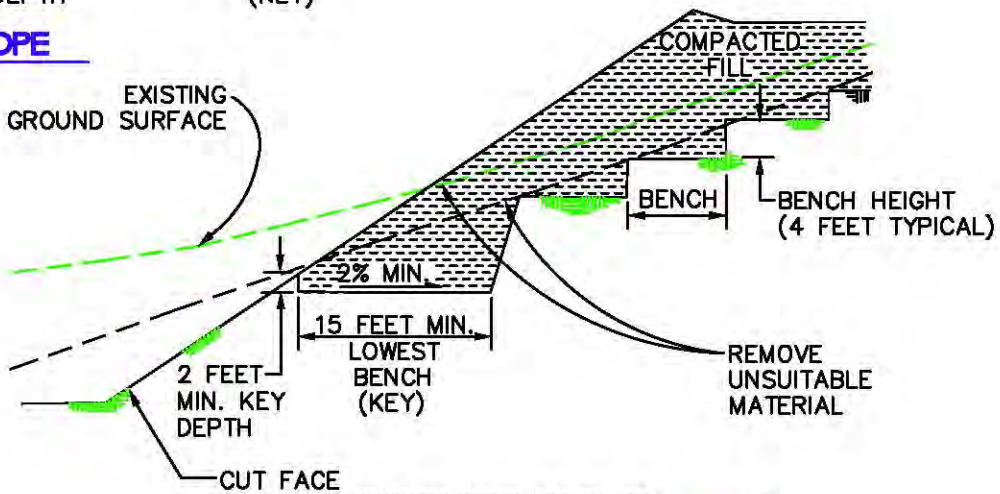
7.4 Observation and Testing

The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

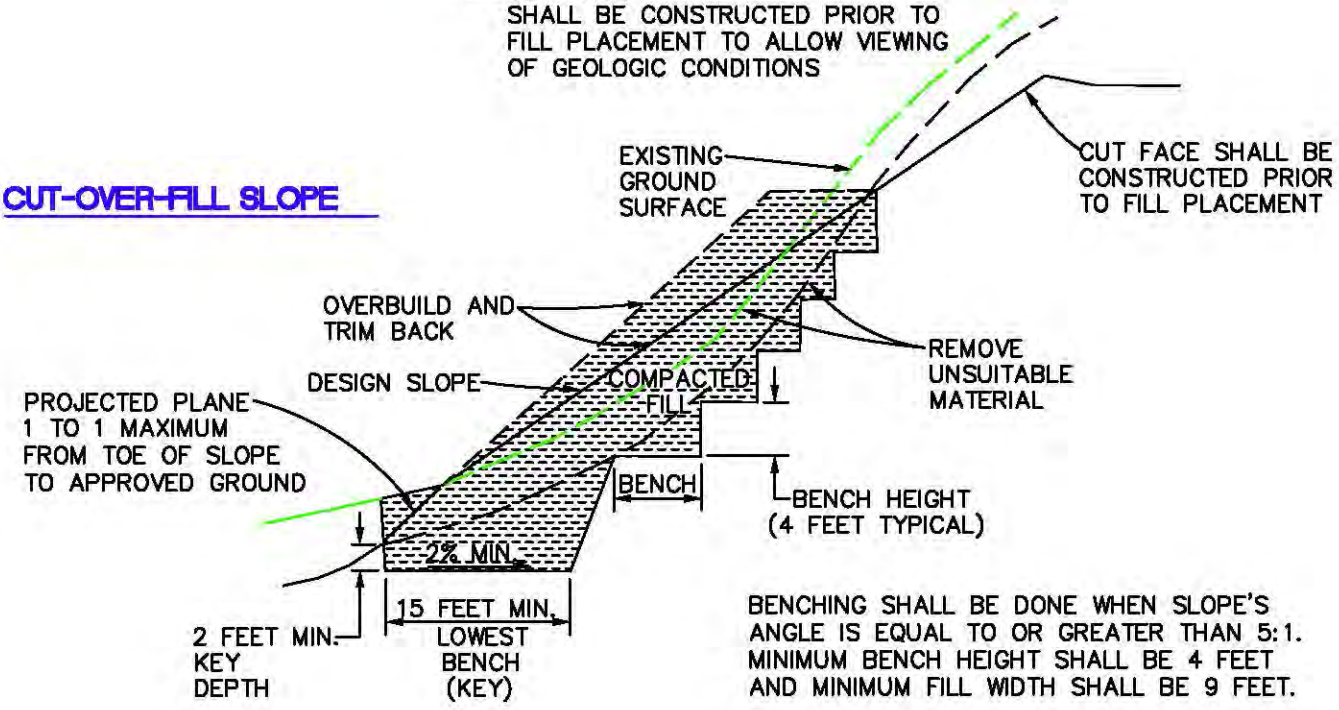
FILL SLOPE



FILL-OVER-CUT SLOPE

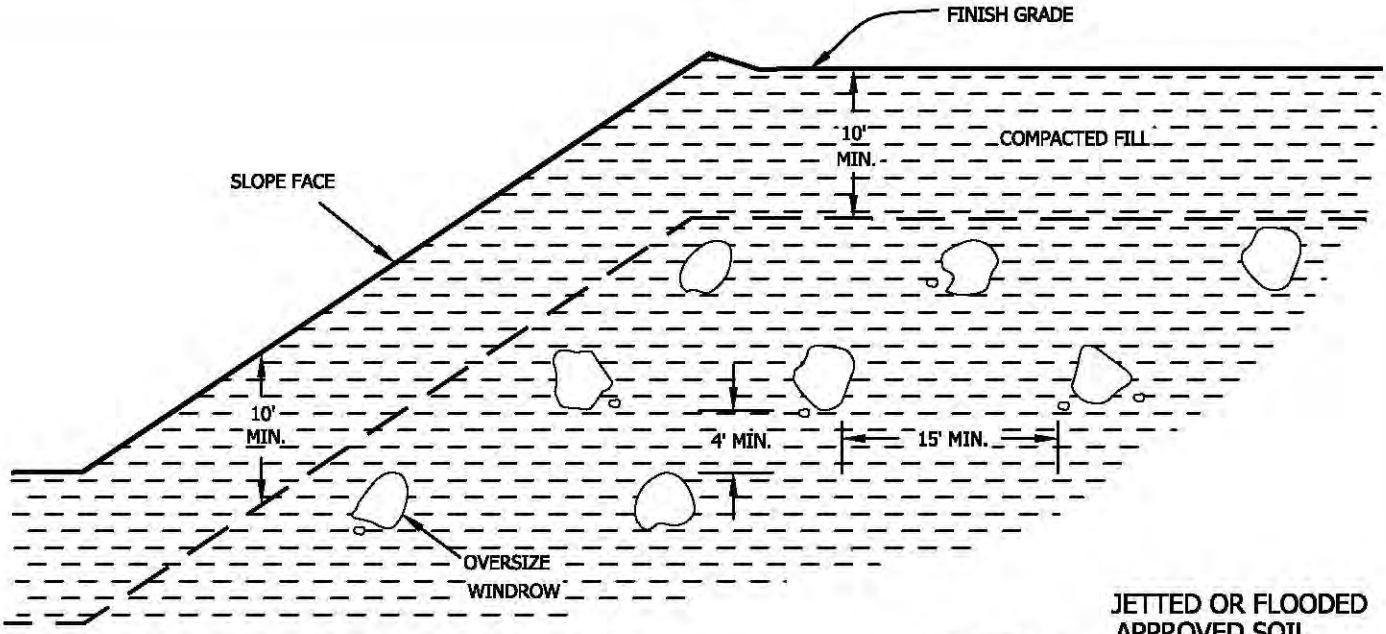


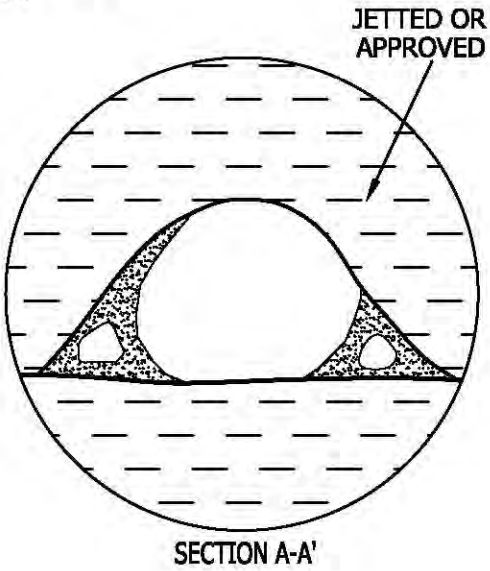
CUT-OVER-FILL SLOPE



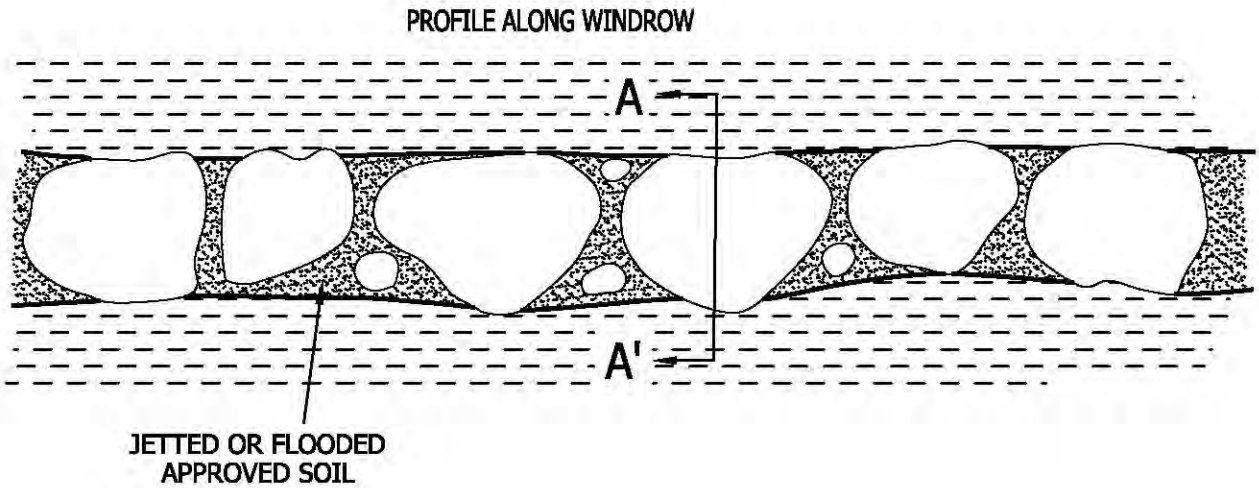
BENCHING SHALL BE DONE WHEN SLOPE'S ANGLE IS EQUAL TO OR GREATER THAN 5:1. MINIMUM BENCH HEIGHT SHALL BE 4 FEET AND MINIMUM FILL WIDTH SHALL BE 9 FEET.

KEYING AND BENCHING	GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAILS A	Leighton





- Oversize rock is larger than 8 inches in largest dimension.
- Backfill with approved soil jetted or flooded in place to fill all the voids.
- Do not bury rock within 10 feet of finish grade.
- Windrow of buried rock shall be parallel to the finished slope face.



OVERSIZE ROCK DISPOSAL

GENERAL EARTHWORK AND GRADING SPECIFICATIONS
STANDARD DETAILS B

Leighton

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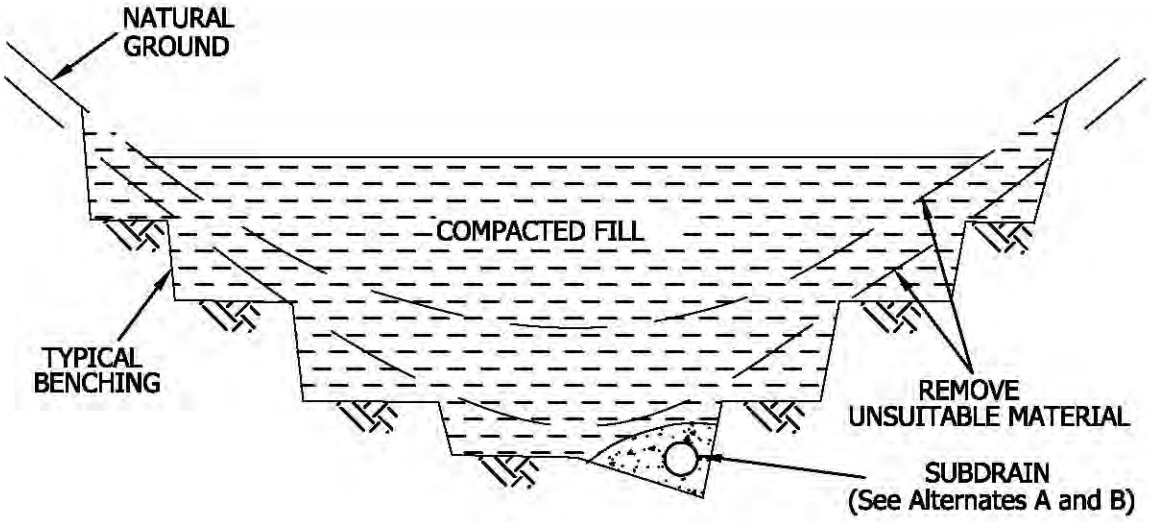
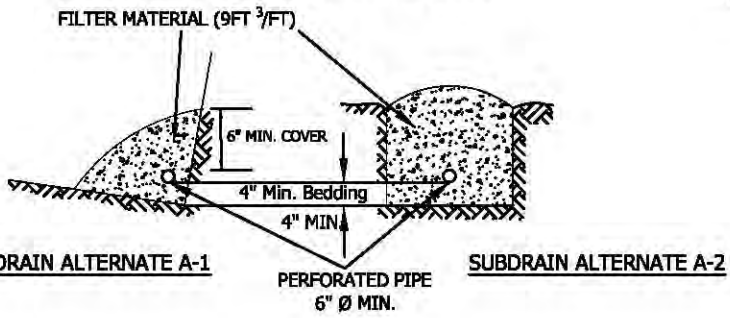


SUBDRAIN ALTERNATE A

PERFORATED PIPE SURROUNDED WITH FILTER MATERIAL

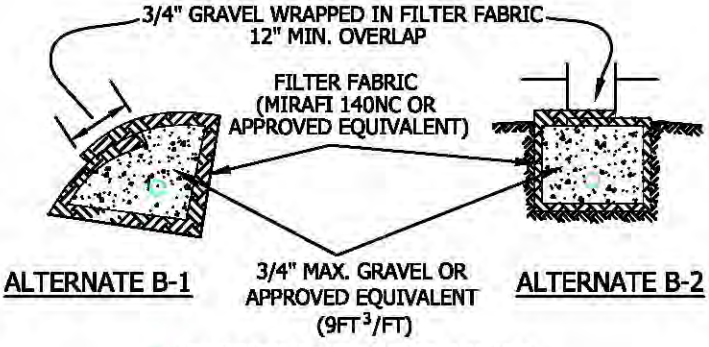


FILTER MATERIAL

FILTER MATERIAL SHALL BE CLASS 2 PERMEABLE MATERIAL PER STATE OF CALIFORNIA STANDARD SPECIFICATION, OR APPROVED ALTERNATE. CLASS 2 GRADING AS FOLLOWS:

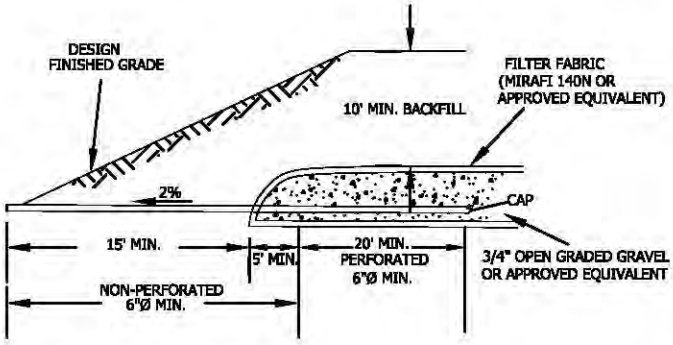
Sieve Size	Percent Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

SUBDRAIN ALTERNATE B



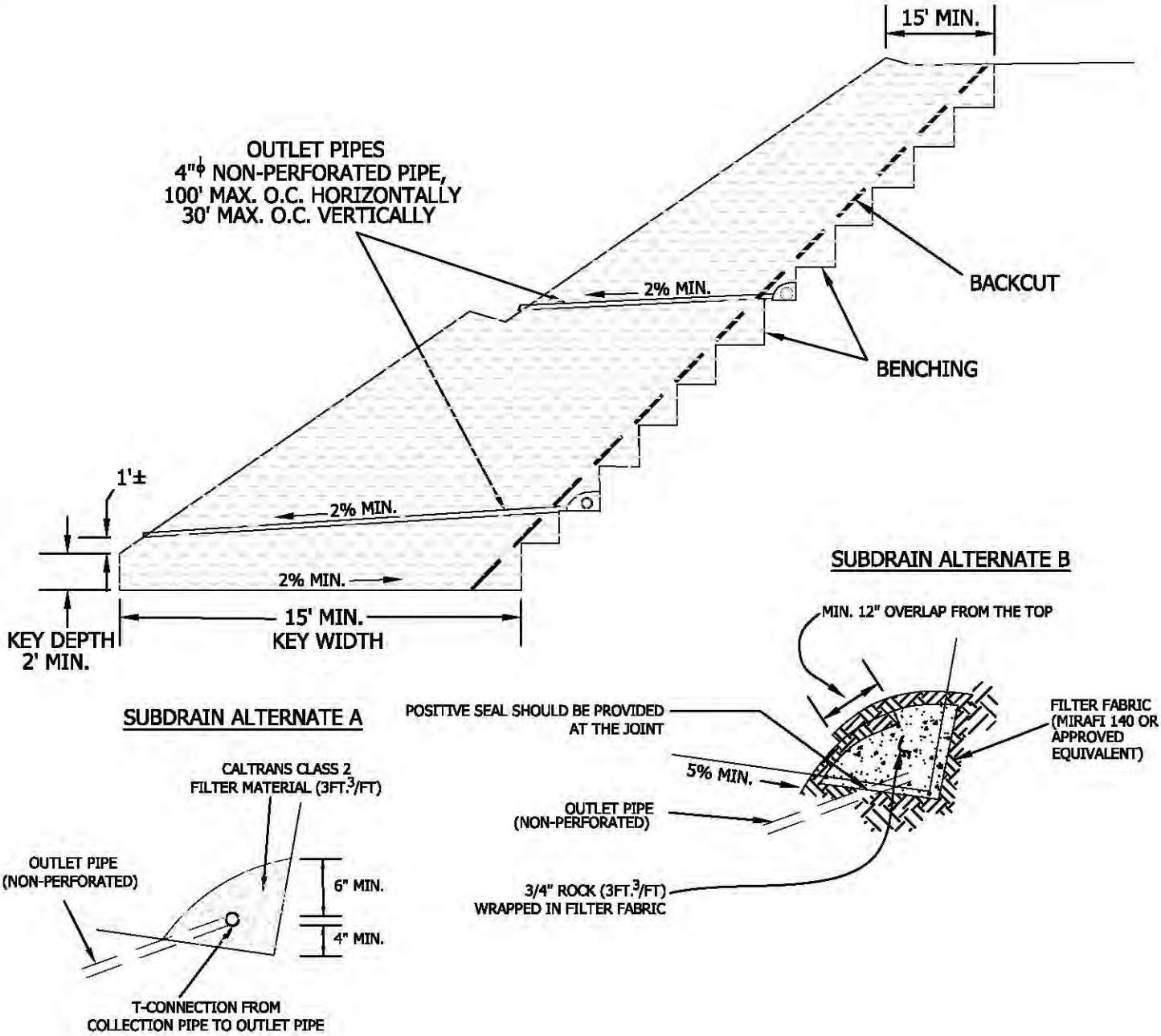
○ PERFORATED PIPE IS OPTIONAL PER GOVERNING AGENCY'S REQUIREMENTS

DETAIL OF CANYON SUBDRAIN TERMINAL



CANYON SUBDRAIN	GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAILS C	Leighton

P:\Drafting\templates\details\canyon_drains.dwg (7/00)



- SUBDRAIN INSTALLATION - Subdrain collector pipe shall be installed with perforations down or, unless otherwise designated by the geotechnical consultant. Outlet pipes shall be non-perforated pipe. The subdrain pipe shall have at least 8 perforations uniformly spaced per foot. Perforation shall be 1/4" to 1/2" if drilled holes are used. All subdrain pipes shall have a gradient at least 2% towards the outlet.
- SUBDRAIN PIPE - Subdrain pipe shall be ASTM D2751, ASTM D1527 (Schedule 40) or SDR 23.5 ABS pipe or ASTM D3034 (Schedule 40) or SDR 23.5 PVC pipe.
- All outlet pipe shall be placed in a trench and, after fill is placed above it, rodded to verify integrity.

BUTTRESS OR REPLACEMENT FILL SUBDRAINS	GENERAL EARTHWORK AND GRADING SPECIFICATIONS STANDARD DETAILS D	Leighton

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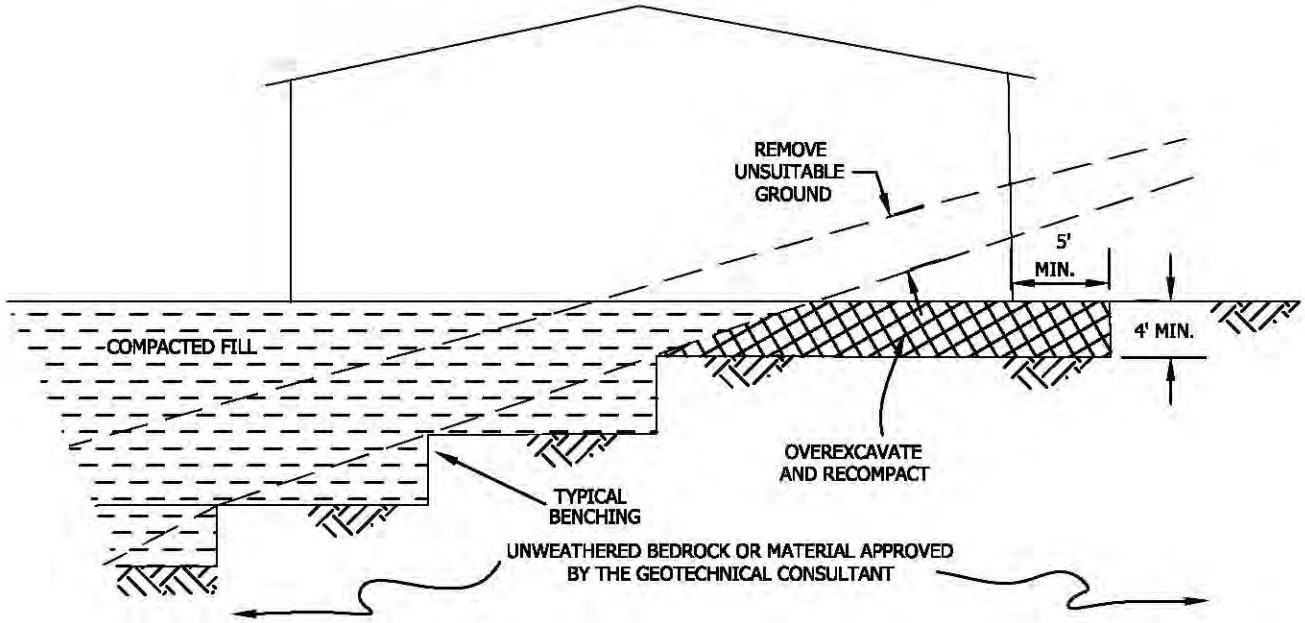
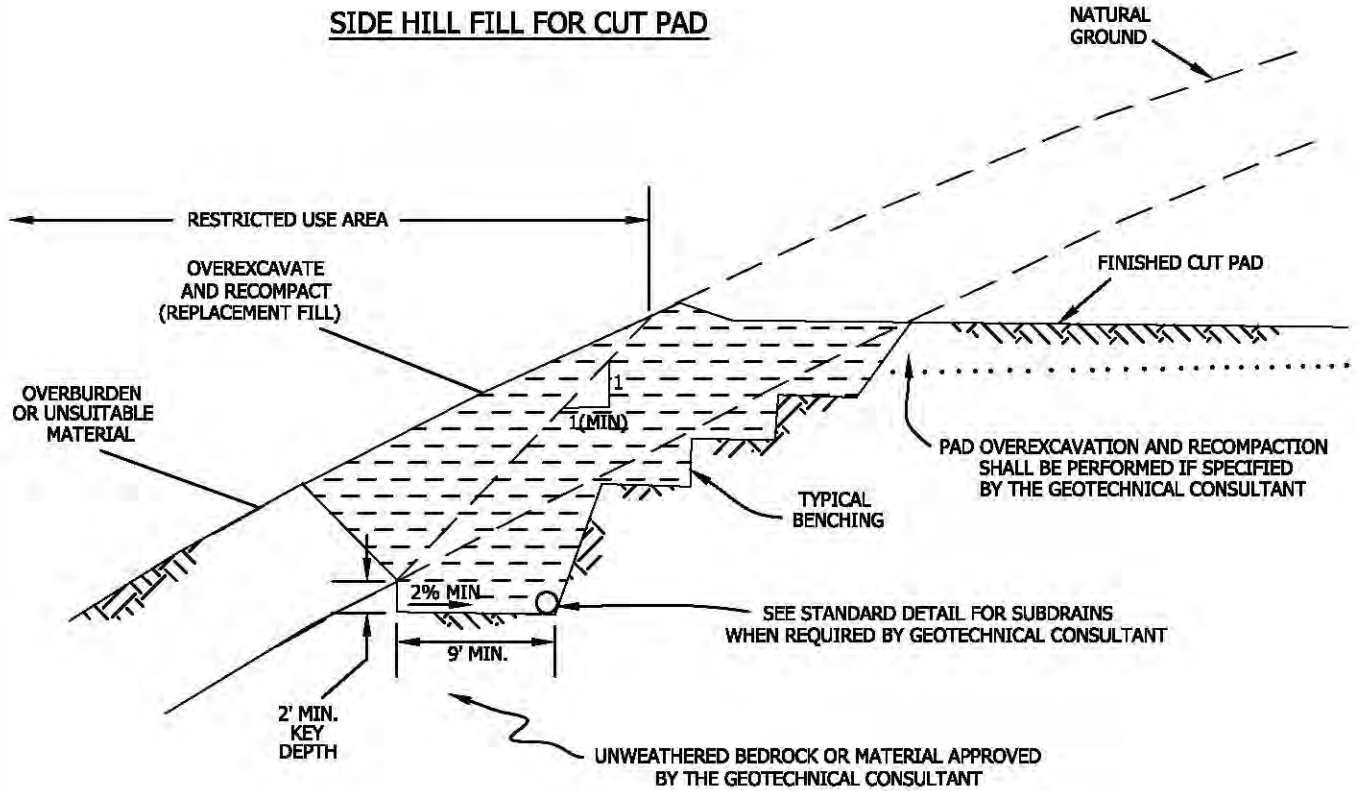
CUT-FILL TRANSITION LOT OVEREXCAVATION



SIDE HILL FILL FOR CUT PAD



TRANSITION LOT FILLS AND SIDE HILL FILLS

GENERAL EARTHWORK AND GRADING
SPECIFICATIONS
STANDARD DETAILS E

Leighton

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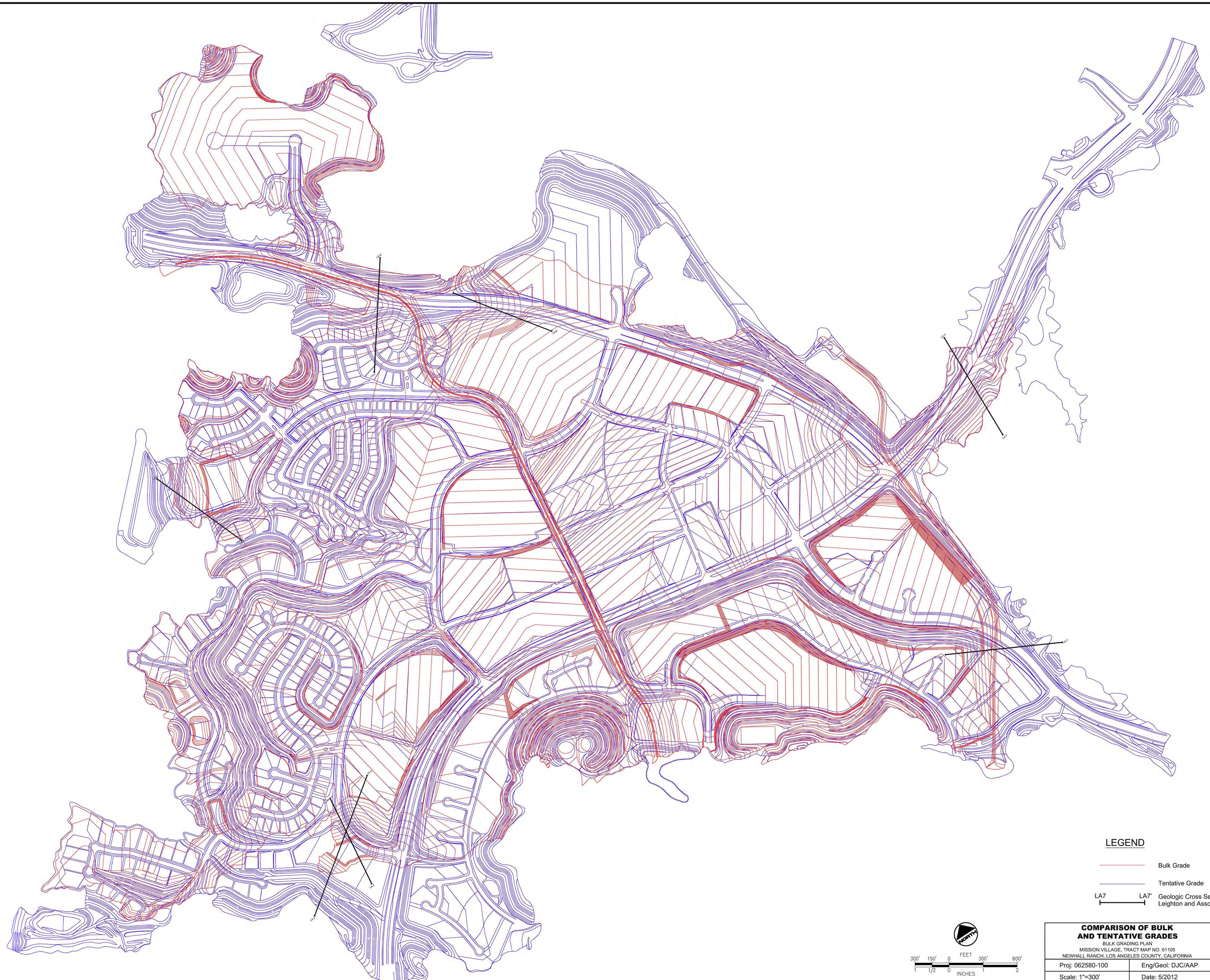


LEGEND

Bulk Grade

Tentative Grade

LA7 — LA7' Geologic Cross Sections Leighton and Associates 2012

NORTH

FEET
300' 150' 0 300' 600'
1 1/2 0 1 2
INCHES

COMPARISON OF BULK AND TENTATIVE GRADES

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=300'	Date: 5/2012

Drafted By: RGT | Checked By: RGT | P:\GRAPTWO\062580100\DP_2012-04-19\COMPARISON OF BULK-TENTATIVE GRADES-PLATE 40.DWG, 05-14-12 2:07:18PM, Plotted by: bkerr

PLATE 40

Leighton

PERMIT NO.

SHEET — OF —

INDEX MAP
MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

JASON H. TUKUMITSU DATE

REGISTERED PROFESSIONAL ENGINEER ★ JASON H. TUKUMITSU ★ No. 49995 Exp. 3-31-13 CIVIL STATE OF CALIFORNIA

NO.	DATE	REVISIONS

PLANS PREPARED BY:

HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 210, Valencia, CA 91355
PH: (661) 294-9930 FX: (661) 294-2211

OWNER/DEVELOPER:

NEWHALL LAND

25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4050
REPRESENTATIVE: MR. COREY HARPOLE

L:\Grading\062580\100\Art_2012-04-19\Comparison of Bulk-Tentative Grades-Plate 40.dwg Plotted on May 14, 2012 - 3:10pm by kbrian

GEOTECHNICAL EXPLANATION

Symbol	Description
af	Artificial Fill
Qsw	Slope wash; only selected, large deposits are shown
Qal	Alluvium
Qsf	Surficial failure; queried where uncertain
Qls	Landslide deposits; queried where uncertain
Qt	Terrace deposits
TQsu	Saugus Formation (upper unit)
TQsl	Saugus Formation (lower unit)
TQs	Saugus Formation (undefferentiated)
· · · ———	Geologic contact; queried where inferred; dotted where concealed
?· · · D/U ———	Fault trace; queried where inferred; dotted where concealed; indicates up (U) or down (D) where known
	Trace of syncline, showing direction of plunge; the trace is concealed where it is mapped across units younger than TQs
	Trace of anticline, showing direction of plunge; the trace is concealed where it is mapped across units younger than TQs
	Trace of monoclinal warp hinge line; the trace is concealed where it is mapped across units younger than TQs
33°	Strike and dip of bedding
5°	Approximate Strike and dip of bedding
	Horizontal bedding
17°	Strike and dip of slice plane
76°	Strike and dip of shear
21°	Strike and dip of fracture
30°	Strike and dip of fault
44°	Strike and dip of minor fault
CS-56	Cut-slope designation
	Recommended buttress
	Recommended stability fill

Symbol	Description
	Recommended building setback for slopes (where greater than h/3)
	Removal boundary
	Recommended Location of Subdrain
R=8-12'	Recommended removal depth; "CR" indicates complete removal of landslide
PR=30' or to Bedrock	Partial removal of landslide with removal depth of upper 30' of landslide material or to bedrock where landslide is lest than 30' deep
A — A'	Geologic Section by RTF&A
51 — 51'	Geologic Section by AES
LA7-7 — LA7-7'	Geologic Section by Leighton and Associates, 2012
T-217Q	Location of exploratory backhoe trench for phase I Landslide Investigation (T-1Q thru T-141Q, T-146Q thru T-160Q, T-177Q thru T-214Q, & T-217Q)
T-25M	Location of exploratory backhoe trench for Mesas Entertainment Landslide Investigation (T-1M thru T-25M)
T-128T	Location of exploratory backhoe trench for Mesas East Tentative Map Investigation (T-1T thru T-59T, T-62T thru T-112T, T-114T, T-128T thru T-150T, T-158T, T-178T thru T-182T)
T-157T	Location of exploratory backhoe trench for Mesas East Tentative Map Investigation (T-60T, T-61T, T-113T & T-151T thru T-157T)
ET-1T	Location of exploratory excavation trench fro Mesas East
T-32B	Location of exploratory backhoe trench for boulder Assessment Investigation (T-1B thru T-32B)
T-74H	Location of exploratory backhoe trench for Holser Investigation (T-1H thru T-74H)
T-82H	Location of exploratory backhoe fault trench for Holser Investigation (T-75H thru T-82H)
DC-1H	Location of exploratory dozer cut for Holser Investigation
DC-B	Location of exploratory dozer cut for Mesas East
T-47I	Location of exploratory backhoe trench for Phase I Feasibility Evaluation Infrastructure (T-42I thru T-47I)
T-55SA	Location of exploratory backhoe trench for Sand Aggregate Investigation (T-40SA thru T-55SA)
T-67	Location of exploratory backhoe trench for Magic Mountain (T-14 thru T-17, T-33 thru T-39, T-48, T-49, T-53 and T-55 thru T-67)

Symbol	Description
T-5MW	Location of exploratory backhoe trench for Phase II Landslide Evaluation Mesas West (T-7MW and T-12MW thru T-14MW)
B-73E	Location of exploratory bucket-auger boring for Mesas East (B-1E thru B-73E)
B-25M	Location of exploratory bucket-auger boring for Mesas Entertainment Landslide Investigation (B-1M thru B-25M)
B-8B	Location of exploratory bucket-auger boring for Boulder Assessment Investigation (B-1B thru B-25B)
B-16W	Location of exploratory bucket-auger boring for Phase II Landslide Investigation - Mesas West
RTF B-5	Location of exploratory bucket-auger boring by RTTF&A; see Westridge Tract 45433-04 report dated 6/3/02 (RTF B-1 thru RTF B-5)
RW-3M	Location of rotary-wash boring for Geotechnical Evaluation - Mesas area (RW-1M thru RW-3M)
RW-3T	Location of rotary-wash boring for Mesas East Tentative Map Investigation (RW-1T thru RW-3T)
HS-34T	Location of hollow-stem-auger boring for Mesas East Tentative Map Investigation (HS-1T thru HS-34T)
HS-13	Location of hollow-stem-auger boring for Magic Mountain Entertainment (HS-4 thru HS-6, HS-8, and HS-10 thru HS-13)
HS-14I	Location of hollow-stem-auger boring for Phase I Feasibility Evaluation Infrastructure (HS-12I thru HS-14I)
CPT-18	Location of cone penetration test for Magic Mountain Entertainment (CPT-4, CPT-6, CPT-16 and CPT-18)
CPT-18M	Location of cone penetration test for Preliminary Geotechnical Evaluation Mesas Area (CPT-1M thru CPT-15M and CPT-18M)
	Lots potentially affected by additional overexcavation requirements in the vicinity of the monoclinal warp and Lion Canyon Anticline (8-ft-minimum overexcavation)
RUA	Restricted Use Area

NOTES:

For the bulk grading of the site, rock disposal areas are recommended to be in fills greater than 15 feet below finished grade and at least 15 feet away from any slope face. Rock disposal should be performed in accordance with County of Los Angeles requirements and recommendations contained in this report.

GEOTECHNICAL EXPLANATION
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 2

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: NTS	Date: 5/2012

Leighton

REVISIONS
NO. DATE

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 23, Valencia, CA 91355
PH: (661) 294-2211 FX: (661) 294-9890

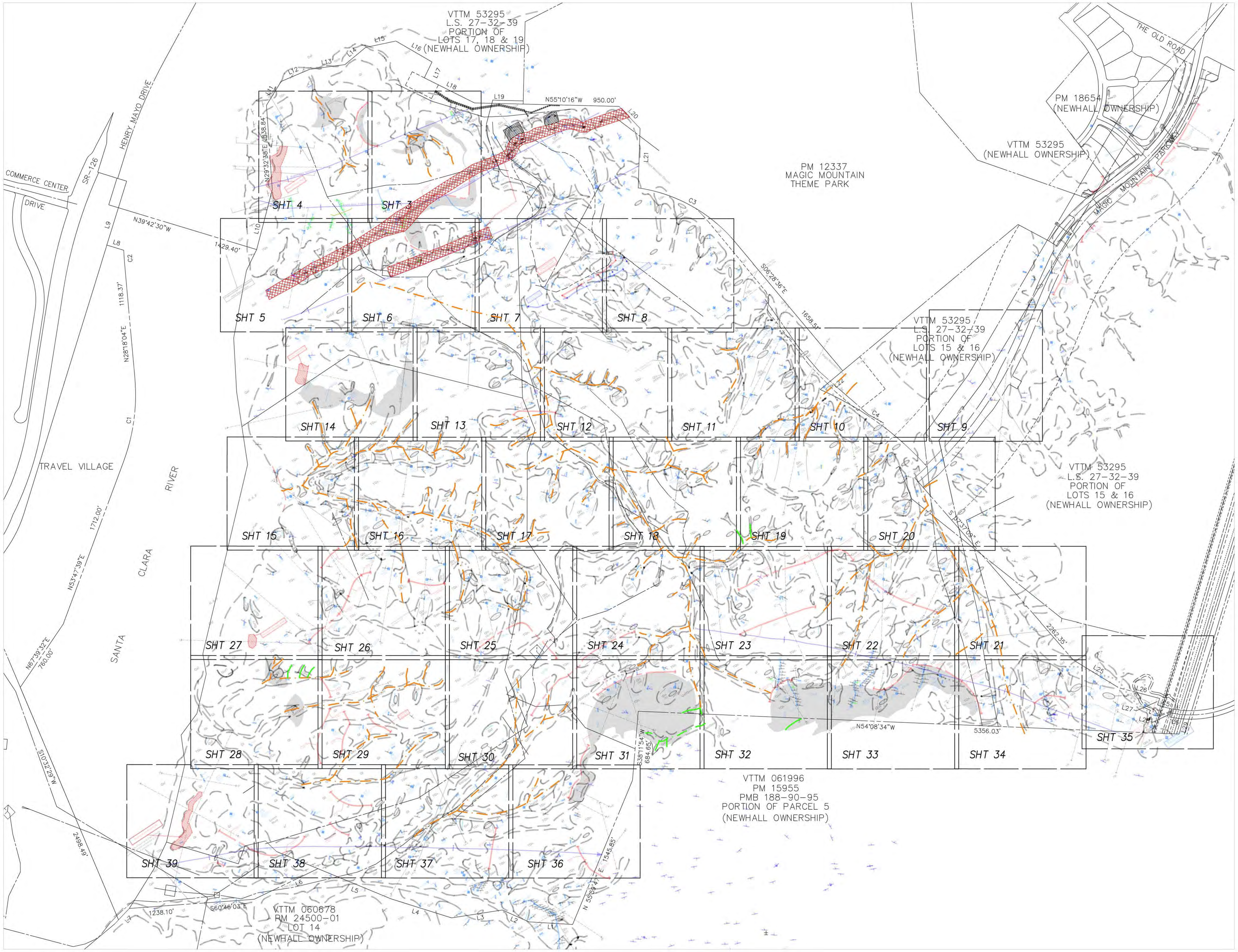
OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. COREY HARPOLE

GEOTECHNICAL EXPLANATION
MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET —



NORTH

INDEX MAP

400' 200' 0 FEET 400' 800'
1 1/2 0 INCHES 1 2

LINE TABLE		
NO.	BEARING	DISTANCE
L1	S53°08'17"E	433.03'
L2	S32°28'53"E	287.53'
L3	S65°20'40"E	508.47'
L4	S39°07'56"E	627.05'
L5	S34°06'34"E	783.50'
L6	S82°11'32"E	700.48'
L7	N76°51'55"E	155.34'
L8	N39°29'33"W	174.80'
L9	N50°39'01"E	386.97'
L10	N48°02'55"E	611.85'
L11	N65°02'09"E	275.84'
L12	S79°39'27"E	306.42'
L13	S64°10'19"E	352.70'
L14	S83°47'18"W	266.02'
L15	N68°30'31"W	306.58'
L16	N26°27'26"W	413.27'
L17	N59°27'47"E	174.40'
L18	S29°57'11"E	554.78'
L19	N55°10'16"W	482.04'
L20	S10°10'16"E	300.19'
L21	S35°11'32"W	589.50'
L22	N83°39'34"E	289.98'
L23	N28°27'21"W	343.51'
L24	S45°50'33"W	1127.52'
L25	S25°08'24"E	529.33'
L26	S42°00'30"E	417.18'
L27	N51°39'46"E	67.04'
L28	44°37'49"E	84.00'
L29	N60°30'35"E	156.19'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	25°29'35"	1900.00'	845.38'
C2	2°27'54"	3300.00'	141.97'
C3	41°47'05"	1540.00'	1123.09'
C4	23°36'01"	3065.00'	1262.48'
C5	8°52'07"	958.00'	148.28'
C6	7°19'33"	1042.00'	133.23'

REVISIONS
NO. DATE

JASON H. FUKUMITSU DATE

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INDEX MAP
MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 2
OF 41

INDEX MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=400'	Date: 5/2012

PLATE 1

Leighton

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GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE TRACT NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 3

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

SEE SHEET 4

SEE SHEET 6

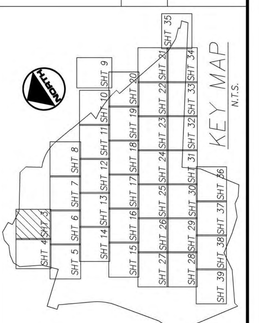
LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOUR
- EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- EXISTING STORM DRAIN LINE
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE
- ARMY CORPS OF ENGINEERS JURISDICTION
- CALIFORNIA DEPT. OF FISH AND GAME JURISDICTION
- EXISTING FLOODWAY
- EXISTING FLOODPLAIN
- SEA RIVER CORRIDOR
- FEMA ZONE
- EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL (40/45)
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL (40/45)
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL (3/40; 4/40)
4. CONSTRUCT 20' TERRACE/DOWN DRAIN JUNCTION PER DETAIL (4/40; 4/45)
5. CONSTRUCT DOWN DRAIN PER DETAIL (3/40; 6/40)
6. CONSTRUCT RIP-RAP APRON PER DETAIL (6/40; 7/40)
7. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL (7/40; 8/40)
8. CONSTRUCT CONCRETE "V" DITCH PER DETAIL (8/40; 4/45)
9. CONSTRUCT SPLASH WALL PER DETAIL (4/40; 5/40)
10. CONSTRUCT TOP OF SLOPE BERM PER DETAIL (5/40)
11. CONSTRUCT TOE DRAIN PER DETAIL (5/40; 6/40)
12. CONSTRUCT RIP-RAP INLET PER DETAIL (7/40; 6/45)
13. CONST. TOP OF SLOPE PROTECTION GUNITE CUT OFF WALL
14. CONSTRUCT TEMPORARY GUNITE DITCH PER DETAIL (14/40; 4/45)
15. CONST. TRANSITION/TERRACE TO PAVED DRAIN PER DETAIL (15/40; 4/45)
16. CONSTRUCT TEMPORARY SPILLWAY PER DETAIL (18/40; 4/45)
17. CONSTRUCT CMP RISER PER DETAIL (17/40; 4/45)
18. CONSTRUCT 16 GA. 48" CMP PIPE
19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL (19/40; 4/45)
20. CONST. PERM. SPILLWAY AND GUNITE DITCH PER DETAIL (20/40; 4/45)
21. CONSTRUCT GUNITE CHANNEL PER DETAIL (21/40; 4/45)
22. CONSTRUCT EARTH SWALE PER DETAIL (22/40; 4/45)
23. CONSTRUCT GUNITE SWALE PER DETAIL (23/40; 4/45)
24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL (25/40; 26/40)
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL (26/40; 4/45)
60. REMOVE OAK TREE
61. PROTECT OAK TREE IN PLACE
62. REMOVE POWER POLE, GUY WIRES AND POWER LINES
63. REMOVE EXISTING WATER TANK AND PUMP
64. REMOVE EXISTING WATER WELL AND PUMP
65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
68. REMOVE EXISTING FENCE
69. REMOVE EXISTING GATE
70. REMOVE EXISTING HEADWALL
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT



KEY MAP
N.T.S.

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE: MR. COREY HARPOLE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, CA 92618
PLANNING • ENGINEERING • SURVEYING
2607A Avenue Hall, Suite #210, CA 91355
FX: (661) 294-9890 PH: (661) 294-2211

JASON H. FUKUMITSU DATE
No. 4063
EXP. 3-31-13
CIVIL
STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 3 OF 41

NO.	DATE	REVISIONS

P:\Grading\052580\100_of_2012-04-16\DWG\25-04-16A.dwg Plotted on May 14, 2012-11:32am by bram

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE TRACT NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted by: BGT | Checked by: BGT

PLATE 4

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates, Inc. and Leighton Consulting, Inc. Reports As Referenced in Appendix A of This Report

SEE LEGEND ON PLATE 2

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 EXISTING CONTOUR
- 1100 PROPOSED CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- PROPOSED SURFACE GRADE
- RIDGE LINE
- TOE LINE
- SD EXISTING CHAINLINK FENCE
- W EXISTING STORM DRAIN LINE
- GAS EXISTING WATER LINE
- OHE EXISTING GAS LINE
- ACOE EXISTING OVERHEAD ELECTRIC LINE
- ARMY CORPS OF ENGINEERS JURISDICTION
- SCE EXISTING EDISON EASEMENT AND GAME JURISDICTION
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SR23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- C2359 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 1032+02.04 EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- DETAIL NUMBER
- SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL (4) (40)
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL (4) (40)
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL (4) (40)
4. CONSTRUCT 20' TERRACE/DOWN DRAIN JUNCTION PER DETAIL (4) (40)
5. CONSTRUCT DOWN DRAIN PER DETAIL (3) (40)
6. CONSTRUCT RIP-RAP APRON PER DETAIL (7) (40)
7. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL (7) (40)
8. CONSTRUCT CONCRETE "V" DITCH PER DETAIL (8) (40)
9. CONSTRUCT SPLASH WALL PER DETAIL (4) (40)
10. CONSTRUCT TOP OF SLOPE BERM PER DETAIL (10)
11. CONSTRUCT TOE DRAIN PER DETAIL (10) (40)
12. CONSTRUCT RIP-RAP INLET PER DETAIL (12) (40)
13. CONST. TOP OF SLOPE PROTECTION GUNITE CUT OFF WALL
14. CONSTRUCT TEMPORARY GUNITE DITCH PER DETAIL (14) (40)
15. CONST. TRANSITION/TERRACE TO PAVED DRAIN PER DETAIL (15) (40)
16. CONSTRUCT TEMPORARY SPILLWAY PER DETAIL (28) (40)
17. CONSTRUCT CMP RISER PER DETAIL (17) (48)
18. CONSTRUCT 16 GA. 48" CMP PIPE
19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL (19)
20. CONST. PERM. SPILLWAY AND GUNITE DITCH PER DETAIL (20) (41)
21. CONSTRUCT GUNITE CHANNEL PER DETAIL (21) (41)
22. CONSTRUCT EARTH SWALE PER DETAIL (22) (41)
23. CONSTRUCT GUNITE SWALE PER DETAIL (23) (41)
24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL (25) (41)
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL (26) (41)

60. REMOVE OAK TREE
61. PROTECT OAK TREE IN PLACE
62. REMOVE POWER POLE, GUY WIRES AND POWER LINES
63. REMOVE EXISTING WATER TANK AND PUMP
64. REMOVE EXISTING WATER WELL AND PUMP
65. ABANDON EXISTING WATER LINE IN PLACE
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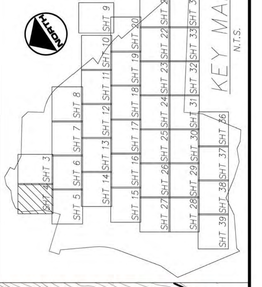
69. REMOVE EXISTING GATE
70. REMOVE EXISTING HEADWALL
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

40' 20' 0 40' 80'
1" = 40' FEET
1 1/2 0 1 2 INCHES



KEY MAP
N.T.S.

HUNSAKER & ASSOCIATES
IRVINE • FRESNO • SAN DIEGO • LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
25074 Avenue Hall, Suite #210, Valencia, CA 91355
PH: (661) 294-9890 FX: (661) 294-2211

PLANS PREPARED BY:

NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. COREY HARPOLE

OWNER/DEVELOPER:

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 4 OF 41

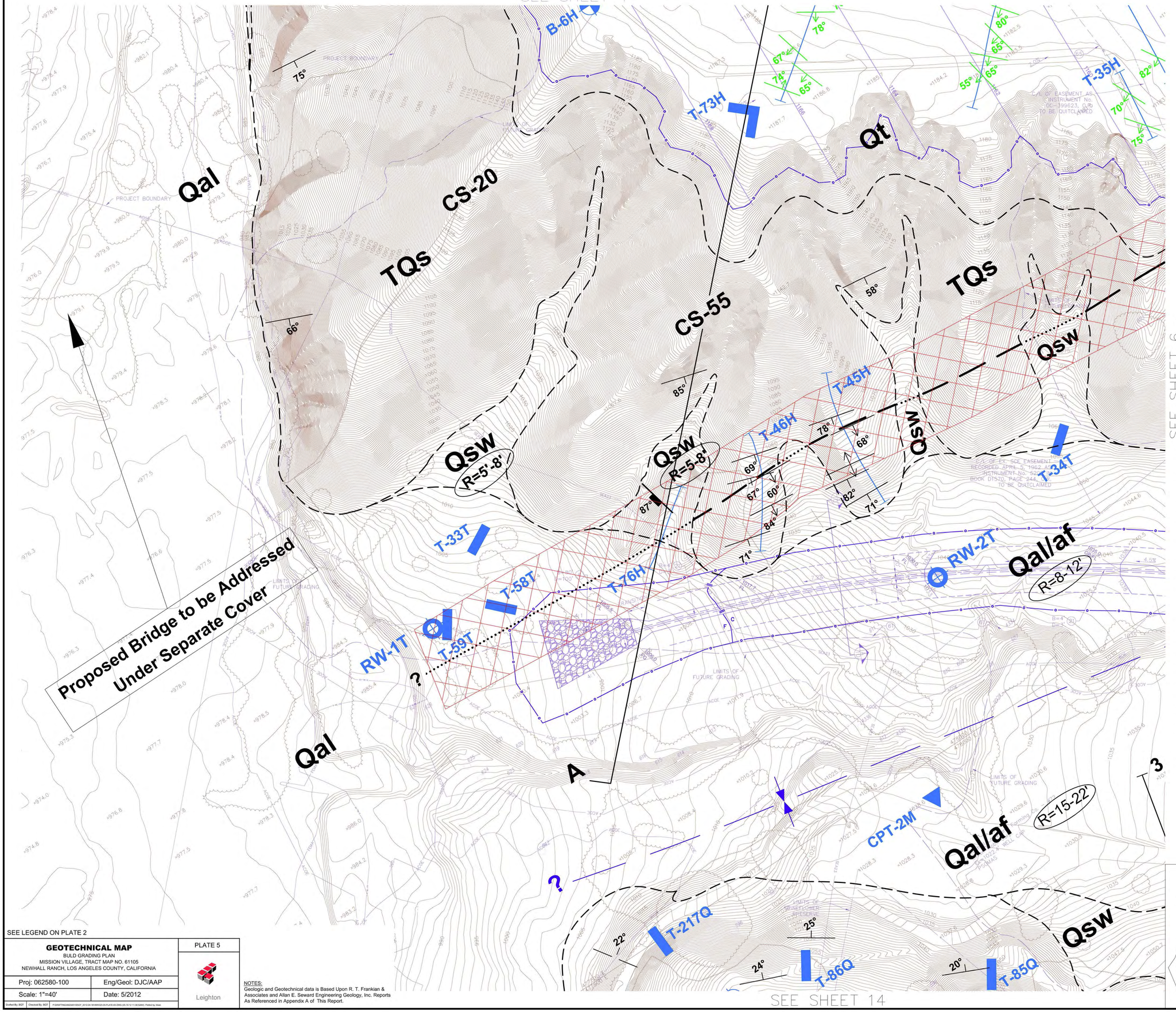
REGISTERED PROFESSIONAL ENGINEER
JASON H. FUKUMITSU
No. 40630
EXP. 3-31-13
CIVIL
STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

NO.	DATE	REVISIONS

SEE SHEET 3
SEE SHEET 5
SEE SHEET 6

SEE SHEET 4



SEE LEGEND ON PLATE 2

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- O266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 3/40
4. CONSTRUCT 20' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 4/40
5. CONSTRUCT DOWN DRAIN PER DETAIL 5/40
6. CONSTRUCT RIP-RAP APRON PER DETAIL 6/40
7. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL 7/40
8. CONSTRUCT CONCRETE "V" DITCH PER DETAIL 8/40
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12. CONSTRUCT RIP-RAP INLET PER DETAIL 12/40
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17. CONSTRUCT CMP RISER PER DETAIL 17/41
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19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL 19/41
20. CONST. PERM. SPILLWAY AND GUNITE DITCH PER DETAIL 20/41
21. CONSTRUCT GUNITE CHANNEL PER DETAIL 21/41
22. CONSTRUCT EARTH SWALE PER DETAIL 22/41
23. CONSTRUCT GUNITE SWALE PER DETAIL 23/41
24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL 25/41
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL 26/41

60. REMOVE OAK TREE
61. PROTECT OAK TREE IN PLACE
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67. EXISTING OIL WELL TO REMAIN
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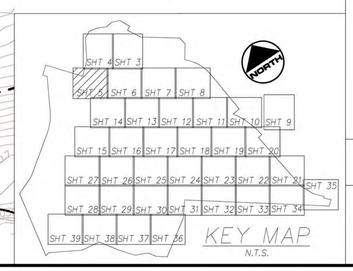
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET: 40' 20' 0 40' 80' — INCHES: 1 1/2 0 1 2



KEY MAP
N.T.S.

GEOTECHNICAL MAP
BULD GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPTING\062580\100\CP_2012-04-16\WORK\03-05\PLATE 05 DWG (05-16-12 11:38:52AM) Plotted by: khan

PLATE 5

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE SHEET 14

SEE SHEET 6

REVISIONS

NO.	DATE

PROFESSIONAL ENGINEER — JASON H. FUKUMITSU — No. 66995 — Exp. 3-31-13 — CIVIL — STATE OF CALIFORNIA

JASON H. FUKUMITSU — DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 210, Valencia, CA 91355
PH: (661) 294-9630 FAX: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
ATTN: MR. COREY HARPOLE
REPRESENTATIVE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 5
OF 41

I:\Grading\062580\100\CP_2012-04-16\WORK\03-05\Plate 05.dwg Plotted on May 16, 2012 11:38pm by khan

SEE SHEET 4

SEE SHEET 4

SEE SHEET 5

SEE SHEET 7

SEE SHEET 14

SEE SHEET 13

Qt

Qsw

TQs

TQs^{u}

Qal/af

af

Qls (XL)

CS-19

CS-18

T-80H

T-37H

T-38H

T-34H

B-2H

B-1H

T-65H

T-75H

T-35T

T-43SA

T-42SA

T-40T

T-17Q

T-16Q

T-39T

T-15Q

T-26H

T-13B

HS-10T

CPT-3M

CPT-4M

CPT-5M

RW-3M

RW-3T

B-8E
Qsw to 4 ft
TD 36 ft

Stability Fill
5' x 35'

Saddle Fault

Saddle Syncline

Middle Canyon

LA-5'

R=5-12'

R=8-12'

R=15-22'

R=10-20'

3E'

L'

3

?

DESILTING BASIN
REQUIRED VOL=4,150 c.y.
ACTUAL VOL=4,480 c.y.
BOTTOM ELEV.=1053.0

DESILTING BASIN # 160B
REQUIRED VOL=8,070 c.y.
ACTUAL VOL=8,230 c.y.
BOTTOM=1073.0

C/L OF EX. EASEMENT RECORDED AS INSTRUMENT No. 00-399523, O.R. TO BE QUITCLAIMED

C/L OF EX. EASEMENT RECORDED APRIL 5, 1962 AS INSTRUMENT No. 5209 IN BOOK D-2970, PAGE 244, O.R. TO BE QUITCLAIMED

LIMITS OF SPINEFLOWER PRESERVE

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
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- FW EXISTING FLOODPLAIN
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- FEMA FEMA ZONE
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- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
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7. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL 7/40
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24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL 25/41
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60. REMOVE OAK TREE
61. PROTECT OAK TREE IN PLACE
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63. REMOVE EXISTING WATER TANK AND PUMP
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65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
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69. REMOVE EXISTING GATE
70. REMOVE EXISTING HEADWALL
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES

SHT 4 SHT 3
SHT 5 SHT 6 SHT 7 SHT 8
SHT 14 SHT 13 SHT 12 SHT 11 SHT 10 SHT 9
SHT 15 SHT 16 SHT 17 SHT 18 SHT 19 SHT 20
SHT 27 SHT 26 SHT 25 SHT 24 SHT 23 SHT 22 SHT 21 SHT 35
SHT 28 SHT 29 SHT 30 SHT 31 SHT 32 SHT 33 SHT 34
SHT 39 SHT 38 SHT 37 SHT 36

KEY MAP
N.T.S.

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

GEOTECHNICAL MAP
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 6

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Leighton

Drafted By: BDT | Checked By: BDT | P:\GRAPHICS\062580\100\GT_2012-05-10\062580-06-PLATE-06.DWG 05-14-12 11:43:53AM3 Plotted by bstarr

REVISIONS

NO.	DATE

RESIDENT ENGINEER
JASON H. FUKUMITSU
No. 68985
Exp. 3-31-13
CIVIL
STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC.
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 210, Valencia, CA 91355
Ph: (661) 294-2211 FX: (661) 294-9930

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 6
OF 41

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GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 7

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAFTING\062580\100\GT_2012-04-16\MAPS\25-GT-PLATE-07.DWG (05-14-12 11:56:00AM) Plotted by: bmain

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE PLATE 2 FOR LEGEND

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
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- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
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- O266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 3/40
4. CONSTRUCT 20' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 4/40
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10. CONSTRUCT TOP OF SLOPE BERM PER DETAIL 10/40
11. CONSTRUCT TOE DRAIN PER DETAIL 11/40
12. CONSTRUCT RIP-RAP INLET PER DETAIL 12/40
13. CONST. TOP OF SLOPE PROTECTION GUNITE CUT OFF WALL
14. CONSTRUCT TEMPORARY GUNITE DITCH PER DETAIL 14/40
15. CONST. TRANSITION/TERRACE TO PAVED DRAIN PER DETAIL 15/40
16. CONSTRUCT TEMPORARY SPILLWAY PER DETAIL 16/40
17. CONSTRUCT CMP RISER PER DETAIL 17/41
18. CONSTRUCT 16 GA. 48" CMP PIPE
19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL 19/41
20. CONST. PERM. SPILLWAY AND GUNITE DITCH PER DETAIL 20/41
21. CONSTRUCT GUNITE CHANNEL PER DETAIL 21/41
22. CONSTRUCT EARTH SWALE PER DETAIL 22/41
23. CONSTRUCT GUNITE SWALE PER DETAIL 23/41
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25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL 25/41
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL 26/41

60. REMOVE OAK TREE
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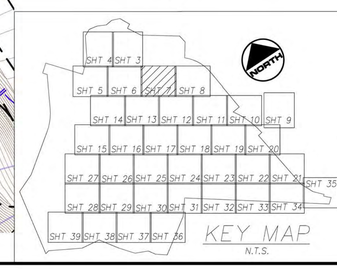
65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
68. REMOVE EXISTING FENCE
69. REMOVE EXISTING GATE
70. REMOVE EXISTING HEADWALL
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES



KEY MAP
N.T.S.

SEE SHEET 8

SEE SHEET 13

SEE SHEET 12

REVISIONS | NO. | DATE

RESPONSIBLE ENGINEER: JASON H. FUKUMITSU, R.C.E. No. 69995, Exp. 3-31-13, CIVIL, STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
I R V I N E, L O S A N G E L E S, I N C.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 203, Valencia, CA 91355
Ph: (661) 294-2211 Fx: (661) 294-9930

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 7
OF 41

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GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 8

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPHICS\062580\100GT_2012-04-16\MXD\GS-GE-PLATE-08.DWG (05-14-12-1:13:19PM). Plotted by Jason

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE PLATE 2 FOR LEGEND

SEE SHEET 9

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% R PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- 266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
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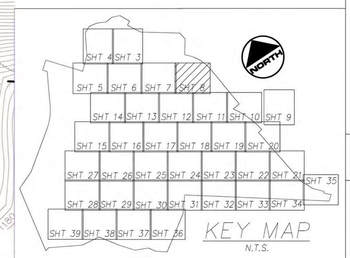
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET: 40' 20' 0 40' 80' / 1 1/2 0 1 2 INCHES



KEY MAP
N.T.S.

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, CA 92618
LOS ANGELES, CA 91355
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 210, Valencia, CA 91355
FAX: (661) 294-9830 PH: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
PHONE: (661) 255-4050
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 8
OF 41

REVISIONS | NO. | DATE

JASON H. FUKUMITSU | DATE

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 69595 Exp. 3-31-13 CIVIL STATE OF CALIFORNIA

C:\projects\062580\100\GT_2012-04-16\MXD\GS-GE-Plate-08.dwg Plotted on May 14, 2012 at 1:13pm by jason

SEE SHEET 10

SEE SHEET 20

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 9

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAFTING\062580100\GT_2012-04-16\MAPS\25-09-PLATE-05.DWG (05-14-12 1:18:25PM) Plotted by: bbaz

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

VTTM 53295
LS. 27-32-39
PORTION OF
LOTS 15 & 16
(NEWHALL OWNERSHIP)

VTTM 53295
LS. 27-32-39
PORTION OF
LOTS 15 & 16
(NEWHALL OWNERSHIP)

af
TQSu
Qal
Qt
CS-46
CS-47
LA-7
LA-7'
T-65
T-66
T-67
T-116T
T-117T
T-34
T-63
T-64
T-118T
T-36
B-61E
TD 65 ft
42
43'
11°
10°
18°
9°
5°
13°
14°

N'LY BOUNDARY OF EX. EASEMENT RECORDED 2001 AS INSTRUMENT No. 01-0227355, O.R. TO REMAIN

O/L OF EX. OIL EASEMENT RECORDED MAY 26, 1924 AS INSTRUMENT No. 570 IN BOOK 4322, PAGE 192, O.R. 10.25' QUITCLAIMED

O/L OF EX. EASEMENT RECORDED AS INSTRUMENT No. 21154 IN BOOK 525, O.R. 10.66' QUITCLAIMED

O/L OF EXPANSION OIL COMPANY OF CALIFORNIA EASEMENT RECORDED MAY 6, 1918 AS INSTRUMENT No. 952 IN BOOK 98, O.R. 20' QUITCLAIMED

O/L OF EX. EASEMENT RECORDED 2001 AS INSTRUMENT No. 01-0227355, O.R. TO REMAIN

SLY BOUNDARY OF EX. EASEMENT RECORDED 2001 AS INSTRUMENT No. 01-0227355, O.R. TO REMAIN

FUTURE R/W FOR MAGIC MOUNTAIN PARKWAY

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% R PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
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- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
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- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

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71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES

KEY MAP
N.T.S.
SHT 4 SHT 3
SHT 5 SHT 6 SHT 7 SHT 8
SHT 14 SHT 13 SHT 12 SHT 11 SHT 10 SHT 9
SHT 15 SHT 16 SHT 17 SHT 18 SHT 19 SHT 20
SHT 27 SHT 26 SHT 25 SHT 24 SHT 23 SHT 22 SHT 21 SHT 35
SHT 28 SHT 29 SHT 30 SHT 31 SHT 32 SHT 33 SHT 34
SHT 39 SHT 38 SHT 37 SHT 36

REVISIONS
NO. DATE

REGISTERED ENGINEER * YUKIMITSU * JASON H. FUKUMITSU * Exp. 3-31-13 * No. 69595 * CIVIL * STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite #210, Valencia, CA 91355
(661) 294-9990 FAX: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
(661) 255-4000
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 9
OF 41

C:\Grading\062580\100\GT_2012-04-16\MAPS\25-09-Plate-05.dwg Plotted on May 14, 2012 1:18pm by bbaz

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

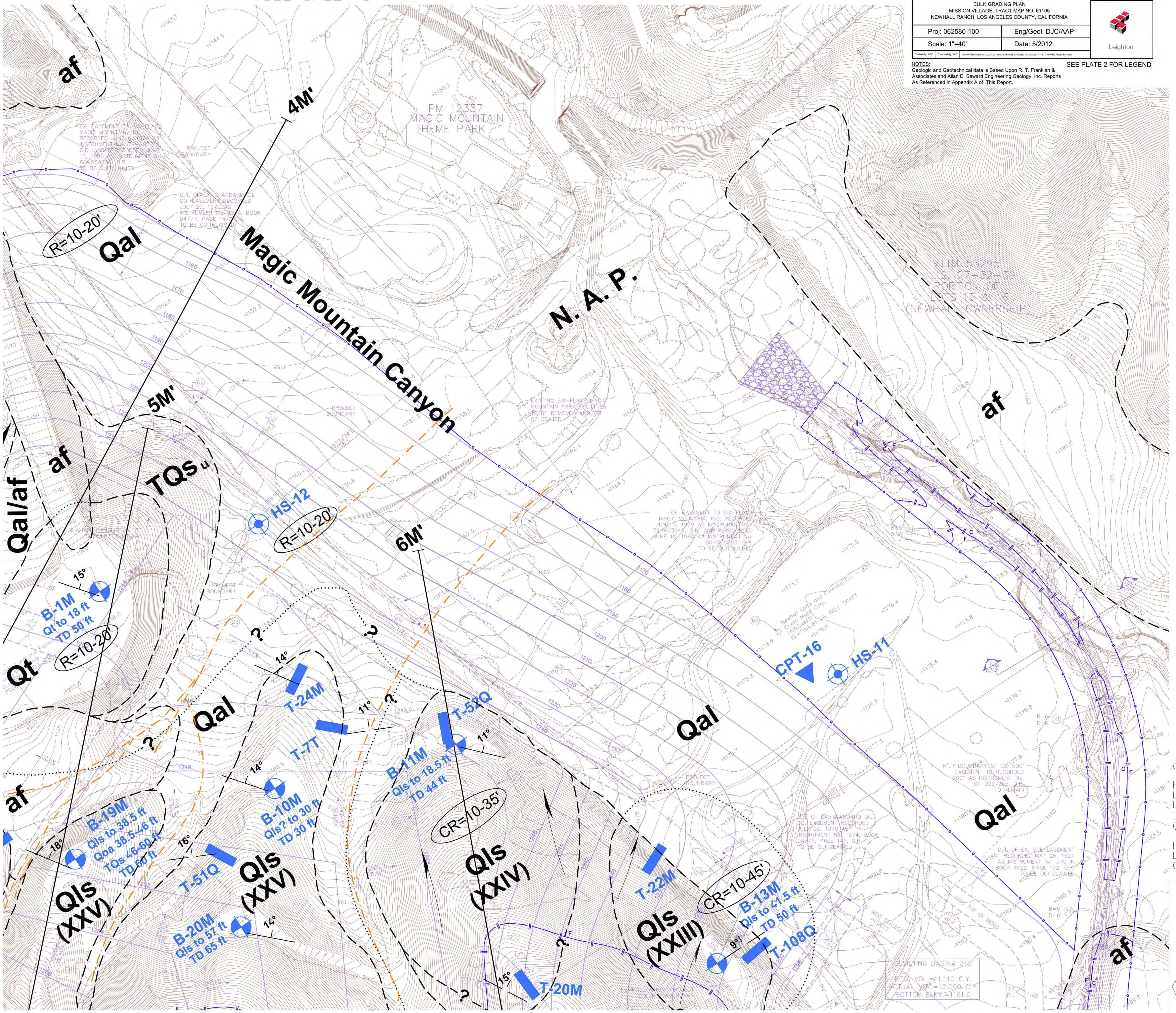
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

PLATE 10

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE PLATE 2 FOR LEGEND



LEGEND

PROJECT BOUNDARY LINE
FUTURE RIGHT OF WAY
EXISTING RIGHT OF WAY
PROPOSED EASEMENT
EXISTING EASEMENT
1100 PROPOSED CONTOUR
1100 EXISTING CONTOUR
DAYLIGHT LINE
CUT & FILL LINE
SLOPE (RATIO PER PLAN)
2.5% PROPOSED SURFACE GRADE
R RIDGE LINE
FLOW LINE
EXISTING CHAINLINK FENCE
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EXISTING OIL WELL (DIGITIZED)
EXISTING OIL WELL (SURVEYED)
4032103E EXISTING POWER POLE AND I.D.
RIP-RAP
CONCRETE STRUCTURE OR SURFACE
1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
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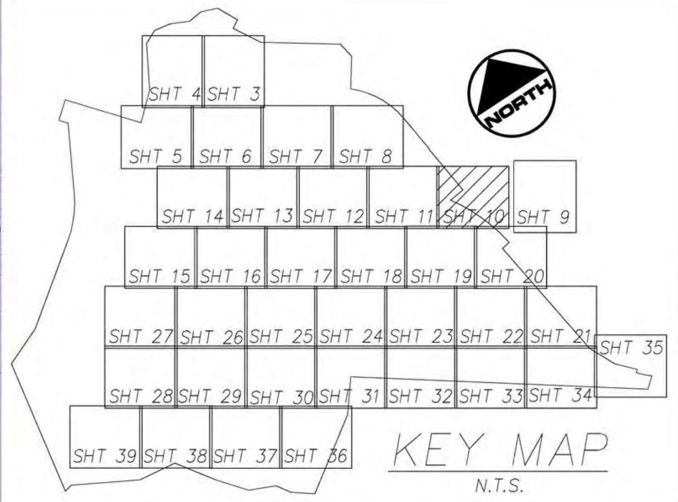

KEY MAP
N.T.S.

REVISIONS | NO. | DATE

JASON H. FUKUMITSU | DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
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FX: (661) 294-9890 PH: (661) 294-2211

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REPRESENTATIVE : MR. COREY HARPOLE

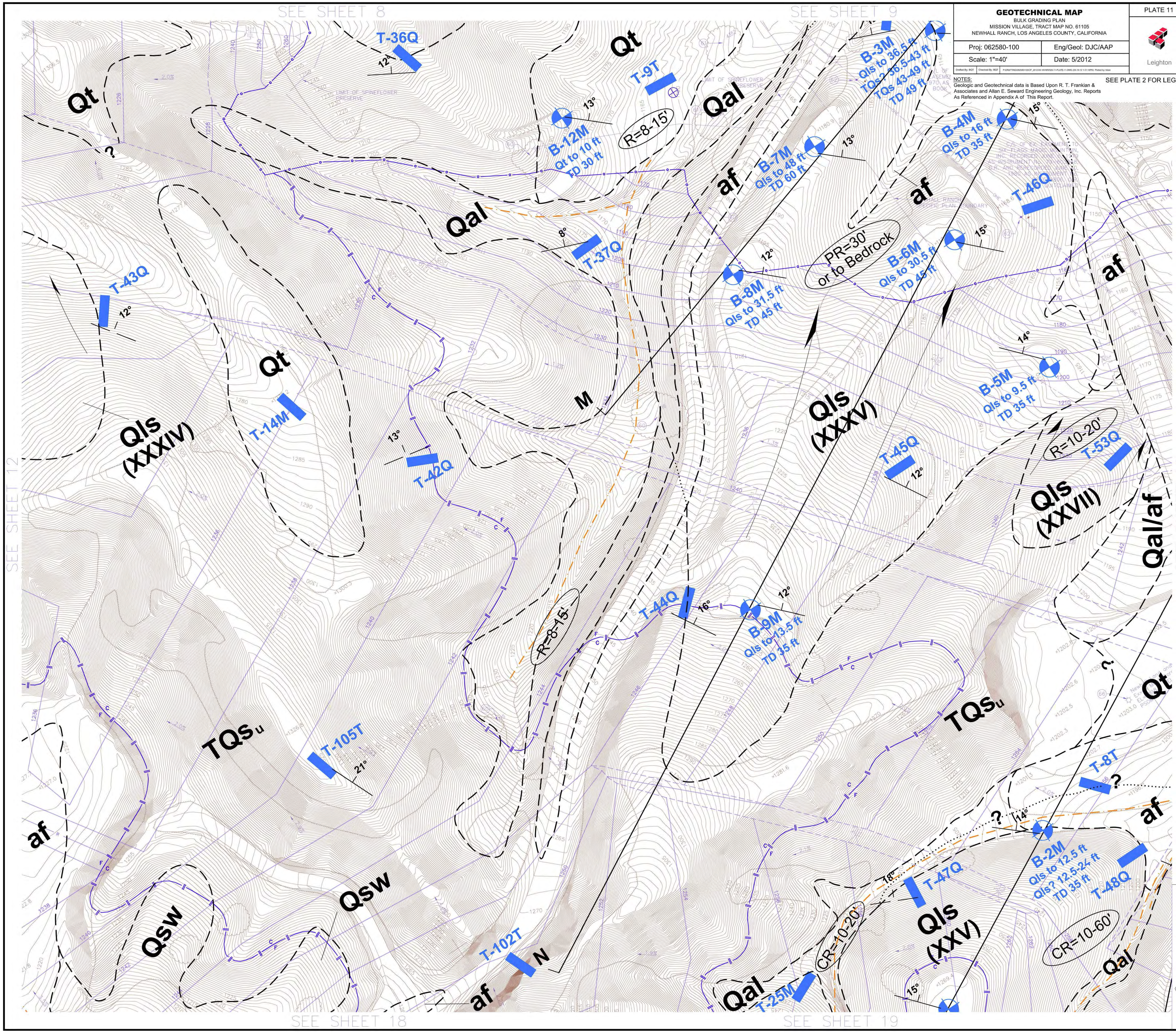
MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 10
OF 41

P:\Drafting\062580\100\of_2012-04-16\HMV025-10-Plate-10.dwg Plotted on May 14, 2012-1:28pm by btran



GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 11

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BQT | Checked By: BQT

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE PLATE 2 FOR LEGEND

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- 266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 4032103E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 3/40
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14. CONSTRUCT TEMPORARY GUNITE DITCH PER DETAIL 14/40
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17. CONSTRUCT CMP RISER PER DETAIL 17/41
18. CONSTRUCT 16 GA. 48" CMP PIPE
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24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL 25/41
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL 26/41

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63. REMOVE EXISTING WATER TANK AND PUMP
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65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
68. REMOVE EXISTING FENCE
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71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2

REVISIONS
NO. DATE

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 Exp. 3-31-13 CIVIL STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 23 Valencia, CA 91355
FX: (661) 294-9890 PH: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 11 OF 41

SEE SHEET 7

SEE SHEET 8

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\DRAFTING\2062580\100\GT_2012-04-16\MAPS\25-12-PLATE-12.DWG 05-14-12 1:35:19PM5 Plotted by: bbae

PLATE 12

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE PLATE 2 FOR LEGEND

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
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- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
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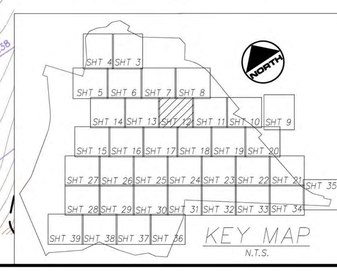
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

JASON H. FUKUMITSU — DATE

HUNSAKER & ASSOCIATES
IRVINE, LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 230, Valencia, CA 91355
TEL: (661) 294-9890 FAX: (661) 294-2211

PLANS PREPARED BY:

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4900
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 12
OF 41

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SEE SHEET 13

SEE SHEET 11

SEE SHEET 17

SEE SHEET 18

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 13

Leighton

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT

NOTES:
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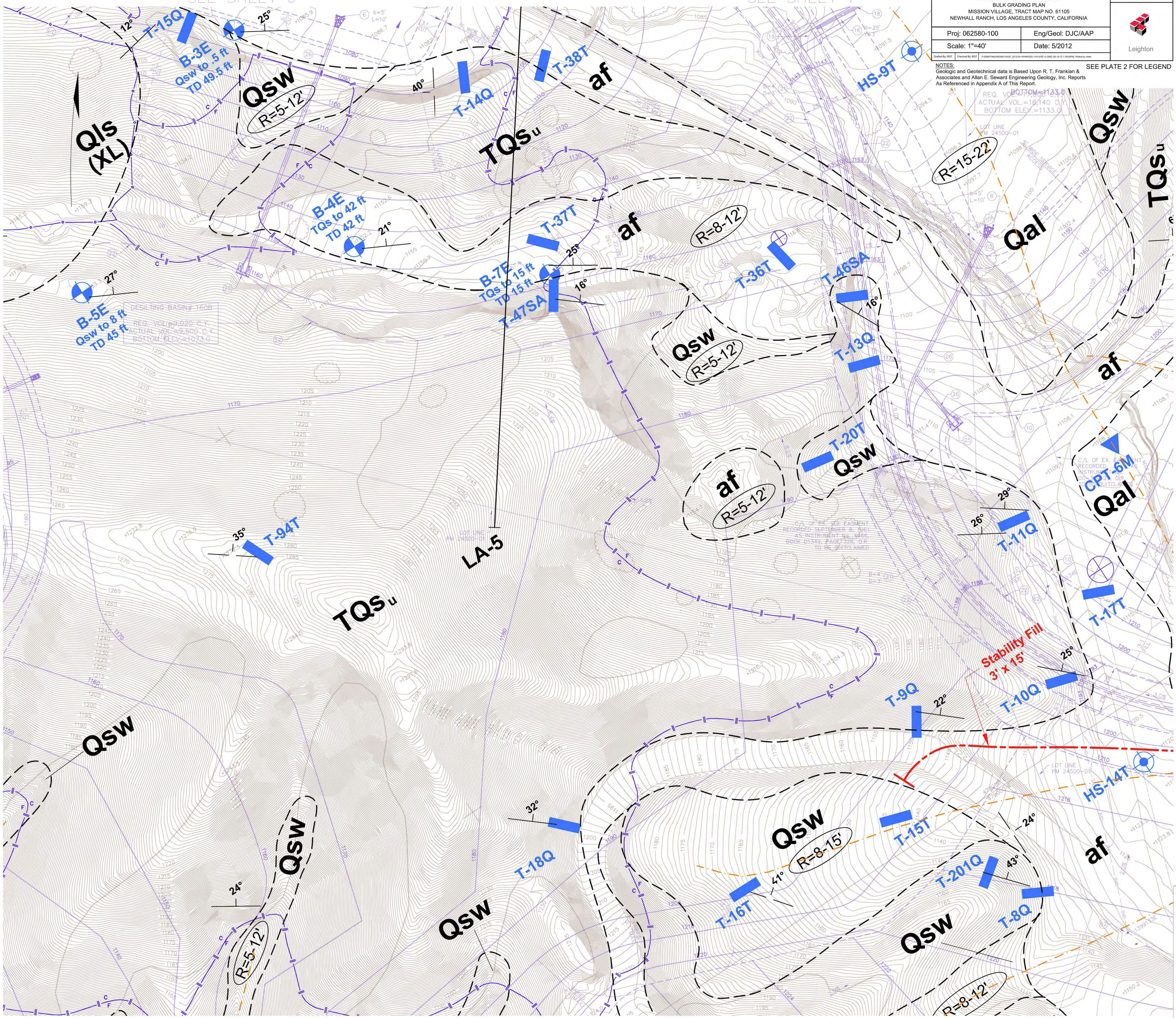
SEE PLATE 2 FOR LEGEND



LEGEND

PROJECT BOUNDARY LINE
FUTURE RIGHT OF WAY
EXISTING RIGHT OF WAY
PROPOSED EASEMENT
EXISTING EASEMENT
1100 PROPOSED CONTOUR
1100 EXISTING CONTOUR
DAYLIGHT LINE
CUT & FILL LINE
SLOPE (RATIO PER PLAN)
2.5% PROPOSED SURFACE GRADE
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FLOW LINE
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CONCRETE STRUCTURE OR SURFACE
1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
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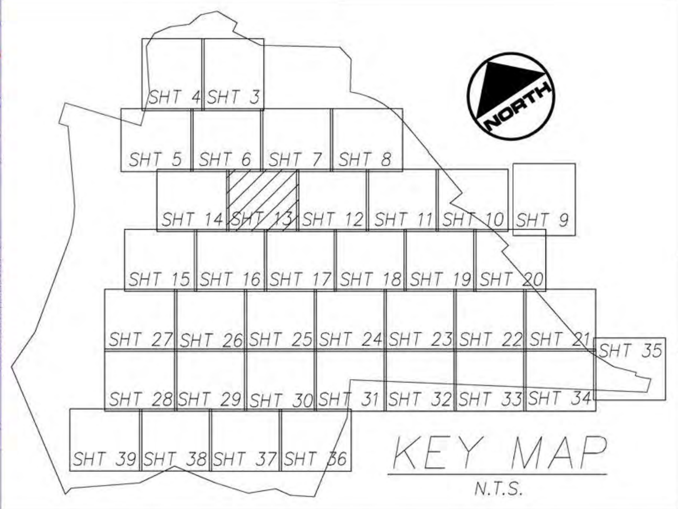
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2



REVISIONS | NO. | DATE

REGISTERED PROFESSIONAL ENGINEER JASON H. FUKUMITSU No. 40695 Exp. 3-31-13 CIVIL STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 23, Valencia, CA 91355
FX: (661) 294-9890 PH: (661) 294-2211

OWNER/DEVELOPER:
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25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 13
OF 41

SEE SHEET 5

SEE SHEET 6

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 14

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPTER\062580\100GT_2012-04-16\MAPS\SI-14-PLATE-14-2MIS.DS-16-12-1-42-14PM) Plotted by: bman

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE PLATE 2 FOR LEGEND

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOUR
- EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- EXISTING STORM DRAIN LINE
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- DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
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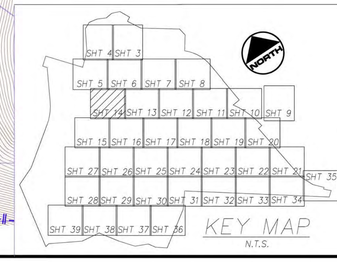
NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES

SEE SHEET 13



KEY MAP
N.T.S.

REVISIONS

NO.	DATE

PROFESSIONAL ENGINEER * JASON H. FUKUMITSU * Exp. 3-31-13 * No. 69595 * CIVIL * STATE OF CALIFORNIA

JASON H. FUKUMITSU — DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
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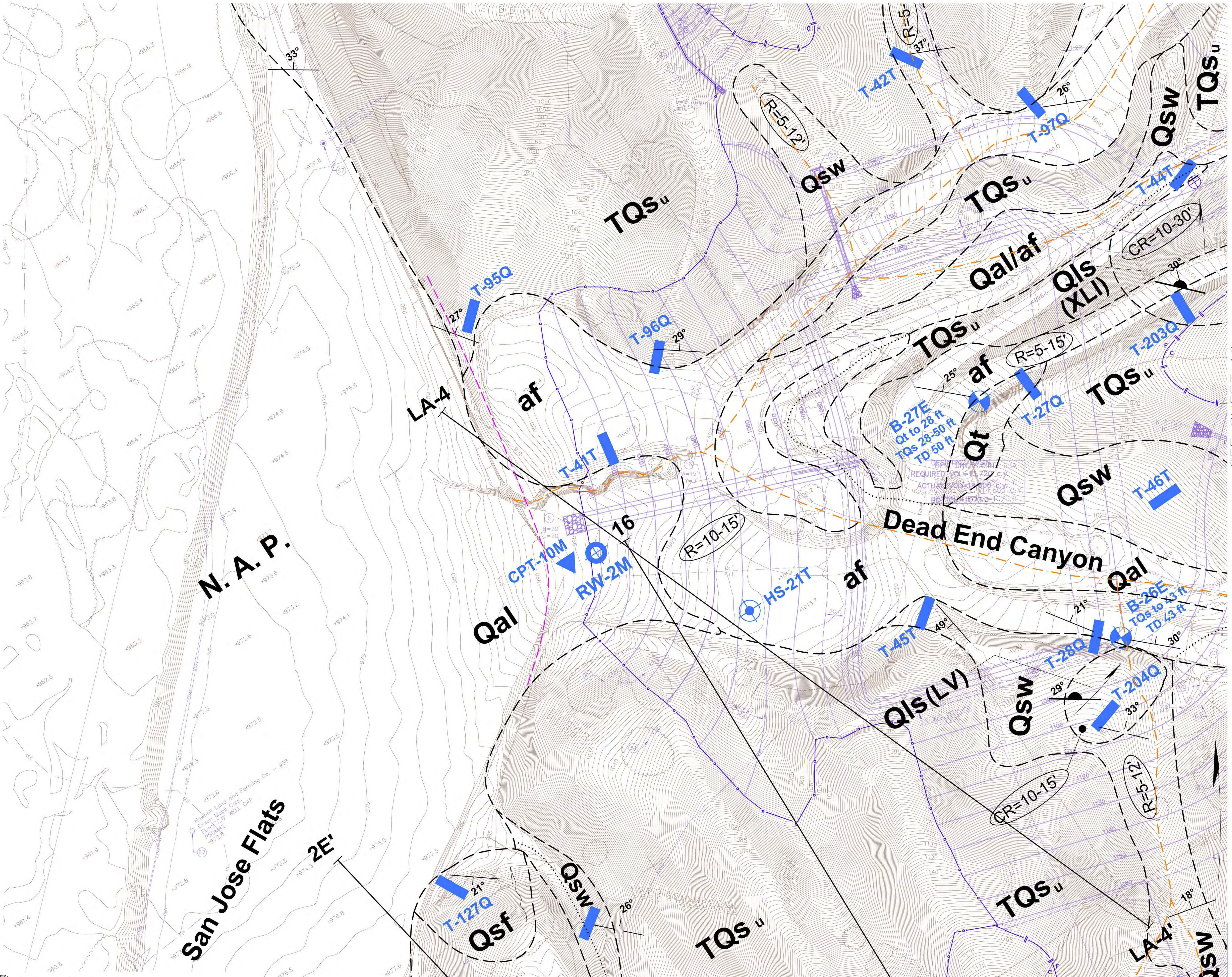
SHEET 14
OF 41

P:\grading\062580\100GT_2012-04-16\MAPS\SI-14-PLATE-14.dwg Plotted at May 14, 2012 - 1:42pm by bman

SEE SHEET 15

SEE SHEET 16



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SEE PLATE 2 FOR LEGEND

GEOTECHNICAL MAP BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA		PLATE 15
Proj: 062580-100	Eng/Geol: DJC/AAP	Leighton
Scale: 1"=40'	Date: 5/2012	

LEGEND

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- FUTURE RIGHT OF WAY
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62. REMOVE POWER POLE, GUY WIRES AND POWER LINES
63. REMOVE EXISTING WATER TANK AND PUMP
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65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
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72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2

KEY MAP
N.T.S.

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING

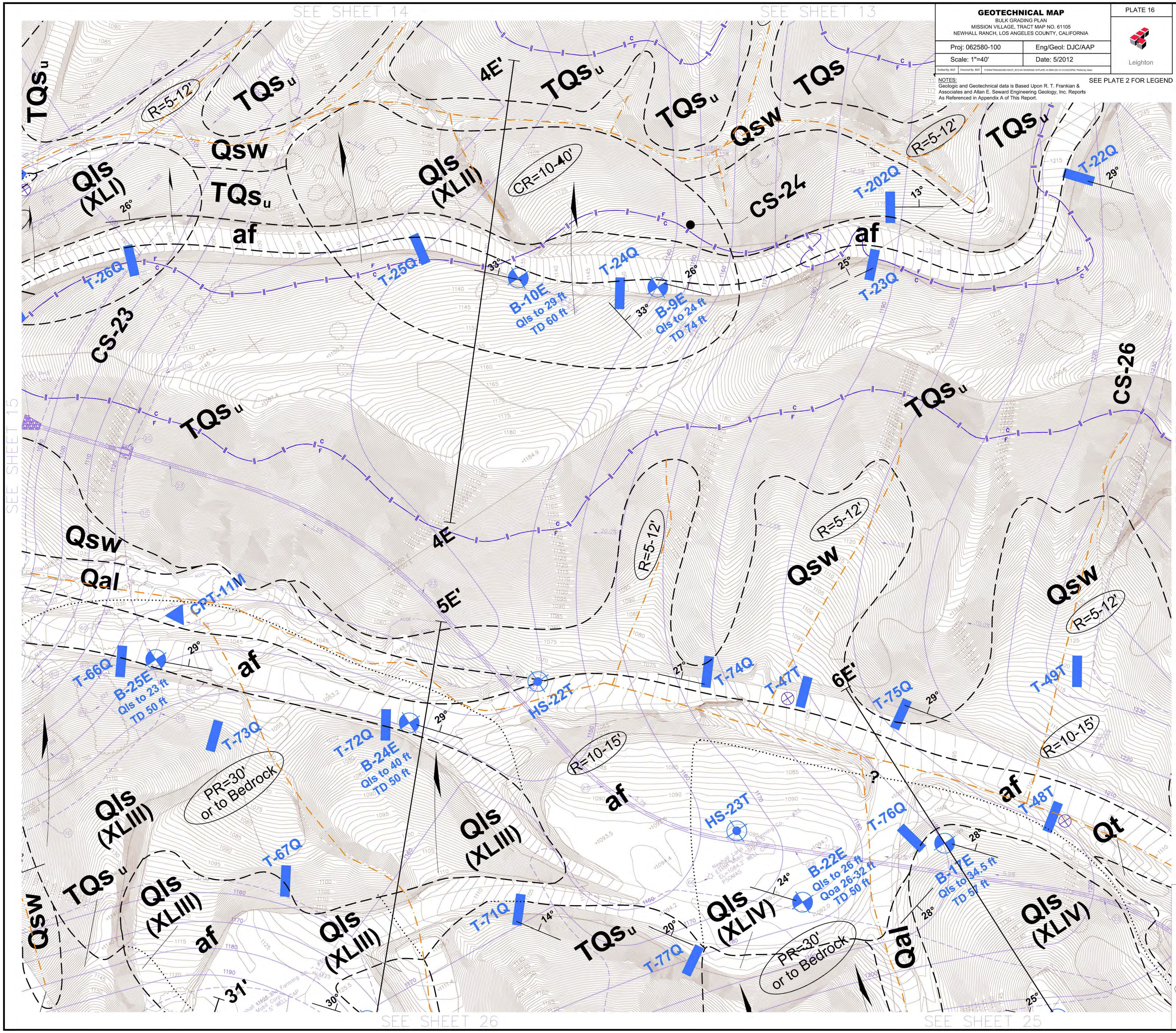
OWNER/DEVELOPER:
NEWHALL LAND

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 15 OF 41



GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BQT | Checked By: BQT

PLATE 16

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE PLATE 2 FOR LEGEND

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- 266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 4032103E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

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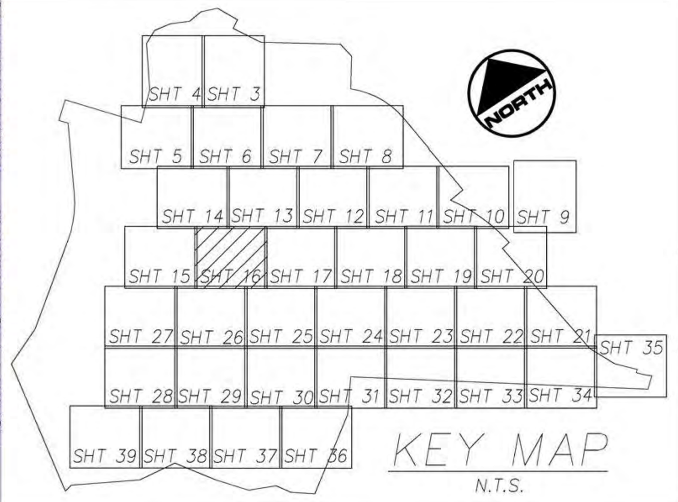
FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

JASON H. FUKUMITSU | DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 23, Valencia, CA 91355
FX: (661) 294-9890 PH: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 16
OF 41

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SEE SHEET 13

SEE SHEET 12

SEE SHEET 16

SEE SHEET 18

SEE SHEET 25

SEE SHEET 24

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 17

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPTER\062580100\GT_2012-04-16\MAPS\SS-17-PLATE-17.DWG (05-16-12 2:25:59PM) Plotted by: btran

Leighton

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- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
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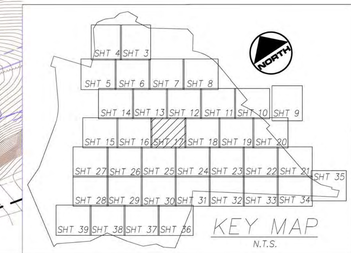
NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

RESPONSIBLE ENGINEER: YASUHIRO "JASON" FUKUMITSU, No. 69595, Exp. 3-31-13, CIVIL, STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 130, Valencia, CA 91355
PH: (661) 294-9990 FX: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 17
OF 41

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GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP	PLATE 18
Scale: 1"=40'	Date: 5/2012	Leighton

Drafted By: BQT | Checked By: BQT

NOTES:
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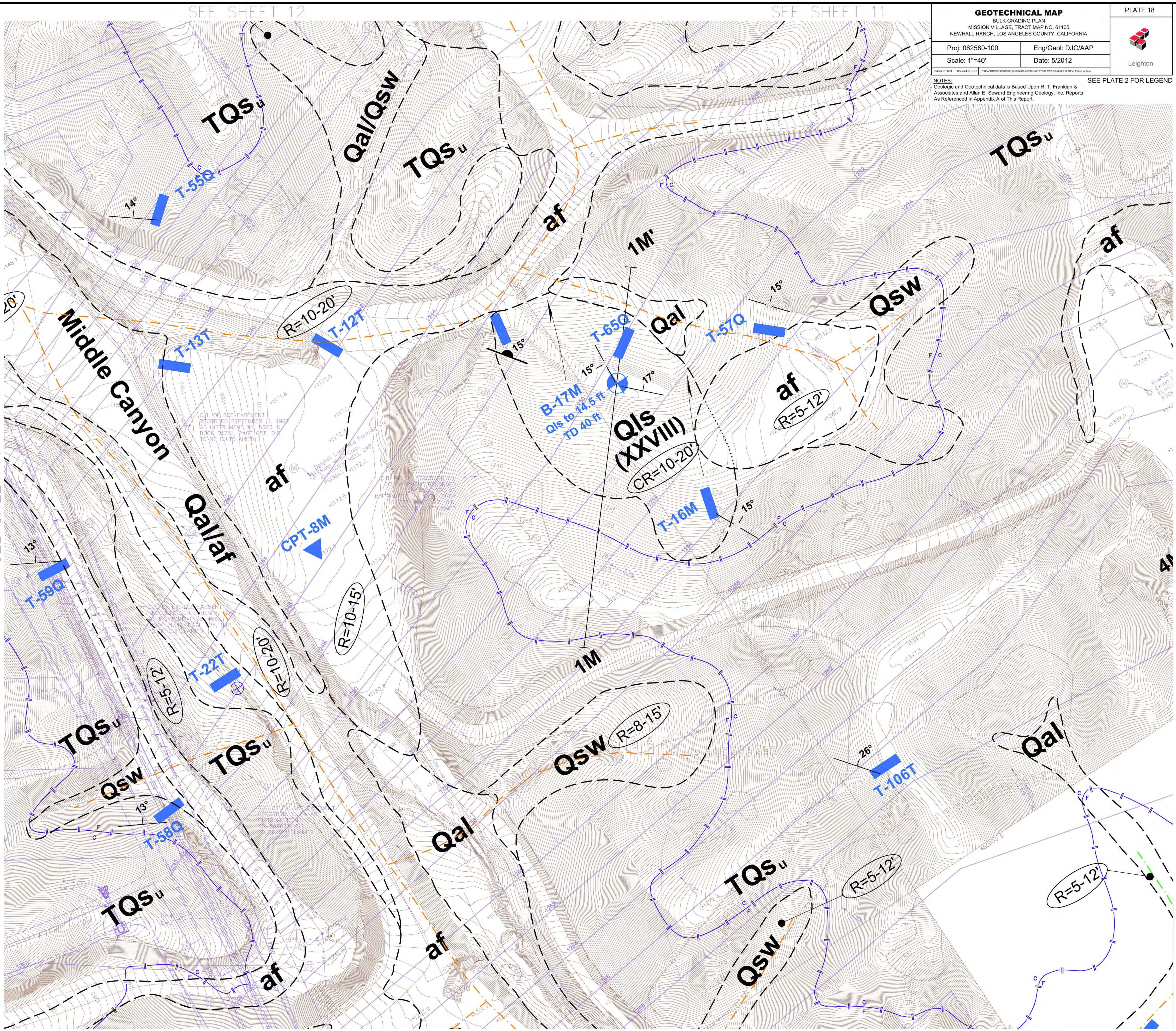
SEE PLATE 2 FOR LEGEND



LEGEND

- PROJECT BOUNDARY LINE
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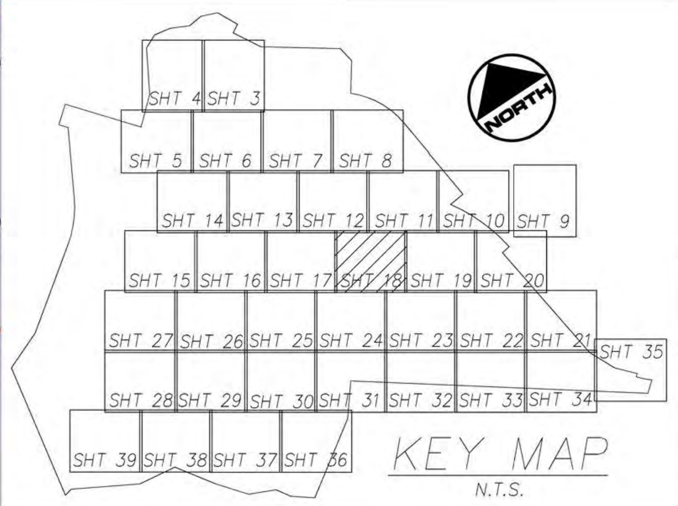

KEY MAP
N.T.S.

REVISIONS | NO. | DATE

JASON H. FUKUMITSU

PLANS PREPARED BY: HUNSAKER & ASSOCIATES LOS ANGELES, INC. PLANNING • ENGINEERING • SURVEYING

OWNER/DEVELOPER: NEWHALL LAND
25124 SPRINGFIELD CT. #300
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REPRESENTATIVE : MR. COREY HARPOLE

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LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 18
OF 41

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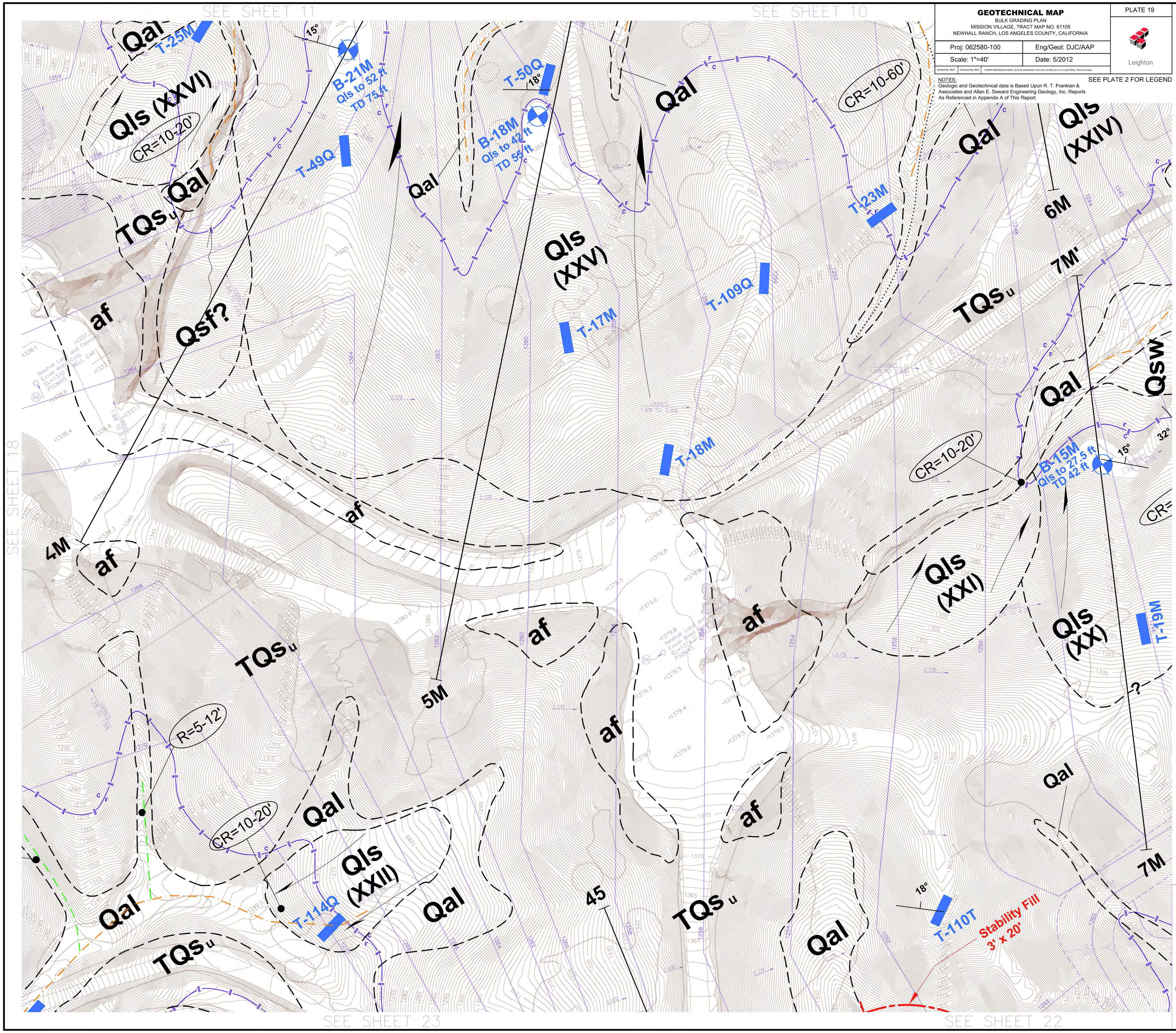

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

PLATE 19

Leighton

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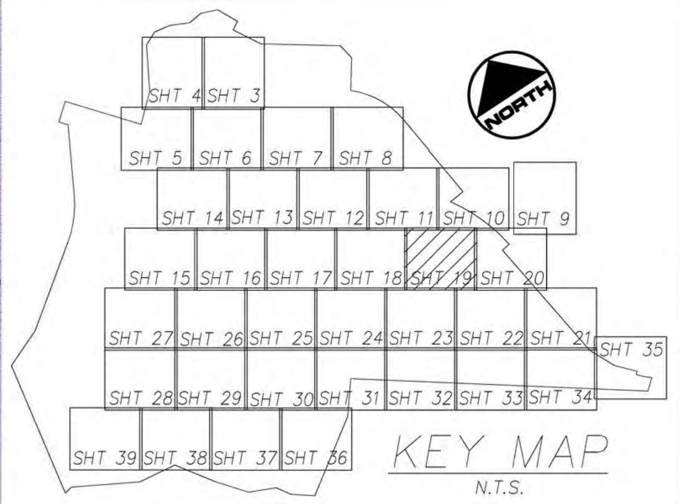
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'



REVISIONS

PLANS PREPARED BY: HUNSAKER & ASSOCIATES LOS ANGELES, INC.

OWNER/DEVELOPER: NEWHALL LAND

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 19 OF 41

SEE SHEET 10

SEE SHEET 9

SEE SHEET 19

SEE SHEET 22

SEE SHEET 21

GEOTECHNICAL MAP

BULK GRADING PLAN,
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 20

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAFTING\062580\100\GT_2012-04-16\HMAP\20-25 PLATE 20 (MAP).DWG (05-14-12 2:12:59 PM) | Plotted by: bbee

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE PLATE 2 FOR LEGEND

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% R PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- O266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

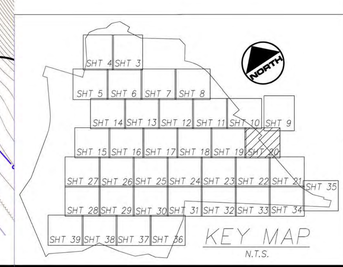
CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 3/40
4. CONSTRUCT 20' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 4/40
5. CONSTRUCT DOWN DRAIN PER DETAIL 5/40
6. CONSTRUCT RIP-RAP APRON PER DETAIL 6/40
7. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL 7/40
8. CONSTRUCT CONCRETE "V" DITCH PER DETAIL 8/40
9. CONSTRUCT SPLASH WALL PER DETAIL 9/40
10. CONSTRUCT TOP OF SLOPE BERM PER DETAIL 10/40
11. CONSTRUCT TOE DRAIN PER DETAIL 11/40
12. CONSTRUCT RIP-RAP INLET PER DETAIL 12/40
13. CONST. TOP OF SLOPE PROTECTION GUNITE CUT OFF WALL
14. CONSTRUCT TEMPORARY GUNITE DITCH PER DETAIL 14/40
15. CONST. TRANSITION/TERRACE TO PAVED DRAIN PER DETAIL 15/40
16. CONSTRUCT TEMPORARY SPILLWAY PER DETAIL 16/40
17. CONSTRUCT CMP RISER PER DETAIL 17/41
18. CONSTRUCT 16 GA. 48" CMP PIPE
19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL 19/41
20. CONST. PERM. SPILLWAY AND GUNITE DITCH PER DETAIL 20/41
21. CONSTRUCT GUNITE CHANNEL PER DETAIL 21/41
22. CONSTRUCT EARTH SWALE PER DETAIL 22/41
23. CONSTRUCT GUNITE SWALE PER DETAIL 23/41
24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL 25/41
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL 26/41

60. REMOVE OAK TREE
61. PROTECT OAK TREE IN PLACE
62. REMOVE POWER POLE, GUY WIRES AND POWER LINES
63. REMOVE EXISTING WATER TANK AND PUMP
64. REMOVE EXISTING WATER WELL AND PUMP
65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
68. REMOVE EXISTING FENCE
69. REMOVE EXISTING GATE
70. REMOVE EXISTING HEADWALL
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, CA 92618
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 210, Valencia, CA 91355
P: (661) 294-9880 F: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
(661) 255-4000
REPRESENTATIVE : MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 20
OF 41

RECOMMENDED: JASON H. FUKUMITSU, PROFESSIONAL ENGINEER, No. 69595, Exp. 3-31-13, CIVIL, STATE OF CALIFORNIA

DATE

JASON H. FUKUMITSU

K:\Grading\062580\100\GT_2012-04-16\MAPS\20-25 Plate 20.dwg Plotted on May 14, 2012 2:13pm by bbee

SEE SHEET 20

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 21

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPTRK\062580\100\GT_EIG\04-16\MISC\21-PLATE\21.DWG 05-14-12 2:19:13PM Plotted by: bbass

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- 266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

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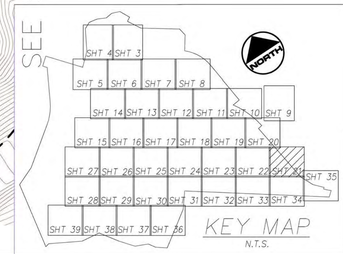
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES

SEE SHEET 35



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

JASON H. FUKUMITSU — DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
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FAX: (661) 294-9590 PH: (661) 294-2211

OWNER/DEVELOPER:
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25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4050
REPRESENTATIVE : MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 21
OF 41

SEE SHEET 22
SEE SHEET 34

I:\Grading\062580\100\GT_EIG\04-16\MISC\21-PLATE\21.dwg Plotted on May 14, 2012 - 2:19pm by bbass

SEE SHEET 19

SEE SHEET 20

SEE SHEET 23

SEE SHEET 21

SEE SHEET 33

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAFTING\062580\100\GT_2012-04-16\MAPS\25-22-PLATE-22.DWG (05-14-12 2:16:49PM) Plotted by: bbatt

PLATE 22

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

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74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET: 40' 20' 0 40' 80' (1 1/2 0 1 2)
INCHES

KEY MAP N.T.S.

SHT 4 SHT 3 | SHT 5 SHT 6 SHT 7 SHT 8 | SHT 14 SHT 13 SHT 12 SHT 11 SHT 10 SHT 9 | SHT 15 SHT 16 SHT 17 SHT 18 SHT 19 SHT 20 | SHT 27 SHT 26 SHT 25 SHT 24 SHT 23 SHT 22 SHT 21 SHT 35 | SHT 28 SHT 29 SHT 30 SHT 31 SHT 32 SHT 33 SHT 34 | SHT 39 SHT 38 SHT 37 SHT 36

REVISIONS

NO.	DATE

RECOMMENDED FOR APPROVAL: JASON H. FUKUMITSU, CIVIL, No. 69595, Exp. 3-31-13, STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 206, Valencia, CA 91355
PH: (661) 294-2211 FX: (661) 294-8890

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
(661) 255-4000 REPRESENTATIVE : MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 22
OF 41

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SEE SHEET 18

SEE SHEET 19

SEE SHEET 24

SEE SHEET 22

SEE SHEET 32

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 23

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPTEK\062580\100GT_2012-04-16\MAPS\23-PLATE-23.DWG (05-14-12 2:20:37PM) Plotted by: bbarr

Leighton

NOTES:
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SEE LEGEND ON PLATE 2

LEGEND

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- RIP-RAP
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CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

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NORTH

FEET: 40' 20' 0 40' 80'
INCHES: 1 1/2 0 1 2

SHT 4 SHT 3
SHT 5 SHT 6 SHT 7 SHT 8
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SHT 28 SHT 29 SHT 30 SHT 31 SHT 32 SHT 33 SHT 34
SHT 39 SHT 38 SHT 37 SHT 36

KEY MAP
N.T.S.

REVISIONS | NO. | DATE

RESIDENTIAL ENGINEER * JASON H. FUKUMITSU * No. 49995 * Exp. 3-31-13 * CIVIL * STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

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MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 23 OF 41

C:\Grading\062580\100\GT_2012-04-16\MAPS\23-PLATE-23.dwg Plotted on May 14, 2012 - 2:20pm by bbarr

SEE SHEET 17

SEE SHEET 18

SEE SHEET 25

SEE SHEET 23

SEE SHEET 31

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 24

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAFTING\062580100\GT_2012-04-16\MAPS\24-PLATE-24.DWG (05-14-12 2:22:02PM) Plotted by: btran

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- 266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

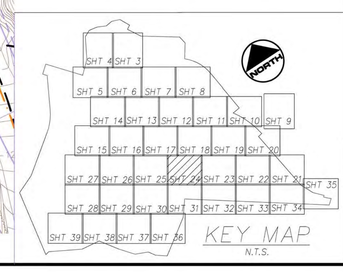
CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 3/40
4. CONSTRUCT 20' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 4/40
5. CONSTRUCT DOWN DRAIN PER DETAIL 5/40
6. CONSTRUCT RIP-RAP APRON PER DETAIL 6/40
7. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL 7/40
8. CONSTRUCT CONCRETE "V" DITCH PER DETAIL 8/40
9. CONSTRUCT SPLASH WALL PER DETAIL 9/40
10. CONSTRUCT TOP OF SLOPE BERM PER DETAIL 10/40
11. CONSTRUCT TOE DRAIN PER DETAIL 11/40
12. CONSTRUCT RIP-RAP INLET PER DETAIL 12/40
13. CONST. TOP OF SLOPE PROTECTION GUNITE CUT OFF WALL
14. CONSTRUCT TEMPORARY GUNITE DITCH PER DETAIL 14/40
15. CONST. TRANSITION/TERRACE TO PAVED DRAIN PER DETAIL 15/40
16. CONSTRUCT TEMPORARY SPILLWAY PER DETAIL 16/40
17. CONSTRUCT CMP RISER PER DETAIL 17/41
18. CONSTRUCT 16 GA. 48" CMP PIPE
19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL 19/41
20. CONST. PERM. SPILLWAY AND GUNITE DITCH PER DETAIL 20/41
21. CONSTRUCT GUNITE CHANNEL PER DETAIL 21/41
22. CONSTRUCT EARTH SWALE PER DETAIL 22/41
23. CONSTRUCT GUNITE SWALE PER DETAIL 23/41
24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL 25/41
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL 26/41

60. REMOVE OAK TREE
61. PROTECT OAK TREE IN PLACE
62. REMOVE POWER POLE, GUY WIRES AND POWER LINES
63. REMOVE EXISTING WATER TANK AND PUMP
64. REMOVE EXISTING WATER WELL AND PUMP
65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
68. REMOVE EXISTING FENCE
69. REMOVE EXISTING GATE
70. REMOVE EXISTING HEADWALL
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET: 40' 20' 0 40' 80' (1 1/2 0 1 2 INCHES)



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

RESCINDED PROFESSIONAL ENGINEER * YIMING H. FUKUMITSU * EXP. 3-31-13 * CIVIL * STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite #200, Valencia, CA 91355
PH: (661) 294-9580 FX: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
PHONE: (661) 255-4050
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 24 OF 41

Updating V:\062580\100\GT_2012-04-16\MAPS\24-Plate-24.dwg Plotted on May 14, 2012 - 2:22pm by btran

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

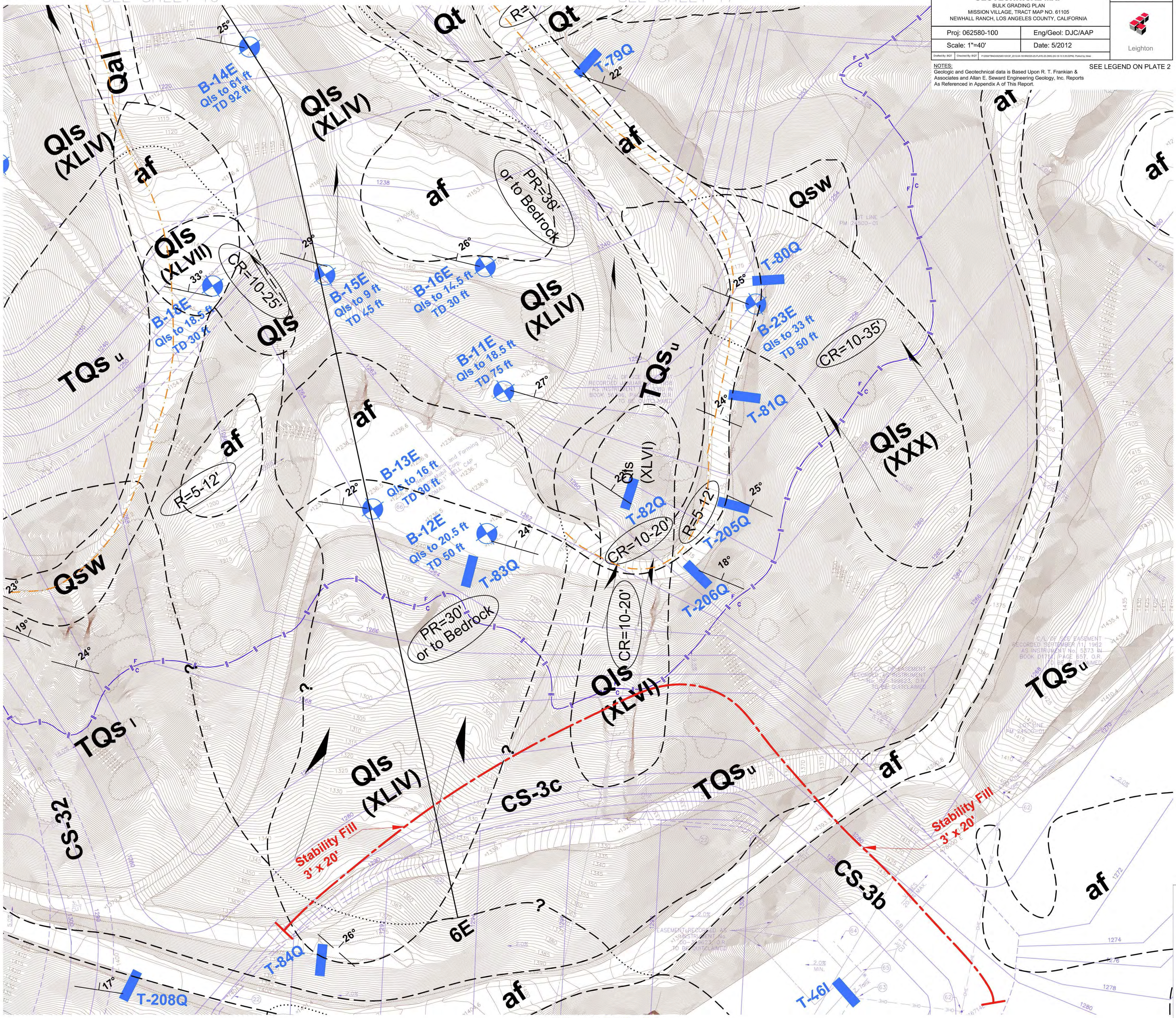
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

PLATE 25

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2



LEGEND

PROJECT BOUNDARY LINE
FUTURE RIGHT OF WAY
EXISTING RIGHT OF WAY
PROPOSED EASEMENT
EXISTING EASEMENT
PROPOSED CONTOUR
EXISTING CONTOUR
DAYLIGHT LINE
CUT & FILL LINE
SLOPE (RATIO PER PLAN)
PROPOSED SURFACE GRADE
RIDGE LINE
FLOW LINE
EXISTING CHAINLINK FENCE
EXISTING STORM DRAIN LINE
EXISTING WATER LINE
EXISTING GAS LINE
EXISTING OVERHEAD ELECTRIC LINE
ARMY CORPS OF ENGINEERS JURISDICTION
CA DEPT. OF FISH AND GAME JURISDICTION
EXISTING FLOODWAY
EXISTING FLOODPLAIN
SEA RIVER CORRIDOR
FEMA ZONE
EXISTING OAK TREE AND NUMBER
EXISTING OIL WELL (DIGITIZED)
EXISTING OIL WELL (SURVEYED)
EXISTING POWER POLE AND I.D.
RIP-RAP
CONCRETE STRUCTURE OR SURFACE
DETAIL NUMBER
SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

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73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'
INCHES 1/2 0 1 2

KEY MAP
N.T.S.

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING

OWNER/DEVELOPER:
NEWHALL LAND

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

REVISIONS | NO. | DATE

PERMIT NO.

SHEET 25
OF 41

SEE SHEET 15

SEE SHEET 16

SEE SHEET 27

SEE SHEET 25

SEE SHEET 29

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 26

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPTING\062580100\GT_2012-04-16\WORK\25-26-PLATE-26.DWG (05-16-12 2:27:01PM) Plotted by: bbarr

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPOSED CONTOUR
- EXISTING CONTOUR
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- CUT & FILL LINE
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- FLOW LINE
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- EXISTING STORM DRAIN LINE
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD ELECTRIC LINE
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- CA DEPT. OF FISH AND GAME JURISDICITON
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- EXISTING FLOODPLAIN
- SEA RIVER CORRIDOR
- FEMA ZONE
- EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

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73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET: 40' 20' 0 40' 80'
INCHES: 1 1/2 0 1 2

SHT 4 SHT 3
SHT 5 SHT 6 SHT 7 SHT 8
SHT 14 SHT 13 SHT 12 SHT 11 SHT 10 SHT 9
SHT 15 SHT 16 SHT 17 SHT 18 SHT 19 SHT 20
SHT 27 SHT 26 SHT 25 SHT 24 SHT 23 SHT 22 SHT 21 SHT 35
SHT 28 SHT 29 SHT 30 SHT 31 SHT 32 SHT 33 SHT 34
SHT 39 SHT 38 SHT 37 SHT 36

KEY MAP
N.T.S.

REVISIONS

NO.	DATE

RECOMMENDED: JASON H. FUKUMITSU, PROFESSIONAL ENGINEER, Exp. 3-31-13, No. 68995, CIVIL, STATE OF CALIFORNIA

JASON H. FUKUMITSU — DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC.
LOS ANGELES, PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 210, Valencia, CA 91355
Ph: (661) 294-9880 Fx: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
PHONE: (661) 255-4000
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 26
OF 41

P:\grading\062580\100\WORK\2012-04-16\WORK\25-26-Hsks-26.dwg Plotted on May 14, 2012 - 2:27pm by bbarr

SEE SHEET 15

SEE SHEET 16

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 27

Leighton

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPTING\062580100\GT_2012-04-16\MM\GS-01-PLATE-01.DWG 05-14-12 2:31:57 PM, Plotted by: bmarin

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
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- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
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FL	FLOW LINE		

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72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING [illegible] FOUNDATION
74. REMOVE EXISTING [illegible] ASHED
75. REMOVE EXISTING [illegible] CEMENT

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES

N.A.P.

Qal

Qsf

Qsf?

Qsf?

Qt

Qsw

TQs l

TQs u

TQs l

Qls (Ll)

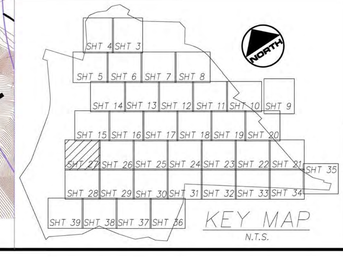
af

Restricted Use Area (RUA)

T-126Q
T-81T
T-125Q
T-124Q
T-78T
T-79T
T-80T
T-82T
T-83T
T-130Q
B-63E casing to 4 ft TD 120 ft.
Stability Fill 5' x 30'
CS-28a
1E
2'
24
35
35'
26°
27°
25°
30°
22°
28°

SEE SHEET 26

SEE SHEET 28



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

RESIDENT ENGINEER * JASON H. FUKUMITSU * Exp. 3-31-13 * No. 49595 * CIVIL * STATE OF CALIFORNIA

JASON H. FUKUMITSU | DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite #2, Valencia, CA 91355
FX: (661) 294-9890 PH: (661) 294-2211

OWNER/DEVELOPER:
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REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 27
OF 41

P:\grading\062580\100\GT_2012-04-16\MM\GS-01-Plate-27.dwg Plotted on May 14, 2012 - 2:31pm by bmarin

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012
Drafted By: BQT	Checked By: BQT

PLATE 28

Leighton

NOTES:
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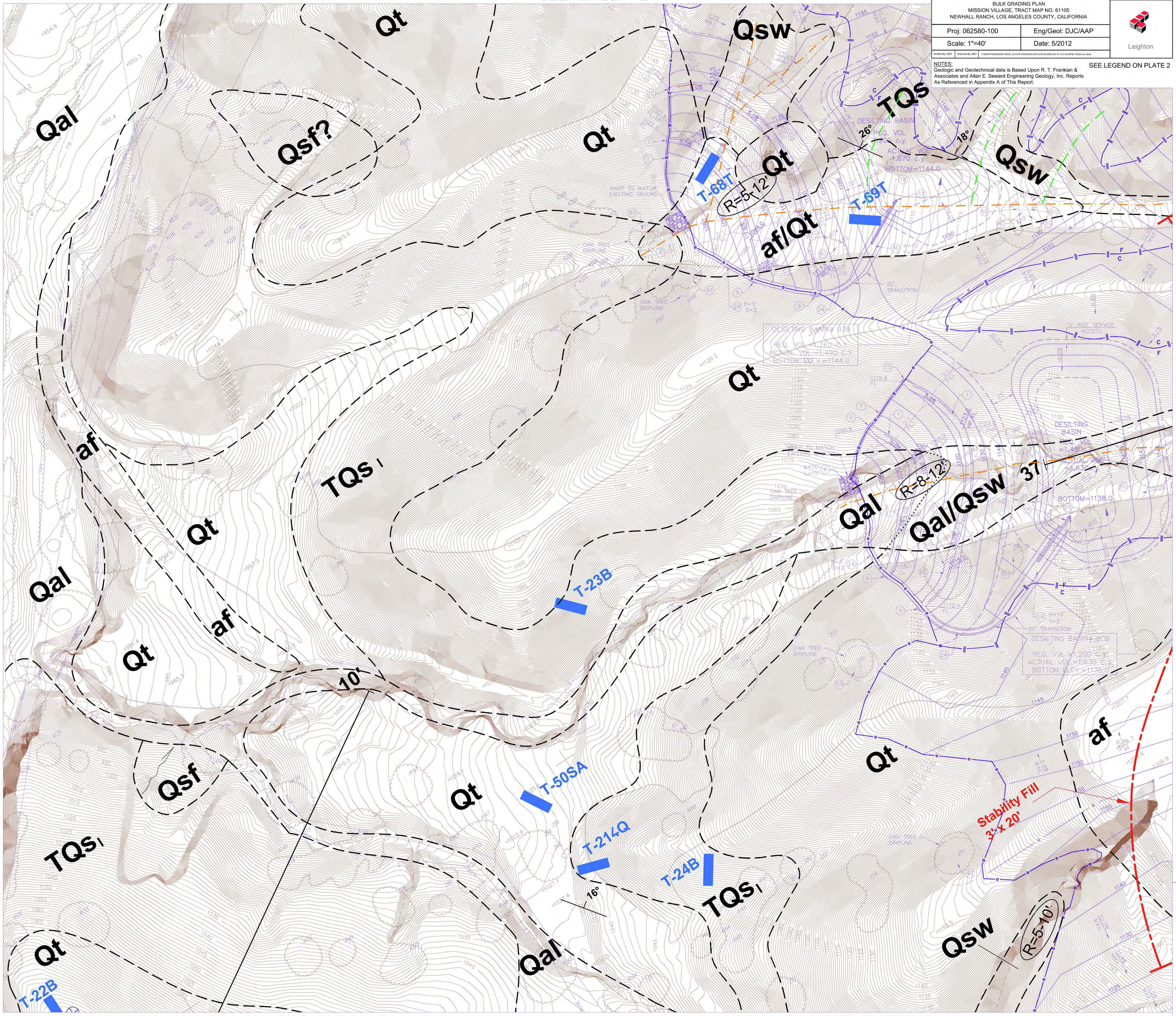
SEE LEGEND ON PLATE 2

SEE SHEET 27



SEE SHEET 39
SEE SHEET 38
SEE SHEET 29

LEGEND

PROJECT BOUNDARY LINE
FUTURE RIGHT OF WAY
EXISTING RIGHT OF WAY
PROPOSED EASEMENT
EXISTING EASEMENT
1100 PROPOSED CONTOUR
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SD EXISTING STORM DRAIN LINE
W EXISTING WATER LINE
GAS EXISTING GAS LINE
OHE EXISTING OVERHEAD ELECTRIC LINE
ACOE ARMY CORPS OF ENGINEERS JURISDICITON
CDFG CA DEPT. OF FISH AND GAME JURISDICITON
FP EXISTING FLOODWAY
FW EXISTING FLOODPLAIN
SEA23 SEA RIVER CORRIDOR
FEMA FEMA ZONE

266 EXISTING OAK TREE AND NUMBER
EXISTING OIL WELL (DIGITIZED)
EXISTING OIL WELL (SURVEYED)
4032103E EXISTING POWER POLE AND I.D.
RIP-RAP
CONCRETE STRUCTURE OR SURFACE
1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 3/40
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61. PROTECT OAK TREE IN PLACE
62. REMOVE POWER POLE, GUY WIRES AND POWER LINES
63. REMOVE EXISTING WATER TANK AND PUMP
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65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
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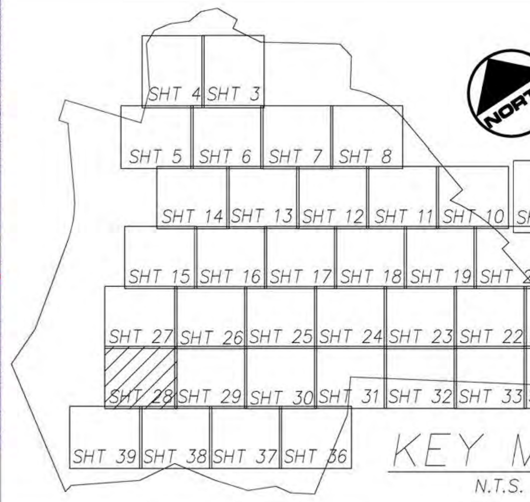
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2



KEY MAP
N.T.S.

REVISIONS | DATE | NO.

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING ENGINEERING SURVEYING
26074 Avenue Hall, Suite 23, Valencia, CA 91355
PH: (661) 294-9890 FX: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

P:\Drafting\062580\100\of_2012-04-16\HMV025-28-Plate-28.dwg Plotted on May 14, 2012-2:30pm by btran

SEE SHEET 26

SEE SHEET 28

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPHICS\062580\100GT_2012-04-16\MXD\GS-25-PLATE-29.DWG (05-14-12 2:39:23 PM) Plotted by: bsaw

PLATE 29

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

TQs
TQs
Qsw
R=5-12'
TQs
R=5-10'
TQs
CS-32
CS-35
Stability Fill
5' x 45'
37'
(Highest Fill Slope)
Qt
R=8-12'
Qal/Qsw
Qsf
R=10-15'
Qsf
R=10-15'
TQs
Qt?
T-28B
25°
Fill over cut
R/R CS-33
20°
Qt
Stability Fill
3' x 20'
CS-33
22°
CS-37
CS-34
T-132Q
Stability Fill
5' x 25'
B-7B
Qt to 109 ft
TD 109 ft
Qt
af
Stability Fill
5' x 30'
T-65T
T-14B
af
Qal
T-66T
T-133Q
25°
Qal
R=8-12'
T-27B
SA-2
TQs
T-134Q
22°
Qsw
18°
B-8B
Qt 0-34 ft
Qt/Qosw 34-76.5 ft
TD 76.5 ft
Qt
af
TQs
LA-3'
CS-42

SEE SHEET 38

SEE SHEET 37

SEE SHEET 30

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
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- EXISTING OIL WELL (SURVEYED)
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- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

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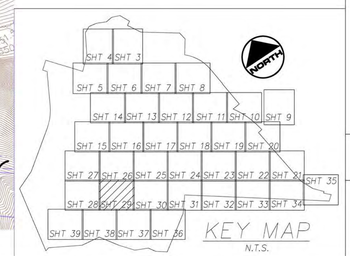
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES



KEY MAP
N.T.S.

REVISIONS

NO.	DATE

RESIDENT ENGINEER
JASON H. FUKUMITSU
No. 49595
Exp. 3-31-13
CIVIL
STATE OF CALIFORNIA

JASON H. FUKUMITSU — DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 210, Valencia, CA 91355
PH: (661) 294-9880 FX: (661) 294-2211

OWNER/DEVELOPER:
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VALENCIA, CALIFORNIA 91355
ATTN: MR. COREY HARPOLE
REPRESENTATIVE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 29
OF 41

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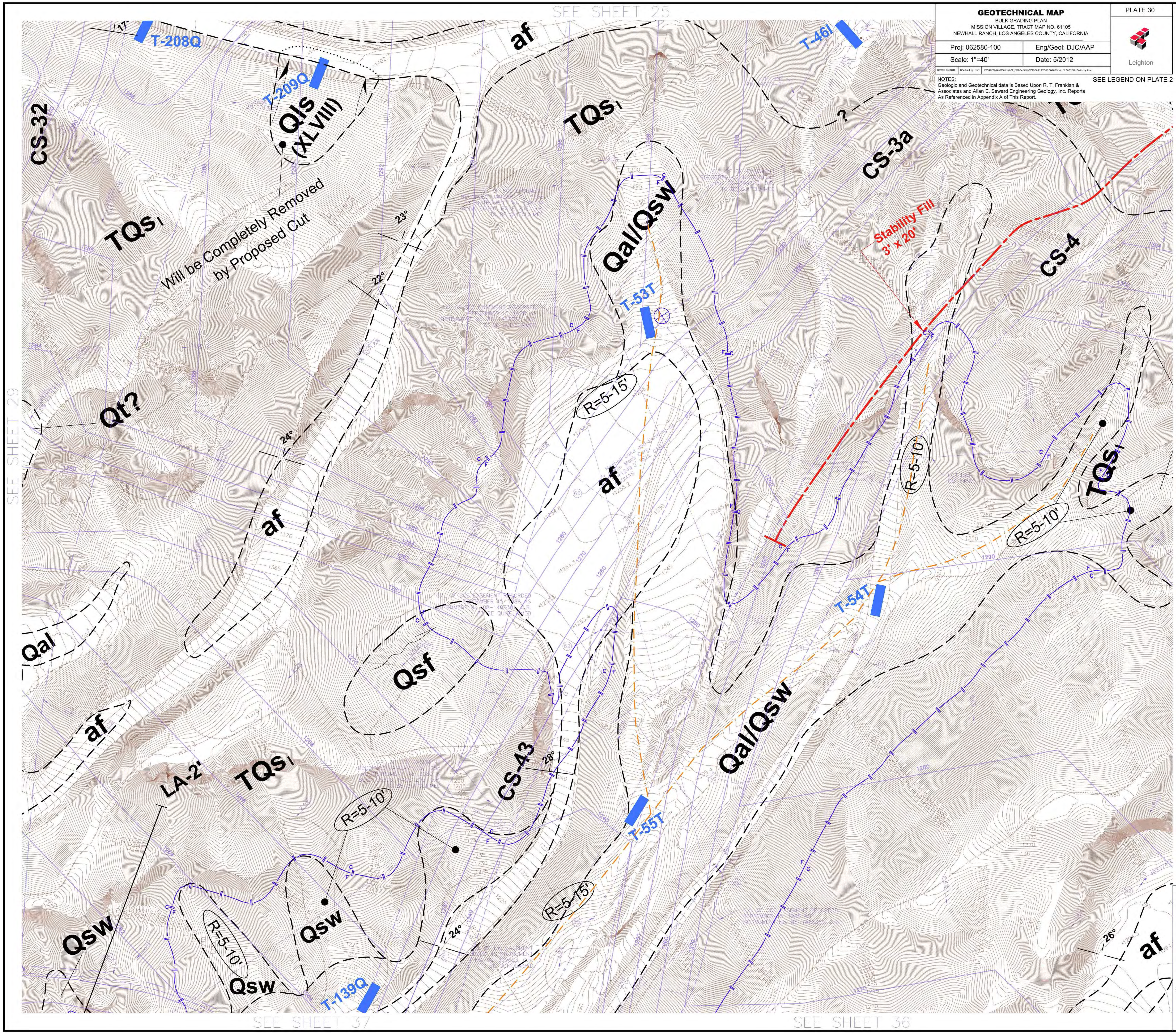

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 30

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Leighton

NOTES:
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SEE LEGEND ON PLATE 2

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
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- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
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- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

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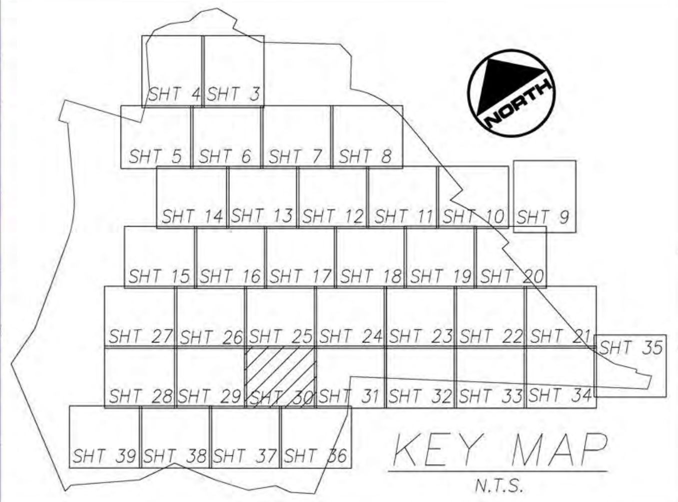
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET: 40' 20' 0 40' 80'
INCHES: 1 1/2 0 1 2



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

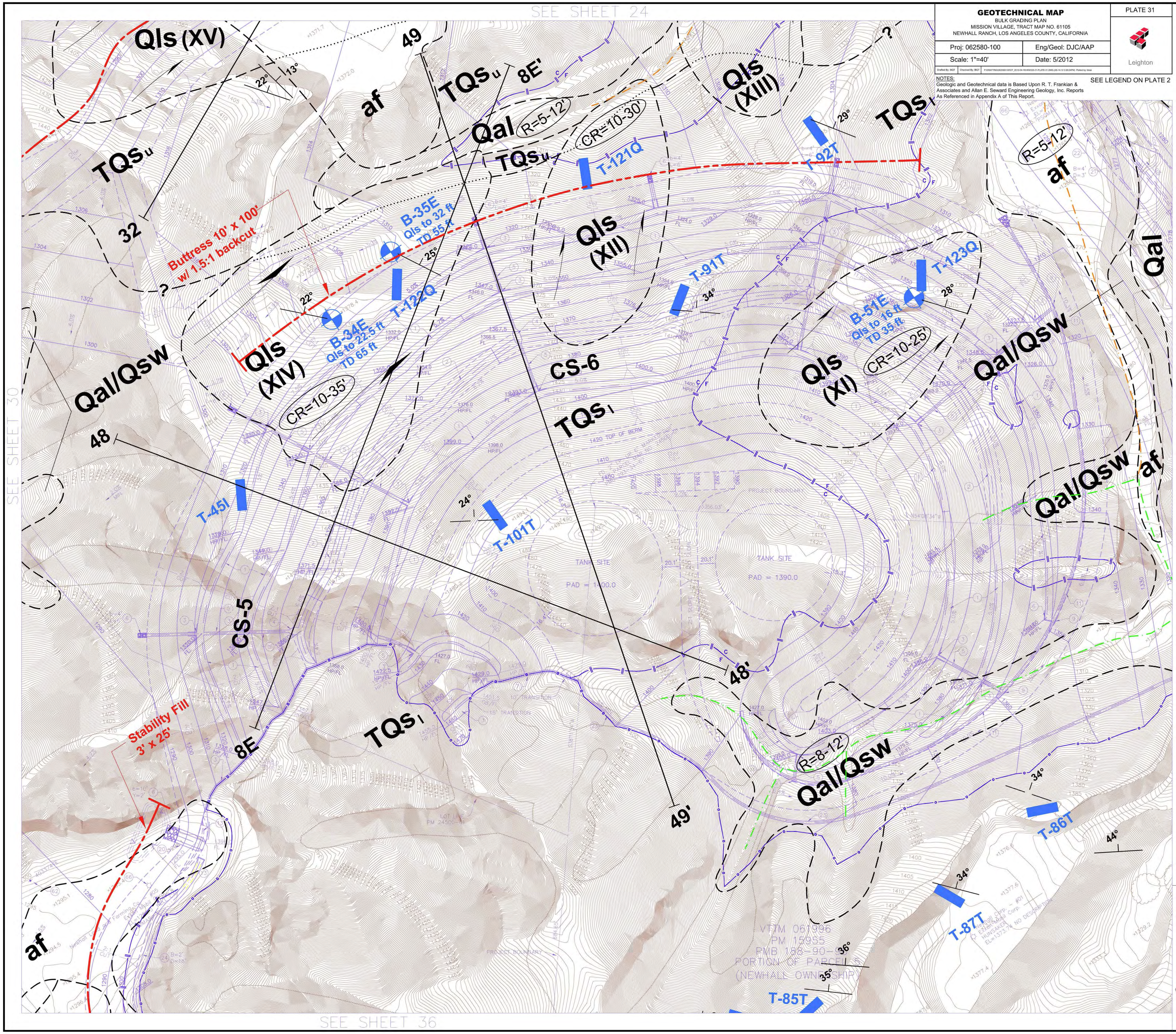
PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING

OWNER/DEVELOPER:
NEWHALL LAND

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 30 OF 41



GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 31

Leighton

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BQT | Checked By: BQT

NOTES:
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SEE LEGEND ON PLATE 2

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FUTURE RIGHT OF WAY
EXISTING RIGHT OF WAY
PROPOSED EASEMENT
EXISTING EASEMENT
1100 PROPOSED CONTOUR
1100 EXISTING CONTOUR
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CUT & FILL LINE
SLOPE (RATIO PER PLAN)
2.5% PROPOSED SURFACE GRADE
R RIDGE LINE
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EXISTING CHAINLINK FENCE
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CONCRETE STRUCTURE OR SURFACE
1/40 DETAIL NUMBER / SHEET NUMBER

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INV	INVERT ELEVATION	HP	HIGH POINT
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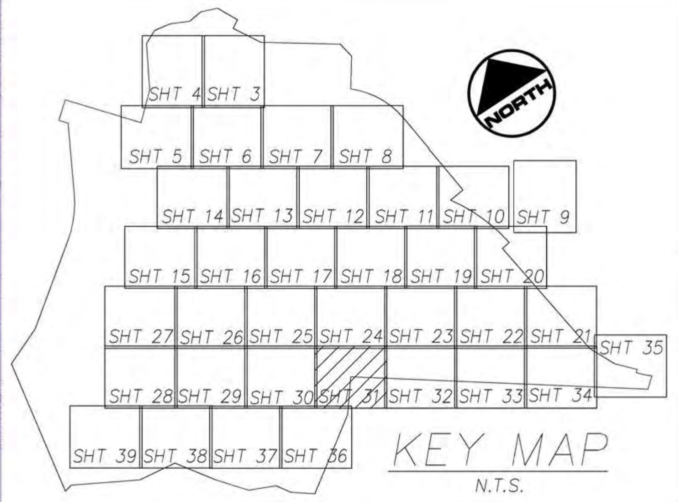
FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2



KEY MAP
N.T.S.

REVISIONS
NO. DATE

JASON H. FUKUMITSU
DATE

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PERMIT NO.

SHEET 31
OF 41

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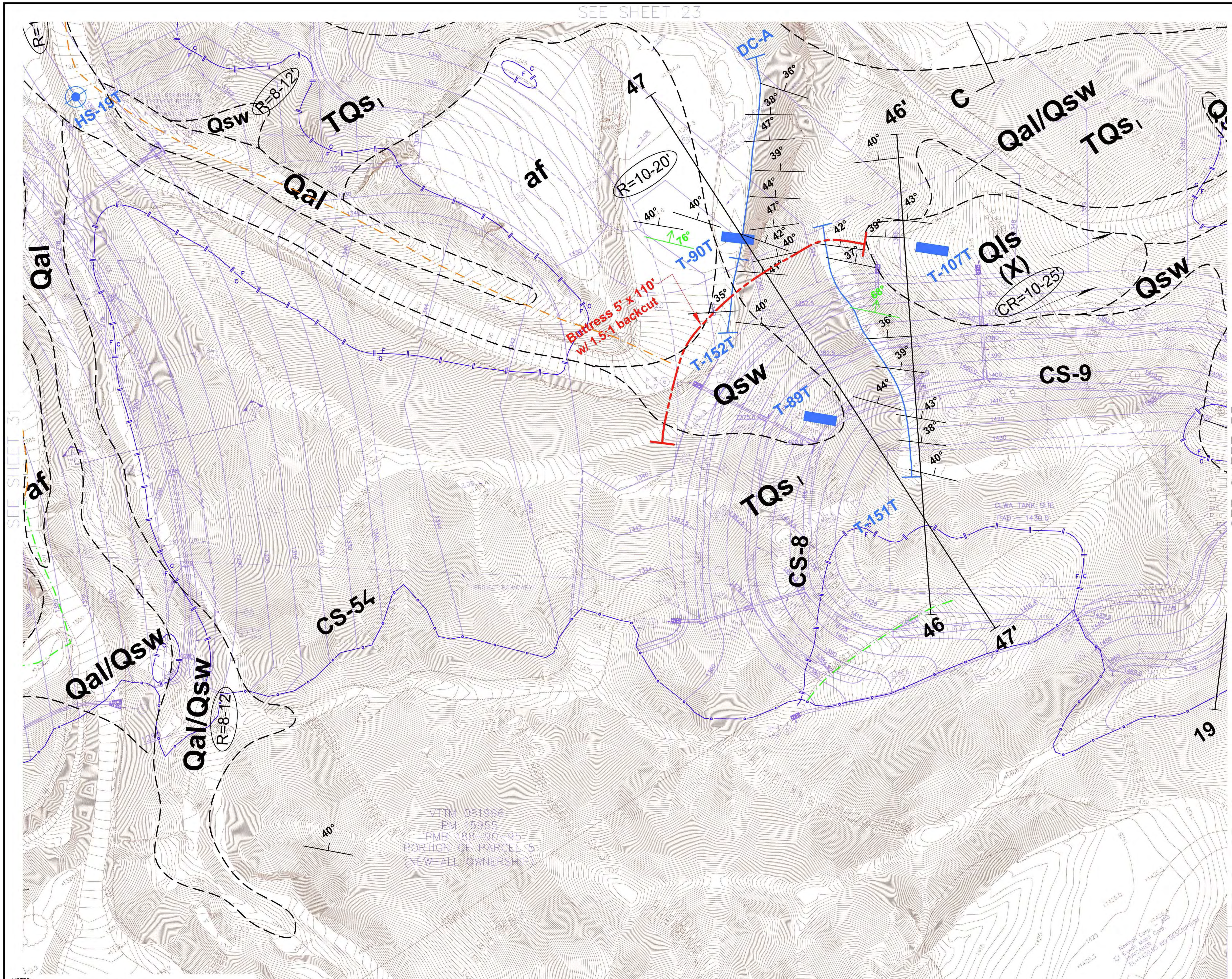

LEGEND

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EXISTING RIGHT OF WAY
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EXISTING EASEMENT
PROPOSED CONTOUR
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4. CONSTRUCT 20' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 4/40
5. CONSTRUCT DOWN DRAIN PER DETAIL 5/40
6. CONSTRUCT RIP-RAP APRON PER DETAIL 6/40
7. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL 7/40
8. CONSTRUCT CONCRETE "V" DITCH PER DETAIL 8/40
9. CONSTRUCT SPLASH WALL PER DETAIL 9/40
10. CONSTRUCT TOP OF SLOPE BERM PER DETAIL 10/40
11. CONSTRUCT TOE DRAIN PER DETAIL 11/40
12. CONSTRUCT RIP-RAP INLET PER DETAIL 12/40
13. CONST. TOP OF SLOPE PROTECTION GUNITE CUT OFF WALL
14. CONSTRUCT TEMPORARY GUNITE DITCH PER DETAIL 14/40
15. CONST. TRANSITION/TERRACE TO PAVED DRAIN PER DETAIL 15/40
16. CONSTRUCT TEMPORARY SPILLWAY PER DETAIL 16/40
17. CONSTRUCT CMP RISER PER DETAIL 17/41
18. CONSTRUCT 16 GA. 48" CMP PIPE
19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL 19/41
20. CONST. PERM. SPILLWAY AND GUNITE DITCH PER DETAIL 20/41
21. CONSTRUCT GUNITE CHANNEL PER DETAIL 21/41
22. CONSTRUCT EARTH SWALE PER DETAIL 22/41
23. CONSTRUCT GUNITE SWALE PER DETAIL 23/41
24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL 25/41
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL 26/41

60. REMOVE OAK TREE
61. PROTECT OAK TREE IN PLACE
62. REMOVE POWER POLE, GUY WIRES AND POWER LINES
63. REMOVE EXISTING WATER TANK AND PUMP
64. REMOVE EXISTING WATER WELL AND PUMP
65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
68. REMOVE EXISTING FENCE
69. REMOVE EXISTING GATE
70. REMOVE EXISTING HEADWALL
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2

KEY MAP
N.T.S.

PLANS PREPARED BY: HUNSAKER & ASSOCIATES LOS ANGELES, INC.

OWNER/DEVELOPER: NEWHALL LAND

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 32 OF 41

P:\Drafting\062580\100\of_2012-04-16\HMV025-32-Plate-32.dwg Plotted on May 14, 2012-2:46pm by btran

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

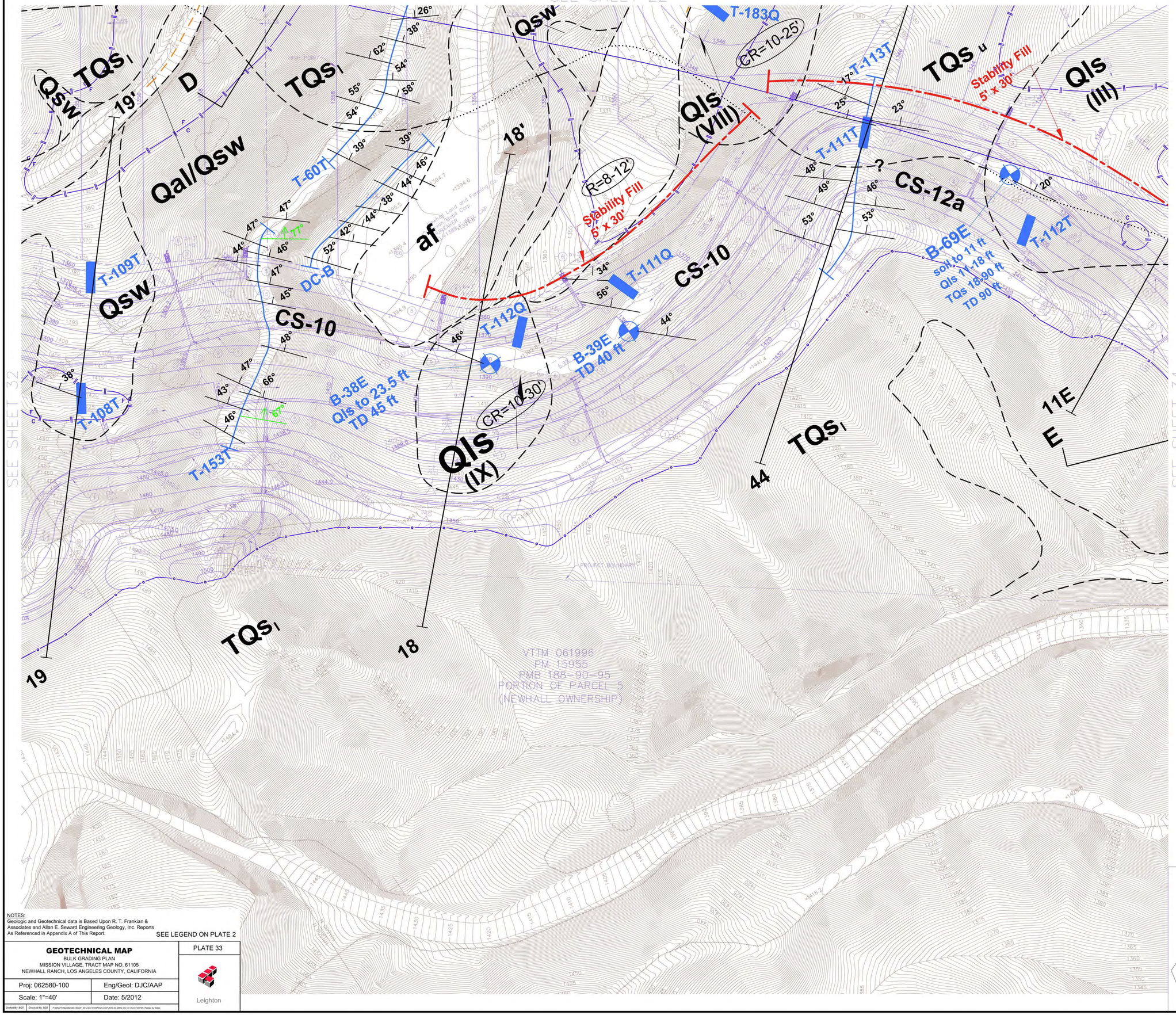
GEOTECHNICAL MAP BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA	PLATE 32
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Leighton

SEE SHEET 22

SEE SHEET 32

SEE SHEET 34



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SEE LEGEND ON PLATE 2

GEOTECHNICAL MAP
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 33

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Leighton

Drafted By: BGT | Checked By: BGT | P:\GRAPHICS\062580\100\DGT_2012-04-16\WORDS\33-PLATE-33.DWG (05-14-12 2:47:00PM) Plotted by: bbian

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- O266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
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19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL 19/41
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71. REMOVE EXISTING PIPE
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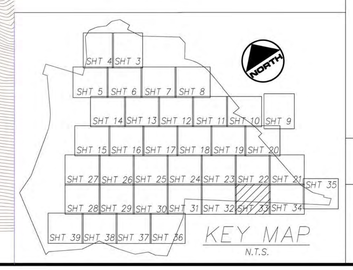
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET: 40' 20' 0 40' 80'
INCHES: 1 1/2 0 1 2



KEY MAP
N.T.S.

REVISIONS | NO. | DATE

PROFESSIONAL ENGINEER ★ YUKIMITSU FUKUMITSU ★ Exp. 3-31-13 CIVIL STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 210, Valencia, CA 91355
PH: (661) 294-9930 FX: (661) 294-2211

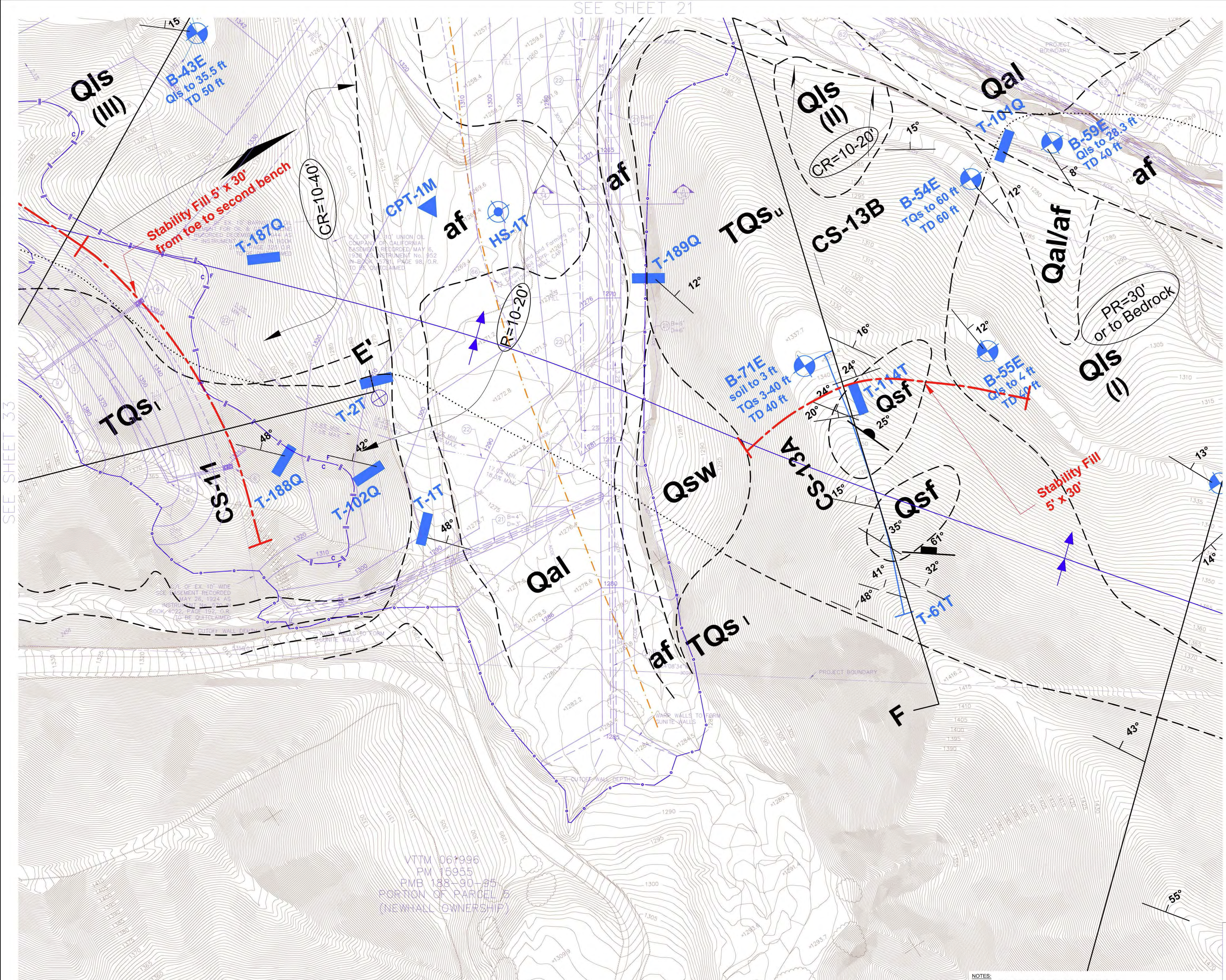
OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT. #300
VALENCIA, CALIFORNIA 91355
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 33
OF 41

I:\grading\062580\100\DGT_2012-04-16\WORDS\33-Plate-33.dwg Plotted on May 14, 2012 - 2:47pm by bbian



LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
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- FW EXISTING FLOODPLAIN
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- FEMA FEMA ZONE
- O266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 4032103E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

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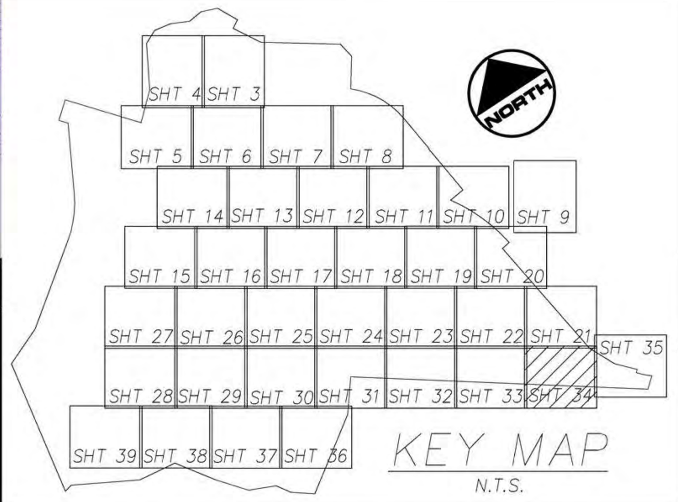
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'



NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

GEOTECHNICAL MAP BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA		PLATE 34
Proj: 062580-100	Eng/Geol: DJC/AAP	Leighton
Scale: 1"=40'	Date: 5/2012	

Drafted By: BQT | Checked By: BQT

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 23 Valencia, CA 91355
FX: (661) 294-9890 PH: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. COREY HARPOLE

JASON H. FUKUMITSU

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 34 OF 41

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GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 35

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPTING\062580100\GT_2012-04-16\MAPS\S-35-PLATE-35.DWG (05-14-12 2:36:21 PM) Plotted by: bman

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

SEE SHEET 21

SEE SHEET 34

VTTM 53295
L.S. 27-32-39
PORTION OF
LOTS 15 & 16
(NEWHALL OWNERSHIP)

VTTM 061996
PM 15955
PMB 188-90-95
PORTION OF PARCEL 5
(NEWHALL OWNERSHIP)

TR 45433

13E'
14E'
15E'

af
Qallaf
Qal
Qls
(I)
Qls A
(Westridge)
TQs u
Cef (RTF&A)

B-50E
Qls to 23.5 ft
TD 75 ft

B-57E
Qal to 29 ft
TD 30 ft

B-53E
Qls to 25.5 ft
TD 65 ft

B-49E
Qls to 18.6 ft
TD 70 ft

B-58E
Qls to 44 ft
TD 65 ft

B-48E
Qls to 45 ft
TD 70 ft

B-56E
Qls to 57 ft
TD 65 ft

RTF B-4
RTF B-3
RTF B-2
RTF B-5

16°
10°
12°
13°
14°
11°
15°
26
25
26'
25'

T-100Q
T-99Q

PR=30'
or to Bedrock

R=10-20'

Approximate Limit of Removals
Qls
(I)
To Remain

Approximate Location
of 30" High
Pressure Gas Line

Refer to RTF&A report dated 6/3/02 for Westridge for RTF boring logs

EX. SCE EASEMENT RECORDED APRIL 13, 1925 IN INSTRUMENT NO. 1125 IN BOOK 3307, PAGE 67, AND FOR ROADWAY PURPOSES BY EASEMENT RECORDED NOV. 29, 1947 AS INSTRUMENT NO. 20, BOTH O.R. TO REMAIN

EX. SCE EASEMENT RECORDED JULY 12, 1966 AS INSTRUMENT No. 2017 IN BOOK 5963, PAGE 479, O.R. TO REMAIN

EX. PACIFIC LIGHTING SERVICE COMPANY EASEMENT FOR 34" GAS PIPELINE RECORDED APRIL 13, 1971 AS INSTRUMENT No. 2154, BOOK D5024, PAGE 894, O.R. TO REMAIN

EX. EASEMENT TO THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT FOR ACCESS PURPOSES RECORDED IN BOOK 45433, PAGE 97, O.R. TO REMAIN

EX. SCE EASEMENT RECORDED FEBRUARY 10, 1926 AS INSTRUMENT NO. 1921 IN BOOK 7654, PAGE 11, O.R. TO REMAIN

EX. HIGH VOLTAGE OVERHEAD ELECTRIC LINES

EX. SCE EASEMENT RECORDED JANUARY 12, 1931 AS INSTRUMENT No. 312 IN BOOK 10833, PAGE 47, O.R. TO REMAIN

EX. HIGH VOLTAGE OVERHEAD ELECTRIC LINES

PROJECT BOUNDARY

WESTRIDGE PARKWAY

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% R PROPOSED SURFACE GRADE RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
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R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
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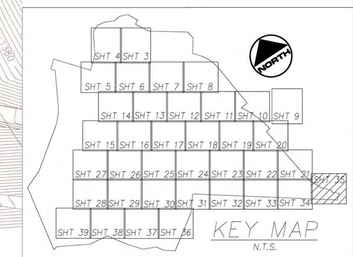
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES



KEY MAP
N.T.S.

REVISIONS

NO.	DATE

RESPONSIBLE ENGINEER
YUKIMITSU "JASON" FUKUMITSU
No. 69595
Exp. 3-31-13
CIVIL
STATE OF CALIFORNIA

JASON H. FUKUMITSU DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
IRVINE, INC.
LOS ANGELES,
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 23, Valencia, CA 91355
PH: (661) 294-2211 FX: (661) 294-9830

OWNER/DEVELOPER:
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REPRESENTATIVE : MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 35
OF 41

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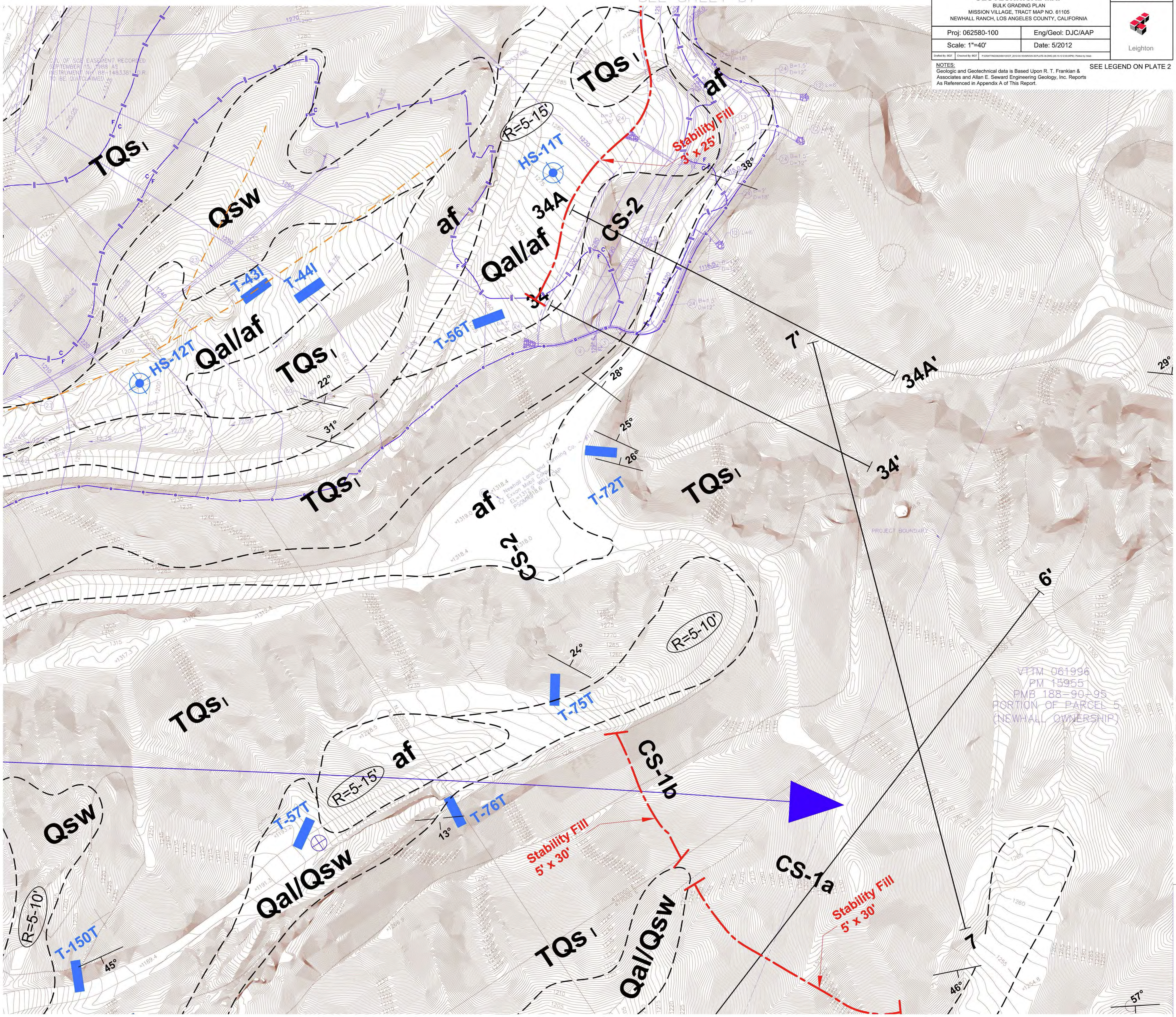

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP	PLATE 36
Scale: 1"=40'	Date: 5/2012	Leighton
Drafted By: BQT	Checked By: BQT	P:\DRAFTING\062580\100\OF_2012-04-16\HMV025-36-PLATE-36.DWG (05-14-12 2:59:34PM) Plotted by: btran

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

LEGEND

PROJECT BOUNDARY LINE
FUTURE RIGHT OF WAY
EXISTING RIGHT OF WAY
PROPOSED EASEMENT
EXISTING EASEMENT
1100 PROPOSED CONTOUR
1100 EXISTING CONTOUR
DAYLIGHT LINE
CUT & FILL LINE
SLOPE (RATIO PER PLAN)
2.5% PROPOSED SURFACE GRADE
R RIDGE LINE
FLOW LINE
EXISTING CHAINLINK FENCE
SD EXISTING STORM DRAIN LINE
W EXISTING WATER LINE
GAS EXISTING GAS LINE
OHE EXISTING OVERHEAD ELECTRIC LINE
ACOE ARMY CORPS OF ENGINEERS JURISDICITON
CDFG CA DEPT. OF FISH AND GAME JURISDICITON
FP EXISTING FLOODWAY
FW EXISTING FLOODPLAIN
SEA23 SEA RIVER CORRIDOR
FEMA FEMA ZONE
266 EXISTING OAK TREE AND NUMBER
EXISTING OIL WELL (DIGITIZED)
EXISTING OIL WELL (SURVEYED)
4032103E EXISTING POWER POLE AND I.D.
RIP-RAP
CONCRETE STRUCTURE OR SURFACE
1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

1. CONSTRUCT 8' TERRACE DRAIN PER DETAIL 1/40
2. CONSTRUCT 20' TERRACE DRAIN PER DETAIL 2/40
3. CONSTRUCT 8' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 3/40
4. CONSTRUCT 20' TERRACE/DOWN DRAIN JUNCTION PER DETAIL 4/40
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7. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL 7/40
8. CONSTRUCT CONCRETE "V" DITCH PER DETAIL 8/40
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10. CONSTRUCT TOP OF SLOPE BERM PER DETAIL 10/40
11. CONSTRUCT TOE DRAIN PER DETAIL 11/40
12. CONSTRUCT RIP-RAP INLET PER DETAIL 12/40
13. CONST. TOP OF SLOPE PROTECTION GUNITE CUT OFF WALL
14. CONSTRUCT TEMPORARY GUNITE DITCH PER DETAIL 14/40
15. CONST. TRANSITION/TERRACE TO PAVED DRAIN PER DETAIL 15/40
16. CONSTRUCT TEMPORARY SPILLWAY PER DETAIL 16/40
17. CONSTRUCT CMP RISER PER DETAIL 17/41
18. CONSTRUCT 16 GA. 48" CMP PIPE
19. CONST. TEMP. SPILLWAY/ACCESS ROAD CROSSING PER DETAIL 19/41
20. CONST. PERM. SPILLWAY AND GUNITE DITCH PER DETAIL 20/41
21. CONSTRUCT GUNITE CHANNEL PER DETAIL 21/41
22. CONSTRUCT EARTH SWALE PER DETAIL 22/41
23. CONSTRUCT GUNITE SWALE PER DETAIL 23/41
24. CONSTRUCT TRAPEZOIDAL DRAIN
25. CONSTRUCT DOWNDRAIN INLET APRON PER DETAIL 25/41
26. CONSTRUCT TEMPORARY DOWNDRAIN PER DETAIL 26/41

60. REMOVE OAK TREE
61. PROTECT OAK TREE IN PLACE
62. REMOVE POWER POLE, GUY WIRES AND POWER LINES
63. REMOVE EXISTING WATER TANK AND PUMP
64. REMOVE EXISTING WATER WELL AND PUMP
65. ABANDON EXISTING WATER LINE IN PLACE
66. ABANDON & CAP OIL WELL PER STATE DEPT. OF OIL AND GAS REGULATIONS
67. EXISTING OIL WELL TO REMAIN
68. REMOVE EXISTING FENCE
69. REMOVE EXISTING GATE
70. REMOVE EXISTING HEADWALL
71. REMOVE EXISTING PIPE
72. REMOVE EXISTING ELECTRIC VAULT
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2

KEY MAP
N.T.S.

REVISIONS | NO. | DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 36
OF 41

P:\Drafting\062580\100\of_2012-04-16\HMV025-36-Plate-36.dwg Plotted on May 14, 2012-2:59pm by btran

SEE SHEET 29

SEE SHEET 30

SEE SHEET 38

SEE SHEET 36

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 37

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BGT | Checked By: BGT | P:\GRAPHICS\062580100\GT_2012-04-16\MXD\GS-01-PLATE-37.DWG (05-14-12 3:09:49 PM) | Plotted by: bbarr

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2

LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% R PROPOSED SURFACE GRADE
- RIDGE LINE
- FLOW LINE
- EXISTING CHAINLINK FENCE
- SD EXISTING STORM DRAIN LINE
- W EXISTING WATER LINE
- GAS EXISTING GAS LINE
- OHE EXISTING OVERHEAD ELECTRIC LINE
- ACOE ARMY CORPS OF ENGINEERS JURISDICITON
- CDFG CA DEPT. OF FISH AND GAME JURISDICITON
- FP EXISTING FLOODWAY
- FW EXISTING FLOODPLAIN
- SEA23 SEA RIVER CORRIDOR
- FEMA FEMA ZONE
- O266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 403210.3E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

CONSTRUCTION NOTES

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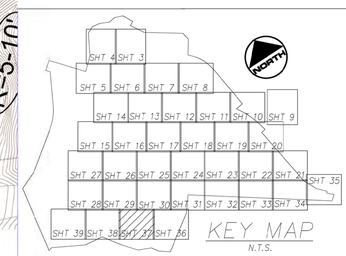
73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET
40' 20' 0 40' 80'
1 1/2 0 1 2
INCHES



KEY MAP
N.T.S.

REVISIONS

NO.	DATE

JASON H. FURUMITSU — DATE

PLANS PREPARED BY:
HUNSAKER & ASSOCIATES
LOS ANGELES, INC.
PLANNING • ENGINEERING • SURVEYING
26074 Avenue Hall, Suite 130, Valencia, CA 91355
PH: (661) 294-9880 FX: (661) 294-2211

OWNER/DEVELOPER:
NEWHALL LAND
25124 SPRINGFIELD CT #300
VALENCIA, CALIFORNIA 91355
REPRESENTATIVE: MR. COREY HARPOLE

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 37
OF 41

P:\grading\062580\100\gt_2012-04-16\MXD\GS-01-Plate-37.dwg Plotted on May 14, 2012 - 3:10pm by bbarr

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 38

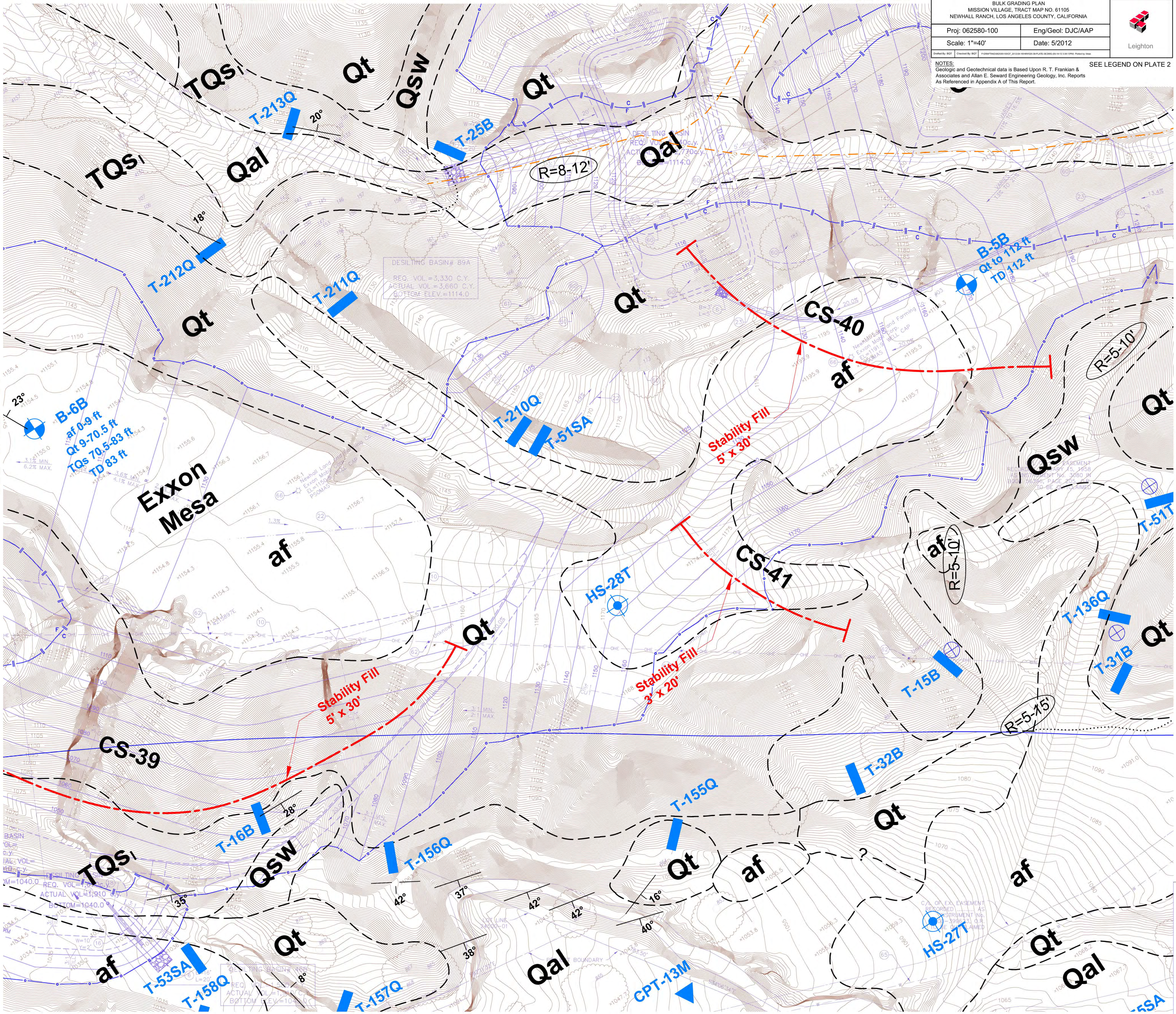
Leighton

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BQT | Checked By: BQT | P:\DRAFTING\062580\100\OF_2012-04-16\HMV025-38-PLATE-38.DWG (05-14-12 3:04:13PM) Plotted by: btran

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2



LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
- CUT & FILL LINE
- SLOPE (RATIO PER PLAN)
- 2.5% PROPOSED SURFACE GRADE
- R RIDGE LINE
- FLOW LINE
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- FEMA FEMA ZONE
- 266 EXISTING OAK TREE AND NUMBER
- EXISTING OIL WELL (DIGITIZED)
- EXISTING OIL WELL (SURVEYED)
- 4032103E EXISTING POWER POLE AND I.D.
- RIP-RAP
- CONCRETE STRUCTURE OR SURFACE
- 1/40 DETAIL NUMBER / SHEET NUMBER

CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
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73. REMOVE EXISTING BUILDING AND FOUNDATION
74. REMOVE EXISTING STORAGE BIN/SHED
75. REMOVE EXISTING PAVEMENT

NORTH

FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2

KEY MAP N.T.S.

REVISIONS

PLANS PREPARED BY: HUNSAKER & ASSOCIATES LOS ANGELES, INC.

OWNER/DEVELOPER: NEWHALL LAND

MISSION VILLAGE TR. 61105
BULK GRADING PLAN

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

PERMIT NO.

SHEET 38 OF 41

GEOTECHNICAL MAP

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

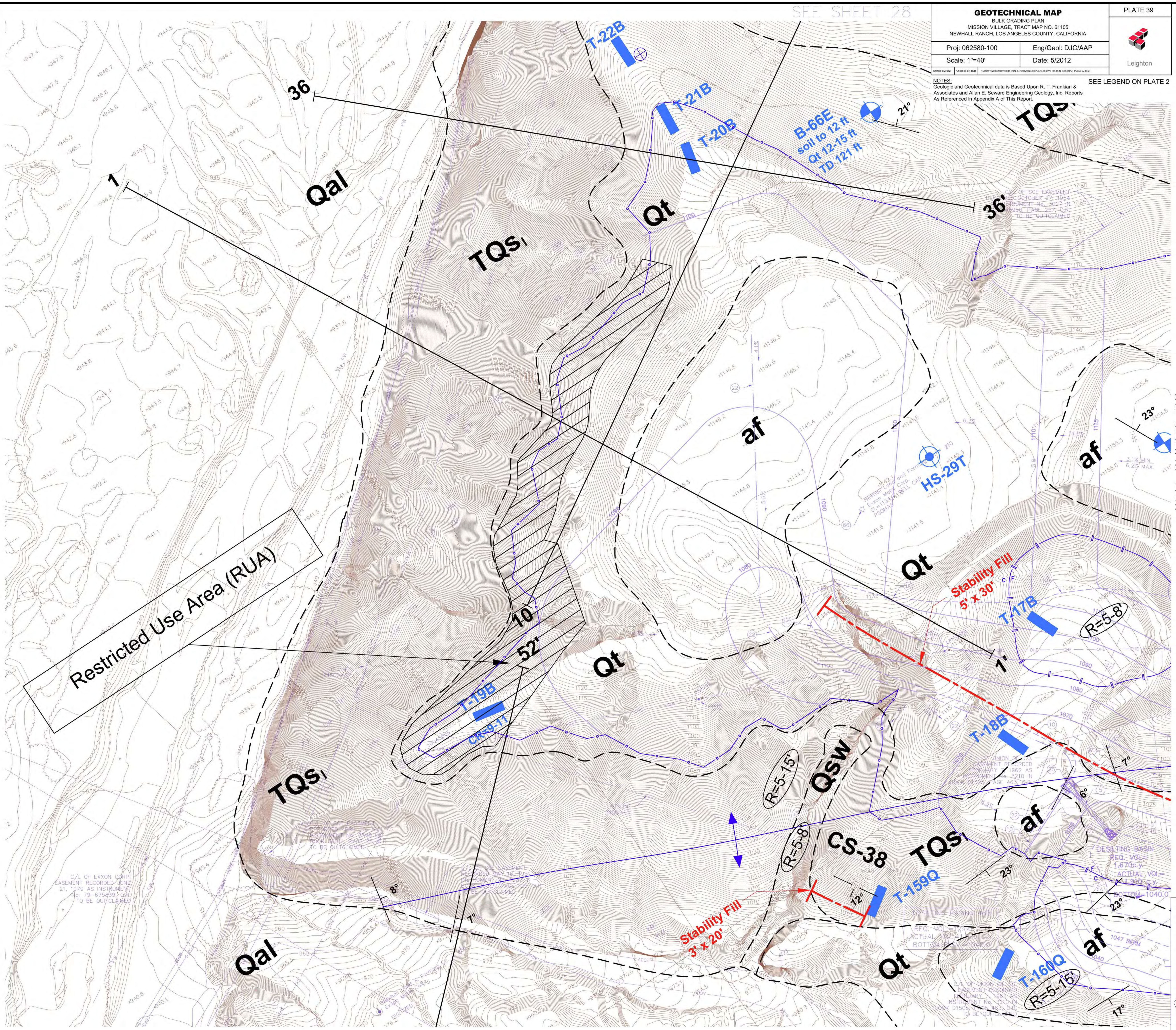
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

PLATE 39

Leighton

NOTES:
Geologic and Geotechnical data is Based Upon R. T. Frankian & Associates and Allan E. Seward Engineering Geology, Inc. Reports As Referenced in Appendix A of This Report.

SEE LEGEND ON PLATE 2



LEGEND

- PROJECT BOUNDARY LINE
- FUTURE RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED EASEMENT
- EXISTING EASEMENT
- 1100 PROPOSED CONTOUR
- 1100 EXISTING CONTOUR
- DAYLIGHT LINE
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CONC	CONCRETE	EX	EXISTING
R/W	RIGHT OF WAY	PR	PROPOSED
INV	INVERT ELEVATION	HP	HIGH POINT
FS	FINISHED SURFACE	LP	LOW POINT
FG	FINISHED GRADE	GB	GRADE BREAK
FL	FLOW LINE		

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NORTH

FEET 40' 20' 0 40' 80'
INCHES 1 1/2 0 1 2

KEY MAP
N.T.S.

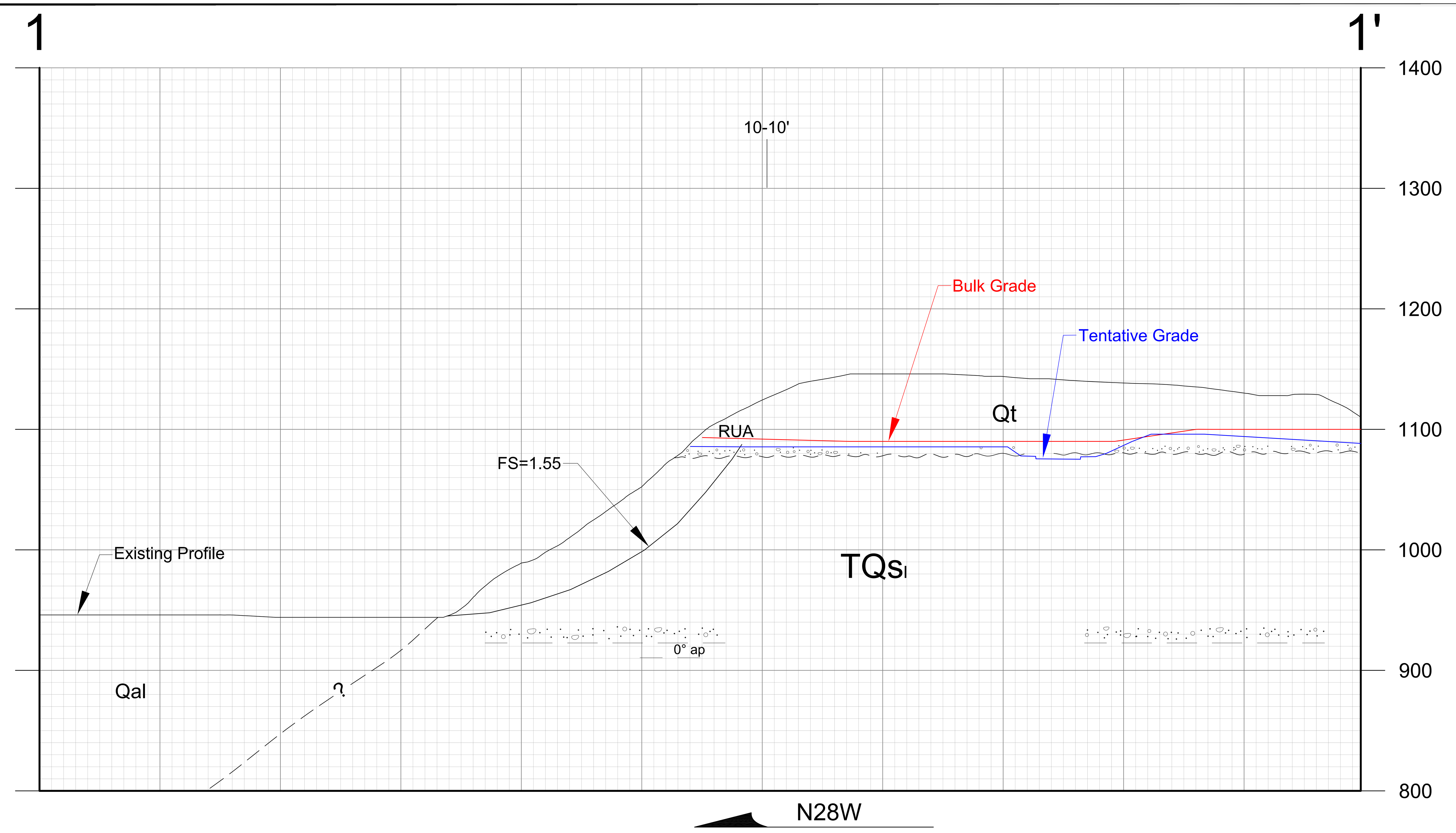
REVISIONS
NO. DATE

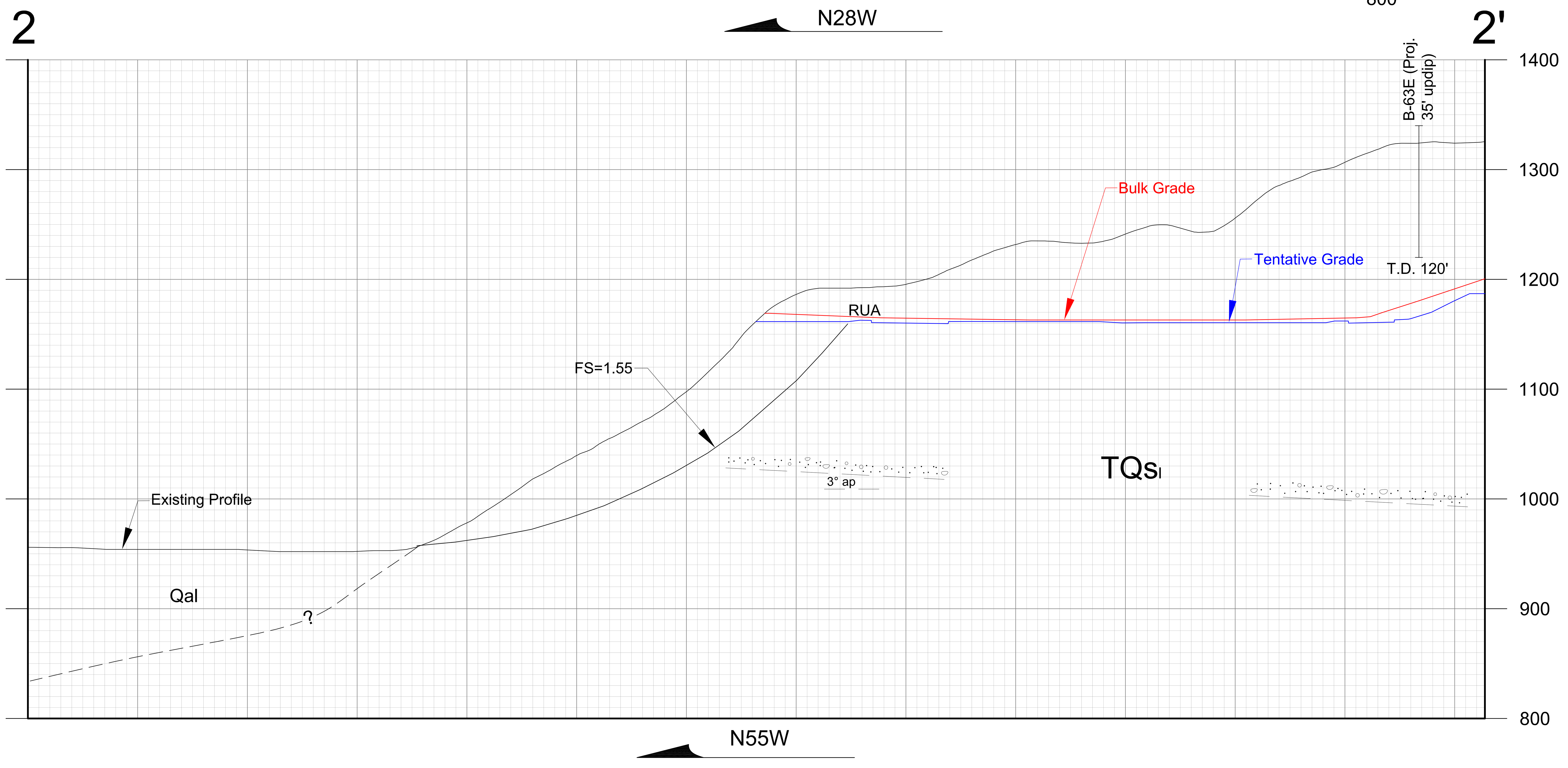
PLANS PREPARED BY:
HUNSAKER & ASSOCIATES LOS ANGELES, INC.

OWNER/DEVELOPER:
NEWHALL LAND

MISSION VILLAGE TR. 61105
BULK GRADING PLAN
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS

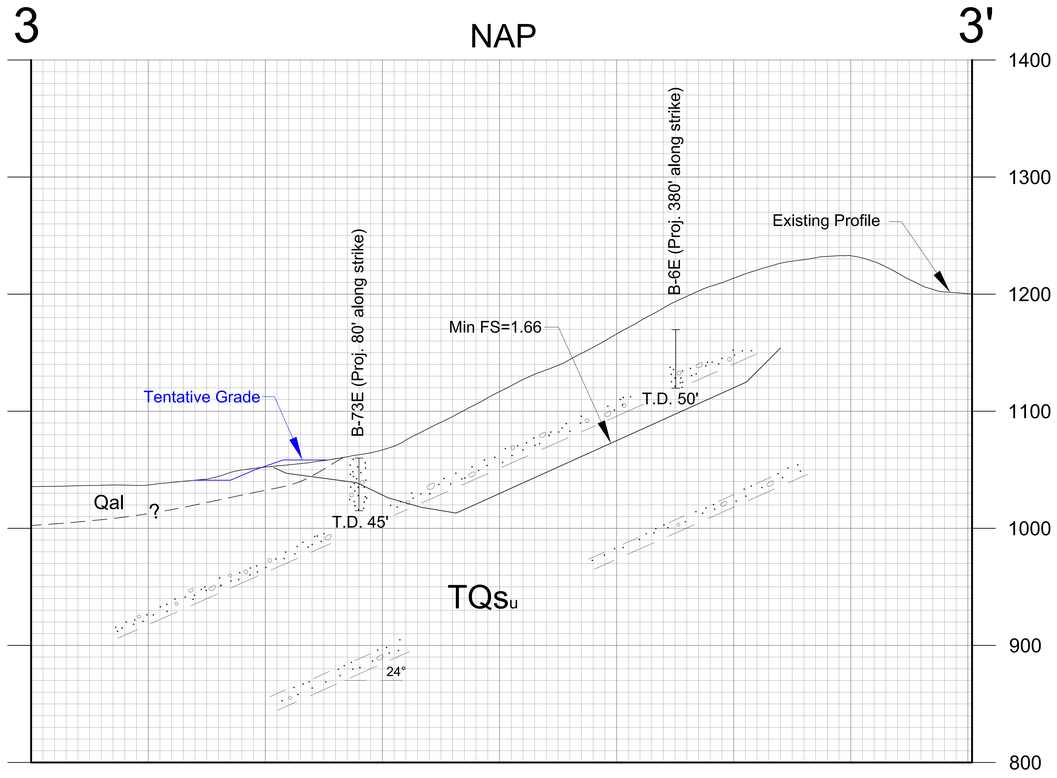
PERMIT NO.

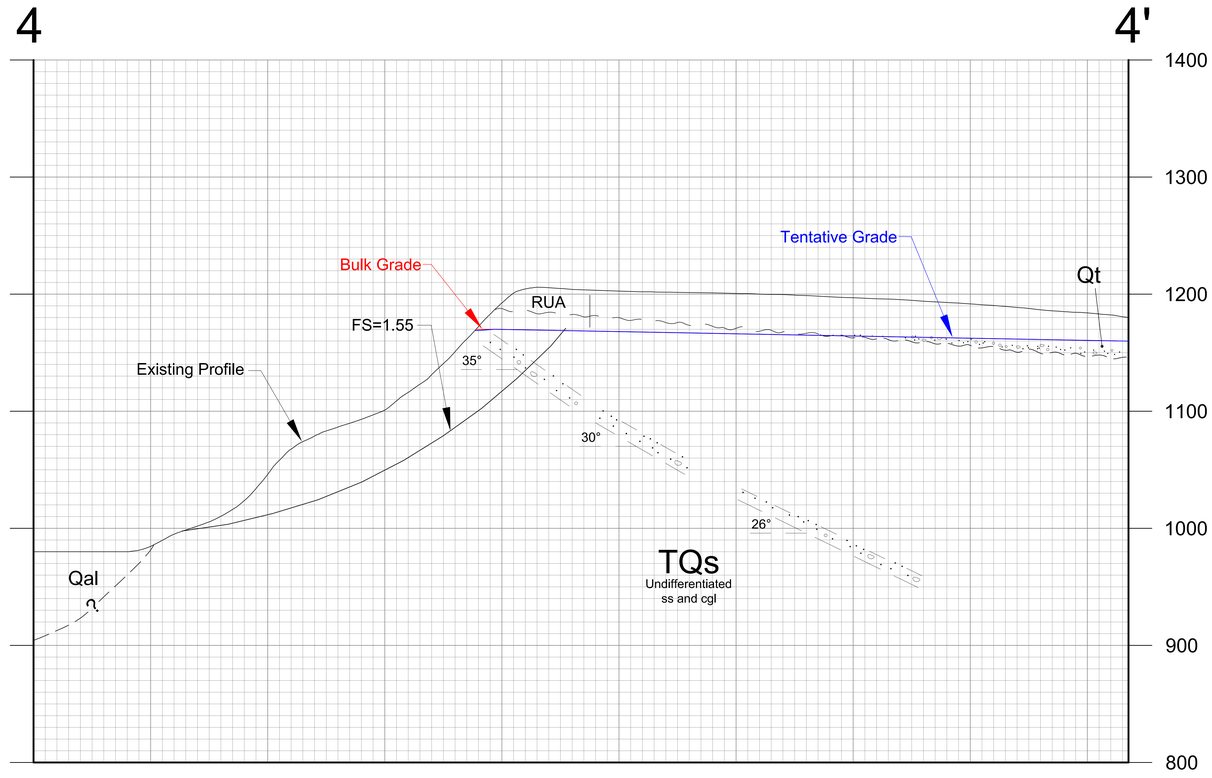


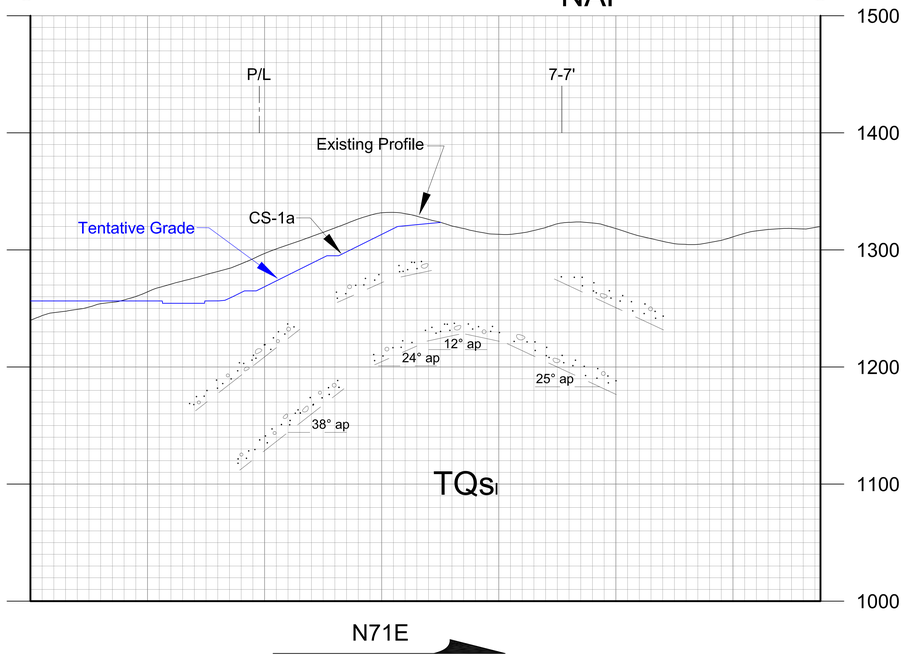


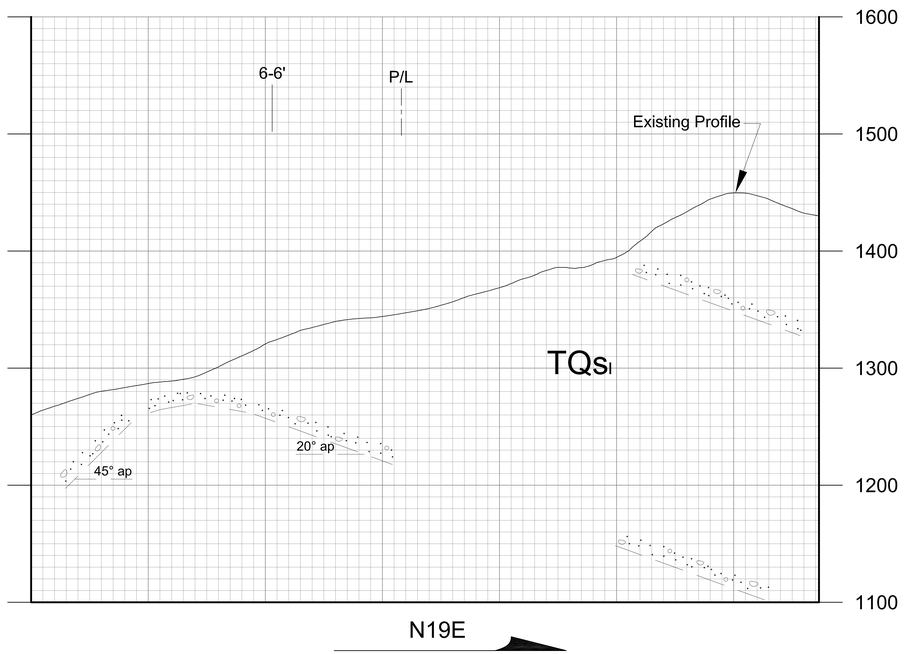
GEOTECHNICAL CROSS SECTIONS 1-1' AND 2-2' BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA		PLATE 41
Proj: 062580-100	Eng/Geol: DJC/AAP	Leighton
Scale: 1"=40'	Date: 5/2012	

Drafted By: BQT | Checked By: BQT | P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:09:49PM) Plotted by: btran









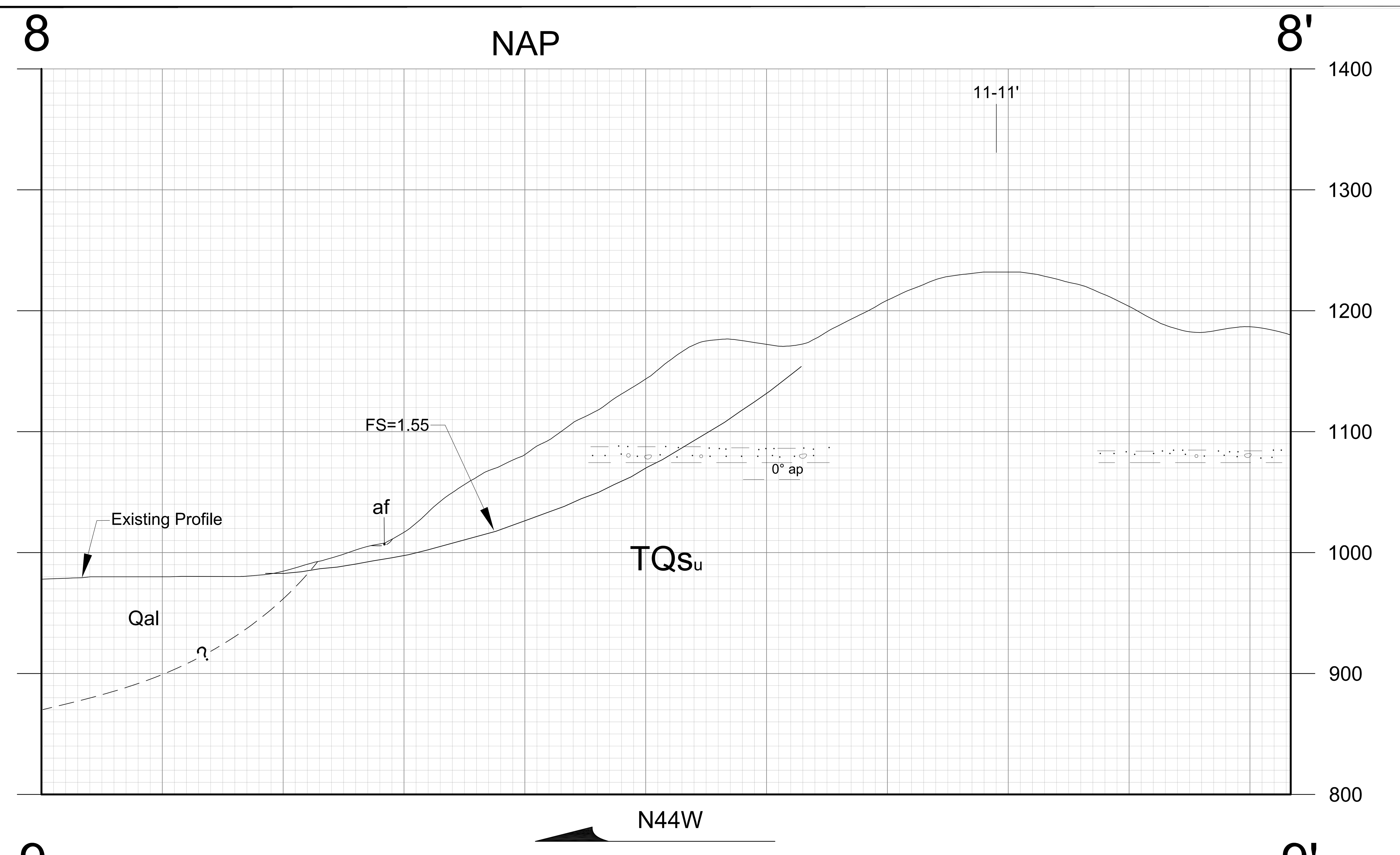
GEOTECHNICAL CROSS SECTIONS
3-3', 4-4', 6-6' AND 7-7'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

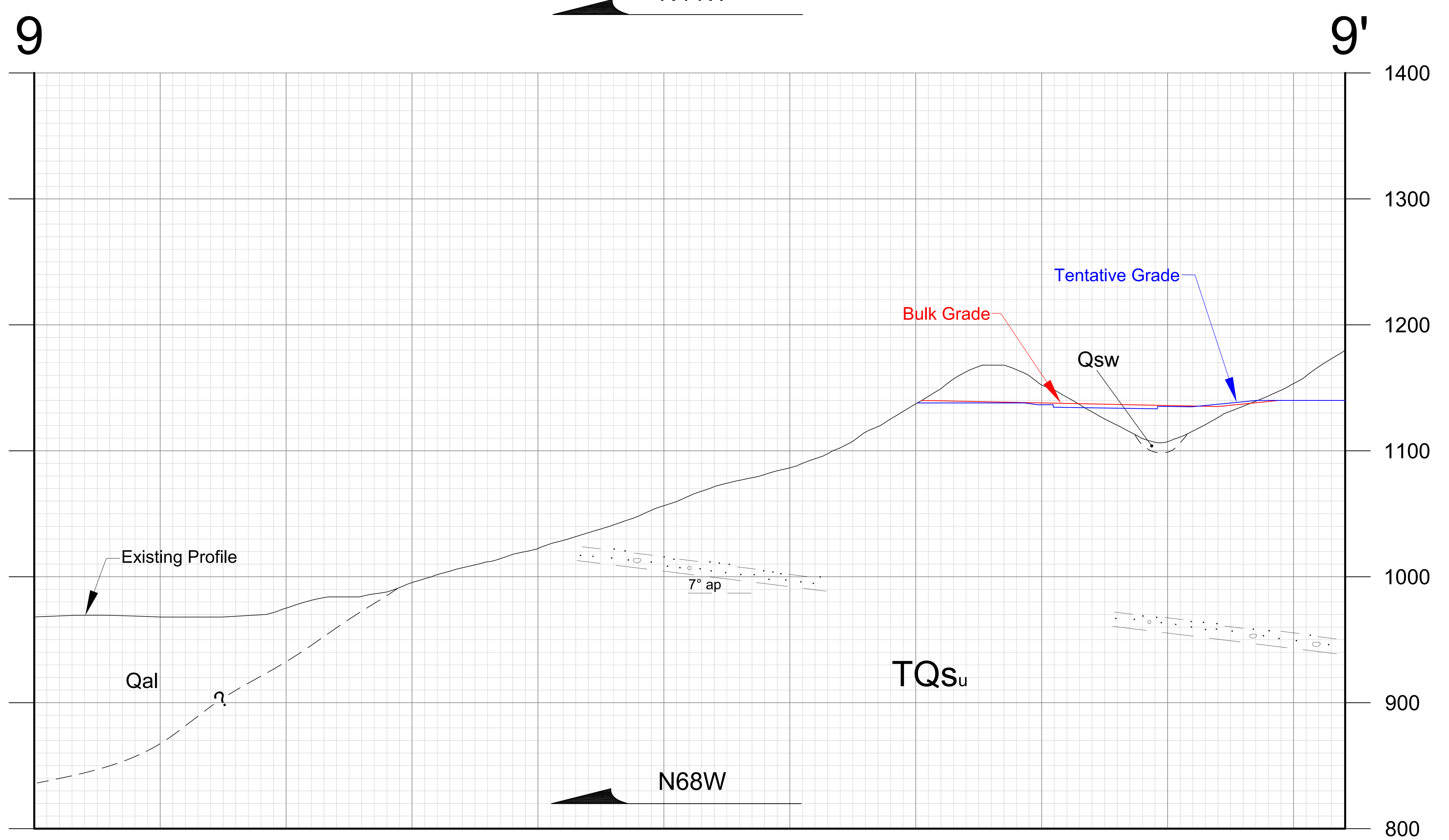
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: RKF | Checked By: RKF | I:\Projects\062580-100\Cad\Plates\Bulk Grading\Plate 42 - Bulk Grading Cross Sections 3-3', 4-4', 6-6' and 7-7'.dwg

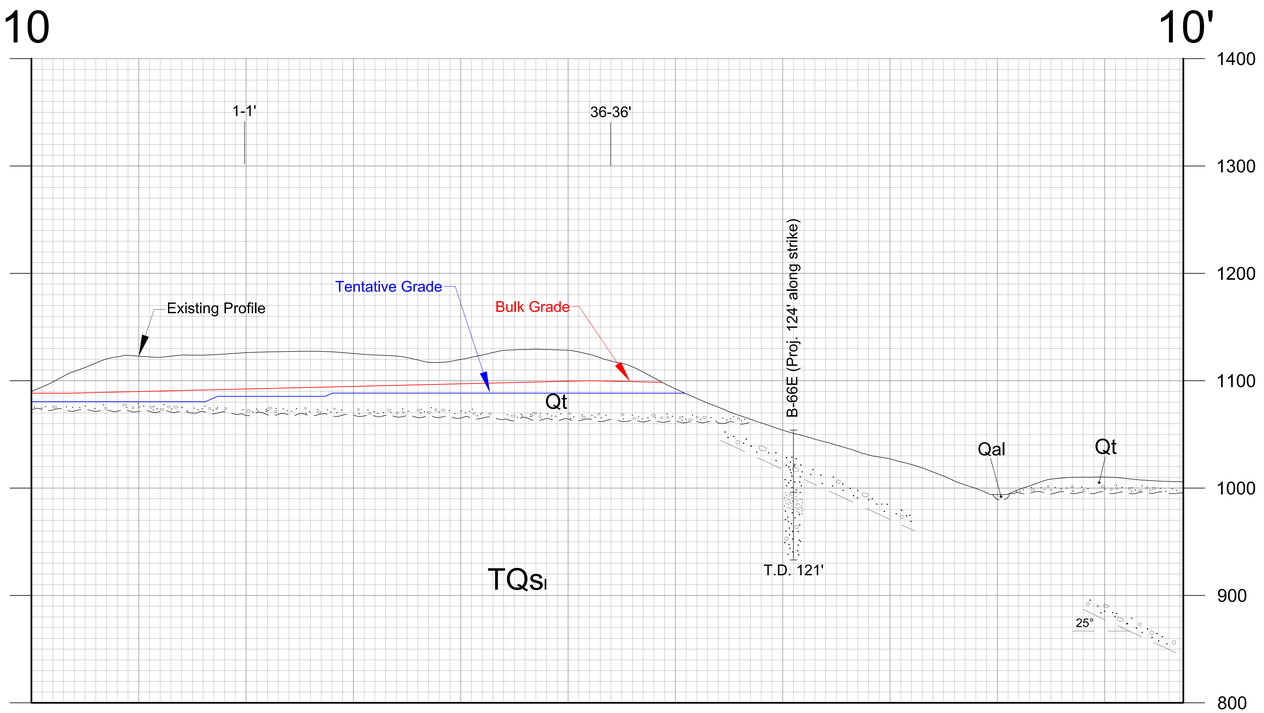
PLATE 42

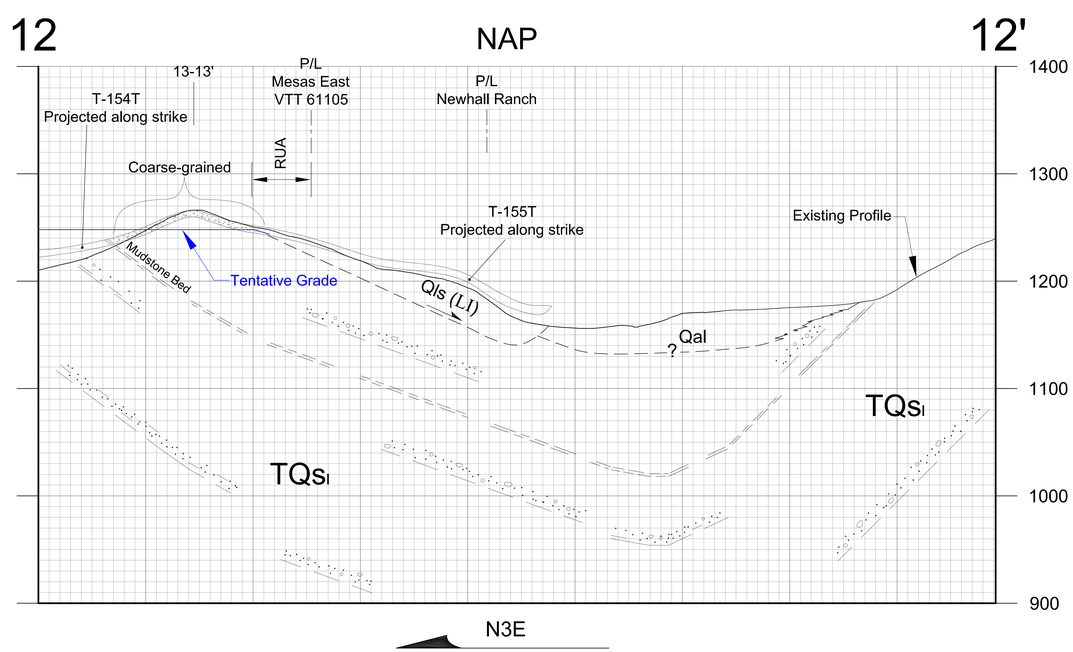
Leighton

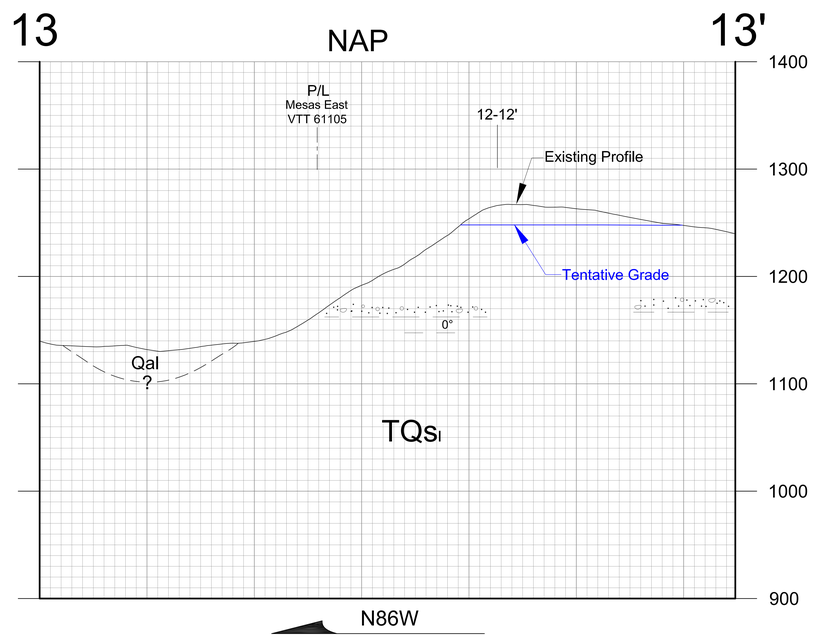


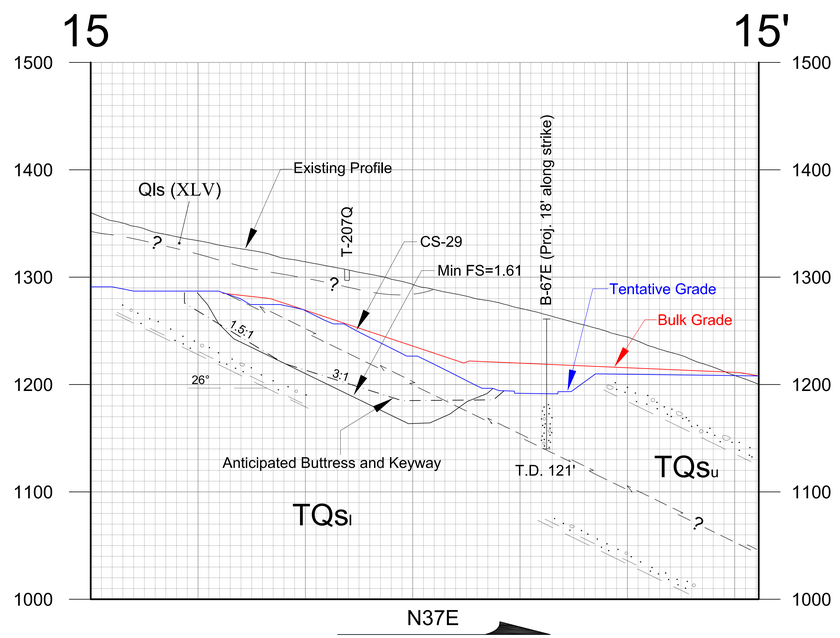


GEOTECHNICAL CROSS SECTIONS 8-8' AND 9-9' BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA		PLATE 43
Proj: 062580-100	Eng/Geol: DJC/AAP	Leighton
Scale: 1"=40'	Date: 5/2012	
Drafted By: BQT / Checked By: BQT	P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:11:58PM) Plotted by: btran	







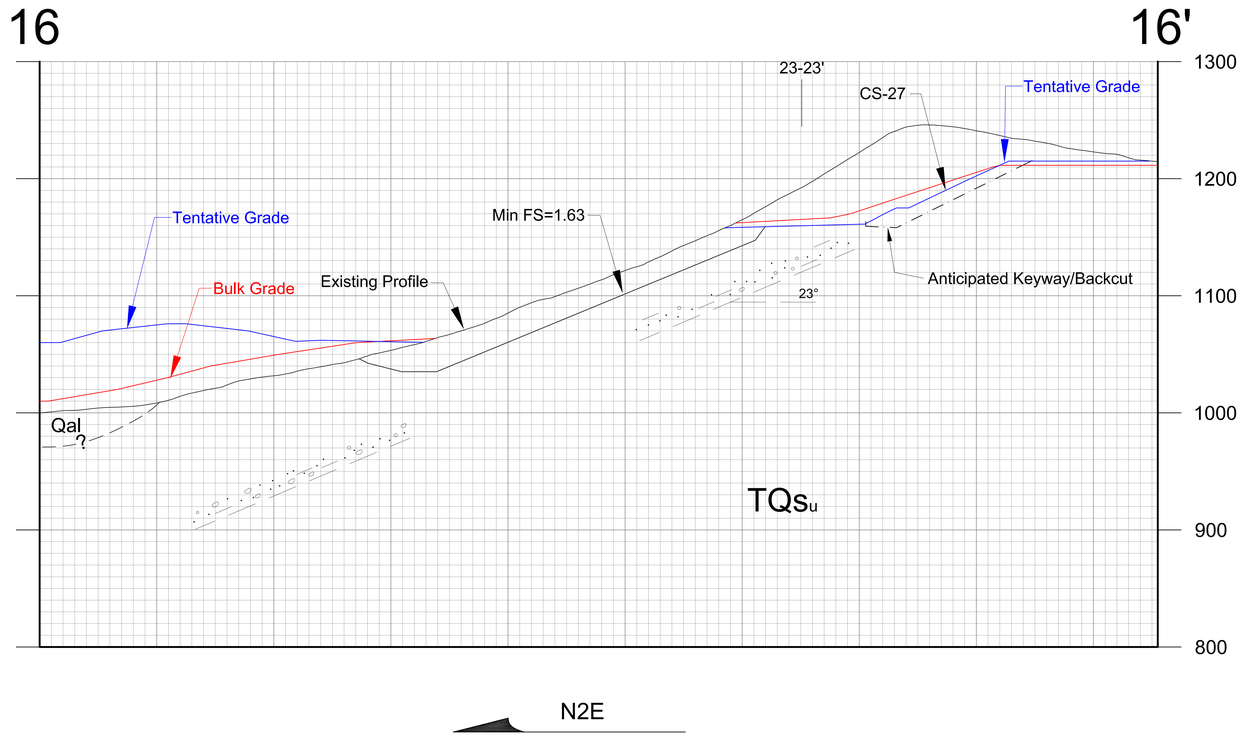


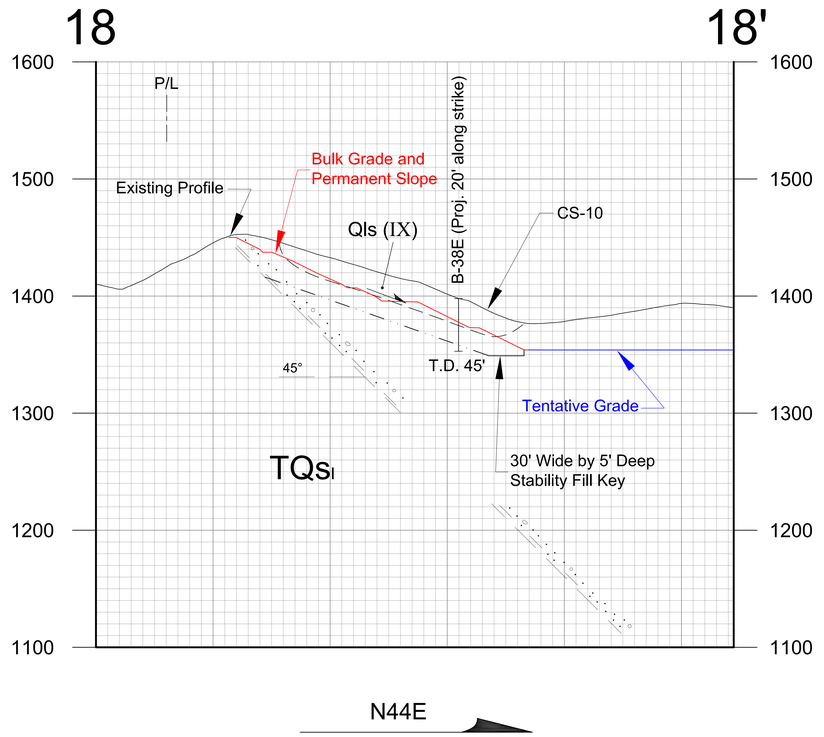
GEOTECHNICAL CROSS SECTIONS
10-10', 12-12', 13-13' AND 15-15'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

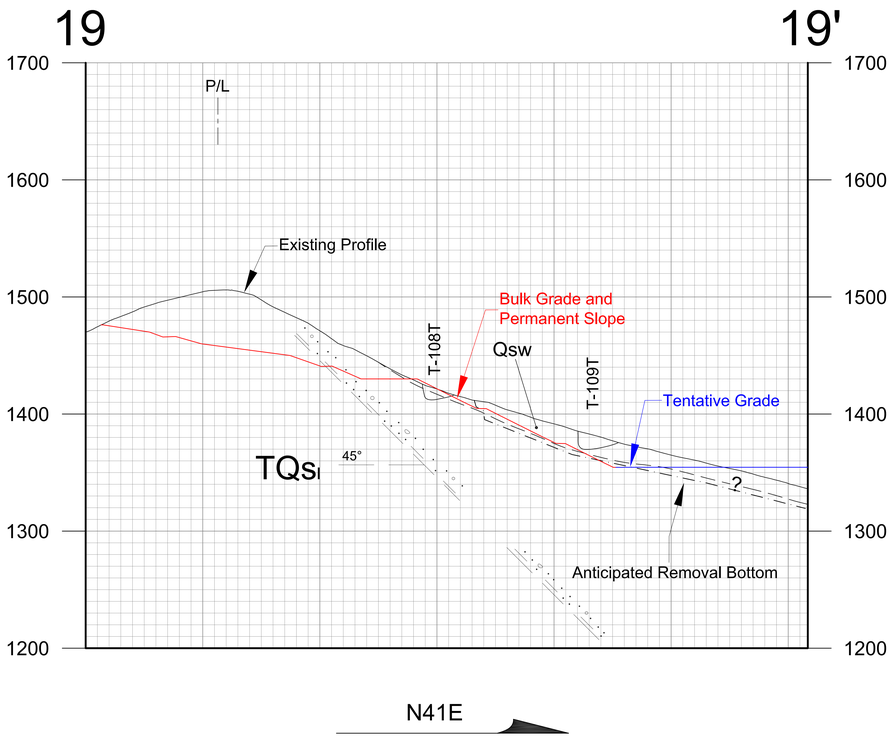
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

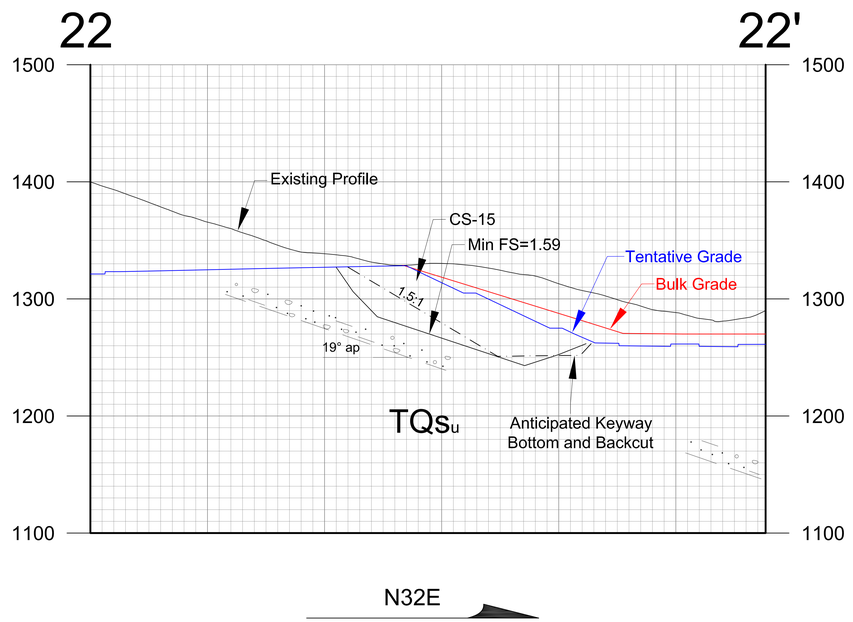
PLATE 44

Leighton









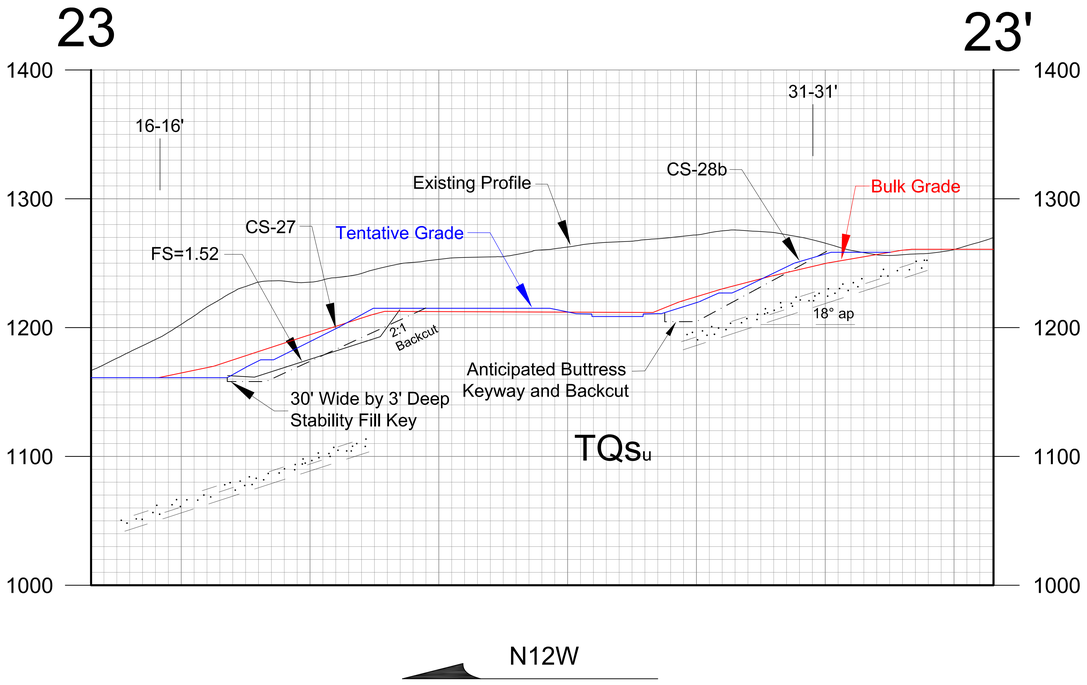
GEOTECHNICAL CROSS SECTIONS
16-16', 18-18', 19-19' AND 22-22'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

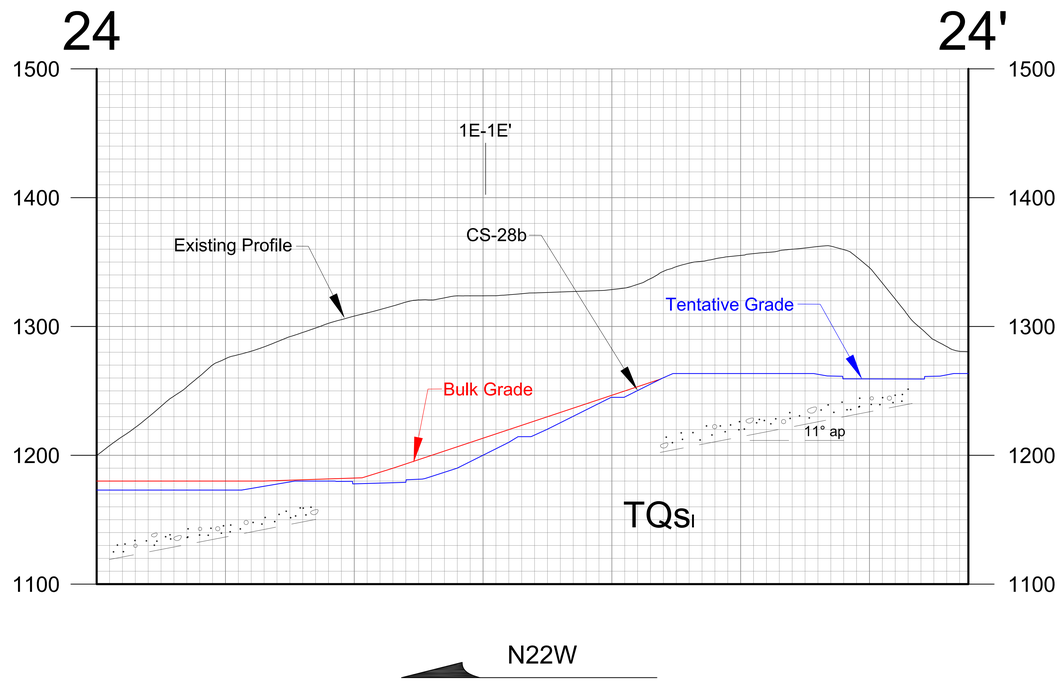
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

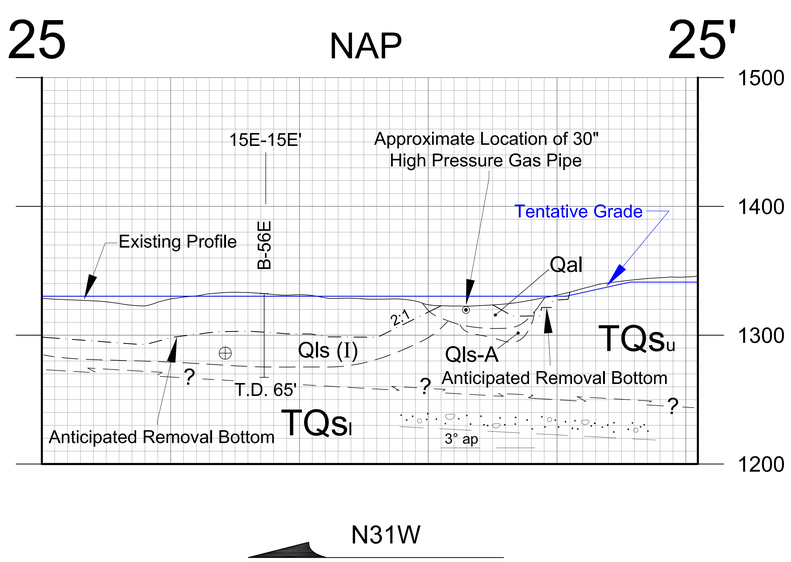
Drafted By: RAT | Checked By: RAT | I:\projects\Newhall\exhibits\GR_grd\cross sects\GR_cs set 052708 Rev2.mxd 2012-05-14 12:33:39 PM Mon by rtate

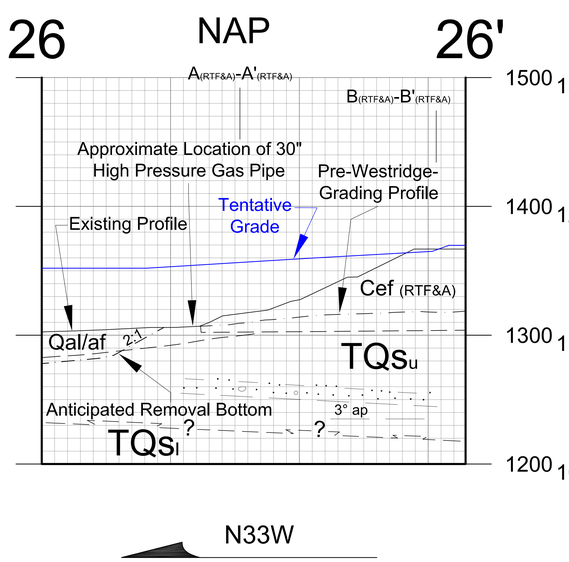
PLATE 45

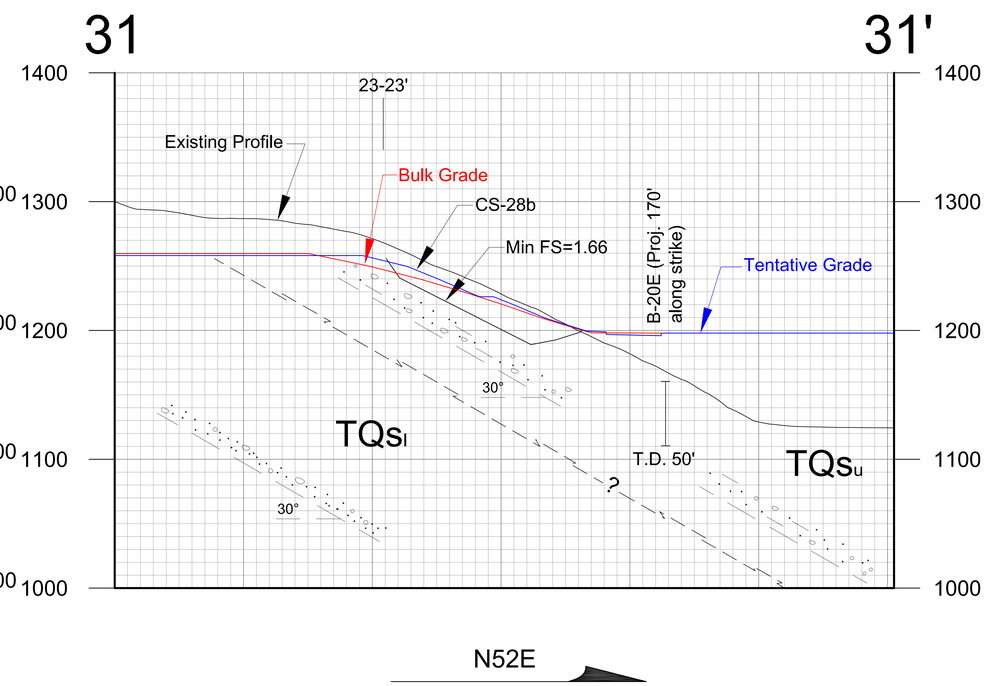
Leighton











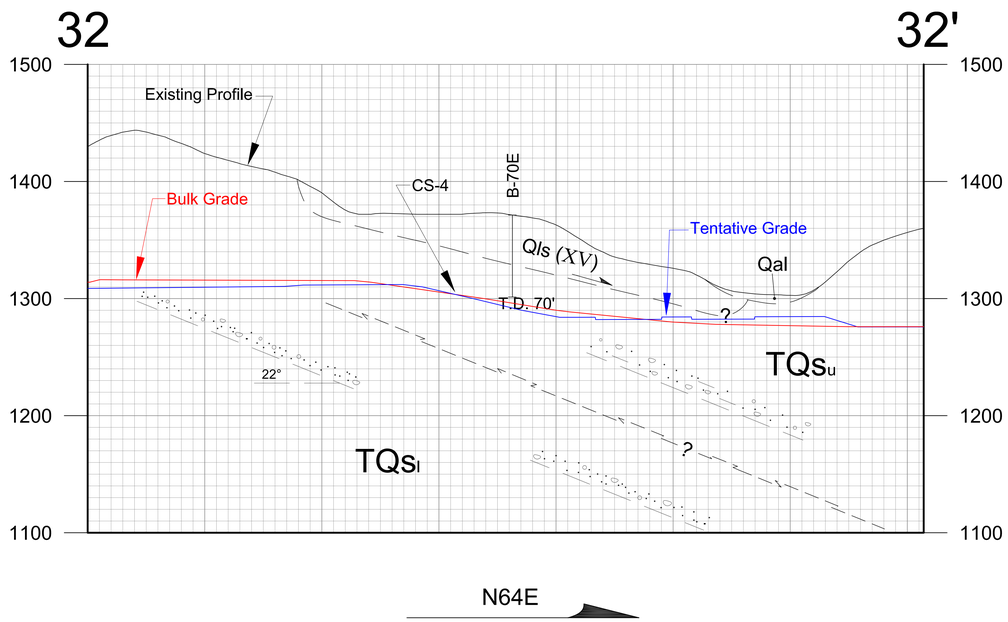
GEOTECHNICAL CROSS SECTIONS
23-23', 24-24', 25-25', 26-26' AND 31-31'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

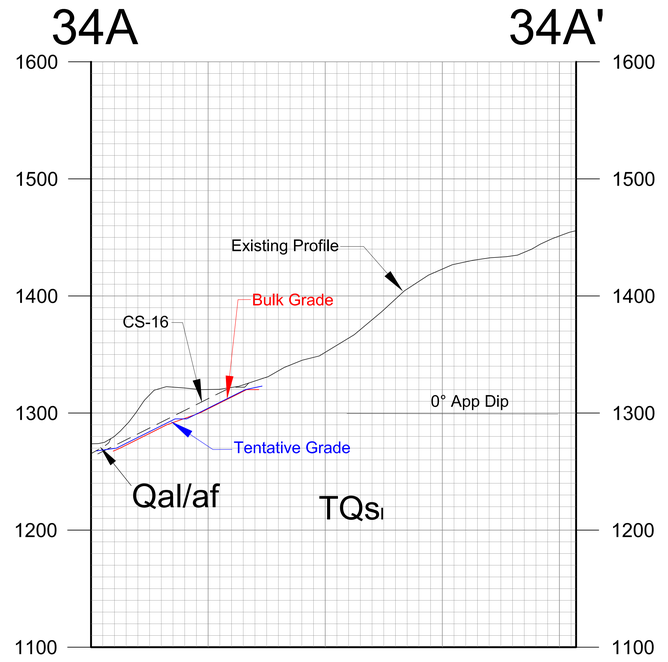
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

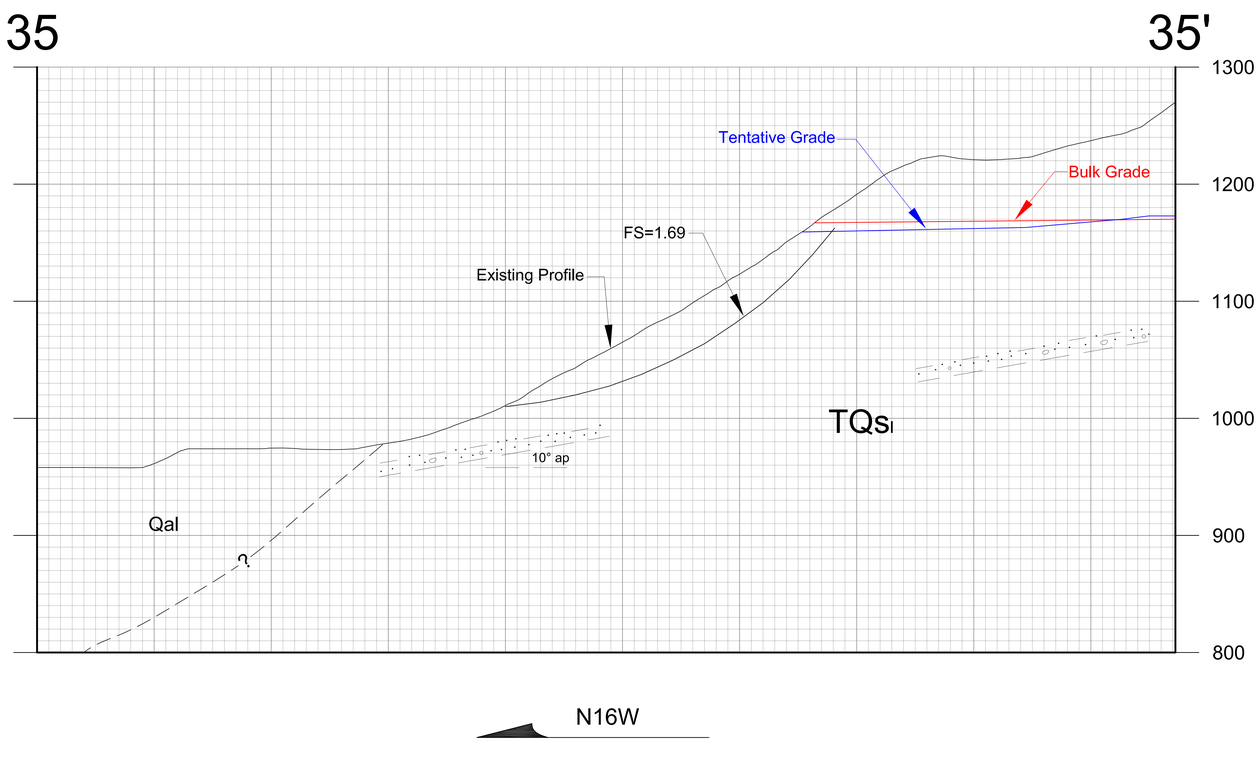
Drafted By: RGT | Checked By: RGT

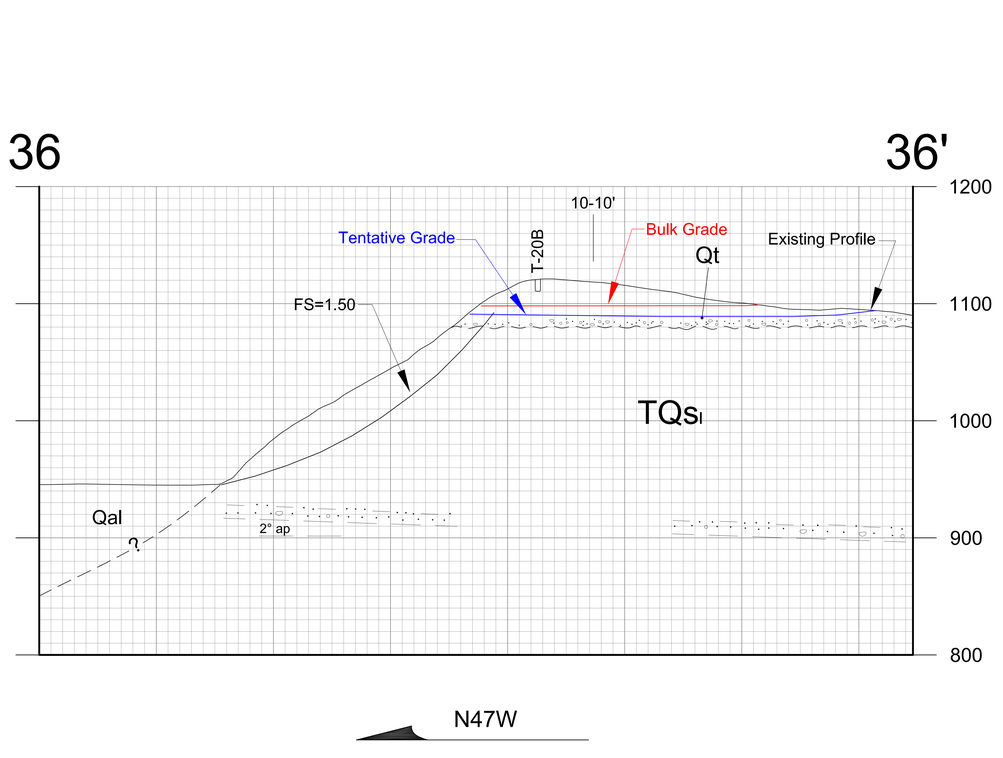
PLATE 46

Leighton









GEOTECHNICAL CROSS SECTIONS
32-32', 34A-34A', 35-35' AND 36-36'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

PLATE 47

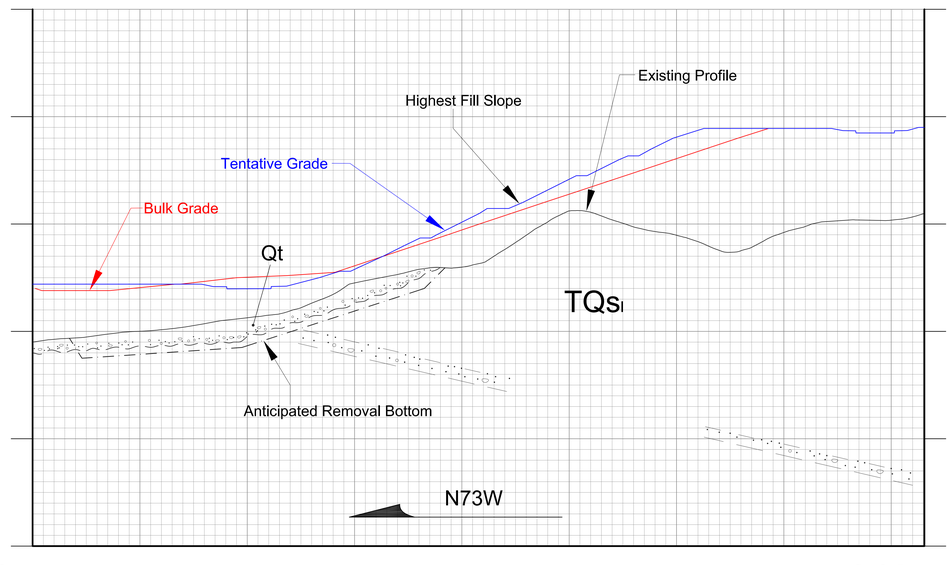
Leighton

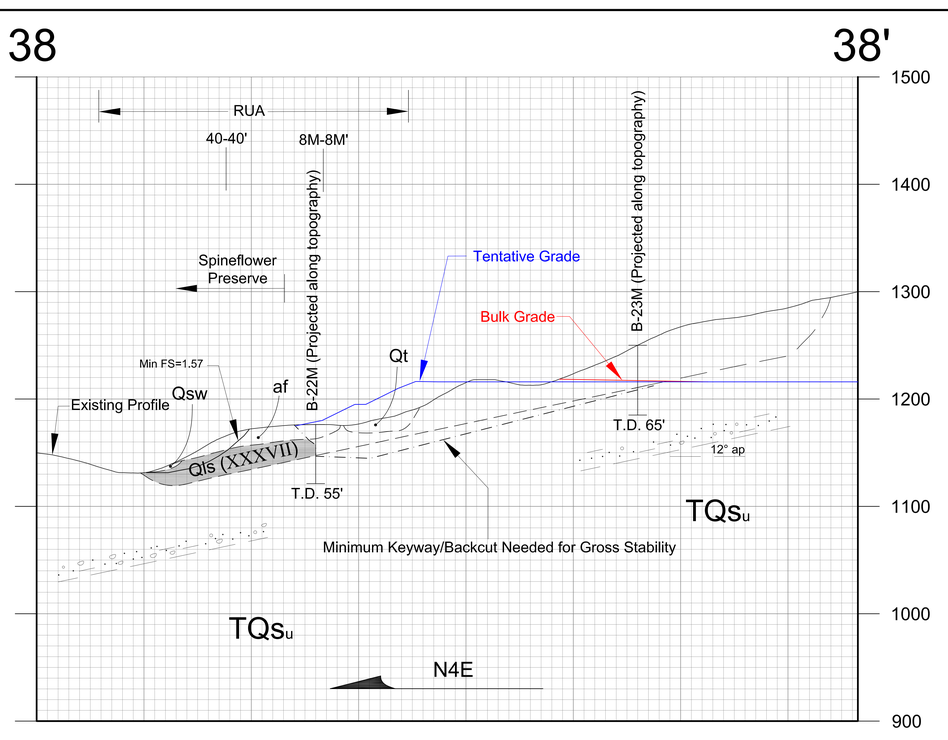
GEOTECHNICAL CROSS SECTIONS
37-37' THROUGH 40-40'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

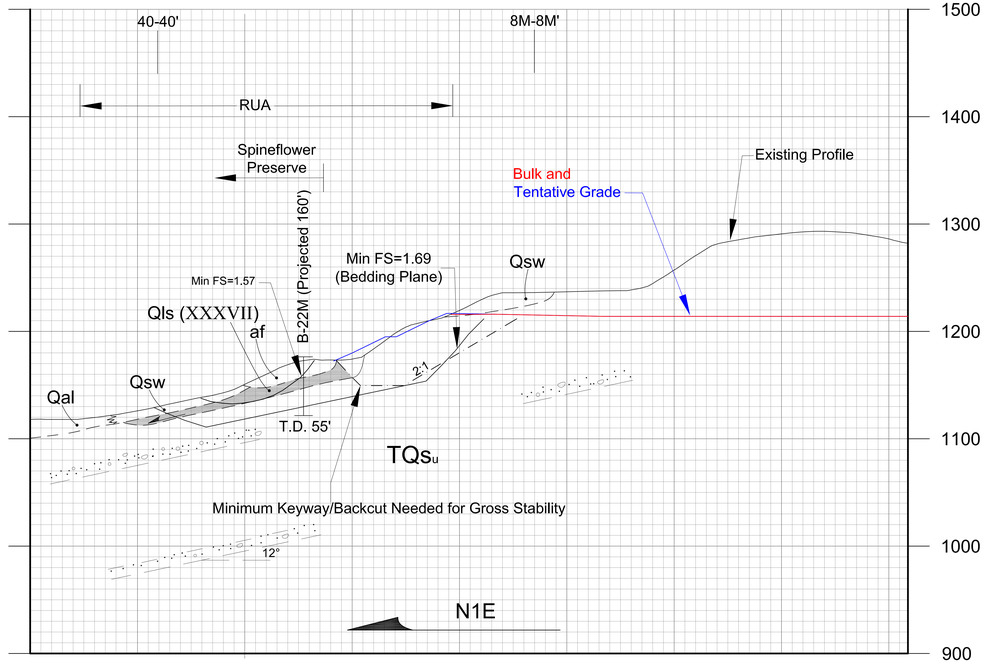
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

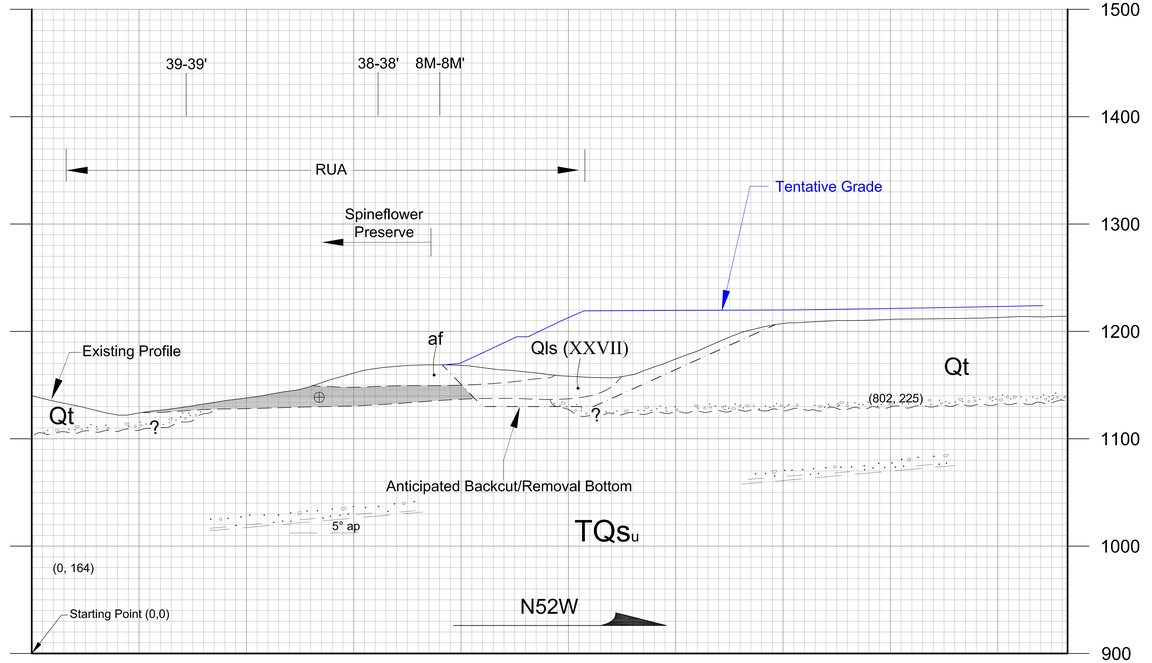
PLATE 48

Leighton









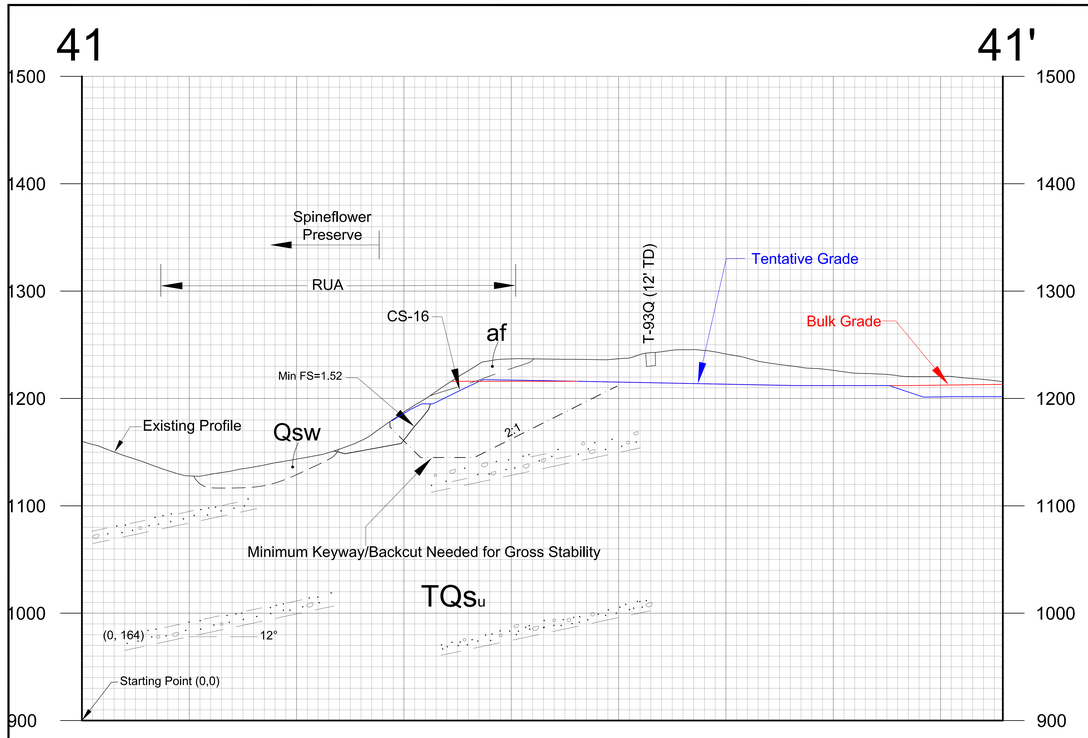
GEOTECHNICAL CROSS SECTIONS
41-41' THROUGH 44-44'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

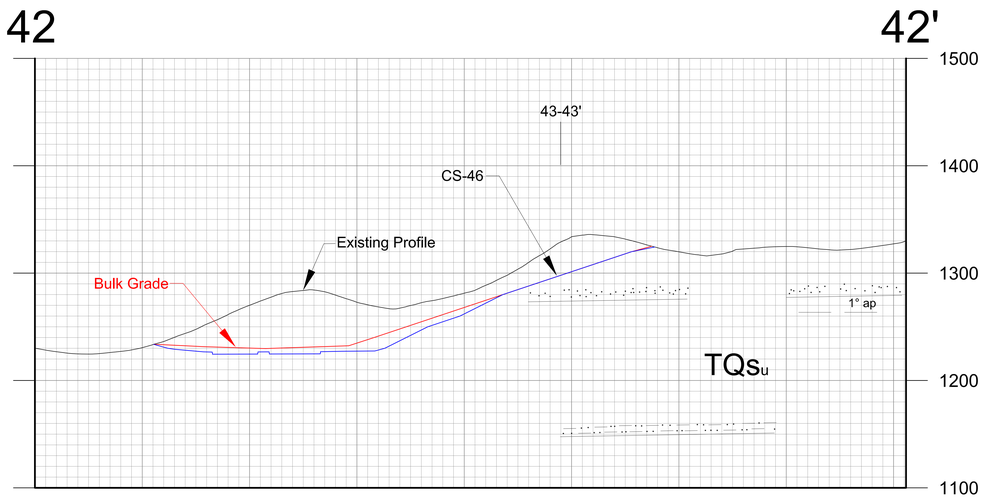
Drafted By: MH | Checked By: MJW | I:\62580\Geotechnical\Grading\Bulk\Plates\Bulk Plates.dwg, 5/11/2012 7:59:43 AM, Timothy Dyer

PLATE 49

Leighton



N1E



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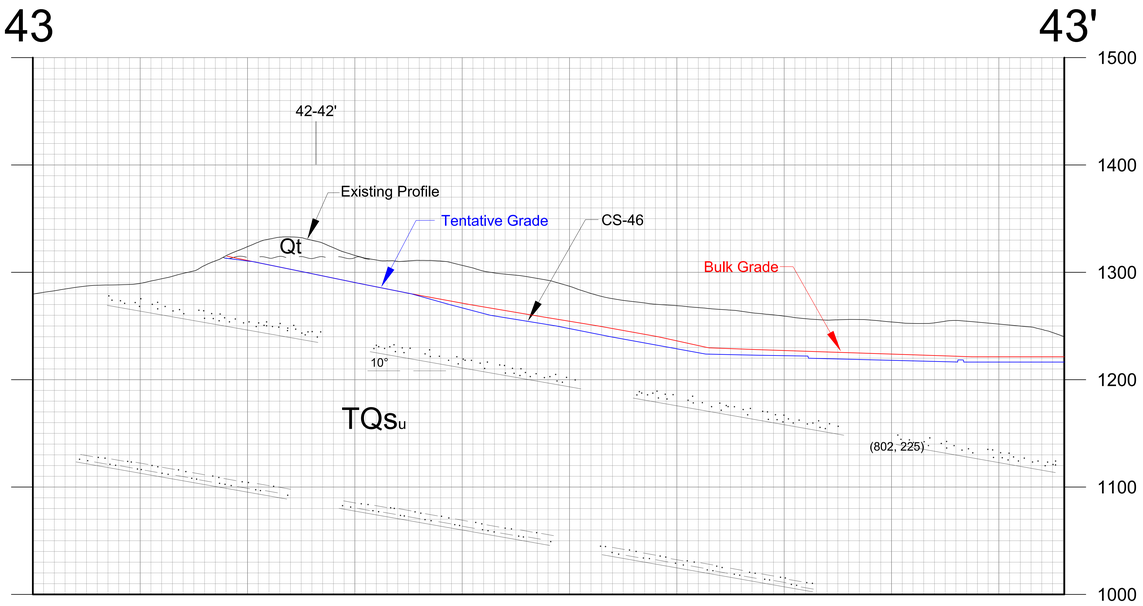

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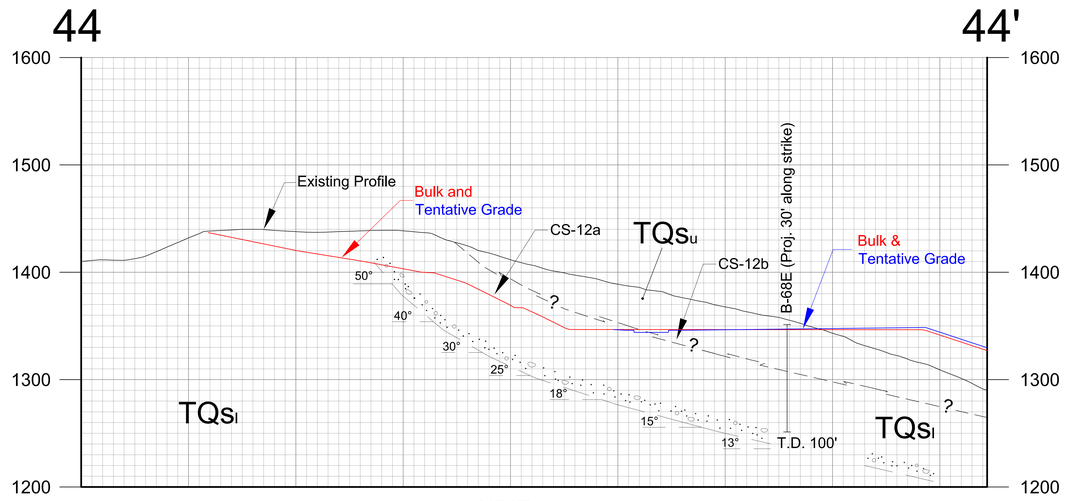
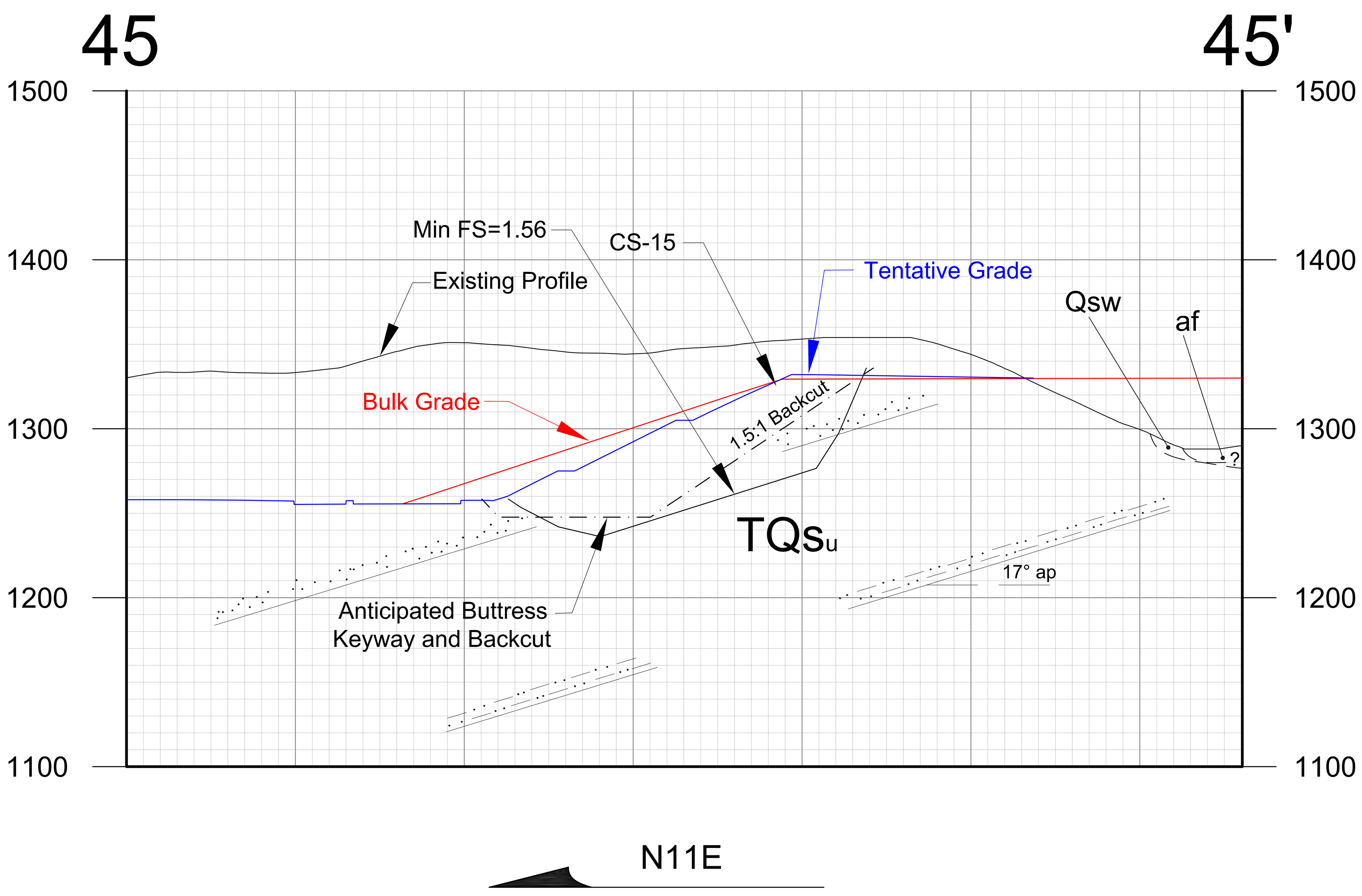
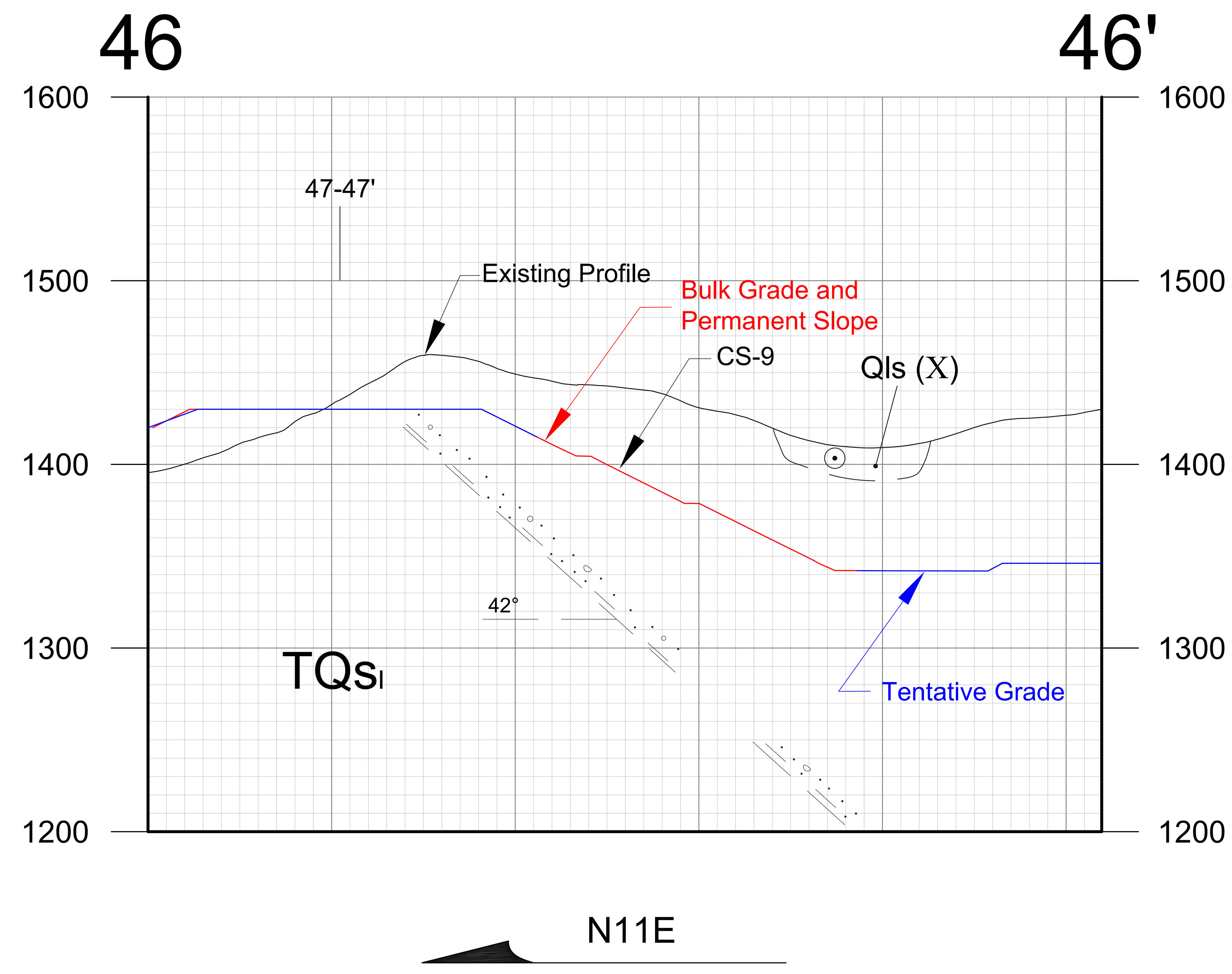
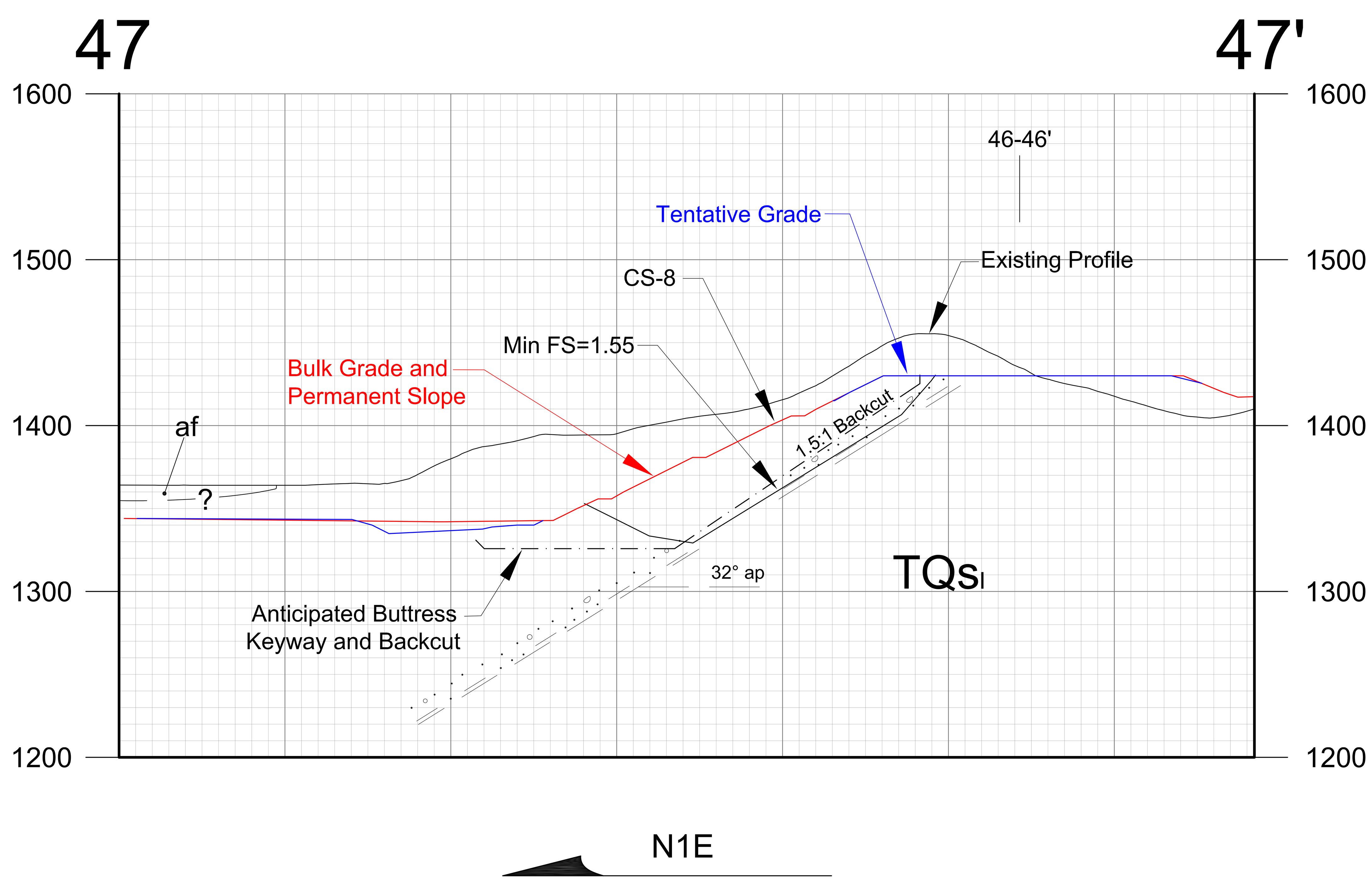


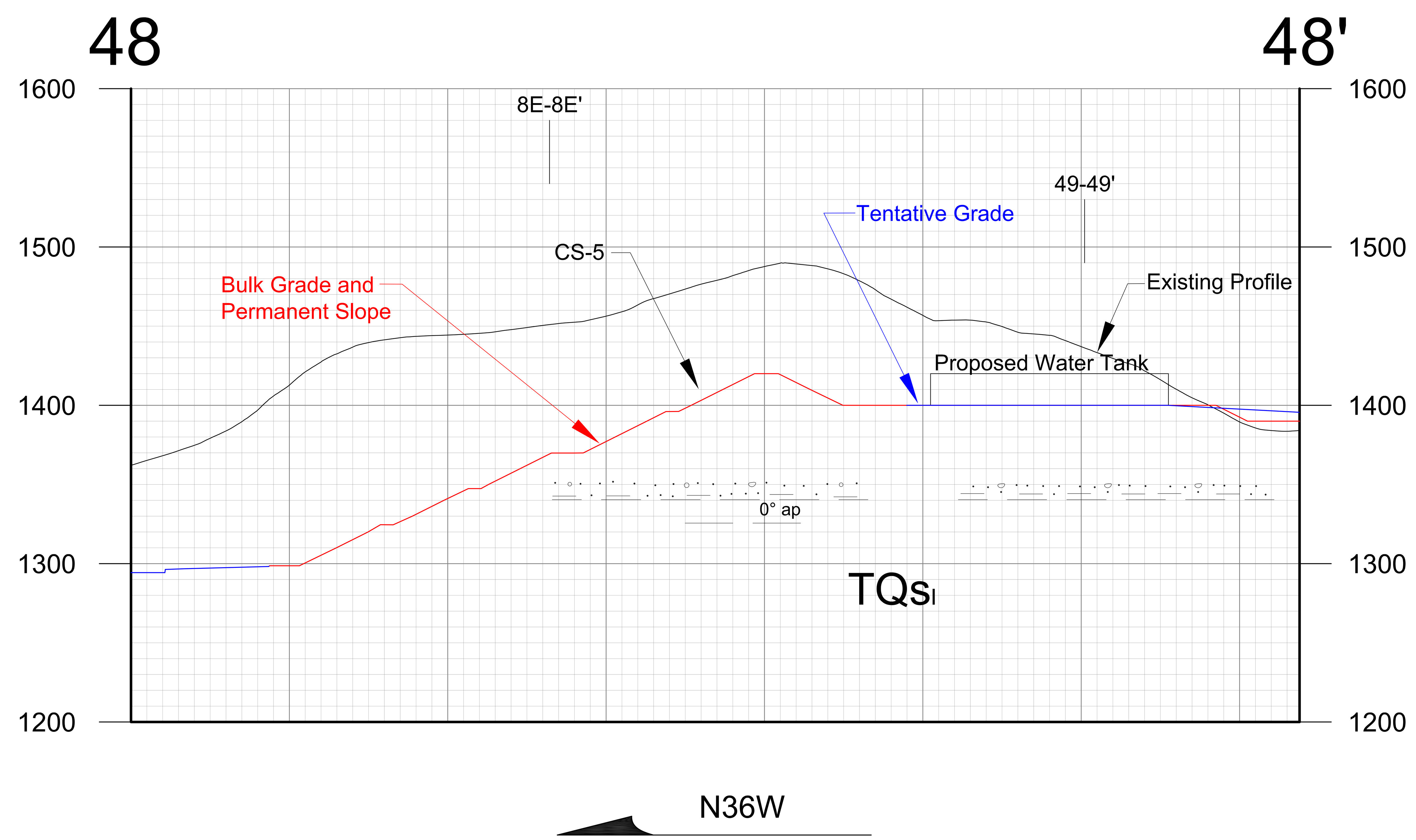
N51E

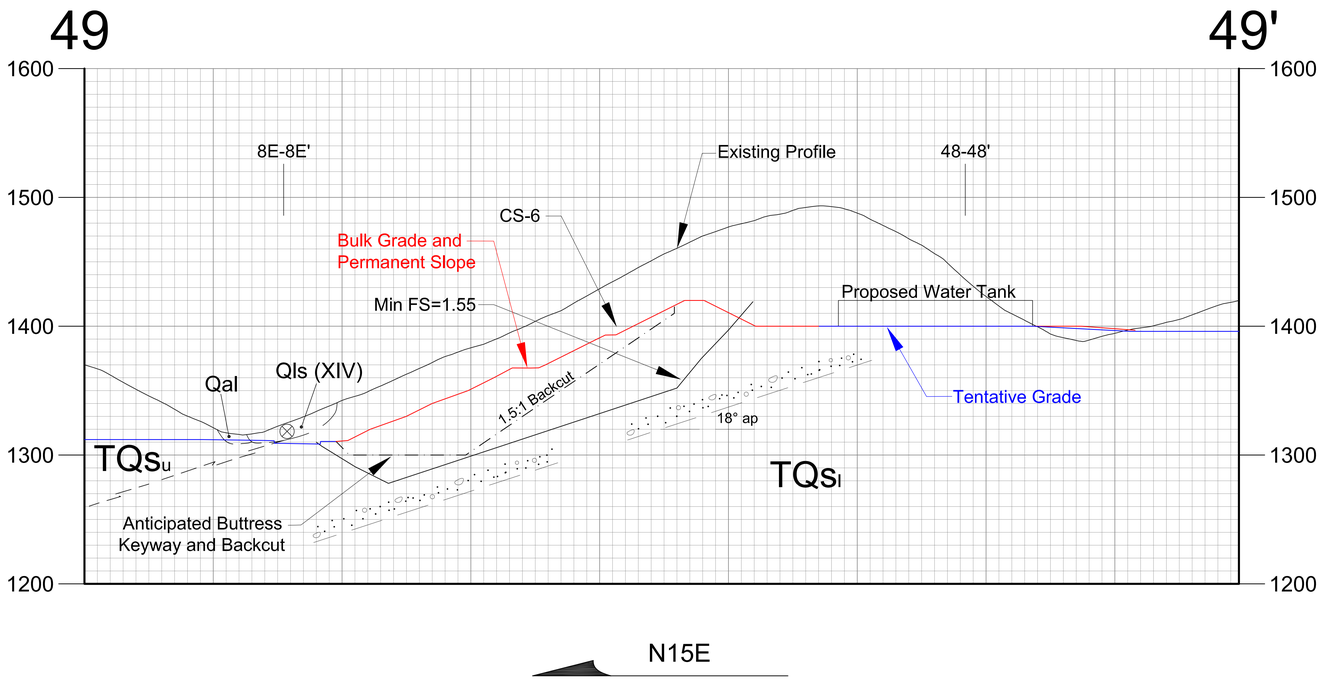
GEOTECHNICAL CROSS SECTIONS 45-45' THROUGH 48-48' BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA		PLATE 50
Proj: 062580-100	Eng/Geol: DJC/AAP	Leighton
Scale: 1"=40'	Date: 5/2012	
Drafted By: BQT / Checked By: BQT	P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:18:11PM) Plotted by: btran	

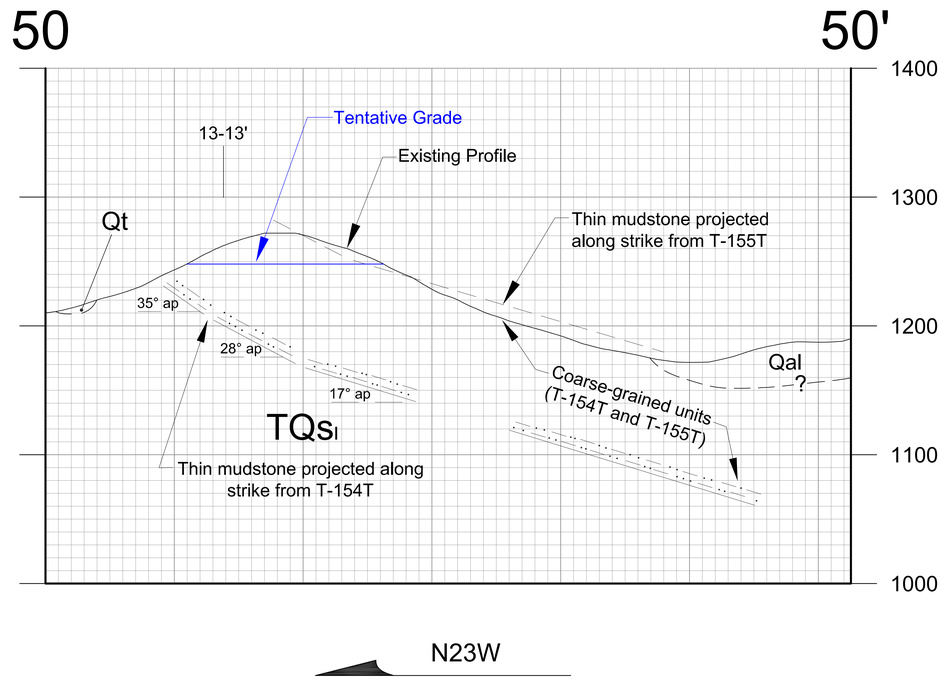


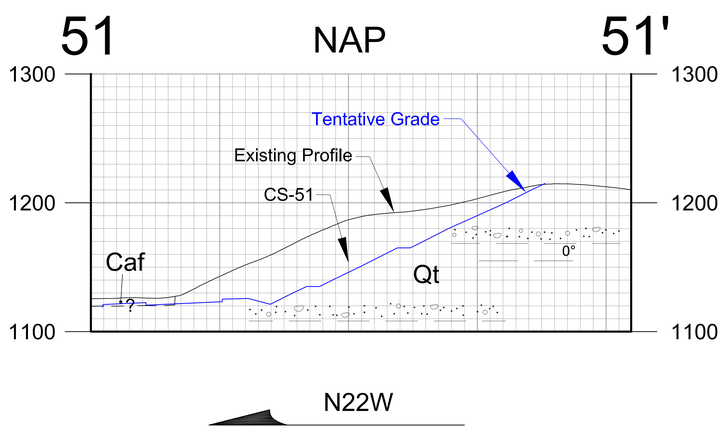


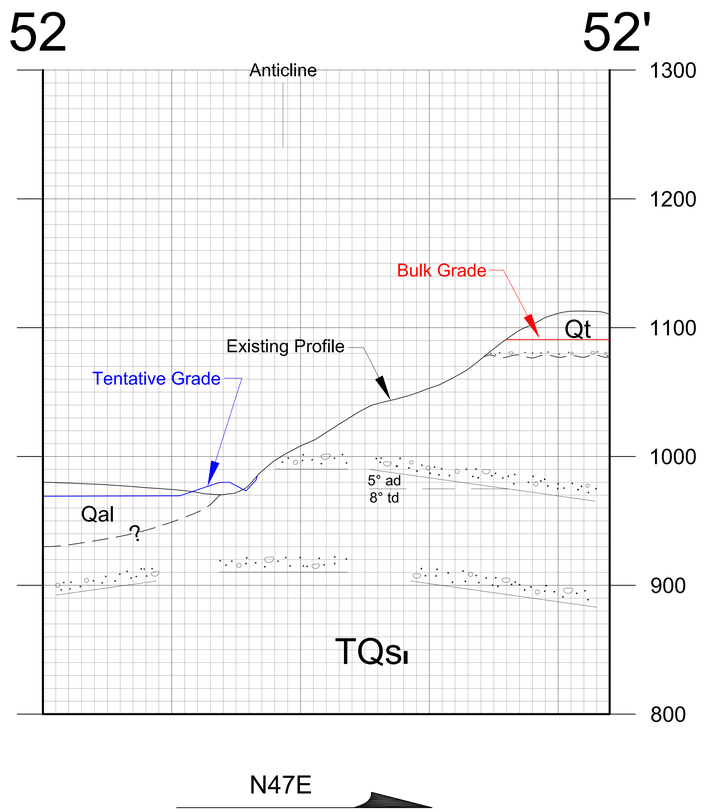












GEOTECHNICAL CROSS SECTIONS
49-49' THROUGH 52-52'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

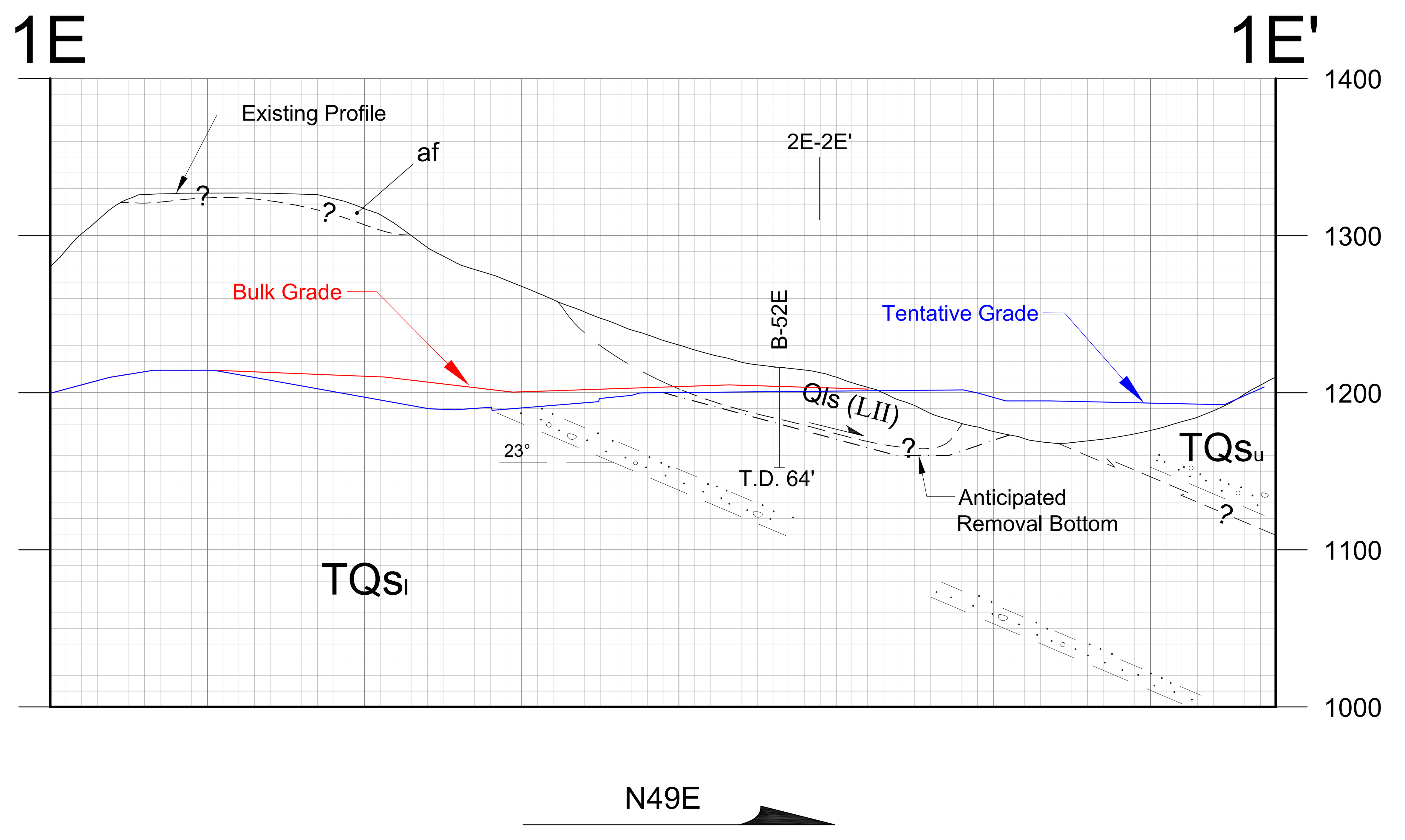
PLATE 51

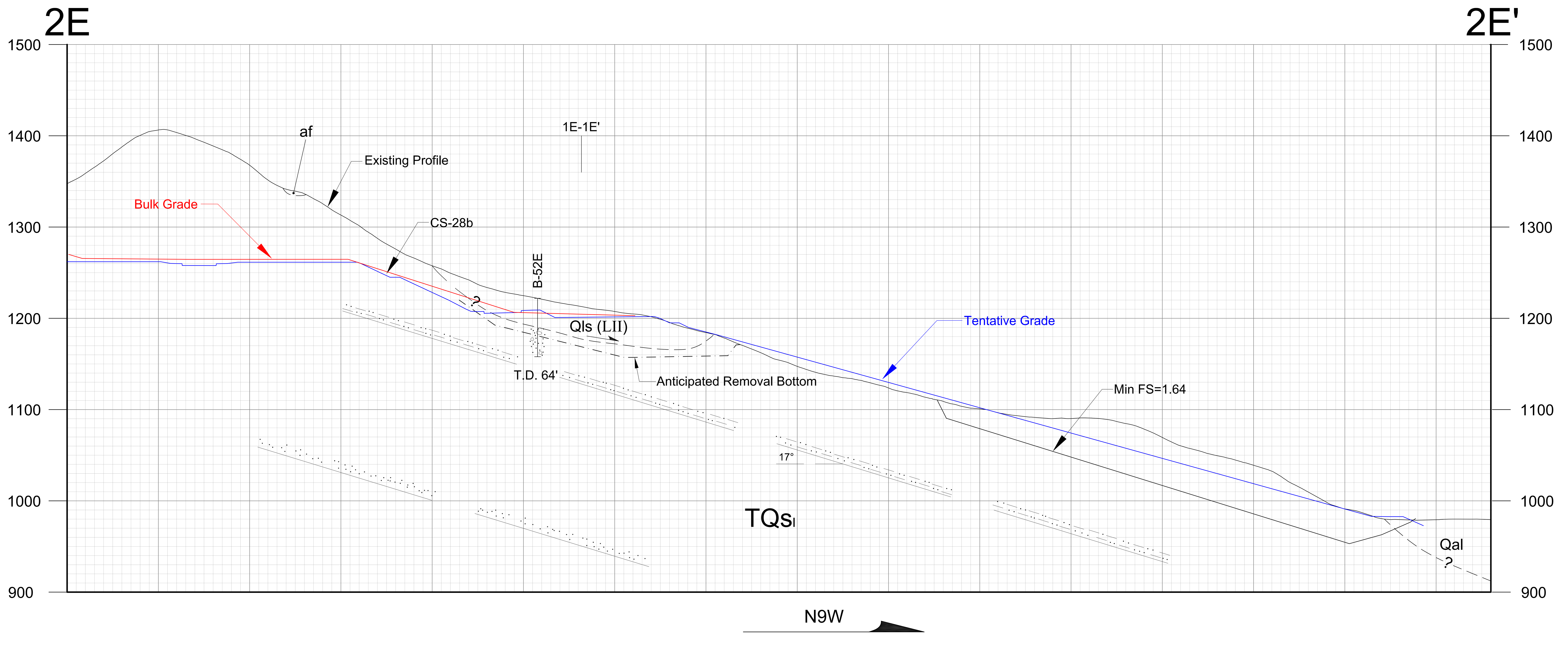
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: RGT | Checked By: RGT

Leighton

GEOTECHNICAL CROSS SECTIONS 1E-1E' AND 2E-2E' BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA			PLATE 52
Proj: 062580-100		Eng/Geol: DJC/AAP	Leighton
Scale: 1"=40'		Date: 5/2012	
Drafted By: BQT	Checked By: BQT	P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:19:29PM) Plotted by: btran	





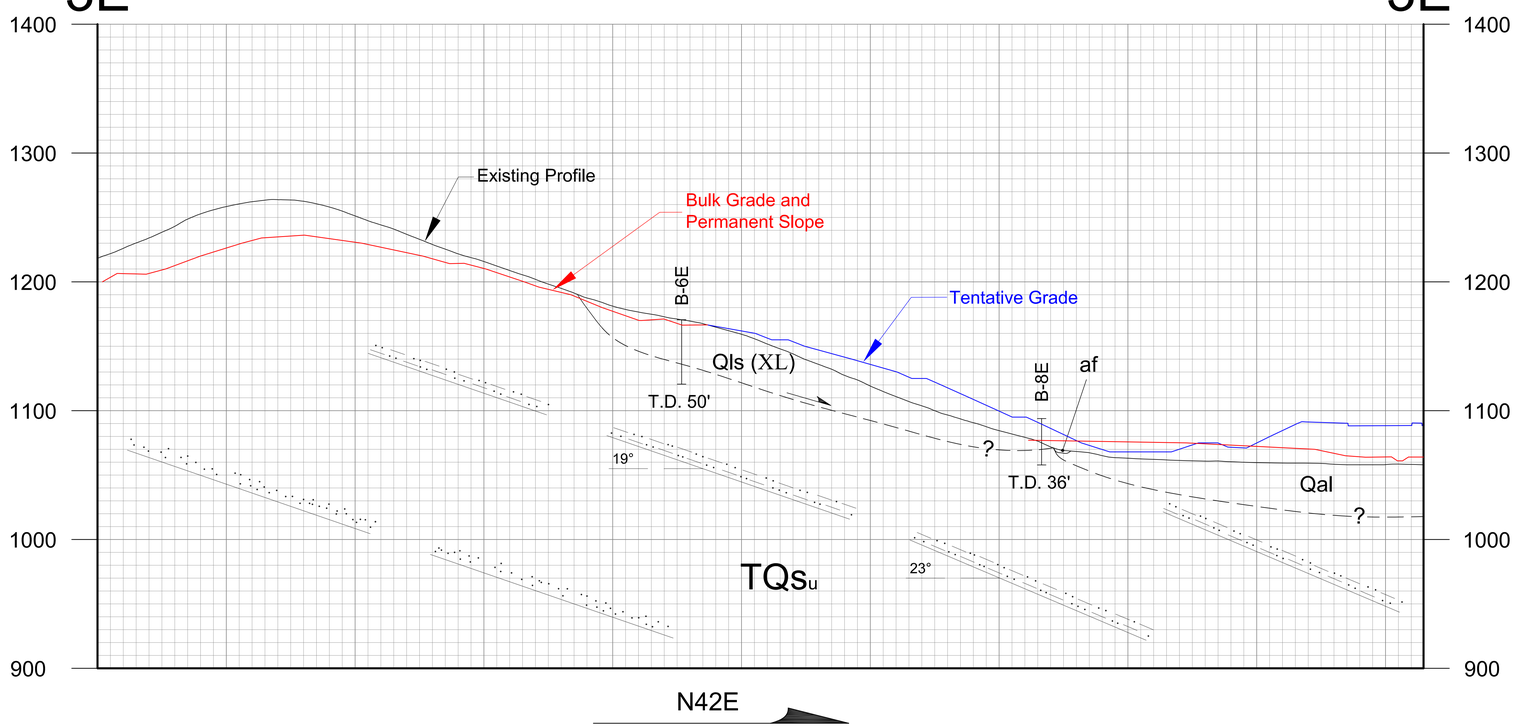
GEOTECHNICAL CROSS SECTIONS
3E-3E', 4E-4E' AND 5E-5E'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

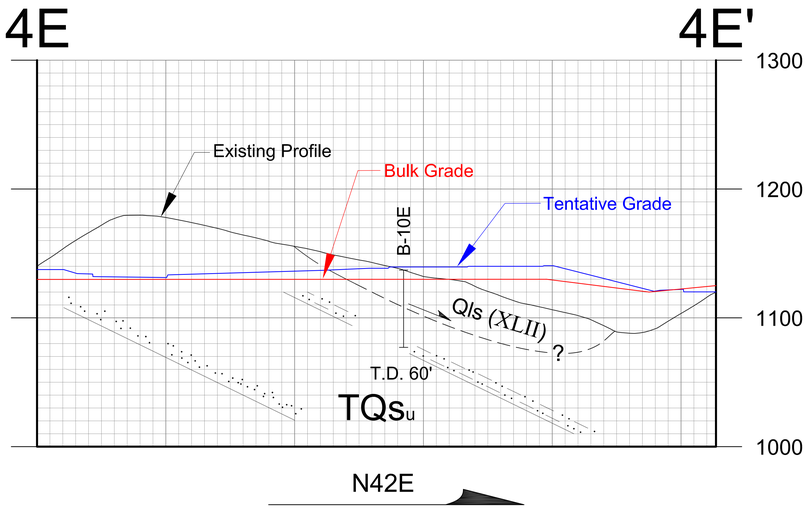
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

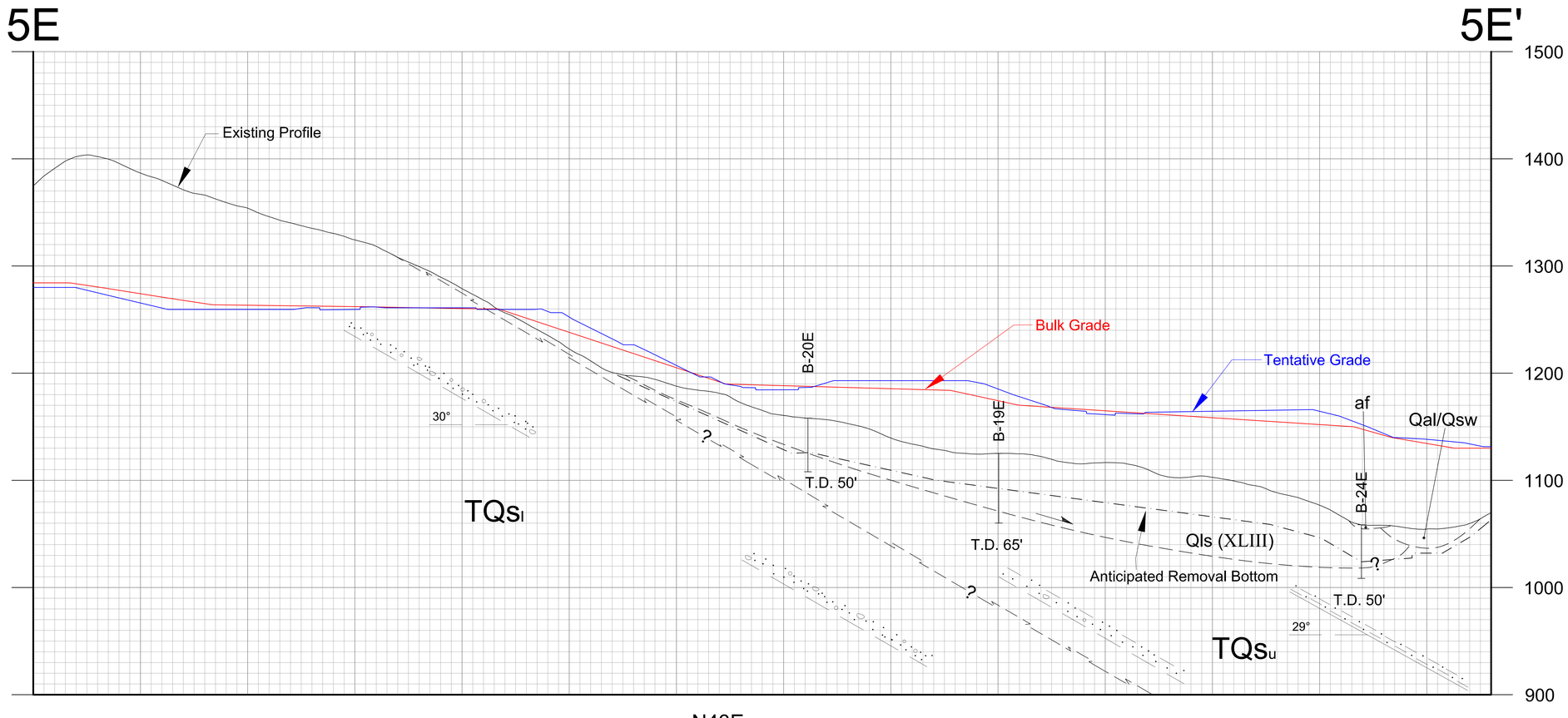
Drafted By: BGT | Checked By: BGT | K:\Grad\Backbone\XSECT_2012-04-05\PLATE_4 HO-SECTIONALS.DGN 4-11-12 12:03:07PM by: Robert Guy Glover

PLATE 53

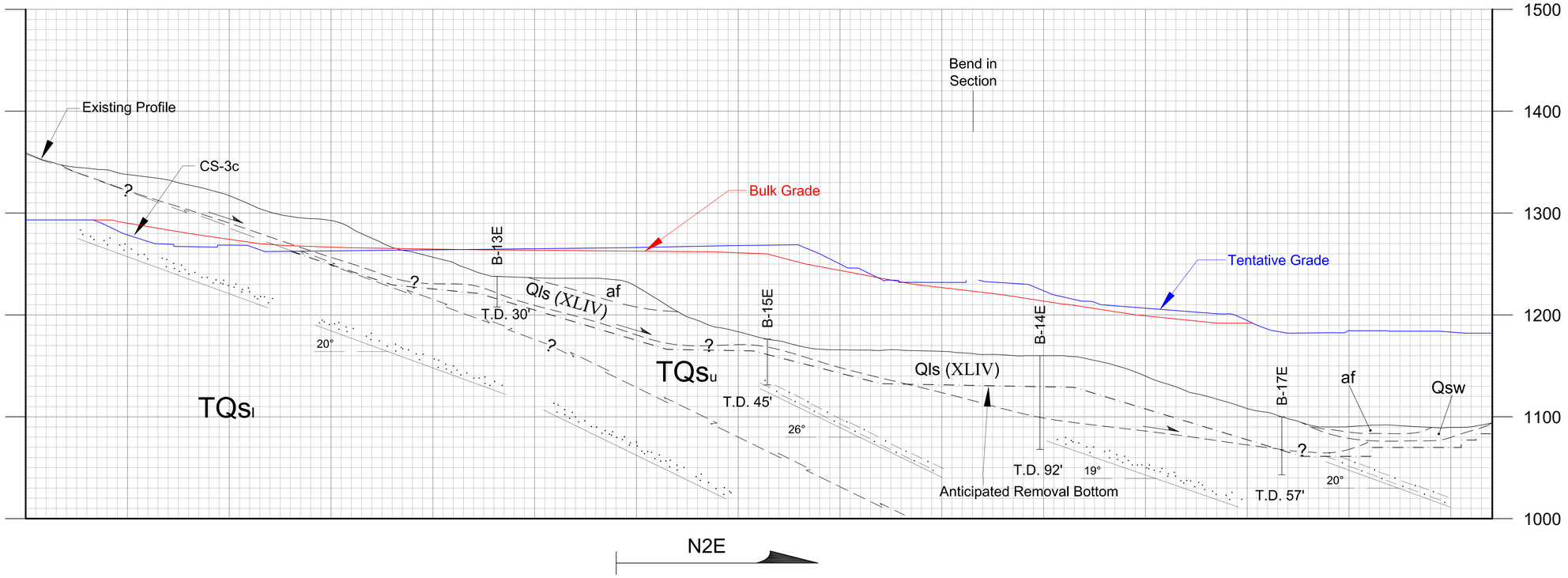
Leighton



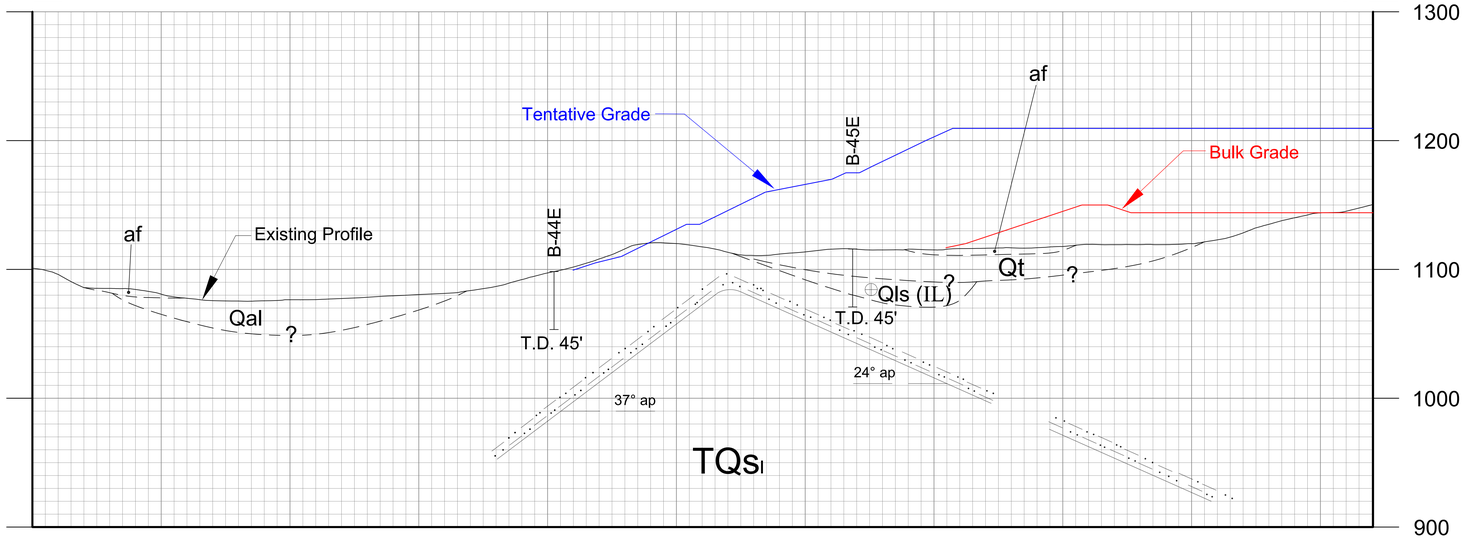




6E — 6E'



7E — 7E'

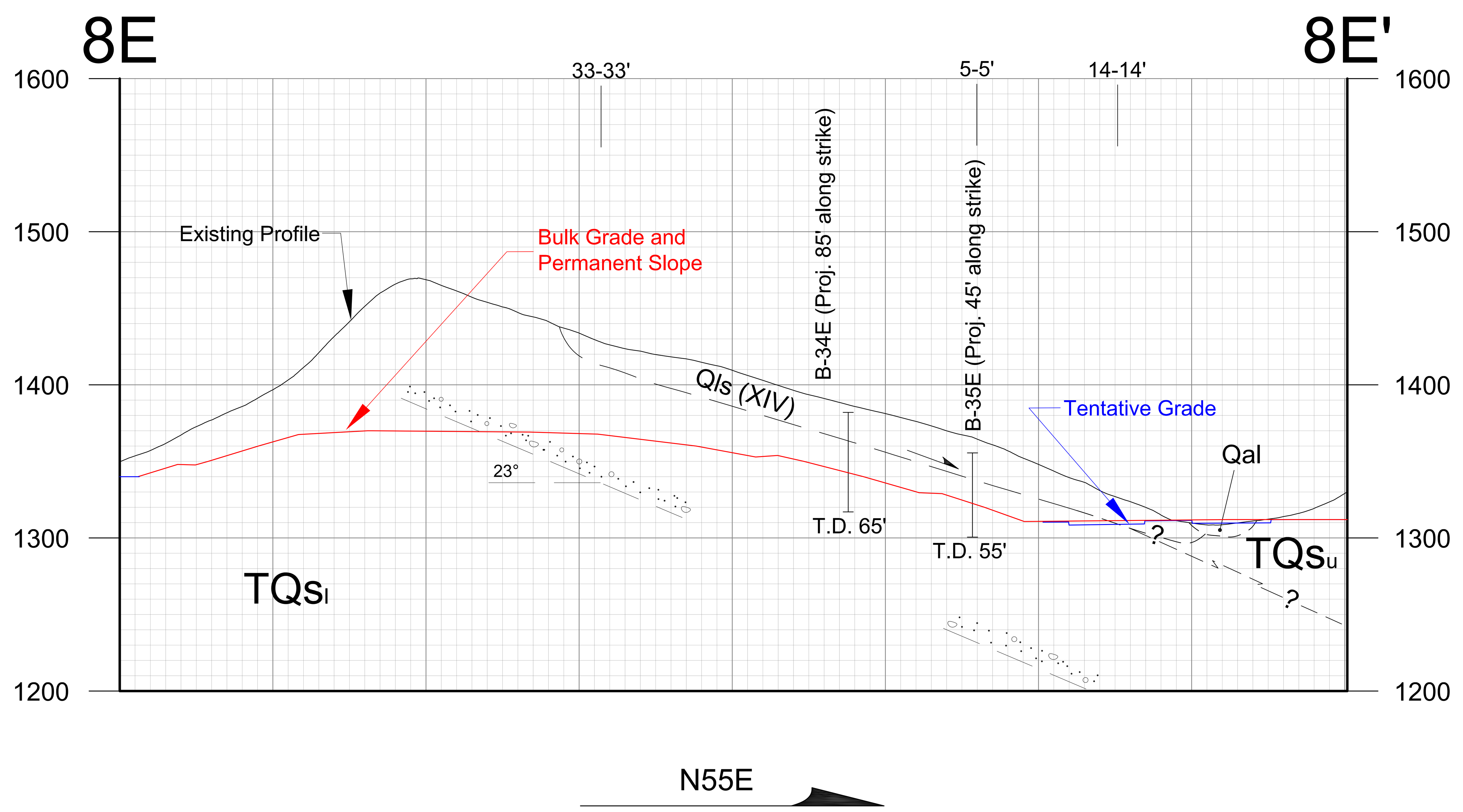


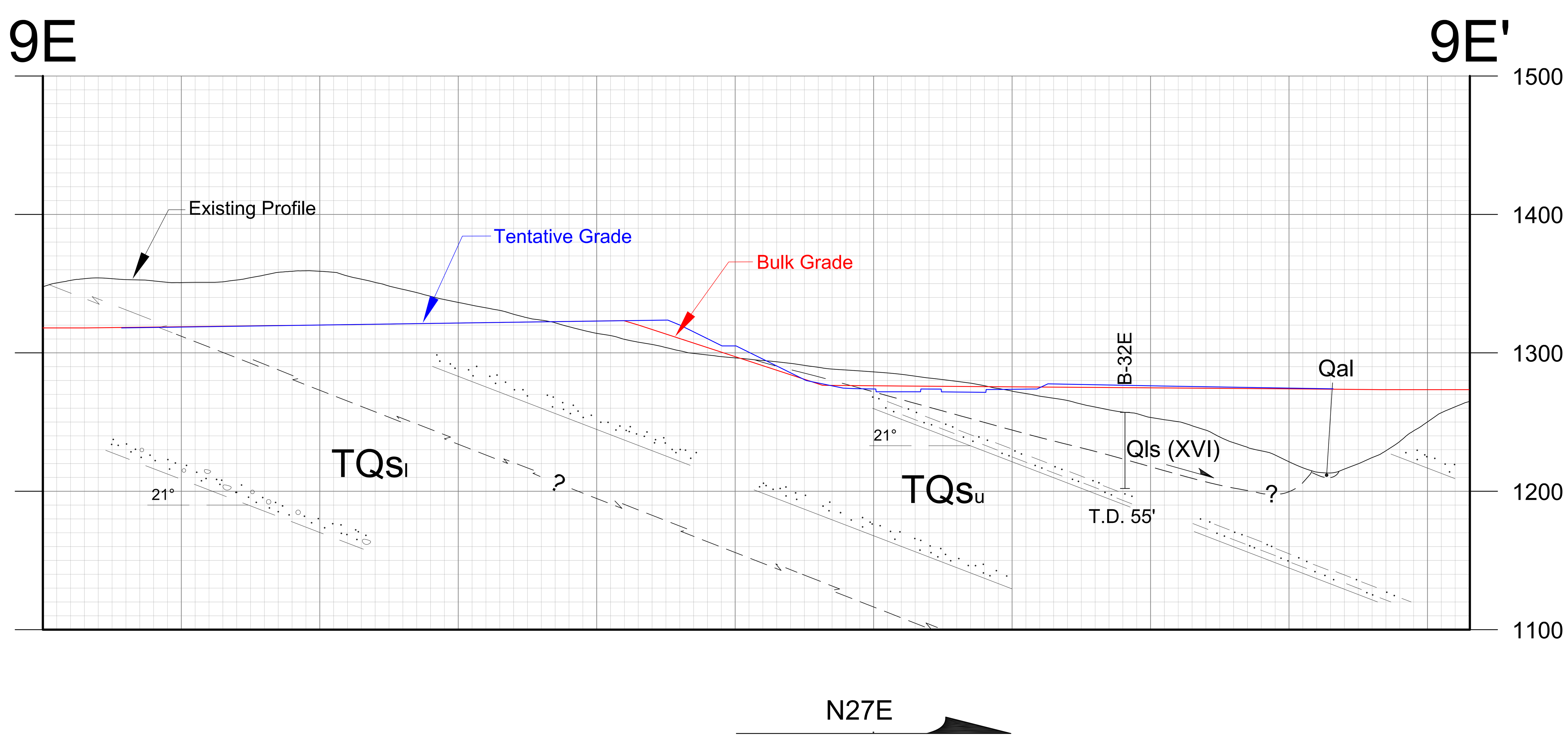
GEOTECHNICAL CROSS SECTIONS
6E-6E' AND 7E-7E'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 54

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: RGT | Checked By: RGT | Leighton





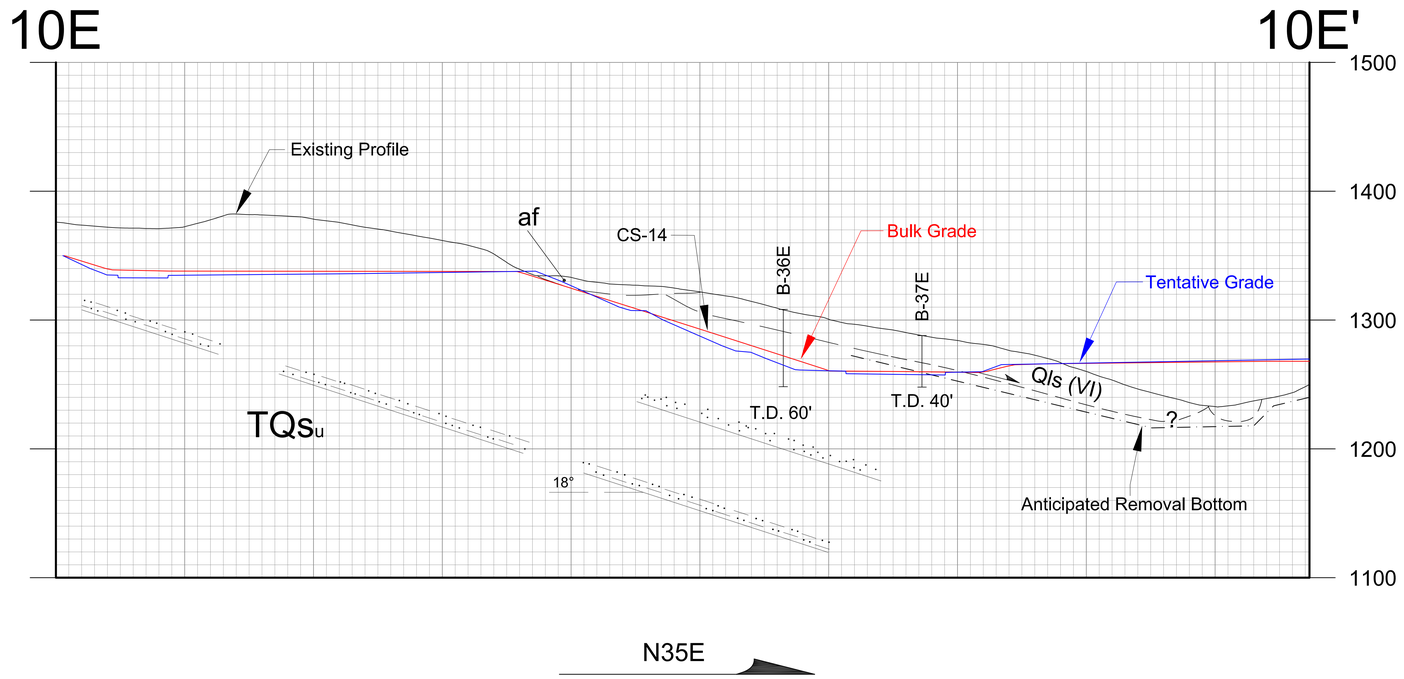
GEOTECHNICAL CROSS SECTIONS
8E-8E' AND 9E-9E'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

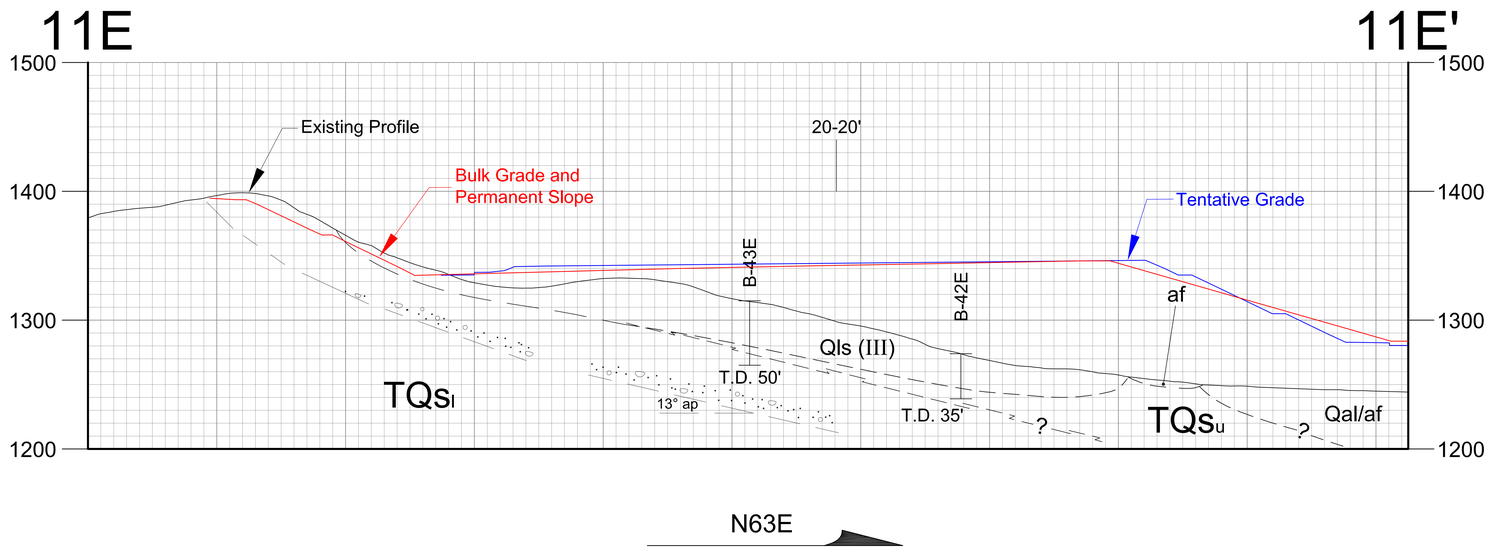
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BQT | Checked By: BQT | P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:21:48PM) Plotted by: btran

PLATE 55

Leighton



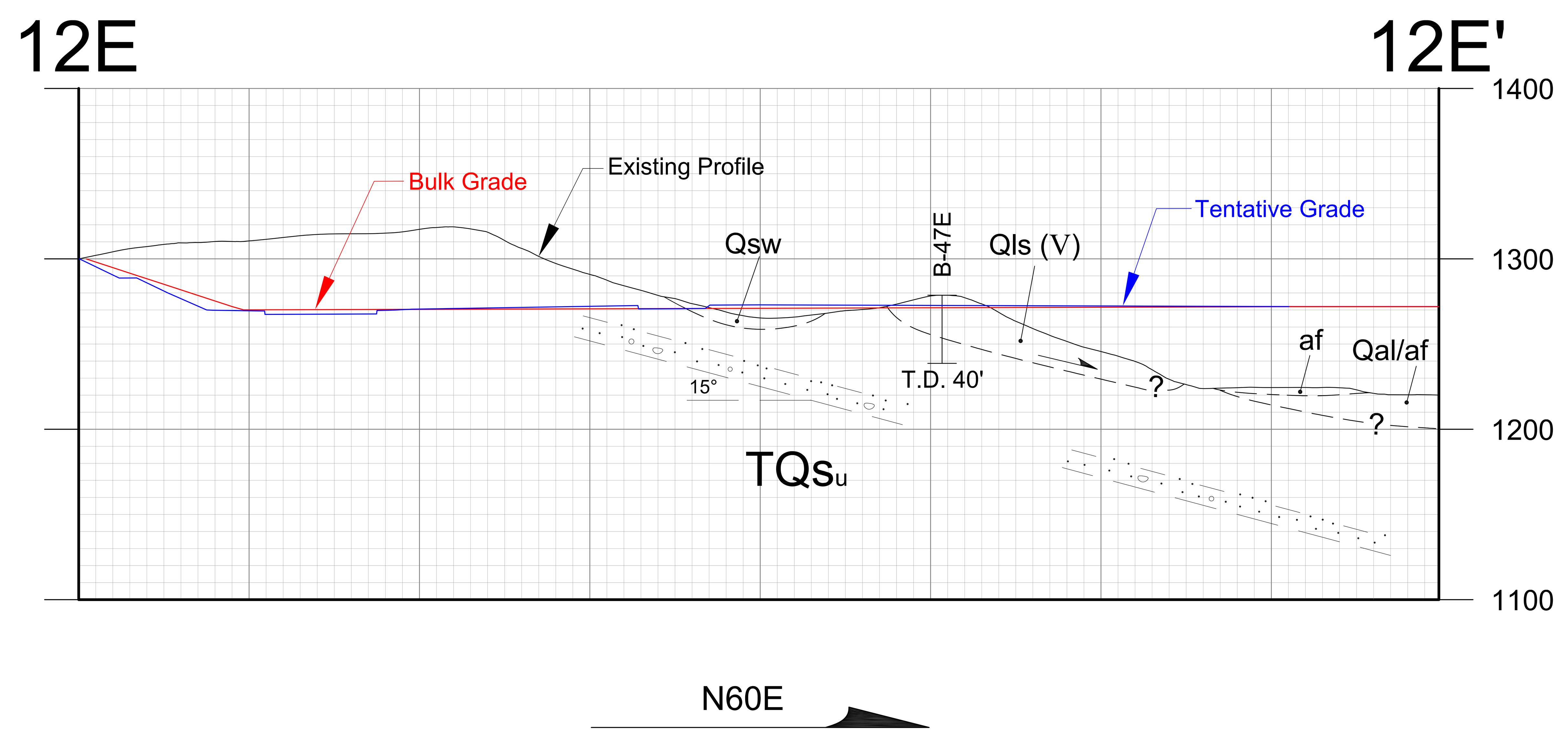


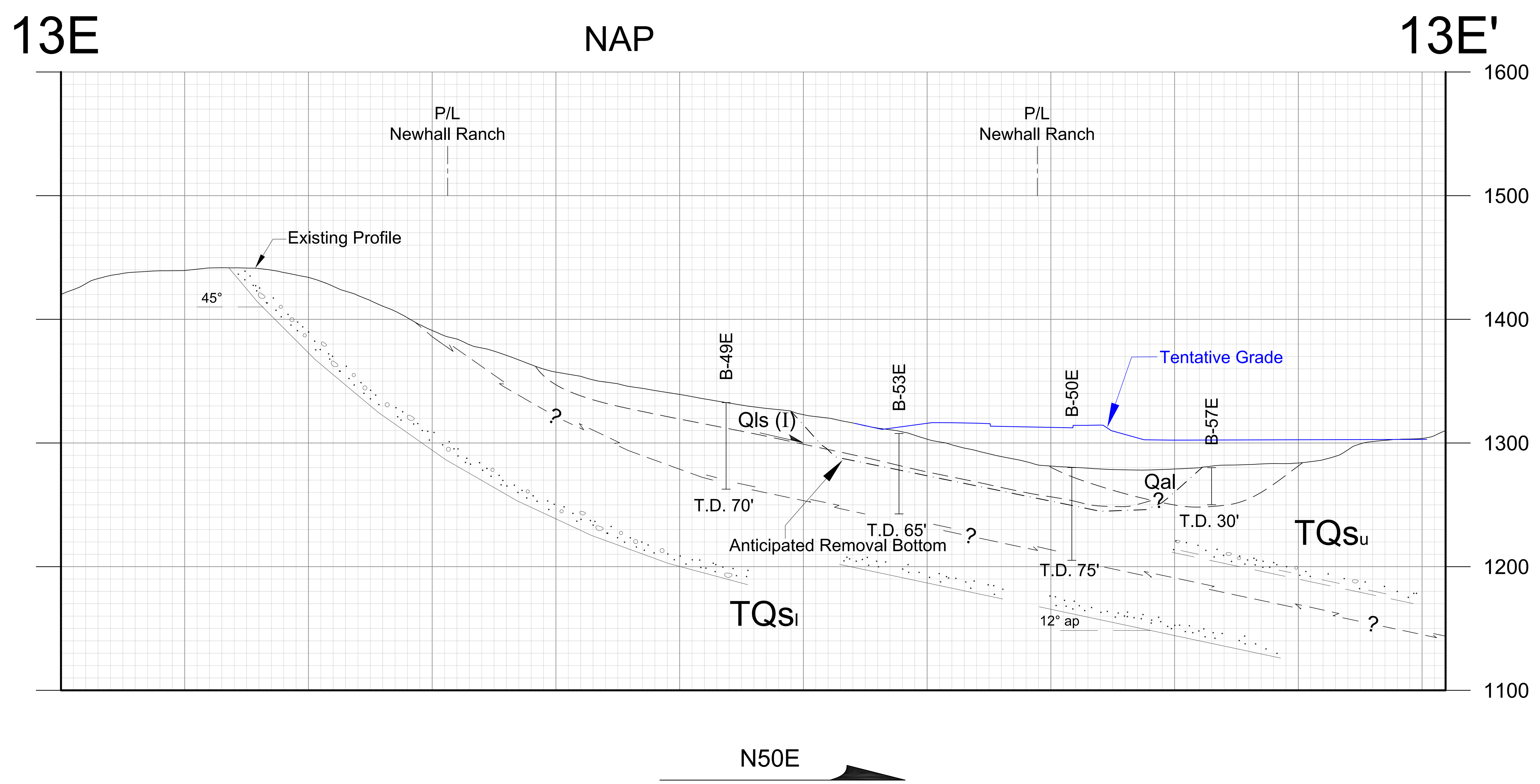
GEOTECHNICAL CROSS SECTIONS
10E-10E' AND 11E-11E'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 56

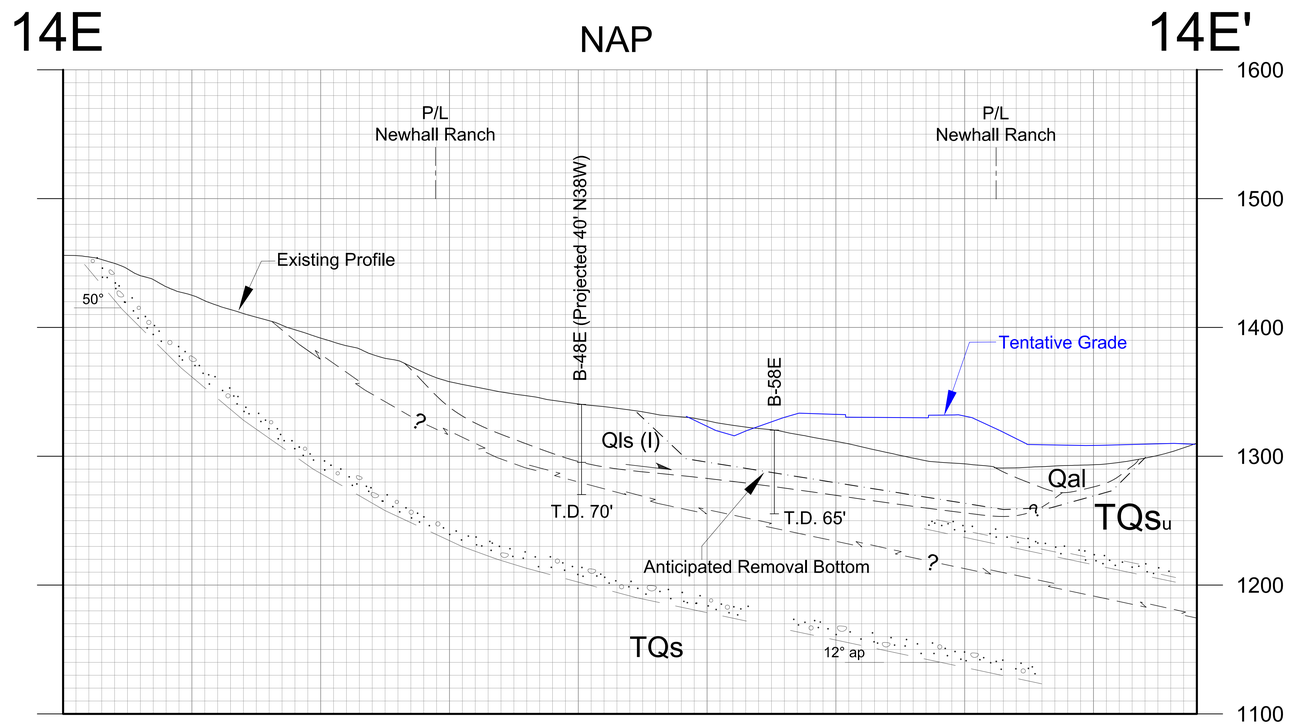
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Leighton

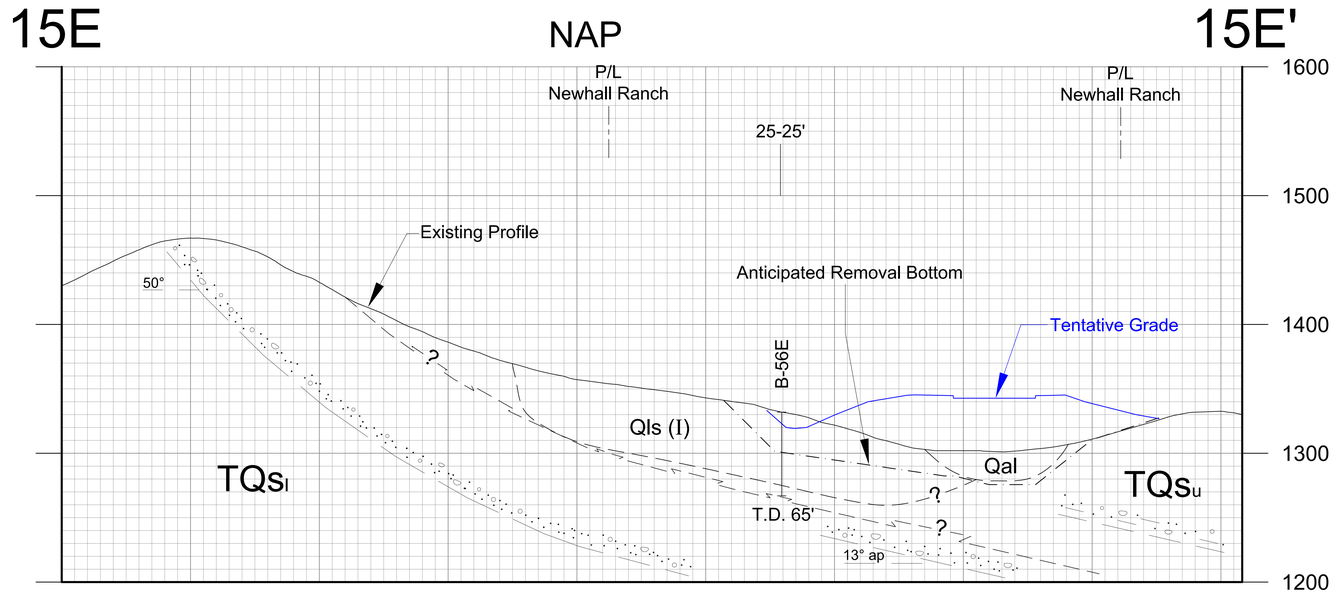




GEOTECHNICAL CROSS SECTIONS 12E-12E' AND 13E-13E' BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA			PLATE 57
Proj: 062580-100		Eng/Geol: DJC/AAP	Leighton
Scale: 1"=40'		Date: 5/2012	
Drafted By: BQT	Checked By: BQT	P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:23:11PM) Plotted by: btran	



N46E



N51E

GEOTECHNICAL CROSS SECTIONS
14E-14E' AND 15E-15E'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 58

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: RCF | Checked By: RCF | Plotted:\\Mission\001-Mission_Grading\Plans\Plate 58 - 14-15 Cross Sections.dwg, 5/2/2012 4:44:41 PM, Plotted by: rfisher

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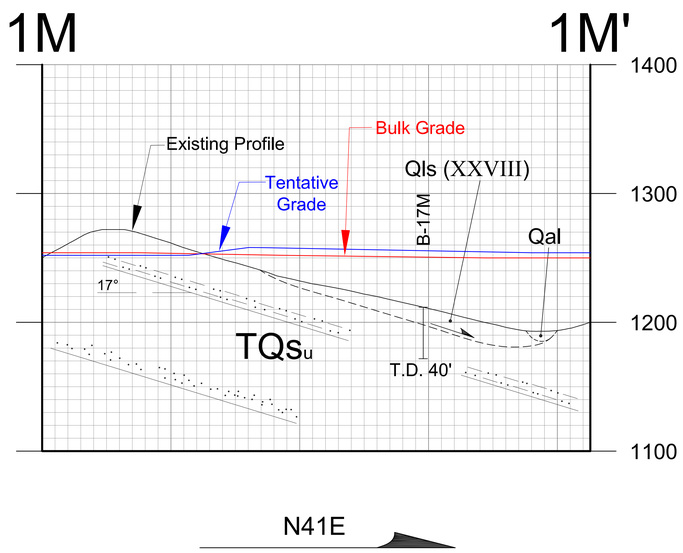
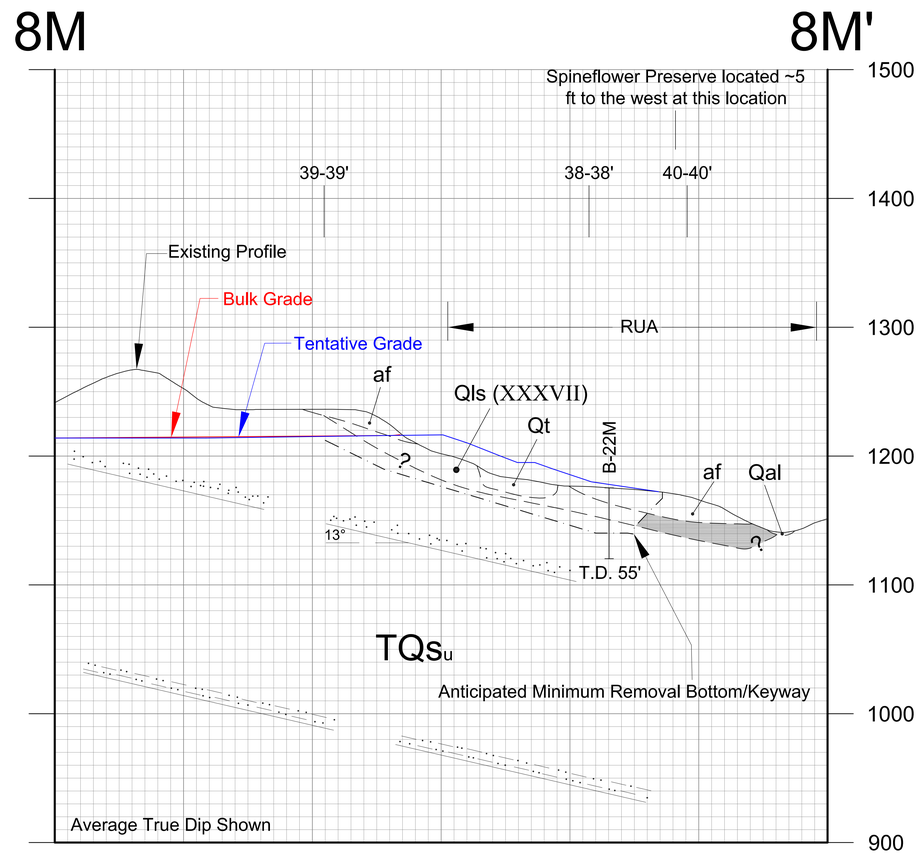
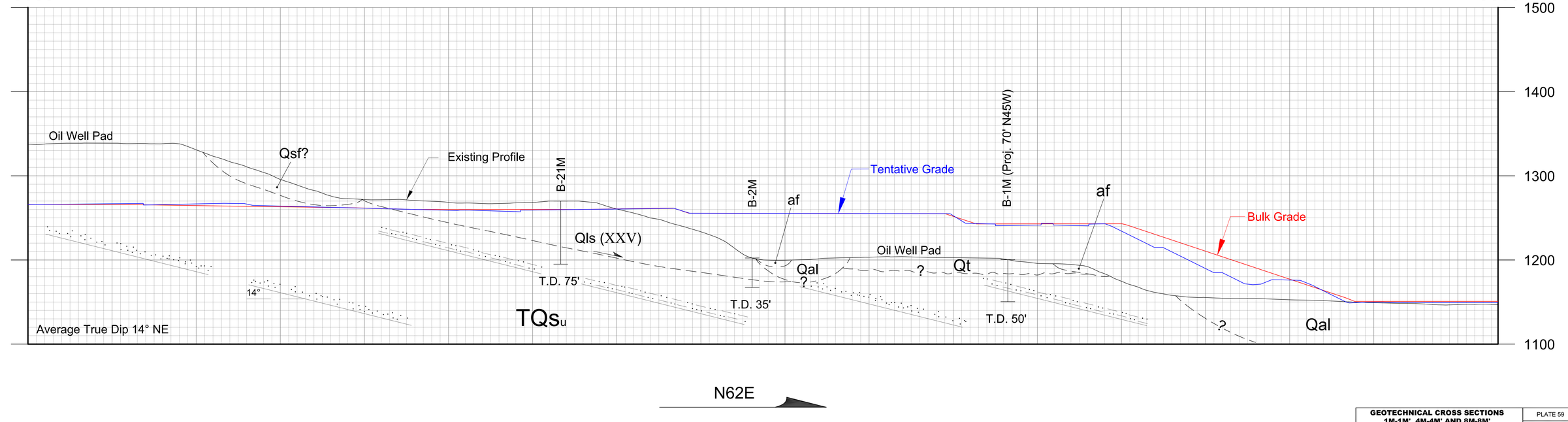
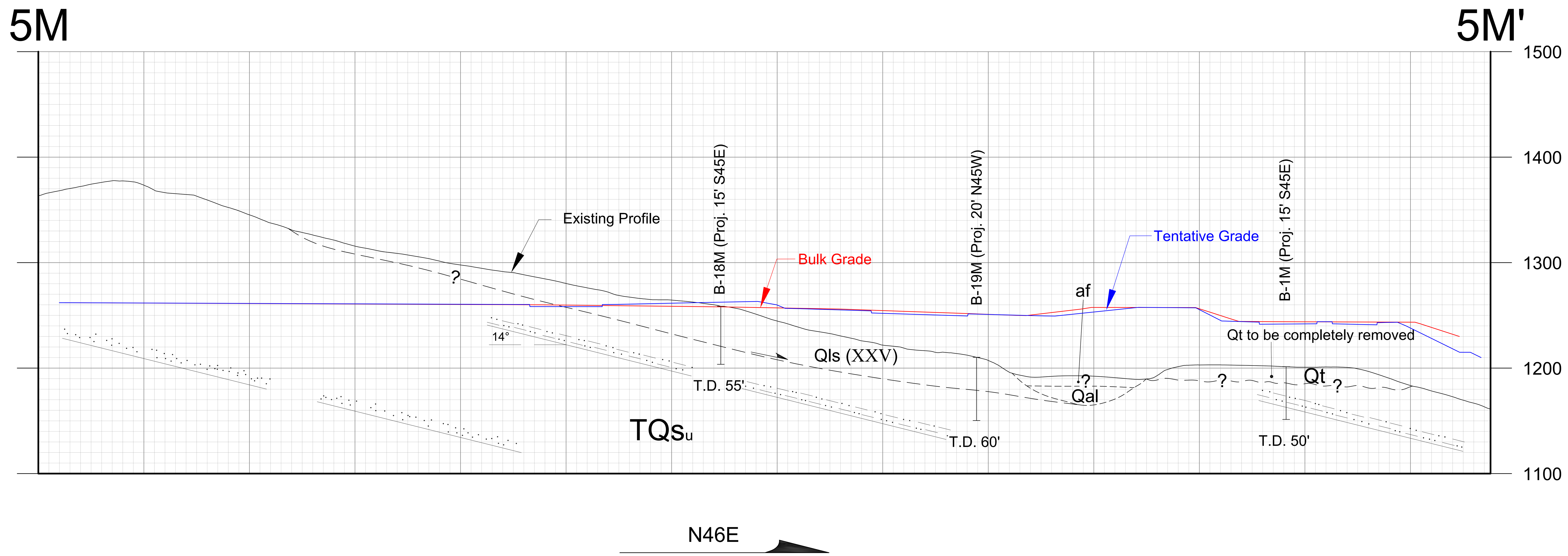
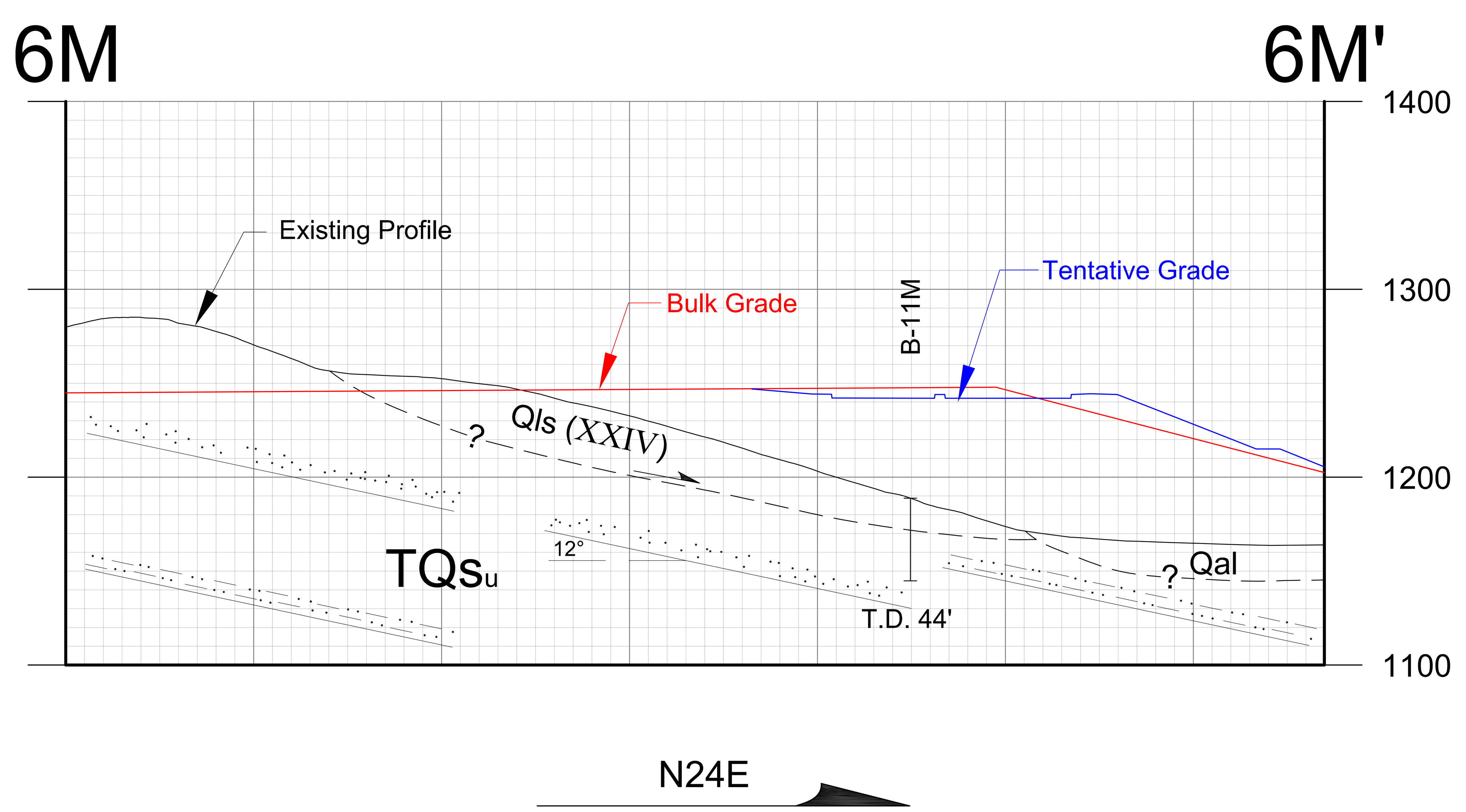


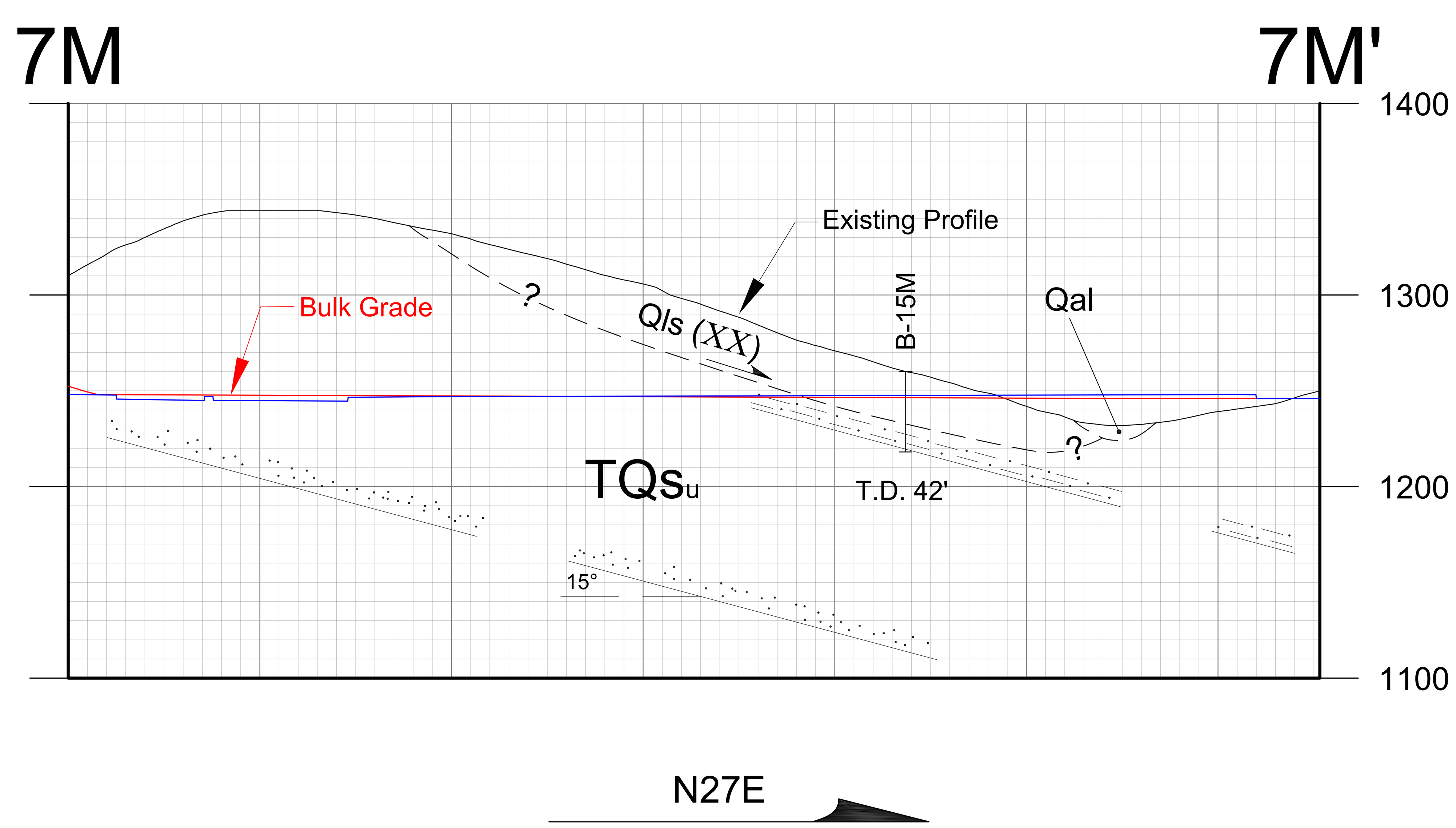




GEOTECHNICAL CROSS SECTIONS 1M-1M', 4M-4M' AND 8M-8M'	PLATE 59
BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA	
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012
Drafted By: BCF | Checked By: BCF | I:\cad\Newhall\mission\GRADE_BULK\MV-NEWHALL-BULK-GRADING-PLAN-12-12-12.dwg 5/2/2012 - 12:12pm, Richard Bass	Leighton







GEOTECHNICAL CROSS SECTIONS
5M-5M' THROUGH 7M-7M'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

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PLATE 60

Leighton

GEOTECHNICAL CROSS SECTIONS
A-A' THROUGH F-F'

BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BQT | Checked By: BQT | P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:25:51PM) Plotted by: btran

PLATE 61

Leighton

GEOTECHNICAL CROSS SECTIONS
G-G' THROUG L-L'

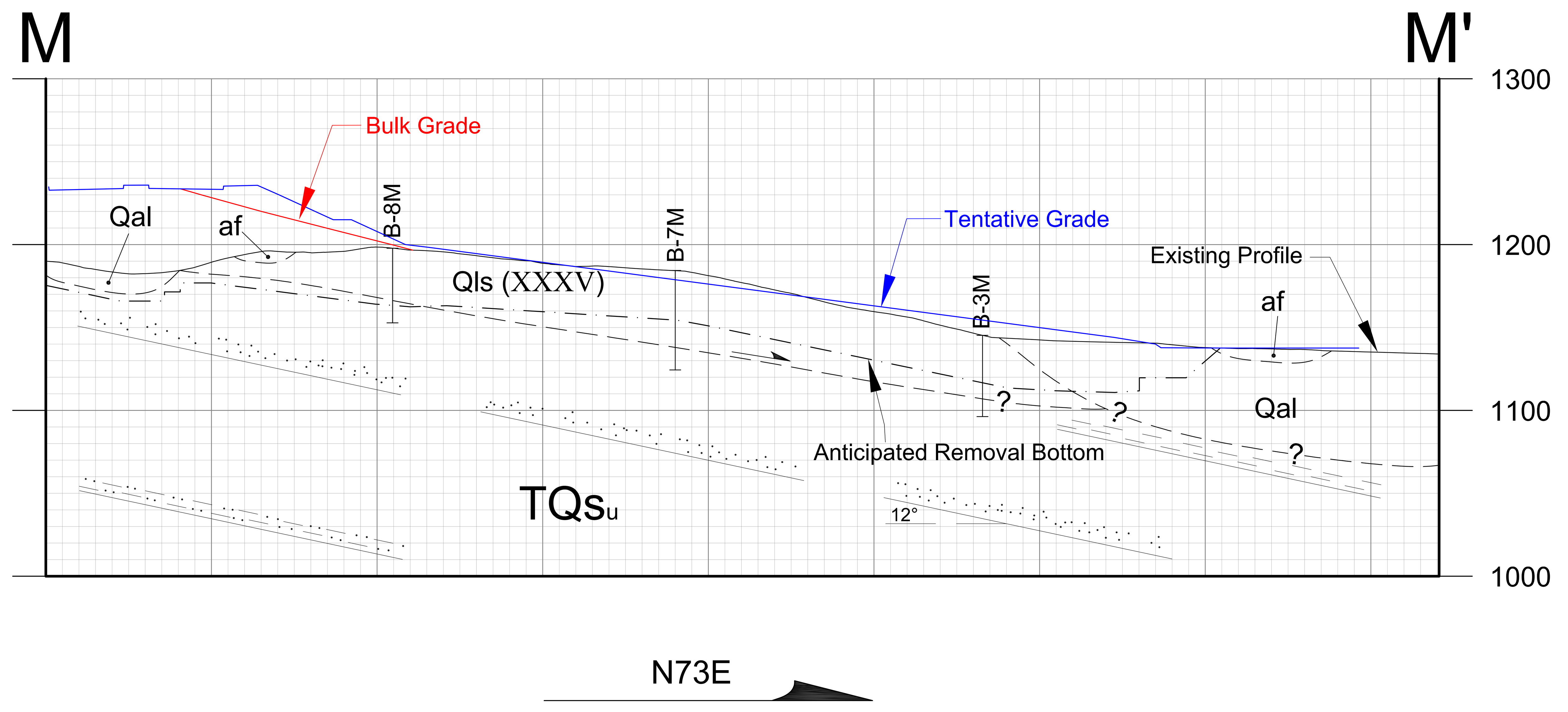
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

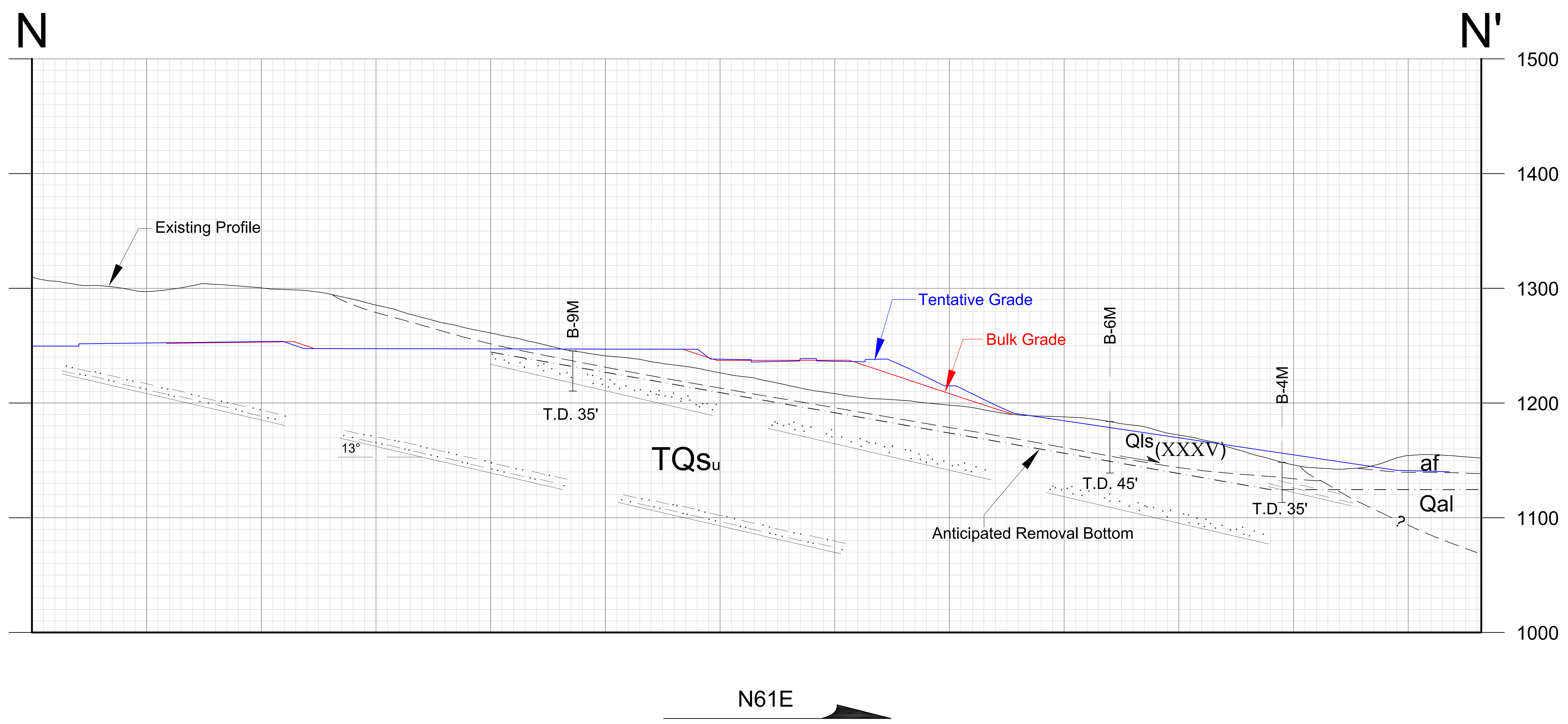
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BQT | Checked By: BQT | P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:26:26PM) Plotted by: btran

PLATE 62

Leighton





GEOTECHNICAL CROSS SECTIONS M-M' AND N-N' BULK GRADING PLAN MISSION VILLAGE, TRACT MAP NO. 61105 NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA	PLATE 63
Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Drafted By: BQT | Checked By: BQT | P:\DRAFTING\062580\100\OF_2012-04-16\PLATE_41-65 SECTIONS.DWG (05-14-12 3:27:00PM) Plotted by: btran

Leighton

GEOTECHNICAL CROSS SECTIONS
LA1-LA1' THROUGH LA3-LA3'

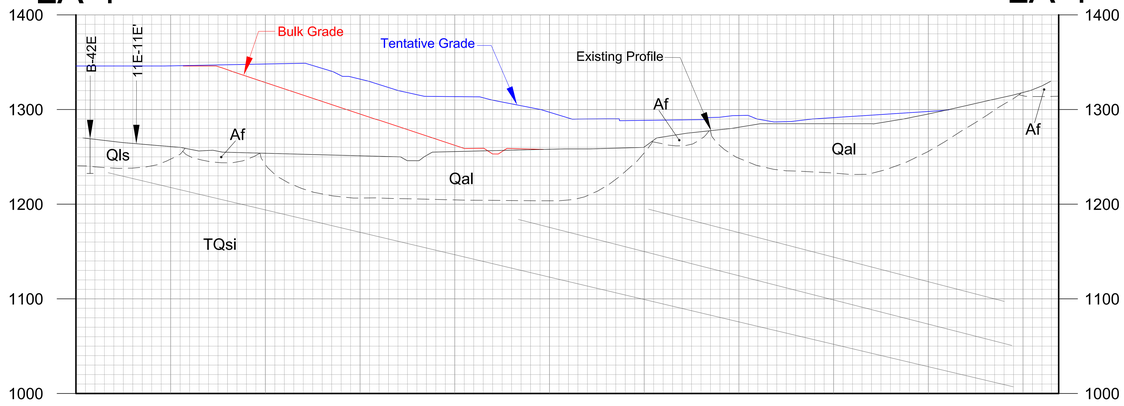
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

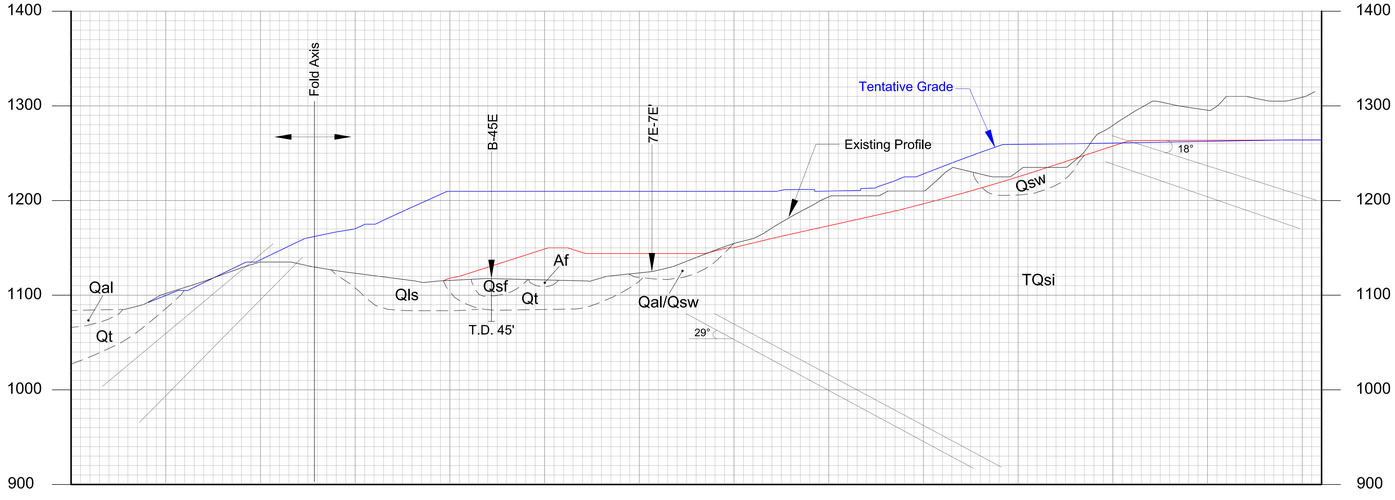
PLATE 64

Leighton

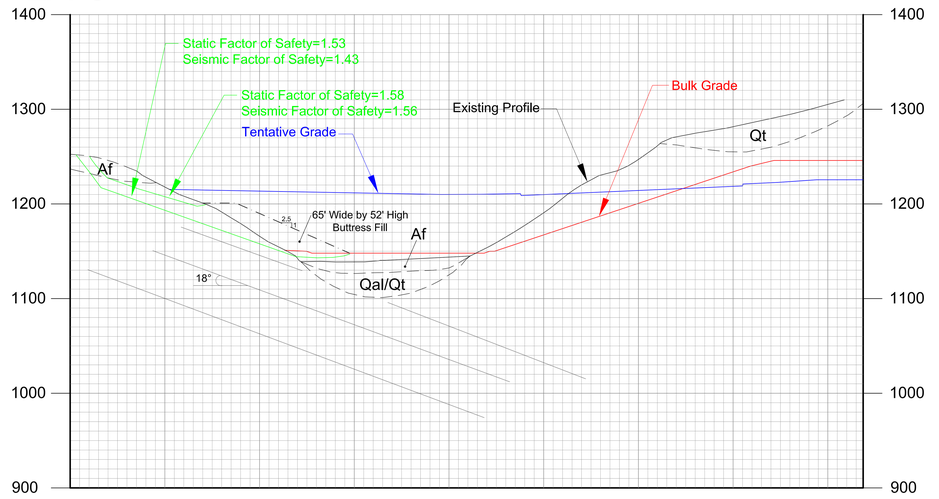
LA-1 — LA-1'



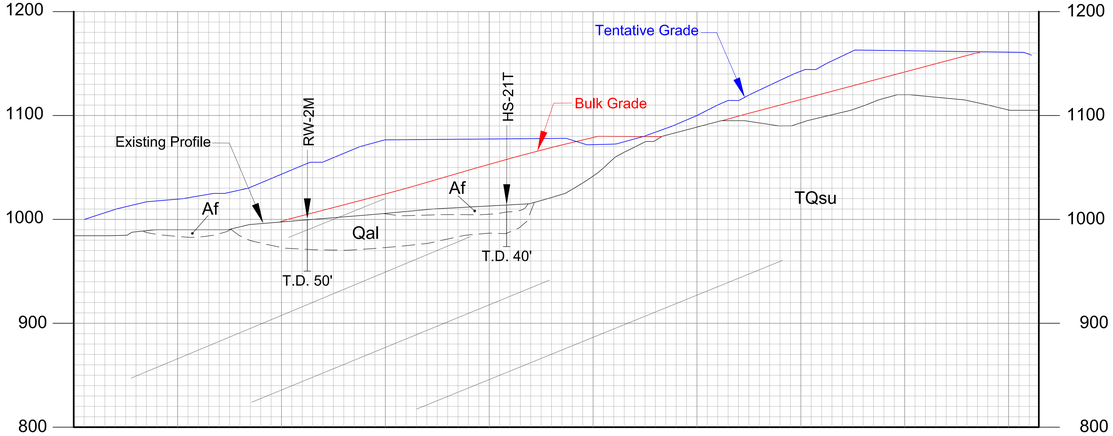
LA-2 — LA-2'



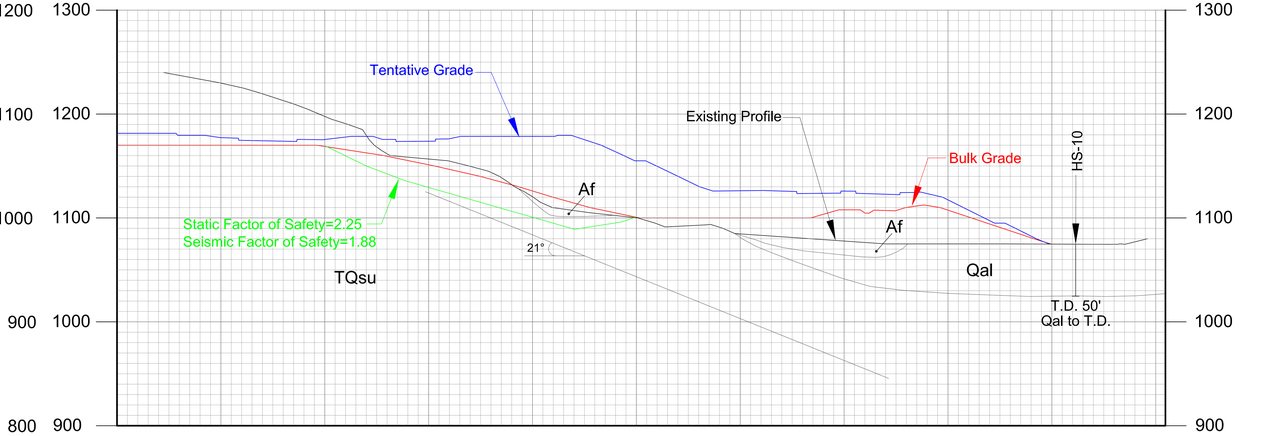
LA-3 — LA-3'



LA-4



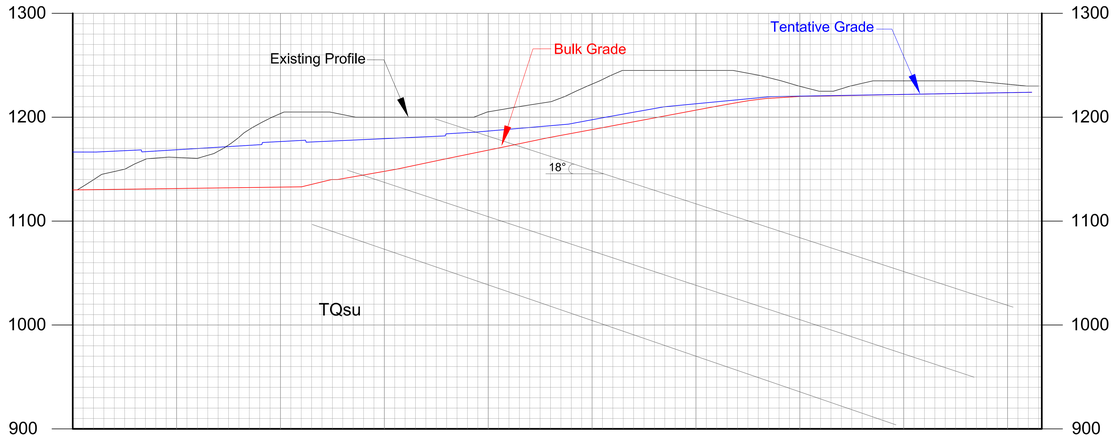
LA-4'



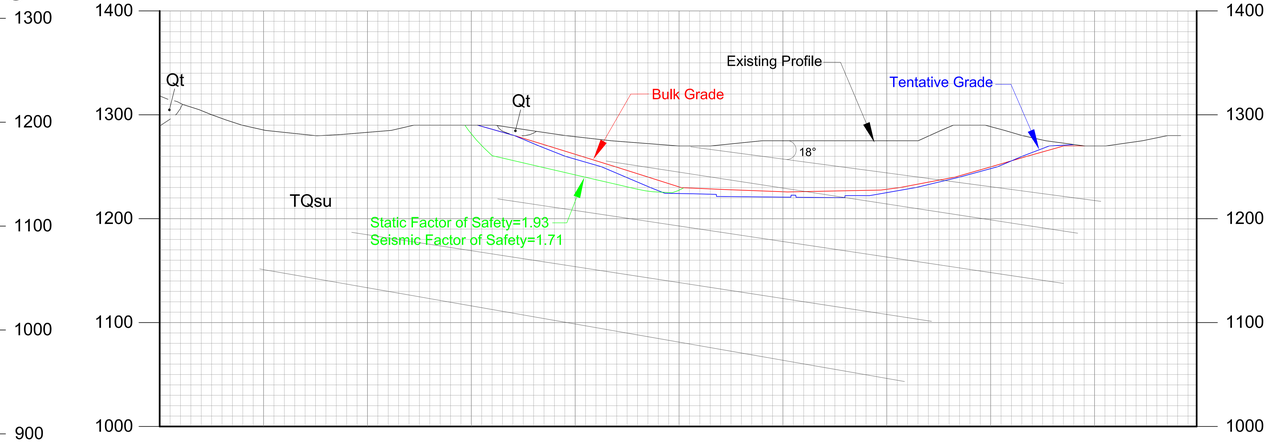
LA-5

LA-5'

LA-6



LA-6'



LA-7

LA-7'

GEOTECHNICAL CROSS SECTIONS
LA4-LA4' THROUGH LA7-LA7'
BULK GRADING PLAN
MISSION VILLAGE, TRACT MAP NO. 61105
NEWHALL RANCH, LOS ANGELES COUNTY, CALIFORNIA

PLATE 65

Proj: 062580-100	Eng/Geol: DJC/AAP
Scale: 1"=40'	Date: 5/2012

Leighton

Appendix 5.6D

Response to Los Angeles County Department of Public Works' Geotechnical Review No. 2 for Vesting Tentative Tract Map No. 53295

R.T. Frankian & Associates

January 16, 2008

RESPONSE TO LOS ANGLES COUNTY

DEPARTMENT OF PUBLIC WORKS

GEOTECHNICAL REVIEW NO. 2

VESTING TENTATIVE TRACT MAP NO. 53295

THE ENTRADA PROJECT

VALENCIA, CALIFORNIA

FOR

NEWHALL LAND AND FARMING COMPANY

JANUARY 16, 2008

JOB NO. 2004-700-22

RTF&A

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

January 16, 2008

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

Job No. 2004-700-22

Attention: Mr. Alex Herrell
Community Manager

Subject: Response to Los Angles County
Department of Public Works
Geotechnical Review No. 2
Vesting Tentative Tract Map No. 53295
The Entrada Project
Valencia, California

This submittal presents our response to review comments by the Los Angeles County Department of Public Works Geotechnical and Materials Engineering Division (LACDPW). The Geologic Review Sheet is dated May 1, 2007. The Soils Engineering Review Sheet is dated June 13, 2007. Review comments address our April 6, 2007 report titled "Report of 100-Scale Plan Review, Vesting Tentative Tract Map No. 53295, Valencia, California, Volumes I and II, Job No. 2004-700-21". The purpose of this report is to provide requested geotechnical data and respond to LACDPW review comments. This work was performed in accordance with our August 4, 2005 proposal and Newhall Land and Farming Company's Letter of Authorization. Review comments are presented in bold type below followed by our response in regular type. Copies of the LACDPW review sheets are included in Appendix A.

R. T. FRANKIAN & ASSOCIATES
1329 SCOTT ROAD BURBANK CALIFORNIA 91504
TEL. (818) 531-1501 FAX (818) 531-1511 WWW.RTFRANKIAN.COM

GEOLOGIC REVIEW SHEET

1. **All parameters and data utilized in the liquefaction analysis must comply with the requirements of the Geotechnical and Materials Engineering Division's Administrative Manual memo G045.0. The historic high groundwater level should be used in the liquefaction analysis unless information obtained indicates that an alternate level is appropriate. (Note: Well 6995D located in the vicinity of Henry Mayo Drive and The Old Road recorded a groundwater level of 6.6 feet below ground surface in 1978.)**

We reviewed the referenced well and wells 6976A and 6986. Historic high groundwater levels from these wells were 6.6 to 9 feet below ground surface. In our April 2007 report we used an historic high groundwater level of 15 feet below ground surface in the local area.

The revised liquefaction analyses, based on an historic high groundwater level of 6.6 feet, are presented in Appendix B. We also revised our liquefaction and seismic settlement analyses utilizing a Factor of Safety = 1.25. Revised liquefaction analyses yield a minor change in calculated results. Liquefaction-prone horizons are limited and localized, and the liquefaction potential and associated differential settlements are considered to be relatively small. For instance, in CPT-8, revised analyses indicate total settlement of 1.35 inches with a potential differential settlement of $^{2}/_{3}$ of 1.35 = 0.9 inch. The estimated settlement before and after the recommended removal depths are shown in the table as follows:

Table 1, Summary of the Settlement Analyses

CPT No.	Settlement with FS=1.20		Settlement with FS=1.25*	
	Before Recommended Removal (inches)	After Recommended Removal (inches)	Before Recommended Removal (inches)	After recommended removal (inches)
CPT-1	0.00	0.00	0.00	0.00
CPT-2	0.00	0.00	0.00	0.00
CPT-4	1.25	1.25	1.30	1.30
CPT-5	0.63	0.46	0.68	0.51
CPT-6	1.96	1.22	1.96	1.22
CPT-7	1.41	1.19	1.45	1.23
CPT-8	1.69	1.35	1.69	1.35
CPT-9	0.95	0.95	0.98	0.98

* see Appendix B

2. Provide geologic mapping for Planning Areas 1 and 2, south of the Santa Clara River.

Geologic mapping for Planning Areas 1 and 2 is shown on attached Figures 1.1 to 1.6. Geologic conditions were modified from the Allan E. Seward Engineering Geology, Inc.'s (AES) report dated July 22, 2004 for Vesting Tentative Tract Map (VTTM) 61105. The mapping covers Lots 44 through 49 where they abut VTTM 61105.

3. Provide stability analyses for natural slopes steeper than 2:1 for Planning Areas 1 and 2. Where there is a potential for daylighted bedding, provide continuous stratigraphy, and translational stability analyses based on strength data from the weakest material identified.

Based on geologic data from the July 22, 2004 AES report, there is no daylighted bedding in the portion of VTTM 61105 that abuts Lots 44 through 49. We prepared geologic cross sections AA-AA' and BB-BB' through critical slope areas using

subsurface exploration from the referenced AES report. Geologic Cross Sections are shown on Figure 2.2. Slope stability analyses were completed on each cross section using strength parameters from the AES report. Results of the stability analyses are presented in response to Comment 3 from the Soils Engineering Review Sheet. Stability analyses indicate cross section BB-BB' has a factor of safety below minimum LACDPW standards. Stability analyses indicate cross section AA-AA' has a factor of safety greater than LACDPW standards.

Results of the stability analyses should be viewed in context. Many geologic factors indicate the results maybe too conservative. For instance, the slopes are around 200 feet tall with an overall slope ratio of around 1:1 horizontal to vertical. Many portions of the slopes have a slope ratio of 0.5:1 or steeper. No landslides were mapped in the area. Bedding is favorably oriented. The rock is sandstone and conglomerate. The area forms a resistant promontory that juts into the Santa Clara River and forces the river to make a substantial bend in its course. Geologic analyses suggest the slopes are grossly stable and have been over geologic time.

Results of the stability analyses may be more representative of the conservatism used in selecting strength parameters and the application of soil engineering strength analyses to a rock mass, then to actual conditions in the field.

4. **For natural slopes that do not meet the minimum County requirements for factor of safety, adjust lot lines to constrain the geotechnical hazard on one lot or provide remediation as warranted. The geotechnical hazard may not be subdivided.**

Lot 44 of VTTM 53295 includes all slope areas located at the boundary of VTTM 61105. No geotechnical hazard is subdivided. Lot 44 is an open space lot not intended for development.

5. **Effective August 1, 2006, all geotechnical reports submitted for review must include an electronic copy of the report on a CD in Adobe Portable Document Format (PDF). The electronic version shall include an electronically generated representation of the licensee's seal, signature, and date of sealing or signing. This project cannot be approved until this**

requirement has been met. The submittal in response to this review must include a CD containing and electronic version of the original report dated 4/6/07 and the supplement report in response to this review.

Acknowledged and attached.

6. The soils engineering review dated 6/13/07 is attached.

Acknowledged.

SOILS ENGINEERING REVIEW SHEET

1. Requirements of the Geology Section are attached.

See our response to the Geology Section earlier in this report.

2. In accordance with Sections 21.40.040 and 21. 40. 080 of Title 21 – Los Angeles County Subdivision Code, geotechnical reports and addenda shall be submitted in a complete text searchable electronic format. The electronic version shall be in Adobe Portable Document Format (PDF) presented on a compact disc. The licensee's seal, signature, license number, date of registration expiration, and date of signing are required to be part of the electronic submittal. Two Hardcopies of reports and addenda shall accompany the electronic submittal. This project cannot be approved until the requirement for the electronic submittal has been met.

Acknowledged and attached.

3. Provide static and seismic slope stability analyses for the daylighted bedding condition in west and northeast facing slopes. Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each

failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

We have provided static and seismic slope stability analyses for west and northwest facing slopes on geologic cross sections AA-AA', and BB-BB'. There is no daylighted bedding in the geologic cross sections. In both cross sections, bedding is favorably oriented. Slope stability analyses were completed on each cross section using strength parameters from the AES report.

Stability analyses indicate cross section AA-AA' has a factor of safety greater than LACDPW standards for residential development.

Stability analyses indicate cross section BB-BB' has a factor of safety below minimum LACDPW standards for residential development. Section BB-BB' is located in Lot 44 of VTTM 53295. Lot 44 includes all slope areas located at the boundary of VTTM 61105. No geotechnical hazard is subdivided. Lot 44 is an open space lot not intended for development.

The results are presented in Appendix C. The Geotechnical Cross Sections with Minimum Factor of Safety surface are shown on Figure 3.

4. **Provide seismic slope stability analyses for the daylighted bedding condition in the northeast facing slopes (i.e. cross sections P-P', Q-Q', R-R', etc.). Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.**

We have provided seismic slope stability analyses for the daylighted bedding condition in northeast facing slopes for Geologic Cross Sections P-P', Q-Q' and R-R'. Results of our stability analyses indicate factors of safety greater than minimum

LACDPW standards. The results are presented in Appendix B of this report. For the analysis of seismic conditions, a seismic coefficient of 0.15g was used. Based on the analyses, the proposed slopes shown on the Geotechnical Map and Geologic Cross Sections are considered grossly stable under seismic conditions and have seismic factor of safety in excess of 1.1. The Geotechnical Cross Sections with Minimum Factor of Safety surfaces are shown on Figure 3.

5. Show all recommended mitigation measures on the geotechnical map as necessary.

See the attached Geotechnical Maps (see Figures 1.1 through 1.6).

6. Include a copy of this review sheet with your response.

A copy of the review sheet is attached.

CHANGES TO VTTM 53295

Lot boundaries in Planning Area EA-1 have been revised since our April 6, 2007 report. Lot boundaries for Lots 44 through 49 have been revised in VTTM 53295. Lot 44 of VTTM 53295 includes all slope areas located at the boundary of VTTM 61105. No geotechnical hazard is subdivided. Lot 44 is an open space lot not intended for development. The revised lots are shown on Figure 1.2.

HOLSER FAULT

We reviewed two reports by Geolabs Westlake Village (Geolabs). The reports are dated May 31 and December 21, 2007. The reports were prepared for Tentative Parcel Map (TPM) 18108. The reports address, among other things, fault hazards

associated with the Holser Fault. New field work by Geolabs and reanalysis of previous exploration on the Holser Fault have resulted in a revised estimate of the location of the fault and the fault's activity. Geolabs' work is summarized on pages 28 to 33 and on Plates 1.4, 2.13, 2.14, and 2.18 of their May 31, 2007 report. The net effect of Geolabs' new analysis is that the Holser Fault is no longer considered an active fault that requires structural setbacks and the Holser Fault is no longer mapped as projecting into VTTM 53295. Los Angeles County Department of Public Works Review Sheets dated July 12 and 26, 2007 covers the May 31, 2007 Geolabs report and appear to accept all Geolabs findings with respect to the Holser Fault. Therefore, we have removed the Holser Fault and associated structural setback from VTTM 53295. There is no evidence within VTTM 53295 that the Holser Fault exists within the tract.

SECTION 111 STATEMENT

Based on our review of the VTTM No. 53295 and referenced reports, it is our professional opinion that the proposed development will be safe from hazard of landslide, settlement, or slippage and will not adversely affect the geotechnical conditions of the off-site properties, provided our recommendations and the requirements of the Los Angeles County Building Codes are followed.

CLOSURE

This work was performed in accordance with generally accepted professional engineering geology and geotechnical engineering principles and practice in southern California at this time. We make no other warranty either express or implied. This work was performed for Newhall Land and Farming Company and their design team to identify geotechnical constraints that affect land use planning decisions. This work was not performed for use by other parties and may not contain sufficient information for other uses at other times.

-oOo-

We appreciate the opportunity to be of service. Please call if you have questions or would like to discuss this proposal in more detail.

- References
- Geotechnical Map - Figures 1.1 through 1.6 (in pocket)
- Geologic Sections - Figures 2.1 and 2.2 (in pocket)
- Geotechnical Sections – Figure 3 (in pocket)
- Appendix A - County of Los Angeles Department of Public Works Review Letters
- Appendix B - Liquefaction Analyses
- Appendix C - Slope Stability Analyses

PROFESSIONAL GEOLOGIST NO. 5917 DOUGLAS S. SANTO CERTIFIED ENGINEERING GEOLOGIST NO. 1866 Exp. 9/08 STATE OF CALIFORNIA

Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

by: Douglas S Santo
Principal Engineering Geologist

REGISTERED PROFESSIONAL ENGINEER DHARMESH P. AMIN No. 2553 Exp: 12-31-08 GEOTECHNICAL STATE OF CALIFORNIA

and: Dharmesh P. Amin
Principal Geotechnical Engineer

DSS/DPA/sjc

Distribution: (6) Newhall Land and Farming Company
Attn: Mr. Alex Herrell
(4) Alliance Land Planning & Engineering, Inc
Attn: Mr. Craig Whitteker
(3 wet-signed stamped copies and 1 CD in PDF Format
for submittal to the LACDPW)

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

REFERENCES

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California Division of Mines and Geology, 1996, Probabilistic Seismic Hazard Assessment for the State of California, Open-File Report 96-08.

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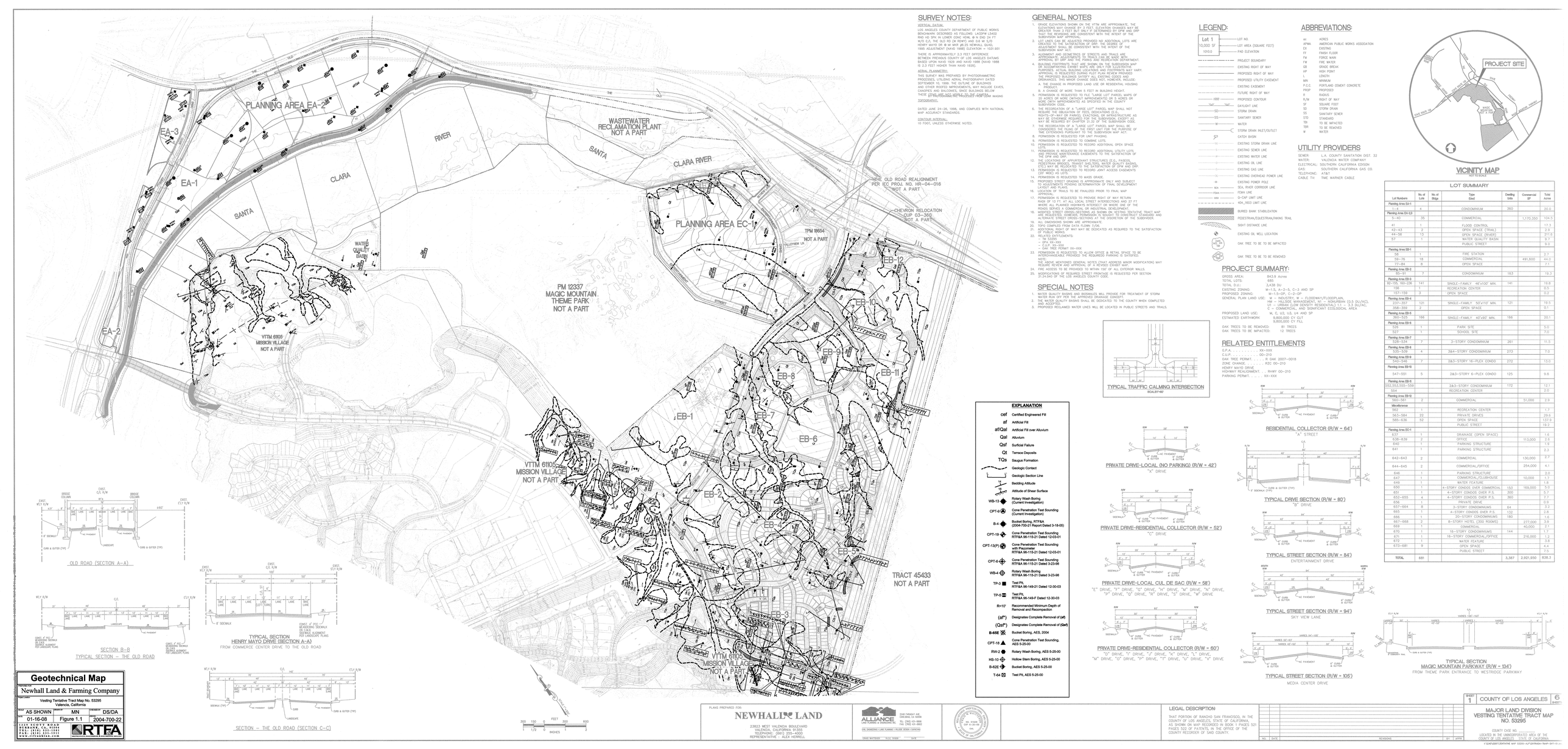

SURVEY NOTES:

VERTICAL DATUM:
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK DESCRIBED AS FOLLOWS: LACDPW LS-6420 BND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O C/L THE OLD RD (@ ROW?) AND 0.6 MI S/O HENRY MAYO DR @ W MKR @0.25 NEBWALL QUAD, 1995 ADJUSTMENT (NAVD 1988) ELEVATION = 1031.931

THERE IS APPROXIMATELY 2.3 FEET DIFFERENCE BETWEEN PREVIOUS COUNTY OF LOS ANGELES DATUMS BASED UPON NAVD 1929 AND NAVD 1988 (NAVD 1988 IS 2.3 FEET HIGHER THAN NAVD 1929).

AERIAL PLANIMETRIC:
THIS SURVEY WAS PREPARED BY PHOTOGRAMMETRIC PROCESSES, UTILIZING AERIAL PHOTOGRAPHY DATED SEPTEMBER 10, 1999. THE OUTLINE OF BUILDINGS AND OTHER ROOFED IMPROVEMENTS, MAY INCLUDE EAVES, CANOPIES AND BALCONIES, SINCE BUILDINGS BELOW THESE LEVEL ARE NOT VISIBLE TO THE AERIAL IMAGING PERSPECTIVE.

TOPOGRAPHY:
DATED JUNE 24–26, 1998, AND COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.

CONTOUR INTERVAL:
10 FOOT, UNLESS OTHERWISE NOTED.

GENERAL NOTES

1. GRADE ELEVATIONS SHOWN ON THE VTTM ARE APPROXIMATE. THE ELEVATIONS MAY CHANGE BY ± 2 FEET, ELEVATION CHANGES MAY BE GREATER THAN ± 2 FEET ONLY AS DETERMINED BY DPW AND DRP SHALL BE REASONABLY CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL.
2. LOT LINES CAN BE ADJUSTED PROVIDED NO ADDITIONAL LOTS ARE CREATED TO THE SATISFACTION OF DRP, THE DEGREE OF ADJUSTMENT SHALL BE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP ACT.
3. ALIGNMENT AND GEOMETRICS OF STREETS AND TRAILS ARE APPROXIMATE. ADJUSTMENTS TO TRAILS CAN BE MADE WITH APPROVAL OF DRP AND DPW AND TO STREETS WITH APPROVAL OF DPW.
4. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE SUBDIVISION MAP OR ACCOMPANYING EXHIBIT MAPS ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS AND FOOTPRINTS MAY VARY. MINOR CHANGES DURING FINAL PLOTTING SHALL BE ALLOWED. THE FOLLOWING BUILDING SHIFTS ALL EXISTING ZONING AND ORDINANCES. MINOR CHANGE DOES NOT, HOWEVER, INCLUDE:
   A. THE CHANGE IN PROPOSED LAND USE OR RESIDENTIAL HOUSING PRODUCT.
   B. A CHANGE OF MORE THAN 5 FEET IN BUILDING HEIGHT.
5. PERMISSION IS REQUESTED TO FILE "LARGE LOT" PARCEL MAPS OF LESS THAN 40 ACRES GROSS AND WITHOUT ALL LOTS HAVING 40 ACRE GROSS (WITH APPROXIMATELY AS SPECIFIED IN THE COUNTY SUBDIVISION CODE.
6. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL NOT REQUIRE THE OBLIGATION OF FEES, DEDICATIONS (E.G., PARKLAND DEDICATION FEES) OR THE CONSTRUCTION OF IMPROVEMENTS AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
7. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL BE CONSIDERED THE FILING OF THE FIRST UNIT FOR THE PURPOSE OF THE TIME LIMITATIONS SET FORTH IN THE SUBDIVISION MAP ACT.
8. PERMISSION IS REQUESTED FOR UNIT PHASING.
9. PERMISSION IS REQUESTED TO COMBINE LOTS.
10. PERMISSION IS REQUESTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
11. PERMISSION IS REQUESTED TO RECORD ADDITIONAL UTILITY LOTS AND PROVIDE MAINTENANCE EASEMENTS TO THE SATISFACTION OF DPW AND DRP.
12. THE LOCATIONS OF APPURTENANT STRUCTURES (E.G., PARKS, PEDESTRIAN BRIDGES, TRANSIT SHELTERS, WATER QUALITY BASINS, ETC.) MAY BE ADJUSTED TO THE SATISFACTION OF DPW AND DRP.
13. PERMISSION IS REQUESTED TO RECORD JOINT ACCESS EASEMENTS (20' WIDE) AS LOTS.
14. PERMISSION IS REQUESTED TO MASS GRADE.
15. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LOT GRADING.
16. LOCATION OF TRAILS TO BE FINALIZED PRIOR TO FINAL MAP APPROVAL.
17. PERMISSION IS REQUESTED TO PROVIDE RIGHT OF WAY RETURN RADII OF 13 FT. AT ALL LOCAL STREET INTERSECTIONS AND 27 FT WHERE ALL PLANNED HIGHWAYS INTERSECT OR WHERE ONE OF THE STREETS IS A COLLECTOR STREET OR A MAJOR HIGHWAY.
18. MODIFIED STREET CROSS-SECTIONS AS SHOWN ON VESTING TENTATIVE TRACT MAP ARE REQUESTED. HOWEVER, PERMISSION IS SOUGHT TO CONSTRUCT STANDARD AND ALTERNATE STREET CROSS-SECTIONS AT THE DISCRETION OF THE SUBDIVIDER.
19. ALL DIMENSIONS SHOWN ARE APPROXIMATE.
20. ADDITIONAL DATA FLOWN 7/98.
21. ADDITIONAL RIGHT OF WAY MAY BE DEDICATED AS REQUIRED TO THE SATISFACTION OF PUBLIC WORKS.
22. RELATED ENTITLEMENTS:
   – TM 53295
   – C.U.P. XX-XXX
   – C.U.P. XX-XXX
   – OAK TREE PERMIT XX-XXX
23. PERMISSION IS REQUESTED TO ALLOW OFFICE & RETAIL SPACE TO BE INTERCHANGEABLE PROVIDED THE REQUIRED PARKING IS SATISFIED.
24. THE ABOVE MENTIONED GENERAL NOTES (THAT ADDRESS MINOR MODIFICATION) MAY REQUIRE REVIEW AND APPROVAL OF A REVISED EXHIBIT MAP.
25. FIRE ACCESS TO BE PROVIDED TO WITHIN 150' OF ALL EXTERIOR WALLS.
26. MODIFICATIONS OF REQUIRED STREET FRONTAGE IS REQUESTED PER SECTION 21.24.040 OF THE LOS ANGELES COUNTY CODE.

SPECIAL NOTES

1. WATER QUALITY BASINS AND BIOSWALES WILL PROVIDE FOR TREATMENT OF STORM WATER RUN OFF PER THE APPROVED DRAINAGE CONCEPT.
2. THE WATER QUALITY BASINS SHALL BE DEDICATED TO THE COUNTY WHEN COMPLETED AND ACCEPTED.
3. PROPOSED RECLAIMED WATER LINES WILL BE LOCATED IN PUBLIC STREETS AND TRAILS.

LEGEND:

Lot 1 / 10,000 SF / 1010.0 — LOT NO. / LOT AREA (SQUARE FEET) / PAD ELEVATION

- PROJECT BOUNDARY
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- PROPOSED UTILITY EASEMENT
- EXISTING EASEMENT
- FUTURE RIGHT OF WAY
- 1000 — PROPOSED CONTOUR
- 1000' — DAYLIGHT LINE
- SD — STORM DRAIN
- SS — SANITARY SEWER
- W — WATER
- STORM DRAIN INLET/OUTLET
- CATCH BASIN
- EXISTING STORM DRAIN LINE
- EXISTING SEWER LINE
- EXISTING WATER LINE
- EXISTING OIL LINE
- EXISTING GAS LINE
- EXISTING OVERHEAD POWER LINE
- EXISTING POWER POLE
- SEA — SEA, RIVER CORRIDOR LINE
- FEMA LINE
- QTR — Q-TAP LIMIT LINE
- 404 — 404_1603 LIMIT LINE
- BURIED BANK STABILIZATION
- PEDESTRIAN/EQUESTRIAN/HIKING TRAIL
- SIGHT DISTANCE LINE
- EXISTING OIL WELL LOCATION
- OAK TREE TO BE TO BE IMPACTED
- OAK TREE TO BE TO BE REMOVED

EXPLANATION

cef	Certified Engineered Fill
af	Artificial Fill
af/Qal	Artificial Fill over Alluvium
Qal	Alluvium
Qsf	Surficial Failure
Qt	Terrace Deposits
TQs	Saugus Formation
	Geologic Contact
	Geologic Section Line
	Bedding Attitude
	Attitude of Shear Surface
WB-13	Rotary Wash Boring (Current Investigation)
CPT-6	Cone Penetration Test Sounding (Current Investigation)
B-4	Bucket Boring, RTF&A (2004-700-2? Report Dated 3-18-05)
CPT-19	Cone Penetration Test Sounding RTF&A 96-115-21 Dated 12-03-01
CPT-13(P)	Cone Penetration Test Sounding with Piezometer RTF&A 96-115-21 Dated 12-03-01
CPT-6	Cone Penetration Test Sounding RTF&A 96-115-21 Dated 3-23-98
WB-4	Rotary Wash Boring RTF&A 96-115-21 Dated 3-23-98
TP-3	Test Pit, RTF&A 96-149-21 Dated 12-30-03
TP-5	Test Pit, RTF&A 96-149-F Dated 12-30-03
R=10'	Recommended Minimum Depth of Removal and Recompaction
(af*)	Designates Complete Removal of (af)
(Qsf*)	Designates Complete Removal of (Qsf)
B-65E	Bucket Boring, AES, 2004
CPT-19	Cone Penetration Test Sounding, AES 5-25-00
RW-2	Rotary Wash Boring, AES 5-25-00
HS-10	Hollow Stem Boring, AES 5-25-00
B-62E	Bucket Boring, AES 5-25-00
T-04	Test Pit, AES 5-25-00

ABBREVIATIONS:

ac	ACRES
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
EX	EXISTING
FF	FINISH FLOOR
FM	FORCE MAIN
FW	FIRE WATER
GB	GRADE BREAK
HP	HIGH POINT
LF	LENGTH
MIN	MINIMUM
P.C.C.	PORTLAND CEMENT CONCRETE
PROP	PROPOSED
R	RADIUS
R/W	RIGHT OF WAY
SF	SQUARE FOOT
SD	STORM DRAIN
SS	SANITARY SEWER
STD	STANDARD
TBI	TO BE IMPACTED
TBR	TO BE REMOVED
W	WATER

UTILITY PROVIDERS

SEWER: L.A. COUNTY SANITATION DIST. 32
WATER: VALENCIA WATER COMPANY
ELECTRICAL: SOUTHERN CALIFORNIA EDISON
GAS: SOUTHERN CALIFORNIA GAS CO.
TELEPHONE: AT&T
CABLE TV: TIME WARNER CABLE

PROJECT SUMMARY:

GROSS AREA: 843.9 Acres
TOTAL LOTS: 685
TOTAL D.U.: 3,438 DU
EXISTING ZONING: M-1.5, A-2-5, C-3 AND SP
PROPOSED ZONING: M-1.5-DP, C-2-DP
GENERAL PLAN LAND USE: M – INDUSTRY, W – I, FLOODWAY/FLOODPLAIN,
HM – HILLSIDE MANAGEMENT, NV – NONURBAN (0.5 DU/AC),
UI – URBAN (LOW DENSITY RESIDENTIAL) 1.1 – 3.3 DU/AC,
C – COMMERCIAL, AND SIGNIFICANT ECOLOGICAL AREA
PROPOSED LAND USE: N, C, U2, U3, UI AND SP
ESTIMATED EARTHWORK: 9,800,000 CY CUT
9,800,000 CY FILL
OAK TREES TO BE REMOVED: 81 TREES
OAK TREES TO BE IMPACTED: 12 TREES

RELATED ENTITLEMENTS

G.P.A. . . . . XX–XXX
C.U.P. 00–210
OAK TREE PERMIT. . . . . R OAK 2007–0018
ZONE CHANGE. . . . . RZC 00–210
HENRY MAYO DRIVE
HIGHWAY REALIGNMENT. . . RHWY 00–210
PARKING PERMIT. . . . . XX–XXX

VICINITY MAP

NOT TO SCALE

LOT SUMMARY

Lot Numbers	No. of Lots	No. of Bldgs	Type (Use)	Dwelling Units	Commercial SF	Total Acres
Planning Area EA-1						
1–4	4		WHOLE AS COMMERCIAL	360		20.0
Planning Area EA-1/2-3						
5–40	35		COMMERCIAL		1,770,350	104.1
41	1		FLOOD CONTROL			17.3
42–43	2		OPEN SPACE (TRAIL)			2.9
44–56	13		OPEN SPACE (RIVER)			217.5
57	1		WATER QUALITY BASIN			9.7
			PUBLIC STREET			9.0
Planning Area EB-1						
58	1		FIRE STATION			2.7
59–76	18		COMMERCIAL		491,800	44.0
77–84	8		OPEN SPACE			7.1
Planning Area EB-2						
85–91	7		CONDOMINIUM	183		19.3
Planning Area EB-3						
92–155, 160–236	141		SINGLE–FAMILY 46'x100' MIN.	141		19.8
156	1		RECREATION CENTER			0.5
157–159	3		OPEN SPACE			0.2
Planning Area EB-4						
237–357	121		SINGLE–FAMILY 50'x110' MIN.	121		19.5
358–359	2		OPEN SPACE			0.1
Planning Area EB-5						
360–525	166		SINGLE–FAMILY 40'x90' MIN.	166		20.1
Planning Area EB-6						
526	1		PARK SITE			5.0
527	1		SCHOOL SITE			7.0
Planning Area EB-7						
528–534	7		3–STORY CONDOMINIUM	261		11.5
Planning Area EB-8						
535–539	4		3&4–STORY CONDOMINIUM	273		7.0
Planning Area EB-9						
540–546	7		2&3–STORY 16–PLEX CONDO	272		13.0
Planning Area EB-10						
547–551	5		2&3–STORY 6–PLEX CONDO	125		9.8
Planning Area EB-11						
552,553,555–559			2&3–STORY CONDOMINIUM	172		12.1
554			RECREATION CENTER			2.5
Planning Area EB-12						
560–561	2		COMMERCIAL		51,000	2.9
Miscellaneous						
562	1		RECREATION CENTER			1.7
563–584	22		PRIVATE DRIVES			29.6
585–636	52		OPEN SPACE			137.0
			PUBLIC STREET			19.2
Planning Area EC-1						
637	1		DRAINAGE (OPEN SPACE)			1.6
638–639	2		OFFICE		113,000	2.6
640	1		PARKING STRUCTURE			1.9
641	1		PARKING STRUCTURE			2.3
642–643	2		COMMERCIAL		130,000	2.7
644–645	2		COMMERCIAL/OFFICE		254,000	4.1
646	1		PARKING STRUCTURE			3.0
647	1		COMMERCIAL/CLUBHOUSE		10,000	1.7
648	1		WATER FEATURE			1.8
650	1		4–STORY CONDOS OVER COMMERCIAL	153	169,000	5.0
651	1		4–STORY CONDOS OVER P.S.	300		5.7
652–655	4		4–STORY CONDOS OVER P.S.	360		7.7
656	1		PRIVATE DRIVE			0.9
657–664	8		3–STORY CONDOMINIUMS	64		3.2
665	1		4–STORY CONDOS OVER P.S.	132		2.8
666	1		20–STORY CONDOMINIUMS	180		1.6
667–668	2		8–STORY HOTEL (300 ROOMS)		277,000	3.9
669	1		COMMERCIAL		45,000	2.1
670	1		16–STORY CONDOMINIUMS	144		1.7
671	1		16–STORY COMMERCIAL/OFFICE		216,000	1.2
672	1		WATER FEATURE			3.8
673–681	9		OPEN SPACE			4.4
			PUBLIC STREET			7.5
TOTAL	681			3,387	2,921,950	836.3

Geotechnical Map

Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	MN	DS/DA
DATE	FIGURE	JOB NO.
01-16-08	Figure 1.1	2004-700-22

1135 SCOTTS ROAD
BEVERLY HILLS, CA
TEL: (310) 652-1311
FAX: (310) 652-1315
www.rtfamedia.com
RTFA

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE: ALEX HERRELL

ALLIANCE
LAND PLANNING & ENGINEERING, INC.
2340 PARKWAY AVE.
CALABASAS, CA 91302
TEL: (805) 412-5600
FAX: (805) 412-5620
CIVIL ENGINEERING • LAND PLANNING • PROJECT MGMT. • SURVEYING
DAVID MATTHEWS R.C.E. 50026 DATE

REGISTERED PROFESSIONAL ENGINEER — No. 50026 — EXP 6-30-08 — CIVIL — STATE OF CALIFORNIA

LEGAL DESCRIPTION

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

No.	DATE	REVISIONS	BY	APPR

SHEET 1 — COUNTY OF LOS ANGELES — 6 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____

LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

I:\2004\700\TENTATIVE MAP 53295-ALP\DWGS\Map-Text\~SHT-01.dgn

LOT SUMMARY

LOT NUMBERS /STREET	LOT AREA SQ. FEET	LOT AREA ACRE	TOTAL BUILDING AREA (SF)	BUILDING FOOTPRINT AREA (SF)	PARKING SPACE PROVIDED	TYPE BUILDING (USE)
PLANNING AREA 2 (PA - 2)						
5	28, 007	0. 64			13	COMMERCIAL
6	75, 706	1. 74	3, 000	3, 000	22	
7	70, 811	1. 63	3, 000	3, 000	69	
8	136, 497	3. 13				
9	445, 872	10. 24	125, 000	125, 000	310	
10	321, 034	7. 37	175, 000	175, 000	465	
11	251, 127	5. 77			680	
12	240, 898	5. 53	108, 000	108, 000	60	
13	128, 434	2. 95			364	
14	115, 144	2. 64			311	
15	270, 716	6. 21	79, 200	79, 200		
16	52, 844	1. 21	5, 000	5, 000	103	
17	134, 975	3. 10	10, 000	10, 000	270	
18	62, 259	1. 43	20, 000	20, 000		
19	173, 988	3. 99	65, 000	65, 000	14	
20	130, 580	3. 00	10, 000	10, 000	147	
21	31, 914	0. 73	3, 500	3, 500	8	
22	193, 167	4. 43	85, 700	85, 700	110	
23	108, 989	2. 50	50, 000	50, 000		
24	159, 663	3. 67			463	
25	300, 234	6. 89	150, 000	150, 000	543	
26	76, 486	1. 76	6, 500	6, 500	60	
27	319, 183	7. 33	161, 000	161, 000	448	
28	154, 523	3. 55			459	
29	32, 200	0. 73				
30	27, 651	0. 63	7, 400	7, 400	2	
31	27, 909	0. 64			40	
32	92, 710	2. 13	34, 000	34, 000	12	
33	93, 330	2. 14			202	
34	24, 199	0. 56	5, 500	5, 500	12	
35	74, 016	1. 70	5, 250	5, 250	51	
36	78, 602	1. 80	3, 300	3, 300	27	
38	106, 780	2. 45	8, 000	8, 000	50	
39	55, 490	1. 27	7, 000	7, 000	32	
40	31, 143	0. 71				
TOTAL	*4, 627, 081*	*106. 22*	*1, 130, 350*	*1, 130, 350*	*5, 347*	
PLANNING AREA 1 (PA - 1)						
			DWELLING UNITS			
1	112, 426	2. 58	24	7, 352	117	RESIDENTIAL
2	138, 687	3. 18	72	22, 843	129	
3	247, 626	5. 68	192	61, 177	143	
4	371, 520	8. 53	120	41, 860	418	
TOTAL	*870, 259*	*19. 98*	*408*	*133, 232*	*807*	
41	72, 521	1. 66				FLOOD CONTROL
44	679, 849	15. 61				
TOTAL	*752, 370*	*17. 27*				
42	25, 651	0. 59				EQUESTRIAN TRAIL
43	102, 141	2. 34				
TOTAL	*127, 792*	*2. 93*				
H. MAYO DR.	350, 102	8. 04				STREETS
TOTAL	*350, 102*	*8. 04*				
37	19, 551	0. 45				TO BE VACATED
T. OLD RD.	61, 573	1. 41				
TOTAL	*81, 124*	*1. 86*				
SUB TOTAL	6, 808, 527	156. 30				

EASEMENTS BASED ON NORTH AMERICAN TITLE COMPANY TITLE REPORT ORDER NO. 7003023-23 DATED APRIL 28, 2006

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION
7	PACIFIC TELEPHONE AND TELEGRAPH COMPANY	POLES	JUNE 12, 1915 BOOK 6080 PAGE 40, O.R.	TO BE QUITCLAIMED
8	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 27, 1920 BOOK 7068 PAGE 323, Dds.	TO BE QUITCLAIMED
14	SOUTHERN CALIFORNIA TELEPHONE COMPANY	POLE LINES	APRIL 14, 1933 BOOK 12148 PAGE 89, O.R. MARCH 21, 1939 BOOK 16456 PAGE 204, O.R.	TO BE QUITCLAIMED
15	STATE OF CALIFORNIA	PIPELINE	MARCH 13, 1934 BOOK 12619 PAGE 272, O.R.	TO BE QUITCLAIMED
21	SOUTHERN CALIFORNIA EDISON COMPANY	POWER LINES	SEPTEMBER 20, 1941 BOOK 18111 PAGE 7, O.R.	TO BE QUITCLAIMED
22	SOUTHERN PACIFIC RAILROAD COMPANY	ROADWAY	SEPTEMBER 20, 1941 BOOK 18111 PAGE 7, O.R.	
25	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES AND METERS	NOVEMBER 22, 1940 BOOK 17999 PAGE 153, O.R.	TO BE QUITCLAIMED
26	SOUTHERN CALIFORNIA EDISON COMPANY	POLE LINES	JULY 28, 1948 BOOK 27828 PAGE 248, O.R.	TO BE QUITCLAIMED
29	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	OCTOBER 8, 1948 BOOK 28455 PAGE 170, O.R.	TO BE QUITCLAIMED
32	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	SEPTEMBER 27, 1951 BOOK 37296 PAGE 252, O.R.	TO BE QUITCLAIMED
34	SOUTHERN CALIFORNIA EDISON COMPANY	POLE LINES	MAY 22, 1952 BOOK 38991 PAGE 298, O.R.	TO BE QUITCLAIMED
35	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	JULY 11, 1952 BOOK 39363 PAGE 41, O.R.	TO BE QUITCLAIMED
36	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	SEPTEMBER 10, 1952 BOOK 39811 PAGE 49, O.R.	TO BE QUITCLAIMED
40	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	NOVEMBER 15, 1955 BOOK 49529 PAGE 249, O.R.	TO BE QUITCLAIMED
44	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	JANUARY 27, 1961 BOOK D-1106 PAGE 434, O.R.	TO BE QUITCLAIMED
45	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	OCTOBER 20, 1961 BOOK D-1394 PAGE 842, O.R.	TO BE QUITCLAIMED
46	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	NOVEMBER 10, 1961 BOOK D-1417 PAGE 415, O.R.	TO BE QUITCLAIMED
56	VALENCIA WATER COMPANY	WATER MAINS	NOVEMBER 10, 1972 BOOK D-5663 PAGE 731, O.R.	TO BE QUITCLAIMED
59	COUNTY OF LOS ANGELES	COVERED STORM DRAIN	PARCEL MAP NO. 13331 BOOK 248 PAGES 46-48	TO BE QUITCLAIMED
64	NEWHALL LAND & FARMING COMPANY	WATER PIPELINES	PARCEL MAP NO. 14415 BOOK 248 PAGES 51-54 DECEMBER 23, 1999 INSTR. NO.99-2360381, O.R. MARCH 17, 2000 INSTR. NO.00-399622, O.R. INSTR. NO.00-399624, O.R. INSTR. NO.00-399625, O.R.	TO BE QUITCLAIMED

NOTES:

1. NOT USED
2. EXISTING 12" WATER LINE TO BE REMOVED.
3. EXISTING 10" WATER LINE TO BE REMOVED.
4. EXISTING GAS LINE TO BE REMOVED.
5. EXISTING EQUILON OIL LINE TO BE REMOVED.
6. EXISTING MOBIL OIL LINE TO BE REMOVED.
7. EXISTING OAK TREE TO BE REMOVED.
8. EXISTING EASEMENTS WHICH RUN THROUGH PROPOSED STRUCTURES WILL BE RELOCATED.
9. PRIVATE DRIVEWAY AND 28' MINIMUM FIRE LANE WIDTH.
10. THE RIGHT TO RESTRICT VEHICULAR ACCESS WILL BE DEDICATED ON FINAL MAP.
11. EXISTING BOX CULVERT
12. PROPOSED UTILITY FACILITY ACCESS EASEMENT
13. EXISTING SANITARY SEWER PUMP STATION
14. PLANNING AREA LIMIT

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Project Location
Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	MN	DS/DA
DATE 01-16-08	Figure 1.2	JOB NO. 2004-700-22

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RTF&A GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

SHEET 2 — COUNTY OF LOS ANGELES — 6 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ________
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Project Location
Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	MN	DS/DA
DATE 01-16-08	Figure 1.3	JOB NO. 2004-700-22

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FAX: (818) 531-1511
www.rtfrankian.com
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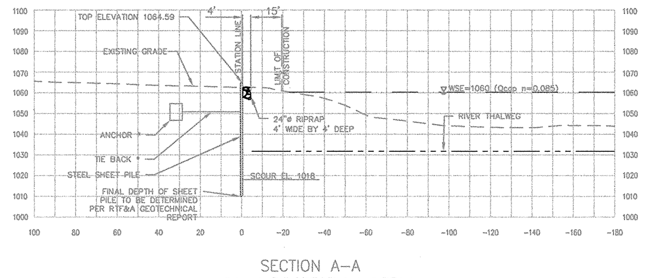
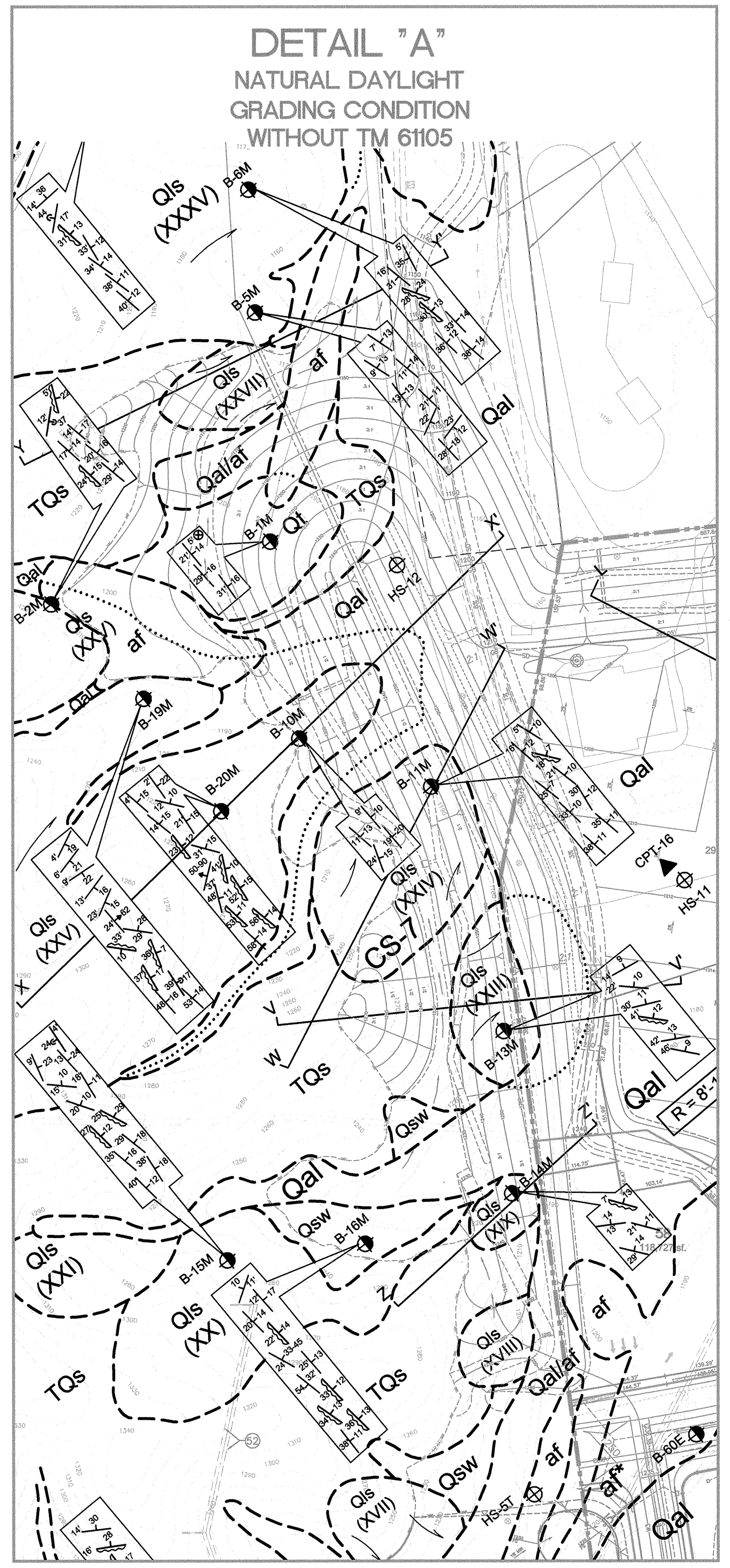
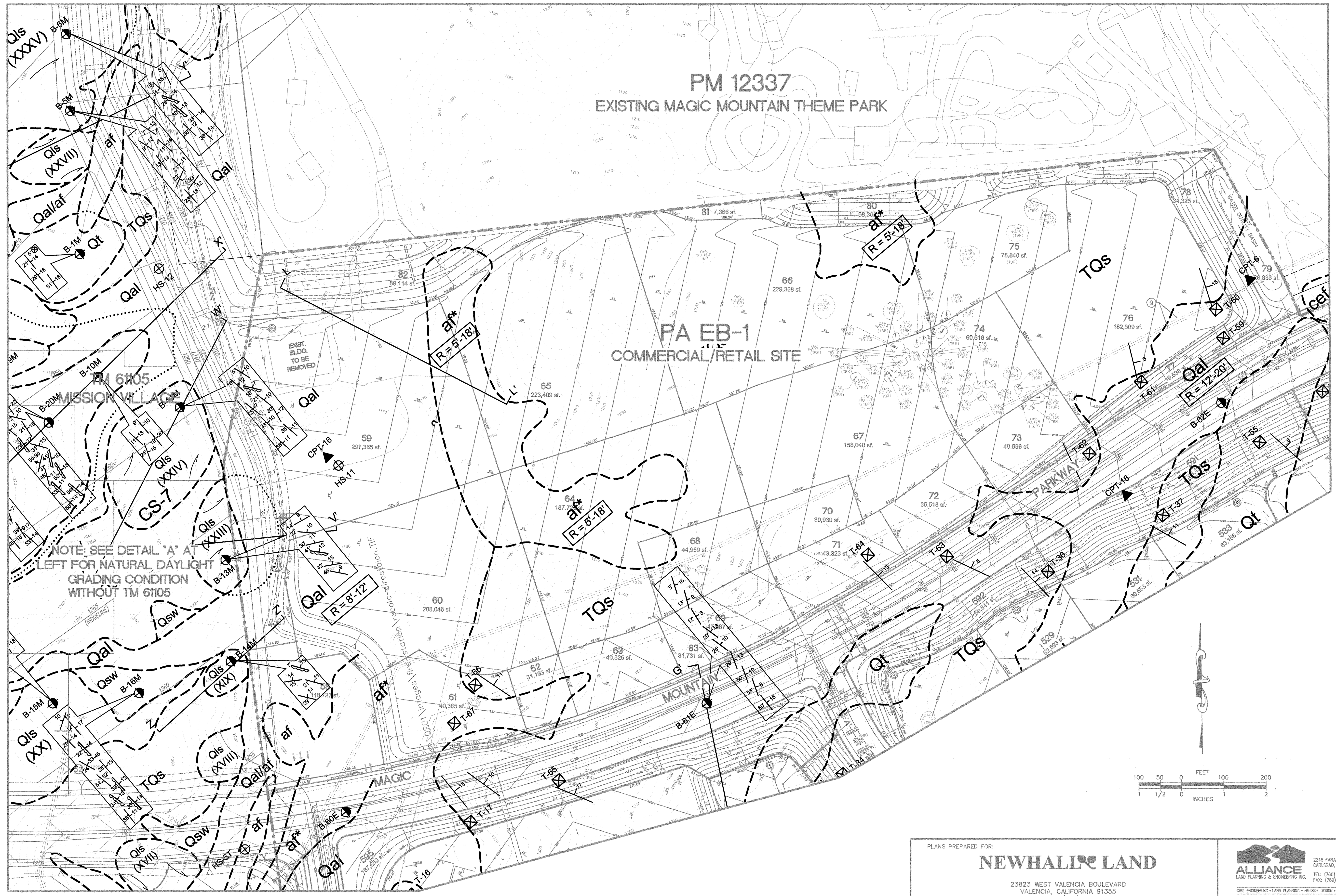
EASEMENTS BASED ON NORTH AMERICAN TITLE COMPANY TITLE REPORT ORDER NO. 7003023-23 DATED APRIL 28, 2006.

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION
9	SOUTHERN CALIFORNIA EDISON CO.	POLES, etc.	MAY 26, 1924 BOOK 4022 PAGE 192, O.R.	TO BE QUITCLAIMED
18	UNION OIL COMPANY	PIPE LINE	MAY 6, 1938 BOOK 15781 PAGE 98, O.R.	TO BE QUITCLAIMED
30	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	MAY 25, 1950 BOOK 33233 PAGE 24, O.R.	TO BE QUITCLAIMED
37	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	JULY 16, 1954 BOOK 45088 PAGE 223, O.R.	TO BE QUITCLAIMED
47	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	APRIL 11, 1962 BOOK D-1576 PAGE 811, O.R.	TO BE QUITCLAIMED
49	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	APRIL 11, 1962 BOOK D-1576 PAGE 813, O.R.	TO BE QUITCLAIMED
53	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	FEBRUARY 5, 1971 INSTRUMENT NO. 3029, O.R.	TO BE QUITCLAIMED
54	COUNTY OF LOS ANGELES	ROADWAY	APRIL 6, 1971 INSTRUMENT NO. 3104, O.R.	TO BE QUITCLAIMED
63	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	SEPTEMBER 27, 1996 INSTR. NO.96-1594307, O.R.	TO BE QUITCLAIMED
73	THE CITY OF SANTA CLARITA	ROADWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0307031, O.R.	TO BE QUITCLAIMED
79	EXXONMOBILE OIL CORPORATION	UTILITIES	DECEMBER 20, 2004 INSTR. NO. 04-3280764, O.R.	TO BE QUITCLAIMED
82	PACIFIC BELL TELEPHONE COMPANY	UNDERGROUND FACILITIES	MARCH 3, 2006 INSTR. NO. 06-0472539, O.R.	TO BE QUITCLAIMED



SECTION A-A
BANK PROTECTION DETAIL





PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
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CRAIG WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP 6-30-08 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

SHEET 3 COUNTY OF LOS ANGELES 6 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ______
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

EASEMENTS BASED ON NORTH AMERICAN TITLE COMPANY TITLE REPORT ORDER NO. 7003023-23 DATED APRIL 28, 2006.

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	FUTURE DISPOSITION
9	SOUTHERN CALIFORNIA EDISON CO.	POLES, etc.	MAY 26, 1924 BOOK 4022 PAGE 192, O.R.	TO BE QUITCLAIMED
10	SOUTHERN CALIFORNIA EDISON CO.	POLES & TOWERS	APRIL 17, 1925 BOOK 3997 PAGE 67, O.R.	TO REMAIN
11	SOUTHERN CALIFORNIA EDISON CO.	POLES, etc.	FEBRUARY 10, 1928 BOOK 7853 PAGE 11, O.R.	TO REMAIN
13	SOUTHERN CALIFORNIA EDISON COMPANY	POLES & TOWERS	JANUARY 12, 1931 BOOK 10631 PAGE 4, O.R.	TO REMAIN
18	UNION OIL COMPANY	PIPE LINE	MAY 6, 1938 BOOK 15781 PAGE 98, O.R.	TO BE QUITCLAIMED
50	SOUTHERN CALIFORNIA EDISON COMPANY	METAL TOWERS, POLES	JULY 12, 1966 BOOK D-3363 PAGE 475, O.R.	TO REMAIN
52	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	AUGUST 7, 1968 INSTRUMENT NO. 3513, O.R.	TO BE QUITCLAIMED
53	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	FEBRUARY 5, 1971 INSTRUMENT NO. 3029, O.R.	TO BE QUITCLAIMED
54	COUNTY OF LOS ANGELES	ROADWAY	APRIL 6, 1971 INSTRUMENT NO. 3104, O.R.	TO BE ABANDONED
55	PACIFIC LIGHTING SERVICE COMPANY	PIPE LINES	APRIL 13, 1971 INSTRUMENT NO. 2154, O.R.	TO REMAIN
62	SOUTHERN CALIFORNIA EDISON COMPANY	ELECTRICAL SUPPLY SYSTEMS	SEPTEMBER 15, 1988 INST. NO. 88-1483381, O.R.	TO BE QUITCLAIMED
71	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT	FLOOD CONTROL	AUGUST 23, 2005 INSTR. NO. 05-2021536, O.R.	TO BE ABANDONED
72	THE CITY OF SANTA CLARITA	ROADWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0307030, O.R.	TO BE ABANDONED
73	THE CITY OF SANTA CLARITA	ROADWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0307031, O.R.	TO BE ABANDONED
82	PACIFIC BELL TELEPHONE COMPANY	UNDERGROUND FACILITIES	MARCH 3, 2006 INSTR. NO. 06-0472539, O.R.	TO BE QUITCLAIMED

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Project Location
Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	MN	DS/DA
DATE 01-16-08	Figure 1. 4	JOB NO. 2004-700-22

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FAX: (818) 531-1511
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I:\CAD\0201\TENTATIVE-MAP-53295-ALP\ENTRADA-TMAP-SHT-04.dwg

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

ALLIANCE LAND PLANNING & ENGINEERING INC.
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REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP. 6-30-08 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

SHEET 4 COUNTY OF LOS ANGELES 6 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ________
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

Geotechnical Map

Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	ENGINEER
AS SHOWN	MN	DS/DA
DATE	FIGURE	JOB NO.
01-16-08	Figure 1.5	2004-700-22

1328 SCOTT ROAD
BURBANK, CA 91504
PH: (818) 953-1585
FAX: (818) 953-1535
WWW.RTFA.COM
RTFA

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE - ALEX HORNELL

ALLIANCE
LAND PLANNING & ENGINEERING, INC.
2240 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9696
FAX: (760) 431-9860
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DAVID MATHEWS R.C.E. 50020 DATE

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR.

SHEET 5 | COUNTY OF LOS ANGELES | 6 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

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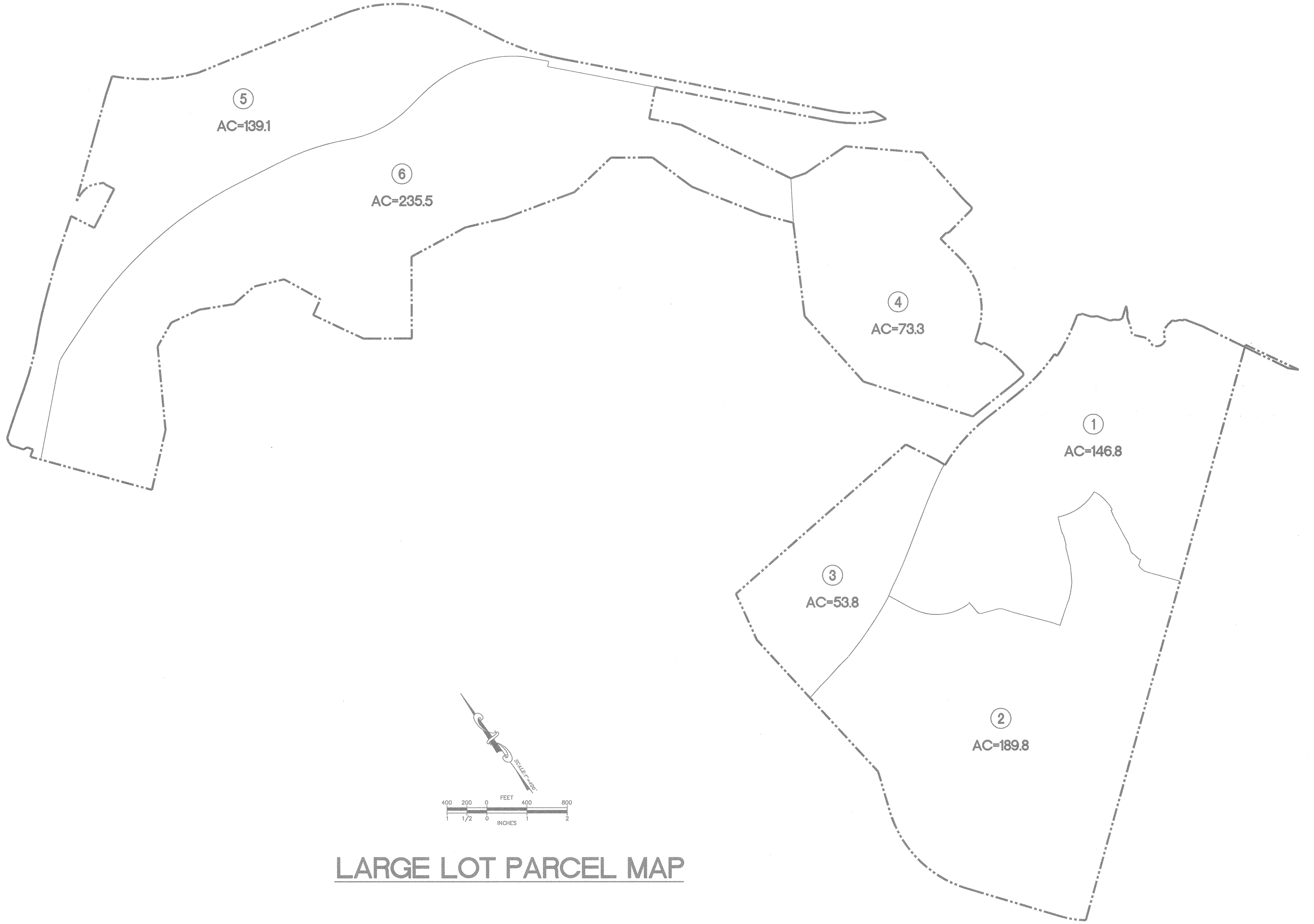

LARGE LOT PARCEL MAP

PHASING MAP

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Project Location
Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	MN	DS/DA
DATE 01-16-08	Figure 1.6	JOB NO. 2004-700-22

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FAX: (818) 531-1511
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TELEPHONE: (661) 255-4000
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CRAIG WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER
CRAIG M. WHITTEKER
NO. 51929
EXP 6-30-08
CIVIL
STATE OF CALIFORNIA

LEGAL DESCRIPTION:
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

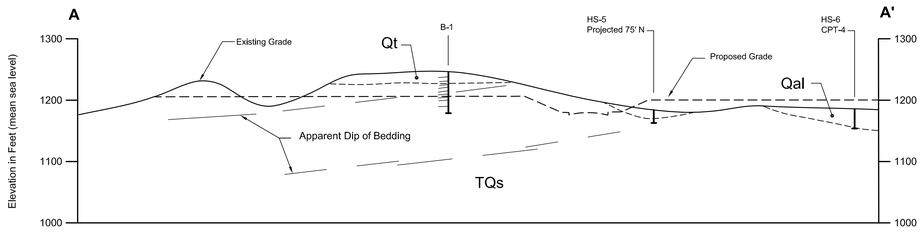
NO. DATE REVISIONS BY APPR

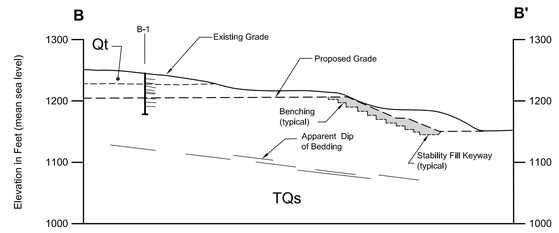
SHEET 6 COUNTY OF LOS ANGELES 6 SHEETS

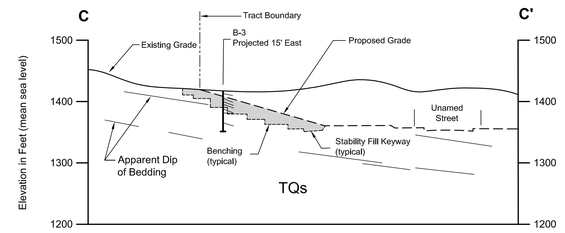
MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

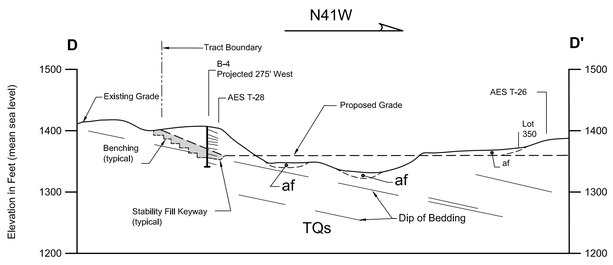
COUNTY CASE NO. ________
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

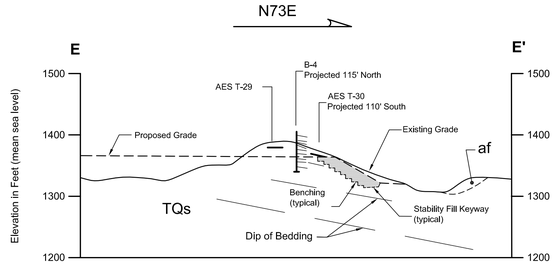
I:\CAD\0201\TENTATIVE MAP 53295-ALP\ENTRADA-TMAP-SHT-06.dwg

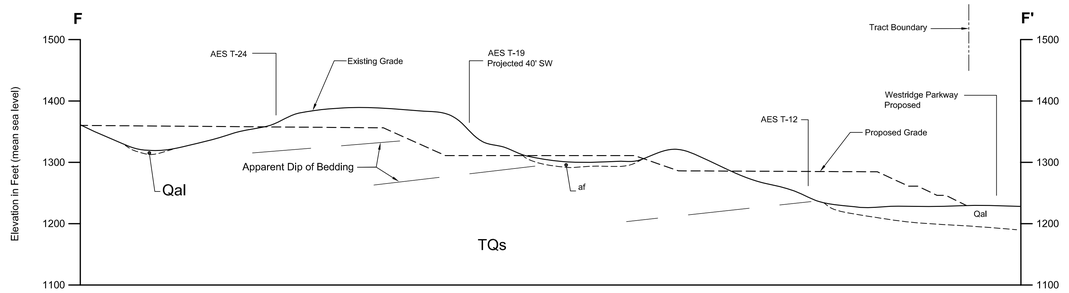


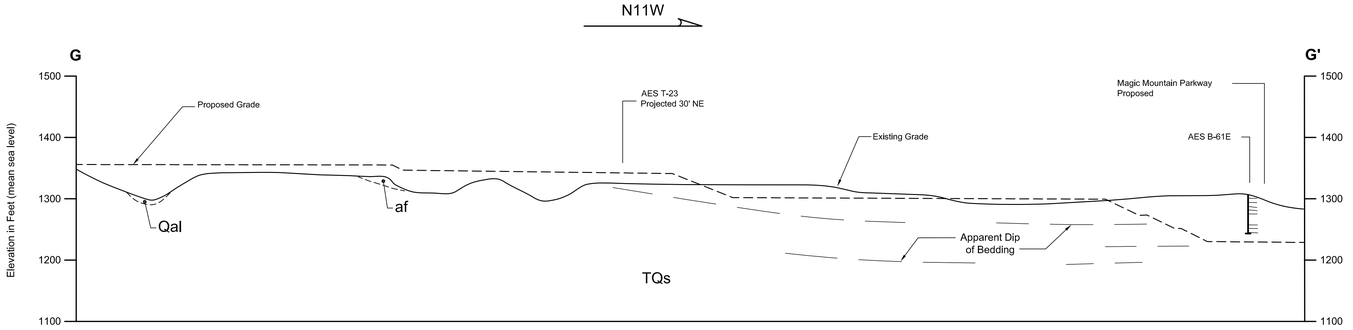


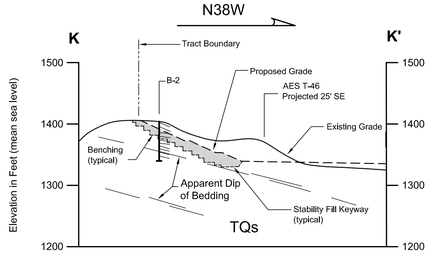


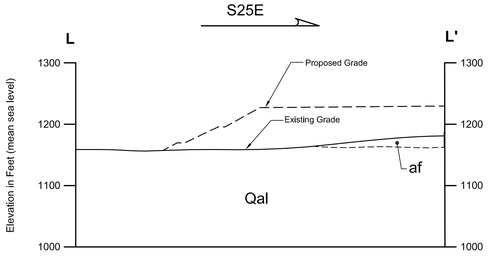


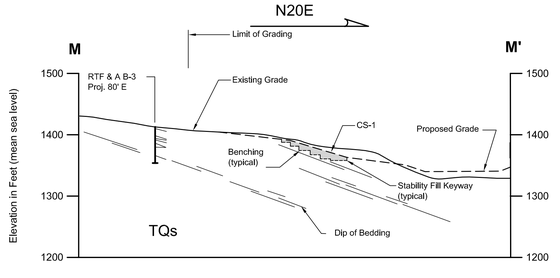


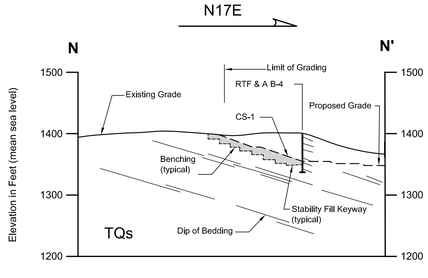


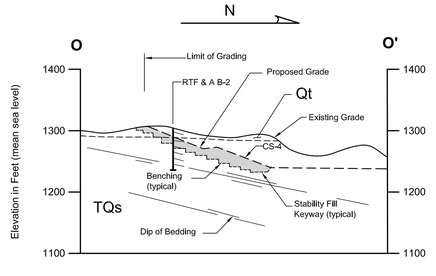












R.T. FRANKIAN & ASSOCIATES

Geologic Sections

PREPARED FOR

Newhall Land and Farming Company

Vesting Tentative Tract Map No. 53425
Valencia, California

SCALE	DRAWN BY	CHECKED BY
1" = 100'	MN	DS/DA
DATE 01-16-08	FIGURE 2.1	JOB NO. 2004-700-22

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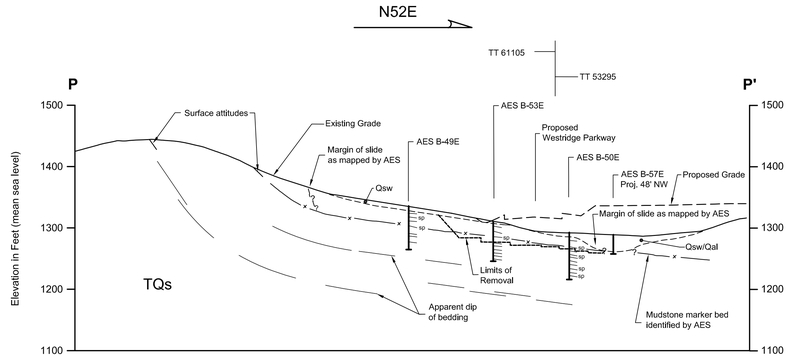

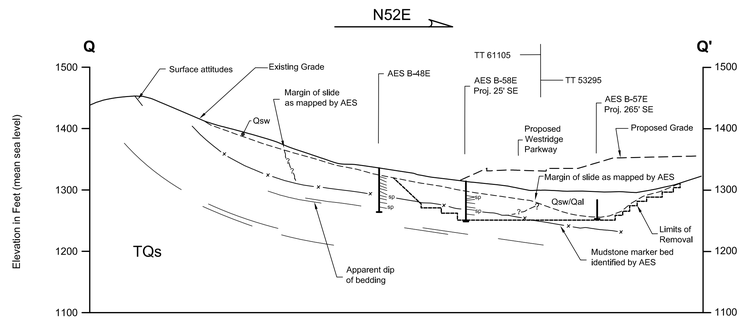

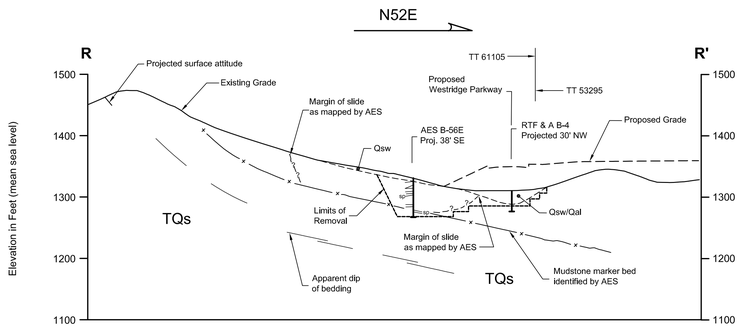

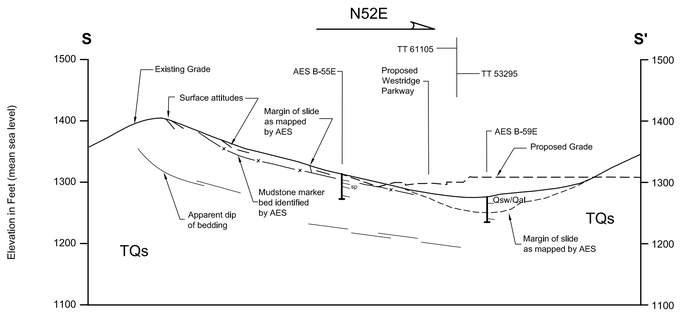

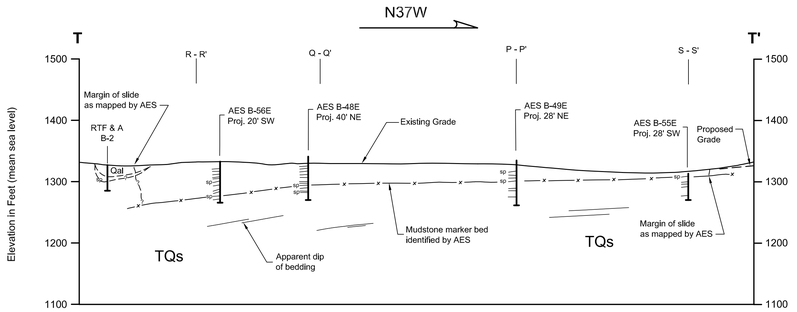

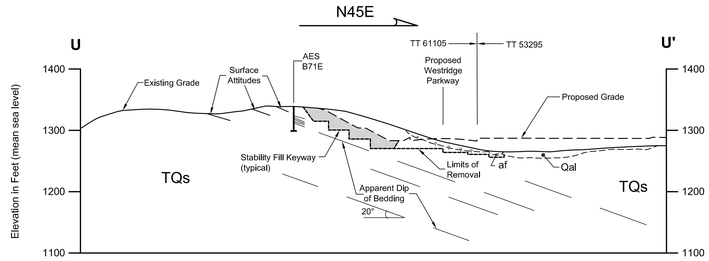

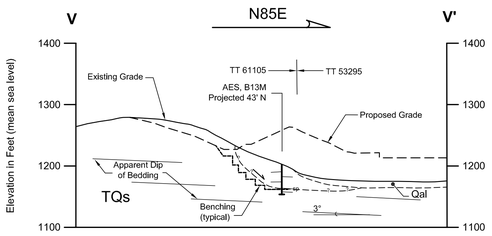

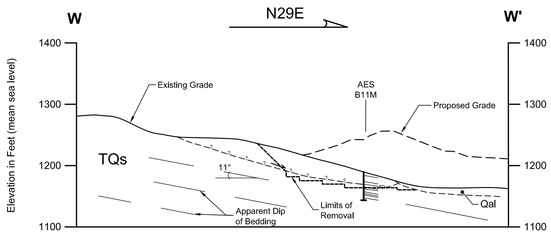

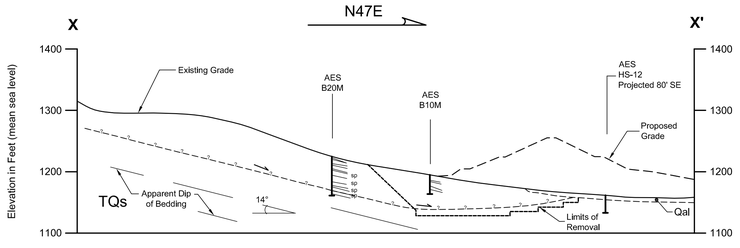

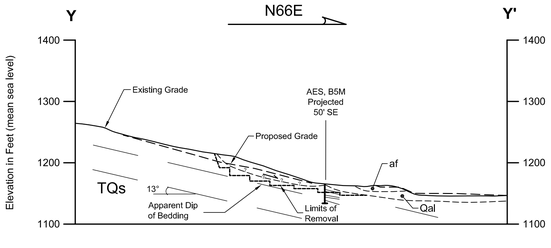

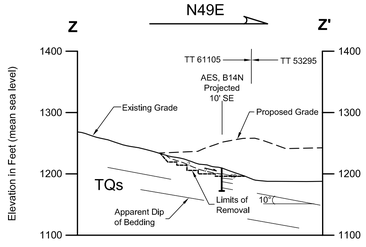

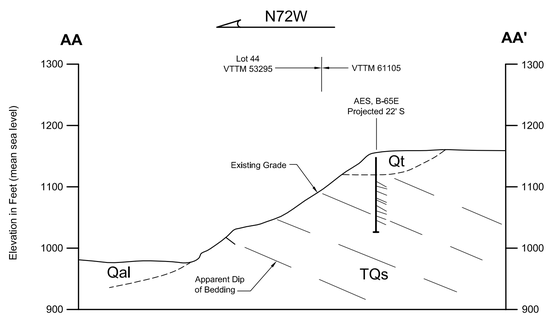

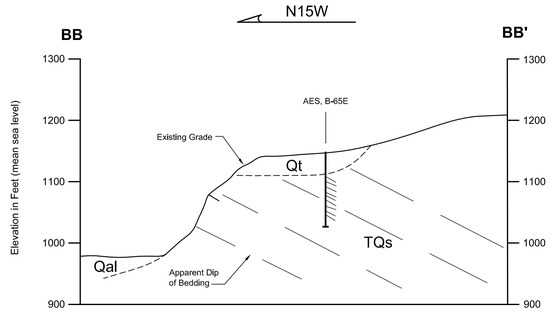

R.T. FRANKIAN & ASSOCIATES

Geologic Sections

PREPARED FOR

Newhall Land and Farming Company

Vesting Tentative Tract Map No. 53425
Valencia, California

SCALE	DRAWN BY	CHECKED BY
1" = 100'	MN	DS/DA
DATE 01-16-08	FIGURE 2.2	JOB NO. 2004-700-22

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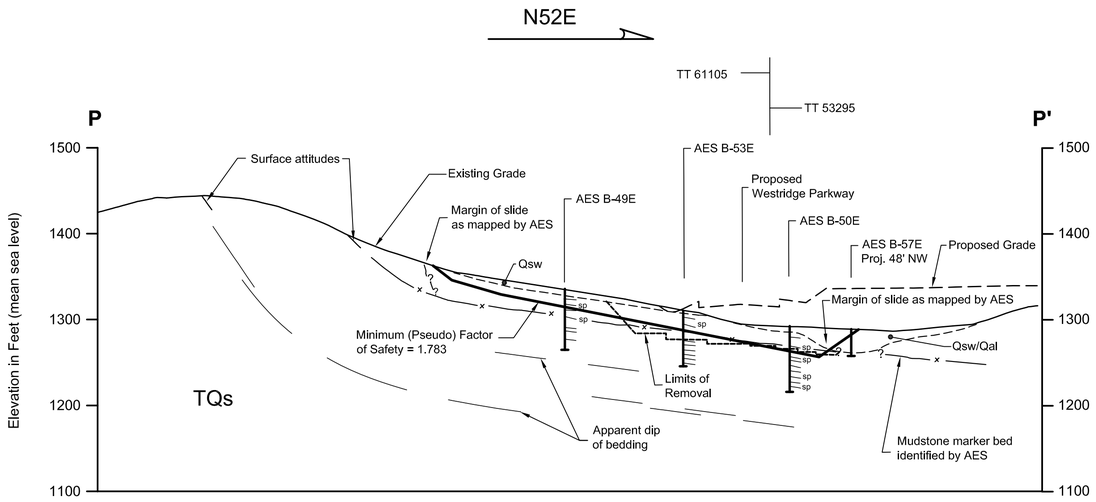

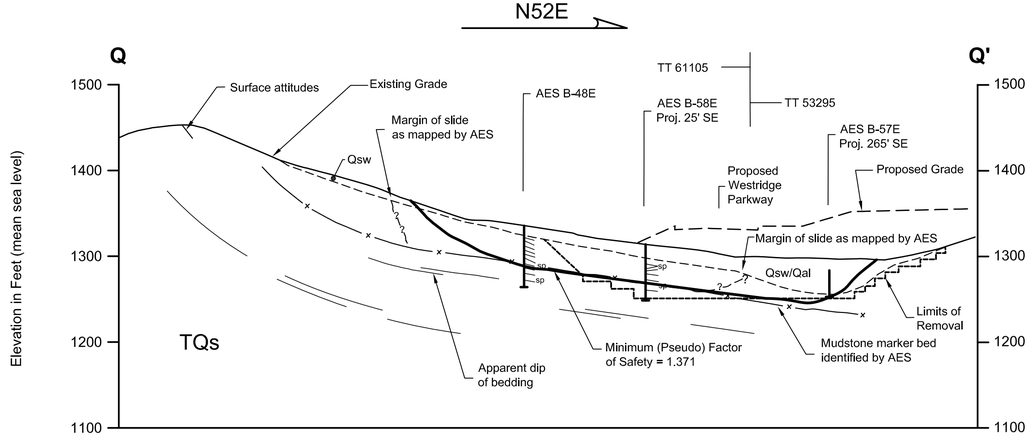

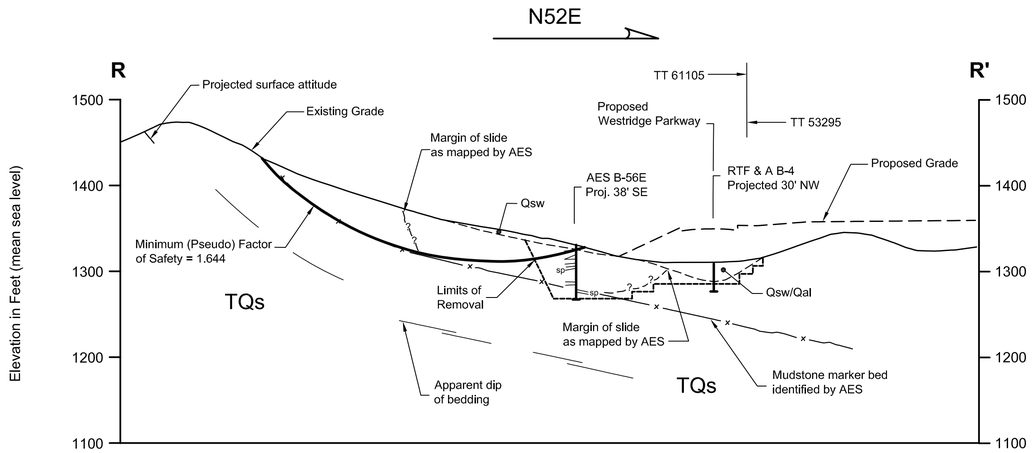

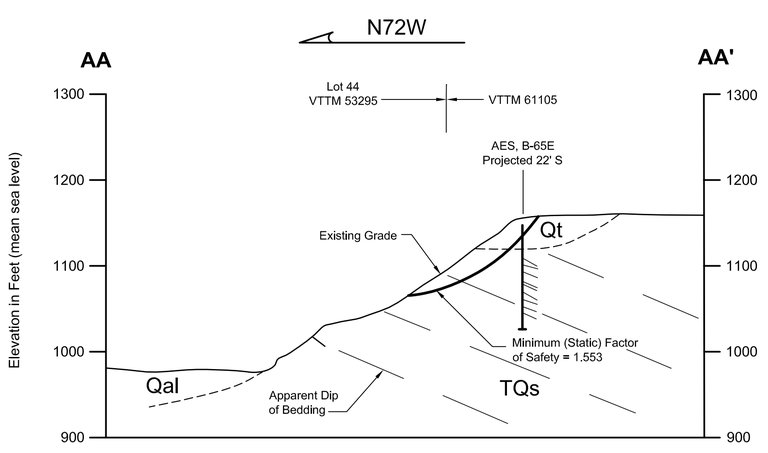

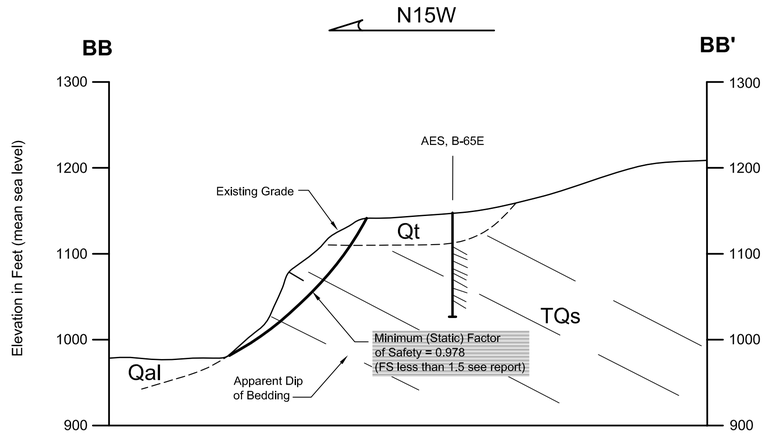

R.T. FRANKIAN & ASSOCIATES

Geotechnical Sections

PREPARED FOR

Newhall Land and Farming Company

Vesting Tentative Tract Map No. 53425
Valencia, California

SCALE	DRAWN BY	CHECKED BY
1" = 100'	MN	DS/DA
DATE	FIGURE 3	JOB NO.
01-16-08		2004-700-22

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Newhall Land and Farming Company
January 16, 2008
2004-700-22

APPENDIX A

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS REVIEW LETTERS

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT MAP 53295
SUBDIVIDER Newhall Land & Farming Company
ENGINEER Psomas
GEOLOGIST & SOILS ENGINEER R.T. Frankian & Associates

TENTATIVE MAP DATED 1/31/07 (Revision)
LOCATION Castaic Junction
REPORT DATE 4/6/07, 3/18/05

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. All parameters and data utilized in the liquefaction analysis must comply the requirements of the Geotechnical and Materials Engineering Division's Administrative Manual memo G045.0. The historic high groundwater level should be used in the liquefaction analysis unless information obtained indicates that an alternate level is appropriate. (Note: Well 6995D located in vicinity of Henry Mayo Drive and The Old Road recorded groundwater level of 6.6 feet below ground surface in 1978.)

2. Provide geologic mapping for Planning Area 1 and 2, south of Santa Clara River.

3. Provide stability analyses for natural slopes steeper than 2:1 for planning areas 1 and 2. Where there is a potential for daylighted bedding, provide continuous stratigraphy, and translational stability analyses based on strength data from the weakest material identified.

4. For natural slopes that does not meet the minimum County requirements for factor of safety, adjust lot lines to constrain the geotechnical hazard on one lot or provide remediation as warranted. The geotechnical hazard may not be subdivided.

5. Effective August 1, 2006, all geotechnical reports submitted for review must include an electronic copy of the report on a CD in Adobe® Portable Document Format (PDF). The electronic version shall include an electronically generated representation of the licensee's seal, signature, and date of sealing or signing. This project cannot be approved until this requirement has been met. The submittal in response to this review must include a CD containing an electronic version of the original report dated 4/6/07 and the supplemental report in response to this review.

6. The Soils Engineering review dated 6-13-07 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by _____ Reviewed by _____ Date 5/1/07
Geir R. Mathisen

P:\gmepub\Geology_Review\Geir\Review Sheets\District 8.2 (Santa Clarita)\Tracts\53295, TM4 NA.doc

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 8.2
PCA GMTR
Sheet 1 of 2

Review No. 3

DISTRIBUTION:
___ Drainage
___ Grading
___ Geo/Soils Central File
___ District Engineer
___ Geologist
___ Soils Engineer
___ Engineer/Architect

Tentative Tract Map	53295
Location	Castaic Junction
Developer/Owner	Newhall Land & Farming Company
Engineer/Architect	Psomas
Soils Engineer	R. T. Frankian & Associates (2004-700-22)
Geologist	R. T. Frankian & Associates

Review of:

Tentative Tract Map and Exhibit Dated by Regional Planning 1/31/07 (rev.)
Soils Engineering and Geology Report and Addendum Dated **4/6/07**, 3/18/05
Previous Review Sheet Dated 3/7/07

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

1. Requirements of the Geology Section are attached.
2. In accordance with Sections 21.40.040 and 21.40.080 of Title 21- Los Angeles County Subdivision Code, geotechnical reports and addenda shall be submitted in a complete text searchable electronic format. The electronic version shall be in Adobe® Portable Document Format (PDF) presented on a compact disc. The licensee's seal, signature, license number, date of registration expiration, and date of signing are required to be part of the electronic submittal. Two hardcopies of reports and addenda shall accompany the electronic submittal. This project cannot be approved until the requirement for the electronic submittal has been met.
3. Provide static, seismic and surficial slope stability analyses for all slopes steeper than 2:1 gradient or subject to adverse bedding conditions for Planning Areas 1 and 2, as requested by the Geology Section. Also, provide a geotechnical cross-section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

As previously requested:

4. Provide seismic slope stability analyses for the daylighted bedding condition in the northeast facing slopes (i.e. cross sections P-P', Q-Q', R-R', etc.). Also, provide a geotechnical cross-section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.
5. Show all recommended mitigation measures on the geotechnical map, as necessary.
6. Include a copy of this review sheet with your response.

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Tentative Tract/Parcel Map Dated by Regional Planning 1/31/07

REMARKS (continued):

NOTE(S) TO THE PLAN CHECKER/BUILDING AND SAFETY ENGINEER:

A. THE SOILS REPORT DATED 3/18/05 INDICATES THERE MAY BE ENVIRONMENTAL CONCERNS REGARDING THE PRESENCE OF OIL WELLS.

PER THE SOILS ENGINEER:

B. ADDITIONAL SUBSURFACE INVESTIGATION SHALL BE PERFORMED AS PART OF THE ROUGH GRADING PLAN REVIEW TO FURTHER DEFINE THE POTENTIAL FOR SEISMIC SETTLEMENT ACROSS THE SITE WITHIN PLANNING AREA 1.
C. THE POTENTIAL FOR LATERAL SPREADING SHALL BE FURTHER EVALUATED ONCE BANK PROTECTION PLANS ARE PRODUCED AND ROUGH GRADING PLANS ARE AVAILABLE.
D. THE PRESENCE OF EROSION-SUSCEPTIBLE BEDS SHALL BE DETERMINED DURING ROUGH GRADING.
E. PAVING STUDIES AND SOIL CORROSIVITY TESTS SHALL BE PERFORMED AT THE COMPLETION OF ROUGH GRADING TO DEVELOP DETAILED RECOMMENDATIONS FOR PROTECTION OF UTILITIES AND STRUCTURES AND FOR CONSTRUCTION OF THE PROPOSED ROADS.
F. WITHIN BUILDING AREAS AT LOCATIONS WHERE EXPANSIVE SAUGUS FORMATION UNITS ARE EXPOSED AT PAD GRADE, IT IS RECOMMENDED THAT THE BEDROCK BE REMOVED AND RECOMPACTED TO A DEPTH OF AT LEAST EIGHT FEET BELOW THE PROPOSED FINAL PAD ELEVATIONS OR FIVE FEET BELOW THE BOTTOM OF PROPOSED FOOTINGS, WHICHEVER IS GREATER. IT IS ALSO RECOMMENDED THAT THE BEDROCK BE REMOVED AND RECOMPACTED TO A DEPTH OF AT LEAST THREE FEET BELOW PROPOSED SOIL SUBGRADE IN EXPOSED SAUGUS FORMATION AREAS RECEIVING PAVEMENT OR HARDSCAPE IMPROVEMENTS.

REGISTERED PROFESSIONAL ENGINEER
JEREMY WAN
NO. C67563
EXP. 6/30/09
STATE OF CALIFORNIA

Prepared by Jeremy Wan Date 6/13/07

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.

SUBDIVISIONS IMPACTED BY EXISTING LANDSLIDES

The following guidelines and requirements are for the geotechnical review of subdivisions impacted by landslides, with regards to property boundaries and safe building areas. Generally, existing landslides are considered a hazard unless it is demonstrated by subsurface exploration, rock and soil testing, and stability analysis that the landslide has appropriate safety factors.

An existing landslide which if activated could adversely impact off-site property (outside of the subdivision) does not have to be mitigated if the existing conditions will not be changed, worsened, or otherwise be affected by the proposed development, and the hazard does not pose a threat to on-site building areas in the subdivision. It must be clearly demonstrated that the proposed development will not increase the potential for failure of the hazardous conditions. Otherwise, mitigation measures will be required.

An unmitigated landslide hazard, and the surrounding affected area inside the proposed subdivision, will have to be designated as a Restricted Use Area.

Case designated listed below refer to the attached Plate A:

Case A — Proposed lot line crosses landslide.

Adjust lot line to constrain the landslide on one lot or provide remediation of the landslide. The landslide hazard cannot be subdivided.

Case B — The designated building area is at the toe of a landslide, which is contained within a single lot of the subdivision.

Relative to the building area, the landslide must be mitigated (e.g. buttressed or removed) or be geotechnically shown to be stable and not a threat to the safety of the proposed structure.

Cases C and G

The landslides are outside of the subdivision boundary where remediation is not possible.

Unless an adequate setback can be provided or the landslide stabilized, an alternate building area is required.

Cases D and E

A landslide transects the subdivision boundary.

No mitigation is required because the landslide transects an existing property boundary. However, it must be clearly demonstrated that the proposed development will not adversely affect or contribute to the instability of the landslide in the future. Otherwise, the landslide must be mitigated.

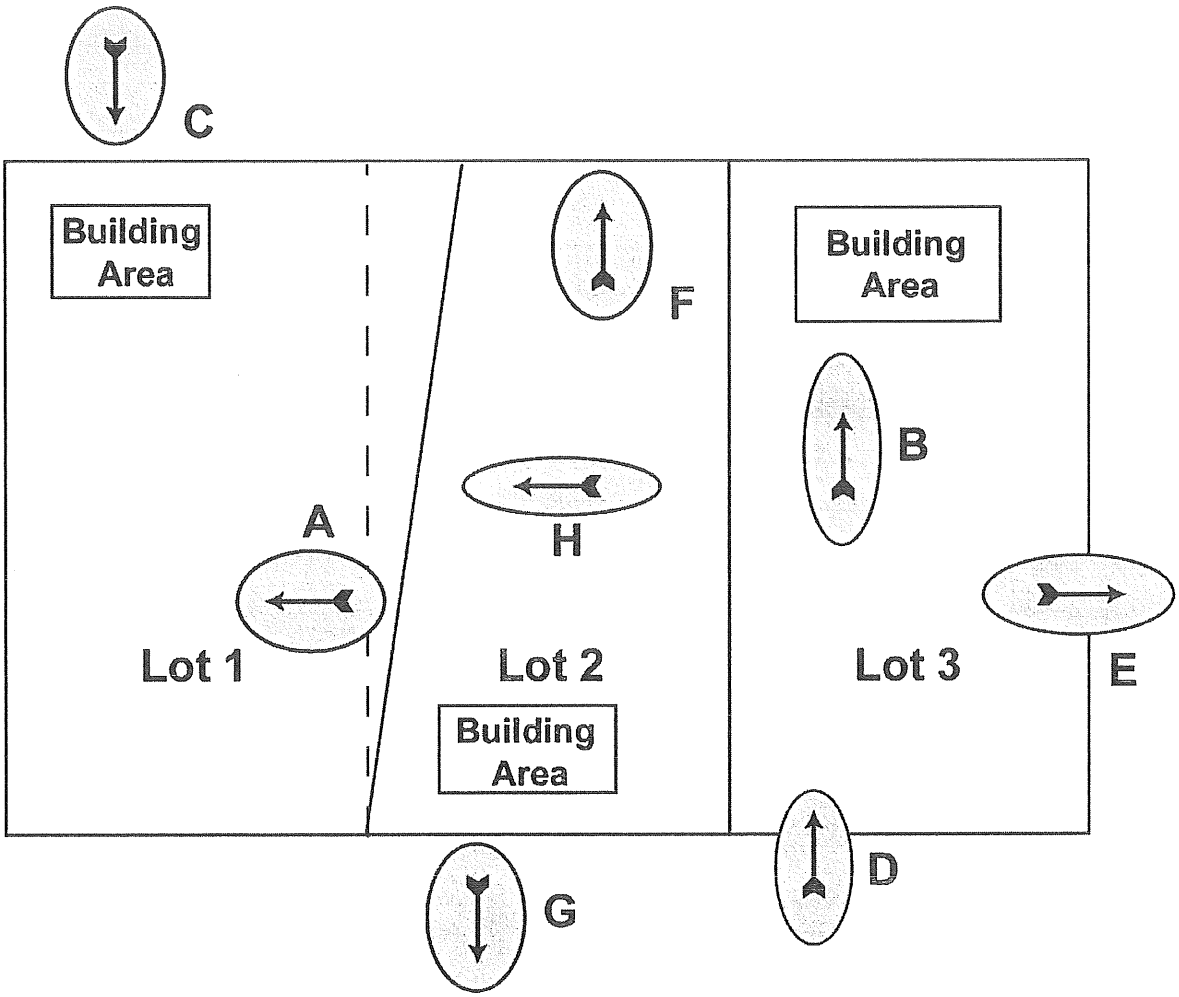
Cases F and G

The landslides are either entirely inside or outside of the subdivision perimeter boundary and do not affect the safety of the building area.

It must be clearly established that the proposed development will not adversely affect or contribute to the instability of the landslide, resulting in adverse effects on adjacent property and relative stability. Otherwise, the landslide must be mitigated.

Case H

An existing landslide, which could affect an adjacent lot in the same subdivision, must be removed or otherwise mitigated.



EXPLANATION

Landslide. Arrow indicates direction of movement.

Lot boundary. Short dashes indicate movement of boundary required for Case "A".

Boundary of tentative subdivision.

A - H Case designation.

Newhall Land and Farming Company
January 16, 2008
2004-700-22

APPENDIX B

LIQUEFACTION ANALYSES

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

WORKBOOK TO CALCULATE LIQUEFACTION POTENTIAL AND SEISMIC SETTLEMENT

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.25**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth	CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05			CPT-5 12/19/05			CPT-6 12/19/05			CPT-7 12/19/05			CPT-8 12/19/05			CPT-9 12/19/05		
Elevation -->	1140	Sht.	1	1140	Sht.	2	1010	Sht.	4	1010	Sht.	5	1010	Sht.	6	1010	Sht.	7	1010	Sht.	8	1010	Sht.	9
Meas. Water -->	A Water **45.0**	45.0		A Water **40.0**	40.0		A Water **21.6**	21.6		A Water **20.0**	20.0		A Water **18.0**	18.0		A Water **26.0**	26.0		A Water **27.0**	27.0		A Water **25.0**	25.0	
Design Water -->	D Water **45.0**	45.0	feet	D Water **40.0**	40.0	feet	D Water **6.6**		feet	D Water **6.6**	6.6	feet	D Water **6.6**	6.6	feet	D Water **6.6**	6.6	feet	D Water **6.6**	6.6	feet	D Water **6.6**	6.6	feet
Soil Density -->	Gamma **130**	130.0	pcf	Gamma **130**	130.0	pcf	Gamma **120**	120.0	pcf	Gamma **120**	120.0	pcf	Gamma **120**	120.0	pcf	Gamma **120**	120.0	pcf	Gamma **120**	120.0	pcf	Gamma **120**	120.0	pcf
Site rd -->	rd **2**	2.0		rd **2**	2.0		rd **2**	2.0		rd **2**	2.0		rd **2**	2.0		rd **2**	2.0		rd **2**	2.0		rd **2**	2.0	
R & R -->	R and R **10.0**		feet	R and R **10.0**		feet	R and R **10.0**		feet	R and R **10.0**		feet	R and R **10.0**		feet	R and R **8.0**		feet	R and R **8.0**		feet	R and R **6.0**		feet
Added Fill -->	Fill **0.0**		feet	Fill **0.0**		feet	Fill **8.0**		feet	Fill **14.0**		feet	Fill **6.0**		feet	Fill **0.0**		feet	Fill **0.0**		feet	Fill **0.0**		feet
Ratio -->	**9999**			**9999**			**2.89**			**4.74**			**2.48**			**1.74**			**1.29**			**2.47**		
Liq Settlement	Liq. 0.00	0.00	inches	Liq. 0.00	0.00	inches	Liq. 1.30	1.30	inches	Liq. 0.68	0.51	inches	Liq. 1.96	1.22	inches	Liq. 1.45	1.23	inches	Liq. 1.69	1.35	inches	Liq. 0.98	0.98	inches
Total After R&R	Total 0.00		inches	Total 0.00		inches	Total 1.30		inches	Total 0.51		inches	Total 1.22		inches	Total 1.23		inches	Total 1.35		inches	Total 0.98		inches

	meters	**feet**	Soil	CPT-1	Ishihara	F.S.	Soil	CPT-2	Ishihara	F.S.	Soil	CPT-4	Ishihara	F.S.	Soil	CPT-5	Ishihara	F.S.	Soil	CPT-6	Ishihara	F.S.	Soil	CPT-7	Ishihara	F.S.	Soil	CPT-8	Ishihara	F.S.	Soil	CPT-9	Ishihara	F.S.
	0	**0**	'1'!AF19	1			'2'!AF19	1			'4'!AF19	1			'5'!AF19	1			'6'!AF19	1			'7'!AF19	1			'8'!AF19	1			'9'!AF19	1		
1	0.05	**0.16**	7 S		---	NL	2 C		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL
2	0.10	**0.33**	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
3	0.15	**0.49**	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL
4	0.20	**0.66**	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL
5	0.25	**0.82**	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL
6	0.30	**0.98**	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL
7	0.35	**1.15**	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
8	0.40	**1.31**	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
9	0.45	**1.48**	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
10	0.50	**1.64**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL
11	0.55	**1.80**	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL
12	0.60	**1.97**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
13	0.65	**2.13**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
14	0.70	**2.30**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
15	0.75	**2.46**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
16	0.80	**2.62**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
17	0.85	**2.79**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
18	0.90	**2.95**	7 S		---	NL	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
19	0.95	**3.12**	7 S		---	NL	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
20	1.00	**3.28**	7 S		---	NL	7 S		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
21	1.05	**3.44**	7 S		---	NL	7 S		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
22	1.10	**3.61**	7 S		---	NL	7 S		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
23	1.15	**3.77**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
24	1.20	**3.94**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
25	1.25	**4.10**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
26	1.30	**4.27**	7 S		---	NL	7 S		---	NL	5 M		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
27	1.35	**4.43**	6 S		---	NL	7 S		---	NL	5 M		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
28	1.40	**4.59**	6 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
29	1.45	**4.76**	6 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
30	1.50	**4.92**	6 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
31	1.55	**5.09**	6 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
32	1.60	**5.25**	7 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
33	1.65	**5.41**	7 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
34	1.70	**5.58**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
35	1.75	**5.74**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL
36	1.80	**5.91**	6 S		---	NL	6 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL
37	1.85	**6.07**	6 S		---	NL	6 S		---	NL	5 M		---	NL	5 M		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL
38	1.90	**6.23**	6 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL
39	1.95	**6.40**	6 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL
40	2.00	**6.56**	6 S		---	NL	6 S		---	NL	4 C		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL
41	2.05	**6.73**	6 S		---	NL	6 S		---	NL	4 C		---	NL	4 C		---	NL	5 M		---	NL	5 M		0.41	5 M		---	NL	6 S		---	**1.42**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.25**
NL = Not liquefiable MSF 1.5
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

Depth			CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05			CPT-5 12/19/05			CPT-6 12/19/05			CPT-7 12/19/05			CPT-8 12/19/05			CPT-9 12/19/05		
42	2.10	**6.89**	6 S	---	NL	7 S	---	NL	4 C		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	**0.56**	6 S		---	**1.42**
43	2.15	**7.05**	6 S	---	NL	7 S	---	NL	4 C		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	**0.52**	6 S		---	**1.48**
44	2.20	**7.22**	6 S	---	NL	6 S	---	NL	4 C		---	NL	3 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	**0.53**	6 S		---	**1.46**
45	2.25	**7.38**	6 S	---	NL	7 S	---	NL	4 C		---	NL	3 C		---	NL	4 C		---	**0.45**	6 S		---	**0.52**	6 S		---	**0.52**	6 S		---	**2.01**
46	2.30	**7.55**	6 S	---	NL	7 S	---	NL	4 C		---	NL	3 C		---	NL	4 C		---	**0.52**	6 S		---	**0.54**	6 S		---	**0.54**	6 S		---	**2.56**
47	2.35	**7.71**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	4 C		---	**0.56**	6 S		---	**0.61**	6 S		---	**0.61**	6 S		---	**3.19**
48	2.40	**7.87**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	**0.63**	6 S		---	**0.69**	6 S		---	**0.69**	6 S		---	**3.55**
49	2.45	**8.04**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	**0.53**	6 S	<1>	48.00	**0.90**	6 S	<1>	48.00	**0.70**	6 S		---	**3.69**
50	2.50	**8.20**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	**0.58**	6 S		49.00	**1.34**	6 S	<1>	24.00	**0.68**	6 S		---	**4.28**
51	2.55	**8.37**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	**0.61**	6 S		50.00	**1.44**	6 S	<1>	16.00	**0.71**	6 S		---	**4.39**
52	2.60	**8.53**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	**0.59**	6 S		51.00	**1.31**	6 S	<1>	12.00	**0.72**	6 S		---	**4.05**
53	2.65	**8.69**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	**0.56**	6 S	<1>	25.50	**1.25**	6 S	<1>	9.60	**0.81**	6 S		---	**4.02**
54	2.70	**8.86**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	**0.53**	6 S		26.00	**1.26**	6 S	<1>	8.00	**0.87**	6 S		---	**3.73**
55	2.75	**9.02**	6 S	---	NL	6 S	---	NL	5 M		---	**0.48**	5 M		---	NL	6 S		---	**0.50**	6 S		26.50	**1.28**	6 S	<1>	6.86	**0.88**	6 S		---	**4.09**
56	2.80	**9.19**	6 S	---	NL	6 S	---	NL	5 M		---	**0.52**	5 M		---	NL	6 S		---	**0.48**	6 S		27.00	**1.30**	6 S	<1>	6.00	**0.94**	6 S		---	**4.11**
57	2.85	**9.35**	6 S	---	NL	6 S	---	NL	5 M		---	**0.54**	5 M		---	**0.64**	6 S		---	**0.44**	6 S		27.50	**1.33**	6 S	<1>	5.33	**1.06**	6 S		---	**4.39**
58	2.90	**9.51**	6 S	---	NL	6 S	---	NL	5 M		---	NL	6 S		---	**0.61**	6 S		---	**0.43**	6 S		28.00	**1.27**	6 S	<1>	4.80	**1.10**	6 S		---	**4.09**
59	2.95	**9.68**	6 S	---	NL	7 S	---	NL	5 M		---	**0.58**	6 S		---	**0.62**	6 S		---	**0.45**	6 S	<1>	18.67	**0.97**	6 S	<1>	4.36	**1.13**	6 S		---	**3.50**
60	3.00	**9.84**	6 S	---	NL	7 S	---	NL	5 M		---	**0.50**	6 S		---	**0.62**	6 S		---	**0.46**	6 S	<1>	14.00	**0.88**	6 S	<1>	4.00	**1.01**	6 S		---	**2.74**
61	3.05	**10.01**	6 S	---	NL	7 S	---	NL	5 M	<1>	108.77	**0.45**	5 M	<1>	145.34	**0.63**	5 M	<1>	96.58	**0.46**	6 S	<1>	11.20	**0.87**	6 S	<1>	3.69	**0.92**	6 S		---	**2.45**
62	3.10	**10.17**	6 S	---	NL	7 S	---	NL	5 M	<1>	54.38	**0.49**	5 M	<1>	72.67	**0.64**	5 M	<1>	48.29	**0.42**	6 S	<1>	9.33	**1.02**	6 S	<1>	3.43	**0.77**	6 S		---	**2.36**
63	3.15	**10.33**	6 S	---	NL	7 S	---	NL	6 S	<1>	36.26	**0.52**	5 M	<1>	48.45	**0.63**	5 M	<1>	32.19	**0.40**	6 S	<1>	8.00	**1.05**	6 S	<1>	3.20	**0.67**	6 S		---	**2.22**
64	3.20	**10.50**	6 S	---	NL	7 S	---	NL	6 S	<1>	27.19	**0.59**	5 M	<1>	36.34	**0.60**	5 M	<1>	24.14	**0.40**	6 S	<1>	7.00	**1.09**	5 M	<1>	3.00	**0.68**	6 S		---	**1.73**
65	3.25	**10.66**	6 S	---	NL	6 S	---	NL	6 S	<1>	21.75	**0.68**	5 M	<1>	29.07	**0.60**	5 M		24.39	NL	6 S	<1>	6.22	**1.07**	5 M		3.06	NL	5 M		---	**1.48**
66	3.30	**10.83**	6 S	---	NL	6 S	---	NL	6 S	<1>	18.13	**0.76**	5 M		29.27	NL	4 C		24.64	NL	6 S	<1>	5.60	**0.94**	5 M		3.13	NL	5 M		---	NL
67	3.35	**10.99**	6 S	---	NL	6 S	---	NL	6 S	<1>	15.54	**0.79**	4 C		29.47	NL	4 C		24.89	NL	6 S	<1>	5.09	**0.73**	4 C		3.19	NL	4 C		---	NL
68	3.40	**11.15**	6 S	---	NL	6 S	---	NL	6 S	<1>	13.60	**0.79**	4 C		29.67	NL	4 C		25.14	NL	6 S	<1>	4.67	**0.55**	5 M		3.25	NL	4 C		---	NL
69	3.45	**11.32**	6 S	---	NL	6 S	---	NL	6 S	<1>	12.09	**0.78**	4 C		29.87	NL	4 C		25.39	NL	6 S	<1>	4.31	**0.43**	4 C		3.31	NL	5 M		---	NL
70	3.50	**11.48**	6 S	---	NL	6 S	---	NL	6 S	<1>	10.88	**0.68**	3 C		30.07	NL	4 C		25.64	NL	6 S	<1>	4.00	**0.39**	5 M		3.37	NL	5 M		---	NL
71	3.55	**11.65**	6 S	---	NL	6 S	---	NL	6 S	<1>	9.89	**0.63**	3 C		30.27	NL	3 C		25.89	NL	6 S	<1>	3.73	**0.42**	5 M		3.44	NL	5 M		---	NL
72	3.60	**11.81**	6 S	---	NL	6 S	---	NL	5 M	<1>	9.06	**0.55**	3 C		30.47	NL	3 C		26.14	NL	5 M	<1>	3.50	**0.46**	5 M		3.50	NL	5 M		---	NL
73	3.65	**11.98**	6 S	---	NL	6 S	---	NL	5 M	<1>	8.37	**0.57**	3 C		30.67	NL	3 C		26.39	NL	5 M	<1>	3.29	**0.50**	5 M	<1>	3.29	**0.39**	5 M		---	NL
74	3.70	**12.14**	6 S	---	NL	6 S	---	NL	5 M		8.44	NL	3 C		30.87	NL	3 C		26.64	NL	5 M		3.35	NL	5 M	<1>	3.11	**0.41**	5 M	<1>	73.00	**0.68**
75	3.75	**12.30**	6 S	---	NL	6 S	---	NL	4 C		8.52	NL	3 C		31.07	NL	4 C		26.89	NL	4 C		3.41	NL	5 M	<1>	2.95	**0.43**	6 S	<1>	36.50	**0.89**
76	3.80	**12.47**	6 S	---	NL	6 S	---	NL	4 C		8.60	NL	3 C		31.27	NL	4 C		27.14	NL	4 C		3.47	NL	5 M	<1>	2.80	**0.42**	6 S		37.00	**1.58**
77	3.85	**12.63**	6 S	---	NL	6 S	---	NL	4 C		8.67	NL	3 C		31.47	NL	4 C		27.39	NL	3 C		3.53	NL	5 M	<1>	2.67	**0.42**	6 S		37.50	**1.89**
78	3.90	**12.80**	6 S	---	NL	6 S	---	NL	4 C		8.75	NL	4 C		31.67	NL	4 C		27.64	NL	3 C		3.59	NL	5 M	<1>	2.55	**0.42**	6 S		38.00	**1.42**
79	3.95	**12.96**	6 S	---	NL	6 S	---	NL	4 C		8.83	NL	4 C		31.87	NL	4 C		27.89	NL	3 C		3.65	NL	5 M	<1>	2.43	**0.44**	6 S		38.50	**1.41**
80	4.00	**13.12**	6 S	---	NL	7 S	---	NL	3 C		8.91	NL	3 C		32.07	NL	4 C		28.14	NL	3 C		3.71	NL	5 M	<1>	2.33	**0.47**	6 S	<1>	25.67	**1.13**
81	4.05	**13.29**	6 S	---	NL	7 S	---	NL	3 C		8.98	NL	4 C		32.27	NL	4 C		28.39	NL	3 C		3.76	NL	6 S	<1>	2.24	**0.51**	6 S	<1>	19.25	**0.82**
82	4.10	**13.45**	6 S	---	NL	7 S	---	NL	3 C		9.06	NL	3 C		32.47	NL	3 C		28.64	NL	3 C		3.82	NL	6 S	<1>	2.15	**0.55**	6 S	<1>	15.40	**0.58**
83	4.15	**13.62**	6 S	---	NL	6 S	---	NL	3 C		9.14	NL	3 C		32.67	NL	3 C		28.89	NL	5 M		3.88	NL	5 M	<1>	2.07	**0.56**	6 S	<1>	12.83	**0.46**
84	4.20	**13.78**	5 M	---	NL	6 S	---	NL	3 C		9.21	NL	4 C		32.87	NL	3 C		29.14	NL	5 M	<1>	3.67	**0.40**	5 M	<1>	2.00	**0.55**	6 S	<1>	11.00	**0.44**
85	4.25	**13.94**	5 M	---	NL	6 S	---	NL	3 C		9.29	NL	3 C		33.07	NL	4 C		29.39	NL	5 M	<1>	3.47	**0.46**	5 M	<1>	1.93	**0.52**	5 M	<1>	9.62	**0.49**
86	4.30	**14.11**	5 M	---	NL	6 S	---	NL	4 C		9.37	NL	3 C		33.27	NL	3 C		29.64	NL	5 M	<1>	3.30	**0.50**	5 M	<1>	1.87	**0.50**	5 M		9.75	NL
87	4.35	**14.27**	6 S	---	NL	6 S	---	NL	4 C		9.44	NL	4 C		33.47	NL	4 C		29.89	NL	5 M	<1>	3.14	**0.50**	6 S	<1>	1.81	**0.49**	5 M		9.87	NL
88	4.40	**14.44**	6 S	---	NL	7 S	---	NL	4 C		9.52	NL	5 M		33.67	NL	4 C		30.14	NL	5 M	<1>	3.00	**0.48**	6 S	<1>	1.75	**0.52**	6 S	<1>	8.78	**0.61**
89	4.45	**14.60**	6 S	---	NL	7 S	---	NL	4 C		9.60	NL	5 M		33.87	NL	5 M		30.39	NL	5 M	<1>	2.87	**0.50**	5 M	<1>	1.70	**0.59**	6 S	<1>	7.90	**0.91**
90	4.50	**14.76**	6 S	---	NL	7 S	---	NL	4 C		9.67	NL	4 C		34.07	NL	5 M		30.64	NL	5 M		2.91	NL	5 M	<1>	1.65	**0.60**	6 S	<1>	7.18	**0.87**
91	4.55	**14.93**	6 S	---	NL	6 S	---	NL	4 C		9.75	NL	5 M		34.27	NL	4 C		30.89	NL	4 C		2.96	NL	5 M		1.68	NL	6 S	<1>	6.58	**0.82**
92	4.60	**15.09**	6 S	---	NL	6 S	---	NL	3 C		9.83	NL	5 M		34.47	NL	4 C		31.14	NL	4 C		3.00	NL	5 M		1.71	NL	6 S	<1>	6.08	**0.69**
93	4.65	**15.26**	6 S	---	NL	6 S	---	NL	4 C		9.91	NL	5 M		34.67	NL	5 M		31.39	NL	5 M	<1>	2.87	**0.42**	5 M	<1>	1.66	**0.54**	6 S	<1>	5.64	**0.70**
94	4.70	**15.42**	6 S	---	NL	7 S	---	NL	4 C		9.98	NL	5 M		34.87	NL	5 M		31.64	NL	5 M	<1>	2.76	**0.42**	5 M	<1>	1.61	**0.47**	6 S	<1>	5.27	**0.96**
95	4.75	**15.58**	6 S	---	NL	7 S	---	NL	5 M		10.06	NL	5 M		35.07	NL	5 M		31.89	NL	5 M	<1>	2.65	**0.42**	5 M	<1>	1.57	**0.41**	6 S	<1>	4.94	**1.23**
96	4.80	**15.75**	6 S	---	NL	7 S	---	NL	5 M	<1>	9.34	**0.38**	5 M		35.27	NL	3 C		32.14	NL	5 M	<1>	2.56	**0.41**	5 M	<1>	1.53	**0.35**	6 S	<1>	4.65	**1.17**
97	4.85	**15.91**	6 S	---	NL	6 S	---	NL	6 S	<1>	8.72	**0.63**	5 M	<1>	29.39	**0.78**	3 C		32.39	NL	5 M	<1>	2.46	**0.39**	5 M	<1>	1.49	**0.34**	6 S	<1>	4.39	**1.08**
98	4.90	**16.08**	6 S	---	NL	7 S	---	NL	6 S	<1>	8.17	**0.89**	5 M	<1>	25.19	**0.77**	3 C		32.64	NL	5 M	<1>	2.38	**0.40**	5 M	<1>	1.45	**0.36**	6 S	<1>	4.16	**1.09**
99	4.95	**16.24**	6 S	---	NL	7 S	---	NL	6 S	<1>	7.69	**1.22**	5 M	<1>	22.04	**0.77**	3 C		32.89	NL	5 M	<1>	2.30	**0.43**	5 M	<1>	1.41	**0.46**	6 S	<1>	3.95	**0.92**
100	5.00	**16.40**	6 S	---	NL	7 S	---	NL	6 S	<1>	7.26	**1.25**	5 M		22.17	NL	4 C		33.14	NL	5 M		2.33	NL	5 M	<1>	1.38	**0.51**	6 S	<1>	3.76	**0.69**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.25**
NL = Not liquefiable MSF 1.5
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

Depth			CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05				CPT-5 12/19/05			CPT-6 12/19/05				CPT-7 12/19/05			CPT-8 12/19/05				CPT-9 12/19/05			
101	5.05	**16.57**	6 S	---	NL	6 S	---	NL	6 S	<1>	6.88	**1.09**	5 M		22.29	NL	5 M	<1>	26.52	**0.34**	4 C		2.37	NL	5 M	<1>	1.35	**0.39**	6 S	<1>	3.59	**0.50**
102	5.10	**16.73**	6 S	---	NL	6 S	---	NL	6 S	<1>	6.54	**0.81**	4 C		22.42	NL	5 M	<1>	22.10	**0.37**	3 C		2.40	NL	6 S	<1>	1.32	**0.51**	5 M	<1>	3.43	**0.38**
103	5.15	**16.90**	6 S	---	NL	6 S	---	NL	6 S	<1>	6.23	**0.57**	5 M		22.54	NL	5 M	<1>	18.94	**0.38**	3 C		2.43	NL	6 S	<1>	1.29	**1.19**	5 M	<1>	3.29	**0.38**
104	5.20	**17.06**	6 S	---	NL	7 S	---	NL	5 M	<1>	5.94	**0.45**	5 M	<1>	20.04	**0.58**	5 M	<1>	16.57	**0.44**	5 M		2.47	NL	6 S		1.31	**2.13**	4 C		3.33	NL
105	5.25	**17.22**	6 S	---	NL	6 S	---	NL	5 M	<1>	5.69	**0.46**	6 S	<1>	18.03	**0.63**	5 M		16.70	NL	6 S	<1>	2.39	**0.74**	6 S		1.33	**2.78**	4 C		3.37	NL
106	5.30	**17.39**	6 S	---	NL	6 S	---	NL	4 C		5.73	NL	5 M	<1>	16.39	**0.65**	4 C		16.82	NL	6 S		2.42	**1.45**	6 S		1.36	**3.57**	4 C		3.42	NL
107	5.35	**17.55**	6 S	---	NL	7 S	---	NL	3 C		5.77	NL	4 C		16.49	NL	3 C		16.95	NL	6 S		2.45	**1.84**	7 S		1.38	**4.38**	4 C		3.46	NL
108	5.40	**17.72**	6 S	---	NL	6 S	---	NL	3 C		5.82	NL	4 C		16.58	NL	3 C		17.07	NL	6 S		2.48	**1.91**	7 S		1.40	**4.48**	4 C		3.50	NL
109	5.45	**17.88**	6 S	---	NL	6 S	---	NL	3 C		5.86	NL	3 C		16.67	NL	3 C		17.20	NL	6 S		2.52	**2.04**	6 S		1.42	**4.53**	6 S	<1>	3.36	**0.84**
110	5.50	**18.04**	6 S	---	NL	6 S	---	NL	3 C		5.90	NL	3 C		16.76	NL	3 C		17.32	NL	6 S		2.55	**2.11**	7 S		1.44	**4.51**	6 S	<1>	3.23	**1.08**
111	5.55	**18.21**	6 S	---	NL	7 S	---	NL	3 C		5.95	NL	3 C		16.85	NL	3 C		17.45	NL	6 S		2.58	**2.07**	6 S		1.47	**4.02**	5 M	<1>	3.11	**0.73**
112	5.60	**18.37**	6 S	---	NL	6 S	---	NL	4 C		5.99	NL	3 C		16.94	NL	3 C		17.57	NL	6 S		2.61	**1.89**	6 S		1.49	**2.56**	6 S	<1>	3.00	**0.48**
113	5.65	**18.54**	6 S	---	NL	6 S	---	NL	4 C		6.03	NL	3 C		17.03	NL	3 C		17.70	NL	6 S		2.65	**1.75**	6 S		1.51	**3.03**	6 S	<1>	2.90	**0.39**
114	5.70	**18.70**	6 S	---	NL	6 S	---	NL	5 M		6.08	NL	3 C		17.12	NL	3 C		17.82	NL	6 S		2.68	**1.85**	6 S		1.53	**2.51**	6 S	<1>	2.80	**0.36**
115	5.75	**18.86**	6 S	---	NL	6 S	---	NL	5 M		6.12	NL	4 C		17.21	NL	3 C		17.95	NL	6 S		2.71	**1.88**	6 S		1.56	**2.09**	6 S	<1>	2.71	**0.34**
116	5.80	**19.03**	6 S	---	NL	6 S	---	NL	4 C		6.16	NL	5 M	<1>	15.78	**0.57**	3 C		18.07	NL	6 S		2.74	**1.81**	6 S		1.58	**1.82**	6 S	<1>	2.62	**0.33**
117	5.85	**19.19**	6 S	---	NL	6 S	---	NL	3 C		6.21	NL	6 S	<1>	14.56	**0.81**	3 C		18.20	NL	6 S		2.77	**1.58**	6 S		1.60	**1.75**	5 M	<1>	2.55	**0.29**
118	5.90	**19.36**	6 S	---	NL	6 S	---	NL	3 C		6.25	NL	6 S	<1>	13.52	**0.95**	3 C		18.32	NL	6 S		2.81	**1.32**	6 S		1.62	**1.53**	5 M	<1>	2.47	**0.28**
119	5.95	**19.52**	6 S	---	NL	6 S	---	NL	3 C		6.29	NL	6 S	<1>	12.62	**1.13**	4 C		18.45	NL	6 S	<1>	2.72	**1.13**	6 S		1.64	**1.51**	5 M		2.50	NL
120	6.00	**19.69**	6 S	---	NL	6 S	---	NL	5 M	<1>	6.03	**0.33**	6 S		12.69	**1.26**	5 M		18.57	NL	6 S	<1>	2.64	**0.91**	6 S	<1>	1.61	**1.08**	4 C		2.53	NL
121	6.05	**19.85**	6 S	---	NL	6 S	---	NL	6 S	<1>	5.79	**0.67**	6 S	<1>	11.90	**1.22**	5 M		18.70	NL	6 S	<1>	2.56	**0.73**	6 S	<1>	1.57	**0.69**	3 C		2.56	NL
122	6.10	**20.01**	6 S	---	NL	6 S	---	NL	6 S	<1>	5.57	**0.86**	5 M	<1>	11.20	**1.12**	5 M		18.82	NL	6 S	<1>	2.49	**0.68**	6 S	<1>	1.54	**0.56**	3 C		2.59	NL
123	6.15	**20.18**	6 S	---	NL	6 S	---	NL	6 S	<1>	5.36	**0.94**	5 M	<1>	10.57	**0.97**	5 M	<1>	16.73	**0.42**	6 S	<1>	2.42	**0.83**	5 M	<1>	1.51	**0.63**	3 C		2.62	NL
124	6.20	**20.34**	6 S	---	NL	6 S	---	NL	6 S	<1>	5.17	**0.81**	5 M	<1>	10.02	**1.03**	5 M	<1>	15.06	**0.46**	6 S	<1>	2.35	**0.79**	5 M	<1>	1.48	**0.69**	3 C		2.65	NL
125	6.25	**20.51**	6 S	---	NL	6 S	---	NL	5 M	<1>	4.99	**0.68**	5 M	<1>	9.52	**1.07**	6 S	<1>	13.69	**0.54**	6 S	<1>	2.29	**0.62**	5 M		1.50	NL	4 C		2.68	NL
126	6.30	**20.67**	6 S	---	NL	6 S	---	NL	5 M		5.03	NL	5 M	<1>	9.06	**0.94**	6 S	<1>	12.55	**0.66**	5 M	<1>	2.23	**0.54**	5 M	<1>	1.47	**0.62**	4 C		2.71	NL
127	6.35	**20.83**	5 M	---	NL	6 S	---	NL	5 M	<1>	4.86	**0.51**	5 M	<1>	8.65	**0.78**	6 S	<1>	11.58	**0.70**	5 M		2.26	NL	5 M	<1>	1.44	**0.57**	3 C		2.74	NL
128	6.40	**21.00**	5 M	---	NL	6 S	---	NL	5 M	<1>	4.70	**0.56**	5 M	<1>	8.28	**0.75**	6 S	<1>	10.76	**0.65**	5 M	<1>	2.20	**0.63**	6 S	<1>	1.42	**1.15**	3 C		2.76	NL
129	6.45	**21.16**	6 S	---	NL	6 S	---	NL	5 M	<1>	4.56	**0.54**	5 M	<1>	7.93	**0.74**	5 M	<1>	10.04	**0.65**	5 M	<1>	2.15	**0.61**	6 S		1.43	**1.34**	6 S	<1>	2.69	**0.63**
130	6.50	**21.33**	6 S	---	NL	5 M	---	NL	5 M	<1>	4.42	**0.57**	5 M		7.97	NL	6 S	<1>	9.41	**0.71**	5 M	<1>	2.10	**0.54**	6 S		1.45	**2.39**	6 S		2.71	**1.51**
131	6.55	**21.49**	6 S	---	NL	5 M	---	NL	5 M		4.45	NL	4 C		8.01	NL	6 S	<1>	8.86	**0.77**	4 C		2.12	NL	6 S		1.47	**3.14**	6 S		2.74	**1.49**
132	6.60	**21.65**	6 S	---	NL	6 S	---	NL	4 C		4.48	NL	4 C		8.06	NL	6 S	<1>	8.37	**0.65**	4 C		2.14	NL	6 S		1.49	**3.15**	6 S		2.77	**2.96**
133	6.65	**21.82**	6 S	---	NL	6 S	---	NL	4 C		4.51	NL	3 C		8.10	NL	6 S	<1>	7.93	**0.72**	4 C		2.17	NL	6 S		1.51	**5.89**	6 S		2.80	**4.66**
134	6.70	**21.98**	6 S	---	NL	5 M	---	NL	4 C		4.54	NL	3 C		8.14	NL	6 S	<1>	7.53	**0.83**	4 C		2.19	NL	6 S		1.53	**3.82**	6 S		2.83	**5.73**
135	6.75	**22.15**	6 S	---	NL	5 M	---	NL	4 C		4.57	NL	3 C		8.18	NL	6 S	<1>	7.17	**0.80**	4 C		2.21	NL	6 S		1.55	**4.52**	6 S		2.86	**8.55**
136	6.80	**22.31**	6 S	---	NL	6 S	---	NL	4 C		4.60	NL	4 C		8.22	NL	6 S	<1>	6.84	**0.70**	5 M		2.24	NL	6 S		1.57	**2.23**	6 S		2.89	**18.33**
137	6.85	**22.47**	6 S	---	NL	6 S	---	NL	4 C		4.63	NL	4 C		8.26	NL	6 S	<1>	6.55	**1.01**	5 M		2.26	NL	6 S		1.58	**2.87**	6 S		2.91	**18.44**
138	6.90	**22.64**	6 S	---	NL	6 S	---	NL	4 C		4.66	NL	5 M	<1>	7.93	**0.69**	6 S		6.59	**1.33**	5 M		2.29	NL	6 S		1.60	**4.09**	6 S		2.94	**21.85**
139	6.95	**22.80**	6 S	---	NL	6 S	---	NL	4 C		4.69	NL	6 S	<1>	7.63	**0.70**	6 S		6.63	**1.35**	4 C		2.31	NL	6 S		1.62	**7.16**	6 S		2.97	**16.56**
140	7.00	**22.97**	5 M	---	NL	6 S	---	NL	5 M		4.72	NL	5 M	<1>	7.35	**0.83**	6 S	<1>	6.36	**1.03**	4 C		2.33	NL	6 S		1.64	**6.91**	6 S		3.00	**11.47**
141	7.05	**23.13**	5 M	---	NL	6 S	---	NL	5 M	<1>	4.58	**0.46**	5 M	<1>	7.08	**0.88**	6 S	<1>	6.10	**0.78**	3 C		2.36	NL	6 S		1.66	**5.27**	6 S		3.03	**9.00**
142	7.10	**23.29**	5 M	---	NL	5 M	---	NL	5 M	<1>	4.45	**0.48**	5 M	<1>	6.84	**1.01**	6 S	<1>	5.87	**0.59**	3 C		2.38	NL	6 S		1.68	**4.88**	6 S		3.06	**8.24**
143	7.15	**23.46**	5 M	---	NL	5 M	---	NL	5 M	<1>	4.33	**0.42**	5 M	<1>	6.61	**1.13**	5 M	<1>	5.65	**0.43**	4 C		2.40	NL	6 S		1.70	**5.85**	6 S		3.09	**11.68**
144	7.20	**23.62**	6 S	---	NL	5 M	---	NL	5 M	<1>	4.21	**0.42**	6 S		6.64	**1.54**	5 M		5.69	NL	3 C		2.43	NL	6 S		1.72	**6.49**	6 S		3.11	**12.91**
145	7.25	**23.79**	6 S	---	NL	5 M	---	NL	5 M	<1>	4.10	**0.48**	6 S		6.68	**1.55**	4 C		5.73	NL	5 M		2.45	NL	6 S		1.74	**4.56**	6 S		3.14	**13.71**
146	7.30	**23.95**	6 S	---	NL	6 S	---	NL	5 M	<1>	3.99	**0.49**	6 S		6.71	**1.79**	3 C		5.76	NL	5 M	<1>	2.40	**0.33**	6 S		1.75	**3.97**	6 S		3.17	**9.11**
147	7.35	**24.11**	6 S	---	NL	6 S	---	NL	6 S	<1>	3.89	**0.72**	6 S		6.74	**1.99**	4 C		5.80	NL	5 M	<1>	2.34	**0.43**	6 S		1.77	**3.20**	6 S		3.20	**7.07**
148	7.40	**24.28**	6 S	---	NL	5 M	---	NL	6 S	<1>	3.80	**0.94**	6 S		6.78	**2.17**	4 C		5.84	NL	4 C		2.36	NL	6 S		1.79	**3.03**	7 S		3.23	**7.84**
149	7.45	**24.44**	6 S	---	NL	5 M	---	NL	6 S		3.82	**1.38**	6 S		6.81	**2.55**	4 C		5.87	NL	3 C		2.39	NL	6 S		1.81	**2.04**	6 S		3.26	**5.36**
150	7.50	**24.61**	6 S	---	NL	5 M	---	NL	6 S		3.85	**1.59**	6 S		6.84	**2.52**	4 C		5.91	NL	3 C		2.41	NL	6 S		1.83	**1.79**	6 S		3.29	**4.57**
151	7.55	**24.77**	6 S	---	NL	5 M	---	NL	6 S		3.87	**1.45**	6 S		6.88	**2.39**	4 C		5.95	NL	3 C		2.43	NL	6 S		1.85	**1.66**	6 S		3.31	**5.16**
152	7.60	**24.93**	6 S	---	NL	6 S	---	NL	6 S		3.90	**1.38**	6 S		6.91	**2.45**	4 C		5.98	NL	3 C		2.45	NL	6 S		1.87	**1.71**	6 S		3.34	**6.20**
153	7.65	**25.10**	6 S	---	NL	6 S	---	NL	6 S		3.92	**1.37**	6 S		6.94	**2.66**	3 C		6.02	NL	5 M	<1>	2.40	**0.32**	6 S		1.89	**1.72**	6 S		3.37	**4.56**
154	7.70	**25.26**	6 S	---	NL	6 S	---	NL	6 S		3.95	**1.34**	6 S		6.98	**2.81**	3 C		6.06	NL	6 S	<1>	2.35	**0.46**	6 S		1.91	**1.86**	6 S		3.40	**5.22**
155	7.75	**25.43**	6 S	---	NL	5 M	---	NL	6 S		3.97	**1.33**	6 S		7.01	**2.80**	5 M		6.10	NL	6 S	<1>	2.30	**0.54**	6 S		1.92	**1.98**	6 S		3.43	**6.84**
156	7.80	**25.59**	6 S	---	NL	6 S	---	NL	6 S		3.99	**1.38**	6 S		7.04	**2.74**	5 M	<1>	5.88	**0.52**	6 S	<1>	2.25	**0.70**	6 S		1.94	**2.05**	6 S		3.46	**12.36**
157	7.85	**25.75**	6 S	---	NL	6 S	---	NL	6 S		4.02	**1.61**	6 S		7.08	**2.58**	5 M	<1>	5.68	**0.42**	6 S	<1>	2.20	**0.76**	6 S		1.96	**2.58**	6 S		3.49	**9.10**
158	7.90	**25.92**	6 S	---	NL	6 S	---	NL	6 S		4.04	**1.82**	6 S		7.11	**2.56**	6 S	<1>	5.49	**0.49**	6 S	<1>	2.16	**0.88**	6 S		1.98	**2.80**	6 S		3.51	**7.45**
159	7.95	**26.08**	6 S	---	NL	6 S	---	NL	6 S		4.07	**1.96**	6 S		7.14	**2.50**	5 M	<1>	5.31	**0.47**	6 S	<1>	2.12	**0.93**	6 S		2.00	**2.96**	6 S		3.54	**6.26**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.25**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth			CPT-1		12/19/05		CPT-2		12/19/05		CPT-4		12/19/05		CPT-5		12/19/05	
160	8.00	**26.25**	6 S		---	NL	6 S		---	NL	6 S		4.09	**2.45**	6 S		7.18	**2.69**
161	8.05	**26.41**	6 S		---	NL	6 S		---	NL	6 S		4.12	**2.68**	6 S		7.21	**2.84**
162	8.10	**26.57**	6 S		---	NL	6 S		---	NL	6 S		4.14	**2.62**	6 S		7.24	**2.90**
163	8.15	**26.74**	6 S		---	NL	6 S		---	NL	6 S		4.17	**2.66**	6 S		7.28	**2.78**
164	8.20	**26.90**	6 S		---	NL	6 S		---	NL	6 S		4.19	**2.87**	6 S		7.31	**2.68**
165	8.25	**27.07**	6 S		---	NL	6 S		---	NL	6 S		4.21	**2.84**	6 S		7.34	**2.60**
166	8.30	**27.23**	6 S		---	NL	6 S		---	NL	6 S		4.24	**2.76**	6 S		7.38	**2.39**
167	8.35	**27.40**	6 S		---	NL	6 S		---	NL	6 S		4.26	**2.46**	6 S		7.41	**2.30**
168	8.40	**27.56**	6 S		---	NL	6 S		---	NL	6 S		4.29	**2.44**	6 S		7.44	**2.24**
169	8.45	**27.72**	6 S		---	NL	6 S		---	NL	6 S		4.31	**2.38**	6 S		7.48	**1.98**
170	8.50	**27.89**	6 S		---	NL	6 S		---	NL	6 S		4.34	**2.14**	6 S		7.51	**1.41**
171	8.55	**28.05**	6 S		---	NL	6 S		---	NL	6 S		4.36	**1.94**	6 S		7.54	**1.29**
172	8.60	**28.22**	6 S		---	NL	6 S		---	NL	6 S		4.38	**2.03**	5 M	<1>	7.30	**0.95**
173	8.65	**28.38**	6 S		---	NL	6 S		---	NL	6 S		4.41	**2.17**	6 S	<1>	7.07	**0.90**
174	8.70	**28.54**	6 S		---	NL	6 S		---	NL	6 S		4.43	**2.01**	6 S		7.10	**1.84**
175	8.75	**28.71**	6 S		---	NL	6 S		---	NL	6 S		4.46	**1.91**	6 S		7.14	**4.15**
176	8.80	**28.87**	6 S		---	NL	6 S		---	NL	6 S		4.48	**1.56**	6 S		7.17	**3.96**
177	8.85	**29.04**	6 S		---	NL	6 S		---	NL	6 S	<1>	4.38	**1.07**	6 S		7.20	**3.42**
178	8.90	**29.20**	6 S		---	NL	6 S		---	NL	6 S	<1>	4.27	**0.68**	6 S		7.23	**3.50**
179	8.95	**29.36**	6 S		---	NL	6 S		---	NL	6 S	<1>	4.18	**0.51**	6 S		7.26	**3.31**
180	9.00	**29.53**	6 S		---	NL	6 S		---	NL	5 M	<1>	4.08	**0.48**	6 S		7.29	**3.18**
181	9.05	**29.69**	6 S		---	NL	5 M		---	NL	5 M	<1>	3.99	**0.47**	6 S		7.32	**3.48**
182	9.10	**29.86**	6 S		---	NL	6 S		---	NL	5 M	<1>	3.91	**0.50**	6 S		7.35	**4.20**
183	9.15	**30.02**	6 S		---	NL	6 S		---	NL	4 C		3.93	NL	6 S		7.39	**4.55**
184	9.20	**30.18**	6 S		---	NL	6 S		---	NL	5 M		3.95	NL	6 S		7.42	**4.65**
185	9.25	**30.35**	6 S		---	NL	6 S		---	NL	5 M		3.97	NL	6 S		7.45	**4.51**
186	9.30	**30.51**	6 S		---	NL	5 M		---	NL	4 C		4.00	NL	6 S		7.48	**3.69**
187	9.35	**30.68**	6 S		---	NL	5 M		---	NL	4 C		4.02	NL	6 S		7.51	**2.86**
188	9.40	**30.84**	6 S		---	NL	6 S		---	NL	3 C		4.04	NL	6 S		7.54	**1.92**
189	9.45	**31.00**	6 S		---	NL	6 S		---	NL	3 C		4.06	NL	6 S	<1>	7.31	**1.24**
190	9.50	**31.17**	6 S		---	NL	6 S		---	NL	6 S	<1>	3.97	**0.40**	6 S		7.34	**1.57**
191	9.55	**31.33**	6 S		---	NL	6 S		---	NL	6 S	<1>	3.89	**0.46**	6 S		7.37	**1.44**
192	9.60	**31.50**	6 S		---	NL	6 S		---	NL	5 M	<1>	3.82	**0.43**	6 S	<1>	7.16	**0.99**
193	9.65	**31.66**	6 S		---	NL	6 S		---	NL	5 M	<1>	3.74	**0.48**	5 M	<1>	6.95	**0.68**
194	9.70	**31.82**	6 S		---	NL	6 S		---	NL	5 M		3.76	NL	5 M		6.98	NL
195	9.75	**31.99**	6 S		---	NL	6 S		---	NL	5 M	<1>	3.69	**0.49**	4 C		7.01	NL
196	9.80	**32.15**	6 S		---	NL	6 S		---	NL	5 M		3.71	NL	4 C		7.04	NL
197	9.85	**32.32**	6 S		---	NL	0 C		---		4 C		3.73	NL	4 C		7.07	NL
198	9.90	**32.48**	6 S		---	NL	0 C		---		4 C		3.75	NL	4 C		7.10	NL
199	9.95	**32.64**	6 S		---	NL	0 C		---		4 C		3.76	NL	3 C		7.12	NL
200	10.00	**32.81**	6 S		---	NL	0 C		---		4 C		3.78	NL	3 C		7.15	NL
201	10.05	**32.97**	6 S		---	NL	0 C		---		5 M	<1>	3.71	**0.41**	4 C		7.18	NL
202	10.10	**33.14**	6 S		---	NL	0 C		---		5 M	<1>	3.64	**0.46**	4 C		7.21	NL
203	10.15	**33.30**	6 S		---	NL	0 C		---		5 M	<1>	3.58	**0.51**	3 C		7.24	NL
204	10.20	**33.46**	6 S		---	NL	0 C		---		6 S	<1>	3.51	**0.70**	4 C		7.27	NL
205	10.25	**33.63**	6 S		---	NL	0 C		---		6 S	<1>	3.45	**0.81**	4 C		7.30	NL
206	10.30	**33.79**	6 S		---	NL	0 C		---		6 S	<1>	3.39	**0.75**	4 C		7.32	NL
207	10.35	**33.96**	6 S		---	NL	0 C		---		6 S	<1>	3.34	**0.69**	3 C		7.35	NL
208	10.40	**34.12**	6 S		---	NL	0 C		---		6 S	<1>	3.28	**0.61**	3 C		7.38	NL
209	10.45	**34.28**	6 S		---	NL	0 C		---		6 S	<1>	3.23	**0.55**	5 M	<1>	7.18	**0.36**
210	10.50	**34.45**	6 S		---	NL	0 C		---		5 M	<1>	3.17	**0.52**	5 M	<1>	6.98	**0.42**
211	10.55	**34.61**	6 S		---	NL	0 C		---		5 M		3.19	NL	5 M	<1>	6.80	**0.45**
212	10.60	**34.78**	6 S		---	NL	0 C		---		4 C		3.21	NL	5 M	<1>	6.62	**0.47**
213	10.65	**34.94**	6 S		---	NL	0 C		---		5 M		3.22	NL	5 M	<1>	6.46	**0.47**
214	10.70	**35.10**	6 S		---	NL	0 C		---		4 C		3.24	NL	5 M	<1>	6.30	**0.43**
215	10.75	**35.27**	6 S		---	NL	0 C		---		4 C		3.25	NL	5 M		6.33	NL
216	10.80	**35.43**	6 S		---	NL	0 C		---		4 C		3.27	NL	4 C		6.35	NL
217	10.85	**35.60**	6 S		---	NL	0 C		---		4 C		3.29	NL	4 C		6.37	NL
218	10.90	**35.76**	6 S		---	NL	0 C		---		4 C		3.30	NL	3 C		6.40	NL

Depth	CPT-6		12/19/05		CPT-7		12/19/05		CPT-8		12/19/05		CPT-9		12/19/05	
160	5 M	<1>	5.14	**0.51**	6 S	<1>	2.08	**1.01**	6 S		2.02	**2.74**	6 S		3.57	**4.69**
161	4 C		5.17	NL	6 S	<1>	2.04	**1.06**	6 S		2.04	**2.02**	6 S		3.60	**3.39**
162	4 C		5.21	NL	6 S	<1>	2.00	**1.07**	6 S		2.06	**1.79**	6 S		3.63	**2.59**
163	4 C		5.24	NL	6 S	<1>	1.96	**1.05**	6 S		2.08	**1.79**	6 S		3.66	**2.35**
164	4 C		5.27	NL	6 S	<1>	1.93	**1.02**	6 S		2.09	**1.72**	6 S		3.69	**3.01**
165	4 C		5.30	NL	6 S	<1>	1.89	**1.04**	6 S		2.11	**1.63**	6 S		3.71	**3.96**
166	5 M	<1>	5.14	**0.40**	6 S	<1>	1.86	**1.05**	6 S	<1>	2.07	**1.20**	6 S		3.74	**3.49**
167	5 M	<1>	4.99	**0.47**	6 S	<1>	1.83	**1.05**	6 S	<1>	2.04	**0.91**	6 S		3.77	**3.65**
168	5 M	<1>	4.85	**0.44**	6 S	<1>	1.80	**1.06**	6 S	<1>	2.00	**1.02**	6 S		3.80	**3.48**
169	5 M	<1>	4.71	**0.49**	6 S	<1>	1.77	**1.09**	6 S	<1>	1.96	**1.08**	6 S		3.83	**3.54**
170	4 C		4.74	NL	6 S	<1>	1.74	**1.15**	6 S	<1>	1.93	**1.22**	6 S		3.86	**3.27**
171	4 C		4.77	NL	6 S		1.76	**1.26**	6 S		1.95	**1.39**	6 S		3.89	**2.44**
172	4 C		4.79	NL	6 S		1.77	**1.34**	6 S		1.97	**1.31**	6 S		3.91	**2.52**
173	4 C		4.82	NL	6 S		1.79	**1.36**	6 S	<1>	1.93	**0.90**	6 S		3.94	**2.50**
174	4 C		4.85	NL	6 S		1.81	**1.41**	6 S	<1>	1.90	**0.78**	6 S		3.97	**2.50**
175	4 C		4.88	NL	6 S		1.82	**1.38**	6 S	<1>	1.87	**0.59**	6 S		4.00	**2.47**
176	5 M	<1>	4.75	**0.43**	6 S		1.84	**1.52**	6 S	<1>	1.84	**0.62**	6 S		4.03	**3.08**
177	6 S	<1>	4.62	**0.53**	6 S		1.85	**1.70**	6 S	<1>	1.81	**1.09**	6 S		4.06	**4.53**
178	6 S	<1>	4.50	**0.57**	6 S		1.87	**1.73**	6 S	<1>	1.78	**1.19**	6 S		4.09	**5.02**
179	6 S	<1>	4.39	**0.68**	6 S		1.89	**1.64**	6 S	<1>	1.75	**1.11**	6 S		4.11	**2.77**
180	6 S	<1>	4.28	**0.71**	6 S		1.90	**1.78**	6 S	<1>	1.73	**1.11**	6 S		4.14	**1.62**
181	6 S	<1>	4.18	**0.70**	6 S		1.92	**2.15**	6 S	<1>	1.70	**1.14**	6 S		4.17	**1.29**
182	6 S	<1>	4.08	**0.74**	6 S		1.94	**2.32**	6 S		1.72	**1.42**	6 S	<1>	4.06	**1.21**
183	6 S	<1>	3.99	**0.77**	6 S		1.95	**2.16**	6 S		1.73	**1.62**	6 S		4.08	**1.96**
184	5 M	<1>	3.90	**0.71**	6 S		1.97	**1.85**	6 S		1.75	**1.84**	6 S		4.11	**2.98**
185	5 M		3.92	NL	6 S		1.98	**1.57**	6 S		1.76	**2.13**	6 S		4.14	**5.90**
186	4 C		3.95	NL	6 S		2.00	**1.39**	6 S		1.78	**2.36**	6 S		4.17	**16.06**
187	3 C		3.97	NL	6 S	<1>	1.97	**1.21**	6 S		1.79	**2.56**	6 S		4.19	**9.22**
188	4 C		3.99	NL	6 S	<1>	1.94	**1.09**	6 S		1.81	**2.48**	6 S		4.22	**8.43**
189	4 C		4.01	NL	6 S	<1>	1.91	**1.01**	6 S		1.82	**2.08**	6 S		4.25	**7.96**
190	3 C		4.04	NL	6 S	<1>	1.88	**0.85**	6 S		1.84	**1.88**	6 S		4.28	**6.17**
191	3 C		4.06	NL	6 S	<1>	1.85	**0.70**	6 S		1.85	**1.53**	6 S		4.31	**4.16**
192	4 C		4.08	NL	6 S	<1>	1.82	**0.47**	6 S	<1>	1.82	**1.06**	6 S		4.33	**3.21**
193	4 C		4.10	NL	5 M	<1>	1.80	**0.40**	6 S	<1>	1.80	**0.70**	6 S		4.36	**2.94**
194	3 C		4.12	NL	5 M		1.81	NL	6 S	<1>	1.77	**0.63**	6 S		4.39	**2.92**
195	3 C		4.15	NL	4 C		1.83	NL	5 M	<1>	1.75	**0.53**	6 S		4.42	**3.00**
196	4 C		4.17	NL	5 M		1.84	NL	5 M	<1>	1.72	**0.45**	6 S		4.44	**3.11**
197	4 C		4.19	NL	5 M		1.86	NL	5 M	<1>	1.70	**0.45**	6 S		4.47	**3.08**
198	3 C		4.21	NL	5 M	<1>	1.83	**0.41**	5 M	<1>	1.68	**0.47**	6 S		4.50	**3.11**
199	4 C		4.24	NL	6 S	<1>	1.80	**0.92**	5 M		1.69	NL	6 S		4.53	**3.08**
200	3 C		4.26	NL	6 S	<1>	1.78	**1.16**	5 M		1.70	NL	6 S		4.56	**3.12**
201	4 C		4.28	NL	6 S		1.79	**1.35**	5 M	<1>	1.68	**0.58**	6 S		4.58	**3.57**
202	4 C		4.30	NL	6 S		1.81	**1.71**	6 S	<1>	1.66	**0.99**	6 S		4.61	**3.90**
203	4 C		4.32	NL	6 S		1.82	**2.09**	6 S		1.67	**1.60**	6 S		4.64	**3.96**
204	4 C		4.35	NL	6 S		1.83	**2.57**	6 S		1.68	**1.74**	6 S		4.67	**5.51**
205	4 C		4.37	NL	6 S		1.85	**3.83**	6 S		1.70	**1.69**	6 S		4.69	**6.80**
206	4 C		4.39	NL	6 S		1.86	**6.17**	6 S		1.71	**1.34**	6 S		4.72	**5.69**
207	4 C		4.41	NL	6 S		1.88	**8.20**	6 S	<1>	1.69	**0.73**	6 S		4.75	**4.60**
208	4 C		4.44	NL	6 S		1.89	**15.72**	6 S	<1>	1.67	**0.48**	6 S		4.78	**3.61**
209	4 C		4.46	NL	6 S		1.90	**8.78**	5 M	<1>	1.65	**0.33**	6 S		4.81	**2.54**
210	5 M		4.48	NL	6 S		1.92	**6.32**	5 M		1.66	NL	6 S		4.83	**2.34**
211	5 M		4.50	NL	6 S		1.93	**6.98**	4 C		1.67	NL	6 S		4.86	**2.70**
212	5 M	<1>	4.40	**0.28**	6 S		1.94	**6.81**	3 C		1.68	NL	6 S		4.89	**2.65**
213	4 C		4.43	NL	6 S		1.96	**6.61**	3 C		1.70	NL	6 S		4.92	**2.53**
214	3 C		4.45	NL	6 S		1.97	**6.27**	4 C		1.71	NL	6 S		4.94	**2.43**
215	4 C		4.47	NL	6 S		1.99	**6.29**	4 C		1.72	NL	6 S		4.97	**2.08**
216	4 C		4.49	NL	6 S		2.00	**6.98**	4 C		1.73	NL	6 S		5.00	**1.44**
217	4 C		4.51	NL	6 S		2.01	**8.36**	4 C		1.75	NL	6 S		5.03	**1.25**
218	5 M		4.53	NL	6 S		2.03	**12.89**	3 C		1.76	NL	6 S	<1>	4.89	**1.25**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.25**
NL = Not liquefiable MSF 1.5
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

Depth			CPT-1	12/19/05		CPT-2	12/19/05		CPT-4		12/19/05		CPT-5		12/19/05		CPT-6		12/19/05		CPT-7		12/19/05		CPT-8		12/19/05		CPT-9	12/19/05	
219	10.95	**35.93**	6 S	---	NL	0 C	---		4 C		3.32	NL	3 C		6.42	NL	5 M	<1>	4.44	**0.42**	6 S		2.04	**19.37**	3 C		1.77	NL	6 S	4.92	**1.44**
220	11.00	**36.09**	6 S	---	NL	0 C	---		5 M	<1>	3.27	**0.60**	3 C		6.45	NL	5 M	<1>	4.35	**0.49**	6 S		2.06	**31.49**	4 C		1.78	NL	6 S	4.95	**2.20**
221	11.05	**36.25**	6 S	---	NL	0 C	---		6 S	<1>	3.22	**0.97**	3 C		6.47	NL	5 M	<1>	4.26	**0.58**	7 S		2.07	**34.23**	5 M	<1>	1.76	**0.33**	6 S	4.97	**4.30**
222	11.10	**36.42**	6 S	---	NL	0 C	---		6 S		3.23	**1.38**	3 C		6.50	NL	6 S	<1>	4.17	**0.66**	6 S		2.08	**31.56**	5 M	<1>	1.74	**0.34**	6 S	5.00	**6.76**
223	11.15	**36.58**	6 S	---	NL	0 C	---		6 S		3.25	**1.47**	5 M		6.52	NL	6 S	<1>	4.09	**0.78**	6 S		2.10	**18.75**	6 S	<1>	1.72	**0.38**	6 S	5.03	**9.57**
224	11.20	**36.75**	6 S	---	NL	0 C	---		6 S		3.26	**1.49**	5 M	<1>	6.37	**0.32**	6 S	<1>	4.01	**1.17**	6 S		2.11	**12.35**	6 S	<1>	1.70	**0.38**	6 S	5.05	**10.82**
225	11.25	**36.91**	6 S	---	NL	0 C	---		6 S		3.28	**1.65**	4 C		6.39	NL	6 S		4.03	**1.82**	6 S		2.13	**8.03**	6 S	<1>	1.68	**0.34**	6 S	5.08	**7.77**
226	11.30	**37.07**	6 S	---	NL	0 C	---		6 S		3.29	**1.65**	4 C		6.41	NL	6 S		4.05	**2.81**	6 S		2.14	**7.37**	6 S	<1>	1.66	**0.35**	6 S	5.11	**8.54**
227	11.35	**37.24**	6 S	---	NL	0 C	---		6 S		3.31	**1.96**	5 M	<1>	6.26	**0.42**	6 S		4.07	**4.04**	6 S		2.15	**7.98**	6 S	<1>	1.64	**0.37**	6 S	5.14	**7.97**
228	11.40	**37.40**	6 S	---	NL	0 C	---		6 S		3.32	**2.10**	6 S	<1>	6.12	**0.62**	6 S		4.09	**5.55**	6 S		2.17	**7.69**	5 M	<1>	1.62	**0.46**	6 S	5.16	**8.15**
229	11.45	**37.57**	6 S	---	NL	0 C	---		6 S		3.34	**2.15**	6 S	<1>	5.99	**0.82**	7 S		4.11	**8.97**	6 S		2.18	**5.32**	5 M	<1>	1.60	**0.50**	6 S	5.19	**10.67**
230	11.50	**37.73**	6 S	---	NL	0 C	---		6 S		3.36	**2.00**	6 S	<1>	5.86	**0.83**	6 S		4.13	**9.55**	6 S		2.19	**4.35**	5 M	<1>	1.58	**0.47**	6 S	5.22	**8.00**
231	11.55	**37.89**	6 S	---	NL	0 C	---		6 S		3.37	**1.65**	6 S	<1>	5.73	**0.87**	7 S		4.15	**12.85**	6 S		2.21	**2.95**	6 S		1.60	**1.92**	6 S	5.24	**5.62**
232	11.60	**38.06**	6 S	---	NL	0 C	---		6 S		3.39	**1.46**	6 S	<1>	5.61	**1.01**	7 S		4.16	**15.66**	6 S		2.22	**3.04**	6 S		1.61	**2.30**	6 S	5.27	**4.85**
233	11.65	**38.22**	6 S	---	NL	0 C	---		6 S	<1>	3.33	**1.16**	6 S		5.63	**1.41**	7 S		4.18	**14.74**	6 S		2.24	**2.38**	6 S		1.62	**3.90**	6 S	5.30	**3.28**
234	11.70	**38.39**	6 S	---	NL	0 C	---		6 S	<1>	3.28	**1.14**	6 S		5.65	**1.54**	7 S		4.20	**11.37**	6 S		2.25	**1.84**	6 S		1.63	**4.05**	6 S	5.32	**3.07**
235	11.75	**38.55**	6 S	---	NL	0 C	---		6 S	<1>	3.24	**1.04**	6 S		5.67	**1.38**	7 S		4.22	**10.89**	6 S		2.26	**1.38**	6 S		1.64	**4.21**	6 S	5.35	**3.09**
236	11.80	**38.71**	6 S	---	NL	0 C	---		6 S	<1>	3.19	**0.82**	6 S	<1>	5.56	**1.21**	7 S		4.24	**10.60**	6 S	<1>	2.23	**1.00**	6 S		1.65	**4.98**	6 S	5.38	**3.23**
237	11.85	**38.88**	6 S	---	NL	0 C	---		6 S	<1>	3.14	**0.57**	6 S	<1>	5.45	**0.89**	7 S		4.26	**11.76**	6 S	<1>	2.20	**0.57**	7 S		1.66	**5.67**	6 S	5.41	**3.11**
238	11.90	**39.04**	6 S	---	NL	0 C	---		6 S	<1>	3.10	**0.41**	6 S	<1>	5.34	**0.60**	7 S		4.28	**7.05**	6 S	<1>	2.17	**0.41**	6 S		1.67	**6.12**	6 S	5.43	**3.29**
239	11.95	**39.21**	6 S	---	NL	0 C	---		5 M	<1>	3.05	**0.35**	6 S	<1>	5.24	**0.46**	6 S		4.30	**3.19**	5 M	<1>	2.14	**0.47**	6 S		1.69	**7.50**	6 S	5.46	**3.70**
240	12.00	**39.37**	6 S	---	NL	0 C	---		4 C		3.07	NL	5 M		5.26	NL	6 S		4.32	**1.46**	4 C		2.16	NL	6 S		1.70	**5.79**	6 S	5.49	**2.97**
241	12.05	**39.53**	6 S	---	NL	0 C	---		3 C		3.08	NL	4 C		5.28	NL	6 S	<1>	4.24	**0.94**	4 C		2.17	NL	6 S		1.71	**7.25**	6 S	5.51	**3.20**
242	12.10	**39.70**	6 S	---	NL	0 C	---		3 C		3.10	NL	3 C		5.30	NL	5 M	<1>	4.16	**0.54**	4 C		2.18	NL	6 S		1.72	**9.71**	6 S	5.54	**2.87**
243	12.15	**39.86**	7 S	---	NL	0 C	---		3 C		3.11	NL	3 C		5.31	NL	5 M	<1>	4.08	**0.48**	5 M	<1>	2.16	**0.51**	7 S		1.73	**12.16**	6 S	5.57	**2.81**
244	12.20	**40.03**	7 S	---	NL	0 C	---		3 C		3.12	NL	3 C		5.33	NL	5 M	<1>	4.01	**0.57**	5 M	<1>	2.13	**0.57**	6 S		1.74	**8.81**	6 S	5.59	**2.56**
245	12.25	**40.19**	0 C	---		0 C	---		3 C		3.14	NL	3 C		5.35	NL	6 S	<1>	3.94	**0.60**	4 C		2.14	NL	6 S		1.75	**7.84**	6 S	5.62	**2.82**
246	12.30	**40.35**	0 C	---		0 C	---		3 C		3.15	NL	4 C		5.37	NL	6 S	<1>	3.87	**0.66**	4 C		2.15	NL	7 S		1.76	**9.24**	6 S	5.65	**3.04**
247	12.35	**40.52**	0 C	---		0 C	---		3 C		3.17	NL	5 M	<1>	5.27	**0.42**	6 S	<1>	3.81	**0.49**	6 S	<1>	2.13	**1.21**	7 S		1.78	**11.84**	6 S	5.68	**2.69**
248	12.40	**40.68**	0 C	---		0 C	---		3 C		3.18	NL	5 M	<1>	5.17	**0.47**	6 S	<1>	3.74	**0.46**	6 S		2.14	**3.49**	7 S		1.79	**15.16**	6 S	5.70	**2.39**
249	12.45	**40.85**	0 C	---		0 C	---		3 C		3.19	NL	5 M	<1>	5.08	**0.55**	5 M	<1>	3.68	**0.51**	6 S		2.15	**5.18**	7 S		1.80	**17.54**	6 S	5.73	**3.50**
250	12.50	**41.01**	0 C	---		0 C	---		3 C		3.21	NL	5 M	<1>	4.99	**0.54**	5 M	<1>	3.62	**0.59**	7 S		2.16	**7.56**	7 S		1.81	**24.86**	6 S	5.76	**6.62**
251	12.55	**41.17**	0 C	---		0 C	---		2 C		3.22	NL	6 S	<1>	4.90	**0.87**	5 M	<1>	3.56	**0.42**	6 S		2.18	**8.99**	6 S		1.82	**15.04**	6 S	5.78	**6.18**
252	12.60	**41.34**	0 C	---		0 C	---		3 C		3.24	NL	6 S		4.92	**1.39**	6 S	<1>	3.51	**0.47**	6 S		2.19	**9.48**	7 S		1.83	**13.01**	6 S	5.81	**6.33**
253	12.65	**41.50**	0 C	---		0 C	---		3 C		3.25	NL	6 S		4.94	**2.12**	5 M	<1>	3.46	**0.46**	6 S		2.20	**8.56**	6 S		1.84	**11.93**	6 S	5.84	**7.16**
254	12.70	**41.67**	0 C	---		0 C	---		5 M	<1>	3.21	**0.31**	6 S		4.95	**3.81**	5 M		3.47	NL	6 S		2.22	**9.79**	7 S		1.85	**9.53**	6 S	5.86	**10.68**
255	12.75	**41.83**	0 C	---		0 C	---		5 M	<1>	3.16	**0.35**	6 S		4.97	**4.06**	3 C		3.49	NL	6 S		2.23	**14.04**	7 S		1.87	**7.82**	6 S	5.89	**9.74**
256	12.80	**41.99**	0 C	---		0 C	---		6 S	<1>	3.12	**0.53**	6 S		4.99	**3.71**	5 M	<1>	3.43	**0.45**	6 S		2.24	**6.58**	7 S		1.88	**6.47**	6 S	5.92	**6.19**
257	12.85	**42.16**	0 C	---		0 C	---		6 S	<1>	3.08	**0.79**	6 S		5.01	**3.48**	5 M	<1>	3.38	**0.76**	6 S		2.25	**7.87**	6 S		1.89	**5.34**	6 S	5.95	**6.23**
258	12.90	**42.32**	0 C	---		0 C	---		6 S	<1>	3.04	**0.88**	6 S		5.02	**3.30**	5 M	<1>	3.33	**0.74**	6 S		2.27	**6.58**	6 S		1.90	**3.88**	6 S	5.97	**6.18**
259	12.95	**42.49**	0 C	---		0 C	---		6 S	<1>	3.00	**1.09**	6 S		5.04	**3.22**	6 S	<1>	3.28	**1.10**	6 S		2.28	**5.93**	6 S		1.91	**3.52**	6 S	6.00	**6.01**
260	13.00	**42.65**	0 C	---		0 C	---		6 S		3.01	**1.43**	6 S		5.06	**3.33**	6 S		3.30	**1.25**	6 S		2.29	**4.81**	6 S		1.92	**3.92**	6 S	6.03	**6.25**
261	13.05	**42.81**	0 C	---		0 C	---		6 S		3.02	**1.37**	6 S		5.08	**3.50**	6 S	<1>	3.25	**1.14**	6 S		2.30	**4.43**	6 S		1.93	**4.32**	6 S	6.05	**6.64**
262	13.10	**42.98**	0 C	---		0 C	---		6 S		3.04	**1.32**	6 S		5.09	**3.94**	6 S		3.27	**1.28**	6 S		2.32	**4.34**	6 S		1.94	**5.47**	6 S	6.08	**9.80**
263	13.15	**43.14**	0 C	---		0 C	---		6 S	<1>	3.00	**1.24**	6 S		5.11	**3.84**	6 S	<1>	3.22	**1.17**	6 S		2.33	**6.60**	6 S		1.96	**4.90**	6 S	6.11	**5.55**
264	13.20	**43.31**	0 C	---		0 C	---		6 S	<1>	2.96	**1.10**	6 S		5.13	**3.35**	6 S	<1>	3.17	**0.93**	6 S		2.34	**7.69**	6 S		1.97	**4.85**	6 S	6.14	**6.18**
265	13.25	**43.47**	0 C	---		0 C	---		6 S	<1>	2.92	**1.08**	6 S		5.15	**2.48**	6 S	<1>	3.13	**0.82**	6 S		2.35	**8.97**	6 S		1.98	**6.59**	6 S	6.16	**5.91**
266	13.30	**43.64**	0 C	---		0 C	---		6 S	<1>	2.89	**1.20**	6 S		5.16	**1.70**	6 S	<1>	3.09	**0.65**	6 S		2.37	**11.23**	7 S		1.99	**8.42**	6 S	6.19	**6.06**
267	13.35	**43.80**	0 C	---		0 C	---		6 S		2.90	**1.49**	6 S	<1>	5.07	**0.88**	6 S	<1>	3.05	**0.62**	6 S		2.38	**6.09**	6 S		2.00	**8.52**	6 S	6.22	**7.87**
268	13.40	**43.96**	0 C	---		0 C	---		6 S		2.91	**1.67**	5 M	<1>	4.99	**0.63**	6 S	<1>	3.01	**0.57**	6 S		2.39	**3.14**	6 S		2.01	**10.53**	6 S	6.24	**7.76**
269	13.45	**44.13**	0 C	---		0 C	---		6 S		2.92	**1.92**	4 C		5.01	NL	5 M	<1>	2.97	**0.54**	6 S		2.41	**3.92**	7 S		2.02	**13.07**	6 S	6.27	**6.16**
270	13.50	**44.29**	0 C	---		0 C	---		6 S		2.94	**2.12**	5 M	<1>	4.92	**0.71**	5 M	<1>	2.93	**0.53**	6 S		2.42	**6.90**	6 S		2.03	**11.86**	7 S	6.30	**5.55**
271	13.55	**44.46**	0 C	---		0 C	---		6 S		2.95	**2.26**	5 M	<1>	4.84	**0.73**	5 M	<1>	2.89	**0.55**	6 S		2.43	**6.26**	6 S		2.04	**12.61**	6 S	6.32	**6.44**
272	13.60	**44.62**	0 C	---		0 C	---		6 S		2.96	**2.37**	4 C		4.86	NL	5 M	<1>	2.86	**0.53**	6 S		2.44	**6.56**	6 S		2.06	**10.52**	6 S	6.35	**7.32**
273	13.65	**44.78**	0 C	---		0 C	---		6 S		2.97	**2.35**	4 C		4.87	NL	6 S	<1>	2.82	**0.53**	6 S		2.46	**6.34**	6 S		2.07	**8.52**	6 S	6.38	**6.40**
274	13.70	**44.95**	0 C	---		0 C	---		6 S		2.98	**2.64**	4 C		4.89	NL	5 M	<1>	2.79	**0.48**	6 S		2.47	**7.15**	6 S		2.08	**7.56**	7 S	6.41	**6.32**
275	13.75	**45.11**	0 C	---		0 C	---		6 S		3.00	**2.80**	4 C		4.91	NL	5 M	<1>	2.75	**0.64**	6 S		2.48	**7.23**	6 S		2.09	**7.36**	6 S	6.43	**5.50**
276	13.80	**45.28**	0 C	---		0 C	---		6 S		3.01	**2.91**	3 C		4.92	NL	5 M	<1>	2.72	**0.74**	6 S		2.49	**7.56**	6 S		2.10	**7.78**	6 S	6.46	**5.34**
277	13.85	**45.44**	0 C	---		0 C	---		6 S		3.02	**3.16**	4 C		4.94	NL	6 S	<1>	2.69	**0.91**	6 S		2.51	**6.68**	6 S		2.11	**6.09**	6 S	6.49	**4.60**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.25**
NL = Not liquefiable MSF 1.5
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

Depth			CPT-1	12/19/05	CPT-2	12/19/05	CPT-4	12/19/05		CPT-5	12/19/05		CPT-6	12/19/05		CPT-7	12/19/05		CPT-8	12/19/05		CPT-9	12/19/05	
278	13.90	**45.60**	**0 C**	---	**0 C**	---	**6 S**	3.03	**3.54**	**4 C**	4.96	**NL**	**6 S**	<1>	2.66	**0.84**	**6 S**	2.52	**5.19**	**6 S**	2.12	**4.95**	**6 S**	6.51	**4.76**
279	13.95	**45.77**	**0 C**	---	**0 C**	---	**6 S**	3.05	**3.56**	**4 C**	4.97	**NL**	**5 M**	<1>	2.63	**0.69**	**6 S**	2.53	**4.12**	**6 S**	2.13	**6.53**	**6 S**	6.54	**5.34**
280	14.00	**45.93**	**0 C**	---	**0 C**	---	**6 S**	3.06	**3.83**	**3 C**	4.99	**NL**	**5 M**	<1>	2.60	**0.72**	**6 S**	2.54	**2.61**	**6 S**	2.15	**5.11**	**6 S**	6.57	**4.88**
281	14.05	**46.10**	**0 C**	---	**0 C**	---	**6 S**	3.07	**4.10**	**3 C**	5.01	**NL**	**6 S**	<1>	2.57	**0.75**	**6 S**	2.56	**1.73**	**6 S**	2.16	**8.69**	**6 S**	6.59	**4.64**
282	14.10	**46.26**	**0 C**	---	**0 C**	---	**6 S**	3.08	**4.43**	**3 C**	5.02	**NL**	**6 S**	<1>	2.54	**0.60**	**6 S**	2.57	**2.40**	**6 S**	2.17	**13.06**	**6 S**	6.62	**4.87**
283	14.15	**46.42**	**0 C**	---	**0 C**	---	**6 S**	3.10	**4.55**	**3 C**	5.04	**NL**	**6 S**	<1>	2.51	**0.83**	**6 S**	2.58	**4.52**	**6 S**	2.18	**19.83**	**6 S**	6.65	**4.41**
284	14.20	**46.59**	**0 C**	---	**0 C**	---	**6 S**	3.11	**4.59**	**4 C**	5.05	**NL**	**6 S**	<1>	2.48	**1.09**	**6 S**	2.59	**5.13**	**6 S**	2.19	**17.44**	**6 S**	6.68	**4.14**
285	14.25	**46.75**	**0 C**	---	**0 C**	---	**6 S**	3.12	**4.61**	**5 M**	<1>	4.97	**0.52**	**6 S**		2.50	**1.35**	**6 S**	2.61	**5.14**	**6 S**	2.20	**14.76**	**6 S**	6.70	**4.34**
286	14.30	**46.92**	**0 C**	---	**0 C**	---	**6 S**	3.13	**4.05**	**5 M**	<1>	4.89	**0.60**	**6 S**		2.51	**1.81**	**6 S**	2.62	**4.90**	**6 S**	2.21	**13.42**	**6 S**	6.73	**4.33**
287	14.35	**47.08**	**0 C**	---	**0 C**	---	**6 S**	3.15	**2.91**	**5 M**	<1>	4.82	**0.67**	**6 S**		2.52	**2.71**	**6 S**	2.63	**5.20**	**6 S**	2.22	**11.49**	**6 S**	6.76	**3.81**
288	14.40	**47.24**	**0 C**	---	**0 C**	---	**6 S**	3.16	**2.37**	**6 S**	<1>	4.74	**0.95**	**6 S**		2.53	**3.00**	**6 S**	2.65	**5.24**	**6 S**	2.24	**13.20**	**6 S**	6.78	**3.29**
289	14.45	**47.41**	**0 C**	---	**0 C**	---	**6 S**	3.17	**1.67**	**6 S**		4.76	**1.57**	**6 S**		2.54	**3.64**	**6 S**	2.66	**6.22**	**6 S**	2.25	**11.59**	**6 S**	6.81	**3.79**
290	14.50	**47.57**	**0 C**	---	**0 C**	---	**6 S**	<1>	3.13	**1.09**	**6 S**		4.77	**2.34**	**6 S**		2.55	**2.74**	**6 S**	2.67	**5.66**	**6 S**	2.26	**9.09**	**6 S**	6.84	**4.17**
291	14.55	**47.74**	**0 C**	---	**0 C**	---	**5 M**	<1>	3.09	**0.68**	**6 S**		4.79	**2.62**	**6 S**		2.56	**2.62**	**6 S**	2.68	**5.52**	**6 S**	2.27	**6.83**	**6 S**	6.86	**4.27**
292	14.60	**47.90**	**0 C**	---	**0 C**	---	**5 M**	<1>	3.06	**0.80**	**6 S**		4.81	**2.64**	**6 S**		2.57	**2.47**	**6 S**	2.70	**5.17**	**6 S**	2.28	**6.81**	**6 S**	6.89	**4.12**
293	14.65	**48.06**	**0 C**	---	**0 C**	---	**6 S**	<1>	3.02	**1.22**	**6 S**		4.82	**2.61**	**6 S**		2.58	**2.78**	**6 S**	2.71	**5.91**	**6 S**	2.29	**9.15**	**6 S**	6.92	**3.46**
294	14.70	**48.23**	**0 C**	---	**0 C**	---	**6 S**		3.03	**1.58**	**6 S**		4.84	**2.46**	**6 S**		2.59	**3.03**	**6 S**	2.72	**7.54**	**6 S**	2.30	**17.71**	**6 S**	6.95	**2.15**
295	14.75	**48.39**	**0 C**	---	**0 C**	---	**6 S**		3.04	**1.80**	**6 S**		4.85	**2.72**	**6 S**		2.60	**3.28**	**6 S**	2.73	**8.44**	**6 S**	2.31	**7.16**	**6 S**	<1>	6.76	**0.96**
296	14.80	**48.56**	**0 C**	---	**0 C**	---	**6 S**		3.06	**1.83**	**6 S**		4.87	**2.95**	**6 S**		2.61	**3.40**	**6 S**	2.75	**9.07**	**6 S**	2.33	**4.87**	**5 M**	<1>	6.59	**0.84**
297	14.85	**48.72**	**0 C**	---	**0 C**	---	**6 S**		3.07	**1.62**	**6 S**		4.88	**2.99**	**6 S**		2.63	**4.00**	**6 S**	2.76	**5.19**	**6 S**	2.34	**4.74**	**5 M**	<1>	6.43	**0.82**
298	14.90	**48.88**	**0 C**	---	**0 C**	---	**6 S**		3.08	**1.53**	**6 S**		4.90	**2.80**	**6 S**		2.64	**4.32**	**6 S**	2.77	**5.54**	**6 S**	2.35	**5.80**	**5 M**	<1>	6.27	**0.63**
299	14.95	**49.05**	**0 C**	---	**0 C**	---	**6 S**		3.09	**1.34**	**6 S**		4.91	**2.79**	**6 S**		2.65	**5.74**	**6 S**	2.78	**7.13**	**7 S**	2.36	**8.38**	**6 S**		6.29	**2.91**
300	15.00	**49.21**	**0 C**	---	**0 C**	---	**6 S**		3.10	**1.55**	**6 S**		4.93	**3.10**	**6 S**		2.66	**4.82**	**6 S**	2.80	**8.19**	**7 S**	2.37	**10.40**	**6 S**		6.32	**6.03**
301	15.05	**49.38**	**0 C**	---	**0 C**	---	**6 S**		3.11	**2.26**	**6 S**		4.94	**4.37**	**6 S**		2.67	**4.70**	**6 S**	2.81	**9.19**	**6 S**	2.38	**6.74**	**6 S**		6.34	**8.12**
302	15.10	**49.54**	**0 C**	---	**0 C**	---	**6 S**		3.13	**2.49**	**6 S**		4.96	**7.38**	**6 S**		2.68	**4.86**	**6 S**	2.82	**9.85**	**6 S**	2.39	**8.29**	**7 S**		6.37	**10.97**
303	15.15	**49.70**	**0 C**	---	**0 C**	---	**6 S**		3.14	**2.61**	**6 S**		4.97	**5.46**	**6 S**		2.69	**4.77**	**6 S**	2.84	**7.23**	**6 S**	2.40	**13.17**	**7 S**		6.39	**11.75**
304	15.20	**49.87**	**0 C**	---	**0 C**	---	**6 S**		3.15	**2.18**	**6 S**		4.99	**5.34**	**6 S**		2.70	**4.87**	**6 S**	2.85	**7.33**	**6 S**	2.42	**13.85**	**7 S**		6.41	**12.16**
305	15.25	**50.03**	**0 C**	---	**0 C**	---	**0 C**		3.16		**6 S**		5.01	**5.03**	**6 S**		2.71	**4.64**	**0 C**	2.86		**6 S**	2.43	**14.34**	**7 S**		6.44	**12.74**
306	15.30	**50.20**	**0 C**	---	**0 C**	---	**0 C**		3.17		**6 S**		5.02	**4.83**	**0 C**		2.72		**0 C**	2.87		**0 C**	2.44		**0 C**		6.46	
307	15.35	**50.36**	**0 C**	---	**0 C**	---	**0 C**		3.19		**0 C**		5.04		**0 C**		2.73		**0 C**	2.89		**0 C**	2.45		**0 C**		6.49	
308	15.40	**50.52**	**0 C**	---	**0 C**	---	**0 C**		3.20		**0 C**		5.05		**0 C**		2.75		**0 C**	2.90		**0 C**	2.46		**0 C**		6.51	

WORKBOOK TO CALCULATE LIQUEFACTION POTENTIAL AND SEISMIC SETTLEMENT

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth			CPT-1	12/19/05		CPT-2	12/19/05		CPT-4	12/19/05		CPT-5	12/19/05		CPT-6	12/19/05		CPT-7	12/19/05		CPT-8	12/19/05		CPT-9	12/19/05	
Elevation -->			1140	Sht.	1	1140	Sht.	2	1010	Sht.	4	1010	Sht.	5	1010	Sht.	6	1010	Sht.	7	1010	Sht.	8	1010	Sht.	9
Meas. Water -->	A Water		**45.0**	45.0		**40.0**	40.0		**21.6**	21.6		**20.0**	20.0		**18.0**	18.0		**26.0**	26.0		**27.0**	27.0		**25.0**	25.0	
Design Water -->	D Water		**45.0**	45.0	feet	**40.0**	40.0	feet	**6.6**		feet	**6.6**	6.6	feet	**6.6**	6.6	feet	**6.6**	6.6	feet	**6.6**	6.6	feet	**6.6**	6.6	feet
Soil Density -->	Gamma		**130**	130.0	pcf	**130**	130.0	pcf	**120**	120.0	pcf	**120**	120.0	pcf	**120**	120.0	pcf	**120**	120.0	pcf	**120**	120.0	pcf	**120**	120.0	pcf
Site rd -->	rd		**2**	2.0		**2**	2.0		**2**	2.0		**2**	2.0		**2**	2.0		**2**	2.0		**2**	2.0		**2**	2.0	
R & R -->	R and R		**10.0**		feet	**10.0**		feet	**10.0**		feet	**10.0**		feet	**10.0**		feet	**8.0**		feet	**8.0**		feet	**6.0**		feet
Added Fill -->	Fill		**0.0**		feet	**0.0**		feet	**8.0**		feet	**14.0**		feet	**6.0**		feet	**0.0**		feet	**0.0**		feet	**0.0**		feet
Ratio -->				**9999**			**9999**			**3.04**			**5.02**			**2.48**			**1.79**			**1.29**			**2.58**	
Liq Settlement	Liq.		0.00	0.00	inches	Liq.	0.00	0.00	inches	Liq.	1.25	1.25	inches	Liq.	0.63	0.46	inches	Liq.	1.96	1.22	inches	Liq.	1.41	1.19	inches	Liq.	1.69	1.35	inches	Liq.	0.95	0.95	inches
Total After R&R	Total		0.00		inches	Total	0.00		inches	Total	1.25		inches	Total	0.46		inches	Total	1.22		inches	Total	1.19		inches	Total	1.35		inches	Total	0.95		inches
	meters	**feet**	Soil	CPT-1	Ishihara	F.S.	Soil	CPT-2	Ishihara	F.S.	Soil	CPT-4	Ishihara	F.S.	Soil	CPT-5	Ishihara	F.S.	Soil	CPT-6	Ishihara	F.S.	Soil	CPT-7	Ishihara	F.S.	Soil	CPT-8	Ishihara	F.S.	Soil	CPT-9	Ishihara	F.S.
	0	**0**	'1'!AF19	1			'2'!AF19	1			'4'!AF19	1			'5'!AF19	1			'6'!AF19	1			'7'!AF19	1			'8'!AF19	1			'9'!AF19	1		
1	0.05	**0.16**	7 S		---	NL	2 C		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL
2	0.10	**0.33**	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
3	0.15	**0.49**	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL
4	0.20	**0.66**	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL
5	0.25	**0.82**	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL
6	0.30	**0.98**	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL	7 S		---	NL
7	0.35	**1.15**	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
8	0.40	**1.31**	7 S		---	NL	7 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
9	0.45	**1.48**	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
10	0.50	**1.64**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	7 S		---	NL
11	0.55	**1.80**	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL
12	0.60	**1.97**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
13	0.65	**2.13**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
14	0.70	**2.30**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
15	0.75	**2.46**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
16	0.80	**2.62**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
17	0.85	**2.79**	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
18	0.90	**2.95**	7 S		---	NL	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
19	0.95	**3.12**	7 S		---	NL	7 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
20	1.00	**3.28**	7 S		---	NL	7 S		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
21	1.05	**3.44**	7 S		---	NL	7 S		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
22	1.10	**3.61**	7 S		---	NL	7 S		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
23	1.15	**3.77**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
24	1.20	**3.94**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
25	1.25	**4.10**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
26	1.30	**4.27**	7 S		---	NL	7 S		---	NL	5 M		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
27	1.35	**4.43**	6 S		---	NL	7 S		---	NL	5 M		---	NL	6 S		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
28	1.40	**4.59**	6 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
29	1.45	**4.76**	6 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
30	1.50	**4.92**	6 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
31	1.55	**5.09**	6 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
32	1.60	**5.25**	7 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
33	1.65	**5.41**	7 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
34	1.70	**5.58**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL	6 S		---	NL
35	1.75	**5.74**	7 S		---	NL	7 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL
36	1.80	**5.91**	6 S		---	NL	6 S		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL	6 S		---	NL
37	1.85	**6.07**	6 S		---	NL	6 S		---	NL	5 M		---	NL	5 M		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL
38	1.90	**6.23**	6 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL
39	1.95	**6.40**	6 S		---	NL	7 S		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL
40	2.00	**6.56**	6 S		---	NL	6 S		---	NL	4 C		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	NL
41	2.05	**6.73**	6 S		---	NL	6 S		---	NL	4 C		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	0.41	5 M		---	NL	6 S		---	1.42

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
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7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth			CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05				CPT-5 12/19/05				CPT-6 12/19/05				CPT-7 12/19/05				CPT-8 12/19/05				CPT-9 12/19/05			
42	2.10	**6.89**	6 S	---	NL	7 S	---	NL	4 C		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	5 M		---	0.56	6 S		---	1.42
43	2.15	**7.05**	6 S	---	NL	7 S	---	NL	4 C		---	NL	4 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	0.52	6 S		---	1.48
44	2.20	**7.22**	6 S	---	NL	6 S	---	NL	4 C		---	NL	3 C		---	NL	5 M		---	NL	5 M		---	NL	6 S		---	0.53	6 S		---	1.46
45	2.25	**7.38**	6 S	---	NL	7 S	---	NL	4 C		---	NL	3 C		---	NL	4 C		---	NL	6 S		---	0.45	6 S		---	0.52	6 S		---	2.01
46	2.30	**7.55**	6 S	---	NL	7 S	---	NL	4 C		---	NL	3 C		---	NL	4 C		---	NL	6 S		---	0.52	6 S		---	0.54	6 S		---	2.56
47	2.35	**7.71**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	4 C		---	NL	6 S		---	0.56	6 S		---	0.61	6 S		---	3.19
48	2.40	**7.87**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	0.43	6 S		---	0.63	6 S		---	0.69	6 S		---	3.55
49	2.45	**8.04**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	0.53	6 S	<1>	48.00	0.90	6 S	<1>	48.00	0.70	6 S		---	3.69
50	2.50	**8.20**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	0.58	6 S		49.00	1.34	6 S	<1>	24.00	0.68	6 S		---	4.28
51	2.55	**8.37**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	0.61	6 S		50.00	1.44	6 S	<1>	16.00	0.71	6 S		---	4.39
52	2.60	**8.53**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	0.59	6 S		51.00	1.31	6 S	<1>	12.00	0.72	6 S		---	4.05
53	2.65	**8.69**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	0.56	6 S		52.00	1.25	6 S	<1>	9.60	0.81	6 S		---	4.02
54	2.70	**8.86**	6 S	---	NL	6 S	---	NL	4 C		---	NL	4 C		---	NL	6 S		---	0.53	6 S		53.00	1.26	6 S	<1>	8.00	0.87	6 S		---	3.73
55	2.75	**9.02**	6 S	---	NL	6 S	---	NL	5 M		---	0.48	5 M		---	NL	6 S		---	0.50	6 S		54.00	1.28	6 S	<1>	6.86	0.88	6 S		---	4.09
56	2.80	**9.19**	6 S	---	NL	6 S	---	NL	5 M		---	0.52	5 M		---	NL	6 S		---	0.48	6 S		55.00	1.30	6 S	<1>	6.00	0.94	6 S		---	4.11
57	2.85	**9.35**	6 S	---	NL	6 S	---	NL	5 M		---	0.54	5 M		---	0.64	6 S		---	0.44	6 S		56.00	1.33	6 S	<1>	5.33	1.06	6 S		---	4.39
58	2.90	**9.51**	6 S	---	NL	6 S	---	NL	5 M		---	NL	6 S		---	0.61	6 S		---	0.43	6 S		57.00	1.27	6 S	<1>	4.80	1.10	6 S		---	4.09
59	2.95	**9.68**	6 S	---	NL	7 S	---	NL	5 M		---	0.58	6 S		---	0.62	6 S		---	0.45	6 S	<1>	28.50	0.97	6 S	<1>	4.36	1.13	6 S		---	3.50
60	3.00	**9.84**	6 S	---	NL	7 S	---	NL	5 M		---	0.50	6 S		---	0.62	6 S		---	0.46	6 S	<1>	19.00	0.88	6 S	<1>	4.00	1.01	6 S		---	2.74
61	3.05	**10.01**	6 S	---	NL	7 S	---	NL	5 M	<1>	108.77	0.45	5 M	<1>	145.34	0.63	5 M	<1>	96.58	0.46	6 S	<1>	14.25	0.87	6 S	<1>	3.69	0.92	6 S		---	2.45
62	3.10	**10.17**	6 S	---	NL	7 S	---	NL	5 M	<1>	54.38	0.49	5 M	<1>	72.67	0.64	5 M	<1>	48.29	0.42	6 S	<1>	11.40	1.02	6 S	<1>	3.43	0.77	6 S		---	2.36
63	3.15	**10.33**	6 S	---	NL	7 S	---	NL	6 S	<1>	36.26	0.52	5 M	<1>	48.45	0.63	5 M	<1>	32.19	0.40	6 S	<1>	9.50	1.05	6 S	<1>	3.20	0.67	6 S		---	2.22
64	3.20	**10.50**	6 S	---	NL	7 S	---	NL	6 S	<1>	27.19	0.59	5 M	<1>	36.34	0.60	5 M	<1>	24.14	0.40	6 S	<1>	8.14	1.09	5 M	<1>	3.00	0.68	6 S		---	1.73
65	3.25	**10.66**	6 S	---	NL	6 S	---	NL	6 S	<1>	21.75	0.68	5 M	<1>	29.07	0.60	5 M		24.39	NL	6 S	<1>	7.12	1.07	5 M		3.06	NL	5 M		---	1.48
66	3.30	**10.83**	6 S	---	NL	6 S	---	NL	6 S	<1>	18.13	0.76	5 M		29.27	NL	4 C		24.64	NL	6 S	<1>	6.33	0.94	5 M		3.13	NL	5 M		---	NL
67	3.35	**10.99**	6 S	---	NL	6 S	---	NL	6 S	<1>	15.54	0.79	4 C		29.47	NL	4 C		24.89	NL	6 S	<1>	5.70	0.73	4 C		3.19	NL	4 C		---	NL
68	3.40	**11.15**	6 S	---	NL	6 S	---	NL	6 S	<1>	13.60	0.79	4 C		29.67	NL	4 C		25.14	NL	6 S	<1>	5.18	0.55	5 M		3.25	NL	4 C		---	NL
69	3.45	**11.32**	6 S	---	NL	6 S	---	NL	6 S	<1>	12.09	0.78	4 C		29.87	NL	4 C		25.39	NL	6 S	<1>	4.75	0.43	4 C		3.31	NL	5 M		---	NL
70	3.50	**11.48**	6 S	---	NL	6 S	---	NL	6 S	<1>	10.88	0.68	3 C		30.07	NL	4 C		25.64	NL	6 S	<1>	4.38	0.39	5 M		3.37	NL	5 M		---	NL
71	3.55	**11.65**	6 S	---	NL	6 S	---	NL	6 S	<1>	9.89	0.63	3 C		30.27	NL	3 C		25.89	NL	6 S	<1>	4.07	0.42	5 M		3.44	NL	5 M		---	NL
72	3.60	**11.81**	6 S	---	NL	6 S	---	NL	5 M	<1>	9.06	0.55	3 C		30.47	NL	3 C		26.14	NL	5 M	<1>	3.80	0.46	5 M		3.50	NL	5 M		---	NL
73	3.65	**11.98**	6 S	---	NL	6 S	---	NL	5 M	<1>	8.37	0.57	3 C		30.67	NL	3 C		26.39	NL	5 M	<1>	3.56	0.50	5 M	<1>	3.29	0.39	5 M		---	NL
74	3.70	**12.14**	6 S	---	NL	6 S	---	NL	5 M		8.44	NL	3 C		30.87	NL	3 C		26.64	NL	5 M		3.62	NL	5 M	<1>	3.11	0.41	5 M	<1>	73.00	0.68
75	3.75	**12.30**	6 S	---	NL	6 S	---	NL	4 C		8.52	NL	3 C		31.07	NL	4 C		26.89	NL	4 C		3.69	NL	5 M	<1>	2.95	0.43	6 S	<1>	36.50	0.89
76	3.80	**12.47**	6 S	---	NL	6 S	---	NL	4 C		8.60	NL	3 C		31.27	NL	4 C		27.14	NL	4 C		3.75	NL	5 M	<1>	2.80	0.42	6 S		37.00	1.58
77	3.85	**12.63**	6 S	---	NL	6 S	---	NL	4 C		8.67	NL	3 C		31.47	NL	4 C		27.39	NL	3 C		3.81	NL	5 M	<1>	2.67	0.42	6 S		37.50	1.89
78	3.90	**12.80**	6 S	---	NL	6 S	---	NL	4 C		8.75	NL	4 C		31.67	NL	4 C		27.64	NL	3 C		3.87	NL	5 M	<1>	2.55	0.42	6 S		38.00	1.42
79	3.95	**12.96**	6 S	---	NL	6 S	---	NL	4 C		8.83	NL	4 C		31.87	NL	4 C		27.89	NL	3 C		3.94	NL	5 M	<1>	2.43	0.44	6 S		38.50	1.41
80	4.00	**13.12**	6 S	---	NL	7 S	---	NL	3 C		8.91	NL	3 C		32.07	NL	4 C		28.14	NL	3 C		4.00	NL	5 M	<1>	2.33	0.47	6 S	<1>	25.67	1.13
81	4.05	**13.29**	6 S	---	NL	7 S	---	NL	3 C		8.98	NL	4 C		32.27	NL	4 C		28.39	NL	3 C		4.06	NL	6 S	<1>	2.24	0.51	6 S	<1>	19.25	0.82
82	4.10	**13.45**	6 S	---	NL	7 S	---	NL	3 C		9.06	NL	3 C		32.47	NL	3 C		28.64	NL	3 C		4.12	NL	6 S	<1>	2.15	0.55	6 S	<1>	15.40	0.58
83	4.15	**13.62**	6 S	---	NL	6 S	---	NL	3 C		9.14	NL	3 C		32.67	NL	3 C		28.89	NL	5 M		4.19	NL	5 M	<1>	2.07	0.56	6 S	<1>	12.83	0.46
84	4.20	**13.78**	5 M	---	NL	6 S	---	NL	3 C		9.21	NL	4 C		32.87	NL	3 C		29.14	NL	5 M	<1>	3.94	0.40	5 M	<1>	2.00	0.55	6 S	<1>	11.00	0.44
85	4.25	**13.94**	5 M	---	NL	6 S	---	NL	3 C		9.29	NL	3 C		33.07	NL	4 C		29.39	NL	5 M	<1>	3.72	0.46	5 M	<1>	1.93	0.52	5 M	<1>	9.62	0.49
86	4.30	**14.11**	5 M	---	NL	6 S	---	NL	4 C		9.37	NL	3 C		33.27	NL	3 C		29.64	NL	5 M	<1>	3.53	0.50	5 M	<1>	1.87	0.50	5 M		9.75	NL
87	4.35	**14.27**	6 S	---	NL	6 S	---	NL	4 C		9.44	NL	4 C		33.47	NL	4 C		29.89	NL	5 M	<1>	3.35	0.50	6 S	<1>	1.81	0.49	5 M		9.87	NL
88	4.40	**14.44**	6 S	---	NL	7 S	---	NL	4 C		9.52	NL	5 M		33.67	NL	4 C		30.14	NL	5 M	<1>	3.19	0.48	6 S	<1>	1.75	0.52	6 S	<1>	8.78	0.61
89	4.45	**14.60**	6 S	---	NL	7 S	---	NL	4 C		9.60	NL	5 M		33.87	NL	5 M		30.39	NL	5 M	<1>	3.05	0.50	5 M	<1>	1.70	0.59	6 S	<1>	7.90	0.91
90	4.50	**14.76**	6 S	---	NL	7 S	---	NL	4 C		9.67	NL	4 C		34.07	NL	5 M		30.64	NL	5 M		3.09	NL	5 M	<1>	1.65	0.60	6 S	<1>	7.18	0.87
91	4.55	**14.93**	6 S	---	NL	6 S	---	NL	4 C		9.75	NL	5 M		34.27	NL	4 C		30.89	NL	4 C		3.14	NL	5 M		1.68	NL	6 S	<1>	6.58	0.82
92	4.60	**15.09**	6 S	---	NL	6 S	---	NL	3 C		9.83	NL	5 M		34.47	NL	4 C		31.14	NL	4 C		3.18	NL	5 M		1.71	NL	6 S	<1>	6.08	0.69
93	4.65	**15.26**	6 S	---	NL	6 S	---	NL	4 C		9.91	NL	5 M		34.67	NL	5 M		31.39	NL	5 M	<1>	3.04	0.42	5 M	<1>	1.66	0.54	6 S	<1>	5.64	0.70
94	4.70	**15.42**	6 S	---	NL	7 S	---	NL	4 C		9.98	NL	5 M		34.87	NL	5 M		31.64	NL	5 M	<1>	2.92	0.42	5 M	<1>	1.61	0.47	6 S	<1>	5.27	0.96
95	4.75	**15.58**	6 S	---	NL	7 S	---	NL	5 M		10.06	NL	5 M		35.07	NL	5 M		31.89	NL	5 M	<1>	2.80	0.42	5 M	<1>	1.57	0.41	6 S		5.33	1.23
96	4.80	**15.75**	6 S	---	NL	7 S	---	NL	5 M	<1>	9.34	0.38	5 M		35.27	NL	3 C		32.14	NL	5 M	<1>	2.69	0.41	5 M	<1>	1.53	0.35	6 S	<1>	5.00	1.17
97	4.85	**15.91**	6 S	---	NL	6 S	---	NL	6 S	<1>	8.72	0.63	5 M	<1>	29.39	0.78	3 C		32.39	NL	5 M	<1>	2.59	0.39	5 M	<1>	1.49	0.34	6 S	<1>	4.71	1.08
98	4.90	**16.08**	6 S	---	NL	7 S	---	NL	6 S	<1>	8.17	0.89	5 M	<1>	25.19	0.77	3 C		32.64	NL	5 M	<1>	2.50	0.40	5 M	<1>	1.45	0.36	6 S	<1>	4.44	1.09
99	4.95	**16.24**	6 S	---	NL	7 S	---	NL	6 S		8.24	1.22	5 M	<1>	22.04	0.77	3 C		32.89	NL	5 M	<1>	2.41	0.43	5 M	<1>	1.41	0.46	6 S	<1>	4.21	0.92
100	5.00	**16.40**	6 S	---	NL	7 S	---	NL	6 S		8.30	1.25	5 M		22.17	NL	4 C		33.14	NL	5 M		2.45	NL	5 M	<1>	1.38	0.51	6 S	<1>	4.00	0.69

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable MSF 1.5
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

Depth			CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05				CPT-5 12/19/05			CPT-6 12/19/05				CPT-7 12/19/05			CPT-8 12/19/05				CPT-9 12/19/05			
101	5.05	**16.57**	6 S	---	NL	6 S	---	NL	6 S	<1>	7.81	**1.09**	5 M		22.29	NL	5 M	<1>	26.52	**0.34**	4 C		2.48	NL	5 M	<1>	1.35	**0.39**	6 S	<1>	3.81	**0.50**
102	5.10	**16.73**	6 S	---	NL	6 S	---	NL	6 S	<1>	7.38	**0.81**	4 C		22.42	NL	5 M	<1>	22.10	**0.37**	3 C		2.52	NL	6 S	<1>	1.32	**0.51**	5 M	<1>	3.64	**0.38**
103	5.15	**16.90**	6 S	---	NL	6 S	---	NL	6 S	<1>	6.99	**0.57**	5 M		22.54	NL	5 M	<1>	18.94	**0.38**	3 C		2.55	NL	6 S	<1>	1.29	**1.19**	5 M	<1>	3.48	**0.38**
104	5.20	**17.06**	6 S	---	NL	7 S	---	NL	5 M	<1>	6.64	**0.45**	5 M	<1>	20.04	**0.58**	5 M	<1>	16.57	**0.44**	5 M		2.59	NL	6 S		1.31	**2.13**	4 C		3.52	NL
105	5.25	**17.22**	6 S	---	NL	6 S	---	NL	5 M	<1>	6.32	**0.46**	6 S	<1>	18.03	**0.63**	5 M		16.70	NL	6 S	<1>	2.50	**0.74**	6 S		1.33	**2.78**	4 C		3.57	NL
106	5.30	**17.39**	6 S	---	NL	6 S	---	NL	4 C		6.37	NL	5 M	<1>	16.39	**0.65**	4 C		16.82	NL	6 S		2.53	**1.45**	6 S		1.36	**3.57**	4 C		3.61	NL
107	5.35	**17.55**	6 S	---	NL	7 S	---	NL	3 C		6.42	NL	4 C		16.49	NL	3 C		16.95	NL	6 S		2.57	**1.84**	7 S		1.38	**4.38**	4 C		3.65	NL
108	5.40	**17.72**	6 S	---	NL	6 S	---	NL	3 C		6.47	NL	4 C		16.58	NL	3 C		17.07	NL	6 S		2.60	**1.91**	7 S		1.40	**4.48**	4 C		3.70	NL
109	5.45	**17.88**	6 S	---	NL	6 S	---	NL	3 C		6.51	NL	3 C		16.67	NL	3 C		17.20	NL	6 S		2.63	**2.04**	6 S		1.42	**4.53**	6 S	<1>	3.54	**0.84**
110	5.50	**18.04**	6 S	---	NL	6 S	---	NL	3 C		6.56	NL	3 C		16.76	NL	3 C		17.32	NL	6 S		2.67	**2.11**	7 S		1.44	**4.51**	6 S	<1>	3.40	**1.08**
111	5.55	**18.21**	6 S	---	NL	7 S	---	NL	3 C		6.61	NL	3 C		16.85	NL	3 C		17.45	NL	6 S		2.70	**2.07**	6 S		1.47	**4.02**	5 M	<1>	3.27	**0.73**
112	5.60	**18.37**	6 S	---	NL	6 S	---	NL	4 C		6.66	NL	3 C		16.94	NL	3 C		17.57	NL	6 S		2.73	**1.89**	6 S		1.49	**2.56**	6 S	<1>	3.15	**0.48**
113	5.65	**18.54**	6 S	---	NL	6 S	---	NL	4 C		6.70	NL	3 C		17.03	NL	3 C		17.70	NL	6 S		2.77	**1.75**	6 S		1.51	**3.03**	6 S	<1>	3.04	**0.39**
114	5.70	**18.70**	6 S	---	NL	6 S	---	NL	5 M		6.75	NL	3 C		17.12	NL	3 C		17.82	NL	6 S		2.80	**1.85**	6 S		1.53	**2.51**	6 S	<1>	2.93	**0.36**
115	5.75	**18.86**	6 S	---	NL	6 S	---	NL	5 M		6.80	NL	4 C		17.21	NL	3 C		17.95	NL	6 S		2.83	**1.88**	6 S		1.56	**2.09**	6 S	<1>	2.83	**0.34**
116	5.80	**19.03**	6 S	---	NL	6 S	---	NL	4 C		6.85	NL	5 M	<1>	15.78	**0.57**	3 C		18.07	NL	6 S		2.87	**1.81**	6 S		1.58	**1.82**	6 S	<1>	2.74	**0.33**
117	5.85	**19.19**	6 S	---	NL	6 S	---	NL	3 C		6.89	NL	6 S	<1>	14.56	**0.81**	3 C		18.20	NL	6 S		2.90	**1.58**	6 S		1.60	**1.75**	5 M	<1>	2.66	**0.29**
118	5.90	**19.36**	6 S	---	NL	6 S	---	NL	3 C		6.94	NL	6 S	<1>	13.52	**0.95**	3 C		18.32	NL	6 S		2.93	**1.32**	6 S		1.62	**1.53**	5 M	<1>	2.58	**0.28**
119	5.95	**19.52**	6 S	---	NL	6 S	---	NL	3 C		6.99	NL	6 S	<1>	12.62	**1.13**	4 C		18.45	NL	6 S	<1>	2.84	**1.13**	6 S		1.64	**1.51**	5 M		2.61	NL
120	6.00	**19.69**	6 S	---	NL	6 S	---	NL	5 M	<1>	6.67	**0.33**	6 S		12.69	**1.26**	5 M		18.57	NL	6 S	<1>	2.75	**0.91**	6 S	<1>	1.61	**1.08**	4 C		2.64	NL
121	6.05	**19.85**	6 S	---	NL	6 S	---	NL	6 S	<1>	6.38	**0.67**	6 S		12.76	**1.22**	5 M		18.70	NL	6 S	<1>	2.67	**0.73**	6 S	<1>	1.57	**0.69**	3 C		2.67	NL
122	6.10	**20.01**	6 S	---	NL	6 S	---	NL	6 S	<1>	6.12	**0.86**	5 M	<1>	11.96	**1.12**	5 M		18.82	NL	6 S	<1>	2.59	**0.68**	6 S	<1>	1.54	**0.56**	3 C		2.70	NL
123	6.15	**20.18**	6 S	---	NL	6 S	---	NL	6 S	<1>	5.87	**0.94**	5 M	<1>	11.26	**0.97**	5 M	<1>	16.73	**0.42**	6 S	<1>	2.51	**0.83**	5 M	<1>	1.51	**0.63**	3 C		2.73	NL
124	6.20	**20.34**	6 S	---	NL	6 S	---	NL	6 S	<1>	5.64	**0.81**	5 M	<1>	10.63	**1.03**	5 M	<1>	15.06	**0.46**	6 S	<1>	2.44	**0.79**	5 M	<1>	1.48	**0.69**	3 C		2.76	NL
125	6.25	**20.51**	6 S	---	NL	6 S	---	NL	5 M	<1>	5.44	**0.68**	5 M	<1>	10.07	**1.07**	6 S	<1>	13.69	**0.54**	6 S	<1>	2.38	**0.62**	5 M		1.50	NL	4 C		2.79	NL
126	6.30	**20.67**	6 S	---	NL	6 S	---	NL	5 M		5.47	NL	5 M	<1>	9.57	**0.94**	6 S	<1>	12.55	**0.66**	5 M	<1>	2.32	**0.54**	5 M	<1>	1.47	**0.62**	4 C		2.82	NL
127	6.35	**20.83**	5 M	---	NL	6 S	---	NL	5 M	<1>	5.28	**0.51**	5 M	<1>	9.11	**0.78**	6 S	<1>	11.58	**0.70**	5 M		2.34	NL	5 M	<1>	1.44	**0.57**	3 C		2.85	NL
128	6.40	**21.00**	5 M	---	NL	6 S	---	NL	5 M	<1>	5.10	**0.56**	5 M	<1>	8.70	**0.75**	6 S	<1>	10.76	**0.65**	5 M	<1>	2.28	**0.63**	6 S	<1>	1.42	**1.15**	3 C		2.88	NL
129	6.45	**21.16**	6 S	---	NL	6 S	---	NL	5 M	<1>	4.93	**0.54**	5 M	<1>	8.32	**0.74**	5 M	<1>	10.04	**0.65**	5 M	<1>	2.22	**0.61**	6 S		1.43	**1.34**	6 S	<1>	2.79	**0.63**
130	6.50	**21.33**	6 S	---	NL	5 M	---	NL	5 M	<1>	4.77	**0.57**	5 M		8.36	NL	6 S	<1>	9.41	**0.71**	5 M	<1>	2.17	**0.54**	6 S		1.45	**2.39**	6 S		2.82	**1.51**
131	6.55	**21.49**	6 S	---	NL	5 M	---	NL	5 M		4.80	NL	4 C		8.41	NL	6 S	<1>	8.86	**0.77**	4 C		2.20	NL	6 S		1.47	**3.14**	6 S		2.85	**1.49**
132	6.60	**21.65**	6 S	---	NL	6 S	---	NL	4 C		4.83	NL	4 C		8.45	NL	6 S	<1>	8.37	**0.65**	4 C		2.22	NL	6 S		1.49	**3.15**	6 S		2.88	**2.96**
133	6.65	**21.82**	6 S	---	NL	6 S	---	NL	4 C		4.86	NL	3 C		8.49	NL	6 S	<1>	7.93	**0.72**	4 C		2.24	NL	6 S		1.51	**5.89**	6 S		2.91	**4.66**
134	6.70	**21.98**	6 S	---	NL	5 M	---	NL	4 C		4.90	NL	3 C		8.54	NL	6 S	<1>	7.53	**0.83**	4 C		2.27	NL	6 S		1.53	**3.82**	6 S		2.94	**5.73**
135	6.75	**22.15**	6 S	---	NL	5 M	---	NL	4 C		4.93	NL	3 C		8.58	NL	6 S	<1>	7.17	**0.80**	4 C		2.29	NL	6 S		1.55	**4.52**	6 S		2.97	**8.55**
136	6.80	**22.31**	6 S	---	NL	6 S	---	NL	4 C		4.96	NL	4 C		8.62	NL	6 S	<1>	6.84	**0.70**	5 M		2.32	NL	6 S		1.57	**2.23**	6 S		3.00	**18.33**
137	6.85	**22.47**	6 S	---	NL	6 S	---	NL	4 C		4.99	NL	4 C		8.67	NL	6 S	<1>	6.55	**1.01**	5 M		2.34	NL	6 S		1.58	**2.87**	6 S		3.03	**18.44**
138	6.90	**22.64**	6 S	---	NL	6 S	---	NL	4 C		5.02	NL	5 M	<1>	8.31	**0.69**	6 S		6.59	**1.33**	5 M		2.37	NL	6 S		1.60	**4.09**	6 S		3.06	**21.85**
139	6.95	**22.80**	6 S	---	NL	6 S	---	NL	4 C		5.06	NL	6 S	<1>	7.97	**0.70**	6 S		6.63	**1.35**	4 C		2.39	NL	6 S		1.62	**7.16**	6 S		3.09	**16.56**
140	7.00	**22.97**	5 M	---	NL	6 S	---	NL	5 M		5.09	NL	5 M	<1>	7.67	**0.83**	6 S	<1>	6.36	**1.03**	4 C		2.41	NL	6 S		1.64	**6.91**	6 S		3.12	**11.47**
141	7.05	**23.13**	5 M	---	NL	6 S	---	NL	5 M	<1>	4.93	**0.46**	5 M	<1>	7.38	**0.88**	6 S	<1>	6.10	**0.78**	3 C		2.44	NL	6 S		1.66	**5.27**	6 S		3.15	**9.00**
142	7.10	**23.29**	5 M	---	NL	5 M	---	NL	5 M	<1>	4.78	**0.48**	5 M	<1>	7.12	**1.01**	6 S	<1>	5.87	**0.59**	3 C		2.46	NL	6 S		1.68	**4.88**	6 S		3.18	**8.24**
143	7.15	**23.46**	5 M	---	NL	5 M	---	NL	5 M	<1>	4.64	**0.42**	5 M	<1>	6.87	**1.13**	5 M	<1>	5.65	**0.43**	4 C		2.49	NL	6 S		1.70	**5.85**	6 S		3.21	**11.68**
144	7.20	**23.62**	6 S	---	NL	5 M	---	NL	5 M	<1>	4.51	**0.42**	6 S		6.91	**1.54**	5 M		5.69	NL	3 C		2.51	NL	6 S		1.72	**6.49**	6 S		3.24	**12.91**
145	7.25	**23.79**	6 S	---	NL	5 M	---	NL	5 M	<1>	4.38	**0.48**	6 S		6.94	**1.55**	4 C		5.73	NL	5 M		2.54	NL	6 S		1.74	**4.56**	6 S		3.26	**13.71**
146	7.30	**23.95**	6 S	---	NL	6 S	---	NL	5 M	<1>	4.26	**0.49**	6 S		6.98	**1.79**	3 C		5.76	NL	5 M	<1>	2.48	**0.33**	6 S		1.75	**3.97**	6 S		3.29	**9.11**
147	7.35	**24.11**	6 S	---	NL	6 S	---	NL	6 S	<1>	4.15	**0.72**	6 S		7.01	**1.99**	4 C		5.80	NL	5 M	<1>	2.42	**0.43**	6 S		1.77	**3.20**	6 S		3.32	**7.07**
148	7.40	**24.28**	6 S	---	NL	5 M	---	NL	6 S	<1>	4.05	**0.94**	6 S		7.05	**2.17**	4 C		5.84	NL	4 C		2.44	NL	6 S		1.79	**3.03**	7 S		3.35	**7.84**
149	7.45	**24.44**	6 S	---	NL	5 M	---	NL	6 S		4.07	**1.38**	6 S		7.08	**2.55**	4 C		5.87	NL	3 C		2.47	NL	6 S		1.81	**2.04**	6 S		3.38	**5.36**
150	7.50	**24.61**	6 S	---	NL	5 M	---	NL	6 S		4.10	**1.59**	6 S		7.12	**2.52**	4 C		5.91	NL	3 C		2.49	NL	6 S		1.83	**1.79**	6 S		3.41	**4.57**
151	7.55	**24.77**	6 S	---	NL	5 M	---	NL	6 S		4.12	**1.45**	6 S		7.15	**2.39**	4 C		5.95	NL	3 C		2.51	NL	6 S		1.85	**1.66**	6 S		3.44	**5.16**
152	7.60	**24.93**	6 S	---	NL	6 S	---	NL	6 S		4.15	**1.38**	6 S		7.18	**2.45**	4 C		5.98	NL	3 C		2.53	NL	6 S		1.87	**1.71**	6 S		3.47	**6.20**
153	7.65	**25.10**	6 S	---	NL	6 S	---	NL	6 S		4.17	**1.37**	6 S		7.22	**2.66**	3 C		6.02	NL	5 M	<1>	2.48	**0.32**	6 S		1.89	**1.72**	6 S		3.50	**4.56**
154	7.70	**25.26**	6 S	---	NL	6 S	---	NL	6 S		4.20	**1.34**	6 S		7.25	**2.81**	3 C		6.06	NL	6 S	<1>	2.42	**0.46**	6 S		1.91	**1.86**	6 S		3.53	**5.22**
155	7.75	**25.43**	6 S	---	NL	5 M	---	NL	6 S		4.22	**1.33**	6 S		7.29	**2.80**	5 M		6.10	NL	6 S	<1>	2.37	**0.54**	6 S		1.92	**1.98**	6 S		3.56	**6.84**
156	7.80	**25.59**	6 S	---	NL	6 S	---	NL	6 S		4.25	**1.38**	6 S		7.32	**2.74**	5 M	<1>	5.88	**0.52**	6 S	<1>	2.32	**0.70**	6 S		1.94	**2.05**	6 S		3.59	**12.36**
157	7.85	**25.75**	6 S	---	NL	6 S	---	NL	6 S		4.28	**1.61**	6 S		7.36	**2.58**	5 M	<1>	5.68	**0.42**	6 S	<1>	2.27	**0.76**	6 S		1.96	**2.58**	6 S		3.62	**9.10**
158	7.90	**25.92**	6 S	---	NL	6 S	---	NL	6 S		4.30	**1.82**	6 S		7.39	**2.56**	6 S	<1>	5.49	**0.49**	6 S	<1>	2.22	**0.88**	6 S		1.98	**2.80**	6 S		3.65	**7.45**
159	7.95	**26.08**	6 S	---	NL	6 S	---	NL	6 S		4.33	**1.96**	6 S		7.43	**2.50**	5 M	<1>	5.31	**0.47**	6 S	<1>	2.18	**0.93**	6 S		2.00	**2.96**	6 S		3.68	**6.26**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth			CPT-1	12/19/05		CPT-2	12/19/05		CPT-4	12/19/05		CPT-5	12/19/05		CPT-6	12/19/05		CPT-7	12/19/05		CPT-8	12/19/05		CPT-9	12/19/05	
160	8.00	**26.25**	6 S	---	NL	6 S	---	NL	6 S		4.35	**2.45**	6 S		7.46	**2.69**	5 M	<1>	5.14	**0.51**	6 S	<1>	2.14	**1.01**	6 S		2.02	**2.74**	6 S	3.71	**4.69**
161	8.05	**26.41**	6 S	---	NL	6 S	---	NL	6 S		4.38	**2.68**	6 S		7.49	**2.84**	4 C		5.17	NL	6 S	<1>	2.10	**1.06**	6 S		2.04	**2.02**	6 S	3.74	**3.39**
162	8.10	**26.57**	6 S	---	NL	6 S	---	NL	6 S		4.40	**2.62**	6 S		7.53	**2.90**	4 C		5.21	NL	6 S	<1>	2.06	**1.07**	6 S		2.06	**1.79**	6 S	3.76	**2.59**
163	8.15	**26.74**	6 S	---	NL	6 S	---	NL	6 S		4.43	**2.66**	6 S		7.56	**2.78**	4 C		5.24	NL	6 S	<1>	2.02	**1.05**	6 S		2.08	**1.79**	6 S	3.79	**2.35**
164	8.20	**26.90**	6 S	---	NL	6 S	---	NL	6 S		4.46	**2.87**	6 S		7.60	**2.68**	4 C		5.27	NL	6 S	<1>	1.98	**1.02**	6 S		2.09	**1.72**	6 S	3.82	**3.01**
165	8.25	**27.07**	6 S	---	NL	6 S	---	NL	6 S		4.48	**2.84**	6 S		7.63	**2.60**	4 C		5.30	NL	6 S	<1>	1.95	**1.04**	6 S		2.11	**1.63**	6 S	3.85	**3.96**
166	8.30	**27.23**	6 S	---	NL	6 S	---	NL	6 S		4.51	**2.76**	6 S		7.67	**2.39**	5 M	<1>	5.14	**0.40**	6 S	<1>	1.91	**1.05**	6 S	<1>	2.07	**1.20**	6 S	3.88	**3.49**
167	8.35	**27.40**	6 S	---	NL	6 S	---	NL	6 S		4.53	**2.46**	6 S		7.70	**2.30**	5 M	<1>	4.99	**0.47**	6 S	<1>	1.88	**1.05**	6 S	<1>	2.04	**0.91**	6 S	3.91	**3.65**
168	8.40	**27.56**	6 S	---	NL	6 S	---	NL	6 S		4.56	**2.44**	6 S		7.74	**2.24**	5 M	<1>	4.85	**0.44**	6 S	<1>	1.85	**1.06**	6 S	<1>	2.00	**1.02**	6 S	3.94	**3.48**
169	8.45	**27.72**	6 S	---	NL	6 S	---	NL	6 S		4.58	**2.38**	6 S		7.77	**1.98**	5 M	<1>	4.71	**0.49**	6 S	<1>	1.82	**1.09**	6 S	<1>	1.96	**1.08**	6 S	3.97	**3.54**
170	8.50	**27.89**	6 S	---	NL	6 S	---	NL	6 S		4.61	**2.14**	6 S		7.80	**1.41**	4 C		4.74	NL	6 S	<1>	1.79	**1.15**	6 S		1.98	**1.22**	6 S	4.00	**3.27**
171	8.55	**28.05**	6 S	---	NL	6 S	---	NL	6 S		4.64	**1.94**	6 S		7.84	**1.29**	4 C		4.77	NL	6 S		1.80	**1.26**	6 S		2.00	**1.39**	6 S	4.03	**2.44**
172	8.60	**28.22**	6 S	---	NL	6 S	---	NL	6 S		4.66	**2.03**	5 M	<1>	7.58	**0.95**	4 C		4.79	NL	6 S		1.82	**1.34**	6 S		2.02	**1.31**	6 S	4.06	**2.52**
173	8.65	**28.38**	6 S	---	NL	6 S	---	NL	6 S		4.69	**2.17**	6 S	<1>	7.33	**0.90**	4 C		4.82	NL	6 S		1.84	**1.36**	6 S	<1>	1.98	**0.90**	6 S	4.09	**2.50**
174	8.70	**28.54**	6 S	---	NL	6 S	---	NL	6 S		4.71	**2.01**	6 S		7.37	**1.84**	4 C		4.85	NL	6 S		1.85	**1.41**	6 S	<1>	1.95	**0.78**	6 S	4.12	**2.50**
175	8.75	**28.71**	6 S	---	NL	6 S	---	NL	6 S		4.74	**1.91**	6 S		7.40	**4.15**	4 C		4.88	NL	6 S		1.87	**1.38**	6 S	<1>	1.92	**0.59**	6 S	4.15	**2.47**
176	8.80	**28.87**	6 S	---	NL	6 S	---	NL	6 S		4.76	**1.56**	6 S		7.43	**3.96**	5 M	<1>	4.75	**0.43**	6 S		1.89	**1.52**	6 S	<1>	1.89	**0.62**	6 S	4.18	**3.08**
177	8.85	**29.04**	6 S	---	NL	6 S	---	NL	6 S	<1>	4.64	**1.07**	6 S		7.46	**3.42**	6 S	<1>	4.62	**0.53**	6 S		1.90	**1.70**	6 S	<1>	1.85	**1.09**	6 S	4.21	**4.53**
178	8.90	**29.20**	6 S	---	NL	6 S	---	NL	6 S	<1>	4.53	**0.68**	6 S		7.49	**3.50**	6 S	<1>	4.50	**0.57**	6 S		1.92	**1.73**	6 S	<1>	1.83	**1.19**	6 S	4.24	**5.02**
179	8.95	**29.36**	6 S	---	NL	6 S	---	NL	6 S	<1>	4.42	**0.51**	6 S		7.53	**3.31**	6 S	<1>	4.39	**0.68**	6 S		1.93	**1.64**	6 S	<1>	1.80	**1.11**	6 S	4.26	**2.77**
180	9.00	**29.53**	6 S	---	NL	6 S	---	NL	5 M	<1>	4.32	**0.48**	6 S		7.56	**3.18**	6 S	<1>	4.28	**0.71**	6 S		1.95	**1.78**	6 S	<1>	1.77	**1.11**	6 S	4.29	**1.62**
181	9.05	**29.69**	6 S	---	NL	5 M	---	NL	5 M	<1>	4.22	**0.47**	6 S		7.59	**3.48**	6 S	<1>	4.18	**0.70**	6 S		1.97	**2.15**	6 S	<1>	1.74	**1.14**	6 S	4.32	**1.29**
182	9.10	**29.86**	6 S	---	NL	6 S	---	NL	5 M	<1>	4.13	**0.50**	6 S		7.62	**4.20**	6 S	<1>	4.08	**0.74**	6 S		1.98	**2.32**	6 S		1.76	**1.42**	6 S	4.35	**1.21**
183	9.15	**30.02**	6 S	---	NL	6 S	---	NL	4 C		4.15	NL	6 S		7.66	**4.55**	6 S	<1>	3.99	**0.77**	6 S		2.00	**2.16**	6 S		1.77	**1.62**	6 S	4.38	**1.96**
184	9.20	**30.18**	6 S	---	NL	6 S	---	NL	5 M		4.17	NL	6 S		7.69	**4.65**	5 M	<1>	3.90	**0.71**	6 S		2.02	**1.85**	6 S		1.79	**1.84**	6 S	4.41	**2.98**
185	9.25	**30.35**	6 S	---	NL	6 S	---	NL	5 M		4.19	NL	6 S		7.72	**4.51**	5 M		3.92	NL	6 S		2.03	**1.57**	6 S		1.80	**2.13**	6 S	4.44	**5.90**
186	9.30	**30.51**	6 S	---	NL	5 M	---	NL	4 C		4.22	NL	6 S		7.75	**3.69**	4 C		3.95	NL	6 S		2.05	**1.39**	6 S		1.82	**2.36**	6 S	4.47	**16.06**
187	9.35	**30.68**	6 S	---	NL	5 M	---	NL	4 C		4.24	NL	6 S		7.79	**2.86**	3 C		3.97	NL	6 S		2.07	**1.21**	6 S		1.83	**2.56**	6 S	4.50	**9.22**
188	9.40	**30.84**	6 S	---	NL	6 S	---	NL	3 C		4.26	NL	6 S		7.82	**1.92**	4 C		3.99	NL	6 S	<1>	2.03	**1.09**	6 S		1.85	**2.48**	6 S	4.53	**8.43**
189	9.45	**31.00**	6 S	---	NL	6 S	---	NL	3 C		4.28	NL	6 S		7.85	**1.24**	4 C		4.01	NL	6 S	<1>	2.00	**1.01**	6 S		1.86	**2.08**	6 S	4.56	**7.96**
190	9.50	**31.17**	6 S	---	NL	6 S	---	NL	6 S	<1>	4.19	**0.40**	6 S		7.88	**1.57**	3 C		4.04	NL	6 S	<1>	1.97	**0.85**	6 S		1.88	**1.88**	6 S	4.59	**6.17**
191	9.55	**31.33**	6 S	---	NL	6 S	---	NL	6 S	<1>	4.10	**0.46**	6 S		7.91	**1.44**	3 C		4.06	NL	6 S	<1>	1.94	**0.70**	6 S		1.89	**1.53**	6 S	4.62	**4.16**
192	9.60	**31.50**	6 S	---	NL	6 S	---	NL	5 M	<1>	4.02	**0.43**	6 S	<1>	7.67	**0.99**	4 C		4.08	NL	6 S	<1>	1.91	**0.47**	6 S	<1>	1.87	**1.06**	6 S	4.65	**3.21**
193	9.65	**31.66**	6 S	---	NL	6 S	---	NL	5 M	<1>	3.93	**0.48**	5 M	<1>	7.43	**0.68**	4 C		4.10	NL	5 M	<1>	1.88	**0.40**	6 S	<1>	1.84	**0.70**	6 S	4.68	**2.94**
194	9.70	**31.82**	6 S	---	NL	6 S	---	NL	5 M		3.95	NL	5 M		7.46	NL	3 C		4.12	NL	5 M		1.90	NL	6 S	<1>	1.81	**0.63**	6 S	4.71	**2.92**
195	9.75	**31.99**	6 S	---	NL	6 S	---	NL	5 M	<1>	3.88	**0.49**	4 C		7.50	NL	3 C		4.15	NL	4 C		1.91	NL	5 M	<1>	1.79	**0.53**	6 S	4.74	**3.00**
196	9.80	**32.15**	6 S	---	NL	6 S	---	NL	5 M		3.90	NL	4 C		7.53	NL	4 C		4.17	NL	5 M		1.93	NL	5 M	<1>	1.76	**0.45**	6 S	4.76	**3.11**
197	9.85	**32.32**	6 S	---	NL	0 C	---		4 C		3.92	NL	4 C		7.56	NL	4 C		4.19	NL	5 M		1.94	NL	5 M	<1>	1.74	**0.45**	6 S	4.79	**3.08**
198	9.90	**32.48**	6 S	---	NL	0 C	---		4 C		3.94	NL	4 C		7.59	NL	3 C		4.21	NL	5 M	<1>	1.91	**0.41**	5 M	<1>	1.71	**0.47**	6 S	4.82	**3.11**
199	9.95	**32.64**	6 S	---	NL	0 C	---		4 C		3.96	NL	3 C		7.62	NL	4 C		4.24	NL	6 S	<1>	1.88	**0.92**	5 M		1.73	NL	6 S	4.85	**3.08**
200	10.00	**32.81**	6 S	---	NL	0 C	---		4 C		3.98	NL	3 C		7.65	NL	3 C		4.26	NL	6 S	<1>	1.86	**1.16**	5 M		1.74	NL	6 S	4.88	**3.12**
201	10.05	**32.97**	6 S	---	NL	0 C	---		5 M	<1>	3.90	**0.41**	4 C		7.68	NL	4 C		4.28	NL	6 S		1.87	**1.35**	5 M	<1>	1.72	**0.58**	6 S	4.91	**3.57**
202	10.10	**33.14**	6 S	---	NL	0 C	---		5 M	<1>	3.82	**0.46**	4 C		7.71	NL	4 C		4.30	NL	6 S		1.89	**1.71**	6 S	<1>	1.69	**0.99**	6 S	4.94	**3.90**
203	10.15	**33.30**	6 S	---	NL	0 C	---		5 M	<1>	3.75	**0.51**	3 C		7.74	NL	4 C		4.32	NL	6 S		1.90	**2.09**	6 S		1.71	**1.60**	6 S	4.97	**3.96**
204	10.20	**33.46**	6 S	---	NL	0 C	---		6 S	<1>	3.68	**0.70**	4 C		7.77	NL	4 C		4.35	NL	6 S		1.91	**2.57**	6 S		1.72	**1.74**	6 S	5.00	**5.51**
205	10.25	**33.63**	6 S	---	NL	0 C	---		6 S	<1>	3.61	**0.81**	4 C		7.80	NL	4 C		4.37	NL	6 S		1.93	**3.83**	6 S		1.73	**1.69**	6 S	5.03	**6.80**
206	10.30	**33.79**	6 S	---	NL	0 C	---		6 S	<1>	3.55	**0.75**	4 C		7.83	NL	4 C		4.39	NL	6 S		1.94	**6.17**	6 S		1.75	**1.34**	6 S	5.06	**5.69**
207	10.35	**33.96**	6 S	---	NL	0 C	---		6 S	<1>	3.49	**0.69**	3 C		7.86	NL	4 C		4.41	NL	6 S		1.96	**8.20**	6 S	<1>	1.72	**0.73**	6 S	5.09	**4.60**
208	10.40	**34.12**	6 S	---	NL	0 C	---		6 S	<1>	3.43	**0.61**	3 C		7.89	NL	4 C		4.44	NL	6 S		1.97	**15.72**	6 S	<1>	1.70	**0.48**	6 S	5.12	**3.61**
209	10.45	**34.28**	6 S	---	NL	0 C	---		6 S	<1>	3.37	**0.55**	5 M	<1>	7.66	**0.36**	4 C		4.46	NL	6 S		1.99	**8.78**	5 M	<1>	1.68	**0.33**	6 S	5.15	**2.54**
210	10.50	**34.45**	6 S	---	NL	0 C	---		5 M	<1>	3.31	**0.52**	5 M	<1>	7.44	**0.42**	5 M		4.48	NL	6 S		2.00	**6.32**	5 M		1.69	NL	6 S	5.18	**2.34**
211	10.55	**34.61**	6 S	---	NL	0 C	---		5 M		3.33	NL	5 M	<1>	7.23	**0.45**	5 M		4.50	NL	6 S		2.01	**6.98**	4 C		1.71	NL	6 S	5.21	**2.70**
212	10.60	**34.78**	6 S	---	NL	0 C	---		4 C		3.35	NL	5 M	<1>	7.04	**0.47**	5 M	<1>	4.40	**0.28**	6 S		2.03	**6.81**	3 C		1.72	NL	6 S	5.24	**2.65**
213	10.65	**34.94**	6 S	---	NL	0 C	---		5 M		3.36	NL	5 M	<1>	6.85	**0.47**	4 C		4.43	NL	6 S		2.04	**6.61**	3 C		1.73	NL	6 S	5.26	**2.53**
214	10.70	**35.10**	6 S	---	NL	0 C	---		4 C		3.38	NL	5 M	<1>	6.68	**0.43**	3 C		4.45	NL	6 S		2.06	**6.27**	4 C		1.74	NL	6 S	5.29	**2.43**
215	10.75	**35.27**	6 S	---	NL	0 C	---		4 C		3.40	NL	5 M		6.70	NL	4 C		4.47	NL	6 S		2.07	**6.29**	4 C		1.76	NL	6 S	5.32	**2.08**
216	10.80	**35.43**	6 S	---	NL	0 C	---		4 C		3.41	NL	4 C		6.73	NL	4 C		4.49	NL	6 S		2.09	**6.98**	4 C		1.77	NL	6 S	5.35	**1.44**
217	10.85	**35.60**	6 S	---	NL	0 C	---		4 C		3.43	NL	4 C		6.75	NL	4 C		4.51	NL	6 S		2.10	**8.36**	4 C		1.78	NL	6 S	5.38	**1.25**
218	10.90	**35.76**	6 S	---	NL	0 C	---		4 C		3.45	NL	3 C		6.78	NL	5 M		4.53	NL	6 S		2.11	**12.89**	3 C		1.79	NL	6 S	5.41	**1.25**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable MSF 1.5
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

Depth			CPT-1	12/19/05		CPT-2	12/19/05		CPT-4		12/19/05			CPT-5	12/19/05			CPT-6	12/19/05			CPT-7	12/19/05			CPT-8	12/19/05			CPT-9	12/19/05	
219	10.95	**35.93**	6 S	---	NL	0 C	---		4 C		3.46	NL		3 C		6.80	NL	5 M	<1>	4.44	**0.42**	6 S		2.13	**19.37**	3 C		1.81	NL	6 S		5.44	**1.44**
220	11.00	**36.09**	6 S	---	NL	0 C	---		5 M	<1>	3.41	**0.60**		3 C		6.83	NL	5 M	<1>	4.35	**0.49**	6 S		2.14	**31.49**	4 C		1.82	NL	6 S		5.47	**2.20**
221	11.05	**36.25**	6 S	---	NL	0 C	---		6 S	<1>	3.35	**0.97**		3 C		6.85	NL	5 M	<1>	4.26	**0.58**	7 S		2.16	**34.23**	5 M	<1>	1.80	**0.33**	6 S		5.50	**4.30**
222	11.10	**36.42**	6 S	---	NL	0 C	---		6 S		3.37	**1.38**		3 C		6.88	NL	6 S	<1>	4.17	**0.66**	6 S		2.17	**31.56**	5 M	<1>	1.78	**0.34**	6 S		5.53	**6.76**
223	11.15	**36.58**	6 S	---	NL	0 C	---		6 S		3.38	**1.47**		5 M		6.91	NL	6 S	<1>	4.09	**0.78**	6 S		2.19	**18.75**	6 S	<1>	1.75	**0.38**	6 S		5.56	**9.57**
224	11.20	**36.75**	6 S	---	NL	0 C	---		6 S		3.40	**1.49**		5 M	<1>	6.73	**0.32**	6 S	<1>	4.01	**1.17**	6 S		2.20	**12.35**	6 S	<1>	1.73	**0.38**	6 S		5.59	**10.82**
225	11.25	**36.91**	6 S	---	NL	0 C	---		6 S		3.42	**1.65**		4 C		6.76	NL	6 S		4.03	**1.82**	6 S		2.21	**8.03**	6 S	<1>	1.71	**0.34**	6 S		5.62	**7.77**
226	11.30	**37.07**	6 S	---	NL	0 C	---		6 S		3.43	**1.65**		4 C		6.78	NL	6 S		4.05	**2.81**	6 S		2.23	**7.37**	6 S	<1>	1.69	**0.35**	6 S		5.65	**8.54**
227	11.35	**37.24**	6 S	---	NL	0 C	---		6 S		3.45	**1.96**		5 M	<1>	6.62	**0.42**	6 S		4.07	**4.04**	6 S		2.24	**7.98**	6 S	<1>	1.67	**0.37**	6 S		5.68	**7.97**
228	11.40	**37.40**	6 S	---	NL	0 C	---		6 S		3.46	**2.10**		6 S	<1>	6.46	**0.62**	6 S		4.09	**5.55**	6 S		2.26	**7.69**	5 M	<1>	1.65	**0.46**	6 S		5.71	**8.15**
229	11.45	**37.57**	6 S	---	NL	0 C	---		6 S		3.48	**2.15**		6 S	<1>	6.31	**0.82**	7 S		4.11	**8.97**	6 S		2.27	**5.32**	5 M	<1>	1.63	**0.50**	6 S		5.74	**10.67**
230	11.50	**37.73**	6 S	---	NL	0 C	---		6 S		3.50	**2.00**		6 S	<1>	6.17	**0.83**	6 S		4.13	**9.55**	6 S		2.29	**4.35**	5 M	<1>	1.61	**0.47**	6 S		5.76	**8.00**
231	11.55	**37.89**	6 S	---	NL	0 C	---		6 S		3.51	**1.65**		6 S	<1>	6.03	**0.87**	7 S		4.15	**12.85**	6 S		2.30	**2.95**	6 S		1.63	**1.92**	6 S		5.79	**5.62**
232	11.60	**38.06**	6 S	---	NL	0 C	---		6 S		3.53	**1.46**		6 S	<1>	5.90	**1.01**	7 S		4.16	**15.66**	6 S		2.31	**3.04**	6 S		1.64	**2.30**	6 S		5.82	**4.85**
233	11.65	**38.22**	6 S	---	NL	0 C	---		6 S	<1>	3.47	**1.16**		6 S		5.92	**1.41**	7 S		4.18	**14.74**	6 S		2.33	**2.38**	6 S		1.65	**3.90**	6 S		5.85	**3.28**
234	11.70	**38.39**	6 S	---	NL	0 C	---		6 S	<1>	3.42	**1.14**		6 S		5.94	**1.54**	7 S		4.20	**11.37**	6 S		2.34	**1.84**	6 S		1.66	**4.05**	6 S		5.88	**3.07**
235	11.75	**38.55**	6 S	---	NL	0 C	---		6 S	<1>	3.37	**1.04**		6 S		5.96	**1.38**	7 S		4.22	**10.89**	6 S		2.36	**1.38**	6 S		1.67	**4.21**	6 S		5.91	**3.09**
236	11.80	**38.71**	6 S	---	NL	0 C	---		6 S	<1>	3.31	**0.82**		6 S		5.99	**1.21**	7 S		4.24	**10.60**	6 S	<1>	2.32	**1.00**	6 S		1.68	**4.98**	6 S		5.94	**3.23**
237	11.85	**38.88**	6 S	---	NL	0 C	---		6 S	<1>	3.27	**0.57**		6 S	<1>	5.86	**0.89**	7 S		4.26	**11.76**	6 S	<1>	2.29	**0.57**	7 S		1.69	**5.67**	6 S		5.97	**3.11**
238	11.90	**39.04**	6 S	---	NL	0 C	---		6 S	<1>	3.22	**0.41**		6 S	<1>	5.74	**0.60**	7 S		4.28	**7.05**	6 S	<1>	2.26	**0.41**	6 S		1.70	**6.12**	6 S		6.00	**3.29**
239	11.95	**39.21**	6 S	---	NL	0 C	---		5 M	<1>	3.17	**0.35**		6 S	<1>	5.62	**0.46**	6 S		4.30	**3.19**	5 M	<1>	2.23	**0.47**	6 S		1.72	**7.50**	6 S		6.03	**3.70**
240	12.00	**39.37**	6 S	---	NL	0 C	---		4 C		3.19	NL		5 M		5.64	NL	6 S		4.32	**1.46**	4 C		2.24	NL	6 S		1.73	**5.79**	6 S		6.06	**2.97**
241	12.05	**39.53**	6 S	---	NL	0 C	---		3 C		3.20	NL		4 C		5.66	NL	6 S	<1>	4.24	**0.94**	4 C		2.26	NL	6 S		1.74	**7.25**	6 S		6.09	**3.20**
242	12.10	**39.70**	6 S	---	NL	0 C	---		3 C		3.21	NL		3 C		5.68	NL	5 M	<1>	4.16	**0.54**	4 C		2.27	NL	6 S		1.75	**9.71**	6 S		6.12	**2.87**
243	12.15	**39.86**	7 S	---	NL	0 C	---		3 C		3.23	NL		3 C		5.70	NL	5 M	<1>	4.08	**0.48**	5 M	<1>	2.24	**0.51**	7 S		1.76	**12.16**	6 S		6.15	**2.81**
244	12.20	**40.03**	7 S	---	NL	0 C	---		3 C		3.24	NL		3 C		5.72	NL	5 M	<1>	4.01	**0.57**	5 M	<1>	2.21	**0.57**	6 S		1.77	**8.81**	6 S		6.18	**2.56**
245	12.25	**40.19**	0 C	---		0 C	---		3 C		3.26	NL		3 C		5.74	NL	6 S	<1>	3.94	**0.60**	4 C		2.22	NL	6 S		1.78	**7.84**	6 S		6.21	**2.82**
246	12.30	**40.35**	0 C	---		0 C	---		3 C		3.27	NL		4 C		5.76	NL	6 S	<1>	3.87	**0.66**	4 C		2.24	NL	7 S		1.80	**9.24**	6 S		6.24	**3.04**
247	12.35	**40.52**	0 C	---		0 C	---		3 C		3.29	NL		5 M	<1>	5.65	**0.42**	6 S	<1>	3.81	**0.49**	6 S		2.25	**1.21**	7 S		1.81	**11.84**	6 S		6.26	**2.69**
248	12.40	**40.68**	0 C	---		0 C	---		3 C		3.30	NL		5 M	<1>	5.54	0.47	6 S	<1>	3.74	**0.46**	6 S		2.26	**3.49**	7 S		1.82	**15.16**	6 S		6.29	**2.39**
249	12.45	**40.85**	0 C	---		0 C	---		3 C		3.32	NL		5 M	<1>	5.43	**0.55**	5 M	<1>	3.68	**0.51**	6 S		2.28	**5.18**	7 S		1.83	**17.54**	6 S		6.32	**3.50**
250	12.50	**41.01**	0 C	---		0 C	---		3 C		3.33	NL		5 M	<1>	5.33	**0.54**	5 M	<1>	3.62	**0.59**	7 S		2.29	**7.56**	7 S		1.84	**24.86**	6 S		6.35	**6.62**
251	12.55	**41.17**	0 C	---		0 C	---		2 C		3.34	NL		6 S	<1>	5.23	**0.87**	5 M	<1>	3.56	**0.42**	6 S		2.30	**8.99**	6 S		1.85	**15.04**	6 S		6.38	**6.18**
252	12.60	**41.34**	0 C	---		0 C	---		3 C		3.36	NL		6 S		5.25	**1.39**	6 S	<1>	3.51	**0.47**	6 S		2.32	**9.48**	7 S		1.86	**13.01**	6 S		6.41	**6.33**
253	12.65	**41.50**	0 C	---		0 C	---		3 C		3.37	NL		6 S		5.27	**2.12**	5 M	<1>	3.46	**0.46**	6 S		2.33	**8.56**	6 S		1.88	**11.93**	6 S		6.44	**7.16**
254	12.70	**41.67**	0 C	---		0 C	---		5 M	<1>	3.33	**0.31**		6 S		5.28	**3.81**	5 M		3.47	NL	6 S		2.34	**9.79**	7 S		1.89	**9.53**	6 S		6.47	**10.68**
255	12.75	**41.83**	0 C	---		0 C	---		5 M	<1>	3.28	**0.35**		6 S		5.30	**4.06**	3 C		3.49	NL	6 S		2.36	**14.04**	7 S		1.90	**7.82**	6 S		6.50	**9.74**
256	12.80	**41.99**	0 C	---		0 C	---		6 S	<1>	3.23	**0.53**		6 S		5.32	**3.71**	5 M	<1>	3.43	**0.45**	6 S		2.37	**6.58**	7 S		1.91	**6.47**	6 S		6.53	**6.19**
257	12.85	**42.16**	0 C	---		0 C	---		6 S	<1>	3.19	**0.79**		6 S		5.34	**3.48**	5 M	<1>	3.38	**0.76**	6 S		2.38	**7.87**	6 S		1.92	**5.34**	6 S		6.56	**6.23**
258	12.90	**42.32**	0 C	---		0 C	---		6 S	<1>	3.15	**0.88**		6 S		5.36	**3.30**	5 M	<1>	3.33	**0.74**	6 S		2.39	**6.58**	6 S		1.93	**3.88**	6 S		6.59	**6.18**
259	12.95	**42.49**	0 C	---		0 C	---		6 S	<1>	3.10	**1.09**		6 S		5.38	**3.22**	6 S	<1>	3.28	**1.10**	6 S		2.41	**5.93**	6 S		1.94	**3.52**	6 S		6.62	**6.01**
260	13.00	**42.65**	0 C	---		0 C	---		6 S		3.12	**1.43**		6 S		5.40	**3.33**	6 S		3.30	**1.25**	6 S		2.42	**4.81**	6 S		1.95	**3.92**	6 S		6.65	**6.25**
261	13.05	**42.81**	0 C	---		0 C	---		6 S		3.13	**1.37**		6 S		5.41	**3.50**	6 S	<1>	3.25	**1.14**	6 S		2.43	**4.43**	6 S		1.97	**4.32**	6 S		6.68	**6.64**
262	13.10	**42.98**	0 C	---		0 C	---		6 S		3.14	**1.32**		6 S		5.43	**3.94**	6 S		3.27	**1.28**	6 S		2.45	**4.34**	6 S		1.98	**5.47**	6 S		6.71	**9.80**
263	13.15	**43.14**	0 C	---		0 C	---		6 S		3.16	**1.24**		6 S		5.45	**3.84**	6 S	<1>	3.22	**1.17**	6 S		2.46	**6.60**	6 S		1.99	**4.90**	6 S		6.74	**5.55**
264	13.20	**43.31**	0 C	---		0 C	---		6 S	<1>	3.12	**1.10**		6 S		5.47	**3.35**	6 S	<1>	3.17	**0.93**	6 S		2.47	**7.69**	6 S		2.00	**4.85**	6 S		6.76	**6.18**
265	13.25	**43.47**	0 C	---		0 C	---		6 S	<1>	3.07	**1.08**		6 S		5.49	**2.48**	6 S	<1>	3.13	**0.82**	6 S		2.49	**8.97**	6 S		2.01	**6.59**	6 S		6.79	**5.91**
266	13.30	**43.64**	0 C	---		0 C	---		6 S	<1>	3.04	**1.20**		6 S		5.51	**1.70**	6 S	<1>	3.09	**0.65**	6 S		2.50	**11.23**	7 S		2.02	**8.42**	6 S		6.82	**6.06**
267	13.35	**43.80**	0 C	---		0 C	---		6 S		3.05	**1.49**		6 S	<1>	5.41	**0.88**	6 S	<1>	3.05	**0.62**	6 S		2.51	**6.09**	6 S		2.03	**8.52**	6 S		6.85	**7.87**
268	13.40	**43.96**	0 C	---		0 C	---		6 S		3.06	**1.67**		5 M	<1>	5.31	**0.63**	6 S	<1>	3.01	**0.57**	6 S		2.53	**3.14**	6 S		2.05	**10.53**	6 S		6.88	**7.76**
269	13.45	**44.13**	0 C	---		0 C	---		6 S		3.07	**1.92**		4 C		5.33	NL	5 M	<1>	2.97	**0.54**	6 S		2.54	**3.92**	7 S		2.06	**13.07**	6 S		6.91	**6.16**
270	13.50	**44.29**	0 C	---		0 C	---		6 S		3.09	**2.12**		5 M	<1>	5.23	**0.71**	5 M	<1>	2.93	**0.53**	6 S		2.55	**6.90**	6 S		2.07	**11.86**	7 S		6.94	**5.55**
271	13.55	**44.46**	0 C	---		0 C	---		6 S		3.10	**2.26**		5 M	<1>	5.14	**0.73**	5 M	<1>	2.89	**0.55**	6 S		2.57	**6.26**	6 S		2.08	**12.61**	6 S		6.97	**6.44**
272	13.60	**44.62**	0 C	---		0 C	---		6 S		3.11	**2.37**		4 C		5.16	NL	5 M	<1>	2.86	**0.53**	6 S		2.58	**6.56**	6 S		2.09	**10.52**	6 S		7.00	**7.32**
273	13.65	**44.78**	0 C	---		0 C	---		6 S		3.13	**2.35**		4 C		5.18	NL	6 S	<1>	2.82	**0.53**	6 S		2.59	**6.34**	6 S		2.10	**8.52**	6 S		7.03	**6.40**
274	13.70	**44.95**	0 C	---		0 C	---		6 S		3.14	**2.64**		4 C		5.20	NL	5 M	<1>	2.79	**0.48**	6 S		2.61	**7.15**	6 S		2.11	**7.56**	7 S		7.06	**6.32**
275	13.75	**45.11**	0 C	---		0 C	---		6 S		3.15	**2.80**		4 C		5.21	NL	5 M	<1>	2.75	**0.64**	6 S		2.62	**7.23**	6 S		2.13	**7.36**	6 S		7.09	**5.50**
276	13.80	**45.28**	0 C	---		0 C	---		6 S		3.16	**2.91**		3 C		5.23	NL	5 M	<1>	2.72	**0.74**	6 S		2.63	**7.56**	6 S		2.14	**7.78**	6 S		7.12	**5.34**
277	13.85	**45.44**	0 C	---		0 C	---		6 S		3.18	**3.16**		4 C		5.25	NL	6 S	<1>	2.69	**0.91**	6 S		2.64	**6.68**	6 S		2.15	**6.09**	6 S		7.15	**4.60**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **12/27/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth			CPT-1 12/19/05		CPT-2 12/19/05		CPT-4 12/19/05			CPT-5 12/19/05			CPT-6 12/19/05			CPT-7 12/19/05			CPT-8 12/19/05			CPT-9 12/19/05			
278	13.90	**45.60**	0 C	---	0 C	---	6 S		3.19	**3.54**	4 C		5.26	NL	6 S	<1>	2.66	**0.84**	6 S	2.66	**5.19**	6 S	2.16	**4.95**	6 S		7.18	**4.76**
279	13.95	**45.77**	0 C	---	0 C	---	6 S		3.20	**3.56**	4 C		5.28	NL	5 M	<1>	2.63	**0.69**	6 S	2.67	**4.12**	6 S	2.17	**6.53**	6 S		7.21	**5.34**
280	14.00	**45.93**	0 C	---	0 C	---	6 S		3.21	**3.83**	3 C		5.30	NL	5 M	<1>	2.60	**0.72**	6 S	2.68	**2.61**	6 S	2.18	**5.11**	6 S		7.24	**4.88**
281	14.05	**46.10**	0 C	---	0 C	---	6 S		3.23	**4.10**	3 C		5.32	NL	6 S	<1>	2.57	**0.75**	6 S	2.70	**1.73**	6 S	2.19	**8.69**	6 S		7.26	**4.64**
282	14.10	**46.26**	0 C	---	0 C	---	6 S		3.24	**4.43**	3 C		5.33	NL	6 S	<1>	2.54	**0.60**	6 S	2.71	**2.40**	6 S	2.20	**13.06**	6 S		7.29	**4.87**
283	14.15	**46.42**	0 C	---	0 C	---	6 S		3.25	**4.55**	3 C		5.35	NL	6 S	<1>	2.51	**0.83**	6 S	2.72	**4.52**	6 S	2.22	**19.83**	6 S		7.32	**4.41**
284	14.20	**46.59**	0 C	---	0 C	---	6 S		3.27	**4.59**	4 C		5.37	NL	6 S	<1>	2.48	**1.09**	6 S	2.74	**5.13**	6 S	2.23	**17.44**	6 S		7.35	**4.14**
285	14.25	**46.75**	0 C	---	0 C	---	6 S		3.28	**4.61**	5 M	<1>	5.28	**0.52**	6 S		2.50	**1.35**	6 S	2.75	**5.14**	6 S	2.24	**14.76**	6 S		7.38	**4.34**
286	14.30	**46.92**	0 C	---	0 C	---	6 S		3.29	**4.05**	5 M	<1>	5.19	**0.60**	6 S		2.51	**1.81**	6 S	2.76	**4.90**	6 S	2.25	**13.42**	6 S		7.41	**4.33**
287	14.35	**47.08**	0 C	---	0 C	---	6 S		3.30	**2.91**	5 M	<1>	5.10	**0.67**	6 S		2.52	**2.71**	6 S	2.78	**5.20**	6 S	2.26	**11.49**	6 S		7.44	**3.81**
288	14.40	**47.24**	0 C	---	0 C	---	6 S		3.32	**2.37**	6 S	<1>	5.02	**0.95**	6 S		2.53	**3.00**	6 S	2.79	**5.24**	6 S	2.27	**13.20**	6 S		7.47	**3.29**
289	14.45	**47.41**	0 C	---	0 C	---	6 S		3.33	**1.67**	6 S		5.04	**1.57**	6 S		2.54	**3.64**	6 S	2.80	**6.22**	6 S	2.28	**11.59**	6 S		7.50	**3.79**
290	14.50	**47.57**	0 C	---	0 C	---	6 S	<1>	3.29	**1.09**	6 S		5.05	**2.34**	6 S		2.55	**2.74**	6 S	2.82	**5.66**	6 S	2.30	**9.09**	6 S		7.53	**4.17**
291	14.55	**47.74**	0 C	---	0 C	---	5 M	<1>	3.25	**0.68**	6 S		5.07	**2.62**	6 S		2.56	**2.62**	6 S	2.83	**5.52**	6 S	2.31	**6.83**	6 S		7.56	**4.27**
292	14.60	**47.90**	0 C	---	0 C	---	5 M	<1>	3.21	**0.80**	6 S		5.09	**2.64**	6 S		2.57	**2.47**	6 S	2.84	**5.17**	6 S	2.32	**6.81**	6 S		7.59	**4.12**
293	14.65	**48.06**	0 C	---	0 C	---	6 S		3.22	**1.22**	6 S		5.10	**2.61**	6 S		2.58	**2.78**	6 S	2.86	**5.91**	6 S	2.33	**9.15**	6 S		7.62	**3.46**
294	14.70	**48.23**	0 C	---	0 C	---	6 S		3.23	**1.58**	6 S		5.12	**2.46**	6 S		2.59	**3.03**	6 S	2.87	**7.54**	6 S	2.34	**17.71**	6 S		7.65	**2.15**
295	14.75	**48.39**	0 C	---	0 C	---	6 S		3.24	**1.80**	6 S		5.13	**2.72**	6 S		2.60	**3.28**	6 S	2.88	**8.44**	6 S	2.35	**7.16**	6 S	<1>	7.43	**0.96**
296	14.80	**48.56**	0 C	---	0 C	---	6 S		3.26	**1.83**	6 S		5.15	**2.95**	6 S		2.61	**3.40**	6 S	2.89	**9.07**	6 S	2.36	**4.87**	5 M	<1>	7.22	**0.84**
297	14.85	**48.72**	0 C	---	0 C	---	6 S		3.27	**1.62**	6 S		5.17	**2.99**	6 S		2.63	**4.00**	6 S	2.91	**5.19**	6 S	2.38	**4.74**	5 M	<1>	7.03	**0.82**
298	14.90	**48.88**	0 C	---	0 C	---	6 S		3.28	**1.53**	6 S		5.18	**2.80**	6 S		2.64	**4.32**	6 S	2.92	**5.54**	6 S	2.39	**5.80**	5 M	<1>	6.84	**0.63**
299	14.95	**49.05**	0 C	---	0 C	---	6 S		3.29	**1.34**	6 S		5.20	**2.79**	6 S		2.65	**5.74**	6 S	2.93	**7.13**	7 S	2.40	**8.38**	6 S		6.87	**2.91**
300	15.00	**49.21**	0 C	---	0 C	---	6 S		3.31	**1.55**	6 S		5.22	**3.10**	6 S		2.66	**4.82**	6 S	2.95	**8.19**	7 S	2.41	**10.40**	6 S		6.89	**6.03**
301	15.05	**49.38**	0 C	---	0 C	---	6 S		3.32	**2.26**	6 S		5.23	**4.37**	6 S		2.67	**4.70**	6 S	2.96	**9.19**	6 S	2.42	**6.74**	6 S		6.92	**8.12**
302	15.10	**49.54**	0 C	---	0 C	---	6 S		3.33	**2.49**	6 S		5.25	**7.38**	6 S		2.68	**4.86**	6 S	2.97	**9.85**	6 S	2.43	**8.29**	7 S		6.95	**10.97**
303	15.15	**49.70**	0 C	---	0 C	---	6 S		3.34	**2.61**	6 S		5.26	**5.46**	6 S		2.69	**4.77**	6 S	2.99	**7.23**	6 S	2.44	**13.17**	7 S		6.97	**11.75**
304	15.20	**49.87**	0 C	---	0 C	---	6 S		3.36	**2.18**	6 S		5.28	**5.34**	6 S		2.70	**4.87**	6 S	3.00	**7.33**	6 S	2.45	**13.85**	7 S		7.00	**12.16**
305	15.25	**50.03**	0 C	---	0 C	---	0 C		3.37		6 S		5.30	**5.03**	6 S		2.71	**4.64**	0 C	3.01		6 S	2.47	**14.34**	7 S		7.03	**12.74**
306	15.30	**50.20**	0 C	---	0 C	---	0 C		3.38		6 S		5.31	**4.83**	0 C		2.72		0 C	3.03		0 C	2.48		0 C		7.05	
307	15.35	**50.36**	0 C	---	0 C	---	0 C		3.39		0 C		5.33		0 C		2.73		0 C	3.04		0 C	2.49		0 C		7.08	
308	15.40	**50.52**	0 C	---	0 C	---	0 C		3.40		0 C		5.34		0 C		2.75		0 C	3.05		0 C	2.50		0 C		7.11	

SPREADSHEET TO CALCULATE CYCLIC RESISTANCE RATIO USING CPT DATA

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-8 CPT DATE: 12/19/05 KTE
DATE : 12/27/2007
amax = 0.6 g
M = 7.50
MSF = 1.5

Ic = (((3.47-LOG(Q))^2)+(LOG(F%)+1.22)^2)^0.5
dqc1N = IF(FC>=35,60,IF(FC<=5,0,2*(FC-5)))
CRR = IF(qc1Ncs<50,(0.833*(qc1Ncs/1000)+0.05),(93*(qc1Ncs/1000)^3+0.08))
MSF = 10^2.24/M^2.56
CSR = 0.65(amax/g)(sigv/sigv')rd = Seed's Equation
Z = IF(Ic<1.31,7,IF(Ic<2.05,6,IF(Ic<2.6,5,IF(Ic<2.95,4,IF(Ic<3.6,3,2)))))
Q = [(qc-St)/Pa]*[(Pa/S')^n]
Kc = IF(Ic<=1.64,1,(-0.403*Ic^4+5.581*Ic^3-21.63*Ic^2+33.75*Ic-17.88))

Liquefiable Soil (Type 5+ or 6+) = 2.4
Seismic Settlement Soil (Type) = 6
Actual Water = 27 feet
Design Water = 6.6 feet
Gamma = 120 pcf
rd = 2

Added Fill = 0 feet
Fill Density = 125 pcf
Pa = 1.04427 tsf = 100 kPa
Threshold FS = 1.25
FS = CRR*MSF/CSR

FS = Threshold Factor of Safety
NL = Above water or Soil Behavior Type is not liquefiable

Z	Soil
3	Clay to Silty Clay
4	Clayey Silt to Silty Clay
5	Silty Sand to Sandy Silt
6	Clean Sand to Silty Sand
7	Gravelly Sand to Sand

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-8 CPT DATE: 12/19/05 KTE
DATE : 12/27/2007
amax = 0.6 g
M = 7.50

Depth (m)	Depth (ft)	Tip Resist qc (tsf)	Sleeve Fric fs (tsf)	Total Stress (tsf) 0.00	Water Pressure (tsf) Sw	Effective Stress (tsf) S' = St - Sw	Norm. Fr. Ratio F (%) = fs/(qc-St)	Norm. Pen. Res. Q for n=1 (qc-St)/S'	Soil Index Ic for n=1	Norm. Pen. Res. Q for n= 0.5	Soil Index Ic for n=0.5	Norm. Pen. Res. Q for n= 0.7	Soil Index Ic for n=0.7	Soil Index Ic	Cq exp n	Overburden Correction Cq = 1.7 > (Pa/S')^n	Norm. Cone Res. qc1N = qc*Cq/Pa	Grain Char. Corr. Kc	Equivalent Clean Sand Cone Res. (qc1N)cs = Kc*qc1N	Cyclic Resistance Ratio CRR CRR	rd rd	Design Effective Stress (tsf) S' = St - Sw	Cyclic Stress Ratio CSR CSR	Depth (ft) Depth
0.00	0.00	0.00	0.00	0.00	0.00	0.00																		
0.05	0.16	2.90	0.14	0.010	0.000	0.010	4.84	294	2.15	29	2.77	72	2.49	2.49	0.70	1.70	5	2.7	12.9	0.061	1.000	0.010	0.390	0.16
0.10	0.33	29.00	0.14	0.020	0.000	0.020	0.48	1472	0.95	202	1.47	447	1.22	1.47	0.50	1.70	47	1.0	47.2	0.089	0.999	0.020	0.390	0.33
0.15	0.49	7.10	0.12	0.030	0.000	0.030	1.70	239	1.81	40	2.36	82	2.13	2.36	0.50	1.70	12	2.2	25.0	0.071	0.999	0.030	0.390	0.49
0.20	0.66	8.60	0.11	0.039	0.000	0.039	1.28	217	1.75	42	2.27	81	2.05	2.27	0.50	1.70	14	1.9	26.1	0.072	0.998	0.039	0.389	0.66
0.25	0.82	30.20	0.11	0.049	0.000	0.049	0.36	613	1.04	133	1.56	245	1.33	1.56	0.50	1.70	49	1.0	49.2	0.091	0.998	0.049	0.389	0.82
0.30	0.98	52.00	0.14	0.059	0.000	0.059	0.27	879	0.84	209	1.32	372	1.11	1.32	0.50	1.70	85	1.0	84.7	0.136	0.998	0.059	0.389	0.98
0.35	1.15	48.80	0.15	0.069	0.000	0.069	0.31	707	0.94	182	1.40	313	1.20	1.40	0.50	1.70	79	1.0	79.4	0.127	0.997	0.069	0.389	1.15
0.40	1.31	46.20	0.16	0.079	0.000	0.079	0.35	586	1.03	161	1.47	270	1.29	1.47	0.50	1.70	75	1.0	75.2	0.120	0.997	0.079	0.389	1.31
0.45	1.48	42.70	0.16	0.089	0.000	0.089	0.38	481	1.12	140	1.54	229	1.36	1.54	0.50	1.70	70	1.0	69.5	0.111	0.997	0.089	0.389	1.48
0.50	1.64	38.30	0.15	0.098	0.000	0.098	0.39	388	1.20	119	1.61	191	1.44	1.61	0.50	1.70	62	1.0	62.3	0.103	0.996	0.098	0.389	1.64
0.55	1.80	36.20	0.14	0.108	0.000	0.108	0.39	333	1.25	107	1.65	169	1.48	1.65	0.50	1.70	59	1.0	59.2	0.099	0.996	0.108	0.388	1.80
0.60	1.97	31.50	0.13	0.118	0.000	0.118	0.41	266	1.34	89	1.73	138	1.57	1.73	0.50	1.70	51	1.1	54.4	0.095	0.995	0.118	0.388	1.97
0.65	2.13	29.20	0.12	0.128	0.000	0.128	0.41	227	1.39	80	1.78	121	1.62	1.78	0.50	1.70	48	1.1	51.9	0.093	0.995	0.128	0.388	2.13
0.70	2.30	26.20	0.12	0.138	0.000	0.138	0.46	189	1.48	69	1.86	103	1.70	1.86	0.50	1.70	43	1.2	49.1	0.091	0.995	0.138	0.388	2.30
0.75	2.46	23.80	0.11	0.148	0.000	0.148	0.47	160	1.55	60	1.91	89	1.76	1.91	0.50	1.70	39	1.2	46.4	0.089	0.994	0.148	0.388	2.46
0.80	2.62	24.50	0.12	0.157	0.000	0.157	0.49	155	1.57	60	1.92	88	1.78	1.92	0.50	1.70	40	1.2	48.3	0.090	0.994	0.157	0.388	2.62
0.85	2.79	26.60	0.13	0.167	0.000	0.167	0.49	158	1.56	63	1.90	91	1.76	1.90	0.50	1.70	43	1.2	51.6	0.093	0.993	0.167	0.387	2.79
0.90	2.95	22.60	0.14	0.177	0.000	0.177	0.62	127	1.70	52	2.03	74	1.89	2.03	0.50	1.70	37	1.3	49.1	0.091	0.993	0.177	0.387	2.95
0.95	3.12	31.90	0.14	0.187	0.000	0.187	0.44	170	1.51	72	1.83	101	1.70	1.83	0.50	1.70	52	1.1	58.7	0.099	0.993	0.187	0.387	3.12
1.00	3.28	31.50	0.15	0.197	0.000	0.197	0.48	159	1.56	69	1.86	96	1.74	1.86	0.50	1.70	51	1.2	59.3	0.099	0.992	0.197	0.387	3.28
1.05	3.45	27.30	0.15	0.207	0.000	0.207	0.55	131	1.66	58	1.96	81	1.84	1.96	0.50	1.70	44	1.2	55.5	0.096	0.992	0.207	0.387	3.45
1.10	3.61	26.30	0.17	0.217	0.000	0.217	0.65	120	1.73	55	2.02	75	1.90	2.02	0.50	1.70	43	1.3	56.6	0.097	0.992	0.217	0.387	3.61
1.15	3.77	24.80	0.19	0.226	0.000	0.226	0.77	109	1.81	51	2.09	69	1.97	2.09	0.50	1.70	40	1.4	57.7	0.098	0.991	0.226	0.387	3.77
1.20	3.94	22.50	0.20	0.236	0.000	0.236	0.90	94	1.90	45	2.16	60	2.06	2.16	0.50	1.70	37	1.6	58.0	0.098	0.991	0.236	0.386	3.94
1.25	4.10	29.00	0.24	0.246	0.000	0.246	0.83	117	1.81	57	2.06	76	1.96	2.06	0.50	1.70	47	1.4	65.6	0.106	0.990	0.246	0.386	4.10
1.30	4.27	38.40	0.28	0.256	0.000	0.256	0.73	149	1.69	74	1.94	98	1.84	1.94	0.50	1.70	63	1.2	76.5	0.122	0.990	0.256	0.386	4.27
1.35	4.43	52.50	0.30	0.266	0.000	0.266	0.57	197	1.53	99	1.77	130	1.67	1.77	0.50	1.70	85	1.1	92.7	0.154	0.990	0.266	0.386	4.43
1.40	4.59	52.30	0.30	0.276	0.000	0.276	0.58	189	1.55	97	1.78	127	1.68	1.78	0.50	1.70	85	1.1	92.9	0.155	0.989	0.276	0.386	4.59
1.45	4.76	53.10	0.30	0.285	0.000	0.285	0.57	185	1.55	97	1.78	125	1.68	1.78	0.50	1.70	86	1.1	94.2	0.158	0.989	0.285	0.386	4.76
1.50	4.92	51.40	0.28	0.295	0.000	0.295	0.55	173	1.56	92	1.79	118	1.69	1.79	0.50	1.70	84	1.1	91.7	0.152	0.989	0.295	0.386	4.92
1.55	5.09	45.80	0.28	0.305	0.000	0.305	0.62	149	1.64	81	1.86	103	1.77	1.86	0.50	1.70	75	1.2	86.1	0.139	0.988	0.305	0.385	5.09
1.60	5.25	42.20	0.27	0.315	0.000	0.315	0.64	133	1.69	73	1.91	93	1.82	1.91	0.50	1.70	69	1.2	82.2	0.132	0.988	0.315	0.385	5.25
1.65	5.41	37.80	0.30	0.325	0.000	0.325	0.80	115	1.80	64	2.01	81	1.92	2.01	0.50	1.70	62	1.3	80.5	0.128	0.987	0.325	0.385	5.41
1.70	5.58	32.70	0.29	0.335	0.000	0.335	0.90	97	1.89	55	2.09	69	2.01	2.09	0.50	1.70	53	1.4	76.6	0.122	0.987	0.335	0.385	5.58
1.75	5.74	29.00	0.27	0.345	0.000	0.345	0.94	83	1.96	48	2.15	60	2.07	2.15	0.50	1.70	47	1.6	73.6	0.117	0.987	0.345	0.385	5.74
1.80	5.91	26.90	0.29	0.354	0.000	0.354	1.09	75	2.03	44	2.22	54	2.14	2.22	0.50	1.70	44	1.7	75.3	0.120	0.986	0.354	0.385	5.91
1.85	6.07	25.00	0.32	0.364	0.000	0.364	1.30	68	2.11	40	2.30	49	2.22	2.30	0.50	1.69	41	1.9	78.4	0.125	0.986	0.364	0.384	6.07
1.90	6.23	24.20	0.36	0.374	0.000	0.374	1.51	64	2.18	38	2.35	47	2.28	2.35	0.50	1.67	39	2.1	82.2	0.132	0.985	0.374	0.384	6.23
1.95	6.40	22.60	0.40	0.384	0.000	0.384	1.80	58	2.26	35	2.43	43	2.36	2.43	0.50	1.65	36	2.4	86.3	0.140	0.985	0.384	0.384	6.40
2.00	6.56	23.20	0.41	0.394	0.000	0.394	1.80	58	2.26	36	2.42	43	2.35	2.42	0.50	1.63	36	2.4	86.7	0.141	0.985	0.394	0.384	6.56
2.05	6.73	22.90	0.46	0.404	0.000	0.404	2.04	56	2.31	35	2.46	42	2.40	2.46	0.50	1.61	35	2.6	91.4	0.151	0.984	0.400	0.388	6.73
2.10	6.89	25.60	0.46	0.413	0.000	0.413	1.83	61	2.24	38	2.40	46	2.34	2.40	0.50	1.59	39	2.3	89.9	0.148	0.984	0.404	0.392	6.89
2.15	7.05	34.00	0.41	0.423	0.000	0.423	1.22	79	2.04	51	2.20	61	2.13	2.20	0.50	1.57	51	1.7	84.9	0.137	0.984	0.409	0.397	7.05
2.20	7.22	44.60	0.37	0.433	0.000	0.433	0.84	102	1.86	66	2.01	78	1.95	2.01	0.50	1.55	66	1.3	87.0	0.141	0.983	0.414	0.401	7.22
2.25	7.38	48.80	0.32	0.443	0.000	0.443	0.66	109	1.77	71	1.92	84	1.86	1.92	0.50	1.54	72	1.2	87.0	0.141	0.983	0.419	0.406	7.38
2.30	7.55	53.60	0.31	0.453	0.000	0.453	0.58	117	1.71	77	1.86	91	1.80	1.86	0.50	1.52	78	1.2	90.2	0.148	0.982	0.423	0.410	7.55
2.35	7.71	63.60	0.29	0.463	0.000	0.463	0.46	136	1.60	91	1.75	107	1.69	1.75	0.50	1.50	92	1.1	98.1	0.168	0.982	0.428	0.414	7.71
2.40	7.87	71.80	0.32	0.472	0.000	0.472	0.45	151	1.56	102	1.70	119	1.64	1.70	0.50	1.49	102	1.0	106.3	0.192	0.982	0.433	0.418	7.87
2.45	8.04	72.30	0.36	0.482	0.000	0.482	0.50	149	1.59	101	1.73	118	1.67	1.73	0.50	1.47	102	1.1	107.8	0.196	0.981	0.437	0.422	8.04
2.50	8.20	69.90	0.40	0.492	0.000	0.492	0.58	141	1.64	97	1.78	113	1.72	1.78	0.50	1.46	98	1.1	106.4	0.192	0.981	0.442	0.426	8.20
2.55	8.37	74.90	0.40	0.502	0.000	0.502	0.54	148	1.61	103	1.74	119	1.69	1.74	0.50	1.44	103	1.1	110.2	0.204	0.980	0.447	0.430	8.37
2.60	8.53	74.90	0.44	0.512	0.000	0.512	0.59	145	1.64	102	1.77	117	1.72	1.77	0.50	1.43	102	1.1	111.0	0.207	0.980	0.452	0.433	8.53
2.65	8.69	82.20	0.49	0.522	0.000	0.522	0.60	157	1.62	111	1.74	127	1.69	1.74	0.50	1.41	111	1.1	118.6	0.235	0.980	0.456	0.437	8.69
2.70	8.86	85.40	0.57	0.532	0.000	0.532	0.67	160	1.64	114	1.76	130	1.71	1.76	0.50	1.40	115	1.1	123.5	0.255	0.979	0.461	0.440	8.86
2.75	9.02	86.10	0.62	0.541	0.000	0.541	0.72	158	1.67	114	1.78	130	1.73	1.78	0.50	1.39	115	1.1	125.0	0.262	0.979	0.466	0.444	9.02
2.80	9.19	90.60	0.66	0.551	0.000	0.551	0.73	163	1.66	119	1.77	135	1.72	1.77	0.50	1.38	119	1.1	129.4	0.282	0.979	0.470	0.447	9.19
2.85	9.35	97.00	0.74	0.561	0.000	0.561	0.77	172	1.66	126	1.76	143	1.72	1.76	0.50	1.36	127	1.1	136.6	0.317	0.978	0.475	0.450	9.35
2.90	9.51	99.70	0.79	0.571	0.000	0.571	0.80	174	1.66	128	1.76	145	1.72	1.76	0.50	1.35	129	1.1	139.6	0.333	0.978	0.480	0.454	9.51
2.95	9.68	101.80	0.83	0.581	0.000	0.581	0.82	174	1.67	130	1.77	146	1.73	1.77	0.50	1.34	131	1.1	141.7	0.344	0.977	0.485	0.457	9.68
3.00	9.84	97.50	0.77	0.591	0.000	0.591	0.79	164	1.68	123	1.78	138	1.74	1.78	0.50	1.33	124	1.1	135.3	0.310	0.977	0.489	0.460	9.84
3.05	10.01	92.80	0.74	0.600	0.000	0.600	0.80	154	1.71	116	1.80	130	1.76	1.80	0.50	1.32	117	1.1	129.6	0.282	0.977	0.494	0.463	10.01
3.10	10.17	85.00	0.65	0.610	0.000	0.610	0.77	138	1.73	106	1.82	118	1.78	1.82	0.50	1.31	106	1.1	119.5	0.239	0.976	0.499	0.466	10.17
3.15	10.34	72.00	0.74	0.620	0.000	0.620	1.04	115	1.87	89	1.96	98	1.93	1.96	0.50	1.30	89	1.3	112.0	0.211	0.976	0.504	0.469	10.34
3.20	10.50	54.70	0.95	0.630	0.000	0.630	1.76	86	2.12	67	2.20	74	2.17	2.20	0.50	1.29	67	1.7	113.0	0.214	0.976	0.508	0.472	10.50
3.25	10.66	35.00	0.97	0.640	0.000	0.640	2.82	54	2.41	42	2.49	46	2.46	2.49	0.50	1.28	43	2.7	116.4	0.227	0.975	0.513	0.474	10.66
3.30	10.83	24.40	0.79	0.650	0.000	0.650	3.33	37	2.58	29	2.66	32	2.63	2.63	0.70	1.39	33	3.5	114.3	0.219	0.975	0.518	0.477	10.83
3.35	10.99	20.50	0.68	0.659	0.000	0.659	3.43	30	2.65	24	2.73	26	2.70	2.65	1.00	1.58	31	3.7	114.3	0.219	0.974	0.522	0.480	10.99
3.40	11.16	21.10	0.54	0.669	0.000	0.669	2.64	31	2.58	24	2.65	27	2.62	2.62	0.70	1.37	28	3.5	95.5	0.161	0.974	0.527	0.482	11.16
3.45	11.32	20.00	0.53	0.679	0.000	0.679	2.74	28	2.61	23	2.68	25	2.65	2.61	1.00	1.54	29	3.4	99.8	0.173	0.974	0.532	0.485	11.32
3.50	11.48	26.60	0.57	0.689	0.000	0.689	2.20	38	2.46	31	2.53	33	2.50	2.53	0.50	1.23	31	2.9	91.1	0.150	0.973	0.537	0.487	11.48
3.55	11.65	27.30	0.58	0.699	0.000	0.699	2.18	38	2.45	31	2.52	34	2.49	2.52	0.50	1.22	32	2.9	91.3	0.151	0.973	0.541	0.490	11.65
3.60	11.81	24.40	0.52	0.709	0.000	0.709	2.19	33	2.49	28	2.56	30	2.53	2.56	0.50	1.21	28	3.1	87.8	0.143	0.972	0.546	0.492	11.81
3.65	11.98	32.90	0.46	0.719	0.000	0.719	1.43	45	2.28	37	2.35	40	2.32	2.35	0.50	1.21	38	2.1	79.9	0.127	0.972	0.551	0.495	11.98
3.70	12.14	41.60	0.52	0.728	0.000	0.728	1.27	56	2.17	47	2.23	50	2.21	2.23	0.50	1.20	48	1.8	83.7	0.135	0.972	0.556	0.497	12.14
3.75	12.30	44.90	0.58	0.738	0.000	0.738	1.31	60	2.16	50	2.22	54	2.19	2.22	0.50	1.19	51	1.7	87.5	0.142	0.971	0.560	0.499	12.30
3.80	12.47	43.40	0.58	0.748	0.000	0.748	1.36	57	2.18	48	2.24	52	2.22	2.24	0.50	1.18	49	1.8	87.1	0.141	0.971	0.565	0.501	12.47
3.85	12.63	41.30	0.59	0.758	0.000	0.758	1.46	53	2.22	46	2.28	49	2.26	2.28	0.50	1.17	46	1.9	87.4	0.142	0.971	0.570	0.504	12.63
3.90	12.80	43.70	0.59	0.768	0.000	0.768	1.37	56	2.19	48	2.25	51	2.23	2.25	0.50	1.17	49	1.8	87.3	0.142	0.970	0.574	0.506	12.80
3.95	12.96	48.80	0.64	0.778	0.000	0.778	1.33	62	2.15	53	2.20	57	2.18	2.20	0.50	1.16	54	1.7	90.5	0.149	0.970	0.579	0.508	12.96
4.00	13.12	58.10	0.70	0.787	0.000	0.787	1.22	73	2.07	63	2.12	67	2.10	2.12	0.50	1.15	64	1.5	95.6	0.161	0.969	0.584	0.510	13.12
4.05	13.29	65.70	0.74	0.797	0.000	0.797	1.14	81	2.02	71	2.06	75	2.04	2.06	0.50	1.14	72	1.4	100.0	0.173	0.969	0.589	0.512	13.29
4.10	13.45	67.60	0.85	0.807	0.000	0.807	1.27	83	2.04	73	2.08	77	2.07	2.08	0.50	1.14	74	1.4	105.0	0.188	0.969	0.593	0.514	13.45

Depth (m)	Soil Behavior Type Z Z	Factor of Safety FS	Liquefiable Layers	Sum of Liquefiable Thickness (m)	Sum of Non-Liq Thickness (m)	Ratio of Non-Liq to Liquefiable 0.98	Liq. 1.69 in. Settlement (in) Settlement	N-Value Conversion (tsf) qc	qc/N	N-Value	CSR	H_Index	V_Index	Liquefaction Settlemer 1.69 in. Strain%	Settlement	Cumulative Settlement
0.00																0
0.05	5 M	NL	0	0.00	0.05	---	0.1641	2.90	2.5	1.2	0.3899	2	15	1.00E-01	0.00E+00	0.00
0.10	7 S	NL	0	0.00	0.10	---	0.3281	29.00	8	3.6	0.3897	7	15	5.00E-02	0.00E+00	0.00
0.15	6 S	NL	0	0.00	0.15	---	0.4922	7.10	6	1.2	0.3896	2	15	1.00E-01	0.00E+00	0.00
0.20	6 S	NL	0	0.00	0.20	---	0.6562	8.60	6	1.4	0.3894	3	15	9.00E-02	0.00E+00	0.00
0.25	7 S	NL	0	0.00	0.25	---	0.8203	30.20	8	3.8	0.3893	7	15	5.00E-02	0.00E+00	0.00
0.30	7 S	NL	0	0.00	0.30	---	0.9843	52.00	8	6.5	0.3891	12	15	3.40E-02	0.00E+00	0.00
0.35	7 S	NL	0	0.00	0.35	---	1.1484	48.80	8	6.1	0.3890	12	15	3.40E-02	0.00E+00	0.00
0.40	7 S	NL	0	0.00	0.40	---	1.3124	46.20	8	5.8	0.3888	11	15	3.60E-02	0.00E+00	0.00
0.45	7 S	NL	0	0.00	0.45	---	1.4765	42.70	8	5.3	0.3887	10	15	3.80E-02	0.00E+00	0.00
0.50	7 S	NL	0	0.00	0.50	---	1.6405	38.30	8	4.8	0.3885	8	15	4.50E-02	0.00E+00	0.00
0.55	7 S	NL	0	0.00	0.55	---	1.8046	36.20	8	4.5	0.3884	8	15	4.50E-02	0.00E+00	0.00
0.60	6 S	NL	0	0.00	0.60	---	1.9686	31.50	6	5.3	0.3882	10	15	3.80E-02	0.00E+00	0.00
0.65	6 S	NL	0	0.00	0.65	---	2.1327	29.20	6	4.9	0.3881	9	15	4.00E-02	0.00E+00	0.00
0.70	6 S	NL	0	0.00	0.70	---	2.2967	26.20	6	4.4	0.3879	8	15	4.50E-02	0.00E+00	0.00
0.75	6 S	NL	0	0.00	0.75	---	2.4608	23.80	6	4.0	0.3878	7	15	5.00E-02	0.00E+00	0.00
0.80	6 S	NL	0	0.00	0.80	---	2.6248	24.50	6	4.1	0.3876	8	15	4.50E-02	0.00E+00	0.00
0.85	6 S	NL	0	0.00	0.85	---	2.7889	26.60	6	4.4	0.3875	8	15	4.50E-02	0.00E+00	0.00
0.90	6 S	NL	0	0.00	0.90	---	2.9529	22.60	6	3.8	0.3873	7	15	5.00E-02	0.00E+00	0.00
0.95	6 S	NL	0	0.00	0.95	---	3.1170	31.90	6	5.3	0.3872	10	15	3.80E-02	0.00E+00	0.00
1.00	6 S	NL	0	0.00	1.00	---	3.2810	31.50	6	5.3	0.3870	10	15	3.80E-02	0.00E+00	0.00
1.05	6 S	NL	0	0.00	1.05	---	3.4451	27.30	6	4.6	0.3869	8	15	4.50E-02	0.00E+00	0.00
1.10	6 S	NL	0	0.00	1.10	---	3.6091	26.30	6	4.4	0.3867	8	15	4.50E-02	0.00E+00	0.00
1.15	6 S	NL	0	0.00	1.15	---	3.7732	24.80	6	4.1	0.3866	8	15	4.50E-02	0.00E+00	0.00
1.20	6 S	NL	0	0.00	1.20	---	3.9372	22.50	6	3.8	0.3864	7	15	5.00E-02	0.00E+00	0.00
1.25	6 S	NL	0	0.00	1.25	---	4.1013	29.00	6	4.8	0.3863	9	15	4.00E-02	0.00E+00	0.00
1.30	6 S	NL	0	0.00	1.30	---	4.2653	38.40	6	6.4	0.3861	12	15	3.40E-02	0.00E+00	0.00
1.35	6 S	NL	0	0.00	1.35	---	4.4294	52.50	6	8.8	0.3860	16	15	2.80E-02	0.00E+00	0.00
1.40	6 S	NL	0	0.00	1.40	---	4.5934	52.30	6	8.7	0.3858	16	15	2.80E-02	0.00E+00	0.00
1.45	6 S	NL	0	0.00	1.45	---	4.7575	53.10	6	8.9	0.3857	16	15	2.80E-02	0.00E+00	0.00
1.50	6 S	NL	0	0.00	1.50	---	4.9215	51.40	6	8.6	0.3855	16	15	2.80E-02	0.00E+00	0.00
1.55	6 S	NL	0	0.00	1.55	---	5.0856	45.80	6	7.6	0.3854	14	15	3.00E-02	0.00E+00	0.00
1.60	6 S	NL	0	0.00	1.60	---	5.2496	42.20	6	7.0	0.3852	13	15	3.20E-02	0.00E+00	0.00
1.65	6 S	NL	0	0.00	1.65	---	5.4137	37.80	6	6.3	0.3851	12	15	3.40E-02	0.00E+00	0.00
1.70	6 S	NL	0	0.00	1.70	---	5.5777	32.70	6	5.5	0.3849	10	15	3.80E-02	0.00E+00	0.00
1.75	6 S	NL	0	0.00	1.75	---	5.7418	29.00	6	4.8	0.3848	9	15	4.00E-02	0.00E+00	0.00
1.80	6 S	NL	0	0.00	1.80	---	5.9058	26.90	6	4.5	0.3846	8	15	4.50E-02	0.00E+00	0.00
1.85	5 M	NL	0	0.00	1.85	---	6.0699	25.00	2.5	10.0	0.3845	18	15	2.60E-02	0.00E+00	0.00
1.90	5 M	NL	0	0.00	1.90	---	6.2339	24.20	2.5	9.7	0.3843	18	15	2.60E-02	0.00E+00	0.00
1.95	5 M	NL	0	0.00	1.95	---	6.3980	22.60	2.5	9.0	0.3842	17	15	2.70E-02	0.00E+00	0.00
2.00	5 M	NL	0	0.00	2.00	---	6.5620	23.20	2.5	9.3	0.3840	17	15	2.70E-02	0.00E+00	0.00
2.05	5 M	NL	0	0.00	2.05	---	6.7261	22.90	2.5	9.2	0.3877	17	15	2.70E-02	0.00E+00	0.00
2.10	5 M	0.56	1	0.05	2.05	41.00	6.8901	25.60	2.5	10.2	0.3923	19	15	2.50E-02	0.00E+00	0.00
2.15	6 S	0.52	1	0.10	2.05	20.50	7.0542	34.00	6	5.7	0.3969	11	15	3.60E-02	7.09E-02	0.07
2.20	6 S	0.53	1	0.15	2.05	13.67	7.2182	44.60	6	7.4	0.4013	13	16	3.20E-02	6.30E-02	0.13
2.25	6 S	0.52	1	0.20	2.05	10.25	7.3823	48.80	6	8.1	0.4056	15	16	2.90E-02	5.71E-02	0.19
2.30	6 S	0.54	1	0.25	2.05	8.20	7.5463	53.60	6	8.9	0.4099	16	16	2.80E-02	5.51E-02	0.25
2.35	6 S	0.61	1	0.30	2.05	6.83	7.7104	63.60	6	10.6	0.4140	19	16	2.50E-02	4.92E-02	0.30
2.40	6 S	0.69	1	0.35	2.05	5.86	7.8744	71.80	6	12.0	0.4180	21	16	2.30E-02	4.53E-02	0.34
2.45	6 S	0.70	1	0.40	2.05	5.13	8.0385	72.30	6	12.1	0.4220	21	16	2.30E-02	4.53E-02	0.39
2.50	6 S	0.68	1	0.45	2.05	4.56	8.2025	69.90	6	11.7	0.4258	20	16	2.40E-02	4.72E-02	0.43
2.55	6 S	0.71	1	0.50	2.05	4.10	8.3666	74.90	6	12.5	0.4296	21	16	2.30E-02	4.53E-02	0.48
2.60	6 S	0.72	1	0.55	2.05	3.73	8.5306	74.90	6	12.5	0.4332	21	16	2.30E-02	4.53E-02	0.52
2.65	6 S	0.81	1	0.60	2.05	3.42	8.6947	82.20	6	13.7	0.4368	23	16	2.10E-02	4.13E-02	0.56
2.70	6 S	0.87	1	0.65	2.05	3.15	8.8587	85.40	6	14.2	0.4403	24	16	2.00E-02	3.94E-02	0.60
2.75	6 S	0.88	1	0.70	2.05	2.93	9.0228	86.10	6	14.4	0.4438	24	16	2.00E-02	3.94E-02	0.64
2.80	6 S	0.94	1	0.75	2.05	2.73	9.1868	90.60	6	15.1	0.4471	24	16	2.00E-02	3.94E-02	0.68
2.85	6 S	1.06	1	0.80	2.05	2.56	9.3509	97.00	6	16.2	0.4504	25	17	1.90E-02	3.74E-02	0.72
2.90	6 S	1.10	1	0.85	2.05	2.41	9.5149	99.70	6	16.6	0.4536	26	17	1.80E-02	3.54E-02	0.76
2.95	6 S	1.13	1	0.90	2.05	2.28	9.6790	101.80	6	17.0	0.4568	26	17	1.80E-02	3.54E-02	0.79
3.00	6 S	1.01	1	0.95	2.05	2.16	9.8430	97.50	6	16.3	0.4598	25	17	1.90E-02	3.74E-02	0.83
3.05	6 S	0.92	1	1.00	2.05	2.05	10.0071	92.80	6	15.5	0.4628	25	17	1.90E-02	3.74E-02	0.87
3.10	6 S	0.77	1	1.05	2.05	1.95	10.1711	85.00	6	14.2	0.4658	24	17	2.00E-02	3.94E-02	0.91
3.15	6 S	0.67	1	1.10	2.05	1.86	10.3352	72.00	6	12.0	0.4687	21	17	2.30E-02	4.53E-02	0.95
3.20	5 M	0.68	1	1.15	2.05	1.78	10.4992	54.70	2.5	21.9	0.4715	30	17	1.40E-02	0.00E+00	0.95
3.25	5 M	NL	0	1.15	2.10	1.83	10.6633	35.00	2.5	14.0	0.4743	23	17	2.10E-02	0.00E+00	0.95
3.30	5 M	NL	0	1.15	2.15	1.87	10.8273	24.40	2.5	9.8	0.4770	18	17	2.60E-02	0.00E+00	0.95
3.35	4 C	NL	0	1.15	2.20	1.91	10.9914	20.50	2	10.3	0.4797	19	17	2.50E-02	0.00E+00	0.95
3.40	5 M	NL	0	1.15	2.25	1.96	11.1554	21.10	2.5	8.4	0.4823	15	17	2.90E-02	0.00E+00	0.95
3.45	4 C	NL	0	1.15	2.30	2.00	11.3195	20.00	2	10.0	0.4848	18	17	2.60E-02	0.00E+00	0.95
3.50	5 M	NL	0	1.15	2.35	2.04	11.4835	26.60	2.5	10.6	0.4873	19	17	2.50E-02	0.00E+00	0.95
3.55	5 M	NL	0	1.15	2.40	2.09	11.6476	27.30	2.5	10.9	0.4898	20	17	2.40E-02	0.00E+00	0.95
3.60	5 M	NL	0	1.15	2.45	2.13	11.8116	24.40	2.5	9.8	0.4922	18	17	2.60E-02	0.00E+00	0.95
3.65	5 M	0.39	1	1.20	2.45	2.04	11.9757	32.90	2.5	13.2	0.4945	22	17	2.20E-02	0.00E+00	0.95
3.70	5 M	0.41	1	1.25	2.45	1.96	12.1397	41.60	2.5	16.6	0.4969	26	17	1.80E-02	0.00E+00	0.95
3.75	5 M	0.43	1	1.30	2.45	1.88	12.3038	44.90	2.5	18.0	0.4991	27	17	1.70E-02	0.00E+00	0.95
3.80	5 M	0.42	1	1.35	2.45	1.81	12.4678	43.40	2.5	17.4	0.5014	26	18	1.80E-02	0.00E+00	0.95
3.85	5 M	0.42	1	1.40	2.45	1.75	12.6319	41.30	2.5	16.5	0.5035	26	18	1.80E-02	0.00E+00	0.95
3.90	5 M	0.42	1	1.45	2.45	1.69	12.7959	43.70	2.5	17.5	0.5057	27	18	1.70E-02	0.00E+00	0.95
3.95	5 M	0.44	1	1.50	2.45	1.63	12.9600	48.80	2.5	19.5	0.5078	28	18	1.60E-02	0.00E+00	0.95
4.00	5 M	0.47	1	1.55	2.45	1.58	13.1240	58.10	2.5	23.2	0.5099	31	18	1.30E-02	0.00E+00	0.95
4.05	6 S	0.51	1	1.60	2.45	1.53	13.2881	65.70	6	11.0	0.5119	20	18	2.40E-02	4.72E-02	1.00
4.10	6 S	0.55	1	1.65	2.45	1.48	13.4521	67.60	6	11.3	0.5139	20	18	2.40E-02	4.72E-02	1.05

SPREADSHEET TO CALCULATE CYCLIC RESISTANCE RATIO USING CPT DATA

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CP1-8 CPT DATE: 12/19/05 KTE
DATE : 12/27/2007
amax = 0.6 g
M = 7.50
MSF = 1.5

Ic = (((3.47-LOG(Q))^2)+(LOG(F%)+1.22)^2)^0.5
dqc1N = IF(FC>=35,60,IF(FC<=5,0,2*(FC-5)))
CRR = IF(qc1Ncs<50,(0.833*(qc1Ncs/1000)+0.05),(93*(qc1Ncs/1000)^3+0.08))
MSF = 10^2.24/M^2.56
CSR = 0.65(amax/g)(sigv/sigv')rd = Seed's Equation
Z = IF(Ic<1.31,7,IF(Ic<2.05,6,IF(Ic<2.6,5,IF(Ic<2.95,4,IF(Ic<3.6,3,2)))))
Q = [(qc-St)/Pa]*[(Pa/S')^n]
Kc = IF(Ic<=1.64,1,(-0.403*Ic^4+5.581*Ic^3-21.63*Ic^2+33.75*Ic-17.88))

Liquefiable Soil (Type 5+ or 6+) = 2.4
Seismic Settlement Soil (Type) = 6
Actual Water = 27 feet
Design Water = 6.6 feet
Gamma = 120 pcf
rd = 2

Added Fill = 0 feet
Fill Density = 125 pcf
Pa = 1.04427 tsf = 100 kPa
Threshold FS = 1.25

FS = CRR*MSF/CSR

FS = Threshold Factor of Safety
NL = Above water or Soil Behavior Type is not liquefiable

Z	Soil
3	Clay to Silty Clay
4	Clayey Silt to Silty Clay
5	Silty Sand to Sandy Silt
6	Clean Sand to Silty Sand
7	Gravelly Sand to Sand

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-8 CPT DATE: 12/19/05 KTE
DATE : 12/27/2007
amax = 0.6 g
M = 7.50

Depth (m)	Depth (ft)	Tip Resist qc (tsf)	Sleeve Fric fs (tsf)	Total Stress (tsf) 0.00	Water Pressure (tsf) Sw	Effective Stress (tsf) S' = St - Sw	Norm. Fr. Ratio F (%) = fs/(qc-St)	Norm. Pen. Res. Q for n=1 (qc-St)/S'	Soil Index Ic for n=1	Norm. Pen. Res. Q for n= 0.5	Soil Index Ic for n=0.5	Norm. Pen. Res. Q for n= 0.7	Soil Index Ic for n=0.7	Soil Index Ic	Cq exp n	Overburden Correction Cq = 1.7 > (Pa/S')^n	Norm. Cone Res. qc1N = qc*Cq/Pa	Grain Char. Corr. Kc	Equivalent Clean Sand Cone Res. (qc1N)cs = Kc*qc1N	Cyclic Resistance Ratio CRR CRR
4.15	13.62	61.70	0.93	0.817	0.000	0.817	1.53	75	2.13	66	2.17	69	2.15	2.17	0.50	1.13	67	1.6	106.2	0.191
4.20	13.78	54.00	0.95	0.827	0.000	0.827	1.79	64	2.22	57	2.26	60	2.24	2.26	0.50	1.12	58	1.8	105.9	0.190
4.25	13.94	59.30	0.87	0.837	0.000	0.837	1.49	70	2.14	63	2.18	65	2.16	2.18	0.50	1.12	63	1.6	102.3	0.180
4.30	14.11	65.30	0.78	0.846	0.000	0.846	1.21	76	2.05	69	2.09	71	2.08	2.09	0.50	1.11	69	1.4	99.8	0.172
4.35	14.27	75.00	0.65	0.856	0.000	0.856	0.88	87	1.92	78	1.96	82	1.94	1.96	0.50	1.10	79	1.2	99.1	0.170
4.40	14.44	71.40	0.81	0.866	0.000	0.866	1.15	81	2.02	74	2.05	77	2.04	2.05	0.50	1.10	75	1.4	102.8	0.181
4.45	14.60	62.50	1.07	0.876	0.000	0.876	1.74	70	2.18	64	2.21	67	2.20	2.21	0.50	1.09	65	1.7	110.7	0.206
4.50	14.76	49.30	1.09	0.886	0.000	0.886	2.25	55	2.34	50	2.37	52	2.36	2.37	0.50	1.09	51	2.2	111.7	0.210
4.55	14.93	44.80	1.17	0.896	0.000	0.896	2.66	49	2.42	45	2.45	47	2.44	2.45	0.50	1.08	46	2.5	116.8	0.228
4.60	15.09	45.50	1.15	0.906	0.000	0.906	2.58	49	2.41	46	2.44	47	2.43	2.44	0.50	1.07	47	2.5	115.3	0.222
4.65	15.26	45.60	0.99	0.915	0.000	0.915	2.22	49	2.37	46	2.39	47	2.38	2.39	0.50	1.07	47	2.3	106.5	0.192
4.70	15.42	57.10	0.85	0.925	0.000	0.925	1.51	61	2.19	57	2.21	59	2.20	2.21	0.50	1.06	58	1.7	98.6	0.169
4.75	15.58	59.00	0.67	0.935	0.000	0.935	1.15	62	2.11	59	2.13	60	2.12	2.13	0.50	1.06	60	1.5	90.3	0.148
4.80	15.75	50.50	0.49	0.945	0.000	0.945	0.99	52	2.13	50	2.15	51	2.14	2.15	0.50	1.05	51	1.5	78.8	0.125
4.85	15.91	45.30	0.49	0.955	0.000	0.955	1.10	46	2.20	44	2.22	45	2.21	2.22	0.50	1.05	45	1.7	77.6	0.123
4.90	16.08	47.00	0.54	0.965	0.000	0.965	1.17	48	2.21	46	2.22	47	2.22	2.22	0.50	1.04	47	1.7	80.5	0.129
4.95	16.24	51.90	0.85	0.974	0.000	0.974	1.67	52	2.27	50	2.28	51	2.28	2.28	0.50	1.04	51	1.9	97.2	0.165
5.00	16.41	47.90	0.99	0.984	0.000	0.984	2.11	48	2.37	46	2.38	47	2.37	2.38	0.50	1.03	47	2.2	104.6	0.186
5.05	16.57	42.70	0.67	0.994	0.000	0.994	1.61	42	2.33	41	2.34	41	2.34	2.34	0.50	1.02	42	2.1	87.6	0.143
5.10	16.73	94.90	0.61	1.004	0.000	1.004	0.65	94	1.82	92	1.83	92	1.82	1.83	0.50	1.02	93	1.1	104.5	0.186
5.15	16.90	160.90	0.63	1.014	0.000	1.014	0.39	158	1.51	155	1.52	156	1.51	1.52	0.50	1.01	156	1.0	156.4	0.436
5.20	17.06	202.70	0.69	1.024	0.000	1.024	0.34	197	1.40	195	1.40	196	1.40	1.40	0.50	1.01	196	1.0	196.1	0.781
5.25	17.23	224.80	0.76	1.034	0.000	1.034	0.34	217	1.36	215	1.36	216	1.36	1.36	0.50	1.01	216	1.0	216.4	1.022
5.30	17.39	247.10	0.91	1.043	0.000	1.043	0.37	236	1.35	236	1.35	236	1.35	1.35	0.50	1.00	237	1.0	236.7	1.314
5.35	17.55	267.10	0.91	1.053	0.000	1.053	0.34	253	1.31	254	1.31	253	1.31	1.31	0.50	1.00	255	1.0	254.7	1.616
5.40	17.72	270.80	0.82	1.063	0.000	1.063	0.30	254	1.28	256	1.27	255	1.27	1.27	0.50	0.99	257	1.0	257.0	1.659
5.45	17.88	273.30	1.03	1.073	0.000	1.073	0.38	254	1.33	257	1.33	256	1.33	1.33	0.50	0.99	258	1.0	258.2	1.681
5.50	18.05	274.20	0.91	1.083	0.000	1.083	0.33	252	1.30	257	1.29	255	1.30	1.29	0.50	0.98	258	1.0	257.9	1.675
5.55	18.21	264.90	1.23	1.093	0.000	1.093	0.47	241	1.40	247	1.40	245	1.40	1.40	0.50	0.98	248	1.0	248.0	1.499
5.60	18.37	226.50	1.22	1.102	0.000	1.102	0.54	204	1.50	210	1.49	208	1.50	1.49	0.50	0.97	211	1.0	211.1	0.955
5.65	18.54	242.10	1.05	1.112	0.000	1.112	0.44	217	1.42	224	1.41	221	1.42	1.41	0.50	0.97	225	1.0	224.6	1.134
5.70	18.70	227.40	1.00	1.122	0.000	1.122	0.44	202	1.45	209	1.44	206	1.44	1.44	0.50	0.96	210	1.0	210.1	0.942
5.75	18.87	213.60	0.88	1.132	0.000	1.132	0.41	188	1.46	195	1.45	192	1.45	1.45	0.50	0.96	196	1.0	196.5	0.785
5.80	19.03	203.90	0.65	1.142	0.000	1.142	0.32	178	1.42	186	1.40	182	1.41	1.40	0.50	0.96	187	1.0	186.7	0.686
5.85	19.19	201.90	0.66	1.152	0.000	1.152	0.33	174	1.43	183	1.41	180	1.42	1.41	0.50	0.95	184	1.0	184.1	0.660
5.90	19.36	192.60	0.53	1.161	0.000	1.161	0.28	165	1.42	174	1.40	170	1.40	1.40	0.50	0.95	175	1.0	174.9	0.577
5.95	19.52	192.60	0.58	1.171	0.000	1.171	0.30	163	1.44	173	1.42	169	1.43	1.42	0.50	0.94	174	1.0	174.1	0.571
6.00	19.69	169.00	0.78	1.181	0.000	1.181	0.46	142	1.59	151	1.57	147	1.58	1.57	0.50	0.94	152	1.0	152.2	0.408
6.05	19.85	126.20	0.95	1.191	0.000	1.191	0.76	105	1.82	112	1.80	109	1.81	1.80	0.50	0.94	113	1.1	125.0	0.262
6.10	20.01	101.80	1.02	1.201	0.000	1.201	1.01	84	1.97	90	1.95	87	1.96	1.95	0.50	0.93	91	1.2	112.7	0.213
6.15	20.18	85.40	1.45	1.211	0.000	1.211	1.72	70	2.18	75	2.16	73	2.17	2.16	0.50	0.93	76	1.6	119.6	0.239
6.20	20.34	64.00	1.62	1.221	0.000	1.221	2.58	51	2.40	56	2.37	54	2.38	2.37	0.50	0.92	57	2.2	125.3	0.263
6.25	20.51	59.20	1.67	1.230	0.000	1.230	2.88	47	2.46	51	2.43	49	2.44	2.43	0.50	0.92	52	2.5	128.2	0.276
6.30	20.67	67.40	1.48	1.240	0.000	1.240	2.24	53	2.35	58	2.32	56	2.33	2.32	0.50	0.92	59	2.0	118.9	0.236
6.35	20.83	89.30	1.29	1.250	0.000	1.250	1.47	70	2.13	77	2.10	74	2.12	2.10	0.50	0.91	78	1.5	114.3	0.219
6.40	21.00	139.50	2.26	1.260	0.000	1.260	1.63	110	2.02	121	2.00	116	2.01	2.00	0.50	0.91	122	1.3	157.5	0.443
6.45	21.16	179.70	1.69	1.270	0.000	1.270	0.95	141	1.78	155	1.75	149	1.76	1.75	0.50	0.91	156	1.1	167.4	0.517
6.50	21.33	240.80	1.59	1.280	0.000	1.280	0.66	187	1.59	207	1.55	199	1.57	1.55	0.50	0.90	208	1.0	208.3	0.921
6.55	21.49	266.80	1.48	1.289	0.000	1.289	0.56	206	1.51	229	1.47	219	1.49	1.47	0.50	0.90	230	1.0	229.9	1.210
6.60	21.65	268.50	1.87	1.299	0.000	1.299	0.70	206	1.57	229	1.54	220	1.55	1.54	0.50	0.90	231	1.0	230.5	1.219
6.65	21.82	307.20	5.03	1.309	0.000	1.309	1.64	234	1.81	262	1.78	250	1.79	1.78	0.50	0.89	263	1.1	287.1	2.280
6.70	21.98	283.50	3.21	1.319	0.000	1.319	1.14	214	1.71	240	1.68	229	1.69	1.68	0.50	0.89	242	1.0	247.0	1.482
6.75	22.15	308.80	3.18	1.329	0.000	1.329	1.03	231	1.66	261	1.62	249	1.64	1.62	0.50	0.89	262	1.0	262.1	1.755
6.80	22.31	223.30	2.62	1.339	0.000	1.339	1.18	166	1.80	188	1.76	179	1.78	1.76	0.50	0.88	189	1.1	203.8	0.867
6.85	22.47	265.10	2.46	1.348	0.000	1.348	0.93	196	1.67	222	1.64	211	1.65	1.64	0.50	0.88	223	1.0	223.4	1.117
6.90	22.64	297.80	3.34	1.358	0.000	1.358	1.13	218	1.70	249	1.66	236	1.68	1.66	0.50	0.88	250	1.0	253.5	1.594
6.95	22.80	368.00	3.49	1.368	0.000	1.368	0.95	268	1.59	307	1.55	291	1.57	1.55	0.50	0.87	308	1.0	307.9	2.794
7.00	22.97	365.10	3.49	1.378	0.000	1.378	0.96	264	1.60	303	1.56	287	1.57	1.56	0.50	0.87	304	1.0	304.4	2.702
7.05	23.13	333.80	2.73	1.388	0.000	1.388	0.82	240	1.57	276	1.53	261	1.55	1.53	0.50	0.87	277	1.0	277.3	2.062
7.10	23.30	326.40	2.01	1.398	0.000	1.398	0.62	233	1.50	269	1.45	254	1.47	1.45	0.50	0.86	270	1.0	270.2	1.914
7.15	23.46	348.90	1.53	1.408	0.000	1.408	0.44	247	1.38	287	1.33	270	1.35	1.33	0.50	0.86	288	1.0	287.8	2.297
7.20	23.62	362.90	2.24	1.417	0.000	1.417	0.62	255	1.47	297	1.42	280	1.44	1.42	0.50	0.86	298	1.0	298.3	2.548
7.25	23.79	322.40	3.08	1.427	0.000	1.427	0.96	225	1.64	263	1.60	247	1.61	1.60	0.50	0.86	264	1.0	264.1	1.793
7.30	23.95	308.40	2.73	1.437	0.000	1.437	0.89	214	1.63	251	1.59	235	1.60	1.59	0.50	0.85	252	1.0	251.7	1.564
7.35	24.12	286.80	2.71	1.447	0.000	1.447	0.95	197	1.68	232	1.63	217	1.65	1.63	0.50	0.85	233	1.0	233.3	1.261
7.40	24.28	282.50	2.03	1.457	0.000	1.457	0.72	193	1.60	228	1.55	213	1.57	1.55	0.50	0.85	229	1.0	229.0	1.197
7.45	24.44	245.30	1.80	1.467	0.000	1.467	0.74	166	1.66	197	1.60	184	1.62	1.60	0.50	0.84	198	1.0	198.2	0.804
7.50	24.61	234.90	1.13	1.476	0.000	1.476	0.48	158	1.56	188	1.50	175	1.52	1.50	0.50	0.84	189	1.0	189.2	0.710
7.55	24.77	229.10	0.95	1.486	0.000	1.486	0.42	153	1.54	183	1.47	170	1.50	1.47	0.50	0.84	184	1.0	183.9	0.658
7.60	24.94	232.30	0.77	1.496	0.000	1.496	0.33	154	1.48	185	1.41	172	1.44	1.41	0.50	0.84	186	1.0	185.8	0.677
7.65	25.10	233.70	0.81	1.506	0.000	1.506	0.35	154	1.49	185	1.42	172	1.45	1.42	0.50	0.83	186	1.0	186.4	0.682
7.70	25.26	241.50	1.14	1.516	0.000	1.516	0.48	158	1.56	191	1.49	177	1.52	1.49	0.50	0.83	192	1.0	191.9	0.738
7.75	25.43	248.30	1.03	1.526	0.000	1.526	0.42	162	1.52	196	1.45	181	1.47	1.45	0.50	0.83	197	1.0	196.7	0.788
7.80	25.59	252.20	1.53	1.536	0.000	1.536	0.61	163	1.61	198	1.55	183	1.57	1.55	0.50	0.82	199	1.0	199.2	0.815
7.85	25.76	275.30	1.52	1.545	0.000	1.545	0.56	177	1.56	215	1.49	199	1.52	1.49	0.50	0.82	217	1.0	216.7	1.027
7.90	25.92	284.70	1.58	1.555	0.000	1.555	0.56	182	1.55	222	1.48	205	1.51	1.48	0.50	0.82	223	1.0	223.4	1.117
7.95	26.08	291.30	1.66	1.565	0.000	1.565	0.57	185	1.55	227	1.48	209	1.51	1.48	0.50	0.82	228	1.0	227.9	1.180
8.00	26.25	284.40	1.31	1.575	0.000	1.575	0.46	180	1.50	221	1.43	203	1.46	1.43	0.50	0.81	222	1.0	221.8	1.094
8.05	26.41	255.30	1.28	1.585	0.000	1.585	0.50	160	1.57	197	1.49	181	1.52	1.49	0.50	0.81	198	1.0	198.5	0.807
8.10	26.58	245.00	1.11	1.595	0.000	1.595	0.46	153	1.56	189	1.48	173	1.51	1.48	0.50	0.81	190	1.0	189.9	0.716
8.15	26.74	246.00	1.05	1.604	0.000	1.604	0.43	152	1.54	189	1.47	173	1.50	1.47	0.50	0.81	190	1.0	190.1	0.718
8.20	26.90	243.10	1.08	1.614	0.000	1.614	0.45	150	1.56	186	1.48	170	1.51	1.48	0.50	0.80	187	1.0	187.2	0.690
8.25	27.07	238.50	1.07	1.624	0.002	1.622	0.45	146	1.57	182	1.49	167	1.52	1.49	0.50	0.80	183	1.0	183.3	0.652
8.30	27.23	212.30	0.99	1.634	0.007	1.627	0.47	130	1.62	162	1.55	148	1.58	1.55	0.50	0.80	163	1.0	162.9	0.482
8.35	27.40	187.20	1.18	1.644	0.012	1.631	0.64	114	1.75	142	1.67	130	1.70	1.67	0.50	0.80	143	1.0	145.7	0.368
8.40	27.56	195.60	1.33	1.654	0.017	1.636	0.69	119	1.75	148	1.67	136	1.70	1.67	0.50	0.80	150	1.0	152.6	0.411

Depth (m)	rd rd	Design Effective Stress (tsf) S' = St - Sw	Cyclic Stress Ratio CSR CSR	Depth (ft) Depth	Soil Behavior Type Z Z	Factor of Safety FS	Liquefiable Layers	Sum of Liquefiable Thickness (m)	Sum of Non-Liq Thickness (m)	Ratio of Non-Liq to Liquefiable 0.98	Liq. 1.69 in. Settlement (in) Settlement	N-Value Conversion (tsf) qc	qc/N	N-Value	CSR	H_Index	V_Index	Strain%	Settlement	Liquefaction Settlemer 1.69 in. Cumulative Settlement
4.15	0.968	0.598	0.516	13.62	5M	0.56	1	1.70	2.45	1.44	13.6162	61.70	2.5	24.7	0.5158	31	18	1.30E-02	0.00E+00	1.05
4.20	0.968	0.603	0.518	13.78	5M	0.55	1	1.75	2.45	1.40	13.7802	54.00	2.5	21.6	0.5178	30	18	1.40E-02	0.00E+00	1.05
4.25	0.967	0.608	0.520	13.94	5M	0.52	1	1.80	2.45	1.36	13.9443	59.30	2.5	23.7	0.5196	31	18	1.30E-02	0.00E+00	1.05
4.30	0.967	0.612	0.521	14.11	5M	0.50	1	1.85	2.45	1.32	14.1083	65.30	2.5	26.1	0.5215	32	18	1.20E-02	0.00E+00	1.05
4.35	0.967	0.617	0.523	14.27	6S	0.49	1	1.90	2.45	1.29	14.2724	75.00	6	12.5	0.5233	22	18	2.20E-02	4.33E-02	1.09
4.40	0.966	0.622	0.525	14.44	6S	0.52	1	1.95	2.45	1.26	14.4364	71.40	6	11.9	0.5251	21	18	2.30E-02	4.53E-02	1.13
4.45	0.966	0.626	0.527	14.60	5M	0.59	1	2.00	2.45	1.23	14.6005	62.50	2.5	25.0	0.5268	32	18	1.20E-02	0.00E+00	1.13
4.50	0.966	0.631	0.529	14.76	5M	0.60	1	2.05	2.45	1.20	14.7645	49.30	2.5	19.7	0.5286	28	18	1.60E-02	0.00E+00	1.13
4.55	0.965	0.636	0.530	14.93	5M	NL	0	2.05	2.50	1.22	14.9286	44.80	2.5	17.9	0.5303	27	18	1.70E-02	0.00E+00	1.13
4.60	0.965	0.641	0.532	15.09	5M	NL	0	2.05	2.55	1.24	15.0926	45.50	2.5	18.2	0.5319	27	18	1.70E-02	0.00E+00	1.13
4.65	0.964	0.645	0.534	15.26	5M	0.54	1	2.10	2.55	1.21	15.2567	45.60	2.5	18.2	0.5336	27	18	1.70E-02	0.00E+00	1.13
4.70	0.964	0.650	0.535	15.42	5M	0.47	1	2.15	2.55	1.19	15.4207	57.10	2.5	22.8	0.5352	30	18	1.40E-02	0.00E+00	1.13
4.75	0.964	0.655	0.537	15.58	5M	0.41	1	2.20	2.55	1.16	15.5848	59.00	2.5	23.6	0.5367	31	18	1.30E-02	0.00E+00	1.13
4.80	0.963	0.659	0.538	15.75	5M	0.35	1	2.25	2.55	1.13	15.7488	50.50	2.5	20.2	0.5383	29	18	1.50E-02	0.00E+00	1.13
4.85	0.963	0.664	0.540	15.91	5M	0.34	1	2.30	2.55	1.11	15.9129	45.30	2.5	18.1	0.5398	27	18	1.70E-02	0.00E+00	1.13
4.90	0.963	0.669	0.541	16.08	5M	0.36	1	2.35	2.55	1.09	16.0769	47.00	2.5	18.8	0.5413	28	18	1.60E-02	0.00E+00	1.13
4.95	0.962	0.674	0.543	16.24	5M	0.46	1	2.40	2.55	1.06	16.2410	51.90	2.5	20.8	0.5428	29	18	1.50E-02	0.00E+00	1.13
5.00	0.962	0.678	0.544	16.41	5M	0.51	1	2.45	2.55	1.04	16.4050	47.90	2.5	19.2	0.5442	28	18	1.60E-02	0.00E+00	1.13
5.05	0.961	0.683	0.546	16.57	5M	0.39	1	2.50	2.55	1.02	16.5691	42.70	2.5	17.1	0.5456	26	18	1.80E-02	0.00E+00	1.13
5.10	0.961	0.688	0.547	16.73	6S	0.51	1	2.55	2.55	1.00	16.7331	94.90	6	15.8	0.5470	25	18	1.90E-02	3.74E-02	1.17
5.15	0.961	0.693	0.548	16.90	6S	1.19	1	2.60	2.55	0.98	16.8972	160.90	6	26.8	0.5484	33	18	1.10E-02	2.17E-02	1.19
5.20	0.960	0.697	0.550	17.06	6S	2.13	0	2.60	2.60	1.00	17.0612	202.70	6	33.8	0.5498	40	18	3.00E-03	0.00E+00	1.19
5.25	0.960	0.702	0.551	17.23	6S	2.78	0	2.60	2.65	1.02	17.2253	224.80	6	37.5	0.5511	42	18	1.00E-03	0.00E+00	1.19
5.30	0.959	0.707	0.552	17.39	6S	3.57	0	2.60	2.70	1.04	17.3893	247.10	6	41.2	0.5524	42	18	1.00E-03	0.00E+00	1.19
5.35	0.959	0.711	0.554	17.55	7S	4.38	0	2.60	2.75	1.06	17.5534	267.10	8	33.4	0.5537	39	18	5.00E-03	0.00E+00	1.19
5.40	0.959	0.716	0.555	17.72	7S	4.48	0	2.60	2.80	1.08	17.7174	270.80	8	33.9	0.5550	40	18	3.00E-03	0.00E+00	1.19
5.45	0.958	0.721	0.556	17.88	6S	4.53	0	2.60	2.85	1.10	17.8815	273.30	6	45.6	0.5562	42	18	1.00E-03	0.00E+00	1.19
5.50	0.958	0.726	0.557	18.05	7S	4.51	0	2.60	2.90	1.12	18.0455	274.20	8	34.3	0.5574	41	18	2.00E-03	0.00E+00	1.19
5.55	0.958	0.730	0.559	18.21	6S	4.02	0	2.60	2.95	1.13	18.2096	264.90	6	44.2	0.5586	42	18	1.00E-03	0.00E+00	1.19
5.60	0.957	0.735	0.560	18.37	6S	2.56	0	2.60	3.00	1.15	18.3736	226.50	6	37.8	0.5598	42	18	1.00E-03	0.00E+00	1.19
5.65	0.957	0.740	0.561	18.54	6S	3.03	0	2.60	3.05	1.17	18.5377	242.10	6	40.4	0.5610	42	18	1.00E-03	0.00E+00	1.19
5.70	0.956	0.745	0.562	18.70	6S	2.51	0	2.60	3.10	1.19	18.7017	227.40	6	37.9	0.5622	42	18	1.00E-03	0.00E+00	1.19
5.75	0.956	0.749	0.563	18.87	6S	2.09	0	2.60	3.15	1.21	18.8658	213.60	6	35.6	0.5633	42	18	1.00E-03	0.00E+00	1.19
5.80	0.956	0.754	0.564	19.03	6S	1.82	0	2.60	3.20	1.23	19.0298	203.90	6	34.0	0.5644	40	18	3.00E-03	0.00E+00	1.19
5.85	0.955	0.759	0.565	19.19	6S	1.75	0	2.60	3.25	1.25	19.1939	201.90	6	33.7	0.5655	40	18	3.00E-03	0.00E+00	1.19
5.90	0.955	0.763	0.567	19.36	6S	1.53	0	2.60	3.30	1.27	19.3579	192.60	6	32.1	0.5666	38	18	6.00E-03	0.00E+00	1.19
5.95	0.954	0.768	0.568	19.52	6S	1.51	0	2.60	3.35	1.29	19.5220	192.60	6	32.1	0.5676	38	18	6.00E-03	0.00E+00	1.19
6.00	0.954	0.773	0.569	19.69	6S	1.08	1	2.65	3.35	1.26	19.6860	169.00	6	28.2	0.5687	33	18	1.10E-02	2.17E-02	1.21
6.05	0.954	0.778	0.570	19.85	6S	0.69	1	2.70	3.35	1.24	19.8501	126.20	6	21.0	0.5697	29	18	1.50E-02	2.95E-02	1.24
6.10	0.953	0.782	0.571	20.01	6S	0.56	1	2.75	3.35	1.22	20.0141	101.80	6	17.0	0.5707	26	18	1.80E-02	3.54E-02	1.28
6.15	0.953	0.787	0.572	20.18	5M	0.63	1	2.80	3.35	1.20	20.1782	85.40	2.5	34.2	0.5717	41	18	2.00E-03	0.00E+00	1.28
6.20	0.953	0.792	0.573	20.34	5M	0.69	1	2.85	3.35	1.18	20.3422	64.00	2.5	25.6	0.5727	32	18	1.20E-02	0.00E+00	1.28
6.25	0.952	0.797	0.574	20.51	5M	NL	0	2.85	3.40	1.19	20.5063	59.20	2.5	23.7	0.5736	31	18	1.30E-02	0.00E+00	1.28
6.30	0.952	0.801	0.575	20.67	5M	0.62	1	2.90	3.40	1.17	20.6703	67.40	2.5	27.0	0.5746	33	18	1.10E-02	0.00E+00	1.28
6.35	0.951	0.806	0.576	20.83	5M	0.57	1	2.95	3.40	1.15	20.8344	89.30	2.5	35.7	0.5755	42	18	1.00E-03	0.00E+00	1.28
6.40	0.951	0.811	0.576	21.00	6S	1.15	1	3.00	3.40	1.13	20.9984	139.50	6	23.3	0.5764	31	18	1.30E-02	2.56E-02	1.31
6.45	0.951	0.815	0.577	21.16	6S	1.34	0	3.00	3.45	1.15	21.1625	179.70	6	30.0	0.5773	36	18	8.00E-03	0.00E+00	1.31
6.50	0.950	0.820	0.578	21.33	6S	2.39	0	3.00	3.50	1.17	21.3265	240.80	6	40.1	0.5782	42	18	1.00E-03	0.00E+00	1.31
6.55	0.950	0.825	0.579	21.49	6S	3.14	0	3.00	3.55	1.18	21.4906	266.80	6	44.5	0.5791	42	18	1.00E-03	0.00E+00	1.31
6.60	0.950	0.830	0.580	21.65	6S	3.15	0	3.00	3.60	1.20	21.6546	268.50	6	44.8	0.5800	42	18	1.00E-03	0.00E+00	1.31
6.65	0.949	0.834	0.581	21.82	6S	5.89	0	3.00	3.65	1.22	21.8187	307.20	6	51.2	0.5808	42	18	1.00E-03	0.00E+00	1.31
6.70	0.949	0.839	0.582	21.98	6S	3.82	0	3.00	3.70	1.23	21.9827	283.50	6	47.3	0.5817	42	18	1.00E-03	0.00E+00	1.31
6.75	0.948	0.844	0.582	22.15	6S	4.52	0	3.00	3.75	1.25	22.1468	308.80	6	51.5	0.5825	42	18	1.00E-03	0.00E+00	1.31
6.80	0.948	0.848	0.583	22.31	6S	2.23	0	3.00	3.80	1.27	22.3108	223.30	6	37.2	0.5833	42	18	1.00E-03	0.00E+00	1.31
6.85	0.948	0.853	0.584	22.47	6S	2.87	0	3.00	3.85	1.28	22.4749	265.10	6	44.2	0.5841	42	18	1.00E-03	0.00E+00	1.31
6.90	0.947	0.858	0.585	22.64	6S	4.09	0	3.00	3.90	1.30	22.6389	297.80	6	49.6	0.5849	42	18	1.00E-03	0.00E+00	1.31
6.95	0.947	0.863	0.586	22.80	6S	7.16	0	3.00	3.95	1.32	22.8030	368.00	6	61.3	0.5857	42	18	1.00E-03	0.00E+00	1.31
7.00	0.946	0.867	0.586	22.97	6S	6.91	0	3.00	4.00	1.33	22.9670	365.10	6	60.9	0.5864	42	18	1.00E-03	0.00E+00	1.31
7.05	0.946	0.872	0.587	23.13	6S	5.27	0	3.00	4.05	1.35	23.1311	333.80	6	55.6	0.5872	42	18	1.00E-03	0.00E+00	1.31
7.10	0.946	0.877	0.588	23.30	6S	4.88	0	3.00	4.10	1.37	23.2951	326.40	6	54.4	0.5879	42	18	1.00E-03	0.00E+00	1.31
7.15	0.945	0.882	0.589	23.46	6S	5.85	0	3.00	4.15	1.38	23.4592	348.90	6	58.2	0.5886	42	18	1.00E-03	0.00E+00	1.31
7.20	0.945	0.886	0.589	23.62	6S	6.49	0	3.00	4.20	1.40	23.6232	362.90	6	60.5	0.5894	42	18	1.00E-03	0.00E+00	1.31
7.25	0.945	0.891	0.590	23.79	6S	4.56	0	3.00	4.25	1.42	23.7873	322.40	6	53.7	0.5901	42	18	1.00E-03	0.00E+00	1.31
7.30	0.944	0.896	0.591	23.95	6S	3.97	0	3.00	4.30	1.43	23.9513	308.40	6	51.4	0.5908	42	18	1.00E-03	0.00E+00	1.31
7.35	0.944	0.900	0.591	24.12	6S	3.20	0	3.00	4.35	1.45	24.1154	286.80	6	47.8	0.5915	42	18	1.00E-03	0.00E+00	1.31
7.40	0.943	0.905	0.592	24.28	6S	3.03	0	3.00	4.40	1.47	24.2794	282.50	6	47.1	0.5921	42	18	1.00E-03	0.00E+00	1.31
7.45	0.943	0.910	0.593	24.44	6S	2.04	0	3.00	4.45	1.48	24.4435	245.30	6	40.9	0.5928	42	18	1.00E-03	0.00E+00	1.31
7.50	0.943	0.915	0.593	24.61	6S	1.79	0	3.00	4.50	1.50	24.6075	234.90	6	39.2	0.5934	42	18	1.00E-03	0.00E+00	1.31
7.55	0.942	0.919	0.594	24.77	6S	1.66	0	3.00	4.55	1.52	24.7716	229.10	6	38.2	0.5941	42	18	1.00E-03	0.00E+00	1.31
7.60	0.942	0.924	0.595	24.94	6S	1.71	0	3.00	4.60	1.53	24.9356	232.30	6	38.7	0.5947	42	18	1.00E-03	0.00E+00	1.31
7.65	0.941	0.929	0.595	25.10	6S	1.72	0	3.00	4.65	1.55	25.0997	233.70	6	39.0	0.5954	42	18	1.00E-03	0.00E+00	1.31
7.70	0.941	0.934	0.596	25.26	6S	1.86	0	3.00	4.70	1.57	25.2637	241.50	6	40.3	0.5960	42	18	1.00E-03	0.00E+00	1.31
7.75	0.941	0.938	0.597	25.43	6S	1.98	0	3.00	4.75	1.58	25.4278	248.30	6	41.4	0.5966	42	18	1.00E-03	0.00E+00	1.31
7.80	0.940	0.943	0.597	25.59	6S	2.05	0	3.00	4.80	1.60	25.5918	252.20	6	42.0	0.5972	42	18	1.00E-03	0.00E+00	1.31
7.85	0.940	0.948	0.598	25.76	6S	2.58	0	3.00	4.85	1.62	25.7559	275.30	6	45.9	0.5978	42	18	1.00E-03	0.00E+00	1.31
7.90	0.940	0.952	0.598	25.92	6S	2.80	0	3.00	4.90	1.63	25.9199	284.70	6	47.5	0.5983	42	18	1.00E-03	0.00E+00	1.31
7.95	0.939	0.957	0.599	26.08	6S	2.96	0	3.00	4.95	1.65	26.0840	291.30	6	48.6	0.5989	42	18	1.00E-03	0.00E+00	1.31
8.00	0.939	0.962	0.599	26.25	6S	2.74	0	3.00	5.00	1.67	26.2480	284.40	6	47.4	0.5995	42	18	1.00E-03	0.00E+00	1.31
8.05	0.938	0.967	0.600	26.41	6S	2.02	0	3.00	5.05	1.68	26.4121	255.30	6	42.6	0.6000	42	19	1.00E-03	0.00E+00	1.31
8.10	0.938	0.971	0.601	26.58	6S	1.79	0	3.00	5.10	1.70	26.5761	245.00	6	40.8	0.6006	42	19	1.00E-03	0.00E+00	1.31
8.15	0.938	0.976	0.601	26.74	6S	1.79	0	3.00	5.15	1.72	26.7402	246.00	6	41.0	0.6011	42	19	1.00E-03	0.00E+00	1.31
8.20	0.937	0.981	0.602	26.90	6S	1.72	0	3.00	5.20	1.73	26.9042	243.10	6	40.5	0.6016	42	19	1.00E-03	0.00E+00	1.31
8.25	0.937	0.985	0.602	27.07	6S	1.63	0	3.00	5.25	1.75	27.0683	238.50	6	39.8	0.6022	42	19	1.00E-03	0.00E+00	1.31
8.30	0.937	0.990	0.603	27.23	6S	1.20	1	3.05	5.25	1.72	27.2323	212.30	6	35.4	0.6027	42	19	1.00E-03	1.97E-03	1.31
8.35	0.936	0.995	0.603	27.40	6S	0.91	1	3.10	5.25	1.69	27.3964	187.20	6	31.2	0.6032	37	19	7.00E-03	1.38E-02	1.32
8.40	0.936	1.000	0.604	27.56	6S	1.02	1	3.15	5.25	1.67	27.5604	195.60	6	32.6	0.6037	39	19	5.00E-03	9.84E-03	1.33

SPREADSHEET TO CALCULATE CYCLIC RESISTANCE RATIO USING CPT DATA

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-8 CPT DATE: 12/19/05 KTE
DATE : 12/27/2007
amax = 0.6 g
M = 7.50
MSF = 1.5

Ic = (((3.47-LOG(Q))^2)+(LOG(F%)+1.22)^2)^0.5
dqc1N = IF(FC>=35,60,IF(FC<=5,0,2*(FC-5)))
CRR = IF(qc1Ncs<50,(0.833*(qc1Ncs/1000)+0.05),(93*(qc1Ncs/1000)^3+0.08))
MSF = 10^2.24/M^2.56
CSR = 0.65(amax/g)(sigv/sigv')rd = Seed's Equation
Z = IF(Ic<1.31,7,IF(Ic<2.05,6,IF(Ic<2.6,5,IF(Ic<2.95,4,IF(Ic<3.6,3,2)))))
Q = [(qc-St)/Pa]*[(Pa/S')^n]
Kc = IF(Ic<=1.64,1,(-0.403*Ic^4+5.581*Ic^3-21.63*Ic^2+33.75*Ic-17.88))

Liquefiable Soil (Type 5+ or 6+) = 2.4
Seismic Settlement Soil (Type) = 6
Actual Water = 27 feet
Design Water = 6.6 feet
Gamma = 120 pcf
rd = 2

Added Fill = 0 feet
Fill Density = 125 pcf
Pa = 1.04427 tsf = 100 kPa
Threshold FS = 1.25
FS = CRR*MSF/CSR

FS = Threshold Factor of Safety	
NL = Above water or Soil Behavior Type is not liquefiable	
Z	Soil
3	Clay to Silty Clay
4	Clayey Silt to Silty Clay
5	Silty Sand to Sandy Silt
6	Clean Sand to Silty Sand
7	Gravelly Sand to Sand

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-8 CPT DATE: 12/19/05 KTE
DATE : 12/27/2007
amax = 0.6 g
M = 7.50

Depth (m)	Depth (ft)	Tip Resist qc (tsf)	Sleeve Fric fs (tsf)	Total Stress (tsf) 0.00	Water Pressure (tsf) Sw	Effective Stress (tsf) S' = St - Sw	Norm. Fr. Ratio F (%) = fs/(qc-St)	Norm. Pen. Res. Q for n=1 (qc-St)/S'	Soil Index Ic for n=1	Norm. Pen. Res. Q for n= 0.5	Soil Index Ic for n=0.5	Norm. Pen. Res. Q for n= 0.7	Soil Index Ic for n=0.7	Soil Index Ic	Cq exp n	Overburden Correction Cq = 1.7 > (Pa/S')^n	Norm. Cone Res. qc1N = qc*Cq/Pa	Grain Char. Corr. Kc	Equivalent Clean Sand Cone Res. (qc1N)cs = Kc*qc1N	Cyclic Resistance Ratio CRR CRR	rd rd	Design Effective Stress (tsf) S' = St - Sw	Cyclic Stress Ratio CSR CSR	Depth (ft) Depth
8.45	27.72	205.40	1.32	1.663	0.023	1.641	0.65	124	1.72	156	1.64	142	1.67	1.64	0.50	0.80	157	1.0	156.6	0.437	0.935	1.004	0.604	27.72
8.50	27.89	215.50	1.25	1.673	0.028	1.646	0.58	130	1.68	163	1.60	149	1.63	1.60	0.50	0.80	164	1.0	164.4	0.493	0.935	1.009	0.605	27.89
8.55	28.05	227.20	0.87	1.683	0.033	1.650	0.39	137	1.56	172	1.47	157	1.51	1.47	0.50	0.80	173	1.0	173.1	0.562	0.935	1.014	0.605	28.05
8.60	28.22	222.20	0.94	1.693	0.038	1.655	0.43	133	1.59	168	1.51	153	1.54	1.51	0.50	0.79	169	1.0	169.0	0.529	0.934	1.019	0.606	28.22
8.65	28.38	191.10	1.04	1.703	0.043	1.660	0.55	114	1.71	144	1.63	131	1.66	1.63	0.50	0.79	145	1.0	145.2	0.364	0.934	1.023	0.606	28.38
8.70	28.54	173.00	1.08	1.713	0.048	1.664	0.63	103	1.78	130	1.70	118	1.73	1.70	0.50	0.79	131	1.0	135.9	0.313	0.933	1.028	0.607	28.54
8.75	28.71	156.20	0.72	1.723	0.053	1.669	0.47	93	1.75	117	1.66	107	1.69	1.66	0.50	0.79	118	1.0	119.5	0.239	0.933	1.033	0.607	28.71
8.80	28.87	162.30	0.73	1.732	0.058	1.674	0.45	96	1.73	121	1.64	111	1.67	1.64	0.50	0.79	123	1.0	122.3	0.250	0.933	1.037	0.607	28.87
8.85	29.04	208.10	0.76	1.742	0.064	1.679	0.37	123	1.59	156	1.50	142	1.54	1.50	0.50	0.79	157	1.0	157.2	0.441	0.932	1.042	0.608	29.04
8.90	29.20	216.30	0.84	1.752	0.069	1.683	0.39	127	1.59	162	1.50	147	1.54	1.50	0.50	0.79	163	1.0	163.1	0.484	0.932	1.047	0.608	29.20
8.95	29.36	210.30	0.77	1.762	0.074	1.688	0.37	124	1.59	157	1.50	143	1.53	1.50	0.50	0.79	158	1.0	158.4	0.450	0.932	1.052	0.609	29.36
9.00	29.53	210.60	0.59	1.772	0.079	1.693	0.28	123	1.53	157	1.44	143	1.48	1.44	0.50	0.79	158	1.0	158.4	0.450	0.931	1.056	0.609	29.53
9.05	29.69	213.80	0.59	1.782	0.084	1.698	0.28	125	1.53	159	1.43	144	1.47	1.43	0.50	0.78	161	1.0	160.6	0.465	0.931	1.061	0.609	29.69
9.10	29.86	232.90	0.54	1.791	0.089	1.702	0.23	136	1.46	173	1.36	157	1.40	1.36	0.50	0.78	175	1.0	174.7	0.576	0.930	1.066	0.610	29.86
9.15	30.02	245.40	0.85	1.801	0.094	1.707	0.35	143	1.52	182	1.43	165	1.47	1.43	0.50	0.78	184	1.0	183.8	0.657	0.930	1.071	0.610	30.02
9.20	30.19	258.10	1.08	1.811	0.099	1.712	0.42	150	1.55	192	1.46	174	1.49	1.46	0.50	0.78	193	1.0	193.0	0.749	0.928	1.075	0.610	30.19
9.25	30.35	272.80	1.12	1.821	0.104	1.716	0.41	158	1.52	202	1.43	183	1.47	1.43	0.50	0.78	204	1.0	203.8	0.867	0.927	1.080	0.610	30.35
9.30	30.51	283.40	1.20	1.831	0.110	1.721	0.43	164	1.52	210	1.43	190	1.46	1.43	0.50	0.78	211	1.0	211.4	0.958	0.926	1.085	0.609	30.51
9.35	30.68	292.10	1.21	1.841	0.115	1.726	0.42	168	1.50	216	1.41	196	1.45	1.41	0.50	0.78	218	1.0	217.6	1.038	0.924	1.089	0.609	30.68
9.40	30.84	289.40	1.11	1.850	0.120	1.731	0.39	166	1.49	214	1.40	193	1.43	1.40	0.50	0.78	215	1.0	215.3	1.008	0.923	1.094	0.609	30.84
9.45	31.01	271.50	1.05	1.860	0.125	1.735	0.39	155	1.51	200	1.42	181	1.46	1.42	0.50	0.78	202	1.0	201.7	0.843	0.922	1.099	0.609	31.01
9.50	31.17	261.70	0.86	1.870	0.130	1.740	0.33	149	1.49	193	1.40	174	1.43	1.40	0.50	0.77	194	1.0	194.1	0.760	0.920	1.104	0.608	31.17
9.55	31.33	242.80	0.67	1.880	0.135	1.745	0.28	138	1.49	178	1.39	161	1.43	1.39	0.50	0.77	180	1.0	179.9	0.621	0.919	1.108	0.608	31.33
9.60	31.50	210.40	0.50	1.890	0.140	1.750	0.24	119	1.52	154	1.42	139	1.46	1.42	0.50	0.77	156	1.0	155.7	0.431	0.918	1.113	0.608	31.50
9.65	31.66	169.70	1.01	1.900	0.145	1.754	0.60	96	1.79	124	1.70	112	1.74	1.70	0.50	0.77	125	1.0	130.2	0.285	0.916	1.118	0.607	31.66
9.70	31.83	151.40	1.12	1.910	0.151	1.759	0.75	85	1.89	110	1.80	99	1.83	1.80	0.50	0.77	112	1.1	123.5	0.255	0.915	1.123	0.607	31.83
9.75	31.99	114.50	1.40	1.919	0.156	1.764	1.24	64	2.12	83	2.03	75	2.07	2.03	0.50	0.77	84	1.3	113.6	0.216	0.914	1.127	0.607	31.99
9.80	32.15	95.50	1.23	1.929	0.161	1.768	1.31	53	2.20	69	2.11	62	2.15	2.11	0.50	0.77	70	1.5	103.6	0.184	0.912	1.132	0.606	32.15
9.85	32.32	78.70	1.28	1.939	0.166	1.773	1.67	43	2.33	56	2.24	51	2.28	2.24	0.50	0.77	58	1.8	103.0	0.181	0.911	1.137	0.606	32.32
9.90	32.48	68.60	1.36	1.949	0.171	1.778	2.04	37	2.44	49	2.35	44	2.38	2.35	0.50	0.77	50	2.1	106.2	0.192	0.910	1.141	0.606	32.48
9.95	32.65	57.60	1.40	1.959	0.176	1.783	2.52	31	2.56	41	2.47	37	2.50	2.47	0.50	0.77	42	2.6	110.0	0.204	0.908	1.146	0.605	32.65
10.00	32.81	56.60	1.54	1.969	0.181	1.787	2.82	31	2.59	40	2.51	36	2.54	2.51	0.50	0.76	41	2.8	115.9	0.225	0.907	1.151	0.605	32.81
10.05	32.97	117.30	1.59	1.978	0.186	1.792	1.38	64	2.15	84	2.06	76	2.09	2.06	0.50	0.76	86	1.4	118.5	0.235	0.906	1.156	0.605	32.97
10.10	33.14	197.90	1.47	1.988	0.192	1.797	0.75	109	1.80	143	1.71	128	1.75	1.71	0.50	0.76	144	1.0	151.0	0.400	0.904	1.160	0.604	33.14
10.15	33.30	250.40	1.51	1.998	0.197	1.802	0.61	138	1.67	181	1.57	162	1.61	1.57	0.50	0.76	183	1.0	182.6	0.646	0.903	1.165	0.604	33.30
10.20	33.47	258.60	1.61	2.008	0.202	1.806	0.63	142	1.66	187	1.57	167	1.61	1.57	0.50	0.76	188	1.0	188.3	0.701	0.902	1.170	0.604	33.47
10.25	33.63	255.70	1.29	2.018	0.207	1.811	0.51	140	1.62	184	1.52	165	1.56	1.52	0.50	0.76	186	1.0	185.9	0.678	0.900	1.174	0.603	33.63
10.30	33.79	234.10	1.10	2.028	0.212	1.816	0.47	128	1.63	169	1.53	151	1.57	1.53	0.50	0.76	170	1.0	170.0	0.537	0.899	1.179	0.603	33.79
10.35	33.96	181.90	0.90	2.038	0.217	1.820	0.50	99	1.74	130	1.64	117	1.68	1.64	0.50	0.76	132	1.0	131.9	0.294	0.898	1.184	0.602	33.96
10.40	34.12	146.10	0.56	2.047	0.222	1.825	0.39	79	1.77	104	1.66	93	1.70	1.66	0.50	0.76	106	1.0	107.1	0.194	0.896	1.189	0.602	34.12
10.45	34.29	90.90	0.62	2.057	0.227	1.830	0.70	49	2.08	64	1.97	57	2.01	1.97	0.50	0.76	66	1.3	83.3	0.134	0.895	1.193	0.602	34.29
10.50	34.45	49.00	0.79	2.067	0.232	1.835	1.68	26	2.52	34	2.42	30	2.46	2.42	0.50	0.75	35	2.4	84.7	0.137	0.894	1.198	0.601	34.45
10.55	34.61	26.00	0.76	2.077	0.238	1.839	3.18	13	2.92	17	2.82	15	2.86	2.92	1.00	0.57	14	5.9	83.1	0.133	0.892	1.203	0.601	34.61
10.60	34.78	14.00	0.58	2.087	0.243	1.844	4.87	6	3.27	9	3.17	8	3.21	3.27	1.00	0.57	8	10.3	78.2	0.125	0.891	1.208	0.600	34.78
10.65	34.94	12.90	0.39	2.097	0.248	1.849	3.61	6	3.24	8	3.13	7	3.17	3.24	1.00	0.56	7	9.8	68.0	0.109	0.890	1.212	0.600	34.94
10.70	35.11	21.10	0.34	2.106	0.253	1.853	1.79	10	2.87	14	2.76	12	2.80	2.87	1.00	0.56	11	5.4	61.2	0.101	0.888	1.217	0.600	35.11
10.75	35.27	27.20	0.42	2.116	0.258	1.858	1.67	13	2.75	18	2.64	16	2.69	2.75	1.00	0.56	15	4.4	64.0	0.104	0.887	1.222	0.599	35.27
10.80	35.43	22.30	0.49	2.126	0.263	1.863	2.43	11	2.92	14	2.81	13	2.85	2.92	1.00	0.56	12	5.9	70.2	0.112	0.886	1.226	0.599	35.43
10.85	35.60	27.10	0.51	2.136	0.268	1.868	2.04	13	2.80	18	2.69	16	2.74	2.80	1.00	0.56	15	4.8	69.3	0.111	0.884	1.231	0.598	35.60
10.90	35.76	14.90	0.54	2.146	0.273	1.872	4.23	7	3.22	9	3.12	8	3.16	3.22	1.00	0.56	8	9.5	75.7	0.120	0.883	1.236	0.598	35.76
10.95	35.93	11.20	0.36	2.156	0.279	1.877	3.98	5	3.33	6	3.22	6	3.26	3.33	1.00	0.56	6	11.2	66.6	0.107	0.882	1.241	0.597	35.93
11.00	36.09	26.30	0.63	2.165	0.284	1.882	2.61	13	2.87	17	2.77	15	2.81	2.87	1.00	0.55	14	5.4	76.1	0.121	0.880	1.245	0.597	36.09
11.05	36.26	52.20	0.75	2.175	0.289	1.887	1.50	27	2.48	36	2.37	32	2.41	2.37	0.50	0.74	37	2.2	81.9	0.131	0.879	1.250	0.597	36.26
11.10	36.42	57.10	0.81	2.185	0.294	1.891	1.48	29	2.44	39	2.34	35	2.38	2.34	0.50	0.74	41	2.1	84.1	0.135	0.878	1.255	0.596	36.42
11.15	36.58	111.20	0.67	2.195	0.299	1.896	0.61	57	1.99	77	1.88	69	1.92	1.88	0.50	0.74	79	1.2	92.2	0.153	0.876	1.260	0.596	36.58
11.20	36.75	116.40	0.55	2.205	0.304	1.901	0.48	60	1.92	81	1.80	72	1.85	1.80	0.50	0.74	83	1.1	91.6	0.152	0.875	1.264	0.595	36.75
11.25	36.91	108.80	0.42	2.215	0.309	1.905	0.39	56	1.91	76	1.79	67	1.84	1.79	0.50	0.74	77	1.1	84.7	0.137	0.874	1.269	0.595	36.91
11.30	37.08	109.50	0.48	2.225	0.314	1.910	0.45	56	1.93	76	1.81	67	1.86	1.81	0.50	0.74	78	1.1	86.5	0.140	0.872	1.274	0.594	37.08
11.35	37.24	110.00	0.62	2.234	0.319	1.915	0.58	56	1.98	76	1.87	68	1.91	1.87	0.50	0.74	78	1.2	90.1	0.148	0.871	1.278	0.594	37.24
11.40	37.40	111.90	1.12	2.244	0.325	1.920	1.02	57	2.11	77	2.00	69	2.04	2.00	0.50	0.74	79	1.3	103.0	0.182	0.870	1.283	0.593	37.40
11.45	37.57	100.50	1.43	2.254	0.330	1.924	1.46	51	2.24	69	2.14	61	2.18	2.14	0.50	0.74	71	1.5	108.2	0.198	0.868	1.288	0.593	37.57
11.50	37.73	95.30	1.34	2.264	0.335	1.929	1.44	48	2.26	66	2.15	58	2.19	2.15	0.50	0.74	67	1.6	104.6	0.187	0.867	1.293	0.592	37.73
11.55	37.90	275.20	1.50	2.274	0.340	1.934	0.55	141	1.63	192	1.53	170	1.57	1.53	0.50	0.73	194	1.0	193.7	0.755	0.866	1.297	0.592	37.90
11.60	38.06	294.60	1.29	2.284	0.345	1.939	0.44	151	1.55	205	1.44	182	1.49	1.44	0.50	0.73	207	1.0	207.1	0.906	0.864	1.302	0.591	38.06
11.65	38.22	356.30	1.04	2.293	0.350	1.943	0.29	182	1.39	249	1.28	219	1.32	1.28	0.50	0.73	250	1.0	250.1	1.535	0.863	1.307	0.591	38.22
11.70	38.39	361.50	0.76	2.303	0.355	1.948	0.21	184	1.32	252	1.20	222	1.25	1.20	0.50	0.73	253	1.0	253.5	1.594	0.862	1.311	0.590	38.39
11.75	38.55	366.60	0.84	2.313	0.360	1.953	0.23	187	1.33	255	1.21	225	1.26	1.21	0.50	0.73	257	1.0	256.7	1.654	0.860	1.316	0.590	38.55
11.80	38.72	389.20	0.92	2.323	0.366	1.957	0.24	198	1.32	271	1.20	239	1.24	1.20	0.50	0.73	272	1.0	272.2	1.956	0.859	1.321	0.589	38.72
11.85	38.88	407.40	0.85	2.333	0.371	1.962	0.21	206	1.28	283	1.15	249	1.20	1.15	0.50	0.73	285	1.0	284.6	2.224	0.858	1.326	0.589	38.88
11.90	39.04	418.60	3.66	2.343	0.376	1.967	0.88	212	1.63	290	1.54	256	1.58	1.54	0.50	0.73	292	1.0	292.1	2.397	0.856	1.330	0.588	39.04
11.95	39.21	449.50	2.65	2.352	0.381	1.972	0.59	227	1.49	312	1.39	274	1.43	1.39	0.50	0.73	313	1.0	313.3	2.939	0.855	1.335	0.587	39.21
12.00	39.37	411.40	3.44	2.362	0.386	1.976	0.84	207	1.63	285	1.53	251	1.57	1.53	0.50	0.73	286	1.0	286.4	2.264	0.854	1.340	0.587	39.37
12.05	39.54	445.00	3.22	2.372	0.391	1.981	0.73	223	1.56	308	1.46	271	1.50	1.46	0.50	0.73	309	1.0	309.4	2.834	0.852	1.345	0.586	39.54
12.10	39.70	492.10	3.23	2.382	0.396	1.986	0.66	247	1.50	340	1.40	299	1.44	1.40	0.50	0.73	342	1.0	341.7	3.791	0.851	1.349	0.586	39.70
12.15	39.86	531.70	1.40	2.392	0.401	1.990	0.26	266	1.23	367	1.11	323	1.16	1.11	0.50	0.72	369	1.0	368.8	4.745	0.850	1.354	0.585	39.86
12.20	40.03	477.00	1.61	2.402	0.406	1.995	0.34	238	1.33	329	1.21	289	1.26	1.21	0.50	0.72	330	1.0	330.5	3.436	0.848	1.359	0.585	40.03
12.25	40.19	458.60	1.44	2.412	0.412	2.000	0.32	228	1.32	316	1.21	277	1.25	1.21	0.50	0.72	317	1.0	317.3	3.052	0.847	1.363	0.584	40.19
12.30	40.36	485.60	1.44	2.421	0.417	2.005	0.30	241	1.29	334	1.17	293	1.22	1.17	0.50	0.72	336	1.0	335.6	3.596	0.846	1.368	0.584	40.36
12.35	40.52	528.80	1.79	2.431	0.422	2.009	0.34	262	1.29	363	1.18	319	1.22	1.18	0.50	0.72	365	1.0	365.1	4.604	0.844	1.373	0.583	40.52
12.40	40.68	575.40	1.25	2.441	0.427	2.014	0.22	284	1.16	395	1.04	346	1.09	1.04	0.50	0.72	397	1.0	396.8	5.888	0.843	1.378	0.583	40.68
12.45	40.85	604.90	2.04	2.451	0.432	2.019	0.34	298	1.25	415	1.13	364	1.18	1.13	0.50	0.72	417	1.0	416.6	6.805	0.842	1.382	0.582	40.85
12.50	41.01	680.80	2.52	2.461	0.437	2.024	0.37	335	1.23	467	1.13	409	1.17	1.13	0.50	0.72	468	1.0	468.3	9.633	0.840	1.387	0.581	41.01
12.55	41.18	575.20	2.40	2.471	0.442	2.028	0.42	282	1.32	394	1.21	345	1.26	1.21	0.50	0.72	395	1.0	395.2	5.822	0.839	1.392	0.581	41.18
12.60	41.34	548.10	2.05	2.480	0.447	2.033	0.38	268	1.31	374	1.20	328	1.24	1.20	0.50	0.72	376	1.0	376.2	5.030	0.838	1.397	0.580	41.34
12.65	41.50	532.80	1.95	2.490	0.453	2.038	0.37	260	1.32	364	1.20	318	1.25	1.20	0.50	0.72	365	1.0	365.2	4.611	0.836	1.401	0.580	41.50
12.70	41.67	493.90	1.49	2.500	0.458	2.042	0.30	241	1.30	336	1.18	294	1.22	1.18	0.50	0.72	338	1.0	338.2	3.677	0.835	1.406	0.579	41.67

Depth (m)	Soil Behavior Type Z Z	Factor of Safety FS	Liquefiable Layers	Sum of Liquefiable Thickness (m)	Sum of Non-Liq Thickness (m)	Ratio of Non-Liq to Liquefiable 0.98	Liq. Settlement (in) 1.69 in. Settlement	N-Value Conversion (tsf) qc	qc/N	N-Value	Liquefaction Settlemer 1.69 in. CSR	H_Index	V_Index	Strain%	Settlement	Cumulative Settlement
8.45	6S	1.08	1	3.20	5.25	1.64	27.7245	205.40	6	34.2	0.6042	41	19	2.00E-03	3.94E-03	1.33
8.50	6S	1.22	1	3.25	5.25	1.62	27.8885	215.50	6	35.9	0.6046	42	19	1.00E-03	1.97E-03	1.34
8.55	6S	1.39	0	3.25	5.30	1.63	28.0526	227.20	6	37.9	0.6051	42	19	1.00E-03	0.00E+00	1.34
8.60	6S	1.31	0	3.25	5.35	1.65	28.2166	222.20	6	37.0	0.6056	42	19	1.00E-03	0.00E+00	1.34
8.65	6S	0.90	1	3.30	5.35	1.62	28.3807	191.10	6	31.9	0.6061	38	19	6.00E-03	1.18E-02	1.35
8.70	6S	0.78	1	3.35	5.35	1.60	28.5447	173.00	6	28.8	0.6065	34	19	1.00E-02	1.97E-02	1.37
8.75	6S	0.59	1	3.40	5.35	1.57	28.7088	156.20	6	26.0	0.6070	32	19	1.20E-02	2.36E-02	1.39
8.80	6S	0.62	1	3.45	5.35	1.55	28.8728	162.30	6	27.1	0.6074	33	19	1.10E-02	2.17E-02	1.41
8.85	6S	1.09	1	3.50	5.35	1.53	29.0369	208.10	6	34.7	0.6078	41	19	2.00E-03	3.94E-03	1.42
8.90	6S	1.19	1	3.55	5.35	1.51	29.2009	216.30	6	36.1	0.6082	42	19	1.00E-03	1.97E-03	1.42
8.95	6S	1.11	1	3.60	5.35	1.49	29.3650	210.30	6	35.1	0.6087	42	19	1.00E-03	1.97E-03	1.42
9.00	6S	1.11	1	3.65	5.35	1.47	29.5290	210.60	6	35.1	0.6091	42	19	1.00E-03	1.97E-03	1.42
9.05	6S	1.14	1	3.70	5.35	1.45	29.6931	213.80	6	35.6	0.6095	42	19	1.00E-03	1.97E-03	1.43
9.10	6S	1.42	0	3.70	5.40	1.46	29.8571	232.90	6	38.8	0.6099	42	19	1.00E-03	0.00E+00	1.43
9.15	6S	1.62	0	3.70	5.45	1.47	30.0212	245.40	6	40.9	0.6103	42	19	1.00E-03	0.00E+00	1.43
9.20	6S	1.84	0	3.70	5.50	1.49	30.1852	258.10	6	43.0	0.6098	42	19	1.00E-03	0.00E+00	1.43
9.25	6S	2.13	0	3.70	5.55	1.50	30.3493	272.80	6	45.5	0.6096	42	19	1.00E-03	0.00E+00	1.43
9.30	6S	2.36	0	3.70	5.60	1.51	30.5133	283.40	6	47.2	0.6093	42	19	1.00E-03	0.00E+00	1.43
9.35	6S	2.56	0	3.70	5.65	1.53	30.6774	292.10	6	48.7	0.6091	42	19	1.00E-03	0.00E+00	1.43
9.40	6S	2.48	0	3.70	5.70	1.54	30.8414	289.40	6	48.2	0.6088	42	19	1.00E-03	0.00E+00	1.43
9.45	6S	2.08	0	3.70	5.75	1.55	31.0055	271.50	6	45.3	0.6085	42	19	1.00E-03	0.00E+00	1.43
9.50	6S	1.88	0	3.70	5.80	1.57	31.1695	261.70	6	43.6	0.6083	42	19	1.00E-03	0.00E+00	1.43
9.55	6S	1.53	0	3.70	5.85	1.58	31.3336	242.80	6	40.5	0.6080	42	19	1.00E-03	0.00E+00	1.43
9.60	6S	1.06	1	3.75	5.85	1.56	31.4976	210.40	6	35.1	0.6077	42	19	1.00E-03	1.97E-03	1.43
9.65	6S	0.70	1	3.80	5.85	1.54	31.6617	169.70	6	28.3	0.6074	33	19	1.10E-02	2.17E-02	1.45
9.70	6S	0.63	1	3.85	5.85	1.52	31.8257	151.40	6	25.2	0.6071	32	19	1.20E-02	2.36E-02	1.47
9.75	5M	0.53	1	3.90	5.85	1.50	31.9898	114.50	2.5	45.8	0.6067	42	19	1.00E-03	0.00E+00	1.47
9.80	5M	0.45	1	3.95	5.85	1.48	32.1538	95.50	2.5	38.2	0.6064	42	19	1.00E-03	0.00E+00	1.47
9.85	5M	0.45	1	4.00	5.85	1.46	32.3179	78.70	2.5	31.5	0.6061	37	19	7.00E-03	0.00E+00	1.47
9.90	5M	0.47	1	4.05	5.85	1.44	32.4819	68.60	2.5	27.4	0.6058	33	19	1.10E-02	0.00E+00	1.47
9.95	5M	NL	0	4.05	5.90	1.46	32.6460	57.60	2.5	23.0	0.6054	30	19	1.40E-02	0.00E+00	1.47
10.00	5M	NL	0	4.05	5.95	1.47	32.8100	56.60	2.5	22.6	0.6051	30	19	1.40E-02	0.00E+00	1.47
10.05	5M	0.58	1	4.10	5.95	1.45	32.9741	117.30	2.5	46.9	0.6047	42	19	1.00E-03	0.00E+00	1.47
10.10	6S	0.99	1	4.15	5.95	1.43	33.1381	197.90	6	33.0	0.6044	39	19	5.00E-03	9.84E-03	1.48
10.15	6S	1.60	0	4.15	6.00	1.45	33.3022	250.40	6	41.7	0.6040	42	19	1.00E-03	0.00E+00	1.48
10.20	6S	1.74	0	4.15	6.05	1.46	33.4662	258.60	6	43.1	0.6036	42	19	1.00E-03	0.00E+00	1.48
10.25	6S	1.69	0	4.15	6.10	1.47	33.6303	255.70	6	42.6	0.6033	42	19	1.00E-03	0.00E+00	1.48
10.30	6S	1.34	0	4.15	6.15	1.48	33.7943	234.10	6	39.0	0.6029	42	19	1.00E-03	0.00E+00	1.48
10.35	6S	0.73	1	4.20	6.15	1.46	33.9584	181.90	6	30.3	0.6025	36	19	8.00E-03	1.57E-02	1.50
10.40	6S	0.48	1	4.25	6.15	1.45	34.1224	146.10	6	24.4	0.6021	31	19	1.30E-02	2.56E-02	1.52
10.45	5M	0.33	1	4.30	6.15	1.43	34.2865	90.90	2.5	36.4	0.6017	42	19	1.00E-03	0.00E+00	1.52
10.50	5M	NL	0	4.30	6.20	1.44	34.4505	49.00	2.5	19.6	0.6013	28	19	1.60E-02	0.00E+00	1.52
10.55	4C	NL	0	4.30	6.25	1.45	34.6146	26.00	2	13.0	0.6009	22	19	2.20E-02	0.00E+00	1.52
10.60	3C	NL	0	4.30	6.30	1.47	34.7786	14.00	2	7.0	0.6005	13	19	3.20E-02	0.00E+00	1.52
10.65	3C	NL	0	4.30	6.35	1.48	34.9427	12.90	2	6.5	0.6001	12	19	3.40E-02	0.00E+00	1.52
10.70	4C	NL	0	4.30	6.40	1.49	35.1067	21.10	2	10.6	0.5996	19	18	2.50E-02	0.00E+00	1.52
10.75	4C	NL	0	4.30	6.45	1.50	35.2708	27.20	2	13.6	0.5992	23	18	2.10E-02	0.00E+00	1.52
10.80	4C	NL	0	4.30	6.50	1.51	35.4348	22.30	2	11.2	0.5988	20	18	2.40E-02	0.00E+00	1.52
10.85	4C	NL	0	4.30	6.55	1.52	35.5989	27.10	2	13.6	0.5983	23	18	2.10E-02	0.00E+00	1.52
10.90	3C	NL	0	4.30	6.60	1.53	35.7629	14.90	2	7.5	0.5979	13	18	3.20E-02	0.00E+00	1.52
10.95	3C	NL	0	4.30	6.65	1.55	35.9270	11.20	2	5.6	0.5974	11	18	3.60E-02	0.00E+00	1.52
11.00	4C	NL	0	4.30	6.70	1.56	36.0910	26.30	2	13.2	0.5970	22	18	2.20E-02	0.00E+00	1.52
11.05	5M	0.33	1	4.35	6.70	1.54	36.2551	52.20	2.5	20.9	0.5965	29	18	1.50E-02	0.00E+00	1.52
11.10	5M	0.34	1	4.40	6.70	1.52	36.4191	57.10	2.5	22.8	0.5961	30	18	1.40E-02	0.00E+00	1.52
11.15	6S	0.38	1	4.45	6.70	1.51	36.5832	111.20	6	18.5	0.5956	27	18	1.70E-02	3.35E-02	1.56
11.20	6S	0.38	1	4.50	6.70	1.49	36.7472	116.40	6	19.4	0.5951	28	18	1.60E-02	3.15E-02	1.59
11.25	6S	0.34	1	4.55	6.70	1.47	36.9113	108.80	6	18.1	0.5946	27	18	1.70E-02	3.35E-02	1.62
11.30	6S	0.35	1	4.60	6.70	1.46	37.0753	109.50	6	18.3	0.5942	27	18	1.70E-02	3.35E-02	1.66
11.35	6S	0.37	1	4.65	6.70	1.44	37.2394	110.00	6	18.3	0.5937	27	18	1.70E-02	3.35E-02	1.69
11.40	5M	0.46	1	4.70	6.70	1.43	37.4034	111.90	2.5	44.8	0.5932	42	18	1.00E-03	0.00E+00	1.69
11.45	5M	0.50	1	4.75	6.70	1.41	37.5675	100.50	2.5	40.2	0.5927	42	18	1.00E-03	0.00E+00	1.69
11.50	5M	0.47	1	4.80	6.70	1.40	37.7315	95.30	2.5	38.1	0.5922	42	18	1.00E-03	0.00E+00	1.69
11.55	6S	1.92	0	4.80	6.75	1.41	37.8956	275.20	6	45.9	0.5917	42	18	1.00E-03	0.00E+00	1.69
11.60	6S	2.30	0	4.80	6.80	1.42	38.0596	294.60	6	49.1	0.5912	42	18	1.00E-03	0.00E+00	1.69
11.65	6S	3.90	0	4.80	6.85	1.43	38.2237	356.30	6	59.4	0.5907	42	18	1.00E-03	0.00E+00	1.69
11.70	6S	4.05	0	4.80	6.90	1.44	38.3877	361.50	6	60.3	0.5901	42	18	1.00E-03	0.00E+00	1.69
11.75	6S	4.21	0	4.80	6.95	1.45	38.5518	366.60	6	61.1	0.5896	42	18	1.00E-03	0.00E+00	1.69
11.80	6S	4.98	0	4.80	7.00	1.46	38.7158	389.20	6	64.9	0.5891	42	18	1.00E-03	0.00E+00	1.69
11.85	7S	5.67	0	4.80	7.05	1.47	38.8799	407.40	8	50.9	0.5886	42	18	1.00E-03	0.00E+00	1.69
11.90	6S	6.12	0	4.80	7.10	1.48	39.0439	418.60	6	69.8	0.5880	42	18	1.00E-03	0.00E+00	1.69
11.95	6S	7.50	0	4.80	7.15	1.49	39.2080	449.50	6	74.9	0.5875	42	18	1.00E-03	0.00E+00	1.69
12.00	6S	5.79	0	4.80	7.20	1.50	39.3720	411.40	6	68.6	0.5870	42	18	1.00E-03	0.00E+00	1.69
12.05	6S	7.25	0	4.80	7.25	1.51	39.5361	445.00	6	74.2	0.5864	42	18	1.00E-03	0.00E+00	1.69
12.10	6S	9.71	0	4.80	7.30	1.52	39.7001	492.10	6	82.0	0.5859	42	18	1.00E-03	0.00E+00	1.69
12.15	7S	12.16	0	4.80	7.35	1.53	39.8642	531.70	8	66.5	0.5853	42	18	1.00E-03	0.00E+00	1.69
12.20	6S	8.81	0	4.80	7.40	1.54	40.0282	477.00	6	79.5	0.5848	42	18	1.00E-03	0.00E+00	1.69
12.25	6S	7.84	0	4.80	7.45	1.55	40.1923	458.60	6	76.4	0.5842	42	18	1.00E-03	0.00E+00	1.69
12.30	7S	9.24	0	4.80	7.50	1.56	40.3563	485.60	8	60.7	0.5836	42	18	1.00E-03	0.00E+00	1.69
12.35	7S	11.84	0	4.80	7.55	1.57	40.5204	528.80	8	66.1	0.5831	42	18	1.00E-03	0.00E+00	1.69
12.40	7S	15.16	0	4.80	7.60	1.58	40.6844	575.40	8	71.9	0.5825	42	18	1.00E-03	0.00E+00	1.69
12.45	7S	17.54	0	4.80	7.65	1.59	40.8485	604.90	8	75.6	0.5819	42	18	1.00E-03	0.00E+00	1.69
12.50	7S	24.86	0	4.80	7.70	1.60	41.0125	680.80	8	85.1	0.5814	42	18	1.00E-03	0.00E+00	1.69
12.55	6S	15.04	0	4.80	7.75	1.61	41.1766	575.20	6	95.9	0.5808	42	18	1.00E-03	0.00E+00	1.69
12.60	7S	13.01	0	4.80	7.80	1.63	41.3406	548.10	8	68.5	0.5802	42	18	1.00E-03	0.00E+00	1.69
12.65	6S	11.93	0	4.80	7.85	1.64	41.5047	532.80	6	88.8	0.5796	42	18	1.00E-03	0.00E+00	1.69
12.70	7S	9.53	0	4.80	7.90	1.65	41.6687	493.90	8	61.7	0.5790	42	18	1.00E-03	0.00E+00	1.69

SPREADSHEET TO CALCULATE CYCLIC RESISTANCE RATIO USING CPT DATA

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-8 CPT DATE: 12/19/05 KTE
DATE : 12/27/2007
amax = 0.6 g
M = 7.50
MSF = 1.5

Ic = (((3.47-LOG(Q))^2)+(LOG(FS%)+1.22)^2)^0.5
dqc1N = IF(FC>=35,60,IF(FC<=5,0,2*(FC-5)))
CRR = IF(qc1Ncs<50,(0.833*(qc1Ncs/1000)+0.05),(93*(qc1Ncs/1000)^3+0.08))
MSF = 10^2.24/M^2.56
CSR = 0.65(amax/g)(sigv/sigv')rd = Seed's Equation
Z = IF(Ic<1.31,7,IF(Ic<2.05,6,IF(Ic<2.6,5,IF(Ic<2.95,4,IF(Ic<3.6,3,2)))))
Q = [(qc-St)/Pa]*[(Pa/S')^n]
Kc = IF(Ic<=1.64,1,(-0.403*Ic^4+5.581*Ic^3-21.63*Ic^2+33.75*Ic-17.88))

Liquefiable Soil (Type 5+ or 6+) = 2.4
Seismic Settlement Soil (Type) = 6
Actual Water = 27 feet
Design Water = 6.6 feet
Gamma = 120 pcf
rd = 2

Added Fill = 0 feet
Fill Density = 125 pcf
Pa = 1.04427 tsf = 100 kPa
Threshold FS = 1.25

FS = CRR*MSF/CSR

FS = Threshold Factor of Safety
NL = Above water or Soil Behavior Type is not liquefiable

Z	Soil
3	Clay to Silty Clay
4	Clayey Silt to Silty Clay
5	Silty Sand to Sandy Silt
6	Clean Sand to Silty Sand
7	Gravelly Sand to Sand

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-8 CPT DATE: 12/19/05 KTE
DATE : 12/27/2007
amax = 0.6 g
M = 7.50

Depth (m)	Depth (ft)	Tip Resist qc (tsf)	Sleeve Fric fs (tsf)	Total Stress (tsf) 0.00	Water Pressure (tsf) Sw	Effective Stress (tsf) S' = St - Sw	Norm. Fr. Ratio fs/(qc-St)	Norm. Pen. Res. Q for n=1 (qc-St)/S'	Soil Index Ic for n=1	Norm. Pen. Res. Q for n= 0.5	Soil Index Ic for n=0.5	Norm. Pen. Res. Q for n= 0.7	Soil Index Ic for n=0.7	Soil Index Ic	Cq exp n	Overburden Correction Cq = 1.7 > (Pa/S')^n	Norm. Cone Res. qc1N = qc*Cq/Pa	Grain Char. Corr. Kc	Equivalent Clean Sand Cone Res. (qc1N)cs = Kc*qc1N	Cyclic Resistance Ratio CRR	rd	Design Effective Stress (tsf) S' = St - Sw	Cyclic Stress Ratio CSR	Depth (ft) Depth	Soil Behavior Type Z	Factor of Safety FS	Liquefiable Layers	Sum of Liquefiable Thickness (in)	Sum of Non-Liq Thickness (in)	Ratio of Non-Liq to Liquefiable 0.98	Liq. 1.69 in. Settlement (in)	N-Value Conversion (tsf) qc	qc/N	N-Value	CSR	H_Index	V_Index	Liquefaction Settlement Strain	Settlement	1.69 in. Cumulative Settlement
12.75	41.83	462.10	1.28	2.510	0.463	2.047	0.28	224	1.30	314	1.18	275	1.23	1.18	0.50	0.71	316	1.0	316.0	3.016	0.834	1.411	0.578	41.83	7 S	7.82	0	4.80	7.95	1.66	41.8328	462.10	8	57.8	0.5784	42	18	1.00E-03	0.00E+00	1.69
12.80	42.00	433.20	1.05	2.520	0.468	2.052	0.24	210	1.30	294	1.17	257	1.22	1.17	0.50	0.71	296	1.0	295.9	2.490	0.832	1.415	0.578	42.00	7 S	6.47	0	4.80	8.00	1.67	41.9968	433.20	8	54.2	0.5778	42	18	1.00E-03	0.00E+00	1.69
12.85	42.16	405.90	1.09	2.530	0.473	2.057	0.27	196	1.35	275	1.22	240	1.27	1.22	0.50	0.71	277	1.0	277.0	2.056	0.831	1.420	0.577	42.16	6 S	5.34	0	4.80	8.05	1.68	42.1609	405.90	6	67.7	0.5772	42	18	1.00E-03	0.00E+00	1.69
12.90	42.32	363.30	0.84	2.539	0.478	2.061	0.23	175	1.36	246	1.23	215	1.28	1.23	0.50	0.71	248	1.0	247.6	1.492	0.830	1.425	0.577	42.32	6 S	3.88	0	4.80	8.10	1.69	42.3249	363.30	6	60.6	0.5766	42	18	1.00E-03	0.00E+00	1.69
12.95	42.49	351.30	1.21	2.549	0.483	2.066	0.35	169	1.46	237	1.33	207	1.38	1.33	0.50	0.71	239	1.0	239.2	1.352	0.828	1.430	0.576	42.49	6 S	3.52	0	4.80	8.15	1.70	42.4890	351.30	6	58.6	0.5760	42	18	1.00E-03	0.00E+00	1.69
13.00	42.65	365.30	1.22	2.559	0.488	2.071	0.34	175	1.44	247	1.31	215	1.36	1.31	0.50	0.71	248	1.0	248.4	1.506	0.827	1.434	0.575	42.65	6 S	3.92	0	4.80	8.20	1.71	42.6530	365.30	6	60.9	0.5754	42	18	1.00E-03	0.00E+00	1.69
13.05	42.82	378.00	1.75	2.569	0.493	2.076	0.47	181	1.50	255	1.39	222	1.43	1.39	0.50	0.71	257	1.0	256.8	1.654	0.826	1.439	0.575	42.82	6 S	4.32	0	4.80	8.25	1.72	42.8171	378.00	6	63.0	0.5748	42	18	1.00E-03	0.00E+00	1.69
13.10	42.98	410.90	1.69	2.579	0.499	2.080	0.41	196	1.44	277	1.33	241	1.37	1.33	0.50	0.71	279	1.0	278.8	2.095	0.824	1.444	0.574	42.98	6 S	5.47	0	4.80	8.30	1.73	42.9811	410.90	6	68.5	0.5742	42	18	1.00E-03	0.00E+00	1.69
13.15	43.15	395.70	1.84	2.589	0.504	2.085	0.47	189	1.49	266	1.37	232	1.42	1.37	0.50	0.71	268	1.0	268.2	1.874	0.823	1.449	0.574	43.15	6 S	4.90	0	4.80	8.35	1.74	43.1452	395.70	6	66.0	0.5736	42	18	1.00E-03	0.00E+00	1.69
13.20	43.31	394.60	1.63	2.599	0.509	2.090	0.42	188	1.46	265	1.34	231	1.39	1.34	0.50	0.71	267	1.0	267.1	1.853	0.822	1.453	0.573	43.31	6 S	4.85	0	4.80	8.40	1.75	43.3092	394.60	6	65.8	0.5729	42	18	1.00E-03	0.00E+00	1.69
13.25	43.47	439.20	1.44	2.608	0.514	2.094	0.33	208	1.37	295	1.24	257	1.29	1.24	0.50	0.71	297	1.0	297.0	2.516	0.820	1.458	0.572	43.47	6 S	6.59	0	4.80	8.45	1.76	43.4733	439.20	6	73.2	0.5723	42	18	1.00E-03	0.00E+00	1.69
13.30	43.64	477.90	1.14	2.618	0.519	2.099	0.24	226	1.27	321	1.14	279	1.19	1.14	0.50	0.71	323	1.0	322.8	3.208	0.819	1.463	0.572	43.64	7 S	8.42	0	4.80	8.50	1.77	43.6373	477.90	8	59.7	0.5717	42	18	1.00E-03	0.00E+00	1.69
13.35	43.80	480.30	1.87	2.628	0.524	2.104	0.39	227	1.38	322	1.26	280	1.31	1.26	0.50	0.70	324	1.0	324.0	3.244	0.818	1.467	0.571	43.80	6 S	8.52	0	4.80	8.55	1.78	43.8014	480.30	6	80.1	0.5710	42	18	1.00E-03	0.00E+00	1.69
13.40	43.97	516.60	1.89	2.638	0.529	2.109	0.37	244	1.34	346	1.22	301	1.26	1.22	0.50	0.70	348	1.0	348.1	4.004	0.816	1.472	0.570	43.97	6 S	10.53	0	4.80	8.60	1.79	43.9654	516.60	6	86.1	0.5704	42	18	1.00E-03	0.00E+00	1.69
13.45	44.13	556.30	1.76	2.648	0.534	2.113	0.32	262	1.28	373	1.15	324	1.20	1.15	0.50	0.70	374	1.0	374.5	4.964	0.815	1.477	0.570	44.13	7 S	13.07	0	4.80	8.65	1.80	44.1295	556.30	8	69.5	0.5698	42	18	1.00E-03	0.00E+00	1.69
13.50	44.29	538.70	2.69	2.658	0.540	2.118	0.50	253	1.41	360	1.30	313	1.34	1.30	0.50	0.70	362	1.0	362.2	4.500	0.814	1.482	0.569	44.29	6 S	11.86	0	4.80	8.70	1.81	44.2935	538.70	6	89.8	0.5691	42	18	1.00E-03	0.00E+00	1.69
13.55	44.46	550.50	2.80	2.667	0.545	2.123	0.51	258	1.41	368	1.30	319	1.34	1.30	0.50	0.70	370	1.0	369.7	4.781	0.812	1.486	0.568	44.46	6 S	12.61	0	4.80	8.75	1.82	44.4576	550.50	6	91.8	0.5685	42	18	1.00E-03	0.00E+00	1.69
13.60	44.62	517.90	2.09	2.677	0.550	2.128	0.41	242	1.37	346	1.25	300	1.29	1.25	0.50	0.70	347	1.0	347.5	3.981	0.811	1.491	0.568	44.62	6 S	10.52	0	4.80	8.80	1.83	44.6216	517.90	6	86.3	0.5678	42	18	1.00E-03	0.00E+00	1.69
13.65	44.79	482.30	1.69	2.687	0.555	2.132	0.35	225	1.36	321	1.23	279	1.28	1.23	0.50	0.70	323	1.0	323.2	3.220	0.810	1.496	0.567	44.79	6 S	8.52	0	4.80	8.85	1.84	44.7857	482.30	6	80.4	0.5672	42	18	1.00E-03	0.00E+00	1.69
13.70	44.95	463.40	1.35	2.697	0.560	2.137	0.29	216	1.33	308	1.20	267	1.25	1.20	0.50	0.70	310	1.0	310.2	2.856	0.808	1.500	0.567	44.95	6 S	7.56	0	4.80	8.90	1.85	44.9497	463.40	6	77.2	0.5666	42	18	1.00E-03	0.00E+00	1.69
13.75	45.11	459.40	1.44	2.707	0.565	2.142	0.32	213	1.35	305	1.22	265	1.27	1.22	0.50	0.70	307	1.0	307.2	2.776	0.807	1.505	0.566	45.11	6 S	7.36	0	4.80	8.95	1.86	45.1138	459.40	6	76.6	0.5659	42	18	1.00E-03	0.00E+00	1.69
13.80	45.28	468.50	1.78	2.717	0.570	2.146	0.38	217	1.39	311	1.26	269	1.31	1.26	0.50	0.70	313	1.0	312.9	2.930	0.806	1.510	0.565	45.28	6 S	7.78	0	4.80	9.00	1.88	45.2778	468.50	6	78.1	0.5652	42	18	1.00E-03	0.00E+00	1.69
13.85	45.44	431.10	2.30	2.727	0.575	2.151	0.54	199	1.51	286	1.39	247	1.44	1.39	0.50	0.70	288	1.0	287.6	2.293	0.804	1.515	0.565	45.44	6 S	6.09	0	4.80	9.05	1.89	45.4419	431.10	6	71.9	0.5646	42	18	1.00E-03	0.00E+00	1.69
13.90	45.61	401.30	2.51	2.736	0.581	2.156	0.63	185	1.58	266	1.46	230	1.51	1.46	0.50	0.70	267	1.0	267.5	1.859	0.803	1.519	0.564	45.61	6 S	4.95	0	4.80	9.10	1.90	45.6059	401.30	6	66.9	0.5639	42	18	1.00E-03	0.00E+00	1.69
13.95	45.77	442.10	1.90	2.746	0.586	2.161	0.43	203	1.44	292	1.32	253	1.37	1.32	0.50	0.70	294	1.0	294.3	2.451	0.802	1.524	0.563	45.77	6 S	6.53	0	4.80	9.15	1.91	45.7700	442.10	6	73.7	0.5633	42	18	1.00E-03	0.00E+00	1.69
14.00	45.93	406.50	1.87	2.756	0.591	2.165	0.46	186	1.49	268	1.37	232	1.42	1.37	0.50	0.69	270	1.0	270.3	1.917	0.800	1.529	0.563	45.93	6 S	5.11	0	4.80	9.20	1.92	45.9340	406.50	6	67.8	0.5626	42	18	1.00E-03	0.00E+00	1.69
14.05	46.10	488.30	2.94	2.766	0.596	2.170	0.61	224	1.50	323	1.39	279	1.43	1.39	0.50	0.69	324	1.0	324.4	3.254	0.799	1.534	0.562	46.10	6 S	8.69	0	4.80	9.25	1.93	46.0981	488.30	6	81.4	0.5619	42	18	1.00E-03	0.00E+00	1.69
14.10	46.26	561.40	3.86	2.776	0.601	2.175	0.69	257	1.50	371	1.39	320	1.43	1.39	0.50	0.69	373	1.0	372.5	4.888	0.798	1.538	0.561	46.26	6 S	13.06	0	4.80	9.30	1.94	46.2621	561.40	6	93.6	0.5612	42	18	1.00E-03	0.00E+00	1.69
14.15	46.43	646.80	3.76	2.786	0.606	2.179	0.58	295	1.40	427	1.30	368	1.34	1.30	0.50	0.69	429	1.0	428.7	7.409	0.796	1.543	0.561	46.43	6 S	19.83	0	4.80	9.35	1.95	46.4262	646.80	6	107.8	0.5606	42	18	1.00E-03	0.00E+00	1.69
14.20	46.59	619.80	4.01	2.795	0.611	2.184	0.65	282	1.45	409	1.34	352	1.39	1.34	0.50	0.69	410	1.0	410.4	6.508	0.795	1.548	0.560	46.59	6 S	17.44	0	4.80	9.40	1.96	46.5902	619.80	6	103.3	0.5599	42	18	1.00E-03	0.00E+00	1.69
14.25	46.75	586.30	3.77	2.805	0.616	2.189	0.65	267	1.47	386	1.36	333	1.40	1.36	0.50	0.69	388	1.0	387.8	5.503	0.794	1.552	0.559	46.75	6 S	14.76	0	4.80	9.45	1.97	46.7543	586.30	6	97.7	0.5592	42	18	1.00E-03	0.00E+00	1.69
14.30	46.92	568.00	2.78	2.815	0.621	2.194	0.49	258	1.40	373	1.28	322	1.33	1.28	0.50	0.69	375	1.0	375.3	4.995	0.792	1.557	0.559	46.92	6 S	13.42	0	4.80	9.50	1.98	46.9183	568.00	6	94.7	0.5585	42	18	1.00E-03	0.00E+00	1.69
14.35	47.08	539.20	2.60	2.825	0.627	2.198	0.48	244	1.41	354	1.29	305	1.34	1.29	0.50	0.69	356	1.0	355.9	4.271	0.791	1.562	0.558	47.08	6 S	11.49	0	4.80	9.55	1.99	47.0824	539.20	6	89.9	0.5579	42	18	1.00E-03	0.00E+00	1.69
14.40	47.25	565.70	2.72	2.835	0.632	2.203	0.48	255	1.40	371	1.28	320	1.32	1.28	0.50	0.69	373	1.0	373.0	4.905	0.790	1.567	0.557	47.25	6 S	13.20	0	4.80	9.60	2.00	47.2464	565.70	6	94.3	0.5572	42	18	1.00E-03	0.00E+00	1.69
14.45	47.41	541.60	2.37	2.845	0.637	2.208	0.44	244	1.38	355	1.26	305	1.31	1.26	0.50	0.69	357	1.0	356.7	4.300	0.788	1.571	0.556	47.41	6 S	11.59	0	4.80	9.65	2.01	47.4105	541.60	6	90.3	0.5565	42	18	1.00E-03	0.00E+00	1.69
14.50	47.57	498.90	2.24	2.854	0.642	2.213	0.45	224	1.42	326	1.30	281	1.34	1.30	0.50	0.69	328	1.0	328.2	3.368	0.787	1.576	0.556	47.57	6 S	9.09	0	4.80	9.70	2.02	47.5745	498.90	6	83.2	0.5558	42	18	1.00E-03	0.00E+00	1.69
14.55	47.74	452.70	2.65	2.864	0.647	2.217	0.59	203	1.53	296	1.41	254	1.45	1.41	0.50	0.69	298	1.0	297.5	2.529	0.786	1.581	0.555	47.74	6 S	6.83	0	4.80	9.75	2.03	47.7386	452.70	6	75.5	0.5551	42	18	1.00E-03	0.00E+00	1.69
14.60	47.90	437.10	5.97	2.874	0.652	2.222	1.37	195	1.80	285	1.70	245	1.74	1.70	0.50	0.69	287	1.0	297.0	2.516	0.784	1.586	0.554	47.90	6 S	6.81	0	4.80	9.80	2.04	47.9026	437.10	6	72.9	0.5544	42	18	1.00E-03	0.00E+00	1.69
14.65	48.07	500.90	5.66	2.884	0.657	2.227	1.14	224	1.70	327	1.59	281	1.63	1.59	0.50	0.68	328	1.0	328.5	3.376	0.783	1.590	0.554	48.07	6 S	9.15	0	4.80	9.85	2.05	48.0667	500.90	6	83.5	0.5537	42	18	1.00E-03	0.00E+00	1.69
14.70	48.23	627.20	5.27	2.894	0.662	2.231	0.84	280	1.54	409	1.43	351	1.47	1.43	0.50	0.68	411	1.0	410.9	6.531	0.782	1.595	0.553	48.23	6 S	17.71	0	4.80	9.90	2.06	48.2307	627.20	6	104.5	0.5530	42	18	1.00E-03	0.00E+00	1.69
14.75	48.39	439.00	6.41	2.904	0.668	2.236	1.47	195	1.82	285	1.72	245	1.76	1.72	0.50	0.68	287	1.1	301.8	2.636	0.780	1.600	0.552	48.39	6 S	7.16	0	4.80	9.95	2.07	48.3948	439.00	6	73.2	0.5523	42	18	1.00E-03	0.00E+00	1.69
14.80	48.56	403.90	3.19	2.914	0.673	2.241	0.80	179	1.65	262	1.54	225	1.58	1.54	0.50	0.68	264	1.0	264.0	1.792	0.779	1.604	0.552	48.56	6 S	4.87	0	4.80	10.00	2.08	48.5588	403.90	6	67.3	0.5516	42	18	1.00E-03	0.00E+00	1.69
14.85	48.72	400.20	1.51	2.923	0.678	2.246	0.38	177	1.46	259	1.32	223	1.38	1.32	0.50	0.68	261	1.0	261.3	1.740	0.778	1.609	0.551	48.72	6 S	4.74	0	4.80	10.05	2.09	48.7229	400.20	6	66.7	0.5509	42	18	1.00E-03	0.00E+00	1.69
14.90	48.89	429.60	1.22	2.933	0.683	2.250	0.29	190	1.37	278	1.23	239	1.28	1.23	0.50	0.68	280	1.0	280.2	2.127	0.776	1.614	0.550	48.89	6 S	5.80	0	4.80	10.10	2.10	48.8869	429.60	6	71.6	0.5502	42	18	1.00E-03	0.00E+00	1.69
14.95	49.05	487.90	0.97	2.943	0.688	2.255	0.20	215	1.25	316	1.10	271	1.16	1.10	0.50	0.68	318	1.0	317.9	3.069	0.775	1.619	0.549	49.05	7 S	8.38	0	4.80	10.15	2.11	49.0510	487.90	8	61.0	0.5495	42	18	1.00E-03	0.00E+00	1.69
15.00	49.22	525.60	1.40	2.953	0.693	2.260	0.27	231	1.28	340	1.14	292	1.20	1.14	0.50	0.68	342	1.0	342.1	3.805	0.774	1.623	0.549	49.22	7 S	10.40	0	4.80	10.20	2.12	49.2150	525.60	8	65.7	0.5487	42	18	1.00E-03	0.00E+00	1.69
15.05	49.38	453.30	1.51	2.963	0.698	2.265	0.34	199	1.39	293	1.25	251	1.30	1.25	0.50	0.68	295	1.0	294.8	2.462	0.772	1.628	0.548	49.38	6 S	6.74	0	4.80	10.25	2.14	49.3791	453.30	6	75.6	0.5480	42	18	1.00E-03	0.00E+00	1.69
15.10	49.54	487.10	1.64	2.973	0.703	2.269	0.34	213	1.37	314	1.23	269	1.28	1.23	0.50	0.68	316	1.0	316.4	3.026	0.771	1.633	0.547	49.54	6 S	8.29	0	4.80	10.30	2.15	49.5431	487.10	6	81.2	0.5473	42	18	1.00E-03	0.00E+00	1.69
15.15	49.71	570.50	2.20	2.982	0.708	2.274	0.39	250	1.34	368	1.21	315	1.26	1.21	0.50	0.68	370	1.0	370.2	4.799	0.769	1.637	0.547	49.71	6 S	13.17	0	4.80	10.35	2.16	49.7072	570.50	6	95.1	0.5466	42	18	1.00E-03	0.00E+00	1.69
15.20	49.87	580.70	2.20	2.992	0.714	2.279	0.38	254	1.33	375	1.20	320	1.25	1.20	0.50	0.68	376	1.0	376.4	5.041	0.768	1.642	0.546	49.87	6 S	13.85	0	4.80	10.40	2.17	49.8712	580.70	6	96.8	0.5459	42	18	1.00E-03	0.00E+00	1.69
15.25	50.04	587.90	2.20	3.002	0.719	2.283	0.38	256	1.33	379	1.19	324	1.25	1.19	0.50	0.68	381	1.0	380.7	5.212	0.767	1.647	0.545	50.04	6 S	14.34	0	4.80	10.45	2.18	50.0353	587.90	6	98.0	0.5451	42	18	1.00E-03	0.00E+00	1.69

Newhall Land and Farming Company
January 16, 2008
2004-700-22

APPENDIX C

STABILITY ANALYSES

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

SLOPE STABILITY ANALYSES RESULTS

TABLE D-1

CROSS SECTION	PROGRAM USED	METHOD USED	ANALYZED PLANE	FACTOR OF SAFETY			REMARKS
				Static	Pseudo	Temp	
AA-AA'	GSTABLE 7	Modified Bishop	Circular	1.553	1.194	N/A	Minimum factor of safety, Entire slope
							Peak shear strength not used in seismic slope staibility analyses
		Surficial		2.390	N/A		Minimum factor of safety
							Open space lot not intended for development
BB-BB'	GSTABLE 7	Modified Bishop	Circular	0.978			Minimum factor of safety is less than LACDPW standards. See comment below
							No geotechnical hazard is subdivided.
							Lot 44 is an open space lot not intended for development.
P-P' **							
Seward 13E-13E' is located proximity of RTF&A P-P'	GSTABLE 7	Simplified Janbu	Bedding	[redacted]	1.783		Landslide plane, Peak shear strength not used in seismic slope stability analyses
Q-Q' **							
	GSTABLE 7	Simplified Janbu	Bedding	[redacted]	1.371		slide plane
Seward 14E-14E' is located proximity of Q-Q'		Simplified Janbu	Bedding	[redacted]	1.796		natural slope above the proposed road, Peak shear strength not used in seismic slope stability analyses
		Simplified Janbu	Circular	[redacted]	1.495		Qls mass
		Modified Bishop	Circular	[redacted]	1.506		natural slope above the proposed road
		Modified Bishop	Bedding	[redacted]	1.677		Qls removal
R-R' **							
	GSTABLE 7	Modified Bishop	Circular	[redacted]	1.644		Natural slope above the proposed road
Seward 15E-15E' is located proximity of R-R'		Simplified Janbu	Bedding	[redacted]	2.636		natural slope above the proposed road, Peak shear strength not used in seismic slope stability analyses

N/A = not applicable

[redacted] For Slope Stability Analyses, See report dated April 6, 2007

** Seward cross sections are more critical in compare to RTF&A. (Source Reference: Mesas East/Mission Village, Vesting Tentative Tract 61105, Report dated July 22, 2004)

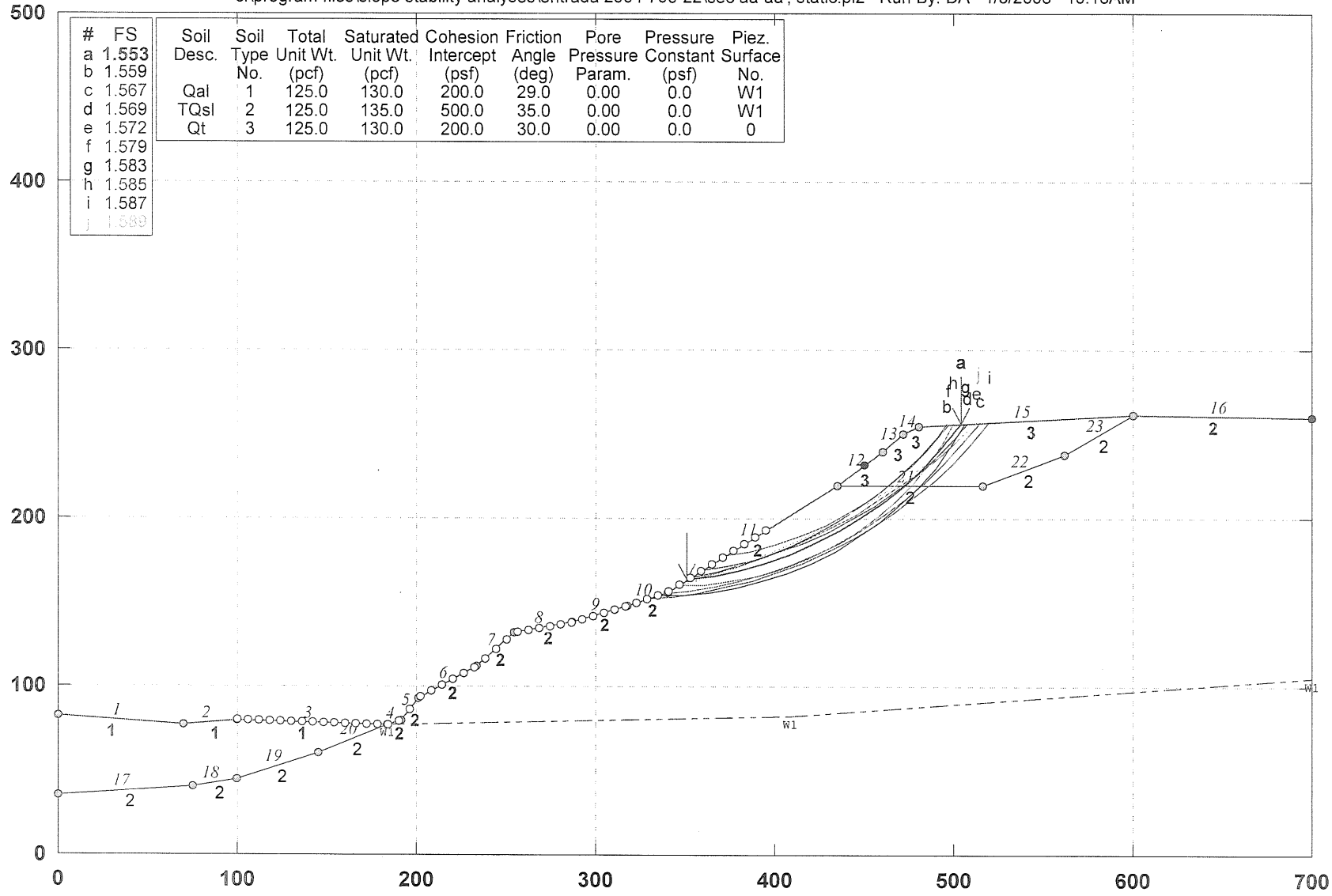
For use with report dated 01/16/2008; RTF Job No. 2004-700-22

C S AA-AA', Static Circular

c:\program files\slope stability analyses\entrada 2004-700-22\sec aa-aa', static.pl2 Run By: DA 1/3/2008 10:18AM

#	FS
a	1.553
b	1.559
c	1.567
d	1.569
e	1.572
f	1.579
g	1.583
h	1.585
i	1.587
j	1.589

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Qal	1	125.0	130.0	200.0	29.0	0.00	0.0	W1
TQsl	2	125.0	135.0	500.0	35.0	0.00	0.0	W1
Qt	3	125.0	130.0	200.0	30.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.553

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(All Rights Reserved-Unauthorized Use Prohibited)

****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 1/3/2008
Time of Run: 10:18AM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec AA-AA', Static.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec AA-AA', Static.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec AA-AA', Static.PLT
PROBLEM DESCRIPTION: C S AA-AA', Static
Circular

BOUNDARY COORDINATES
16 Top Boundaries
23 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	82.00	70.00	77.00	1
2	70.00	77.00	100.00	80.00	1
3	100.00	80.00	184.00	77.00	1
4	184.00	77.00	192.00	80.00	2
5	192.00	80.00	201.00	93.00	2
6	201.00	93.00	234.00	112.00	2
7	234.00	112.00	255.00	132.00	2
8	255.00	132.00	287.00	138.00	2
9	287.00	138.00	318.00	148.00	2
10	318.00	148.00	340.00	156.00	2
11	340.00	156.00	435.00	220.00	2
12	435.00	220.00	460.00	240.00	3
13	460.00	240.00	472.00	250.00	3
14	472.00	250.00	480.00	255.00	3
15	480.00	255.00	600.00	262.00	3
16	600.00	262.00	700.00	260.00	2
17	0.00	35.00	75.00	40.00	2
18	75.00	40.00	100.00	45.00	2
19	100.00	45.00	145.00	60.00	2
20	145.00	60.00	184.00	77.00	2
21	435.00	220.00	516.00	220.00	2
22	516.00	220.00	562.00	238.00	2
23	562.00	238.00	600.00	262.00	2

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	200.0	29.0	0.00	0.0	1
2	125.0	135.0	500.0	35.0	0.00	0.0	1
3	125.0	130.0	200.0	30.0	0.00	0.0	0

1 PIEZOMETRIC SURFACE(S) SPECIFIED
Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 3 Coordinate Points

Pore Pressure Inclination Factor = 0.00

Point No.	X-Water (ft)	Y-Water (ft)
1	184.00	77.00
2	409.00	82.00
3	700.00	105.00

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.
3000 Trial Surfaces Have Been Generated.
10 Surface(s) Initiate(s) From Each Of 300 Points Equally Spaced Along The Ground Surface Between X = 100.00(ft)
and X = 400.00(ft)
Each Surface Terminates Between X = 450.00(ft)
and X = 700.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00(ft)
15.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 3000
Number of Trial Surfaces With Valid FS = 3000
Statistical Data On All Valid FS Values:
FS Max = 7.296 FS Min = 1.553 FS Ave = 2.814
Standard Deviation = 0.917 Coefficient of Variation = 32.58 %
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.837	163.301
2	365.647	165.679
3	380.260	169.066
4	394.607	173.444
5	408.620	178.794
6	422.234	185.091
7	435.386	192.304
8	448.013	200.401
9	460.057	209.343
10	471.460	219.088
11	482.169	229.590
12	492.135	240.801
13	501.310	252.668
14	503.800	256.388

Circle Center At X = 323.726 ; Y = 380.069 ; and Radius = 218.457
Factor of Safety
*** 1.553 ***
Individual data on the 18 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	14.8	7033.8	0.0	0.0	0.	0.	0.0	0.0	0.0
2	14.6	19778.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	14.3	29949.0	0.0	0.0	0.	0.	0.0	0.0	0.0
4	14.0	37466.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	13.6	42326.6	0.0	0.0	0.	0.	0.0	0.0	0.0
6	12.8	43256.8	0.0	0.0	0.	0.	0.0	0.0	0.0
7	0.4	1348.9	0.0	0.0	0.	0.	0.0	0.0	0.0
8	12.6	45784.5	0.0	0.0	0.	0.	0.0	0.0	0.0
9	12.0	45481.8	0.0	0.0	0.	0.	0.0	0.0	0.0
10	0.1	217.1	0.0	0.0	0.	0.	0.0	0.0	0.0
11	11.4	43593.7	0.0	0.0	0.	0.	0.0	0.0	0.0
12	0.5	2054.1	0.0	0.0	0.	0.	0.0	0.0	0.0
13	0.4	1478.2	0.0	0.0	0.	0.	0.0	0.0	0.0
14	7.6	27481.7	0.0	0.0	0.	0.	0.0	0.0	0.0
15	2.2	7196.3	0.0	0.0	0.	0.	0.0	0.0	0.0
16	10.0	25190.5	0.0	0.0	0.	0.	0.0	0.0	0.0

17	9.2	10598.6	0.0	0.0	0.	0.	0.0	0.0	0.0
18	2.5	556.3	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	352.844	164.653
2	367.460	168.024
3	381.830	172.324
4	395.896	177.535
5	409.600	183.635
6	422.885	190.600
7	435.697	198.400
8	447.984	207.004
9	459.695	216.377
10	470.783	226.479
11	481.201	237.271
12	490.908	248.707
13	496.299	255.951

Circle Center At X = 307.508 ; Y = 394.535 ; and Radius = 234.310

Factor of Safety

*** 1.559 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	336.790	154.833
2	351.687	156.583
3	366.448	159.252
4	381.016	162.828
5	395.334	167.298
6	409.349	172.645
7	423.006	178.849
8	436.253	185.885
9	449.040	193.727
10	461.317	202.345
11	473.038	211.706
12	484.157	221.773
13	494.633	232.509
14	504.425	243.872
15	513.495	255.819
16	514.281	257.000

Circle Center At X = 316.024 ; Y = 396.166 ; and Radius = 242.225

Factor of Safety

*** 1.567 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	358.864	168.708
2	373.598	171.520
3	388.122	175.268
4	402.377	179.937
5	416.304	185.508
6	429.847	191.957
7	442.950	199.259
8	455.559	207.383
9	467.623	216.297
10	479.092	225.964
11	489.921	236.345
12	500.063	247.396
13	507.487	256.603

Circle Center At X = 322.286 ; Y = 400.374 ; and Radius = 234.536

Factor of Safety

*** 1.569 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	348.830	161.949
2	363.309	165.870

3	377.600	170.427
4	391.675	175.611
5	405.508	181.412
6	419.071	187.819
7	432.338	194.819
8	445.282	202.398
9	457.878	210.542
10	470.103	219.235
11	481.931	228.459
12	493.340	238.198
13	504.308	248.431
14	512.619	256.903

Circle Center At X = 267.634 ; Y = 490.745 ; and Radius = 338.674

Factor of Safety

*** 1.572 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	371.907	177.495
2	386.619	180.421
3	401.052	184.508
4	415.113	189.731
5	428.714	196.057
6	441.768	203.445
7	454.192	211.850
8	465.908	221.217
9	476.841	231.486
10	486.922	242.594
11	496.086	254.469
12	497.081	255.996

Circle Center At X = 342.720 ; Y = 363.085 ; and Radius = 187.871

Factor of Safety

*** 1.579 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	333.780	153.738
2	348.773	154.174
3	363.688	155.772
4	378.434	158.523
5	392.921	162.410
6	407.063	167.411
7	420.775	173.493
8	433.972	180.622
9	446.577	188.754
10	458.512	197.840
11	469.706	207.824
12	480.091	218.648
13	489.605	230.245
14	498.190	242.545
15	505.794	255.475
16	506.312	256.535

Circle Center At X = 335.711 ; Y = 346.682 ; and Radius = 192.953

Factor of Safety

*** 1.583 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	345.820	159.921
2	360.809	160.503
3	375.688	162.406
4	390.340	165.615
5	404.652	170.106
6	418.512	175.843
7	431.810	182.782
8	444.444	190.868
9	456.315	200.038

10	467.329	210.221
11	477.401	221.336
12	486.452	233.298
13	494.411	246.012
14	499.568	256.141

Circle Center At X = 346.840 ; Y = 329.237 ; and Radius = 169.319

Factor of Safety

*** 1.585 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	328.763	151.914
2	343.692	153.376
3	358.510	155.700
4	373.170	158.878
5	387.621	162.900
6	401.814	167.752
7	415.703	173.418
8	429.240	179.879
9	442.381	187.112
10	455.080	195.095
11	467.296	203.800
12	478.987	213.198
13	490.115	223.257
14	500.641	233.943
15	510.530	245.221
16	519.750	257.053
17	519.941	257.330

Circle Center At X = 311.006 ; Y = 410.204 ; and Radius = 258.900

Factor of Safety

*** 1.587 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	344.817	159.245
2	359.059	163.952
3	373.133	169.141
4	387.021	174.809
5	400.708	180.947
6	414.177	187.548
7	427.413	194.605
8	440.401	202.110
9	453.124	210.054
10	465.570	218.428
11	477.722	227.221
12	489.567	236.424
13	501.091	246.026
14	512.281	256.015
15	513.248	256.939

Circle Center At X = 214.071 ; Y = 578.791 ; and Radius = 439.446

Factor of Safety

*** 1.589 ***

**** END OF GSTABL7 OUTPUT ****

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

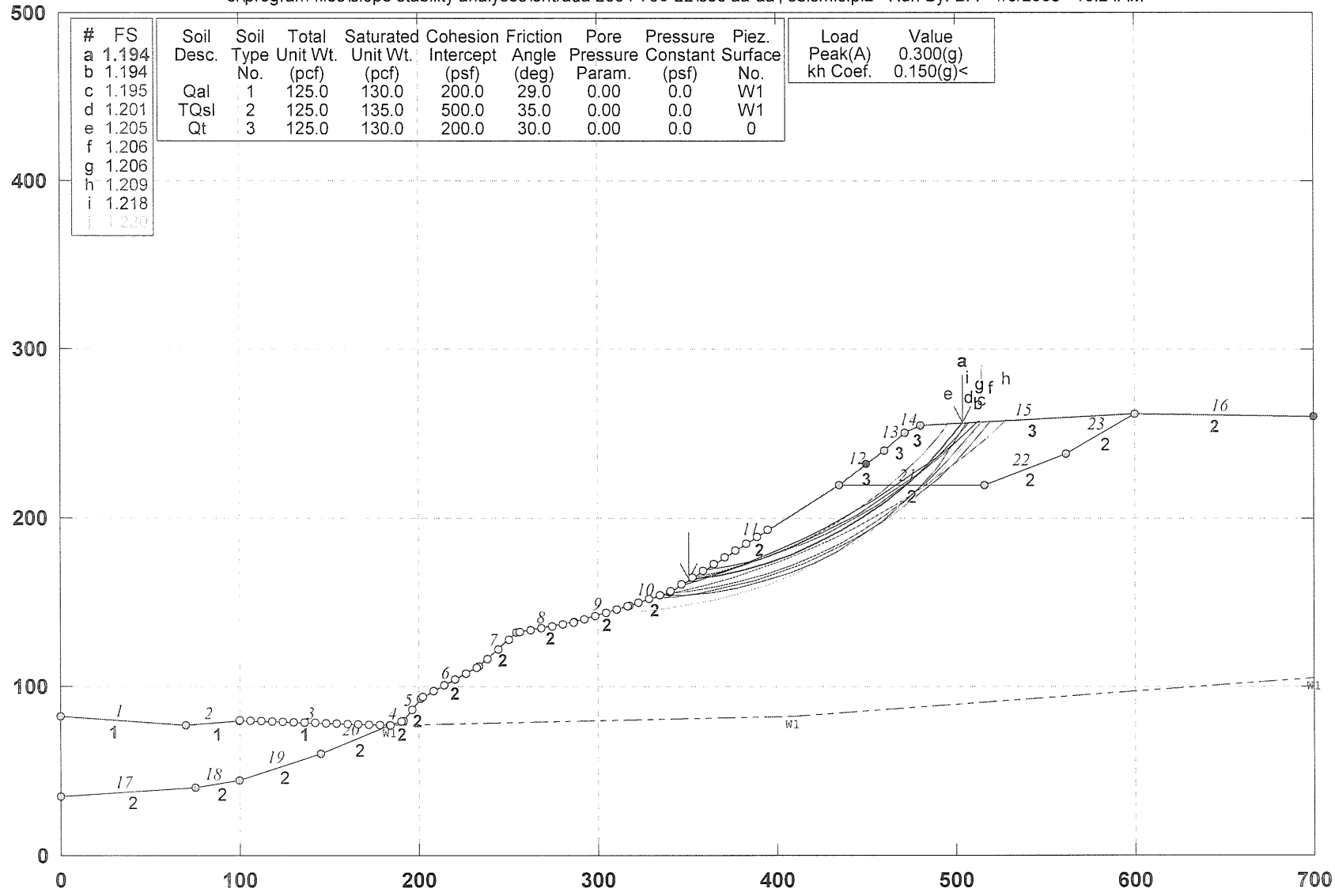
C S AA-AA', Seismic Circular

c:\program files\slope stability analyses\entrada 2004-700-22\sec aa-aa', seismic.pl2 Run By: DA 1/3/2008 10:24AM

#	FS
a	1.194
b	1.194
c	1.195
d	1.201
e	1.205
f	1.206
g	1.206
h	1.209
i	1.218
j	1.240

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Qal	1	125.0	130.0	200.0	29.0	0.00	0.0	W1
TQsl	2	125.0	135.0	500.0	35.0	0.00	0.0	W1
Qt	3	125.0	130.0	200.0	30.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.194

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 1/3/2008
Time of Run: 10:24AM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec AA-AA', Seismic.in
Output Filename: C:\Program Files\S1ope stability analyses\Entrada 2004-700-2 2\sec AA-AA', Seismic.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec AA-AA', Seismic.PLT
PROBLEM DESCRIPTION: C S AA-AA', Seismic
Circular

BOUNDARY COORDINATES
16 Top Boundaries
23 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	82.00	70.00	77.00	1
2	70.00	77.00	100.00	80.00	1
3	100.00	80.00	184.00	77.00	1
4	184.00	77.00	192.00	80.00	2
5	192.00	80.00	201.00	93.00	2
6	201.00	93.00	234.00	112.00	2
7	234.00	112.00	255.00	132.00	2
8	255.00	132.00	287.00	138.00	2
9	287.00	138.00	318.00	148.00	2
10	318.00	148.00	340.00	156.00	2
11	340.00	156.00	435.00	220.00	2
12	435.00	220.00	460.00	240.00	3
13	460.00	240.00	472.00	250.00	3
14	472.00	250.00	480.00	255.00	3
15	480.00	255.00	600.00	262.00	3
16	600.00	262.00	700.00	260.00	2
17	0.00	35.00	75.00	40.00	2
18	75.00	40.00	100.00	45.00	2
19	100.00	45.00	145.00	60.00	2
20	145.00	60.00	184.00	77.00	2
21	435.00	220.00	516.00	220.00	2
22	516.00	220.00	562.00	238.00	2
23	562.00	238.00	600.00	262.00	2

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	200.0	29.0	0.00	0.0	1
2	125.0	135.0	500.0	35.0	0.00	0.0	1
3	125.0	130.0	200.0	30.0	0.00	0.0	0

1 PIEZOMETRIC SURFACE(S) SPECIFIED
Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 3 Coordinate Points

Pore Pressure Inclination Factor = 0.00

Point No.	X-Water (ft)	Y-Water (ft)
1	184.00	77.00
2	409.00	82.00
3	700.00	105.00

Specified Peak Ground Acceleration Coefficient (A) = 0.300(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
3000 Trial Surfaces Have Been Generated.
10 Surface(s) Initiate(s) From Each Of 300 Points Equally Spaced
Along The Ground Surface Between X = 100.00(ft)
and X = 400.00(ft)
Each Surface Terminates Between X = 450.00(ft)
and X = 700.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
15.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 3000
Number of Trial Surfaces With Valid FS = 3000
Statistical Data On All Valid FS Values:
FS Max = 3.939 FS Min = 1.194 FS Ave = 1.969
Standard Deviation = 0.527 Coefficient of Variation = 26.78 %
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	350.837	163.301
2	365.647	165.679
3	380.260	169.066
4	394.607	173.444
5	408.620	178.794
6	422.234	185.091
7	435.386	192.304
8	448.013	200.401
9	460.057	209.343
10	471.460	219.088
11	482.169	229.590
12	492.135	240.801
13	501.310	252.668
14	503.800	256.388

Circle Center At X = 323.726 ; Y = 380.069 ; and Radius = 218.457
Factor of Safety
*** 1.194 ***
Individual data on the 18 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	14.8	7033.8	0.0	0.0	0.	0.	1055.1	0.0	0.0
2	14.6	19778.1	0.0	0.0	0.	0.	2966.7	0.0	0.0
3	14.3	29949.0	0.0	0.0	0.	0.	4492.4	0.0	0.0
4	14.0	37466.1	0.0	0.0	0.	0.	5619.9	0.0	0.0
5	13.6	42326.6	0.0	0.0	0.	0.	6349.0	0.0	0.0
6	12.8	43256.8	0.0	0.0	0.	0.	6488.5	0.0	0.0
7	0.4	1348.9	0.0	0.0	0.	0.	202.3	0.0	0.0
8	12.6	45784.5	0.0	0.0	0.	0.	6867.7	0.0	0.0
9	12.0	45481.8	0.0	0.0	0.	0.	6822.3	0.0	0.0
10	0.1	217.1	0.0	0.0	0.	0.	32.6	0.0	0.0
11	11.4	43593.7	0.0	0.0	0.	0.	6539.0	0.0	0.0
12	0.5	2054.1	0.0	0.0	0.	0.	308.1	0.0	0.0

13	0.4	1478.2	0.0	0.0	0.	0.	221.7	0.0	0.0
14	7.6	27481.7	0.0	0.0	0.	0.	4122.3	0.0	0.0
15	2.2	7196.3	0.0	0.0	0.	0.	1079.4	0.0	0.0
16	10.0	25190.5	0.0	0.0	0.	0.	3778.6	0.0	0.0
17	9.2	10598.6	0.0	0.0	0.	0.	1589.8	0.0	0.0
18	2.5	556.3	0.0	0.0	0.	0.	83.4	0.0	0.0

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	348.830	161.949
2	363.309	165.870
3	377.600	170.427
4	391.675	175.611
5	405.508	181.412
6	419.071	187.819
7	432.338	194.819
8	445.282	202.398
9	457.878	210.542
10	470.103	219.235
11	481.931	228.459
12	493.340	238.198
13	504.308	248.431
14	512.619	256.903

Circle Center At X = 267.634 ; Y = 490.745 ; and Radius = 338.674

Factor of Safety

*** 1.194 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	336.790	154.833
2	351.687	156.583
3	366.448	159.252
4	381.016	162.828
5	395.334	167.298
6	409.349	172.645
7	423.006	178.849
8	436.253	185.885
9	449.040	193.727
10	461.317	202.345
11	473.038	211.706
12	484.157	221.773
13	494.633	232.509
14	504.425	243.872
15	513.495	255.819
16	514.281	257.000

Circle Center At X = 316.024 ; Y = 396.166 ; and Radius = 242.225

Factor of Safety

*** 1.195 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	358.864	168.708
2	373.598	171.520
3	388.122	175.268
4	402.377	179.937
5	416.304	185.508
6	429.847	191.957
7	442.950	199.259
8	455.559	207.383
9	467.623	216.297
10	479.092	225.964
11	489.921	236.345
12	500.063	247.396
13	507.487	256.603

Circle Center At X = 322.286 ; Y = 400.374 ; and Radius = 234.536

Factor of Safety

*** 1.201 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	352.844	164.653
2	367.460	168.024
3	381.830	172.324
4	395.896	177.535
5	409.600	183.635
6	422.885	190.600
7	435.697	198.400
8	447.984	207.004
9	459.695	216.377
10	470.783	226.479
11	481.201	237.271
12	490.908	248.707
13	496.299	255.951

Circle Center At X = 307.508 ; Y = 394.535 ; and Radius = 234.310

Factor of Safety

*** 1.205 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	328.763	151.914
2	343.692	153.376
3	358.510	155.700
4	373.170	158.878
5	387.621	162.900
6	401.814	167.752
7	415.703	173.418
8	429.240	179.879
9	442.381	187.112
10	455.080	195.095
11	467.296	203.800
12	478.987	213.198
13	490.115	223.257
14	500.641	233.943
15	510.530	245.221
16	519.750	257.053
17	519.941	257.330

Circle Center At X = 311.006 ; Y = 410.204 ; and Radius = 258.900

Factor of Safety

*** 1.206 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	344.817	159.245
2	359.059	163.952
3	373.133	169.141
4	387.021	174.809
5	400.708	180.947
6	414.177	187.548
7	427.413	194.605
8	440.401	202.110
9	453.124	210.054
10	465.570	218.428
11	477.722	227.221
12	489.567	236.424
13	501.091	246.026
14	512.281	256.015
15	513.248	256.939

Circle Center At X = 214.071 ; Y = 578.791 ; and Radius = 439.446

Factor of Safety

*** 1.206 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	331.773	153.008

2	346.402	156.324
3	360.895	160.191
4	375.231	164.604
5	389.390	169.556
6	403.352	175.040
7	417.096	181.049
8	430.602	187.574
9	443.852	194.605
10	456.827	202.132
11	469.507	210.145
12	481.875	218.632
13	493.913	227.581
14	505.604	236.980
15	516.930	246.814
16	527.877	257.069
17	528.636	257.837

Circle Center At X = 251.503 ; Y = 541.089 ; and Radius = 396.295

Factor of Safety

*** 1.209 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	333.780	153.738
2	348.773	154.174
3	363.688	155.772
4	378.434	158.523
5	392.921	162.410
6	407.063	167.411
7	420.775	173.493
8	433.972	180.622
9	446.577	188.754
10	458.512	197.840
11	469.706	207.824
12	480.091	218.648
13	489.605	230.245
14	498.190	242.545
15	505.794	255.475
16	506.312	256.535

Circle Center At X = 335.711 ; Y = 346.682 ; and Radius = 192.953

Factor of Safety

*** 1.218 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	306.689	144.351
2	321.682	144.806
3	336.620	146.168
4	351.448	148.433
5	366.112	151.591
6	380.558	155.631
7	394.732	160.538
8	408.584	166.295
9	422.061	172.880
10	435.115	180.270
11	447.697	188.436
12	459.762	197.349
13	471.264	206.976
14	482.163	217.283
15	492.417	228.230
16	501.990	239.778
17	510.846	251.885
18	514.126	256.991

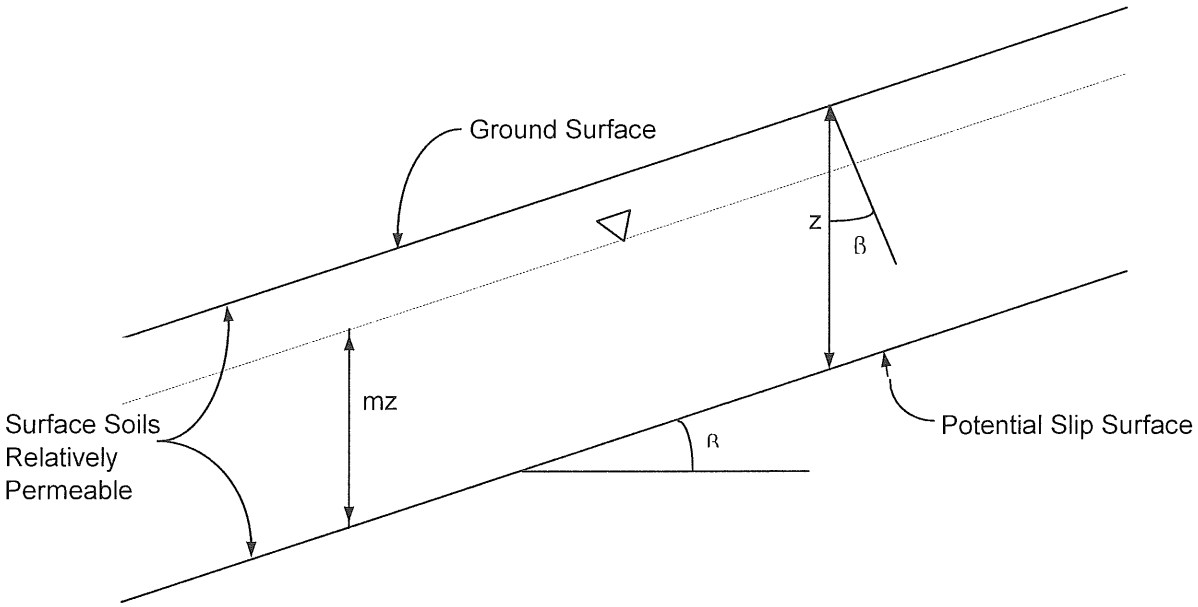
Circle Center At X = 306.789 ; Y = 391.495 ; and Radius = 247.144

Factor of Safety

*** 1.220 ***

**** END OF GSTABL7 OUTPUT ****

SURFICIAL SLOPE STABILITY



C S AA-AA', Bedrock Slope

F.S.	= Static Factor of Safety		
γ	= Unit Weight of Soil	= 135	pcf
γw	= Unit Weight of Water	= 62.4	pcf
c	= Cohesion of Soil	= 500	psf
ϕ'	= Effective Angle of Internal Friction	= 35	degree
z	= Vertical Depth of Slip Surface	= 4	
mz	= Vertical Height of Temporary Water Surface Above Slip Surface	= 1	
β	= Slope Angle	= 38	degree

$$F.S. = \frac{c + z\,(\gamma - m\gamma w)\,\cos^2\beta\,\tan\phi'}{z\,\gamma\,\sin\beta\,\cos\beta}$$

F.S. = 2.39

Job No. 2004-700-22

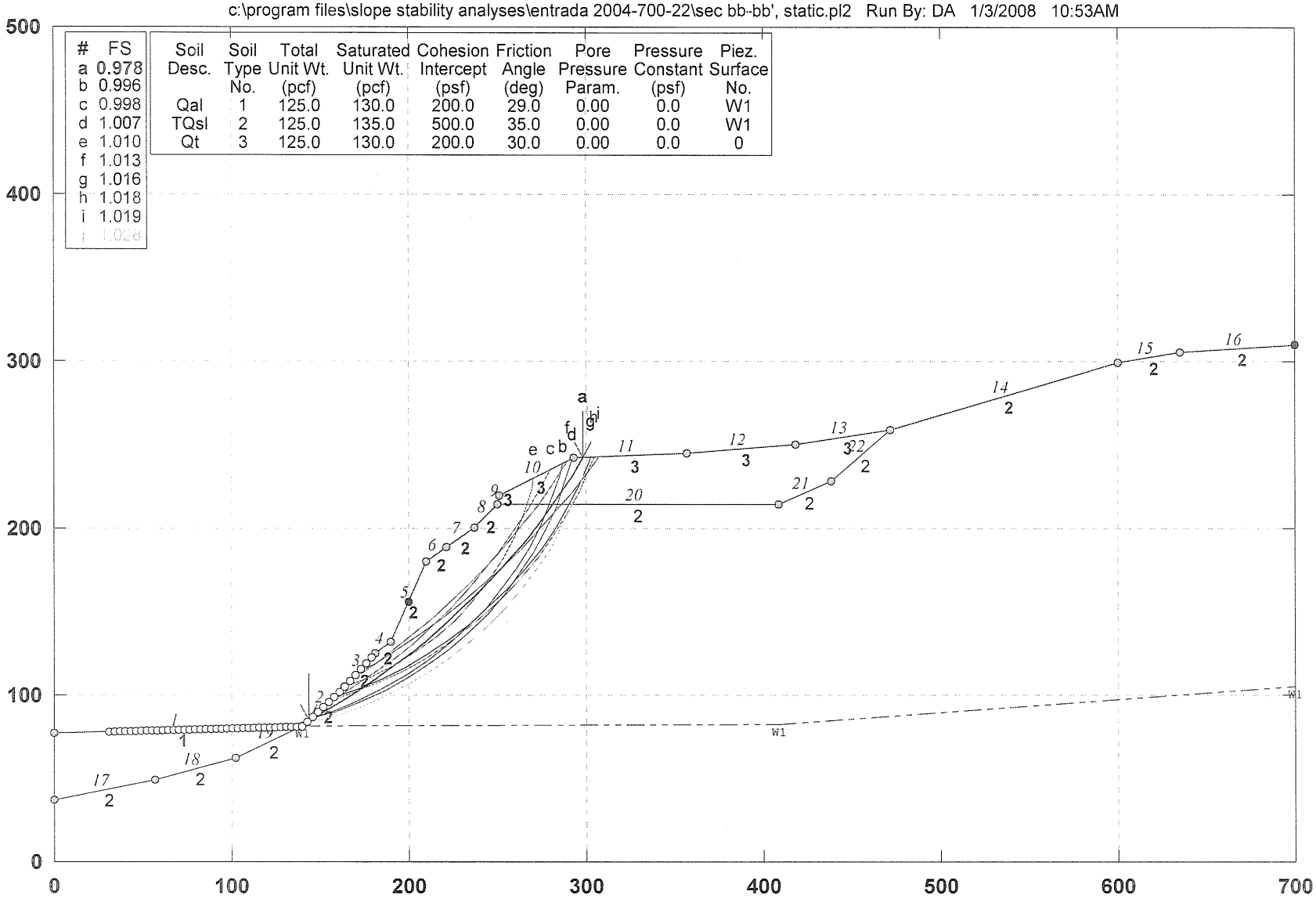
For use with report dated 01/16/2008; RTF Job No. 2004-700-22

C S BB-BB', Static Circular

c:\program files\slope stability analyses\entrada 2004-700-22\sec bb-bb', static.pl2 Run By: DA 1/3/2008 10:53AM

#	FS
a	0.978
b	0.996
c	0.998
d	1.007
e	1.010
f	1.013
g	1.016
h	1.018
i	1.019
j	1.028

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Qal	1	125.0	130.0	200.0	29.0	0.00	0.0	W1
TQsl	2	125.0	135.0	500.0	35.0	0.00	0.0	W1
Qt	3	125.0	130.0	200.0	30.0	0.00	0.0	0



GSTABL7 v.2 FSmin=0.978

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 1/3/2008
Time of Run: 10:53AM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec bb-bb', static.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec bb-bb', static.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec bb-bb', static.PLT

PROBLEM DESCRIPTION: C S BB-BB', Static
Circular

BOUNDARY COORDINATES

16 Top Boundaries
22 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	77.00	140.00	81.00	1
2	140.00	81.00	164.00	105.00	2
3	164.00	105.00	181.00	125.00	2
4	181.00	125.00	190.00	132.00	2
5	190.00	132.00	210.00	180.00	2
6	210.00	180.00	221.00	189.00	2
7	221.00	189.00	237.00	200.00	2
8	237.00	200.00	250.00	214.00	2
9	250.00	214.00	251.00	220.00	3
10	251.00	220.00	293.00	242.00	3
11	293.00	242.00	357.00	245.00	3
12	357.00	245.00	418.00	250.00	3
13	418.00	250.00	472.00	259.00	3
14	472.00	259.00	600.00	299.00	2
15	600.00	299.00	635.00	305.00	2
16	635.00	305.00	700.00	310.00	2
17	0.00	37.00	57.00	49.00	2
18	57.00	49.00	102.00	62.00	2
19	102.00	62.00	140.00	81.00	2
20	250.00	214.00	409.00	214.00	2
21	409.00	214.00	438.00	228.00	2
22	438.00	228.00	472.00	259.00	2

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

3 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	200.0	29.0	0.00	0.0	1
2	125.0	135.0	500.0	35.0	0.00	0.0	1
3	125.0	130.0	200.0	30.0	0.00	0.0	0

1 PIEZOMETRIC SURFACE(S) SPECIFIED
Unit Weight of Water = 62.40 (pcf)
Piezometric Surface No. 1 Specified by 3 Coordinate Points
Pore Pressure Inclination Factor = 0.00

Point No.	X-Water (ft)	Y-Water (ft)
1	140.00	81.00
2	409.00	82.00
3	700.00	105.00

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
1500 Trial Surfaces Have Been Generated.
10 Surface(s) Initiate(s) From Each Of 150 Points Equally Spaced
Along The Ground Surface Between X = 31.00(ft)
and X = 181.00(ft)
Each Surface Terminates Between X = 200.00(ft)
and X = 700.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
15.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 1500
Number of Trial Surfaces With Valid FS = 1500
Statistical Data On All Valid FS Values:
FS Max = 4.918 FS Min = 0.978 FS Ave = 2.510
Standard Deviation = 0.786 Coefficient of Variation = 31.30 %
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	143.752	84.752
2	156.563	92.554
3	169.090	100.805
4	181.316	109.496
5	193.226	118.614
6	204.805	128.150
7	216.038	138.090
8	226.912	148.423
9	237.412	159.134
10	247.526	170.212
11	257.241	181.641
12	266.544	193.408
13	275.423	205.497
14	283.869	217.894
15	291.869	230.582
16	298.668	242.266

Circle Center At X = -69.508 ; Y = 449.432 ; and Radius = 422.459
Factor of Safety
*** 0.978 ***
Individual data on the 25 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.8	4011.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	7.4	5836.6	0.0	0.0	0.	0.	0.0	0.0	0.0
3	5.1	5640.3	0.0	0.0	0.	0.	0.0	0.0	0.0
4	11.9	19288.5	0.0	0.0	0.	0.	0.0	0.0	0.0
5	0.3	621.2	0.0	0.0	0.	0.	0.0	0.0	0.0
6	8.7	17154.3	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.2	7456.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	11.6	43789.8	0.0	0.0	0.	0.	0.0	0.0	0.0
9	5.2	28130.4	0.0	0.0	0.	0.	0.0	0.0	0.0
10	6.0	35513.7	0.0	0.0	0.	0.	0.0	0.0	0.0
11	5.0	28854.2	0.0	0.0	0.	0.	0.0	0.0	0.0
12	5.9	33564.4	0.0	0.0	0.	0.	0.0	0.0	0.0
13	10.1	54177.6	0.0	0.0	0.	0.	0.0	0.0	0.0
14	0.4	2129.1	0.0	0.0	0.	0.	0.0	0.0	0.0
15	10.1	52107.4	0.0	0.0	0.	0.	0.0	0.0	0.0

16	2.5	12678.3	0.0	0.0	0.	0.	0.0	0.0	0.0
17	1.0	5411.2	0.0	0.0	0.	0.	0.0	0.0	0.0
18	6.2	34062.2	0.0	0.0	0.	0.	0.0	0.0	0.0
19	9.3	44399.2	0.0	0.0	0.	0.	0.0	0.0	0.0
20	8.9	34425.3	0.0	0.0	0.	0.	0.0	0.0	0.0
21	5.8	17784.1	0.0	0.0	0.	0.	0.0	0.0	0.0
22	2.7	6822.5	0.0	0.0	0.	0.	0.0	0.0	0.0
23	8.0	15074.2	0.0	0.0	0.	0.	0.0	0.0	0.0
24	1.1	1435.3	0.0	0.0	0.	0.	0.0	0.0	0.0
25	5.7	3356.1	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.759	85.759
2	158.893	90.781
3	172.636	96.792
4	185.918	103.762
5	198.673	111.655
6	210.837	120.433
7	222.348	130.050
8	233.149	140.459
9	243.185	151.607
10	252.406	163.438
11	260.766	175.892
12	268.222	188.908
13	274.737	202.419
14	280.278	216.358
15	284.818	230.654
16	286.766	238.735

Circle Center At X = 81.299 ; Y = 287.069 ; and Radius = 211.076

Factor of Safety

*** 0.996 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	153.819	94.819
2	166.405	102.980
3	178.613	111.696
4	190.419	120.948
5	201.800	130.719
6	212.733	140.989
7	223.196	151.737
8	233.169	162.942
9	242.630	174.582
10	251.562	186.632
11	259.946	199.070
12	267.766	211.871
13	275.006	225.008
14	280.052	235.218

Circle Center At X = -21.935 ; Y = 379.788 ; and Radius = 334.808

Factor of Safety

*** 0.998 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.759	85.759
2	159.017	90.415
3	172.908	96.076
4	186.361	102.710
5	199.308	110.286
6	211.682	118.764
7	223.422	128.101
8	234.467	138.251
9	244.761	149.160
10	254.253	160.775
11	262.893	173.037
12	270.639	185.882

13	277.451	199.246
14	283.294	213.061
15	288.139	227.257
16	291.868	241.407

Circle Center At X = 86.576 ; Y = 288.093 ; and Radius = 210.533

Factor of Safety

*** 1.007 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	163.886	104.886
2	177.742	110.632
3	191.024	117.602
4	203.626	125.739
5	215.444	134.977
6	226.382	145.240
7	236.353	156.447
8	245.275	168.505
9	253.076	181.317
10	259.692	194.779
11	265.070	208.782
12	269.166	223.212
13	270.485	230.206

Circle Center At X = 107.087 ; Y = 261.421 ; and Radius = 166.521

Factor of Safety

*** 1.010 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.906	108.419
2	179.041	117.236
3	190.865	126.467
4	202.363	136.099
5	213.523	146.122
6	224.330	156.524
7	234.773	167.293
8	244.838	178.415
9	254.513	189.877
10	263.788	201.666
11	272.650	213.768
12	281.090	226.168
13	289.098	238.852
14	290.027	240.443

Circle Center At X = -82.284 ; Y = 464.227 ; and Radius = 434.390

Factor of Safety

*** 1.013 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	156.839	97.839
2	170.824	103.263
3	184.445	109.547
4	197.648	116.665
5	210.383	124.591
6	222.601	133.293
7	234.254	142.738
8	245.297	152.890
9	255.687	163.708
10	265.384	175.152
11	274.351	187.177
12	282.553	199.736
13	289.958	212.780
14	296.538	226.260
15	302.266	240.124
16	303.069	242.472

Circle Center At X = 76.870 ; Y = 324.930 ; and Radius = 240.760

Factor of Safety

```
      ***    1.016   ***
Failure Surface Specified By 16 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        154.826      95.826
    2        168.873     101.087
    3        182.568     107.206
    4        195.859     114.160
    5        208.694     121.922
    6        221.025     130.463
    7        232.804     139.750
    8        243.987     149.747
    9        254.531     160.417
   10        264.394     171.717
   11        273.540     183.606
   12        281.934     196.038
   13        289.544     208.964
   14        296.339     222.337
   15        302.295     236.104
   16        304.621     242.545
Circle Center At X =    77.128 ; Y =   324.979 ; and Radius =   241.968
       Factor of Safety
      ***    1.018   ***
Failure Surface Specified By 14 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        169.926     111.972
    2        182.639     119.934
    3        195.072     128.326
    4        207.210     137.138
    5        219.040     146.361
    6        230.546     155.984
    7        241.717     165.995
    8        252.539     176.382
    9        262.998     187.134
   10        273.083     198.237
   11        282.783     209.680
   12        292.084     221.447
   13        300.978     233.526
   14        307.238     242.667
Circle Center At X =   -55.624 ; Y =   486.419 ; and Radius =   437.131
       Factor of Safety
      ***    1.019   ***
Failure Surface Specified By 17 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        141.738      82.738
    2        156.163      86.853
    3        170.272      91.946
    4        183.999      97.993
    5        197.280     104.965
    6        210.053     112.830
    7        222.257     121.551
    8        233.836     131.087
    9        244.734     141.394
   10        254.902     152.422
   11        264.290     164.120
   12        272.856     176.434
   13        280.559     189.305
   14        287.362     202.674
   15        293.235     216.476
   16        298.148     230.649
   17        301.338     242.391
Circle Center At X =    88.912 ; Y =   295.254 ; and Radius =   218.983
       Factor of Safety
      ***    1.028   ***
          **** END OF GSTABL7 OUTPUT ****
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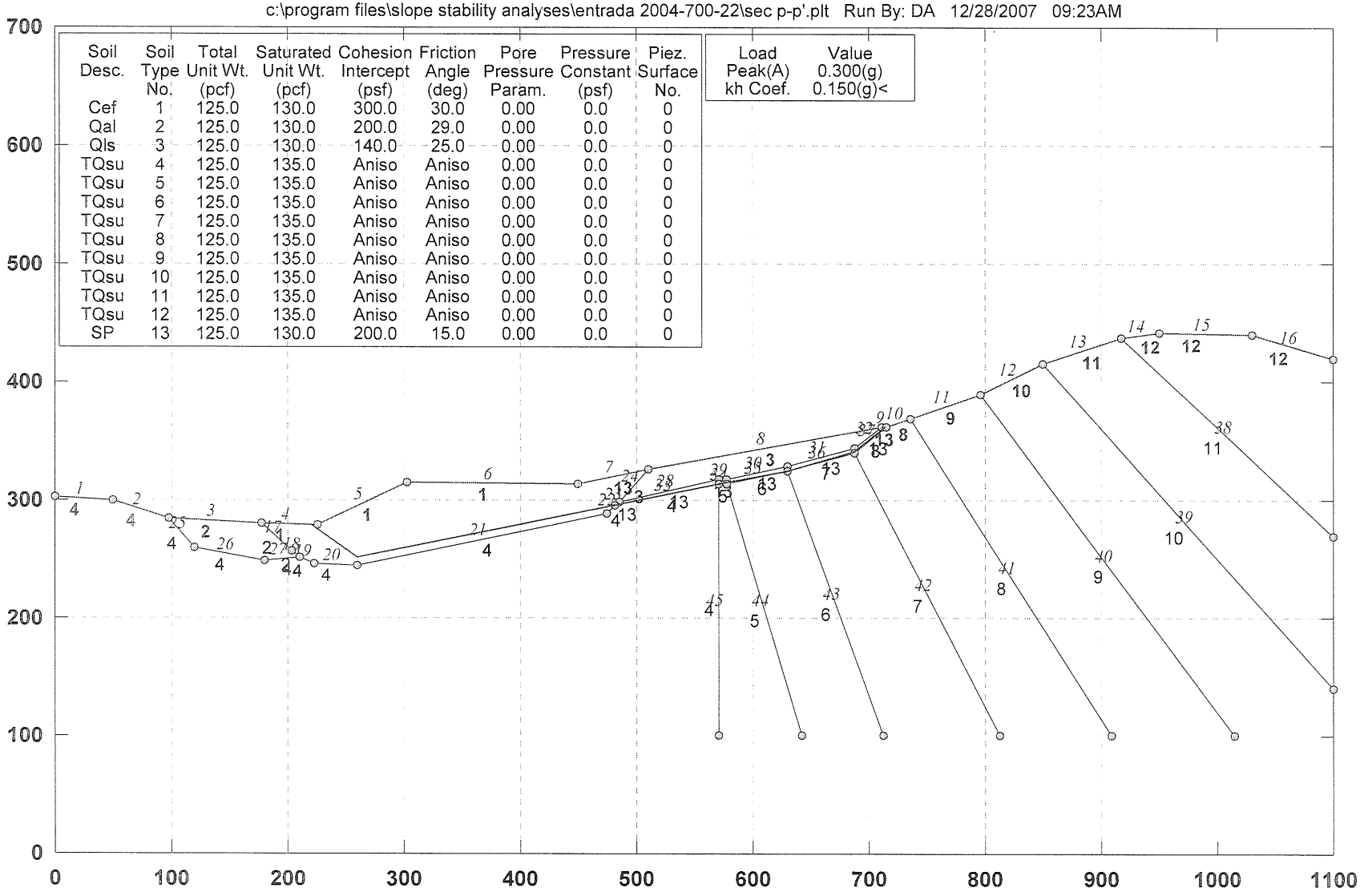
For use with report dated 01/16/2008; RTF Job No. 2004-700-22

Cross Section P-P', Seismic Bedding (Seward 13E-13E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec p-p'.plt Run By: DA 12/28/2007 09:23AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0.00	0.0	0
Qal	2	125.0	130.0	200.0	29.0	0.00	0.0	0
Qls	3	125.0	130.0	140.0	25.0	0.00	0.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	5	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	6	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	7	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	8	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	9	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	10	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	11	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	12	125.0	135.0	Aniso	Aniso	0.00	0.0	0
SP	13	125.0	130.0	200.0	15.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.783

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date: 12/28/2007
Time of Run: 09:23AM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec p-p'.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec p-p'.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec p-p'.PLT
PROBLEM DESCRIPTION: Cross Section P-P', Seismic
Bedding (Seward 13E-13E')

BOUNDARY COORDINATES
16 Top Boundaries
45 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	303.00	50.00	300.00	4
2	50.00	300.00	98.00	284.00	4
3	98.00	284.00	178.00	280.00	2
4	178.00	280.00	226.00	279.00	1
5	226.00	279.00	302.00	315.00	1
6	302.00	315.00	450.00	313.00	1
7	450.00	313.00	510.00	326.00	13
8	510.00	326.00	711.00	362.00	3
9	711.00	362.00	715.00	362.00	13
10	715.00	362.00	736.00	369.00	8
11	736.00	369.00	796.00	389.00	9
12	796.00	389.00	850.00	415.00	10
13	850.00	415.00	917.00	437.00	11
14	917.00	437.00	950.00	441.00	12
15	950.00	441.00	1030.00	440.00	12
16	1030.00	440.00	1100.00	420.00	12
17	178.00	280.00	204.00	257.00	2
18	204.00	257.00	210.00	252.00	2
19	210.00	252.00	223.00	246.00	4
20	223.00	246.00	260.00	245.00	4
21	260.00	245.00	475.00	289.00	4
22	475.00	289.00	481.00	295.00	4
23	481.00	295.00	485.00	299.00	13
24	485.00	299.00	510.00	326.00	3
25	98.00	284.00	120.00	260.00	4
26	120.00	260.00	180.00	249.00	4
27	180.00	249.00	210.00	252.00	4
28	485.00	299.00	570.00	317.00	13
29	570.00	317.00	577.00	318.00	13
30	577.00	318.00	630.00	328.00	13
31	630.00	328.00	688.00	344.00	13
32	688.00	344.00	711.00	362.00	13
33	481.00	295.00	570.00	313.00	4
34	570.00	313.00	577.00	314.00	5
35	577.00	314.00	630.00	324.00	6
36	630.00	324.00	688.00	340.00	7
37	688.00	340.00	715.00	362.00	8

38	917.00	437.00	1100.00	270.00	11
39	850.00	415.00	1100.00	140.00	10
40	796.00	389.00	1015.00	100.00	9
41	736.00	369.00	909.00	100.00	8
42	688.00	340.00	812.00	100.00	7
43	630.00	324.00	712.00	100.00	6
44	577.00	314.00	642.00	100.00	5
45	570.00	313.00	570.01	100.00	4

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit	Cohesion Intercept	Friction Angle

No.	(deg)	(psf)	(deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Specified Peak Ground Acceleration Coefficient (A) = 0.300(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	220.000	279.125
2	260.000	251.000
3	570.000	314.000
4	577.000	315.000
5	630.000	325.000
6	688.000	341.000
7	713.000	362.000

* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *
Factor Of Safety For The Preceding Specified Surface = 1.783

Table 1 - Individual Data on the 13 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	6.0	1535.2	0.0	0.0	0.0	0.0	230.3	0.0	0.0
2	34.0	102423.0	0.0	0.0	0.0	0.0	15363.4	0.0	0.0
3	42.0	261370.7	0.0	0.0	0.0	0.0	39205.6	0.0	0.0

4	148.0	729377.5	0.0	0.0	0.0	0.0	*******	0.0	0.0
5	32.1	94842.5	0.0	0.0	0.0	0.0	14226.4	0.0	0.0
6	2.9	8505.1	0.0	0.0	0.0	0.0	1275.8	0.0	0.0
7	25.0	75079.7	0.0	0.0	0.0	0.0	11262.0	0.0	0.0
8	60.0	176024.3	0.0	0.0	0.0	0.0	26403.7	0.0	0.0
9	7.0	20014.0	0.0	0.0	0.0	0.0	3002.1	0.0	0.0
10	53.0	150694.1	0.0	0.0	0.0	0.0	22604.1	0.0	0.0
11	58.0	142727.5	0.0	0.0	0.0	0.0	21409.1	0.0	0.0
12	23.0	26680.9	0.0	0.0	0.0	0.0	4002.1	0.0	0.0
13	2.0	210.0	0.0	0.0	0.0	0.0	31.5	0.0	0.0

Table 2 - Base Stress Data on the 13 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-35.11	223.00	7.33	708.62	-115.77
2	-35.11	243.00	41.56	3227.54	-1363.05
3	11.49	281.00	42.86	3727.27	2154.13
4	11.49	376.00	151.03	3011.48	1705.91
5	11.49	466.07	32.80	980.85	1021.28
6	11.49	483.57	2.91	988.65	1031.45
7	11.49	497.50	25.51	994.86	1039.55
8	11.49	540.00	61.23	976.44	1015.51
9	8.13	573.50	7.07	955.41	828.90
10	10.68	603.50	53.94	951.84	946.27
11	15.42	659.00	60.17	856.00	1010.23
12	40.03	699.50	30.04	592.38	879.36
13	40.03	712.00	2.61	264.55	79.59

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 1002194.12 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1930.80(psf)
Sum of the Driving Forces = 561959.88 (lbs)
Average Mobilized Shear Stress = 1082.66(psf)
Total length of the failure surface = 519.06(ft)

*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.4000(g)
Calculated Newmark Seismic Displacement = 0.016(ft)
Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

**** END OF GSTABL7 OUTPUT ****

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

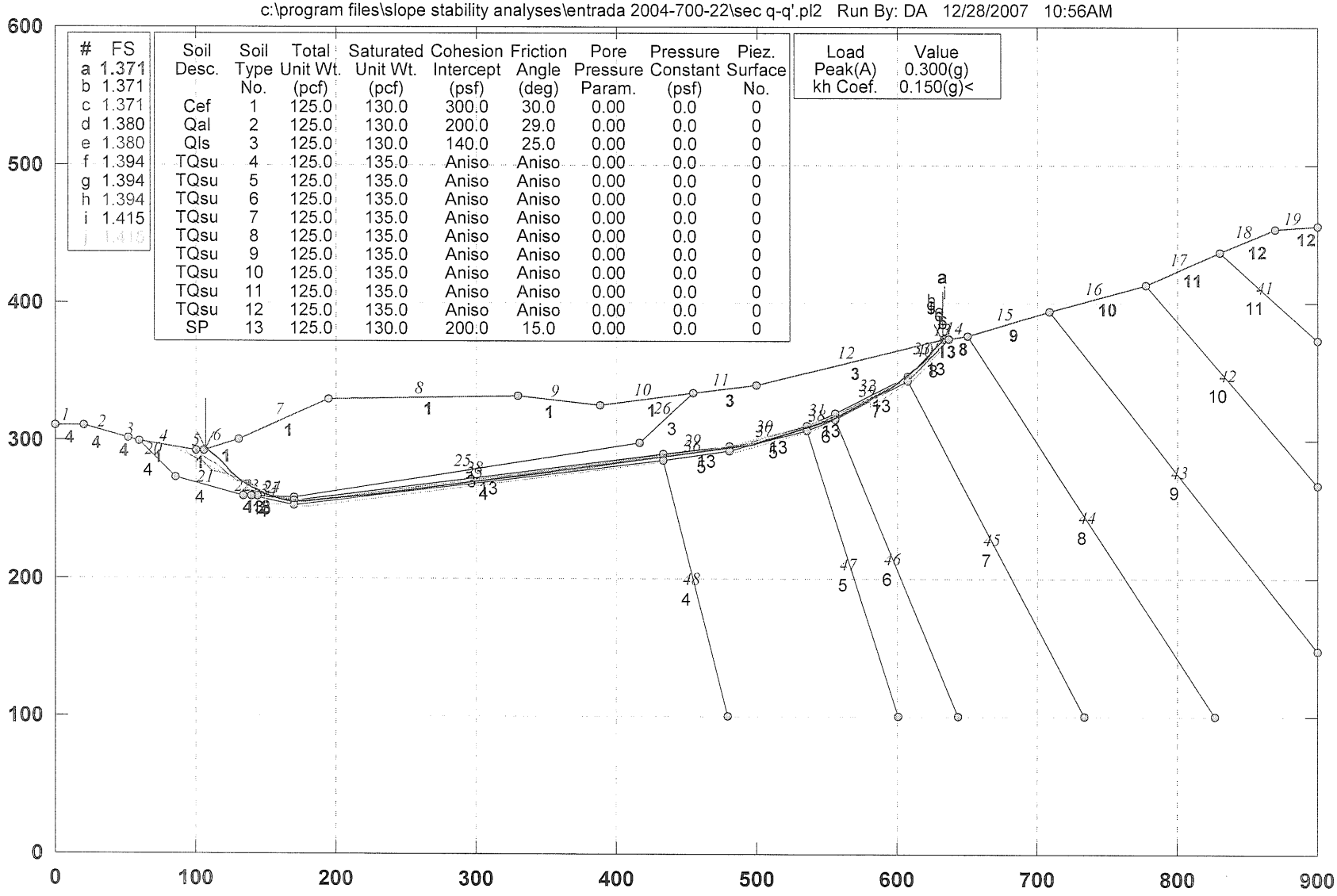
Cross Section Q-Q', Seismic Bedding (Seward 14E-14E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec q-q'.pl2 Run By: DA 12/28/2007 10:56AM

#	FS
a	1.371
b	1.371
c	1.371
d	1.380
e	1.380
f	1.394
g	1.394
h	1.394
i	1.415
j	1.415

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0.00	0.0	0
Qal	2	125.0	130.0	200.0	29.0	0.00	0.0	0
Qls	3	125.0	130.0	140.0	25.0	0.00	0.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	5	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	6	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	7	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	8	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	9	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	10	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	11	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	12	125.0	135.0	Aniso	Aniso	0.00	0.0	0
SP	13	125.0	130.0	200.0	15.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.371

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 12/28/2007
Time of Run: 10:56AM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec Q-Q'.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec Q-Q'.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec Q-Q'.PLT
PROBLEM DESCRIPTION: Cross Section Q-Q', Seismic
Bedding (Seward 14E-14E')

BOUNDARY COORDINATES
19 Top Boundaries
48 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	310.00	20.00	310.00	4
2	20.00	310.00	52.00	301.00	4
3	52.00	301.00	60.00	299.00	4
4	60.00	299.00	100.00	293.00	1
5	100.00	293.00	106.00	293.00	1
6	106.00	293.00	130.00	300.00	1
7	130.00	300.00	195.00	330.00	1
8	195.00	330.00	330.00	332.00	1
9	330.00	332.00	388.00	325.00	1
10	388.00	325.00	454.00	334.00	1
11	454.00	334.00	500.00	340.00	3
12	500.00	340.00	633.00	373.00	3
13	633.00	373.00	637.00	373.00	13
14	637.00	373.00	650.00	376.00	8
15	650.00	376.00	709.00	394.00	9
16	709.00	394.00	777.00	413.00	10
17	777.00	413.00	830.00	437.00	11
18	830.00	437.00	870.00	453.00	12
19	870.00	453.00	900.00	456.00	12
20	60.00	299.00	86.00	273.00	4
21	86.00	273.00	134.00	260.00	4
22	134.00	260.00	140.00	260.00	4
23	140.00	260.00	144.00	260.00	13
24	144.00	260.00	170.00	259.00	3
25	170.00	259.00	416.00	298.00	3
26	416.00	298.00	454.00	334.00	3
27	144.00	260.00	170.00	257.00	13
28	170.00	257.00	433.00	290.00	13
29	433.00	290.00	480.00	296.00	13
30	480.00	296.00	535.00	311.00	13
31	535.00	311.00	556.00	319.00	13
32	556.00	319.00	607.00	347.00	13
33	607.00	347.00	633.00	373.00	13
34	140.00	260.00	170.00	253.00	4
35	170.00	253.00	433.00	286.00	4
36	433.00	286.00	480.00	292.00	5
37	480.00	292.00	535.00	307.00	5

38	535.00	307.00	556.00	315.00	6
39	556.00	315.00	607.00	343.00	7
40	607.00	343.00	637.00	373.00	8
41	830.00	437.00	900.00	372.00	11
42	777.00	413.00	900.00	268.00	10
43	709.00	394.00	900.00	147.00	9
44	650.00	376.00	827.00	100.00	8
45	607.00	343.00	733.00	100.00	7
46	556.00	315.00	644.00	100.00	6
47	535.00	307.00	601.00	100.00	5
48	433.00	286.00	479.00	100.00	4

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.
Specified Peak Ground Acceleration Coefficient (A) = 0.300(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 Trial Surfaces Have Been Generated.
6 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	150.00	257.00	179.90	254.00	5.00
2	180.00	254.00	433.00	287.00	5.00
3	480.00	293.00	534.00	308.00	5.00
4	535.00	308.00	556.00	316.00	5.00
5	580.00	327.00	610.00	346.00	5.00
6	611.00	346.00	630.00	367.00	5.00

Following Are Displayed The Ten Most Critical Of The Trial

Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 500
Number of Trial Surfaces With Valid FS = 500
Statistical Data On All Valid FS Values:
FS Max = 22.665 FS Min = 1.371 FS Ave = 1.792
Standard Deviation = 1.633 Coefficient of Variation = 91.14 %
Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.003	293.293
2	110.595	290.985
3	117.857	284.110
4	124.928	277.039
5	132.465	270.467
6	141.039	265.321
7	150.023	260.928
8	159.312	257.224
9	169.211	255.811
10	228.287	261.288
11	497.768	296.892
12	553.917	314.687
13	594.998	337.657
14	619.933	357.205
15	625.966	365.180
16	632.390	372.843
17	632.391	372.849

Factor of Safety
*** 1.371 ***

Individual data on the 33 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.6	753.1	0.0	0.0	0.	0.	113.0	0.0	0.0
2	7.3	7128.0	0.0	0.0	0.	0.	1069.2	0.0	0.0
3	7.1	14950.8	0.0	0.0	0.	0.	2242.6	0.0	0.0
4	5.1	15489.8	0.0	0.0	0.	0.	2323.5	0.0	0.0
5	2.5	8944.7	0.0	0.0	0.	0.	1341.7	0.0	0.0
6	8.6	37749.8	0.0	0.0	0.	0.	5662.5	0.0	0.0
7	9.0	49460.1	0.0	0.0	0.	0.	7419.0	0.0	0.0
8	3.2	20000.6	0.0	0.0	0.	0.	3000.1	0.0	0.0
9	2.5	16357.6	0.0	0.0	0.	0.	2453.6	0.0	0.0
10	3.6	24376.4	0.0	0.0	0.	0.	3656.5	0.0	0.0
11	9.9	73375.1	0.0	0.0	0.	0.	11006.3	0.0	0.0
12	0.8	6155.4	0.0	0.0	0.	0.	923.3	0.0	0.0
13	25.0	209962.6	0.0	0.0	0.	0.	31494.4	0.0	0.0
14	33.3	293347.2	0.0	0.0	0.	0.	44002.1	0.0	0.0
15	101.7	804036.5	0.0	0.0	0.	0.	*******	0.0	0.0
16	58.0	362081.8	0.0	0.0	0.	0.	54312.3	0.0	0.0
17	28.0	149346.0	0.0	0.0	0.	0.	22401.9	0.0	0.0
18	17.0	90877.3	0.0	0.0	0.	0.	13631.6	0.0	0.0
19	21.0	112471.9	0.0	0.0	0.	0.	16870.8	0.0	0.0
20	26.0	139324.6	0.0	0.0	0.	0.	20898.7	0.0	0.0
21	17.8	95131.5	0.0	0.0	0.	0.	14269.7	0.0	0.0
22	2.2	11887.0	0.0	0.0	0.	0.	1783.0	0.0	0.0
23	35.0	180235.6	0.0	0.0	0.	0.	27035.3	0.0	0.0
24	18.9	93028.7	0.0	0.0	0.	0.	13954.3	0.0	0.0
25	2.1	9988.9	0.0	0.0	0.	0.	1498.3	0.0	0.0
26	39.0	155887.2	0.0	0.0	0.	0.	23383.1	0.0	0.0
27	11.7	33367.4	0.0	0.0	0.	0.	5005.1	0.0	0.0
28	0.6	1425.0	0.0	0.0	0.	0.	213.8	0.0	0.0
29	12.6	25155.5	0.0	0.0	0.	0.	3773.3	0.0	0.0
30	6.0	7023.4	0.0	0.0	0.	0.	1053.5	0.0	0.0
31	4.1	2113.4	0.0	0.0	0.	0.	317.0	0.0	0.0
32	2.4	327.9	0.0	0.0	0.	0.	49.2	0.0	0.0

33 0.0 0.0 0.0 0.0 0. 0. 0.0 0.0 0.0

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.003	293.293
2	110.595	290.985
3	117.857	284.110
4	124.928	277.039
5	132.465	270.467
6	141.039	265.321
7	150.023	260.928
8	159.312	257.224
9	169.211	255.811
10	228.287	261.288
11	497.768	296.892
12	553.917	314.687
13	594.998	337.657
14	619.933	357.205
15	625.966	365.180
16	632.390	372.843
17	632.391	372.849

Factor of Safety

*** 1.371 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.003	293.293
2	110.595	290.985
3	117.857	284.110
4	124.928	277.039
5	132.465	270.467
6	141.039	265.321
7	150.023	260.928
8	159.312	257.224
9	169.211	255.811
10	228.287	261.288
11	497.768	296.892
12	553.917	314.687
13	594.998	337.657
14	619.933	357.205
15	625.966	365.180
16	632.390	372.843
17	632.391	372.849

Factor of Safety

*** 1.371 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	90.478	294.428
2	95.741	289.659
3	104.330	284.536
4	111.413	277.478
5	121.248	275.666
6	130.714	272.442
7	139.730	268.117
8	146.974	261.223
9	156.601	258.519
10	166.280	256.005
11	176.277	255.776
12	371.093	279.417
13	498.717	298.610
14	545.427	312.986
15	603.963	343.071
16	622.345	360.935
17	627.515	369.495
18	629.769	372.198

Factor of Safety

*** 1.380 ***
Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	90.478	294.428
2	95.741	289.659
3	104.330	284.536
4	111.413	277.478
5	121.248	275.666
6	130.714	272.442
7	139.730	268.117
8	146.974	261.223
9	156.601	258.519
10	166.280	256.005
11	176.277	255.776
12	371.093	279.417
13	498.717	298.610
14	545.427	312.986
15	603.963	343.071
16	622.345	360.935
17	627.515	369.495
18	629.769	372.198

Factor of Safety
*** 1.380 ***
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.088	293.000
2	106.514	287.345
3	114.969	282.004
4	122.806	275.793
5	131.015	270.082
6	140.827	268.156
7	148.181	261.379
8	157.677	258.244
9	167.642	257.408
10	177.467	255.547
11	234.402	263.461
12	487.999	296.911
13	544.171	312.487
14	596.485	338.187
15	624.400	360.979
16	624.552	370.904

Factor of Safety
*** 1.394 ***
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.088	293.000
2	106.514	287.345
3	114.969	282.004
4	122.806	275.793
5	131.015	270.082
6	140.827	268.156
7	148.181	261.379
8	157.677	258.244
9	167.642	257.408
10	177.467	255.547
11	234.402	263.461
12	487.999	296.911
13	544.171	312.487
14	596.485	338.187
15	624.400	360.979
16	624.552	370.904

Factor of Safety
*** 1.394 ***
Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	100.088	293.000
2	106.514	287.345
3	114.969	282.004
4	122.806	275.793
5	131.015	270.082
6	140.827	268.156
7	148.181	261.379
8	157.677	258.244
9	167.642	257.408
10	177.467	255.547
11	234.402	263.461
12	487.999	296.911
13	544.171	312.487
14	596.485	338.187
15	624.400	360.979
16	624.552	370.904

Factor of Safety
*** 1.394 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.864	295.570
2	83.631	294.972
3	92.643	290.636
4	99.770	283.622
5	109.452	281.120
6	118.425	276.706
7	127.034	271.618
8	136.990	270.675
9	144.947	264.618
10	153.854	260.072
11	162.839	255.682
12	424.893	286.467
13	497.860	299.489
14	550.467	316.091
15	584.620	330.433
16	616.737	350.512
17	623.361	358.003
18	629.617	365.805
19	632.978	372.995

Factor of Safety
*** 1.415 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.864	295.570
2	83.631	294.972
3	92.643	290.636
4	99.770	283.622
5	109.452	281.120
6	118.425	276.706
7	127.034	271.618
8	136.990	270.675
9	144.947	264.618
10	153.854	260.072
11	162.839	255.682
12	424.893	286.467
13	497.860	299.489
14	550.467	316.091
15	584.620	330.433
16	616.737	350.512
17	623.361	358.003
18	629.617	365.805
19	632.978	372.995

Factor of Safety

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***    1.415   ***
    **** END OF GSTABL7 OUTPUT ****
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For use with report dated 01/16/2008; RTF Job No. 2004-700-22

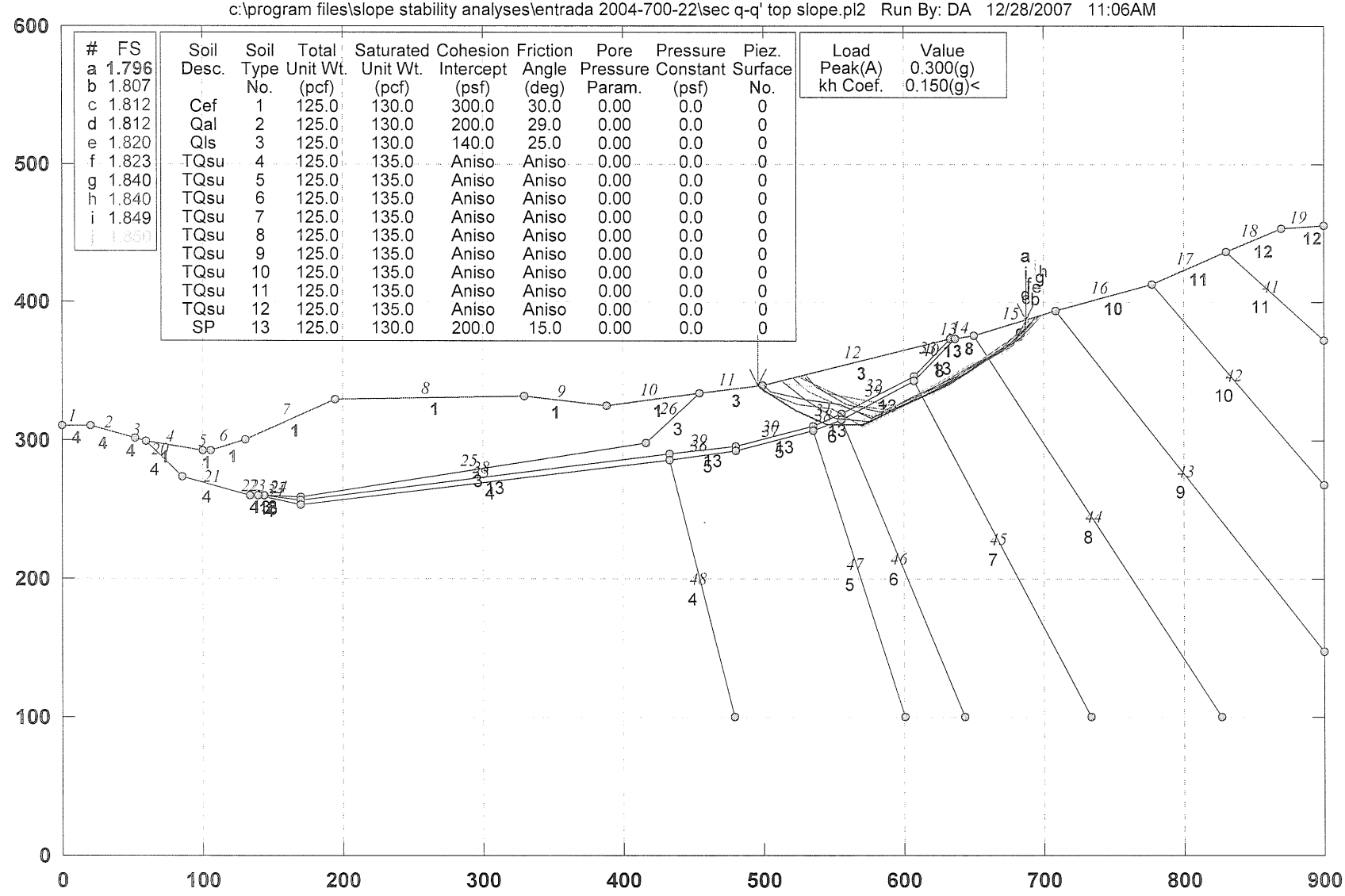
Cross Section Q-Q', Seismic Bedding (Seward 14E-14E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec q-q' top slope.pl2 Run By: DA 12/28/2007 11:06AM

#	FS
a	1.796
b	1.807
c	1.812
d	1.812
e	1.820
f	1.823
g	1.840
h	1.840
i	1.849
j	1.850

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0.00	0.0	0
Qal	2	125.0	130.0	200.0	29.0	0.00	0.0	0
Qls	3	125.0	130.0	140.0	25.0	0.00	0.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	5	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	6	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	7	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	8	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	9	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	10	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	11	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	12	125.0	135.0	Aniso	Aniso	0.00	0.0	0
SP	13	125.0	130.0	200.0	15.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.796

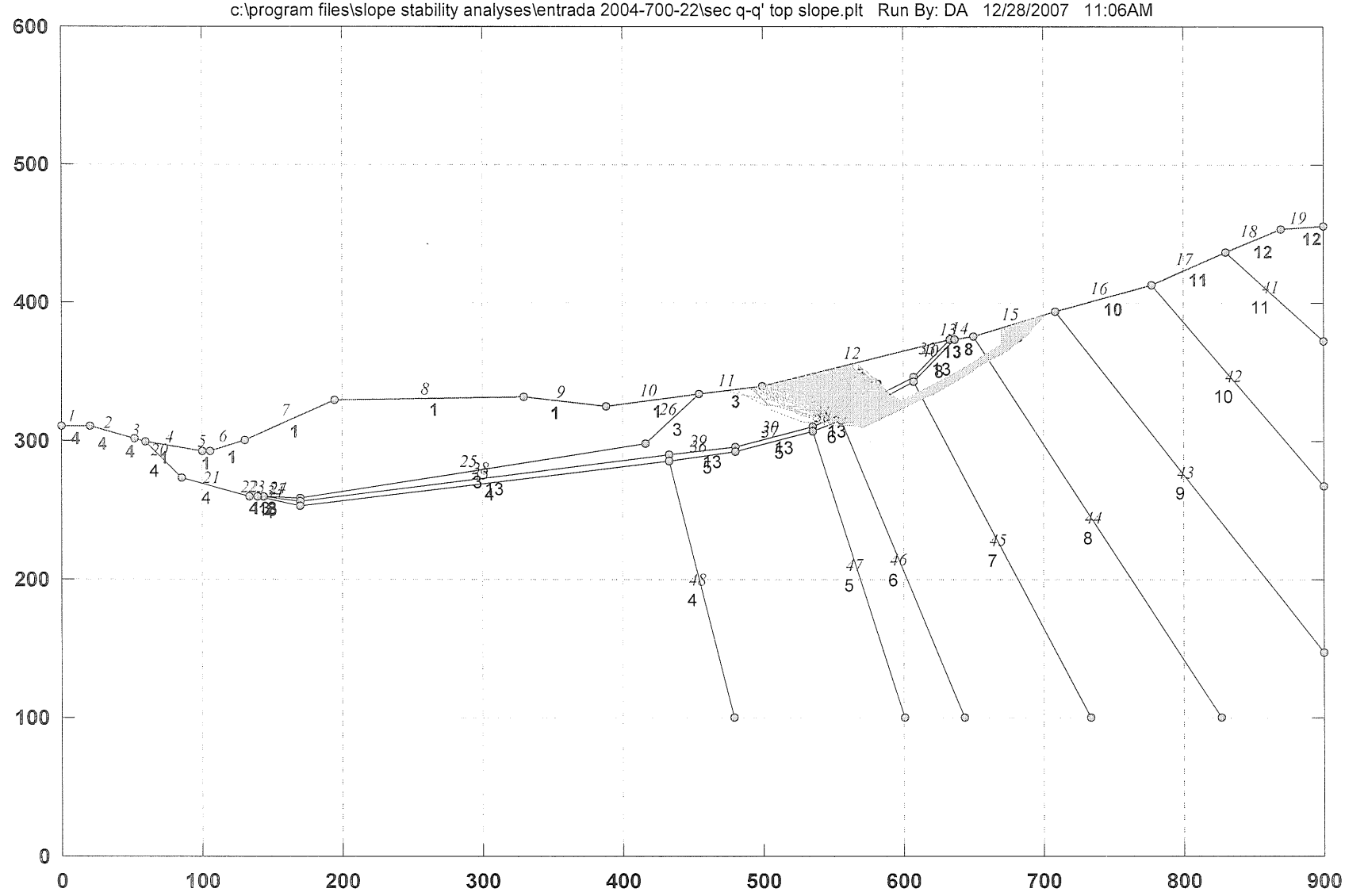
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

Cross Section Q-Q', Seismic Bedding (Seward 14E-14E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec q-q' top slope.plt Run By: DA 12/28/2007 11:06AM



GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 12/28/2007
Time of Run: 11:06AM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' top slope.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' top slope.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' top slope.PLT
PROBLEM DESCRIPTION: Cross Section Q-Q', Seismic
Bedding (Seward 14E-14E')

BOUNDARY COORDINATES

19 Top Boundaries
48 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	310.00	20.00	310.00	4
2	20.00	310.00	52.00	301.00	4
3	52.00	301.00	60.00	299.00	4
4	60.00	299.00	100.00	293.00	1
5	100.00	293.00	106.00	293.00	1
6	106.00	293.00	130.00	300.00	1
7	130.00	300.00	195.00	330.00	1
8	195.00	330.00	330.00	332.00	1
9	330.00	332.00	388.00	325.00	1
10	388.00	325.00	454.00	334.00	1
11	454.00	334.00	500.00	340.00	3
12	500.00	340.00	633.00	373.00	3
13	633.00	373.00	637.00	373.00	13
14	637.00	373.00	650.00	376.00	8
15	650.00	376.00	709.00	394.00	9
16	709.00	394.00	777.00	413.00	10
17	777.00	413.00	830.00	437.00	11
18	830.00	437.00	870.00	453.00	12
19	870.00	453.00	900.00	456.00	12
20	60.00	299.00	86.00	273.00	4
21	86.00	273.00	134.00	260.00	4
22	134.00	260.00	140.00	260.00	4
23	140.00	260.00	144.00	260.00	13
24	144.00	260.00	170.00	259.00	3
25	170.00	259.00	416.00	298.00	3
26	416.00	298.00	454.00	334.00	3
27	144.00	260.00	170.00	257.00	13
28	170.00	257.00	433.00	290.00	13
29	433.00	290.00	480.00	296.00	13
30	480.00	296.00	535.00	311.00	13
31	535.00	311.00	556.00	319.00	13
32	556.00	319.00	607.00	347.00	13
33	607.00	347.00	633.00	373.00	13
34	140.00	260.00	170.00	253.00	4
35	170.00	253.00	433.00	286.00	4
36	433.00	286.00	480.00	292.00	5
37	480.00	292.00	535.00	307.00	5

38	535.00	307.00	556.00	315.00	6
39	556.00	315.00	607.00	343.00	7
40	607.00	343.00	637.00	373.00	8
41	830.00	437.00	900.00	372.00	11
42	777.00	413.00	900.00	268.00	10
43	709.00	394.00	900.00	147.00	9
44	650.00	376.00	827.00	100.00	8
45	607.00	343.00	733.00	100.00	7
46	556.00	315.00	644.00	100.00	6
47	535.00	307.00	601.00	100.00	5
48	433.00	286.00	479.00	100.00	4

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
   (1) An input value of 0.01 for C and/or Phi will cause Aniso
       C and/or Phi to be ignored in that range.
   (2) An input value of 0.02 for Phi will set both Phi and
       C equal to zero, with no water weight in the tension crack.
   (3) An input value of 0.03 for Phi will set both Phi and
       C equal to zero, with water weight in the tension crack.
Specified Peak Ground Acceleration Coefficient (A) =   0.300(g)
Specified Horizontal Earthquake Coefficient (kh) =   0.150(g)
Specified Vertical Earthquake Coefficient (kv) =   0.000(g)
Specified Seismic Pore-Pressure Factor =   0.000
Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
 500 Trial Surfaces Have Been Generated.
3 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 25.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	570.00	312.00	600.00	326.00	5.00
2	620.00	336.00	650.00	354.00	5.00
3	670.00	365.00	690.00	381.00	5.00

Following Are Displayed The Ten Most Critical Of The Trial
      Failure Surfaces Evaluated. They Are
      Ordered - Most Critical First.
      * * Safety Factors Are Calculated By The Simplified Janbu Method * *

Total Number of Trial Surfaces Attempted = 500
Number of Trial Surfaces With Valid FS = 500
Statistical Data On All Valid FS Values:
FS Max = 2.853 FS Min = 1.796 FS Ave = 2.235
Standard Deviation = 0.211 Coefficient of Variation = 9.44 %
Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	496.059	339.486
2	501.405	334.882
3	522.953	322.206
4	545.708	311.851
5	570.701	311.259
6	632.933	341.302
7	686.073	376.102
8	687.828	387.541

Factor of Safety
*** 1.796 ***

Individual data on the 18 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Surcharge Ver (lbs)	Load (lbs)	
1	3.9	962.5	0.0	0.0	0.	0.	144.4	0.0	0.0	
2	1.4	823.5	0.0	0.0	0.	0.	123.5	0.0	0.0	
3	21.5	38997.5	0.0	0.0	0.	0.	5849.6	0.0	0.0	
4	18.9	71161.8	0.0	0.0	0.	0.	10674.3	0.0	0.0	
5	3.9	18406.4	0.0	0.0	0.	0.	2761.0	0.0	0.0	
6	1.9	9475.8	0.0	0.0	0.	0.	1421.4	0.0	0.0	
7	8.4	43126.1	0.0	0.0	0.	0.	6468.9	0.0	0.0	
8	1.4	7445.8	0.0	0.0	0.	0.	1116.9	0.0	0.0	
9	13.3	73936.1	0.0	0.0	0.	0.	11090.4	0.0	0.0	
10	36.3	190681.2	0.0	0.0	0.	0.	28602.2	0.0	0.0	
11	5.9	27324.2	0.0	0.0	0.	0.	4098.6	0.0	0.0	
12	20.0	85236.0	0.0	0.0	0.	0.	12785.4	0.0	0.0	
13	0.1	266.2	0.0	0.0	0.	0.	39.9	0.0	0.0	
14	4.0	15172.1	0.0	0.0	0.	0.	2275.8	0.0	0.0	
15	13.0	42701.5	0.0	0.0	0.	0.	6405.2	0.0	0.0	
16	10.6	28766.3	0.0	0.0	0.	0.	4314.9	0.0	0.0	
17	25.5	48847.2	0.0	0.0	0.	0.	7327.1	0.0	0.0	
18	1.8	1195.9	0.0	0.0	0.	0.	179.4	0.0	0.0	

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	500.216	340.054
2	505.579	334.925
3	530.036	329.745
4	551.268	316.546
5	576.077	313.462
6	621.785	335.383
7	672.001	365.906
8	689.677	383.585
9	693.753	389.348

Factor of Safety
*** 1.807 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	529.532	347.327
2	538.110	339.091
3	559.653	326.405
4	584.024	320.834
5	637.759	346.336
6	679.564	371.108
7	687.309	387.383

Factor of Safety
*** 1.812 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	529.532	347.327
2	538.110	339.091
3	559.653	326.405
4	584.024	320.834
5	637.759	346.336
6	679.564	371.108
7	687.309	387.383

Factor of Safety
*** 1.812 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	528.150	346.985
2	545.208	334.242
3	569.862	330.097
4	594.380	325.216
5	632.061	342.055
6	681.937	376.578
7	695.042	389.742

Factor of Safety
*** 1.820 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	524.461	346.069
2	545.321	335.839
3	567.710	324.714
4	592.535	321.762
5	629.512	342.659
6	671.019	366.267
7	688.184	384.443
8	689.755	388.129

Factor of Safety
*** 1.823 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	513.533	343.358
2	529.668	330.086
3	554.410	326.509
4	577.322	316.507
5	630.648	340.292
6	681.112	373.822
7	697.803	390.584

Factor of Safety
*** 1.840 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	520.483	345.082
2	531.646	335.009
3	554.643	325.202
4	578.428	317.505
5	631.461	341.565
6	686.146	376.672
7	700.096	391.283

Factor of Safety
*** 1.840 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	495.768	339.448
2	500.728	335.229
3	524.244	326.744

4	549.010	323.331
5	570.694	310.888
6	629.351	339.479
7	678.490	369.414
8	687.353	387.396

Factor of Safety

*** 1.849 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	513.159	343.265
2	515.823	340.868
3	540.671	338.109
4	563.971	329.049
5	587.789	321.451
6	648.672	355.357
7	677.230	368.609
8	693.835	387.298
9	694.645	389.620

Factor of Safety

*** 1.850 ***

**** END OF GSTABL7 OUTPUT ****

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

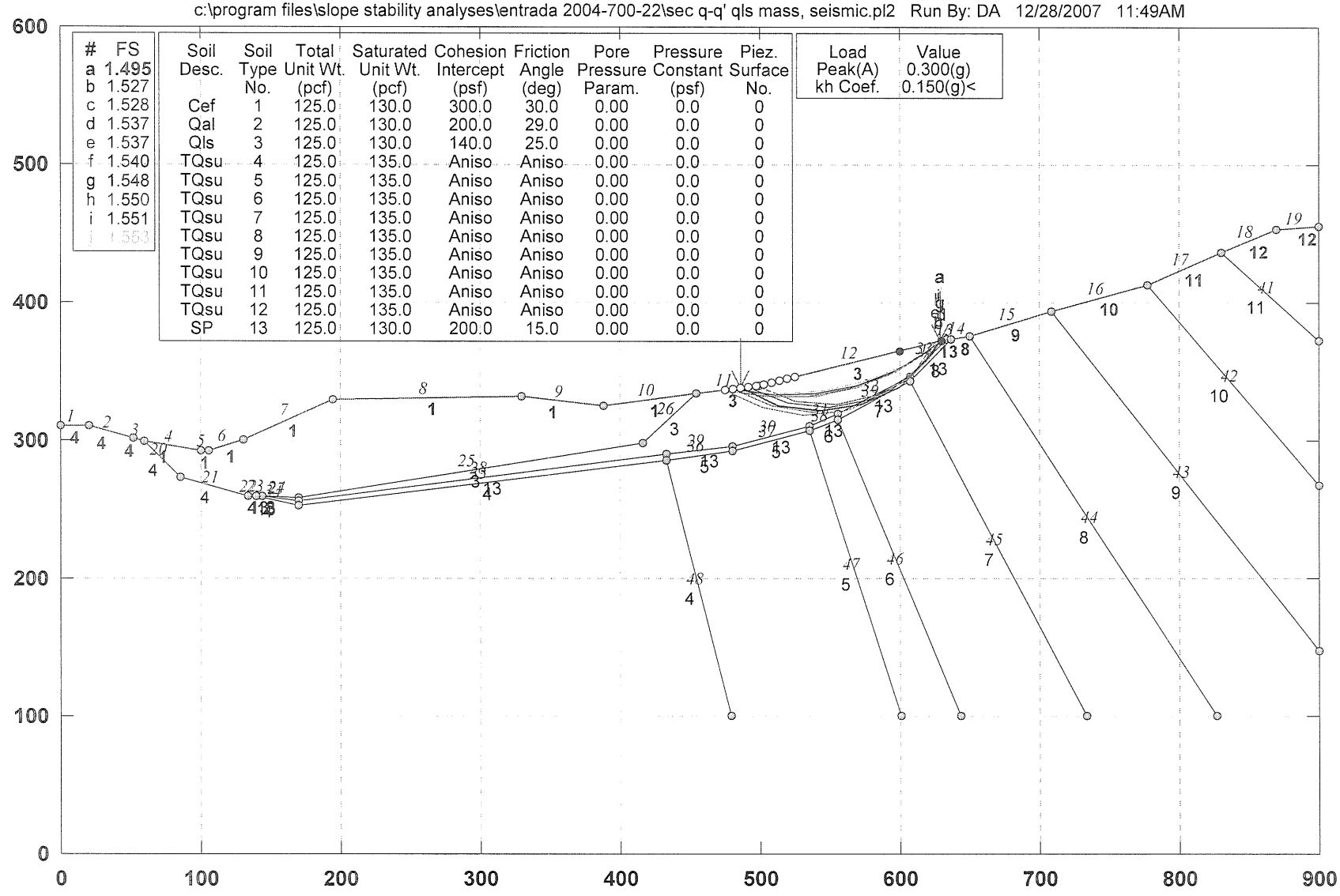
Cross Section Q-Q', Seismic Circular in Qls mass (Seward 14E-14E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec q-q' qls mass, seismic.pl2 Run By: DA 12/28/2007 11:49AM

#	FS
a	1.495
b	1.527
c	1.528
d	1.537
e	1.537
f	1.540
g	1.548
h	1.550
i	1.551
j	1.553

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0.00	0.0	0
Qal	2	125.0	130.0	200.0	29.0	0.00	0.0	0
Qls	3	125.0	130.0	140.0	25.0	0.00	0.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	5	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	6	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	7	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	8	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	9	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	10	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	11	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	12	125.0	135.0	Aniso	Aniso	0.00	0.0	0
SP	13	125.0	130.0	200.0	15.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.495

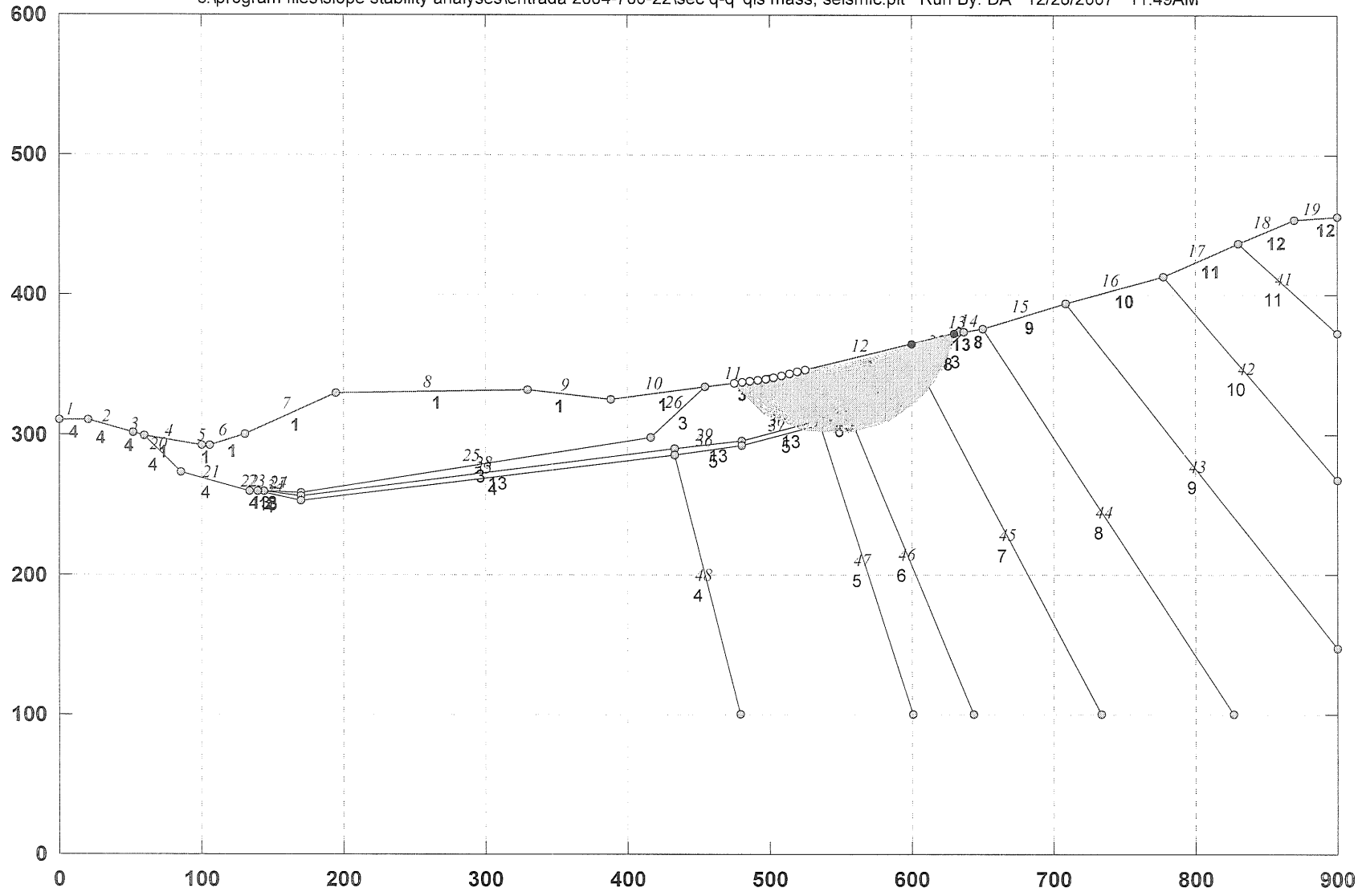
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

Cross Section Q-Q', Seismic Circular in Qls mass (Seward 14E-14E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec q-q' qls mass, seismic.plt Run By: DA 12/28/2007 11:49AM



GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 12/28/2007
Time of Run: 11:49AM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' qls mass, seismic.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' qls mass, seismic.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' qls mass, seismic.PLT
PROBLEM DESCRIPTION: Cross Section Q-Q', Seismic
Circular in Qls mass (Seward 14E-14E')

BOUNDARY COORDINATES

19 Top Boundaries
48 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	310.00	20.00	310.00	4
2	20.00	310.00	52.00	301.00	4
3	52.00	301.00	60.00	299.00	4
4	60.00	299.00	100.00	293.00	1
5	100.00	293.00	106.00	293.00	1
6	106.00	293.00	130.00	300.00	1
7	130.00	300.00	195.00	330.00	1
8	195.00	330.00	330.00	332.00	1
9	330.00	332.00	388.00	325.00	1
10	388.00	325.00	454.00	334.00	1
11	454.00	334.00	500.00	340.00	3
12	500.00	340.00	633.00	373.00	3
13	633.00	373.00	637.00	373.00	13
14	637.00	373.00	650.00	376.00	8
15	650.00	376.00	709.00	394.00	9
16	709.00	394.00	777.00	413.00	10
17	777.00	413.00	830.00	437.00	11
18	830.00	437.00	870.00	453.00	12
19	870.00	453.00	900.00	456.00	12
20	60.00	299.00	86.00	273.00	4
21	86.00	273.00	134.00	260.00	4
22	134.00	260.00	140.00	260.00	4
23	140.00	260.00	144.00	260.00	13
24	144.00	260.00	170.00	259.00	3
25	170.00	259.00	416.00	298.00	3
26	416.00	298.00	454.00	334.00	3
27	144.00	260.00	170.00	257.00	13
28	170.00	257.00	433.00	290.00	13
29	433.00	290.00	480.00	296.00	13
30	480.00	296.00	535.00	311.00	13
31	535.00	311.00	556.00	319.00	13
32	556.00	319.00	607.00	347.00	13
33	607.00	347.00	633.00	373.00	13
34	140.00	260.00	170.00	253.00	4
35	170.00	253.00	433.00	286.00	4
36	433.00	286.00	480.00	292.00	5
37	480.00	292.00	535.00	307.00	5

38	535.00	307.00	556.00	315.00	6
39	556.00	315.00	607.00	343.00	7
40	607.00	343.00	637.00	373.00	8
41	830.00	437.00	900.00	372.00	11
42	777.00	413.00	900.00	268.00	10
43	709.00	394.00	900.00	147.00	9
44	650.00	376.00	827.00	100.00	8
45	607.00	343.00	733.00	100.00	7
46	556.00	315.00	644.00	100.00	6
47	535.00	307.00	601.00	100.00	5
48	433.00	286.00	479.00	100.00	4

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.
Specified Peak Ground Acceleration Coefficient (A) = 0.300(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
500 Trial Surfaces Have Been Generated.
50 Surface(s) Initiate(s) From Each Of 10 Points Equally Spaced
Along The Ground Surface Between X = 475.00(ft)
and X = 525.00(ft)
Each Surface Terminates Between X = 600.00(ft)
and X = 630.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
30.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 500
Number of Trial Surfaces With Valid FS = 500

Statistical Data On All Valid FS Values:
FS Max = 3.227 FS Min = 1.495 FS Ave = 2.123
Standard Deviation = 0.463 Coefficient of Variation = 21.83 %

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	486.111	338.188
2	513.262	325.428
3	542.963	321.202
4	572.595	325.883
5	599.547	339.058
6	621.443	359.566
7	628.496	371.883

Circle Center At X = 542.188 ; Y = 422.241 ; and Radius = 101.042

Factor of Safety
*** 1.495 ***

Individual data on the 10 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	13.9	7238.8	0.0	0.0	0.	0.	1085.8	0.0	0.0
2	13.3	21717.9	0.0	0.0	0.	0.	3257.7	0.0	0.0
3	29.7	87841.0	0.0	0.0	0.	0.	13176.2	0.0	0.0
4	23.9	91361.0	0.0	0.0	0.	0.	13704.2	0.0	0.0
5	5.7	22700.7	0.0	0.0	0.	0.	3405.1	0.0	0.0
6	27.0	97314.9	0.0	0.0	0.	0.	14597.2	0.0	0.0
7	7.5	21496.6	0.0	0.0	0.	0.	3224.5	0.0	0.0
8	14.4	28052.2	0.0	0.0	0.	0.	4207.8	0.0	0.0
9	2.5	2729.6	0.0	0.0	0.	0.	409.4	0.0	0.0
10	4.5	1928.3	0.0	0.0	0.	0.	289.2	0.0	0.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	491.667	338.913
2	519.193	326.984
3	549.029	323.852
4	578.432	329.807
5	604.699	344.299
6	625.415	365.998
7	628.289	371.831

Circle Center At X = 544.319 ; Y = 422.682 ; and Radius = 98.942

Factor of Safety
*** 1.527 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	480.556	337.464
2	507.947	325.227
3	537.657	321.068
4	567.355	325.313
5	594.710	337.629
6	617.577	357.049
7	627.202	371.561

Circle Center At X = 537.502 ; Y = 428.160 ; and Radius = 107.092

Factor of Safety
*** 1.528 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	497.222	339.638
2	524.997	328.300
3	554.910	326.014
4	584.085	333.000
5	609.719	348.586
6	629.346	371.274
7	629.735	372.190

Circle Center At X = 547.237 ; Y = 422.472 ; and Radius = 96.762
Factor of Safety
*** 1.537 ***
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.000	336.739
2	501.988	323.639
3	531.558	318.574
4	561.368	321.946
5	589.059	333.487
6	612.439	352.285
7	625.687	371.185

Circle Center At X = 534.597 ; Y = 425.166 ; and Radius = 106.635
Factor of Safety
*** 1.537 ***
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	497.222	339.638
2	524.957	328.201
3	554.866	325.867
4	584.039	332.863
5	609.636	348.507
6	629.168	371.278
7	629.527	372.138

Circle Center At X = 547.301 ; Y = 421.737 ; and Radius = 96.167
Factor of Safety
*** 1.540 ***
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	480.556	337.464
2	510.221	332.994
3	540.210	333.792
4	569.596	339.833
5	597.468	350.930
6	622.964	366.740
7	628.773	371.951

Circle Center At X = 520.697 ; Y = 503.199 ; and Radius = 170.528
Factor of Safety
*** 1.548 ***
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	480.556	337.464
2	510.058	332.022
3	540.057	332.279
4	569.461	338.226
5	597.202	349.647
6	622.271	366.127
7	628.067	371.776

Circle Center At X = 523.715 ; Y = 488.743 ; and Radius = 157.315
Factor of Safety
*** 1.550 ***
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.000	336.739
2	504.599	331.852
3	534.598	332.147
4	564.095	337.616
5	592.206	348.094
6	618.086	363.268
7	628.128	371.791

Circle Center At X = 517.901 ; Y = 504.486 ; and Radius = 173.146
Factor of Safety

```
      ***    1.551   ***
Failure Surface Specified By  7 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        486.111      338.188
    2        515.893      334.578
    3        545.852      336.148
    4        575.093      342.852
    5        602.744      354.490
    6        627.979      370.714
    7        629.525      372.138
Circle Center At X =   521.818 ; Y =   508.101 ; and Radius =   173.624
       Factor of Safety
      ***    1.553   ***
          **** END OF GSTABL7 OUTPUT ****
```

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

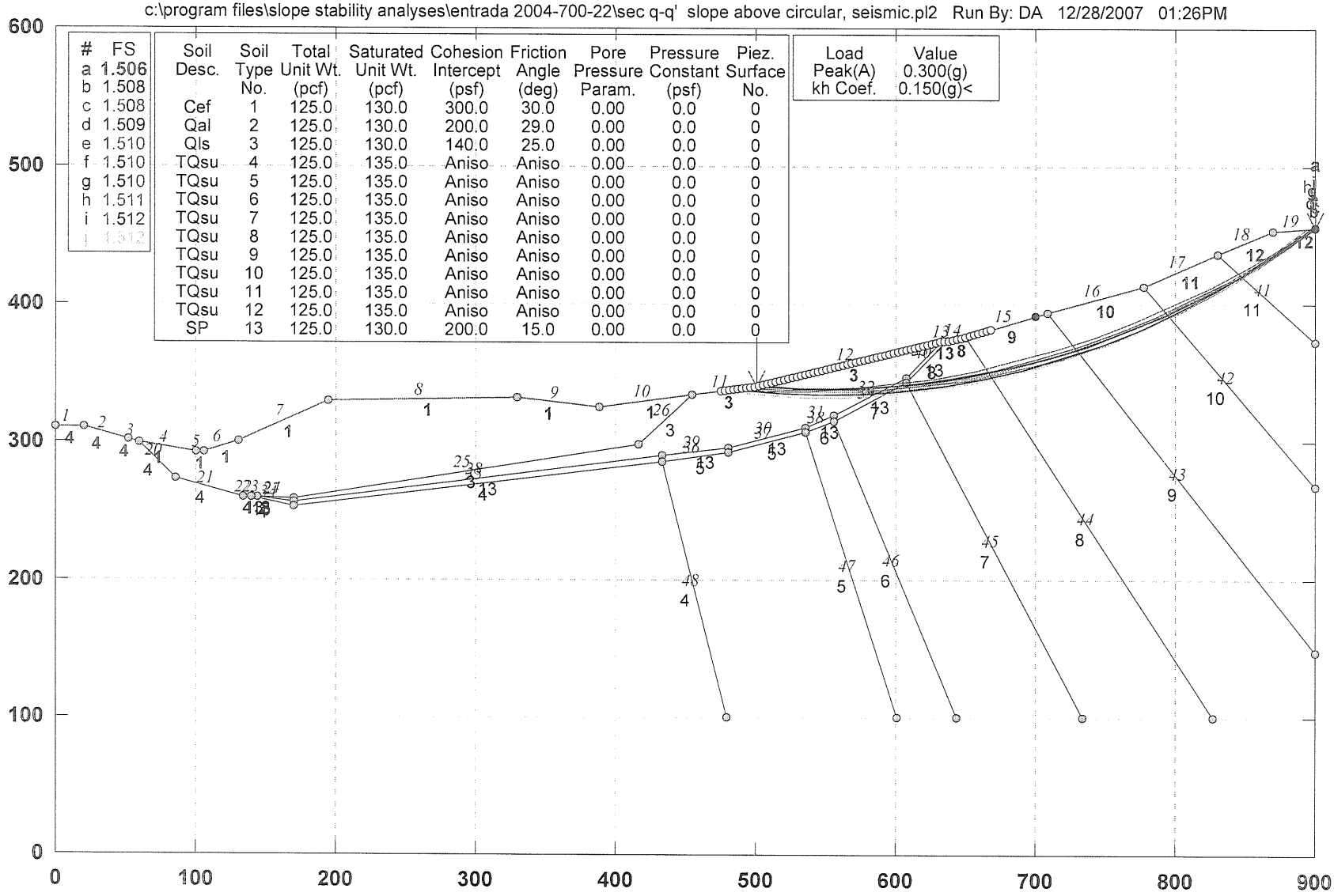
Cross Section Q-Q', Seismic Circular in nat. slope (Seward 14E-14E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec q-q' slope above circular, seismic.pl2 Run By: DA 12/28/2007 01:26PM

#	FS
a	1.506
b	1.508
c	1.508
d	1.509
e	1.510
f	1.510
g	1.510
h	1.511
i	1.512
j	1.512

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0.00	0.0	0
Qal	2	125.0	130.0	200.0	29.0	0.00	0.0	0
Qls	3	125.0	130.0	140.0	25.0	0.00	0.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	5	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	6	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	7	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	8	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	9	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	10	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	11	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	12	125.0	135.0	Aniso	Aniso	0.00	0.0	0
SP	13	125.0	130.0	200.0	15.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.506

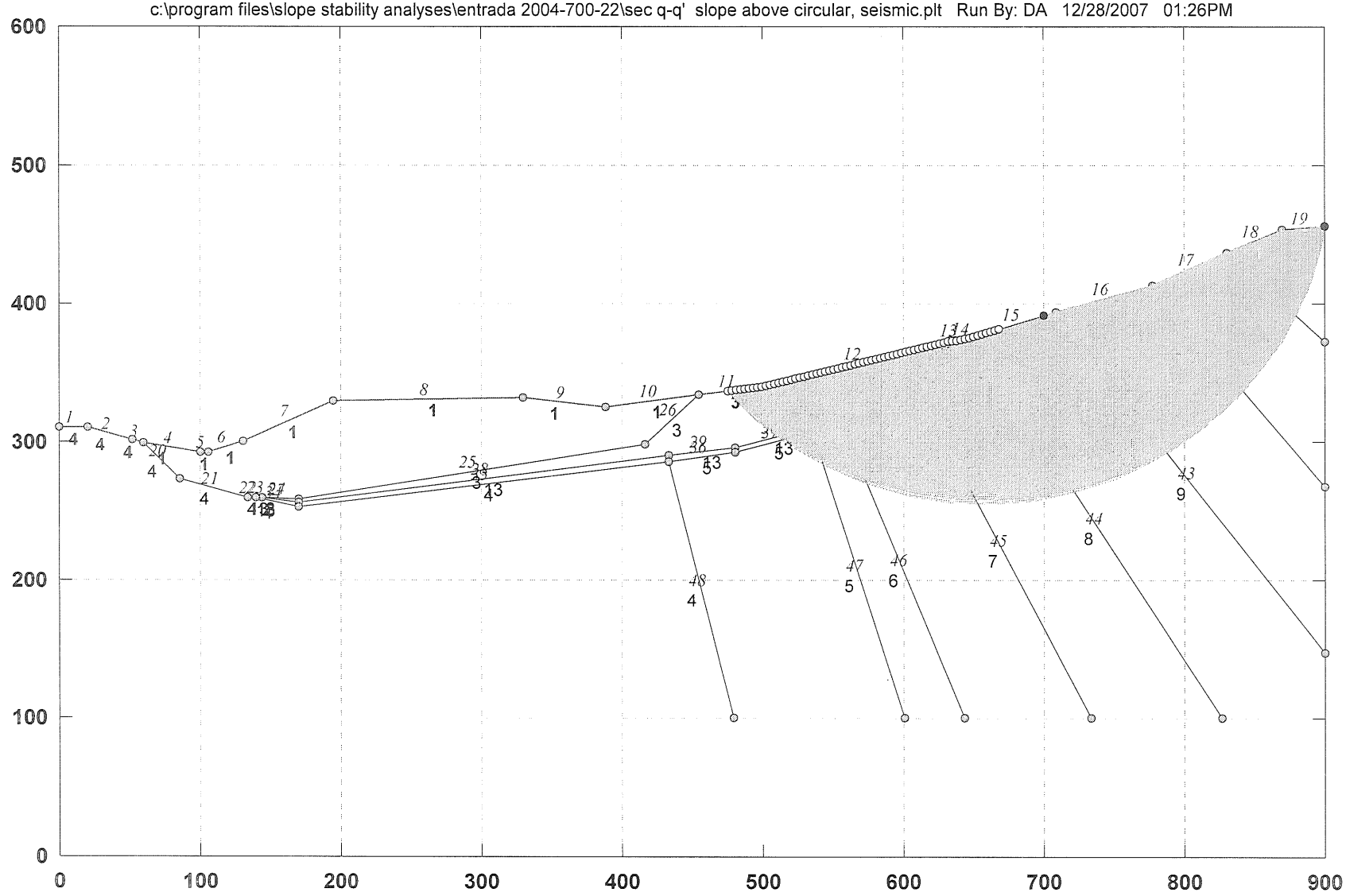
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

Cross Section Q-Q', Seismic Circular in nat. slope (Seward 14E-14E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec q-q' slope above circular, seismic.plt Run By: DA 12/28/2007 01:26PM



GSTABL7

*** GSTABL7 ***

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 12/28/2007
Time of Run: 01:26PM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' slope above circular, seismic.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' slope above circular, seismic.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec q-q' slope above circular, seismic.PLT
PROBLEM DESCRIPTION: Cross Section Q-Q', Seismic
Circular in nat. slope (Seward 14E-14E')

BOUNDARY COORDINATES

19 Top Boundaries
48 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	310.00	20.00	310.00	4
2	20.00	310.00	52.00	301.00	4
3	52.00	301.00	60.00	299.00	4
4	60.00	299.00	100.00	293.00	1
5	100.00	293.00	106.00	293.00	1
6	106.00	293.00	130.00	300.00	1
7	130.00	300.00	195.00	330.00	1
8	195.00	330.00	330.00	332.00	1
9	330.00	332.00	388.00	325.00	1
10	388.00	325.00	454.00	334.00	1
11	454.00	334.00	500.00	340.00	3
12	500.00	340.00	633.00	373.00	3
13	633.00	373.00	637.00	373.00	13
14	637.00	373.00	650.00	376.00	8
15	650.00	376.00	709.00	394.00	9
16	709.00	394.00	777.00	413.00	10
17	777.00	413.00	830.00	437.00	11
18	830.00	437.00	870.00	453.00	12
19	870.00	453.00	900.00	456.00	12
20	60.00	299.00	86.00	273.00	4
21	86.00	273.00	134.00	260.00	4
22	134.00	260.00	140.00	260.00	4
23	140.00	260.00	144.00	260.00	13
24	144.00	260.00	170.00	259.00	3
25	170.00	259.00	416.00	298.00	3
26	416.00	298.00	454.00	334.00	3
27	144.00	260.00	170.00	257.00	13
28	170.00	257.00	433.00	290.00	13
29	433.00	290.00	480.00	296.00	13
30	480.00	296.00	535.00	311.00	13
31	535.00	311.00	556.00	319.00	13
32	556.00	319.00	607.00	347.00	13
33	607.00	347.00	633.00	373.00	13
34	140.00	260.00	170.00	253.00	4
35	170.00	253.00	433.00	286.00	4
36	433.00	286.00	480.00	292.00	5
37	480.00	292.00	535.00	307.00	5

38	535.00	307.00	556.00	315.00	6
39	556.00	315.00	607.00	343.00	7
40	607.00	343.00	637.00	373.00	8
41	830.00	437.00	900.00	372.00	11
42	777.00	413.00	900.00	268.00	10
43	709.00	394.00	900.00	147.00	9
44	650.00	376.00	827.00	100.00	8
45	607.00	343.00	733.00	100.00	7
46	556.00	315.00	644.00	100.00	6
47	535.00	307.00	601.00	100.00	5
48	433.00	286.00	479.00	100.00	4

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.
Specified Peak Ground Acceleration Coefficient (A) = 0.300(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
9750 Trial Surfaces Have Been Generated.
50 Surface(s) Initiate(s) From Each Of 195 Points Equally Spaced
Along The Ground Surface Between X = 475.00(ft)
and X = 670.00(ft)
Each Surface Terminates Between X = 700.00(ft)
and X = 900.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
30.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 0
Number of Trial Surfaces With Valid FS = 0

Statistical Data On All Valid FS Values:
FS Max = 0.000 FS Min = 500.000 FS Ave = NaN
Standard Deviation = 0.000 Coefficient of Variation = NaN %

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	500.129	340.032
2	530.080	338.319
3	560.080	338.149
4	590.048	339.523
5	619.906	342.436
6	649.575	346.882
7	678.976	352.847
8	708.031	360.318
9	736.663	369.273
10	764.797	379.688
11	792.358	391.538
12	819.273	404.789
13	845.470	419.407
14	870.881	435.354
15	895.438	452.587
16	899.777	455.978

Circle Center At X = 548.464 ; Y = 920.164 ; and Radius = 582.142

Factor of Safety
*** 1.506 ***

Individual data on the 0 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	502.139	340.531
2	532.091	338.830
3	562.091	338.689
4	592.057	340.107
5	621.909	343.082
6	651.567	347.604
7	680.949	353.662
8	709.976	361.239
9	738.570	370.315
10	766.654	380.865
11	794.151	392.860
12	820.988	406.269
13	847.091	421.055
14	872.390	437.178
15	896.817	454.595
16	898.382	455.838

Circle Center At X = 549.844 ; Y = 915.077 ; and Radius = 576.523

Factor of Safety
*** 1.508 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	487.062	338.312
2	516.939	335.601
3	546.919	334.501
4	576.915	335.015
5	606.839	337.141
6	636.606	340.875
7	666.129	346.203
8	695.322	353.112
9	724.102	361.582
10	752.385	371.587
11	780.088	383.099
12	807.132	396.084

13	833.438	410.505
14	858.931	426.321
15	883.536	443.484
16	899.503	455.950

Circle Center At X = 552.449 ; Y = 890.896 ; and Radius = 556.439

Factor of Safety

*** 1.508 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	493.093	339.099
2	523.057	337.625
3	553.057	337.638
4	583.019	339.139
5	612.870	342.124
6	642.537	346.585
7	671.945	352.511
8	701.024	359.889
9	729.701	368.699
10	757.906	378.921
11	785.570	390.528
12	812.623	403.493
13	839.001	417.784
14	864.638	433.365
15	889.470	450.198
16	896.745	455.675

Circle Center At X = 537.914 ; Y = 941.031 ; and Radius = 603.599

Factor of Safety

*** 1.509 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	485.052	338.050
2	514.915	335.195
3	544.890	333.966
4	574.888	334.366
5	604.819	336.395
6	634.596	340.045
7	664.131	345.307
8	693.337	352.164
9	722.127	360.597
10	750.417	370.581
11	778.123	382.086
12	805.164	395.079
13	831.459	409.520
14	856.932	425.368
15	881.506	442.575
16	898.418	455.842

Circle Center At X = 552.593 ; Y = 885.235 ; and Radius = 551.337

Factor of Safety

*** 1.510 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	502.139	340.531
2	532.034	338.015
3	562.022	337.176
4	592.010	338.017
5	621.904	340.534
6	651.611	344.721
7	681.036	350.563
8	710.089	358.043
9	738.677	367.138
10	766.712	377.817
11	794.105	390.049
12	820.771	403.795
13	846.625	419.012

14	871.588	435.651
15	895.580	453.662
16	898.135	455.813

Circle Center At X = 562.052 ; Y = 872.494 ; and Radius = 535.326

Factor of Safety

*** 1.510 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	482.036	337.657
2	511.914	334.957
3	541.894	333.852
4	571.890	334.346
5	601.817	336.437
6	631.590	340.119
7	661.125	345.381
8	690.337	352.210
9	719.145	360.585
10	747.465	370.482
11	775.218	381.875
12	802.325	394.729
13	828.708	409.009
14	854.293	424.674
15	879.008	441.679
16	897.258	455.726

Circle Center At X = 547.692 ; Y = 895.914 ; and Radius = 562.105

Factor of Safety

*** 1.510 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	488.067	338.444
2	517.994	336.357
3	547.990	335.829
4	577.972	336.859
5	607.860	339.447
6	637.574	343.584
7	667.032	349.259
8	696.156	356.457
9	724.866	365.159
10	753.085	375.341
11	780.737	386.976
12	807.747	400.031
13	834.042	414.473
14	859.552	430.261
15	884.206	447.354
16	894.703	455.470

Circle Center At X = 543.274 ; Y = 911.603 ; and Radius = 575.812

Factor of Safety

*** 1.511 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	477.010	337.001
2	506.998	336.148
3	536.995	336.608
4	566.942	338.378
5	596.784	341.457
6	626.462	345.837
7	655.921	351.512
8	685.103	358.469
9	713.953	366.695
10	742.416	376.176
11	770.437	386.892
12	797.962	398.823
13	824.940	411.946
14	851.317	426.236

15	877.045	441.667
16	898.507	455.851

Circle Center At X = 511.574 ; Y = 1021.261 ; and Radius = 685.132

Factor of Safety

*** 1.512 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	475.000	336.739
2	504.834	333.588
3	534.795	332.051
4	564.795	332.133
5	594.746	333.834
6	624.563	337.148
7	654.157	342.066
8	683.443	348.574
9	712.334	356.652
10	740.748	366.277
11	768.601	377.422
12	795.813	390.053
13	822.303	404.134
14	847.994	419.624
15	872.813	436.478
16	896.686	454.646
17	898.050	455.805

Circle Center At X = 548.277 ; Y = 887.691 ; and Radius = 555.803

Factor of Safety

*** 1.512 ***

**** END OF GSTABL7 OUTPUT ****

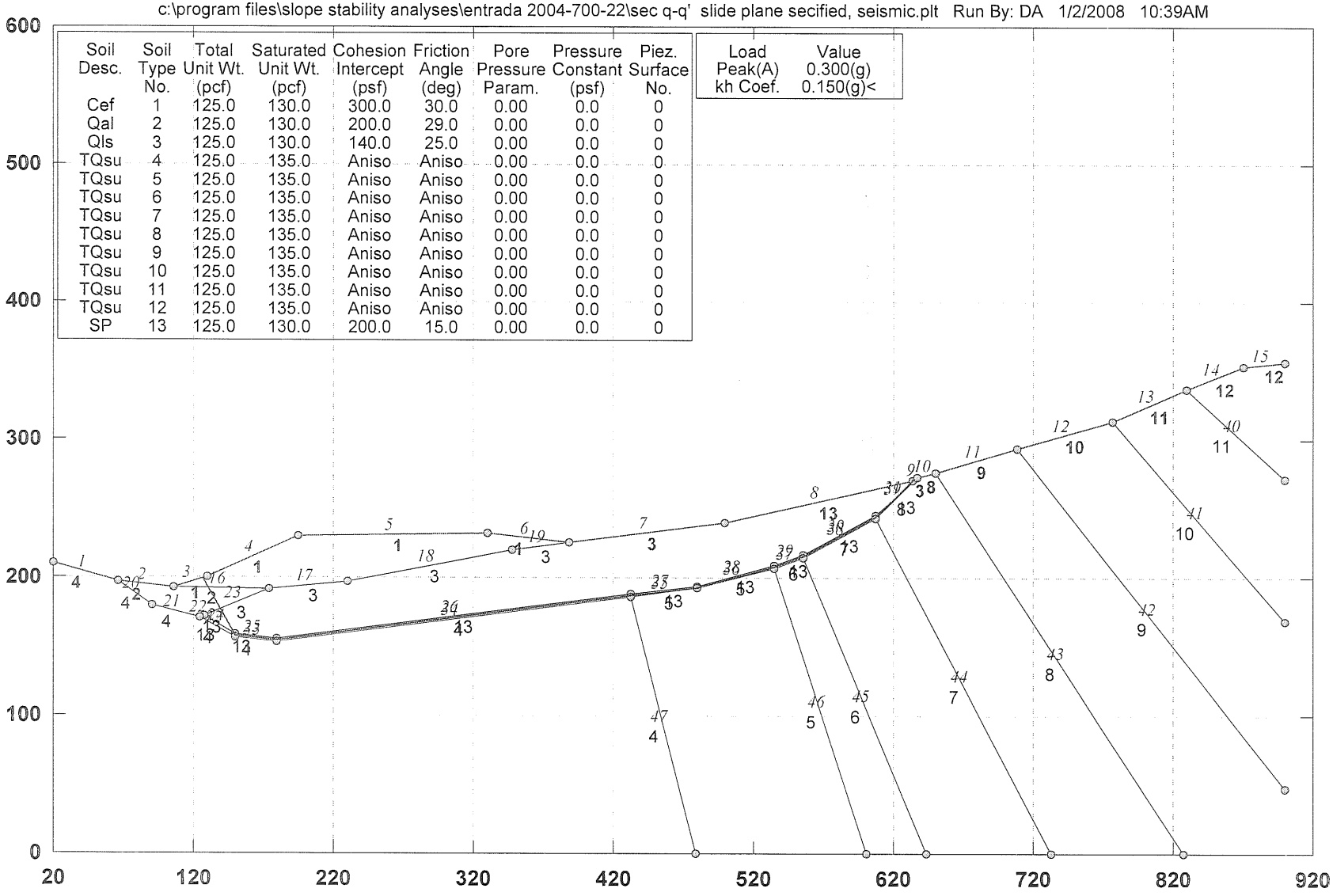
For use with report dated 01/16/2008; RTF Job No. 2004-700-22

Cross Section Q-Q', Seismic Slide Plane specified (Seward 14E-14E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec q-q' slide plane secified, seismic.plt Run By: DA 1/2/2008 10:39AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0.00	0.0	0
Qal	2	125.0	130.0	200.0	29.0	0.00	0.0	0
Qls	3	125.0	130.0	140.0	25.0	0.00	0.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	5	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	6	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	7	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	8	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	9	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	10	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	11	125.0	135.0	Aniso	Aniso	0.00	0.0	0
TQsu	12	125.0	135.0	Aniso	Aniso	0.00	0.0	0
SP	13	125.0	130.0	200.0	15.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.677

Factor Of Safety Is Calculated By The Simplified Janbu Method

GSTABL7

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 1/2/2008
Time of Run: 10:39AM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\sec q-q' Slide Plane Secified, seismic.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\sec q-q' Slide Plane Secified, seismic.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\sec q-q' Slide Plane Secified, seismic.PLT
PROBLEM DESCRIPTION: Cross Section Q-Q', Seismic
Slide Plane specified (Seward 14E-14E')

BOUNDARY COORDINATES

Note: User origin value specified.
Add 20.00 to X-values and 0.00 to Y-values listed.

15 Top Boundaries
47 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	20.00	210.00	66.00	197.00	4
2	66.00	197.00	106.00	193.00	2
3	106.00	193.00	130.00	200.00	1
4	130.00	200.00	195.00	230.00	1
5	195.00	230.00	330.00	232.00	1
6	330.00	232.00	388.00	225.00	1
7	388.00	225.00	500.00	240.00	3
8	500.00	240.00	634.00	271.00	13
9	634.00	271.00	637.00	273.00	3
10	637.00	273.00	650.00	276.00	8
11	650.00	276.00	709.00	294.00	9
12	709.00	294.00	777.00	313.00	10
13	777.00	313.00	830.00	337.00	11
14	830.00	337.00	870.00	353.00	12
15	870.00	353.00	900.00	356.00	12
16	106.00	193.00	174.00	191.00	2
17	174.00	191.00	230.00	197.00	3
18	230.00	197.00	348.00	220.00	3
19	348.00	220.00	388.00	225.00	3
20	66.00	197.00	90.00	179.00	4
21	90.00	179.00	125.00	171.00	4
22	125.00	171.00	128.00	172.00	13
23	128.00	172.00	174.00	191.00	3
24	128.00	172.00	150.00	158.00	13
25	150.00	158.00	180.00	155.00	13
26	180.00	155.00	433.00	188.00	13
27	433.00	188.00	480.00	194.00	13
28	480.00	194.00	535.00	209.00	13
29	535.00	209.00	556.00	217.00	13
30	556.00	217.00	607.00	245.00	13
31	607.00	245.00	637.00	273.00	13
32	125.00	171.00	150.00	156.00	4
33	150.00	156.00	180.00	153.00	4
34	180.00	153.00	433.00	186.00	4

35	433.00	186.00	480.00	192.00	5
36	480.00	192.00	535.00	207.00	5
37	535.00	207.00	556.00	215.00	6
38	556.00	215.00	607.00	243.00	7
39	607.00	243.00	637.00	273.00	8
40	830.00	337.00	900.00	272.00	11
41	777.00	313.00	900.00	168.00	10
42	709.00	294.00	900.00	47.00	9
43	650.00	276.00	827.00	0.00	8
44	607.00	243.00	733.00	0.00	7
45	556.00	215.00	644.00	0.00	6
46	535.00	207.00	601.00	0.00	5
47	433.00	186.00	479.00	0.00	4

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00

3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Specified Peak Ground Acceleration Coefficient (A) = 0.300(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbu's Empirical Coef. is being used for the case of c & phi both > 0
Trial Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	127.000	199.125
2	150.000	157.000
3	180.000	154.000
4	433.000	187.000
5	480.000	193.000
6	535.000	208.000
7	556.000	216.000
8	607.000	244.000
9	635.000	271.667

Janbu's Empirical Coefficient (fo) = 1.046
* * Factor Of Safety Is Calculated By The Simplified Janbu Method * *

Factor Of Safety For The Preceding Specified Surface = 1.677

Table 1 - Individual Data on the 21 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.0	1194.3	0.0	0.0	0.0	0.0	179.1	0.0	0.0
2	0.7	669.2	0.0	0.0	0.0	0.0	100.4	0.0	0.0
3	8.5	19022.9	0.0	0.0	0.0	0.0	2853.4	0.0	0.0
4	9.9	48195.9	0.0	0.0	0.0	0.0	7229.4	0.0	0.0
5	0.8	5362.5	0.0	0.0	0.0	0.0	804.4	0.0	0.0
6	24.0	176907.7	0.0	0.0	0.0	0.0	26536.2	0.0	0.0
7	6.0	50544.2	0.0	0.0	0.0	0.0	7581.6	0.0	0.0
8	15.0	134175.4	0.0	0.0	0.0	0.0	20126.3	0.0	0.0
9	35.0	315088.1	0.0	0.0	0.0	0.0	47263.2	0.0	0.0
10	100.0	802697.4	0.0	0.0	0.0	0.0	*******	0.0	0.0
11	18.0	126393.0	0.0	0.0	0.0	0.0	18958.9	0.0	0.0
12	40.0	244460.2	0.0	0.0	0.0	0.0	36669.0	0.0	0.0
13	45.0	247208.5	0.0	0.0	0.0	0.0	37081.3	0.0	0.0
14	47.0	259522.9	0.0	0.0	0.0	0.0	38928.4	0.0	0.0
15	20.0	107333.6	0.0	0.0	0.0	0.0	16100.0	0.0	0.0
16	35.0	178592.9	0.0	0.0	0.0	0.0	26788.9	0.0	0.0
17	21.0	101131.1	0.0	0.0	0.0	0.0	15169.7	0.0	0.0
18	51.0	183947.4	0.0	0.0	0.0	0.0	27592.1	0.0	0.0
19	18.3	31601.1	0.0	0.0	0.0	0.0	4740.2	0.0	0.0
20	8.7	3963.2	0.0	0.0	0.0	0.0	594.5	0.0	0.0
21	1.0	20.1	0.0	0.0	0.0	0.0	3.0	0.0	0.0

Table 2 - Base Stress Data on the 21 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-61.37	128.50	6.26	2993.75	-320.79
2	-61.37	130.37	1.55	4639.10	-727.22
3	-61.37	135.01	17.79	7599.14	-1797.64
4	-61.37	144.22	20.65	10256.28	-3925.10
5	-61.37	149.58	1.75	5656.50	-5164.40
6	-5.71	162.00	24.12	2221.44	366.73
7	-5.71	177.00	6.03	2509.58	419.11
8	7.43	187.50	15.13	2565.33	2487.43
9	7.43	212.50	35.30	2580.55	2503.41
10	7.43	280.00	100.85	2322.32	2232.14
11	7.43	339.00	18.15	2056.26	1952.63
12	7.43	368.00	40.34	1815.30	1699.48
13	7.43	410.50	45.38	1651.72	1527.63
14	7.28	456.50	47.38	1659.33	1520.83
15	15.26	490.00	20.73	1626.91	2188.70
16	15.26	517.50	36.28	1556.65	2081.03
17	20.85	545.50	22.47	1503.34	2389.43
18	28.77	581.50	58.18	1223.34	2210.06
19	44.66	616.13	25.67	805.79	1400.96
20	44.66	629.63	12.29	390.35	367.14
21	44.66	634.50	1.41	164.72	16.27

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 1324248.00 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 2374.51(psf)

Sum of the Driving Forces = 826316.44 (lbs)

Average Mobilized Shear Stress = 1481.67(psf)

Total length of the failure surface = 557.69(ft)

**** END OF GSTABL7 OUTPUT ****

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

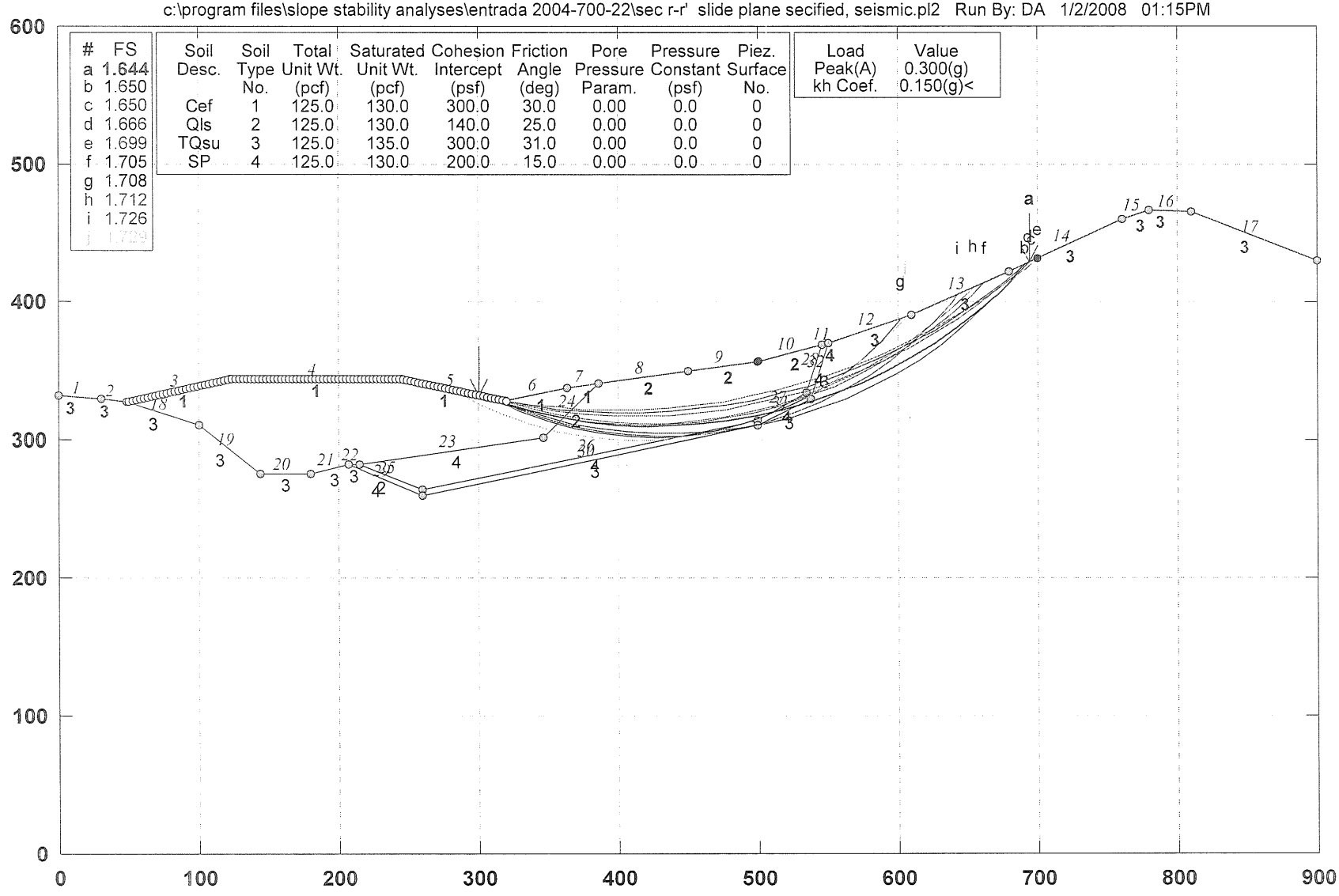
Cross Section R-R', Seismic (Seward 15E-15E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec r-r' slide plane secified, seismic.pl2 Run By: DA 1/2/2008 01:15PM

#	FS
a	1.644
b	1.650
c	1.650
d	1.666
e	1.699
f	1.705
g	1.708
h	1.712
i	1.726

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0.00	0.0	0
Qls	2	125.0	130.0	140.0	25.0	0.00	0.0	0
TQsu	3	125.0	135.0	300.0	31.0	0.00	0.0	0
SP	4	125.0	130.0	200.0	15.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=1.644

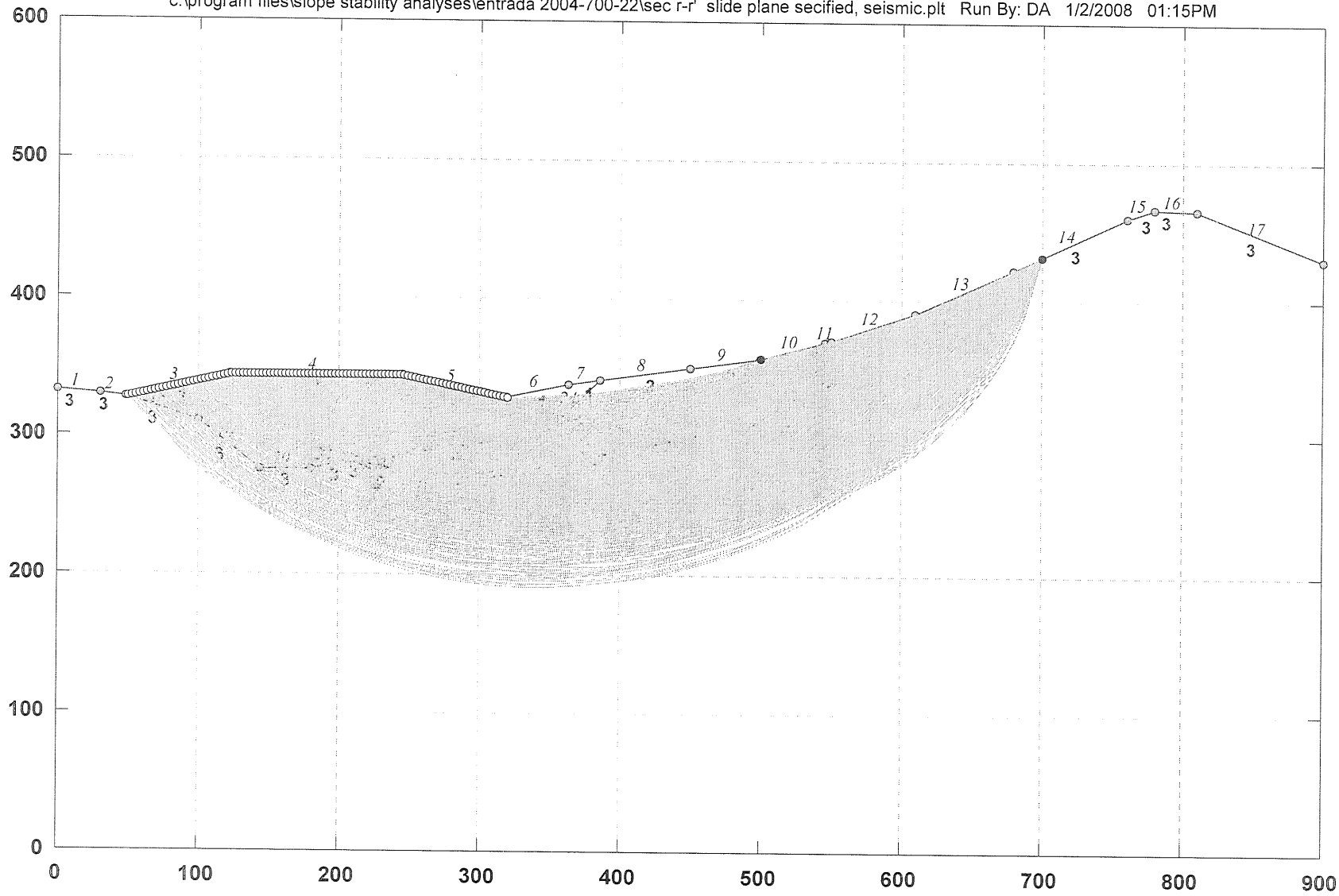
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

Cross Section R-R', Seismic (Seward 15E-15E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec r-r' slide plane secified, seismic.plt Run By: DA 1/2/2008 01:15PM



GSTABL7

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 1/2/2008
Time of Run: 01:31PM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec R-R', seismic.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec R-R', seismic.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec R-R', seismic.PLT
PROBLEM DESCRIPTION: Cross Section R-R', Seismic
(Seward 15E-15E')

BOUNDARY COORDINATES
17 Top Boundaries
32 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	332.00	30.00	330.00	3
2	30.00	330.00	48.00	327.00	3
3	48.00	327.00	123.00	344.00	1
4	123.00	344.00	245.00	344.00	1
5	245.00	344.00	320.00	328.00	1
6	320.00	328.00	363.00	338.00	1
7	363.00	338.00	386.00	341.00	1
8	386.00	341.00	450.00	350.00	2
9	450.00	350.00	500.00	357.00	2
10	500.00	357.00	546.00	369.00	2
11	546.00	369.00	550.00	370.00	4
12	550.00	370.00	610.00	390.00	3
13	610.00	390.00	680.00	422.00	3
14	680.00	422.00	760.00	460.00	3
15	760.00	460.00	780.00	467.00	3
16	780.00	467.00	810.00	466.00	3
17	810.00	466.00	900.00	430.00	3
18	48.00	327.00	100.00	310.00	3
19	100.00	310.00	144.00	276.00	3
20	144.00	276.00	180.00	276.00	3
21	180.00	276.00	207.00	282.00	3
22	207.00	282.00	215.00	282.00	3
23	215.00	282.00	347.00	302.00	4
24	347.00	302.00	386.00	341.00	2
25	215.00	282.00	260.00	264.00	2
26	260.00	264.00	500.00	314.00	4
27	500.00	314.00	534.00	334.00	4
28	534.00	334.00	546.00	369.00	4
29	207.00	282.00	260.00	260.00	4
30	260.00	260.00	500.00	310.00	3
31	500.00	310.00	538.00	330.00	3
32	538.00	330.00	550.00	370.00	3

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	140.0	25.0	0.00	0.0	0
3	125.0	135.0	300.0	31.0	0.00	0.0	0
4	125.0	130.0	200.0	15.0	0.00	0.0	0

Specified Peak Ground Acceleration Coefficient (A) = 0.300(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
1000 Trial Surfaces Have Been Generated.
10 Surface(s) Initiate(s) From Each Of 100 Points Equally Spaced
Along The Ground Surface Between X = 50.00(ft)
and X = 320.00(ft)
Each Surface Terminates Between X = 500.00(ft)
and X = 700.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
20.00(ft) Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -50.0
And -10.0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 5.049 FS Min = 1.644 FS Ave = 2.944
Standard Deviation = 0.652 Coefficient of Variation = 22.16 %
Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	300.909	332.073
2	319.865	325.693
3	339.143	320.369
4	358.685	316.116
5	378.433	312.947
6	398.325	310.872
7	418.301	309.897
8	438.301	310.025
9	458.263	311.255
10	478.127	313.585
11	497.832	317.006
12	517.318	321.509
13	536.527	327.079
14	555.399	333.700
15	573.878	341.352
16	591.906	350.011
17	609.429	359.651
18	626.394	370.243
19	642.750	381.754
20	658.445	394.150
21	673.433	407.392
22	687.668	421.441
23	694.368	428.825

Circle Center At X = 425.983 ; Y = 672.365 ; and Radius = 362.549
Factor of Safety
*** 1.644 ***
Individual data on the 36 slices

Slice	Width	Weight	Water Force Top	Water Force Bot	Tie Force Norm	Tie Force Tan	Earthquake Force Hor	Earthquake Force Ver	Surcharge Load

No.	(ft)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	
1	19.0	2766.8	0.0	0.0	0.	0.	415.0	0.0	0.0	
2	0.1	39.6	0.0	0.0	0.	0.	5.9	0.0	0.0	
3	19.1	17260.5	0.0	0.0	0.	0.	2589.1	0.0	0.0	
4	19.5	40261.7	0.0	0.0	0.	0.	6039.3	0.0	0.0	
5	2.1	5574.4	0.0	0.0	0.	0.	836.2	0.0	0.0	
6	2.2	6144.2	0.0	0.0	0.	0.	921.6	0.0	0.0	
7	15.4	47882.4	0.0	0.0	0.	0.	7182.4	0.0	0.0	
8	7.6	26442.0	0.0	0.0	0.	0.	3966.3	0.0	0.0	
9	12.3	46760.3	0.0	0.0	0.	0.	7014.0	0.0	0.0	
10	20.0	84283.5	0.0	0.0	0.	0.	12642.5	0.0	0.0	
11	20.0	92468.1	0.0	0.0	0.	0.	13870.2	0.0	0.0	
12	11.7	56730.5	0.0	0.0	0.	0.	8509.6	0.0	0.0	
13	8.3	40877.9	0.0	0.0	0.	0.	6131.7	0.0	0.0	
14	19.9	99635.7	0.0	0.0	0.	0.	14945.4	0.0	0.0	
15	19.7	98579.8	0.0	0.0	0.	0.	14787.0	0.0	0.0	
16	2.2	10730.3	0.0	0.0	0.	0.	1609.5	0.0	0.0	
17	9.8	48650.9	0.0	0.0	0.	0.	7297.6	0.0	0.0	
18	7.5	37402.2	0.0	0.0	0.	0.	5610.3	0.0	0.0	
19	10.1	50470.6	0.0	0.0	0.	0.	7570.6	0.0	0.0	
20	6.6	32450.2	0.0	0.0	0.	0.	4867.5	0.0	0.0	
21	2.5	12472.7	0.0	0.0	0.	0.	1870.9	0.0	0.0	
22	1.5	7251.6	0.0	0.0	0.	0.	1087.7	0.0	0.0	
23	8.0	38957.2	0.0	0.0	0.	0.	5843.6	0.0	0.0	
24	4.0	19197.8	0.0	0.0	0.	0.	2879.7	0.0	0.0	
25	5.4	25745.1	0.0	0.0	0.	0.	3861.8	0.0	0.0	
26	18.5	86278.2	0.0	0.0	0.	0.	12941.7	0.0	0.0	
27	18.0	79509.8	0.0	0.0	0.	0.	11926.5	0.0	0.0	
28	17.5	70220.2	0.0	0.0	0.	0.	10533.0	0.0	0.0	
29	0.6	2145.9	0.0	0.0	0.	0.	321.9	0.0	0.0	
30	16.4	58654.3	0.0	0.0	0.	0.	8798.1	0.0	0.0	
31	16.4	51588.8	0.0	0.0	0.	0.	7738.3	0.0	0.0	
32	15.7	40429.2	0.0	0.0	0.	0.	6064.4	0.0	0.0	
33	15.0	27730.4	0.0	0.0	0.	0.	4159.6	0.0	0.0	
34	6.6	8099.0	0.0	0.0	0.	0.	1214.8	0.0	0.0	
35	7.7	5909.0	0.0	0.0	0.	0.	886.3	0.0	0.0	
36	6.7	1759.4	0.0	0.0	0.	0.	263.9	0.0	0.0	

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	309.091	330.327
2	327.723	323.058
3	346.768	316.950
4	366.152	312.027
5	385.803	308.306
6	405.646	305.803
7	425.605	304.527
8	445.605	304.482
9	465.570	305.669
10	485.424	308.084
11	505.091	311.716
12	524.497	316.553
13	543.569	322.576
14	562.233	329.762
15	580.420	338.084
16	598.059	347.510
17	615.085	358.004
18	631.432	369.527
19	647.038	382.035
20	661.844	395.480
21	675.794	409.812
22	688.835	424.976
23	690.281	426.884

Circle Center At X = 436.330 ; Y = 628.946 ; and Radius = 324.597

Factor of Safety

*** 1.650 ***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	298.182	332.655
2	317.551	327.672
3	337.138	323.627
4	356.897	320.530
5	376.782	318.387
6	396.747	317.203
7	416.745	316.982
8	436.732	317.723
9	456.659	319.426
10	476.482	322.085
11	496.153	325.695
12	515.628	330.248
13	534.861	335.732
14	553.808	342.136
15	572.425	349.444
16	590.669	357.640
17	608.497	366.704
18	625.868	376.615
19	642.743	387.351
20	659.081	398.887
21	674.844	411.196
22	689.998	424.248
23	695.274	429.255

Circle Center At X = 411.343 ; Y = 732.421 ; and Radius = 415.474

Factor of Safety

*** 1.650 ***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	298.182	332.655
2	317.677	328.190
3	337.357	324.625
4	357.180	321.967
5	377.103	320.222
6	397.086	319.393
7	417.086	319.483
8	437.061	320.491
9	456.968	322.415
10	476.766	325.251
11	496.413	328.993
12	515.867	333.633
13	535.088	339.161
14	554.034	345.566
15	572.667	352.834
16	590.946	360.950
17	608.834	369.896
18	626.292	379.654
19	643.283	390.204
20	659.772	401.522
21	675.725	413.586
22	691.106	426.369
23	693.182	428.261

Circle Center At X = 405.129 ; Y = 754.830 ; and Radius = 435.511

Factor of Safety

*** 1.666 ***

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	276.364	337.309
2	295.800	332.592
3	315.418	328.704
4	335.184	325.651
5	355.061	323.438
6	375.014	322.071
7	395.007	321.550

8	415.005	321.878
9	434.970	323.053
10	454.868	325.073
11	474.662	327.935
12	494.317	331.634
13	513.797	336.163
14	533.068	341.514
15	552.095	347.676
16	570.844	354.640
17	589.280	362.393
18	607.371	370.920
19	625.084	380.207
20	642.388	390.236
21	659.251	400.989
22	675.643	412.448
23	691.534	424.592
24	699.583	431.302

Circle Center At X = 397.272 ; Y = 792.706 ; and Radius = 471.175

Factor of Safety

*** 1.699 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	300.909	332.073
2	319.849	325.646
3	339.135	320.350
4	358.700	316.203
5	378.476	313.219
6	398.394	311.409
7	418.384	310.780
8	438.376	311.333
9	458.301	313.067
10	478.089	315.975
11	497.670	320.047
12	516.976	325.270
13	535.939	331.624
14	554.494	339.089
15	572.576	347.636
16	590.120	357.237
17	607.067	367.859
18	623.356	379.463
19	638.931	392.010
20	653.738	405.455
21	661.771	413.667

Circle Center At X = 419.029 ; Y = 649.048 ; and Radius = 338.268

Factor of Safety

*** 1.705 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	311.818	329.745
2	329.799	320.988
3	348.467	313.811
4	367.684	308.269
5	387.307	304.403
6	407.189	302.241
7	427.185	301.800
8	447.143	303.083
9	466.917	306.081
10	486.360	310.770
11	505.326	317.117
12	523.675	325.074
13	541.271	334.581
14	557.982	345.569
15	573.685	357.956
16	588.262	371.649
17	601.606	386.547

18	602.262	387.421

Circle Center At X = 422.281 ; Y = 533.626 ; and Radius = 231.882

Factor of Safety

*** 1.708 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	317.273	328.582
2	336.432	322.844
3	355.906	318.289
4	375.623	314.934
5	395.508	312.793
6	415.487	311.872
7	435.485	312.176
8	455.426	313.703
9	475.237	316.448
10	494.842	320.401
11	514.169	325.545
12	533.145	331.863
13	551.699	339.331
14	569.761	347.920
15	587.263	357.598
16	604.140	368.329
17	620.329	380.074
18	635.768	392.787
19	650.401	406.421
20	653.837	410.040

Circle Center At X = 420.506 ; Y = 638.078 ; and Radius = 326.259

Factor of Safety

*** 1.712 ***

Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	311.818	329.745
2	330.104	321.643
3	348.937	314.912
4	368.216	309.589
5	387.834	305.703
6	407.686	303.275
7	427.664	302.319
8	447.657	302.839
9	467.557	304.833
10	487.256	308.290
11	506.646	313.191
12	525.622	319.510
13	544.080	327.211
14	561.919	336.253
15	579.042	346.587
16	595.357	358.157
17	610.773	370.898
18	625.207	384.742
19	638.580	399.614
20	642.712	404.954

Circle Center At X = 430.572 ; Y = 572.785 ; and Radius = 270.500

Factor of Safety

*** 1.726 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	281.818	336.145
2	299.318	326.462
3	317.528	318.191
4	336.334	311.386
5	355.620	306.088
6	375.264	302.331
7	395.143	300.138
8	415.134	299.524

9	435.110	300.490
10	454.948	303.033
11	474.523	307.135
12	493.712	312.772
13	512.396	319.907
14	530.458	328.497
15	547.784	338.487
16	564.266	349.815
17	579.802	362.411
18	594.293	376.194
19	605.265	388.422

Circle Center At X = 412.908 ; Y = 552.385 ; and Radius = 252.872

Factor of Safety

*** 1.729 ***

**** END OF GSTABL7 OUTPUT ****

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

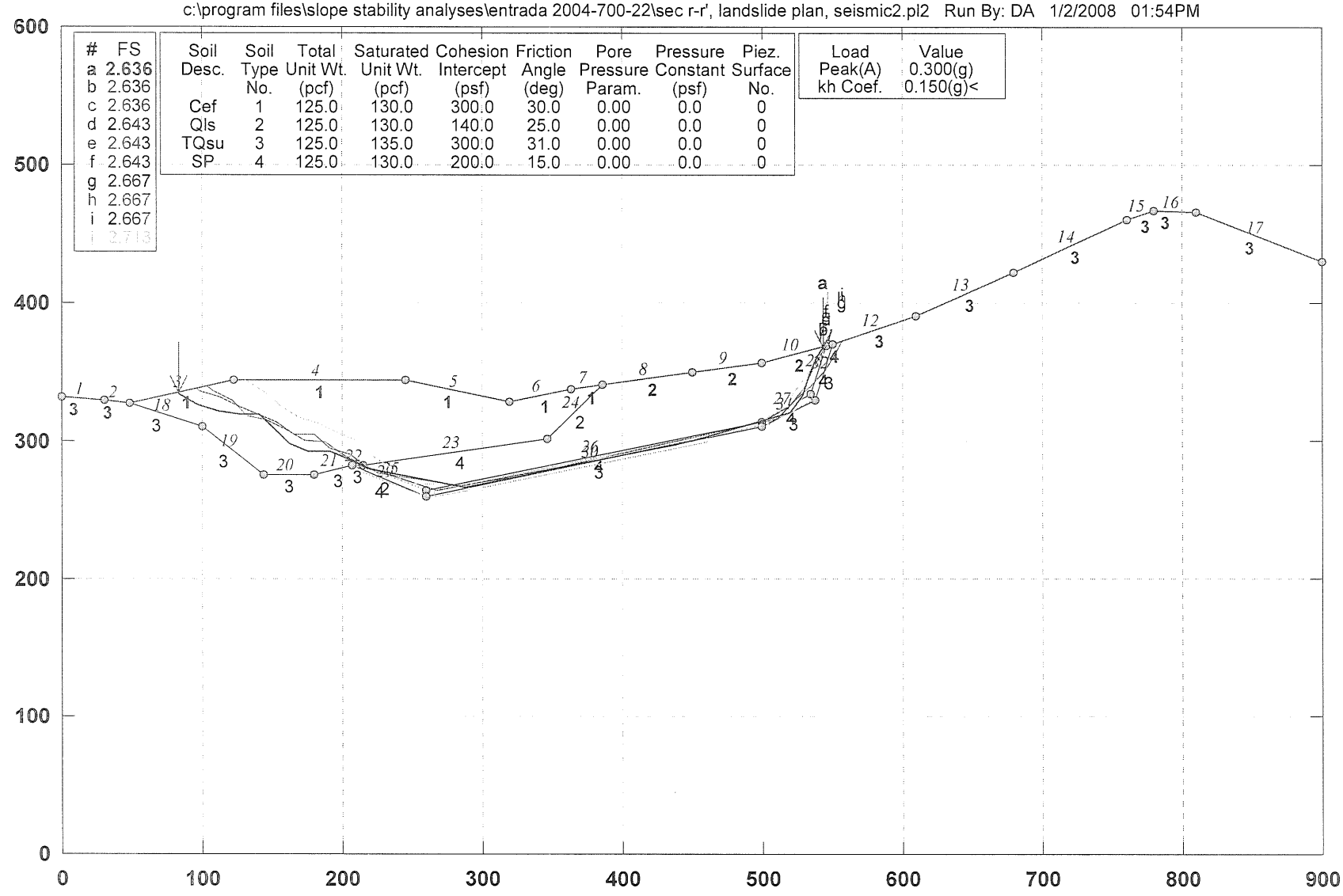
Cross Section R-R', Seismic landslide plane (Seward 15E-15E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec r-r', landslide plan, seismic2.pl2 Run By: DA 1/2/2008 01:54PM

#	FS
a	2.636
b	2.636
c	2.636
d	2.643
e	2.643
f	2.643
g	2.667
h	2.667
i	2.667
j	2.713

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0.00	0.0	0
Qls	2	125.0	130.0	140.0	25.0	0.00	0.0	0
TQsu	3	125.0	135.0	300.0	31.0	0.00	0.0	0
SP	4	125.0	130.0	200.0	15.0	0.00	0.0	0

Load	Value
Peak(A)	0.300(g)
kh Coef.	0.150(g)<



GSTABL7 v.2 FSmin=2.636

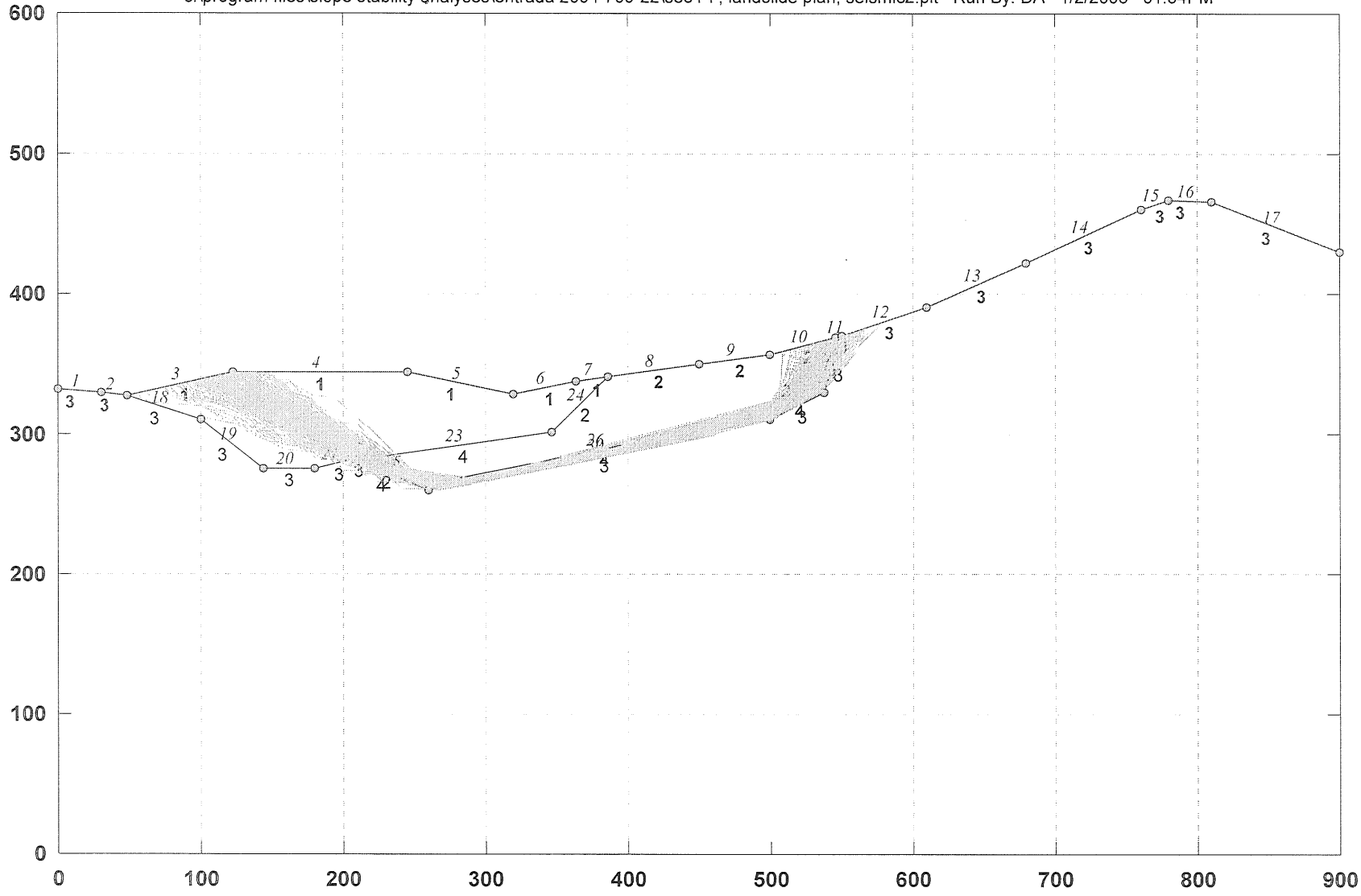
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

For use with report dated 01/16/2008; RTF Job No. 2004-700-22

Cross Section R-R', Seismic landslide plane (Seward 15E-15E')

c:\program files\slope stability analyses\entrada 2004-700-22\sec r-r', landslide plan, seismic2.plt Run By: DA 1/2/2008 01:54PM



GSTABL7

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **
(All Rights Reserved-Unauthorized Use Prohibited)

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date: 1/2/2008
Time of Run: 01:54PM
Run By: DA
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec R-R', landslide plan, seismic2.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec R-R', landslide plan, seismic2.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec R-R', landslide plan, seismic2.PLT
PROBLEM DESCRIPTION: Cross Section R-R', Seismic landslide plane (Seward 15E-15E')

BOUNDARY COORDINATES
17 Top Boundaries
32 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	332.00	30.00	330.00	3
2	30.00	330.00	48.00	327.00	3
3	48.00	327.00	123.00	344.00	1
4	123.00	344.00	245.00	344.00	1
5	245.00	344.00	320.00	328.00	1
6	320.00	328.00	363.00	338.00	1
7	363.00	338.00	386.00	341.00	1
8	386.00	341.00	450.00	350.00	2
9	450.00	350.00	500.00	357.00	2
10	500.00	357.00	546.00	369.00	2
11	546.00	369.00	550.00	370.00	4
12	550.00	370.00	610.00	390.00	3
13	610.00	390.00	680.00	422.00	3
14	680.00	422.00	760.00	460.00	3
15	760.00	460.00	780.00	467.00	3
16	780.00	467.00	810.00	466.00	3
17	810.00	466.00	900.00	430.00	3
18	48.00	327.00	100.00	310.00	3
19	100.00	310.00	144.00	276.00	3
20	144.00	276.00	180.00	276.00	3
21	180.00	276.00	207.00	282.00	3
22	207.00	282.00	215.00	282.00	3
23	215.00	282.00	347.00	302.00	4
24	347.00	302.00	386.00	341.00	2
25	215.00	282.00	260.00	264.00	2
26	260.00	264.00	500.00	314.00	4
27	500.00	314.00	534.00	334.00	4
28	534.00	334.00	546.00	369.00	4
29	207.00	282.00	260.00	260.00	4
30	260.00	260.00	500.00	310.00	3
31	500.00	310.00	538.00	330.00	3
32	538.00	330.00	550.00	370.00	3

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	140.0	25.0	0.00	0.0	0
3	125.0	135.0	300.0	31.0	0.00	0.0	0
4	125.0	130.0	200.0	15.0	0.00	0.0	0

Specified Peak Ground Acceleration Coefficient (A) = 0.300(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.150(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
500 Trial Surfaces Have Been Generated.
4 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	210.00	282.00	260.00	262.00	5.00
2	265.00	262.00	290.00	267.00	5.00
3	300.00	269.00	460.00	302.00	5.00
4	500.00	312.00	536.00	332.00	5.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 500
Number of Trial Surfaces With Valid FS = 500
Statistical Data On All Valid FS Values:
FS Max = 4.088 FS Min = 2.636 FS Ave = 3.221
Standard Deviation = 0.286 Coefficient of Variation = 8.88 %
Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.724	334.871
2	83.619	334.062
3	96.389	326.193
4	110.837	322.159
5	125.667	319.905
6	140.649	319.185
7	151.455	308.781
8	162.063	298.176
9	176.004	292.639
10	190.998	292.211
11	205.121	287.156
12	218.578	280.531
13	287.441	266.193
14	451.670	300.677
15	519.483	321.078
16	528.386	333.150
17	533.064	347.402
18	539.371	361.012
19	543.554	368.362

Factor of Safety
*** 2.636 ***
Individual data on the 33 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	0.9	56.6	0.0	0.0	0.	0.	8.5	0.0	0.0
2	12.8	10206.2	0.0	0.0	0.	0.	1530.9	0.0	0.0
3	14.4	27865.0	0.0	0.0	0.	0.	4179.7	0.0	0.0
4	12.2	32516.2	0.0	0.0	0.	0.	4877.4	0.0	0.0

5	2.7	7963.9	0.0	0.0	0.	0.	1194.6	0.0	0.0
6	15.0	45800.3	0.0	0.0	0.	0.	6870.0	0.0	0.0
7	10.8	40543.4	0.0	0.0	0.	0.	6081.5	0.0	0.0
8	10.6	53735.6	0.0	0.0	0.	0.	8060.3	0.0	0.0
9	13.9	84675.7	0.0	0.0	0.	0.	12701.4	0.0	0.0
10	15.0	96663.6	0.0	0.0	0.	0.	14499.5	0.0	0.0
11	14.1	95887.8	0.0	0.0	0.	0.	14383.2	0.0	0.0
12	10.3	76714.0	0.0	0.0	0.	0.	11507.1	0.0	0.0
13	2.7	21270.2	0.0	0.0	0.	0.	3190.5	0.0	0.0
14	0.4	3211.3	0.0	0.0	0.	0.	481.7	0.0	0.0
15	0.2	1548.3	0.0	0.0	0.	0.	232.2	0.0	0.0
16	26.2	217154.3	0.0	0.0	0.	0.	32573.2	0.0	0.0
17	34.0	292585.1	0.0	0.0	0.	0.	43887.8	0.0	0.0
18	8.5	72736.6	0.0	0.0	0.	0.	10910.5	0.0	0.0
19	32.6	251770.3	0.0	0.0	0.	0.	37765.6	0.0	0.0
20	27.0	186555.2	0.0	0.0	0.	0.	27983.3	0.0	0.0
21	16.0	111522.2	0.0	0.0	0.	0.	16728.3	0.0	0.0
22	23.0	158202.5	0.0	0.0	0.	0.	23730.4	0.0	0.0
23	64.0	415142.8	0.0	0.0	0.	0.	62271.4	0.0	0.0
24	1.7	10356.7	0.0	0.0	0.	0.	1553.5	0.0	0.0
25	35.2	205467.6	0.0	0.0	0.	0.	30820.1	0.0	0.0
26	13.2	70436.4	0.0	0.0	0.	0.	10565.5	0.0	0.0
27	4.2	22067.5	0.0	0.0	0.	0.	3310.1	0.0	0.0
28	15.2	78743.0	0.0	0.0	0.	0.	11811.4	0.0	0.0
29	5.7	27029.4	0.0	0.0	0.	0.	4054.4	0.0	0.0
30	3.2	13178.5	0.0	0.0	0.	0.	1976.8	0.0	0.0
31	4.7	14464.7	0.0	0.0	0.	0.	2169.7	0.0	0.0
32	6.3	9651.6	0.0	0.0	0.	0.	1447.7	0.0	0.0
33	4.2	1636.4	0.0	0.0	0.	0.	245.5	0.0	0.0

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.724	334.871
2	83.619	334.062
3	96.389	326.193
4	110.837	322.159
5	125.667	319.905
6	140.649	319.185
7	151.455	308.781
8	162.063	298.176
9	176.004	292.639
10	190.998	292.211
11	205.121	287.156
12	218.578	280.531
13	287.441	266.193
14	451.670	300.677
15	519.483	321.078
16	528.386	333.150
17	533.064	347.402
18	539.371	361.012
19	543.554	368.362

Factor of Safety

*** 2.636 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	82.724	334.871
2	83.619	334.062
3	96.389	326.193
4	110.837	322.159
5	125.667	319.905
6	140.649	319.185
7	151.455	308.781
8	162.063	298.176
9	176.004	292.639
10	190.998	292.211
11	205.121	287.156

12	218.578	280.531
13	287.441	266.193
14	451.670	300.677
15	519.483	321.078
16	528.386	333.150
17	533.064	347.402
18	539.371	361.012
19	543.554	368.362

Factor of Safety
*** 2.636 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.069	339.482
2	107.727	335.848
3	121.243	329.344
4	131.935	318.822
5	146.458	315.070
6	159.917	308.448
7	172.831	300.817
8	187.764	299.402
9	199.700	290.317
10	213.060	283.498
11	226.537	276.913
12	283.413	267.882
13	324.639	274.589
14	510.870	316.210
15	520.806	327.447
16	530.190	339.149
17	536.543	352.738
18	543.400	366.078
19	545.094	368.764

Factor of Safety
*** 2.643 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.069	339.482
2	107.727	335.848
3	121.243	329.344
4	131.935	318.822
5	146.458	315.070
6	159.917	308.448
7	172.831	300.817
8	187.764	299.402
9	199.700	290.317
10	213.060	283.498
11	226.537	276.913
12	283.413	267.882
13	324.639	274.589
14	510.870	316.210
15	520.806	327.447
16	530.190	339.149
17	536.543	352.738
18	543.400	366.078
19	545.094	368.764

Factor of Safety
*** 2.643 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	103.069	339.482
2	107.727	335.848
3	121.243	329.344
4	131.935	318.822
5	146.458	315.070
6	159.917	308.448

7	172.831	300.817
8	187.764	299.402
9	199.700	290.317
10	213.060	283.498
11	226.537	276.913
12	283.413	267.882
13	324.639	274.589
14	510.870	316.210
15	520.806	327.447
16	530.190	339.149
17	536.543	352.738
18	543.400	366.078
19	545.094	368.764

Factor of Safety
*** 2.643 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	96.335	337.956
2	97.828	336.492
3	111.993	331.556
4	125.737	325.548
5	139.260	319.058
6	153.455	314.208
7	165.367	305.093
8	180.364	304.794
9	191.700	294.971
10	205.945	290.273
11	217.578	280.802
12	267.702	263.971
13	437.217	296.746
14	513.278	318.224
15	523.604	329.104
16	534.078	339.842
17	544.494	350.636
18	552.049	363.594
19	556.424	372.141

Factor of Safety
*** 2.667 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	96.335	337.956
2	97.828	336.492
3	111.993	331.556
4	125.737	325.548
5	139.260	319.058
6	153.455	314.208
7	165.367	305.093
8	180.364	304.794
9	191.700	294.971
10	205.945	290.273
11	217.578	280.802
12	267.702	263.971
13	437.217	296.746
14	513.278	318.224
15	523.604	329.104
16	534.078	339.842
17	544.494	350.636
18	552.049	363.594
19	556.424	372.141

Factor of Safety
*** 2.667 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	96.335	337.956

2	97.828	336.492
3	111.993	331.556
4	125.737	325.548
5	139.260	319.058
6	153.455	314.208
7	165.367	305.093
8	180.364	304.794
9	191.700	294.971
10	205.945	290.273
11	217.578	280.802
12	267.702	263.971
13	437.217	296.746
14	513.278	318.224
15	523.604	329.104
16	534.078	339.842
17	544.494	350.636
18	552.049	363.594
19	556.424	372.141

Factor of Safety

*** 2.667 ***

Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	130.989	344.000
2	132.495	342.903
3	145.247	335.004
4	156.323	324.889
5	169.026	316.912
6	183.331	312.400
7	196.700	305.598
8	210.674	300.146
9	221.396	289.656
10	233.725	281.112
11	244.335	270.509
12	284.987	267.994
13	452.842	301.942
14	504.419	312.931
15	514.897	323.664
16	523.335	336.066
17	531.686	348.527
18	541.892	359.519
19	546.801	369.200

Factor of Safety

*** 2.713 ***

**** END OF GSTABL7 OUTPUT ****

Appendix 5.6E

Response to Los Angeles County Department of Public Works' Geotechnical Review for Vesting Tentative Tract Map No. 53295

R.T. Frankian & Associates

April 6, 2007

RTF&A

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

ELECTRONIC MEDIA LIMITATIONS

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In the event of a conflict between the signed document prepared by RTF&A and electronic files, the signed or sealed hard-copy documents shall govern.

RESPONSE TO LOS ANGLES COUNTY

DEPARTMENT OF PUBLIC WORKS

GEOTECHNICAL REVIEW

VESTING TENTATIVE TRACT MAP NO. 53295

THE ENTRADA PROJECT

VALENCIA, CALIFORNIA

VOLUME I OF II

FOR

NEWHALL LAND AND FARMING COMPANY

APRIL 6, 2007

JOB NO. 2004-700-22

RTF&A

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

April 6, 2007

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

Job No. 2004-700-22

Attention: Mr. Alex Herrell
Community Manager

Subject: Response to Los Angles County
Department of Public Works
Geotechnical Review
Vesting Tentative Tract Map No. 53295
The Entrada Project
Valencia, California

This submittal presents our response to review comments by the Los Angeles County Department of Public Works Geotechnical and Materials Engineering Division (LACDPW). The Geologic Review Sheet is dated May 19, 2005. The Soils Engineering Review Sheet is dated June 9, 2005. Review sheets are attached at the end of this report. Review comments address our March 18, 2005 report titled "Report of 100-Scale Plan Review, Vesting Tentative Tract Map No. 53295, Valencia, California, Volumes I and II, Job No. 2004-700-21". The purpose of this report is to provide requested geotechnical data and respond to LACDPW review comments. This work was performed in accordance with our August 4, 2005 proposal and your Letter of Authorization. Review comments are repeated below followed by our response. Copies of the LACDPW review sheets are included in Appendix A.

Vesting Tentative Tract Map 53295 (VTTM 53295) has been revised to include new planning areas. This report includes additional field exploration, laboratory testing and geotechnical recommendations for planning areas not shown on previous versions of VTTM 53295. The new planning areas are discussed following the response to

comments section. LACDPW comments are presented in bold type followed by our response in regular type.

GEOLOGIC REVIEW SHEET

1. **A geotechnical report by Frankian dated 3/29/05 for the relocation of the Chevron Gas Station (27549 The Old Road) shows several landslides located along the proposed haul road and stockpile site. These are not shown on the geotechnical map (sheet 5). Revise and discuss as necessary.**

Two landslides and a surficial failure were mapped on the west flank of a north-trending ridge. The landslides were mapped in previous R. T. Frankian & Associates (RTF&A) reports covering the proposed haul route and stockpile site. The landslides were adopted from previous Allan E. Seward (Seward) reports covering the area. Earth materials include terrace deposits and Saugus Formation bedrock. Terrace deposits in this area consist of silty sand and sand with gravel. The material is generally massive and loose in the upper few feet, but becomes cemented and increasingly dense with depth. The contact between terrace deposits and bedrock is often difficult to distinguish in outcrop and borings. Bedrock consists of interbedded conglomerate and sandstone. The conglomerate is a matrix-supported coarse sand and gravel mixture that is generally hard, dry, and friable. Sandstone layers are fine to coarse grained, generally massive, but locally show cross-bedding and fining upwards gradation. Terrace and bedrock strike roughly east-west with north dips between 4 degrees and 14 degrees. Bedding orientation is neutral to favorable with respect to west facing slopes. No evidence of groundwater or seeps were identified in outcrops or borings. No structural features of significance were identified in outcrops or borings.

To evaluate the landslides for VTTM 53295, we reviewed stereo-paired aerial photographs (referenced in our "Geotechnical Review," RTF&A, 2005), analyzed topographic maps, completed geologic mapping of the area, and excavated Boring B-1. Each of the three mapped features will be discussed beginning on the south, in the area closest to the oil pad, and moving north.

The first landslide is located in a modified natural slope cut as part of grading for the oil pad. The slide is mapped entirely in Saugus Formation bedrock. Results of our aerial photo and topographic map analyses yielded no geomorphic or topographic evidence of landsliding. Mapping of the cut and natural slopes in this area revealed no scarps, grabens, transverse cracks, lateral ridges, or other evidence of landsliding. If the landslide existed, the margins of it would be exposed in the relatively fresh cut extending upslope to the east at the point where the existing access road enters the drill pad. No such features were identified in this cut. Based on this work, the landslide does not exist.

The second landslide is located about 120 feet north along the ridge. The second landslide was mapped as a surficial failure. The landslide is located on a natural slope and mapped primarily in bedrock. Results of our aerial photo and topographic map analyses yielded no geomorphic or topographic evidence of a surficial failure. Mapping of the natural slopes in this area revealed no scarps, grabens, transverse cracks, lateral ridges, or other evidence of large-scale surficial failure.

The third landslide is located at the north end of the ridge south of Magic Mountain Parkway. The slide is mapped in terrace deposits and bedrock. Boring B-1 was drilled within the mapped limits of the slide near the headscarp. Boring B-1 is included in Appendix B of our March 18, 2005 report. Boring B-1 extended to a depth of 65 feet below ground surface and encountered 14 feet of terrace deposits over undisturbed bedrock. Bedrock was hard when struck with a rock pick and unjointed. Primary bedding features were visible throughout the stratigraphic section. Attitudes were consistent from top to bottom with east-west strikes and shallow north dips. Two attitudes measured at 33 and 37 feet were not consistent with the general trend, but these attitudes were measured on cross bedding and channel-fill features. The rock consisted of coarse sand and gravel conglomerate interbedded with fine to coarse sandstone. No clay beds or other weak horizons were identified. No groundwater or seeps were encountered. No evidence of landsliding was identified in the boring.

There is weak geomorphic evidence of a deep-seated landslide in this area characterized by a discontinuous bench at roughly mid slope height. Deep-seated rotational landsliding at this location would require cross-bedding failure at depth through conglomerate and sandstone. This by itself makes deep-seated landsliding unlikely. Mapping of the natural slopes in this area revealed no scarps, grabens,

transverse cracks, lateral ridges, or other evidence of landsliding. These observations combined with results from Boring B-1 are definitive. Based on this work, the landslide does not exist.

In addition to the analyses above, the landslides are located in an area of cut. Earthwork to reach proposed grade would remove all landslide debris if the slides actually existed.

2. **Based on the data provided, cut slopes CS-1, CS-2, and CS-4 (sheet 6) may expose a component of out of slope bedding. Provide stability analyses that model this condition, based on strength data from the weakest material that will be exposed in the cuts.**

We prepared Geologic Cross Sections M-M', N-N', and O-O' drawn through Cut Slopes CS-1, CS-2, and CS-4. The sections are oriented perpendicular to strike of bedding as measured in nearby exploratory borings. Dip on the sections is true dip and represents the most critical condition with respect to out-of-slope bedding. The sections are shown on Figures 2.1 and 2.2. The location of the sections is shown on Figure 3. Borings discussed below are included in Appendix B of our March 18, 2005 report. Boring location is shown on Figure 3.

Boring B-3 was excavated to evaluate Cut Slope 1. Boring B-3 extended to a depth of 65 feet below ground surface and encountered seven feet of soil and heavily weathered bedrock over undisturbed bedrock. Bedrock was hard when struck with a rock pick and largely unjointed. The rock was difficult to excavate with a rock pick at depths below 35 feet. Primary bedding features were visible throughout the stratigraphic section. Attitudes were consistent from top to bottom with east-west strikes and north dips from 3 degrees to 25 degrees. The rock consisted primarily of siltstone and fine sandstone with interbeds of coarse sandstone and gravel/cobble conglomerate. No clay beds or other weak horizons were identified. No groundwater or seeps were encountered. No evidence of landsliding was identified in the boring. Direct shear tests were performed on samples collected at 10 feet and 30 feet. Samples selected for testing consisted of siltstone and fine sandstone and were considered representative of the weakest materials encountered in the boring. Direct shear tests from this boring are shown on Figures B-1.1 and B-1.3 from our March 18, 2005 report.

Boring B-4 was excavated to evaluate Cut Slope 2. Boring B-4 extended to a depth of 65 feet below ground surface and encountered 4 feet of soil and heavily weathered bedrock over undisturbed bedrock. Bedrock was hard when struck with a rock pick and largely unjointed. Primary bedding features were visible throughout the stratigraphic section. Attitudes were consistent from top to bottom with east-west strikes and north dips from 13° to 28°. Where attitudes varied from regional trend, the variation was due to local bedding forms such as cross bedding and soil filled erosional channels. The rock consisted primarily of fine sandstone with interbeds of sandy siltstone and gravel conglomerate. No clay beds or other weak horizons were identified. No groundwater or seeps were encountered. No evidence of landsliding was identified in the boring. Direct shear tests were performed on samples collected at 10 feet and 30 feet. Samples selected for testing consisted of fine sandstone and sandy siltstone and were considered representative of the weakest materials encountered in the boring. Direct shear tests from this boring are shown on Figure B-1.1 from our March 18, 2005 report.

Boring B-2 was excavated to evaluate Cut Slope 4. Boring B-2 extended to a depth of 65 feet below ground surface and encountered 16 feet of terrace deposits over undisturbed bedrock. Bedrock was hard when struck with a rock pick and largely unjointed. Primary bedding features were visible throughout the stratigraphic section. Attitudes were consistent from top to bottom with east-west strikes and north dips from 10° to 16°. The rock consisted primarily of fine sandstone with interbeds of sandy siltstone and gravel conglomerate. No clay beds or other weak horizons were identified. No groundwater or seeps were encountered. No evidence of landsliding was identified in the boring. Direct shear tests were performed on samples collected at 10 feet (terrace deposits), 20 feet, and 30 feet. Bedrock samples selected for testing consisted of fine sandstone and sandy siltstone and were considered representative of the weakest materials encountered in the boring. Direct shear tests from this boring are shown on Figures B-1.1, B-1.2, and B-1.3 from our March 18, 2005 report.

Slope stability analyses on Geologic Sections M-M', N-N', and O-O' will be discussed in later sections of this response under Comment 3 from the Soils Engineering Review Sheet.

3. **A landslide (Qls-1) located along the proposed Westridge Parkway (vicinity of lots 587, 584 of tract 53295) was mapped by A. E. Seward**

Engineering Geology for tentative tract 61105 Mission Village in a report dated 12/22/04 (geotechnical map sheet 7 of 8). Adjust lot lines to constrain the landslide on one lot or provide remediation of the landslide. The landslide hazard may not be subdivided.

BACKGROUND

Seward maps a landslide located on the north facing dip slope of a strike ridge. The bulk of the slide is offsite in Tentative Tract 61105 (TT 61105) and southwest of proposed Westridge Parkway. As mapped by Seward the landslide covers about 9 acres with a variable depth between 4 feet to 57 feet. On Seward's maps the toe of the landslide is shown to underlie proposed Westridge Parkway and extends into VTTM 53295. Within VTTM 53295 the landslide is shown to underlie portions of open space lots 584 and 587, and portions of buildable lots 120, 121, 122, 156, 157, 158, and 159. The toe of the landslide is buried by about 30 feet of channel sediments that fill a small tributary canyon. The landslide does not offset channel sediments according to Seward. The limits of the landslide as mapped by Seward are shown on Figure 3.

GEOMORPHOLOGY

The landslide has apparent geomorphic expression on aerial photographs and topographic maps. The geomorphic expression is characterized by a subdued topographic bench between elevation 1,330 feet and 1,350 feet. Above the topographic bench the slope steepens approaching the ridge crest. Two broad swales constrain the margins of the apparent landslide on the northwest and southeast. Geomorphology suggests that, if the landslide exists, it has experienced significant translational movement on the order of 60 feet or more. The subdued topography suggests the apparent landslide would be an ancient failure. The toe of the apparent slide is buried by up to 30 feet of channel sediments, which also suggests an ancient failure.

The topographic bench between elevations 1,330 feet and 1,350 feet, which is the primary geomorphic evidence for the existence of the landslide, extends across the broad swales on both ends of the apparent slide to intact bedrock ridges where it displays the same topographic expression at the same elevation. This suggests an

alternate interpretation for the geomorphology that does not involve landsliding. The bench could be a remnant stream terrace or could be the surface expression of contrasting lithologies with differing resistance to weathering.

PREVIOUS EXPLORATION

Seward excavated 11 bucket auger borings in or adjacent to the slide. Boring locations are shown on Figure 3. Borings Logs are in Appendix A. We prepared five geologic cross sections using Seward data to evaluate the subsurface conditions in the landslide area. The Geologic Cross Sections are labeled P-P', Q-Q', R-R', S-S', and T-T'. Geologic Cross Section locations and subsurface conditions are shown on Figure 3.

Boring logs that penetrate the interpreted landslide describe interbedded siltstone, sandstone, and conglomerate that is largely undisturbed with little or no change in physical characteristics of the rock mass above and below the interpreted landslide plane. There is a noticeable lack of jointing, brecciation, soil filled cracks, and other features that one may expect within the mass of a translational landslide that has experienced large lateral displacement. Sample blow counts corrected for kelly weight show no significant difference in drive energy above and below the interpreted landslide plane. In-situ dry density and moisture contents reported on the boring logs also show no discernable difference. Consolidation tests on bedrock interpreted to be landslide debris and reported in Appendix B of the July 22, 2004 Seward report show overconsolidated sands, silts, and clays that display low potential consolidation at overburden pressures up to 20 ksf. Consolidation tests are consistent with undisturbed rock. No groundwater or seeps were encountered in any boring. No seepage was encountered at the interpreted slide plane in any boring.

The interpreted slip surface of the landslide is generally described as a $^{1}/_{2}$-inch to 2 inch thick clay layer within a 4-inch to 6-inch thick mudstone bed. These materials are generally described by Seward as plastic, sticky, soft, and moist. The slip surface is typically described as sheared. Geologic Cross Sections P-P' through T-T' document the subsurface geometry of the mudstone bed. The mudstone bed is a normal depositional horizon within the Saugus Formation. It is parallel to bedding.

The mudstone bed is shallow in the north portion of the landslide and deep in the south portion. This subsurface geometry results in the mudstone bed having a shallow subsurface outcrop or subcrop in the now buried canyon wall near Geologic Cross Section S-S'. The depth of the mudstone subcrop increases moving south. At Geologic Cross Section P-P' the subcrop is at its most critical location at the maximum depth of canyon scour. Moving south from Geologic Cross Section P-P' the mudstone bed no longer has a subcrop. At Geologic Cross Section Q-Q' the mudstone bed is buried by 20 feet of bedrock below the maximum depth of ancient canyon scour. At Geologic Cross Section R-R' the mudstone bed is buried by about 44 feet of bedrock below the maximum depth of ancient canyon scour.

The model for failure of the apparent slide must be that movement occurred contemporaneous with the ancient erosional event that caused the maximum scour in the now buried channel. Failure would have occurred in the down dip direction with an azimuth of about N80W. The average dip is about 8 degrees. The geometry of the subcrop suggests that if movement on the mudstone bed occurred, movement would be restricted to the areas around Geologic Cross Sections S-S' and P-P'. Movement would not likely have occurred on portions of the mudstone bed south of Geologic Cross Section P-P' because the mudstone bed is naturally buttressed against such failure by 20 to 40 feet of bedrock. The lack of jointing, brecciation, soil filled cracks, and other evidence of disturbance to the rock mass in the area of Seward borings B-56E and B-58E is further evidence that the portion of the slide south of Geologic Cross Section P-P' did not fail. If failure did occur in this area, the cross-bedding breakout required at the toe of the landslide would have caused significant and widespread disturbance to the rock mass.

CONCLUSION

Results indicate it is unlikely the interpreted landslide actually failed. The interpreted landslide mass as it exists in the field has a factor of safety equal to or higher than minimum LACDPW standards for residential development.

PROPOSED GRADING

Results discussed above do not take into account proposed grading. The December 22, 2004 Seward report for TT 61105 indicates that Seward recommends

removal of portions of the interpreted landslide. Removals will extend to intact bedrock or a depth of 30 feet whichever is shallower. Proposed removals will excavate the bulk of channel sediments at the toe of the landslide. Proposed removals extend beyond the TT 61105 tract boundary and into VTTM 53295. Seward Sections 13E-13E', 14E-14E', and 15E-15E' on Plate G17 show that all landslide materials that extend into TT 53295 are proposed to be removed and replaced with engineered fill. We believe the Seward recommendation is conservative.

Proposed grading will result in the placement of 10 to 40 feet of engineered fill at the toe of the interpreted slide. The fill will buttresses remnants of the interpreted landslide left in place and results in a net increase in factor of safety on each cross section.

Seward completed slope stability analyses on Sections 13E, 14E, and 15E. These analyses are reported in Appendix F of the December 22, 2004 Seward report. Factors of safety are in excess of 1.50 for the end condition after removal of the landslide in each case considered. Seward recommendations will remove all traces of the interpreted landslide from VTTM 53295 and result in engineered ground with a factor of safety in excess of minimum LACDPW standards. The interpreted slide will be mitigated and therefore does not require lot line adjustments within VTTM 53295.

4. Address location of "Recreation Building" within setback zone for the Holser fault (Sheet 2).

The development plan for this portion of the site has changed and the Recreation Building and associated works have been eliminated from the final plan.

SOILS ENGINEERING REVIEW SHEET

1. Requirements of the Geology Section are attached.

See our response to the Geology Section earlier in this report.

2. Liquefaction analyses based on CPT data must be corroborated by SPT data, per the State of California Division of Mines and Geology "Special Publication 117". Dated 1997 and "Recommended Procedure For Implementation of DMG Special Publication 117", dated March 1998. Provide data and revised liquefaction analyses as necessary.

During the preparation of this report, additional field exploration was performed between September 6, 2005 and February 9, 2006. Field exploration included an additional 13 rotary wash borings and nine Cone Penetrometer Test (CPTs) soundings at the locations shown on the Geotechnical Map. Out of thirteen rotary wash borings, two wash borings (WB-11 and WB-12) were excavated within three feet of CPT soundings (CPT 6 and CPT 7) to verify the soil parameters interpreted from the CPT data with rotary wash boring data. We also reviewed and analyzed our current four borings (WB-1, WB-2, WB-3 and WB-4) excavated with respect to previous nearby past four CPT soundings to verify soil conditions. The analyses are presented in Appendix C. Blow counts and percent fines from the CPT data generally correlate with rotary wash boring data. Overall, the CPT data are slightly conservative when compared to data from the rotary wash borings. This is shown in the following table:

COMPARING BETWEEN FIELD DATA FROM
ADJACENT CPTS AND WASH BORINGS

CPT No.	Rotary Wash Boring No.	CPT Blow Counts	CPT Percent Fines	Remarks
CPT-6(05)	WB-11(06)	Conservative	Conservative	See Figure C1
CPT-7(05)	WB-12(06)	Slightly Conservative	Conservative	See Figure C2
CPT-6(98)	WB-1(05)	Match to Conservative	Conservative	See Figure C3
CPT-1(01)	WB-2 (05)	Match	Conservative	See Figure C4
CPT-15(01)	WB-3(05)	Match	Conservative	See Figure C5
CPT-19(01)	WB-4(05)	Un-conservative	Conservative	See Figure C6

3. Provide static and seismic slope stability analyses for the daylighted bedding condition in west and northeast facing slopes. Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength

parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

We have provided static and seismic slope stability analyses for west and northwest facing slopes with daylighted bedding on Geologic Cross Sections M-M', N-N' and O-O'. Results of our stability analyses indicate factors of safety greater than minimum LACDPW standards. The results are presented in Appendix D. The Geotechnical Cross Sections with Minimum Factor of Safety surface are shown on Figure 3. Shear strengths used in our slope stability analyses are presented below.

SUMMARY OF SHEAR STRENGTH PARAMETERS*

MATERIAL	Static Cohesion (psf)	Static Ø(degrees)
Landslide Failure Plane Material	200	18
Terrace Deposits	450	27
Saugus Cross-Bedding	400	30
Saugus Along Bedding (static)	250	22
Saugus Along Bedding (Pseudo static)	300	30
Compacted Fill	250	29
Alluvium	100	38

* Source: RTF&A Report, Job No. 2004-700-21, dated March 18, 2005.

4. **Include laboratory test results from previous investigations in this report.**

We have included all available laboratory test results from previous investigation in this report (see Appendix B).

5. **Determine suitability of the engineered fill placed during construction of Magic Mountain Parkway, between Planning Area 15, and 4 through 14.**

We researched our files, and LACDPW records regarding observation and testing reports on Magic Mountain Parkway between Planning Area 15, and 4 through 14. We also requested that Newhall Land and Farming Company (NLF) research their files and provide copies of any available reports. Based on our research and review no observation and testing (compaction) report is available for this stretch of Magic Mountain Parkway. Therefore, we recommend artificial fill placed during construction of Magic Mountain Parkway be completely removed during future site grading or not used for structural support. Alternatively, additional subsurface investigation should be performed in this area during the 40-scale study.

6. **Due to environmental concerns, regarding oil wells, provide copy of permit, letter of non-objection, processed application, etc. as applicable, obtained from the appropriate State Agencies, i.e. Division of Oil, Gas and Geothermal Resources. Department of Toxic Substances Control, South Coast Air Quality Management District, Regional Water Quality Control Board, etc.**

Fourteen (14) oil wells were identified as having been drilled within the tract boundary.

Records on file with the California Division of Oil and Gas and Geothermal (DOGGR) relative to these oil wells were included in our March 18, 2005 report as an Appendix E in Volume II.

A copy of the rough grading plan for VTTM 53295 should be submitted to the California Division of Oil, Gas and Geothermal Resources (DOGGR) for their review and comment. DOGGR will determine if the oil wells will require re-abandonment and/or adjustments and/or adjustments of well casings, relative to proposed grading. DOGGR will submit their findings to NL&F for any further action. Any additional work on the wells will be performed by a DOGGR approved well abandonment contractor, under the observation of DOGGR. DOGGR documentation approving abandonment operations will be forwarded to NL&F and will be provided to LACDPW in RTF&A's final as-built report. Documents relating to oil wells that may be on file at other agencies was beyond the scope of our services for this project.

7. Show/note the following on the geotechnical map:

a. Approximate depth of artificial fills to be completely removed (af).

b. Recommended stability fills for the cut slopes.

See the attached Geotechnical Maps (see Figures 1.1 through 1.5).

8. Relabel Cross-section "F-G" as "G-G".

The geologic cross section has been relabeled.

CHANGES TO VTTM 53295

Four additional pieces of land have been added to VTTM 53295 since our March 18, 2005 report. The pieces of land are located south of The Old Road between State Route 126 and Henry Mayo Drive. The pieces of land are part of new Planning Area 2 and have been assigned Lot Numbers 26, and 30 through 39. The lots cover about 15 acres and are currently proposed for commercial development. The new lots are shown on Figure 1.2.

Former Planning Area 2 has been removed from VTTM 53295. This area is now a proposed water quality basin that is to be constructed as part of the adjacent TT 61105.

Details have been added for off site daylight grading adjacent to Planning Areas 3, 4, and 5. The details are shown on Figures 1.3 and 1.5. The daylight grading would extend into TM 61105 and assumes the adjacent tract is not graded prior to grading for VTTM 53295.

FIELD EXPLORATION

Additional field explorations for the new parcels of land were performed between September 6, 2005 and February 9, 2006. Field exploration included 13 rotary wash borings and nine CPTs soundings at the locations shown on the Geotechnical Map. Conditions encountered in the borings and CPT's are summarized in Table A-1 in Appendix A. Boring logs are also presented in Appendix A. The borings were excavated to depths ranging from 50.5 to 130 feet below existing grade. The borings were sampled using "ring" (relatively undisturbed) and bulk samples. In addition to obtaining undisturbed samples, Standard Penetration Tests (SPT) were performed in each boring. The Standard Penetration Tests were performed in accordance with the ASTM D 1586 Test Method. The depths, blow counts, field moisture contents, and unit dry densities of the samples are presented in the boring logs in Appendix A. Kehoe Testing & Engineering (KTE) performed the CPT soundings at the site. The nine CPTs for this investigation extended to depths of about 32 to 57 feet below the existing grade. Shear wave velocity of the soils was measured in some CPTs. The CPT logs and a description of the equipment used are presented in Appendix A.

ADDITIONAL LABORATORY TESTS

Undisturbed and bulk samples of soil collected from explorations at the site were carefully packaged and transported to our laboratory. Each sample was examined and classified, and laboratory tests were conducted to determine the physical properties of the soil. Laboratory tests included:

- in-place moisture content and dry density determinations;
- consolidation tests;
- percent passing through No. 200 sieve tests;
- Atterberg limits;
- hydrometer tests; and
- mechanical analyses (grain size distribution).

SOIL CONDITIONS

ALLUVIUM

Alluvial soils consist of silty sand, sand, and gravelly sand with gravel/cobble layers. The material ranges from loose to very dense, and generally becomes denser with depth.

Removals: Alluvial removals will extend to a depth of six to 14 feet below the current grade for the proposed development.

Shear Wave Velocities: Shear wave velocities in terrace deposits (Qt), alluvial soil (Qal), similar in age and composition to alluvial soil that underlies the site, were

measured in CPT-1, CPT-2, CPT-3, CPT-6 and CPT-8, completed. The shear wave velocity in the upper 50 feet of alluvial soil is about 536.69 to 1,185.30 feet per second with an average velocity of 672 feet per second. The shear wave velocity in the upper 55 feet of terrace deposits (Qt) soil is about 718.87 to 1,763.78 feet per second with an average velocity of 1,163.22 feet per second. These measurements generally increased with depth, though the incremental velocities varied, indicating layering of various types of soils with varying consistencies.

ADDITIONAL LIQUEFACTION CALCULATIONS

Additional liquefaction analyses were performed on all our latest (2006) CPT data which includes the pieces of land located south of The Old Road between State Route 126 and Henry Mayo Drive. The symbols, methods and N values used in the liquefaction analyses including detailed computations for typical CPT-4 are presented in Appendix C. General liquefaction analyses including computations for all 2006 CPT data are also presented in Appendix C. Please note there is a discrepancy between the raw CPT data presented in Kehoe Testing and Engineering (depth interval = 12 inches) and in our liquefaction spread sheet analyses (depth interval = 2 inches) due to the difference in depth interval readings.

CONCLUSIONS

Hillside Areas: The western portion of the site covered in the daylight grading details on Figures 1.3 and 1.5 is mountainous with terrace deposits and bedrock materials exposed at or near the ground surface. These materials are not susceptible to liquefaction.

Alluvial Areas: A total of six CPT soundings were performed in the pieces of land located south of The Old Road between State Route 126 and Henry Mayo Drive. After the recommended removal of the upper loose alluvium soils with compacted fill, some thin layer of alluvium deposits appear to be liquefiable. However, the potential seismically induced settlement in surface soils at the site is small. (e.g. at the location of near the CPT 6, the total seismic settlement is 1.14 inches with differential settlements to be no longer greater than 0.76 inch($^2/_3$ x 1.14) in a horizontal distance of 30 feet with non liquefiable thickness 15 feet+6 feet, proposed raise in grade=21 feet). There is expected to be a sufficient thickness of non-liquefiable soils over the potentially liquefiable soils to mitigate the effects of liquefaction on the ground surface and on structures. Based on the expected cyclic settlements after the recommended removals of alluvial soils, no special mitigation as required.

PROPOSED DAYLIGHT GRADING

To evaluate proposed grading on Detail A on Figures 1.3 and 1.5 we reviewed previous Seward reports for the area and prepared revised geologic maps and cross sections based on the Seward work. The new Geologic Cross Sections include Sections P-P' through Z-Z' and are shown on Figure 2.2.

The grading shown would result in a temporary condition that would exist between the completion of grading for VTTM 53295 and the completion of grading for TT 61105. Grading operations would involve removal of alluvial materials in canyons and complete to partial removals of landslide materials identified by Seward.

Geologic conditions in this area are similar to those described in our March 18, 2005 report and in the July 22, 2004 Seward report for Mesas East.

Our general recommendation in the off site areas is that removals for alluvium and landslide debris extend past the proposed limits of fill to cover an area defined by extending a 1:1 (horizontal:vertical) line from the proposed toe of fill to intact bedrock. From this point a similar line extends back to ground surface. All landslide debris within this area would be removed. In most cases this recommendation would result in temporary cut slopes generated as part of removal of landslide debris mapped by Seward. The temporary cut slopes would be subsequently buried by placement of fill to return the area past the toe of fill to pre-construction conditions. Only two areas would require significant finished cut slopes. These areas are shown on Geologic Cross Sections U-U' and V-V'.

On Geologic Cross Section U-U', grading for proposed Westridge Parkway would result in a 2:1 cut slope with a maximum height of about 50 feet and a maximum length of about 400 feet. This is labeled Cut Slope 6 (CS-6) on the geotechnical Map. The cut would expose portions of Seward's Qls 1 and Saugus Formation bedrock. The landslide identified as Seward's Qls II would be entirely removed. Portions of Seward's Qls 1 would be entirely removed within the cut area. The cut would expose sandstone bedrock with an out-of-slope dip of about 16 degrees to 24 degrees. The cut will be grossly stable, but will require a stabilization fill to limit surface erosion. The keyway is shown on Figure 1.5.

On Geologic Cross Section V-V', grading would result in complete removal of Seward Qls XXIII and partial removal of Seward Qls IV. The excavation left after removal of the landslide would be backfilled with engineered fill. The slope above the

fill would remain as a finished cut slope. This is labeled Cut Slope 7 (CS-7) on the Geotechnical Map. The cut slope would have a surface ratio of 3:1 to 2:1, a maximum height of 50 feet, and a maximum length of about 300 feet. The cut would expose sandstone bedrock with a maximum out-of-slope dip component of about 11 degrees. In most areas bedrock would be neutral to the proposed cut slope. The proposed cut slope will be grossly stable. A stabilization fill is not currently planned, but may be required depending on conditions encountered in the field.

SLOPE STABILITY ANALYSES

Two details have been added for off site daylight grading adjacent to Planning Areas 3, 4, and 5. The details are shown on Geotechnical Map Figures 1.3 and 1.5. The daylight grading would extend into TM 61105 currently known as Mission Village (formerly Mesas East) and assumes the adjacent tract is not graded prior to grading for VTTM 53295. We have reviewed Seward's report dated July 22, 2004 for these areas. We agree and accept Seward's conclusions and recommendations presented in their July 22, 2004 report regarding these two detail areas. We have not performed additional subsurface investigation in these areas during the preparation of this report.

Presented below are the shear strengths adopted from the Seward's July 22, 2004 report and used in our slope stability analyses. These shear strength test data have previously been reviewed by the LACDPW.

SUMMARY OF SHEAR STRENGTH PARAMETERS*

MATERIAL	Cohesion (psf)	Ø(degrees)
Bedrock(TQs), Cross Bedding, Residual	300	31
Bedrock(TQs), Cross Bedding, Peak	400	38
Bedrock(TQs), Parallel Bedding, Residual	200	20
Slide Plane(Sp), Peak, Residual	200	15
Artificial Fill (Cef), Peak, Ultimate	300	30

* Source: Seward, Allan E., Engineering Geology, Inc., 2004, "Geologic and Geotechnical Report Review of Vesting Tentative Tract Map 61105 (dated June 14, 2004)" for Mesas East VTT61105, dated July 22, 2004, Job No. 04-2023-4.

We have also provided static, seismic and temporary back cut slope stability analyses for Geologic Cross Sections V-V', W-W' and X-X'. The results of our stability analyses indicate factors of safety greater than minimum LACDPW standards. The slope stability analyses results are also presented in Appendix D. The Geotechnical Cross Sections with minimum factor of safety surface are shown on Figure 3.

We have also included slope stability analyses performed by Seward's for Geologic Cross Sections 13E-13E', 14E-14E' and 15E-15E'. These Seward cross sections correspond to RTF&A Geologic Cross Sections P-P', Q-Q' and R-R' respectively. The slope stability analyses are also presented in Appendix D.

BANK STABILIZATION

Soil cement bank stabilization is shown along the south side of Planning Areas 1 and 2 adjacent to the Santa Clara River. Details regarding the proposed

stabilization measures are still conceptual. A detailed geotechnical investigation will be required for the PD plan set that will include the bank stabilization.

SECTION 111 STATEMENT

Based on our review of the VTTM No. 53295 and referenced reports, it is our professional opinion that the proposed development will be safe from hazard of landslide, settlement, or slippage and will not adversely affect the geotechnical conditions of the off-site properties, provided our recommendations and the requirements of the Los Angeles County Building Codes are followed.

CLOSURE

This work was performed in accordance with generally accepted professional engineering geology and geotechnical engineering principles and practice in southern California at this time. We make no other warranty either express or implied. This work was performed for Newhall Land and Farming Company and their design team to identify geotechnical constraints that affect land use planning decisions. This work was not performed for use by other parties and may not contain sufficient information for other uses at other times.

-oOo-

We appreciate the opportunity to be of service. Please call if you have questions or would like to discuss this proposal in more detail.

Volume I
- References
- County of Los Angeles Department of Public Works Review Letters
- Appendix A - Explorations
- Appendix B – Laboratory Tests
- Appendix C - Liquefaction Analyses
- Appendix D - Slope Stability Analyses

Volume II
- Geotechnical Map - Figures 1.1 through 1.5 (in pocket)
- Geologic Sections - Figures 2.1 and 2.2 (in pocket)
- Geotechnical Sections - Figure 3 (in pocket)

PROFESSIONAL GEOLOGIST NO. 5917 DOUGLAS S. SANTO CERTIFIED ENGINEERING GEOLOGIST NO. 1866 Exp. 9/08 STATE OF CALIFORNIA

Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

by: Douglas S Santo
Principal Engineering Geologist

and: Dharmesh P. Amin
Principal Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER DHARMESH P. AMIN No. 2553 Exp: 12-31-08 GEOTECHNICAL STATE OF CALIFORNIA

DSS/DPA/sjc
Distribution: (6) Newhall Land and Farming Company
Attn: Mr. Alex Herrell
(4) Alliance Land Planning & Engineering, Inc
Attn: Mr. Craig Whitteker
(3 wet-signed stamped copies and 1 CD in PDF Format
for submittal to the LACDPW)

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

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Sheet 1 of 1

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
900 So. Fremont Ave., Alhambra, CA 91803
TEL. (626) 458-4925

DISTRIBUTION
1 Geologist
__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT MAP 53295
SUBDIVIDER Newhall Land & Farming Company
ENGINEER Psomas
GEOLOGIST & SOILS ENGINEER R.T. Frankian & Associates

TENTATIVE MAP DATED 12/28/04 (Tentative)
LOCATION Castaic Junction

REPORT DATE 3/18/05

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

1. A geotechnical report by Frankian dated 3/29/05 for the relocation of the Chevron Gas Station (27549 The Old Road) shows several landslides located along the proposed haul road and stockpile site. These are not shown on the geotechnical map (sheet 5). Revise and discuss as necessary.

2. Based on the data provided, cut slopes CS-1, CS-2 and CS-4 (sheet 6) may expose a component of out of slope bedding. Provide stability analyses that model this condition, based on strength data from the weakest material that will be exposed in the cuts.

3. A landslide (Qls-l) located along the proposed Westridge Parkway (vicinity of lots 587, 587 of tract 53295) was mapped by A. E. Seward Engineering Geology for tentative tract 61105 Mission Village in a report dated 12/22/04 (geotechnical map sheet 7 of 9). Adjust lot lines to constrain the landslide on one lot or provide remediation of the landslide. The landslide hazard may not be subdivided.

4. Address location of "Recreation Building" within setback zone for the Holser fault (sheet 2).

5. The Soils Engineering review dated 6/9/05 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by Geir R. Mathisen Reviewed by Charles T. Nestle Date 5/19/05

C:\MyFiles\Geir\Geology Review\Review Sheets\District 5 2\Tracts\53295_geotech_TM2.doc
10/30/03

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 8.2
PCA GMTR
Sheet 1 of 2

Review No. 1

Tentative Tract Map 53295
Location Castaic Junction
Developer/Owner Newhall Land and Farming Company
Engineer/Architect Psomas
Soils Engineer R.T. Frankian
Geologist R.T. Frankian

DISTRIBUTION:
1 Drainage
1 Grading
1 Geo/Soils Central File
___ District Engineer
1 Geologist
1 Soils Engineer
1 Engineer/Architect

Review of:

Tentative Tract Map Dated By Regional Planning 12/28/04
Geotechnical Report Dated 3/18/05

ACTION:

Tentative Map feasibility is not recommended for approval.

REMARKS:

1. Requirements of the Geology Section are attached.

2. Liquefaction analyses based on CPT data must be corroborated by SPT data, per the State of California Division of Mines and Geology "Special Publication 117", dated 1997 and "Recommended Procedure For Implementation of DMG Special Publication 117", dated March 1999. Provide SPT data and revised liquefaction analyses as necessary.

3. Provide static and seismic slope stability analyses for the daylighted bedding condition in east and northeast facing slopes. Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.

4. Include laboratory test results from previous investigations in this report.

5. Determine suitability of the engineered fill placed during construction of Magic Mountain Parkway, between Planning Areas 15, and 4 through 14.

6. Due to environmental concerns, regarding oil wells, provide copy of permit, letter of non-objection, processed application, etc., as applicable, obtained from the appropriate State Agencies, i.e. Division of Oil, Gas and Geothermal Resources, Department of Toxic Substances Control, South Coast Air Quality Management District, Regional Water Quality Control Board, etc.

7. Show / note the following on the geotechnical map:
   a. Approximate depth of artificial fills , to be completely removed (af')
   b. Recommended stability fills for the out slopes.

8. Relabel cross-section "F-G' " as "G-G'."

Recvd 3/14/07 to 2007-010

Sheet 1 of 1

County of Los Angeles Department of Public Works
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION
GEOLOGIC REVIEW SHEET
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TEL. (626) 458-4925

COPY

DISTRIBUTION
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__ Soils Engineer
1 GMED File
1 Subdivision

TENTATIVE TRACT MAP 53295
SUBDIVIDER Newhall Land & Farming Company
ENGINEER Psomas
GEOLOGIST & SOILS ENGINEER R.T. Frankian & Associates

TENTATIVE MAP DATED 1/31/07 (Revision)
LOCATION Castaic Junction

REPORT DATE 3/18/05

The Regional Planning Commission, developer, and engineer are advised that:

PRIOR TO RECOMMENDING APPROVAL OF THE TENTATIVE TRACT OR PARCEL MAP:

As previously requested:

1. A geotechnical report by Frankian dated 3/29/05 for the relocation of the Chevron Gas Station (27549 The Old Road) shows several landslides located along the proposed haul road and stockpile site. These are not shown on the geotechnical map (sheet 5). Revise and discuss as necessary.

2. Based on the data provided, cut slopes CS-1, CS-2 and CS-4 (sheet 6) may expose a component of out of slope bedding. Provide stability analyses that model this condition, based on strength data from the weakest material that will be exposed in the cuts.

3. A landslide (Qls-l) located along the proposed Westridge Parkway (vicinity of lots 587, 587 of tract 53295) was mapped by A. E. Seward Engineering Geology for tentative tract 61105 Mission Village in a report dated 12/22/04 (geotechnical map sheet 7 of 9). Adjust lot lines to constrain the landslide on one lot or provide remediation of the landslide. The landslide hazard may not be subdivided.

4. Address location of "Recreation Building" within setback zone for the Holser fault (sheet 2).

5. The Soils Engineering review dated 3/7/07 is attached.

NOTE Provide a copy of this review with your resubmittal

Prepared by _____ Reviewed by _____ Date 3/6/07
Geir Mathisen

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For use with report dated 04/06/2007; RTF Job No. 2004-700-22

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
GEOTECHNICAL AND MATERIALS ENGINEERING DIVISION

SOILS ENGINEERING REVIEW SHEET

Address: 900 S. Fremont Ave., Alhambra, CA 91803
Telephone: (626) 458-4925
Fax: (626) 458-4913

District Office 8.2
Job Number LX001129
Sheet 1 of 1

DISTRIBUTION:
___ Drainage
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___ District Engineer
___ Geologist
___ Soils Engineer
___ Engineer/Architect

Tentative Tract Map	53295
Location	Castaic Junction
Developer/Owner	Newhall Land and Farming Company
Engineer/Architect	Psomas
Soils Engineer	R.T. Frankian and Associates, Inc.
Geologist	Same as above

Review of:
Revised Tentative Tract Map Dated By Regional Planning **1/31/07**
Geotechnical Report Dated 3/18/05
Previous Review Sheet Dated 6/6/05

ACTION:
Tentative Map feasibility is not recommended for approval.

REMARKS:
As Previously Requested:

1. Requirements of the Geology Section are attached.
2. Liquefaction analyses based on CPT data must be corroborated by SPT data, per the State of California Division of Mines and Geology "Special Publication 117", dated 1997 and "Recommended Procedure For Implementation of DMG Special Publication 117", dated March 1999. Provide SPT data and revised liquefaction analyses as necessary.
3. Provide static and seismic slope stability analyses for the daylighted bedding condition in east and northeast facing slopes. Also, provide a geotechnical cross section, for each section analyzed, showing the critical failure plane used in the analyses. Indicate the various shear strength parameters used in the analyses, in the appropriate segments of each failure plane. Show locations of the cross sections used in slope stability analyses on the geotechnical map. Recommend mitigation if factors of safety are below County minimum standards.
4. Include laboratory test results from previous investigations in this report.
5. Determine suitability of the engineered fill placed during construction of Magic Mountain Parkway, between Planning Areas 15, and 4 through 14.
6. Due to environmental concerns, regarding oil wells, provide copy of permit, letter of non-objection, processed application, etc., as applicable, obtained from the appropriate State Agencies, i.e. Division of Oil, Gas and Geothermal Resources, Department of Toxic Substances Control, South Coast Air Quality Management District, Regional Water Quality Control Board, etc.
7. Show / note the following on the geotechnical map:
   a. Approximate depth of artificial fills , to be completely removed (af*)
   b. Recommended stability fills for the cut slopes.
8. Relabel cross-section "F-G' " as "G-G'."
9. Submit two revised reports and revised geotechnical maps to the Soils Section for verification of compliance with County codes and policies.
10. Include a copy of this review sheet with your response.

NOTE (S) TO THE PLAN CHECKER/ BUILDING AND SAFETY ENGINEEER:
PER THE SOILS ENGINEER:

A. ADDITIONAL SUBSURFACE INVESTIGATION SHALL BE PERFORMED AS PART OF THE ROUGH GRADING PLAN REVIEW TO FURTHER DEFINE THE POTENTIAL FOR SEISMIC SETTLEMENT ACROSS THE SITE WITHIN PLANNING AREA I.
B. THE POTENTIAL FOR LATERAL SPREADING SHALL BE FURTHER EVALUATED ONCE BANK PROTECTION PLANS ARE PRODUCED AND ROUGH GRADING PLANS ARE AVAILABLE.
C. THE PRESENCE OF EROSION-SUSCEPTIBLE BEDS SHALL BE DETERMINED DURING ROUGH GRADING.
D. PAVING STUDIES AND SOIL CORROSIVITY TESTS SHALL BE PERFORMED AT THE COMPLETION OF ROUGH GRADING TO DEVELOPE DETAILED RECOMMENDATIONS FOR PROTECTION OF UTILITIES, STRUCTURES AND FOR CONSTRUCTION OF THE PROPOSED ROADS.
E. WITHIN BUILDING AREAS AT LOCATIONS WHERE EXPANSIVE SAUGUS FRMATION UNITS ARE EXPOSED AT PAD GRADE, IT IS RECOMMENED THAT THE BEDROCK BE REMOVED AND RECOMPACTED TO A DEPTH OF AT LEAST EIGHT FEET BELOW THE PROPOSED FINAL PAD ELEVATIONS OR FIVE FEET BELOW THE BOTTOM OF PROPOSED FOOTINGS WHICHEVER IS GREATER. IT IS ALSO RECOMMENDED THAT THE BEDROCK BE REMOVED AND RECOMPACTED TO A DEPTH OF AT LEAST THREE FEET BELOW PROPOSED SOIL SUBGRADE IN EXPOSED SAGUS FORMATION AREAS RECEIVING PAVEMENT OR HARDSCAPE IMPROVEMENTS.

REGISTERED PROFESSIONAL ENGINEER
YOSHIYA MORISAKU
No. 67587
Exp. 6/30/07
CIVIL
STATE OF CALIFORNIA

Reviewed by _____ Date 3/7/07
Yoshiya Morisaku

NOTICE: Public safety, relative to geotechnical subsurface exploration, shall be provided in accordance with current codes for excavations, inclusive of the Los Angeles County Code, Chapter 11.48, and the State of California, Title 8, Construction Safety Orders.

P:\Yosh\53295TentTa
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Newhall Land and Farming Company
April 6, 2007
2004-700-22

APPENDIX A

EXPLORATIONS

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

APPENDIX A

EXPLORATIONS

The soil conditions within the site were explored by drilling additional 13 wash borings. The borings were drilled to a maximum depth of 130 feet below the existing grade. Details of the explorations are summarized in the "Field Explorations" section of the report, and the boring locations are shown on the Geotechnical Map (Figures 1.1 through 1.5).

Our field representative logged the soil and undisturbed samples were obtained from the boring for laboratory testing. The undisturbed samples were collected with a 3.2-inch outside diameter drive sampler containing an eight-inch long, $2^{5}/_{8}$-inch inside-diameter sampling sleeve. In addition to obtaining undisturbed samples, Standard Penetration Tests (SPT) were performed in each borings. The standard penetration tests were performed in accordance with the ASTM D 1586 test method. The soils are classified in the accordance with the Unified Soil Classification System.

CONE PENETROMETER TEST SOUNDINGS

Cone Penetrometer Test (CPT) soundings were performed for us nine locations by Kehoe Testing & Engineering in 2005. Further details of the various CPT are described below:

CPT by Kehoe Testing & Engineering (2005): The CPT soundings are identified as CPT-1 through CPT-9. The soundings extended to depths of approximately 32 to 57 feet. The locations of the soundings are shown on Geotechnical Map. The results of the soundings and the methodology of performing the soundings are presented in the Kehoe Testing & Engineering report in this appendix.

Shear Wave Velocities: Shear wave velocities in terrace deposits (Qt), alluvial soil (Qal), similar in age and composition to alluvial soil that underlies the site, were measured in CPT-1, CPT-2, CPT-3, CPT-6 and CPT-8, completed. The results of the shear wave velocity with depth measured during the soundings are presented in the Kehoe Testing & Engineering report in this appendix.

CURRENT OR RECENT EXPLORATION SUMMARY
TABLE - A1

Exploration	Date	Locations	Total Depth (ft.)	Groundwater (ft.)	Existing grade (ft.)	Proposed grade (ft.)	Historical water (ft.)	Removal depth (ft.)	Remarks
WB-1	9/12/2005	PA-2	51	21	1000	1011	5	6	Alluvium
WB-2	9/13/2005	PA-2	51	21	1010	1019	15	10	Alluvium
WB-3	9/12/2005	PA-2	51	25	1010	1025	5	9	Alluvium
WB-4	9/6/2005	PA-2	51	25	1020	1036	5	8	Alluvium
WB-5	9/6/2005	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Outside the proposed development
WB-6	1/23/2006	PA-15	105	81	1138	1133	N/A	Cut 5	Qt, Exploration for the proposed tall bldg.
WB-7	1/23/2006	PA-15	130	81	1142	1125	N/A	Cut 17	Qt, Exploration for the proposed tall bldg.
WB-8	2/9/2006	PA-15	101.5	81	1120	1110	N/A	Cut 10	Qt, Exploration for the proposed tall bldg.
WB-9	1/30/2006	PA-2	51	23.5	1010	1020	15	10	Alluvium
WB-10	1/30/2006	PA-2	51.5	24	1020	1020	15	10	Alluvium
WB-11	1/30/2006	PA-2	51.5	29	1010	1016	15	10	Alluvium
WB-12	1/27/2006	PA-2	51.5	24.5	1010	1010	15	8 to 14	Alluvium
WB-13	1/27/2006	PA-2	50.5	24	1010	1010	15	6	Alluvium
CPT 1	12/19/2005	PA-15	40	dry	1140	1134	N/A	Cut 6	Qt, Exploration for the proposed tall bldg.
CPT 2	12/19/2005	PA-15	32	dry	1139	1129	N/A	Cut 6	Qt, Exploration for the proposed tall bldg.
CPT-3	2/10/2006	PA-15	57	dry	1130	1115	N/A	Cut 15	Qt, Exploration for the proposed tall bldg.
CPT 4	12/19/2005	PA-2	50	21.6	1010	1018	15	10	Alluvium
CPT 5	12/19/2005	PA-2	50	hole open to 20, dry	1010	1022	15	10	Alluvium
CPT 6	12/19/2005	PA-2	50	hole open to 18, dry	1010	1016	15	10	Alluvium
CPT 7	12/19/2005	PA-2	50	hole open to 26, dry	1010	1010	15	8 to 14	Alluvium
CPT 8	12/19/2005	PA-2	50	27	1010	1010	15	8	Alluvium
CPT 9	12/19/2005	PA-2	50	25	1010	1008	15	6	Alluvium

BORING WB-1

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/12/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: C&L Drilling
LOGGED BY: VL/MB
BORING DEPTH: 0-51.5'
SURFACE CONDITIONS: Tilled field

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
							SM	SILTY SAND: fine, some sandy silt interbeds, trace fine gravel, slightly moist, brown to dark brown
14	18.8	90	-	5				some iron oxide stains from 4 to 7 feet.
-			17					
				10			ML	Layer of SANDY SILT (53% passing no. 200 sieve)
-			9					no sandy silt interbeds, moist, gray
34	14.4	103	-	15			SM	SAND: fine, some silt, trace fine gravel, moist, gray, (11% passing no. 200 sieve)
-			34					groundwater at 17.5 feet (10:15 am) 9/13/05 groundwater at 18 feet (12:10 pm) 9/12/05
				20				fine to medium, grayish brown
-			26					(14% passing no. 200 sieve)
66	15.9	113	-	25				few fine gravel, wet
-			40					(19% passing no. 200 sieve)
							SC	CLAYEY SAND: some silt, few fine gravel, very moist, gray
-	31.2		36	30				(47% passing no. 200 sieve) (LL 51%, PL 25%, PI 26%)
							SW-SM	WELL-GRADED SAND: fine to coarse, with silt, wet, brown
-			40	35				(7% passing no. 200 sieve)
							SM	SILTY SAND: fine to coarse, some gravel, trace clay, wet, brown
				40				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-1 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/12/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: C&L Drilling
LOGGED BY: VL/MB
BORING DEPTH: 0-51.5'
SURFACE CONDITIONS: Tilled field

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
-			73	45			SM	(Sampler bouncing on rock) increasing clay content at 41 feet
-			58					
-			60	50				
								Bottom of Boring at 51.5 feet. Groundwater measured at a depth of 18 feet 10 minutes after completion of drilling and 17.5 feet on 9/13/2005 at 10:15 a.m. Boring backfilled with a cement-bentonite grout.

55
60
65
70
75
80

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-10

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/30/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-51.5'
HAMMER WEIGHT: 140lbs

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
					ML	CLAYEY SILT: fine, little fine sand, stiff, brown
-			6	5		(52.7% passing no. 200 sieve)
-			10	10	SM	SILTY SAND: fine, loose, brown, (21.8% passing no. 200 sieve)
9	19.5	104	-	15	ML	SANDY SILT: fine, stiff, dark brown
-			7	20	CL	SILTY CLAY: fine, stiff, reddish brown, (94.8% passing no. 200 sieve)
						▽ groundwater at 24 feet 1/30/06
-			21	25	SM	SILTY SAND: fine, medium dense, olive gray
50/5"	12.8	114	-	30	SP	SAND: medium to coarse, little gravel, dense, gray
-			27	35	SM	SILTY SAND: very fine, little gravel, dense, dark gray
				40		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-10 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/30/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-51.5'
HAMMER WEIGHT: 140lbs

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
-			24		ML	SILT: fine, little very fine sand, stiff to hard
39	16.6	83	-	45	SP	SAND: medium to coarse, little gravel, dense
-			51	50		coarse, some gravel, dense to very dense, gray
						Bottom of Boring at 51.5 feet. Water level at 24 ft.

SAMPLE LOCATION

GRAPHIC LOG

55
60
65
70
75
80

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-11

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/30/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
ELEVATION: 1012'
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-51.5'
HAMMER WEIGHT: 140lbs
SURFACE CONDITIONS: Dirt, some grass

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
-			7	5	ML	SANDY SILT: fine, little clay, stiff, darkish brown
						(51.8% passing no. 200 sieve)
-			10		SM	SILTY SAND: fine, loose to medium dense, brownish gray, (44.9% passing no. 200 sieve)
-			10	10		(41.4% passing no. 200 sieve)
-	6.2	102	8		ML	SANDY SILT: little clay, stiff, reddish dark gray, (80.8% passing no. 200 sieve)
-			10	15		fine, very little clay, dark gray, (62.2% passing no. 200 sieve)
-			14		SM	SILTY SAND: fine, medium dense, gray, (48.1% passing no. 200 sieve)
	13.1	111		20		
-			9		ML	SANDY SILT: with little clay, stiff, dark gray, (73.5% passing no. 200 sieve)
-			18	25		fine, some clay, stiff, gray, (73.9% passing no. 200 sieve)
-			23		CL	SILTY CLAY: stiff, grayish brown, (83.7% passing no. 200 sieve)
						▽ groundwater at 29 feet 1/30/06
-			16	30		greenish gray, (90.7% passing no. 200 sieve)
-			28		SM	SILTY SAND: very fine, dense, gray, (47.6% passing no. 200 sieve)
	14.9	108		35		
-			33			fine, dense, dark gray, (24.3% passing no. 200 sieve)
						grades very dense
				40		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-11 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/30/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
ELEVATION: 1012'
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-51.5'
HAMMER WEIGHT: 140lbs
SURFACE CONDITIONS: Dirt, some grass

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
-			51				SM	medium to coarse, little silt, very dense, gray with white particles of sand, (14.1% passing no. 200 sieve)
-			52	45				coarse, olive gray, (27.1% passing no. 200 sieve) (drilling difficult)
-	13.5	119	37	50				medium to coarse, very dense, dark gray, (38.9% passing no. 200 sieve)
								Bottom of Boring at 51.5 feet. Water level at 29 ft. after 30 minutes. Boring backfilled with soil cuttings after drilling.
				55				
				60				
				65				
				70				
				75				
				80				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-12

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/27/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
ELEVATION: 1022'
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-51.5'
HAMMER WEIGHT: 140lbs

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
-			8	5	SM	SILTY SAND: fine, little silt, loose, gray
						(12% passing no. 200 sieve)
-			11			clean, gray to reddish gray, (16% passing no. 200 sieve)
-			8	10	SP	SAND: little silt, olive gray, (7.6% passing no. 200 sieve)
-			6		SM	SILTY SAND: loose to medium dense, reddish gray, (32.8% passing no. 200 sieve)
-			14	15		medium dense, reddish dark gray, (41.0% passing no. 200 sieve)
-			19			SAND: fine to medium, gray, (10% passing no. 200 sieve)
-			35	20		SILTY SAND: fine, little clay, dense, dark gray, (31.8% passing no. 200 sieve)
-			49	25		▽ medium to coarse, little gravel, dense to very dense, olive gray, (12.6% passing no. 200 sieve) groundwater at 24.5 feet 1/27/06
-			44			(12.1% passing no. 200 sieve)
-			38	30		wet, (35.7% passing no. 200 sieve)
-			41	35	SP	SAND: medium to coarse, dense to very dense, (9.8% passing no. 200 sieve)
				40		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-12 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/27/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
ELEVATION: 1022'
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-51.5'
HAMMER WEIGHT: 140lbs

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
-			46				SP	little gravel, gray, (8.8% passing no. 200 sieve)
-			68	45				coarse, some gravel, light gray, (10.5% passing no. 200 sieve)
-			50/6"	50				with gravel, very dense, reddish brown, (6.9% passing no. 200 sieve)
								Bottom of Boring at 51.5 feet. Water level at 24.5 ft.
				55				
				60				
				65				
				70				
				75				
				80				

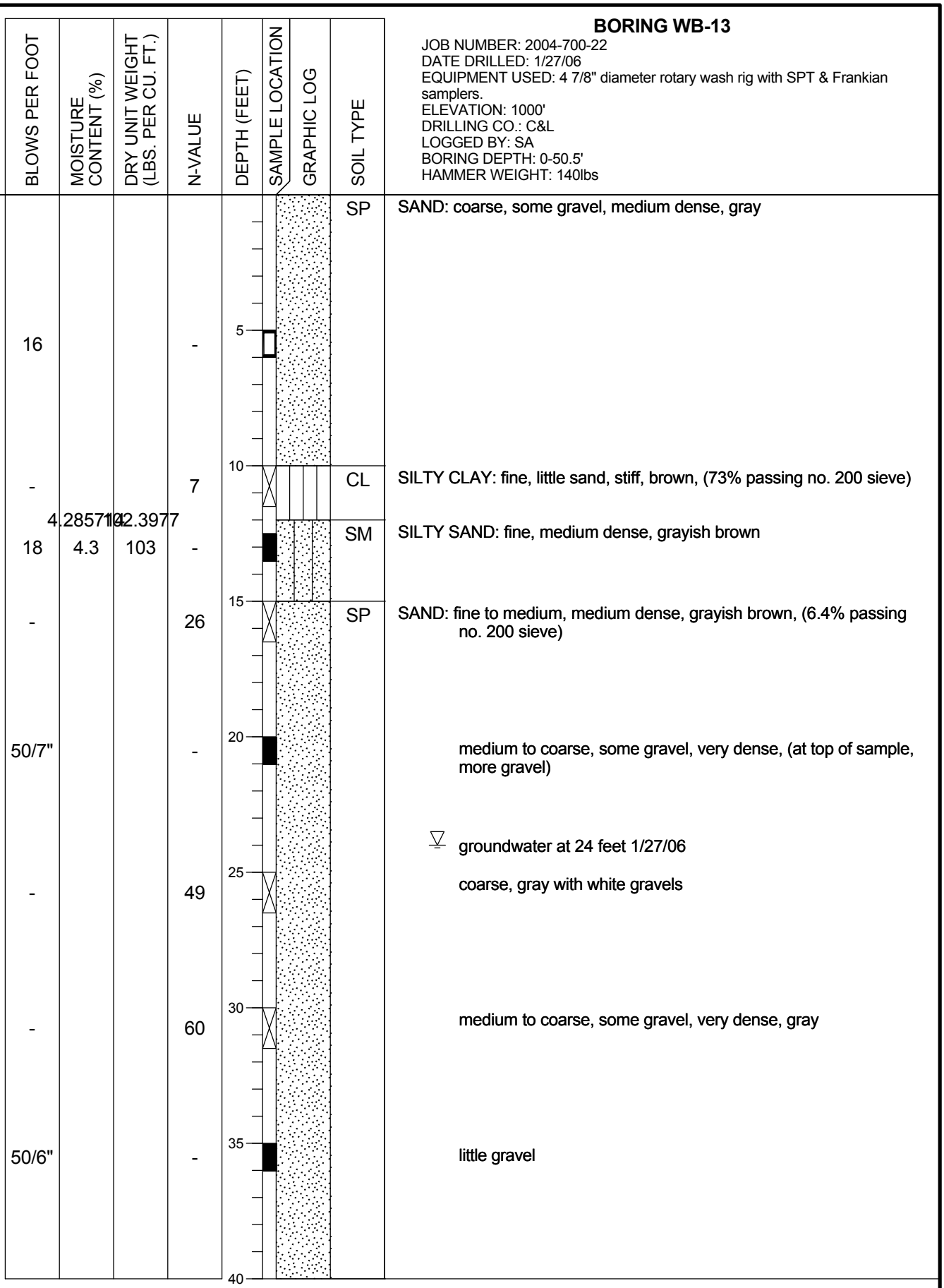
Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-13

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/27/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
ELEVATION: 1000'
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-50.5'
HAMMER WEIGHT: 140lbs



SAND: coarse, some gravel, medium dense, gray

SILTY CLAY: fine, little sand, stiff, brown, (73% passing no. 200 sieve)

SILTY SAND: fine, medium dense, grayish brown

SAND: fine to medium, medium dense, grayish brown, (6.4% passing no. 200 sieve)

medium to coarse, some gravel, very dense, (at top of sample, more gravel)

▽ groundwater at 24 feet 1/27/06

coarse, gray with white gravels

medium to coarse, some gravel, very dense, gray

little gravel

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-13 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/27/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
ELEVATION: 1000'
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-50.5'
HAMMER WEIGHT: 140lbs

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
-			82				GP/SP	GRAVEL/SAND: coarse, very dense, (coarse gravels in sample) (A gravel at tip)
-			36	45			ML	SILT: fine, stiff, dark brownish black
50/5"			-	50			SP	SAND: coarse, some gravel, very dense
								Bottom of Boring at 50.5 feet. Water level at 24 ft. Boring backfilled with soil cuttings after drilling.
				55				
				60				
				65				
				70				
				75				
				80				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-2

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/13/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: C&L Drilling
LOGGED BY: VL/MB
BORING DEPTH: 0-51.5'
SURFACE CONDITIONS: Dirt

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
					ML	CLAYEY SILT: some sand, some iron oxide stains, slightly moist, grayish and reddish brown
6	32.1	79	-	5		
-			6			increasing sand content
					SM	SILTY SAND: fine, some iron oxide stains, slightly moist, grayish and reddish brown
-			10	10		(25% passing no. 200 sieve)
					SP-SM	SAND: fine, some silt, slightly moist, brown
22	20.4	102	-	15		
-			21			(10% passing no. 200 sieve)
					SM	SILTY SAND: fine, slightly moist, brown
						▽ groundwater at 17.5 feet (10:20 am) 9/13/05
				20		▽ groundwater at 19.5 feet (10:10 am) 9/13/05
-			19			(37% passing no. 200 sieve)
						interbedding silt layers and silty sand layers to 40 feet.
					SP-SM	SAND: fine, some silt, slightly moist, brown, (5% passing no. 200 sieve)
40	19	104.1	-	25		fine to coarse, few to some gravel
-			17		SM	SILTY SAND: (14% passing no. 200 sieve)
					ML	layer of clayey silt
					SW-SM	SAND: fine, some silt, slightly moist, brown, (5% passing no. 200 sieve)
					CH	CLAY: moist to very moist, gray, (77% passing no. 200 sieve)
-	51.4		36	30		(LL 55%, PL 26%, PI 18%)
					SW-SM	SAND: fine to medium, some silt, few gravel, very moist, gray, (8% passing no. 200 sieve)
					ML	CLAYEY SILT: trace gravel, some clayey sand interbeds, very moist, gray
				35		layer of sandy silt
-			10			(LL 45%, PL 27%, PI 18%)
				40		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-2 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/13/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: C&L Drilling
LOGGED BY: VL/MB
BORING DEPTH: 0-51.5'
SURFACE CONDITIONS: Dirt

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
-	37.2		60		CL	SILTY CLAY: some sand, few gravel, gray, (76% passing no. 200 sieve)
					SC	layer of CLAYEY SAND, fine to coarse
				45	SM	SILTY SAND: fine to medium, few gravel, some clayey silt interbeds, wet, gray
-			73			
-			54	50		fine
						Bottom of Boring at 51.5 feet. Groundwater measured at a depth of 19.5 feet 10 minutes after completion of drilling and 17.5 feet 20 minutes after completion of drilling. Boring backfilled with a cement-bentonite grout.
				55		
				60		
				65		
				70		
				75		
				80		

SAMPLE LOCATION

GRAPHIC LOG

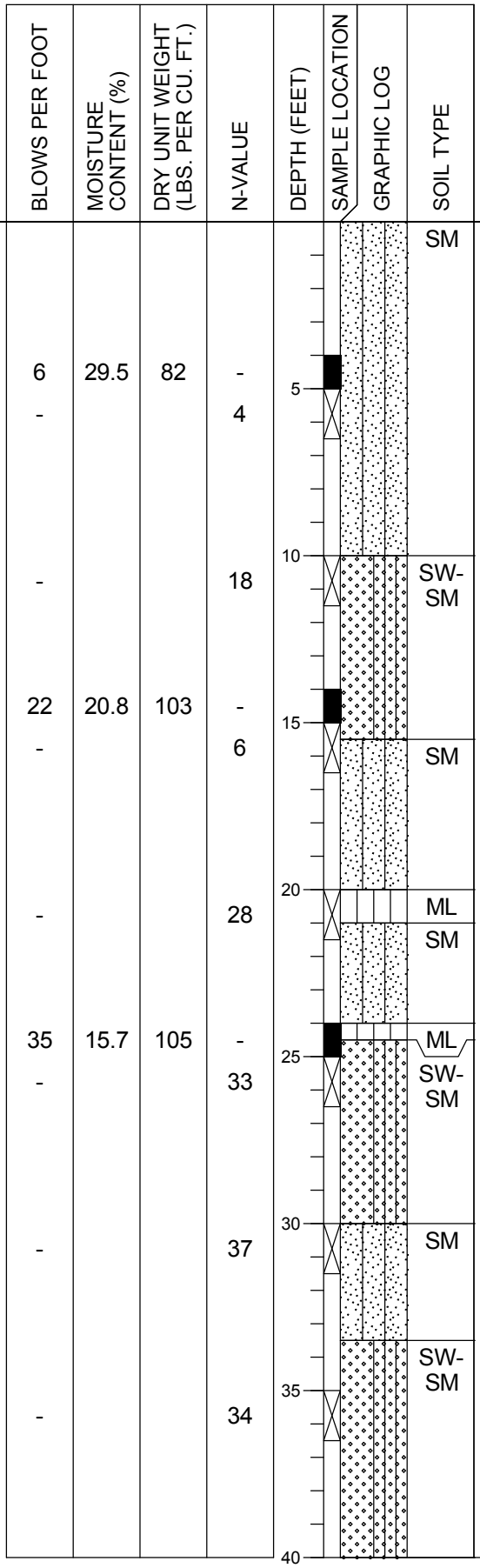
Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-3

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/12/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: C&L Drilling
LOGGED BY: VL
BORING DEPTH: 0-49.5'
SURFACE CONDITIONS: Weathered asphalt road



SILTY SAND: fine, some iron oxide stains, slightly moist, brown

SAND: fine to medium, some silt, trace fine gravel, grayish brown, (9% passing no. 200 sieve)

▽ groundwater at 13.5 feet (5:10 pm) 9/12/05

fine, no gravel, gray

brown

Alternating layers of SILTY SAND, SANDY SILT, AND CLAYEY SILT to 24.5 feet: moist, gray

layer of clayey silt

CLAYEY SILT: moist, gray

SILTY SAND: fine, few gravel, moist, gray

SILTY SAND: (16% passing no. 200 sieve)

layer of clayey silt; moist gray

SAND: fine to medium, some silt, some gravel, gray

(9% passing no. 200 sieve)

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-3 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/12/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: C&L Drilling
LOGGED BY: VL
BORING DEPTH: 0-49.5'
SURFACE CONDITIONS: Weathered asphalt road

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
-			36	45			SM	SILTY SAND: fine to coarse, some gravel, trace clay, few thin layers of clayey silt, gray (20% passing no. 200 sieve)
-			31					
				50				Bottom of Boring at 49.5 feet. Groundwater encountered at a depth of 13.5 feet 10 minutes after completion of drilling. Boring backfilled with a cement-bentonite grout.
				55				
				60				
				65				
				70				
				75				
				80				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-4

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/6/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: Gregg Drilling
LOGGED BY: VL
BORING DEPTH: 0-51.5'
SURFACE CONDITIONS: Tilled field

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
					SM	**FILL** SILTY SAND: fine to medium, some paper, slightly moist, brown
11	17.3	101	-			
-			6	5	SP	**NATURAL SOIL** SAND: fine, moist, brown
15			-			(disturbed sample)
17	15.3	99	-			some thin (1/4") gray sandy silt layers
-			11	10		some iron oxide stains
33	14	111	-			SAND: fine, some silt, moist, brown
-			13	15		fine to medium, few gravel
27	15.1	114	-			(5% passing no. 200 sieve)
					SM	SILTY SAND: fine, trace clay, wet, dark gray, (39% passing no. 200 sieve)
-	38.4		15	20		
					SW-SM	SAND: fine, some silt, few gravel, wet, brown
-			43	25		(possible interference due to gravel, 9% passing no. 200 sieve)
88/11"			-		SM	SILTY SAND: fine to medium, some gravel, wet, brown
						fine, trace clay, no gravel
-	23.6		24	30		(20% passing no. 200 sieve)
					SW-SM	SAND: fine to medium, some silt, few gravel, wet, brown
-			37	35		(8% passing no. 200 sieve)
				40		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-4 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/6/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: Gregg Drilling
LOGGED BY: VL
BORING DEPTH: 0-51.5'
SURFACE CONDITIONS: Tilled field

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
-			39	45			SW-SM	fine to coarse, some gravel
-			21					grayish brown
-			36	50				(No recovery)
								Bottom of Boring at 51.5 feet. Groundwater not measured. Boring backfilled with a cement-bentonite grout.
				55				
				60				
				65				
				70				
				75				
				80				

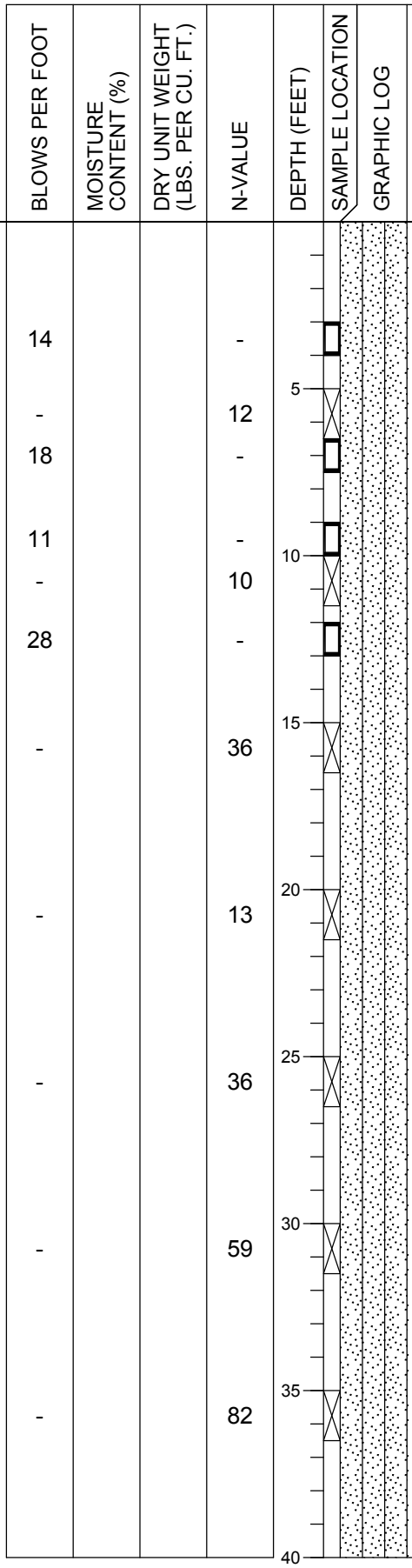
Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/5/07

LOG OF BORING

BORING WB-5

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/6/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: Gregg Drilling
LOGGED BY: VL
BORING DEPTH: 0-51.5'
SURFACE CONDITIONS: Tilled field



SILTY SAND: fine, some clay, moist, brown to dark brown

(No sample recovery)

(No sample recovery)

(No sample recovery)

few gravel, dark brown, (36% passing no. 200 sieve)

(No sample recovery)

fine to medium, moist, brown

(24% passing no. 200 sieve)

(32% passing no. 200 sieve)

(33% passing no. 200 sieve)

some gravel

abundant gravel

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-5 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 9/6/05
EQUIPMENT USED: 5" diamter rotary wash
DRILLING CO.: Gregg Drilling
LOGGED BY: VL
BORING DEPTH: 0-51.5'
SURFACE CONDITIONS: Tilled field

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	SOIL TYPE	
-			41	SM	fine to coarse, few gravel, (28% passing no. 200 sieve)
-			38		fine to medium, (30% passing no. 200 sieve)
-	25.2		27		fine, some clay (47% passing no. 200 sieve) (LL 30%, PL 19%, PI 19%)

Bottom of Boring at 51.5 feet.
Groundwater not measured after drilling. Boring backfilled with cement-bentonite grout. Returned with C&L drilling on 9/12/2005 and drilled* without sampling to 60 feet. Groundwater encountered at a depth of 26.5 feet 10 minutes after completion of drilling and 13.5 feet on 9/13/2005 at 11:00 a.m. Boring backfilled with cement-bentonite grout

* approximately 10 feet from original location.

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-6

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/23/06
EQUIPMENT USED: Rotary wash rig with heavy duty and SPT samplers
ELEVATION: 1132'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-105'
HAMMER WEIGHT: 140lbs; DROP: 30"
SURFACE CONDITIONS: Dry

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
					SM	**QUATERNARY TERRACE DEPOSITS (Qt)** SILTY SAND: with gravel, dense, slightly moist, light brown
54	13.7	106	-	5		very dense, moist, brown
-			50	10		(25.9% passing no. 200 sieve)
43	10.4	111	-	15		
-			*	20		(* 50 blows for first 6")(29.4% passing no. 200 sieve)
76	8.2	113	-	25		
-			50/6"	30		(35.8% passing no. 200 sieve)
50	8.3	115	-	35		
				40	ML	SANDY SILT: hard, moist, light brown

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-6 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/23/06
EQUIPMENT USED: Rotary wash rig with heavy duty and SPT samplers
ELEVATION: 1132'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-105'
HAMMER WEIGHT: 140lbs; DROP: 30"
SURFACE CONDITIONS: Dry

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
-			50/6"		ML	(51.2% passing no. 200 sieve)
70	10.6	115	-	45	CL	SILTY CLAY: very hard, moist, light brown
-			*	50	SM	SILTY SAND: very dense, moist, light brown, (* 50 blows for first 5")(10.8% passing no. 200 sieve)
50/5"	2.9	107	-	55		
-			*	60		(22% passing no. 200 sieve)
					CL	SILTY CLAY: hard, moist, light brown, (* 50 blows for first 5")
75/11"	20.7	102	-	65		
-			50/6"	70		(80.2% passing no. 200 sieve)
70/10"	14.7	116	-	75		
				80		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-6 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/23/06
EQUIPMENT USED: Rotary wash rig with heavy duty and SPT samplers
ELEVATION: 1132'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-105'
HAMMER WEIGHT: 140lbs; DROP: 30"
SURFACE CONDITIONS: Dry

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
-			50/5"				CL	▽ (70.4% passing no. 200 sieve) groundwater at 81 feet 1/23/05
78/11"	14.9	113	-	85				
							SM	SILTY SAND: gravelly, very dense (7.9% passing no. 200 sieve)
-			50/5"	90				
68			-	95				
-			58	100				
				105				Bottom of Boring at 105 feet. Boring backfilled with soil/cuttings after drilling.
				110				
				115				
				120				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-7

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/23/06
EQUIPMENT USED: Rotary wash rig with heavy duty and SPT samplers
ELEVATION: 1135'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-130'
HAMMER WEIGHT: 140lbs; DROP: 30"

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
					SP	**QUARTERNARY TERRACE DEPOSITS (Qt)** SAND: fine, very dense, slightly moist, light brown
-			59	5	SM	SILTY SAND: with gravel, (20.9% passing no. 200 sieve)
34			-	10		(disturbed sample)
-			50/5"	15		(9.4% passing no. 200 sieve)
50/4"			-	20		
-			50/5"	25		very dense, slightly moist, light brown, (12.9% passing no. 200 sieve)
50/6"			-	30		
-			50/6"	35	SP SM	SAND: fine, very dense, moist, light brown SILTY SAND: very dense, moist, light brown, (27.6% passing no. 200 sieve)
				40		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-7 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/23/06
EQUIPMENT USED: Rotary wash rig with heavy duty and SPT samplers
ELEVATION: 1135'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-130'
HAMMER WEIGHT: 140lbs; DROP: 30"

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
50/6"	7.9	113	-				SM	with gravel, slightly moist, medium brown
-			50/5"	45				(18.1% passing no. 200 sieve)
50/3"			-	50				
-			*	55				(* 50 blows for first 3")(13.6% passing no. 200 sieve)
50/6"	3.2	119	-	60				light brown
-			*	65				(* 50 blows for first 5")(13.4% passing no. 200 sieve)
50/5"			-	70				
-			*	75				(* 50 blows for first 5")(19.4% passing no. 200 sieve)
				80				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-7 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/23/06
EQUIPMENT USED: Rotary wash rig with heavy duty and SPT samplers
ELEVATION: 1135'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-130'
HAMMER WEIGHT: 140lbs; DROP: 30"

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
50/5"			-				SM	▽ groundwater at 81 feet 1/23/06
-			50/5"	85				wet, light to medium brown
-			48	90			ML	SILT: fine, stiff, wet, light brown
-			52	100			SP	SAND: fine, very dense, wet, light brown
-			66	110				
				115				
				120				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-7 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/23/06
EQUIPMENT USED: Rotary wash rig with heavy duty and SPT samplers
ELEVATION: 1135'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-130'
HAMMER WEIGHT: 140lbs; DROP: 30"

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
-			50/5"	125			SM	SILTY SAND: with gravel, very dense, wet
							CL	SILTY CLAY: very stiff, wet, light brown
-			72	130				Bottom of Boring at 130 feet. Boring backfilled with soil/cuttings after drilling.
				135				
				140				
				145				
				150				
				155				
				160				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-8

JOB NUMBER: 2004-700-22
DATE DRILLED: 2/9/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with heavy duty and SPT samplers using 300 lb. hammer and 18" drop for heavy duty sampler and 140 lb. hammer with 30" drop for SPT sampler.
ELEVATION: 1129.5'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-101.5'

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE	
							SM	**QUARTERNARY TERRACE DEPOSITS (Qt)** SAND: fine, very silty, occasional small gravel, damp to moist, light to medium brown
36	9	124	-	5				fine to coarse, occasional to abundant gravel, very dense, moist
-			24	10				fine, more silty, less gravel, (39.1% passing no. 200 sieve)
32	9.9	117	-	15				fine to coarse, almost clean, with trace of silt, white to tan, abundant gravel
-			28	20				fine, silty, occasional small gravel, tannish brown, (38% passing no. 200 sieve)
55	11.1	113	-	25				fine to coarse, almost clean with trace of silt, light brown, abundant gravel
-			98	30				light grayish brown, (28.7% passing no. 200 sieve)
100/9"	5.1	128	-	35				
				40				

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-8 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 2/9/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with heavy duty and SPT samplers using 300 lb. hammer and 18" drop for heavy duty sampler and 140 lb. hammer with 30" drop for SPT sampler.
ELEVATION: 1129.5'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-101.5'

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
-			46		SM	fine to medium, slightly silty, occasional small gravel, very dense, moist, light brown, (25.2% passing no. 200 sieve)
						fine to coarse, with small gravel, light gray
100/11"	7.8	122	-	45		
						fine to medium, clean, occasional small gravel, intermittant layers of whitish gray and rust brown (17.4% passing no. 200 sieve)
-			75/6"	50		
100/5"	7.9	114	-	55		medium to coarse, clean, with abundant small to medium gravel, light gray
-			*	60		fine to coarse, with abundant small to medium gravel, hard, moist, brownish gray, (100 blows for first 4")(46.6% passing no. 200 sieve)
				65		
100/10"	11.6	113	-	70	ML	SILT: clayey, some fine sand, stiff, moist, light brown
					SP	SAND: poorly graded, very dense
				75		
					CL	SILTY CLAY: very stiff to hard, moist, greenish brown
				80		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-8 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 2/9/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with heavy duty and SPT samplers using 300 lb. hammer and 18" drop for heavy duty sampler and 140 lb. hammer with 30" drop for SPT sampler.
ELEVATION: 1129.5'
DRILLING CO.: C&L
LOGGED BY: DA
BORING DEPTH: 0-101.5'

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
-			30		CL	(LL=68, PL=28, PI=40)
75	34.2	85	-	90		slightly silty, with occastional sand particle, hard, moist, reddish brown
					SM	SILTY SAND: very dense, medium brown
-			*	100		fine to medium, light medium brown, (100 blows for first 3")(23.3% passing no. 200 sieve)
						Bottom of Boring at 101.5 feet. Boring grouted upon completion.

Depth markers: 85, 90, 95, 100, 105, 110, 115, 120

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

BORING WB-9

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/30/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-51'
HAMMER WEIGHT: 140lbs
SURFACE CONDITIONS: Dirt, low bushes

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
					SP	SILTY SAND: medium to coarse, little gravel, loose, reddish brown
-			8	5		(18% passing no. 200 sieve)
16	11.4	104	-	10		fine, little silt, brown
				15	ML	
-			8			SILT: fine, little to some sand, loose, (74% passing no. 200 sieve)
10	27.3	96	-	20		little sand, little to some clay, loose, dark brown
						▽ groundwater at 23.5 feet 1/30/06
-			13	25		little to some sand, little clay, loose to medium dense, olive gray, (59% passing no. 200 sieve)
50/5"	18.2	89	-	30		
					SP	SAND: medium, little silt, dense, dark gray
						beginning of soft layer
-			5	35		medium to coarse, loose
						grades to gravelly (rig chattering)
				40		

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

LOG OF BORING

BORING WB-9 (CONTINUED)

JOB NUMBER: 2004-700-22
DATE DRILLED: 1/30/06
EQUIPMENT USED: 4 7/8" diameter rotary wash rig with SPT & Frankian samplers.
DRILLING CO.: C&L
LOGGED BY: SA
BORING DEPTH: 0-51'
HAMMER WEIGHT: 140lbs
SURFACE CONDITIONS: Dirt, low bushes

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
50/7"	17.6	111	-		SP	dense, greenish gray
-			58	45		medium, very dense
30	21.2	109	-	50		
						Bottom of Boring at 51 feet. Water level at 23.5 ft. after 30 minutes.

SAMPLE LOCATION
GRAPHIC LOG

55
60
65
70
75
80

Note: The log of subsurface conditions shown hereon is approximate and applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-22.GPJ FRANKIAN.GDT 4/4/07

LOG OF BORING

PRESENTATION

OF

CONE PENETRATION TEST DATA

Project:

Old Road & Henry Mayo Drive
Santa Clarita, CA
December 19, 2005

Prepared for:

Mr. Dharmesh Amin
R.T. Frankian
1329 Scott Road
Burbank, CA 91504
Office (818) 531-1501 / Fax (818) 531-1511

Prepared by:

KEHOE TESTING & ENGINEERING
15571 Industry Lane
Huntington Beach, CA 92649-1534
Office (714) 901-7270 / Fax (714) 901-7289

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- Summary of Shear Wave Velocities
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PRESENTATION
OF
CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the project located at Old Road & Henry Mayo Drive in Santa Clarita, California. The work was performed by Kehoe Testing & Engineering (KTE) on December 19, 2005. The scope of work was performed as directed by R.T. Frankian personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at eight locations to determine the soil lithology. The groundwater measurements were taken in the open CPT hole approximately 10 minutes after completion of CPT. The following **TABLE 2.1** summarizes the CPT soundings performed:

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	40	Refusal, hole open to 5 ft (dry)
CPT-2	32	Refusal, hole open to 2 ft (dry)
CPT-4	50	Groundwater @ 21.6 ft
CPT-5	50	Hole open to 20 ft (dry)
CPT-6	50	Hole open to 18 ft (dry)
CPT-7	50	Hole open to 26 ft (dry)
CPT-8	50	Groundwater @ 27 ft
CPT-9	50	Groundwater @ 25 ft

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed
- Pore Pressure Dissipation (at selected depths)

At locations CPT-1, CPT-2, CPT-6 & CPT-8, shear wave measurements were obtained at approximately 5-foot intervals. The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

The above parameters were recorded and viewed in real time using a portable computer and stored on a diskette for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the CPT Classification Chart (Robertson, 1986) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

Output from the interpretation program CPTINT provides averaged CPT data over one-foot intervals. The CPTINT output includes Soil Classification Zones, SPT N Values and Undrained Shear Strength (Su). A summary of the equations used for the tabulated parameters is provided in the CPTINT Correlation Table in the Appendix.

The interpretation of soils encountered on this project was carried out using correlations developed by Robertson et al, 1986. It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgment and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING

Steven P. Kehoe, P.E.
President

01/04/05-ca-16

PRESENTATION

OF

CONE PENETRATION TEST DATA

Project:

Old Road & Magic Mountain Parkway
Santa Clarita, CA

Prepared for:

Mr. Dharmesh Amin
R.T. Frankian
1329 Scott Road
Burbank, CA 91504
Office (818) 531-1501 / Fax (818) 531-1511

Prepared by:

KEHOE TESTING & ENGINEERING
15571 Industry Lane
Huntington Beach, CA 92649-1534
Office (714) 901-7270 / Fax (714) 901-7289

PRESENTATION
OF
CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the project located at Old Road & Magic Mountain Parkway in Santa Clarita, California. The work was performed by Kehoe Testing & Engineering (KTE) on February 10, 2006. The scope of work was performed as directed by R.T. Frankian personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at one location to determine the soil lithology. The groundwater measurements were taken in the open CPT hole approximately 10 minutes after completion of CPT. The following **TABLE 2.1** summarizes the CPT soundings performed:

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-3	57	Refusal, hole open to 57 ft (dry)

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed
- Pore Pressure Dissipation (at selected depths)

At location CPT-3, shear wave measurements were obtained at approximately 5-foot intervals. The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

The above parameters were recorded and viewed in real time using a portable computer and stored on a diskette for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the CPT Classification Chart (Robertson, 1986) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

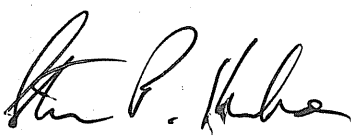
Output from the interpretation program CPTINT provides averaged CPT data over one-foot intervals. The CPTINT output includes Soil Classification Zones, SPT N Values and Undrained Shear Strength (Su). A summary of the equations used for the tabulated parameters is provided in the CPTINT Correlation Table in the Appendix.

The interpretation of soils encountered on this project was carried out using correlations developed by Robertson et al, 1986. It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgment and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

KEHOE TESTING & ENGINEERING



Steven P. Kehoe, P.E.
President

02/17/06-ca-19

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APPENDIX

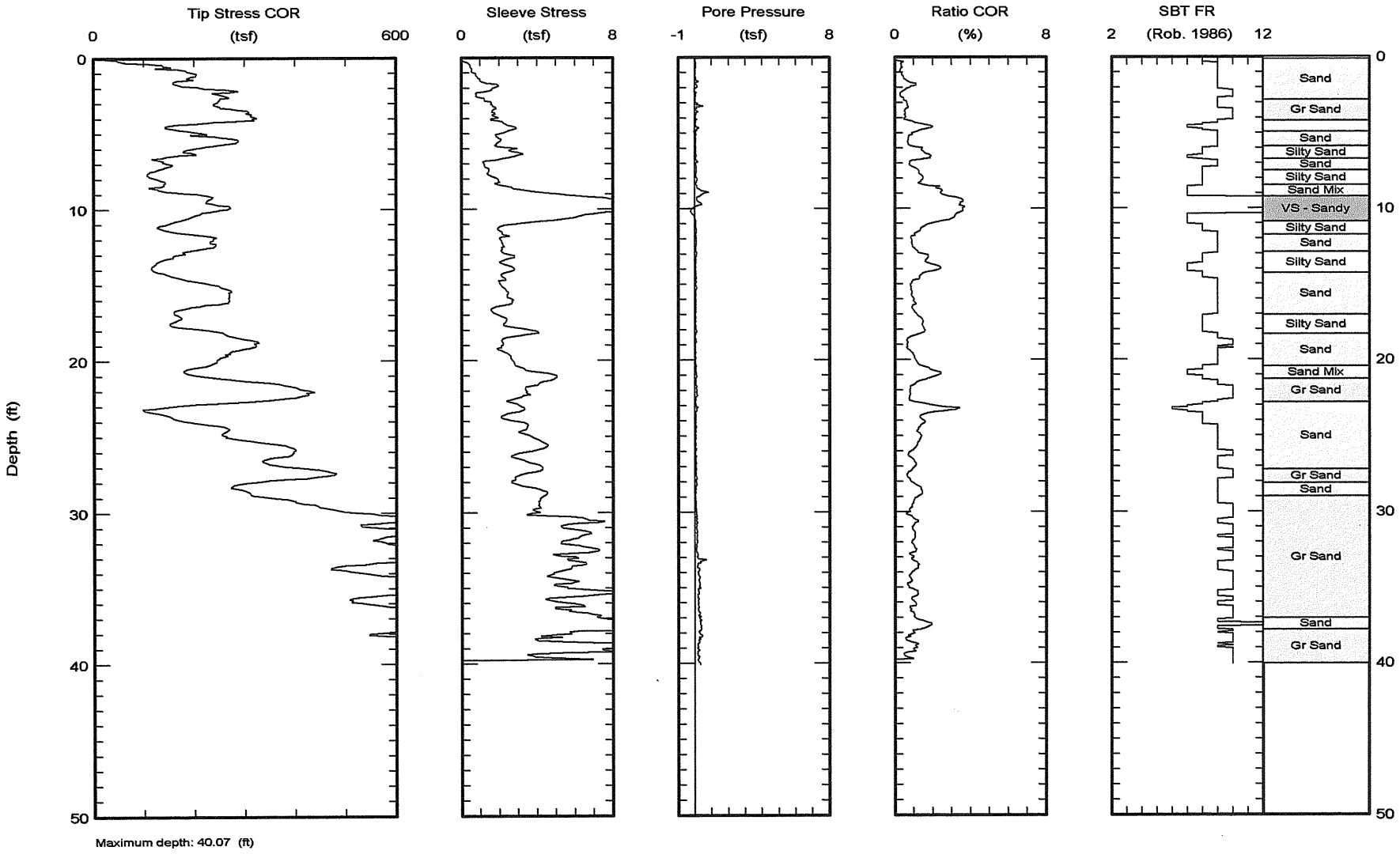
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
skehoe@msn.com

CPT Data
30 ton rig

Date: 19/Dec/2005
Test ID: CPT-1
Project: SantaClarita

Client: R.T. Frankian
Job Site: Old Road & Henry Mayo Drive



Maximum depth: 40.07 (ft)

Test ID: CPT-1
File: Z19D0509C.ECP

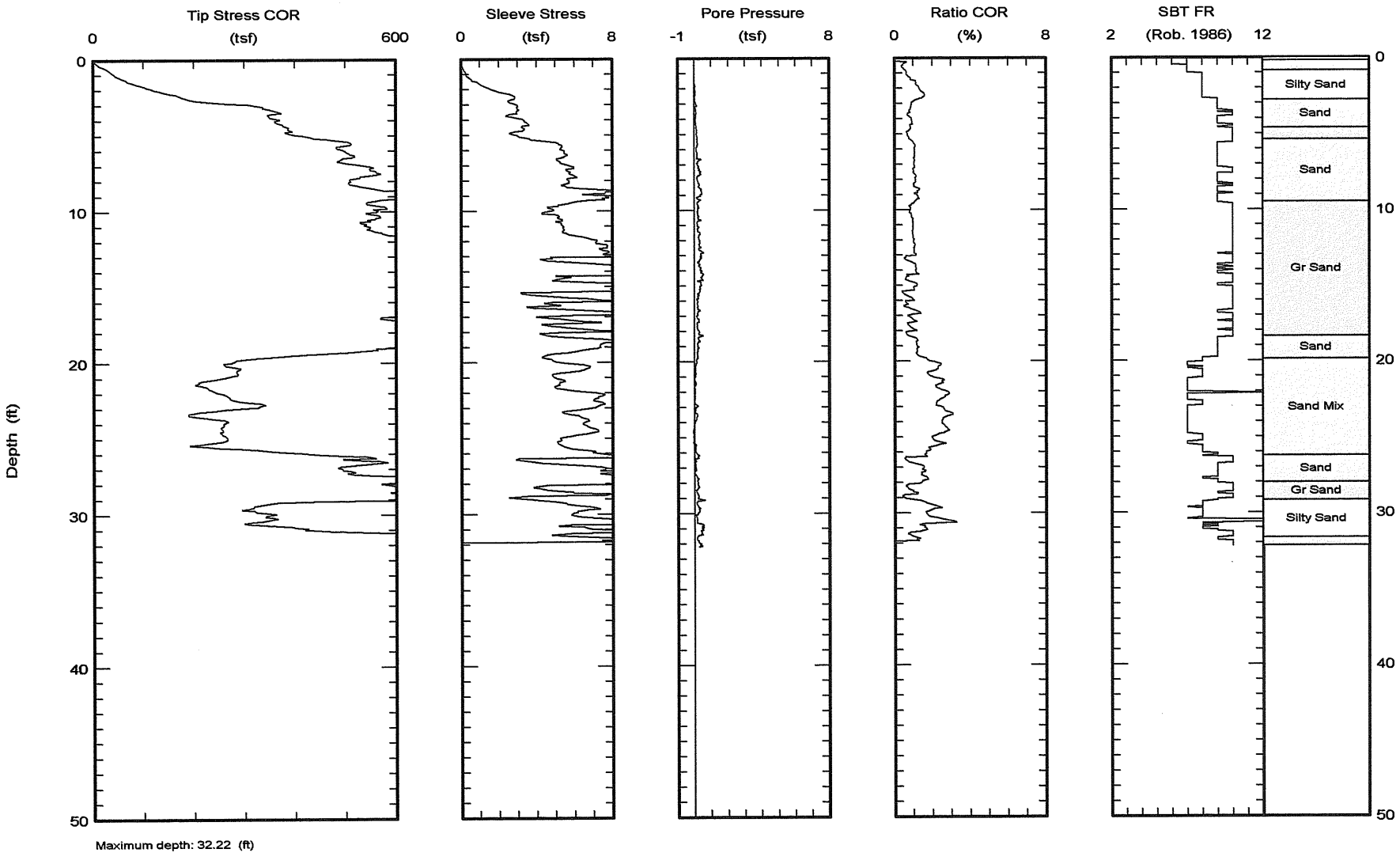
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
skehoe@msn.com

CPT Data
30 ton rig

Date: 19/Dec/2005
Test ID: CPT-2
Project: SantaClarita

Client: R.T. Frankian
Job Site: Old Road & Henry Mayo Drive



Maximum depth: 32.22 (ft)

Test ID: CPT-2
File: Z19D0510C.ECP

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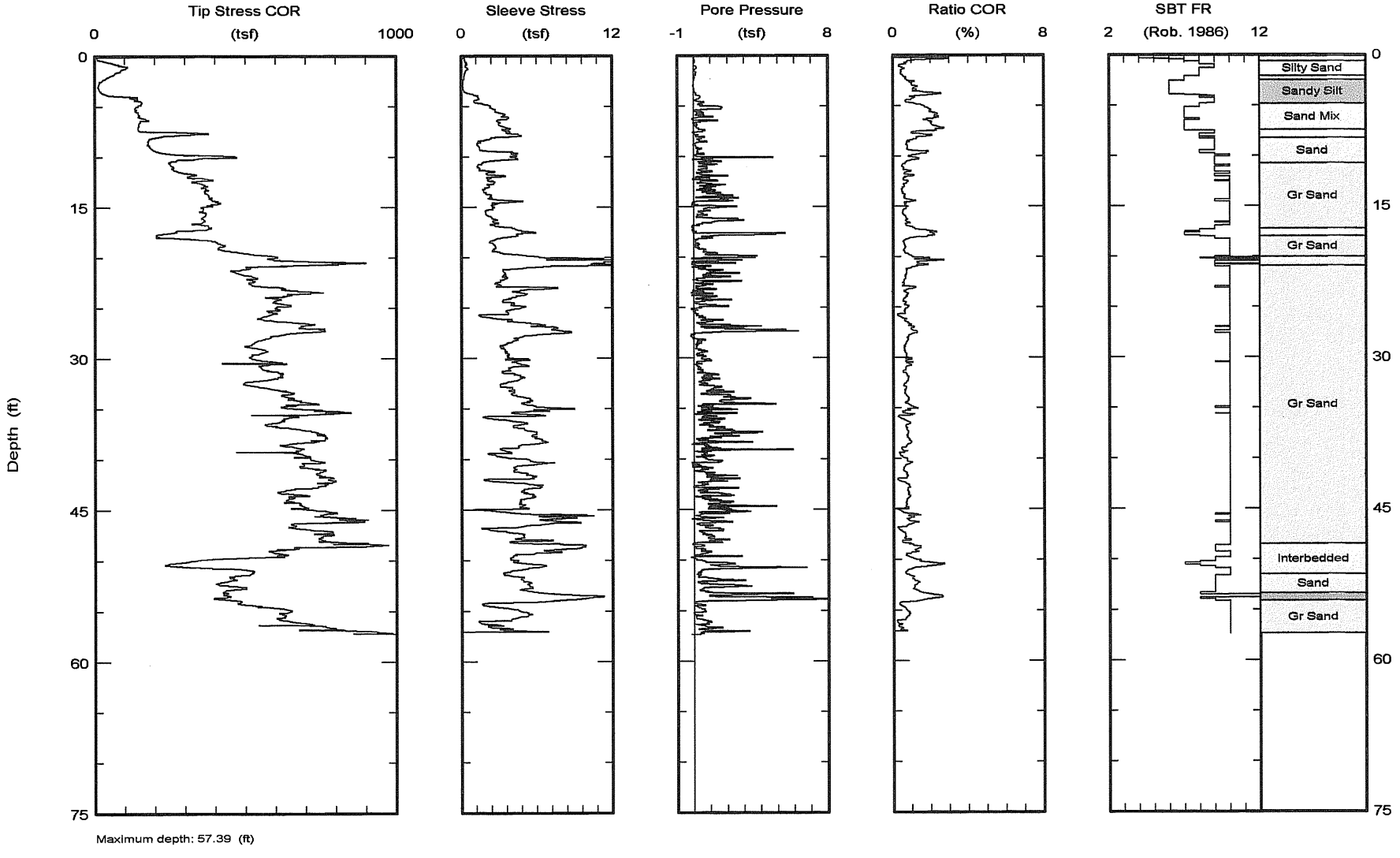
Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
skehoe@msn.com

CPT Data
30 ton rig

Date: 10/Feb/2006
Test ID: CPT-3
Project: SantaClarita

Client: R. T. Frankian
Job Site: Old Rd & Magic Mountain Pkwy



Maximum depth: 57.39 (ft)

Test ID: CPT-3
File: Z10F0601C.ECP

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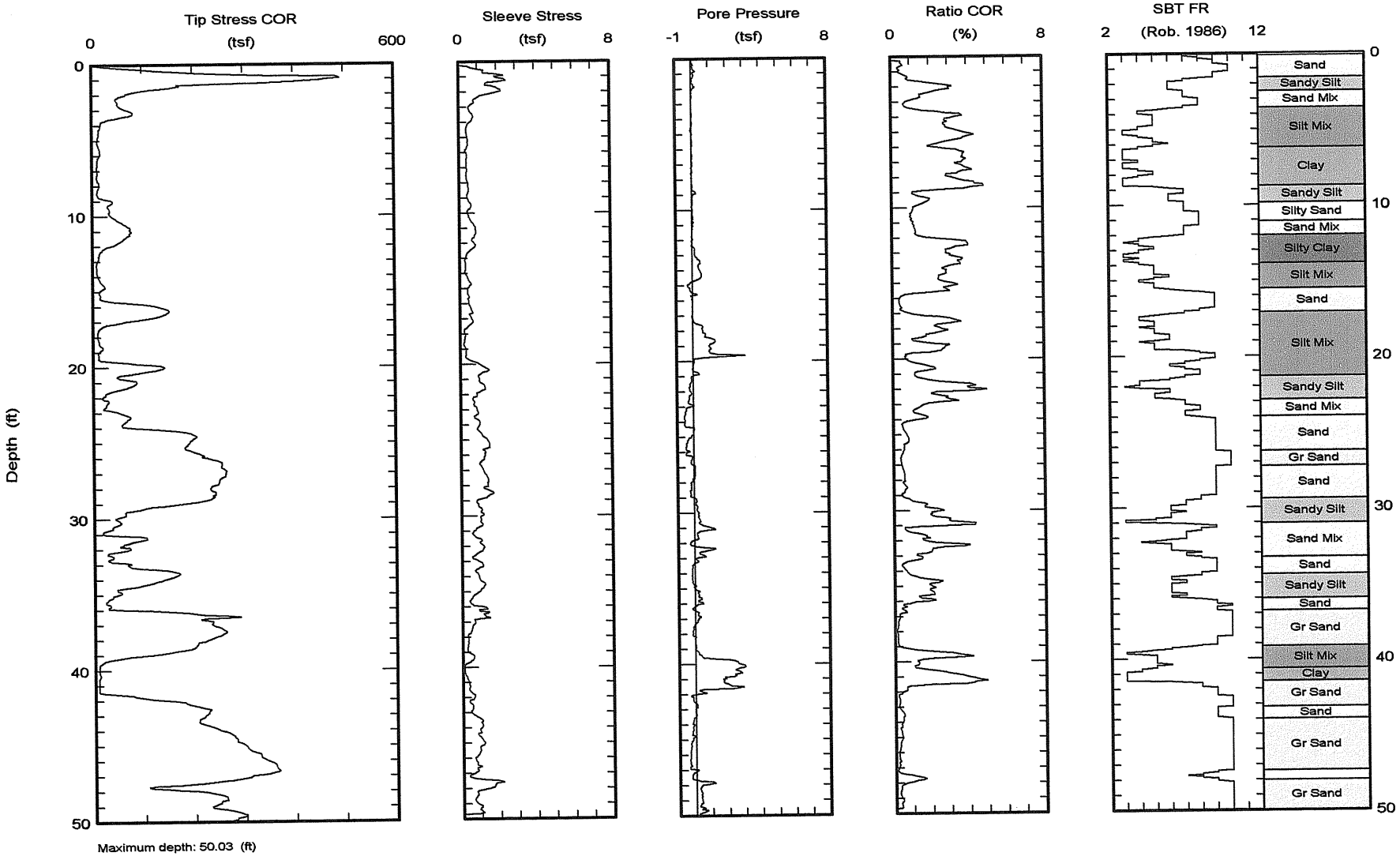
Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
skehoe@msn.com

CPT Data
30 ton rig

Date: 19/Dec/2005
Test ID: CPT-4
Project: SantaClarita

Client: R.T. Frankian
Job Site: Old Road & Henry Mayo Drive



Maximum depth: 50.03 (ft)

Test ID: CPT-4
File: Z19D0502C.ECP

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Kehoe Testing & Engineering
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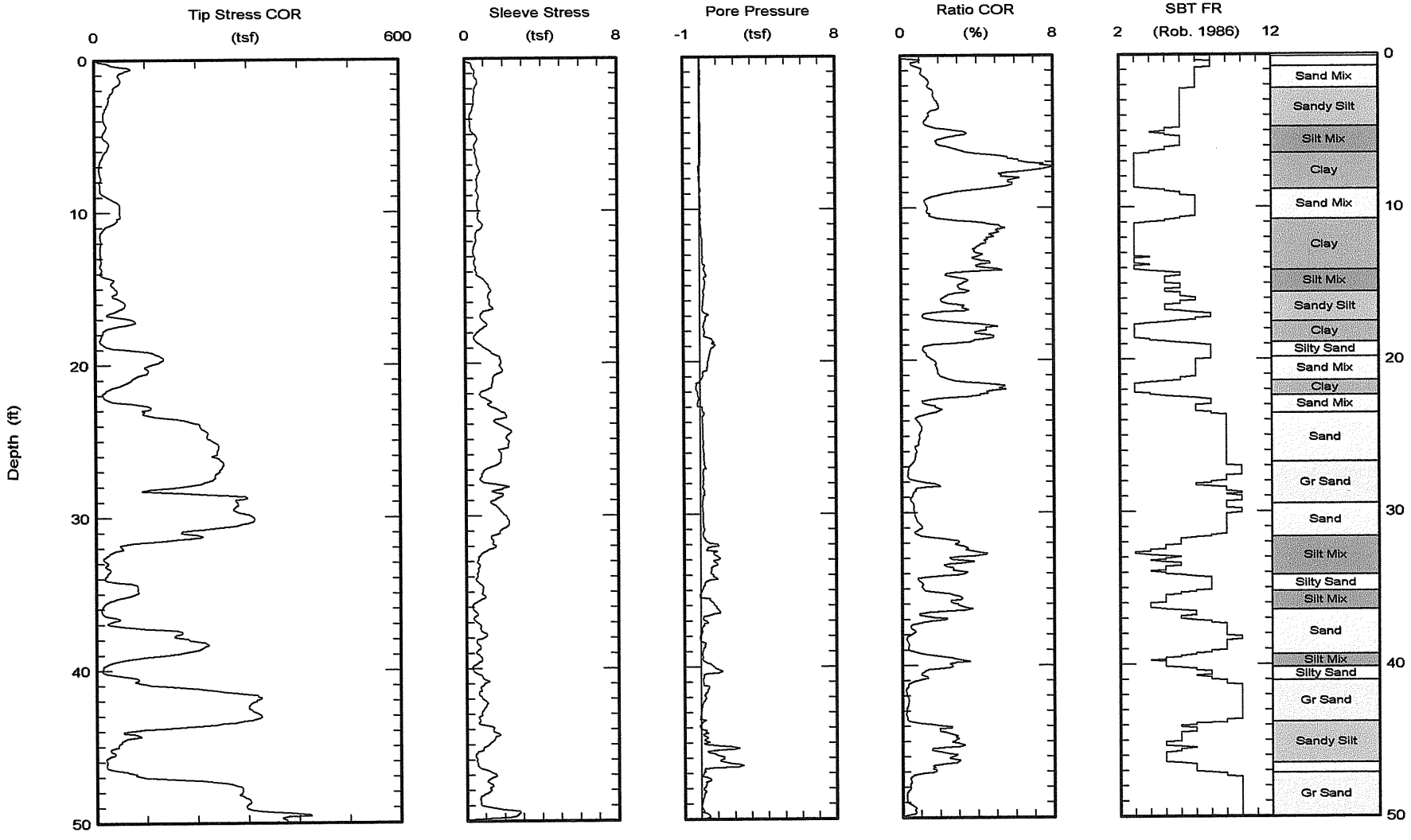
skehoe@msn.com

CPT Data
30 ton rig

Date: 19/Dec/2005
Test ID: CPT-5
Project: SantaClarita

Client: R.T. Frankian
Job Site: Old Road & Henry Mayo Drive



Maximum depth: 50.22 (ft)

Test ID: CPT-5
File: Z19D0503C.ECP

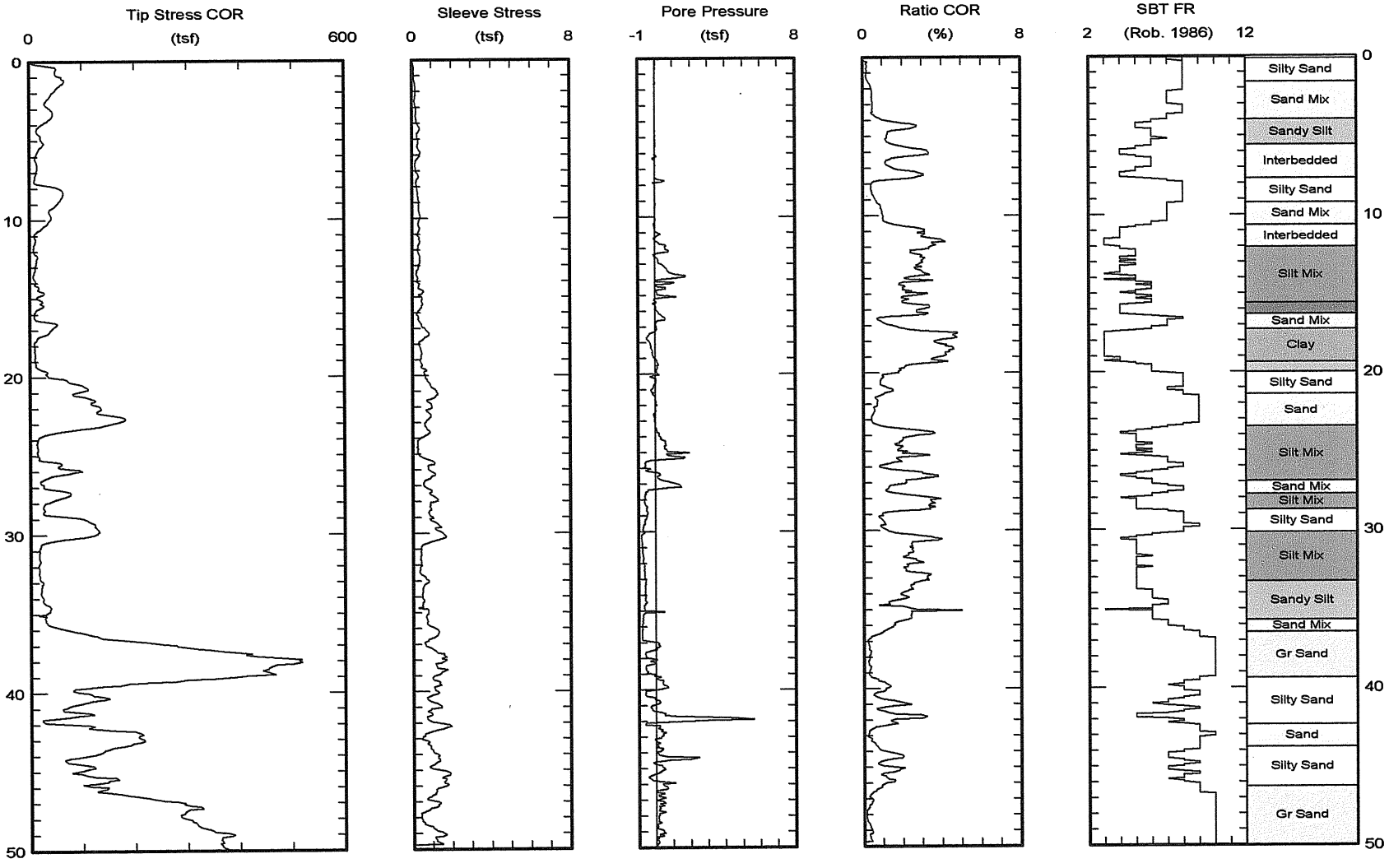
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
skehoe@msn.com

CPT Data
30 ton rig

Date: 19/Dec/2005
Test ID: CPT-6
Project: SantaClarita

Client: R.T. Frankian
Job Site: Old Road & Henry Mayo Drive



Maximum depth: 50.08 (ft)

Test ID: CPT-6
File: Z19D0504C.ECP

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Kehoe Testing & Engineering
Office: (714) 901-7270
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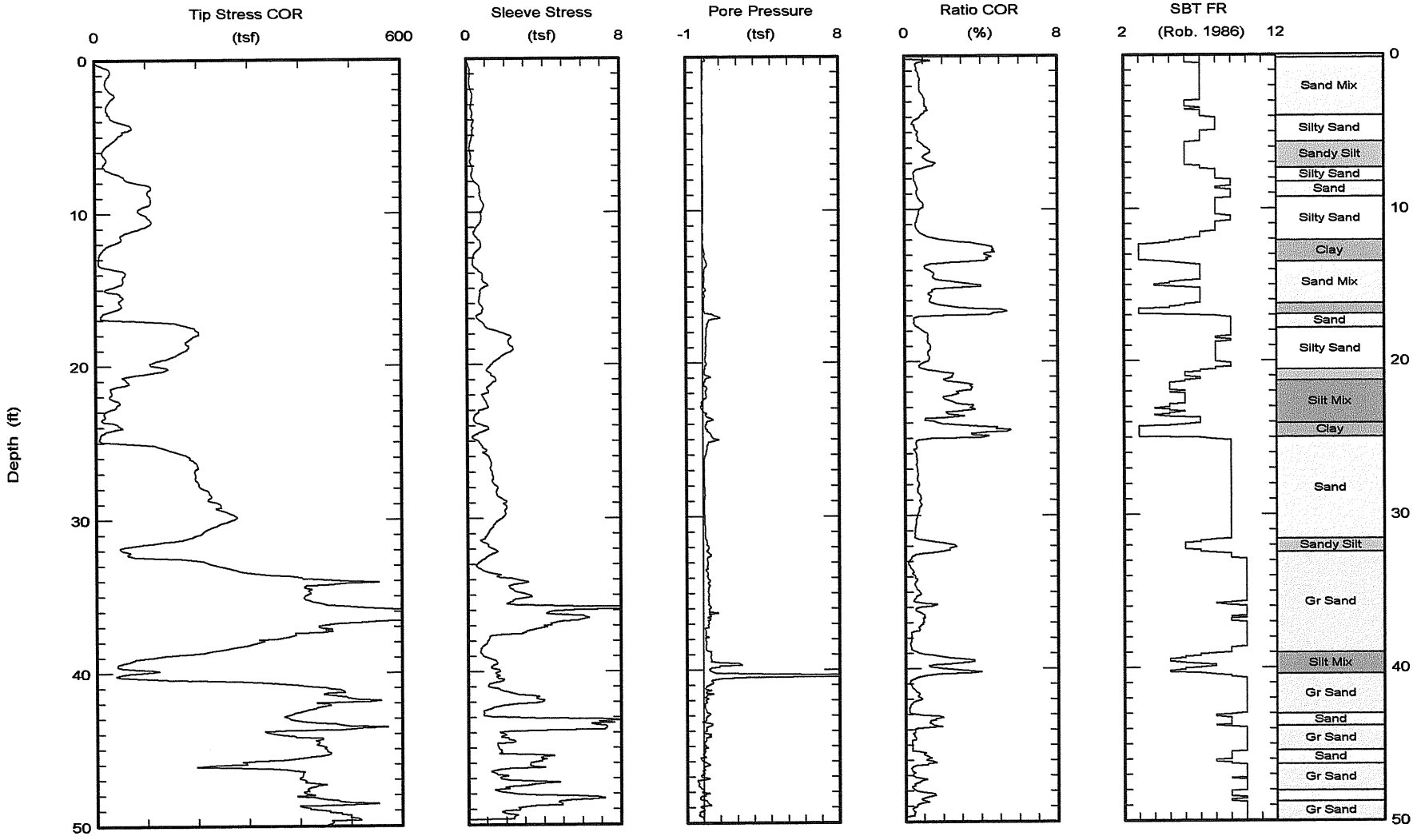
skehoe@msn.com

CPT Data
30 ton rig

Date: 19/Dec/2005
Test ID: CPT-7
Project: SantaClarita

Client: R.T. Frankian
Job Site: Old Road & Henry Mayo Drive



Maximum depth: 50.02 (ft)

Test ID: CPT-7
File: Z19D0506C.ECP

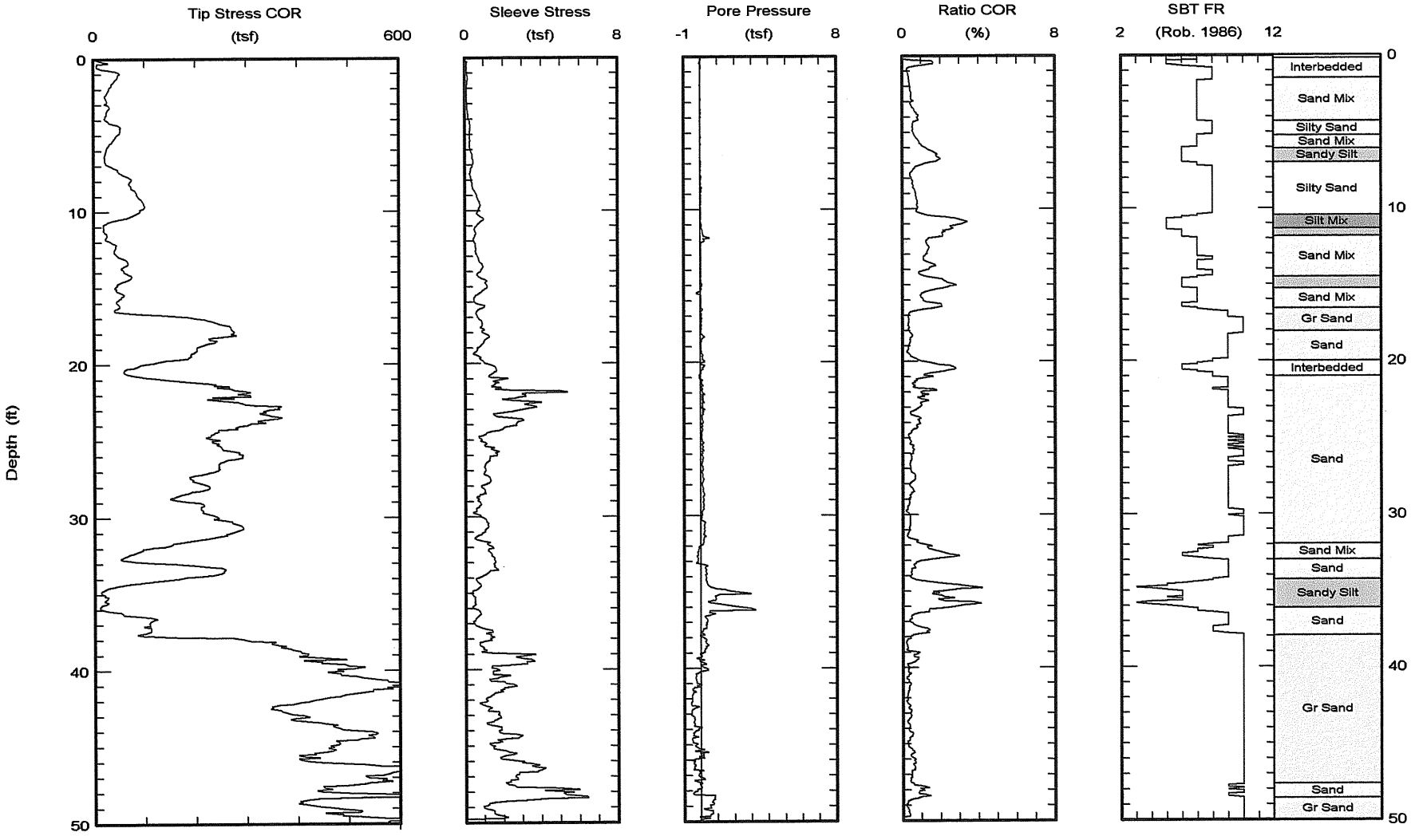
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
skehoe@msn.com

CPT Data
30 ton rig

Date: 19/Dec/2005
Test ID: CPT-8
Project: SantaClarita

Client: R.T. Frankian
Job Site: Old Road & Henry Mayo Drive



Maximum depth: 50.08 (ft)

Test ID: CPT-8
File: Z19D0507C.ECP

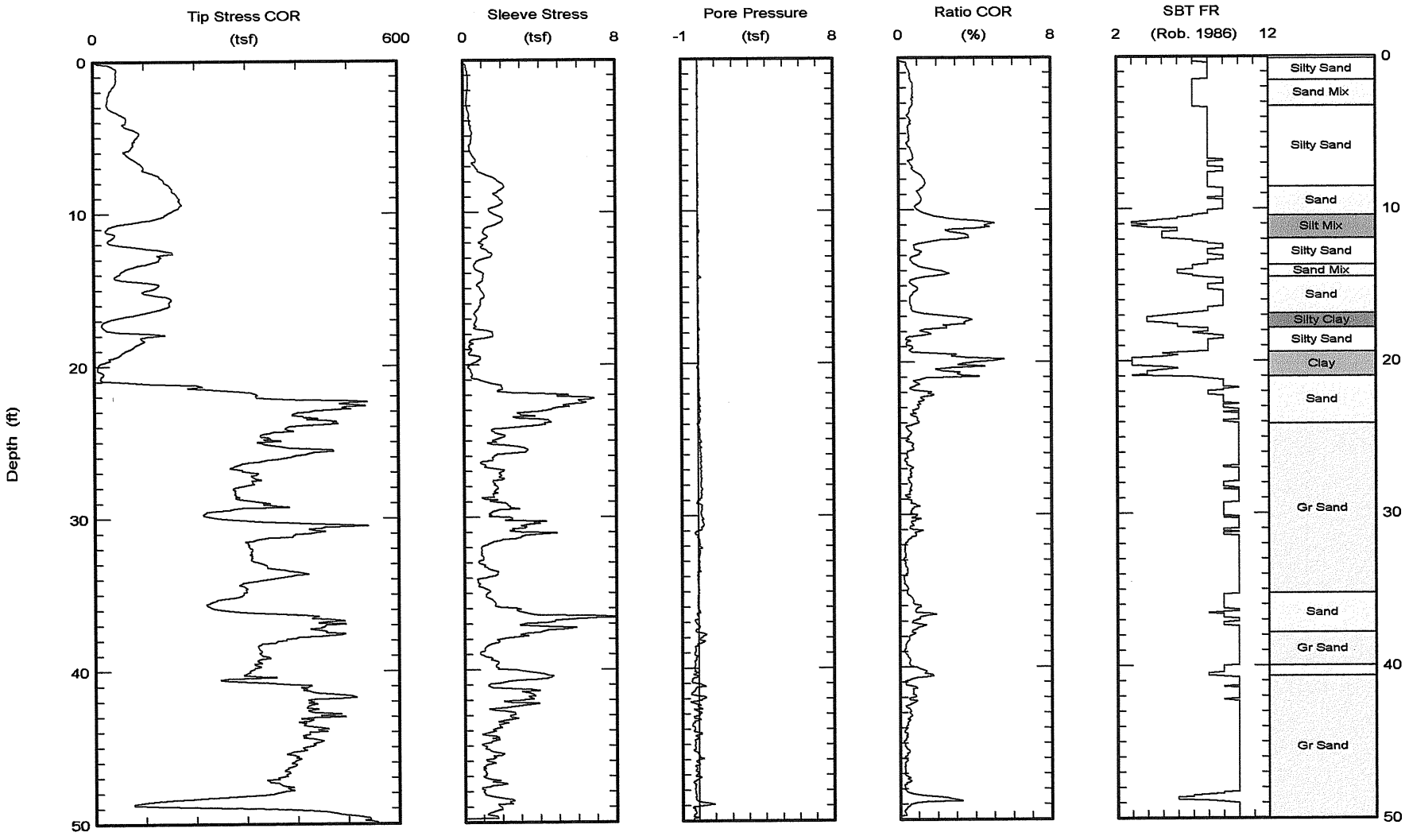
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Kehoe Testing & Engineering
Office: (714) 901-7270
Fax: (714) 901-7289
skehoe@msn.com

CPT Data
30 ton rig

Date: 19/Dec/2005
Test ID: CPT-9
Project: SantaClarita

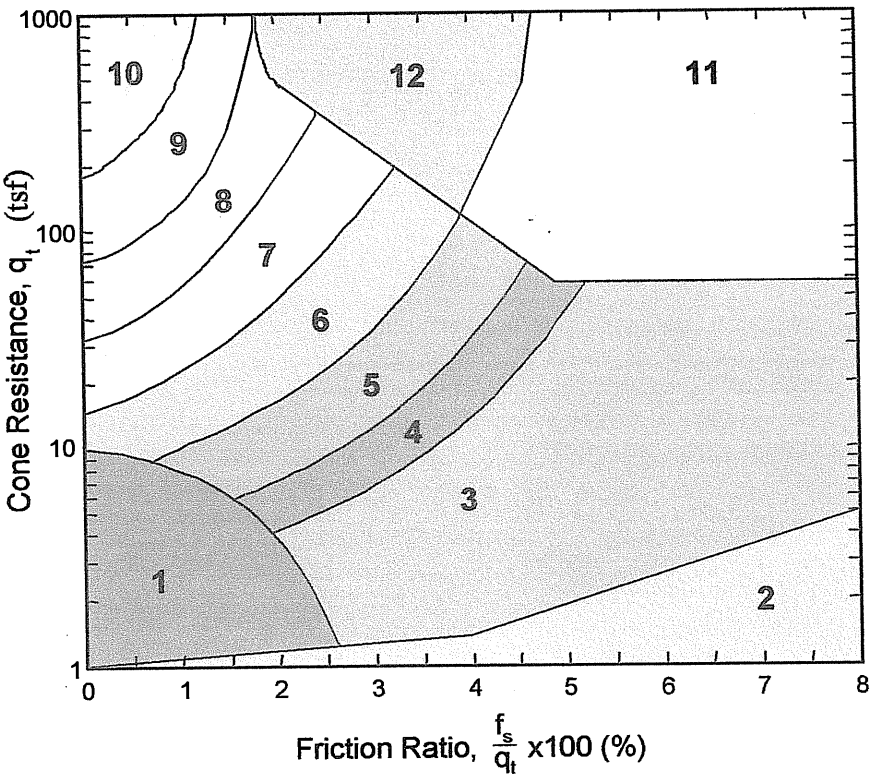
Client: R.T. Frankian
Job Site: Old Road & Henry Mayo Drive



Maximum depth: 50.08 (ft)

Test ID: CPT-9
File: Z19D0508C.ECP

CPT Soil Behavior Type Legend
(Robertson et al. 1986)



Zone	Soil Behavior Type
1	Sensitive, Fine Grained
2	Organic Material
3	Clay
4	Silty Clay to Clay
5	Clayey Silt to Silty Clay (Silt Mix)
6	Sandy Silt to Clayey Silt
7	Silty Sand to Sandy Silt (Sand Mix)
8	Sand to Silty Sand
9	Sand
10	Gravelly Sand to Sand
11	Very Stiff Fine Grained*
12	Sand to Clayey Sand*

*Overconsolidated or cemented

INPUT FILE: C:\TEMP\CPT-1.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	120.346	0.378	0.314	9	23	35	9E9
1.500	185.425	1.183	0.638	9	36	54	9E9
2.500	254.071	1.209	0.476	9	49	74	9E9
3.500	286.523	1.726	0.602	9	55	83	9E9
4.500	207.050	2.333	1.127	9	40	60	9E9
5.500	248.987	2.032	0.816	9	48	72	9E9
6.500	159.200	2.313	1.453	8	38	57	9E9
7.500	125.885	1.475	1.171	8	30	45	9E9
8.500	144.467	2.808	1.943	7	46	69	9E9
9.500	242.373	8.147	3.361	12	116	173	9E9
10.500	196.682	6.243	3.174	6	75	103	9E9
11.500	182.079	2.165	1.189	9	35	45	9E9
12.500	218.464	2.164	0.990	9	42	51	9E9
13.500	134.458	2.503	1.861	7	43	49	9E9
14.500	170.327	2.247	1.319	8	41	44	9E9
15.500	265.417	2.367	0.892	9	51	52	9E9
16.500	203.300	2.083	1.025	9	39	38	9E9
17.500	173.746	2.512	1.446	8	42	39	9E9
18.500	292.086	2.806	0.961	9	56	50	9E9
19.500	274.731	2.347	0.854	9	53	45	9E9
20.500	208.038	3.402	1.635	8	50	41	9E9
21.500	338.671	4.196	1.239	9	65	52	9E9
22.500	348.192	3.093	0.888	9	67	52	9E9
23.500	137.683	2.715	1.972	7	44	33	9E9
24.500	248.415	3.359	1.352	9	48	35	9E9
25.500	350.369	4.192	1.196	9	67	47	9E9
26.500	364.031	3.318	0.911	9	70	48	9E9
27.500	428.500	3.447	0.804	10	68	45	9E9
28.500	299.015	3.825	1.279	9	57	37	9E9
29.500	437.379	4.082	0.933	9	84	52	9E9
30.500	595.108	5.721	0.961	10	95	58	9E9
31.500	603.650	6.091	1.009	9	116	69	9E9
32.500	625.754	6.209	0.992	10	100	58	9E9
33.500	541.938	5.859	1.081	9	104	59	9E9
34.500	669.146	5.302	0.792	10	107	59	9E9
35.500	603.750	6.257	1.036	9	116	63	9E9
36.500	649.669	6.293	0.969	10	104	55	9E9
37.500	660.885	9.709	1.469	9	127	66	9E9
38.500	687.621	6.297	0.916	10	110	56	9E9
39.500	737.386	3.956	0.536	10	118	59	9E9
40.500	833.300	0.000	0.000	10	9E9	9E9	9E9

INPUT FILE: C:\TEMP\CPT-2.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	22.500	0.119	0.530	7	7	11	9E9
1.500	77.385	0.809	1.046	8	19	29	9E9
2.500	187.615	2.464	1.313	8	45	68	9E9
3.500	351.969	2.907	0.826	9	67	101	9E9
4.500	381.477	3.231	0.847	9	73	110	9E9
5.500	479.507	4.517	0.942	9	92	138	9E9
6.500	506.013	5.389	1.065	9	97	146	9E9
7.500	545.638	5.815	1.066	9	105	158	9E9
8.500	562.664	6.470	1.150	9	108	162	9E9
9.500	575.214	6.021	1.047	9	110	165	9E9
10.500	550.647	5.061	0.919	10	88	122	9E9
11.500	599.777	5.919	0.987	10	96	124	9E9
12.500	716.578	7.600	1.061	10	114	137	9E9
13.500	735.557	6.754	0.918	10	117	133	9E9
14.500	796.529	7.288	0.915	10	127	136	9E9
15.500	763.986	6.301	0.825	10	122	124	9E9
16.500	692.085	5.880	0.850	10	110	106	9E9
17.500	639.150	5.797	0.907	10	102	94	9E9
18.500	672.985	6.488	0.964	10	107	94	9E9
19.500	419.950	5.490	1.307	9	80	68	9E9
20.500	277.808	5.902	2.124	8	67	55	9E9
21.500	226.554	5.367	2.369	7	72	57	9E9
22.500	294.169	7.302	2.482	7	94	72	9E9
23.500	229.058	6.185	2.700	7	73	54	9E9
24.500	257.677	6.601	2.562	7	82	59	9E9
25.500	281.523	5.718	2.031	8	67	47	9E9
26.500	520.129	6.016	1.157	9	100	67	9E9
27.500	564.414	8.774	1.554	9	108	71	9E9
28.500	618.800	5.050	0.816	10	99	63	9E9
29.500	361.700	5.895	1.630	8	87	54	9E9
30.500	358.936	7.209	2.008	8	86	52	9E9
31.500	652.446	6.174	0.946	10	104	61	9E9
32.500	880.625	0.000	0.000	10	9E9	9E9	9E9

INPUT FILE: C:\TEMP\CPT-3.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	39.100	0.294	0.753	7	12	18	9E9
1.500	82.935	0.376	0.454	8	20	30	9E9
2.500	24.837	0.193	0.777	7	8	12	9E9
3.500	29.425	0.484	1.644	6	11	17	9E9
4.500	145.657	1.466	1.006	9	28	42	9E9
5.500	142.478	2.927	2.053	7	46	69	9E9
6.500	154.157	3.161	2.050	7	49	74	9E9
7.500	235.878	3.977	1.686	8	56	84	9E9
8.500	183.209	1.770	0.966	9	35	53	9E9
9.500	253.857	2.878	1.133	9	49	74	9E9
10.500	281.643	2.405	0.853	9	54	76	9E9
11.500	288.286	2.074	0.719	9	55	72	9E9
12.500	353.344	2.310	0.653	10	56	68	9E9
13.500	370.842	2.010	0.542	10	59	68	9E9
14.500	393.600	2.986	0.758	10	63	68	9E9
15.500	363.410	2.127	0.585	10	58	59	9E9
16.500	360.135	2.672	0.741	10	58	57	9E9
17.500	268.895	4.603	1.710	8	64	60	9E9
18.500	387.296	2.628	0.678	10	62	55	9E9
19.500	487.477	3.493	0.716	10	78	67	9E9
20.500	677.250	10.659	1.573	9	130	107	9E9
21.500	490.161	3.682	0.751	10	78	62	9E9
22.500	536.428	3.374	0.629	10	86	66	9E9
23.500	657.624	5.006	0.761	10	105	78	9E9
24.500	613.813	3.981	0.648	10	98	70	9E9
25.500	585.917	3.145	0.537	10	94	65	9E9
26.500	651.462	5.106	0.784	10	104	70	9E9
27.500	673.112	6.901	1.025	10	108	70	9E9
28.500	533.240	3.789	0.710	10	85	54	9E9
29.500	540.263	3.620	0.670	10	86	53	9E9
30.500	557.546	4.591	0.823	10	89	53	9E9
31.500	603.642	4.102	0.679	10	96	56	9E9
32.500	535.844	3.777	0.705	10	86	49	9E9
33.500	633.505	4.281	0.676	10	101	56	9E9
34.500	664.468	5.687	0.855	10	106	58	9E9
35.500	713.582	4.770	0.668	10	114	61	9E9
36.500	615.046	4.293	0.698	10	98	51	9E9
37.500	743.275	5.748	0.773	10	119	61	9E9
38.500	683.156	5.378	0.787	10	109	55	9E9
39.500	681.258	3.309	0.486	10	109	55	9E9
40.500	718.079	5.341	0.744	10	115	58	9E9
41.499	759.628	5.034	0.663	10	121	61	9E9
42.499	753.085	4.512	0.599	10	120	60	9E9
43.499	652.167	5.305	0.813	10	104	52	9E9
44.499	676.496	4.491	0.664	10	108	54	9E9
45.499	789.069	5.966	0.756	10	126	63	9E9
46.499	720.969	5.658	0.785	10	115	58	9E9
47.499	763.880	4.368	0.572	10	122	61	9E9
48.499	783.819	7.495	0.956	10	125	63	9E9
49.499	549.010	5.182	0.944	10	88	44	9E9

INPUT FILE: C:\TEMP\CPT-3.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
50.499	335.721	5.283	1.572	8	80	40	9E9
51.499	489.568	4.015	0.820	10	78	39	9E9
52.499	442.746	5.239	1.183	9	85	43	9E9
53.499	435.013	8.474	1.945	8	104	52	9E9
54.499	555.455	3.490	0.628	10	89	45	9E9
55.499	625.263	4.792	0.766	10	100	50	9E9
56.499	757.085	2.714	0.358	10	121	61	9E9
57.499	969.918	0.628	0.065	10	155	78	9E9

INPUT FILE: C:\TEMP\CPT-4.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	225.150	1.018	0.452	9	43	65	9E9
1.500	201.517	1.982	0.984	9	39	59	9E9
2.500	54.675	1.053	1.927	7	17	26	9E9
3.500	51.300	0.665	1.296	7	16	24	9E9
4.500	14.467	0.442	3.053	5	7	11	0.946
5.500	14.383	0.439	3.053	5	7	11	0.937
6.500	11.417	0.419	3.672	3	11	17	0.735
7.500	11.875	0.417	3.509	4	8	12	0.761
8.500	15.642	0.479	3.060	5	7	11	1.009
9.500	35.033	0.542	1.548	7	11	17	9E9
10.500	61.714	0.659	1.067	7	20	28	9E9
11.500	64.323	0.806	1.253	7	21	28	9E9
12.500	17.718	0.594	3.347	5	8	10	1.132
13.500	9.260	0.313	3.355	3	9	11	0.567
14.500	17.950	0.481	2.674	5	9	10	1.140
15.500	43.360	0.470	1.084	7	14	15	9E9
16.500	127.264	0.585	0.460	9	24	24	9E9
17.500	21.970	0.481	2.185	6	8	8	9E9
18.500	14.200	0.263	1.827	5	7	6	0.884
19.500	47.073	0.464	0.980	7	15	13	9E9
20.500	90.082	1.190	1.321	8	22	19	9E9
21.500	53.682	1.127	2.101	6	21	17	9E9
22.500	27.664	0.766	2.776	5	13	10	1.749
23.500	63.991	0.895	1.400	7	20	15	9E9
24.500	177.600	1.064	0.599	9	34	26	9E9
25.500	197.154	1.391	0.706	9	38	28	9E9
26.500	253.221	1.140	0.450	10	40	29	9E9
27.500	249.662	1.372	0.550	9	48	34	9E9
28.500	228.793	1.349	0.590	9	44	31	9E9
29.500	84.300	1.007	1.194	8	20	14	9E9
30.500	38.385	0.985	2.561	6	15	10	9E9
31.500	72.436	0.851	1.174	8	17	11	9E9
32.500	41.731	0.879	2.103	6	16	11	9E9
33.500	131.550	0.916	0.697	9	25	16	9E9
34.500	80.485	1.066	1.325	8	19	12	9E9
35.500	32.207	0.610	1.891	6	12	8	9E9
36.500	215.985	1.118	0.517	9	41	26	9E9
37.500	248.521	0.501	0.202	10	40	25	9E9
38.500	185.329	0.307	0.166	9	36	22	9E9
39.500	28.431	0.418	1.462	6	11	7	9E9
40.500	8.800	0.185	1.992	5	4	2	0.453
41.499	45.179	0.446	0.982	7	15	9	9E9
42.499	205.854	0.495	0.240	9	39	23	9E9
43.499	220.214	0.859	0.390	9	42	24	9E9
44.499	277.764	0.954	0.343	10	44	25	9E9
45.499	321.107	0.899	0.280	10	51	29	9E9
46.499	352.950	0.746	0.212	10	56	31	9E9
47.499	207.393	1.233	0.594	9	40	22	9E9
48.499	248.846	0.749	0.301	10	40	22	9E9
49.499	274.521	0.674	0.245	10	44	24	9E9

INPUT FILE: C:\TEMP\CPT-5.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	43.631	0.335	0.768	7	14	21	9E9
1.500	46.557	0.597	1.283	7	15	23	9E9
2.500	30.762	0.511	1.660	6	12	18	9E9
3.500	20.008	0.359	1.795	6	8	12	9E9
4.500	20.764	0.325	1.561	6	8	12	9E9
5.500	24.308	0.580	2.385	6	9	14	9E9
6.500	14.445	0.608	4.202	3	14	21	0.938
7.500	10.942	0.716	6.542	3	10	15	0.699
8.500	13.508	0.647	4.796	3	13	20	0.864
9.500	44.875	0.679	1.513	7	14	21	9E9
10.500	41.538	0.764	1.839	6	16	22	9E9
11.500	12.967	0.643	4.952	3	12	16	0.818
12.500	11.625	0.482	4.140	3	11	13	0.724
13.500	12.583	0.527	4.166	3	12	14	0.787
14.500	29.192	0.923	3.155	5	14	15	1.891
15.500	45.358	1.273	2.803	6	17	18	9E9
16.500	46.815	1.110	2.370	6	18	18	9E9
17.500	45.208	0.940	2.076	6	17	16	9E9
18.500	18.946	0.636	3.340	5	9	8	1.194
19.500	121.342	1.596	1.314	8	29	25	9E9
20.500	94.869	1.763	1.857	7	30	25	9E9
21.500	40.025	1.275	3.187	5	19	15	2.579
22.500	59.785	1.129	1.889	7	19	15	9E9
23.500	142.738	1.840	1.289	8	34	26	9E9
24.500	218.300	2.180	0.999	9	42	31	9E9
25.500	240.642	2.085	0.866	9	46	34	9E9
26.500	246.531	1.687	0.684	9	47	34	9E9
27.500	224.646	0.948	0.422	9	43	31	9E9
28.500	208.462	1.811	0.868	9	40	28	9E9
29.500	284.808	1.688	0.593	10	45	31	9E9
30.500	266.792	2.162	0.810	9	51	35	9E9
31.500	130.350	1.514	1.161	8	31	21	9E9
32.500	27.515	0.922	3.331	5	13	9	1.710
33.500	23.158	0.658	2.820	5	11	7	1.416
34.500	64.477	0.744	1.152	7	21	13	9E9
35.500	35.600	0.720	2.020	6	14	9	9E9
36.500	24.569	0.468	1.895	6	9	6	9E9
37.500	130.546	0.862	0.660	9	25	15	9E9
38.500	196.608	0.653	0.332	9	38	23	9E9
39.500	45.077	0.634	1.405	7	14	8	9E9
40.500	63.246	0.766	1.210	7	20	12	9E9
41.499	262.477	0.772	0.294	10	42	25	9E9
42.499	309.685	0.961	0.310	10	49	28	9E9
43.499	231.700	0.883	0.381	9	44	25	9E9
44.499	59.992	1.481	2.467	6	23	13	9E9
45.499	29.077	0.721	2.462	6	11	6	9E9
46.499	42.962	0.855	1.981	6	17	9	9E9
47.499	237.546	1.297	0.546	9	46	25	9E9
48.499	295.269	0.869	0.294	10	47	25	9E9
49.499	359.092	1.921	0.535	10	57	31	9E9

INPUT FILE: C:\TEMP\CPT-6.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	39.600	0.082	0.206	8	9	14	9E9
1.500	59.342	0.158	0.265	8	14	21	9E9
2.500	35.982	0.175	0.485	7	11	17	9E9
3.500	39.954	0.228	0.570	7	13	20	9E9
4.500	18.543	0.328	1.768	6	7	11	9E9
5.500	19.864	0.346	1.740	6	8	12	9E9
6.500	13.771	0.237	1.722	5	7	11	0.892
7.500	20.020	0.267	1.331	6	8	12	9E9
8.500	61.171	0.307	0.502	8	15	23	9E9
9.500	42.529	0.378	0.888	7	14	21	9E9
10.500	24.657	0.363	1.472	6	9	13	9E9
11.500	10.050	0.346	3.430	3	10	13	0.627
12.500	12.973	0.376	2.892	4	8	10	0.816
13.500	9.814	0.279	2.797	4	6	7	0.611
14.500	17.943	0.403	2.238	5	9	10	1.141
15.500	19.336	0.472	2.438	5	9	9	1.228
16.500	29.993	0.379	1.263	7	10	10	9E9
17.500	21.543	0.656	3.053	5	10	10	1.363
18.500	10.414	0.436	4.204	3	10	9	0.616
19.500	22.067	0.538	2.436	5	11	10	1.394
20.500	88.079	0.879	0.998	8	21	18	9E9
21.500	112.987	1.043	0.923	8	27	22	9E9
22.500	156.800	0.842	0.537	9	30	24	9E9
23.500	67.720	0.708	1.045	8	16	12	9E9
24.500	14.571	0.279	1.899	5	7	5	0.878
25.500	49.860	0.769	1.542	7	16	12	9E9
26.500	37.307	0.848	2.270	6	14	10	9E9
27.500	56.921	0.974	1.711	7	18	13	9E9
28.500	40.220	0.916	2.284	6	15	11	9E9
29.500	123.471	1.203	0.975	8	30	21	9E9
30.500	44.993	1.041	2.320	6	17	12	9E9
31.500	17.736	0.429	2.439	5	8	5	1.043
32.500	18.460	0.486	2.649	5	9	6	1.091
33.500	22.264	0.567	2.560	5	11	7	1.341
34.500	31.960	0.571	1.792	6	12	8	9E9
35.500	35.971	0.765	2.135	6	14	9	9E9
36.500	159.540	1.020	0.640	9	31	20	9E9
37.500	386.833	1.172	0.303	10	62	39	9E9
38.500	467.450	1.417	0.303	10	75	46	9E9
39.500	200.108	1.163	0.581	9	38	23	9E9
40.500	109.250	1.063	0.973	8	26	16	9E9
41.499	65.350	0.898	1.368	7	21	12	9E9
42.499	174.183	1.138	0.653	9	33	19	9E9
43.499	161.983	0.868	0.535	9	31	18	9E9
44.499	91.975	1.163	1.262	8	22	13	9E9
45.499	126.317	1.678	1.329	8	30	17	9E9
46.499	192.145	1.041	0.542	9	37	21	9E9
47.499	299.192	0.873	0.292	10	48	27	9E9
48.499	327.817	0.777	0.237	10	52	28	9E9
49.499	369.700	1.009	0.273	10	59	32	9E9

INPUT FILE: C:\TEMP\CPT-7.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	19.818	0.131	0.660	6	8	12	9E9
1.500	24.350	0.189	0.777	7	8	12	9E9
2.500	32.082	0.297	0.927	7	10	15	9E9
3.500	28.418	0.292	1.026	7	9	14	9E9
4.500	60.945	0.335	0.550	8	15	23	9E9
5.500	27.808	0.220	0.791	7	9	14	9E9
6.500	18.958	0.231	1.218	6	7	11	9E9
7.500	46.400	0.313	0.675	7	15	23	9E9
8.500	104.308	0.647	0.621	8	25	38	9E9
9.500	99.408	0.831	0.836	8	24	36	9E9
10.500	102.785	0.725	0.705	8	25	35	9E9
11.500	56.908	0.500	0.879	8	14	18	9E9
12.500	15.883	0.584	3.678	4	10	12	1.008
13.500	28.054	0.451	1.605	6	11	13	9E9
14.500	47.525	0.911	1.915	7	15	16	9E9
15.500	44.917	0.693	1.542	7	14	15	9E9
16.500	28.962	0.710	2.449	6	11	11	9E9
17.500	175.042	1.115	0.637	9	34	32	9E9
18.500	183.792	2.256	1.227	8	44	40	9E9
19.500	141.623	1.840	1.299	8	34	30	9E9
20.500	99.208	1.229	1.239	8	24	20	9E9
21.500	41.631	1.160	2.785	6	16	13	9E9
22.500	37.600	0.963	2.562	6	14	11	9E9
23.500	24.454	0.503	2.052	6	9	7	9E9
24.500	18.758	0.676	3.588	4	12	9	1.155
25.500	139.608	0.861	0.616	9	27	20	9E9
26.500	195.508	1.235	0.632	9	37	27	9E9
27.500	199.158	1.374	0.690	9	38	27	9E9
28.500	225.023	1.703	0.757	9	43	30	9E9
29.500	257.292	1.985	0.771	9	49	34	9E9
30.500	232.308	1.383	0.595	9	45	31	9E9
31.500	120.933	0.976	0.807	8	29	19	9E9
32.500	134.023	1.067	0.796	9	26	17	9E9
33.500	325.208	1.141	0.351	10	52	34	9E9
34.500	441.546	2.629	0.595	10	70	45	9E9
35.500	479.746	4.045	0.843	10	77	49	9E9
36.500	610.315	5.122	0.839	10	97	61	9E9
37.500	396.647	2.439	0.615	10	63	39	9E9
38.500	230.923	0.799	0.346	10	37	22	9E9
39.500	71.377	1.380	1.929	7	23	14	9E9
40.500	223.392	1.495	0.668	9	43	26	9E9
41.499	485.954	2.762	0.568	10	78	46	9E9
42.499	411.485	1.441	0.350	10	66	38	9E9
43.499	430.000	5.931	1.379	9	82	47	9E9
44.499	427.046	1.948	0.456	10	68	38	9E9
45.499	396.047	2.979	0.752	10	63	35	9E9
46.499	360.836	2.179	0.604	10	58	32	9E9
47.499	419.686	2.586	0.616	10	67	36	9E9
48.499	447.467	4.606	1.029	9	86	46	9E9
49.499	479.871	1.457	0.304	10	77	41	9E9

INPUT FILE: C:\TEMP\CPT-8.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	22.725	0.101	0.444	7	7	11	9E9
1.500	40.669	0.145	0.357	8	10	15	9E9
2.500	26.146	0.124	0.474	7	8	12	9E9
3.500	27.246	0.166	0.610	7	9	14	9E9
4.500	45.477	0.278	0.612	7	15	23	9E9
5.500	35.154	0.283	0.805	7	11	17	9E9
6.500	24.077	0.407	1.690	6	9	14	9E9
7.500	56.231	0.335	0.595	8	13	20	9E9
8.500	77.769	0.466	0.599	8	19	29	9E9
9.500	95.923	0.748	0.779	8	23	35	9E9
10.500	51.357	0.776	1.510	7	16	22	9E9
11.500	24.462	0.536	2.189	6	9	12	9E9
12.500	43.146	0.575	1.333	7	14	17	9E9
13.500	61.400	0.828	1.348	7	20	23	9E9
14.500	61.638	0.918	1.490	7	20	22	9E9
15.500	50.243	0.761	1.514	7	16	17	9E9
16.500	77.438	0.729	0.942	8	19	19	9E9
17.500	252.100	0.874	0.347	10	40	38	9E9
18.500	234.854	1.037	0.442	9	45	41	9E9
19.500	172.221	0.732	0.425	9	33	29	9E9
20.500	83.000	1.524	1.835	7	27	23	9E9
21.500	248.464	2.309	0.929	9	48	39	9E9
22.500	299.133	3.127	1.045	9	57	44	9E9
23.500	335.767	2.372	0.706	10	54	41	9E9
24.500	247.692	1.472	0.594	9	47	35	9E9
25.500	258.233	1.287	0.499	9	49	36	9E9
26.500	257.169	1.192	0.464	10	41	30	9E9
27.500	206.573	1.154	0.558	9	40	28	9E9
28.500	184.064	0.859	0.467	9	35	24	9E9
29.500	217.818	0.669	0.307	9	42	29	9E9
30.500	273.492	1.090	0.399	10	44	30	9E9
31.500	192.909	0.925	0.479	9	37	25	9E9
32.500	77.445	1.410	1.821	7	25	16	9E9
33.500	221.008	1.310	0.593	9	42	27	9E9
34.500	53.927	0.619	1.145	7	17	11	9E9
35.500	19.367	0.454	2.314	5	9	6	1.162
36.500	86.255	0.628	0.727	8	21	13	9E9
37.500	138.358	1.079	0.780	9	27	17	9E9
38.500	374.936	0.977	0.261	10	60	37	9E9
39.500	465.342	2.730	0.587	10	74	45	9E9
40.500	547.708	1.759	0.321	10	87	52	9E9
41.499	519.333	1.732	0.334	10	83	49	9E9
42.499	378.717	1.253	0.331	10	60	35	9E9
43.499	447.662	1.598	0.357	10	71	41	9E9
44.499	516.608	2.046	0.396	10	82	46	9E9
45.499	437.208	1.994	0.456	10	70	39	9E9
46.499	572.677	3.425	0.598	10	91	50	9E9
47.499	507.233	3.091	0.609	10	81	44	9E9
48.499	479.500	3.584	0.747	10	77	41	9E9
49.499	533.931	1.208	0.226	10	85	45	9E9

INPUT FILE: C:\TEMP\CPT-9.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	36.408	0.157	0.430	7	12	18	9E9
1.500	42.121	0.281	0.668	7	13	20	9E9
2.500	29.450	0.219	0.745	7	9	14	9E9
3.500	51.923	0.296	0.570	8	12	18	9E9
4.500	77.014	0.426	0.553	8	18	27	9E9
5.500	76.707	0.409	0.533	8	18	27	9E9
6.500	82.200	0.555	0.675	8	20	30	9E9
7.500	123.057	1.214	0.986	8	29	44	9E9
8.500	157.247	1.929	1.227	8	38	57	9E9
9.500	166.062	1.785	1.075	9	32	48	9E9
10.500	89.877	1.795	1.997	7	29	41	9E9
11.500	33.162	1.088	3.281	5	16	21	2.165
12.500	119.077	1.222	1.026	8	29	35	9E9
13.500	82.025	0.713	0.870	8	20	23	9E9
14.500	87.938	0.939	1.068	8	21	23	9E9
15.500	131.808	0.988	0.749	9	25	26	9E9
16.500	99.673	0.732	0.734	8	24	24	9E9
17.500	42.100	0.848	2.015	6	16	15	9E9
18.500	86.855	0.674	0.776	8	21	19	9E9
19.500	35.890	0.591	1.646	7	11	10	9E9
20.500	12.791	0.397	3.108	4	8	7	0.768
21.500	234.617	2.310	0.985	9	45	36	9E9
22.500	466.979	5.727	1.226	9	89	69	9E9
23.500	429.047	3.756	0.875	10	68	51	9E9
24.500	355.054	1.911	0.538	10	57	42	9E9
25.500	394.093	2.373	0.602	10	63	46	9E9
26.500	305.350	1.404	0.460	10	49	35	9E9
27.500	311.136	1.804	0.580	10	50	35	9E9
28.500	287.050	1.554	0.541	10	46	32	9E9
29.500	273.486	1.922	0.703	9	52	36	9E9
30.500	404.927	3.012	0.744	10	65	44	9E9
31.500	329.314	2.288	0.695	10	53	35	9E9
32.500	312.186	0.928	0.297	10	50	33	9E9
33.500	371.980	1.369	0.368	10	59	38	9E9
34.500	300.336	0.947	0.315	10	48	30	9E9
35.500	248.100	1.529	0.616	9	48	30	9E9
36.500	407.738	4.661	1.143	9	78	48	9E9
37.500	438.100	3.661	0.836	10	70	43	9E9
38.500	330.915	1.274	0.385	10	53	32	9E9
39.500	324.693	1.501	0.462	10	52	31	9E9
40.500	315.464	3.371	1.069	9	60	35	9E9
41.499	445.046	2.938	0.660	10	71	41	9E9
42.499	438.292	2.483	0.567	10	70	40	9E9
43.499	427.877	2.070	0.484	10	68	38	9E9
44.499	428.153	1.372	0.320	10	68	38	9E9
45.499	398.350	1.438	0.361	10	64	35	9E9
46.499	382.107	1.153	0.302	10	61	33	9E9
47.499	366.993	1.382	0.377	10	59	32	9E9
48.499	186.807	1.824	0.977	9	36	19	9E9
49.499	492.021	1.176	0.239	10	79	42	9E9

R.T. Frankian - Old Road & Henry Mayo Drive
Santa Clarita, CA

Shear Wave Measurements

	Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)	
	CPT-1					
	5.08	7.13	6.96	1024.12		
	12.12	13.11	14.33	914.92	811.80	
	15.03	15.84	16.75	945.66	1127.69	
Qt	20.12	20.73	20.89	992.43	1181.67	
	25.00	25.50	24.99	1020.21	1161.74	
	30.03	30.44	30.20	1008.06	949.77	
	34.99	35.35	34.38	1028.08	1172.74	AVE
	39.95	40.27	38.66	1041.53	1149.58	1079.28
	CPT-2					
	5.12	7.16	7.88	908.18		
	10.01	11.19	13.49	829.45	718.87	
Qt	15.41	16.20	18.45	878.10	1010.40	
	20.16	20.77	22.57	920.28	1109.20	
	30.01	30.42	31.81	956.42	1044.69	AVE
	32.03	32.42	33.75	960.53	1027.96	982.22
	CPT-6					
	5.06	7.11	13.33	533.65		
	10.12	11.29	19.81	569.80	644.16	
	15.21	16.01	28.44	562.97	547.27	
Qal	20.06	20.67	36.91	560.11	550.53	
	25.02	25.51	44.70	570.80	621.43	
	29.99	30.40	53.81	565.02	536.69	
	35.05	35.40	62.15	569.67	599.63	
	40.00	40.31	68.69	586.86	750.22	
	45.06	45.34	75.57	599.93	730.42	
	50.14	50.39	81.92	615.10	795.61	
	CPT-8					
	7.26	8.82	15.22	579.18		
	10.06	11.23	18.33	612.88	777.76	
	15.01	15.82	25.32	624.84	656.20	
	20.04	20.65	32.08	643.84	715.01	
Qal	25.02	25.51	38.35	665.31	775.18	
	30.05	30.46	46.07	661.24	640.99	
	35.12	35.47	53.76	659.86	651.63	
	40.05	40.36	59.50	678.33	851.35	
	45.09	45.37	65.42	693.46	845.52	
	50.06	50.31	69.59	722.94	1185.30	

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

Old Rd & Magic Mtn Pkwy
Santa Clarita,CA

CPT-3

CPT Shear Wave Measurements

Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
5.35	7.32	6.86	1067.45	
10.27	11.42	9.64	1184.90	1474.72
15.35	16.14	12.57	1284.31	1611.38
20.25	20.86	15.93	1309.36	1403.08
25.22	25.71	19.39	1325.99	1402.52
30.44	30.85	23.84	1293.96	1154.39
35.10	35.45	27.11	1307.80	1408.69
40.26	40.57	30.01	1351.86	1763.78
45.18	45.46	32.79	1386.27	1757.75
50.42	50.67	36.85	1374.96	1283.62
55.09	55.32	41.40	1336.15	1021.79

AVE
1428.17

Shear Wave Source Offset = 5 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

CPTCP.TBL - CPTINT Correlation and Parameters Table File
----------with NOTES & References at end----------

Program: CPTINT - CPT Cone Interpretation Program
Version: 5.2
Table File by: Dr. R. G. (DICK) Campanella, P.Eng.
Rev. Dated: April 3, 2002

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Depth average see NOTE #1	Depth averaged over specified range (see menu)		All	All
Parameter Averaging	Averaged over range specified for depth. If no values exist, your choice is zero's or no value		All	All
Qc, Tip Stress	measured tip force/area	#6,#8	All	All
Qt corrtd for U2 see NOTE #2	Qt = Qc + (1 - a) x U2 and a = tip area ratio. Defaults to U2 if given or uses U1 or U3 times Const.	#6,#8	All	All
[Note: Input value from input file is used if defined, not calculated]				
Q (Qt Normalized)	$Q = \frac{Qt - sv}{sv'}$	#9 & 13	All	All
Fs	measured sleeve force/area	#6,#8	All	All
Rf Friction Ratio (if Rf>8, Rf=8)	$Rf = \frac{Fs}{Qt} \times 100\%$	#6,#8	All	All
F (Rf Normalized)	$F = \frac{Fs}{(Qt - sv)} \times 100\%$	#9 & 13	All	All
Gamma Total Unit Weight (Soil + Water) see NOTE #3	Based on Rf or Bq Classif. Zone Zone # — Gamma = kN/m^3 1 — Qt<4bar — 15.70 1 — Qt=4bar — 17.30 2 — Rf<5% — 13.36 2 — Rf=5% — 11.80 2 — Bq Zone — 12.58 3 — Qt<10bar — 18.86 3 — Qt=10bar — 19.65 4, 5 & 6 — Qt<20bar — 18.86 4, 5 & 6 — Qt=20bar — 19.65 7 — 18.86 8 & 9 — 19.65 10 — 20.44 11 & 12 — 21.22		All	All

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
U Penetration Pore Pressure see NOTE #4	U1,measured on Face of tip U2,measured Behind Tip at shoulder (std location) U3,measured Behind Friction Sleeve		All	All
Water Table	Depth below ground surface to where pore pressure = 0 Make negative if water level is above ground		All	All
Uo Hydrostatic Pore Pressure see NOTE #4	Uo = water depth,Hw x unit weight water, Gamma or Uo=Hw=depth-depth to water table if depth<water table,Uo = 0		All	All
dU Excess Pore Pressure	dU = U2 - Uo Defaults to U2 if given or uses U1 or U3 x const.		All	All
DPPR (Differential Pore Pressure Ratio)	$DPPR = \frac{dU}{Qt} = \frac{U - Uo}{Qt}$ Defaults to U2 if given or uses U1 or U3 x const.	#6,#8	All	All
Bq	$Bq = \frac{dU}{Qt - sv}$	# 4 # 8 # 13	All	All
OS (Overburden Stress)	OS = sv = S (Gamma x Depth)		All	All
EOS (Effective Overburden Stress)	EOS = sv' = OS - Uo = sv - Uo		All	All
Rf Zone Soil Behavior Type see NOTE #5	Classification chart for Qc and Rf Zone # = Soil Behavior Type 1=sensitive fine grained 2=organic material 3=clay 4=silty clay 5=clayey silt 6=sandy silt 7=silty sand 8=fine sand 9=sand 10=gravelly sand 11=very stiff fine grained ¥ 12=sand to clayey sand ¥ ¥ overconsolidated or cemented	#6 #8, Fig4.3	All	1<Qt<1000bar 0<Rf<8%

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Bq Zone Soil Behavior Type	Classification chart for Qc and Bq (same zone #'s as Rf above)	#8 Fig 4.3	All	0<Qt<1000bar -0.1<Bq<1.4
Spt N(60) Standard Penetration Test (Blows/foot) at 60% Energy After R&C(1983) see NOTE #6	Qt/N ratio per zone Zone # Qt/N Zone # Qt/N 1 2 7 3 2 1 8 4 3 1 9 5 4 1.5 10 6 5 2 11 1 6 2.5 12 2	# 7 # 8 Fig 4.2	All	All
Spt N1(60) Normalized for Overburden str	Spt N1(60) = Cn x Spt N(60) where Cn = (sv')^(-0.77)	# 8	All	0.5<Cn<1.5
Dr Relative Density see NOTE #7	Specific Sands: $Dr = \frac{100}{C2} * \ln\left(\frac{Qc}{C1 + C0\ sv'}\right)$ where: All are NC & UNAGED Sand / C0 / C1 / C2 Ticino / 17.37 / .558 / 2.58 Schmertmann / 15.32 / .520 / 2.75	# 8 # 1 # 1	/ Sand-- \	7 to 10 0<Qt<500bar 0<sv'<5bar
Compressibility moderate high all	ALL SANDS: NC, OC, ALL TESTS $Dr = C3 + C4 \log_{10}\left(\frac{Qc + C1}{sv' + C2}\right)$ where: C0 / C1 / C2 / C3 / C4 0.100 / 0.0981 / 0.5 / -98 / 66	# 5	Sand	7 to 10 (6 possible)
Phi Friction Angle	Methods: 1) Robertson & Campanella 2) Durgunoglu & Mitchell 3) Janbu beta = +15 degree 4) Janbu beta = 0 degree 5) Janbu beta = -15 degree	#6, #8 # 2 #6, #8 #6, #8 #6, #8	/ Sand-- \	7 to 10 & 6 0<Qt<500bar 0<sv'<4bar 29<phi<49

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Gmax Maximum Shear Modulus at very small strains	Clay: Gmax = alpha x Qt Sand: Digitized figure of Qc vs Gmax with interpolation between sv'curves,R&C method	# 8 Fig4.18 # 6 # 8 Fig4.13	Clay Sand	1 to 6 (6 possible) 7 to 10 .25<sv'<8bar
CSR(Qc), t/s LEVEL ground Liquefaction SAND Resistance see NOTE #8	Seed's CSR vs N1(60) graph for specified equake Magnitude.Can include silty sand corr. for Zone 7. N1(60) from CPT correlations.	# 11 # 12	Sand	7 to 10 (6 possible)
CSR(Eq), t/s Cyclic Stress Ratio applied by design quake	$CSR(Eq) = 0.65 \frac{Amax}{g} \frac{sv}{svo'} rd$ Amax=max surface acceleratn including Amplification	# 12 # 3	Sand	7 to 10 (6 possible)
[Note: Input value from input file is used if defined, & not calculated]				
rd Reduction Factor to find CSR(Eq)	Digitized graph to use for depth vs rd: 1) Seed's mean 2) Fraser Delta	# 12 # 3	Sand	(6 possible) 7 to 10 0<depth<30m
FL,Safety Factor against Liquefaction	FL = CSR(Qc)/CSR(Eq)	# 3	Sand	7 to 10 (6 possible)
Qcr Critical Bearng required to resist Liquefctn	Qcr backcalculated from CSR(Eq) for a specified FL. Qcr is only for the given GWT,EOS,OS,Amax/g & Eq.Mag	# 12	Sand	7 to 10 (6 possible)
Su, Undrained Shear Strength of CLAY METHODS: see NOTE #9	Nk: $Su = \frac{Qc - st}{Nk}$ Nke: $Su = \frac{Qt - U2}{Nke}$ Nkt: $Su = \frac{Qt - sv}{Nkt}$ Nc: $Su = \frac{Qt}{Nc}$ NdU: $Su = \frac{dU2 \text{ (dU1 or dU3)}}{NdU}$	# 8	Clay Clay Clay Clay Clay	1 to 6 1 to 6 1 to 6 1 to 6 1 to 6

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Su/EOS	$Su/EOS = \frac{Su}{sv'}$	# 8	Clay	1 to 6
Ko (NC) Normally Consolidated	$(Ko)NC = 1 - \sin(f)$ see NOTE #10	# 8	Sand	7 to 10 (6 possible)
Ko (OC) Over Consolidated	$(Ko)OC = (Ko)NC \times OCR^{0.42}$	# 8	Sand	7 to 10 (6 possible)
E25 Youngs Modulus	E25 = alpha x Qt where user input alpha	# 8 4.11&12	Sand	(6) 7 to 10 0<Qt<500bar
M Constrained Modulus	CLAY: M = alpha x Qt where user input alpha SAND: Methods: Qt: M = alpha x Qt Baldi: $\frac{M}{Qt} = C0 \times pa \left(\frac{sv' + C1}{pa}\right)^{C2} \times OCR^{C3 Dr}$	# 8 Tabl4.3 Sand # 8 Fig4.10 Sand	Clay Sand Sand	1 to 6 7 to 10 (6 possible) 7 to 10
OCR (Clay) Over-Consolidation Ratio see NOTE #11	$OCR = \left(\frac{Su}{svo'} \Big/ \left(\frac{Su}{svo'} + NC\right)\right)^{1.25}$	# 6 # 8 Fig4.19	Clay	1 to 6
Ic Material Index After J&D(1993) see NOTE #18	$Ic = \left[(3 - \log_{10}(Q(1-Bq)))^2 + (1.5 + 1.3\log_{10} F)^{2+0.5}\right]^{0.5}$	# 13 # 17	All	All
Spt N(60) Standard Penetration Test (Blows/foot) at 60% Energy After J&D(1993) see NOTE #16	$Qc/N = 8.5(1-(Ic/4.75))$ where Qc in bars	# 13	All	All

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
State Parameter State, (e-units) Current Void Void Ratio minus Critical Void Ratio	$State = \ln\left[\frac{3M + 8.5M/F}{Q(1-Bq)}\right] + \frac{}{11.9 - 1.33F}$ $M = \frac{6 \sin fcv}{3 - \sin fcv}$ fcv = const. vol. Phi angle	# 14	All	All
Fines Content FC(%) Percent less than #200 Sieve After Davies,99	FC(%) = 42.4179(Ic) - 54.8574 FC(%) = 0% if Ic < 1.2933 FC(%) = 100% if Ic > 3.6508	# 15	All	All
OCR (Clay) Overcons. Ratio by Pore Press. U1 & U2 or U1 & U3 see NOTE #17	OCR = 0.5 + 1.50(PPD) PPD = (U1 - U2)/Uo or PPD = (U1 - U3)/Uo and default 0.5 & 1.5 are settable	# 16	Clay	1 to 6

1. Depth averaging may be in 0.5, 1, 2.5 or 5 ft. intervals or 0.1, 0.25, 0.5 or 1.0 m intervals, or no depth averaging if zero is selected. The average is the mean value of the readings in the interval. The depth value is the mid-depth of the averaged interval. It is convenient to start at half the depth averaging interval. For example, if you want "even" depths and the depth averaging is set at 0.50 m then start at 0.25 to get values of depth of 0.5, 1.0, 1.5, etc.

2. Basic input CPTU data columns are for Depth, Qc, Fs, U1, U2, U3, INC and TEMP may be selected. In addition the following parameters may also be specified as an INPUT data column: Qt, Gamma, Uo, Spt N, Rf Zone, Bq Zone and CSR(EQ). These values will be used where required to obtain other interpreted parameters. If they are not specified the program will estimate them when they are required. For example, you can create an OUTPUT data file of any of the above parameters and then edit some or all of the values to suite your measurements or your desires to specify their values. You can do that with "Gamma" values to input your measurements of unit weight, or with "Uo" if you want to input values of pore water pressure other than hydrostatic, or with any of the other input parameters. You would use your edited file of adjusted data as your new INPUT data file. Thus, you can specify these parameters if you want to override the Program's values.

You can also use the designated value of "9E9" to denote an unknown value.

You can use the "OTHER" designation to input other data that exists on your input file and identify its units. This allows you to output it, without operating on it, if you choose.

It is best NOT to use depth averaging when using input data that is not continuous at regular depth intervals. Always use DEPTH AVERAGING with extreme caution since the program averages ALL INPUT parameters over the interval chosen irregardless of soil type. Careful use of start and end depth choises can make depth averaging very effective.

3. Since there is no data in the file within the initial depth interval, a default Gamma (unit weight) must be specified from the surface to the starting depth. This is done in the "Param" Menu in units of kN/m^3 (1kN/m^3=6.36pcf). Also, you can specify the values of Gamma to be used by the program as in NOTE #2 above.

4. If pore pressures are not measured by the cone then the program will take Qc as being equal to Qt for all interpretations requiring Qt. Also, Uo may be specified in the input file as a column of Uo vs depth values, if the water pressures are not hydrostatic. See NOTE #2 for more info on customizing input data.

5. You can choose to use either the Rf classif. Zone or the Bq classif. Zone to divide soil into Undrained Parameters (Zones 1 to 6) and Drained Parameters (Zones 7 to 10) in the "Param" Menu. (However, in order to use the Bq Zone you must have Pore Pressure, U2, data.) Also, you may choose to switch Zone 6 to a Drained Zone from its Undrained Zone status. This is done if you feel that the soil identified as Zone 6 (sandy silt) is really coaser (using other sources of information) and/or you want it analyzed as a Drained rather than Undrained soil. Finally, the soil behavior names in each zone were shortened in version 5.0 for simplicity. For example, Zone 6 was named "sandy silt to clayey silt" but was shortened to "sandy silt".

6. Spt N is the same as Spt N(60) for 60% transferred energy. This value is calculated from the Qt/N ratios given for each Soil Zone (you can specify either Rf or Bq Zone) and these values are used in the Level Ground Liquefaction analysis. Values of Spt N may be specified in the Input File, if indepedently measured values are to be used. We suggest that you not use depth averaging if you only have selected Spt N values at a few depths. You may use "9E9" for missing data.

7. If Dr values are negative then soil is very loose or likely more of an undrained soil like a silty sand rather than a drained soil for which the Dr correlations were developed. Use Dr interpretations very cautiously since they also assume the soil is free draining, uncemented, unaged and has the same compressibility of grains as the soil used for the correlations in chamber calibration tests.

8. The simplified sand liquefaction analysis for level ground according to Seed et al requires Spt N1(60) and earthquake magnitude to obtain the cyclic stress ratio to cause liquefaction, CSR(Qc). The design maximum ground acceleration, the depth-reduction factor, Rd, and overburden total and effective stresses are required to calculate the cyclic stress ratio applied by the design earthquake, CSR(EQ). The program estimates the N1(60) values from the cone stresses, the operator identifies the earthquake magnitude and Seed et al chart is used to get CSR(Qc). The program also calculates CSR(EQ) from the user specified maximum ground acceleration including any amplification factors, the calculated overburden stresses and either Seed's mean or the Fraser Delta Rd factor. The Fraser Delta is used only when amplification factors of the order of 2 or more are used. See Reference Nos. 3, 6, 11 and 12 for more information. The user can INPUT specific values for Spt N, CSR(EQ), Soil Zones, Gamma's, etc. in order to customize the analysis for the existing data base of information. It is recommended that you do not use depth averaging when using specific input data but make calculations at specific depths where external input data exists. The calculated value of Qcr is the minimum value of cone bearing stress required at a given depth such that the factor of safety against liquefaction, or the ratio FL = CSR(Qc)/CSR(EQ) have the specified value for a given earthquake magnitude, max. ground acceleration, depth reduction factor, and calculated overburden stresses. This value of Qcr is useful to identify the required minimum level of soil improvement for a given design condition.

9. The NdU method to calculate undrained shear strength has been extended to allow the user to choose either dU1, or dU2 or dU3 provided such pore pressure measurements exist.

10. The Overconsolidation Ratio, OCR, for the sand must be estimated by the user in the "Param" menu if you want to estimate Ko in the sand layers. For the typical normally consolidated sand, OCR = 1.0.

11. It is currently only possible to estimate the OCR for a clay, which makes use of the correlations obtained from extensive laboratory tests.

12. An improved calculation and print routine was added to version 5.0 which uses swap routines to reduce memory requirements, but slows down the calculations.

13. The classification charts for Rf has been extended at all boundaries such that values of Rf>8 and values of Qc<1.00 are possible. The Bq classification chart which requires dU2 and can now accept values of Bq>1.2 and Qt<1. Unfortunately, this feature does not work.

14. Version 5.1ppd added several enhancements to the program. You may input an average vertical flow gradient, which is applied over the entire profile depth to be analysed so adjust the depth of interest accordingly. Zero gives hydrostatic and no flow, a negative gradient is upward flow which increases pore pressure and reduces vertical effective stress. A positive gradient gives downward flow.

15. A State Parameter or current void ratio minus critical void ratio is calculated according to the paper by Ref. 14, Plewes, Davies and Jefferies, 1994.

16. An alternate method to estimate SPT from CPT is provided according to Ref. 13, Jefferies and Davies, 1993 in ASTM.

17. An alternate method to estimate OCR in clays is provided which uses the measured pore pressure difference, ppd, so both U1 and U2 or U1 and U3 must be measured at the same time. (see Ref. 16)

18. Version 5.2 added the value Ic (Material Index) according to Jefferies & Davies, 1993, 1991 (Ref. 13 & 17) which combines all Normalized parameters Q, F and Bq.
(Note: QtN was changed to Q and RfN to F.)

18A. In Version 5.2, if at any depth the value of Bq>1 (in very sensitive saturated soil)then Bq is made equal to 0.99. Also, if Rf>8 it is made 7.99. These changes have a negligable effect on the results.

19. FC(%) or percent of dry weight less than #200 sieve (.074mm) was also added according to Davies, 1999 Ref.#15)

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Newhall Land and Farming Company
April 6, 2007
2004-700-22

APPENDIX B

LABORATORY TESTS

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

APPENDIX B

LABORATORY TESTS

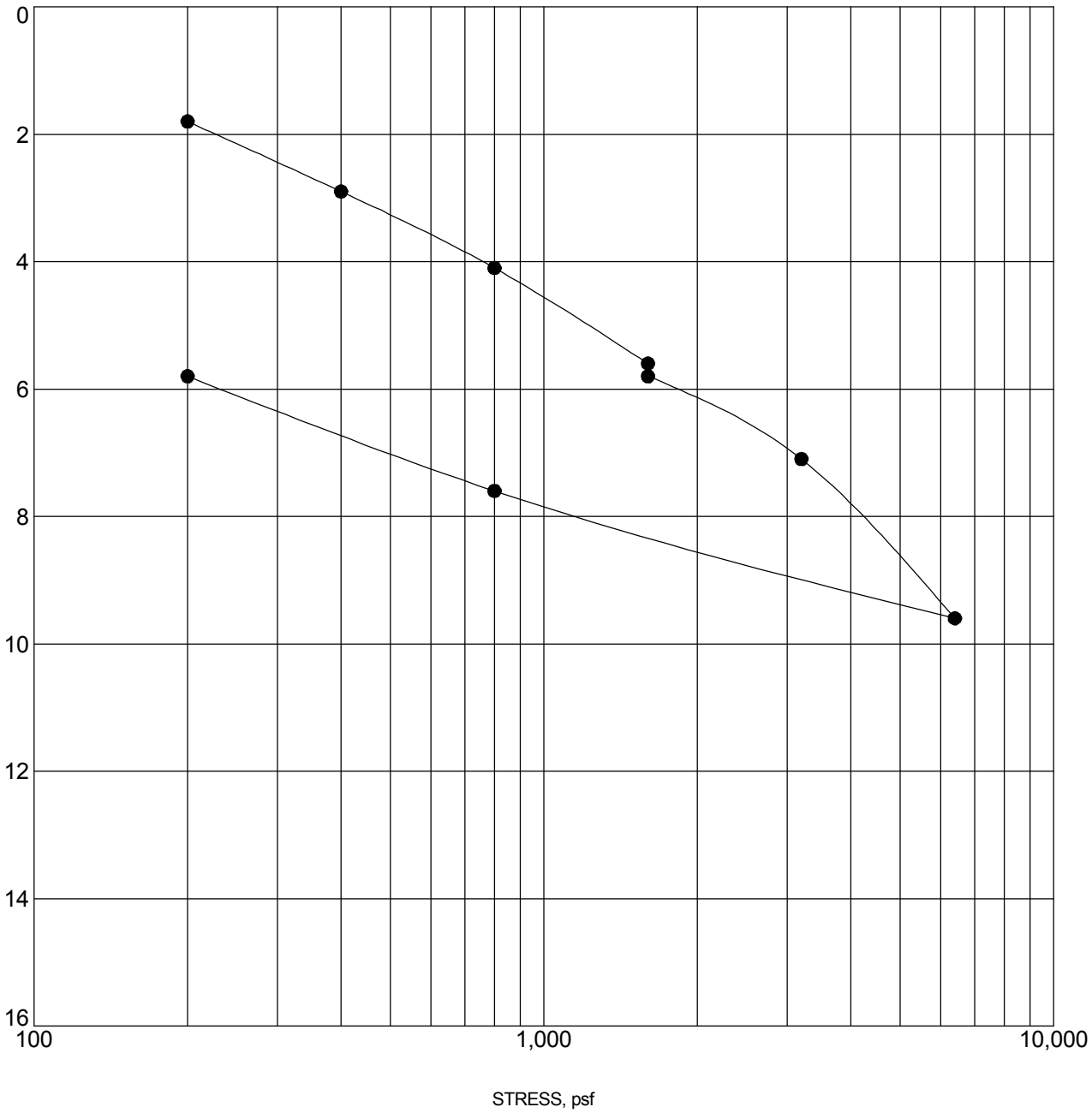
Laboratory tests were performed during current investigation on selected samples obtained from the borings to evaluate their engineering characteristics.

The field moisture content and dry density of the soils encountered were determined by performing tests on the undisturbed samples. The results of the tests are presented on the boring logs in Appendix A.

Confined consolidation tests were performed on undisturbed samples. Water was added during the tests to each of the samples to illustrate the effect of moisture on the compressibility. The results of the tests are presented on Consolidation Test Data.

Atterberg Limit's tests were performed on selected disturbed samples obtained from the borings. The results of the tests are presented on the boring logs in Appendix A.

The gradation of selected samples was determined by performing mechanical (sieve) and hydrometer analyses. The results of the tests are presented on Gradation Test Data, in this Appendix. The percentages of particles passing the No. 4 and No. 200 U. S. Standard sieves are presented on the boring logs in Appendix A.



Water added at 1600 psf

Specimen Identification		Classification
●	**WB-9 20.0'**	**SILT (ML)**

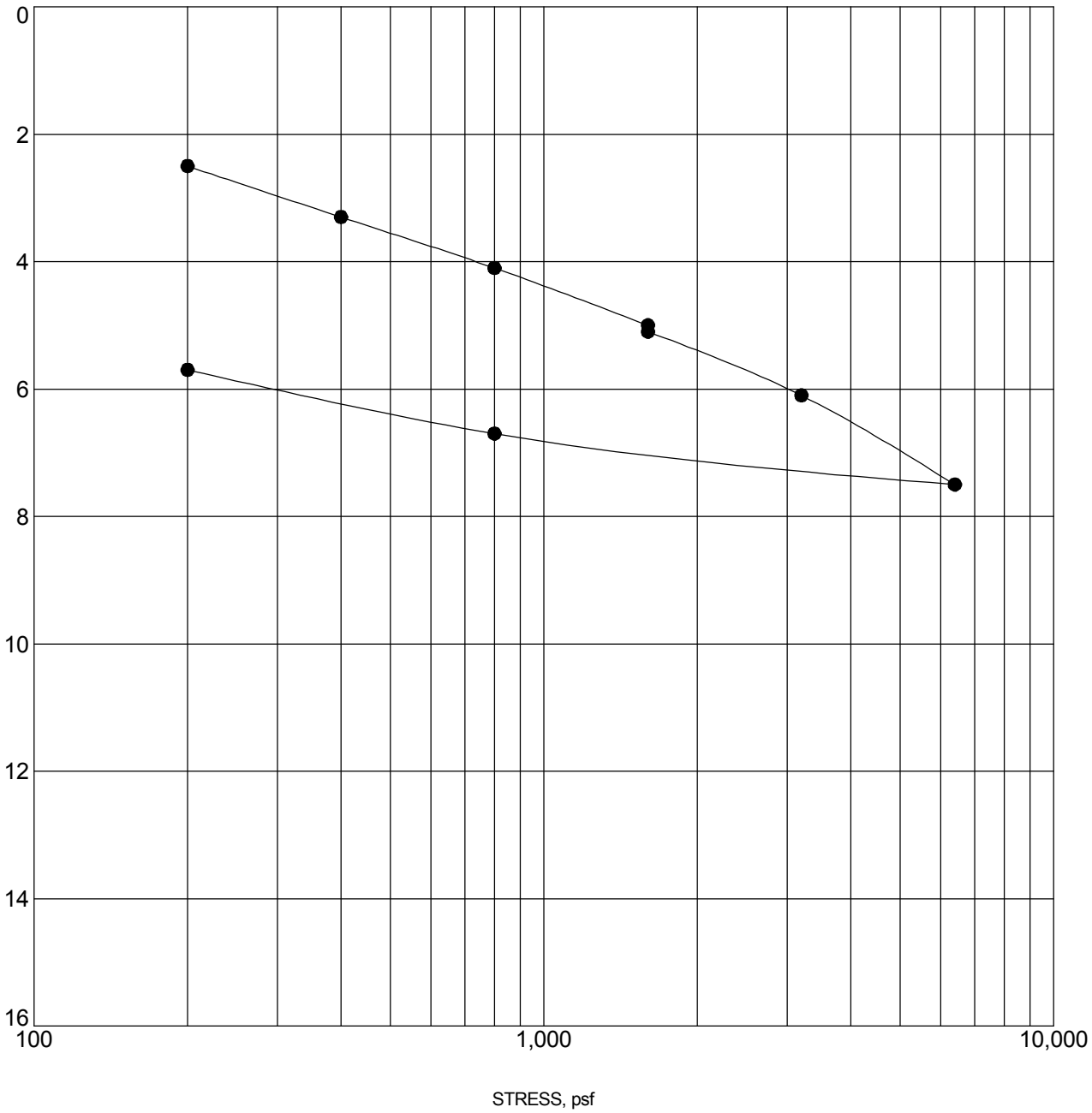
R. T. Frankian & Associates
1329 Scott Road
Burbank, Ca 91504
Telephone: (818) 531-1501
Fax: (818) 531-1511

CONSOLIDATION TEST

JOB NUMBER: 2004-700-22

REPORT DATED: 04-06-2007

US CONSOL STRAIN 2004-700-22.GPJ FRANKIAN.GDT 4/4/07



Water added at 1600 psf

Specimen Identification		Classification
●	**WB-10 15.0'**	**SANDY SILT (ML)**

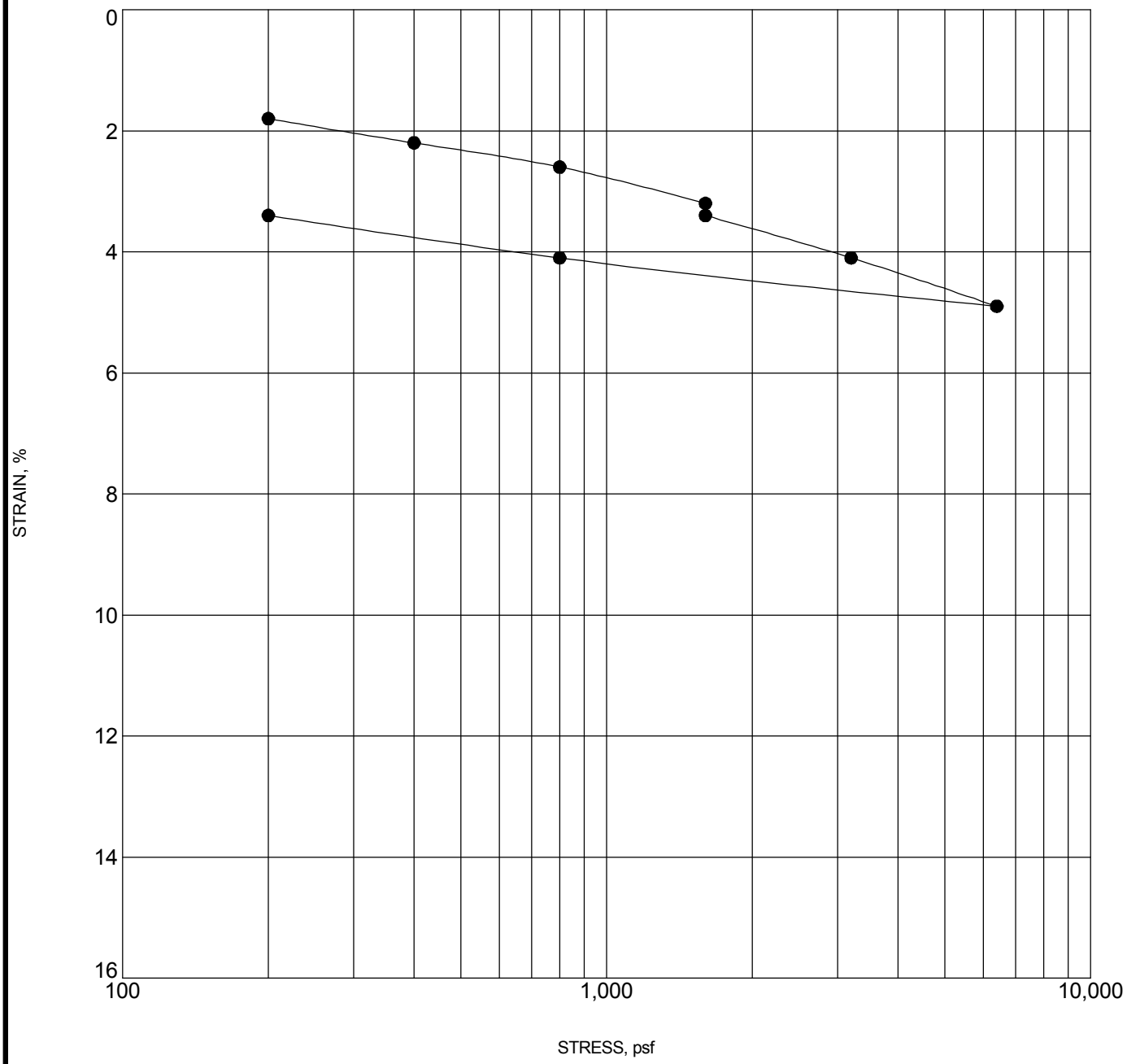
R. T. Frankian & Associates
1329 Scott Road
Burbank, Ca 91504
Telephone: (818) 531-1501
Fax: (818) 531-1511

CONSOLIDATION TEST

JOB NUMBER: 2004-700-22

REPORT DATED: 04-06-2007

US CONSOL STRAIN 2004-700-22.GPJ FRANKIAN.GDT 4/4/07



Water added at 1600 psf

Specimen Identification		Classification		
●	**WB-13 12.0'**	**SILTY SAND (SM)**		

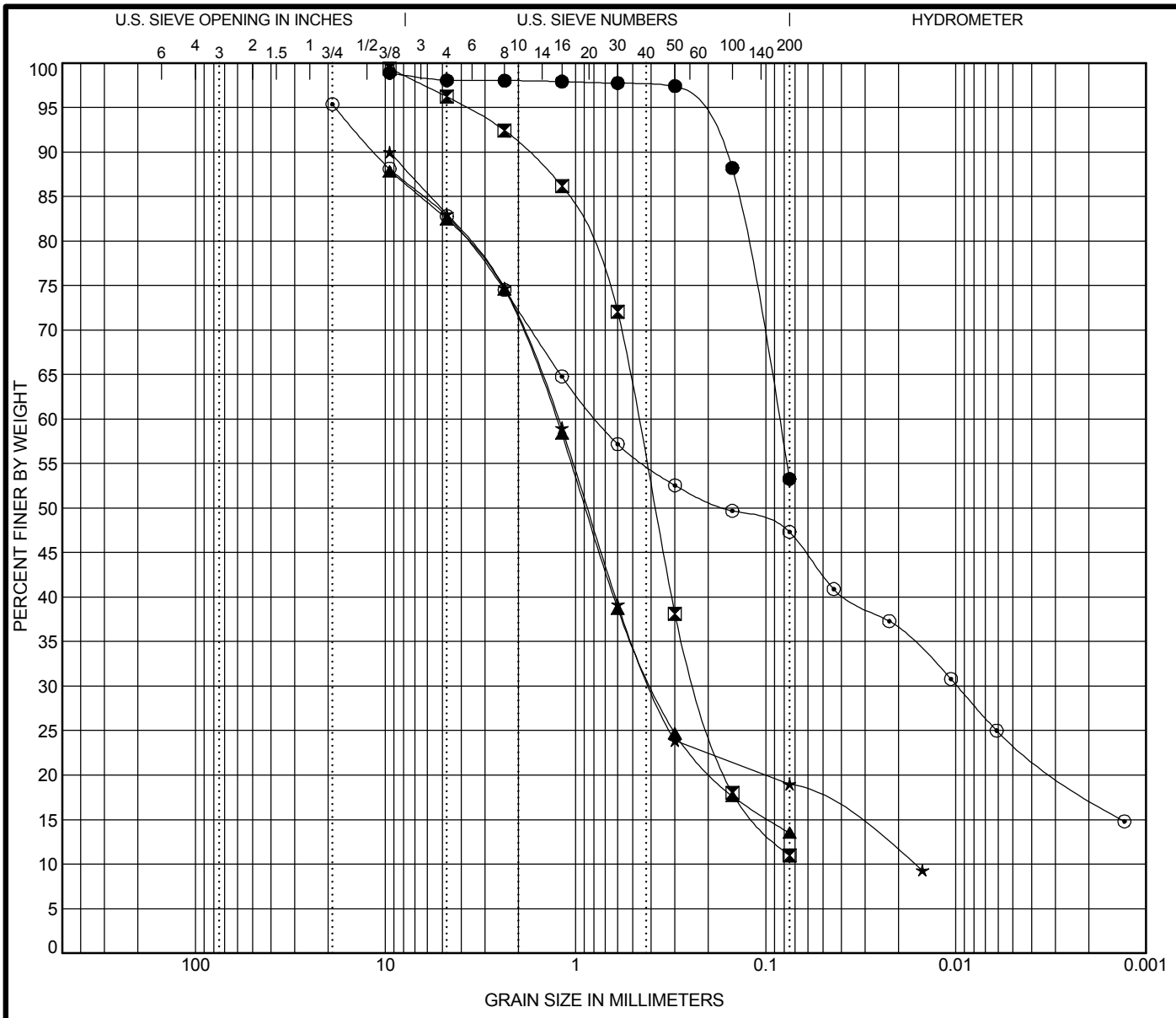
R. T. Frankian & Associates
1329 Scott Road
Burbank, Ca 91504
Telephone: (818) 531-1501
Fax: (818) 531-1511

CONSOLIDATION TEST

JOB NUMBER: 2004-700-22

REPORT DATED: 04-06-2007

US CONSOL STRAIN 2004-700-22.GPJ FRANKIAN.GDT 4/4/07



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB-1**	**10.0**	**SANDY SILT (ML)**					
⊠	**WB-1**	**15.0**	**SILTY SAND (SM)**				**1.61**	**6.89**
▲	**WB-1**	**20.0**	**SILTY SAND (SM)**					
★	**WB-1**	**25.0**	**SILTY SAND (SM)**				**7.54**	**73.10**
⊙	**WB-1**	**30.0**	**CLAYEY SAND (SC)**	**51**	**25**	**26**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB-1**	**10.0**	**9.5**	**0.086**			**0.8**	**44.8**	**53.3**	
⊠	**WB-1**	**15.0**	**9.5**	**0.469**	**0.227**		**3.2**	**85.3**	**11.0**	
▲	**WB-1**	**20.0**	**9.5**	**1.265**	**0.39**		**5.4**	**68.9**	**13.5**	
★	**WB-1**	**25.0**	**9.5**	**1.233**	**0.396**	**0.017**	**7.0**	**64.0**	**19.0**	
⊙	**WB-1**	**30.0**	**19**	**0.77**	**0.01**		**12.6**	**35.5**	**23.6**	**23.7**

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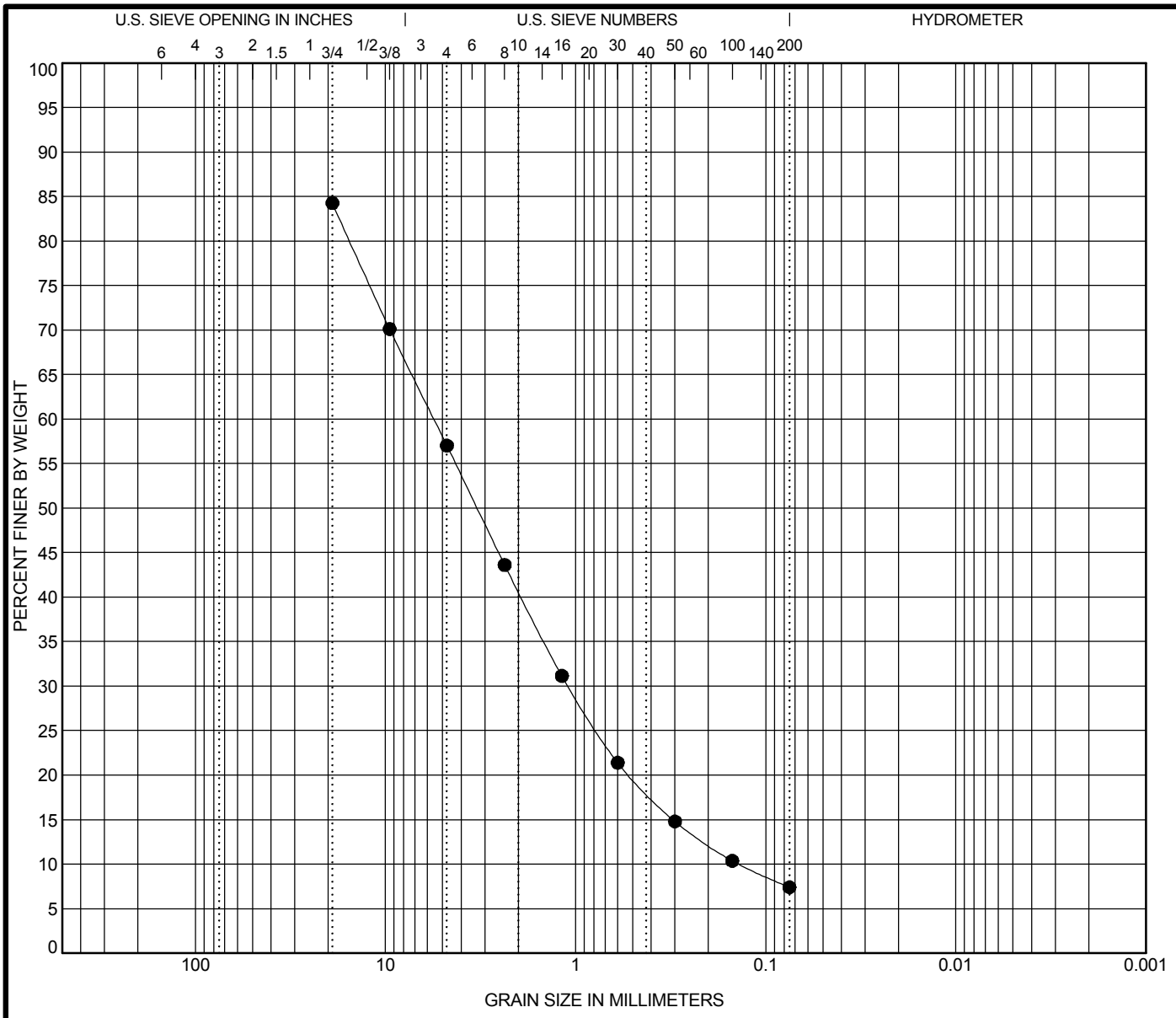

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB-1**	**35.0**	**WELL GRADED SAND WITH SILT (SW-SM)**				**1.55**	**40.32**

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB-1**	**35.0**	**19**	**5.561**	**1.09**	**0.138**	**27.3**	**49.6**	**7.4**	

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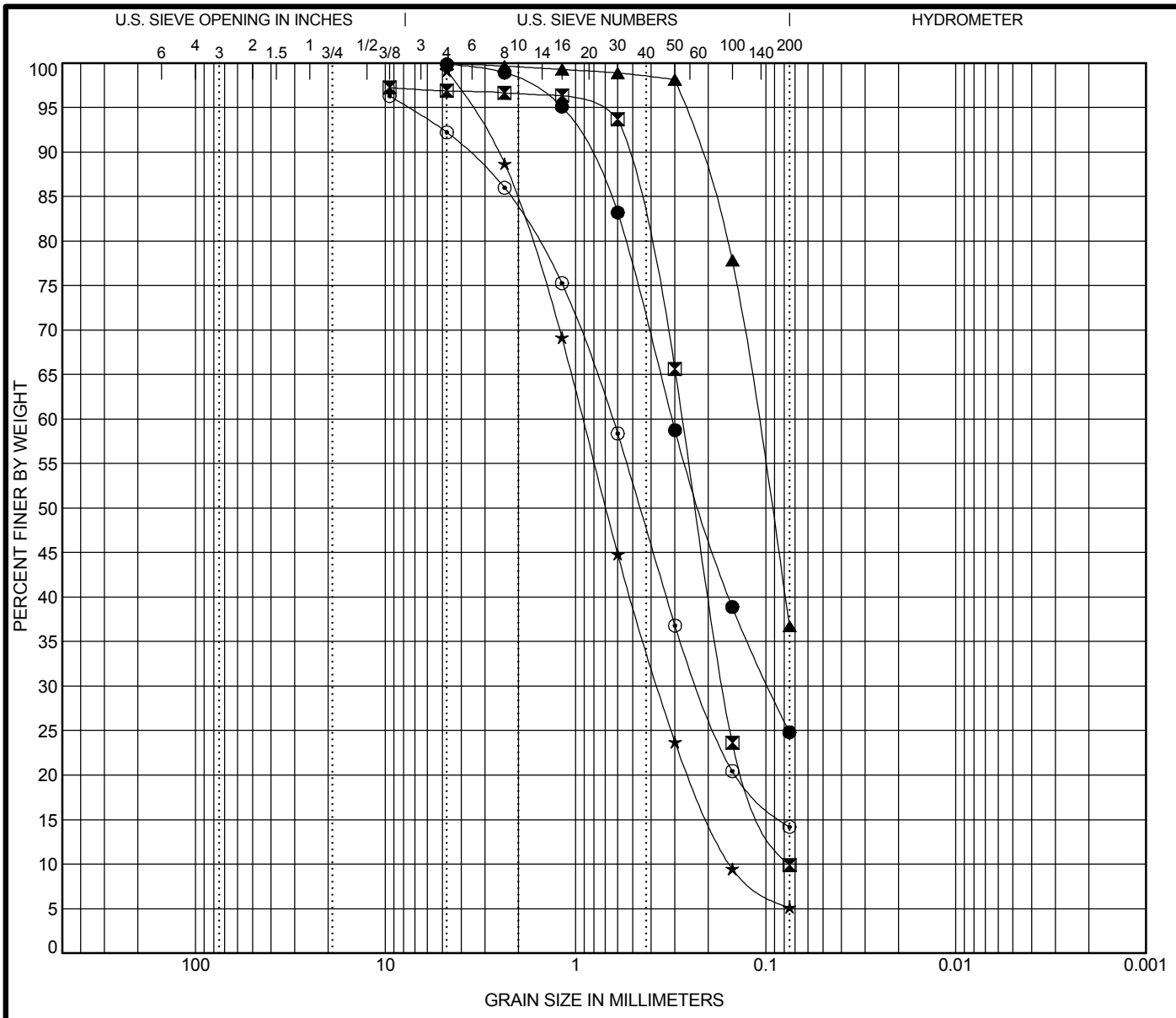

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	WB-2	10.0	SILTY SAND (SM)					
⊠	WB-2	15.0	SAND (SP-SM)				1.35	3.63
▲	WB-2	20.0	SILTY SAND (SM)					
★	WB-2	24.0	SAND (SP-SM)				0.97	5.94
⊙	WB-2	25.0	SAND (SM)					

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	WB-2	10.0	4.75	0.311	0.097			75.1	24.8	
⊠	WB-2	15.0	9.5	0.273	0.167	0.075	0.4	87.0	9.9	
▲	WB-2	20.0	4.75	0.111				63.2	36.7	
★	WB-2	24.0	4.75	0.915	0.369	0.154		94.0	5.1	
⊙	WB-2	25.0	9.5	0.64	0.225		4.1	78.0	14.2	

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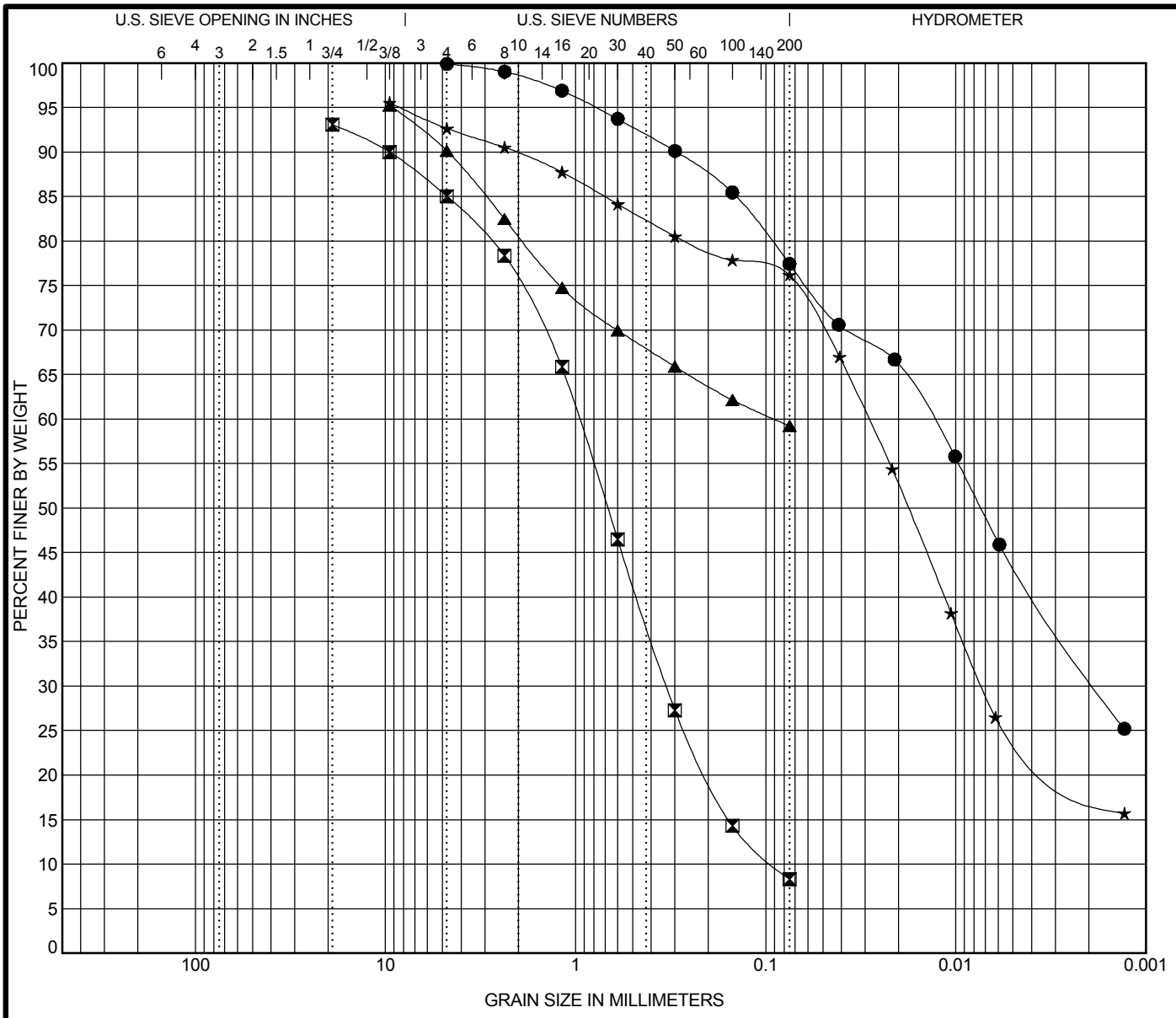

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB-2**	**30.0**	**CLAY (CH)**	**55**	**26**	**29**		
⊠	**WB-2**	**31.0**	**SAND (SW-SM)**				**1.25**	**10.53**
▲	**WB-2**	**35.0**	**CLAYEY SILT (ML)**					
★	**WB-2**	**40.0**	**SILTY CLAY (CL)**	**45**	**27**	**18**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB-2**	**30.0**	**4.75**	**0.013**	**0.002**			**22.5**	**33.8**	**43.6**
⊠	**WB-2**	**31.0**	**19**	**0.962**	**0.331**	**0.091**	**8.0**	**76.8**	**8.3**	
▲	**WB-2**	**35.0**	**9.5**	**0.09**			**5.1**	**30.9**	**59.2**	
★	**WB-2**	**40.0**	**9.5**	**0.029**	**0.007**		**2.9**	**16.4**	**51.2**	**25.0**

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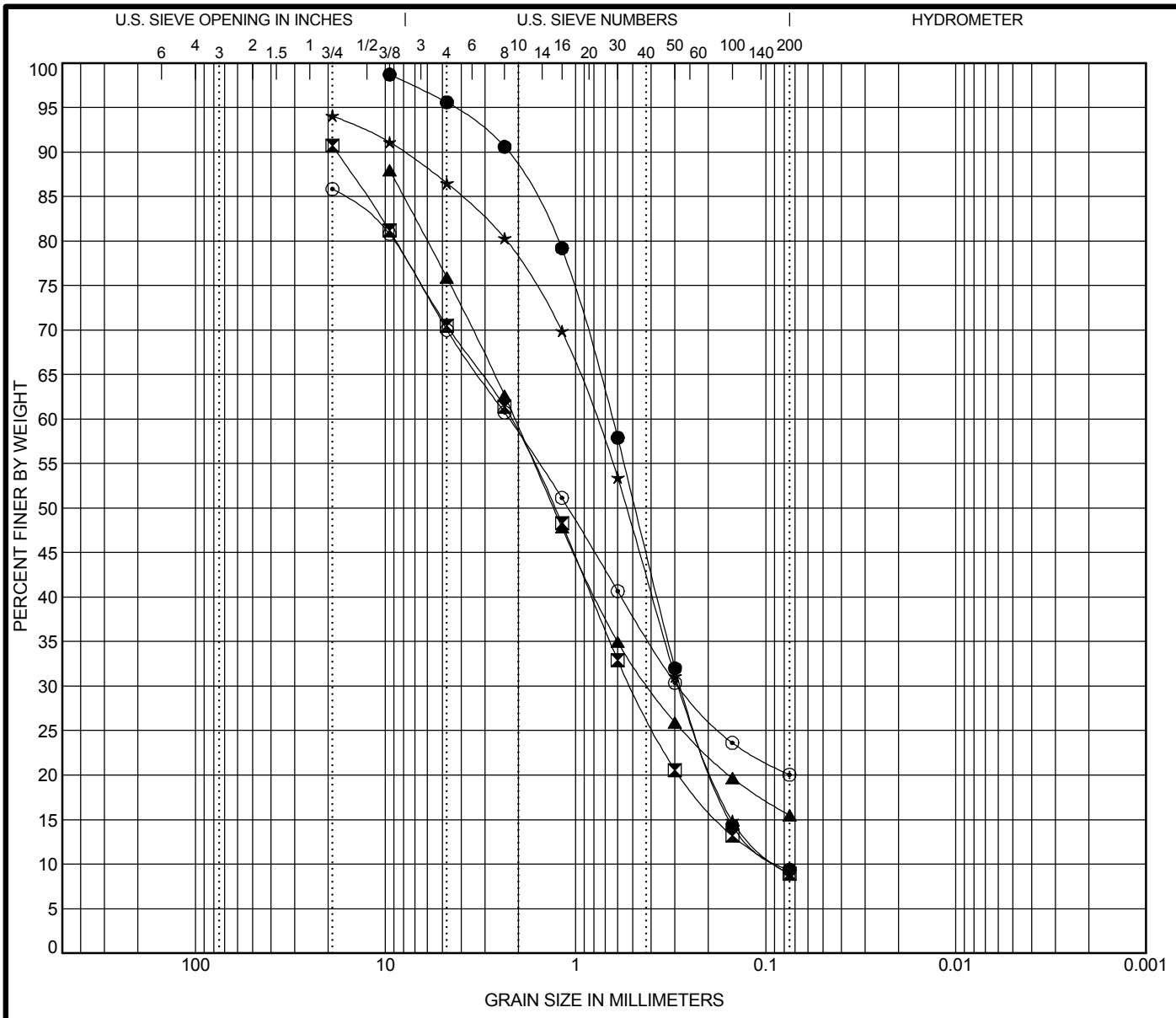

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB-3**	**10.0**	**SAND (SW-SM)**				**1.46**	**7.82**
⊠	**WB-3**	**25.0**	**SAND (SW-SM)**				**1.32**	**24.42**
▲	**WB-3**	**30.0**	**SILTY SAND (SM)**					
★	**WB-3**	**35.0**	**SAND (SW-SM)**				**1.22**	**9.17**
⊙	**WB-3**	**42.5**	**SILTY SAND (SM)**					

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB-3**	**10.0**	**9.5**	**0.641**	**0.277**	**0.082**	**3.1**	**86.2**	**9.4**	
⊠	**WB-3**	**25.0**	**19**	**2.192**	**0.51**	**0.09**	**20.2**	**61.6**	**8.9**	
▲	**WB-3**	**30.0**	**9.5**	**2.085**	**0.41**		**12.1**	**60.4**	**15.5**	
★	**WB-3**	**35.0**	**19**	**0.786**	**0.286**	**0.086**	**7.6**	**77.7**	**8.8**	
⊙	**WB-3**	**42.5**	**19**	**2.237**	**0.289**		**15.8**	**50.0**	**20.0**	

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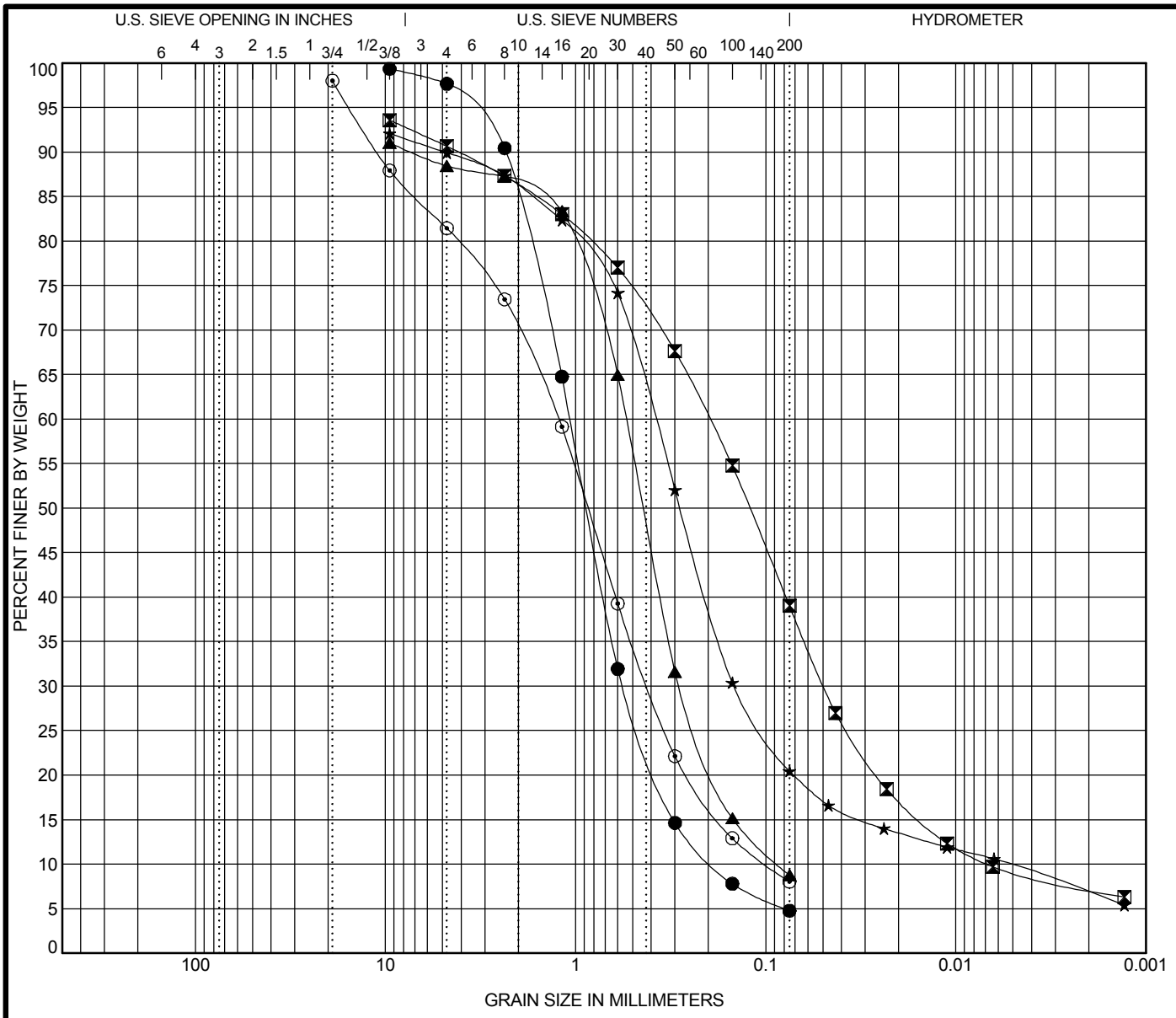

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB-4**	**16.5**	**POORLY GRADED SAND (SP)**				**1.54**	**5.70**
⊠	**WB-4**	**20.0**	**SILTY SAND (SM)**				**1.80**	**29.13**
▲	**WB-4**	**25.0**	**SAND (SW-SM)**				**1.69**	**6.30**
★	**WB-4**	**30.0**	**SILTY SAND (SM)**				**10.55**	**73.27**
⊙	**WB-4**	**35.0**	**SAND (SW-SM)**				**1.39**	**12.38**

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB-4**	**16.5**	**9.5**	**1.07**	**0.556**	**0.188**	**1.7**	**92.9**	**4.8**	
⊠	**WB-4**	**20.0**	**9.5**	**0.199**	**0.049**	**0.007**	**2.9**	**51.6**	**29.8**	**9.2**
▲	**WB-4**	**25.0**	**9.5**	**0.541**	**0.281**	**0.086**	**2.6**	**79.7**	**8.7**	
★	**WB-4**	**30.0**	**9.5**	**0.385**	**0.146**	**0.005**	**2.2**	**69.5**	**10.6**	**9.8**
⊙	**WB-4**	**35.0**	**19**	**1.23**	**0.413**	**0.099**	**16.6**	**73.4**	**8.0**	

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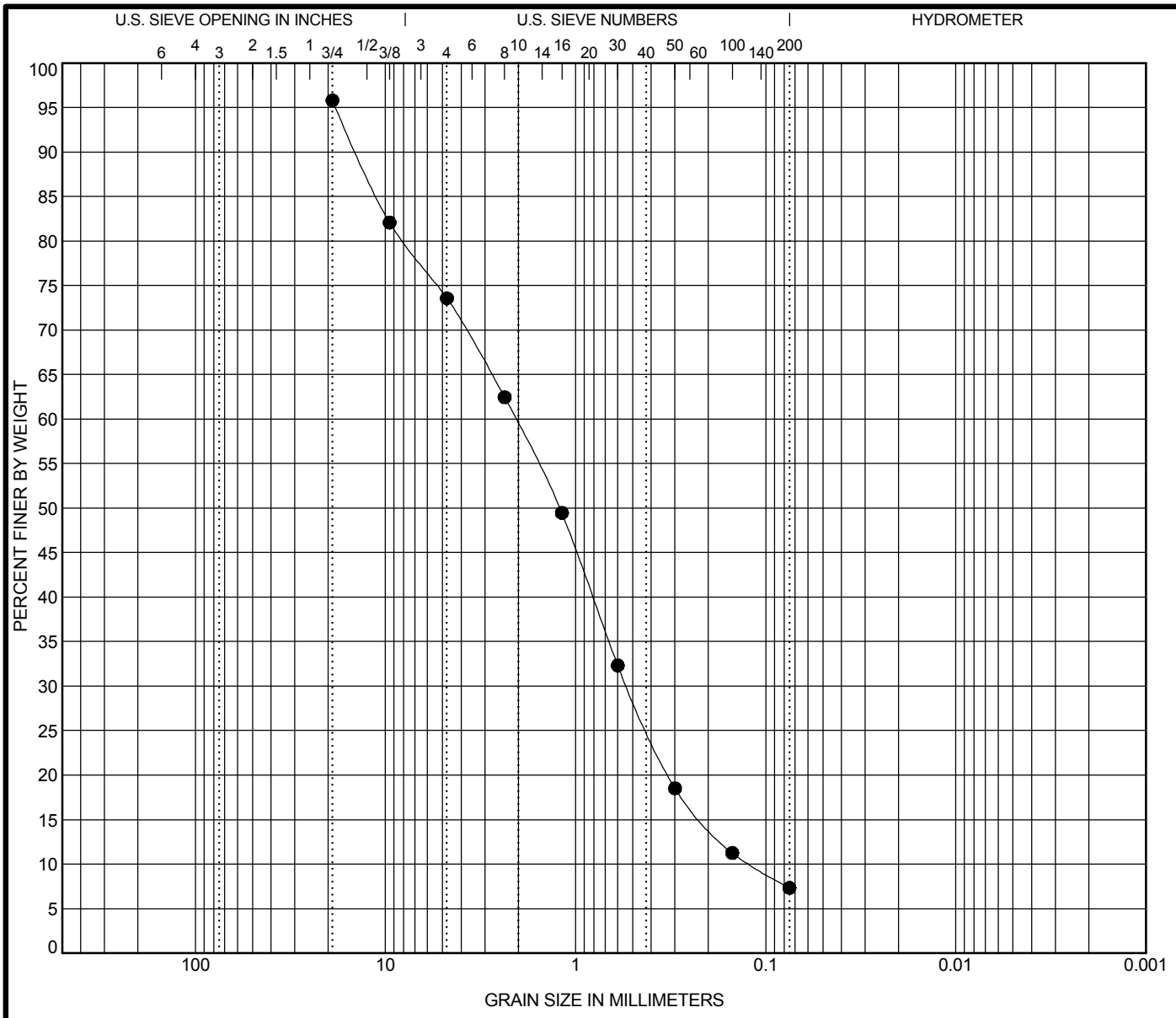

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB-4**	**40.0**	**SAND (SW-SM)**				**1.15**	**17.20**

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB-4**	**40.0**	**19**	**2.07**	**0.534**	**0.12**	**22.2**	**66.3**	**7.3**	

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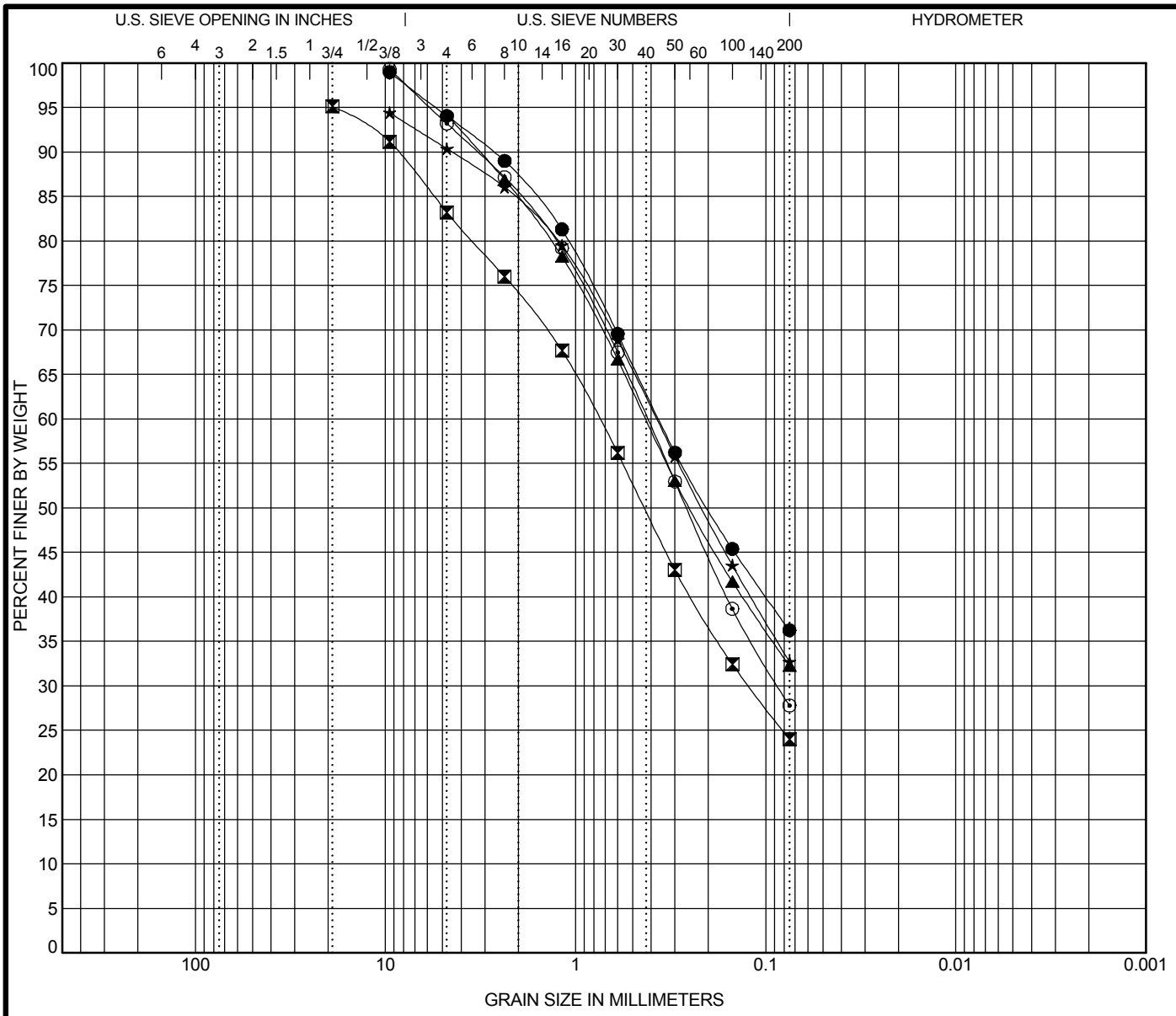

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB-5**	**10.0**	**SILTY SAND (SM)**					
⊠	**WB-5**	**15.0**	**SILTY SAND (SM)**					
▲	**WB-5**	**20.0**	**SILTY SAND (SM)**					
★	**WB-5**	**25.0**	**SILTY SAND (SM)**					
⊙	**WB-5**	**40.0**	**SILTY SAND (SM)**					

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB-5**	**10.0**	**9.5**	**0.365**			**4.9**	**57.8**	**36.2**	
⊠	**WB-5**	**15.0**	**19**	**0.751**	**0.123**		**11.9**	**59.2**	**24.0**	
▲	**WB-5**	**20.0**	**4.75**	**0.427**				**61.9**	**32.3**	
★	**WB-5**	**25.0**	**9.5**	**0.375**			**4.1**	**57.7**	**32.7**	
⊙	**WB-5**	**40.0**	**9.5**	**0.42**	**0.086**		**6.2**	**65.4**	**27.8**	

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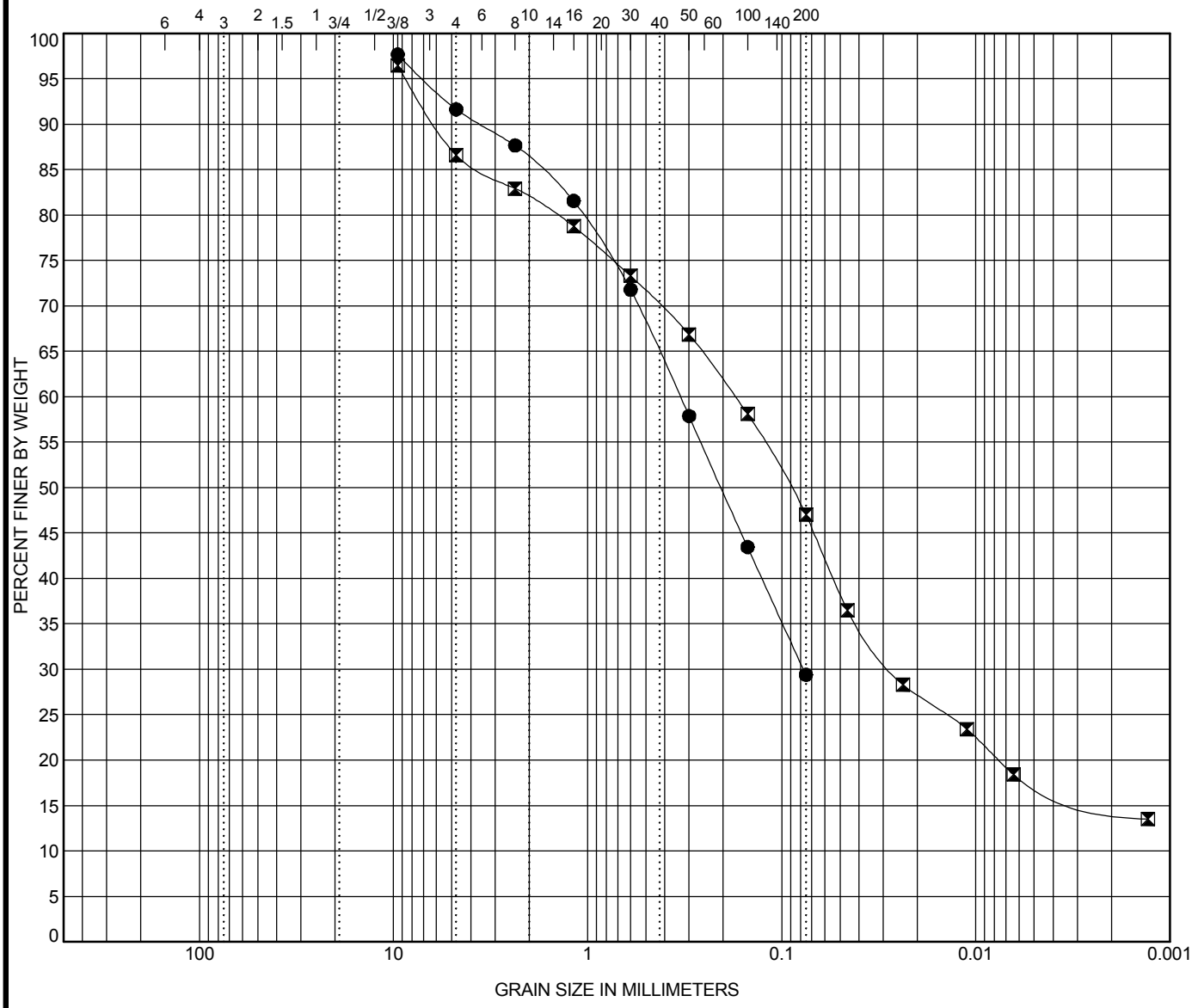

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB-5**	**45.0**	**SILTY SAND (SM)**					
⊠	**WB-5**	**50.0**	**SILTY SAND (SM)**	**30**	**19**	**11**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB-5**	**45.0**	**9.5**	**0.333**	**0.077**		**6.0**	**62.3**	**29.4**	
⊠	**WB-5**	**50.0**	**9.5**	**0.174**	**0.027**		**9.9**	**39.6**	**29.4**	**17.6**

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Newhall Land and Farming Company
April 6, 2007
2004-700-22

APPENDIX C

LIQUEFACTION CALCULATIONS

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

APPENDIX C

LIQUEFACTION CALCULATIONS

As shown on Figures C1 and C2 of this Appendix, the results from two rotary wash borings (WS-11 and WS-12) next to CPT sounding location (CPT-6 and CPT-7) verify the soil parameters interpreted from CPT logs. We have also reviewed and analyzed our current four borings (WB-1, WB-2, WB-3 and WB-4) excavated with respect to previous nearby past four CPT soundings to verify soil conditions. Based on the field data presented in this report, the cone-tip resistances and percent fines interpreted from the CPTs used in the analyses are slightly conservative relative to the blow counts and the percent fines measured from the boring drilled at the site.

Liquefaction analyses were performed on our 2006 CPT data. The symbols, method and N values used in the liquefaction analyses including detail computations for typical CPT-4 are presented in this Appendix. The general liquefaction analyses including computations for all 2006 CPT data are also presented in this Appendix. Please note that the there is a discrepancy between the raw CPT data presented in Kehoe Testing and Engineering (depth interval = 12 inches) and in our liquefaction spread sheet analyses (depth interval = 2 inches) due to the difference in depth interval readings.

CPT-6(05)			WB-11(06)		Remarks
Depth ft.	N60 blows/ft.	FC % *	N60 blows/ft.	FC %	
0.5	9.0	0.0			
1.5	14.0	0.0			
2.5	11.0	3.6			
3.5	13.0	4.9	7	52	CPT blows match, CPT fine very conservative
4.5	7.0	14.6			
5.5	8.0	15.4			
6.5	7.0	19.2	10	45	CPT blows and fine both conservative
7.5	8.0	15.3			
8.5	15.0	5.6			
9.5	14.0	9.6	10	41	CPT blows match, CPT fine conservative
10.5	9.0	15.6			
11.5	10.0	29.4			
12.5	8.0	26.0	8	81	CPT blows match, CPT fine conservative
13.5	6.0	29.8			
14.5	9.0	22.2			
15.5	9.0	25.1	10	62	CPT blows match and CPT fine conservative
16.5	10.0	17.7			
17.5	10.0	26.3			
18.5	10.0	39.5	14	48	CPT blows and CPT fine both conservative
19.5	11.0	25.0			
20.5	21.0	11.7			
21.5	27.0	10.8	9	74	CPT blows liberal, CPT fine very conservative
22.5	30.0	7.1			
23.5	16.0	13.2			
24.5	7.0	29.5	18	74	CPT blows and fine both conservative
25.5	16.0	17.5			
26.5	14.0	22.2			
27.5	18.0	18.0	23	84	CPT blows and fine both conservative
28.5	15.0	22.1			
29.5	30.0	12.0			
30.5	17.0	22.0	16	91	CPT blows and fine both conservative
31.5	8.0	35.7			
32.5	9.0	36.3			
33.5	11.0	28.6	28	48	CPT blows and fine both conservative
34.5	12.0	22.9			
35.5	14.0	23.5			
36.5	31.0	9.4	33	24	CPT blows and fine both conservative
37.5	62.0	5.0			
38.5	75.0	5.4			
39.5	38.0	8.9			
40.5	26.0	13.3	51	14	CPT blows and fine both conservative
41.5	21.0	17.6			
42.5	33.0	9.9			
43.5	31.0	8.8			
44.5	22.0	16.1			
45.5	30.0	16.1	52	27	CPT blows and fine both conservative
46.5	37.0	8.9			
47.5	48.0	5.1			
48.5	52.0	4.1			
49.5	59.0	10.0	37	39	CPT blows liberal and CPT fine conservative

Figure C1

* **Robertson and Campanella, 1989**

CPT-7(05)			WB-12(06)		Remarks
Depth ft.	N60 blows/ft.	FC %*	N60 blows/ft.	FC %	
0.5	8.0	0.8			
1.5	8.0	4.1			
2.5	10.0	5.8			
3.5	9.0	8.3	8	12	CPT blows liberal, CPT fine conservative
4.5	15.0	4.2			
5.5	9.0	10.0			
6.5	7.0	14.9	11	16	CPT blows and fine both conservative
7.5	15.0	7.7			
8.5	25.0	5.3			
9.5	24.0	7.2	8	8	CPT blows liberal, CPT fine conservative
10.5	25.0	6.4			
11.5	14.0	9.2			
12.5	10.0	26.0	6	33	CPT blows liberal, CPT fine conservative
13.5	11.0	16.6			
14.5	15.0	15.4			
15.5	14.0	14.4	14	41	CPT blows match and CPT fine conservative
16.5	11.0	20.2			
17.5	34.0	6.8			
18.5	44.0	11.9	19	10	CPT blows and fine both liberal
19.5	34.0	12.2			
20.5	24.0	11.9			
21.5	16.0	20.8	35	32	CPT blows and fine conservative
22.5	14.0	20.8			
23.5	9.0	22.2			
24.5	12.0	29.0	49	13	CPT blows conservative and CPT fine liberal
25.5	27.0	7.6			
26.5	37.0	7.8			
27.5	38.0	8.5	44	12	CPT blows and fine both conservative
28.5	43.0	9.4			
29.5	49.0	9.9			
30.5	45.0	7.9	38	36	CPT blows matches and CPT fine conservative
31.5	29.0	10.1			
32.5	26.0	10.0			
33.5	52.0	5.1			
34.5	70.0	9.7			
35.5	77.0	13.6	41	10	CPT blows and fine both liberal
36.5	97.0	15.2			
37.5	63.0	9.8			
38.5	37.0	5.2			
39.5	23.0	19.0			
40.5	43.0	9.5	46	9	CPT blows conservative and CPT fine match
41.5	78.0	10.1			
42.5	66.0	5.9			
43.5	82.0	19.4			
44.5	68.0	8.0			
45.5	63.0	12.2	68	11	CPT blows conservative and CPT fine slighly liberal
46.5	58.0	9.9			
47.5	67.0	10.6			
48.5	86.0	16.3			
49.5	77.0	10.0	100	7	CPT blows conservative and CPT fine slighly liberal

Figure C2

* **Robertson and Campanella, 1989**

CPT-6(98)			WB-1(05)		Remarks
Depth ft.	N60 blows/ft.	FC %*	N60 blows/ft.	FC %	
0.49	5.0	3.4			
1.48	27.0	7.4			
2.46	19.0	9.9			
3.44	14.0	11.4			
4.43	13.0	15.8			
5.41	13.0	21.0			
6.40	14.0	26.2			
7.30	20.0	18.4			
8.20	16.0	8.9			
9.19	9.0	10.7			
10.17	11.0	8.8	9	53	CPT blows match with SPT , CPT fine conservative
11.15	16.0	7.7			
12.14	19.0	2.3			
13.21	10.0	5.4			
14.27	12.0	2.5			
15.26	23.0	11.2		11	CPT fine match with lab fine
16.24	35.0	4.2			
17.22	42.0	5.9			
18.21	44.0	12.4			
19.19	46.0	14.8			
20.18	48.0	7.2			
21.16	39.0	5.9	26	14	CPT blows liberal, CPT fine conservative
22.15	23.0	5.9			
23.13	48.0	8.3			
24.11	>50	10.2			
25.10	>50	12.0		19	CPT fine conservative
26.08	>50	6.1			
27.07	>50	6.2			
28.05	>50	11.8			
29.04	>50	5.5			
30.02	28.0	5.8	36	47	CPT blows and fine both conservative
31.00	28.0	4.5			
31.99	43.0	15.9			
32.97	17.0	27.3			
33.96	11.0	17.7			
34.94	10.0	20.9			
35.92	9.0	25.4	40	7	CPT blows conservative, CPT fine liberal
36.91	9.0	17.1			
37.89	9.0	48.7			
38.88	5.0	7.1			
39.86	8.0	11.7			
40.85	33.0	17.7			
41.83	40.0	12.6	73		CPTblows conservative
42.81	33.0	14.2			
43.80	38.0	11.0			
44.78	>50	14.0			
45.77	>50	14.8	58		CPT blows match
46.75	22.0	10.3			
47.74	32.0	16.5			
48.72	16.0	10.0			
49.70	22.0	10.0	60		CPT blows conservative

Figure C3

*** Robertson and Campanella, 1989**

CPT-1(01)			WB-2(05)		Remarks
Depth ft.	N60 blows/ft.	FC %*	N60 blows/ft.	FC %	
0.49	19.1	0.5			
1.48	17.1	0.0			
2.46	8.8	14.2			
3.44	8.5	15.0			
4.43	10.0	24.0			
5.41	10.1	25.7			
6.40	18.8	33.6			
7.30	15.6	17.2			
8.20	13.6	16.6			
9.19	18.1	13.5			
10.17	25.0	3.6		25	CPT fine conservative
11.15	24.6	3.3			
12.14	20.8	11.5			
13.21	18.0	21.6			
14.27	15.1	11.3			
15.26	26.9	2.3		10	CPT fine conservative
16.24	30.7	2.4			
17.22	25.4	7.1			
18.21	32.8	6.9			
19.19	36.7	9.0			
20.18	23.3	12.2			
21.16	18.5	15.0	19	37	CPT blows match with SPT and CPT fine conservative
22.15	13.0	26.3			
23.13	11.8	29.5			
24.11	34.2	3.1			
25.10	43.9	2.5			
26.08	29.5	8.2			
27.07	11.8	43.8			
28.05	6.0	61.4			
29.04	12.3	28.9		77	CPT fine conservative
30.02	39.4	4.0	36	8	CPT blows match/liberal and CPT fine conservative
31.00	48.0	3.1			
31.99	40.4	2.3			
32.97	29.6	19.2			
33.96	24.3	17.2			
34.94	20.0	23.8			
35.92	47.1	10.7	10		CPT blows liberal
36.91	59.3	1.8			
37.89	57.0	2.6			
38.88	55.8	2.8			
39.86	60.4	7.6			
40.85	50.5	5.6			
41.83	36.6	19.4	60	76	CPTblows and fine conservative
42.81	30.0	15.1			
43.80	31.5	21.8			
44.78	55.2	4.5			
45.77	62.2	4.4	73		CPT blows conservative
46.75	55.9	3.8			
47.74	56.9	3.5			
48.72	27.1	17.7	54		CPT blows conservative
49.70	20.3	22.1			

Figure C4

*** Robertson and Campanella, 1989**

CPT-15 (01)			WB-3 (05)		Remarks
Depth ft.	N60 blows/ft.	FC %*	N60 blows/ft.	FC %	
0.49	29.2	0.5			
1.48	16.6	0.0			
2.46	10.9	14.2			
3.44	12.9	15.0			
4.43	11.7	24.0			
5.41	8.1	25.7			
6.40	5.6	33.6			
7.30	10.3	17.2			
8.20	12.2	16.6			
9.19	8.0	13.5			
10.17	18.9	3.6	18	9	CPT blows match with SPT and CPT fine conservative
11.15	20.8	3.3			
12.14	24.4	11.5			
13.21	25.6	21.6			
14.27	20.9	11.3			
15.26	11.2	2.3			
16.24	14.5	2.4			
17.22	32.0	7.1			
18.21	31.6	6.9			
19.19	35.5	9.0			
20.18	38.6	12.2			
21.16	45.6	15.0	28		CPT blows liberal
22.15	62.1	26.3			
23.13	54.2	29.5			
24.11	53.0	3.1			
25.10	57.6	2.5			
26.08	46.5	8.2			
27.07	46.7	43.8			
28.05	57.3	61.4			
29.04	49.3	28.9			
30.02	63.4	4.0			
31.00	31.7	3.1	37	16	CPT blows and fine conservative
31.99	17.2	2.3			
32.97	9.2	19.2			
33.96	12.7	17.2			
34.94	39.4	23.8			
35.92	42.7	10.7	34	9	CPT blows liberal and CPT fine match
36.91	9.4	1.8			
37.89	5.2	2.6			
38.88	11.8	2.8			
39.86	38.0	7.6			
40.85	34.6	5.6			
41.83	35.4	19.4			
42.81	46.9	15.1			
43.80	46.3	21.8			
44.78	36.1	4.5	36	20	CPT blows match with SPT and CPT fine conservative
45.77	10.8	4.4			
46.75	7.1	3.8			
47.74	31.1	3.5	31		CPT blows match with SPT
48.72	54.3	17.7			

Figure C5

* **Robertson and Campanella, 1989**

CPT-19 (01)			WB-4 (05)		Remarks
Depth ft.	N60 blows/ft.	FC %*	N60 blows/ft.	FC %	
0.49	16.8	0.0			
1.48	19.6	0.0			
2.46	18.2	0.0			
3.44	18.6	0.0			
4.43	13.0	1.6			
5.41	16.0	1.7			
6.40	19.0	0.5			
7.30	21.0	2.1			
8.20	14.0	10.6			
9.19	12.1	5.0			
10.17	14.9	5.0			
11.15	16.9	3.1			
12.14	18.7	1.6			
13.21	21.6	1.2			
14.27	22.8	1.0			
15.26	18.8	2.2			
16.24	11.9	20.5			
17.22	9.4	29.3		5	CPT fine conservative
18.21	10.3	29.5			
19.19	20.5	3.6			
20.18	33.2	4.0			
21.16	37.7	2.5	15	39	CPT blows liberal and CPT fine conservative
22.15	38.7	0.2			
23.13	34.5	0.3			
24.11	39.4	2.6			
25.10	41.6	1.7		9	CPT fine conservative
26.08	49.8	2.4			
27.07	44.4	0.8			
28.05	57.1	4.5			
29.04	41.9	1.1			
30.02	42.1	9.3	24	20	CPT blows liberal and CPT fine conservative
31.00	46.7	4.4			
31.99	27.9	8.9			
32.97	57.5	3.0			
33.96	69.2	3.8			
34.94	49.4	2.9		8	CPT fine conservative
35.92	43.5	11.2	37		CPT blows liberal
36.91	43.7	16.7			
37.89	40.9	3.5			
38.88	21.4	5.0			
39.86	23.5	13.0			
40.85	45.2	2.2	39		CPT blows liberal
41.83	45.4	3.2			
42.81	47.4	2.3			
43.80	48.4	2.6			
44.78	49.9	2.6			
45.77	50.1	3.4	21		CPT blows liberal
46.75	57.1	3.0			
47.74	59.7	2.5			
48.72	58.8	1.6	54		CPT blows match with SPT
49.70	51.6	2.5			
50.69	47.6	3.9	36		CPT blows liberal

Figure C6

*** Robertson and Campanella, 1989**

LIQUEFACTION ANALYSES SUMMARY TABLE

Exploration	Date	Location	Total Depth in ft.	Groundwater in ft.	Existing grade in ft.	Proposed grade in ft.	Historical water in ft.	Removal depth in ft.	Seismic Settlement in inch	Thickness of Non-liquefiable layer in ft.
CPT 1	12/19/2005	PA-15	40	dry	1140	1134	N/A	Cut 6	0	Cut 6
CPT 2	12/19/2005	PA-15	32	dry	1139	1129	N/A	Cut 6	0	Cut 6
CPT-3	2/10/2006	PA-15	57	dry	1130	1115	N/A	Cut 15	0	Cut 15
CPT 4*	12/19/2005	PA-2	50	21.6	1010	1018	15	10	0.73*	23
CPT 5	12/19/2005	PA-2	50	hole open to 20, dry	1010	1022	15	10	0.42	25
CPT 6	12/19/2005	PA-2	50	hole open to 18, dry	1010	1016	15	10	1.14	23
CPT 7	12/19/2005	PA-2	50	hole open to 26, dry	1010	1010	15	8 to 14	0.44	15
CPT 8	12/19/2005	PA-2	50	27	1010	1010	15	8	0.44	15
CPT 9	12/19/2005	PA-2	50	25	1010	1008	15	6	0.43	13

* See detail calculations attached

SPREADSHEET TO CALCULATE CYCLIC RESISTANCE RATIO USING CPT DATA

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-4 CPT DATE: 12/19/05 KTE
DATE : 04/02/2007
amax = 0.6 g
M = 7.50
MSF = 1.5

Ic = (((3.47-LOG(Q))^2)+(LOG(F%)+1.22)^2)^0.5
dqc1N = IF(FC>=35,60,IF(FC<=5,0,2*(FC-5)))
CRR = IF(qc1Ncs<50,(0.833*(qc1Ncs/1000)+0.05),(93*(qc1Ncs/1000)^3+0.08))
MSF = 10^2.24/M^2.56
CSR = 0.65(amax/g)(sigv/sigv')rd = Seed's Equation
Z = IF(Ic<1.31,7,IF(Ic<2.05,6,IF(Ic<2.6,5,IF(Ic<2.95,4,IF(Ic<3.6,3,2)))))
Q = [(qc-St)/Pa]*[(Pa/S')^n]
Kc = IF(Ic<=1.64,1,(-0.403*Ic^4+5.581*Ic^3-21.63*Ic^2+33.75*Ic-17.88))

Liquefiable Soil (Type 5+ or 6+) = 2.4
Seismic Settlement Soil (Type) = 6
Actual Water = 21.6 feet
Design Water = 15 feet
Gamma = 120 pcf
rd = 2

Added Fill = 8 feet
Fill Density = 125 pcf
Pa = 1.04427 tsf = 100 kPa
Threshold FS = 1.20
FS = CRR*MSF/CSR

FS = Threshold Factor of Safety
NL = Above water or Soil Behavior Type is not liquefiable

Z	Soil
3	Clay to Silty Clay
4	Clayey Silt to Silty Clay
5	Silty Sand to Sandy Silt
6	Clean Sand to Silty Sand
7	Gravelly Sand to Sand

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-4 CPT DATE: 12/19/05 KTE
DATE : 04/02/2007
amax = 0.6 g
M = 7.50

Depth (m)	Depth (ft)	Tip Resist qc (tsf)	Sleeve Fric fs (tsf)	Total Stress (tsf) 0.00	Water Pressure (tsf) Sw	Effective Stress (tsf) S' = St - Sw	Norm. Fr. Ratio F (%) = fs/(qc-St)	Norm. Pen. Res. Q for n=1 (qc-St)/S'	Soil Index Ic for n=1	Norm. Pen. Res. Q for n= 0.5	Soil Index Ic for n=0.5	Norm. Pen. Res. Q for n= 0.7	Soil Index Ic for n=0.7	Soil Index Ic	Cq exp n	Overburden Correction Cq = 1.7 > (Pa/S')^n	Norm. Cone Res. qc1N = qc*Cq/Pa	Grain Char. Corr. Kc	Equivalent Clean Sand Cone Res. (qc1N)cs = Kc*qc1N	Cyclic Resistance Ratio CRR
0.00	0.00	0.00	0.00	0.00	0.00	0.00														
0.05	0.16	26.70	0.48	0.010	0.000	0.010	1.80	2712	1.48	263	1.81	669	1.61	1.81	0.50	1.70	43	1.1	48.4	0.090
0.10	0.33	89.60	0.48	0.020	0.000	0.020	0.54	4550	0.97	625	1.16	1382	1.00	1.16	0.50	1.70	146	1.0	145.9	0.369
0.15	0.49	122.80	0.65	0.030	0.000	0.030	0.53	4158	0.96	699	1.13	1427	1.00	1.13	0.50	1.70	200	1.0	199.9	0.823
0.20	0.66	204.50	1.34	0.039	0.000	0.039	0.66	5193	1.07	1008	1.14	1942	1.05	1.14	0.50	1.70	333	1.0	332.9	3.511
0.25	0.82	341.50	1.32	0.049	0.000	0.049	0.39	6938	0.89	1506	0.86	2775	0.81	0.86	0.50	1.70	556	1.0	555.9	16.060
0.30	0.98	469.40	1.90	0.059	0.000	0.059	0.40	7947	0.93	1890	0.85	3357	0.83	0.85	0.50	1.70	764	1.0	764.2	41.577
0.35	1.15	453.70	2.04	0.069	0.000	0.069	0.45	6584	0.94	1691	0.91	2913	0.87	0.91	0.50	1.70	739	1.0	738.6	37.551
0.40	1.31	235.70	2.11	0.079	0.000	0.079	0.90	2992	1.17	822	1.30	1378	1.22	1.30	0.50	1.70	384	1.0	383.7	5.334
0.45	1.48	174.40	1.44	0.089	0.000	0.089	0.83	1968	1.15	573	1.34	939	1.24	1.34	0.50	1.70	284	1.0	283.9	2.208
0.50	1.64	137.30	1.77	0.098	0.000	0.098	1.29	1394	1.37	428	1.57	686	1.47	1.57	0.50	1.70	224	1.0	223.5	1.118
0.55	1.80	92.50	2.10	0.108	0.000	0.108	2.27	853	1.67	275	1.88	432	1.78	1.88	0.50	1.70	151	1.2	176.8	0.594
0.60	1.97	68.80	2.24	0.118	0.000	0.118	3.26	581	1.87	196	2.10	302	2.00	2.10	0.50	1.70	112	1.4	162.2	0.477
0.65	2.13	55.00	1.70	0.128	0.000	0.128	3.10	429	1.91	150	2.15	228	2.04	2.15	0.50	1.70	90	1.5	138.1	0.325
0.70	2.30	48.70	1.17	0.138	0.000	0.138	2.41	352	1.85	128	2.10	192	1.99	2.10	0.50	1.70	79	1.5	115.8	0.224
0.75	2.46	50.50	0.88	0.148	0.000	0.148	1.75	341	1.74	128	2.00	190	1.89	2.00	0.50	1.70	82	1.3	106.7	0.193
0.80	2.62	51.50	0.80	0.157	0.000	0.157	1.56	326	1.71	127	1.97	185	1.86	1.97	0.50	1.70	84	1.3	105.5	0.189
0.85	2.79	54.10	0.78	0.167	0.000	0.167	1.45	322	1.68	129	1.94	186	1.83	1.94	0.50	1.70	88	1.2	108.0	0.197
0.90	2.95	65.40	0.56	0.177	0.000	0.177	0.86	368	1.47	152	1.73	216	1.62	1.73	0.50	1.70	106	1.1	112.7	0.213
0.95	3.12	79.10	0.54	0.187	0.000	0.187	0.68	422	1.35	179	1.61	252	1.50	1.61	0.50	1.70	129	1.0	128.8	0.279
1.00	3.28	82.70	0.56	0.197	0.000	0.197	0.68	419	1.35	182	1.60	254	1.50	1.60	0.50	1.70	135	1.0	134.6	0.307
1.05	3.45	74.70	0.66	0.207	0.000	0.207	0.89	360	1.48	160	1.72	222	1.62	1.72	0.50	1.70	122	1.1	128.0	0.275
1.10	3.61	47.20	0.76	0.217	0.000	0.217	1.62	217	1.82	99	2.05	135	1.96	2.05	0.50	1.70	77	1.4	105.8	0.190
1.15	3.77	26.10	0.75	0.226	0.000	0.226	2.90	114	2.20	53	2.42	72	2.33	2.42	0.50	1.70	42	2.4	102.4	0.180
1.20	3.94	18.50	0.70	0.236	0.000	0.236	3.83	77	2.40	37	2.62	50	2.53	2.53	0.70	1.70	30	2.9	88.2	0.144
1.25	4.10	17.60	0.55	0.246	0.000	0.246	3.17	71	2.36	34	2.59	46	2.50	2.59	0.50	1.70	29	3.3	93.6	0.156
1.30	4.27	16.20	0.46	0.256	0.000	0.256	2.89	62	2.37	31	2.60	41	2.51	2.60	0.50	1.70	26	3.3	87.3	0.142
1.35	4.43	14.70	0.41	0.266	0.000	0.266	2.84	54	2.41	27	2.63	36	2.54	2.54	0.70	1.70	24	3.0	71.5	0.114
1.40	4.59	13.70	0.40	0.276	0.000	0.276	2.98	49	2.46	25	2.68	33	2.59	2.59	0.70	1.70	22	3.3	72.5	0.115
1.45	4.76	13.70	0.41	0.285	0.000	0.285	3.06	47	2.48	25	2.69	32	2.60	2.60	0.70	1.70	22	3.3	74.6	0.119
1.50	4.92	12.40	0.44	0.295	0.000	0.295	3.63	41	2.57	22	2.78	28	2.69	2.69	0.70	1.70	20	4.0	79.8	0.127
1.55	5.09	11.70	0.47	0.305	0.000	0.305	4.12	37	2.64	20	2.84	26	2.76	2.64	1.00	1.70	19	3.6	68.2	0.110
1.60	5.25	11.60	0.48	0.315	0.000	0.315	4.25	36	2.66	20	2.86	25	2.78	2.66	1.00	1.70	19	3.7	70.4	0.113
1.65	5.41	13.10	0.49	0.325	0.000	0.325	3.84	39	2.60	22	2.79	28	2.71	2.60	1.00	1.70	21	3.3	71.2	0.114
1.70	5.58	15.80	0.47	0.335	0.000	0.335	3.04	46	2.48	26	2.67	33	2.59	2.59	0.70	1.70	26	3.3	84.2	0.136
1.75	5.74	16.50	0.45	0.345	0.000	0.345	2.79	47	2.45	27	2.63	34	2.56	2.56	0.70	1.70	27	3.1	82.9	0.133
1.80	5.91	16.50	0.36	0.354	0.000	0.354	2.23	46	2.40	27	2.58	33	2.50	2.58	0.50	1.70	27	3.2	85.8	0.139
1.85	6.07	15.70	0.36	0.364	0.000	0.364	2.35	42	2.44	25	2.61	31	2.54	2.54	0.70	1.70	26	3.0	76.4	0.122
1.90	6.23	12.70	0.44	0.374	0.000	0.374	3.57	33	2.64	20	2.81	24	2.74	2.64	1.00	1.70	21	3.6	73.6	0.117
1.95	6.40	11.30	0.44	0.384	0.000	0.384	4.03	28	2.72	17	2.88	21	2.82	2.72	1.00	1.70	18	4.1	76.2	0.121
2.00	6.56	11.10	0.42	0.394	0.000	0.394	3.92	27	2.73	17	2.89	20	2.82	2.73	1.00	1.70	18	4.2	75.7	0.120
2.05	6.73	11.20	0.42	0.404	0.000	0.404	3.89	27	2.73	17	2.89	20	2.82	2.73	1.00	1.70	18	4.2	76.8	0.122
2.10	6.89	10.30	0.40	0.413	0.000	0.413	4.05	24	2.78	15	2.93	18	2.87	2.78	1.00	1.70	17	4.6	77.0	0.122
2.15	7.05	10.80	0.40	0.423	0.000	0.423	3.85	25	2.76	16	2.91	19	2.84	2.76	1.00	1.70	18	4.4	77.6	0.123
2.20	7.22	11.60	0.43	0.433	0.000	0.433	3.85	26	2.74	17	2.88	20	2.83	2.74	1.00	1.70	19	4.3	80.9	0.129
2.25	7.38	10.60	0.41	0.443	0.000	0.443	4.04	23	2.79	15	2.93	18	2.88	2.79	1.00	1.70	17	4.7	81.1	0.130
2.30	7.55	9.50	0.41	0.453	0.000	0.453	4.53	20	2.87	13	3.01	16	2.95	2.87	1.00	1.70	15	5.4	83.4	0.134
2.35	7.71	11.70	0.41	0.463	0.000	0.463	3.65	24	2.74	16	2.88	19	2.82	2.74	1.00	1.70	19	4.3	82.2	0.132
2.40	7.87	14.50	0.42	0.472	0.000	0.472	2.99	30	2.62	20	2.75	23	2.70	2.62	1.00	1.70	24	3.5	81.5	0.130
2.45	8.04	14.90	0.46	0.482	0.000	0.482	3.19	30	2.64	20	2.77	24	2.71	2.64	1.00	1.70	24	3.6	86.2	0.140
2.50	8.20	13.40	0.48	0.492	0.000	0.492	3.72	26	2.72	18	2.85	21	2.80	2.72	1.00	1.70	22	4.2	90.8	0.150
2.55	8.37	11.40	0.49	0.502	0.000	0.502	4.50	22	2.84	15	2.96	17	2.91	2.84	1.00	1.70	19	5.1	95.1	0.160
2.60	8.53	10.80	0.52	0.512	0.000	0.512	5.05	20	2.90	14	3.02	16	2.97	2.90	1.00	1.70	18	5.7	99.8	0.172
2.65	8.69	11.50	0.50	0.522	0.000	0.522	4.55	21	2.85	15	2.97	17	2.92	2.85	1.00	1.70	19	5.2	98.3	0.168
2.70	8.86	15.90	0.45	0.532	0.000	0.532	2.93	29	2.62	21	2.74	24	2.69	2.62	1.00	1.70	26	3.5	89.8	0.147
2.75	9.02	37.50	0.42	0.541	0.000	0.541	1.14	68	2.07	49	2.19	56	2.14	2.19	0.50	1.39	50	1.6	81.8	0.131
2.80	9.19	40.00	0.50	0.551	0.000	0.551	1.27	72	2.09	52	2.20	59	2.15	2.20	0.50	1.38	53	1.7	87.5	0.142
2.85	9.35	32.20	0.55	0.561	0.000	0.561	1.74	56	2.26	41	2.36	47	2.32	2.36	0.50	1.36	42	2.2	90.7	0.149
2.90	9.51	32.10	0.64	0.571	0.000	0.571	2.03	55	2.31	41	2.41	46	2.37	2.41	0.50	1.35	42	2.3	97.2	0.165
2.95	9.68	35.20	0.63	0.581	0.000	0.581	1.82	60	2.25	44	2.35	50	2.31	2.35	0.50	1.34	45	2.1	95.4	0.161
3.00	9.84	33.50	0.50	0.591	0.000	0.591	1.52	56	2.22	42	2.32	47	2.28	2.32	0.50	1.33	43	2.0	85.8	0.139
3.05	10.01	36.30	0.42	0.600	0.000	0.600	1.18	59	2.13	45	2.23	50	2.19	2.23	0.50	1.32	46	1.7	79.7	0.127
3.10	10.17	43.10	0.48	0.610	0.000	0.610	1.13	70	2.07	53	2.16	59	2.12	2.16	0.50	1.31	54	1.6	84.9	0.137
3.15	10.34	49.40	0.53	0.620	0.000	0.620	1.09	79	2.01	61	2.10	67	2.07	2.10	0.50	1.30	61	1.5	89.7	0.147
3.20	10.50	59.40	0.61	0.630	0.000	0.630	1.04	93	1.94	72	2.03	80	2.00	2.03	0.50	1.29	73	1.3	98.2	0.168
3.25	10.66	68.40	0.70	0.640	0.000	0.640	1.03	106	1.90	83	1.98	91	1.95	1.98	0.50	1.28	84	1.3	106.9	0.194
3.30	10.83	75.50	0.78	0.650	0.000	0.650	1.04	115	1.88	91	1.95	100	1.92	1.95	0.50	1.27	92	1.2	114.0	0.218
3.35	10.99	75.70	0.86	0.659	0.000	0.659	1.15	114	1.91	90	1.98	99	1.95	1.98	0.50	1.26	91	1.3	116.5	0.227
3.40	11.16	75.80	0.87	0.669	0.000	0.669	1.16	112	1.91	90	1.99	98	1.96	1.99	0.50	1.25	91	1.3	116.3	0.226
3.45	11.32	75.40	0.89	0.679	0.000	0.679	1.19	110	1.93	89	2.00	97	1.97	2.00	0.50	1.24	90	1.3	116.3	0.226
3.50	11.48	66.10	0.83	0.689	0.000	0.689	1.27	95	1.99	77	2.06	84	2.04	2.06	0.50	1.23	78	1.4	108.5	0.199
3.55	11.65	60.60	0.78	0.699	0.000	0.699	1.30	86	2.04	70	2.10	76	2.08	2.10	0.50	1.22	71	1.5	103.5	0.183
3.60	11.81	53.60	0.67	0.709	0.000	0.709	1.27	75	2.07	61	2.14	66	2.11	2.14	0.50	1.21	62	1.5	95.3	0.161
3.65	11.98	42.00	0.75	0.719	0.000	0.719	1.82	57	2.26	48	2.32	51	2.30	2.32	0.50	1.21	48	2.0	98.3	0.168
3.70	12.14	26.70	0.86	0.728	0.000	0.728	3.31	36	2.59	30	2.65	32	2.62	2.62	0.70	1.29	33	3.5	114.5	0.220
3.75	12.30	19.30	0.77	0.738	0.000	0.738	4.15	25	2.77	21	2.82	23	2.80	2.77	1.00	1.41	26	4.5	118.1	0.233
3.80	12.47	16.80	0.68	0.748	0.000	0.748	4.24	21	2.83	18	2.88	19	2.86	2.83	1.00	1.40	22	5.0	112.4	0.212
3.85	12.63	14.40	0.49	0.758	0.000	0.758	3.59	18	2.84	15	2.89	16	2.87	2.84	1.00	1.38	19	5.1	97.3	0.166

Depth (m)	rd	Design Effective Stress (tsf) S' = St - Sw	Cyclic Stress Ratio CSR	Depth (ft) Depth	Soil Behavior Type Z	Factor of Safety FS	Liquefiable Layers	Sum of Liquefiable Thickness (m)	Sum of Non-Liq Thickness (m)	Ratio of Non-Liq to Liquefiable 3.53	Liq. Settlement (in) Settlement 0.73 in.	N-Value Conversion (tsf) qc	qc/N	N-Value	CSR	H_Index	V_Index	Strain%	Settlement	Liquefaction Settlemer 0.73 in. Cumulative Settlement
0.00																				0
0.05	1.000	0.010	0.390	0.16	6S	NL	0	0.00	0.05	---	0.1641	26.70	6	4.5	0.3899	8	15	4.50E-02	0.00E+00	0.00
0.10	0.999	0.020	0.390	0.33	7S	NL	0	0.00	0.10	---	0.3281	89.60	8	11.2	0.3897	20	15	2.40E-02	0.00E+00	0.00
0.15	0.999	0.030	0.390	0.49	7S	NL	0	0.00	0.15	---	0.4922	122.80	8	15.4	0.3896	25	15	1.90E-02	0.00E+00	0.00
0.20	0.998	0.039	0.389	0.66	7S	NL	0	0.00	0.20	---	0.6562	204.50	8	25.6	0.3894	32	15	1.20E-02	0.00E+00	0.00
0.25	0.998	0.049	0.389	0.82	7S	NL	0	0.00	0.25	---	0.8203	341.50	8	42.7	0.3893	42	15	0.00E+00	0.00E+00	0.00
0.30	0.998	0.059	0.389	0.98	7S	NL	0	0.00	0.30	---	0.9843	469.40	8	58.7	0.3891	42	15	0.00E+00	0.00E+00	0.00
0.35	0.997	0.069	0.389	1.15	7S	NL	0	0.00	0.35	---	1.1484	453.70	8	56.7	0.3890	42	15	0.00E+00	0.00E+00	0.00
0.40	0.997	0.079	0.389	1.31	7S	NL	0	0.00	0.40	---	1.3124	235.70	8	29.5	0.3888	35	15	6.00E-03	0.00E+00	0.00
0.45	0.997	0.089	0.389	1.48	7S	NL	0	0.00	0.45	---	1.4765	174.40	8	21.8	0.3887	30	15	1.40E-02	0.00E+00	0.00
0.50	0.996	0.098	0.389	1.64	6S	NL	0	0.00	0.50	---	1.6405	137.30	6	22.9	0.3885	30	15	1.40E-02	0.00E+00	0.00
0.55	0.996	0.108	0.388	1.80	6S	NL	0	0.00	0.55	---	1.8046	92.50	6	15.4	0.3884	25	15	1.90E-02	0.00E+00	0.00
0.60	0.995	0.118	0.388	1.97	6S	NL	0	0.00	0.60	---	1.9686	68.80	6	11.5	0.3882	20	15	2.40E-02	0.00E+00	0.00
0.65	0.995	0.128	0.388	2.13	6S	NL	0	0.00	0.65	---	2.1327	55.00	6	9.2	0.3881	17	15	2.70E-02	0.00E+00	0.00
0.70	0.995	0.138	0.388	2.30	6S	NL	0	0.00	0.70	---	2.2967	48.70	6	8.1	0.3879	15	15	2.90E-02	0.00E+00	0.00
0.75	0.994	0.148	0.388	2.46	6S	NL	0	0.00	0.75	---	2.4608	50.50	6	8.4	0.3878	15	15	2.90E-02	0.00E+00	0.00
0.80	0.994	0.157	0.388	2.62	6S	NL	0	0.00	0.80	---	2.6248	51.50	6	8.6	0.3876	16	15	2.80E-02	0.00E+00	0.00
0.85	0.993	0.167	0.387	2.79	6S	NL	0	0.00	0.85	---	2.7889	54.10	6	9.0	0.3875	17	15	2.70E-02	0.00E+00	0.00
0.90	0.993	0.177	0.387	2.95	6S	NL	0	0.00	0.90	---	2.9529	65.40	6	10.9	0.3873	20	15	2.40E-02	0.00E+00	0.00
0.95	0.993	0.187	0.387	3.12	6S	NL	0	0.00	0.95	---	3.1170	79.10	6	13.2	0.3872	22	15	2.20E-02	0.00E+00	0.00
1.00	0.992	0.197	0.387	3.28	6S	NL	0	0.00	1.00	---	3.2810	82.70	6	13.8	0.3870	23	15	2.10E-02	0.00E+00	0.00
1.05	0.992	0.207	0.387	3.45	6S	NL	0	0.00	1.05	---	3.4451	74.70	6	12.5	0.3869	21	15	2.30E-02	0.00E+00	0.00
1.10	0.992	0.217	0.387	3.61	6S	NL	0	0.00	1.10	---	3.6091	47.20	6	7.9	0.3867	14	15	3.00E-02	0.00E+00	0.00
1.15	0.991	0.226	0.387	3.77	5M	NL	0	0.00	1.15	---	3.7732	26.10	2.5	10.4	0.3866	19	15	2.50E-02	0.00E+00	0.00
1.20	0.991	0.236	0.386	3.94	5M	NL	0	0.00	1.20	---	3.9372	18.50	2.5	7.4	0.3864	13	15	3.20E-02	0.00E+00	0.00
1.25	0.990	0.246	0.386	4.10	5M	NL	0	0.00	1.25	---	4.1013	17.60	2.5	7.0	0.3863	13	15	3.20E-02	0.00E+00	0.00
1.30	0.990	0.256	0.386	4.27	5M	NL	0	0.00	1.30	---	4.2653	16.20	2.5	6.5	0.3861	12	15	3.40E-02	0.00E+00	0.00
1.35	0.990	0.266	0.386	4.43	5M	NL	0	0.00	1.35	---	4.4294	14.70	2.5	5.9	0.3860	11	15	3.60E-02	0.00E+00	0.00
1.40	0.989	0.276	0.386	4.59	5M	NL	0	0.00	1.40	---	4.5934	13.70	2.5	5.5	0.3858	10	15	3.80E-02	0.00E+00	0.00
1.45	0.989	0.285	0.386	4.76	5M	NL	0	0.00	1.45	---	4.7575	13.70	2.5	5.5	0.3857	10	15	3.80E-02	0.00E+00	0.00
1.50	0.989	0.295	0.386	4.92	5M	NL	0	0.00	1.50	---	4.9215	12.40	2.5	5.0	0.3855	9	15	4.00E-02	0.00E+00	0.00
1.55	0.988	0.305	0.385	5.09	4C	NL	0	0.00	1.55	---	5.0856	11.70	2	5.9	0.3854	11	15	3.60E-02	0.00E+00	0.00
1.60	0.988	0.315	0.385	5.25	4C	NL	0	0.00	1.60	---	5.2496	11.60	2	5.8	0.3852	11	15	3.60E-02	0.00E+00	0.00
1.65	0.987	0.325	0.385	5.41	4C	NL	0	0.00	1.65	---	5.4137	13.10	2	6.6	0.3851	12	15	3.40E-02	0.00E+00	0.00
1.70	0.987	0.335	0.385	5.58	5M	NL	0	0.00	1.70	---	5.5777	15.80	2.5	6.3	0.3849	12	15	3.40E-02	0.00E+00	0.00
1.75	0.987	0.345	0.385	5.74	5M	NL	0	0.00	1.75	---	5.7418	16.50	2.5	6.6	0.3848	12	15	3.40E-02	0.00E+00	0.00
1.80	0.986	0.354	0.385	5.91	5M	NL	0	0.00	1.80	---	5.9058	16.50	2.5	6.6	0.3846	12	15	3.40E-02	0.00E+00	0.00
1.85	0.986	0.364	0.384	6.07	5M	NL	0	0.00	1.85	---	6.0699	15.70	2.5	6.3	0.3845	12	15	3.40E-02	0.00E+00	0.00
1.90	0.985	0.374	0.384	6.23	4C	NL	0	0.00	1.90	---	6.2339	12.70	2	6.4	0.3843	12	15	3.40E-02	0.00E+00	0.00
1.95	0.985	0.384	0.384	6.40	4C	NL	0	0.00	1.95	---	6.3980	11.30	2	5.7	0.3842	11	15	3.60E-02	0.00E+00	0.00
2.00	0.985	0.394	0.384	6.56	4C	NL	0	0.00	2.00	---	6.5620	11.10	2	5.6	0.3840	10	15	3.80E-02	0.00E+00	0.00
2.05	0.984	0.404	0.384	6.73	4C	NL	0	0.00	2.05	---	6.7261	11.20	2	5.6	0.3839	11	15	3.60E-02	0.00E+00	0.00
2.10	0.984	0.413	0.384	6.89	4C	NL	0	0.00	2.10	---	6.8901	10.30	2	5.2	0.3837	9	15	4.00E-02	0.00E+00	0.00
2.15	0.984	0.423	0.384	7.05	4C	NL	0	0.00	2.15	---	7.0542	10.80	2	5.4	0.3836	10	15	3.80E-02	0.00E+00	0.00
2.20	0.983	0.433	0.383	7.22	4C	NL	0	0.00	2.20	---	7.2182	11.60	2	5.8	0.3834	11	15	3.60E-02	0.00E+00	0.00
2.25	0.983	0.443	0.383	7.38	4C	NL	0	0.00	2.25	---	7.3823	10.60	2	5.3	0.3833	10	15	3.80E-02	0.00E+00	0.00
2.30	0.982	0.453	0.383	7.55	4C	NL	0	0.00	2.30	---	7.5463	9.50	2	4.8	0.3831	8	15	4.50E-02	0.00E+00	0.00
2.35	0.982	0.463	0.383	7.71	4C	NL	0	0.00	2.35	---	7.7104	11.70	2	5.9	0.3830	11	15	3.60E-02	0.00E+00	0.00
2.40	0.982	0.472	0.383	7.87	4C	NL	0	0.00	2.40	---	7.8744	14.50	2	7.3	0.3828	13	15	3.20E-02	0.00E+00	0.00
2.45	0.981	0.482	0.383	8.04	4C	NL	0	0.00	2.45	---	8.0385	14.90	2	7.5	0.3827	13	15	3.20E-02	0.00E+00	0.00
2.50	0.981	0.492	0.383	8.20	4C	NL	0	0.00	2.50	---	8.2025	13.40	2	6.7	0.3825	12	15	3.40E-02	0.00E+00	0.00
2.55	0.980	0.502	0.382	8.37	4C	NL	0	0.00	2.55	---	8.3666	11.40	2	5.7	0.3824	11	15	3.60E-02	0.00E+00	0.00
2.60	0.980	0.512	0.382	8.53	4C	NL	0	0.00	2.60	---	8.5306	10.80	2	5.4	0.3822	10	15	3.80E-02	0.00E+00	0.00
2.65	0.980	0.522	0.382	8.69	4C	NL	0	0.00	2.65	---	8.6947	11.50	2	5.8	0.3821	11	15	3.60E-02	0.00E+00	0.00
2.70	0.979	0.532	0.382	8.86	4C	NL	0	0.00	2.70	---	8.8587	15.90	2	8.0	0.3819	14	15	3.00E-02	0.00E+00	0.00
2.75	0.979	0.541	0.382	9.02	5M	NL	0	0.00	2.75	---	9.0228	37.50	2.5	15.0	0.3818	24	15	2.00E-02	0.00E+00	0.00
2.80	0.979	0.551	0.382	9.19	5M	NL	0	0.00	2.80	---	9.1868	40.00	2.5	16.0	0.3816	25	15	1.90E-02	0.00E+00	0.00
2.85	0.978	0.561	0.381	9.35	5M	NL	0	0.00	2.85	---	9.3509	32.20	2.5	12.9	0.3815	22	15	2.20E-02	0.00E+00	0.00
2.90	0.978	0.571	0.381	9.51	5M	NL	0	0.00	2.90	---	9.5149	32.10	2.5	12.8	0.3813	22	15	2.20E-02	0.00E+00	0.00
2.95	0.977	0.581	0.381	9.68	5M	NL	0	0.00	2.95	---	9.6790	35.20	2.5	14.1	0.3812	23	15	2.10E-02	0.00E+00	0.00
3.00	0.977	0.591	0.381	9.84	5M	NL	0	0.00	3.00	---	9.8430	33.50	2.5	13.4	0.3810	23	15	2.10E-02	0.00E+00	0.00
3.05	0.977	0.600	0.381	10.01	5M	NL	0	0.00	3.05	---	10.0071	36.30	2.5	14.5	0.3809	24	15	2.00E-02	0.00E+00	0.00
3.10	0.976	0.610	0.381	10.17	5M	NL	0	0.00	3.10	---	10.1711	43.10	2.5	17.2	0.3808	26	15	1.80E-02	0.00E+00	0.00
3.15	0.976	0.620	0.381	10.34	6S	NL	0	0.00	3.15	---	10.3352	49.40	6	8.2	0.3806	15	15	2.90E-02	0.00E+00	0.00
3.20	0.976	0.630	0.380	10.50	6S	NL	0	0.00	3.20	---	10.4992	59.40	6	9.9	0.3805	18	15	2.60E-02	0.00E+00	0.00
3.25	0.975	0.640	0.380	10.66	6S	NL	0	0.00	3.25	---	10.6633	68.40	6	11.4	0.3803	20	15	2.40E-02	0.00E+00	0.00
3.30	0.975	0.650	0.380	10.83	6S	NL	0	0.00	3.30	---	10.8273	75.50	6	12.6	0.3802	22	15	2.20E-02	0.00E+00	0.00
3.35	0.974	0.659	0.380	10.99	6S	NL	0	0.00	3.35	---	10.9914	75.70	6	12.6	0.3800	22	15	2.20E-02	0.00E+00	0.00
3.40	0.974	0.669	0.380	11.16	6S	NL	0	0.00	3.40	---	11.1554	75.80	6	12.6	0.3799	22	15	2.20E-02	0.00E+00	0.00
3.45	0.974	0.679	0.380	11.32	6S	NL	0	0.00	3.45	---	11.3195	75.40	6	12.6	0.3797	22	15	2.20E-02	0.00E+00	0.00
3.50	0.973	0.689	0.380	11.48	6S	NL	0	0.00	3.50	---	11.4835	66.10	6	11.0	0.3796	20	15	2.40E-02	0.00E+00	0.00
3.55	0.973	0.699	0.379	11.65	6S	NL	0	0.00	3.55	---	11.6476	60.60	6	10.1	0.3794	18	15	2.60E-02	0.00E+00	0.00
3.60	0.972	0.709	0.379	11.81	5M	NL	0	0.00	3.60	---	11.8116	53.60	2.5	21.4	0.3793	29	15	1.50E-02	0.00E+00	0.00
3.65	0.972	0.719	0.379	11.98	5M	NL	0	0.00	3.65	---	11.9757	42.00	2.5	16.8	0.3791	26	15	1.80E-02	0.00E+00	0.00
3.70	0.972	0.728	0.379	12.14	5M	NL	0	0.00	3.70	---	12.1397	26.70	2.5	10.7	0.3790	19	15	2.50E-02	0.00E+00	0.00
3.75	0.971	0.738	0.379	12.30	4C	NL	0	0.00	3.75	---	12.3038	19.30	2	9.7	0.3788	18	15	2.60E-02	0.00E+00	0.00
3.80	0.971	0.748	0.379	12.47	4C	NL	0	0.00	3.80	---	12.4678	16.80	2	8.4	0.3787	15	15	2.90E-02	0.00E+00	0.00
3.85	0.971	0.758	0.379	12.63	4C	NL	0	0.00	3.85	---	12.6319	14.40	2	7.2	0.3785	13	15	3.20E-02	0.00E+00	0.00

SPREADSHEET TO CALCULATE CYCLIC RESISTANCE RATIO USING CPT DATA

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-4 CPT DATE: 12/19/05 KTE
DATE : 04/02/2007
amax = 0.6 g
M = 7.50
MSF = 1.5

Ic = (((3.47-LOG(Q))^2)+(LOG(F%)+1.22)^2)^0.5
dqc1N = IF(FC>=35,60,IF(FC<=5,0,2*(FC-5)))
CRR = IF(qc1Ncs<50,(0.833*(qc1Ncs/1000)+0.05),(93*(qc1Ncs/1000)^3+0.08))
MSF = 10^2.24/M^2.56
CSR = 0.65(amax/g)(sigv/sigv')rd = Seed's Equation
Z = IF(Ic<1.31,7,IF(Ic<2.05,6,IF(Ic<2.6,5,IF(Ic<2.95,4,IF(Ic<3.6,3,2)))))
Q = [(qc-St)/Pa]*[(Pa/S')^n]
Kc = IF(Ic<=1.64,1,(-0.403*Ic^4+5.581*Ic^3-21.63*Ic^2+33.75*Ic-17.88))

Liquefiable Soil (Type 5+ or 6+) = 2.4
Seismic Settlement Soil (Type) = 6
Actual Water = 21.6 feet
Design Water = 15 feet
Gamma = 120 pcf
rd = 2

Added Fill = 8 feet
Fill Density = 125 pcf
Pa = 1.04427 tsf = 100 kPa
Threshold FS = 1.20

FS = CRR*MSF/CSR

FS = Threshold Factor of Safety
NL = Above water or Soil Behavior Type is not liquefiable

Z	Soil
3	Clay to Silty Clay
4	Clayey Silt to Silty Clay
5	Silty Sand to Sandy Silt
6	Clean Sand to Silty Sand
7	Gravelly Sand to Sand

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-4 CPT DATE: 12/19/05 KTE
DATE : 04/02/2007
amax = 0.6 g
M = 7.50

Depth (m)	Depth (ft)	Tip Resist qc (tsf)	Sleeve Fric fs (tsf)	Total Stress (tsf) 0.00	Water Pressure (tsf) Sw	Effective Stress (tsf) S' = St - Sw	Norm. Fr. Ratio F (%) = fs/(qc-St)	Norm. Pen. Res. Q for n=1 (qc-St)/S'	Soil Index Ic for n=1	Norm. Pen. Res. Q for n= 0.5	Soil Index Ic for n=0.5	Norm. Pen. Res. Q for n= 0.7	Soil Index Ic for n=0.7	Soil Index Ic	Cq exp n	Overburden Correction Cq = 1.7 > (Pa/S')^n	Norm. Cone Res. qc1N = qc*Cq/Pa	Grain Char. Corr. Kc	Equivalent Clean Sand Cone Res. (qc1N)cs = Kc*qc1N	Cyclic Resistance Ratio CRR CRR
3.90	12.80	13.20	0.38	0.768	0.000	0.768	3.06	16	2.83	14	2.89	15	2.86	2.83	1.00	1.36	17	5.1	87.0	0.141
3.95	12.96	12.70	0.37	0.778	0.000	0.778	3.10	15	2.85	13	2.91	14	2.89	2.85	1.00	1.34	16	5.3	86.0	0.139
4.00	13.12	9.80	0.30	0.787	0.000	0.787	3.33	11	2.97	10	3.02	11	3.00	2.97	1.00	1.33	12	6.5	80.5	0.129
4.05	13.29	8.70	0.30	0.797	0.000	0.797	3.80	10	3.06	9	3.11	9	3.09	3.06	1.00	1.31	11	7.4	81.0	0.129
4.10	13.45	9.00	0.33	0.807	0.000	0.807	4.03	10	3.07	9	3.11	9	3.09	3.07	1.00	1.29	11	7.5	83.7	0.135
4.15	13.62	9.50	0.33	0.817	0.000	0.817	3.80	11	3.03	9	3.08	10	3.06	3.03	1.00	1.28	12	7.1	83.0	0.133
4.20	13.78	9.10	0.33	0.827	0.000	0.827	3.99	10	3.07	9	3.11	9	3.09	3.07	1.00	1.26	11	7.5	83.0	0.133
4.25	13.94	10.30	0.29	0.837	0.000	0.837	3.06	11	2.96	10	3.00	11	2.98	2.96	1.00	1.25	12	6.3	77.4	0.123
4.30	14.11	11.80	0.31	0.846	0.000	0.846	2.83	13	2.89	12	2.93	12	2.91	2.89	1.00	1.23	14	5.6	78.2	0.124
4.35	14.27	14.20	0.40	0.856	0.000	0.856	3.00	16	2.84	14	2.87	15	2.86	2.84	1.00	1.22	17	5.1	85.1	0.137
4.40	14.44	16.80	0.47	0.866	0.000	0.866	2.95	18	2.78	17	2.81	17	2.80	2.78	1.00	1.21	19	4.6	89.3	0.146
4.45	14.60	22.10	0.55	0.876	0.000	0.876	2.59	24	2.65	22	2.68	23	2.67	2.65	1.00	1.19	25	3.6	91.9	0.152
4.50	14.76	25.00	0.62	0.886	0.000	0.886	2.57	27	2.61	25	2.64	26	2.62	2.61	1.00	1.18	28	3.4	95.2	0.160
4.55	14.93	18.40	0.51	0.896	0.000	0.896	2.91	20	2.75	18	2.78	19	2.77	2.75	1.00	1.17	21	4.4	90.5	0.149
4.60	15.09	12.80	0.44	0.906	0.000	0.906	3.70	13	2.95	12	2.98	13	2.97	2.95	1.00	1.15	14	6.2	88.3	0.144
4.65	15.26	14.50	0.45	0.915	0.000	0.915	3.31	15	2.88	14	2.91	14	2.90	2.88	1.00	1.14	16	5.5	87.7	0.143
4.70	15.42	15.60	0.45	0.925	0.000	0.925	3.07	16	2.84	15	2.86	15	2.85	2.84	1.00	1.13	17	5.1	86.5	0.140
4.75	15.58	24.30	0.52	0.935	0.000	0.935	2.23	25	2.60	24	2.62	24	2.61	2.61	0.70	1.08	25	3.4	85.2	0.137
4.80	15.75	42.10	0.45	0.945	0.000	0.945	1.09	44	2.22	41	2.24	42	2.23	2.24	0.50	1.05	42	1.8	75.0	0.119
4.85	15.91	101.60	0.50	0.955	0.000	0.955	0.50	105	1.71	101	1.73	103	1.72	1.73	0.50	1.05	102	1.1	107.6	0.196
4.90	16.08	129.50	0.50	0.965	0.000	0.965	0.39	133	1.57	128	1.59	130	1.58	1.59	0.50	1.04	129	1.0	129.0	0.280
4.95	16.24	149.80	0.56	0.974	0.000	0.974	0.38	153	1.51	148	1.53	150	1.52	1.53	0.50	1.04	148	1.0	148.5	0.385
5.00	16.41	152.00	0.60	0.984	0.000	0.984	0.40	153	1.52	149	1.53	151	1.53	1.53	0.50	1.03	150	1.0	149.9	0.393
5.05	16.57	144.30	0.65	0.994	0.000	0.994	0.45	144	1.58	141	1.59	142	1.58	1.59	0.50	1.02	142	1.0	141.6	0.344
5.10	16.73	126.60	0.51	1.004	0.000	1.004	0.41	125	1.60	123	1.61	124	1.61	1.61	0.50	1.02	124	1.0	123.6	0.256
5.15	16.90	92.40	0.60	1.014	0.000	1.014	0.66	90	1.84	89	1.84	89	1.84	1.84	0.50	1.01	90	1.1	102.2	0.179
5.20	17.06	58.50	0.66	1.024	0.000	1.024	1.15	56	2.14	56	2.15	56	2.15	2.15	0.50	1.01	57	1.5	87.6	0.143
5.25	17.23	42.00	0.71	1.034	0.000	1.034	1.73	40	2.37	39	2.37	40	2.37	2.37	0.50	1.01	40	2.2	89.5	0.147
5.30	17.39	20.40	0.63	1.043	0.000	1.043	3.25	19	2.80	19	2.80	19	2.80	2.80	1.00	1.00	20	4.8	93.8	0.157
5.35	17.55	12.30	0.45	1.053	0.000	1.053	4.00	11	3.05	11	3.05	11	3.05	3.05	1.00	0.99	12	7.3	85.0	0.137
5.40	17.72	10.90	0.26	1.063	0.000	1.063	2.64	9	2.99	9	2.99	9	2.99	2.99	1.00	0.98	10	6.7	68.5	0.110
5.45	17.88	10.60	0.24	1.073	0.000	1.073	2.52	9	3.00	9	2.99	9	2.99	3.00	1.00	0.97	10	6.7	66.4	0.107
5.50	18.05	10.40	0.28	1.083	0.000	1.083	3.01	9	3.05	9	3.04	9	3.05	3.05	1.00	0.96	10	7.3	70.4	0.112
5.55	18.21	11.20	0.29	1.093	0.000	1.093	2.87	9	3.01	9	3.01	9	3.01	3.01	1.00	0.96	10	6.9	70.7	0.113
5.60	18.37	12.30	0.28	1.102	0.000	1.102	2.50	10	2.95	10	2.94	10	2.94	2.95	1.00	0.95	11	6.2	68.9	0.110
5.65	18.54	13.50	0.24	1.112	0.000	1.112	1.94	11	2.85	11	2.84	11	2.85	2.85	1.00	0.94	12	5.3	63.8	0.104
5.70	18.70	20.60	0.21	1.122	0.000	1.122	1.08	17	2.56	18	2.54	18	2.55	2.54	0.50	0.96	19	3.0	57.2	0.097
5.75	18.87	20.40	0.23	1.132	0.000	1.132	1.19	17	2.59	18	2.57	17	2.58	2.57	0.50	0.96	19	3.2	59.3	0.099
5.80	19.03	13.90	0.31	1.142	0.000	1.142	2.43	11	2.91	12	2.89	11	2.90	2.91	1.00	0.91	12	5.8	70.0	0.112
5.85	19.19	11.80	0.33	1.152	0.000	1.152	3.10	9	3.03	10	3.02	10	3.02	3.03	1.00	0.91	10	7.1	72.9	0.116
5.90	19.36	12.80	0.34	1.161	0.000	1.161	2.92	10	2.99	11	2.97	10	2.98	2.99	1.00	0.90	11	6.6	73.1	0.116
5.95	19.52	11.80	0.30	1.171	0.000	1.171	2.82	9	3.02	10	3.00	9	3.00	3.02	1.00	0.89	10	6.9	69.9	0.112
6.00	19.69	36.40	0.37	1.181	0.000	1.181	1.05	30	2.35	32	2.33	31	2.34	2.33	0.50	0.94	33	2.0	66.9	0.108
6.05	19.85	116.70	0.75	1.191	0.000	1.191	0.65	97	1.81	104	1.78	101	1.79	1.78	0.50	0.94	105	1.1	114.6	0.220
6.10	20.01	135.50	0.93	1.201	0.000	1.201	0.69	112	1.77	120	1.75	117	1.76	1.75	0.50	0.93	121	1.1	129.6	0.282
6.15	20.18	137.10	1.17	1.211	0.000	1.211	0.86	112	1.83	121	1.81	117	1.82	1.81	0.50	0.93	122	1.1	135.4	0.311
6.20	20.34	109.90	1.41	1.221	0.000	1.221	1.30	89	2.02	96	2.00	93	2.01	2.00	0.50	0.92	97	1.3	126.1	0.267
6.25	20.51	71.40	1.40	1.230	0.000	1.230	2.00	57	2.29	62	2.26	60	2.27	2.26	0.50	0.92	63	1.8	115.9	0.225
6.30	20.67	47.10	1.08	1.240	0.000	1.240	2.36	37	2.48	40	2.45	39	2.46	2.45	0.50	0.92	41	2.5	105.0	0.188
6.35	20.83	53.10	0.98	1.250	0.000	1.250	1.89	41	2.38	45	2.35	44	2.36	2.35	0.50	0.91	46	2.1	98.7	0.169
6.40	21.00	85.90	1.01	1.260	0.000	1.260	1.19	67	2.09	74	2.06	71	2.07	2.06	0.50	0.91	75	1.4	104.0	0.185
6.45	21.16	84.30	0.99	1.270	0.000	1.270	1.19	65	2.10	72	2.07	69	2.08	2.07	0.50	0.91	73	1.4	102.5	0.180
6.50	21.33	73.80	1.16	1.280	0.000	1.280	1.60	57	2.23	63	2.20	60	2.21	2.20	0.50	0.90	64	1.7	105.9	0.190
6.55	21.49	52.60	1.28	1.289	0.000	1.289	2.49	40	2.47	44	2.44	42	2.45	2.44	0.50	0.90	45	2.5	112.1	0.211
6.60	21.65	42.30	1.31	1.299	0.002	1.298	3.20	32	2.62	35	2.58	34	2.60	2.62	1.00	0.80	33	3.4	112.2	0.211
6.65	21.82	25.90	1.13	1.309	0.007	1.302	4.60	19	2.89	21	2.85	20	2.87	2.89	1.00	0.80	20	5.6	111.5	0.209
6.70	21.98	21.10	0.86	1.319	0.012	1.307	4.35	15	2.95	17	2.91	16	2.93	2.95	1.00	0.80	16	6.2	100.0	0.173
6.75	22.15	21.40	0.87	1.329	0.017	1.312	4.33	15	2.94	17	2.91	16	2.92	2.94	1.00	0.80	16	6.1	100.3	0.174
6.80	22.31	31.80	0.65	1.339	0.022	1.316	2.13	23	2.61	26	2.57	25	2.59	2.61	1.00	0.79	24	3.4	82.5	0.132
6.85	22.47	26.10	0.76	1.348	0.027	1.321	3.07	19	2.78	21	2.74	20	2.76	2.78	1.00	0.79	20	4.6	91.6	0.152
6.90	22.64	26.50	0.74	1.358	0.032	1.326	2.94	19	2.77	21	2.73	20	2.74	2.77	1.00	0.79	20	4.5	90.2	0.148
6.95	22.80	20.90	0.73	1.368	0.038	1.331	3.74	15	2.92	17	2.88	16	2.89	2.92	1.00	0.78	16	5.9	92.4	0.153
7.00	22.97	46.20	0.87	1.378	0.043	1.335	1.94	34	2.46	38	2.42	36	2.44	2.42	0.50	0.88	39	2.4	93.5	0.156
7.05	23.13	59.50	0.90	1.388	0.048	1.340	1.55	43	2.31	49	2.27	47	2.29	2.27	0.50	0.88	50	1.9	93.3	0.156
7.10	23.30	74.80	0.92	1.398	0.053	1.345	1.25	55	2.18	62	2.13	59	2.15	2.13	0.50	0.88	63	1.5	95.9	0.162
7.15	23.46	68.80	0.73	1.408	0.058	1.350	1.08	50	2.17	57	2.13	54	2.14	2.13	0.50	0.88	58	1.5	87.1	0.141
7.20	23.62	66.00	0.75	1.417	0.063	1.354	1.16	48	2.20	54	2.16	52	2.18	2.16	0.50	0.88	55	1.6	87.3	0.142
7.25	23.79	59.80	0.98	1.427	0.068	1.359	1.68	43	2.34	49	2.29	46	2.31	2.29	0.50	0.88	50	1.9	96.6	0.164
7.30	23.95	58.70	1.02	1.437	0.073	1.364	1.78	42	2.36	48	2.32	45	2.33	2.32	0.50	0.88	49	2.0	98.4	0.169
7.35	24.12	131.60	0.94	1.447	0.078	1.368	0.72	95	1.84	109	1.79	103	1.81	1.79	0.50	0.87	110	1.1	121.3	0.246
7.40	24.28	164.60	0.89	1.457	0.084	1.373	0.55	119	1.69	136	1.64	129	1.66	1.64	0.50	0.87	137	1.0	137.2	0.320
7.45	24.44	193.90	0.94	1.467	0.089	1.378	0.49	140	1.61	160	1.56	152	1.58	1.56	0.50	0.87	162	1.0	161.6	0.473
7.50	24.61	205.20	1.10	1.476	0.094	1.383	0.54	147	1.61	170	1.56	160	1.58	1.56	0.50	0.87	171	1.0	170.8	0.543
7.55	24.77	198.40	1.17	1.486	0.099	1.387	0.59	142	1.65	164	1.60	155	1.62	1.60	0.50	0.87	165	1.0	164.8	0.496
7.60	24.94	192.90	1.36	1.496	0.104	1.392	0.71	137	1.71	159	1.66	150	1.68	1.66	0.50	0.87	160	1.0	161.8	0.474
7.65	25.10	188.60	1.45	1.506	0.109	1.397	0.78	134	1.74	155	1.69	146	1.71	1.69	0.50	0.86	156	1.0	161.4	0.471
7.70	25.26	183.00	1.53	1.516	0.114	1.402	0.84	129	1.78	150	1.73	141	1.75	1.73	0.50	0.86	151	1.1	159.9	0.460
7.75	25.43	182.50	1.53	1.526	0.119	1.406	0.85	129	1.78	149	1.73	141	1.75	1.73	0.50	0.86	151	1.1	159.4	0.457

Depth (m)	rd rd	Design Effective Stress (tsf) S' = St - Sw	Cyclic Stress Ratio CSR CSR	Depth (ft) Depth	Soil Behavior Type Z Z	Factor of Safety FS	Liquefiable Layers	Sum of Liquefiable Thickness (m)	Sum of Non-Liq Thickness (m)	Ratio of Non-Liq to Liquefiable 3.53	Liq. Settlement (in) 0.73 in. Settlement	N-Value Conversion (tsf) qc	qc/N	N-Value	Liquefaction Settlemer 0.73 in. CSR	H_Index	V_Index	Strain%	Settlement	Cumulative Settlement
3.90	0.970	0.768	0.378	12.80	4 C	NL	0	0.00	3.90	---	12.7959	13.20	2	6.6	0.3784	12	15	3.40E-02	0.00E+00	0.00
3.95	0.970	0.778	0.378	12.96	4 C	NL	0	0.00	3.95	---	12.9600	12.70	2	6.4	0.3782	12	15	3.40E-02	0.00E+00	0.00
4.00	0.969	0.787	0.378	13.12	3 C	NL	0	0.00	4.00	---	13.1240	9.80	2	4.9	0.3781	9	15	4.00E-02	0.00E+00	0.00
4.05	0.969	0.797	0.378	13.29	3 C	NL	0	0.00	4.05	---	13.2881	8.70	2	4.4	0.3779	8	15	4.50E-02	0.00E+00	0.00
4.10	0.969	0.807	0.378	13.45	3 C	NL	0	0.00	4.10	---	13.4521	9.00	2	4.5	0.3778	8	15	4.50E-02	0.00E+00	0.00
4.15	0.968	0.817	0.378	13.62	3 C	NL	0	0.00	4.15	---	13.6162	9.50	2	4.8	0.3776	8	15	4.50E-02	0.00E+00	0.00
4.20	0.968	0.827	0.377	13.78	3 C	NL	0	0.00	4.20	---	13.7802	9.10	2	4.6	0.3775	8	15	4.50E-02	0.00E+00	0.00
4.25	0.967	0.837	0.377	13.94	3 C	NL	0	0.00	4.25	---	13.9443	10.30	2	5.2	0.3773	9	15	4.00E-02	0.00E+00	0.00
4.30	0.967	0.846	0.377	14.11	4 C	NL	0	0.00	4.30	---	14.1083	11.80	2	5.9	0.3772	11	15	3.60E-02	0.00E+00	0.00
4.35	0.967	0.856	0.377	14.27	4 C	NL	0	0.00	4.35	---	14.2724	14.20	2	7.1	0.3770	13	15	3.20E-02	0.00E+00	0.00
4.40	0.966	0.866	0.377	14.44	4 C	NL	0	0.00	4.40	---	14.4364	16.80	2	8.4	0.3769	15	15	2.90E-02	0.00E+00	0.00
4.45	0.966	0.876	0.377	14.60	4 C	NL	0	0.00	4.45	---	14.6005	22.10	2	11.1	0.3767	20	15	2.40E-02	0.00E+00	0.00
4.50	0.966	0.886	0.377	14.76	4 C	NL	0	0.00	4.50	---	14.7645	25.00	2	12.5	0.3766	22	15	2.20E-02	0.00E+00	0.00
4.55	0.965	0.896	0.376	14.93	4 C	NL	0	0.00	4.55	---	14.9286	18.40	2	9.2	0.3764	17	15	2.70E-02	0.00E+00	0.00
4.60	0.965	0.903	0.377	15.09	3 C	NL	0	0.00	4.60	---	15.0926	12.80	2	6.4	0.3771	12	15	3.40E-02	0.00E+00	0.00
4.65	0.964	0.907	0.378	15.26	4 C	NL	0	0.00	4.65	---	15.2567	14.50	2	7.3	0.3783	13	15	3.20E-02	0.00E+00	0.00
4.70	0.964	0.912	0.379	15.42	4 C	NL	0	0.00	4.70	---	15.4207	15.60	2	7.8	0.3795	14	15	3.00E-02	0.00E+00	0.00
4.75	0.964	0.917	0.381	15.58	5 M	NL	0	0.00	4.75	---	15.5848	24.30	2.5	9.7	0.3807	18	15	2.60E-02	0.00E+00	0.00
4.80	0.963	0.922	0.382	15.75	5 M	0.47	1	0.05	4.75	95.00	15.7488	42.10	2.5	16.8	0.3819	26	15	1.80E-02	0.00E+00	0.00
4.85	0.963	0.926	0.383	15.91	6 S	0.77	1	0.10	4.75	47.50	15.9129	101.60	6	16.9	0.3830	26	15	1.80E-02	3.54E-02	0.04
4.90	0.963	0.931	0.384	16.08	6 S	1.09	1	0.15	4.75	31.67	16.0769	129.50	6	21.6	0.3842	30	15	1.40E-02	2.76E-02	0.06
4.95	0.962	0.936	0.385	16.24	6 S	1.50	0	0.15	4.80	32.00	16.2410	149.80	6	25.0	0.3854	32	15	1.20E-02	0.00E+00	0.06
5.00	0.962	0.940	0.386	16.41	6 S	1.53	0	0.15	4.85	32.33	16.4050	152.00	6	25.3	0.3865	32	15	1.20E-02	0.00E+00	0.06
5.05	0.961	0.945	0.388	16.57	6 S	1.33	0	0.15	4.90	32.67	16.5691	144.30	6	24.1	0.3876	31	15	1.30E-02	0.00E+00	0.06
5.10	0.961	0.950	0.389	16.73	6 S	0.99	1	0.20	4.90	24.50	16.7331	126.60	6	21.1	0.3888	29	15	1.50E-02	2.95E-02	0.09
5.15	0.961	0.955	0.390	16.90	6 S	0.69	1	0.25	4.90	19.60	16.8972	92.40	6	15.4	0.3899	25	15	1.90E-02	3.74E-02	0.13
5.20	0.960	0.959	0.391	17.06	5 M	0.55	1	0.30	4.90	16.33	17.0612	58.50	2.5	23.4	0.3910	31	15	1.30E-02	0.00E+00	0.13
5.25	0.960	0.964	0.392	17.23	5 M	0.56	1	0.35	4.90	14.00	17.2253	42.00	2.5	16.8	0.3921	26	15	1.80E-02	0.00E+00	0.13
5.30	0.959	0.969	0.393	17.39	4 C	NL	0	0.35	4.95	14.14	17.3893	20.40	2	10.2	0.3932	19	15	2.50E-02	0.00E+00	0.13
5.35	0.959	0.974	0.394	17.55	3 C	NL	0	0.35	5.00	14.29	17.5534	12.30	2	6.2	0.3943	12	15	3.40E-02	0.00E+00	0.13
5.40	0.959	0.978	0.395	17.72	3 C	NL	0	0.35	5.05	14.43	17.7174	10.90	2	5.5	0.3953	10	15	3.80E-02	0.00E+00	0.13
5.45	0.958	0.983	0.396	17.88	3 C	NL	0	0.35	5.10	14.57	17.8815	10.60	2	5.3	0.3964	10	15	3.80E-02	0.00E+00	0.13
5.50	0.958	0.988	0.397	18.05	3 C	NL	0	0.35	5.15	14.71	18.0455	10.40	2	5.2	0.3975	10	15	3.80E-02	0.00E+00	0.13
5.55	0.958	0.992	0.398	18.21	3 C	NL	0	0.35	5.20	14.86	18.2096	11.20	2	5.6	0.3985	11	15	3.60E-02	0.00E+00	0.13
5.60	0.957	0.997	0.400	18.37	4 C	NL	0	0.35	5.25	15.00	18.3736	12.30	2	6.2	0.3995	12	15	3.40E-02	0.00E+00	0.13
5.65	0.957	1.002	0.401	18.54	4 C	NL	0	0.35	5.30	15.14	18.5377	13.50	2	6.8	0.4006	12	16	3.40E-02	0.00E+00	0.13
5.70	0.956	1.007	0.402	18.70	5 M	NL	0	0.35	5.35	15.29	18.7017	20.60	2.5	8.2	0.4016	15	16	2.90E-02	0.00E+00	0.13
5.75	0.956	1.011	0.403	18.87	5 M	NL	0	0.35	5.40	15.43	18.8658	20.40	2.5	8.2	0.4026	15	16	2.90E-02	0.00E+00	0.13
5.80	0.956	1.016	0.404	19.03	4 C	NL	0	0.35	5.45	15.57	19.0298	13.90	2	7.0	0.4036	13	16	3.20E-02	0.00E+00	0.13
5.85	0.955	1.021	0.405	19.19	3 C	NL	0	0.35	5.50	15.71	19.1939	11.80	2	5.9	0.4046	11	16	3.60E-02	0.00E+00	0.13
5.90	0.955	1.026	0.406	19.36	3 C	NL	0	0.35	5.55	15.86	19.3579	12.80	2	6.4	0.4056	12	16	3.40E-02	0.00E+00	0.13
5.95	0.954	1.030	0.407	19.52	3 C	NL	0	0.35	5.60	16.00	19.5220	11.80	2	5.9	0.4066	11	16	3.60E-02	0.00E+00	0.13
6.00	0.954	1.035	0.408	19.69	5 M	0.40	1	0.40	5.60	14.00	19.6860	36.40	2.5	14.6	0.4075	24	16	2.00E-02	0.00E+00	0.13
6.05	0.954	1.040	0.409	19.85	6 S	0.81	1	0.45	5.60	12.44	19.8501	116.70	6	19.5	0.4085	28	16	1.60E-02	3.15E-02	0.16
6.10	0.953	1.044	0.409	20.01	6 S	1.03	1	0.50	5.60	11.20	20.0141	135.50	6	22.6	0.4095	30	16	1.40E-02	2.76E-02	0.19
6.15	0.953	1.049	0.410	20.18	6 S	1.14	1	0.55	5.60	10.18	20.1782	137.10	6	22.9	0.4104	30	16	1.40E-02	2.76E-02	0.22
6.20	0.953	1.054	0.411	20.34	6 S	0.97	1	0.60	5.60	9.33	20.3422	109.90	6	18.3	0.4114	27	16	1.70E-02	3.35E-02	0.25
6.25	0.952	1.059	0.412	20.51	5 M	0.82	1	0.65	5.60	8.62	20.5063	71.40	2.5	28.6	0.4123	34	16	9.00E-03	0.00E+00	0.25
6.30	0.952	1.063	0.413	20.67	5 M	NL	0	0.65	5.65	8.69	20.6703	47.10	2.5	18.8	0.4132	28	16	1.60E-02	0.00E+00	0.25
6.35	0.951	1.068	0.414	20.83	5 M	0.61	1	0.70	5.65	8.07	20.8344	53.10	2.5	21.2	0.4141	29	16	1.50E-02	0.00E+00	0.25
6.40	0.951	1.073	0.415	21.00	5 M	0.67	1	0.75	5.65	7.53	20.9984	85.90	2.5	34.4	0.4150	41	16	0.00E+00	0.00E+00	0.25
6.45	0.951	1.077	0.416	21.16	5 M	0.65	1	0.80	5.65	7.06	21.1625	84.30	2.5	33.7	0.4159	40	16	7.00E-04	0.00E+00	0.25
6.50	0.950	1.082	0.417	21.33	5 M	0.69	1	0.85	5.65	6.65	21.3265	73.80	2.5	29.5	0.4168	35	16	9.00E-03	0.00E+00	0.25
6.55	0.950	1.087	0.418	21.49	5 M	NL	0	0.85	5.70	6.71	21.4906	52.60	2.5	21.0	0.4177	29	16	1.50E-02	0.00E+00	0.25
6.60	0.950	1.092	0.419	21.65	4 C	NL	0	0.85	5.75	6.76	21.6546	42.30	2	21.2	0.4186	29	16	1.50E-02	0.00E+00	0.25
6.65	0.949	1.096	0.419	21.82	4 C	NL	0	0.85	5.80	6.82	21.8187	25.90	2	13.0	0.4195	22	16	2.20E-02	0.00E+00	0.25
6.70	0.949	1.101	0.420	21.98	4 C	NL	0	0.85	5.85	6.88	21.9827	21.10	2	10.6	0.4204	19	16	2.50E-02	0.00E+00	0.25
6.75	0.948	1.106	0.421	22.15	4 C	NL	0	0.85	5.90	6.94	22.1468	21.40	2	10.7	0.4212	19	16	2.50E-02	0.00E+00	0.25
6.80	0.948	1.111	0.422	22.31	4 C	NL	0	0.85	5.95	7.00	22.3108	31.80	2	15.9	0.4221	25	16	1.90E-02	0.00E+00	0.25
6.85	0.948	1.115	0.423	22.47	4 C	NL	0	0.85	6.00	7.06	22.4749	26.10	2	13.1	0.4229	22	16	2.20E-02	0.00E+00	0.25
6.90	0.947	1.120	0.424	22.64	4 C	NL	0	0.85	6.05	7.12	22.6389	26.50	2	13.3	0.4238	22	16	2.20E-02	0.00E+00	0.25
6.95	0.947	1.125	0.425	22.80	4 C	NL	0	0.85	6.10	7.18	22.8030	20.90	2	10.5	0.4246	19	16	2.50E-02	0.00E+00	0.25
7.00	0.946	1.129	0.425	22.97	5 M	NL	0	0.85	6.15	7.24	22.9670	46.20	2.5	18.5	0.4254	27	16	1.70E-02	0.00E+00	0.25
7.05	0.946	1.134	0.426	23.13	5 M	0.55	1	0.90	6.15	6.83	23.1311	59.50	2.5	23.8	0.4262	31	16	1.30E-02	0.00E+00	0.25
7.10	0.946	1.139	0.427	23.30	5 M	0.57	1	0.95	6.15	6.47	23.2951	74.80	2.5	29.9	0.4271	36	16	7.00E-03	0.00E+00	0.25
7.15	0.945	1.144	0.428	23.46	5 M	0.50	1	1.00	6.15	6.15	23.4592	68.80	2.5	27.5	0.4279	33	16	1.00E-02	0.00E+00	0.25
7.20	0.945	1.148	0.429	23.62	5 M	0.50	1	1.05	6.15	5.86	23.6232	66.00	2.5	26.4	0.4287	32	16	1.20E-02	0.00E+00	0.25
7.25	0.945	1.153	0.429	23.79	5 M	0.57	1	1.10	6.15	5.59	23.7873	59.80	2.5	23.9	0.4295	31	16	1.30E-02	0.00E+00	0.25
7.30	0.944	1.158	0.430	23.95	5 M	0.59	1	1.15	6.15	5.35	23.9513	58.70	2.5	23.5	0.4303	31	16	1.30E-02	0.00E+00	0.25
7.35	0.944	1.163	0.431	24.12	6 S	0.86	1	1.20	6.15	5.13	24.1154	131.60	6	21.9	0.4310	30	16	1.40E-02	2.76E-02	0.28
7.40	0.943	1.167	0.432	24.28	6 S	1.11	1	1.25	6.15	4.92	24.2794	164.60	6	27.4	0.4318	33	16	1.00E-02	1.97E-02	0.30
7.45	0.943	1.172	0.433	24.44	6 S	1.64	0	1.25	6.20	4.96	24.4435	193.90	6	32.3	0.4326	38	16	3.00E-03	0.00E+00	0.30
7.50	0.943	1.177	0.433	24.61	6 S	1.88	0	1.25	6.25	5.00	24.6075	205.20	6	34.2	0.4333	41	16	0.00E+00	0.00E+00	0.30
7.55	0.942	1.181	0.434	24.77	6 S	1.72	0	1.25	6.30	5.04	24.7716	198.40	6	33.1	0.4341	39	16	1.80E-03	0.00E+00	0.30
7.60	0.942	1.186	0.435	24.94	6 S	1.63	0	1.25	6.35	5.08	24.9356	192.90	6	32.2	0.4349	38	16	3.00E-03	0.00E+00	0.30
7.65	0.941	1.191	0.436	25.10	6 S	1.62	0	1.25	6.40	5.12	25.0997	188.60	6	31.4	0.4356	37	16	5.00E-03	0.00E+00	0.30
7.70	0.941	1.196	0.436	25.26	6 S	1.58	0	1.25	6.45	5.16	25.2637	183.00	6	30.5	0.4363	36	16	7.00E-03	0.00E+00	0.30
7.75	0.941	1.200	0.437	25.43	6 S	1.57	0	1.25	6.50	5.20	25.4278	182.50	6	30.4	0.4371	36	16	7.00E-03	0.00E+00	0.30

SPREADSHEET TO CALCULATE CYCLIC RESISTANCE RATIO USING CPT DATA

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-4 CPT DATE: 12/19/05 KTE
DATE : 04/02/2007
amax = 0.6 g
M = 7.50
MSF = 1.5

Ic = (((3.47-LOG(Q))^2)+(LOG(F%)+1.22)^2)^0.5
dqc1N = IF(FC>=35,60,IF(FC<=5,0,2*(FC-5)))
CRR = IF(qc1Ncs<50,(0.833*(qc1Ncs/1000)+0.05),(93*(qc1Ncs/1000)^3+0.08))
MSF = 10^2.24/M^2.56
CSR = 0.65(amax/g)(sigv/sigv')rd = Seed's Equation
Z = IF(Ic<1.31,7,IF(Ic<2.05,6,IF(Ic<2.6,5,IF(Ic<2.95,4,IF(Ic<3.6,3,2)))))
Q = [(qc-St)/Pa]*[(Pa/S')^n]
Kc = IF(Ic<=1.64,1,(-0.403*Ic^4+5.581*Ic^3-21.63*Ic^2+33.75*Ic-17.88))

Liquefiable Soil (Type 5+ or 6+) = 2.4
Seismic Settlement Soil (Type) = 6
Actual Water = 21.6 feet
Design Water = 15 feet
Gamma = 120 pcf
rd = 2

Added Fill = 8 feet
Fill Density = 125 pcf
Pa = 1.04427 tsf = 100 kPa
Threshold FS = 1.20

FS = CRR*MSF/CSR

FS = Threshold Factor of Safety
NL = Above water or Soil Behavior Type is not liquefiable

Z	Soil
3	Clay to Silty Clay
4	Clayey Silt to Silty Clay
5	Silty Sand to Sandy Silt
6	Clean Sand to Silty Sand
7	Gravelly Sand to Sand

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-4 CPT DATE: 12/19/05 KTE
DATE : 04/02/2007
amax = 0.6 g
M = 7.50

Depth (m)	Depth (ft)	Tip Resist qc (tsf)	Sleeve Fric fs (tsf)	Total Stress (tsf) 0.00	Water Pressure (tsf) Sw	Effective Stress (tsf) S' = St - Sw	Norm. Fr. Ratio F (%) = fs/(qc-St)	Norm. Pen. Res. Q for n=1 (qc-St)/S'	Soil Index Ic for n=1	Norm. Pen. Res. Q for n= 0.5	Soil Index Ic for n=0.5	Norm. Pen. Res. Q for n= 0.7	Soil Index Ic for n=0.7	Soil Index Ic	Cq exp n	Overburden Correction Cq = 1.7 > (Pa/S')^n	Norm. Cone Res. qc1N = qc*Cq/Pa	Grain Char. Corr. Kc	Equivalent Clean Sand Cone Res. (qc1N)cs = Kc*qc1N	Cyclic Resistance Ratio CRR CRR	rd rd	Design Effective Stress (tsf) S' = St - Sw	Cyclic Stress Ratio CSR CSR
7.80	25.59	197.10	1.32	1.536	0.125	1.411	0.67	139	1.69	161	1.64	152	1.66	1.64	0.50	0.86	162	1.0	162.0	0.475	0.940	1.205	0.438
7.85	25.76	209.60	1.27	1.545	0.130	1.416	0.61	147	1.65	171	1.59	161	1.61	1.59	0.50	0.86	172	1.0	172.4	0.556	0.940	1.210	0.439
7.90	25.92	220.10	1.26	1.555	0.135	1.420	0.58	154	1.61	179	1.56	169	1.58	1.56	0.50	0.86	181	1.0	180.7	0.629	0.940	1.214	0.439
7.95	26.08	226.70	1.28	1.565	0.140	1.425	0.57	158	1.60	185	1.55	173	1.57	1.55	0.50	0.86	186	1.0	185.8	0.677	0.939	1.219	0.440
8.00	26.25	246.90	1.25	1.575	0.145	1.430	0.51	172	1.54	201	1.49	189	1.51	1.49	0.50	0.85	202	1.0	202.1	0.847	0.939	1.224	0.441
8.05	26.41	255.90	1.10	1.585	0.150	1.435	0.43	177	1.49	208	1.44	195	1.46	1.44	0.50	0.85	209	1.0	209.1	0.930	0.938	1.229	0.441
8.10	26.58	254.10	1.00	1.595	0.155	1.439	0.40	175	1.47	206	1.42	193	1.44	1.42	0.50	0.85	207	1.0	207.3	0.908	0.938	1.233	0.442
8.15	26.74	256.30	1.04	1.604	0.160	1.444	0.41	176	1.48	207	1.42	194	1.44	1.42	0.50	0.85	209	1.0	208.7	0.926	0.938	1.238	0.443
8.20	26.90	264.00	1.14	1.614	0.165	1.449	0.43	181	1.48	213	1.43	200	1.45	1.43	0.50	0.85	215	1.0	214.6	1.000	0.937	1.243	0.443
8.25	27.07	263.40	1.18	1.624	0.171	1.453	0.45	180	1.50	212	1.44	199	1.46	1.44	0.50	0.85	214	1.0	213.8	0.989	0.937	1.248	0.444
8.30	27.23	261.10	1.27	1.634	0.176	1.458	0.49	178	1.52	210	1.46	197	1.49	1.46	0.50	0.85	212	1.0	211.6	0.961	0.937	1.252	0.445
8.35	27.40	251.10	1.36	1.644	0.181	1.463	0.55	171	1.56	202	1.51	189	1.53	1.51	0.50	0.84	203	1.0	203.2	0.860	0.936	1.257	0.445
8.40	27.56	250.80	1.43	1.654	0.186	1.468	0.57	170	1.58	201	1.52	188	1.55	1.52	0.50	0.84	203	1.0	202.6	0.853	0.936	1.262	0.446
8.45	27.72	248.80	1.46	1.663	0.191	1.472	0.59	168	1.59	199	1.53	186	1.56	1.53	0.50	0.84	201	1.0	200.6	0.831	0.935	1.266	0.447
8.50	27.89	239.70	1.40	1.673	0.196	1.477	0.59	161	1.60	192	1.55	179	1.57	1.55	0.50	0.84	193	1.0	193.0	0.749	0.935	1.271	0.447
8.55	28.05	231.70	1.43	1.683	0.201	1.482	0.62	155	1.63	185	1.57	172	1.60	1.57	0.50	0.84	186	1.0	186.3	0.681	0.935	1.276	0.448
8.60	28.22	236.10	1.21	1.693	0.206	1.487	0.52	158	1.58	188	1.52	175	1.54	1.52	0.50	0.84	189	1.0	189.5	0.713	0.934	1.281	0.449
8.65	28.38	242.60	1.52	1.703	0.212	1.491	0.63	162	1.62	193	1.56	180	1.59	1.56	0.50	0.84	194	1.0	194.4	0.763	0.934	1.285	0.449
8.70	28.54	236.20	1.72	1.713	0.217	1.496	0.73	157	1.67	188	1.62	175	1.64	1.62	0.50	0.84	189	1.0	189.0	0.708	0.933	1.290	0.450
8.75	28.71	232.00	1.40	1.723	0.222	1.501	0.61	153	1.63	184	1.57	171	1.59	1.57	0.50	0.83	185	1.0	185.3	0.672	0.933	1.295	0.451
8.80	28.87	214.90	1.12	1.732	0.227	1.505	0.53	142	1.62	170	1.56	158	1.58	1.56	0.50	0.83	171	1.0	171.4	0.548	0.933	1.300	0.451
8.85	29.04	184.70	0.85	1.742	0.232	1.510	0.46	121	1.65	146	1.58	135	1.61	1.58	0.50	0.83	147	1.0	147.1	0.376	0.932	1.304	0.452
8.90	29.20	141.20	0.83	1.752	0.237	1.515	0.60	92	1.80	111	1.74	103	1.76	1.74	0.50	0.83	112	1.1	119.4	0.238	0.932	1.309	0.452
8.95	29.36	103.80	0.93	1.762	0.242	1.520	0.91	67	2.02	81	1.96	75	1.98	1.96	0.50	0.83	82	1.2	102.8	0.181	0.932	1.314	0.453
9.00	29.53	64.90	1.07	1.772	0.247	1.524	1.69	41	2.35	50	2.29	46	2.31	2.29	0.50	0.83	51	1.9	98.3	0.168	0.931	1.318	0.454
9.05	29.69	63.20	1.05	1.782	0.253	1.529	1.71	40	2.37	49	2.30	45	2.33	2.30	0.50	0.83	50	1.9	97.5	0.166	0.931	1.323	0.454
9.10	29.86	59.50	1.13	1.791	0.258	1.534	1.96	38	2.42	46	2.36	42	2.38	2.36	0.50	0.83	47	2.2	101.2	0.176	0.930	1.328	0.455
9.15	30.02	42.00	1.11	1.801	0.263	1.539	2.76	26	2.64	32	2.58	29	2.60	2.64	1.00	0.68	27	3.6	97.9	0.167	0.930	1.333	0.455
9.20	30.19	49.90	1.01	1.811	0.268	1.543	2.10	31	2.51	38	2.44	35	2.47	2.44	0.50	0.82	39	2.5	97.7	0.167	0.928	1.337	0.455
9.25	30.35	50.30	1.02	1.821	0.273	1.548	2.10	31	2.51	38	2.44	35	2.47	2.44	0.50	0.82	40	2.5	98.0	0.168	0.927	1.342	0.456
9.30	30.51	39.30	1.08	1.831	0.278	1.553	2.88	24	2.68	29	2.61	27	2.64	2.68	1.00	0.67	25	3.8	97.4	0.166	0.926	1.347	0.456
9.35	30.68	37.10	1.08	1.841	0.283	1.557	3.06	23	2.72	28	2.65	26	2.68	2.72	1.00	0.67	24	4.1	98.3	0.168	0.924	1.352	0.456
9.40	30.84	23.40	0.86	1.850	0.288	1.562	3.99	14	2.96	17	2.89	16	2.92	2.96	1.00	0.67	15	6.3	94.1	0.158	0.923	1.356	0.456
9.45	31.01	17.20	0.74	1.860	0.293	1.567	4.82	10	3.13	12	3.06	11	3.08	3.13	1.00	0.67	11	8.3	90.6	0.149	0.922	1.361	0.456
9.50	31.17	92.60	0.56	1.870	0.299	1.572	0.62	58	1.99	71	1.91	65	1.94	1.91	0.50	0.82	72	1.2	86.6	0.140	0.920	1.366	0.456
9.55	31.33	105.40	0.67	1.880	0.304	1.576	0.65	66	1.95	81	1.87	74	1.90	1.87	0.50	0.81	82	1.2	95.6	0.161	0.919	1.370	0.456
9.60	31.50	87.40	0.82	1.890	0.309	1.581	0.96	54	2.11	67	2.04	61	2.07	2.04	0.50	0.81	68	1.4	92.1	0.153	0.918	1.375	0.456
9.65	31.66	67.20	1.09	1.900	0.314	1.586	1.67	41	2.35	51	2.28	47	2.31	2.28	0.50	0.81	52	1.9	98.4	0.169	0.916	1.380	0.456
9.70	31.83	51.90	0.99	1.910	0.319	1.591	1.98	31	2.49	39	2.42	36	2.45	2.42	0.50	0.81	40	2.4	95.9	0.162	0.915	1.385	0.456
9.75	31.99	72.90	1.13	1.919	0.324	1.595	1.59	44	2.31	55	2.24	51	2.27	2.24	0.50	0.81	56	1.8	99.9	0.173	0.914	1.389	0.456
9.80	32.15	53.70	1.16	1.929	0.329	1.600	2.24	32	2.51	40	2.44	37	2.47	2.44	0.50	0.81	42	2.5	103.1	0.182	0.912	1.394	0.456
9.85	32.32	27.30	1.10	1.939	0.334	1.605	4.34	16	2.93	20	2.86	18	2.89	2.93	1.00	0.65	17	6.0	102.7	0.181	0.911	1.399	0.456
9.90	32.48	34.20	0.89	1.949	0.340	1.609	2.76	20	2.73	25	2.66	23	2.69	2.73	1.00	0.65	21	4.2	89.9	0.147	0.910	1.403	0.456
9.95	32.65	36.40	0.74	1.959	0.345	1.614	2.15	21	2.64	27	2.57	24	2.60	2.64	1.00	0.65	23	3.6	81.4	0.130	0.908	1.408	0.456
10.00	32.81	34.40	0.60	1.969	0.350	1.619	1.85	20	2.63	25	2.55	23	2.58	2.63	1.00	0.65	21	3.5	74.6	0.119	0.907	1.413	0.456
10.05	32.97	73.00	0.86	1.978	0.355	1.624	1.21	44	2.25	55	2.17	50	2.20	2.17	0.50	0.80	56	1.6	89.3	0.146	0.906	1.418	0.457
10.10	33.14	69.10	1.04	1.988	0.360	1.628	1.55	41	2.33	51	2.25	47	2.28	2.25	0.50	0.80	53	1.8	95.9	0.162	0.904	1.422	0.457
10.15	33.30	90.80	1.14	1.998	0.365	1.633	1.28	54	2.18	68	2.11	62	2.14	2.11	0.50	0.80	70	1.5	102.3	0.179	0.903	1.427	0.457
10.20	33.47	145.40	0.97	2.008	0.370	1.638	0.68	88	1.85	110	1.77	100	1.81	1.77	0.50	0.80	111	1.1	121.0	0.245	0.902	1.432	0.457
10.25	33.63	170.30	0.71	2.018	0.375	1.642	0.42	102	1.69	128	1.60	117	1.64	1.60	0.50	0.80	130	1.0	130.0	0.284	0.900	1.437	0.457
10.30	33.79	163.30	0.80	2.028	0.380	1.647	0.50	98	1.74	123	1.66	112	1.69	1.66	0.50	0.80	125	1.0	125.5	0.264	0.899	1.441	0.457
10.35	33.96	148.80	0.90	2.038	0.386	1.652	0.61	89	1.82	112	1.74	102	1.78	1.74	0.50	0.80	113	1.1	120.8	0.244	0.898	1.446	0.456
10.40	34.12	132.00	0.93	2.047	0.391	1.657	0.72	78	1.91	99	1.83	90	1.86	1.83	0.50	0.79	100	1.1	112.9	0.214	0.896	1.451	0.456
10.45	34.29	117.40	0.96	2.057	0.396	1.661	0.83	69	1.99	88	1.91	80	1.94	1.91	0.50	0.79	89	1.2	106.5	0.192	0.895	1.455	0.456
10.50	34.45	87.20	1.21	2.067	0.401	1.666	1.42	51	2.23	65	2.15	59	2.19	2.15	0.50	0.79	66	1.6	103.2	0.182	0.894	1.460	0.456
10.55	34.61	55.80	1.19	2.077	0.406	1.671	2.22	32	2.51	41	2.43	37	2.46	2.43	0.50	0.79	42	2.4	103.3	0.183	0.892	1.465	0.456
10.60	34.78	46.90	1.10	2.087	0.411	1.676	2.45	27	2.60	34	2.52	31	2.55	2.60	1.00	0.62	28	3.3	93.3	0.155	0.891	1.470	0.456
10.65	34.94	54.60	1.01	2.097	0.416	1.680	1.92	31	2.48	40	2.40	36	2.43	2.40	0.50	0.79	41	2.3	95.5	0.161	0.890	1.474	0.456
10.70	35.11	37.20	0.80	2.106	0.421	1.685	2.28	21	2.67	26	2.58	24	2.62	2.67	1.00	0.62	22	3.8	83.2	0.134	0.888	1.479	0.456
10.75	35.27	32.90	0.62	2.116	0.427	1.690	2.01	18	2.68	23	2.60	21	2.63	2.68	1.00	0.62	19	3.9	75.6	0.120	0.887	1.484	0.456
10.80	35.43	25.80	0.54	2.126	0.432	1.694	2.28	14	2.81	18	2.72	16	2.76	2.81	1.00	0.62	15	4.9	74.1	0.118	0.886	1.489	0.456
10.85	35.60	22.10	0.47	2.136	0.437	1.699	2.35	12	2.88	15	2.79	14	2.83	2.88	1.00	0.61	13	5.5	71.6	0.114	0.884	1.493	0.456
10.90	35.76	31.00	0.40	2.146	0.442	1.704	1.39	17	2.62	22	2.53	20	2.57	2.62	1.00	0.61	18	3.5	63.1	0.103	0.883	1.498	0.456
10.95	35.93	27.00	0.59	2.156	0.447	1.709	2.37	15	2.81	19	2.72	17	2.75	2.81	1.00	0.61	16	4.8	76.3	0.121	0.882	1.503	0.456
11.00	36.09	115.30	1.27	2.165	0.452	1.713	1.12	66	2.08	85	2.00	77	2.03	2.00	0.50	0.78	86	1.3	111.9	0.210	0.880	1.507	0.456
11.05	36.26	188.40	0.90	2.175	0.457	1.718	0.48	108	1.70	139	1.61	126	1.64	1.61	0.50	0.78	141	1.0	140.7	0.339	0.879	1.512	0.456
11.10	36.42	218.70	1.42	2.185	0.462	1.723	0.66	126	1.72	161	1.63	146	1.67	1.63	0.50	0.78	163	1.0	163.1	0.483	0.878	1.517	0.456
11.15	36.58	224.20	1.20	2.195	0.467	1.728	0.54	129	1.66	165	1.57	149	1.61	1.57	0.50	0.78	167	1.0	166.9	0.513	0.876	1.522	0.456
11.20	36.75	225.70	1.47	2.205	0.473	1.732	0.66	129	1.71	166	1.62	150	1.66	1.62	0.50	0.78	168	1.0	167.8	0.519	0.875	1.526	0.455
11.25	36.91	235.40	0.66	2.215	0.478	1.737	0.28	134	1.50	173	1.40	156	1.44	1.40	0.50	0.78	175	1.0	174.8	0.577	0.874	1.531	0.455
11.30	37.08	235.60	0.71	2.225	0.483	1.742	0.30	134	1.52	173	1.42	156	1.46	1.42	0.50	0.77	175	1.0	174.7	0.576	0.872	1.536	0.455
11.35	37.24	251.60	0.57	2.234	0.488	1.746	0.23	143	1.44	185	1.34	167	1.38	1.34	0.50	0.77	186	1.0	186.3	0.681	0.871	1.540	0.455
11.40	37.40	258.60	0.54	2.244	0.493	1.751	0.21	146	1.41	190	1.31	171	1.35	1.31	0.50	0.77	191	1.0	191.2	0.730	0.870	1.545	0.455
11.45	37.57	261.40	0.51	2.254	0.498	1.756	0.20	148	1.40	191	1.29	172	1.34	1.29	0.50	0.77	193	1.0	193.0	0.749	0.868	1.550	0.455
11.50	37.73	254.40	0.46	2.264	0.503	1.761	0.18	143	1.40	186	1.29	168	1.34	1.29	0.50	0.77	188	1.0	187.6	0.694	0.867	1.555	0.455
11.55	37.90	236.80	0.30	2.274	0.508	1.765	0.13	133	1.39	173	1.28	156	1.32	1.28	0.50	0.77	174	1.0	174.4	0.573	0.866	1.559	0.455
11.60	38.06	225.70	0.32	2.284	0.514	1.770	0.14	126	1.42	164	1.31	148	1.35	1.31	0.50	0.77	166	1.0	166.0	0.505	0.864	1.564	0.455
11.65	38.22	206.20	0.33	2.293	0.519	1.775	0.16	115	1.47	150	1.36	135	1.41	1.36	0.50	0.77	151	1.0	151.5	0.403	0.863	1.569	0.454

Depth (m)	Depth (ft) Depth	Soil Behavior Type Z Z	Factor of Safety FS	Liquefiable Layers	Sum of Liquefiable Thickness (m)	Sum of Non-Liq Thickness (m)	Ratio of Non-Liq to Liquefiable 3.53	Liq. 0.73 in. Settlement (in) Settlement	N-Value Conversion (tsf) qc	qc/N	N-Value	Liquefaction Settlemer 0.73 in. CSR	H_Index	V_Index	Strain%	Settlement	Cumulative Settlement
7.80	25.59	6 S	1.63	0	1.25	6.55	5.24	25.5918	197.10	6	32.9	0.4378	39	16	1.80E-03	0.00E+00	0.30
7.85	25.76	6 S	1.90	0	1.25	6.60	5.28	25.7559	209.60	6	34.9	0.4385	41	16	0.00E+00	0.00E+00	0.30
7.90	25.92	6 S	2.15	0	1.25	6.65	5.32	25.9199	220.10	6	36.7	0.4392	42	16	0.00E+00	0.00E+00	0.30
7.95	26.08	6 S	2.31	0	1.25	6.70	5.36	26.0840	226.70	6	37.8	0.4400	42	16	0.00E+00	0.00E+00	0.30
8.00	26.25	6 S	2.88	0	1.25	6.75	5.40	26.2480	246.90	6	41.2	0.4407	42	16	0.00E+00	0.00E+00	0.30
8.05	26.41	6 S	3.16	0	1.25	6.80	5.44	26.4121	255.90	6	42.7	0.4414	42	16	0.00E+00	0.00E+00	0.30
8.10	26.58	6 S	3.08	0	1.25	6.85	5.48	26.5761	254.10	6	42.4	0.4421	42	16	0.00E+00	0.00E+00	0.30
8.15	26.74	6 S	3.14	0	1.25	6.90	5.52	26.7402	256.30	6	42.7	0.4427	42	16	0.00E+00	0.00E+00	0.30
8.20	26.90	6 S	3.38	0	1.25	6.95	5.56	26.9042	264.00	6	44.0	0.4434	42	16	0.00E+00	0.00E+00	0.30
8.25	27.07	6 S	3.34	0	1.25	7.00	5.60	27.0683	263.40	6	43.9	0.4441	42	16	0.00E+00	0.00E+00	0.30
8.30	27.23	6 S	3.24	0	1.25	7.05	5.64	27.2323	261.10	6	43.5	0.4448	42	16	0.00E+00	0.00E+00	0.30
8.35	27.40	6 S	2.90	0	1.25	7.10	5.68	27.3964	251.10	6	41.9	0.4455	42	16	0.00E+00	0.00E+00	0.30
8.40	27.56	6 S	2.87	0	1.25	7.15	5.72	27.5604	250.80	6	41.8	0.4461	42	16	0.00E+00	0.00E+00	0.30
8.45	27.72	6 S	2.79	0	1.25	7.20	5.76	27.7245	248.80	6	41.5	0.4468	42	16	0.00E+00	0.00E+00	0.30
8.50	27.89	6 S	2.51	0	1.25	7.25	5.80	27.8885	239.70	6	40.0	0.4474	42	16	0.00E+00	0.00E+00	0.30
8.55	28.05	6 S	2.28	0	1.25	7.30	5.84	28.0526	231.70	6	38.6	0.4481	42	16	0.00E+00	0.00E+00	0.30
8.60	28.22	6 S	2.38	0	1.25	7.35	5.88	28.2166	236.10	6	39.4	0.4487	42	16	0.00E+00	0.00E+00	0.30
8.65	28.38	6 S	2.55	0	1.25	7.40	5.92	28.3807	242.60	6	40.4	0.4494	42	16	0.00E+00	0.00E+00	0.30
8.70	28.54	6 S	2.36	0	1.25	7.45	5.96	28.5447	236.20	6	39.4	0.4500	42	16	0.00E+00	0.00E+00	0.30
8.75	28.71	6 S	2.24	0	1.25	7.50	6.00	28.7088	232.00	6	38.7	0.4506	42	17	0.00E+00	0.00E+00	0.30
8.80	28.87	6 S	1.82	0	1.25	7.55	6.04	28.8728	214.90	6	35.8	0.4512	42	17	0.00E+00	0.00E+00	0.30
8.85	29.04	6 S	1.25	0	1.25	7.60	6.08	29.0369	184.70	6	30.8	0.4519	36	17	8.00E-03	0.00E+00	0.30
8.90	29.20	6 S	0.79	1	1.30	7.60	5.85	29.2009	141.20	6	23.5	0.4525	31	17	1.30E-02	2.56E-02	0.32
8.95	29.36	6 S	0.60	1	1.35	7.60	5.63	29.3650	103.80	6	17.3	0.4531	26	17	1.80E-02	3.54E-02	0.36
9.00	29.53	5 M	0.56	1	1.40	7.60	5.43	29.5290	64.90	2.5	26.0	0.4537	32	17	1.20E-02	0.00E+00	0.36
9.05	29.69	5 M	0.55	1	1.45	7.60	5.24	29.6931	63.20	2.5	25.3	0.4543	32	17	1.20E-02	0.00E+00	0.36
9.10	29.86	5 M	0.58	1	1.50	7.60	5.07	29.8571	59.50	2.5	23.8	0.4549	31	17	1.30E-02	0.00E+00	0.36
9.15	30.02	4 C	NL	0	1.50	7.65	5.10	30.0212	42.00	2	21.0	0.4555	29	17	1.50E-02	0.00E+00	0.36
9.20	30.19	5 M	NL	0	1.50	7.70	5.13	30.1852	49.90	2.5	20.0	0.4554	28	17	1.60E-02	0.00E+00	0.36
9.25	30.35	5 M	NL	0	1.50	7.75	5.17	30.3493	50.30	2.5	20.1	0.4555	29	17	1.50E-02	0.00E+00	0.36
9.30	30.51	4 C	NL	0	1.50	7.80	5.20	30.5133	39.30	2	19.7	0.4556	28	17	1.60E-02	0.00E+00	0.36
9.35	30.68	4 C	NL	0	1.50	7.85	5.23	30.6774	37.10	2	18.6	0.4557	27	17	1.70E-02	0.00E+00	0.36
9.40	30.84	3 C	NL	0	1.50	7.90	5.27	30.8414	23.40	2	11.7	0.4558	21	17	2.30E-02	0.00E+00	0.36
9.45	31.01	3 C	NL	0	1.50	7.95	5.30	31.0055	17.20	2	8.6	0.4559	16	17	2.80E-02	0.00E+00	0.36
9.50	31.17	6 S	0.46	1	1.55	7.95	5.13	31.1695	92.60	6	15.4	0.4560	25	17	1.90E-02	3.74E-02	0.40
9.55	31.33	6 S	0.53	1	1.60	7.95	4.97	31.3336	105.40	6	17.6	0.4561	27	17	1.70E-02	3.35E-02	0.43
9.60	31.50	5 M	0.50	1	1.65	7.95	4.82	31.4976	87.40	2.5	35.0	0.4561	41	17	1.00E-03	0.00E+00	0.43
9.65	31.66	5 M	0.55	1	1.70	7.95	4.68	31.6617	67.20	2.5	26.9	0.4562	33	17	1.10E-02	0.00E+00	0.43
9.70	31.83	5 M	NL	0	1.70	8.00	4.71	31.8257	51.90	2.5	20.8	0.4563	29	17	1.50E-02	0.00E+00	0.43
9.75	31.99	5 M	0.57	1	1.75	8.00	4.57	31.9898	72.90	2.5	29.2	0.4563	35	17	9.00E-03	0.00E+00	0.43
9.80	32.15	5 M	NL	0	1.75	8.05	4.60	32.1538	53.70	2.5	21.5	0.4564	29	17	1.50E-02	0.00E+00	0.43
9.85	32.32	4 C	NL	0	1.75	8.10	4.63	32.3179	27.30	2	13.7	0.4564	23	17	2.10E-02	0.00E+00	0.43
9.90	32.48	4 C	NL	0	1.75	8.15	4.66	32.4819	34.20	2	17.1	0.4564	26	17	1.80E-02	0.00E+00	0.43
9.95	32.65	4 C	NL	0	1.75	8.20	4.69	32.6460	36.40	2	18.2	0.4565	27	17	1.70E-02	0.00E+00	0.43
10.00	32.81	4 C	NL	0	1.75	8.25	4.71	32.8100	34.40	2	17.2	0.4565	26	17	1.80E-02	0.00E+00	0.43
10.05	32.97	5 M	0.48	1	1.80	8.25	4.58	32.9741	73.00	2.5	29.2	0.4565	35	17	9.00E-03	0.00E+00	0.43
10.10	33.14	5 M	0.53	1	1.85	8.25	4.46	33.1381	69.10	2.5	27.6	0.4565	33	17	1.10E-02	0.00E+00	0.43
10.15	33.30	5 M	0.59	1	1.90	8.25	4.34	33.3022	90.80	2.5	36.3	0.4565	42	17	0.00E+00	0.00E+00	0.43
10.20	33.47	6 S	0.80	1	1.95	8.25	4.23	33.4662	145.40	6	24.2	0.4565	31	17	1.30E-02	2.56E-02	0.45
10.25	33.63	6 S	0.93	1	2.00	8.25	4.13	33.6303	170.30	6	28.4	0.4565	34	17	1.00E-02	1.97E-02	0.47
10.30	33.79	6 S	0.87	1	2.05	8.25	4.02	33.7943	163.30	6	27.2	0.4565	33	17	1.10E-02	2.17E-02	0.50
10.35	33.96	6 S	0.80	1	2.10	8.25	3.93	33.9584	148.80	6	24.8	0.4565	32	17	1.20E-02	2.36E-02	0.52
10.40	34.12	6 S	0.70	1	2.15	8.25	3.84	34.1224	132.00	6	22.0	0.4565	30	17	1.40E-02	2.76E-02	0.55
10.45	34.29	6 S	0.63	1	2.20	8.25	3.75	34.2865	117.40	6	19.6	0.4565	28	17	1.60E-02	3.15E-02	0.58
10.50	34.45	5 M	0.60	1	2.25	8.25	3.67	34.4505	87.20	2.5	34.9	0.4564	41	17	1.00E-03	0.00E+00	0.58
10.55	34.61	5 M	NL	0	2.25	8.30	3.69	34.6146	55.80	2.5	22.3	0.4564	30	17	1.40E-02	0.00E+00	0.58
10.60	34.78	4 C	NL	0	2.25	8.35	3.71	34.7786	46.90	2	23.5	0.4564	31	17	1.30E-02	0.00E+00	0.58
10.65	34.94	5 M	NL	0	2.25	8.40	3.73	34.9427	54.60	2.5	21.8	0.4563	30	17	1.40E-02	0.00E+00	0.58
10.70	35.11	4 C	NL	0	2.25	8.45	3.76	35.1067	37.20	2	18.6	0.4563	28	17	1.60E-02	0.00E+00	0.58
10.75	35.27	4 C	NL	0	2.25	8.50	3.78	35.2708	32.90	2	16.5	0.4562	26	17	1.80E-02	0.00E+00	0.58
10.80	35.43	4 C	NL	0	2.25	8.55	3.80	35.4348	25.80	2	12.9	0.4561	22	17	2.20E-02	0.00E+00	0.58
10.85	35.60	4 C	NL	0	2.25	8.60	3.82	35.5989	22.10	2	11.1	0.4561	20	17	2.40E-02	0.00E+00	0.58
10.90	35.76	4 C	NL	0	2.25	8.65	3.84	35.7629	31.00	2	15.5	0.4560	25	17	1.90E-02	0.00E+00	0.58
10.95	35.93	4 C	NL	0	2.25	8.70	3.87	35.9270	27.00	2	13.5	0.4559	23	17	2.10E-02	0.00E+00	0.58
11.00	36.09	5 M	0.69	1	2.30	8.70	3.78	36.0910	115.30	2.5	46.1	0.4559	42	17	0.00E+00	0.00E+00	0.58
11.05	36.26	6 S	1.11	1	2.35	8.70	3.70	36.2551	188.40	6	31.4	0.4558	37	17	6.50E-03	1.28E-02	0.59
11.10	36.42	6 S	1.59	0	2.35	8.75	3.72	36.4191	218.70	6	36.5	0.4557	42	17	0.00E+00	0.00E+00	0.59
11.15	36.58	6 S	1.69	0	2.35	8.80	3.74	36.5832	224.20	6	37.4	0.4556	42	17	0.00E+00	0.00E+00	0.59
11.20	36.75	6 S	1.71	0	2.35	8.85	3.77	36.7472	225.70	6	37.6	0.4555	42	17	0.00E+00	0.00E+00	0.59
11.25	36.91	6 S	1.90	0	2.35	8.90	3.79	36.9113	235.40	6	39.2	0.4554	42	17	0.00E+00	0.00E+00	0.59
11.30	37.08	6 S	1.90	0	2.35	8.95	3.81	37.0753	235.60	6	39.3	0.4553	42	17	0.00E+00	0.00E+00	0.59
11.35	37.24	6 S	2.25	0	2.35	9.00	3.83	37.2394	251.60	6	41.9	0.4552	42	17	0.00E+00	0.00E+00	0.59
11.40	37.40	6 S	2.41	0	2.35	9.05	3.85	37.4034	258.60	6	43.1	0.4551	42	17	0.00E+00	0.00E+00	0.59
11.45	37.57	6 S	2.47	0	2.35	9.10	3.87	37.5675	261.40	6	43.6	0.4549	42	17	0.00E+00	0.00E+00	0.59
11.50	37.73	6 S	2.29	0	2.35	9.15	3.89	37.7315	254.40	6	42.4	0.4548	42	17	0.00E+00	0.00E+00	0.59
11.55	37.90	6 S	1.89	0	2.35	9.20	3.91	37.8956	236.80	6	39.5	0.4547	42	17	0.00E+00	0.00E+00	0.59
11.60	38.06	6 S	1.67	0	2.35	9.25	3.94	38.0596	225.70	6	37.6	0.4546	42	17	0.00E+00	0.00E+00	0.59
11.65	38.22	6 S	1.33	0	2.35	9.30	3.96	38.2237	206.20	6	34.4	0.4544	41	17	1.00E-03	0.00E+00	0.59

SPREADSHEET TO CALCULATE CYCLIC RESISTANCE RATIO USING CPT DATA

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-4 CPT DATE: 12/19/05 KTE
DATE : 04/02/2007
amax = 0.6 g
M = 7.50
MSF = 1.5

Ic = (((3.47-LOG(Q))^2)+(LOG(F%)+1.22)^2)^0.5
dqc1N = IF(FC>=35,60,IF(FC<=5,0,2*(FC-5)))
CRR = IF(qc1Ncs<50,(0.833*(qc1Ncs/1000)+0.05),(93*(qc1Ncs/1000)^3+0.08))
MSF = 10^2.24/M^2.56
CSR = 0.65(amax/g)(sigv/sigv')rd = Seed's Equation
Z = IF(Ic<1.31,7,IF(Ic<2.05,6,IF(Ic<2.6,5,IF(Ic<2.95,4,IF(Ic<3.6,3,2)))))
Q = [(qc-St)/Pa]*[(Pa/S')^n]
Kc = IF(Ic<=1.64,1,(-0.403*Ic^4+5.581*Ic^3-21.63*Ic^2+33.75*Ic-17.88))

Liquefiable Soil (Type 5+ or 6+) = 2.4
Seismic Settlement Soil (Type) = 6
Actual Water = 21.6 feet
Design Water = 15 feet
Gamma = 120 pcf
rd = 2

Added Fill = 8 feet
Fill Density = 125 pcf
Pa = 1.04427 tsf = 100 kPa
Threshold FS = 1.20
FS = CRR*MSF/CSR

FS = Threshold Factor of Safety
NL = Above water or Soil Behavior Type is not liquefiable

Z	Soil
3	Clay to Silty Clay
4	Clayey Silt to Silty Clay
5	Silty Sand to Sandy Silt
6	Clean Sand to Silty Sand
7	Gravelly Sand to Sand

RTF Job: 2004-700-22
PROJECT : Entrada
CPT: CPT-4 CPT DATE: 12/19/05 KTE
DATE : 04/02/2007
amax = 0.6 g
M = 7.50

Depth (m)	Depth (ft)	Tip Resist qc (tsf)	Sleeve Fric fs (tsf)	Total Stress (tsf) 0.00	Water Pressure (tsf) Sw	Effective Stress (tsf) S' = St - Sw	Norm. Fr. Ratio F (%) = fs/(qc-St)	Norm. Pen. Res. Q for n=1 (qc-St)/S'	Soil Index Ic for n=1	Norm. Pen. Res. Q for n= 0.5	Soil Index Ic for n=0.5	Norm. Pen. Res. Q for n= 0.7	Soil Index Ic for n=0.7	Soil Index Ic	Cq exp n	Overburden Correction Cq = 1.7 > (Pa/S')^n	Norm. Cone Res. qc1N = qc*Cq/Pa	Grain Char. Corr. Kc	Equivalent Clean Sand Cone Res. (qc1N)cs = Kc*qc1N	Cyclic Resistance Ratio CRR	rd
11.70	38.39	204.90	0.31	2.303	0.524	1.779	0.15	114	1.47	149	1.36	134	1.40	1.36	0.50	0.77	150	1.0	150.3	0.396	0.862
11.75	38.55	197.10	0.31	2.313	0.529	1.784	0.16	109	1.49	143	1.38	128	1.43	1.38	0.50	0.77	144	1.0	144.4	0.360	0.860
11.80	38.72	178.00	0.29	2.323	0.534	1.789	0.17	98	1.54	129	1.43	115	1.47	1.43	0.50	0.76	130	1.0	130.2	0.285	0.859
11.85	38.88	147.90	0.28	2.333	0.539	1.794	0.19	81	1.64	106	1.53	95	1.57	1.53	0.50	0.76	108	1.0	108.1	0.197	0.858
11.90	39.04	116.80	0.31	2.343	0.544	1.798	0.27	64	1.79	84	1.68	75	1.72	1.68	0.50	0.76	85	1.0	87.3	0.142	0.856
11.95	39.21	51.70	0.60	2.352	0.549	1.803	1.22	27	2.42	36	2.32	32	2.36	2.32	0.50	0.76	38	2.0	75.5	0.120	0.855
12.00	39.37	26.50	0.62	2.362	0.554	1.808	2.57	13	2.86	18	2.76	16	2.80	2.86	1.00	0.58	15	5.3	77.3	0.123	0.854
12.05	39.54	15.80	0.54	2.372	0.560	1.813	4.02	7	3.18	10	3.08	9	3.12	3.18	1.00	0.58	9	8.9	77.8	0.124	0.852
12.10	39.70	9.70	0.40	2.382	0.565	1.817	5.47	4	3.47	5	3.37	5	3.41	3.47	1.00	0.57	5	13.5	72.3	0.115	0.851
12.15	39.86	9.00	0.18	2.392	0.570	1.822	2.72	4	3.35	5	3.24	4	3.29	3.35	1.00	0.57	5	11.5	56.7	0.097	0.850
12.20	40.03	9.00	0.11	2.402	0.575	1.827	1.67	4	3.25	5	3.14	4	3.18	3.25	1.00	0.57	5	10.0	49.1	0.091	0.848
12.25	40.19	9.00	0.11	2.412	0.580	1.831	1.67	4	3.25	5	3.14	4	3.19	3.25	1.00	0.57	5	10.0	49.1	0.091	0.847
12.30	40.36	10.50	0.11	2.421	0.585	1.836	1.36	4	3.13	6	3.02	5	3.07	3.13	1.00	0.57	6	8.4	47.8	0.090	0.846
12.35	40.52	9.50	0.17	2.431	0.590	1.841	2.40	4	3.30	5	3.19	5	3.24	3.30	1.00	0.57	5	10.7	55.3	0.096	0.844
12.40	40.68	8.80	0.24	2.441	0.595	1.846	3.77	3	3.44	5	3.33	4	3.38	3.44	1.00	0.57	5	13.0	62.0	0.102	0.843
12.45	40.85	8.50	0.28	2.451	0.601	1.850	4.63	3	3.51	4	3.40	4	3.44	3.51	1.00	0.56	5	14.2	65.2	0.106	0.842
12.50	41.01	8.80	0.33	2.461	0.606	1.855	5.21	3	3.52	5	3.41	4	3.46	3.52	1.00	0.56	5	14.4	68.3	0.110	0.840
12.55	41.18	8.10	0.37	2.471	0.611	1.860	6.57	3	3.62	4	3.51	4	3.56	3.62	1.00	0.56	4	16.3	71.2	0.114	0.839
12.60	41.34	8.80	0.38	2.480	0.616	1.865	6.01	3	3.56	5	3.45	4	3.49	3.56	1.00	0.56	5	15.1	71.4	0.114	0.838
12.65	41.50	8.90	0.35	2.490	0.621	1.869	5.46	3	3.53	5	3.42	4	3.46	3.53	1.00	0.56	5	14.6	69.5	0.111	0.836
12.70	41.67	52.10	0.41	2.500	0.626	1.874	0.83	26	2.34	35	2.23	32	2.28	2.23	0.50	0.75	37	1.7	65.1	0.106	0.835
12.75	41.83	80.80	0.51	2.510	0.631	1.879	0.65	42	2.12	56	2.01	50	2.05	2.01	0.50	0.75	58	1.3	75.7	0.120	0.834
12.80	42.00	135.40	0.62	2.520	0.636	1.883	0.47	71	1.85	95	1.74	84	1.78	1.74	0.50	0.74	97	1.1	102.7	0.181	0.832
12.85	42.16	178.00	0.58	2.530	0.641	1.888	0.33	93	1.67	125	1.56	111	1.61	1.56	0.50	0.74	127	1.0	126.8	0.269	0.831
12.90	42.32	187.30	0.35	2.539	0.647	1.893	0.19	98	1.56	131	1.44	117	1.49	1.44	0.50	0.74	133	1.0	133.2	0.300	0.830
12.95	42.49	205.80	0.47	2.549	0.652	1.898	0.23	107	1.55	144	1.43	128	1.48	1.43	0.50	0.74	146	1.0	146.2	0.371	0.828
13.00	42.65	230.20	0.55	2.559	0.657	1.902	0.24	120	1.52	162	1.40	143	1.45	1.40	0.50	0.74	163	1.0	163.3	0.485	0.827
13.05	42.82	226.60	0.53	2.569	0.662	1.907	0.24	117	1.52	159	1.40	141	1.45	1.40	0.50	0.74	161	1.0	160.6	0.465	0.826
13.10	42.98	223.20	0.45	2.579	0.667	1.912	0.20	115	1.50	156	1.38	138	1.43	1.38	0.50	0.74	158	1.0	158.0	0.447	0.824
13.15	43.15	218.10	0.52	2.589	0.672	1.917	0.24	112	1.54	152	1.42	135	1.47	1.42	0.50	0.74	154	1.0	154.2	0.421	0.823
13.20	43.31	207.20	0.77	2.599	0.677	1.921	0.38	106	1.65	144	1.53	128	1.58	1.53	0.50	0.74	146	1.0	146.3	0.371	0.822
13.25	43.47	206.20	0.96	2.608	0.682	1.926	0.47	106	1.70	144	1.59	127	1.63	1.59	0.50	0.74	145	1.0	145.4	0.366	0.820
13.30	43.64	215.40	1.06	2.618	0.688	1.931	0.50	110	1.70	150	1.59	133	1.63	1.59	0.50	0.74	152	1.0	151.7	0.405	0.819
13.35	43.80	235.50	1.05	2.628	0.693	1.935	0.45	120	1.64	164	1.53	145	1.57	1.53	0.50	0.73	166	1.0	165.7	0.503	0.818
13.40	43.97	246.70	1.02	2.638	0.698	1.940	0.42	126	1.61	171	1.49	151	1.54	1.49	0.50	0.73	173	1.0	173.3	0.564	0.816
13.45	44.13	260.70	0.91	2.648	0.703	1.945	0.35	133	1.55	181	1.43	160	1.48	1.43	0.50	0.73	183	1.0	182.9	0.649	0.815
13.50	44.29	270.70	0.95	2.658	0.708	1.950	0.35	137	1.54	188	1.42	166	1.47	1.42	0.50	0.73	190	1.0	189.7	0.715	0.814
13.55	44.46	277.40	0.80	2.667	0.713	1.954	0.29	141	1.49	192	1.37	170	1.42	1.37	0.50	0.73	194	1.0	194.2	0.761	0.812
13.60	44.62	282.70	0.91	2.677	0.718	1.959	0.32	143	1.50	196	1.39	173	1.43	1.39	0.50	0.73	198	1.0	197.7	0.798	0.811
13.65	44.79	282.00	1.02	2.687	0.723	1.964	0.37	142	1.53	195	1.42	172	1.46	1.42	0.50	0.73	197	1.0	196.9	0.790	0.810
13.70	44.95	294.50	1.09	2.697	0.729	1.968	0.37	148	1.52	204	1.41	179	1.45	1.41	0.50	0.73	205	1.0	205.4	0.886	0.808
13.75	45.11	301.10	1.14	2.707	0.734	1.973	0.38	151	1.52	208	1.40	183	1.45	1.40	0.50	0.73	210	1.0	209.8	0.938	0.807
13.80	45.28	305.60	0.93	2.717	0.739	1.978	0.31	153	1.47	211	1.35	185	1.39	1.35	0.50	0.73	213	1.0	212.6	0.974	0.806
13.85	45.44	315.30	0.92	2.727	0.744	1.983	0.29	158	1.45	217	1.33	191	1.37	1.33	0.50	0.73	219	1.0	219.1	1.059	0.804
13.90	45.61	328.60	0.93	2.736	0.749	1.987	0.29	164	1.43	226	1.30	199	1.35	1.30	0.50	0.72	228	1.0	228.1	1.184	0.803
13.95	45.77	329.60	0.86	2.746	0.754	1.992	0.26	164	1.41	227	1.29	199	1.33	1.29	0.50	0.72	229	1.0	228.5	1.190	0.802
14.00	45.93	338.60	0.72	2.756	0.759	1.997	0.21	168	1.36	233	1.23	204	1.28	1.23	0.50	0.72	234	1.0	234.5	1.279	0.800
14.05	46.10	347.20	0.64	2.766	0.764	2.002	0.19	172	1.33	238	1.20	209	1.25	1.20	0.50	0.72	240	1.0	240.2	1.368	0.799
14.10	46.26	357.10	0.71	2.776	0.769	2.006	0.20	177	1.33	245	1.20	215	1.25	1.20	0.50	0.72	247	1.0	246.7	1.477	0.798
14.15	46.43	360.80	0.76	2.786	0.775	2.011	0.21	178	1.34	247	1.21	217	1.26	1.21	0.50	0.72	249	1.0	249.0	1.515	0.796
14.20	46.59	362.10	0.97	2.795	0.780	2.016	0.27	178	1.38	248	1.26	217	1.31	1.26	0.50	0.72	250	1.0	249.6	1.526	0.795
14.25	46.75	363.00	0.74	2.805	0.785	2.020	0.21	178	1.33	248	1.20	217	1.25	1.20	0.50	0.72	250	1.0	249.9	1.531	0.794
14.30	46.92	347.00	0.78	2.815	0.790	2.025	0.23	170	1.37	237	1.24	207	1.29	1.24	0.50	0.72	239	1.0	238.6	1.343	0.792
14.35	47.08	308.40	0.44	2.825	0.795	2.030	0.14	151	1.35	210	1.21	184	1.26	1.21	0.50	0.72	212	1.0	211.8	0.964	0.791
14.40	47.25	286.20	0.33	2.835	0.800	2.035	0.12	139	1.36	194	1.22	170	1.27	1.22	0.50	0.72	196	1.0	196.3	0.784	0.790
14.45	47.41	250.90	0.66	2.845	0.805	2.039	0.27	122	1.53	170	1.40	149	1.45	1.40	0.50	0.72	172	1.0	171.9	0.553	0.788
14.50	47.57	174.90	2.14	2.854	0.810	2.044	1.24	84	2.03	118	1.92	103	1.96	1.92	0.50	0.71	120	1.2	144.6	0.361	0.787
14.55	47.74	106.00	1.71	2.864	0.816	2.049	1.66	50	2.28	71	2.17	62	2.21	2.17	0.50	0.71	72	1.6	115.4	0.223	0.786
14.60	47.90	146.90	1.67	2.874	0.821	2.054	1.16	70	2.07	98	1.96	86	2.00	1.96	0.50	0.71	100	1.2	125.2	0.263	0.784
14.65	48.07	222.00	1.17	2.884	0.826	2.058	0.53	106	1.73	149	1.61	130	1.65	1.61	0.50	0.71	151	1.0	151.4	0.403	0.783
14.70	48.23	246.50	0.74	2.894	0.831	2.063	0.30	118	1.56	166	1.43	145	1.49	1.43	0.50	0.71	168	1.0	167.9	0.521	0.782
14.75	48.39	259.20	0.78	2.904	0.836	2.068	0.30	124	1.55	174	1.42	152	1.47	1.42	0.50	0.71	176	1.0	176.4	0.590	0.780
14.80	48.56	261.30	0.73	2.914	0.841	2.072	0.28	125	1.53	176	1.40	153	1.45	1.40	0.50	0.71	178	1.0	177.6	0.601	0.779
14.85	48.72	249.60	0.63	2.923	0.846	2.077	0.26	119	1.53	167	1.39	146	1.45	1.39	0.50	0.71	169	1.0	169.5	0.533	0.778
14.90	48.89	243.70	0.65	2.933	0.851	2.082	0.27	116	1.55	163	1.42	142	1.47	1.42	0.50	0.71	165	1.0	165.3	0.500	0.776
14.95	49.05	231.60	0.79	2.943	0.856	2.087	0.35	110	1.62	155	1.49	135	1.54	1.49	0.50	0.71	157	1.0	156.9	0.439	0.775
15.00	49.22	245.80	1.00	2.953	0.862	2.091	0.41	116	1.63	164	1.51	143	1.56	1.51	0.50	0.71	166	1.0	166.3	0.508	0.774
15.05	49.38	284.20	0.87	2.963	0.867	2.096	0.31	134	1.52	190	1.39	165	1.44	1.39	0.50	0.71	192	1.0	192.1	0.739	0.772
15.10	49.54	294.60	1.00	2.973	0.872	2.101	0.34	139	1.53	197	1.40	171	1.45	1.40	0.50	0.71	199	1.0	198.9	0.812	0.771
15.15	49.71	299.90	0.90	2.982	0.877	2.105	0.30	141	1.50	200	1.36	174	1.42	1.36	0.50	0.70	202	1.0	202.3	0.849	0.769
15.20	49.87	281.00	1.00	2.992	0.882	2.110	0.36	132	1.56	187	1.43	163	1.48	1.43	0.50	0.70	189	1.0	189.3	0.711	0.768

Depth (m)	Design Effective Stress (tsf) S' = St - Sw	Cyclic Stress Ratio CSR	Depth (ft) Depth	Soil Behavior Type Z	Factor of Safety FS	Liquefiable Layers	Sum of Liquefiable Thickness (m)	Sum of Non-Liq Thickness (m)	Ratio of Non-Liq to Liquefiable 3.53	Liq. Settlement (in) 0.73 in. Settlement	N-Value Conversion (tsf) qc	qc/N	N-Value	CSR	H_Index	V_Index	Strain%	Liquefaction Settlemer 0.73 in. Settlement	Cumulative Settlement
11.70	1.574	0.454	38.39	6 S	1.31	0	2.35	9.35	3.98	38.3877	204.90	6	34.2	0.4543	41	17	1.00E-03	0.00E+00	0.59
11.75	1.578	0.454	38.55	6 S	1.19	1	2.40	9.35	3.90	38.5518	197.10	6	32.9	0.4541	39	17	4.00E-03	7.87E-03	0.60
11.80	1.583	0.454	38.72	6 S	0.94	1	2.45	9.35	3.82	38.7158	178.00	6	29.7	0.4540	35	17	9.00E-03	1.77E-02	0.62
11.85	1.588	0.454	38.88	6 S	0.65	1	2.50	9.35	3.74	38.8799	147.90	6	24.7	0.4538	31	17	1.30E-02	2.56E-02	0.64
11.90	1.592	0.454	39.04	6 S	0.47	1	2.55	9.35	3.67	39.0439	116.80	6	19.5	0.4537	28	17	1.60E-02	3.15E-02	0.67
11.95	1.597	0.454	39.21	5 M	0.40	1	2.60	9.35	3.60	39.2080	51.70	2.5	20.7	0.4535	29	17	1.50E-02	0.00E+00	0.67
12.00	1.602	0.453	39.37	4 C	NL	0	2.60	9.40	3.62	39.3720	26.50	2	13.3	0.4533	22	17	2.20E-02	0.00E+00	0.67
12.05	1.607	0.453	39.54	3 C	NL	0	2.60	9.45	3.63	39.5361	15.80	2	7.9	0.4532	14	17	3.00E-02	0.00E+00	0.67
12.10	1.611	0.453	39.70	3 C	NL	0	2.60	9.50	3.65	39.7001	9.70	2	4.9	0.4530	9	17	4.00E-02	0.00E+00	0.67
12.15	1.616	0.453	39.86	3 C	NL	0	2.60	9.55	3.67	39.8642	9.00	2	4.5	0.4528	8	17	4.50E-02	0.00E+00	0.67
12.20	1.621	0.453	40.03	3 C	NL	0	2.60	9.60	3.69	40.0282	9.00	2	4.5	0.4526	8	17	4.50E-02	0.00E+00	0.67
12.25	1.626	0.452	40.19	3 C	NL	0	2.60	9.65	3.71	40.1923	9.00	2	4.5	0.4524	8	17	4.50E-02	0.00E+00	0.67
12.30	1.630	0.452	40.36	3 C	NL	0	2.60	9.70	3.73	40.3563	10.50	2	5.3	0.4523	10	17	3.80E-02	0.00E+00	0.67
12.35	1.635	0.452	40.52	3 C	NL	0	2.60	9.75	3.75	40.5204	9.50	2	4.8	0.4521	8	17	4.50E-02	0.00E+00	0.67
12.40	1.640	0.452	40.68	3 C	NL	0	2.60	9.80	3.77	40.6844	8.80	2	4.4	0.4519	8	17	4.50E-02	0.00E+00	0.67
12.45	1.644	0.452	40.85	3 C	NL	0	2.60	9.85	3.79	40.8485	8.50	2	4.3	0.4517	8	17	4.50E-02	0.00E+00	0.67
12.50	1.649	0.451	41.01	3 C	NL	0	2.60	9.90	3.81	41.0125	8.80	2	4.4	0.4514	8	17	4.50E-02	0.00E+00	0.67
12.55	1.654	0.451	41.18	2 C	NL	0	2.60	9.95	3.83	41.1766	8.10	2	4.1	0.4512	8	17	4.50E-02	0.00E+00	0.67
12.60	1.659	0.451	41.34	3 C	NL	0	2.60	10.00	3.85	41.3406	8.80	2	4.4	0.4510	8	17	4.50E-02	0.00E+00	0.67
12.65	1.663	0.451	41.50	3 C	NL	0	2.60	10.05	3.87	41.5047	8.90	2	4.5	0.4508	8	17	4.50E-02	0.00E+00	0.67
12.70	1.668	0.451	41.67	5 M	0.35	1	2.65	10.05	3.79	41.6687	52.10	2.5	20.8	0.4506	29	17	1.50E-02	0.00E+00	0.67
12.75	1.673	0.450	41.83	5 M	0.40	1	2.70	10.05	3.72	41.8328	80.80	2.5	32.3	0.4504	38	17	5.00E-03	0.00E+00	0.67
12.80	1.678	0.450	42.00	6 S	0.60	1	2.75	10.05	3.65	41.9968	135.40	6	22.6	0.4501	30	17	1.40E-02	2.76E-02	0.70
12.85	1.682	0.450	42.16	6 S	0.90	1	2.80	10.05	3.59	42.1609	178.00	6	29.7	0.4499	35	16	9.00E-03	1.77E-02	0.72
12.90	1.687	0.450	42.32	6 S	1.00	1	2.85	10.05	3.53	42.3249	187.30	6	31.2	0.4497	37	16	5.00E-03	9.84E-03	0.73
12.95	1.692	0.449	42.49	6 S	1.24	0	2.85	10.10	3.54	42.4890	205.80	6	34.3	0.4494	41	16	0.00E+00	0.00E+00	0.73
13.00	1.696	0.449	42.65	6 S	1.62	0	2.85	10.15	3.56	42.6530	230.20	6	38.4	0.4492	42	16	0.00E+00	0.00E+00	0.73
13.05	1.701	0.449	42.82	6 S	1.55	0	2.85	10.20	3.58	42.8171	226.60	6	37.8	0.4489	42	16	0.00E+00	0.00E+00	0.73
13.10	1.706	0.449	42.98	6 S	1.49	0	2.85	10.25	3.60	42.9811	223.20	6	37.2	0.4487	42	16	0.00E+00	0.00E+00	0.73
13.15	1.711	0.448	43.15	6 S	1.41	0	2.85	10.30	3.61	43.1452	218.10	6	36.4	0.4484	42	16	0.00E+00	0.00E+00	0.73
13.20	1.715	0.448	43.31	6 S	1.24	0	2.85	10.35	3.63	43.3092	207.20	6	34.5	0.4482	41	16	0.00E+00	0.00E+00	0.73
13.25	1.720	0.448	43.47	6 S	1.23	0	2.85	10.40	3.65	43.4733	206.20	6	34.4	0.4479	41	16	0.00E+00	0.00E+00	0.73
13.30	1.725	0.448	43.64	6 S	1.36	0	2.85	10.45	3.67	43.6373	215.40	6	35.9	0.4476	42	16	0.00E+00	0.00E+00	0.73
13.35	1.729	0.447	43.80	6 S	1.69	0	2.85	10.50	3.68	43.8014	235.50	6	39.3	0.4474	42	16	0.00E+00	0.00E+00	0.73
13.40	1.734	0.447	43.97	6 S	1.89	0	2.85	10.55	3.70	43.9654	246.70	6	41.1	0.4471	42	16	0.00E+00	0.00E+00	0.73
13.45	1.739	0.447	44.13	6 S	2.18	0	2.85	10.60	3.72	44.1295	260.70	6	43.5	0.4468	42	16	0.00E+00	0.00E+00	0.73
13.50	1.744	0.447	44.29	6 S	2.40	0	2.85	10.65	3.74	44.2935	270.70	6	45.1	0.4465	42	16	0.00E+00	0.00E+00	0.73
13.55	1.748	0.446	44.46	6 S	2.56	0	2.85	10.70	3.75	44.4576	277.40	6	46.2	0.4462	42	16	0.00E+00	0.00E+00	0.73
13.60	1.753	0.446	44.62	6 S	2.68	0	2.85	10.75	3.77	44.6216	282.70	6	47.1	0.4460	42	16	0.00E+00	0.00E+00	0.73
13.65	1.758	0.446	44.79	6 S	2.66	0	2.85	10.80	3.79	44.7857	282.00	6	47.0	0.4457	42	16	0.00E+00	0.00E+00	0.73
13.70	1.763	0.445	44.95	6 S	2.98	0	2.85	10.85	3.81	44.9497	294.50	6	49.1	0.4454	42	16	0.00E+00	0.00E+00	0.73
13.75	1.767	0.445	45.11	6 S	3.16	0	2.85	10.90	3.82	45.1138	301.10	6	50.2	0.4451	42	16	0.00E+00	0.00E+00	0.73
13.80	1.772	0.445	45.28	6 S	3.29	0	2.85	10.95	3.84	45.2778	305.60	6	50.9	0.4448	42	16	0.00E+00	0.00E+00	0.73
13.85	1.777	0.444	45.44	6 S	3.57	0	2.85	11.00	3.86	45.4419	315.30	6	52.6	0.4445	42	16	0.00E+00	0.00E+00	0.73
13.90	1.781	0.444	45.61	6 S	4.00	0	2.85	11.05	3.88	45.6059	328.60	6	54.8	0.4442	42	16	0.00E+00	0.00E+00	0.73
13.95	1.786	0.444	45.77	6 S	4.02	0	2.85	11.10	3.89	45.7700	329.60	6	54.9	0.4439	42	16	0.00E+00	0.00E+00	0.73
14.00	1.791	0.444	45.93	6 S	4.33	0	2.85	11.15	3.91	45.9340	338.60	6	56.4	0.4436	42	16	0.00E+00	0.00E+00	0.73
14.05	1.796	0.443	46.10	6 S	4.63	0	2.85	11.20	3.93	46.0981	347.20	6	57.9	0.4432	42	16	0.00E+00	0.00E+00	0.73
14.10	1.800	0.443	46.26	6 S	5.00	0	2.85	11.25	3.95	46.2621	357.10	6	59.5	0.4429	42	16	0.00E+00	0.00E+00	0.73
14.15	1.805	0.443	46.43	6 S	5.14	0	2.85	11.30	3.96	46.4262	360.80	6	60.1	0.4426	42	16	0.00E+00	0.00E+00	0.73
14.20	1.810	0.442	46.59	6 S	5.17	0	2.85	11.35	3.98	46.5902	362.10	6	60.4	0.4423	42	16	0.00E+00	0.00E+00	0.73
14.25	1.815	0.442	46.75	6 S	5.20	0	2.85	11.40	4.00	46.7543	363.00	6	60.5	0.4419	42	16	0.00E+00	0.00E+00	0.73
14.30	1.819	0.442	46.92	6 S	4.56	0	2.85	11.45	4.02	46.9183	347.00	6	57.8	0.4416	42	16	0.00E+00	0.00E+00	0.73
14.35	1.824	0.441	47.08	6 S	3.28	0	2.85	11.50	4.04	47.0824	308.40	6	51.4	0.4413	42	16	0.00E+00	0.00E+00	0.73
14.40	1.829	0.441	47.25	6 S	2.67	0	2.85	11.55	4.05	47.2464	286.20	6	47.7	0.4409	42	16	0.00E+00	0.00E+00	0.73
14.45	1.833	0.441	47.41	6 S	1.88	0	2.85	11.60	4.07	47.4105	250.90	6	41.8	0.4406	42	16	0.00E+00	0.00E+00	0.73
14.50	1.838	0.440	47.57	6 S	1.23	0	2.85	11.65	4.09	47.5745	174.90	6	29.2	0.4403	35	16	9.00E-03	0.00E+00	0.73
14.55	1.843	0.440	47.74	5 M	0.76	1	2.90	11.65	4.02	47.7386	106.00	2.5	42.4	0.4399	42	16	0.00E+00	0.00E+00	0.73
14.60	1.848	0.440	47.90	5 M	0.90	1	2.95	11.65	3.95	47.9026	146.90	2.5	58.8	0.4396	42	16	0.00E+00	0.00E+00	0.73
14.65	1.852	0.439	48.07	6 S	1.38	0	2.95	11.70	3.97	48.0667	222.00	6	37.0	0.4392	42	16	0.00E+00	0.00E+00	0.73
14.70	1.857	0.439	48.23	6 S	1.78	0	2.95	11.75	3.98	48.2307	246.50	6	41.1	0.4389	42	16	0.00E+00	0.00E+00	0.73
14.75	1.862	0.438	48.39	6 S	2.02	0	2.95	11.80	4.00	48.3948	259.20	6	43.2	0.4385	42	16	0.00E+00	0.00E+00	0.73
14.80	1.866	0.438	48.56	6 S	2.06	0	2.95	11.85	4.02	48.5588	261.30	6	43.6	0.4381	42	16	0.00E+00	0.00E+00	0.73
14.85	1.871	0.438	48.72	6 S	1.83	0	2.95	11.90	4.03	48.7229	249.60	6	41.6	0.4378	42	16	0.00E+00	0.00E+00	0.73
14.90	1.876	0.437	48.89	6 S	1.71	0	2.95	11.95	4.05	48.8869	243.70	6	40.6	0.4374	42	16	0.00E+00	0.00E+00	0.73
14.95	1.881	0.437	49.05	6 S	1.51	0	2.95	12.00	4.07	49.0510	231.60	6	38.6	0.4370	42	16	0.00E+00	0.00E+00	0.73
15.00	1.885	0.437	49.22	6 S	1.74	0	2.95	12.05	4.08	49.2150	245.80	6	41.0	0.4367	42	16	0.00E+00	0.00E+00	0.73
15.05	1.890	0.436	49.38	6 S	2.54	0	2.95	12.10	4.10	49.3791	284.20	6	47.4	0.4363	42	16	0.00E+00	0.00E+00	0.73
15.10	1.895	0.436	49.54	6 S	2.79	0	2.95	12.15	4.12	49.5431	294.60	6	49.1	0.4359	42	16	0.00E+00	0.00E+00	0.73
15.15	1.900	0.436	49.71	6 S	2.93	0	2.95	12.20	4.14	49.7072	299.90	6	50.0	0.4355	42	16	0.00E+00	0.00E+00	0.73
15.20	1.904	0.435	49.87	6 S	2.45	0	2.95	12.25	4.15	49.8712	281.00	6	46.8	0.4351	42	16	0.00E+00	0.00E+00	0.73

WORKBOOK TO CALCULATE LIQUEFACTION POTENTIAL AND SEISMIC SETTLEMENT

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **02/21/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable MSF 1.5
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

Depth			CPT-1	12/19/05			CPT-2	12/19/05			CPT-4	12/19/05			CPT-5	12/19/05			CPT-6	12/19/05			CPT-7	12/19/05			CPT-8	12/19/05			CPT-9	12/19/05		
Elevation -->			1140	Sht.	1		1140	Sht.	2		1010	Sht.	4		1010	Sht.	5		1010	Sht.	6		1010	Sht.	7		1010	Sht.	8		1010	Sht.	9	
Meas. Water -->			A Water **45.0**	45.0			A Water **40.0**	40.0			A Water **21.6**	21.6			A Water **20.0**	20.0			A Water **18.0**	18.0			A Water **26.0**	26.0			A Water **27.0**	27.0			A Water **25.0**	25.0		
Design Water -->			D Water **45.0**	45.0	feet		D Water **40.0**	40.0	feet		D Water **15.0**	15.0	feet		D Water **15.0**	15.0	feet		D Water **15.0**	15.0	feet		D Water **15.0**	15.0	feet		D Water **15.0**	15.0	feet		D Water **15.0**	15.0	feet	
Soil Density -->			Gamma **130**	130.0	pcf		Gamma **130**	130.0	pcf		Gamma **120**	120.0	pcf		Gamma **120**	120.0	pcf		Gamma **120**	120.0	pcf		Gamma **120**	120.0	pcf		Gamma **120**	120.0	pcf		Gamma **120**	120.0	pcf	
Site rd -->			rd **2**	2.0			rd **2**	2.0			rd **2**	2.0			rd **2**	2.0			rd **2**	2.0			rd **2**	2.0			rd **2**	2.0			rd **2**	2.0		
R & R -->			R and R **10.0**		feet		R and R **10.0**		feet		R and R **10.0**		feet		R and R **10.0**		feet		R and R **10.0**		feet		R and R **8.0**		feet		R and R **8.0**		feet		R and R **6.0**		feet
Added Fill -->			Fill **0.0**		feet		Fill **0.0**		feet		Fill **8.0**		feet		Fill **14.0**		feet		Fill **6.0**		feet		Fill **0.0**		feet		Fill **0.0**		feet		Fill **0.0**		feet
Ratio -->			**9999**				**9999**				**4.38**				**6.04**				**2.95**				**5.12**				**4.61**				**6.87**			
Liq Settlement			Liq. 0.00	0.00	inches		Liq. 0.00	0.00	inches		Liq. 0.73	0.73	inches		Liq. 0.42	0.42	inches		Liq. 1.14	1.14	inches		Liq. 0.44	0.44	inches		Liq. 0.44	0.44	inches		Liq. 0.43	0.43	inches	
Total After R&R			Total 0.00		inches		Total 0.00		inches		Total 0.73		inches		Total 0.42		inches		Total 1.14		inches		Total 0.44		inches		Total 0.44		inches		Total 0.43		inches	
meters	feet	Soil	CPT-1	Ishihara	F.S.	Soil	CPT-2	Ishihara	F.S.	Soil	CPT-4	Ishihara	F.S.	Soil	CPT-5	Ishihara	F.S.	Soil	CPT-6	Ishihara	F.S.	Soil	CPT-7	Ishihara	F.S.	Soil	CPT-8	Ishihara	F.S.	Soil	CPT-9	Ishihara	F.S.
0	**0**	'1'!AF19	1			'2'!AF19	1			'4'!AF19	1			'5'!AF19	1			'6'!AF19	1			'7'!AF19	1			'8'!AF19	1			'9'!AF19	1		
0.05	**0.16**	**7 S**		---	NL	**2 C**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**5 M**		---	NL	**6 S**		---	NL
0.10	**0.33**	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL
0.15	**0.49**	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL
0.20	**0.66**	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL
0.25	**0.82**	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL
0.30	**0.98**	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL
0.35	**1.15**	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL
0.40	**1.31**	**7 S**		---	NL	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL
0.45	**1.48**	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL
0.50	**1.64**	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL
0.55	**1.80**	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL
0.60	**1.97**	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
0.65	**2.13**	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
0.70	**2.30**	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
0.75	**2.46**	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
0.80	**2.62**	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
0.85	**2.79**	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
0.90	**2.95**	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
0.95	**3.12**	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.00	**3.28**	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.05	**3.44**	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.10	**3.61**	**7 S**		---	NL	**7 S**		---	NL	**6 S**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.15	**3.77**	**7 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.20	**3.94**	**7 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.25	**4.10**	**7 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.30	**4.27**	**7 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.35	**4.43**	**6 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.40	**4.59**	**6 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.45	**4.76**	**6 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.50	**4.92**	**6 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.55	**5.09**	**6 S**		---	NL	**7 S**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.60	**5.25**	**7 S**		---	NL	**7 S**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.65	**5.41**	**7 S**		---	NL	**7 S**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.70	**5.58**	**7 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.75	**5.74**	**7 S**		---	NL	**7 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.80	**5.91**	**6 S**		---	NL	**6 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL	**6 S**		---	NL
1.85	**6.07**	**6 S**		---	NL	**6 S**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL
1.90	**6.23**	**6 S**		---	NL	**7 S**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL
1.95	**6.40**	**6 S**		---	NL	**7 S**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL
2.00	**6.56**	**6 S**		---	NL	**6 S**		---	NL	**4 C**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL
2.05	**6.73**	**6 S**		---	NL	**6 S**		---	NL	**4 C**		---	NL	**4 C**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**5 M**		---	NL	**6 S**		---	NL

SUMMARY SHEET

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RTF JOB: **2004-700-22**
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Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
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MSF 1.5

Depth			CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05			CPT-5 12/19/05			CPT-6 12/19/05			CPT-7 12/19/05			CPT-8 12/19/05			CPT-9 12/19/05		
42	2.10	**6.89**	6 S	---	NL	7 S	---	NL	4 C	---	NL	4 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL
43	2.15	**7.05**	6 S	---	NL	7 S	---	NL	4 C	---	NL	4 C	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL
44	2.20	**7.22**	6 S	---	NL	6 S	---	NL	4 C	---	NL	3 C	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL
45	2.25	**7.38**	6 S	---	NL	7 S	---	NL	4 C	---	NL	3 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
46	2.30	**7.55**	6 S	---	NL	7 S	---	NL	4 C	---	NL	3 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
47	2.35	**7.71**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
48	2.40	**7.87**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
49	2.45	**8.04**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
50	2.50	**8.20**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
51	2.55	**8.37**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
52	2.60	**8.53**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
53	2.65	**8.69**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
54	2.70	**8.86**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
55	2.75	**9.02**	6 S	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
56	2.80	**9.19**	6 S	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
57	2.85	**9.35**	6 S	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
58	2.90	**9.51**	6 S	---	NL	6 S	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
59	2.95	**9.68**	6 S	---	NL	7 S	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
60	3.00	**9.84**	6 S	---	NL	7 S	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
61	3.05	**10.01**	6 S	---	NL	7 S	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
62	3.10	**10.17**	6 S	---	NL	7 S	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
63	3.15	**10.33**	6 S	---	NL	7 S	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL	6 S	---	NL
64	3.20	**10.50**	6 S	---	NL	7 S	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	5 M	---	NL	6 S	---	NL
65	3.25	**10.66**	6 S	---	NL	6 S	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL
66	3.30	**10.83**	6 S	---	NL	6 S	---	NL	6 S	---	NL	5 M	---	NL	4 C	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL
67	3.35	**10.99**	6 S	---	NL	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL
68	3.40	**11.15**	6 S	---	NL	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	5 M	---	NL	4 C	---	NL
69	3.45	**11.32**	6 S	---	NL	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	6 S	---	NL	4 C	---	NL	5 M	---	NL
70	3.50	**11.48**	6 S	---	NL	6 S	---	NL	6 S	---	NL	3 C	---	NL	4 C	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL
71	3.55	**11.65**	6 S	---	NL	6 S	---	NL	6 S	---	NL	3 C	---	NL	3 C	---	NL	6 S	---	NL	5 M	---	NL	5 M	---	NL
72	3.60	**11.81**	6 S	---	NL	6 S	---	NL	5 M	---	NL	3 C	---	NL	3 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL
73	3.65	**11.98**	6 S	---	NL	6 S	---	NL	5 M	---	NL	3 C	---	NL	3 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL
74	3.70	**12.14**	6 S	---	NL	6 S	---	NL	5 M	---	NL	3 C	---	NL	3 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL
75	3.75	**12.30**	6 S	---	NL	6 S	---	NL	4 C	---	NL	3 C	---	NL	4 C	---	NL	4 C	---	NL	5 M	---	NL	6 S	---	NL
76	3.80	**12.47**	6 S	---	NL	6 S	---	NL	4 C	---	NL	3 C	---	NL	4 C	---	NL	4 C	---	NL	5 M	---	NL	6 S	---	NL
77	3.85	**12.63**	6 S	---	NL	6 S	---	NL	4 C	---	NL	3 C	---	NL	4 C	---	NL	3 C	---	NL	5 M	---	NL	6 S	---	NL
78	3.90	**12.80**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	4 C	---	NL	3 C	---	NL	5 M	---	NL	6 S	---	NL
79	3.95	**12.96**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	4 C	---	NL	3 C	---	NL	5 M	---	NL	6 S	---	NL
80	4.00	**13.12**	6 S	---	NL	7 S	---	NL	3 C	---	NL	3 C	---	NL	4 C	---	NL	3 C	---	NL	5 M	---	NL	6 S	---	NL
81	4.05	**13.29**	6 S	---	NL	7 S	---	NL	3 C	---	NL	4 C	---	NL	4 C	---	NL	3 C	---	NL	6 S	---	NL	6 S	---	NL
82	4.10	**13.45**	6 S	---	NL	7 S	---	NL	3 C	---	NL	3 C	---	NL	3 C	---	NL	3 C	---	NL	6 S	---	NL	6 S	---	NL
83	4.15	**13.62**	6 S	---	NL	6 S	---	NL	3 C	---	NL	3 C	---	NL	3 C	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL
84	4.20	**13.78**	5 M	---	NL	6 S	---	NL	3 C	---	NL	4 C	---	NL	3 C	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL
85	4.25	**13.94**	5 M	---	NL	6 S	---	NL	3 C	---	NL	3 C	---	NL	4 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL
86	4.30	**14.11**	5 M	---	NL	6 S	---	NL	4 C	---	NL	3 C	---	NL	3 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL
87	4.35	**14.27**	6 S	---	NL	6 S	---	NL	4 C	---	NL	4 C	---	NL	4 C	---	NL	5 M	---	NL	6 S	---	NL	5 M	---	NL
88	4.40	**14.44**	6 S	---	NL	7 S	---	NL	4 C	---	NL	5 M	---	NL	4 C	---	NL	5 M	---	NL	6 S	---	NL	6 S	---	NL
89	4.45	**14.60**	6 S	---	NL	7 S	---	NL	4 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL
90	4.50	**14.76**	6 S	---	NL	7 S	---	NL	4 C	---	NL	4 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL	6 S	---	NL
91	4.55	**14.93**	6 S	---	NL	6 S	---	NL	4 C	---	NL	5 M	---	NL	4 C	---	NL	4 C	---	NL	5 M	---	NL	6 S	---	NL
92	4.60	**15.09**	6 S	---	NL	6 S	---	NL	3 C	---	NL	5 M	---	NL	4 C	---	NL	4 C	---	NL	5 M	---	NL	6 S	<1>	91.00	**0.98**
93	4.65	**15.26**	6 S	---	NL	6 S	---	NL	4 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	<1>	92.00	**0.59**	5 M	<1>	92.00	**0.76**	6 S	<1>	45.50	**0.98**
94	4.70	**15.42**	6 S	---	NL	7 S	---	NL	4 C	---	NL	5 M	---	NL	5 M	---	NL	5 M	<1>	46.00	**0.59**	5 M	<1>	46.00	**0.67**	6 S		46.00	**1.34**
95	4.75	**15.58**	6 S	---	NL	7 S	---	NL	5 M	---	NL	5 M	---	NL	5 M	---	NL	5 M	<1>	30.67	**0.58**	5 M	<1>	30.67	**0.58**	6 S		46.50	**1.72**
96	4.80	**15.75**	6 S	---	NL	7 S	---	NL	5 M	<1>	143.77	**0.47**	5 M		---	NL	3 C	---	NL	5 M	<1>	23.00	**0.57**	5 M	<1>	23.00	**0.49**	6 S		47.00	**1.64**
97	4.85	**15.91**	6 S	---	NL	6 S	---	NL	6 S	<1>	71.88	**0.77**	5 M	<1>	181.34	**0.92**	3 C	---	NL	5 M	<1>	18.40	**0.54**	5 M	<1>	18.40	**0.48**	6 S		47.50	**1.50**
98	4.90	**16.08**	6 S	---	NL	7 S	---	NL	6 S	<1>	47.92	**1.09**	5 M	<1>	90.67	**0.90**	3 C	---	NL	5 M	<1>	15.33	**0.56**	5 M	<1>	15.33	**0.50**	6 S		48.00	**1.52**
99	4.95	**16.24**	6 S	---	NL	7 S	---	NL	6 S		48.26	**1.50**	5 M	<1>	60.45	**0.90**	3 C	---	NL	5 M	<1>	13.14	**0.60**	5 M	<1>	13.14	**0.63**	6 S		48.50	**1.28**
100	5.00	**16.40**	6 S	---	NL	7 S	---	NL	6 S		48.59	**1.53**	5 M		60.78	NL	4 C	---	NL	5 M		13.29	NL	5 M	<1>	11.50	**0.71**	6 S	<1>	32.33	**0.95**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **02/21/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth			CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05			CPT-5 12/19/05			CPT-6 12/19/05			CPT-7 12/19/05			CPT-8 12/19/05			CPT-9 12/19/05		
101	5.05	**16.57**	6 S	---	NL	6 S	---	NL	6 S		48.92	**1.33**	5 M		61.11	NL	5 M	<1>	136.58	**0.43**	4 C		13.43	NL	5 M	<1>	10.22	**0.54**	6 S	<1>	24.25	**0.69**
102	5.10	**16.73**	6 S	---	NL	6 S	---	NL	6 S	<1>	36.69	**0.99**	4 C		61.45	NL	5 M	<1>	68.29	**0.46**	3 C		13.57	NL	6 S	<1>	9.20	**0.70**	5 M	<1>	19.40	**0.53**
103	5.15	**16.90**	6 S	---	NL	6 S	---	NL	6 S	<1>	29.35	**0.69**	5 M		61.78	NL	5 M	<1>	45.53	**0.47**	3 C		13.71	NL	6 S		9.30	**1.64**	5 M	<1>	16.17	**0.52**
104	5.20	**17.06**	6 S	---	NL	7 S	---	NL	5 M	<1>	24.46	**0.55**	5 M	<1>	46.34	**0.67**	5 M	<1>	34.14	**0.55**	5 M		13.86	NL	6 S		9.40	**2.93**	4 C		16.33	NL
105	5.25	**17.22**	6 S	---	NL	6 S	---	NL	5 M	<1>	20.97	**0.56**	6 S	<1>	37.07	**0.74**	5 M		34.39	NL	6 S	<1>	12.13	**1.02**	6 S		9.50	**3.82**	4 C		16.50	NL
106	5.30	**17.39**	6 S	---	NL	6 S	---	NL	4 C		21.11	NL	5 M	<1>	30.89	**0.76**	4 C		34.64	NL	6 S		12.25	**1.99**	6 S		9.60	**4.89**	4 C		16.67	NL
107	5.35	**17.55**	6 S	---	NL	7 S	---	NL	3 C		21.25	NL	4 C		31.06	NL	3 C		34.89	NL	6 S		12.38	**2.52**	7 S		9.70	**5.99**	4 C		16.83	NL
108	5.40	**17.72**	6 S	---	NL	6 S	---	NL	3 C		21.40	NL	4 C		31.22	NL	3 C		35.14	NL	6 S		12.50	**2.62**	7 S		9.80	**6.12**	4 C		17.00	NL
109	5.45	**17.88**	6 S	---	NL	6 S	---	NL	3 C		21.54	NL	3 C		31.39	NL	3 C		35.39	NL	6 S		12.63	**2.78**	6 S		9.90	**6.18**	6 S	<1>	14.57	**1.14**
110	5.50	**18.04**	6 S	---	NL	6 S	---	NL	3 C		21.68	NL	3 C		31.56	NL	3 C		35.64	NL	6 S		12.75	**2.88**	7 S		10.00	**6.13**	6 S		14.71	**1.47**
111	5.55	**18.21**	6 S	---	NL	7 S	---	NL	3 C		21.82	NL	3 C		31.72	NL	3 C		35.89	NL	6 S		12.88	**2.81**	6 S		10.10	**5.47**	5 M	<1>	12.88	**1.00**
112	5.60	**18.37**	6 S	---	NL	6 S	---	NL	4 C		21.97	NL	3 C		31.89	NL	3 C		36.14	NL	6 S		13.00	**2.56**	6 S		10.20	**3.47**	6 S	<1>	11.44	**0.65**
113	5.65	**18.54**	6 S	---	NL	6 S	---	NL	4 C		22.11	NL	3 C		32.06	NL	3 C		36.39	NL	6 S		13.13	**2.37**	6 S		10.30	**4.11**	6 S	<1>	10.30	**0.52**
114	5.70	**18.70**	6 S	---	NL	6 S	---	NL	5 M		22.25	NL	3 C		32.22	NL	3 C		36.64	NL	6 S		13.25	**2.50**	6 S		10.40	**3.40**	6 S	<1>	9.36	**0.49**
115	5.75	**18.86**	6 S	---	NL	6 S	---	NL	5 M		22.40	NL	4 C		32.39	NL	3 C		36.89	NL	6 S		13.38	**2.54**	6 S		10.50	**2.82**	6 S	<1>	8.58	**0.46**
116	5.80	**19.03**	6 S	---	NL	6 S	---	NL	4 C		22.54	NL	5 M	<1>	27.76	**0.66**	3 C		37.14	NL	6 S		13.50	**2.44**	6 S		10.60	**2.46**	6 S	<1>	7.92	**0.44**
117	5.85	**19.19**	6 S	---	NL	6 S	---	NL	3 C		22.68	NL	6 S	<1>	24.29	**0.94**	3 C		37.39	NL	6 S		13.63	**2.12**	6 S		10.70	**2.36**	5 M	<1>	7.36	**0.40**
118	5.90	**19.36**	6 S	---	NL	6 S	---	NL	3 C		22.82	NL	6 S	<1>	21.59	**1.10**	3 C		37.64	NL	6 S		13.75	**1.77**	6 S		10.80	**2.05**	5 M	<1>	6.87	**0.37**
119	5.95	**19.52**	6 S	---	NL	6 S	---	NL	3 C		22.97	NL	6 S		21.70	**1.31**	4 C		37.89	NL	6 S		13.88	**1.51**	6 S		10.90	**2.02**	5 M		6.93	NL
120	6.00	**19.69**	6 S	---	NL	6 S	---	NL	5 M	<1>	20.10	**0.40**	6 S		21.82	**1.46**	5 M		38.14	NL	6 S		14.00	**1.22**	6 S		11.00	**1.44**	4 C		7.00	NL
121	6.05	**19.85**	6 S	---	NL	6 S	---	NL	6 S	<1>	17.86	**0.81**	6 S		21.93	**1.41**	5 M		38.39	NL	6 S	<1>	12.44	**0.98**	6 S	<1>	10.00	**0.92**	3 C		7.07	NL
122	6.10	**20.01**	6 S	---	NL	6 S	---	NL	6 S	<1>	16.08	**1.03**	5 M		22.04	**1.29**	5 M		38.64	NL	6 S	<1>	11.20	**0.90**	6 S	<1>	9.17	**0.75**	3 C		7.13	NL
123	6.15	**20.18**	6 S	---	NL	6 S	---	NL	6 S	<1>	14.62	**1.14**	5 M	<1>	19.83	**1.13**	5 M	<1>	30.92	**0.52**	6 S	<1>	10.18	**1.11**	5 M	<1>	8.46	**0.84**	3 C		7.20	NL
124	6.20	**20.34**	6 S	---	NL	6 S	---	NL	6 S	<1>	13.40	**0.97**	5 M	<1>	18.03	**1.19**	5 M	<1>	25.76	**0.57**	6 S	<1>	9.33	**1.05**	5 M	<1>	7.86	**0.92**	3 C		7.27	NL
125	6.25	**20.51**	6 S	---	NL	6 S	---	NL	5 M	<1>	12.37	**0.82**	5 M		18.12	**1.23**	6 S	<1>	22.08	**0.66**	6 S	<1>	8.62	**0.83**	5 M		7.93	NL	4 C		7.33	NL
126	6.30	**20.67**	6 S	---	NL	6 S	---	NL	5 M		12.44	NL	5 M	<1>	16.61	**1.08**	6 S	<1>	19.32	**0.81**	5 M	<1>	8.00	**0.72**	5 M	<1>	7.40	**0.82**	4 C		7.40	NL
127	6.35	**20.83**	5 M	---	NL	6 S	---	NL	5 M	<1>	11.55	**0.61**	5 M	<1>	15.33	**0.90**	6 S	<1>	17.18	**0.86**	5 M		8.07	NL	5 M	<1>	6.94	**0.76**	3 C		7.47	NL
128	6.40	**21.00**	5 M	---	NL	6 S	---	NL	5 M	<1>	10.78	**0.67**	5 M	<1>	14.24	**0.86**	6 S	<1>	15.46	**0.80**	5 M	<1>	7.53	**0.84**	6 S		7.00	**1.53**	3 C		7.53	NL
129	6.45	**21.16**	6 S	---	NL	6 S	---	NL	5 M	<1>	10.11	**0.65**	5 M	<1>	13.29	**0.85**	5 M	<1>	14.05	**0.79**	5 M	<1>	7.06	**0.80**	6 S		7.06	**1.77**	6 S	<1>	7.06	**0.83**
130	6.50	**21.33**	6 S	---	NL	5 M	---	NL	5 M	<1>	9.52	**0.69**	5 M		13.36	NL	6 S	<1>	12.88	**0.87**	5 M	<1>	6.65	**0.71**	6 S		7.12	**3.15**	6 S		7.12	**1.99**
131	6.55	**21.49**	6 S	---	NL	5 M	---	NL	5 M		9.57	NL	4 C		13.42	NL	6 S	<1>	11.89	**0.94**	4 C		6.71	NL	6 S		7.19	**4.13**	6 S		7.19	**1.97**
132	6.60	**21.65**	6 S	---	NL	6 S	---	NL	4 C		9.63	NL	4 C		13.49	NL	6 S	<1>	11.04	**0.79**	4 C		6.76	NL	6 S		7.25	**4.15**	6 S		7.25	**3.90**
133	6.65	**21.82**	6 S	---	NL	6 S	---	NL	4 C		9.69	NL	3 C		13.56	NL	6 S	<1>	10.31	**0.88**	4 C		6.82	NL	6 S		7.31	**7.74**	6 S		7.31	**6.12**
134	6.70	**21.98**	6 S	---	NL	5 M	---	NL	4 C		9.75	NL	3 C		13.62	NL	6 S	<1>	9.66	**1.01**	4 C		6.88	NL	6 S		7.37	**5.01**	6 S		7.37	**7.52**
135	6.75	**22.15**	6 S	---	NL	5 M	---	NL	4 C		9.81	NL	3 C		13.69	NL	6 S	<1>	9.09	**0.97**	4 C		6.94	NL	6 S		7.44	**5.92**	6 S		7.44	**11.20**
136	6.80	**22.31**	6 S	---	NL	6 S	---	NL	4 C		9.87	NL	4 C		13.76	NL	6 S	<1>	8.59	**0.85**	5 M		7.00	NL	6 S		7.50	**2.92**	6 S		7.50	**23.99**
137	6.85	**22.47**	6 S	---	NL	6 S	---	NL	4 C		9.93	NL	4 C		13.82	NL	6 S		8.64	**1.23**	5 M		7.06	NL	6 S		7.56	**3.75**	6 S		7.56	**24.10**
138	6.90	**22.64**	6 S	---	NL	6 S	---	NL	4 C		9.99	NL	5 M	<1>	12.96	**0.79**	6 S		8.70	**1.61**	5 M		7.12	NL	6 S		7.62	**5.34**	6 S		7.62	**28.52**
139	6.95	**22.80**	6 S	---	NL	6 S	---	NL	4 C		10.05	NL	6 S	<1>	12.20	**0.81**	6 S		8.75	**1.64**	4 C		7.18	NL	6 S		7.69	**9.33**	6 S		7.69	**21.60**
140	7.00	**22.97**	5 M	---	NL	6 S	---	NL	5 M		10.10	NL	5 M	<1>	11.52	**0.96**	6 S		8.81	**1.25**	4 C		7.24	NL	6 S		7.75	**9.00**	6 S		7.75	**14.94**
141	7.05	**23.13**	5 M	---	NL	6 S	---	NL	5 M	<1>	9.54	**0.55**	5 M	<1>	10.91	**1.01**	6 S	<1>	8.35	**0.94**	3 C		7.29	NL	6 S		7.81	**6.85**	6 S		7.81	**11.71**
142	7.10	**23.29**	5 M	---	NL	5 M	---	NL	5 M	<1>	9.04	**0.57**	5 M	<1>	10.37	**1.16**	6 S	<1>	7.93	**0.72**	3 C		7.35	NL	6 S		7.87	**6.34**	6 S		7.87	**10.70**
143	7.15	**23.46**	5 M	---	NL	5 M	---	NL	5 M	<1>	8.59	**0.50**	5 M		10.42	**1.30**	5 M	<1>	7.55	**0.51**	4 C		7.41	NL	6 S		7.94	**7.59**	6 S		7.94	**15.15**
144	7.20	**23.62**	6 S	---	NL	5 M	---	NL	5 M	<1>	8.18	**0.50**	6 S		10.47	**1.76**	5 M		7.60	NL	3 C		7.47	NL	6 S		8.00	**8.40**	6 S		8.00	**16.73**
145	7.25	**23.79**	6 S	---	NL	5 M	---	NL	5 M	<1>	7.81	**0.57**	6 S		10.52	**1.78**	4 C		7.65	NL	5 M		7.53	NL	6 S		8.06	**5.90**	6 S		8.06	**17.74**
146	7.30	**23.95**	6 S	---	NL	6 S	---	NL	5 M	<1>	7.47	**0.59**	6 S		10.57	**2.05**	3 C		7.69	NL	5 M	<1>	7.11	**0.43**	6 S		8.12	**5.13**	6 S		8.12	**11.77**
147	7.35	**24.11**	6 S	---	NL	6 S	---	NL	6 S	<1>	7.16	**0.86**	6 S		10.62	**2.28**	4 C		7.74	NL	5 M	<1>	6.74	**0.56**	6 S		8.19	**4.13**	6 S		8.19	**9.12**
148	7.40	**24.28**	6 S	---	NL	5 M	---	NL	6 S	<1>	6.87	**1.11**	6 S		10.67	**2.49**	4 C		7.79	NL	4 C		6.79	NL	6 S		8.25	**3.91**	7 S		8.25	**10.10**
149	7.45	**24.44**	6 S	---	NL	5 M	---	NL	6 S		6.91	**1.64**	6 S		10.72	**2.93**	4 C		7.84	NL	3 C		6.84	NL	6 S		8.31	**2.62**	6 S		8.31	**6.90**
150	7.50	**24.61**	6 S	---	NL	5 M	---	NL	6 S		6.95	**1.88**	6 S		10.77	**2.89**	4 C		7.88	NL	3 C		6.89	NL	6 S		8.37	**2.31**	6 S		8.37	**5.88**
151	7.55	**24.77**	6 S	---	NL	5 M	---	NL	6 S		6.99	**1.72**	6 S		10.82	**2.74**	4 C		7.93	NL	3 C		6.95	NL	6 S		8.44	**2.14**	6 S		8.44	**6.63**
152	7.60	**24.93**	6 S	---	NL	6 S	---	NL	6 S		7.03	**1.63**	6 S		10.87	**2.81**	4 C		7.98	NL	3 C		7.00	NL	6 S		8.50	**2.19**	6 S		8.50	**7.96**
153	7.65	**25.10**	6 S	---	NL	6 S	---	NL	6 S		7.07	**1.62**	6 S		10.92	**3.04**	3 C		8.03	NL	5 M	<1>	6.65	**0.40**	6 S		8.56	**2.20**	6 S		8.56	**5.85**
154	7.70	**25.26**	6 S	---	NL	6 S	---	NL	6 S		7.11	**1.58**	6 S		10.97	**3.22**	3 C		8.08	NL	6 S	<1>	6.33	**0.59**	6 S		8.62	**2.38**	6 S		8.62	**6.69**
155	7.75	**25.43**	6 S	---	NL	5 M	---	NL	6 S		7.15	**1.57**	6 S		11.02	**3.20**	5 M		8.12	NL	6 S	<1>	6.05	**0.69**	6 S		8.69	**2.53**	6 S		8.69	**8.75**
156	7.80	**25.59**	6 S	---	NL	6 S	---	NL	6 S		7.19	**1.63**	6 S		11.07	**3.13**	5 M	<1>	7.75	**0.62**	6 S	<1>	5.78	**0.90**	6 S		8.75	**2.62**	6 S		8.75	**15.80**
157	7.85	**25.75**	6 S	---	NL	6 S	---	NL	6 S		7.23	**1.90**	6 S		11.12	**2.96**	5 M	<1>	7.42	**0.51**	6 S	<1>	5.54	**0.97**	6 S		8.81	**3.29**	6 S		8.81	**11.62**
158	7.90	**25.92**	6 S	---	NL	6 S	---	NL	6 S		7.27	**2.15**	6 S		11.17	**2.93**	6 S	<1>	7.11	**0.59**	6 S	<1>	5.32	**1.12**	6 S		8.87	**3.57**	6 S		8.87	**9.50**
159	7.95	**26.08**	6 S	---	NL	6 S	---	NL	6 S		7.31	**2.31**	6 S		11.22	**2.85**	5 M	<1>	6.82	**0.56**	6 S	<1>	5.12	**1.18**	6 S		8.94	**3.77**	6 S		8.94	**7.97**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **02/21/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth			CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05				CPT-5 12/19/05				CPT-6 12/19/05				CPT-7 12/19/05			CPT-8 12/19/05			CPT-9 12/19/05		
160	8.00	**26.25**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.35	**2.88**	**6 S**		11.27	**3.07**	**5 M**	<1>	6.56	**0.61**	**6 S**	5.15	**1.28**	**6 S**	9.00	**3.48**	**6 S**	9.00	**5.96**
161	8.05	**26.41**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.39	**3.16**	**6 S**		11.32	**3.25**	**4 C**		6.60	**NL**	**6 S**	5.19	**1.35**	**6 S**	9.06	**2.56**	**6 S**	9.06	**4.31**
162	8.10	**26.57**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.43	**3.08**	**6 S**		11.37	**3.31**	**4 C**		6.64	**NL**	**6 S**	5.23	**1.36**	**6 S**	9.12	**2.27**	**6 S**	9.12	**3.29**
163	8.15	**26.74**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.47	**3.14**	**6 S**		11.42	**3.17**	**4 C**		6.68	**NL**	**6 S**	5.27	**1.34**	**6 S**	9.19	**2.27**	**6 S**	9.19	**2.99**
164	8.20	**26.90**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.51	**3.38**	**6 S**		11.47	**3.05**	**4 C**		6.71	**NL**	**6 S**	5.31	**1.29**	**6 S**	9.25	**2.18**	**6 S**	9.25	**3.82**
165	8.25	**27.07**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.55	**3.34**	**6 S**		11.52	**2.97**	**4 C**		6.75	**NL**	**6 S**	5.35	**1.31**	**6 S**	9.31	**2.06**	**6 S**	9.31	**5.01**
166	8.30	**27.23**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.59	**3.24**	**6 S**		11.57	**2.72**	**5 M**	<1>	6.50	**0.47**	**6 S**	5.38	**1.33**	**6 S**	9.37	**1.52**	**6 S**	9.37	**4.42**
167	8.35	**27.40**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.63	**2.90**	**6 S**		11.62	**2.62**	**5 M**	<1>	6.27	**0.56**	**6 S**	5.42	**1.33**	**6 S**	8.82	**1.16**	**6 S**	9.44	**4.61**
168	8.40	**27.56**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.67	**2.87**	**6 S**		11.67	**2.56**	**5 M**	<1>	6.05	**0.52**	**6 S**	5.46	**1.34**	**6 S**	8.88	**1.29**	**6 S**	9.50	**4.39**
169	8.45	**27.72**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.71	**2.79**	**6 S**		11.72	**2.25**	**5 M**	<1>	5.85	**0.59**	**6 S**	5.50	**1.38**	**6 S**	8.94	**1.37**	**6 S**	9.56	**4.46**
170	8.50	**27.89**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.75	**2.51**	**6 S**		11.77	**1.61**	**4 C**		5.89	**NL**	**6 S**	5.54	**1.44**	**6 S**	9.00	**1.54**	**6 S**	9.62	**4.12**
171	8.55	**28.05**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.79	**2.28**	**6 S**		11.82	**1.47**	**4 C**		5.92	**NL**	**6 S**	5.58	**1.58**	**6 S**	9.06	**1.75**	**6 S**	9.69	**3.07**
172	8.60	**28.22**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.83	**2.38**	**5 M**	<1>	11.25	**1.08**	**4 C**		5.95	**NL**	**6 S**	5.62	**1.68**	**6 S**	9.12	**1.65**	**6 S**	9.75	**3.17**
173	8.65	**28.38**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.87	**2.55**	**6 S**	<1>	10.74	**1.02**	**4 C**		5.99	**NL**	**6 S**	5.65	**1.71**	**6 S**	8.61	**1.13**	**6 S**	9.81	**3.14**
174	8.70	**28.54**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.91	**2.36**	**6 S**		10.79	**2.09**	**4 C**		6.02	**NL**	**6 S**	5.69	**1.77**	**6 S**	8.16	**0.97**	**6 S**	9.87	**3.13**
175	8.75	**28.71**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.95	**2.24**	**6 S**		10.83	**4.72**	**4 C**		6.05	**NL**	**6 S**	5.73	**1.72**	**6 S**	7.75	**0.74**	**6 S**	9.94	**3.10**
176	8.80	**28.87**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		7.99	**1.82**	**6 S**		10.88	**4.51**	**5 M**	<1>	5.86	**0.50**	**6 S**	5.77	**1.90**	**6 S**	7.38	**0.77**	**6 S**	10.00	**3.85**
177	8.85	**29.04**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**		8.03	**1.25**	**6 S**		10.92	**3.89**	**6 S**	<1>	5.67	**0.63**	**6 S**	5.81	**2.13**	**6 S**	7.43	**1.36**	**6 S**	10.06	**5.67**
178	8.90	**29.20**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**	<1>	7.72	**0.79**	**6 S**		10.97	**3.98**	**6 S**	<1>	5.50	**0.67**	**6 S**	5.85	**2.16**	**6 S**	7.48	**1.49**	**6 S**	10.13	**6.28**
179	8.95	**29.36**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**	<1>	7.44	**0.60**	**6 S**		11.02	**3.76**	**6 S**	<1>	5.34	**0.80**	**6 S**	5.88	**2.05**	**6 S**	7.52	**1.38**	**6 S**	10.19	**3.46**
180	9.00	**29.53**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**	<1>	7.17	**0.56**	**6 S**		11.06	**3.61**	**6 S**	<1>	5.19	**0.84**	**6 S**	5.92	**2.22**	**6 S**	7.57	**1.38**	**6 S**	10.25	**2.02**
181	9.05	**29.69**	**6 S**	---	**NL**	**5 M**	---	**NL**	**5 M**	<1>	6.92	**0.55**	**6 S**		11.11	**3.95**	**6 S**	<1>	5.04	**0.83**	**6 S**	5.96	**2.68**	**6 S**	7.62	**1.43**	**6 S**	10.31	**1.60**
182	9.10	**29.86**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**	<1>	6.69	**0.58**	**6 S**		11.15	**4.76**	**6 S**	<1>	4.91	**0.87**	**6 S**	6.00	**2.89**	**6 S**	7.67	**1.76**	**6 S**	10.38	**1.51**
183	9.15	**30.02**	**6 S**	---	**NL**	**6 S**	---	**NL**	**4 C**		6.73	**NL**	**6 S**		11.20	**5.17**	**6 S**	<1>	4.78	**0.91**	**6 S**	6.04	**2.68**	**6 S**	7.71	**2.01**	**6 S**	10.44	**2.43**
184	9.20	**30.18**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**		6.76	**NL**	**6 S**		11.24	**5.27**	**5 M**	<1>	4.66	**0.83**	**6 S**	6.08	**2.30**	**6 S**	7.76	**2.29**	**6 S**	10.50	**3.70**
185	9.25	**30.35**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**		6.79	**NL**	**6 S**		11.29	**5.11**	**5 M**		4.68	**NL**	**6 S**	6.12	**1.95**	**6 S**	7.81	**2.65**	**6 S**	10.56	**7.33**
186	9.30	**30.51**	**6 S**	---	**NL**	**5 M**	---	**NL**	**4 C**		6.83	**NL**	**6 S**		11.33	**4.19**	**4 C**		4.71	**NL**	**6 S**	6.15	**1.73**	**6 S**	7.86	**2.93**	**6 S**	10.63	**19.94**
187	9.35	**30.68**	**6 S**	---	**NL**	**5 M**	---	**NL**	**4 C**		6.86	**NL**	**6 S**		11.38	**3.24**	**3 C**		4.73	**NL**	**6 S**	6.19	**1.50**	**6 S**	7.90	**3.17**	**6 S**	10.69	**11.44**
188	9.40	**30.84**	**6 S**	---	**NL**	**6 S**	---	**NL**	**3 C**		6.89	**NL**	**6 S**		11.42	**2.17**	**4 C**		4.76	**NL**	**6 S**	6.23	**1.36**	**6 S**	7.95	**3.08**	**6 S**	10.75	**10.45**
189	9.45	**31.00**	**6 S**	---	**NL**	**6 S**	---	**NL**	**3 C**		6.93	**NL**	**6 S**		11.47	**1.40**	**4 C**		4.78	**NL**	**6 S**	6.27	**1.25**	**6 S**	8.00	**2.57**	**6 S**	10.81	**9.86**
190	9.50	**31.17**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**	<1>	6.70	**0.46**	**6 S**		11.52	**1.78**	**3 C**		4.81	**NL**	**6 S**	<1>	6.04	**1.05**	**6 S**	8.05	**2.32**	**6 S**	10.88	**7.64**
191	9.55	**31.33**	**6 S**	---	**NL**	**6 S**	---	**NL**	**6 S**	<1>	6.49	**0.53**	**6 S**		11.56	**1.63**	**3 C**		4.84	**NL**	**6 S**	<1>	5.82	**0.86**	**6 S**	8.10	**1.90**	**6 S**	10.94	**5.15**
192	9.60	**31.50**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**	<1>	6.30	**0.50**	**6 S**	<1>	11.06	**1.12**	**4 C**		4.86	**NL**	**6 S**	<1>	5.62	**0.59**	**6 S**	8.14	**1.31**	**6 S**	11.00	**3.96**
193	9.65	**31.66**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**	<1>	6.11	**0.55**	**5 M**	<1>	10.60	**0.77**	**4 C**		4.89	**NL**	**5 M**	<1>	5.43	**0.49**	**6 S**	<1>	7.77	**0.87**	**6 S**	11.06	**3.63**
194	9.70	**31.82**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**		6.14	**NL**	**5 M**		10.64	**NL**	**3 C**		4.91	**NL**	**5 M**		5.47	**NL**	**6 S**	<1>	7.43	**0.78**	**6 S**	11.13	**3.61**
195	9.75	**31.99**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**	<1>	5.96	**0.57**	**4 C**		10.68	**NL**	**3 C**		4.94	**NL**	**4 C**		5.50	**NL**	**5 M**	<1>	7.13	**0.66**	**6 S**	11.19	**3.70**
196	9.80	**32.15**	**6 S**	---	**NL**	**6 S**	---	**NL**	**5 M**		5.99	**NL**	**4 C**		10.72	**NL**	**4 C**		4.96	**NL**	**5 M**		5.53	**NL**	**5 M**	<1>	6.84	**0.56**	**6 S**	11.25	**3.83**
197	9.85	**32.32**	**6 S**	---	**NL**	**0 C**	---		**4 C**		6.02	**NL**	**4 C**		10.76	**NL**	**4 C**		4.99	**NL**	**5 M**		5.57	**NL**	**5 M**	<1>	6.58	**0.55**	**6 S**	11.31	**3.79**
198	9.90	**32.48**	**6 S**	---	**NL**	**0 C**	---		**4 C**		6.05	**NL**	**4 C**		10.81	**NL**	**3 C**		5.01	**NL**	**5 M**	<1>	5.39	**0.51**	**5 M**	<1>	6.33	**0.58**	**6 S**	11.38	**3.83**
199	9.95	**32.64**	**6 S**	---	**NL**	**0 C**	---		**4 C**		6.08	**NL**	**3 C**		10.85	**NL**	**4 C**		5.04	**NL**	**6 S**	<1>	5.22	**1.13**	**5 M**		6.37	**NL**	**6 S**	11.44	**3.78**
200	10.00	**32.81**	**6 S**	---	**NL**	**0 C**	---		**4 C**		6.11	**NL**	**3 C**		10.89	**NL**	**3 C**		5.07	**NL**	**6 S**		5.25	**1.43**	**5 M**		6.41	**NL**	**6 S**	11.50	**3.83**
201	10.05	**32.97**	**6 S**	---	**NL**	**0 C**	---		**5 M**	<1>	5.94	**0.48**	**4 C**		10.93	**NL**	**4 C**		5.09	**NL**	**6 S**		5.28	**1.66**	**5 M**	<1>	6.18	**0.71**	**6 S**	11.56	**4.38**
202	10.10	**33.14**	**6 S**	---	**NL**	**0 C**	---		**5 M**	<1>	5.78	**0.53**	**4 C**		10.97	**NL**	**4 C**		5.12	**NL**	**6 S**		5.31	**2.09**	**6 S**		6.21	**1.22**	**6 S**	11.63	**4.78**
203	10.15	**33.30**	**6 S**	---	**NL**	**0 C**	---		**5 M**	<1>	5.63	**0.59**	**3 C**		11.01	**NL**	**4 C**		5.14	**NL**	**6 S**		5.34	**2.56**	**6 S**		6.25	**1.96**	**6 S**	11.69	**4.86**
204	10.20	**33.46**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	5.48	**0.80**	**4 C**		11.06	**NL**	**4 C**		5.17	**NL**	**6 S**		5.38	**3.14**	**6 S**		6.29	**2.13**	**6 S**	11.75	**6.74**
205	10.25	**33.63**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	5.34	**0.93**	**4 C**		11.10	**NL**	**4 C**		5.19	**NL**	**6 S**		5.41	**4.69**	**6 S**		6.32	**2.06**	**6 S**	11.81	**8.31**
206	10.30	**33.79**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	5.21	**0.87**	**4 C**		11.14	**NL**	**4 C**		5.22	**NL**	**6 S**		5.44	**7.54**	**6 S**		6.36	**1.63**	**6 S**	11.88	**6.96**
207	10.35	**33.96**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	5.09	**0.80**	**3 C**		11.18	**NL**	**4 C**		5.25	**NL**	**6 S**		5.47	**10.02**	**6 S**	<1>	6.14	**0.89**	**6 S**	11.94	**5.62**
208	10.40	**34.12**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	4.97	**0.70**	**3 C**		11.22	**NL**	**4 C**		5.27	**NL**	**6 S**		5.50	**19.19**	**6 S**	<1>	5.93	**0.59**	**6 S**	12.00	**4.41**
209	10.45	**34.28**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	4.86	**0.63**	**5 M**	<1>	10.77	**0.41**	**4 C**		5.30	**NL**	**6 S**		5.53	**10.71**	**5 M**	<1>	5.74	**0.41**	**6 S**	12.06	**3.10**
210	10.50	**34.45**	**6 S**	---	**NL**	**0 C**	---		**5 M**	<1>	4.75	**0.60**	**5 M**	<1>	10.36	**0.47**	**5 M**		5.32	**NL**	**6 S**		5.56	**7.71**	**5 M**		5.77	**NL**	**6 S**	12.13	**2.85**
211	10.55	**34.61**	**6 S**	---	**NL**	**0 C**	---		**5 M**		4.77	**NL**	**5 M**	<1>	9.98	**0.51**	**5 M**		5.35	**NL**	**6 S**		5.59	**8.50**	**4 C**		5.81	**NL**	**6 S**	12.19	**3.29**
212	10.60	**34.78**	**6 S**	---	**NL**	**0 C**	---		**4 C**		4.79	**NL**	**5 M**	<1>	9.62	**0.53**	**5 M**	<1>	5.21	**0.32**	**6 S**		5.63	**8.29**	**3 C**		5.84	**NL**	**6 S**	12.25	**3.23**
213	10.65	**34.94**	**6 S**	---	**NL**	**0 C**	---		**5 M**		4.82	**NL**	**5 M**	<1>	9.29	**0.53**	**4 C**		5.24	**NL**	**6 S**		5.66	**8.04**	**3 C**		5.87	**NL**	**6 S**	12.31	**3.07**
214	10.70	**35.10**	**6 S**	---	**NL**	**0 C**	---		**4 C**		4.84	**NL**	**5 M**	<1>	8.98	**0.49**	**3 C**		5.26	**NL**	**6 S**		5.69	**7.62**	**4 C**		5.90	**NL**	**6 S**	12.38	**2.95**
215	10.75	**35.27**	**6 S**	---	**NL**	**0 C**	---		**4 C**		4.86	**NL**	**5 M**		9.01	**NL**	**4 C**		5.29	**NL**	**6 S**		5.72	**7.64**	**4 C**		5.94	**NL**	**6 S**	12.44	**2.52**
216	10.80	**35.43**	**6 S**	---	**NL**	**0 C**	---		**4 C**		4.88	**NL**	**4 C**		9.04	**NL**	**4 C**		5.31	**NL**	**6 S**		5.75	**8.47**	**4 C**		5.97	**NL**	**6 S**	12.50	**1.75**
217	10.85	**35.60**	**6 S**	---	**NL**	**0 C**	---		**4 C**		4.91	**NL**	**4 C**		9.08	**NL**	**4 C**		5.34	**NL**	**6 S**		5.78	**10.14**	**4 C**		6.00	**NL**	**6 S**	12.56	**1.52**
218	10.90	**35.76**	**6 S**	---	**NL**	**0 C**	---		**4 C**		4.93	**NL**	**3 C**		9.11	**NL**	**5 M**		5.36	**NL**	**6 S**		5.81	**15.62**	**3 C**		6.03	**NL**	**6 S**	12.63	**1.51**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **02/21/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

MSF 1.5

Depth			CPT-1 12/19/05			CPT-2 12/19/05			CPT-4 12/19/05				CPT-5 12/19/05				CPT-6 12/19/05				CPT-7 12/19/05				CPT-8 12/19/05				CPT-9 12/19/05		
219	10.95	**35.93**	**6 S**	---	**NL**	**0 C**	---		**4 C**		4.95	**NL**	**3 C**		9.14	**NL**	**5 M**	<1>	5.23	**0.48**	**6 S**		5.84	**23.46**	**3 C**		6.06	**NL**	**6 S**	12.69	**1.75**
220	11.00	**36.09**	**6 S**	---	**NL**	**0 C**	---		**5 M**	<1>	4.84	**0.69**	**3 C**		9.18	**NL**	**5 M**	<1>	5.11	**0.56**	**6 S**		5.88	**38.12**	**4 C**		6.10	**NL**	**6 S**	12.75	**2.67**
221	11.05	**36.25**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	4.74	**1.11**	**3 C**		9.21	**NL**	**5 M**	<1>	4.99	**0.68**	**7 S**		5.91	**41.40**	**5 M**	<1>	5.91	**0.40**	**6 S**	12.81	**5.20**
222	11.10	**36.42**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.76	**1.59**	**3 C**		9.24	**NL**	**6 S**	<1>	4.88	**0.76**	**6 S**		5.94	**38.16**	**5 M**	<1>	5.73	**0.41**	**6 S**	12.88	**8.17**
223	11.15	**36.58**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.78	**1.69**	**5 M**		9.28	**NL**	**6 S**	<1>	4.77	**0.90**	**6 S**		5.97	**22.66**	**6 S**	<1>	5.56	**0.47**	**6 S**	12.94	**11.57**
224	11.20	**36.75**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.80	**1.71**	**5 M**	<1>	8.98	**0.36**	**6 S**		4.79	**1.36**	**6 S**		6.00	**14.92**	**6 S**	<1>	5.40	**0.46**	**6 S**	13.00	**13.06**
225	11.25	**36.91**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.82	**1.90**	**4 C**		9.01	**NL**	**6 S**		4.81	**2.11**	**6 S**		6.03	**9.69**	**6 S**	<1>	5.25	**0.42**	**6 S**	13.06	**9.38**
226	11.30	**37.07**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.85	**1.90**	**4 C**		9.04	**NL**	**6 S**		4.84	**3.25**	**6 S**		6.06	**8.89**	**6 S**	<1>	5.11	**0.43**	**6 S**	13.13	**10.30**
227	11.35	**37.24**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.87	**2.25**	**5 M**	<1>	8.76	**0.47**	**6 S**		4.86	**4.68**	**6 S**		6.09	**9.61**	**6 S**	<1>	4.97	**0.45**	**6 S**	13.19	**9.60**
228	11.40	**37.40**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.89	**2.41**	**6 S**	<1>	8.50	**0.70**	**6 S**		4.88	**6.42**	**6 S**		6.13	**9.26**	**5 M**	<1>	4.85	**0.55**	**6 S**	13.25	**9.82**
229	11.45	**37.57**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.91	**2.47**	**6 S**	<1>	8.25	**0.92**	**7 S**		4.90	**10.38**	**6 S**		6.16	**6.40**	**5 M**	<1>	4.73	**0.60**	**6 S**	13.31	**12.84**
230	11.50	**37.73**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.93	**2.29**	**6 S**	<1>	8.01	**0.93**	**6 S**		4.92	**11.05**	**6 S**		6.19	**5.23**	**5 M**	<1>	4.61	**0.57**	**6 S**	13.38	**9.62**
231	11.55	**37.89**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.95	**1.89**	**6 S**	<1>	7.79	**0.98**	**7 S**		4.95	**14.87**	**6 S**		6.22	**3.54**	**6 S**		4.63	**2.30**	**6 S**	13.44	**6.75**
232	11.60	**38.06**	**6 S**	---	**NL**	**0 C**	---		**6 S**		4.97	**1.67**	**6 S**	<1>	7.58	**1.13**	**7 S**		4.97	**18.11**	**6 S**		6.25	**3.65**	**6 S**		4.66	**2.76**	**6 S**	13.50	**5.83**
233	11.65	**38.22**	**6 S**	---	**NL**	**0 C**	---		**6 S**		5.00	**1.33**	**6 S**		7.60	**1.58**	**7 S**		4.99	**17.04**	**6 S**		6.28	**2.85**	**6 S**		4.68	**4.68**	**6 S**	13.56	**3.94**
234	11.70	**38.39**	**6 S**	---	**NL**	**0 C**	---		**6 S**		5.02	**1.31**	**6 S**		7.63	**1.72**	**7 S**		5.01	**13.14**	**6 S**		6.31	**2.21**	**6 S**		4.71	**4.86**	**6 S**	13.63	**3.68**
235	11.75	**38.55**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	4.91	**1.19**	**6 S**		7.66	**1.54**	**7 S**		5.04	**12.58**	**6 S**		6.34	**1.65**	**6 S**		4.73	**5.04**	**6 S**	13.69	**3.70**
236	11.80	**38.71**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	4.81	**0.94**	**6 S**		7.68	**1.35**	**7 S**		5.06	**12.24**	**6 S**		6.38	**1.20**	**6 S**		4.76	**5.97**	**6 S**	13.75	**3.87**
237	11.85	**38.88**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	4.72	**0.65**	**6 S**	<1>	7.48	**1.00**	**7 S**		5.08	**13.57**	**6 S**	<1>	6.18	**0.68**	**7 S**		4.78	**6.79**	**6 S**	13.81	**3.73**
238	11.90	**39.04**	**6 S**	---	**NL**	**0 C**	---		**6 S**	<1>	4.62	**0.47**	**6 S**	<1>	7.29	**0.68**	**7 S**		5.10	**8.14**	**6 S**	<1>	6.00	**0.49**	**6 S**		4.80	**7.32**	**6 S**	13.88	**3.93**
239	11.95	**39.21**	**6 S**	---	**NL**	**0 C**	---		**5 M**	<1>	4.53	**0.40**	**6 S**	<1>	7.11	**0.52**	**6 S**		5.12	**3.68**	**5 M**	<1>	5.83	**0.56**	**6 S**		4.83	**8.98**	**6 S**	13.94	**4.42**
240	12.00	**39.37**	**6 S**	---	**NL**	**0 C**	---		**4 C**		4.55	**NL**	**5 M**		7.13	**NL**	**6 S**		5.15	**1.68**	**4 C**		5.86	**NL**	**6 S**		4.85	**6.92**	**6 S**	14.00	**3.55**
241	12.05	**39.53**	**6 S**	---	**NL**	**0 C**	---		**3 C**		4.57	**NL**	**4 C**		7.16	**NL**	**6 S**	<1>	5.03	**1.08**	**4 C**		5.89	**NL**	**6 S**		4.88	**8.66**	**6 S**	14.06	**3.82**
242	12.10	**39.70**	**6 S**	---	**NL**	**0 C**	---		**3 C**		4.59	**NL**	**3 C**		7.18	**NL**	**5 M**	<1>	4.93	**0.63**	**4 C**		5.91	**NL**	**6 S**		4.90	**11.59**	**6 S**	14.13	**3.43**
243	12.15	**39.86**	**7 S**	---	**NL**	**0 C**	---		**3 C**		4.61	**NL**	**3 C**		7.21	**NL**	**5 M**	<1>	4.82	**0.55**	**5 M**	<1>	5.75	**0.60**	**7 S**		4.93	**14.51**	**6 S**	14.19	**3.36**
244	12.20	**40.03**	**7 S**	---	**NL**	**0 C**	---		**3 C**		4.63	**NL**	**3 C**		7.23	**NL**	**5 M**	<1>	4.73	**0.65**	**5 M**	<1>	5.59	**0.68**	**6 S**		4.95	**10.51**	**6 S**	14.25	**3.05**
245	12.25	**40.19**	**0 C**	---		**0 C**	---		**3 C**		4.65	**NL**	**3 C**		7.26	**NL**	**6 S**	<1>	4.63	**0.69**	**4 C**		5.62	**NL**	**6 S**		4.98	**9.34**	**6 S**	14.31	**3.37**
246	12.30	**40.35**	**0 C**	---		**0 C**	---		**3 C**		4.67	**NL**	**4 C**		7.28	**NL**	**6 S**	<1>	4.54	**0.76**	**4 C**		5.65	**NL**	**7 S**		5.00	**11.01**	**6 S**	14.38	**3.62**
247	12.35	**40.52**	**0 C**	---		**0 C**	---		**3 C**		4.69	**NL**	**5 M**	<1>	7.11	**0.47**	**6 S**	<1>	4.45	**0.56**	**6 S**		5.68	**1.44**	**7 S**		5.02	**14.11**	**6 S**	14.44	**3.21**
248	12.40	**40.68**	**0 C**	---		**0 C**	---		**3 C**		4.71	**NL**	**5 M**	<1>	6.94	**0.52**	**6 S**	<1>	4.37	**0.53**	**6 S**		5.70	**4.15**	**7 S**		5.05	**18.05**	**6 S**	14.50	**2.85**
249	12.45	**40.85**	**0 C**	---		**0 C**	---		**3 C**		4.73	**NL**	**5 M**	<1>	6.78	**0.61**	**5 M**	<1>	4.29	**0.59**	**6 S**		5.73	**6.17**	**7 S**		5.07	**20.86**	**6 S**	14.56	**4.17**
250	12.50	**41.01**	**0 C**	---		**0 C**	---		**3 C**		4.75	**NL**	**5 M**	<1>	6.62	**0.60**	**5 M**	<1>	4.21	**0.68**	**7 S**		5.76	**8.99**	**7 S**		5.10	**29.55**	**6 S**	14.63	**7.87**
251	12.55	**41.17**	**0 C**	---		**0 C**	---		**2 C**		4.76	**NL**	**6 S**	<1>	6.47	**0.97**	**5 M**	<1>	4.14	**0.49**	**6 S**		5.78	**10.69**	**6 S**		5.12	**17.87**	**6 S**	14.69	**7.34**
252	12.60	**41.34**	**0 C**	---		**0 C**	---		**3 C**		4.78	**NL**	**6 S**		6.50	**1.55**	**6 S**	<1>	4.06	**0.54**	**6 S**		5.81	**11.26**	**7 S**		5.15	**15.45**	**6 S**	14.75	**7.52**
253	12.65	**41.50**	**0 C**	---		**0 C**	---		**3 C**		4.80	**NL**	**6 S**		6.52	**2.37**	**5 M**	<1>	3.99	**0.53**	**6 S**		5.84	**10.16**	**6 S**		5.17	**14.17**	**6 S**	14.81	**8.49**
254	12.70	**41.67**	**0 C**	---		**0 C**	---		**5 M**	<1>	4.71	**0.35**	**6 S**		6.54	**4.25**	**5 M**		4.01	**NL**	**6 S**		5.86	**11.61**	**7 S**		5.20	**11.30**	**6 S**	14.88	**12.67**
255	12.75	**41.83**	**0 C**	---		**0 C**	---		**5 M**	<1>	4.63	**0.40**	**6 S**		6.56	**4.53**	**3 C**		4.03	**NL**	**6 S**		5.89	**16.64**	**7 S**		5.22	**9.27**	**6 S**	14.94	**11.55**
256	12.80	**41.99**	**0 C**	---		**0 C**	---		**6 S**	<1>	4.54	**0.60**	**6 S**		6.59	**4.13**	**5 M**	<1>	3.96	**0.52**	**6 S**		5.92	**7.80**	**7 S**		5.24	**7.66**	**6 S**	15.00	**7.34**
257	12.85	**42.16**	**0 C**	---		**0 C**	---		**6 S**	<1>	4.46	**0.90**	**6 S**		6.61	**3.87**	**5 M**	<1>	3.89	**0.87**	**6 S**		5.95	**9.32**	**6 S**		5.27	**6.33**	**6 S**	15.06	**7.38**
258	12.90	**42.32**	**0 C**	---		**0 C**	---		**6 S**	<1>	4.38	**1.00**	**6 S**		6.63	**3.68**	**5 M**	<1>	3.83	**0.84**	**6 S**		5.97	**7.79**	**6 S**		5.29	**4.60**	**6 S**	15.13	**7.32**
259	12.95	**42.49**	**0 C**	---		**0 C**	---		**6 S**		4.40	**1.24**	**6 S**		6.65	**3.58**	**6 S**		3.85	**1.26**	**6 S**		6.00	**7.01**	**6 S**		5.32	**4.17**	**6 S**	15.19	**7.11**
260	13.00	**42.65**	**0 C**	---		**0 C**	---		**6 S**		4.42	**1.62**	**6 S**		6.67	**3.71**	**6 S**		3.86	**1.44**	**6 S**		6.03	**5.68**	**6 S**		5.34	**4.64**	**6 S**	15.25	**7.39**
261	13.05	**42.81**	**0 C**	---		**0 C**	---		**6 S**		4.43	**1.55**	**6 S**		6.70	**3.90**	**6 S**		3.88	**1.30**	**6 S**		6.05	**5.23**	**6 S**		5.37	**5.10**	**6 S**	15.31	**7.85**
262	13.10	**42.98**	**0 C**	---		**0 C**	---		**6 S**		4.45	**1.49**	**6 S**		6.72	**4.39**	**6 S**		3.89	**1.46**	**6 S**		6.08	**5.12**	**6 S**		5.39	**6.47**	**6 S**	15.38	**11.58**
263	13.15	**43.14**	**0 C**	---		**0 C**	---		**6 S**		4.47	**1.41**	**6 S**		6.74	**4.28**	**6 S**		3.91	**1.34**	**6 S**		6.11	**7.80**	**6 S**		5.41	**5.79**	**6 S**	15.44	**6.55**
264	13.20	**43.31**	**0 C**	---		**0 C**	---		**6 S**		4.49	**1.24**	**6 S**		6.76	**3.73**	**6 S**	<1>	3.85	**1.06**	**6 S**		6.14	**9.08**	**6 S**		5.44	**5.73**	**6 S**	15.50	**7.30**
265	13.25	**43.47**	**0 C**	---		**0 C**	---		**6 S**		4.50	**1.23**	**6 S**		6.79	**2.76**	**6 S**	<1>	3.79	**0.93**	**6 S**		6.16	**10.58**	**6 S**		5.46	**7.78**	**6 S**	15.56	**6.97**
266	13.30	**43.64**	**0 C**	---		**0 C**	---		**6 S**		4.52	**1.36**	**6 S**		6.81	**1.89**	**6 S**	<1>	3.73	**0.75**	**6 S**		6.19	**13.24**	**7 S**		5.49	**9.92**	**6 S**	15.63	**7.15**
267	13.35	**43.80**	**0 C**	---		**0 C**	---		**6 S**		4.54	**1.69**	**6 S**	<1>	6.66	**0.97**	**6 S**	<1>	3.67	**0.71**	**6 S**		6.22	**7.18**	**6 S**		5.51	**10.04**	**6 S**	15.69	**9.28**
268	13.40	**43.96**	**0 C**	---		**0 C**	---		**6 S**		4.56	**1.89**	**5 M**	<1>	6.52	**0.70**	**6 S**	<1>	3.61	**0.65**	**6 S**		6.24	**3.70**	**6 S**		5.54	**12.40**	**6 S**	15.75	**9.14**
269	13.45	**44.13**	**0 C**	---		**0 C**	---		**6 S**		4.57	**2.18**	**4 C**		6.54	**NL**	**5 M**	<1>	3.56	**0.62**	**6 S**		6.27	**4.62**	**7 S**		5.56	**15.39**	**6 S**	15.81	**7.25**
270	13.50	**44.29**	**0 C**	---		**0 C**	---		**6 S**		4.59	**2.40**	**5 M**	<1>	6.40	**0.79**	**5 M**	<1>	3.51	**0.61**	**6 S**		6.30	**8.12**	**6 S**		5.59	**13.96**	**7 S**	15.88	**6.53**
271	13.55	**44.46**	**0 C**	---		**0 C**	---		**6 S**		4.61	**2.56**	**5 M**	<1>	6.27	**0.81**	**5 M**	<1>	3.46	**0.63**	**6 S**		6.32	**7.37**	**6 S**		5.61	**14.84**	**6 S**	15.94	**7.57**
272	13.60	**44.62**	**0 C**	---		**0 C**	---		**6 S**		4.63	**2.68**	**4 C**		6.29	**NL**	**5 M**	<1>	3.41	**0.60**	**6 S**		6.35	**7.71**	**6 S**		5.63	**12.36**	**6 S**	16.00	**8.61**
273	13.65	**44.78**	**0 C**	---		**0 C**	---		**6 S**		4.65	**2.66**	**4 C**		6.31	**NL**	**6 S**	<1>	3.36	**0.61**	**6 S**		6.38	**7.45**	**6 S**		5.66	**10.01**	**6 S**	16.06	**7.53**
274	13.70	**44.95**	**0 C**	---		**0 C**	---		**6 S**		4.66	**2.98**	**4 C**		6.33	**NL**	**5 M**	<1>	3.31	**0.55**	**6 S**		6.41	**8.40**	**6 S**		5.68	**8.88**	**7 S**	16.13	**7.43**
275	13.75	**45.11**	**0 C**	---		**0 C**	---		**6 S**		4.68	**3.16**	**4 C**		6.35	**NL**	**5 M**	<1>	3.27	**0.73**	**6 S**		6.43	**8.49**	**6 S**		5.71	**8.64**	**6 S**	16.19	**6.46**
276	13.80	**45.28**	**0 C**	---		**0 C**	---		**6 S**		4.70	**3.29**	**3 C**		6.37	**NL**	**5 M**	<1>	3.22	**0.84**	**6 S**		6.46	**8.87**	**6 S**		5.73	**9.12**	**6 S**	16.25	**6.26**
277	13.85	**45.44**	**0 C**	---		**0 C**	---		**6 S**		4.72	**3.57**	**4 C**		6.39	**NL**	**6 S**	<1>	3.18	**1.03**	**6 S**		6.49	**7.83**	**6 S**		5.76	**7.15**	**6 S**	16.31	**5.40**

SUMMARY SHEET

CLIENT: **NL&FCO**
RTF JOB: **2004-700-22**
PROJ. : **Entrada**
BY: **DA**
DATE: **02/21/2007**

Z	Ic	Soil
3	>2.95	Clay to Silty Clay
4	<2.95	Clayey Silt to Silty Clay
5	<2.6	Silty Sand to Sandy Silt
6	<2.05	Clean Sand to Silty Sand
7	<1.31	Gravelly Sand to Sand

FS = Threshold Factor of Safety = **1.20**
NL = Not liquefiable MSF 1.5
Liquefiable Ic (between 1.5 and 2.6) = **2.40** (usu. 2.05 to 2.6)
Seismic Settlement Soil (Type) = **6**

Depth			CPT-1 12/19/05		CPT-2 12/19/05		CPT-4 12/19/05			CPT-5 12/19/05			CPT-6 12/19/05			CPT-7 12/19/05			CPT-8 12/19/05			CPT-9 12/19/05		
278	13.90	**45.60**	**0 C**	---	**0 C**	---	**6 S**		4.73	**4.00**	**4 C**		6.42	**NL**	**6 S**	<1>	3.14	**0.96**	**6 S**	6.51	**6.09**	**6 S**	5.78	**5.80**	**6 S**		16.38	**5.58**
279	13.95	**45.77**	**0 C**	---	**0 C**	---	**6 S**		4.75	**4.02**	**4 C**		6.44	**NL**	**5 M**	<1>	3.10	**0.78**	**6 S**	6.54	**4.82**	**6 S**	5.80	**7.65**	**6 S**		16.44	**6.26**
280	14.00	**45.93**	**0 C**	---	**0 C**	---	**6 S**		4.77	**4.33**	**3 C**		6.46	**NL**	**5 M**	<1>	3.06	**0.82**	**6 S**	6.57	**3.06**	**6 S**	5.83	**5.99**	**6 S**		16.50	**5.72**
281	14.05	**46.10**	**0 C**	---	**0 C**	---	**6 S**		4.79	**4.63**	**3 C**		6.48	**NL**	**6 S**	<1>	3.02	**0.85**	**6 S**	6.59	**2.02**	**6 S**	5.85	**10.17**	**6 S**		16.56	**5.44**
282	14.10	**46.26**	**0 C**	---	**0 C**	---	**6 S**		4.80	**5.00**	**3 C**		6.50	**NL**	**6 S**	<1>	2.98	**0.68**	**6 S**	6.62	**2.81**	**6 S**	5.88	**15.29**	**6 S**		16.63	**5.70**
283	14.15	**46.42**	**0 C**	---	**0 C**	---	**6 S**		4.82	**5.14**	**3 C**		6.52	**NL**	**6 S**	<1>	2.95	**0.95**	**6 S**	6.65	**5.28**	**6 S**	5.90	**23.19**	**6 S**		16.69	**5.16**
284	14.20	**46.59**	**0 C**	---	**0 C**	---	**6 S**		4.84	**5.17**	**4 C**		6.54	**NL**	**6 S**		2.96	**1.24**	**6 S**	6.68	**6.00**	**6 S**	5.93	**20.39**	**6 S**		16.75	**4.84**
285	14.25	**46.75**	**0 C**	---	**0 C**	---	**6 S**		4.86	**5.20**	**5 M**	<1>	6.41	**0.58**	**6 S**		2.97	**1.53**	**6 S**	6.70	**6.00**	**6 S**	5.95	**17.25**	**6 S**		16.81	**5.07**
286	14.30	**46.92**	**0 C**	---	**0 C**	---	**6 S**		4.87	**4.56**	**5 M**	<1>	6.28	**0.67**	**6 S**		2.98	**2.05**	**6 S**	6.73	**5.73**	**6 S**	5.98	**15.67**	**6 S**		16.88	**5.06**
287	14.35	**47.08**	**0 C**	---	**0 C**	---	**6 S**		4.89	**3.28**	**5 M**	<1>	6.16	**0.75**	**6 S**		2.99	**3.08**	**6 S**	6.76	**6.07**	**6 S**	6.00	**13.41**	**6 S**		16.94	**4.45**
288	14.40	**47.24**	**0 C**	---	**0 C**	---	**6 S**		4.91	**2.67**	**6 S**	<1>	6.04	**1.05**	**6 S**		3.01	**3.40**	**6 S**	6.78	**6.12**	**6 S**	6.02	**15.41**	**6 S**		17.00	**3.84**
289	14.45	**47.41**	**0 C**	---	**0 C**	---	**6 S**		4.93	**1.88**	**6 S**		6.06	**1.73**	**6 S**		3.02	**4.13**	**6 S**	6.81	**7.26**	**6 S**	6.05	**13.53**	**6 S**		17.06	**4.42**
290	14.50	**47.57**	**0 C**	---	**0 C**	---	**6 S**		4.94	**1.23**	**6 S**		6.08	**2.59**	**6 S**		3.03	**3.11**	**6 S**	6.84	**6.60**	**6 S**	6.07	**10.60**	**6 S**		17.13	**4.87**
291	14.55	**47.74**	**0 C**	---	**0 C**	---	**5 M**	<1>	4.86	**0.76**	**6 S**		6.10	**2.90**	**6 S**		3.04	**2.97**	**6 S**	6.86	**6.44**	**6 S**	6.10	**7.97**	**6 S**		17.19	**4.98**
292	14.60	**47.90**	**0 C**	---	**0 C**	---	**5 M**	<1>	4.78	**0.90**	**6 S**		6.12	**2.92**	**6 S**		3.06	**2.80**	**6 S**	6.89	**6.02**	**6 S**	6.12	**7.93**	**6 S**		17.25	**4.80**
293	14.65	**48.06**	**0 C**	---	**0 C**	---	**6 S**		4.79	**1.38**	**6 S**		6.14	**2.88**	**6 S**		3.07	**3.15**	**6 S**	6.92	**6.88**	**6 S**	6.15	**10.65**	**6 S**		17.31	**4.03**
294	14.70	**48.23**	**0 C**	---	**0 C**	---	**6 S**		4.81	**1.78**	**6 S**		6.16	**2.72**	**6 S**		3.08	**3.44**	**6 S**	6.95	**8.78**	**6 S**	6.17	**20.63**	**6 S**		17.38	**2.50**
295	14.75	**48.39**	**0 C**	---	**0 C**	---	**6 S**		4.83	**2.02**	**6 S**		6.18	**3.01**	**6 S**		3.09	**3.71**	**6 S**	6.97	**9.83**	**6 S**	6.20	**8.33**	**6 S**	<1>	16.35	**1.12**
296	14.80	**48.56**	**0 C**	---	**0 C**	---	**6 S**		4.84	**2.06**	**6 S**		6.20	**3.26**	**6 S**		3.11	**3.85**	**6 S**	7.00	**10.55**	**6 S**	6.22	**5.67**	**5 M**	<1>	15.44	**0.98**
297	14.85	**48.72**	**0 C**	---	**0 C**	---	**6 S**		4.86	**1.83**	**6 S**		6.21	**3.31**	**6 S**		3.12	**4.53**	**6 S**	7.03	**6.03**	**6 S**	6.24	**5.51**	**5 M**	<1>	14.63	**0.95**
298	14.90	**48.88**	**0 C**	---	**0 C**	---	**6 S**		4.88	**1.71**	**6 S**		6.23	**3.10**	**6 S**		3.13	**4.89**	**6 S**	7.05	**6.44**	**6 S**	6.27	**6.74**	**5 M**	<1>	13.90	**0.73**
299	14.95	**49.05**	**0 C**	---	**0 C**	---	**6 S**		4.89	**1.51**	**6 S**		6.25	**3.08**	**6 S**		3.14	**6.49**	**6 S**	7.08	**8.29**	**7 S**	6.29	**9.73**	**6 S**		13.95	**3.38**
300	15.00	**49.21**	**0 C**	---	**0 C**	---	**6 S**		4.91	**1.74**	**6 S**		6.27	**3.42**	**6 S**		3.16	**5.45**	**6 S**	7.11	**9.51**	**7 S**	6.32	**12.08**	**6 S**		14.00	**7.00**
301	15.05	**49.38**	**0 C**	---	**0 C**	---	**6 S**		4.93	**2.54**	**6 S**		6.29	**4.83**	**6 S**		3.17	**5.31**	**6 S**	7.14	**10.67**	**6 S**	6.34	**7.82**	**6 S**		14.05	**9.42**
302	15.10	**49.54**	**0 C**	---	**0 C**	---	**6 S**		4.95	**2.79**	**6 S**		6.31	**8.15**	**6 S**		3.18	**5.50**	**6 S**	7.16	**11.43**	**6 S**	6.37	**9.63**	**7 S**		14.10	**12.74**
303	15.15	**49.70**	**0 C**	---	**0 C**	---	**6 S**		4.96	**2.93**	**6 S**		6.33	**6.03**	**6 S**		3.19	**5.40**	**6 S**	7.19	**8.38**	**6 S**	6.39	**15.28**	**7 S**		14.15	**13.63**
304	15.20	**49.87**	**0 C**	---	**0 C**	---	**6 S**		4.98	**2.45**	**6 S**		6.35	**5.89**	**6 S**		3.20	**5.50**	**6 S**	7.22	**8.50**	**6 S**	6.41	**16.06**	**7 S**		14.20	**14.11**
305	15.25	**50.03**	**0 C**	---	**0 C**	---	**0 C**		5.00		**6 S**		6.36	**5.56**	**6 S**		3.22	**5.24**	**0 C**	7.24		**6 S**	6.44	**16.62**	**7 S**		14.25	**14.77**
306	15.30	**50.20**	**0 C**	---	**0 C**	---	**0 C**		5.01		**6 S**		6.38	**5.33**	**0 C**		3.23		**0 C**	7.27		**0 C**	6.46		**0 C**		14.30	
307	15.35	**50.36**	**0 C**	---	**0 C**	---	**0 C**		5.03		**0 C**		6.40		**0 C**		3.24		**0 C**	7.30		**0 C**	6.49		**0 C**		14.35	
308	15.40	**50.52**	**0 C**	---	**0 C**	---	**0 C**		5.05		**0 C**		6.42		**0 C**		3.25		**0 C**	7.32		**0 C**	6.51		**0 C**		14.40	

Newhall Land and Farming Company
April 6, 2007
2004-700-22

APPENDIX D

SLOPE STABILITY ANALYSES

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

SLOPE STABILITY ANALYSES RESULTS

TABLE D-1

CROSS SECTION	PROGRAM USED	METHOD USED	ANALYZED PLANE	FACTOR OF SAFETY			REMARKS
				Static	Pseudo	Temp	
M-M'	SLOPE/W	Spencer	Bedding	2.970		*	Minimum factor of safety
					1.600		Peak shear strength not used in pseudo static stability analyses
N-N'	SLOPE/W	Spencer	Bedding	2.490		*	Minimum factor of safety
					1.540		Peak shear strength not used in pseudo static stability analyses
O-O'	SLOPE/W	Spencer	Bedding	2.070		*	Minimum factor of safety
					1.360		Peak shear strength not used in pseudo static stability analyses
V-V'	GSTABLE 7	Modified Bishop	Circular	*	*	1.743	Minimum factor of safety, Temp Cut, Entire slope
							Used peak shear strength in temp. stability analyses
							Section X-X' is more critical, see slope stability analyses below
W-W'	GSTABLE 7	Modified Bishop	Circular	*	*	2.329	Minimum factor of safety, Temp Cut, Entire slope
							Used peak shear strength in temp. stability analyses
		Simplified Janbu	Bedding			3.060	Along slide plane
							Section X-X' is more critical, see slope stability analyses below
X-X'	GSTABLE 7	Simplified Janbu	Bedding	1.870	*		Minimum factor of safety, after the proposed grading
			Bedding	1.873	*		Shallower search
			Bedding	1.872	*		Deeper search
			Bedding	1.956	*		Along slide plane
			Bedding	N/A	N/A	1.488	Peak shear strength not used in Temp. stability analyses
			Bedding	N/A	N/A	1.535	Deeper search
			Bedding	N/A	N/A	1.786	Shallower search
			Bedding	N/A	N/A	1.269	Along slide plane
		Modified Bishop	Circular	N/A	N/A	1.326	Used peak shear strength in Temp. stability analyses
P-P' **							See note below
Seward 13E-13E' is located proximity of RTF&A P-P'	GSTABLE 7	Simplified Janbu	Bedding	3.270	*		** Seward Analyses-landslide plane
Q-Q' **							See note below
	GSTABLE 7	Simplified Janbu	Bedding	2.890	*		** Seward Analyses - slide plane
Seward 14E-14E' is located proximity of Q-Q'		Simplified Janbu	Bedding	3.010	*		natural slope above the proposed road
		Simplified Janbu	Circular	2.640	*		Qls mass
		Modified Bishop	Circular	2.410	*		natural slope above the proposed road
		Modified Bishop	Bedding	2.500	*		Qls removal
R-R' **							See note below
	GSTABLE 7	Modified Bishop	Circular	2.770	*		**Seward Analyses - natural slope above the proposed road
Seward 15E-15E' is located proximity of R-R'		Simplified Janbu	Bedding	12.620	*		natural slope above the proposed road

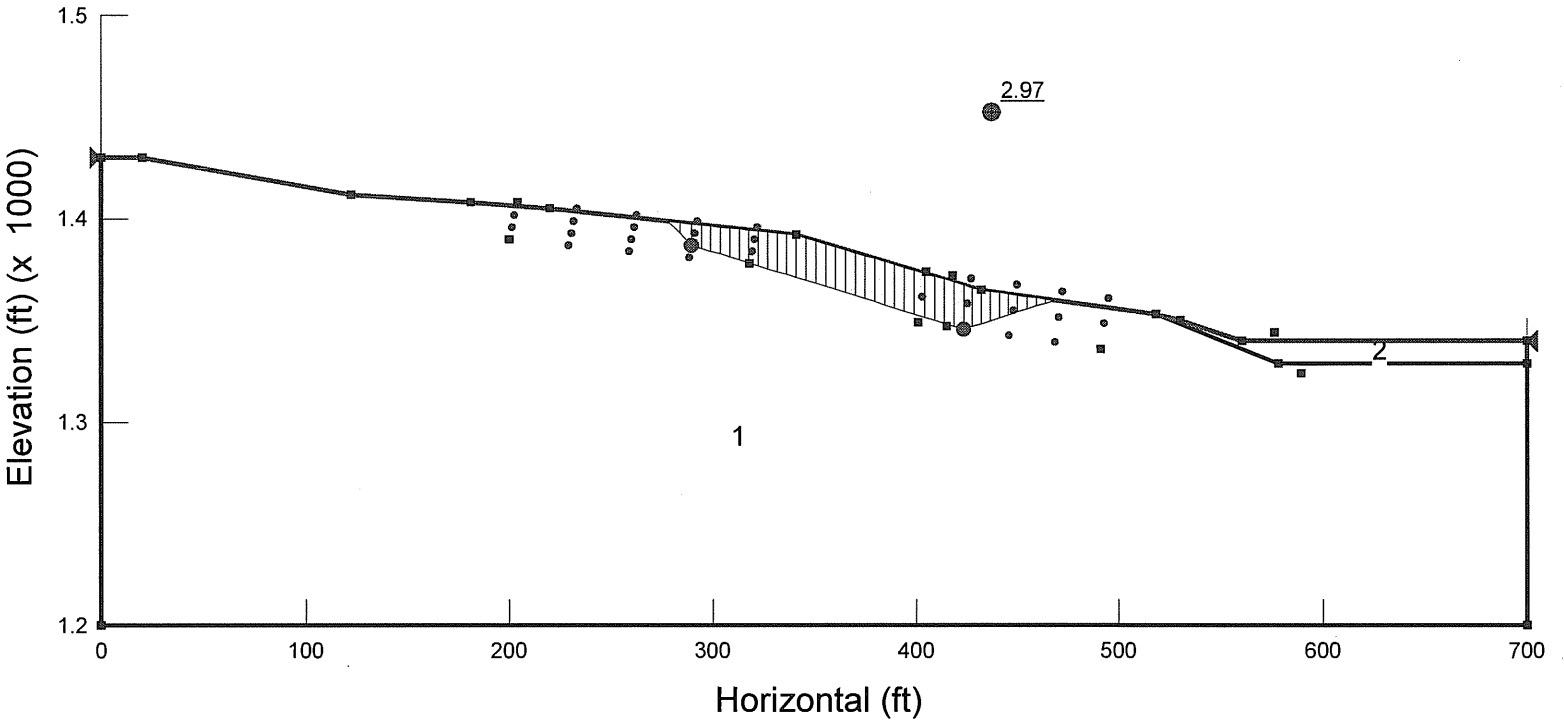
* Not critical and therefore not performed

N/A = not applicable

** Seward cross sections are more critical in compare to RTF&A. (Source Reference: Mesas East/Mission Village, Vesting Tentative Tract 61105, Report dated July 22, 2004)

Title: TT53295, Job No. 2004-700-21 ---- Section M-M', Static
Comments: BLOCK Specified Failure Surfaces Defined by Grid Points
Name: M-M' static, block.gsz, Date: 10/7/2005

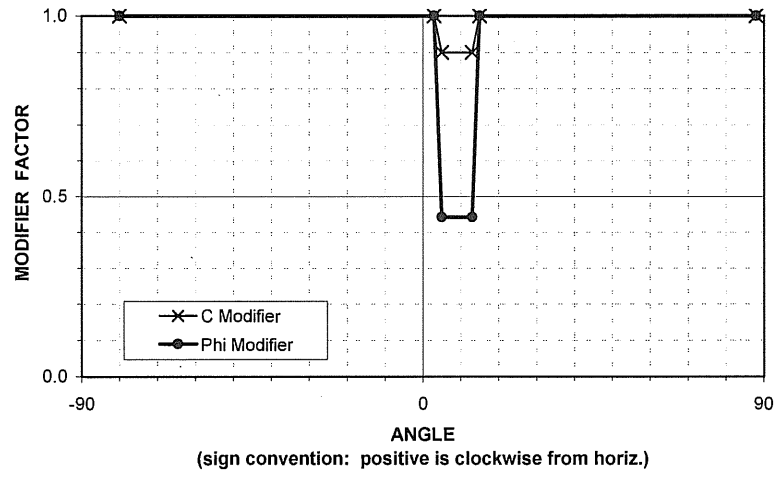
Material #: 1 = Saugus Formation Wt: 130 C: 400 Phi: 30 Model: AnisotropicFn
Material #: 2 = Fill Wt: 130 C: 250 Phi: 29 Model: MohrCoulomb
Horz Seismic Load: 0g
Method: Spencer



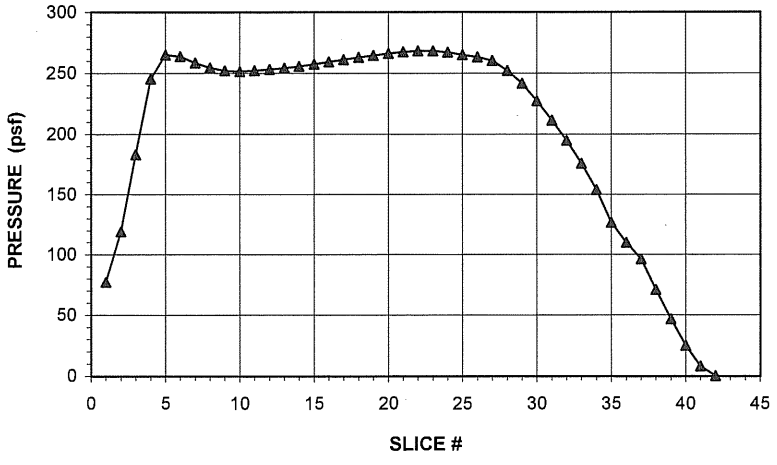
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

M-M' Static - Graphs.xls

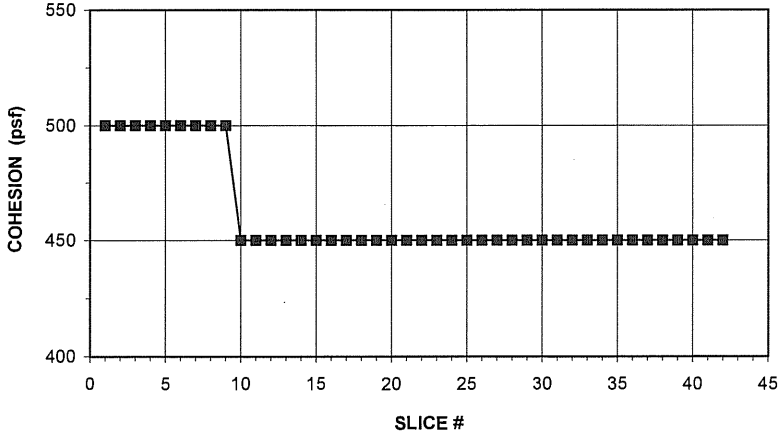
ANISOTROPIC STRENGTH FUNCTIONS



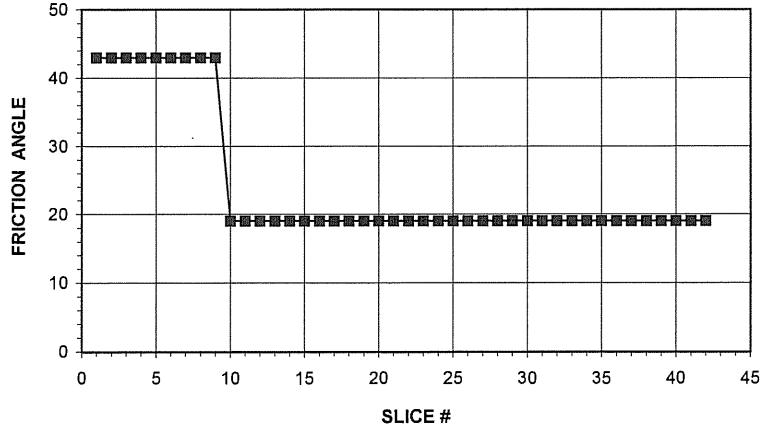
PORE-WATER PRESSURE



BASE COHESION



BASE FRICTION ANGLE



```
TT53295, Job No. 2004-700-21  ----  Section M-M', Static
BLOCK Specified Failure Surfaces Defined by Grid Points
 DATESTAMP 10/7/2005
 TIMESTAMP 1:15:20 PM
 2=METHOD 2700=NO. OF SLIP SURFACES    1=NO. OF RADII    1=SIDE FUNCTION TYPE
     437.5000=X-COOR.   1452.5000=Y-COOR.       COMPUTED AXIS
 SLIP      X-         Y-              ITERATION            FACTOR OF SAFETY
  NO.    COORD.     COORD.     RADIUS     NO.    LAMBDA    (MOMENT)   (FORCE)
================================================================================
   1    437.500   1452.500    212.022     1     0.0000   4.2670542   4.6659805
   1    437.500   1452.500    212.022     4     0.0000   4.7574069   4.3881479
   1    437.500   1452.500    212.022     3     0.1485   4.4861284   4.4802983
   2    437.500   1452.500    195.007     1     0.0000   3.9495889   4.4813342
   2    437.500   1452.500    195.007     4     0.0000   4.6960483   4.3445192
   2    437.500   1452.500    195.007     3     0.1555   4.5312674   4.5324513
   3    437.500   1452.500    193.923     1     0.0000   3.6680162   4.2214283
   3    437.500   1452.500    193.923     5     0.0000   4.9174343   4.5226826
   3    437.500   1452.500    193.923     3     0.1482   4.8772279   4.8759937
*
*
*
 2698    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
 2698    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
 2698    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
 2699    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
 2699    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
 2699    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
 2700    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
 2700    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
 2700    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000

 ----------------------------------------
 | SUMMARY OF MINIMUM FACTORS OF SAFETY |
 ----------------------------------------
 MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
     437.5000=X-COOR.   1452.5000=Y-COOR.    128.4507=RADIUS   1.7177638=F.S.  2523=SLIP#
 MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
     437.5000=X-COOR.   1452.5000=Y-COOR.    129.4656=RADIUS   2.9016699=F.S.  2522=SLIP#
 FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
     437.5000=X-COOR.   1452.5000=Y-COOR.    129.4656=RADIUS   2.6631054=F.S.  2522=SLIP#
 MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
     437.5000=X-COOR.   1452.5000=Y-COOR.    143.5233=RADIUS   2.9654149=F.S.  1175=SLIP#

 NORMAL TERMINATION OF SLOPE

MOST_CRITICAL #      SLIP_SURFACE #
=====================================
          1                1175

SLIP_SURFACE #      AUTOTENSIONELEV
=====================================
          1         1.40715376e+003
          2         1.40715376e+003
          3         1.40715376e+003
*
*
*
       2698         0.00000000e+000
       2699         0.00000000e+000
       2700         0.00000000e+000
```

TT53295, Job No. 2004-700-21 ---- Section M-M', Static
BLOCK Specified Failure Surfaces Defined by Grid Points
DATESTAMP 10/7/2005
TIMESTAMP 1:15:20 PM

Center_X	Center_Y	Radius	Slip_Surface	Method
4.375000e+002	1.452500e+003	1.435233e+002	1175	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	2.780725e+002	1.398761e+003	1.398761e+003	2.839529e+002	1.398129e+003	1.392880e+003	2.624311e+000	8.316143e+000
2	2.839529e+002	1.398129e+003	1.392880e+003	2.898333e+002	1.397497e+003	1.387000e+003	7.872934e+000	8.316143e+000
3	2.898333e+002	1.397497e+003	1.387000e+003	2.944848e+002	1.396997e+003	1.385565e+003	1.096511e+001	4.867975e+000
4	2.944848e+002	1.396997e+003	1.385565e+003	2.991364e+002	1.396498e+003	1.384129e+003	1.190083e+001	4.867975e+000
5	2.991364e+002	1.396498e+003	1.384129e+003	3.037879e+002	1.395998e+003	1.382694e+003	1.283656e+001	4.867975e+000
6	3.037879e+002	1.395998e+003	1.382694e+003	3.084394e+002	1.395498e+003	1.381258e+003	1.377228e+001	4.867975e+000
7	3.084394e+002	1.395498e+003	1.381258e+003	3.130909e+002	1.394998e+003	1.379823e+003	1.470800e+001	4.867975e+000
8	3.130909e+002	1.394998e+003	1.379823e+003	3.177424e+002	1.394499e+003	1.378387e+003	1.564373e+001	4.867975e+000
9	3.177424e+002	1.394499e+003	1.378387e+003	3.223939e+002	1.393999e+003	1.376952e+003	1.657945e+001	4.867975e+000
10	3.223939e+002	1.393999e+003	1.376952e+003	3.270455e+002	1.393499e+003	1.375516e+003	1.751518e+001	4.867975e+000
11	3.270455e+002	1.393499e+003	1.375516e+003	3.316970e+002	1.392999e+003	1.374081e+003	1.845090e+001	4.867975e+000
12	3.316970e+002	1.392999e+003	1.374081e+003	3.363485e+002	1.392500e+003	1.372645e+003	1.938663e+001	4.867975e+000
13	3.363485e+002	1.392500e+003	1.372645e+003	3.410000e+002	1.392000e+003	1.371210e+003	2.032235e+001	4.867975e+000
14	3.410000e+002	1.392000e+003	1.371210e+003	3.458529e+002	1.390560e+003	1.369712e+003	2.081909e+001	5.078774e+000
15	3.458529e+002	1.390560e+003	1.369712e+003	3.507059e+002	1.389120e+003	1.368215e+003	2.087684e+001	5.078774e+000
16	3.507059e+002	1.389120e+003	1.368215e+003	3.555588e+002	1.387680e+003	1.366717e+003	2.093459e+001	5.078774e+000
17	3.555588e+002	1.387680e+003	1.366717e+003	3.604118e+002	1.386240e+003	1.365219e+003	2.099234e+001	5.078774e+000
18	3.604118e+002	1.386240e+003	1.365219e+003	3.652647e+002	1.384801e+003	1.363722e+003	2.105009e+001	5.078774e+000
19	3.652647e+002	1.384801e+003	1.363722e+003	3.701176e+002	1.383361e+003	1.362224e+003	2.110784e+001	5.078774e+000
20	3.701176e+002	1.383361e+003	1.362224e+003	3.749706e+002	1.381921e+003	1.360726e+003	2.116559e+001	5.078774e+000
21	3.749706e+002	1.381921e+003	1.360726e+003	3.798235e+002	1.380481e+003	1.359229e+003	2.122334e+001	5.078774e+000
22	3.798235e+002	1.380481e+003	1.359229e+003	3.846765e+002	1.379041e+003	1.357731e+003	2.128109e+001	5.078774e+000
23	3.846765e+002	1.379041e+003	1.357731e+003	3.895294e+002	1.377601e+003	1.356233e+003	2.133885e+001	5.078774e+000
24	3.895294e+002	1.377601e+003	1.356233e+003	3.943824e+002	1.376161e+003	1.354736e+003	2.139660e+001	5.078774e+000
25	3.943824e+002	1.376161e+003	1.354736e+003	3.992353e+002	1.374721e+003	1.353238e+003	2.145435e+001	5.078774e+000
26	3.992353e+002	1.374721e+003	1.353238e+003	4.040882e+002	1.373282e+003	1.351741e+003	2.151210e+001	5.078774e+000
27	4.040882e+002	1.373282e+003	1.351741e+003	4.089412e+002	1.371842e+003	1.350243e+003	2.156985e+001	5.078774e+000
28	4.089412e+002	1.371842e+003	1.350243e+003	4.137941e+002	1.370402e+003	1.348745e+003	2.162760e+001	5.078774e+000
29	4.137941e+002	1.370402e+003	1.348745e+003	4.186471e+002	1.368962e+003	1.347248e+003	2.168535e+001	5.078774e+000
30	4.186471e+002	1.368962e+003	1.347248e+003	4.235000e+002	1.367522e+003	1.345750e+003	2.174310e+001	5.078774e+000
31	4.235000e+002	1.367522e+003	1.345750e+003	4.277500e+002	1.366261e+003	1.347090e+003	2.047147e+001	4.456249e+000
32	4.277500e+002	1.366261e+003	1.347090e+003	4.320000e+002	1.365000e+003	1.348430e+003	1.787046e+001	4.456249e+000
33	4.320000e+002	1.365000e+003	1.348430e+003	4.365539e+002	1.364365e+003	1.349866e+003	1.553434e+001	4.774846e+000
34	4.365539e+002	1.364365e+003	1.349866e+003	4.411077e+002	1.363729e+003	1.351302e+003	1.346309e+001	4.774846e+000
35	4.411077e+002	1.363729e+003	1.351302e+003	4.456616e+002	1.363094e+003	1.352738e+003	1.139185e+001	4.774846e+000
36	4.456616e+002	1.363094e+003	1.352738e+003	4.502154e+002	1.362458e+003	1.354173e+003	9.320603e+000	4.774846e+000
37	4.502154e+002	1.362458e+003	1.354173e+003	4.547693e+002	1.361823e+003	1.355609e+003	7.249358e+000	4.774846e+000
38	4.547693e+002	1.361823e+003	1.355609e+003	4.593231e+002	1.361187e+003	1.357045e+003	5.178113e+000	4.774846e+000
39	4.593231e+002	1.361187e+003	1.357045e+003	4.638770e+002	1.360552e+003	1.358481e+003	3.106868e+000	4.774846e+000
40	4.638770e+002	1.360552e+003	1.358481e+003	4.684308e+002	1.359917e+003	1.359917e+003	1.035623e+000	4.774846e+000

Spencer_Method_Fm= 2.9654149 Applied_Lambda= 0.1890

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	1.4299e+003	-1.4001e+003	3.0000e+001	4.0000e+002	0.0000e+000	0.0000e+000	-2.7126e+001	5.1264e+000
2	5.6418e+003	-2.2202e+003	3.0000e+001	4.0000e+002	2.7126e+001	-5.1264e+000	-2.4577e+003	4.6448e+002
3	6.4111e+003	-1.2834e+003	2.1990e+001	2.5000e+002	2.4577e+003	-4.6448e+002	-3.1251e+003	5.9059e+002
4	6.9621e+003	-1.3585e+003	2.1990e+001	2.5000e+002	3.1251e+003	-5.9059e+002	-3.8834e+003	7.3390e+002
5	7.5131e+003	-1.4335e+003	2.1990e+001	2.5000e+002	3.8834e+003	-7.3390e+002	-4.7326e+003	8.9441e+002
6	8.0641e+003	-1.5086e+003	2.1990e+001	2.5000e+002	4.7326e+003	-8.9441e+002	-5.6729e+003	1.0721e+003
7	8.6152e+003	-1.5836e+003	2.1990e+001	2.5000e+002	5.6729e+003	-1.0721e+003	-6.7041e+003	1.2670e+003
8	9.1662e+003	-1.6586e+003	2.1990e+001	2.5000e+002	6.7041e+003	-1.2670e+003	-7.8263e+003	1.4791e+003
9	9.7172e+003	-1.7337e+003	2.1990e+001	2.5000e+002	7.8263e+003	-1.4791e+003	-9.0395e+003	1.7083e+003
10	1.0268e+004	-1.8087e+003	2.1990e+001	2.5000e+002	9.0395e+003	-1.7083e+003	-1.0344e+004	1.9548e+003
11	1.0819e+004	-1.8837e+003	2.1990e+001	2.5000e+002	1.0344e+004	-1.9548e+003	-1.1739e+004	2.2185e+003
12	1.1370e+004	-1.9588e+003	2.1990e+001	2.5000e+002	1.1739e+004	-2.2185e+003	-1.3225e+004	2.4993e+003
13	1.1921e+004	-2.0338e+003	2.1990e+001	2.5000e+002	1.3225e+004	-2.4993e+003	-1.4802e+004	2.7974e+003
14	1.2743e+004	-2.1634e+003	2.1990e+001	2.5000e+002	1.4802e+004	-2.7974e+003	-1.6498e+004	3.1178e+003
15	1.2778e+004	-2.1683e+003	2.1990e+001	2.5000e+002	1.6498e+004	-3.1178e+003	-1.8199e+004	3.4394e+003
16	1.2814e+004	-2.1731e+003	2.1990e+001	2.5000e+002	1.8199e+004	-3.4394e+003	-1.9907e+004	3.7621e+003
17	1.2849e+004	-2.1779e+003	2.1990e+001	2.5000e+002	1.9907e+004	-3.7621e+003	-2.1620e+004	4.0859e+003
18	1.2885e+004	-2.1828e+003	2.1990e+001	2.5000e+002	2.1620e+004	-4.0859e+003	-2.3339e+004	4.4108e+003
19	1.2920e+004	-2.1876e+003	2.1990e+001	2.5000e+002	2.3339e+004	-4.4108e+003	-2.5064e+004	4.7368e+003
20	1.2956e+004	-2.1924e+003	2.1990e+001	2.5000e+002	2.5064e+004	-4.7368e+003	-2.6795e+004	5.0639e+003
21	1.2991e+004	-2.1973e+003	2.1990e+001	2.5000e+002	2.6795e+004	-5.0639e+003	-2.8532e+004	5.3921e+003
22	1.3026e+004	-2.2021e+003	2.1990e+001	2.5000e+002	2.8532e+004	-5.3921e+003	-3.0274e+004	5.7214e+003
23	1.3062e+004	-2.2069e+003	2.1990e+001	2.5000e+002	3.0274e+004	-5.7214e+003	-3.2023e+004	6.0519e+003
24	1.3097e+004	-2.2117e+003	2.1990e+001	2.5000e+002	3.2023e+004	-6.0519e+003	-3.3777e+004	6.3834e+003
25	1.3133e+004	-2.2166e+003	2.1990e+001	2.5000e+002	3.3777e+004	-6.3834e+003	-3.5537e+004	6.7161e+003
26	1.3168e+004	-2.2214e+003	2.1990e+001	2.5000e+002	3.5537e+004	-6.7161e+003	-3.7303e+004	7.0498e+003
27	1.3204e+004	-2.2262e+003	2.1990e+001	2.5000e+002	3.7303e+004	-7.0498e+003	-3.9075e+004	7.3847e+003
28	1.3239e+004	-2.2311e+003	2.1990e+001	2.5000e+002	3.9075e+004	-7.3847e+003	-4.0853e+004	7.7207e+003
29	1.3275e+004	-2.2359e+003	2.1990e+001	2.5000e+002	4.0853e+004	-7.7207e+003	-4.2636e+004	8.0577e+003
30	1.3310e+004	-2.2407e+003	2.1990e+001	2.5000e+002	4.2636e+004	-8.0577e+003	-4.4426e+004	8.3959e+003
31	1.4438e+004	-3.4122e+003	3.0001e+001	4.0001e+002	4.4426e+004	-8.3959e+003	-3.6840e+004	6.9623e+003

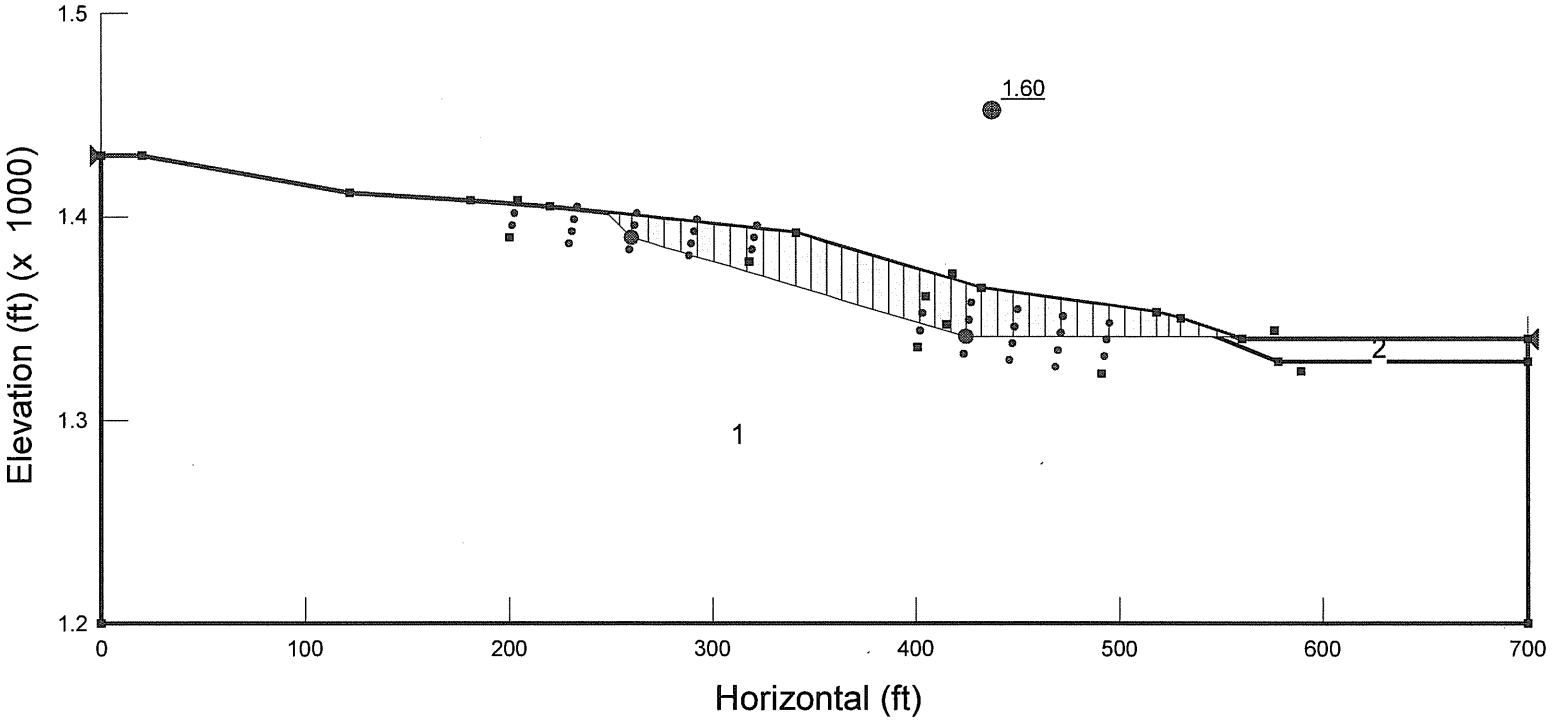
32	1.2650e+004	-3.0640e+003	3.0001e+001	4.0001e+002	3.6840e+004	-6.9623e+003	-3.0124e+004	5.6930e+003
33	1.1832e+004	-2.9478e+003	3.0001e+001	4.0001e+002	3.0124e+004	-5.6930e+003	-2.3763e+004	4.4909e+003
34	1.0306e+004	-2.6507e+003	3.0001e+001	4.0001e+002	2.3763e+004	-4.4909e+003	-1.8144e+004	3.4290e+003
35	8.7798e+003	-2.3535e+003	3.0001e+001	4.0001e+002	1.8144e+004	-3.4290e+003	-1.3266e+004	2.5072e+003
36	7.2535e+003	-2.0563e+003	3.0001e+001	4.0001e+002	1.3266e+004	-2.5072e+003	-9.1303e+003	1.7255e+003
37	5.7272e+003	-1.7592e+003	3.0001e+001	4.0001e+002	9.1303e+003	-1.7255e+003	-5.7355e+003	1.0839e+003
38	4.2009e+003	-1.4620e+003	3.0001e+001	4.0001e+002	5.7355e+003	-1.0839e+003	-3.0822e+003	5.8250e+002
39	2.6746e+003	-1.1648e+003	3.0001e+001	4.0001e+002	3.0822e+003	-5.8250e+002	-1.1704e+003	2.2119e+002
40	1.1483e+003	-8.6765e+002	3.0001e+001	4.0001e+002	1.1704e+003	-2.2119e+002	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Ordinary Method	3.0826e+003	4.0074e+005	2.3903e+007	9.4816e+006			2.5209926
Bishop Method	3.0826e+003	4.0074e+005	2.5300e+007	8.4495e+006			2.9942500
Janbu Method	3.0826e+003	4.0074e+005			2.2469e+005	8.1189e+004	2.7675448
Spencer Method	3.0826e+003	4.0074e+005	2.5434e+007	8.5768e+006	2.2685e+005	7.6297e+004	2.9654149

Title: TT53295, Job No. 2004-700-21 ---- Section M-M', Seismic
Comments: BLOCK Specified Failure Surfaces Defined by Grid Points
Name: M-M' seismic, block.gsz, Date: 10/13/2005

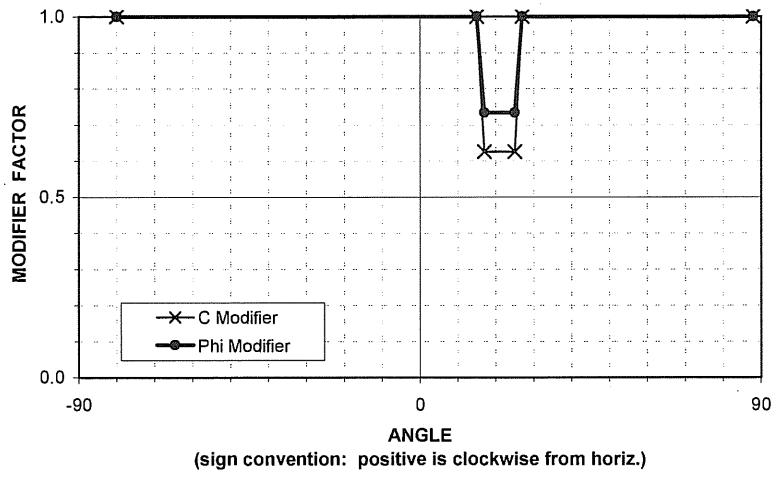
Material #: 1 = Saugus Formation Wt: 130 C: 400 Phi: 30 Model: AnisotropicFn
Material #: 2 = Fill Wt: 130 C: 250 Phi: 29 Model: MohrCoulomb
Horz Seismic Load: 0.26g
Method: Spencer



For use with report dated 04/06/2007; RTF Job No. 2004-700-22

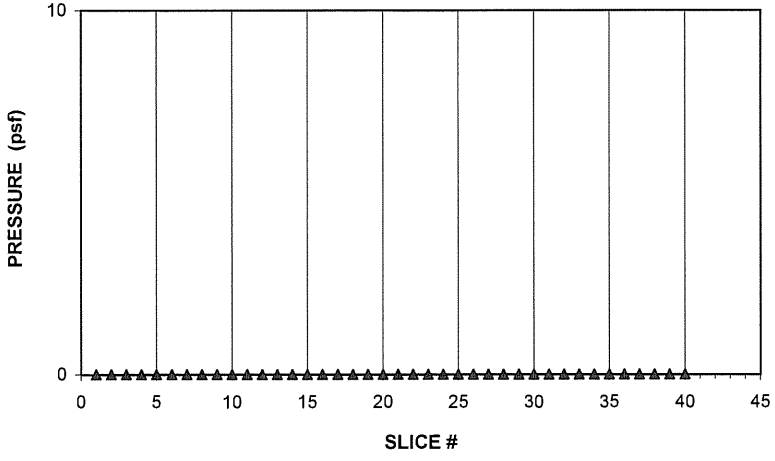
M-M' Seismic - Graphs.xls

ANISOTROPIC STRENGTH FUNCTIONS

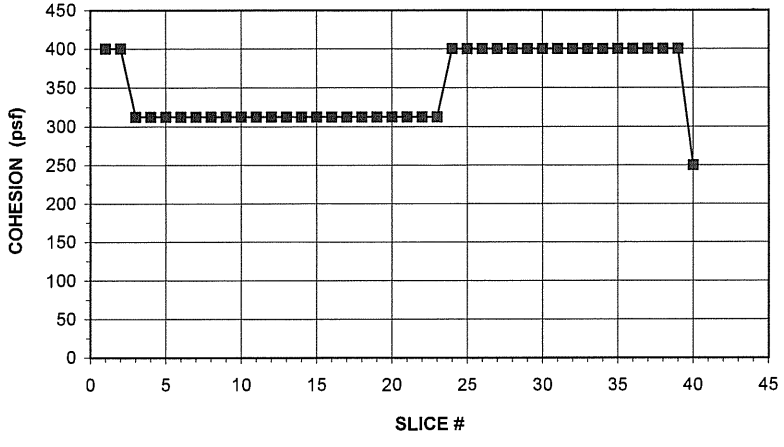


(sign convention: positive is clockwise from horiz.)

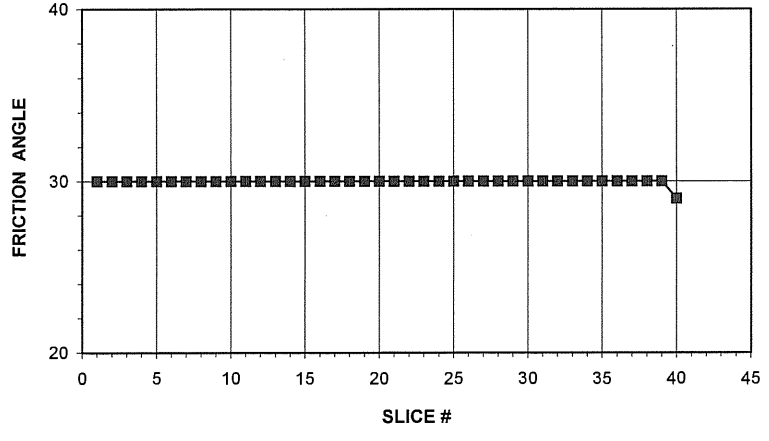
PORE-WATER PRESSURE



BASE COHESION



BASE FRICTION ANGLE



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TT53295, Job No. 2004-700-21  ----  Section M-M', Seismic
BLOCK Specified Failure Surfaces Defined by Grid Points
 DATESTAMP 10/13/2005
 TIMESTAMP 6:22:53 PM
 2=METHOD 3600=NO. OF SLIP SURFACES    1=NO. OF RADII    1=SIDE FUNCTION TYPE
     437.5000=X-COOR.   1452.5000=Y-COOR.       COMPUTED AXIS
 SLIP      X-         Y-              ITERATION            FACTOR OF SAFETY
  NO.    COORD.     COORD.     RADIUS     NO.    LAMBDA    (MOMENT)    (FORCE)
================================================================================
   1    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
   1    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
   1    437.500   1452.500    992.000     0     0.0000 992.0000000 992.0000000
   2    437.500   1452.500    198.538     1     0.0000   1.5983070   1.5470061
   2    437.500   1452.500    198.538     3     0.0000   1.8896252   1.6252956
   2    437.500   1452.500    198.538     3     0.4028   1.7839637   1.7827840
   3    437.500   1452.500    194.669     1     0.0000   1.4844731   1.4564388
   3    437.500   1452.500    194.669     4     0.0000   2.0094454   1.7178409
   3    437.500   1452.500    194.669     3     0.3527   2.1224543   2.1255597
*
*
*
 3598    437.500   1452.500    108.043     1     0.0000  10.3309877  10.3052661
 3598    437.500   1452.500    108.043     5     0.0000  10.7145753  10.3052841
 3598    437.500   1452.500    108.043     3     0.3025  10.3054316  10.3052661
 3599    437.500   1452.500    108.043     1     0.0000  10.3309877  10.3052661
 3599    437.500   1452.500    108.043     5     0.0000  10.7145753  10.3052841
 3599    437.500   1452.500    108.043     3     0.3025  10.3054316  10.3052661
 3600    437.500   1452.500    108.043     1     0.0000  10.3309877  10.3052661
 3600    437.500   1452.500    108.043     5     0.0000  10.7145753  10.3052841
 3600    437.500   1452.500    108.043     3     0.3025  10.3054316  10.3052661

 ----------------------------------------
 | SUMMARY OF MINIMUM FACTORS OF SAFETY |
 ----------------------------------------
 MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
     437.5000=X-COOR.   1452.5000=Y-COOR.    117.3885=RADIUS   1.1811712=F.S.  2523=SLIP#
 MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
     437.5000=X-COOR.   1452.5000=Y-COOR.    133.8301=RADIUS   1.7200854=F.S.  2372=SLIP#
 FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
     437.5000=X-COOR.   1452.5000=Y-COOR.    152.6150=RADIUS   1.5490132=F.S.   859=SLIP#
 MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
     437.5000=X-COOR.   1452.5000=Y-COOR.    183.5410=RADIUS   1.5966784=F.S.  1399=SLIP#

 NORMAL TERMINATION OF SLOPE

MOST_CRITICAL #      SLIP_SURFACE #
=====================================
          1               1399

SLIP_SURFACE #      AUTOTENSIONELEV
=======================================
          1         0.00000000e+000
          2         1.40715376e+003
          3         1.40715376e+003
*
*
*
       3598         1.39280360e+003
       3599         1.39280360e+003
       3600         1.39280360e+003
```

TT53295, Job No. 2004-700-21 ---- Section M-M', Seismic
BLOCK Specified Failure Surfaces Defined by Grid Points
DATESTAMP 10/13/2005
TIMESTAMP 6:22:53 PM

Center_X	Center_Y	Radius	Slip_Surface	Method
4.375000e+002	1.452500e+003	1.835410e+002	1399	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	2.483827e+002	1.401951e+003	1.401951e+003	2.543580e+002	1.401309e+003	1.395975e+003	2.666667e+000	8.450363e+000
2	2.543580e+002	1.401309e+003	1.395975e+003	2.603333e+002	1.400667e+003	1.390000e+003	8.000000e+000	8.450363e+000
3	2.603333e+002	1.400667e+003	1.390000e+003	2.684000e+002	1.399800e+003	1.387601e+003	1.143271e+001	8.415766e+000
4	2.684000e+002	1.399800e+003	1.387601e+003	2.764667e+002	1.398933e+003	1.385202e+003	1.296479e+001	8.415766e+000
5	2.764667e+002	1.398933e+003	1.385202e+003	2.845333e+002	1.398067e+003	1.382804e+003	1.449688e+001	8.415766e+000
6	2.845333e+002	1.398067e+003	1.382804e+003	2.926000e+002	1.397200e+003	1.380405e+003	1.602896e+001	8.415766e+000
7	2.926000e+002	1.397200e+003	1.380405e+003	3.006667e+002	1.396333e+003	1.378006e+003	1.756104e+001	8.415766e+000
8	3.006667e+002	1.396333e+003	1.378006e+003	3.087333e+002	1.395467e+003	1.375607e+003	1.909313e+001	8.415766e+000
9	3.087333e+002	1.395467e+003	1.375607e+003	3.168000e+002	1.394600e+003	1.373209e+003	2.062521e+001	8.415766e+000
10	3.168000e+002	1.394600e+003	1.373209e+003	3.248667e+002	1.393733e+003	1.370810e+003	2.215729e+001	8.415766e+000
11	3.248667e+002	1.393733e+003	1.370810e+003	3.329333e+002	1.392867e+003	1.368411e+003	2.368938e+001	8.415766e+000
12	3.329333e+002	1.392867e+003	1.368411e+003	3.410000e+002	1.392000e+003	1.366012e+003	2.522146e+001	8.415766e+000
13	3.410000e+002	1.392000e+003	1.366012e+003	3.486212e+002	1.389739e+003	1.363746e+003	2.599003e+001	7.951033e+000
14	3.486212e+002	1.389739e+003	1.363746e+003	3.562424e+002	1.387478e+003	1.361480e+003	2.599508e+001	7.951033e+000
15	3.562424e+002	1.387478e+003	1.361480e+003	3.638636e+002	1.385216e+003	1.359214e+003	2.600013e+001	7.951033e+000
16	3.638636e+002	1.385216e+003	1.359214e+003	3.714848e+002	1.382955e+003	1.356947e+003	2.600517e+001	7.951033e+000
17	3.714848e+002	1.382955e+003	1.356947e+003	3.791061e+002	1.380694e+003	1.354681e+003	2.601022e+001	7.951033e+000
18	3.791061e+002	1.380694e+003	1.354681e+003	3.867273e+002	1.378433e+003	1.352415e+003	2.601527e+001	7.951033e+000
19	3.867273e+002	1.378433e+003	1.352415e+003	3.943485e+002	1.376171e+003	1.350148e+003	2.602032e+001	7.951033e+000
20	3.943485e+002	1.376171e+003	1.350148e+003	4.019697e+002	1.373910e+003	1.347882e+003	2.602537e+001	7.951033e+000
21	4.019697e+002	1.373910e+003	1.347882e+003	4.095909e+002	1.371649e+003	1.345616e+003	2.603042e+001	7.951033e+000
22	4.095909e+002	1.371649e+003	1.345616e+003	4.172121e+002	1.369388e+003	1.343350e+003	2.603547e+001	7.951033e+000
23	4.172121e+002	1.369388e+003	1.343350e+003	4.248333e+002	1.367126e+003	1.341083e+003	2.604052e+001	7.951033e+000
24	4.248333e+002	1.367126e+003	1.341083e+003	4.320000e+002	1.365000e+003	1.341083e+003	2.497985e+001	7.166667e+000
25	4.320000e+002	1.365000e+003	1.341083e+003	4.398182e+002	1.363909e+003	1.341083e+003	2.337121e+001	7.818182e+000
26	4.398182e+002	1.363909e+003	1.341083e+003	4.476364e+002	1.362818e+003	1.341083e+003	2.228030e+001	7.818182e+000
27	4.476364e+002	1.362818e+003	1.341083e+003	4.554545e+002	1.361727e+003	1.341083e+003	2.118939e+001	7.818182e+000
28	4.554545e+002	1.361727e+003	1.341083e+003	4.632727e+002	1.360636e+003	1.341083e+003	2.009848e+001	7.818182e+000
29	4.632727e+002	1.360636e+003	1.341083e+003	4.710909e+002	1.359545e+003	1.341083e+003	1.900758e+001	7.818182e+000
30	4.710909e+002	1.359545e+003	1.341083e+003	4.789091e+002	1.358455e+003	1.341083e+003	1.791667e+001	7.818182e+000
31	4.789091e+002	1.358455e+003	1.341083e+003	4.867273e+002	1.357364e+003	1.341083e+003	1.682576e+001	7.818182e+000
32	4.867273e+002	1.357364e+003	1.341083e+003	4.945455e+002	1.356273e+003	1.341083e+003	1.573485e+001	7.818182e+000
33	4.945455e+002	1.356273e+003	1.341083e+003	5.023636e+002	1.355182e+003	1.341083e+003	1.464394e+001	7.818182e+000
34	5.023636e+002	1.355182e+003	1.341083e+003	5.101818e+002	1.354091e+003	1.341083e+003	1.355303e+001	7.818182e+000
35	5.101818e+002	1.354091e+003	1.341083e+003	5.180000e+002	1.353000e+003	1.341083e+003	1.246212e+001	7.818182e+000
36	5.180000e+002	1.353000e+003	1.341083e+003	5.240000e+002	1.351500e+003	1.341083e+003	1.116667e+001	6.000000e+000
37	5.240000e+002	1.351500e+003	1.341083e+003	5.300000e+002	1.350000e+003	1.341083e+003	9.666667e+000	6.000000e+000
38	5.300000e+002	1.350000e+003	1.341083e+003	5.388958e+002	1.347035e+003	1.341083e+003	7.434028e+000	8.895833e+000
39	5.388958e+002	1.347035e+003	1.341083e+003	5.477917e+002	1.344069e+003	1.341083e+003	4.468750e+000	8.895833e+000
40	5.477917e+002	1.344069e+003	1.341083e+003	5.567500e+002	1.341083e+003	1.341083e+003	1.493056e+000	8.958333e+000

Spencer_Method_Fm= 1.5966784 Applied_Lambda= 0.4088

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	8.4512e+002	-2.4226e+003	3.0000e+001	4.0000e+002	0.0000e+000	0.0000e+000	5.7583e+002	-2.3539e+002
2	4.0683e+003	-3.5881e+003	3.0000e+001	4.0000e+002	-5.7583e+002	2.3539e+002	-1.3959e+003	5.7064e+002
3	1.0507e+004	-5.4457e+003	3.0000e+001	3.1236e+002	1.3959e+003	-5.7064e+002	-2.2989e+003	9.3977e+002
4	1.1892e+004	-5.9466e+003	3.0000e+001	3.1236e+002	2.2989e+003	-9.3977e+002	-3.5353e+003	1.4452e+003
5	1.3278e+004	-6.4475e+003	3.0000e+001	3.1236e+002	3.5353e+003	-1.4452e+003	-5.1052e+003	2.0869e+003
6	1.4663e+004	-6.9485e+003	3.0000e+001	3.1236e+002	5.1052e+003	-2.0869e+003	-7.0085e+003	2.8650e+003
7	1.6048e+004	-7.4494e+003	3.0000e+001	3.1236e+002	7.0085e+003	-2.8650e+003	-9.2452e+003	3.7793e+003
8	1.7434e+004	-7.9503e+003	3.0000e+001	3.1236e+002	9.2452e+003	-3.7793e+003	-1.1815e+004	4.8299e+003
9	1.8819e+004	-8.4513e+003	3.0000e+001	3.1236e+002	1.1815e+004	-4.8299e+003	-1.4719e+004	6.0169e+003
10	2.0204e+004	-8.9522e+003	3.0000e+001	3.1236e+002	1.4719e+004	-6.0169e+003	-1.7956e+004	7.3401e+003
11	2.1590e+004	-9.4531e+003	3.0000e+001	3.1236e+002	1.7956e+004	-7.3401e+003	-2.1526e+004	8.7997e+003
12	2.2975e+004	-9.9541e+003	3.0000e+001	3.1236e+002	2.1526e+004	-8.7997e+003	-2.5430e+004	1.0395e+004
13	2.2363e+004	-9.6418e+003	3.0000e+001	3.1236e+002	2.5430e+004	-1.0395e+004	-2.9276e+004	1.1968e+004
14	2.2367e+004	-9.6434e+003	3.0000e+001	3.1236e+002	2.9276e+004	-1.1968e+004	-3.3124e+004	1.3541e+004
15	2.2372e+004	-9.6449e+003	3.0000e+001	3.1236e+002	3.3124e+004	-1.3541e+004	-3.6972e+004	1.5114e+004
16	2.2376e+004	-9.6465e+003	3.0000e+001	3.1236e+002	3.6972e+004	-1.5114e+004	-4.0821e+004	1.6687e+004
17	2.2380e+004	-9.6480e+003	3.0000e+001	3.1236e+002	4.0821e+004	-1.6687e+004	-4.4672e+004	1.8261e+004
18	2.2385e+004	-9.6496e+003	3.0000e+001	3.1236e+002	4.4672e+004	-1.8261e+004	-4.8523e+004	1.9836e+004
19	2.2389e+004	-9.6512e+003	3.0000e+001	3.1236e+002	4.8523e+004	-1.9836e+004	-5.2376e+004	2.1411e+004
20	2.2393e+004	-9.6527e+003	3.0000e+001	3.1236e+002	5.2376e+004	-2.1411e+004	-5.6229e+004	2.2986e+004
21	2.2398e+004	-9.6543e+003	3.0000e+001	3.1236e+002	5.6229e+004	-2.2986e+004	-6.0084e+004	2.4562e+004
22	2.2402e+004	-9.6558e+003	3.0000e+001	3.1236e+002	6.0084e+004	-2.4562e+004	-6.3940e+004	2.6138e+004
23	2.2406e+004	-9.6574e+003	3.0000e+001	3.1236e+002	6.3940e+004	-2.6138e+004	-6.7796e+004	2.7714e+004
24	2.5256e+004	-1.0928e+004	3.0000e+001	4.0000e+002	6.7796e+004	-2.7714e+004	-6.2945e+004	2.5731e+004
25	2.5838e+004	-1.1301e+004	3.0000e+001	4.0000e+002	6.2945e+004	-2.5731e+004	-5.7847e+004	2.3647e+004
26	2.4675e+004	-1.0881e+004	3.0000e+001	4.0000e+002	5.7847e+004	-2.3647e+004	-5.2880e+004	2.1617e+004
27	2.3513e+004	-1.0461e+004	3.0000e+001	4.0000e+002	5.2880e+004	-2.1617e+004	-4.8044e+004	1.9640e+004
28	2.2351e+004	-1.0041e+004	3.0000e+001	4.0000e+002	4.8044e+004	-1.9640e+004	-4.3339e+004	1.7716e+004
29	2.1188e+004	-9.6202e+003	3.0000e+001	4.0000e+002	4.3339e+004	-1.7716e+004	-3.8765e+004	1.5847e+004
30	2.0026e+004	-9.1999e+003	3.0000e+001	4.0000e+002	3.8765e+004	-1.5847e+004	-3.4322e+004	1.4030e+004
31	1.8864e+004	-8.7796e+003	3.0000e+001	4.0000e+002	3.4322e+004	-1.4030e+004	-3.0011e+004	1.2268e+004

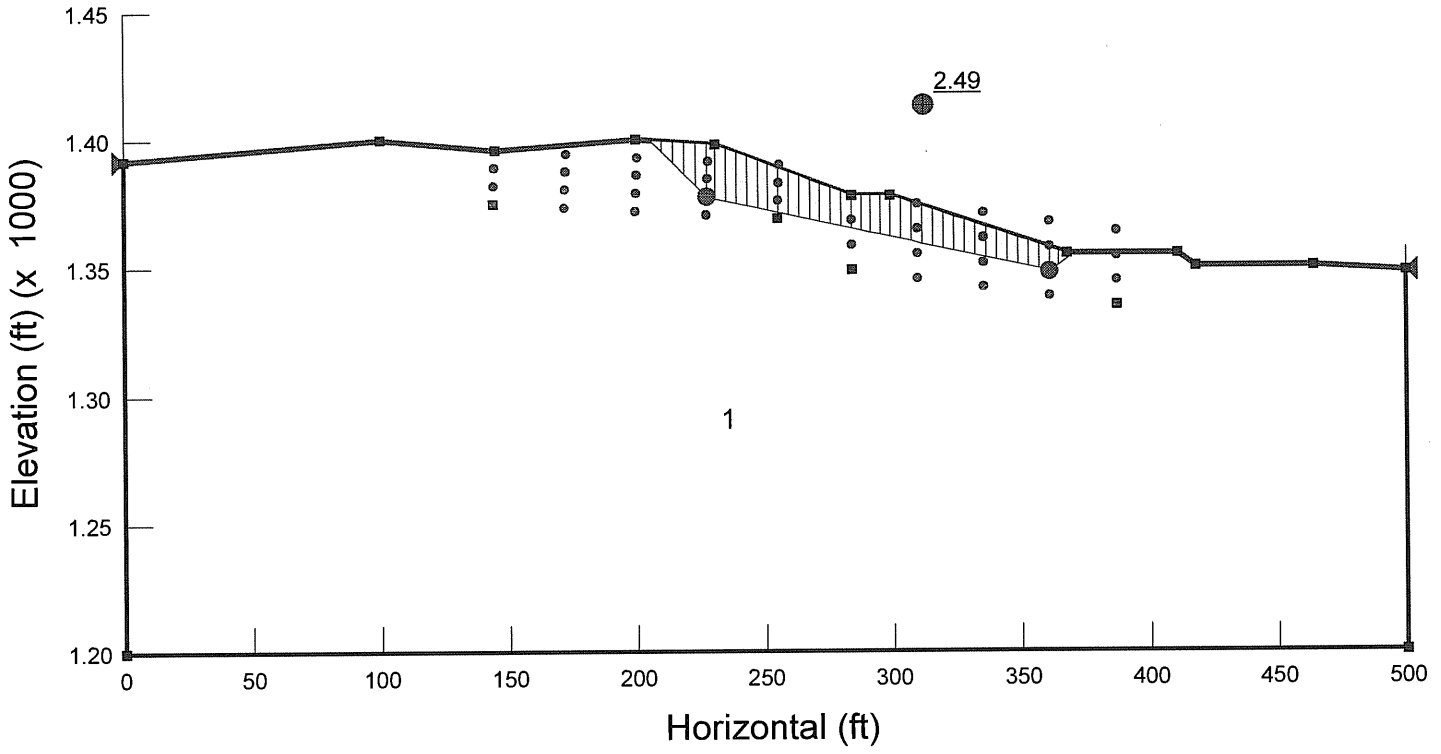
32	1.7701e+004	-8.3593e+003	3.0000e+001	4.0000e+002	3.0011e+004	-1.2268e+004	-2.5830e+004	1.0559e+004
33	1.6539e+004	-7.9390e+003	3.0000e+001	4.0000e+002	2.5830e+004	-1.0559e+004	-2.1781e+004	8.9037e+003
34	1.5377e+004	-7.5187e+003	3.0000e+001	4.0000e+002	2.1781e+004	-8.9037e+003	-1.7863e+004	7.3020e+003
35	1.4214e+004	-7.0984e+003	3.0000e+001	4.0000e+002	1.7863e+004	-7.3020e+003	-1.4076e+004	5.7540e+003
36	9.8492e+003	-5.0646e+003	3.0000e+001	4.0000e+002	1.4076e+004	-5.7540e+003	-1.1289e+004	4.6148e+003
37	8.6226e+003	-4.6210e+003	3.0000e+001	4.0000e+002	1.1289e+004	-4.6148e+003	-8.6404e+003	3.5321e+003
38	1.0077e+004	-5.8726e+003	3.0000e+001	4.0000e+002	8.6404e+003	-3.5321e+003	-5.0192e+003	2.0518e+003
39	6.4825e+003	-4.5726e+003	3.0000e+001	4.0000e+002	5.0192e+003	-2.0518e+003	-1.8035e+003	7.3724e+002
40	2.4760e+003	-2.2622e+003	2.9000e+001	2.5000e+002	1.8035e+003	-7.3724e+002	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Ordinary Method	5.6872e+003	7.3933e+005	5.6456e+007	3.4663e+007			1.6286962
Bishop Method	5.6872e+003	7.3933e+005	5.8061e+007	3.3329e+007			1.7420871
Janbu Method	5.6872e+003	7.3933e+005			4.9943e+005	3.2081e+005	1.5567634
Spencer Method	5.6872e+003	7.3933e+005	5.7842e+007	3.6226e+007	5.0186e+005	3.1360e+005	1.5966784

Title: TT53295, Job No. 2004-700-21 ---- Section N-N', Static
Comments: BLOCK Specified Failure Surfaces Defined by Grid Points
Name: N-N' static, block.gsz, Date: 10/9/2005

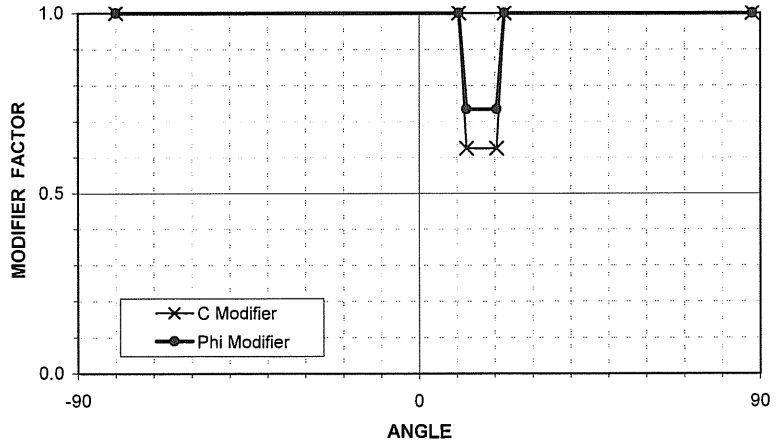
Material #: 1 = Saugus Formation Wt: 130 C: 400 Phi: 30 Model: AnisotropicFn
Horz Seismic Load: 0g
Method: Spencer



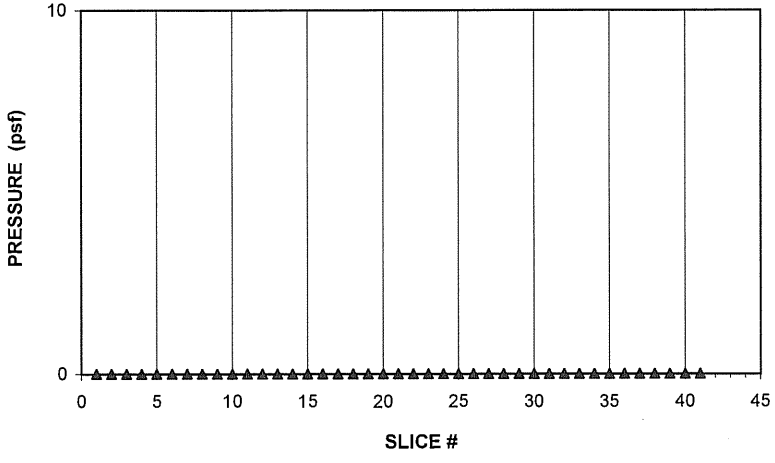
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

N-N' Static - Graphs.xls

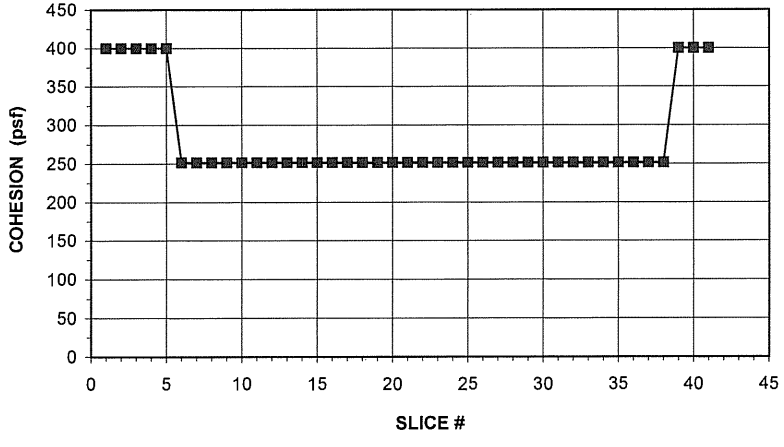
ANISOTROPIC STRENGTH FUNCTIONS



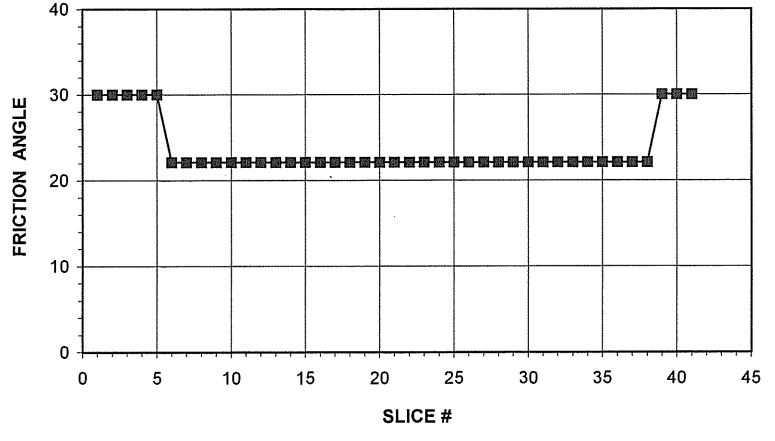
PORE-WATER PRESSURE



BASE COHESION



BASE FRICTION ANGLE



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TT53295, Job No. 2004-700-21  ----  Section N-N', Static
BLOCK Specified Failure Surfaces Defined by Grid Points
 DATESTAMP 10/9/2005
 TIMESTAMP 7:32:54 PM
 2=METHOD 3600=NO. OF SLIP SURFACES    1=NO. OF RADII    1=SIDE FUNCTION TYPE
     312.5000=X-COOR.   1413.0000=Y-COOR.       COMPUTED AXIS
 SLIP      X-         Y-              ITERATION            FACTOR OF SAFETY
  NO.    COORD.     COORD.     RADIUS     NO.    LAMBDA    (MOMENT)   (FORCE)
=============================================================================
   1    312.500   1413.000    177.795     1     0.0000   4.5825789   5.5574515
   1    312.500   1413.000    177.795     5     0.0000   5.6930362   4.8943533
   1    312.500   1413.000    177.795     3     0.1311   5.0572646   5.0565921
   2    312.500   1413.000    136.116     1     0.0000   4.2987100   5.9133866
   2    312.500   1413.000    136.116     6     0.0000   6.1958058   5.2928191
   2    312.500   1413.000    136.116     3     0.1188   5.6587178   5.6559948
   3    312.500   1413.000    132.130     1     0.0000   3.7899133   5.4155934
   3    312.500   1413.000    132.130     6     0.0000   6.9395928   5.8887309
   3    312.500   1413.000    132.130     3     0.1007   6.5547170   6.5540376
*
*
*
 3598    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000
 3598    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000
 3598    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000
 3599    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000
 3599    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000
 3599    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000
 3600    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000
 3600    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000
 3600    312.500   1413.000    992.000     0     0.0000 992.0000000 992.0000000

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 | SUMMARY OF MINIMUM FACTORS OF SAFETY |
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 MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
     312.5000=X-COOR.   1413.0000=Y-COOR.     83.9440=RADIUS   1.6441025=F.S.   603=SLIP#
 MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
     312.5000=X-COOR.   1413.0000=Y-COOR.     98.1484=RADIUS   2.6175481=F.S.  1587=SLIP#
 FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
     312.5000=X-COOR.   1413.0000=Y-COOR.     95.2712=RADIUS   2.3053125=F.S.  1508=SLIP#
 MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
     312.5000=X-COOR.   1413.0000=Y-COOR.     98.1484=RADIUS   2.4884872=F.S.  1587=SLIP#

 NORMAL TERMINATION OF SLOPE

MOST_CRITICAL #      SLIP_SURFACE #
=====================================
          1               1587

SLIP_SURFACE #      AUTOTENSIONELEV
=======================================
          1         1.39700081e+003
          2         1.39700081e+003
          3         1.39700081e+003
*
*
*
       3598         0.00000000e+000
       3599         0.00000000e+000
       3600         0.00000000e+000
```

TT53295, Job No. 2004-700-21 ---- Section N-N', Static
BLOCK Specified Failure Surfaces Defined by Grid Points
DATESTAMP 10/9/2005
TIMESTAMP 7:32:54 PM

Center_X	Center_Y	Radius	Slip_Surface	Method
3.125000e+002	1.413000e+003	9.814843e+001	1587	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	2.054339e+002	1.399649e+003	1.399649e+003	2.098638e+002	1.399364e+003	1.395220e+003	2.072043e+000	6.264804e+000
2	2.098638e+002	1.399364e+003	1.395220e+003	2.142937e+002	1.399078e+003	1.390790e+003	6.216129e+000	6.264804e+000
3	2.142937e+002	1.399078e+003	1.390790e+003	2.187236e+002	1.398792e+003	1.386360e+003	1.036022e+001	6.264804e+000
4	2.187236e+002	1.398792e+003	1.386360e+003	2.231534e+002	1.398506e+003	1.381930e+003	1.450430e+001	6.264804e+000
5	2.231534e+002	1.398506e+003	1.381930e+003	2.275833e+002	1.398220e+003	1.377500e+003	1.864839e+001	6.264804e+000
6	2.275833e+002	1.398220e+003	1.377500e+003	2.310000e+002	1.398000e+003	1.376750e+003	2.098511e+001	3.497971e+000
7	2.310000e+002	1.398000e+003	1.376750e+003	2.350769e+002	1.396462e+003	1.375856e+003	2.092790e+001	4.173939e+000
8	2.350769e+002	1.396462e+003	1.375856e+003	2.391538e+002	1.394923e+003	1.374961e+003	2.028413e+001	4.173939e+000
9	2.391538e+002	1.394923e+003	1.374961e+003	2.432308e+002	1.393385e+003	1.374066e+003	1.964035e+001	4.173939e+000
10	2.432308e+002	1.393385e+003	1.374066e+003	2.473077e+002	1.391846e+003	1.373171e+003	1.899658e+001	4.173939e+000
11	2.473077e+002	1.391846e+003	1.373171e+003	2.513846e+002	1.390308e+003	1.372277e+003	1.835280e+001	4.173939e+000
12	2.513846e+002	1.390308e+003	1.372277e+003	2.554615e+002	1.388769e+003	1.371382e+003	1.770903e+001	4.173939e+000
13	2.554615e+002	1.388769e+003	1.371382e+003	2.595385e+002	1.387231e+003	1.370487e+003	1.706525e+001	4.173939e+000
14	2.595385e+002	1.387231e+003	1.370487e+003	2.636154e+002	1.385692e+003	1.369593e+003	1.642148e+001	4.173939e+000
15	2.636154e+002	1.385692e+003	1.369593e+003	2.676923e+002	1.384154e+003	1.368698e+003	1.577770e+001	4.173939e+000
16	2.676923e+002	1.384154e+003	1.368698e+003	2.717692e+002	1.382615e+003	1.367803e+003	1.513393e+001	4.173939e+000
17	2.717692e+002	1.382615e+003	1.367803e+003	2.758462e+002	1.381077e+003	1.366909e+003	1.449015e+001	4.173939e+000
18	2.758462e+002	1.381077e+003	1.366909e+003	2.799231e+002	1.379538e+003	1.366014e+003	1.384638e+001	4.173939e+000
19	2.799231e+002	1.379538e+003	1.366014e+003	2.840000e+002	1.378000e+003	1.365119e+003	1.320260e+001	4.173939e+000
20	2.840000e+002	1.378000e+003	1.365119e+003	2.877500e+002	1.378000e+003	1.364296e+003	1.329219e+001	3.839236e+000
21	2.877500e+002	1.378000e+003	1.364296e+003	2.915000e+002	1.378000e+003	1.363473e+003	1.411513e+001	3.839236e+000
22	2.915000e+002	1.378000e+003	1.363473e+003	2.952500e+002	1.378000e+003	1.362650e+003	1.493807e+001	3.839236e+000
23	2.952500e+002	1.378000e+003	1.362650e+003	2.990000e+002	1.378000e+003	1.361828e+003	1.576101e+001	3.839236e+000
24	2.990000e+002	1.378000e+003	1.361828e+003	3.031500e+002	1.376617e+003	1.360917e+003	1.593618e+001	4.248755e+000
25	3.031500e+002	1.376617e+003	1.360917e+003	3.073000e+002	1.375233e+003	1.360006e+003	1.546357e+001	4.248755e+000
26	3.073000e+002	1.375233e+003	1.360006e+003	3.114500e+002	1.373850e+003	1.359095e+003	1.499096e+001	4.248755e+000
27	3.114500e+002	1.373850e+003	1.359095e+003	3.156000e+002	1.372467e+003	1.358185e+003	1.451835e+001	4.248755e+000
28	3.156000e+002	1.372467e+003	1.358185e+003	3.197500e+002	1.371083e+003	1.357274e+003	1.404574e+001	4.248755e+000
29	3.197500e+002	1.371083e+003	1.357274e+003	3.239000e+002	1.369700e+003	1.356363e+003	1.357313e+001	4.248755e+000
30	3.239000e+002	1.369700e+003	1.356363e+003	3.280500e+002	1.368317e+003	1.355452e+003	1.310052e+001	4.248755e+000
31	3.280500e+002	1.368317e+003	1.355452e+003	3.322000e+002	1.366933e+003	1.354542e+003	1.262791e+001	4.248755e+000
32	3.322000e+002	1.366933e+003	1.354542e+003	3.363500e+002	1.365550e+003	1.353631e+003	1.215530e+001	4.248755e+000
33	3.363500e+002	1.365550e+003	1.353631e+003	3.405000e+002	1.364167e+003	1.352720e+003	1.168269e+001	4.248755e+000
34	3.405000e+002	1.364167e+003	1.352720e+003	3.446500e+002	1.362783e+003	1.351810e+003	1.121008e+001	4.248755e+000
35	3.446500e+002	1.362783e+003	1.351810e+003	3.488000e+002	1.361400e+003	1.350899e+003	1.073747e+001	4.248755e+000
36	3.488000e+002	1.361400e+003	1.350899e+003	3.529500e+002	1.360017e+003	1.349988e+003	1.026486e+001	4.248755e+000
37	3.529500e+002	1.360017e+003	1.349988e+003	3.571000e+002	1.358633e+003	1.349077e+003	9.792249e+000	4.248755e+000
38	3.571000e+002	1.358633e+003	1.349077e+003	3.612500e+002	1.357250e+003	1.348167e+003	9.319638e+000	4.248755e+000
39	3.612500e+002	1.357250e+003	1.348167e+003	3.646250e+002	1.356125e+003	1.350530e+003	7.339233e+000	4.120114e+000
40	3.646250e+002	1.356125e+003	1.350530e+003	3.680000e+002	1.355000e+003	1.352893e+003	3.851033e+000	4.120114e+000
41	3.680000e+002	1.355000e+003	1.352893e+003	3.710090e+002	1.355000e+003	1.355000e+003	1.053466e+000	3.673325e+000

Spencer_Method_Fm= 2.4884872 Applied_Lambda= 0.2306

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	6.4768e+002	-1.1573e+003	3.0000e+001	4.0000e+002	0.0000e+000	0.0000e+000	3.5798e+002	-8.2539e+001
2	3.0426e+003	-1.7129e+003	3.0000e+001	4.0000e+002	-3.5798e+002	8.2539e+001	-5.8681e+002	1.3530e+002
3	5.4376e+003	-2.2686e+003	3.0000e+001	4.0000e+002	5.8681e+002	-1.3530e+002	-2.8344e+003	6.5352e+002
4	7.8325e+003	-2.8242e+003	3.0000e+001	4.0000e+002	2.8344e+003	-6.5352e+002	-6.3847e+003	1.4721e+003
5	1.0227e+004	-3.3799e+003	3.0000e+001	4.0000e+002	6.3847e+003	-1.4721e+003	-1.1238e+004	2.5911e+003
6	9.1022e+003	-1.8372e+003	2.2077e+001	2.5162e+002	1.1238e+004	-2.5911e+003	-1.1397e+004	2.6278e+003
7	1.0832e+004	-2.1874e+003	2.2077e+001	2.5162e+002	1.1397e+004	-2.6278e+003	-1.1586e+004	2.6713e+003
8	1.0498e+004	-2.1331e+003	2.2077e+001	2.5162e+002	1.1586e+004	-2.6713e+003	-1.1756e+004	2.7105e+003
9	1.0165e+004	-2.0788e+003	2.2077e+001	2.5162e+002	1.1756e+004	-2.7105e+003	-1.1907e+004	2.7454e+003
10	9.8323e+003	-2.0245e+003	2.2077e+001	2.5162e+002	1.1907e+004	-2.7454e+003	-1.2040e+004	2.7761e+003
11	9.4993e+003	-1.9703e+003	2.2077e+001	2.5162e+002	1.2040e+004	-2.7761e+003	-1.2155e+004	2.8025e+003
12	9.1662e+003	-1.9160e+003	2.2077e+001	2.5162e+002	1.2155e+004	-2.8025e+003	-1.2251e+004	2.8247e+003
13	8.8332e+003	-1.8617e+003	2.2077e+001	2.5162e+002	1.2251e+004	-2.8247e+003	-1.2329e+004	2.8426e+003
14	8.5001e+003	-1.8074e+003	2.2077e+001	2.5162e+002	1.2329e+004	-2.8426e+003	-1.2388e+004	2.8563e+003
15	8.1670e+003	-1.7531e+003	2.2077e+001	2.5162e+002	1.2388e+004	-2.8563e+003	-1.2429e+004	2.8657e+003
16	7.8340e+003	-1.6989e+003	2.2077e+001	2.5162e+002	1.2429e+004	-2.8657e+003	-1.2451e+004	2.8709e+003
17	7.5009e+003	-1.6446e+003	2.2077e+001	2.5162e+002	1.2451e+004	-2.8709e+003	-1.2455e+004	2.8718e+003
18	7.1679e+003	-1.5903e+003	2.2077e+001	2.5162e+002	1.2455e+004	-2.8718e+003	-1.2441e+004	2.8684e+003
19	6.8348e+003	-1.5360e+003	2.2077e+001	2.5162e+002	1.2441e+004	-2.8684e+003	-1.2408e+004	2.8608e+003
20	6.3294e+003	-1.4198e+003	2.2077e+001	2.5162e+002	1.2408e+004	-2.8608e+003	-1.2380e+004	2.8544e+003
21	6.7210e+003	-1.4836e+003	2.2077e+001	2.5162e+002	1.2380e+004	-2.8544e+003	-1.2373e+004	2.8529e+003
22	7.1126e+003	-1.5474e+003	2.2077e+001	2.5162e+002	1.2373e+004	-2.8529e+003	-1.2389e+004	2.8565e+003
23	7.5042e+003	-1.6113e+003	2.2077e+001	2.5162e+002	1.2389e+004	-2.8565e+003	-1.2426e+004	2.8650e+003
24	8.3969e+003	-1.7982e+003	2.2077e+001	2.5162e+002	1.2426e+004	-2.8650e+003	-1.2472e+004	2.8757e+003
25	8.1480e+003	-1.7576e+003	2.2077e+001	2.5162e+002	1.2472e+004	-2.8757e+003	-1.2504e+004	2.8832e+003
26	7.8991e+003	-1.7170e+003	2.2077e+001	2.5162e+002	1.2504e+004	-2.8832e+003	-1.2523e+004	2.8875e+003
27	7.6502e+003	-1.6765e+003	2.2077e+001	2.5162e+002	1.2523e+004	-2.8875e+003	-1.2528e+004	2.8886e+003
28	7.4013e+003	-1.6359e+003	2.2077e+001	2.5162e+002	1.2528e+004	-2.8886e+003	-1.2519e+004	2.8865e+003
29	7.1524e+003	-1.5953e+003	2.2077e+001	2.5162e+002	1.2519e+004	-2.8865e+003	-1.2496e+004	2.8813e+003
30	6.9036e+003	-1.5548e+003	2.2077e+001	2.5162e+002	1.2496e+004	-2.8813e+003	-1.2460e+004	2.8728e+003

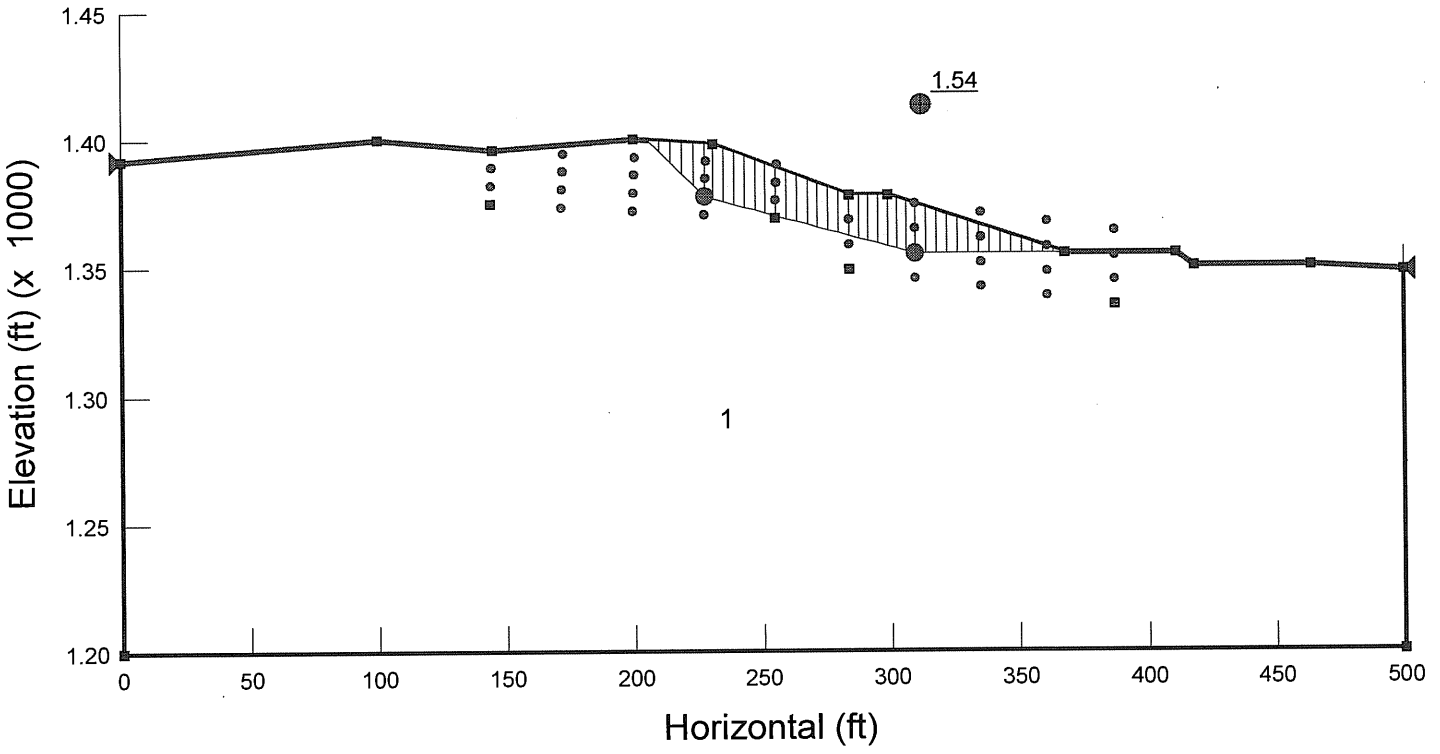
31	6.6547e+003	-1.5142e+003	2.2077e+001	2.5162e+002	1.2460e+004	-2.8728e+003	-1.2409e+004	2.8612e+003
32	6.4058e+003	-1.4736e+003	2.2077e+001	2.5162e+002	1.2409e+004	-2.8612e+003	-1.2345e+004	2.8464e+003
33	6.1569e+003	-1.4331e+003	2.2077e+001	2.5162e+002	1.2345e+004	-2.8464e+003	-1.2267e+004	2.8285e+003
34	5.9080e+003	-1.3925e+003	2.2077e+001	2.5162e+002	1.2267e+004	-2.8285e+003	-1.2176e+004	2.8073e+003
35	5.6591e+003	-1.3519e+003	2.2077e+001	2.5162e+002	1.2176e+004	-2.8073e+003	-1.2070e+004	2.7830e+003
36	5.4102e+003	-1.3114e+003	2.2077e+001	2.5162e+002	1.2070e+004	-2.7830e+003	-1.1951e+004	2.7555e+003
37	5.1613e+003	-1.2708e+003	2.2077e+001	2.5162e+002	1.1951e+004	-2.7555e+003	-1.1818e+004	2.7248e+003
38	4.9124e+003	-1.2303e+003	2.2077e+001	2.5162e+002	1.1818e+004	-2.7248e+003	-1.1671e+004	2.6910e+003
39	7.2934e+003	-2.3544e+003	3.0000e+001	4.0000e+002	1.1671e+004	-2.6910e+003	-5.5787e+003	1.2863e+003
40	4.2965e+003	-1.6591e+003	3.0000e+001	4.0000e+002	5.5787e+003	-1.2863e+003	-1.7673e+003	4.0749e+002
41	1.6877e+003	-9.8203e+002	3.0000e+001	4.0000e+002	1.7673e+003	-4.0749e+002	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Ordinary Method	2.2506e+003	2.9257e+005	9.9072e+006	4.4663e+006			2.2182360
Bishop Method	2.2506e+003	2.9257e+005	1.0616e+007	4.0558e+006			2.6175481
Janbu Method	2.2506e+003	2.9257e+005			1.6237e+005	6.9212e+004	2.3459921
Spencer Method	2.2506e+003	2.9257e+005	1.0624e+007	4.2692e+006	1.6338e+005	6.5511e+004	2.4884872

Title: TT53295, Job No. 2004-700-21 ---- Section N-N', Seismic
Comments: BLOCK Specified Failure Surfaces Defined by Grid Points
Name: N-N' seismic, block.gsz, Date: 10/25/2005

Material #: 1 = Saugus Formation Wt: 130 C: 400 Phi: 30 Model: AnisotropicFn
Horz Seismic Load: 0.26g
Method: Spencer



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TT53295, Job No. 2004-700-21  ----  Section N-N', Seismic
BLOCK Specified Failure Surfaces Defined by Grid Points
 DATESTAMP 10/25/2005
 TIMESTAMP 2:39:54 PM
 2=METHOD 3600=NO. OF SLIP SURFACES    1=NO. OF RADII    1=SIDE FUNCTION TYPE
     312.5000=X-COOR.   1413.0000=Y-COOR.       COMPUTED AXIS
 SLIP      X-          Y-                ITERATION            FACTOR OF SAFETY
  NO.    COORD.      COORD.      RADIUS      NO.     LAMBDA     (MOMENT)    (FORCE)
================================================================================
   1     312.500    1413.000     177.795      1      0.0000    1.9939747   1.8397659
   1     312.500    1413.000     177.795      3      0.0000    2.3118014   1.8026919
   1     312.500    1413.000     177.795      3      0.4013    1.8536512   1.8509441
   2     312.500    1413.000     136.116      1      0.0000    1.9059351   1.7989410
   2     312.500    1413.000     136.116      4      0.0000    2.4081361   1.8311385
   2     312.500    1413.000     136.116      3      0.4617    2.0230950   2.0226752
   3     312.500    1413.000     132.130      1      0.0000    1.7952107   1.7415008
   3     312.500    1413.000     132.130      5      0.0000    2.6283893   1.9829601
   3     312.500    1413.000     132.130      3      0.3513    2.4239114   2.4248819
*
*
*
 3598    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000
 3598    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000
 3598    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000
 3599    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000
 3599    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000
 3599    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000
 3600    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000
 3600    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000
 3600    312.500    1413.000     992.000      0      0.0000 992.0000000 992.0000000

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 | SUMMARY OF MINIMUM FACTORS OF SAFETY |
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 MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
     312.5000=X-COOR.   1413.0000=Y-COOR.     78.5127=RADIUS   1.1907413=F.S.  2463=SLIP#
 MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
     312.5000=X-COOR.   1413.0000=Y-COOR.     99.5342=RADIUS   1.7192713=F.S.  1568=SLIP#
 FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
     312.5000=X-COOR.   1413.0000=Y-COOR.    103.2763=RADIUS   1.4059908=F.S.   668=SLIP#
 MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
     312.5000=X-COOR.   1413.0000=Y-COOR.     97.2902=RADIUS   1.5362141=F.S.  1579=SLIP#

 NORMAL TERMINATION OF SLOPE

MOST_CRITICAL #      SLIP_SURFACE #
====================================
          1               1579

SLIP_SURFACE #      AUTOTENSIONELEV
====================================
          1         1.39700081e+003
          2         1.39700081e+003
          3         1.39700081e+003
*
*
*
       3598         0.00000000e+000
       3599         0.00000000e+000
       3600         0.00000000e+000
```

TT53295, Job No. 2004-700-21 ---- Section N-N', Seismic
BLOCK Specified Failure Surfaces Defined by Grid Points
DATESTAMP 10/25/2005
TIMESTAMP 2:39:54 PM

Center_X	Center_Y	Radius	Slip_Surface	Method
3.125000e+002	1.413000e+003	9.729019e+001	1579	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	2.054339e+002	1.399649e+003	1.399649e+003	2.098638e+002	1.399364e+003	1.395220e+003	2.072043e+000	6.264804e+000
2	2.098638e+002	1.399364e+003	1.395220e+003	2.142937e+002	1.399078e+003	1.390790e+003	6.216129e+000	6.264804e+000
3	2.142937e+002	1.399078e+003	1.390790e+003	2.187236e+002	1.398792e+003	1.386360e+003	1.036022e+001	6.264804e+000
4	2.187236e+002	1.398792e+003	1.386360e+003	2.231534e+002	1.398506e+003	1.381930e+003	1.450430e+001	6.264804e+000
5	2.231534e+002	1.398506e+003	1.381930e+003	2.275833e+002	1.398220e+003	1.377500e+003	1.864839e+001	6.264804e+000
6	2.275833e+002	1.398220e+003	1.377500e+003	2.310000e+002	1.398000e+003	1.376571e+003	2.107455e+001	3.540626e+000
7	2.310000e+002	1.398000e+003	1.376571e+003	2.350769e+002	1.396462e+003	1.375463e+003	2.121350e+001	4.224838e+000
8	2.350769e+002	1.396462e+003	1.375463e+003	2.391538e+002	1.394923e+003	1.374355e+003	2.078317e+001	4.224838e+000
9	2.391538e+002	1.394923e+003	1.374355e+003	2.432308e+002	1.393385e+003	1.373247e+003	2.035284e+001	4.224838e+000
10	2.432308e+002	1.393385e+003	1.373247e+003	2.473077e+002	1.391846e+003	1.372139e+003	1.992250e+001	4.224838e+000
11	2.473077e+002	1.391846e+003	1.372139e+003	2.513846e+002	1.390308e+003	1.371031e+003	1.949217e+001	4.224838e+000
12	2.513846e+002	1.390308e+003	1.371031e+003	2.554615e+002	1.388769e+003	1.369923e+003	1.906184e+001	4.224838e+000
13	2.554615e+002	1.388769e+003	1.369923e+003	2.595385e+002	1.387231e+003	1.368814e+003	1.863151e+001	4.224838e+000
14	2.595385e+002	1.387231e+003	1.368814e+003	2.636154e+002	1.385692e+003	1.367706e+003	1.820118e+001	4.224838e+000
15	2.636154e+002	1.385692e+003	1.367706e+003	2.676923e+002	1.384154e+003	1.366598e+003	1.777084e+001	4.224838e+000
16	2.676923e+002	1.384154e+003	1.366598e+003	2.717692e+002	1.382615e+003	1.365490e+003	1.734051e+001	4.224838e+000
17	2.717692e+002	1.382615e+003	1.365490e+003	2.758462e+002	1.381077e+003	1.364382e+003	1.691018e+001	4.224838e+000
18	2.758462e+002	1.381077e+003	1.364382e+003	2.799231e+002	1.379538e+003	1.363274e+003	1.647985e+001	4.224838e+000
19	2.799231e+002	1.379538e+003	1.363274e+003	2.840000e+002	1.378000e+003	1.362166e+003	1.604951e+001	4.224838e+000
20	2.840000e+002	1.378000e+003	1.362166e+003	2.877500e+002	1.378000e+003	1.361146e+003	1.634398e+001	3.886053e+000
21	2.877500e+002	1.378000e+003	1.361146e+003	2.915000e+002	1.378000e+003	1.360127e+003	1.736325e+001	3.886053e+000
22	2.915000e+002	1.378000e+003	1.360127e+003	2.952500e+002	1.378000e+003	1.359108e+003	1.838252e+001	3.886053e+000
23	2.952500e+002	1.378000e+003	1.359108e+003	2.990000e+002	1.378000e+003	1.358089e+003	1.940179e+001	3.886053e+000
24	2.990000e+002	1.378000e+003	1.358089e+003	3.025833e+002	1.376806e+003	1.357115e+003	1.980119e+001	3.713340e+000
25	3.025833e+002	1.376806e+003	1.357115e+003	3.061667e+002	1.375611e+003	1.356141e+003	1.958071e+001	3.713340e+000
26	3.061667e+002	1.375611e+003	1.356141e+003	3.097500e+002	1.374417e+003	1.355167e+003	1.936024e+001	3.713340e+000
27	3.097500e+002	1.374417e+003	1.355167e+003	3.138750e+002	1.373042e+003	1.355167e+003	1.856250e+001	4.125000e+000
28	3.138750e+002	1.373042e+003	1.355167e+003	3.180000e+002	1.371667e+003	1.355167e+003	1.718750e+001	4.125000e+000
29	3.180000e+002	1.371667e+003	1.355167e+003	3.221250e+002	1.370292e+003	1.355167e+003	1.581250e+001	4.125000e+000
30	3.221250e+002	1.370292e+003	1.355167e+003	3.262500e+002	1.368917e+003	1.355167e+003	1.443750e+001	4.125000e+000
31	3.262500e+002	1.368917e+003	1.355167e+003	3.303750e+002	1.367542e+003	1.355167e+003	1.306250e+001	4.125000e+000
32	3.303750e+002	1.367542e+003	1.355167e+003	3.345000e+002	1.366167e+003	1.355167e+003	1.168750e+001	4.125000e+000
33	3.345000e+002	1.366167e+003	1.355167e+003	3.386250e+002	1.364792e+003	1.355167e+003	1.031250e+001	4.125000e+000
34	3.386250e+002	1.364792e+003	1.355167e+003	3.427500e+002	1.363417e+003	1.355167e+003	8.937500e+000	4.125000e+000
35	3.427500e+002	1.363417e+003	1.355167e+003	3.468750e+002	1.362042e+003	1.355167e+003	7.562500e+000	4.125000e+000
36	3.468750e+002	1.362042e+003	1.355167e+003	3.510000e+002	1.360667e+003	1.355167e+003	6.187500e+000	4.125000e+000
37	3.510000e+002	1.360667e+003	1.355167e+003	3.551250e+002	1.359292e+003	1.355167e+003	4.812500e+000	4.125000e+000
38	3.551250e+002	1.359292e+003	1.355167e+003	3.592500e+002	1.357917e+003	1.355167e+003	3.437500e+000	4.125000e+000
39	3.592500e+002	1.357917e+003	1.355167e+003	3.633750e+002	1.356542e+003	1.355167e+003	2.062500e+000	4.125000e+000
40	3.633750e+002	1.356542e+003	1.355167e+003	3.675000e+002	1.355167e+003	1.355167e+003	6.875000e-001	4.125000e+000

Spencer_Method_Fm= 1.5362141 Applied_Lambda= 0.4766

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	3.8375e+002	-1.7755e+003	3.0000e+001	4.0000e+002	0.0000e+000	0.0000e+000	6.8614e+002	-3.2699e+002
2	2.1502e+003	-2.4393e+003	3.0000e+001	4.0000e+002	-6.8614e+002	3.2699e+002	-3.4547e+001	1.6464e+001
3	3.9167e+003	-3.1032e+003	3.0000e+001	4.0000e+002	3.4547e+001	-1.6464e+001	-2.1621e+003	1.0304e+003
4	5.6832e+003	-3.7671e+003	3.0000e+001	4.0000e+002	2.1621e+003	-1.0304e+003	-5.6964e+003	2.7147e+003
5	7.4496e+003	-4.4310e+003	3.0000e+001	4.0000e+002	5.6964e+003	-2.7147e+003	-1.0638e+004	5.0695e+003
6	8.2192e+003	-3.7804e+003	3.0000e+001	3.0000e+002	1.0638e+004	-5.0695e+003	-1.1567e+004	5.5122e+003
7	9.8712e+003	-4.5349e+003	3.0000e+001	3.0000e+002	1.1567e+004	-5.5122e+003	-1.2688e+004	6.0465e+003
8	9.6742e+003	-4.4609e+003	3.0000e+001	3.0000e+002	1.2688e+004	-6.0465e+003	-1.3770e+004	6.5621e+003
9	9.4773e+003	-4.3869e+003	3.0000e+001	3.0000e+002	1.3770e+004	-6.5621e+003	-1.4812e+004	7.0590e+003
10	9.2804e+003	-4.3129e+003	3.0000e+001	3.0000e+002	1.4812e+004	-7.0590e+003	-1.5816e+004	7.5372e+003
11	9.0834e+003	-4.2388e+003	3.0000e+001	3.0000e+002	1.5816e+004	-7.5372e+003	-1.6780e+004	7.9966e+003
12	8.8865e+003	-4.1648e+003	3.0000e+001	3.0000e+002	1.6780e+004	-7.9966e+003	-1.7705e+004	8.4373e+003
13	8.6896e+003	-4.0908e+003	3.0000e+001	3.0000e+002	1.7705e+004	-8.4373e+003	-1.8590e+004	8.8593e+003
14	8.4926e+003	-4.0168e+003	3.0000e+001	3.0000e+002	1.8590e+004	-8.8593e+003	-1.9436e+004	9.2626e+003
15	8.2957e+003	-3.9428e+003	3.0000e+001	3.0000e+002	1.9436e+004	-9.2626e+003	-2.0243e+004	9.6471e+003
16	8.0987e+003	-3.8688e+003	3.0000e+001	3.0000e+002	2.0243e+004	-9.6471e+003	-2.1011e+004	1.0013e+004
17	7.9018e+003	-3.7948e+003	3.0000e+001	3.0000e+002	2.1011e+004	-1.0013e+004	-2.1739e+004	1.0360e+004
18	7.7049e+003	-3.7207e+003	3.0000e+001	3.0000e+002	2.1739e+004	-1.0360e+004	-2.2428e+004	1.0688e+004
19	7.5079e+003	-3.6467e+003	3.0000e+001	3.0000e+002	2.2428e+004	-1.0688e+004	-2.3078e+004	1.0998e+004
20	7.0298e+003	-3.4009e+003	3.0000e+001	3.0000e+002	2.3078e+004	-1.0998e+004	-2.3701e+004	1.1295e+004
21	7.4589e+003	-3.5621e+003	3.0000e+001	3.0000e+002	2.3701e+004	-1.1295e+004	-2.4409e+004	1.1632e+004
22	7.8879e+003	-3.7234e+003	3.0000e+001	3.0000e+002	2.4409e+004	-1.1632e+004	-2.5202e+004	1.2010e+004
23	8.3170e+003	-3.8846e+003	3.0000e+001	3.0000e+002	2.5202e+004	-1.2010e+004	-2.6081e+004	1.2429e+004
24	8.1080e+003	-3.7724e+003	3.0000e+001	3.0000e+002	2.6081e+004	-1.2429e+004	-2.6953e+004	1.2845e+004
25	8.0193e+003	-3.7390e+003	3.0000e+001	3.0000e+002	2.6953e+004	-1.2845e+004	-2.7808e+004	1.3252e+004
26	7.9306e+003	-3.7057e+003	3.0000e+001	3.0000e+002	2.7808e+004	-1.3252e+004	-2.8645e+004	1.3651e+004
27	1.1255e+004	-5.3040e+003	3.0000e+001	4.0000e+002	2.8645e+004	-1.3651e+004	-2.5915e+004	1.2350e+004
28	1.0467e+004	-5.0080e+003	3.0000e+001	4.0000e+002	2.5915e+004	-1.2350e+004	-2.3291e+004	1.1099e+004
29	9.6800e+003	-4.7121e+003	3.0000e+001	4.0000e+002	2.3291e+004	-1.1099e+004	-2.0771e+004	9.8988e+003
30	8.8926e+003	-4.4161e+003	3.0000e+001	4.0000e+002	2.0771e+004	-9.8988e+003	-1.8357e+004	8.7484e+003
31	8.1051e+003	-4.1202e+003	3.0000e+001	4.0000e+002	1.8357e+004	-8.7484e+003	-1.6048e+004	7.6480e+003

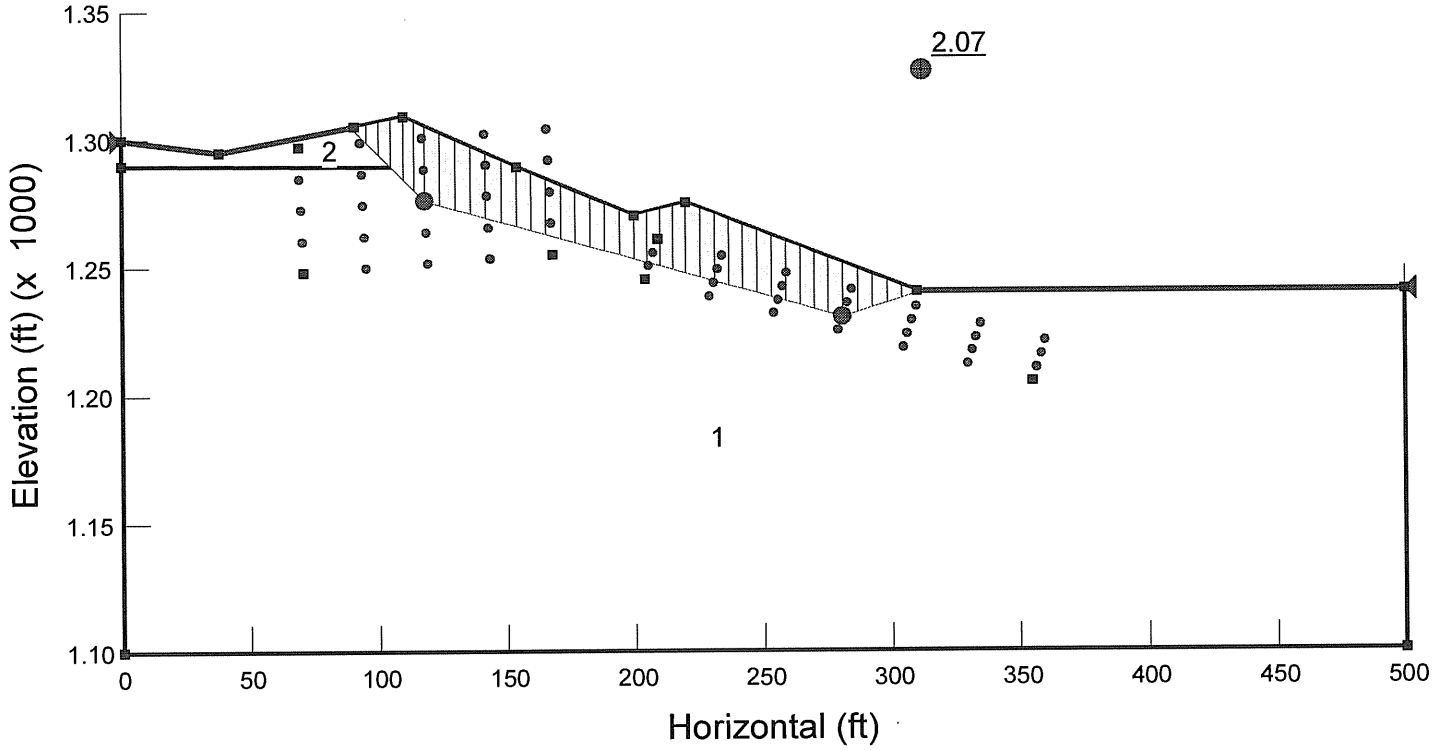
32	7.3177e+003	-3.8242e+003	3.0000e+001	4.0000e+002	1.6048e+004	-7.6480e+003	-1.3845e+004	6.5978e+003
33	6.5302e+003	-3.5283e+003	3.0000e+001	4.0000e+002	1.3845e+004	-6.5978e+003	-1.1746e+004	5.5977e+003
34	5.7427e+003	-3.2323e+003	3.0000e+001	4.0000e+002	1.1746e+004	-5.5977e+003	-9.7526e+003	4.6477e+003
35	4.9553e+003	-2.9364e+003	3.0000e+001	4.0000e+002	9.7526e+003	-4.6477e+003	-7.8642e+003	3.7478e+003
36	4.1678e+003	-2.6405e+003	3.0000e+001	4.0000e+002	7.8642e+003	-3.7478e+003	-6.0811e+003	2.8980e+003
37	3.3804e+003	-2.3445e+003	3.0000e+001	4.0000e+002	6.0811e+003	-2.8980e+003	-4.4031e+003	2.0983e+003
38	2.5929e+003	-2.0486e+003	3.0000e+001	4.0000e+002	4.4031e+003	-2.0983e+003	-2.8302e+003	1.3488e+003
39	1.8055e+003	-1.7526e+003	3.0000e+001	4.0000e+002	2.8302e+003	-1.3488e+003	-1.3625e+003	6.4933e+002
40	1.0180e+003	-1.4567e+003	3.0000e+001	4.0000e+002	1.3625e+003	-6.4933e+002	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Ordinary Method	2.3234e+003	3.0204e+005	1.2879e+007	8.4869e+006			1.5175474
Bishop Method	2.3234e+003	3.0204e+005	1.3640e+007	7.7988e+006			1.7490462
Janbu Method	2.3234e+003	3.0204e+005			2.0999e+005	1.4349e+005	1.4634224
Spencer Method	2.3234e+003	3.0204e+005	1.3420e+007	8.7359e+006	2.1208e+005	1.3841e+005	1.5362141

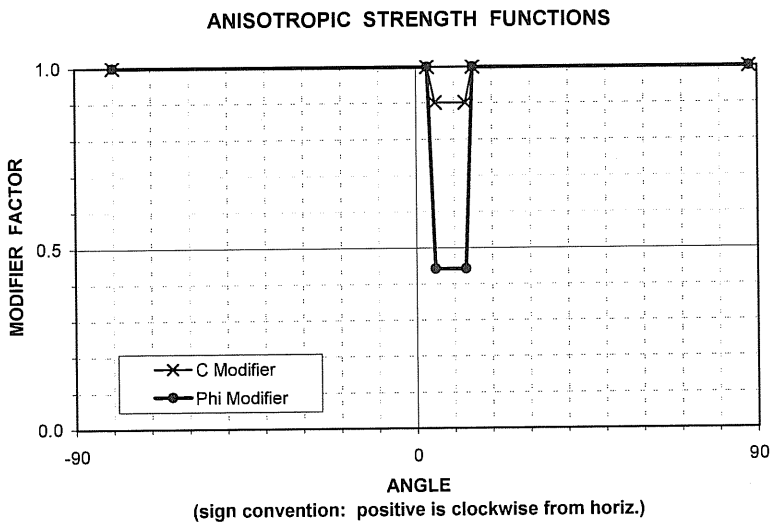
Title: TT53295, Job No. 2004-700-21 ---- Section O-O', Static
Comments: BLOCK Specified Failure Surfaces Defined by Grid Points
Name: O-O' static, block.gsz, Date: 10/11/2005

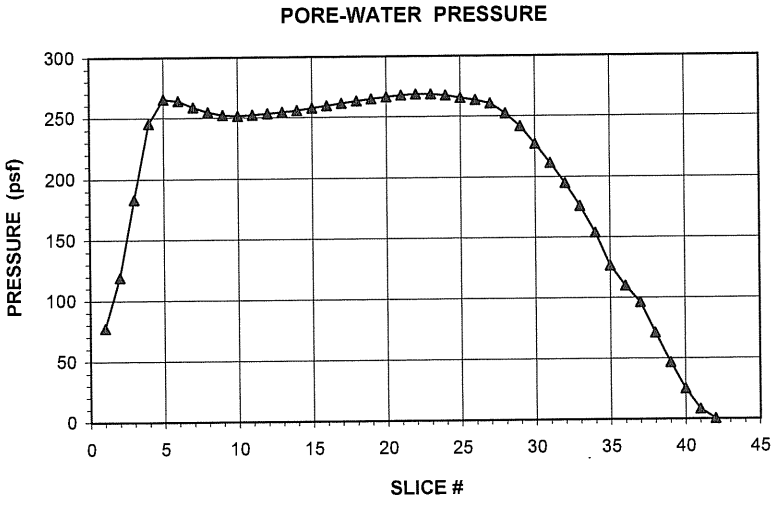
Material #: 1 = Saugus Formation Wt: 130 C: 400 Phi: 30 Model: AnisotropicFn
Material #: 2 = Terrace Deposits Wt: 120 C: 450 Phi: 27 Model: MohrCoulomb
Horz Seismic Load: 0g
Method: Spencer

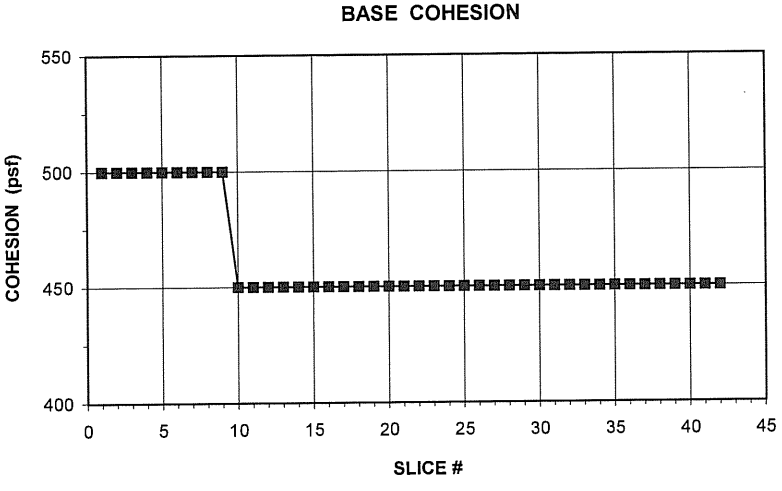


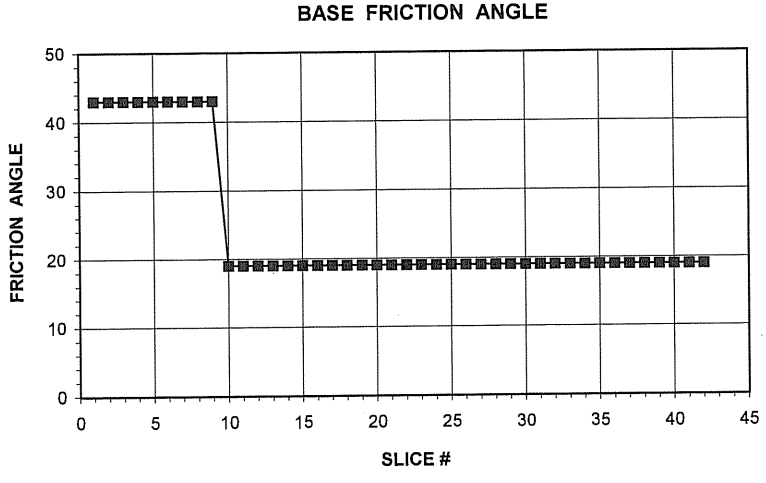
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

O-O' Static - Graphs.xls









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TT53295, Job No. 2004-700-21  ----  Section O-O', Static
BLOCK Specified Failure Surfaces Defined by Grid Points
 DATESTAMP 10/11/2005
 TIMESTAMP 10:43:32 AM
 2=METHOD 6300=NO. OF SLIP SURFACES    1=NO. OF RADII    1=SIDE FUNCTION TYPE
     312.5000=X-COOR.   1326.2500=Y-COOR.       COMPUTED AXIS
 SLIP      X-          Y-                ITERATION            FACTOR OF SAFETY
  NO.    COORD.      COORD.      RADIUS      NO.     LAMBDA     (MOMENT)    (FORCE)
=============================================================================================
   1     312.500    1326.250     204.029      1      0.0000    3.4616675  14.5620179
   1     312.500    1326.250     204.029      6      0.0000    5.9261962   4.9791644
   1     312.500    1326.250     204.029      7      0.1870    6.0634401   6.0726183
   2     312.500    1326.250     205.320      1      0.0000    3.2358045  39.1002378
   2     312.500    1326.250     205.320      7      0.0000    7.0552947   5.7826472
   2     312.500    1326.250     205.320      4      0.1373    7.2342550   7.2341943
   3     312.500    1326.250     208.145      1      0.0000    2.8246936  36.8193625
   3     312.500    1326.250     208.145      8      0.0000    7.6385114   6.2469238
   3     312.500    1326.250     208.145      5      0.1154    8.0348346   8.0284525
*
*
*
 6298    312.500    1326.250     992.000      0      0.0000 992.0000000 992.0000000
 6298    312.500    1326.250     992.000      0      0.0000 992.0000000 992.0000000
 6298    312.500    1326.250     992.000      0      0.0000 992.0000000 992.0000000
 6299    312.500    1326.250     104.267      1      0.0000 999.0000000 999.0000000
 6299    312.500    1326.250     104.267     20      0.0000 999.0000000 999.0000000
 6299    312.500    1326.250     104.267     20      0.0000 999.0000000 999.0000000
 6300    312.500    1326.250      96.945      1      0.0000 999.0000000 999.0000000
 6300    312.500    1326.250      96.945     20      0.0000 999.0000000 999.0000000
 6300    312.500    1326.250      96.945     20      0.0000 999.0000000 999.0000000

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 | SUMMARY OF MINIMUM FACTORS OF SAFETY |
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 MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
     312.5000=X-COOR.   1326.2500=Y-COOR.    122.8048=RADIUS   0.9516900=F.S.  6219=SLIP#
 MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
     312.5000=X-COOR.   1326.2500=Y-COOR.    171.1985=RADIUS   2.1883176=F.S.  3140=SLIP#
 FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
     312.5000=X-COOR.   1326.2500=Y-COOR.    171.1985=RADIUS   1.9287009=F.S.  3140=SLIP#
 MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
     312.5000=X-COOR.   1326.2500=Y-COOR.    175.8080=RADIUS   2.0651366=F.S.  3224=SLIP#

 NORMAL TERMINATION OF SLOPE

MOST_CRITICAL #      SLIP_SURFACE #
=====================================
          1                3224

SLIP_SURFACE #      AUTOTENSIONELEV
=====================================
          1         1.29692212e+003
          2         1.29692212e+003
          3         1.29692212e+003
 *
*
*
       6298         0.00000000e+000
       6299         1.23887223e+003
       6300         1.23849690e+003
```

TT53295, Job No. 2004-700-21 ---- Section O-O', Static
BLOCK Specified Failure Surfaces Defined by Grid Points
DATESTAMP 10/11/2005
TIMESTAMP 10:43:32 AM

Center_X	Center_Y	Radius	Slip_Surface	Method
3.125000e+002	1.326250e+003	1.758080e+002	3224	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	9.100000e+001	1.305000e+003	1.303500e+003	9.572767e+001	1.305995e+003	1.298772e+003	4.361484e+000	6.685933e+000
2	9.572767e+001	1.305995e+003	1.298772e+003	1.004553e+002	1.306991e+003	1.294045e+003	1.008445e+001	6.685933e+000
3	1.004553e+002	1.306991e+003	1.294045e+003	1.051830e+002	1.307986e+003	1.289317e+003	1.580742e+001	6.685933e+000
4	1.051830e+002	1.307986e+003	1.289317e+003	1.100000e+002	1.309000e+003	1.284500e+003	2.158445e+001	6.812257e+000
5	1.100000e+002	1.309000e+003	1.284500e+003	1.142500e+002	1.307068e+003	1.280250e+003	2.565909e+001	6.010408e+000
6	1.142500e+002	1.307068e+003	1.280250e+003	1.185000e+002	1.305136e+003	1.276000e+003	2.797727e+001	6.010408e+000
7	1.185000e+002	1.305136e+003	1.276000e+003	1.244167e+002	1.302447e+003	1.274337e+003	2.862294e+001	6.145811e+000
8	1.244167e+002	1.302447e+003	1.274337e+003	1.303333e+002	1.299758e+003	1.272675e+003	2.759608e+001	6.145811e+000
9	1.303333e+002	1.299758e+003	1.272675e+003	1.362500e+002	1.297068e+003	1.271012e+003	2.656923e+001	6.145811e+000
10	1.362500e+002	1.297068e+003	1.271012e+003	1.421667e+002	1.294379e+003	1.269350e+003	2.554238e+001	6.145811e+000
11	1.421667e+002	1.294379e+003	1.269350e+003	1.480833e+002	1.291689e+003	1.267687e+003	2.451553e+001	6.145811e+000
12	1.480833e+002	1.291689e+003	1.267687e+003	1.540000e+002	1.289000e+003	1.266025e+003	2.348868e+001	6.145811e+000
13	1.540000e+002	1.289000e+003	1.266025e+003	1.597500e+002	1.286625e+003	1.264409e+003	2.259560e+001	5.972689e+000
14	1.597500e+002	1.286625e+003	1.264409e+003	1.655000e+002	1.284250e+003	1.262793e+003	2.183631e+001	5.972689e+000
15	1.655000e+002	1.284250e+003	1.262793e+003	1.712500e+002	1.281875e+003	1.261178e+003	2.107702e+001	5.972689e+000
16	1.712500e+002	1.281875e+003	1.261178e+003	1.770000e+002	1.279500e+003	1.259562e+003	2.031773e+001	5.972689e+000
17	1.770000e+002	1.279500e+003	1.259562e+003	1.827500e+002	1.277125e+003	1.257946e+003	1.955844e+001	5.972689e+000
18	1.827500e+002	1.277125e+003	1.257946e+003	1.885000e+002	1.274750e+003	1.256330e+003	1.879915e+001	5.972689e+000
19	1.885000e+002	1.274750e+003	1.256330e+003	1.942500e+002	1.272375e+003	1.254715e+003	1.803986e+001	5.972689e+000
20	1.942500e+002	1.272375e+003	1.254715e+003	2.000000e+002	1.270000e+003	1.253099e+003	1.728057e+001	5.972689e+000
21	2.000000e+002	1.270000e+003	1.253099e+003	2.050000e+002	1.271250e+003	1.251694e+003	1.822841e+001	5.193643e+000
22	2.050000e+002	1.271250e+003	1.251694e+003	2.100000e+002	1.272500e+003	1.250289e+003	2.088337e+001	5.193643e+000
23	2.100000e+002	1.272500e+003	1.250289e+003	2.150000e+002	1.273750e+003	1.248884e+003	2.353834e+001	5.193643e+000
24	2.150000e+002	1.273750e+003	1.248884e+003	2.200000e+002	1.275000e+003	1.247479e+003	2.619330e+001	5.193643e+000
25	2.200000e+002	1.275000e+003	1.247479e+003	2.255601e+002	1.272838e+003	1.245917e+003	2.722083e+001	5.775433e+000
26	2.255601e+002	1.272838e+003	1.245917e+003	2.311202e+002	1.270675e+003	1.244355e+003	2.662091e+001	5.775433e+000
27	2.311202e+002	1.270675e+003	1.244355e+003	2.366803e+002	1.268513e+003	1.242792e+003	2.602100e+001	5.775433e+000
28	2.366803e+002	1.268513e+003	1.242792e+003	2.422404e+002	1.266351e+003	1.241230e+003	2.542109e+001	5.775433e+000
29	2.422404e+002	1.266351e+003	1.241230e+003	2.478005e+002	1.264189e+003	1.239667e+003	2.482118e+001	5.775433e+000
30	2.478005e+002	1.264189e+003	1.239667e+003	2.533606e+002	1.262026e+003	1.238105e+003	2.422127e+001	5.775433e+000
31	2.533606e+002	1.262026e+003	1.238105e+003	2.589207e+002	1.259864e+003	1.236543e+003	2.362135e+001	5.775433e+000
32	2.589207e+002	1.259864e+003	1.236543e+003	2.644808e+002	1.257702e+003	1.234980e+003	2.302144e+001	5.775433e+000
33	2.644808e+002	1.257702e+003	1.234980e+003	2.700409e+002	1.255540e+003	1.233418e+003	2.242153e+001	5.775433e+000
34	2.700409e+002	1.255540e+003	1.233418e+003	2.756010e+002	1.253377e+003	1.231856e+003	2.182162e+001	5.775433e+000
35	2.756010e+002	1.253377e+003	1.231856e+003	2.811611e+002	1.251215e+003	1.230293e+003	2.122170e+001	5.775433e+000
36	2.811611e+002	1.251215e+003	1.230293e+003	2.869289e+002	1.248972e+003	1.232112e+003	1.889095e+001	6.047689e+000
37	2.869289e+002	1.248972e+003	1.232112e+003	2.926967e+002	1.246729e+003	1.233931e+003	1.482935e+001	6.047689e+000
38	2.926967e+002	1.246729e+003	1.233931e+003	2.984644e+002	1.244486e+003	1.235749e+003	1.076774e+001	6.047689e+000
39	2.984644e+002	1.244486e+003	1.235749e+003	3.042322e+002	1.242243e+003	1.237568e+003	6.706141e+000	6.047689e+000
40	3.042322e+002	1.242243e+003	1.237568e+003	3.100000e+002	1.240000e+003	1.239386e+003	2.644539e+000	6.047689e+000
41	3.100000e+002	1.240000e+003	1.239386e+003	3.119465e+002	1.240000e+003	1.240000e+003	3.068692e-001	2.040993e+000

Spencer_Method_Fm= 2.0651366 Applied_Lambda= 0.2652

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	1.6793e+003	-1.8712e+003	2.7000e+001	4.5000e+002	0.0000e+000	0.0000e+000	1.2816e+002	-3.3992e+001
2	4.8531e+003	-2.6543e+003	2.7000e+001	4.5000e+002	-1.2816e+002	3.3992e+001	-1.4394e+003	3.8177e+002
3	8.0269e+003	-3.4373e+003	2.7000e+001	4.5000e+002	1.4394e+003	-3.8177e+002	-4.7028e+003	1.2473e+003
4	1.1449e+004	-4.5203e+003	3.0000e+001	4.0000e+002	4.7028e+003	-1.2473e+003	-9.6245e+003	2.5527e+003
5	1.2283e+004	-4.5983e+003	3.0000e+001	4.0000e+002	9.6245e+003	-2.5527e+003	-1.5082e+004	4.0002e+003
6	1.3593e+004	-4.9644e+003	3.0000e+001	4.0000e+002	1.5082e+004	-4.0002e+003	-2.1209e+004	5.6251e+003
7	2.0377e+004	-4.7286e+003	2.1990e+001	2.5000e+002	2.1209e+004	-5.6251e+003	-2.2184e+004	5.8837e+003
8	1.9767e+004	-4.6093e+003	2.1990e+001	2.5000e+002	2.2184e+004	-5.8837e+003	-2.3108e+004	6.1288e+003
9	1.9157e+004	-4.4900e+003	2.1990e+001	2.5000e+002	2.3108e+004	-6.1288e+003	-2.3982e+004	6.3605e+003
10	1.8547e+004	-4.3707e+003	2.1990e+001	2.5000e+002	2.3982e+004	-6.3605e+003	-2.4805e+004	6.5789e+003
11	1.7937e+004	-4.2514e+003	2.1990e+001	2.5000e+002	2.4805e+004	-6.5789e+003	-2.5577e+004	6.7838e+003
12	1.7327e+004	-4.1321e+003	2.1990e+001	2.5000e+002	2.5577e+004	-6.7838e+003	-2.6299e+004	6.9753e+003
13	1.6269e+004	-3.9043e+003	2.1990e+001	2.5000e+002	2.6299e+004	-6.9753e+003	-2.6954e+004	7.1488e+003
14	1.5722e+004	-3.7973e+003	2.1990e+001	2.5000e+002	2.6954e+004	-7.1488e+003	-2.7563e+004	7.3104e+003
15	1.5175e+004	-3.6903e+003	2.1990e+001	2.5000e+002	2.7563e+004	-7.3104e+003	-2.8127e+004	7.4599e+003
16	1.4628e+004	-3.5834e+003	2.1990e+001	2.5000e+002	2.8127e+004	-7.4599e+003	-2.8645e+004	7.5974e+003
17	1.4081e+004	-3.4764e+003	2.1990e+001	2.5000e+002	2.8645e+004	-7.5974e+003	-2.9118e+004	7.7229e+003
18	1.3534e+004	-3.3694e+003	2.1990e+001	2.5000e+002	2.9118e+004	-7.7229e+003	-2.9546e+004	7.8364e+003
19	1.2986e+004	-3.2625e+003	2.1990e+001	2.5000e+002	2.9546e+004	-7.8364e+003	-2.9928e+004	7.9378e+003
20	1.2439e+004	-3.1555e+003	2.1990e+001	2.5000e+002	2.9928e+004	-7.9378e+003	-3.0266e+004	8.0272e+003
21	1.1411e+004	-2.8600e+003	2.1990e+001	2.5000e+002	3.0266e+004	-8.0272e+003	-3.0608e+004	8.1180e+003
22	1.3074e+004	-3.1853e+003	2.1990e+001	2.5000e+002	3.0608e+004	-8.1180e+003	-3.1088e+004	8.2454e+003
23	1.4737e+004	-3.5105e+003	2.1990e+001	2.5000e+002	3.1088e+004	-8.2454e+003	-3.1706e+004	8.4093e+003
24	1.6401e+004	-3.8358e+003	2.1990e+001	2.5000e+002	3.1706e+004	-8.4093e+003	-3.2462e+004	8.6098e+003
25	1.8954e+004	-4.4054e+003	2.1990e+001	2.5000e+002	3.2462e+004	-8.6098e+003	-3.3362e+004	8.8484e+003
26	1.8536e+004	-4.3237e+003	2.1990e+001	2.5000e+002	3.3362e+004	-8.8484e+003	-3.4227e+004	9.0779e+003
27	1.8118e+004	-4.2420e+003	2.1990e+001	2.5000e+002	3.4227e+004	-9.0779e+003	-3.5058e+004	9.2982e+003
28	1.7700e+004	-4.1603e+003	2.1990e+001	2.5000e+002	3.5058e+004	-9.2982e+003	-3.5854e+004	9.5093e+003
29	1.7282e+004	-4.0785e+003	2.1990e+001	2.5000e+002	3.5854e+004	-9.5093e+003	-3.6615e+004	9.7113e+003
30	1.6864e+004	-3.9968e+003	2.1990e+001	2.5000e+002	3.6615e+004	-9.7113e+003	-3.7342e+004	9.9040e+003

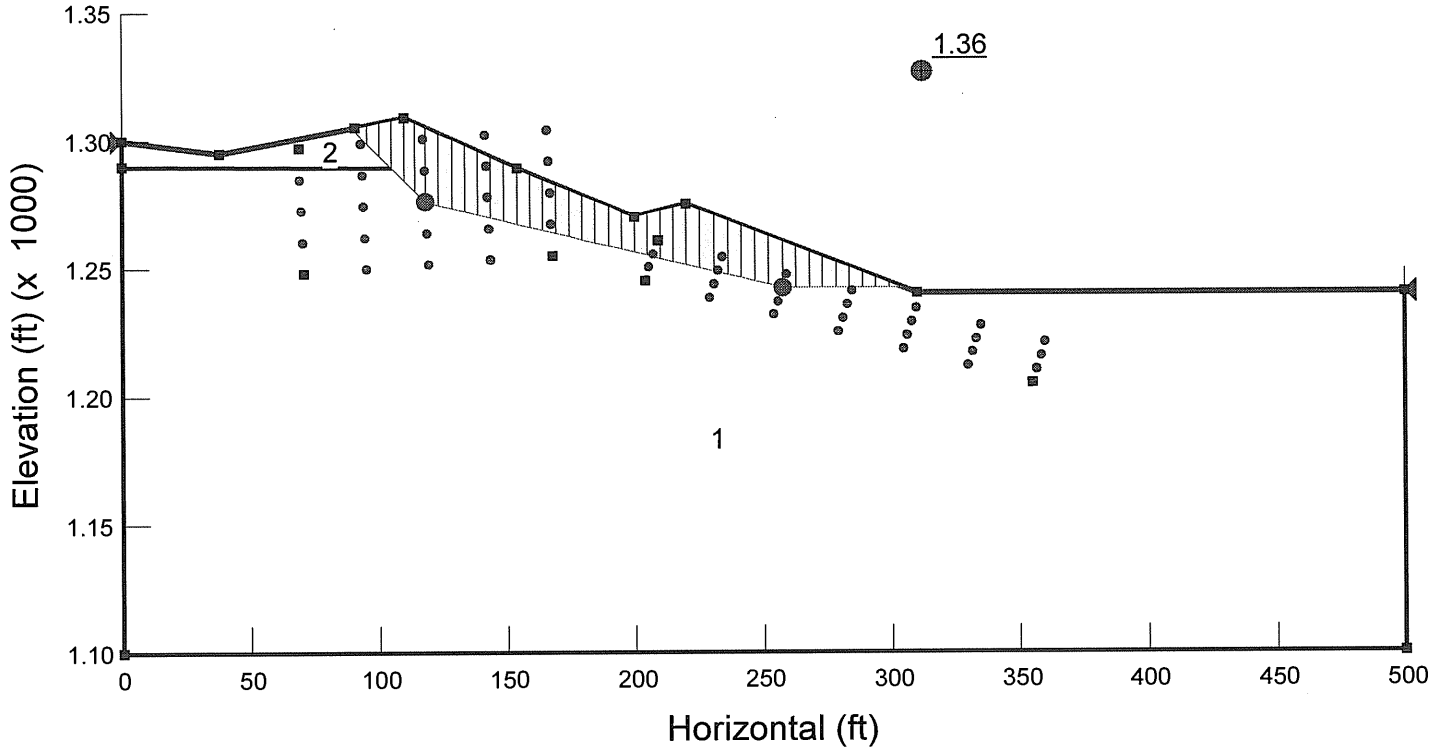
31	1.6446e+004	-3.9151e+003	2.1990e+001	2.5000e+002	3.7342e+004	-9.9040e+003	-3.8034e+004	1.0088e+004
32	1.6028e+004	-3.8334e+003	2.1990e+001	2.5000e+002	3.8034e+004	-1.0088e+004	-3.8691e+004	1.0262e+004
33	1.5610e+004	-3.7516e+003	2.1990e+001	2.5000e+002	3.8691e+004	-1.0262e+004	-3.9314e+004	1.0427e+004
34	1.5192e+004	-3.6699e+003	2.1990e+001	2.5000e+002	3.9314e+004	-1.0427e+004	-3.9902e+004	1.0583e+004
35	1.4774e+004	-3.5882e+003	2.1990e+001	2.5000e+002	3.9902e+004	-1.0583e+004	-4.0456e+004	1.0730e+004
36	2.0580e+004	-6.9250e+003	3.0000e+001	4.0000e+002	4.0456e+004	-1.0730e+004	-2.7697e+004	7.3460e+003
37	1.6348e+004	-5.7420e+003	3.0000e+001	4.0000e+002	2.7697e+004	-7.3460e+003	-1.7333e+004	4.5972e+003
38	1.2117e+004	-4.5590e+003	3.0000e+001	4.0000e+002	1.7333e+004	-4.5972e+003	-9.3637e+003	2.4835e+003
39	7.8854e+003	-3.3760e+003	3.0000e+001	4.0000e+002	9.3637e+003	-2.4835e+003	-3.7887e+003	1.0049e+003
40	3.6539e+003	-2.1929e+003	3.0000e+001	4.0000e+002	3.7887e+003	-1.0049e+003	-6.0824e+002	1.6132e+002
41	4.1119e+002	-5.1029e+002	3.0000e+001	4.0000e+002	6.0824e+002	-1.6132e+002	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Ordinary Method	4.5538e+003	5.8531e+005	3.3042e+007	1.9356e+007			1.7070289
Bishop Method	4.5538e+003	5.8531e+005	3.5554e+007	1.6200e+007			2.1946210
Janbu Method	4.5538e+003	5.8531e+005			2.9779e+005	1.5323e+005	1.9434393
Spencer Method	4.5538e+003	5.8531e+005	3.5179e+007	1.7035e+007	3.0114e+005	1.4527e+005	2.0651366

Title: TT53295, Job No. 2004-700-21 ---- Section O-O', Seismic
Comments: BLOCK Specified Failure Surfaces Defined by Grid Points
Name: O-O' seismic, block.gsz, Date: 10/13/2005

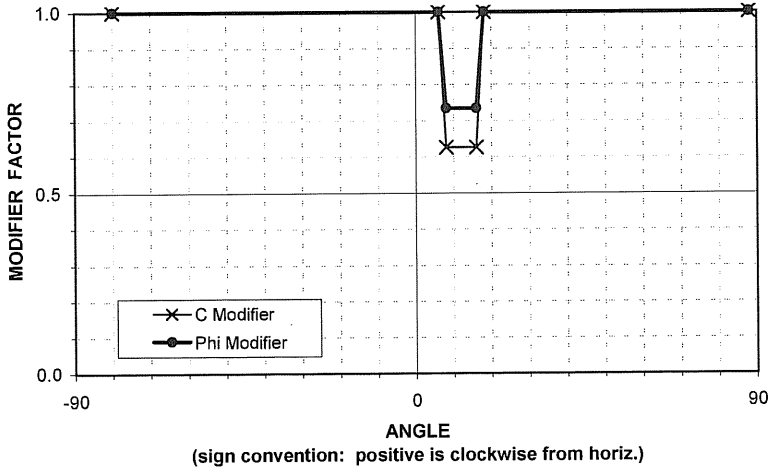
Material #: 1 = Saugus Formation Wt: 130 C: 400 Phi: 30 Model: AnisotropicFn
Material #: 2 = Terrace Deposits Wt: 120 C: 450 Phi: 27 Model: MohrCoulomb
Horz Seismic Load: 0.26g
Method: Spencer



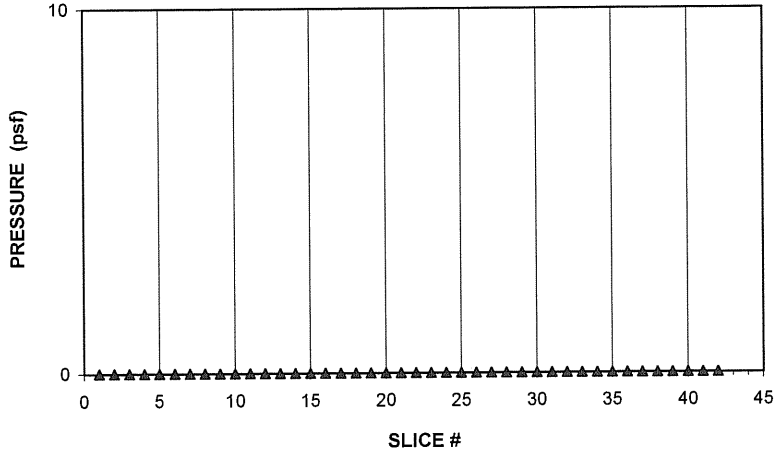
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

O-O' Seismic - Graphs.xls

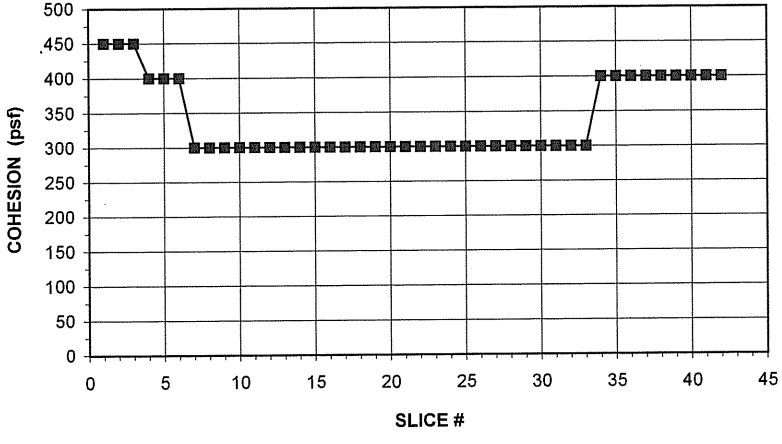
ANISOTROPIC STRENGTH FUNCTIONS



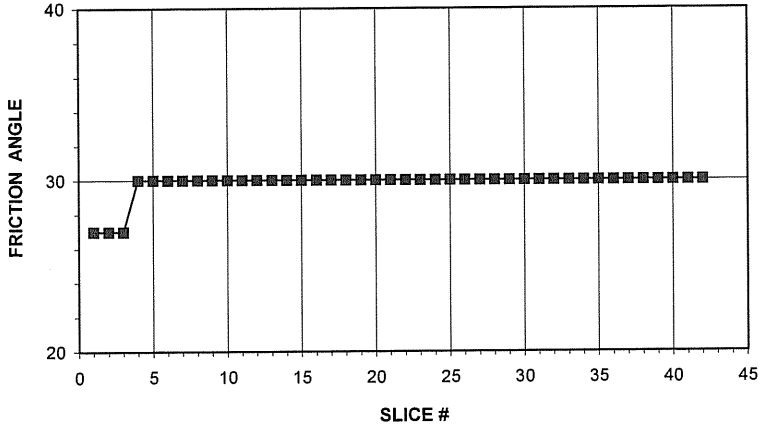
PORE-WATER PRESSURE



BASE COHESION



BASE FRICTION ANGLE



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TT53295, Job No. 2004-700-21  ----  Section O-O', Seismic
BLOCK Specified Failure Surfaces Defined by Grid Points
 DATESTAMP 10/13/2005
 TIMESTAMP 6:28:47 PM
 2=METHOD 6300=NO. OF SLIP SURFACES    1=NO. OF RADII    1=SIDE FUNCTION TYPE
     312.5000=X-COOR.   1326.2500=Y-COOR.       COMPUTED AXIS
 SLIP      X-          Y-                 ITERATION              FACTOR OF SAFETY
  NO.    COORD.      COORD.      RADIUS      NO.     LAMBDA     (MOMENT)    (FORCE)
================================================================================
   1    312.500    1326.250    204.029      1      0.0000    1.7136178    2.1815346
   1    312.500    1326.250    204.029      5      0.0000    2.3656705    1.8243099
   1    312.500    1326.250    204.029     50      0.0000 999.0000000 999.0000000
   2    312.500    1326.250    205.320      1      0.0000    1.6700774    2.4037273
   2    312.500    1326.250    205.320      5      0.0000    2.6176096    1.9742207
   2    312.500    1326.250    205.320     50      0.0000 999.0000000 999.0000000
   3    312.500    1326.250    208.145      1      0.0000    1.5429933    2.3852008
   3    312.500    1326.250    208.145      5      0.0000    2.7799399    2.0950803
   3    312.500    1326.250    208.145     50      0.0000 999.0000000 999.0000000
*
*
*
 6298    312.500    1326.250    992.000      0      0.0000 992.0000000 992.0000000
 6298    312.500    1326.250    992.000      0      0.0000 992.0000000 992.0000000
 6298    312.500    1326.250    992.000      0      0.0000 992.0000000 992.0000000
 6299    312.500    1326.250    104.121      1      0.0000    5.6195419    3.8237862
 6299    312.500    1326.250    104.121      4      0.0000    4.1471762    3.9245168
 6299    312.500    1326.250    104.121      3      0.2043    4.4004009    4.4003255
 6300    312.500    1326.250     95.904      1      0.0000    6.0025045    3.0706475
 6300    312.500    1326.250     95.904      7      0.0000    4.8044853    4.5497542
 6300    312.500    1326.250     95.904      4      0.1990    6.2344521    6.2396204

 ----------------------------------------
 | SUMMARY OF MINIMUM FACTORS OF SAFETY |
 ----------------------------------------
 MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
     312.5000=X-COOR.   1326.2500=Y-COOR.    122.5919=RADIUS   0.6952792=F.S.  6219=SLIP#
 MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
     312.5000=X-COOR.   1326.2500=Y-COOR.    168.7049=RADIUS   1.4801098=F.S.  2216=SLIP#
 FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
     312.5000=X-COOR.   1326.2500=Y-COOR.    174.9735=RADIUS   1.2575528=F.S.   956=SLIP#
 MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
     312.5000=X-COOR.   1326.2500=Y-COOR.    175.1953=RADIUS   1.3615819=F.S.  3241=SLIP#

 NORMAL TERMINATION OF SLOPE

MOST_CRITICAL #      SLIP_SURFACE #
=====================================
          1                3241

SLIP_SURFACE #      AUTOTENSIONELEV
=====================================
          1         1.29692212e+003
          2         1.29692212e+003
          3         1.29692212e+003
*
*
*
       6298         0.00000000e+000
       6299         1.24000000e+003
       6300         1.24000000e+003
```

TT53295, Job No. 2004-700-21 ---- Section O-O', Seismic
BLOCK Specified Failure Surfaces Defined by Grid Points
DATESTAMP 10/13/2005
TIMESTAMP 6:28:47 PM

Center_X	Center_Y	Radius	Slip_Surface	Method
3.125000e+002	1.326250e+003	1.751953e+002	3241	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	9.100000e+001	1.305000e+003	1.303500e+003	9.572767e+001	1.305995e+003	1.298772e+003	4.361484e+000	6.685933e+000
2	9.572767e+001	1.305995e+003	1.298772e+003	1.004553e+002	1.306991e+003	1.294045e+003	1.008445e+001	6.685933e+000
3	1.004553e+002	1.306991e+003	1.294045e+003	1.051830e+002	1.307986e+003	1.289317e+003	1.580742e+001	6.685933e+000
4	1.051830e+002	1.307986e+003	1.289317e+003	1.100000e+002	1.309000e+003	1.284500e+003	2.158445e+001	6.812257e+000
5	1.100000e+002	1.309000e+003	1.284500e+003	1.142500e+002	1.307068e+003	1.280250e+003	2.565909e+001	6.010408e+000
6	1.142500e+002	1.307068e+003	1.280250e+003	1.185000e+002	1.305136e+003	1.276000e+003	2.797727e+001	6.010408e+000
7	1.185000e+002	1.305136e+003	1.276000e+003	1.235714e+002	1.302831e+003	1.274770e+003	2.859880e+001	5.218471e+000
8	1.235714e+002	1.302831e+003	1.274770e+003	1.286429e+002	1.300526e+003	1.273540e+003	2.752366e+001	5.218471e+000
9	1.286429e+002	1.300526e+003	1.273540e+003	1.337143e+002	1.298221e+003	1.272310e+003	2.644853e+001	5.218471e+000
10	1.337143e+002	1.298221e+003	1.272310e+003	1.387857e+002	1.295916e+003	1.271080e+003	2.537339e+001	5.218471e+000
11	1.387857e+002	1.295916e+003	1.271080e+003	1.438571e+002	1.293610e+003	1.269850e+003	2.429826e+001	5.218471e+000
12	1.438571e+002	1.293610e+003	1.269850e+003	1.489286e+002	1.291305e+003	1.268620e+003	2.322312e+001	5.218471e+000
13	1.489286e+002	1.291305e+003	1.268620e+003	1.540000e+002	1.289000e+003	1.267390e+003	2.214799e+001	5.218471e+000
14	1.540000e+002	1.289000e+003	1.267390e+003	1.591111e+002	1.286889e+003	1.266150e+003	2.117470e+001	5.259304e+000
15	1.591111e+002	1.286889e+003	1.266150e+003	1.642222e+002	1.284778e+003	1.264910e+003	2.030328e+001	5.259304e+000
16	1.642222e+002	1.284778e+003	1.264910e+003	1.693333e+002	1.282667e+003	1.263671e+003	1.943185e+001	5.259304e+000
17	1.693333e+002	1.282667e+003	1.263671e+003	1.744444e+002	1.280556e+003	1.262431e+003	1.856043e+001	5.259304e+000
18	1.744444e+002	1.280556e+003	1.262431e+003	1.795556e+002	1.278444e+003	1.261191e+003	1.768900e+001	5.259304e+000
19	1.795556e+002	1.278444e+003	1.261191e+003	1.846667e+002	1.276333e+003	1.259951e+003	1.681757e+001	5.259304e+000
20	1.846667e+002	1.276333e+003	1.259951e+003	1.897778e+002	1.274222e+003	1.258712e+003	1.594615e+001	5.259304e+000
21	1.897778e+002	1.274222e+003	1.258712e+003	1.948889e+002	1.272111e+003	1.257472e+003	1.507472e+001	5.259304e+000
22	1.948889e+002	1.272111e+003	1.257472e+003	2.000000e+002	1.270000e+003	1.256232e+003	1.420329e+001	5.259304e+000
23	2.000000e+002	1.270000e+003	1.256232e+003	2.050000e+002	1.271250e+003	1.255020e+003	1.499895e+001	5.144971e+000
24	2.050000e+002	1.271250e+003	1.255020e+003	2.100000e+002	1.272500e+003	1.253807e+003	1.746168e+001	5.144971e+000
25	2.100000e+002	1.272500e+003	1.253807e+003	2.150000e+002	1.273750e+003	1.252594e+003	1.992442e+001	5.144971e+000
26	2.150000e+002	1.273750e+003	1.252594e+003	2.200000e+002	1.275000e+003	1.251381e+003	2.238715e+001	5.144971e+000
27	2.200000e+002	1.275000e+003	1.251381e+003	2.253832e+002	1.272907e+003	1.250076e+003	2.322462e+001	5.539322e+000
28	2.253832e+002	1.272907e+003	1.250076e+003	2.307665e+002	1.270813e+003	1.248770e+003	2.243683e+001	5.539322e+000
29	2.307665e+002	1.270813e+003	1.248770e+003	2.361497e+002	1.268720e+003	1.247464e+003	2.164904e+001	5.539322e+000
30	2.361497e+002	1.268720e+003	1.247464e+003	2.415330e+002	1.266626e+003	1.246159e+003	2.086124e+001	5.539322e+000
31	2.415330e+002	1.266626e+003	1.246159e+003	2.469162e+002	1.264533e+003	1.244853e+003	2.007345e+001	5.539322e+000
32	2.469162e+002	1.264533e+003	1.244853e+003	2.522994e+002	1.262439e+003	1.243547e+003	1.928565e+001	5.539322e+000
33	2.522994e+002	1.262439e+003	1.243547e+003	2.576827e+002	1.260346e+003	1.242242e+003	1.849786e+001	5.539322e+000
34	2.576827e+002	1.260346e+003	1.242242e+003	2.628552e+002	1.258334e+003	1.242242e+003	1.709819e+001	5.172561e+000
35	2.628552e+002	1.258334e+003	1.242242e+003	2.680278e+002	1.256323e+003	1.242242e+003	1.508664e+001	5.172561e+000
36	2.680278e+002	1.256323e+003	1.242242e+003	2.732004e+002	1.254311e+003	1.242242e+003	1.307509e+001	5.172561e+000
37	2.732004e+002	1.254311e+003	1.242242e+003	2.783729e+002	1.252299e+003	1.242242e+003	1.106353e+001	5.172561e+000
38	2.783729e+002	1.252299e+003	1.242242e+003	2.835455e+002	1.250288e+003	1.242242e+003	9.051982e+000	5.172561e+000
39	2.835455e+002	1.250288e+003	1.242242e+003	2.887180e+002	1.248276e+003	1.242242e+003	7.040431e+000	5.172561e+000
40	2.887180e+002	1.248276e+003	1.242242e+003	2.938906e+002	1.246265e+003	1.242242e+003	5.028879e+000	5.172561e+000
41	2.938906e+002	1.246265e+003	1.242242e+003	2.990632e+002	1.244253e+003	1.242242e+003	3.017327e+000	5.172561e+000
42	2.990632e+002	1.244253e+003	1.242242e+003	3.042357e+002	1.242242e+003	1.242242e+003	1.005776e+000	5.172561e+000

Spencer_Method_Fm= 1.3615819 Applied_Lambda= 0.5341

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	1.1571e+003	-2.6427e+003	2.7000e+001	4.5000e+002	0.0000e+000	0.0000e+000	3.9951e+002	-2.1338e+002
2	3.4707e+003	-3.5085e+003	2.7000e+001	4.5000e+002	-3.9951e+002	2.1338e+002	-1.0701e+003	5.7156e+002
3	5.7843e+003	-4.3743e+003	2.7000e+001	4.5000e+002	1.0701e+003	-5.7156e+002	-4.4089e+003	2.3548e+003
4	8.3103e+003	-5.5251e+003	3.0000e+001	4.0000e+002	4.4089e+003	-2.3548e+003	-9.6647e+003	5.1619e+003
5	8.9274e+003	-5.5512e+003	3.0000e+001	4.0000e+002	9.6647e+003	-5.1619e+003	-1.5543e+004	8.3015e+003
6	9.8847e+003	-5.9571e+003	3.0000e+001	4.0000e+002	1.5543e+004	-8.3015e+003	-2.2166e+004	1.1839e+004
7	1.6271e+004	-8.0491e+003	3.0000e+001	3.0000e+002	2.2166e+004	-1.1839e+004	-2.2906e+004	1.2234e+004
8	1.5748e+004	-7.8275e+003	3.0000e+001	3.0000e+002	2.2906e+004	-1.2234e+004	-2.3583e+004	1.2596e+004
9	1.5226e+004	-7.6059e+003	3.0000e+001	3.0000e+002	2.3583e+004	-1.2596e+004	-2.4198e+004	1.2924e+004
10	1.4703e+004	-7.3843e+003	3.0000e+001	3.0000e+002	2.4198e+004	-1.2924e+004	-2.4750e+004	1.3219e+004
11	1.4180e+004	-7.1627e+003	3.0000e+001	3.0000e+002	2.4750e+004	-1.3219e+004	-2.5240e+004	1.3481e+004
12	1.3658e+004	-6.9411e+003	3.0000e+001	3.0000e+002	2.5240e+004	-1.3481e+004	-2.5667e+004	1.3709e+004
13	1.3135e+004	-6.7196e+003	3.0000e+001	3.0000e+002	2.5667e+004	-1.3709e+004	-2.6030e+004	1.3903e+004
14	1.2720e+004	-6.5524e+003	3.0000e+001	3.0000e+002	2.6030e+004	-1.3903e+004	-2.6335e+004	1.4066e+004
15	1.2210e+004	-6.3363e+003	3.0000e+001	3.0000e+002	2.6335e+004	-1.4066e+004	-2.6579e+004	1.4196e+004
16	1.1700e+004	-6.1201e+003	3.0000e+001	3.0000e+002	2.6579e+004	-1.4196e+004	-2.6761e+004	1.4293e+004
17	1.1191e+004	-5.9040e+003	3.0000e+001	3.0000e+002	2.6761e+004	-1.4293e+004	-2.6882e+004	1.4358e+004
18	1.0681e+004	-5.6879e+003	3.0000e+001	3.0000e+002	2.6882e+004	-1.4358e+004	-2.6942e+004	1.4390e+004
19	1.0171e+004	-5.4717e+003	3.0000e+001	3.0000e+002	2.6942e+004	-1.4390e+004	-2.6941e+004	1.4389e+004
20	9.6615e+003	-5.2556e+003	3.0000e+001	3.0000e+002	2.6941e+004	-1.4389e+004	-2.6878e+004	1.4356e+004
21	9.1518e+003	-5.0394e+003	3.0000e+001	3.0000e+002	2.6878e+004	-1.4356e+004	-2.6755e+004	1.4290e+004
22	8.6421e+003	-4.8233e+003	3.0000e+001	3.0000e+002	2.6755e+004	-1.4290e+004	-2.6570e+004	1.4191e+004
23	8.9095e+003	-4.9115e+003	3.0000e+001	3.0000e+002	2.6570e+004	-1.4191e+004	-2.6444e+004	1.4124e+004
24	1.0319e+004	-5.5090e+003	3.0000e+001	3.0000e+002	2.6444e+004	-1.4124e+004	-2.6487e+004	1.4147e+004
25	1.1728e+004	-6.1066e+003	3.0000e+001	3.0000e+002	2.6487e+004	-1.4147e+004	-2.6699e+004	1.4260e+004
26	1.3137e+004	-6.7042e+003	3.0000e+001	3.0000e+002	2.6699e+004	-1.4260e+004	-2.7080e+004	1.4463e+004
27	1.4660e+004	-7.4368e+003	3.0000e+001	3.0000e+002	2.7080e+004	-1.4463e+004	-2.7552e+004	1.4716e+004
28	1.4175e+004	-7.2310e+003	3.0000e+001	3.0000e+002	2.7552e+004	-1.4716e+004	-2.7967e+004	1.4937e+004
29	1.3689e+004	-7.0252e+003	3.0000e+001	3.0000e+002	2.7967e+004	-1.4937e+004	-2.8323e+004	1.5127e+004

30	1.3204e+004	-6.8194e+003	3.0000e+001	3.0000e+002	2.8323e+004	-1.5127e+004	-2.8620e+004	1.5286e+004
31	1.2719e+004	-6.6136e+003	3.0000e+001	3.0000e+002	2.8620e+004	-1.5286e+004	-2.8860e+004	1.5414e+004
32	1.2233e+004	-6.4078e+003	3.0000e+001	3.0000e+002	2.8860e+004	-1.5414e+004	-2.9041e+004	1.5511e+004
33	1.1748e+004	-6.2020e+003	3.0000e+001	3.0000e+002	2.9041e+004	-1.5511e+004	-2.9164e+004	1.5576e+004
34	1.3836e+004	-7.3867e+003	3.0000e+001	4.0000e+002	2.9164e+004	-1.5576e+004	-2.4784e+004	1.3237e+004
35	1.2332e+004	-6.7486e+003	3.0000e+001	4.0000e+002	2.4784e+004	-1.3237e+004	-2.0689e+004	1.1050e+004
36	1.0827e+004	-6.1106e+003	3.0000e+001	4.0000e+002	2.0689e+004	-1.1050e+004	-1.6879e+004	9.0154e+003
37	9.3223e+003	-5.4725e+003	3.0000e+001	4.0000e+002	1.6879e+004	-9.0154e+003	-1.3354e+004	7.1325e+003
38	7.8176e+003	-4.8345e+003	3.0000e+001	4.0000e+002	1.3354e+004	-7.1325e+003	-1.0114e+004	5.4018e+003
39	6.3128e+003	-4.1964e+003	3.0000e+001	4.0000e+002	1.0114e+004	-5.4018e+003	-7.1582e+003	3.8232e+003
40	4.8081e+003	-3.5583e+003	3.0000e+001	4.0000e+002	7.1582e+003	-3.8232e+003	-4.4874e+003	2.3967e+003
41	3.3034e+003	-2.9203e+003	3.0000e+001	4.0000e+002	4.4874e+003	-2.3967e+003	-2.1013e+003	1.1223e+003
42	1.7986e+003	-2.2822e+003	3.0000e+001	4.0000e+002	2.1013e+003	-1.1223e+003	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Ordinary Method	3.7708e+003	4.8351e+005	3.2494e+007	2.5957e+007			1.2518581
Bishop Method	3.7708e+003	4.8351e+005	3.4869e+007	2.2922e+007			1.5212063
Janbu Method	3.7708e+003	4.8351e+005			3.1216e+005	2.3944e+005	1.3036954
Spencer Method	3.7708e+003	4.8351e+005	3.3841e+007	2.4854e+007	3.1590e+005	2.3142e+005	1.3615819

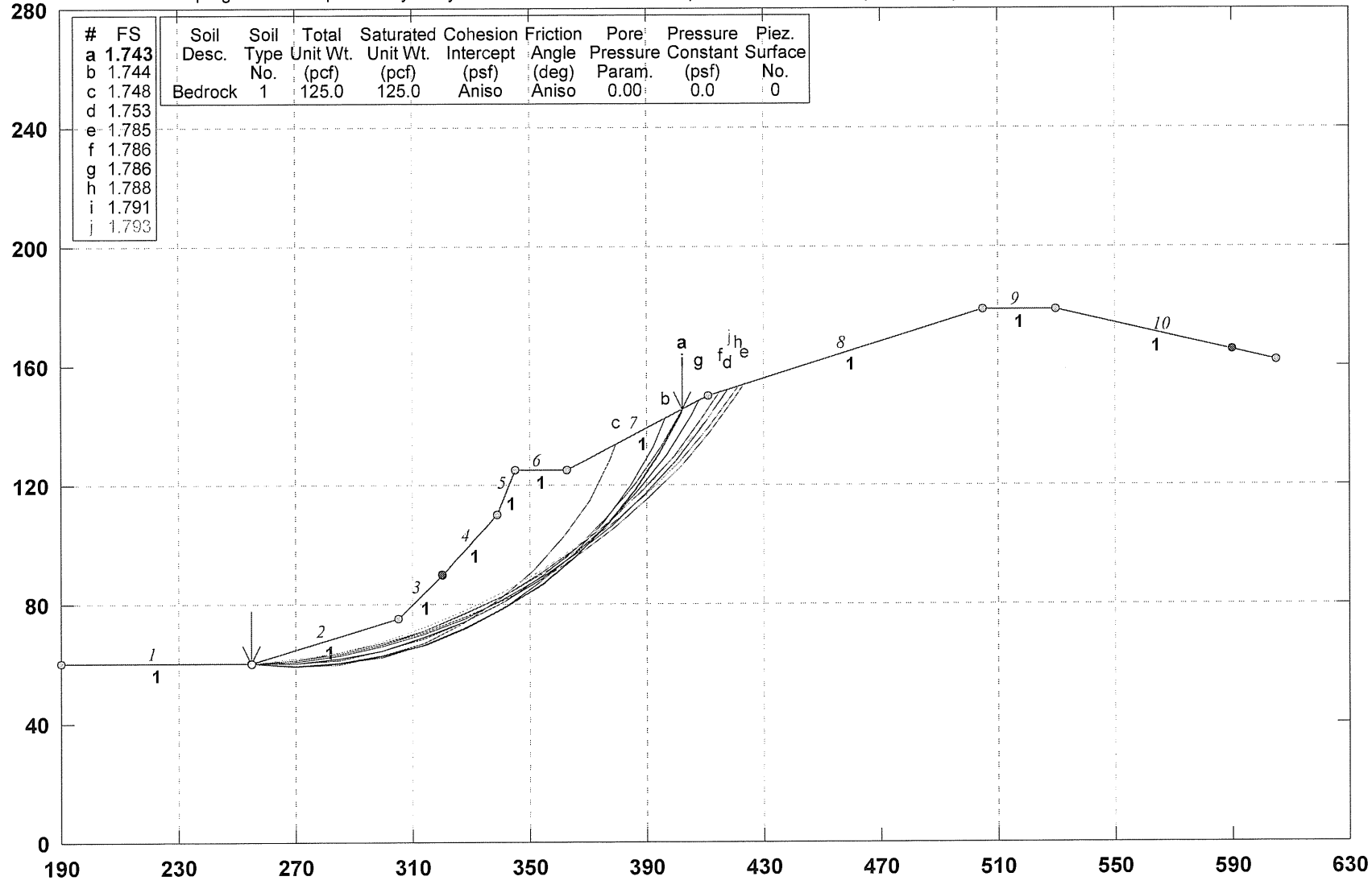
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec V-V', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec v-v', circular.pl2 Run By: Username 3/26/2007 03:44PM

#	FS
a	1.743
b	1.744
c	1.748
d	1.753
e	1.785
f	1.786
g	1.786
h	1.788
i	1.791
j	1.793

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0



GSTABL7 v.2 FSmin=1.743

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/26/2007
Time of Run: 03:44PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2
2\temp cut sec v-v', circular.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2
2\temp cut sec v-v', circular.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2
2\temp cut sec v-v', circular.PLT
PROBLEM DESCRIPTION: Sec V-V', Static
Temp Cut
BOUNDARY COORDINATES
Note: User origin value specified.
Add 190.00 to X-values and 0.00 to Y-values listed.

10 Top Boundaries
10 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	190.00	60.00	255.00	60.00	1
2	255.00	60.00	305.00	75.00	1
3	305.00	75.00	320.00	90.00	1
4	320.00	90.00	339.00	110.00	1
5	339.00	110.00	345.00	125.00	1
6	345.00	125.00	363.00	125.00	1
7	363.00	125.00	411.00	150.00	1
8	411.00	150.00	505.00	179.00	1
9	505.00	179.00	530.00	179.00	1
10	530.00	179.00	605.00	162.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)
ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	400.0	38.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	2.5	400.00	38.00
2	3.5	200.00	20.00
3	90.0	400.00	38.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso
C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and
C equal to zero, with no water weight in the tension crack.

(3) An input value of 0.03 for Phi will set both Phi and
C equal to zero, with water weight in the tension crack.
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
1000 Trial Surfaces Have Been Generated.
1000 Surface(s) Initiate(s) From Each Of 1 Points Equally Spaced
Along The Ground Surface Between X = 255.00(ft)
and X = 255.00(ft)
Each Surface Terminates Between X = 320.00(ft)
and X = 590.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
15.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 5.816 FS Min = 1.743 FS Ave = 3.040
Standard Deviation = 0.766 Coefficient of Variation = 25.18 %
Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.985	59.324
3	284.960	60.189
4	299.767	62.585
5	314.251	66.488
6	328.257	71.856
7	341.639	78.632
8	354.256	86.746
9	365.973	96.111
10	376.668	106.628
11	386.227	118.187
12	394.551	130.666
13	401.550	143.933
14	402.133	145.382

Circle Center At X = 269.107 ; Y = 205.154 ; and Radius = 145.838
Factor of Safety
*** 1.743 ***
Individual data on the 18 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	15.0	4843.3	0.0	0.0	0.	0.	0.0	0.0	0.0
2	15.0	13075.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	14.8	18180.0	0.0	0.0	0.	0.	0.0	0.0	0.0
4	5.2	7146.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	9.3	16632.4	0.0	0.0	0.	0.	0.0	0.0	0.0
6	5.7	14039.9	0.0	0.0	0.	0.	0.0	0.0	0.0
7	8.3	24846.3	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.7	39976.9	0.0	0.0	0.	0.	0.0	0.0	0.0
9	2.6	11657.3	0.0	0.0	0.	0.	0.0	0.0	0.0
10	3.4	17260.1	0.0	0.0	0.	0.	0.0	0.0	0.0
11	9.3	47701.3	0.0	0.0	0.	0.	0.0	0.0	0.0
12	8.7	37994.5	0.0	0.0	0.	0.	0.0	0.0	0.0
13	3.0	11465.1	0.0	0.0	0.	0.	0.0	0.0	0.0
14	10.7	37384.2	0.0	0.0	0.	0.	0.0	0.0	0.0
15	9.6	26528.1	0.0	0.0	0.	0.	0.0	0.0	0.0
16	8.3	15437.9	0.0	0.0	0.	0.	0.0	0.0	0.0
17	7.0	5210.6	0.0	0.0	0.	0.	0.0	0.0	0.0
18	0.6	41.7	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 13 Coordinate Points

Point	X-Surf	Y-Surf

No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.976	59.156
3	284.955	59.946
4	299.760	62.361
5	314.213	66.373
6	328.145	71.933
7	341.388	78.977
8	353.786	87.419
9	365.193	97.161
10	375.471	108.086
11	384.500	120.064
12	392.172	132.954
13	396.502	142.449

Circle Center At X = 270.226 ; Y = 196.807 ; and Radius = 137.652

Factor of Safety

*** 1.744 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.960	58.909
3	284.937	59.751
4	299.680	62.514
5	313.945	67.151
6	327.495	73.584
7	340.105	81.708
8	351.565	91.387
9	361.684	102.460
10	370.294	114.742
11	377.252	128.031
12	379.257	133.467

Circle Center At X = 271.026 ; Y = 174.707 ; and Radius = 115.822

Factor of Safety

*** 1.748 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.978	60.819
3	284.848	62.785
4	299.524	65.889
5	313.917	70.110
6	327.944	75.424
7	341.522	81.800
8	354.569	89.201
9	367.010	97.581
10	378.770	106.893
11	389.780	117.080
12	399.975	128.083
13	409.294	139.836
14	417.506	152.007

Circle Center At X = 251.858 ; Y = 255.064 ; and Radius = 195.089

Factor of Safety

*** 1.753 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.967	60.999
3	284.824	63.064
4	299.496	66.185
5	313.907	70.344
6	327.985	75.522
7	341.658	81.692
8	354.855	88.821
9	367.510	96.875

10	379.557	105.811
11	390.936	115.585
12	401.588	126.145
13	411.460	137.440
14	420.499	149.410
15	423.354	153.811

Circle Center At X = 248.502 ; Y = 269.904 ; and Radius = 210.005

Factor of Safety

*** 1.785 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.960	61.093
3	284.795	63.312
4	299.421	66.642
5	313.753	71.066
6	327.712	76.559
7	341.216	83.088
8	354.190	90.617
9	366.559	99.103
10	378.253	108.497
11	389.205	118.746
12	399.353	129.792
13	408.640	141.572
14	415.175	151.288

Circle Center At X = 248.107 ; Y = 258.260 ; and Radius = 198.379

Factor of Safety

*** 1.786 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.999	60.193
3	284.920	61.724
4	299.645	64.583
5	314.056	68.746
6	328.038	74.179
7	341.478	80.840
8	354.269	88.675
9	366.309	97.621
10	377.502	107.607
11	387.758	118.553
12	396.995	130.372
13	405.139	142.968
14	408.025	148.450

Circle Center At X = 260.474 ; Y = 227.125 ; and Radius = 167.215

Factor of Safety

*** 1.786 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.946	61.276
3	284.766	63.593
4	299.387	66.941
5	313.739	71.303
6	327.751	76.657
7	341.354	82.978
8	354.482	90.235
9	367.070	98.392
10	379.058	107.408
11	390.385	117.241
12	400.998	127.841
13	410.844	139.158
14	419.874	151.135
15	421.176	153.139

Circle Center At X = 244.247 ; Y = 274.159 ; and Radius = 214.428

Factor of Safety

*** 1.788 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	270.000	60.018
3	284.930	61.465
4	299.654	64.329
5	314.038	68.583
6	327.951	74.189
7	341.267	81.095
8	353.863	89.240
9	365.626	98.548
10	376.448	108.934
11	386.230	120.306
12	394.885	132.557
13	402.256	145.446

Circle Center At X = 262.316 ; Y = 217.017 ; and Radius = 157.187

Factor of Safety

*** 1.791 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	255.000	60.000
2	269.925	61.500
3	284.710	64.031
4	299.284	67.581
5	313.576	72.133
6	327.519	77.665
7	341.045	84.150
8	354.088	91.558
9	366.587	99.851
10	378.480	108.992
11	389.711	118.935
12	400.226	129.632
13	409.974	141.033
14	418.290	152.249

Circle Center At X = 240.896 ; Y = 275.610 ; and Radius = 216.071

Factor of Safety

*** 1.793 ***

**** END OF GSTABL7 OUTPUT ****

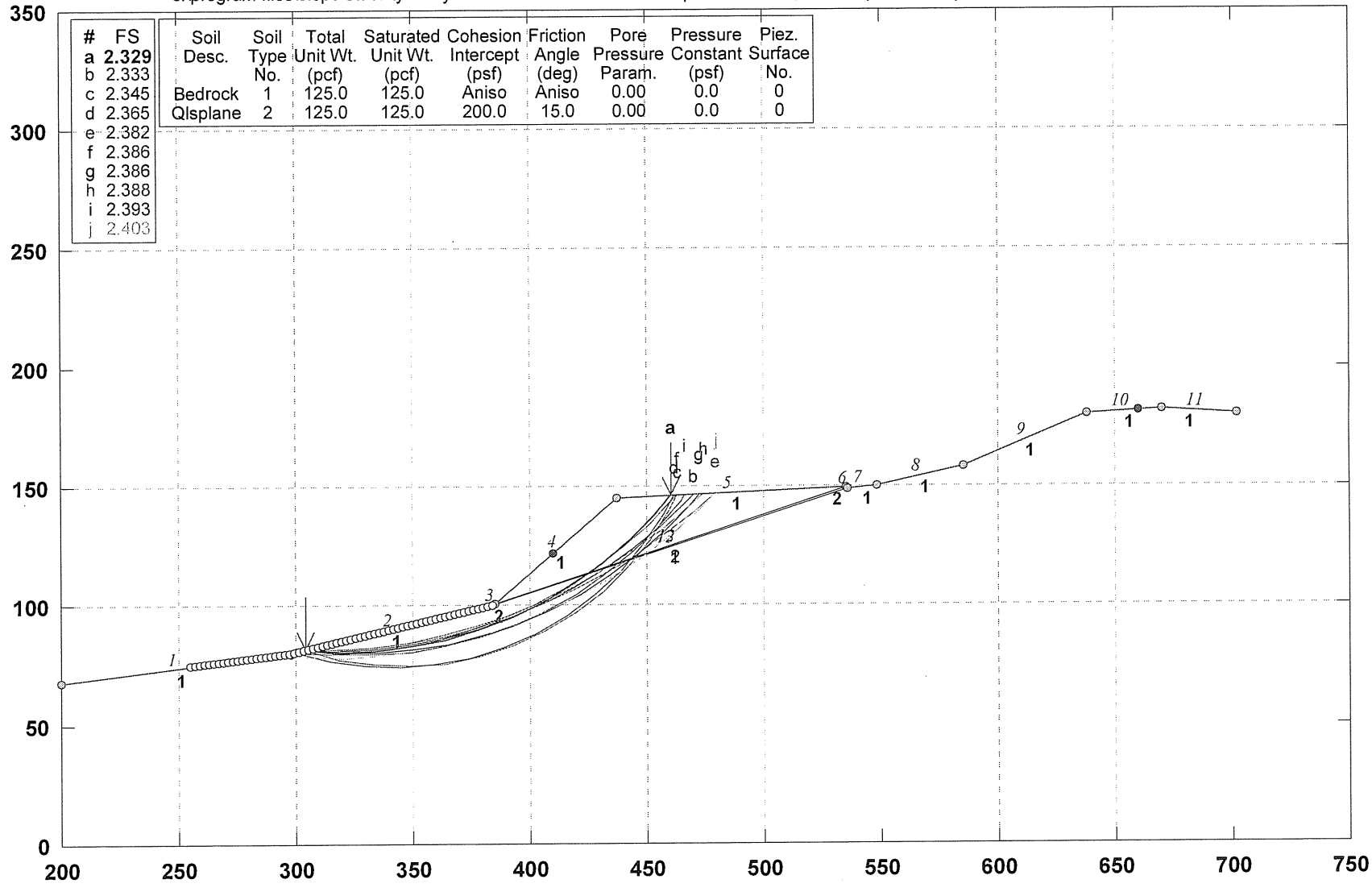
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec W-W', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec w-w', circular.pl2 Run By: Username 3/27/2007 02:22PM

#	FS
a	**2.329**
b	2.333
c	2.345
d	2.365
e	2.382
f	2.386
g	2.386
h	2.388
i	2.393
j	2.403

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0
Qlsplane	2	125.0	125.0	200.0	15.0	0.00	0.0	0



GSTABL7 v.2 FSmin=2.329

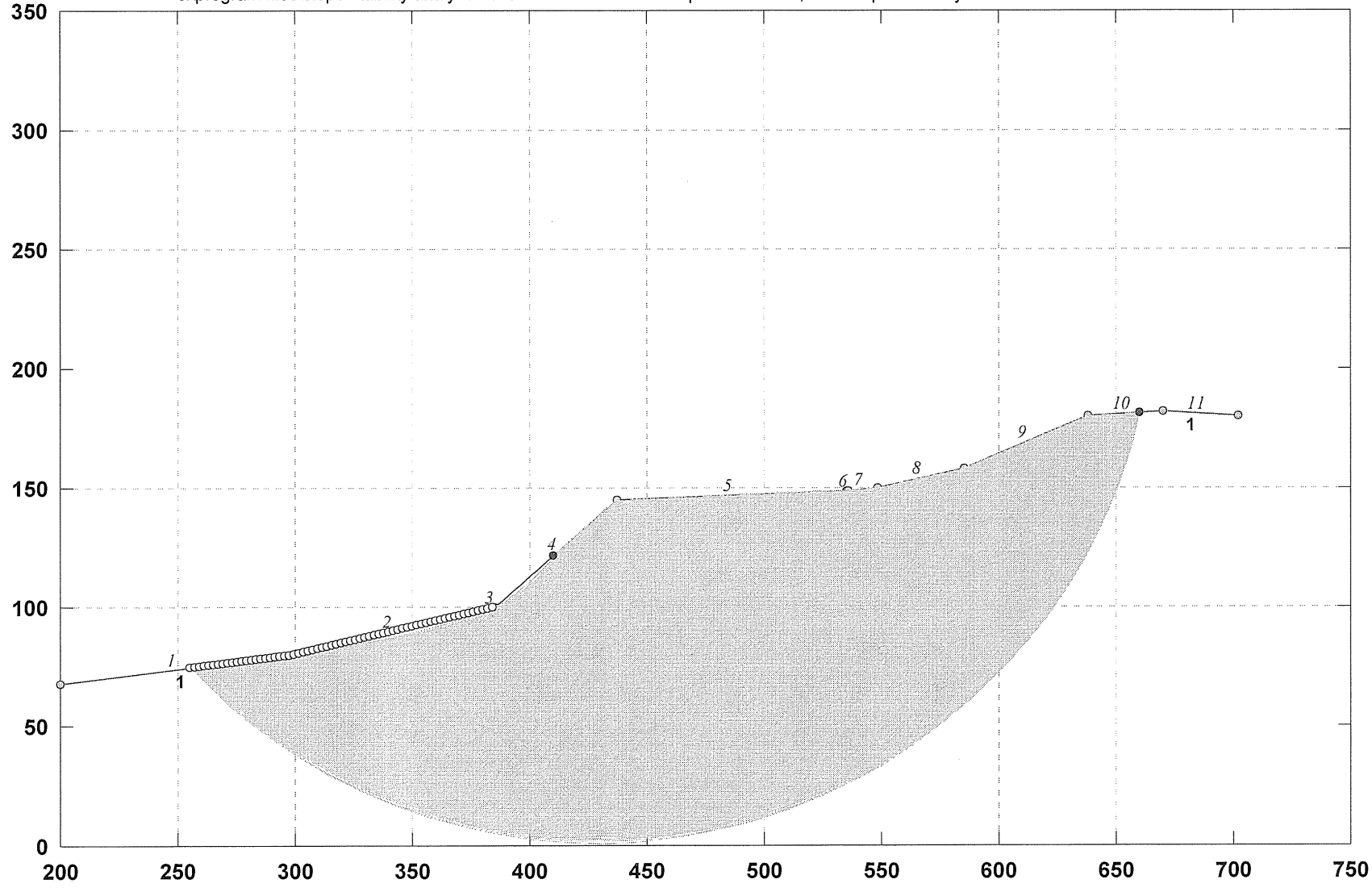
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec W-W', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec w-w', circular.plt Run By: Username 3/27/2007 10:52AM



GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/27/2007
Time of Run: 02:22PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec w-w', circular.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec w-w', circular.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec w-w', circular.PLT
PROBLEM DESCRIPTION: Sec W-W', Static
Temp Cut

BOUNDARY COORDINATES

Note: User origin value specified.
Add 200.00 to X-values and 0.00 to Y-values listed.

11 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	200.00	68.00	298.00	80.00	1
2	298.00	80.00	384.00	99.80	1
3	384.00	99.80	385.00	100.20	2
4	385.00	100.20	437.00	145.00	1
5	437.00	145.00	535.00	149.20	1
6	535.00	149.20	536.00	149.00	2
7	536.00	149.00	548.00	150.00	1
8	548.00	150.00	585.00	158.00	1
9	585.00	158.00	638.00	180.00	1
10	638.00	180.00	670.00	182.00	1
11	670.00	182.00	702.00	180.00	1
12	385.00	100.20	535.00	149.20	2
13	384.00	99.80	536.00	149.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	400.0	38.0	0.00	0.0	0
2	125.0	125.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	10.5	400.00	38.00
2	11.5	200.00	20.00
3	90.0	400.00	38.00

ANISOTROPIC SOIL NOTES:

(1) An input value of 0.01 for C and/or Phi will cause Aniso
C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and
C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and
C equal to zero, with water weight in the tension crack.
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
12900 Trial Surfaces Have Been Generated.
100 Surface(s) Initiate(s) From Each Of 129 Points Equally Spaced
Along The Ground Surface Between X = 255.00(ft)
and X = 384.00(ft)
Each Surface Terminates Between X = 410.00(ft)
and X = 660.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
15.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 0
Number of Trial Surfaces With Valid FS = 0
Statistical Data On All Valid FS Values:
FS Max = 0.000 FS Min = 500.000 FS Ave = NaN
Standard Deviation = 0.000 Coefficient of Variation = NaN %
Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	304.383	81.470
2	319.355	80.560
3	334.351	80.918
4	349.263	82.539
5	363.985	85.412
6	378.413	89.518
7	392.442	94.826
8	405.974	101.298
9	418.911	108.890
10	431.161	117.546
11	442.638	127.204
12	453.259	137.797
13	460.195	145.994

Circle Center At X = 322.627 ; Y = 258.158 ; and Radius = 177.628
Factor of Safety
*** 2.329 ***
Individual data on the 0 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	303.375	81.238
2	318.369	80.819
3	333.355	81.465
4	348.258	83.172
5	363.002	85.933
6	377.512	89.732
7	391.717	94.552
8	405.544	100.367
9	418.924	107.148
10	431.789	114.861
11	444.074	123.468
12	455.718	132.924
13	466.661	143.183
14	469.638	146.399

Circle Center At X = 316.854 ; Y = 291.538 ; and Radius = 210.733

Factor of Safety

*** 2.333 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	304.383	81.470
2	318.834	77.451
3	333.651	75.110
4	348.637	74.480
5	363.598	75.566
6	378.336	78.356
7	392.659	82.813
8	406.378	88.878
9	419.314	96.471
10	431.297	105.494
11	442.170	115.828
12	451.790	127.337
13	460.031	139.870
14	463.184	146.122

Circle Center At X = 346.652 ; Y = 204.999 ; and Radius = 130.561

Factor of Safety

*** 2.345 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	300.352	80.541
2	314.858	76.724
3	329.696	74.527
4	344.686	73.979
5	359.645	75.086
6	374.391	77.833
7	388.745	82.189
8	402.531	88.099
9	415.583	95.493
10	427.740	104.279
11	438.856	114.351
12	448.794	125.586
13	457.434	137.848
14	461.963	146.070

Circle Center At X = 342.160 ; Y = 209.484 ; and Radius = 135.551

Factor of Safety

*** 2.365 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	303.375	81.238
2	318.375	81.321
3	333.343	82.296
4	348.227	84.160
5	362.973	86.906
6	377.530	90.525
7	391.846	95.004
8	405.870	100.326
9	419.552	106.473
10	432.845	113.424
11	445.700	121.153
12	458.073	129.633
13	469.920	138.834
14	479.004	146.800

Circle Center At X = 309.552 ; Y = 332.710 ; and Radius = 251.549

Factor of Safety

*** 2.382 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	299.344	80.309

2	314.335	79.811
3	329.323	80.429
4	344.223	82.159
5	358.953	84.991
6	373.431	88.911
7	387.579	93.897
8	401.316	99.920
9	414.568	106.948
10	427.261	114.941
11	439.324	123.856
12	450.692	133.643
13	461.300	144.247
14	462.905	146.110

Circle Center At X = 313.591 ; Y = 281.077 ; and Radius = 201.273

Factor of Safety

*** 2.386 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	305.391	81.702
2	320.333	80.384
3	335.332	80.264
4	350.293	81.343
5	365.120	83.614
6	379.719	87.062
7	393.995	91.666
8	407.857	97.395
9	421.218	104.214
10	433.991	112.078
11	446.095	120.938
12	457.452	130.736
13	467.991	141.411
14	472.279	146.512

Circle Center At X = 329.397 ; Y = 267.159 ; and Radius = 187.005

Factor of Safety

*** 2.386 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	302.367	81.005
2	317.366	81.176
3	332.327	82.262
4	347.193	84.258
5	361.910	87.158
6	376.423	90.950
7	390.678	95.620
8	404.621	101.152
9	418.200	107.523
10	431.366	114.712
11	444.068	122.690
12	456.260	131.428
13	467.896	140.893
14	474.085	146.589

Circle Center At X = 307.191 ; Y = 325.971 ; and Radius = 245.013

Factor of Safety

*** 2.388 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	304.383	81.470
2	319.294	79.838
3	334.290	79.514
4	349.258	80.499
5	364.082	82.787
6	378.651	86.359
7	392.852	91.188
8	406.578	97.238

9	419.723	104.463
10	432.189	112.807
11	443.878	122.206
12	454.703	132.590
13	464.581	143.879
14	466.320	146.257

Circle Center At X = 330.543 ; Y = 250.857 ; and Radius = 171.396

Factor of Safety

*** 2.393 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	291.281	79.177
2	306.246	78.150
3	321.246	78.089
4	336.219	78.994
5	351.102	80.863
6	365.833	83.687
7	380.353	87.455
8	394.599	92.150
9	408.513	97.754
10	422.036	104.243
11	435.114	111.590
12	447.691	119.764
13	459.715	128.732
14	471.136	138.457
15	479.778	146.833

Circle Center At X = 314.692 ; Y = 310.629 ; and Radius = 232.633

Factor of Safety

*** 2.403 ***

**** END OF GSTABL7 OUTPUT ****

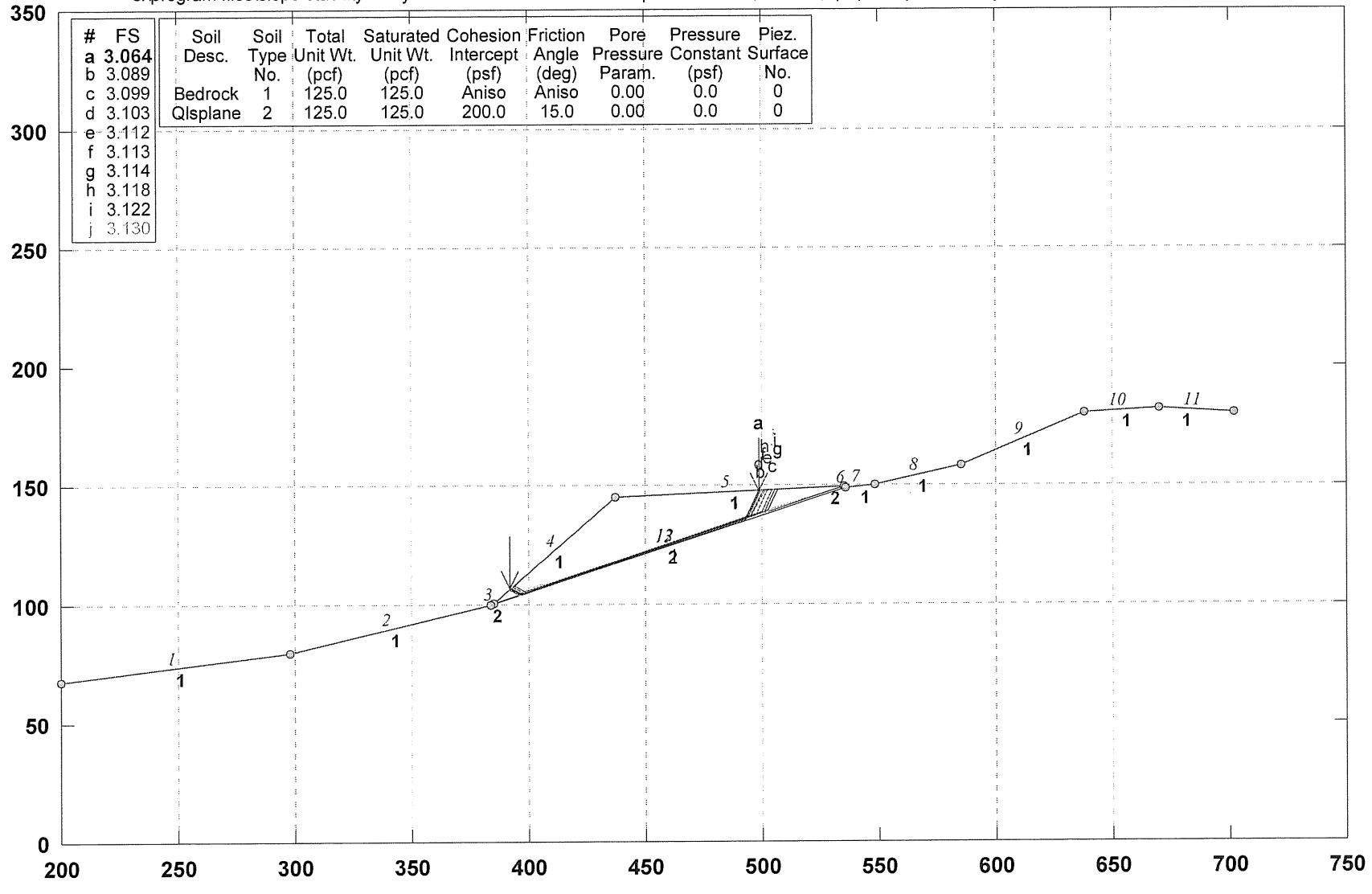
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec W-W', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec w-w', circular, qls plane.pl2 Run By: Username 3/27/2007 03:01PM

#	FS
a	3.064
b	3.089
c	3.099
d	3.103
e	3.112
f	3.113
g	3.114
h	3.118
i	3.122
j	3.130

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0
Qlsplane	2	125.0	125.0	200.0	15.0	0.00	0.0	0



GSTABL7 v.2 FSmin=3.064

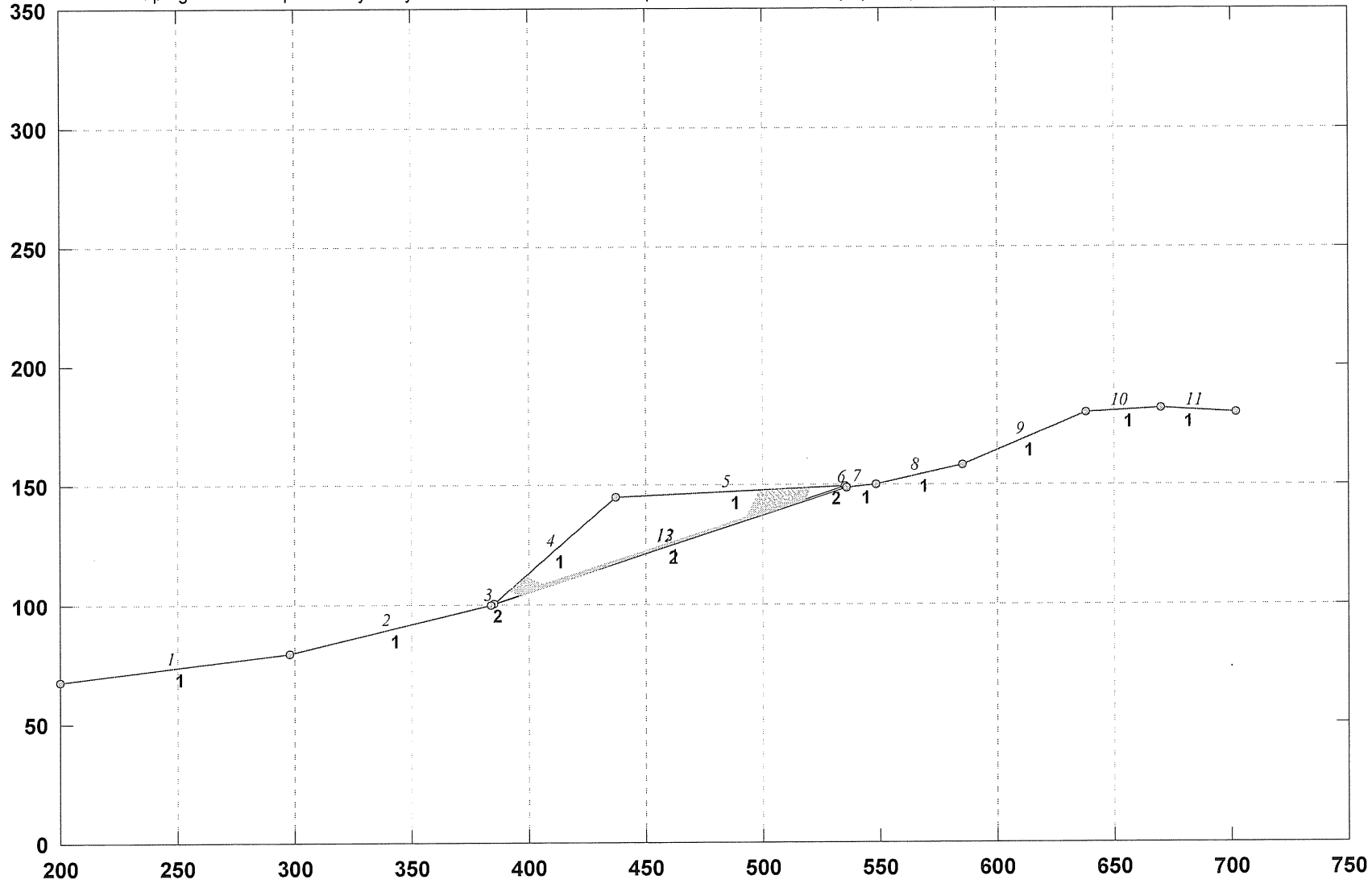
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec W-W', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec w-w', circular, qls plane.plt Run By: Username 3/27/2007 03:01PM



GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/27/2007
Time of Run: 03:01PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2
2\temp cut sec w-w', circular, qls plane.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2
2\temp cut sec w-w', circular, qls plane.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2
2\temp cut sec w-w', circular, qls plane.PLT
PROBLEM DESCRIPTION: Sec W-W', Static
Temp Cut
BOUNDARY COORDINATES
Note: User origin value specified.
Add 200.00 to X-values and 0.00 to Y-values listed.

11 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	200.00	68.00	298.00	80.00	1
2	298.00	80.00	384.00	99.80	1
3	384.00	99.80	385.00	100.20	2
4	385.00	100.20	437.00	145.00	1
5	437.00	145.00	535.00	149.20	1
6	535.00	149.20	536.00	149.00	2
7	536.00	149.00	548.00	150.00	1
8	548.00	150.00	585.00	158.00	1
9	585.00	158.00	638.00	180.00	1
10	638.00	180.00	670.00	182.00	1
11	670.00	182.00	702.00	180.00	1
12	385.00	100.20	535.00	149.20	1
13	384.00	99.80	536.00	149.00	2

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)
ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	400.0	38.0	0.00	0.0	0
2	125.0	125.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	10.5	400.00	38.00
2	11.5	200.00	20.00
3	90.0	400.00	38.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso

C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
100 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	396.00	104.00	406.00	108.00	1.00
2	493.00	136.00	518.80	144.00	1.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 100
Number of Trial Surfaces With Valid FS = 100
Statistical Data On All Valid FS Values:
FS Max = 3.452 FS Min = 3.064 FS Ave = 3.215
Standard Deviation = 0.087 Coefficient of Variation = 2.71 %

Failure Surface Specified By 5 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	392.243	106.440
2	397.000	104.120
3	397.125	104.059
4	493.168	135.768
5	498.966	147.656

Factor of Safety
*** 3.064 ***

Individual data on the 6 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	4.8	1908.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	0.1	101.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	29.2	52495.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	10.6	33145.5	0.0	0.0	0.	0.	0.0	0.0	0.0
5	56.2	138369.3	0.0	0.0	0.	0.	0.0	0.0	0.0
6	5.8	4217.7	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	392.098	106.315
2	396.021	104.402
3	494.151	136.537
4	499.587	147.682

Factor of Safety
*** 3.089 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	392.720	106.851
2	397.662	104.441
3	499.996	138.544
4	504.557	147.895

Factor of Safety
*** 3.099 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	393.829	107.807
2	399.517	105.032
3	493.093	135.863
4	498.842	147.650

Factor of Safety
*** 3.103 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	392.438	106.609
2	396.617	104.570
3	497.502	137.670
4	502.445	147.805

Factor of Safety
*** 3.112 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	393.236	107.295
2	398.394	104.779
3	495.234	136.512
4	500.706	147.730

Factor of Safety
*** 3.113 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	392.594	106.742
2	397.398	104.399
3	502.743	139.436
4	506.918	147.996

Factor of Safety
*** 3.114 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	393.061	107.145
2	397.516	104.973
3	495.789	137.151
4	500.954	147.741

Factor of Safety
*** 3.118 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	393.216	107.279
2	398.297	104.801
3	501.029	138.916
4	505.427	147.933

Factor of Safety
*** 3.122 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	392.953	107.052
2	398.092	104.546
3	500.299	138.165
4	505.055	147.917

Factor of Safety
*** 3.130 ***

**** END OF GSTABL7 OUTPUT ****

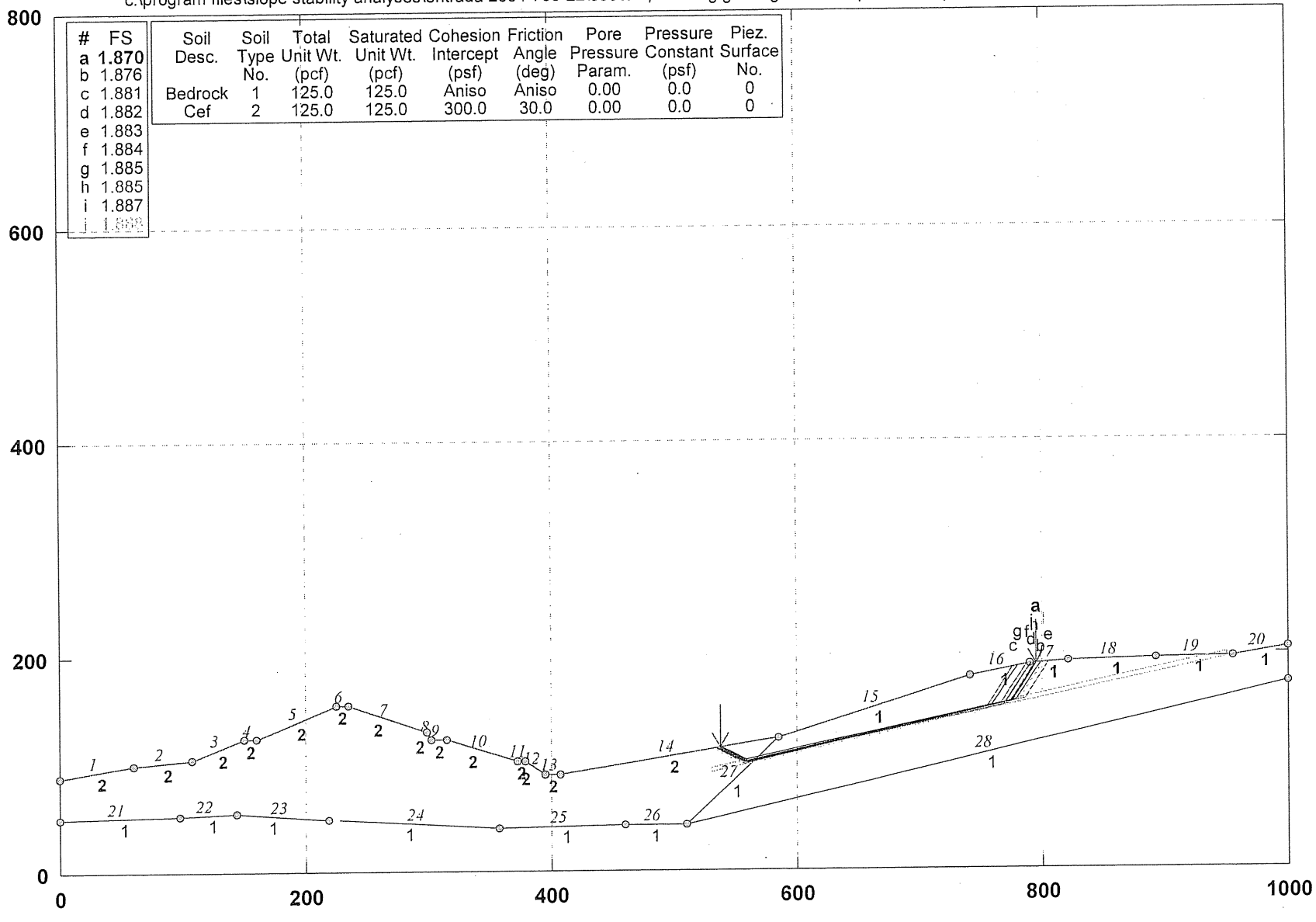
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static After the grading

c:\program files\slope stability analyses\entrada 2004-700-22\sec x-x', bedding grading minimum.pl2 Run By: Username 3/26/2007 01:22PM

#	FS
a	1.870
b	1.876
c	1.881
d	1.882
e	1.883
f	1.884
g	1.885
h	1.885
i	1.887
j	1.888

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0
Cef	2	125.0	125.0	300.0	30.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.870

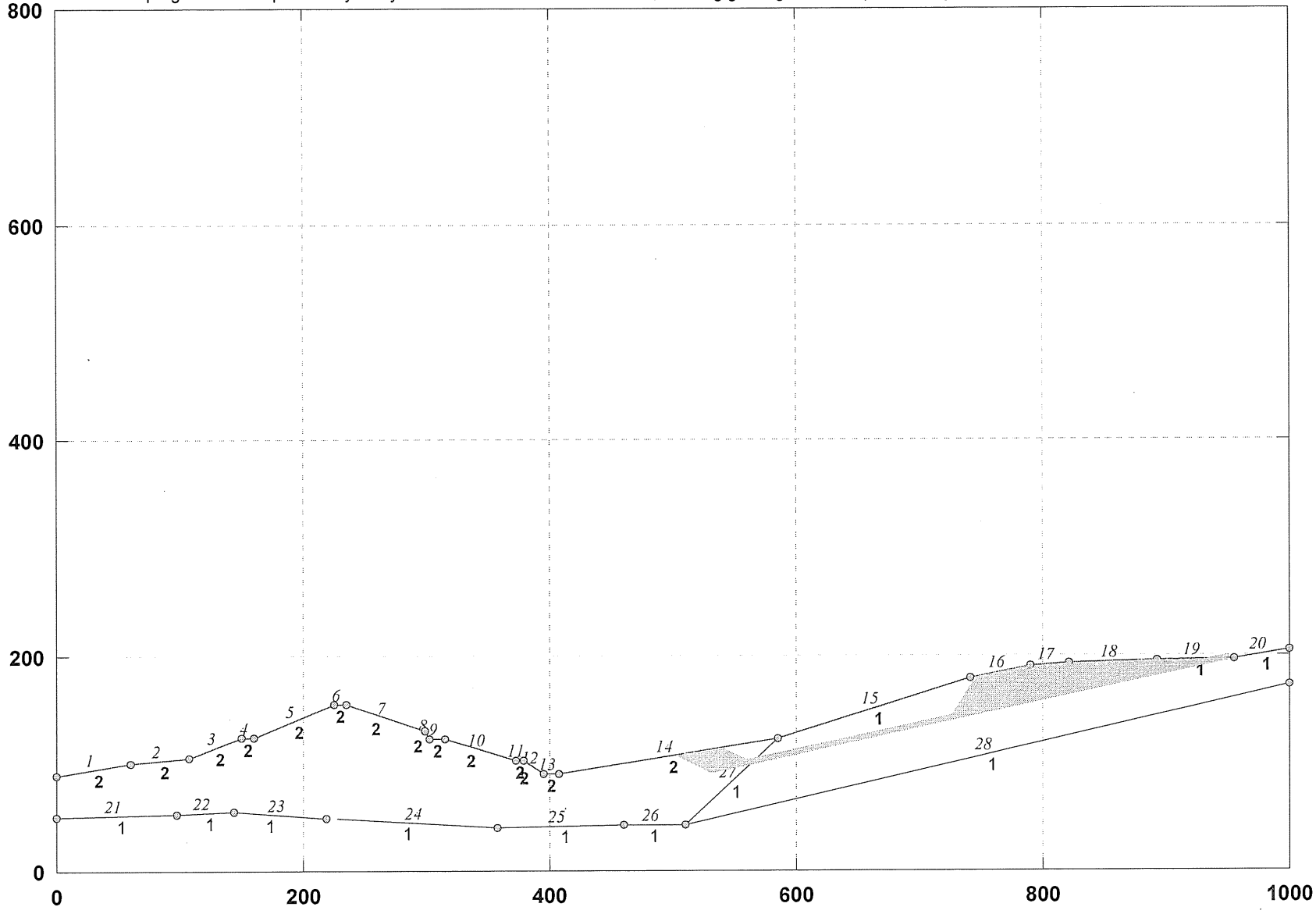
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static After the grading

c:\program files\slope stability analyses\entrada 2004-700-22\sec x-x', bedding grading minimum.plt Run By: Username 3/26/2007 01:22PM



GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/26/2007
Time of Run: 01:22PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec x-x', bedding grading minimum.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec x-x', bedding grading minimum.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec x-x', bedding grading minimum.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
After the grading

BOUNDARY COORDINATES

20 Top Boundaries
28 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	89.00	60.00	100.00	2
2	60.00	100.00	108.00	105.00	2
3	108.00	105.00	150.00	124.00	2
4	150.00	124.00	160.00	124.00	2
5	160.00	124.00	225.00	155.00	2
6	225.00	155.00	235.00	155.00	2
7	235.00	155.00	299.00	130.00	2
8	299.00	130.00	302.00	123.00	2
9	302.00	123.00	315.00	123.00	2
10	315.00	123.00	372.00	103.00	2
11	372.00	103.00	379.00	103.00	2
12	379.00	103.00	395.00	90.00	2
13	395.00	90.00	408.00	90.00	2
14	408.00	90.00	585.00	122.00	2
15	585.00	122.00	741.00	179.00	1
16	741.00	179.00	790.00	190.00	1
17	790.00	190.00	821.00	192.00	1
18	821.00	192.00	892.00	195.00	1
19	892.00	195.00	955.00	196.00	1
20	955.00	196.00	1000.00	205.00	1
21	0.00	50.00	97.00	52.00	1
22	97.00	52.00	144.00	55.00	1
23	144.00	55.00	219.00	49.00	1
24	227.00	49.00	358.00	40.00	1
25	358.00	40.00	460.00	42.00	1
26	460.00	42.00	510.00	42.00	1
27	510.00	42.00	585.00	122.00	1
28	510.00	42.00	1000.00	173.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	300.0	31.0	0.00	0.0	0

```
   2   125.0    125.0     300.0     30.0    0.00       0.0      0
ANISOTROPIC STRENGTH PARAMETERS
     1 soil type(s)
 Soil Type  1 Is Anisotropic
 Number Of Direction Ranges Specified =  3
 Direction    Counterclockwise     Cohesion     Friction
   Range       Direction Limit    Intercept      Angle
    No.            (deg)            (psf)        (deg)
     1             13.5             300.00         31.00
     2             14.5             200.00         20.00
     3             90.0             300.00         31.00
 ANISOTROPIC SOIL NOTES:
    (1) An input value of 0.01 for C and/or Phi will cause Aniso
        C and/or Phi to be ignored in that range.
    (2) An input value of 0.02 for Phi will set both Phi and
        C equal to zero, with no water weight in the tension crack.
    (3) An input value of 0.03 for Phi will set both Phi and
        C equal to zero, with water weight in the tension crack.
 Janbus Empirical Coef is being used for the case of  c & phi both > 0
 A Critical Failure Surface Searching Method, Using A Random
 Technique For Generating Sliding Block Surfaces, Has Been
 Specified.
 The Active And Passive Portions Of The Sliding Surfaces
 Are Generated According To The Rankine Theory.
 1000 Trial Surfaces Have Been Generated.
 2 Boxes Specified For Generation Of Central Block Base
 Length Of Line Segments For Active And Passive Portions Of
 Sliding Block Is  15.0
 Box        X-Left     Y-Left    X-Right    Y-Right      Height
 No.         (ft)       (ft)       (ft)       (ft)        (ft)
  1         530.00      92.76     560.00     100.24       4.00
  2         725.00     141.41     950.00     197.53       4.00
 Following Are Displayed The Ten Most Critical Of The Trial
       Failure Surfaces Evaluated. They Are
       Ordered - Most Critical First.
       * * Safety Factors Are Calculated By The Simplified Janbu Method * *
       Total Number of Trial Surfaces Attempted =  1000
       Number of Trial Surfaces With Valid FS = 1000
       Statistical Data On All Valid FS Values:
          FS Max =   3.311   FS Min =   1.870   FS Ave =   2.059
          Standard Deviation =    0.289   Coefficient of Variation =   14.04 %
       Failure Surface Specified By  7 Coordinate Points
         Point      X-Surf      Y-Surf
         No.         (ft)        (ft)
          1         537.293     113.375
          2         546.839     107.863
          3         559.830     100.363
          4         775.468     155.060
          5         782.855     168.116
          6         790.241     181.171
          7         795.435     190.351
             Factor of Safety
            ***    1.870   ***
           Individual data on the    10  slices
                      Water  Water     Tie     Tie     Earthquake
                      Force  Force     Force   Force      Force   Surcharge
Slice  Width   Weight   Top    Bot     Norm     Tan      Hor     Ver    Load
 No.    (ft)    (lbs)  (lbs)  (lbs)    (lbs)   (lbs)    (lbs)   (lbs)  (lbs)
  1      9.5    4318.4   0.0    0.0      0.      0.       0.0     0.0     0.0
  2     13.0   19748.4   0.0    0.0      0.      0.       0.0     0.0     0.0
  3      6.4   13503.6   0.0    0.0      0.      0.       0.0     0.0     0.0
  4     18.8   37369.2   0.0    0.0      0.      0.       0.0     0.0     0.0
  5    156.0  467366.1   0.0    0.0      0.      0.       0.0     0.0     0.0
  6     34.5  138650.1   0.0    0.0      0.      0.       0.0     0.0     0.0
  7      7.4   23986.3   0.0    0.0      0.      0.       0.0     0.0     0.0
  8      7.1   13190.0   0.0    0.0      0.      0.       0.0     0.0     0.0
  9      0.2     272.8   0.0    0.0      0.      0.       0.0     0.0     0.0
```

10 5.2 2871.0 0.0 0.0 0. 0. 0.0 0.0 0.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	537.820	113.470
2	546.166	108.652
3	559.156	101.152
4	779.204	155.980
5	786.590	169.035
6	793.977	182.091
7	798.771	190.566

Factor of Safety
*** 1.876 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	538.348	113.566
2	546.957	108.596
3	559.947	101.096
4	755.254	149.846
5	762.640	162.902
6	770.026	175.957
7	776.221	186.907

Factor of Safety
*** 1.881 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.710	113.089
2	546.224	107.019
3	559.214	99.519
4	769.096	151.373
5	776.483	164.429
6	783.869	177.484
7	790.986	190.064

Factor of Safety
*** 1.882 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	533.600	112.707
2	544.818	106.230
3	557.808	98.730
4	786.674	157.820
5	794.061	170.875
6	801.447	183.931
7	805.445	190.996

Factor of Safety
*** 1.883 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	534.655	112.898
2	544.935	106.963
3	557.925	99.463
4	766.460	152.606
5	773.846	165.661
6	781.232	178.717
7	787.269	189.387

Factor of Safety
*** 1.884 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	538.876	113.661
2	546.283	109.385
3	559.273	101.885

4	758.989	150.766
5	766.375	163.822
6	773.762	176.877
7	779.904	187.734

Factor of Safety
*** 1.885 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	536.238	113.184
2	545.550	107.808
3	558.541	100.308
4	772.832	152.293
5	780.218	165.348
6	787.604	178.404
7	794.323	190.279

Factor of Safety
*** 1.885 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.182	112.993
2	544.261	107.752
3	557.252	100.252
4	770.195	153.526
5	777.581	166.581
6	784.968	179.637
7	790.862	190.056

Factor of Safety
*** 1.887 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	532.017	112.421
2	544.203	105.386
3	557.193	97.886
4	780.302	154.133
5	787.689	167.188
6	795.075	180.244
7	800.996	190.709

Factor of Safety
*** 1.888 ***

**** END OF GSTABL7 OUTPUT ****

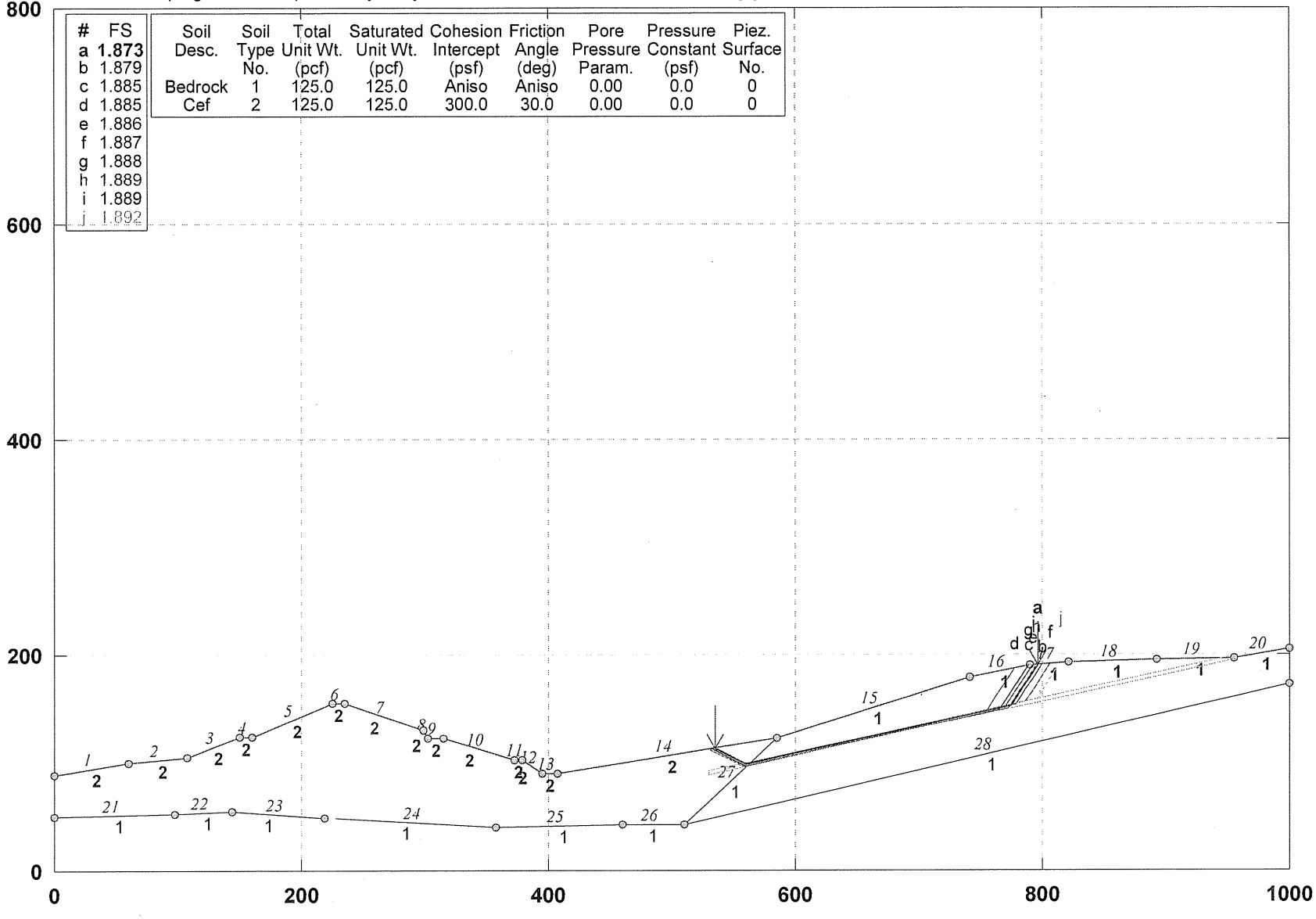
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static After the grading

c:\program files\slope stability analyses\entrada 2004-700-22\sec x-x', bedding grading u9.pl2 Run By: Username 3/28/2007 01:40PM

#	FS
a	1.873
b	1.879
c	1.885
d	1.885
e	1.886
f	1.887
g	1.888
h	1.889
i	1.889
j	1.892

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0
Cef	2	125.0	125.0	300.0	30.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.873

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/28/2007
Time of Run: 01:40PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec x-x', bedding grading u9.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec x-x', bedding grading u9.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-22\sec x-x', bedding grading u9.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
After the grading

BOUNDARY COORDINATES
20 Top Boundaries
28 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	89.00	60.00	100.00	2
2	60.00	100.00	108.00	105.00	2
3	108.00	105.00	150.00	124.00	2
4	150.00	124.00	160.00	124.00	2
5	160.00	124.00	225.00	155.00	2
6	225.00	155.00	235.00	155.00	2
7	235.00	155.00	299.00	130.00	2
8	299.00	130.00	302.00	123.00	2
9	302.00	123.00	315.00	123.00	2
10	315.00	123.00	372.00	103.00	2
11	372.00	103.00	379.00	103.00	2
12	379.00	103.00	395.00	90.00	2
13	395.00	90.00	408.00	90.00	2
14	408.00	90.00	585.00	122.00	2
15	585.00	122.00	741.00	179.00	1
16	741.00	179.00	790.00	190.00	1
17	790.00	190.00	821.00	192.00	1
18	821.00	192.00	892.00	195.00	1
19	892.00	195.00	955.00	196.00	1
20	955.00	196.00	1000.00	205.00	1
21	0.00	50.00	97.00	52.00	1
22	97.00	52.00	144.00	55.00	1
23	144.00	55.00	219.00	49.00	1
24	227.00	49.00	358.00	40.00	1
25	358.00	40.00	460.00	42.00	1
26	460.00	42.00	510.00	42.00	1
27	510.00	42.00	585.00	122.00	1
28	510.00	42.00	1000.00	173.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	300.0	31.0	0.00	0.0	0

2 125.0 125.0 300.0 30.0 0.00 0.0 0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	13.5	300.00	31.00
2	14.5	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:

(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.

(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.

(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.

1000 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	530.00	90.76	560.00	98.24	4.00
2	725.00	139.41	950.00	195.53	4.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Simplified Janbu Method * *

Total Number of Trial Surfaces Attempted = 1000

Number of Trial Surfaces With Valid FS = 1000

Statistical Data On All Valid FS Values:

FS Max = 3.314 FS Min = 1.873 FS Ave = 2.061

Standard Deviation = 0.285 Coefficient of Variation = 13.81 %

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	534.655	112.898
2	546.839	105.863
3	559.830	98.363
4	775.468	153.060
5	782.855	166.116
6	790.241	179.171
7	796.609	190.426

Factor of Safety

*** 1.873 ***

Individual data on the 10 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	12.2	7034.7	0.0	0.0	0.	0.	0.0	0.0	0.0
2	13.0	22995.9	0.0	0.0	0.	0.	0.0	0.0	0.0
3	4.0	9353.3	0.0	0.0	0.	0.	0.0	0.0	0.0
4	21.2	47812.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	156.0	506366.1	0.0	0.0	0.	0.	0.0	0.0	0.0
6	34.5	147267.2	0.0	0.0	0.	0.	0.0	0.0	0.0
7	7.4	25832.9	0.0	0.0	0.	0.	0.0	0.0	0.0
8	7.1	14976.3	0.0	0.0	0.	0.	0.0	0.0	0.0
9	0.2	333.1	0.0	0.0	0.	0.	0.0	0.0	0.0

10 6.4 4316.3 0.0 0.0 0. 0. 0.0 0.0 0.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.182	112.993
2	546.166	106.652
3	559.156	99.152
4	779.204	153.980
5	786.590	167.035
6	793.977	180.091
7	799.946	190.642

Factor of Safety
*** 1.879 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	532.544	112.517
2	533.908	111.729
3	546.898	104.229
4	559.888	96.729
5	765.361	148.453
6	772.747	161.509
7	780.134	174.564
8	787.520	187.619
9	788.702	189.709

Factor of Safety
*** 1.885 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.710	113.089
2	546.957	106.596
3	559.947	99.096
4	755.254	147.846
5	762.640	160.902
6	770.026	173.957
7	777.413	187.012
8	777.518	187.198

Factor of Safety
*** 1.885 ***

Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	533.072	112.612
2	533.234	112.519
3	546.224	105.019
4	559.214	97.519
5	769.096	149.373
6	776.483	162.429
7	783.869	175.484
8	791.255	188.539
9	792.161	190.139

Factor of Safety
*** 1.886 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	530.962	112.230
2	531.828	111.730
3	544.818	104.230
4	557.808	96.730
5	786.674	155.820
6	794.061	168.875
7	801.447	181.931
8	806.619	191.072

Factor of Safety
*** 1.887 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	532.017	112.421
2	544.935	104.963
3	557.925	97.463
4	766.460	150.606
5	773.846	163.661
6	781.232	176.717
7	788.565	189.678

Factor of Safety
*** 1.888 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	533.600	112.707
2	545.550	105.808
3	558.541	98.308
4	772.832	150.293
5	780.218	163.348
6	787.604	176.404
7	794.991	189.459
8	795.497	190.355

Factor of Safety
*** 1.889 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	532.544	112.516
2	544.261	105.752
3	557.252	98.252
4	770.195	151.526
5	777.581	164.581
6	784.968	177.637
7	792.037	190.131

Factor of Safety
*** 1.889 ***

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	533.600	112.707
2	533.732	112.631
3	546.722	105.131
4	559.713	97.631
5	795.683	158.274
6	803.070	171.329
7	810.456	184.385
8	814.528	191.582

Factor of Safety
*** 1.892 ***

**** END OF GSTABL7 OUTPUT ****

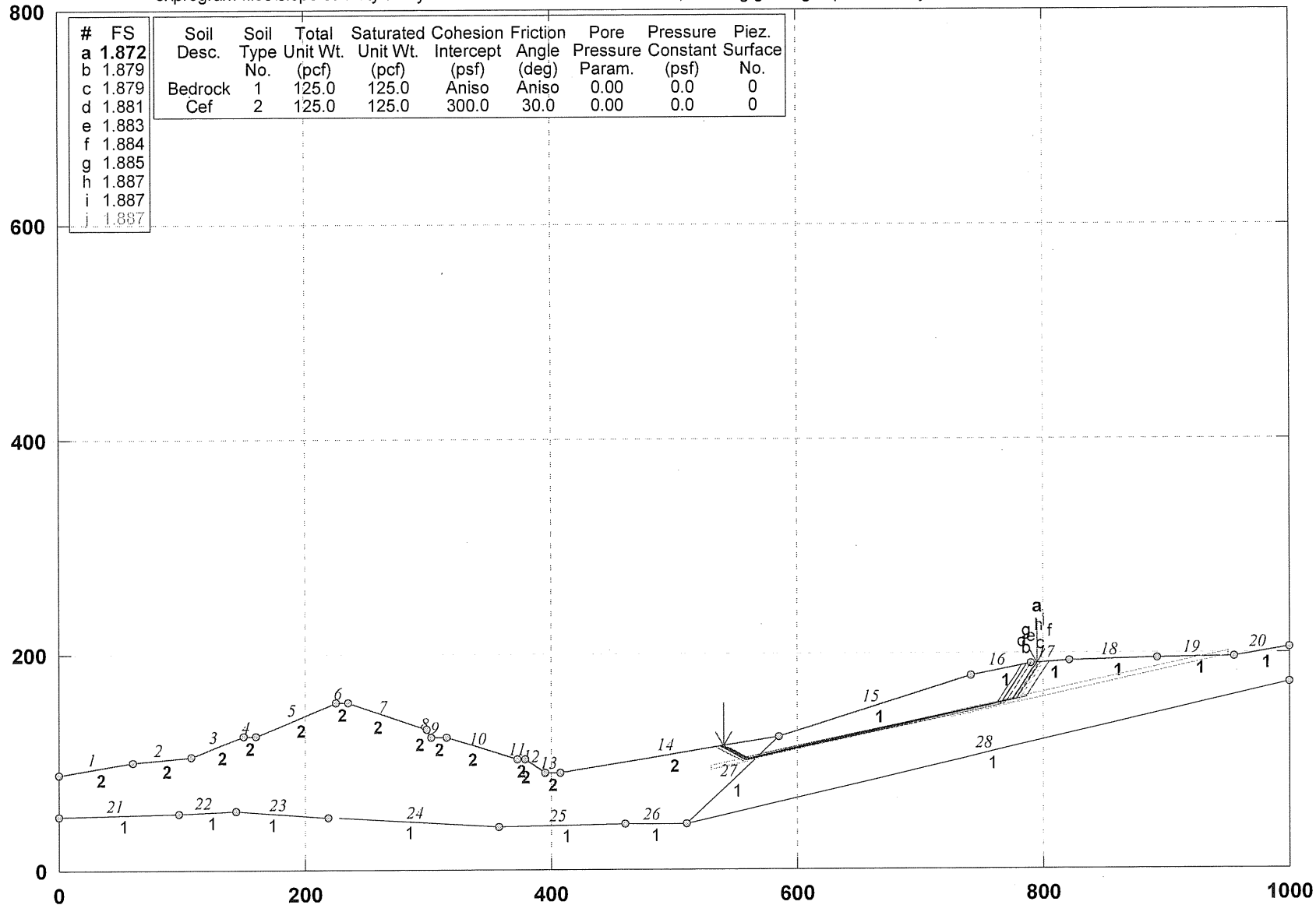
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static After the grading

c:\program files\slope stability analyses\entrada 2004-700-22\sec x-x', bedding grading l1.pl2 Run By: Username 3/28/2007 01:43PM

#	FS
a	1.872
b	1.879
c	1.879
d	1.881
e	1.883
f	1.884
g	1.885
h	1.887
i	1.887
j	1.887

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0
Cef	2	125.0	125.0	300.0	30.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.872

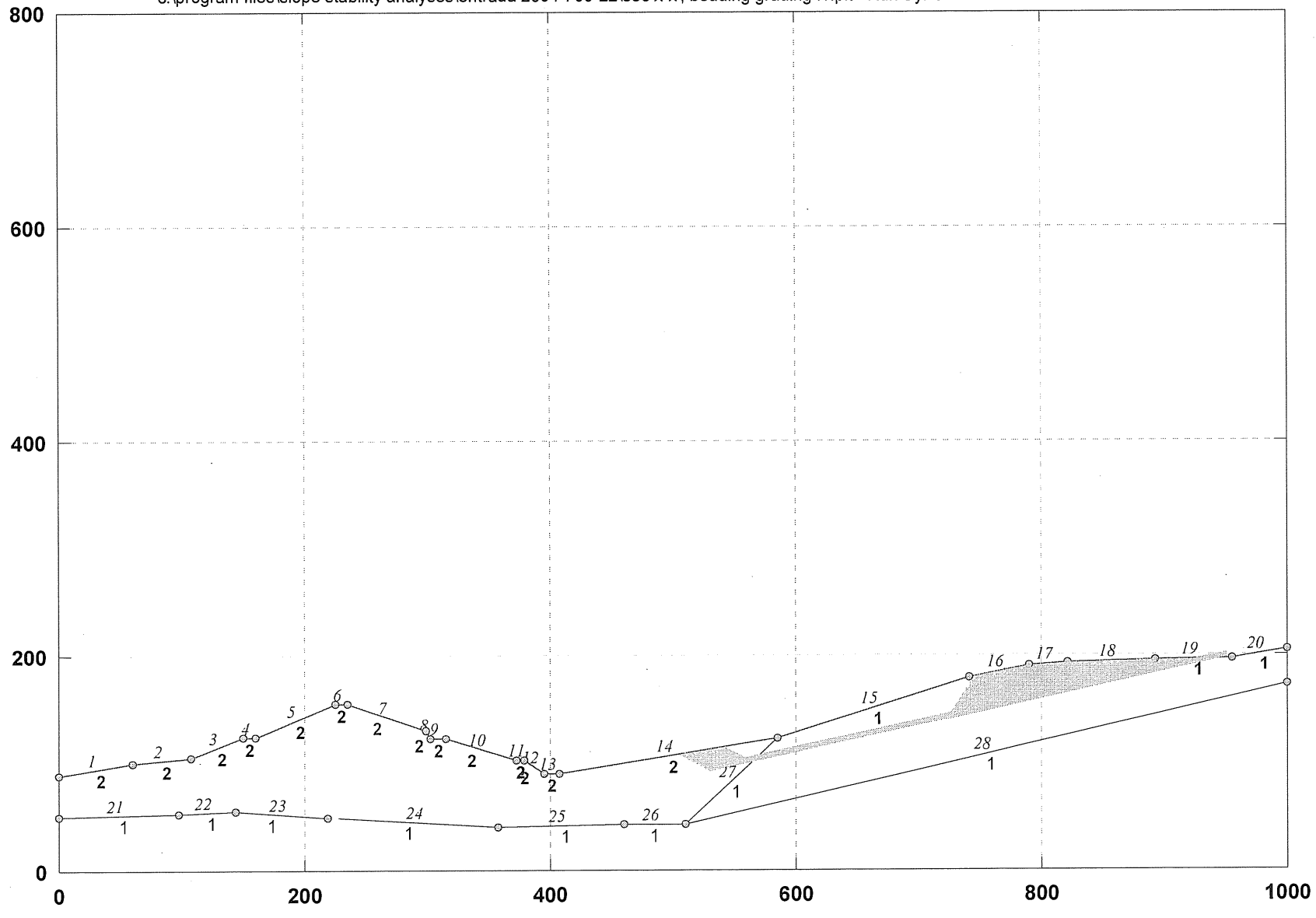
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static After the grading

c:\program files\slope stability analyses\entrada 2004-700-22\sec x-x', bedding grading l1.plt Run By: Username 3/28/2007 01:43PM



GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/28/2007
Time of Run: 01:43PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec x-x', bedding grading l1.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec x-x', bedding grading l1.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec x-x', bedding grading l1.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
After the grading

BOUNDARY COORDINATES
20 Top Boundaries
28 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	89.00	60.00	100.00	2
2	60.00	100.00	108.00	105.00	2
3	108.00	105.00	150.00	124.00	2
4	150.00	124.00	160.00	124.00	2
5	160.00	124.00	225.00	155.00	2
6	225.00	155.00	235.00	155.00	2
7	235.00	155.00	299.00	130.00	2
8	299.00	130.00	302.00	123.00	2
9	302.00	123.00	315.00	123.00	2
10	315.00	123.00	372.00	103.00	2
11	372.00	103.00	379.00	103.00	2
12	379.00	103.00	395.00	90.00	2
13	395.00	90.00	408.00	90.00	2
14	408.00	90.00	585.00	122.00	2
15	585.00	122.00	741.00	179.00	1
16	741.00	179.00	790.00	190.00	1
17	790.00	190.00	821.00	192.00	1
18	821.00	192.00	892.00	195.00	1
19	892.00	195.00	955.00	196.00	1
20	955.00	196.00	1000.00	205.00	1
21	0.00	50.00	97.00	52.00	1
22	97.00	52.00	144.00	55.00	1
23	144.00	55.00	219.00	49.00	1
24	227.00	49.00	358.00	40.00	1
25	358.00	40.00	460.00	42.00	1
26	460.00	42.00	510.00	42.00	1
27	510.00	42.00	585.00	122.00	1
28	510.00	42.00	1000.00	173.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	300.0	31.0	0.00	0.0	0

2 125.0 125.0 300.0 30.0 0.00 0.0 0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic

Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	13.5	300.00	31.00
2	14.5	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:

(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.

(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.

(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.

1000 Trial Surfaces Have Been Generated.

2 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	530.00	94.76	560.00	102.24	4.00
2	725.00	142.41	950.00	199.53	4.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Simplified Janbu Method * *

Total Number of Trial Surfaces Attempted = 1000

Number of Trial Surfaces With Valid FS = 1000

Statistical Data On All Valid FS Values:

FS Max = 3.313 FS Min = 1.872 FS Ave = 2.072

Standard Deviation = 0.303 Coefficient of Variation = 14.63 %

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	539.931	113.852
2	546.839	109.863
3	559.830	102.363
4	775.468	156.285
5	782.855	169.340
6	790.241	182.395
7	794.716	190.304

Factor of Safety

*** 1.872 ***

Individual data on the 10 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	6.9	2261.5	0.0	0.0	0.	0.	0.0	0.0	0.0
2	13.0	16500.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	8.8	16315.8	0.0	0.0	0.	0.	0.0	0.0	0.0
4	16.3	28406.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	156.0	435602.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	34.5	133108.0	0.0	0.0	0.	0.	0.0	0.0	0.0
7	7.4	22855.9	0.0	0.0	0.	0.	0.0	0.0	0.0
8	7.1	12096.5	0.0	0.0	0.	0.	0.0	0.0	0.0
9	0.2	235.9	0.0	0.0	0.	0.	0.0	0.0	0.0

10 4.5 2131.2 0.0 0.0 0. 0. 0.0 0.0 0.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	537.820	113.470
2	546.898	108.229
3	559.888	100.729
4	765.361	151.633
5	772.747	164.688
6	780.134	177.743
7	786.642	189.246

Factor of Safety
*** 1.879 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	540.458	113.947
2	546.166	110.652
3	559.156	103.152
4	779.204	157.221
5	786.590	170.276
6	793.977	183.332
7	798.043	190.519

Factor of Safety
*** 1.879 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	536.765	113.280
2	545.609	108.174
3	558.599	100.674
4	762.724	152.854
5	770.111	165.909
6	777.497	178.965
7	782.830	188.390

Factor of Safety
*** 1.881 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	538.348	113.566
2	546.224	109.019
3	559.214	101.519
4	769.096	152.569
5	776.483	165.625
6	783.869	178.680
7	790.284	190.018

Factor of Safety
*** 1.883 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	536.238	113.184
2	544.818	108.230
3	557.808	100.730
4	786.674	159.094
5	794.061	172.150
6	801.447	185.205
7	804.697	190.948

Factor of Safety
*** 1.884 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	537.293	113.375
2	544.935	108.963
3	557.925	101.463

4	766.460	153.790
5	773.846	166.846
6	781.232	179.901
7	786.502	189.215

Factor of Safety
*** 1.885 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	533.600	112.707
2	542.914	107.330
3	555.904	99.830
4	777.666	156.600
5	785.052	169.655
6	792.438	182.711
7	796.811	190.439

Factor of Safety
*** 1.887 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	534.655	112.898
2	544.203	107.386
3	557.193	99.886
4	780.302	155.379
5	787.689	168.434
6	795.075	181.490
7	800.265	190.662

Factor of Safety
*** 1.887 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	534.655	112.898
2	544.203	107.386
3	557.193	99.886
4	780.302	155.379
5	787.689	168.434
6	795.075	181.490
7	800.265	190.662

Factor of Safety
*** 1.887 ***

**** END OF GSTABL7 OUTPUT ****

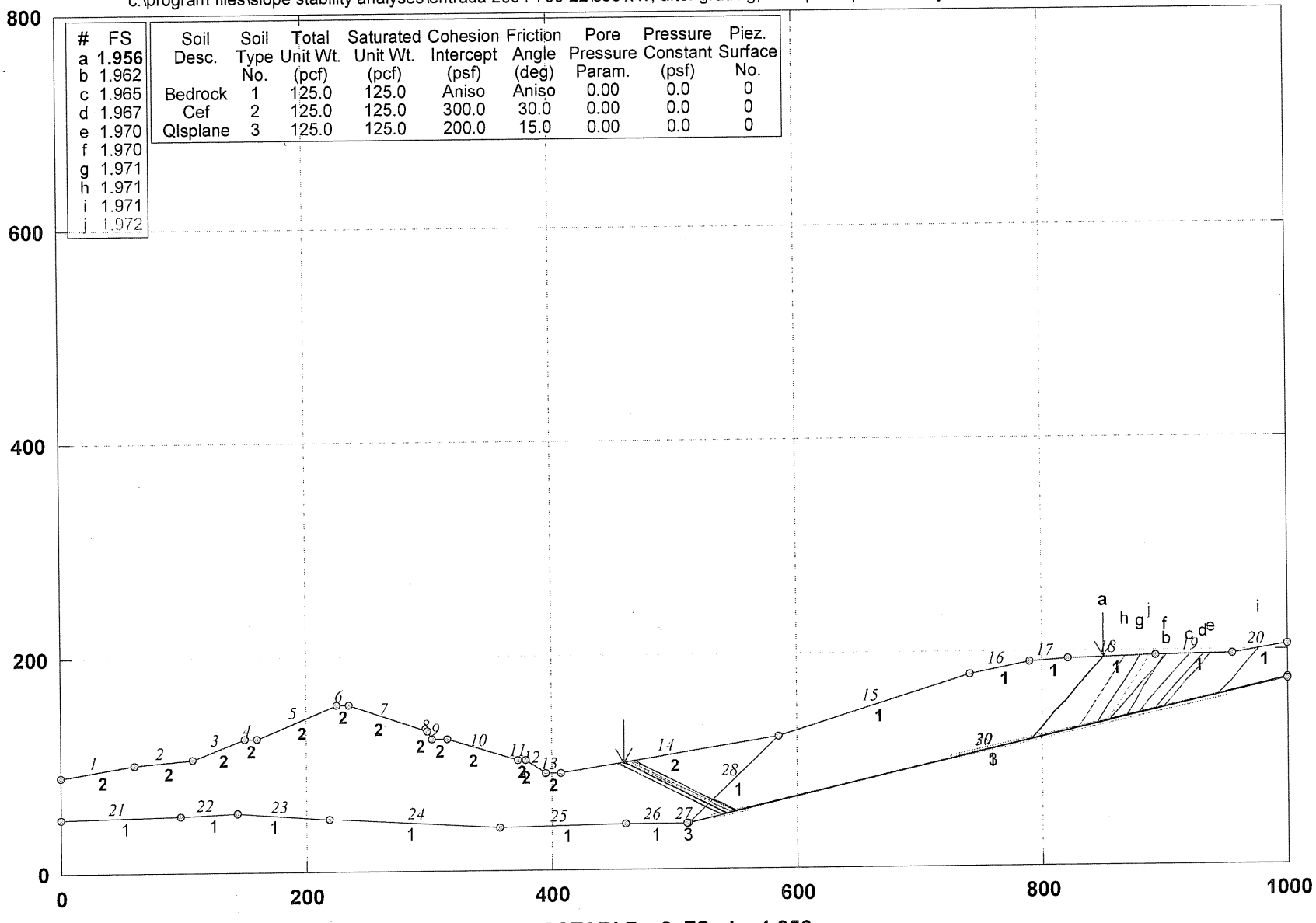
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static After the grading at slide plane

c:\program files\slope stability analyses\entrada 2004-700-22\sec x-x', after grading, slide plane.pl2 Run By: Username 3/28/2007 02:17PM

#	FS
a	1.956
b	1.962
c	1.965
d	1.967
e	1.970
f	1.970
g	1.971
h	1.971
i	1.971
j	1.972

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0
Cef	2	125.0	125.0	300.0	30.0	0.00	0.0	0
Qlsplane	3	125.0	125.0	200.0	15.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.956

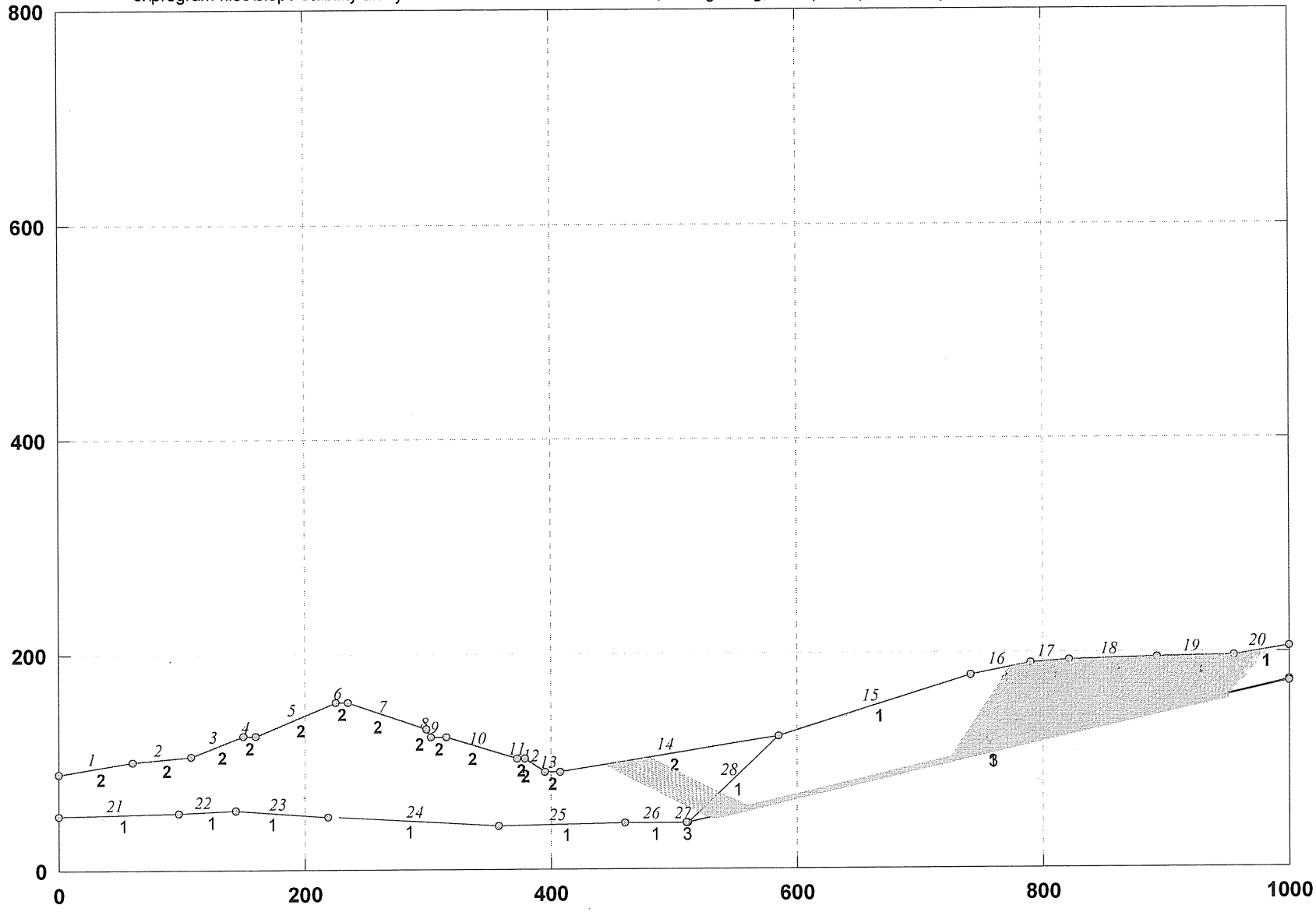
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static After the grading at slide plane

c:\program files\slope stability analyses\entrada 2004-700-22\sec x-x', after grading, slide plane.plt Run By: Username 3/28/2007 02:17PM



GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/28/2007
Time of Run: 02:17PM
Run By: Username
Input Data Filename: c:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec x-x', after grading, slide plane.in
Output Filename: c:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec x-x', after grading, slide plane.OUT
Unit System: English
Plotted Output Filename: c:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\sec x-x', after grading, slide plane.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
After the grading at slide plane

BOUNDARY COORDINATES
20 Top Boundaries
30 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	89.00	60.00	100.00	2
2	60.00	100.00	108.00	105.00	2
3	108.00	105.00	150.00	124.00	2
4	150.00	124.00	160.00	124.00	2
5	160.00	124.00	225.00	155.00	2
6	225.00	155.00	235.00	155.00	2
7	235.00	155.00	299.00	130.00	2
8	299.00	130.00	302.00	123.00	2
9	302.00	123.00	315.00	123.00	2
10	315.00	123.00	372.00	103.00	2
11	372.00	103.00	379.00	103.00	2
12	379.00	103.00	395.00	90.00	2
13	395.00	90.00	408.00	90.00	2
14	408.00	90.00	585.00	122.00	2
15	585.00	122.00	741.00	179.00	1
16	741.00	179.00	790.00	190.00	1
17	790.00	190.00	821.00	192.00	1
18	821.00	192.00	892.00	195.00	1
19	892.00	195.00	955.00	196.00	1
20	955.00	196.00	1000.00	205.00	1
21	0.00	50.00	97.00	52.00	1
22	97.00	52.00	144.00	55.00	1
23	144.00	55.00	219.00	49.00	1
24	227.00	49.00	358.00	40.00	1
25	358.00	40.00	460.00	42.00	1
26	460.00	42.00	510.00	42.00	1
27	510.00	42.00	511.00	43.00	3
28	511.00	43.00	585.00	122.00	1
29	511.00	43.00	1000.00	174.00	3
30	510.00	42.00	1000.00	173.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
3 Type(s) of Soil

Soil Type	Total Unit Wt.	Saturated Unit Wt.	Cohesion Intercept	Friction Angle	Pore Pressure	Pressure Constant	Piez. Surface

No.	(pcf)	(pcf)	(psf)	(deg)	Param.	(psf)	No.
1	125.0	125.0	300.0	31.0	0.00	0.0	0
2	125.0	125.0	300.0	30.0	0.00	0.0	0
3	125.0	125.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	13.5	300.00	31.00
2	14.5	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.
Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
The Active And Passive Portions Of The Sliding Surfaces Are Generated According To The Rankine Theory.
1000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	530.00	47.76	560.00	55.24	4.00
2	725.00	100.41	950.00	158.52	4.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 3.548 FS Min = 1.956 FS Ave = 2.770
Standard Deviation = 0.423 Coefficient of Variation = 15.26 %
Failure Surface Specified By 19 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	458.881	99.199
2	461.920	97.444
3	474.910	89.944
4	487.901	82.444
5	500.891	74.944
6	513.882	67.444
7	526.872	59.944
8	529.042	58.717
9	542.097	51.331
10	542.779	50.807
11	791.728	117.714
12	792.203	118.332
13	801.334	130.233
14	810.466	142.133
15	819.597	154.033
16	828.729	165.934
17	837.860	177.834
18	846.991	189.734
19	849.659	193.211

Factor of Safety

*** 1.956 ***

Individual data on the 22 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.0	437.5	0.0	0.0	0.	0.	0.0	0.0	0.0
2	13.0	11737.0	0.0	0.0	0.	0.	0.0	0.0	0.0
3	13.0	27729.0	0.0	0.0	0.	0.	0.0	0.0	0.0
4	13.0	43721.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	13.0	59713.1	0.0	0.0	0.	0.	0.0	0.0	0.0
6	13.0	75705.0	0.0	0.0	0.	0.	0.0	0.0	0.0
7	2.2	14198.4	0.0	0.0	0.	0.	0.0	0.0	0.0
8	13.1	94715.9	0.0	0.0	0.	0.	0.0	0.0	0.0
9	0.7	5391.4	0.0	0.0	0.	0.	0.0	0.0	0.0
10	42.2	325643.4	0.0	0.0	0.	0.	0.0	0.0	0.0
11	156.0	1313961.6	0.0	0.0	0.	0.	0.0	0.0	0.0
12	49.0	452240.8	0.0	0.0	0.	0.	0.0	0.0	0.0
13	1.7	15677.9	0.0	0.0	0.	0.	0.0	0.0	0.0
14	0.5	4279.3	0.0	0.0	0.	0.	0.0	0.0	0.0
15	9.1	75510.0	0.0	0.0	0.	0.	0.0	0.0	0.0
16	9.1	62599.0	0.0	0.0	0.	0.	0.0	0.0	0.0
17	9.1	49688.2	0.0	0.0	0.	0.	0.0	0.0	0.0
18	1.4	6489.1	0.0	0.0	0.	0.	0.0	0.0	0.0
19	7.7	30205.1	0.0	0.0	0.	0.	0.0	0.0	0.0
20	9.1	23554.1	0.0	0.0	0.	0.	0.0	0.0	0.0
21	9.1	10411.1	0.0	0.0	0.	0.	0.0	0.0	0.0
22	2.7	560.9	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	454.589	98.423
2	459.942	95.332
3	472.932	87.832
4	485.922	80.332
5	498.913	72.832
6	511.903	65.332
7	524.894	57.832
8	525.165	57.679
9	538.221	50.292
10	538.502	50.077
11	854.570	134.217
12	855.365	135.253
13	864.496	147.154
14	873.628	159.054
15	882.759	170.954
16	891.891	182.854
17	901.022	194.755
18	901.324	195.148

Factor of Safety

*** 1.962 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	461.877	99.741
2	463.301	98.919
3	476.291	91.419
4	489.282	83.919
5	502.272	76.419
6	515.263	68.919
7	528.253	61.419
8	531.747	59.442
9	544.802	52.055
10	544.888	51.989
11	877.861	140.865
12	878.261	141.387
13	887.393	153.287

14	896.524	165.188
15	905.656	177.088
16	914.787	188.988
17	919.738	195.440

Factor of Safety
*** 1.965 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	466.639	100.601
2	478.486	93.762
3	491.477	86.262
4	504.467	78.762
5	517.457	71.262
6	530.448	63.762
7	536.047	60.594
8	549.103	53.207
9	549.371	53.002
10	892.143	144.980
11	892.265	145.139
12	901.397	157.039
13	910.528	168.939
14	919.659	180.839
15	928.791	192.740
16	931.000	195.619

Factor of Safety
*** 1.967 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	453.121	98.157
2	459.265	94.610
3	472.255	87.110
4	485.246	79.610
5	498.236	72.110
6	511.227	64.610
7	524.217	57.110
8	536.895	49.937
9	537.593	49.401
10	898.735	145.956
11	899.620	147.109
12	908.751	159.009
13	917.883	170.909
14	927.014	182.810
15	936.146	194.710
16	936.915	195.713

Factor of Safety
*** 1.970 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	467.228	100.708
2	478.758	94.051
3	491.748	86.551
4	504.738	79.051
5	517.729	71.551
6	530.719	64.051
7	536.579	60.736
8	549.634	53.350
9	550.162	52.945
10	868.193	138.634
11	868.247	138.704
12	875.633	151.760
13	883.020	164.815
14	890.406	177.870
15	897.792	190.926
16	900.171	195.130

Factor of Safety
*** 1.970 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	459.940	99.390
2	462.408	97.965
3	475.398	90.465
4	488.389	82.965
5	501.379	75.465
6	514.369	67.965
7	527.360	60.465
8	529.997	58.973
9	543.052	51.587
10	543.775	51.032
11	844.902	131.986
12	845.351	132.570
13	852.737	145.626
14	860.123	158.681
15	867.510	171.736
16	874.896	184.792
17	880.394	194.510

Factor of Safety
*** 1.971 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	463.055	99.953
2	463.844	99.498
3	476.834	91.998
4	489.824	84.498
5	502.815	76.998
6	515.805	69.498
7	528.796	61.998
8	532.810	59.727
9	545.865	52.340
10	546.470	51.876
11	829.961	128.174
12	830.225	128.518
13	837.611	141.574
14	844.998	154.629
15	852.384	167.684
16	859.770	180.740
17	867.157	193.795
18	867.247	193.954

Factor of Safety
*** 1.971 ***

Failure Surface Specified By 15 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	467.698	100.793
2	478.974	94.282
3	491.964	86.782
4	504.955	79.282
5	517.945	71.782
6	530.935	64.282
7	537.003	60.850
8	550.058	53.463
9	550.367	53.227
10	945.317	159.252
11	945.413	159.376
12	954.544	171.277
13	963.676	183.177
14	972.807	195.077
15	976.872	200.374

Factor of Safety
*** 1.971 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	462.466	99.847
2	463.572	99.208
3	476.563	91.708
4	489.553	84.208
5	502.543	76.708
6	515.534	69.208
7	528.524	61.708
8	532.279	59.584
9	545.334	52.198
10	545.679	51.933
11	853.911	134.520
12	854.243	134.953
13	861.630	148.008
14	869.016	161.063
15	876.402	174.119
16	883.789	187.174
17	888.124	194.836

Factor of Safety

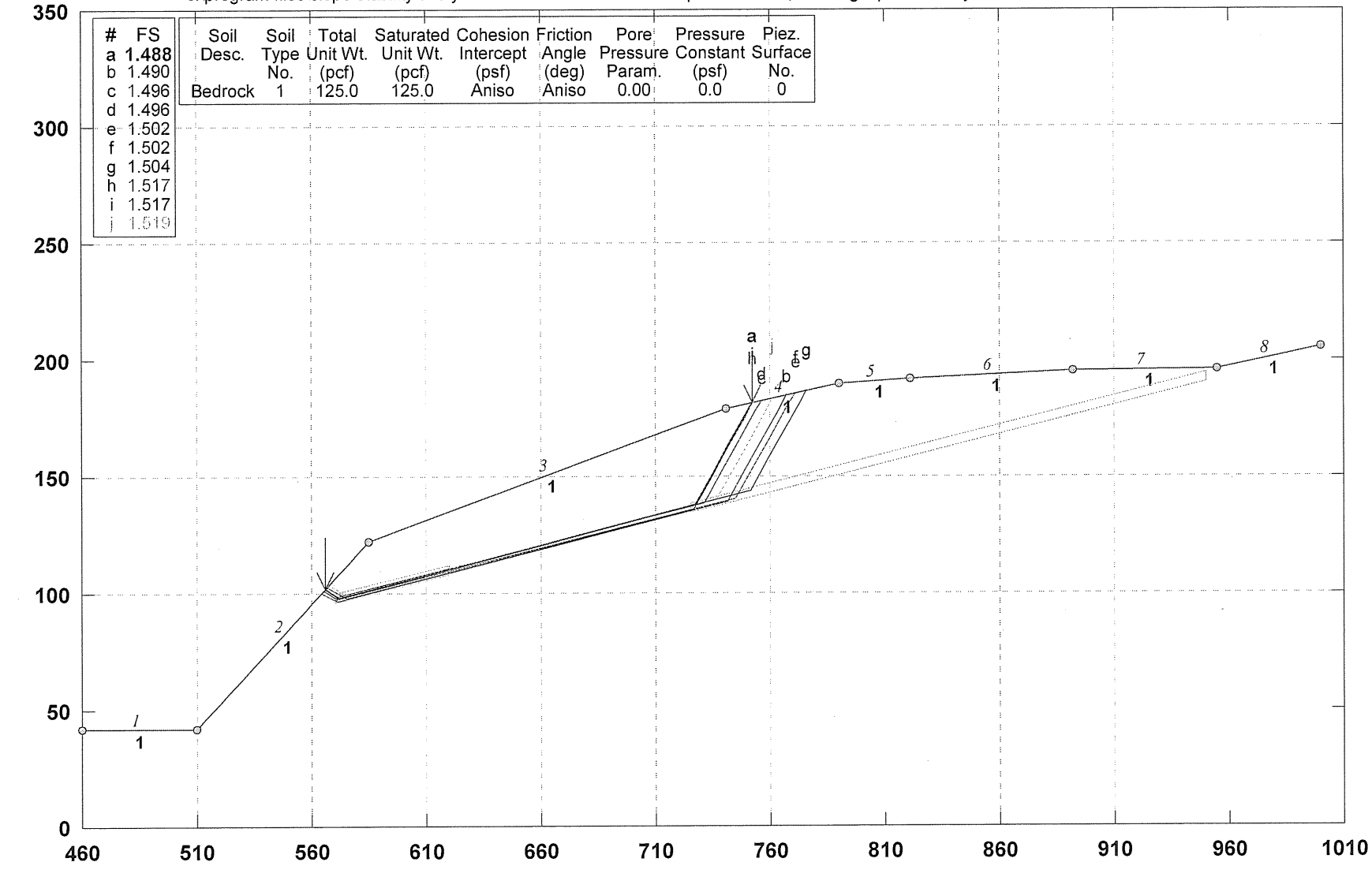
*** 1.972 ***

**** END OF GSTABL7 OUTPUT ****

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec x-x', beddingl1.pl2 Run By: Username 3/26/2007 02:37PM



GSTABL7 v.2 FSmin=1.488

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/26/2007
Time of Run: 02:37PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', beddingl1.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', beddingl1.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', beddingl1.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
Temp Cut

BOUNDARY COORDINATES

Note: User origin value specified.
Add 460.00 to X-values and 0.00 to Y-values listed.

8 Top Boundaries
8 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	460.00	42.00	510.00	42.00	1
2	510.00	42.00	585.00	122.00	1
3	585.00	122.00	741.00	179.00	1
4	741.00	179.00	790.00	190.00	1
5	790.00	190.00	821.00	192.00	1
6	821.00	192.00	892.00	195.00	1
7	892.00	195.00	955.00	196.00	1
8	955.00	196.00	1000.00	205.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	300.0	31.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	13.5	300.00	31.00
2	14.5	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:

(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
The Active And Passive Portions Of The Sliding Surfaces
Are Generated According To The Rankine Theory.
1000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	570.00	97.75	620.00	110.22	4.00
2	725.00	136.41	950.00	192.53	4.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 3.352 FS Min = 1.488 FS Ave = 1.510
Standard Deviation = 0.550 Coefficient of Variation = 36.44 %
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	565.912	101.639
2	572.353	97.995
3	727.568	137.792
4	734.954	150.848
5	742.341	163.903
6	749.727	176.958
7	752.320	181.541

Factor of Safety
*** 1.488 ***
Individual data on the 8 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	6.4	4233.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	12.6	24723.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	142.6	508452.8	0.0	0.0	0.	0.	0.0	0.0	0.0
4	7.4	28734.3	0.0	0.0	0.	0.	0.0	0.0	0.0
5	6.0	16402.5	0.0	0.0	0.	0.	0.0	0.0	0.0
6	1.3	2754.0	0.0	0.0	0.	0.	0.0	0.0	0.0
7	7.4	8955.3	0.0	0.0	0.	0.	0.0	0.0	0.0
8	2.6	648.3	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	564.448	100.078
2	571.132	96.296
3	741.411	139.319
4	748.797	152.375
5	756.184	165.430
6	763.570	178.485
7	767.187	184.879

Factor of Safety
*** 1.490 ***
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	565.937	101.666
2	571.230	98.672
3	731.303	138.712
4	738.690	151.768

5	746.076	164.823
6	753.462	177.878
7	756.003	182.368

Factor of Safety
*** 1.496 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	565.937	101.666
2	571.230	98.672
3	731.303	138.712
4	738.690	151.768
5	746.076	164.823
6	753.462	177.878
7	756.003	182.368

Factor of Safety
*** 1.496 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	564.473	100.105
2	570.009	96.973
3	745.146	140.239
4	752.533	153.295
5	759.919	166.350
6	767.305	179.405
7	770.870	185.705

Factor of Safety
*** 1.502 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	564.473	100.105
2	570.009	96.973
3	745.146	140.239
4	752.533	153.295
5	759.919	166.350
6	767.305	179.405
7	770.870	185.705

Factor of Safety
*** 1.502 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	565.409	101.103
2	571.035	97.920
3	751.518	143.926
4	758.905	156.982
5	766.291	170.037
6	773.677	183.092
7	775.779	186.808

Factor of Safety
*** 1.504 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	566.796	102.583
2	575.624	97.588
3	726.469	135.640
4	733.856	148.695
5	741.242	161.750
6	748.628	174.806
7	752.457	181.572

Factor of Safety
*** 1.517 ***

Failure Surface Specified By 7 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	566.796	102.583
2	575.624	97.588
3	726.469	135.640
4	733.856	148.695
5	741.242	161.750
6	748.628	174.806
7	752.457	181.572

Factor of Safety
*** 1.517 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	567.757	103.608
2	575.527	99.212
3	736.577	140.246
4	743.963	153.302
5	751.350	166.357
6	758.736	179.412
7	761.049	183.501

Factor of Safety
*** 1.519 ***

**** END OF GSTABL7 OUTPUT ****

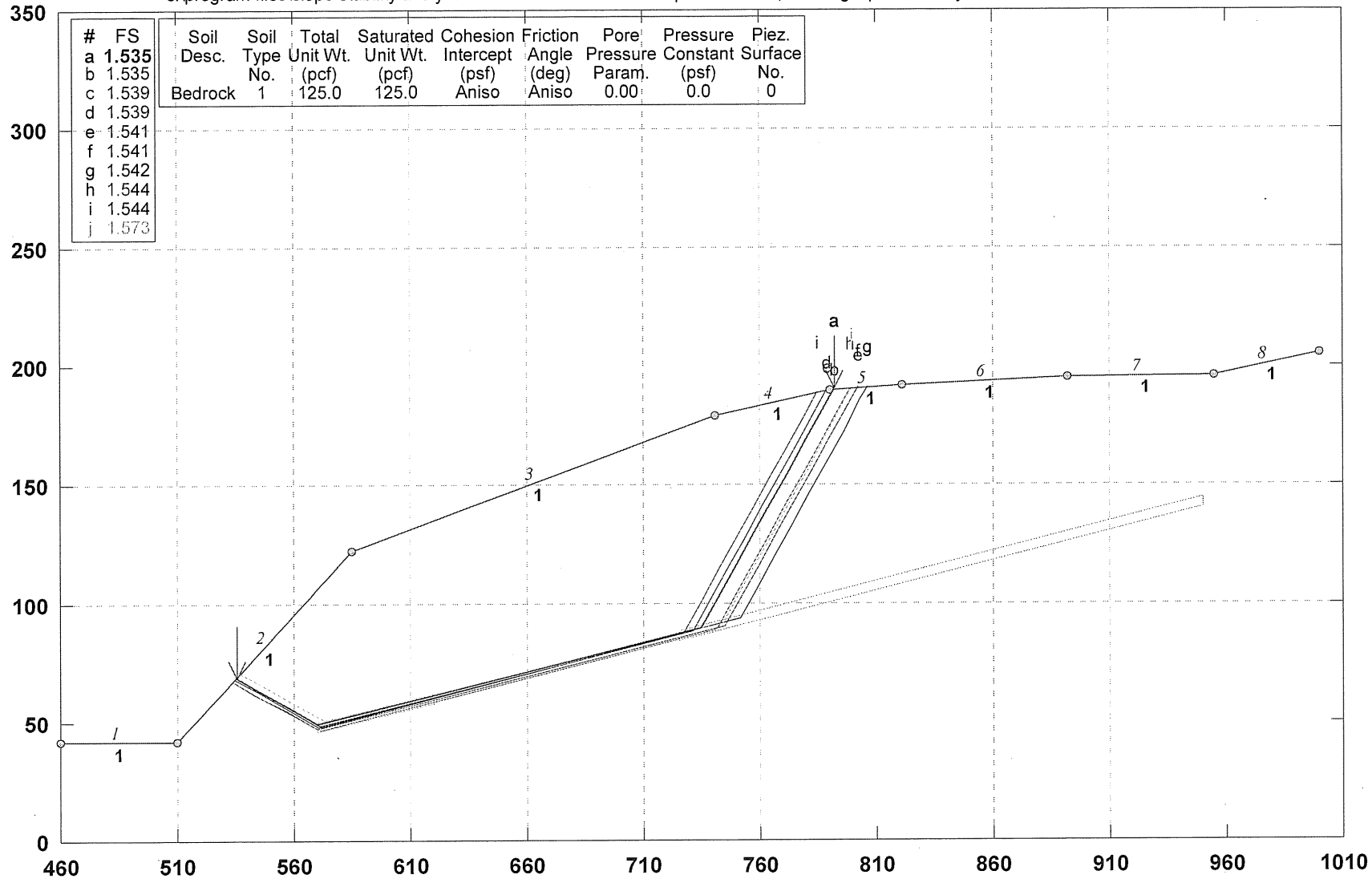
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec x-x', beddingl2.pl2 Run By: Username 3/26/2007 02:41PM

#	FS
a	**1.535**
b	1.535
c	1.539
d	1.539
e	1.541
f	1.541
g	1.542
h	1.544
i	1.544
j	1.573

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0



GSTABL7 v.2 FSmin=1.535

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/26/2007
Time of Run: 02:41PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', beddingl2.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', beddingl2.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', beddingl2.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
Temp Cut

BOUNDARY COORDINATES

Note: User origin value specified.
Add 460.00 to X-values and 0.00 to Y-values listed.

8 Top Boundaries
8 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	460.00	42.00	510.00	42.00	1
2	510.00	42.00	585.00	122.00	1
3	585.00	122.00	741.00	179.00	1
4	741.00	179.00	790.00	190.00	1
5	790.00	190.00	821.00	192.00	1
6	821.00	192.00	892.00	195.00	1
7	892.00	195.00	955.00	196.00	1
8	955.00	196.00	1000.00	205.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	300.0	31.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	13.5	300.00	31.00
2	14.5	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:

(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
The Active And Passive Portions Of The Sliding Surfaces
Are Generated According To The Rankine Theory.
1000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	570.00	47.75	620.00	60.22	4.00
2	725.00	86.41	950.00	142.53	4.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 3.392 FS Min = 1.535 FS Ave = 1.370
Standard Deviation = 0.614 Coefficient of Variation = 44.80 %
Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.333	69.022
2	543.996	64.121
3	557.051	56.735
4	570.107	49.349
5	735.039	89.632
6	742.425	102.688
7	749.811	115.743
8	757.198	128.798
9	764.584	141.854
10	771.971	154.909
11	779.357	167.964
12	786.743	181.020
13	791.893	190.122

Factor of Safety
*** 1.535 ***
Individual data on the 15 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	8.7	7656.2	0.0	0.0	0.	0.	0.0	0.0	0.0
2	13.1	40467.1	0.0	0.0	0.	0.	0.0	0.0	0.0
3	13.1	75246.5	0.0	0.0	0.	0.	0.0	0.0	0.0
4	14.9	117078.2	0.0	0.0	0.	0.	0.0	0.0	0.0
5	150.0	1464783.5	0.0	0.0	0.	0.	0.0	0.0	0.0
6	6.0	61855.5	0.0	0.0	0.	0.	0.0	0.0	0.0
7	1.4	13847.0	0.0	0.0	0.	0.	0.0	0.0	0.0
8	7.4	65492.6	0.0	0.0	0.	0.	0.0	0.0	0.0
9	7.4	54969.6	0.0	0.0	0.	0.	0.0	0.0	0.0
10	7.4	44446.7	0.0	0.0	0.	0.	0.0	0.0	0.0
11	7.4	33923.8	0.0	0.0	0.	0.	0.0	0.0	0.0
12	7.4	23400.8	0.0	0.0	0.	0.	0.0	0.0	0.0
13	7.4	12877.9	0.0	0.0	0.	0.	0.0	0.0	0.0
14	3.3	2335.4	0.0	0.0	0.	0.	0.0	0.0	0.0
15	1.9	381.5	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.333	69.022
2	543.996	64.121
3	557.051	56.735
4	570.107	49.349

5	735.039	89.632
6	742.425	102.688
7	749.811	115.743
8	757.198	128.798
9	764.584	141.854
10	771.971	154.909
11	779.357	167.964
12	786.743	181.020
13	791.893	190.122

Factor of Safety
*** 1.535 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.308	68.995
2	545.119	63.444
3	558.174	56.058
4	571.230	48.672
5	731.303	88.712
6	738.690	101.768
7	746.076	114.823
8	753.462	127.878
9	760.849	140.934
10	768.235	153.989
11	775.622	167.044
12	783.008	180.100
13	788.407	189.642

Factor of Safety
*** 1.539 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.308	68.995
2	545.119	63.444
3	558.174	56.058
4	571.230	48.672
5	731.303	88.712
6	738.690	101.768
7	746.076	114.823
8	753.462	127.878
9	760.849	140.934
10	768.235	153.989
11	775.622	167.044
12	783.008	180.100
13	788.407	189.642

Factor of Safety
*** 1.539 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	533.844	67.434
2	543.898	61.745
3	556.954	54.359
4	570.009	46.973
5	745.146	90.239
6	752.533	103.295
7	759.919	116.350
8	767.305	129.405
9	774.692	142.461
10	782.078	155.516
11	789.464	168.571
12	796.851	181.627
13	802.027	190.776

Factor of Safety
*** 1.541 ***

Failure Surface Specified By 13 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	533.844	67.434
2	543.898	61.745
3	556.954	54.359
4	570.009	46.973
5	745.146	90.239
6	752.533	103.295
7	759.919	116.350
8	767.305	129.405
9	774.692	142.461
10	782.078	155.516
11	789.464	168.571
12	796.851	181.627
13	802.027	190.776

Factor of Safety
*** 1.541 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	534.780	68.432
2	544.924	62.693
3	557.979	55.306
4	571.035	47.920
5	751.518	93.926
6	758.905	106.982
7	766.291	120.037
8	773.677	133.092
9	781.064	146.148
10	788.450	159.203
11	795.836	172.258
12	803.223	185.314
13	806.476	191.063

Factor of Safety
*** 1.542 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	533.819	67.407
2	545.021	61.069
3	558.077	53.682
4	571.132	46.296
5	741.411	89.319
6	748.797	102.375
7	756.184	115.430
8	763.570	128.485
9	770.956	141.541
10	778.343	154.596
11	785.729	167.651
12	793.115	180.707
13	798.690	190.561

Factor of Safety
*** 1.544 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	535.283	68.968
2	546.242	62.767
3	559.298	55.381
4	572.353	47.995
5	727.568	87.792
6	734.954	100.848
7	742.341	113.903
8	749.727	126.958
9	757.113	140.014
10	764.500	153.069
11	771.886	166.124
12	779.273	179.180

```
   13        784.724      188.816
       Factor of Safety
      ***    1.544   ***
Failure Surface Specified By 13 Coordinate Points
  Point      X-Surf      Y-Surf
   No.        (ft)        (ft)
    1        537.179      70.991
    2        547.170      65.339
    3        560.225      57.952
    4        573.281      50.566
    5        744.048      92.086
    6        751.434     105.142
    7        758.820     118.197
    8        766.207     131.252
    9        773.593     144.308
   10        780.979     157.363
   11        788.366     170.418
   12        795.752     183.474
   13        799.802     190.632
       Factor of Safety
      ***    1.573   ***
          **** END OF GSTABL7 OUTPUT ****
```

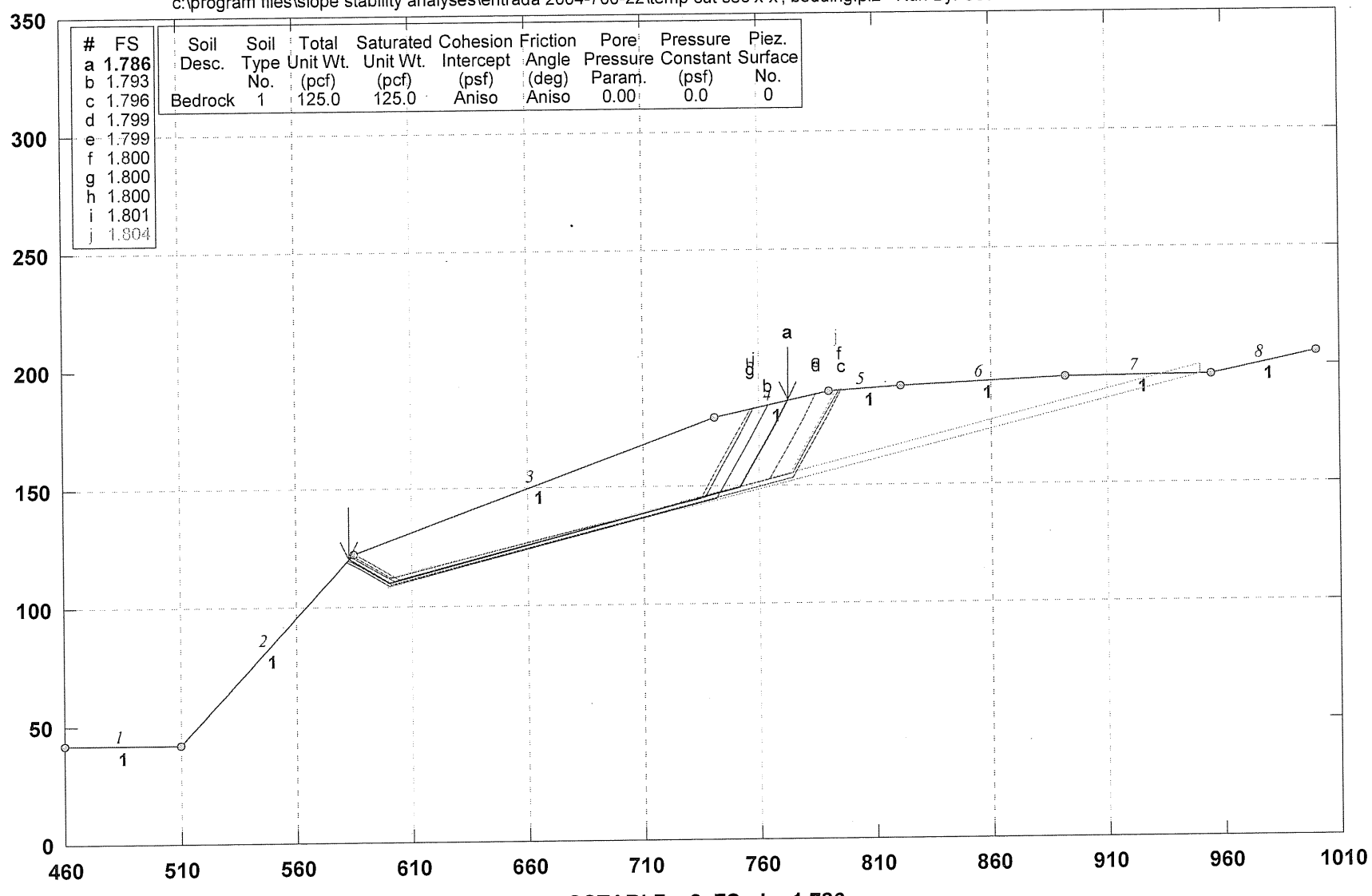
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec x-x', bedding.pl2 Run By: Username 3/26/2007 01:40PM

#	FS
a	1.786
b	1.793
c	1.796
d	1.799
e	1.799
f	1.800
g	1.800
h	1.800
i	1.801
j	1.804

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0



GSTABL7 v.2 FSmin=1.786

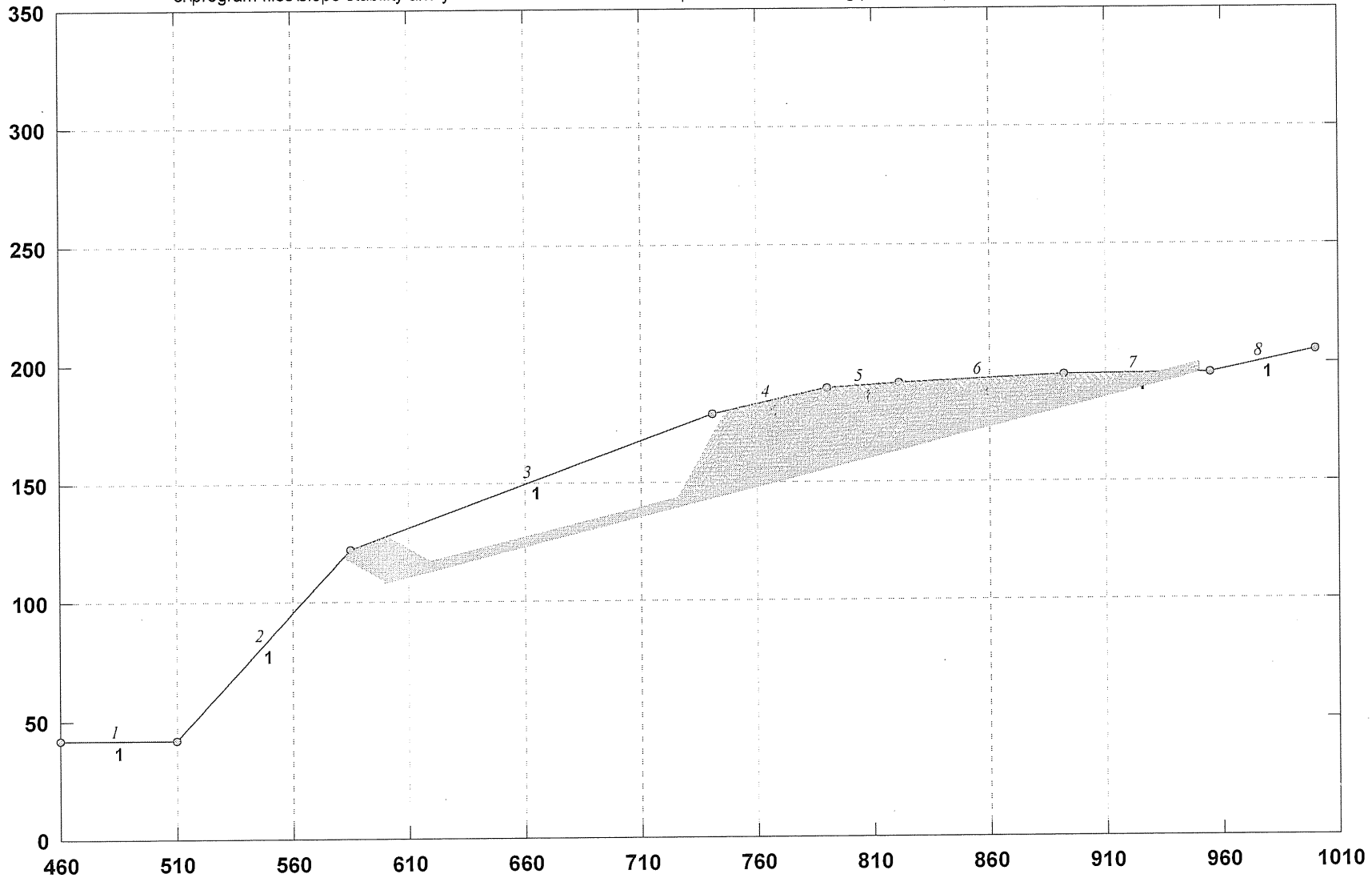
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec x-x', bedding.plt Run By: Username 3/26/2007 01:40PM



GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/26/2007
Time of Run: 01:40PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', bedding.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', bedding.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2 2\temp cut sec x-x', bedding.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
Temp Cut

BOUNDARY COORDINATES

Note: User origin value specified.
Add 460.00 to X-values and 0.00 to Y-values listed.

8 Top Boundaries
8 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	460.00	42.00	510.00	42.00	1
2	510.00	42.00	585.00	122.00	1
3	585.00	122.00	741.00	179.00	1
4	741.00	179.00	790.00	190.00	1
5	790.00	190.00	821.00	192.00	1
6	821.00	192.00	892.00	195.00	1
7	892.00	195.00	955.00	196.00	1
8	955.00	196.00	1000.00	205.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	300.0	31.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)

Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	13.5	300.00	31.00
2	14.5	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:

(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
The Active And Passive Portions Of The Sliding Surfaces
Are Generated According To The Rankine Theory.
1000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	600.00	110.23	620.00	115.22	4.00
2	725.00	141.41	950.00	197.53	4.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 3.348 FS Min = 1.786 FS Ave = 1.897
Standard Deviation = 0.441 Coefficient of Variation = 23.26 %
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	583.141	120.017
2	587.358	117.631
3	600.414	110.245
4	751.518	148.926
5	758.905	161.982
6	766.291	175.037
7	772.539	186.080

Factor of Safety
*** 1.786 ***
Individual data on the 8 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	1.9	352.5	0.0	0.0	0.	0.	0.0	0.0	0.0
2	2.4	1218.2	0.0	0.0	0.	0.	0.0	0.0	0.0
3	13.1	18454.6	0.0	0.0	0.	0.	0.0	0.0	0.0
4	140.6	440676.8	0.0	0.0	0.	0.	0.0	0.0	0.0
5	10.5	42862.6	0.0	0.0	0.	0.	0.0	0.0	0.0
6	7.4	24685.5	0.0	0.0	0.	0.	0.0	0.0	0.0
7	7.4	14162.6	0.0	0.0	0.	0.	0.0	0.0	0.0
8	6.2	3764.6	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 8 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	582.151	118.961
2	587.398	115.993
3	600.453	108.606
4	741.411	144.319
5	748.797	157.375
6	756.184	170.430
7	763.570	183.485
8	763.947	184.151

Factor of Safety
*** 1.793 ***
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	582.938	119.801
2	588.140	116.858
3	601.195	109.471
4	774.370	152.907

5	781.756	165.963
6	789.143	179.018
7	795.559	190.359

Factor of Safety
*** 1.796 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	584.398	121.358
2	588.179	119.219
3	601.234	111.833
4	764.262	152.300
5	771.649	165.356
6	779.035	178.411
7	784.951	188.866

Factor of Safety
*** 1.799 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	584.398	121.358
2	588.179	119.219
3	601.234	111.833
4	764.262	152.300
5	771.649	165.356
6	779.035	178.411
7	784.951	188.866

Factor of Safety
*** 1.799 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	585.813	122.297
2	591.616	119.014
3	604.672	111.628
4	774.809	155.368
5	782.196	168.424
6	789.582	181.479
7	794.570	190.295

Factor of Safety
*** 1.800 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	583.973	120.904
2	586.987	119.199
3	600.043	111.813
4	735.039	144.632
5	742.425	157.688
6	749.811	170.743
7	756.445	182.467

Factor of Safety
*** 1.800 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	583.973	120.904
2	586.987	119.199
3	600.043	111.813
4	735.039	144.632
5	742.425	157.688
6	749.811	170.743
7	756.445	182.467

Factor of Safety
*** 1.800 ***

Failure Surface Specified By 7 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	584.144	121.087
2	589.155	118.252
3	602.211	110.865
4	736.577	145.246
5	743.963	158.302
6	751.350	171.357
7	757.809	182.773

Factor of Safety
*** 1.801 ***

Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	585.514	122.188
2	589.448	119.961
3	602.504	112.575
4	773.271	154.754
5	780.658	167.810
6	788.044	180.865
7	793.334	190.215

Factor of Safety
*** 1.804 ***

**** END OF GSTABL7 OUTPUT ****

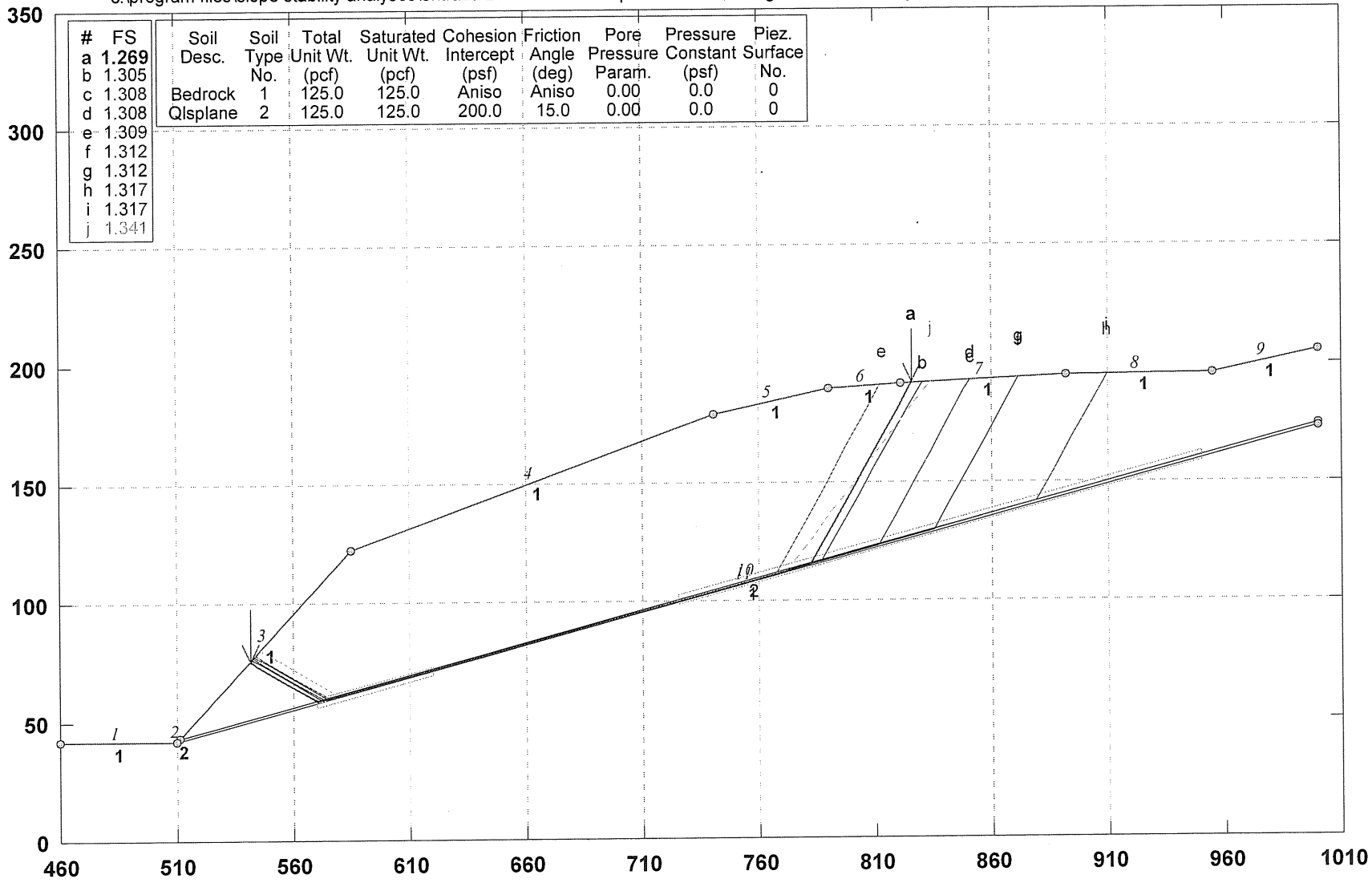
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec x-x', along the slide bedding.pl2 Run By: Username 3/28/2007 02:30PM

#	FS
a	1.269
b	1.305
c	1.308
d	1.308
e	1.309
f	1.312
g	1.312
h	1.317
i	1.317
j	1.341

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0
Qlsplane	2	125.0	125.0	200.0	15.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.269

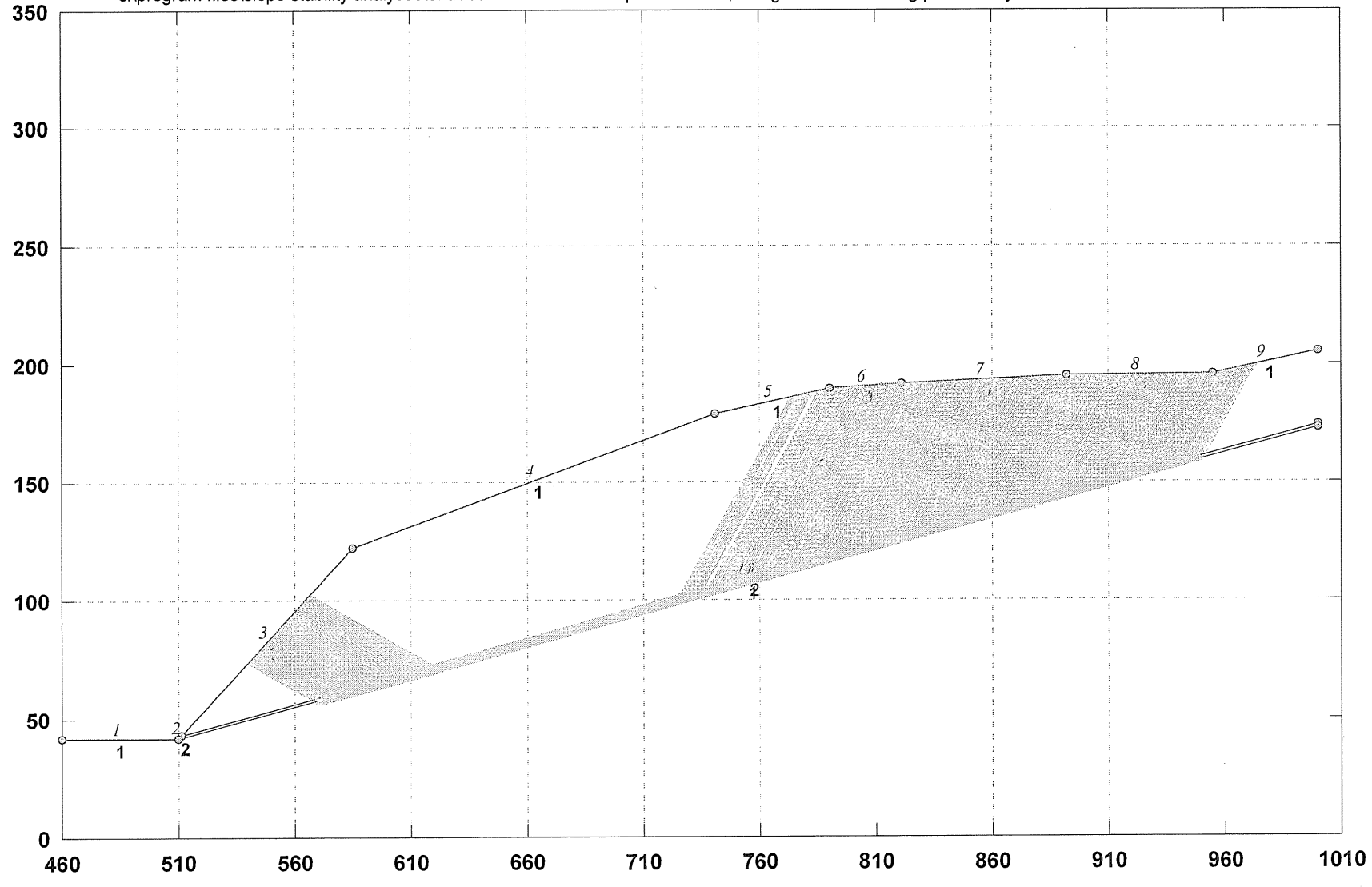
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec x-x', along the slide bedding.plt Run By: Username 3/28/2007 02:31PM



GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/28/2007
Time of Run: 02:30PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\temp cut sec x-x', along the slide bedding.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\temp cut sec x-x', along the slide bedding.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\temp cut sec x-x', along the slide bedding.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
Temp Cut

BOUNDARY COORDINATES

Note: User origin value specified.
Add 460.00 to X-values and 0.00 to Y-values listed.

9 Top Boundaries
11 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	460.00	42.00	510.00	42.00	1
2	510.00	42.00	511.00	43.00	2
3	511.00	43.00	585.00	122.00	1
4	585.00	122.00	741.00	179.00	1
5	741.00	179.00	790.00	190.00	1
6	790.00	190.00	821.00	192.00	1
7	821.00	192.00	892.00	195.00	1
8	892.00	195.00	955.00	196.00	1
9	955.00	196.00	1000.00	205.00	1
10	511.00	43.00	1000.00	174.00	2
11	510.00	42.00	1000.00	173.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	300.0	31.0	0.00	0.0	0
2	125.0	125.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS

1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	13.5	300.00	31.00
2	14.5	200.00	15.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:

(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and

C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and
C equal to zero, with water weight in the tension crack.
Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
The Active And Passive Portions Of The Sliding Surfaces
Are Generated According To The Rankine Theory.
1000 Trial Surfaces Have Been Generated.
2 Boxes Specified For Generation Of Centra1 Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	570.00	57.75	620.00	71.22	4.00
2	725.00	100.41	950.00	160.53	4.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Attempted = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 3.233 FS Min = 1.269 FS Ave = 1.533
Standard Deviation = 0.673 Coefficient of Variation = 43.90 %
Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	541.395	75.449
2	544.440	73.726
3	557.495	66.340
4	570.551	58.953
5	570.742	58.807
6	781.841	114.758
7	782.612	115.763
8	789.998	128.818
9	797.385	141.874
10	804.771	154.929
11	812.157	167.984
12	819.544	181.040
13	825.861	192.205

Factor of Safety
*** 1.269 ***
Individual data on the 16 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	3.0	946.5	0.0	0.0	0.	0.	0.0	0.0	0.0
2	13.1	25515.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	13.1	60314.8	0.0	0.0	0.	0.	0.0	0.0	0.0
4	0.2	1139.6	0.0	0.0	0.	0.	0.0	0.0	0.0
5	14.3	95696.4	0.0	0.0	0.	0.	0.0	0.0	0.0
6	156.0	1311187.9	0.0	0.0	0.	0.	0.0	0.0	0.0
7	40.8	378993.6	0.0	0.0	0.	0.	0.0	0.0	0.0
8	0.8	7039.3	0.0	0.0	0.	0.	0.0	0.0	0.0
9	7.4	61749.7	0.0	0.0	0.	0.	0.0	0.0	0.0
10	0.0	12.6	0.0	0.0	0.	0.	0.0	0.0	0.0
11	7.4	50668.8	0.0	0.0	0.	0.	0.0	0.0	0.0
12	7.4	39067.6	0.0	0.0	0.	0.	0.0	0.0	0.0
13	7.4	27453.6	0.0	0.0	0.	0.	0.0	0.0	0.0
14	7.4	15839.7	0.0	0.0	0.	0.	0.0	0.0	0.0
15	1.5	1752.3	0.0	0.0	0.	0.	0.0	0.0	0.0
16	4.9	2547.8	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 13 Coordinate Points

Point	X-Surf	Y-Surf

No.	(ft)	(ft)
1	543.330	77.514
2	548.230	74.741
3	561.285	67.355
4	574.341	59.969
5	575.038	59.433
6	787.114	116.386
7	787.678	117.120
8	795.064	130.176
9	802.450	143.231
10	809.837	156.286
11	817.223	169.342
12	824.609	182.397
13	830.264	192.391

Factor of Safety
*** 1.305 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	542.781	76.928
2	547.155	74.453
3	560.210	67.067
4	573.266	59.681
5	573.720	59.332
6	811.064	122.945
7	811.489	123.499
8	818.876	136.555
9	826.262	149.610
10	833.648	162.665
11	841.035	175.720
12	848.421	188.776
13	850.961	193.266

Factor of Safety
*** 1.308 ***

Failure Surface Specified By 13 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	542.781	76.928
2	547.155	74.453
3	560.210	67.067
4	573.266	59.681
5	573.720	59.332
6	811.064	122.945
7	811.489	123.499
8	818.876	136.555
9	826.262	149.610
10	833.648	162.665
11	841.035	175.720
12	848.421	188.776
13	850.961	193.266

Factor of Safety
*** 1.308 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	543.776	77.991
2	549.105	74.976
3	562.160	67.589
4	575.216	60.203
5	575.234	60.189
6	766.899	110.812
7	767.615	111.746
8	775.002	124.801
9	782.388	137.856
10	789.774	150.912
11	797.161	163.967
12	804.547	177.022

13	811.933	190.078
14	812.719	191.466

Factor of Safety
*** 1.309 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	542.232	76.342
2	546.080	74.165
3	559.135	66.779
4	572.191	59.393
5	572.402	59.231
6	835.014	129.505
7	835.301	129.878
8	842.687	142.933
9	850.073	155.989
10	857.460	169.044
11	864.846	182.099
12	871.659	194.141

Factor of Safety
*** 1.312 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	542.232	76.342
2	546.080	74.165
3	559.135	66.779
4	572.191	59.393
5	572.402	59.231
6	835.014	129.505
7	835.301	129.878
8	842.687	142.933
9	850.073	155.989
10	857.460	169.044
11	864.846	182.099
12	871.659	194.141

Factor of Safety
*** 1.312 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	541.237	75.280
2	544.130	73.643
3	557.186	66.257
4	570.241	58.870
5	570.888	58.374
6	879.179	141.638
7	886.566	154.693
8	893.952	167.748
9	901.338	180.804
10	908.725	193.859
11	909.528	195.278

Factor of Safety
*** 1.317 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	541.237	75.280
2	544.130	73.643
3	557.186	66.257
4	570.241	58.870
5	570.888	58.374
6	879.179	141.638
7	886.566	154.693
8	893.952	167.748
9	901.338	180.804
10	908.725	193.859

11	909.528	195.278

Factor of Safety
*** 1.317 ***

Failure Surface Specified By 14 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	545.710	80.056
2	552.895	75.991
3	565.950	68.605
4	579.006	61.218
5	579.531	60.815
6	772.173	112.440
7	772.681	113.103
8	781.812	125.003
9	790.944	136.903
10	800.075	148.804
11	809.207	160.704
12	818.338	172.604
13	827.469	184.504
14	833.630	192.534

Factor of Safety
*** 1.341 ***

**** END OF GSTABL7 OUTPUT ****

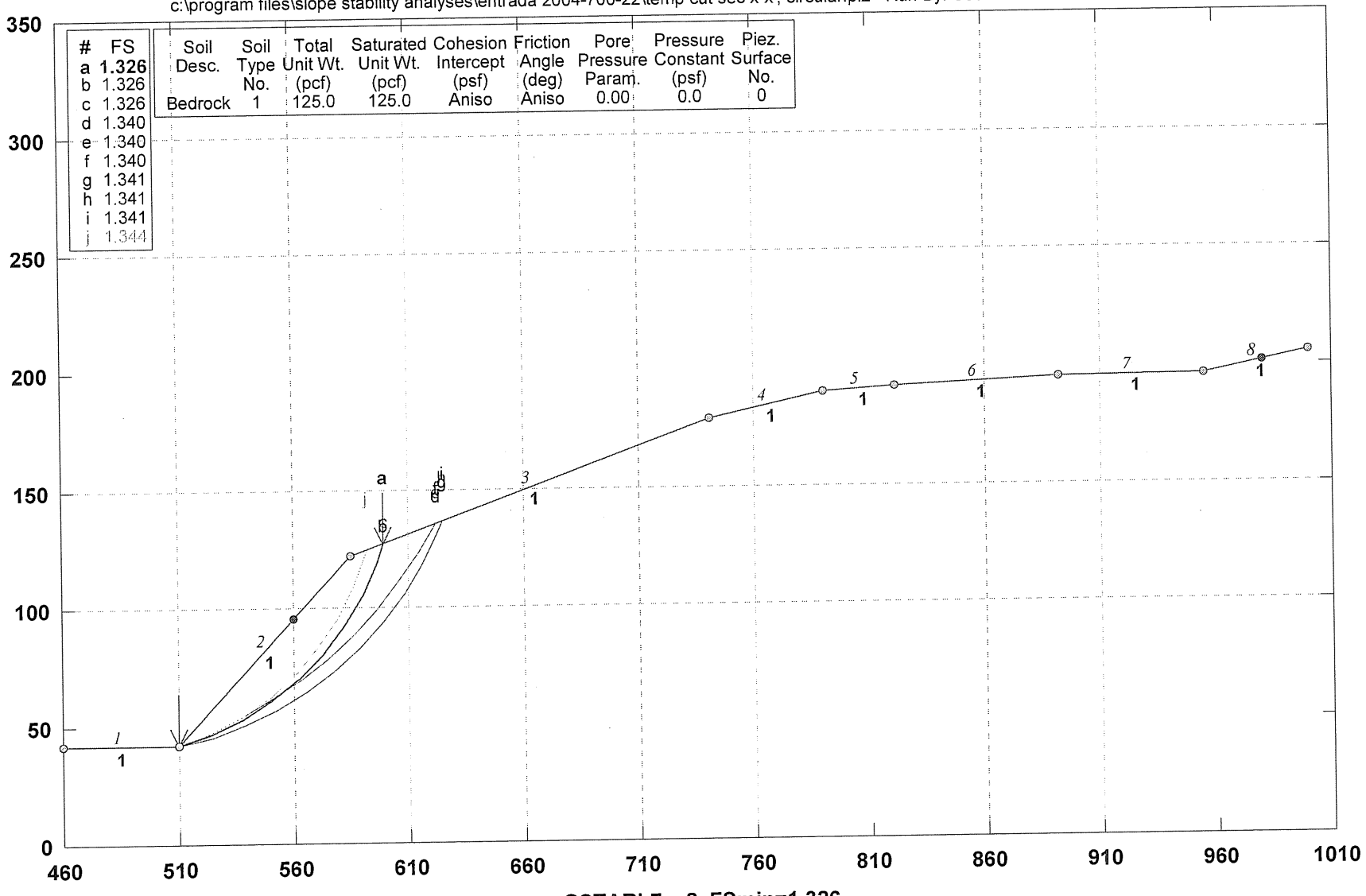
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Sec X-X', Static Temp Cut

c:\program files\slope stability analyses\entrada 2004-700-22\temp cut sec x-x', circular.pl2 Run By: Username 3/26/2007 03:15PM

#	FS
a	1.326
b	1.326
c	1.326
d	1.340
e	1.340
f	1.340
g	1.341
h	1.341
i	1.341
j	1.344

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Bedrock	1	125.0	125.0	Aniso	Aniso	0.00	0.0	0



GSTABL7 v.2 FSmin=1.326

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

***** GSTABL7 *****

** GSTABL7 by Garry H. Gregory, P.E. **

** Original Version 1.0, January 1996; Current Version 2.004, June 2003 **

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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 3/26/2007
Time of Run: 03:15PM
Run By: Username
Input Data Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\temp cut sec x-x', circular.in
Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\temp cut sec x-x', circular.OUT
Unit System: English
Plotted Output Filename: C:\Program Files\Slope stability analyses\Entrada 2004-700-2\temp cut sec x-x', circular.PLT
PROBLEM DESCRIPTION: Sec X-X', Static
Temp Cut

BOUNDARY COORDINATES
Note: User origin value specified.
Add 460.00 to X-values and 0.00 to Y-values listed.

8 Top Boundaries
8 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	460.00	42.00	510.00	42.00	1
2	510.00	42.00	585.00	122.00	1
3	585.00	122.00	741.00	179.00	1
4	741.00	179.00	790.00	190.00	1
5	790.00	190.00	821.00	192.00	1
6	821.00	192.00	892.00	195.00	1
7	892.00	195.00	955.00	196.00	1
8	955.00	196.00	1000.00	205.00	1

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
1 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	125.0	400.0	38.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
1 soil type(s)
Soil Type 1 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	13.5	400.00	38.00
2	14.5	200.00	20.00
3	90.0	400.00	38.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

A Critical Failure Surface Searching Method, Using A Random

Technique For Generating Circular Surfaces, Has Been Specified.
1000 Trial Surfaces Have Been Generated.
1000 Surface(s) Initiate(s) From Each Of 1 Points Equally Spaced
Along The Ground Surface Between X = 510.00(ft)
and X = 510.00(ft)
Each Surface Terminates Between X = 560.00(ft)
and X = 980.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
15.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 1000
Number of Trial Surfaces With Valid FS = 1000
Statistical Data On All Valid FS Values:
FS Max = 3.819 FS Min = 1.326 FS Ave = 2.404
Standard Deviation = 0.771 Coefficient of Variation = 32.08 %
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.263	46.646
3	537.882	52.932
4	550.670	60.772
5	562.450	70.058
6	573.059	80.662
7	582.352	92.437
8	590.200	105.220
9	596.494	118.836
10	599.222	127.197

Circle Center At X = 478.049 ; Y = 164.779 ; and Radius = 126.868
Factor of Safety
*** 1.326 ***
Individual data on the 10 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Surcharge Ver (lbs)	Surcharge Load (lbs)
1	14.3	9420.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	13.6	25005.2	0.0	0.0	0.	0.	0.0	0.0	0.0
3	12.8	34701.0	0.0	0.0	0.	0.	0.0	0.0	0.0
4	11.8	38651.1	0.0	0.0	0.	0.	0.0	0.0	0.0
5	10.6	37458.3	0.0	0.0	0.	0.	0.0	0.0	0.0
6	9.3	32141.5	0.0	0.0	0.	0.	0.0	0.0	0.0
7	2.6	8604.0	0.0	0.0	0.	0.	0.0	0.0	0.0
8	5.2	14276.3	0.0	0.0	0.	0.	0.0	0.0	0.0
9	6.3	10245.3	0.0	0.0	0.	0.	0.0	0.0	0.0
10	2.7	1255.9	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.263	46.646
3	537.882	52.932
4	550.670	60.772
5	562.450	70.058
6	573.059	80.662
7	582.352	92.437
8	590.200	105.220
9	596.494	118.836
10	599.222	127.197

Circle Center At X = 478.049 ; Y = 164.779 ; and Radius = 126.868
Factor of Safety
*** 1.326 ***
Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.263	46.646
3	537.882	52.932
4	550.670	60.772
5	562.450	70.058
6	573.059	80.662
7	582.352	92.437
8	590.200	105.220
9	596.494	118.836
10	599.222	127.197

Circle Center At X = 478.049 ; Y = 164.779 ; and Radius = 126.868

Factor of Safety

*** 1.326 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.007	47.367
3	537.581	53.751
4	550.647	61.118
5	563.136	69.427
6	574.978	78.633
7	586.110	88.686
8	596.472	99.532
9	606.006	111.112
10	614.662	123.363
11	621.964	135.506

Circle Center At X = 444.237 ; Y = 234.593 ; and Radius = 203.511

Factor of Safety

*** 1.340 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.007	47.367
3	537.581	53.751
4	550.647	61.118
5	563.136	69.427
6	574.978	78.633
7	586.110	88.686
8	596.472	99.532
9	606.006	111.112
10	614.662	123.363
11	621.964	135.506

Circle Center At X = 444.237 ; Y = 234.593 ; and Radius = 203.511

Factor of Safety

*** 1.340 ***

Failure Surface Specified By 11 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.007	47.367
3	537.581	53.751
4	550.647	61.118
5	563.136	69.427
6	574.978	78.633
7	586.110	88.686
8	596.472	99.532
9	606.006	111.112
10	614.662	123.363
11	621.964	135.506

Circle Center At X = 444.237 ; Y = 234.593 ; and Radius = 203.511

Factor of Safety

*** 1.340 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.577	45.538
3	538.746	50.462
4	552.375	56.727
5	565.337	64.274
6	577.514	73.035
7	588.790	82.926
8	599.062	93.857
9	608.234	105.726
10	616.222	118.422
11	622.950	131.828
12	624.767	136.530

Circle Center At X = 480.895 ; Y = 194.269 ; and Radius = 155.026

Factor of Safety

*** 1.341 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.577	45.538
3	538.746	50.462
4	552.375	56.727
5	565.337	64.274
6	577.514	73.035
7	588.790	82.926
8	599.062	93.857
9	608.234	105.726
10	616.222	118.422
11	622.950	131.828
12	624.767	136.530

Circle Center At X = 480.895 ; Y = 194.269 ; and Radius = 155.026

Factor of Safety

*** 1.341 ***

Failure Surface Specified By 12 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.577	45.538
3	538.746	50.462
4	552.375	56.727
5	565.337	64.274
6	577.514	73.035
7	588.790	82.926
8	599.062	93.857
9	608.234	105.726
10	616.222	118.422
11	622.950	131.828
12	624.767	136.530

Circle Center At X = 480.895 ; Y = 194.269 ; and Radius = 155.026

Factor of Safety

*** 1.341 ***

Failure Surface Specified By 10 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	510.000	42.000
2	524.091	47.141
3	537.437	53.988
4	549.832	62.436
5	561.086	72.354
6	571.023	83.590
7	579.493	95.970
8	586.363	109.304
9	591.529	123.386
10	591.782	124.478

Circle Center At X = 475.839 ; Y = 157.657 ; and Radius = 120.597

```
 Factor of Safety
***     1.344    ***
    **** END OF GSTABL7 OUTPUT ****
```

Appendix D
April 6, 2007
2004-700-21

SEWARD SLOPE STABILIBY ANALYSES

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

APPENDIX F

SLOPE STABILITY ANALYSES

General

Analyses were performed to evaluate the stability of proposed cut and fill slopes, critical natural slopes proposed to remain adjacent to the development and landslide areas which may impact the proposed development. The stability analyses utilized cross sections constructed to illustrate critical structural geometries and maximum slope heights for each analyzed slope. Our evaluation included gross and surficial stability and static and pseudostatic (i.e. with an imposed pseudostatic simulated load) conditions were considered for gross stability. Based on our analyses, the need for stabilization measures was explored and dimensional design of these measures was performed, as needed, in a step-by-step fashion utilizing computer-based numerical slope stability analyses. The results of our stability analyses are summarized in **Table F1** along with slope parameters and recommended mitigations. Slope stability diagrams graphically illustrating the results of our analyses for each cross section are attached for review. Critical failure surfaces (factor of safety 1.70 or less) were plotted on our Cross Sections in **Appendix G.**

Buttresses and building setback zones were utilized to mitigate proposed cut, fill and natural slopes that did not meet the calculated minimum factors of safety for gross stability.

Geometry and Groundwater

As shown on the respective cross sections, the analyzed geometries of cut-slopes and natural slopes included removal of vegetation, topsoil, artificial fill, alluvium, landslide debris and bedrock materials and adding certified compacted fill to achieve the proposed grades, or remedial grades as needed on portions of the slopes. Anticipated removal depths were shown on the cross section in **Appendix G** only if integral to slope stability calculations. Analyses included cross-bedding and potential adverse bedding with dips ranging from 0 to 60 degrees depending on geologic data obtained near each cross section listed in **Table F1**.

Review of ground water data in the vicinity and trench and boring log data indicates that the proposed cut-slopes in bedrock are above historic high ground water levels. Ground water was modeled in the slope stability source for future ground water existed directly up gradient (updip) of the slope being analyzed. In general a static water table was modeled where existing ground water was encountered and an assumed pore-pressured parameters (ru of

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APPENDIX F

0.12) was utilized where a future source of ground water could exist, directly above and directly updip of the scope.

It should be noted that ground water in the bedrock and alluvium is very rare on the subject site with the exception of the mouth of Middle Canyon.

Where rapid drawdown and steady state seepage conditions were expectable adjacent to planned debris basins, those conditions were included in the analyses. Backdrains are proposed for all Stability Fill/Buttress slopes.

Shear Strength Parameters

A total of 66 direct shear strength tests were performed for this project. Individual Direct Shear test results are presented in **Appendix B**. Data used in our analyses are summarized in the below table:

Table F2 - Summary of Design Shear Strength Values

Material	Peak		Ultimate		Residual		Unit Wt. (pcf)
	Cohesion (psf)	Phi ϕ	Cohesion (psf)	Phi ϕ	Cohesion (psf)	Phi ϕ	
Bedrock (TQs), cross-bedding Upper Saugus Formation	400	38°	-	-	300	31°	135
Bedrock (TQs), cross-bedding Lower Saugus Formation	600	38°	500	35°	-	-	135
Bedrock (TQs), parallel-bedding			-	-	200	20°	135
Terrace Deposits (Qt)	300	31°	200	30°	-	-	125
Alluvium (Qal)	300	31°	200	29°	-	-	125
Slopewash (Qsw)	300	28°	250	28°	-	-	125
Landslide Mass (Qls)	200	29°	-	-	140	25°	125
Slide Plane (Sp)	200	15°	200	15°	200	15°	125
Qls back calculation[1]	200	15°	200	15°	200	15°	125
Artificial Fill (Cef), fine-grained	350	24°	-	-	350	24°	125
Artificial Fill (Cef), coarse-grained	300	30°	300	30°	-	-	125

[1] See Run No. 27 in Table F1

APPENDIX F

In our analyses, peak shear strengths were utilized for seismic slope stability. For static slope stability, ultimate shear strengths were generally used for coarse-grained materials and residual shear strengths were used for fine-grained materials and landslide debris. Residual shear strengths were utilized for bedding plane and landslide plane stability analyses.

Methods of Analysis

The computer program GSTABL7, originally written by Purdue University and updated by Garry H. Gregory, Gregory Geotechnical Software was used for the analyses. This program computes the minimum factor of safety from trial failure surfaces using limit equilibrium methods of analysis, such as the Modified Bishop's Method for circular slip surfaces or Janbu's methods for both circular or planar surfaces. In many cases, exit of slip planes at the ground surface is not known. For this report, GSTABL7 method was used to determine breakage of slip planes through upper layers and their exit at the ground surface where the failure surface is unknown. Janbu's method was used to provide the static minimum safety factor corresponding to the complete slip plane.

The pseudostatic procedure introduces a static horizontal force equal to a "seismic" (pseudostatic) coefficient times the weight of individual slices in addition to other forces acting on the slice. The seismic coefficient is an empirical number which in no way models actual seismic forces. However, the pseudostatic method provides some indication of stability or instability. We selected a seismic coefficient of 0.15 for our analyses in accordance with Los Angeles County Guidelines.

Surficial Stability Evaluation

Surficial stability of fill and cut slopes was not analyzed using the "Infinite Slope" method since the lower-bound cohesion value of bedrock and proposed fill materials is greater than 250 psf. Stability fills are need and shown on the Geologic/Geotechnical Maps for cut-slopes that are proposed with thin terrace deposits (Qt), exhibits daylighted bedding conditions, have a fill over cut configurations, or if traversed by a geologic fold. Surficial stability calculations were not performed on natural slopes because the proposed grading configuration and our debris flow hazard mitigation measure precluded the need for analyzation.

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APPENDIX F

Conclusion

The analyzed cut-slopes, proposed grades, remedial grades and compacted fill slopes comply with Los Angeles County minimum requirements for gross stability under static and pseudostatic loading conditions and for surficial stability, as applicable, provided our recommendations are followed and incorporated into project construction. The results of the stability analyses are summarized in **Table F1**.

The following attachments complete this Appendix.

Slope Stability Analyses Results — Table F1
Slope Stability Diagrams and Data Sheets for Run No. 1 through 117

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APPENDIX F

SLOPE STABILITY ANALYSES RESULTS

Cross Section	File Name	Slope Designation	Analyzed Plane	Method	Factor of Safety		Comments	Run No.
					Static	Pseudostatic[1] (Coeff = 0.15)		
2E-2E′	T2ES2A T2EPS2A	CS-28b	Bedding plane	Janbu	1.64	1.32	Cut-slope over Qls removal. Minimum factor of safety.	98 99
10E-10E′	T10ES1A	CS-14	Bedding plane	Janbu	1.32	-	Descending slope below the proposed pad. Minimum FS < 1.5; see recommended action below.	100
10E-10E′	T10ES4A T10EPS4A	CS-14	Bedding plane	Janbu	1.60	1.16	Buttress with 15′d by 30′w key with 2:1 (h:v) backcut.	101 102
10E-10E′	T10ES4B	CS-14	Circular	Modified Bishop	1.90	-	Pseudostatic is not critical and therefore not performed.	103
13E-13E′	T13ES1A	Natural slope	Bedding plane	Janbu	3.27	-	Analyzed landslide plane.	104
14E-14E′	T14ES1A	Natural slope	Bedding plane	Janbu	2.89	-	Analyses along the slide plane. Pseudostatic is not critical and therefore not performed.	105
14E-14E′	T14ES1C	Natural slope	Bedding plane	Janbu	3.01	-	Analyzed natural slope above the proposed road. Pseudostatic is not critical and therefore not performed.	106
14E-14E′	T14ES1D	Natural slope	Circular	Janbu	2.64	-	Analyzed Qls mass above the proposed road. Pseudostatic is not critical and therefore not performed.	107
14E-14E′	T14ES1E	Natural slope	Circular	Modified Bishop	2.41	-	Analyzed natural slope above the proposed road. Pseudostatic is not critical and therefore not performed.	108

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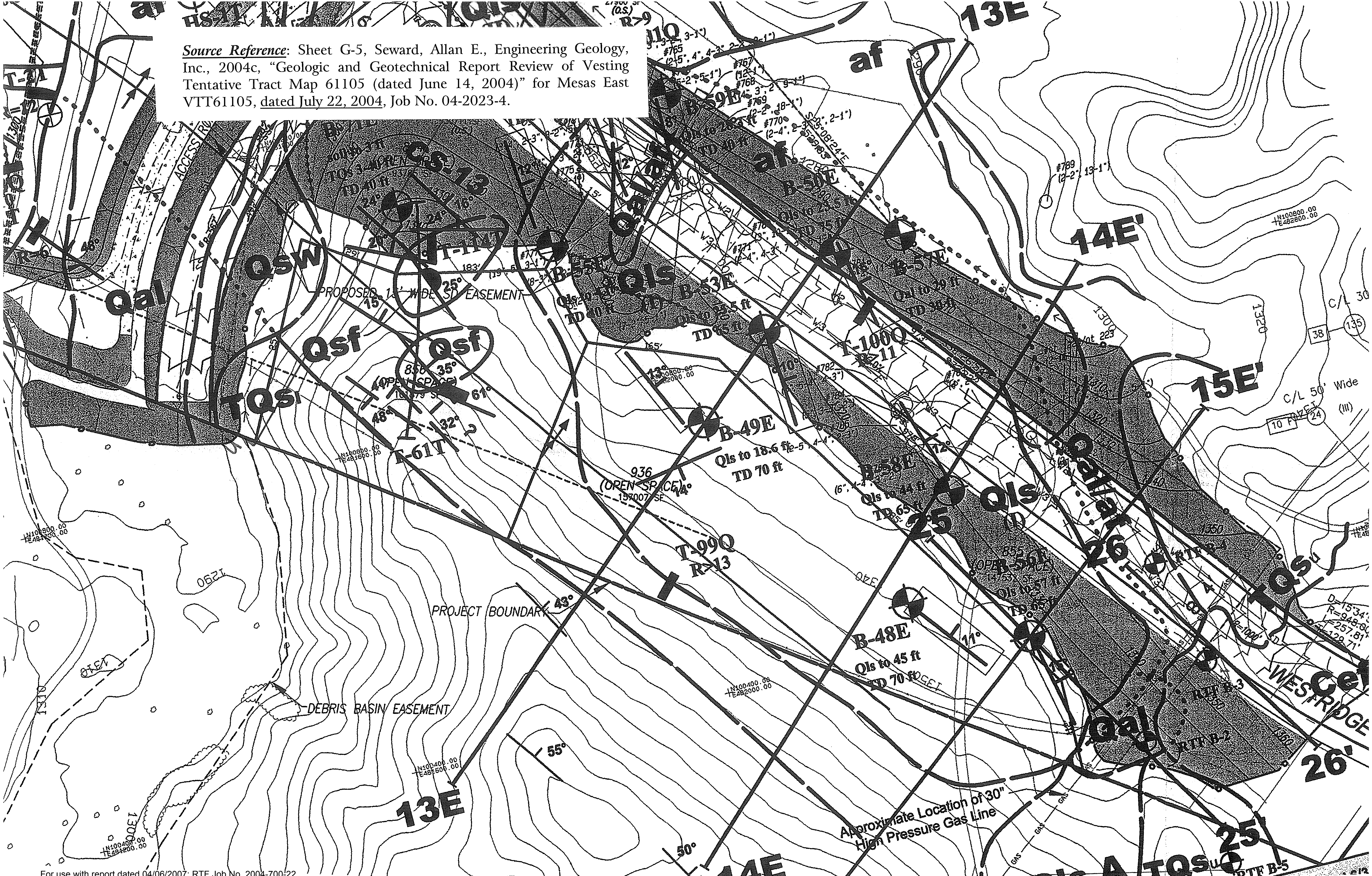
APPENDIX F

SLOPE STABILITY ANALYSES RESULTS

Cross Section	File Name	Slope Designation	Analyzed Plane	Method	Factor of Safety		Comments	Run No.
					Static	Pseudostatic[1] (Coeff = 0.15)		
14E-14E'	T14ES2B	Natural slope	Bedding Plane	Modified Bishop	2.50	-	Minimum factor of safety Qls removal. Pseudostatic is not critical and therefore not performed.	109
15E-15E'	T15ES1B	Natural slope	Circular	Modified Bishop	2.77	-	Pseudostatic is not critical and therefore not performed	110
15E-15E'	T15ES1A	Natural slope	Bedding plane	Janbu	12.62	-	Pseudostatic is not critical and therefore not performed	111
3M-3M'	T3MS2D	Fill slope	Bedding plane	Janbu	1.77	-	Qls removal; Minimum factor of safety. Pseudostatic is not critical and therefore not performed.	112
3M-3M'	T3MS1A	Fill slope	Bedding plane	Janbu	1.89	-	Pseudostatic is not critical and therefore not performed.	113
8M-8M'	T8MS2A	Qls removal	Bedding plane	Janbu	2.60	-	Minimum factor of safety. Pseudostatic is not critical and therefore not performed.	114
8M-8M'	T8MS1A	Qls removal	Circular	Modified Bishop	3.11	-	Minimum factor of safety. Pseudostatic is not critical and therefore not performed.	115
N/A	RD1S1	Internal basin face	Circular	Modified Bishop	1.55	-	Rapid drawdown conditions for critical debris basin upstream 2:1 fill slope.	116
N/A	SS1S1	External basin face	Circular	Modified Bishop	2.18	-	Steady state seepage conditions for critical downstream fill slope.	117

Source Reference: Sheet G-5, Seward, Allan E., Engineering Geology, Inc., 2004c, "Geologic and Geotechnical Report Review of Vesting Tentative Tract Map 61105 (dated June 14, 2004)" for Mesas East VTT61105, dated July 22, 2004, Job No. 04-2023-4.



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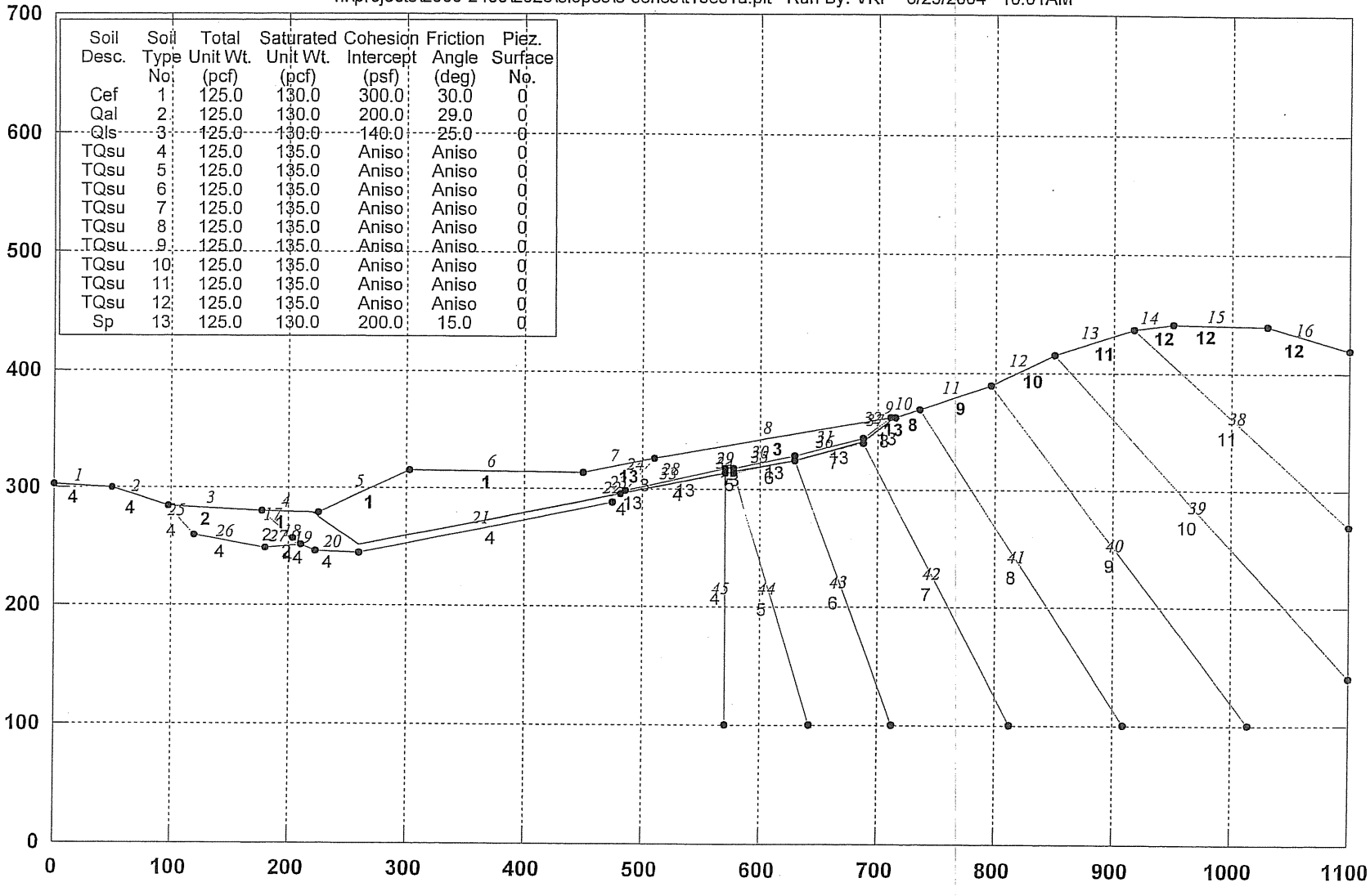
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Mesas East, x-sec 13E-13E'; Along landslide plane; static

n:\projects\2000-2499\2023\slopes\e-series\t13es1a.plt Run By: VKP 6/29/2004 10:01AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0
Qal	2	125.0	130.0	200.0	29.0	0
Qls	3	125.0	130.0	140.0	25.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0
TQsu	5	125.0	135.0	Aniso	Aniso	0
TQsu	6	125.0	135.0	Aniso	Aniso	0
TQsu	7	125.0	135.0	Aniso	Aniso	0
TQsu	8	125.0	135.0	Aniso	Aniso	0
TQsu	9	125.0	135.0	Aniso	Aniso	0
TQsu	10	125.0	135.0	Aniso	Aniso	0
TQsu	11	125.0	135.0	Aniso	Aniso	0
TQsu	12	125.0	135.0	Aniso	Aniso	0
Sp	13	125.0	130.0	200.0	15.0	0



GSTABL7 v.2 FSmin=3.27

Factor Of Safety Is Calculated By The Modified Bishop Method

GSTABL7

RUN NO. 104

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.003, June 2002 **
(All Rights Reserved-Unauthorized Use Prohibited)
****

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date: 6/29/2004
Time of Run: 10:01AM
Run By: VKP
Input Data Filename: n:\Projects\2000-2499\2023\Slopes\E-Series\t13es1a.in
Output Filename: n:\Projects\2000-2499\2023\Slopes\E-Series\t13es1a.OUT
Unit System: English
Plotted Output Filename: n:\Projects\2000-2499\2023\SlopeSeries\t13es1a.PLT
PROBLEM DESCRIPTION: Mesas East, x-sec 13E-13E';
Along landslide plane; static

BOUNDARY COORDINATES
16 Top Boundaries
45 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	303.00	50.00	300.00	4
2	50.00	300.00	98.00	284.00	4
3	98.00	284.00	178.00	280.00	2
4	178.00	280.00	226.00	279.00	1
5	226.00	279.00	302.00	315.00	1
6	302.00	315.00	450.00	313.00	1
7	450.00	313.00	510.00	326.00	13
8	510.00	326.00	711.00	362.00	3
9	711.00	362.00	715.00	362.00	13
10	715.00	362.00	736.00	369.00	8
11	736.00	369.00	796.00	389.00	9
12	796.00	389.00	850.00	415.00	10
13	850.00	415.00	917.00	437.00	11
14	917.00	437.00	950.00	441.00	12
15	950.00	441.00	1030.00	440.00	12
16	1030.00	440.00	1100.00	420.00	12
17	178.00	280.00	204.00	257.00	2
18	204.00	257.00	210.00	252.00	2
19	210.00	252.00	223.00	246.00	4
20	223.00	246.00	260.00	245.00	4
21	260.00	245.00	475.00	289.00	4
22	475.00	289.00	481.00	295.00	4
23	481.00	295.00	485.00	299.00	13
24	485.00	299.00	510.00	326.00	3
25	98.00	284.00	120.00	260.00	4
26	120.00	260.00	180.00	249.00	4
27	180.00	249.00	210.00	252.00	4
28	485.00	299.00	570.00	317.00	13
29	570.00	317.00	577.00	318.00	13
30	577.00	318.00	630.00	328.00	13
31	630.00	328.00	688.00	344.00	13
32	688.00	344.00	711.00	362.00	13
33	481.00	295.00	570.00	313.00	4
34	570.00	313.00	577.00	314.00	5
35	577.00	314.00	630.00	324.00	6
36	630.00	324.00	688.00	340.00	7
37	688.00	340.00	715.00	362.00	8
38	917.00	437.00	1100.00	270.00	11
39	850.00	415.00	1100.00	140.00	10
40	796.00	389.00	1015.00	100.00	9
41	736.00	369.00	909.00	100.00	8

42	688.00	340.00	812.00	100.00	7
43	630.00	324.00	712.00	100.00	6
44	577.00	314.00	642.00	100.00	5
45	570.00	313.00	570.00	100.00	4

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Trial Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	220.00	279.12
2	260.00	251.00
3	570.00	314.00
4	577.00	315.00
5	630.00	325.00
6	688.00	341.00
7	713.00	362.00

Circle Center At X = 209.031(ft) ; Y = 2162.922(ft); and Radius = 1883.829(ft)
* * Factor Of Safety Is Calculated By The Modified Bishop Method * *
Factor Of Safety For The Preceding Specified Surface = 3.274
Table 1 - Individual Data on the 13 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	6.0	1535.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	34.0	102423.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	42.0	261370.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	148.0	729377.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	32.1	94842.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	2.9	8505.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	25.0	75079.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	60.0	176024.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	7.0	20014.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	53.0	150694.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

11	58.0	142727.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	23.0	26680.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	2.0	210.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

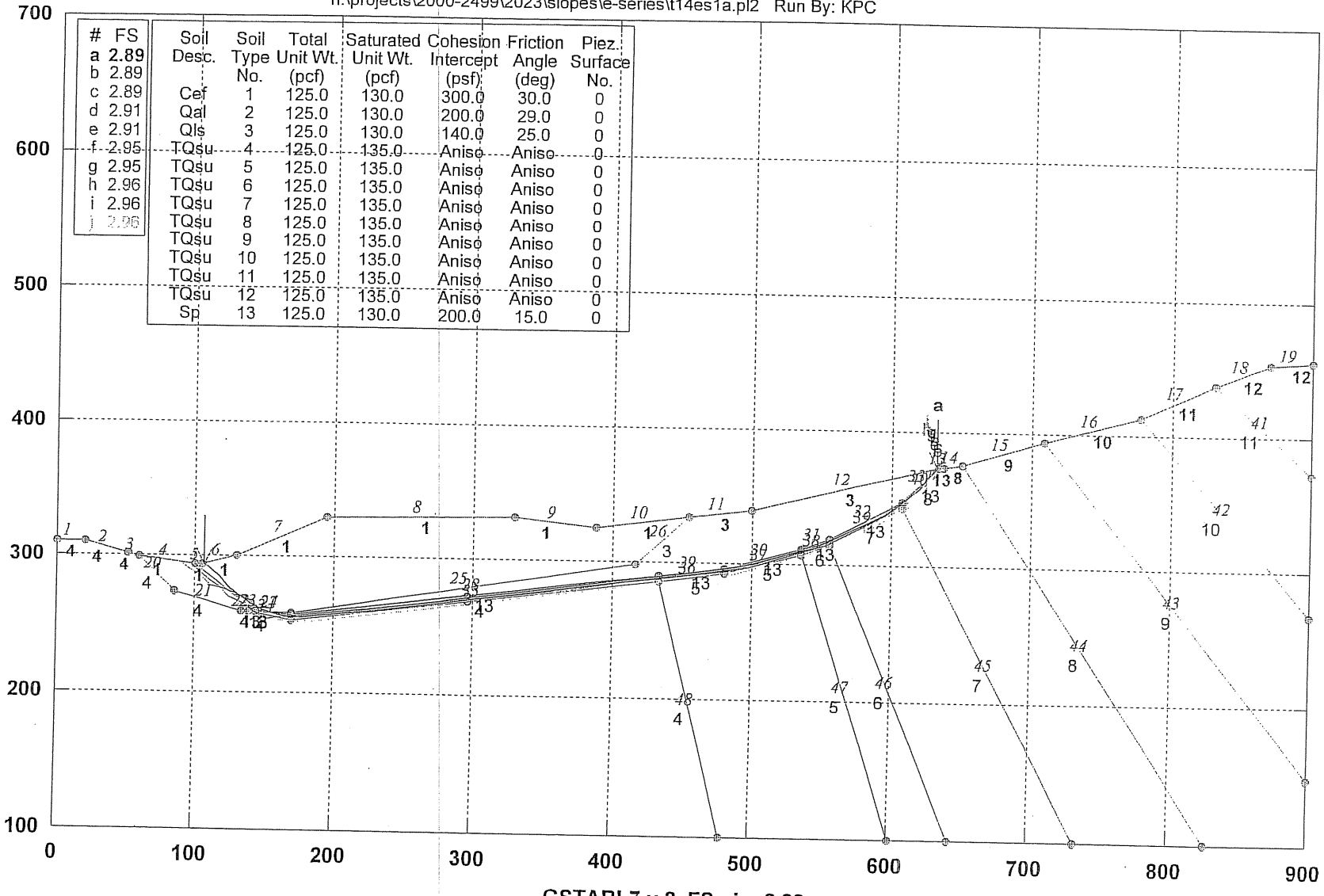
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Mesas East, x-sect 14E-14E'; Landslide Plane; Static

n:\projects\2000-2499\2023\slopes\e-series\t14es1a.pl2 Run By: KPC

#	FS
a	2.89
b	2.89
c	2.89
d	2.91
e	2.91
f	2.95
g	2.95
h	2.96
i	2.96
j	2.96

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0
Qal	2	125.0	130.0	200.0	29.0	0
Qls	3	125.0	130.0	140.0	25.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0
TQsu	5	125.0	135.0	Aniso	Aniso	0
TQsu	6	125.0	135.0	Aniso	Aniso	0
TQsu	7	125.0	135.0	Aniso	Aniso	0
TQsu	8	125.0	135.0	Aniso	Aniso	0
TQsu	9	125.0	135.0	Aniso	Aniso	0
TQsu	10	125.0	135.0	Aniso	Aniso	0
TQsu	11	125.0	135.0	Aniso	Aniso	0
TQsu	12	125.0	135.0	Aniso	Aniso	0
Sp	13	125.0	130.0	200.0	15.0	0



GSTABL7 v.2 FSmin=2.89

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

RUN NO. 105

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.003, June 2002 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run: 09:58AM
Run By: KPC
Input Data Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es1a.in
Output Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es1a.OUT
Unit System: English
Plotted Output Filename: N:\Projects\2000-2499\2023\SlopeSeries\t14es1a.PLT
PROBLEM DESCRIPTION: Mesas East, x-sect 14E-14E';
Landslide Plane; Static

BOUNDARY COORDINATES
19 Top Boundaries
48 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	310.00	20.00	310.00	4
2	20.00	310.00	52.00	301.00	4
3	52.00	301.00	60.00	299.00	4
4	60.00	299.00	100.00	293.00	1
5	100.00	293.00	106.00	293.00	1
6	106.00	293.00	130.00	300.00	1
7	130.00	300.00	195.00	330.00	1
8	195.00	330.00	330.00	332.00	1
9	330.00	332.00	388.00	325.00	1
10	388.00	325.00	454.00	334.00	1
11	454.00	334.00	500.00	340.00	3
12	500.00	340.00	633.00	373.00	3
13	633.00	373.00	637.00	373.00	13
14	637.00	373.00	650.00	376.00	8
15	650.00	376.00	709.00	394.00	9
16	709.00	394.00	777.00	413.00	10
17	777.00	413.00	830.00	437.00	11
18	830.00	437.00	870.00	453.00	12
19	870.00	453.00	900.00	456.00	12
20	60.00	299.00	86.00	273.00	4
21	86.00	273.00	134.00	260.00	4
22	134.00	260.00	140.00	260.00	4
23	140.00	260.00	144.00	260.00	13
24	144.00	260.00	170.00	259.00	3
25	170.00	259.00	416.00	298.00	3
26	416.00	298.00	454.00	334.00	3
27	144.00	260.00	170.00	257.00	13
28	170.00	257.00	433.00	290.00	13
29	433.00	290.00	480.00	296.00	13
30	480.00	296.00	535.00	311.00	13
31	535.00	311.00	556.00	319.00	13
32	556.00	319.00	607.00	347.00	13
33	607.00	347.00	633.00	373.00	13
34	140.00	260.00	170.00	253.00	4
35	170.00	253.00	433.00	286.00	4
36	433.00	286.00	480.00	292.00	5
37	480.00	292.00	535.00	307.00	5
38	535.00	307.00	556.00	315.00	6
39	556.00	315.00	607.00	343.00	7
40	607.00	343.00	637.00	373.00	8

41	830.00	437.00	900.00	372.00	11
42	777.00	413.00	900.00	268.00	10
43	709.00	394.00	900.00	147.00	9
44	650.00	376.00	827.00	100.00	8
45	607.00	343.00	733.00	100.00	7
46	556.00	315.00	644.00	100.00	6
47	535.00	307.00	601.00	100.00	5
48	433.00	286.00	479.00	100.00	4

User Specified Y-Origin = 100.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit	Cohesion Intercept	Friction Angle

No.	(deg)	(psf)	(deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.
Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 Trial Surfaces Have Been Generated.
6 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 10.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	150.10	257.00	179.90	254.00	5.00
2	180.00	254.00	433.00	287.00	5.00
3	480.00	293.00	534.00	308.00	5.00
4	535.00	308.00	556.00	316.00	5.00
5	580.00	327.00	610.00	346.00	5.00
6	611.00	346.00	630.00	367.00	5.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Evaluated = 500
Statistical Data On All Valid FS Values:
FS Max = 35.326 FS Min = 2.886 FS Ave = 3.788
Standard Deviation = 2.490 Coefficient of Variation = 65.74 %

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.03	293.30
2	110.63	290.98
3	117.89	284.11
4	124.96	277.04
5	132.50	270.47
6	141.07	265.32
7	150.06	260.93
8	159.35	257.22
9	169.25	255.81
10	228.29	261.29
11	497.77	296.89
12	553.92	314.69
13	595.00	337.66
14	619.93	357.20
15	625.97	365.18
16	632.39	372.84
17	632.39	372.85

Factor of Safety

*** 2.886 ***

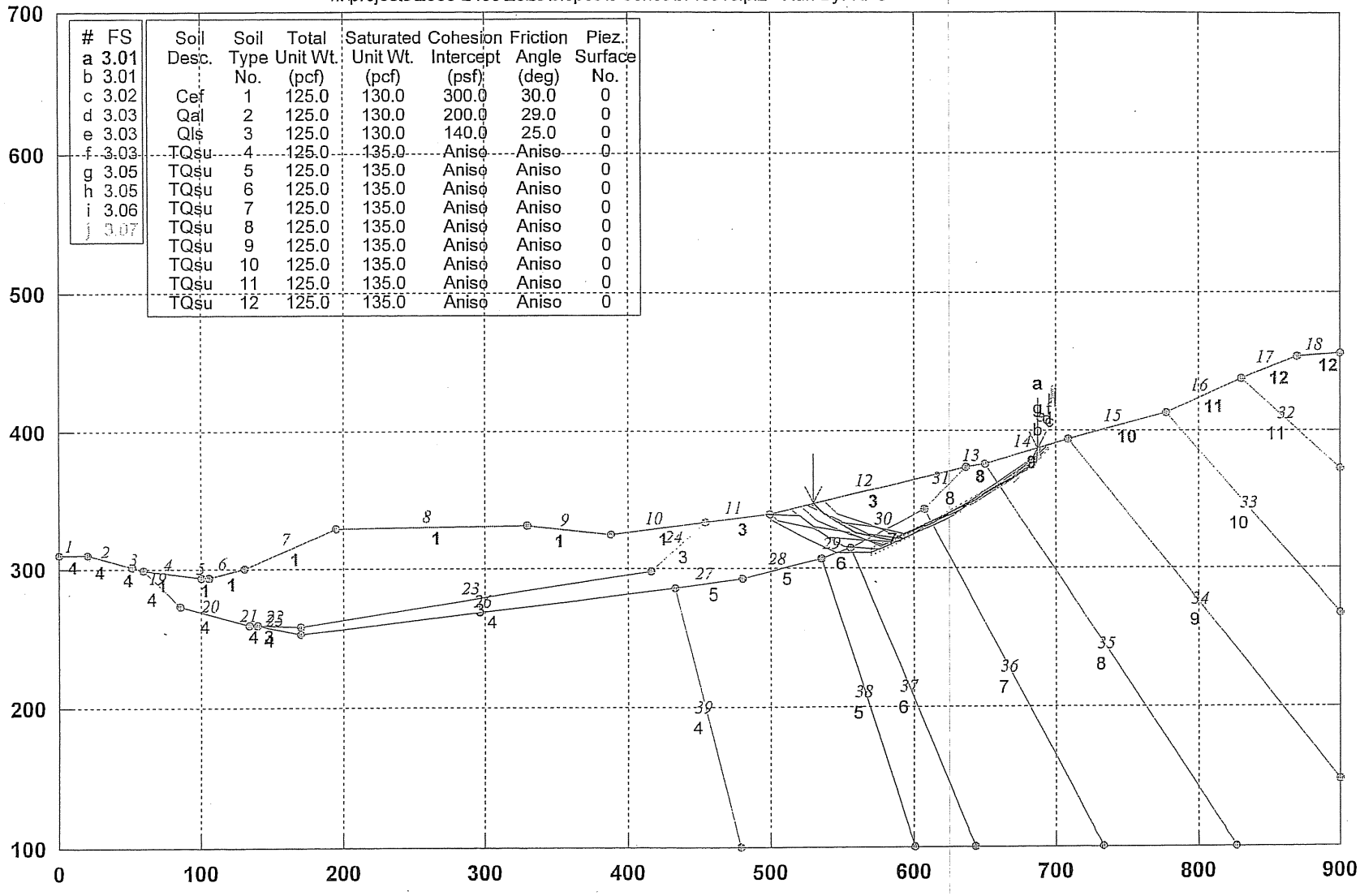
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Mesas East, x-sect 14E-14E'; Bedding Plane; Static

n:\projects\2000-2499\2023\slopes\e-series\t14es1c.pl2 Run By: KPC

#	FS
a	3.01
b	3.01
c	3.02
d	3.03
e	3.03
f	3.03
g	3.05
h	3.05
i	3.06
j	3.07

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0
Qal	2	125.0	130.0	200.0	29.0	0
Qls	3	125.0	130.0	140.0	25.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0
TQsu	5	125.0	135.0	Aniso	Aniso	0
TQsu	6	125.0	135.0	Aniso	Aniso	0
TQsu	7	125.0	135.0	Aniso	Aniso	0
TQsu	8	125.0	135.0	Aniso	Aniso	0
TQsu	9	125.0	135.0	Aniso	Aniso	0
TQsu	10	125.0	135.0	Aniso	Aniso	0
TQsu	11	125.0	135.0	Aniso	Aniso	0
TQsu	12	125.0	135.0	Aniso	Aniso	0



GSTABL7 v.2 FSmin=3.01

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

RUN NO. 106

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.003, June 2002 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date:
Time of Run: 10:02AM
Run By: KPC
Input Data Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es1c.in
Output Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es1c.OUT
Unit System: English
Plotted Output Filename: N:\Projects\2000-2499\2023\SlopeSeries\t14es1c.PLT
PROBLEM DESCRIPTION: Mesas East, x-sect 14E-14E';
Bedding Plane; Static

BOUNDARY COORDINATES
18 Top Boundaries
39 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	310.00	20.00	310.00	4
2	20.00	310.00	52.00	301.00	4
3	52.00	301.00	60.00	299.00	4
4	60.00	299.00	100.00	293.00	1
5	100.00	293.00	106.00	293.00	1
6	106.00	293.00	130.00	300.00	1
7	130.00	300.00	195.00	330.00	1
8	195.00	330.00	330.00	332.00	1
9	330.00	332.00	388.00	325.00	1
10	388.00	325.00	454.00	334.00	1
11	454.00	334.00	500.00	340.00	3
12	500.00	340.00	637.00	373.00	3
13	637.00	373.00	650.00	376.00	8
14	650.00	376.00	709.00	394.00	9
15	709.00	394.00	777.00	413.00	10
16	777.00	413.00	830.00	437.00	11
17	830.00	437.00	870.00	453.00	12
18	870.00	453.00	900.00	456.00	12
19	60.00	299.00	86.00	273.00	4
20	86.00	273.00	134.00	260.00	4
21	134.00	260.00	140.00	260.00	4
22	140.00	260.00	170.00	259.00	3
23	170.00	259.00	416.00	298.00	3
24	416.00	298.00	454.00	334.00	3
25	140.00	260.00	170.00	253.00	4
26	170.00	253.00	433.00	286.00	4
27	433.00	286.00	480.00	292.00	5
28	480.00	292.00	535.00	307.00	5
29	535.00	307.00	556.00	315.00	6
30	556.00	315.00	607.00	343.00	7
31	607.00	343.00	637.00	373.00	8
32	830.00	437.00	900.00	372.00	11
33	777.00	413.00	900.00	268.00	10
34	709.00	394.00	900.00	147.00	9
35	650.00	376.00	827.00	100.00	8
36	607.00	343.00	733.00	100.00	7
37	556.00	315.00	644.00	100.00	6
38	535.00	307.00	601.00	100.00	5
39	433.00	286.00	479.00	100.00	4

User Specified Y-Origin = 100.00(ft)

Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
12 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00

2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.
500 Trial Surfaces Have Been Generated.
3 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 25.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	570.00	312.00	600.00	326.00	5.00
2	620.00	336.00	650.00	354.00	5.00
3	670.00	365.00	690.00	381.00	5.00

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Evaluated = 500
Statistical Data On All Valid FS Values:
FS Max = 5.112 FS Min = 3.005 FS Ave = 3.672
Standard Deviation = 0.338 Coefficient of Variation = 9.21 %
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	529.71	347.16
2	538.11	339.09
3	559.65	326.41
4	584.02	320.83
5	637.76	346.34
6	679.56	371.11
7	687.31	387.38

Factor of Safety
*** 3.005 ***

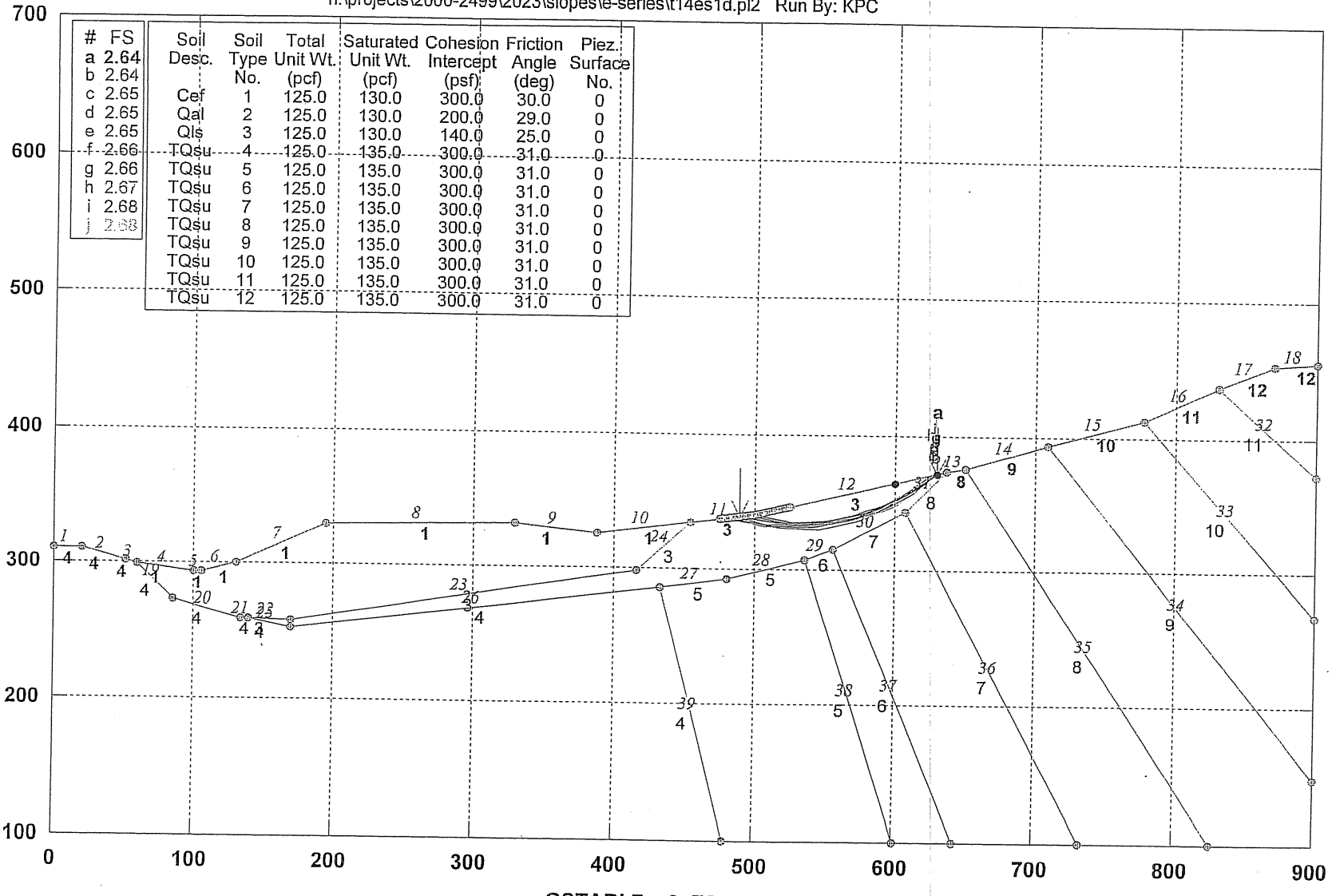
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Mesas East, x-sect 14E-14E'; Circular; Static

n:\projects\2000-2499\2023\slopes\e-series\t14es1d.pl2 Run By: KPC

#	FS
a	2.64
b	2.64
c	2.65
d	2.65
e	2.65
f	2.66
g	2.66
h	2.67
i	2.68
j	2.68

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0
Qal	2	125.0	130.0	200.0	29.0	0
Qls	3	125.0	130.0	140.0	25.0	0
TQsu	4	125.0	135.0	300.0	31.0	0
TQsu	5	125.0	135.0	300.0	31.0	0
TQsu	6	125.0	135.0	300.0	31.0	0
TQsu	7	125.0	135.0	300.0	31.0	0
TQsu	8	125.0	135.0	300.0	31.0	0
TQsu	9	125.0	135.0	300.0	31.0	0
TQsu	10	125.0	135.0	300.0	31.0	0
TQsu	11	125.0	135.0	300.0	31.0	0
TQsu	12	125.0	135.0	300.0	31.0	0



GSTABL7 v.2 FSmin=2.64

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

RUN NO. 107

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.003, June 2002 **
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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run: 10:03AM
Run By: KPC
Input Data Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es1d.in
Output Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es1d.OUT
Unit System: English
Plotted Output Filename: N:\Projects\2000-2499\2023\SlopeSeries\t14es1d.PLT
PROBLEM DESCRIPTION: Mesas East, x-sect 14E-14E';
Circular; Static

BOUNDARY COORDINATES
18 Top Boundaries
39 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	310.00	20.00	310.00	4
2	20.00	310.00	52.00	301.00	4
3	52.00	301.00	60.00	299.00	4
4	60.00	299.00	100.00	293.00	1
5	100.00	293.00	106.00	293.00	1
6	106.00	293.00	130.00	300.00	1
7	130.00	300.00	195.00	330.00	1
8	195.00	330.00	330.00	332.00	1
9	330.00	332.00	388.00	325.00	1
10	388.00	325.00	454.00	334.00	1
11	454.00	334.00	500.00	340.00	3
12	500.00	340.00	637.00	373.00	3
13	637.00	373.00	650.00	376.00	8
14	650.00	376.00	709.00	394.00	9
15	709.00	394.00	777.00	413.00	10
16	777.00	413.00	830.00	437.00	11
17	830.00	437.00	870.00	453.00	12
18	870.00	453.00	900.00	456.00	12
19	60.00	299.00	86.00	273.00	4
20	86.00	273.00	134.00	260.00	4
21	134.00	260.00	140.00	260.00	4
22	140.00	260.00	170.00	259.00	3
23	170.00	259.00	416.00	298.00	3
24	416.00	298.00	454.00	334.00	3
25	140.00	260.00	170.00	253.00	4
26	170.00	253.00	433.00	286.00	4
27	433.00	286.00	480.00	292.00	5
28	480.00	292.00	535.00	307.00	5
29	535.00	307.00	556.00	315.00	6
30	556.00	315.00	607.00	343.00	7
31	607.00	343.00	637.00	373.00	8
32	830.00	437.00	900.00	372.00	11
33	777.00	413.00	900.00	268.00	10
34	709.00	394.00	900.00	147.00	9
35	650.00	376.00	827.00	100.00	8
36	607.00	343.00	733.00	100.00	7
37	556.00	315.00	644.00	100.00	6
38	535.00	307.00	601.00	100.00	5
39	433.00	286.00	479.00	100.00	4

User Specified Y-Origin = 100.00(ft)

Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
12 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00

2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

ANISOTROPIC STRENGTH DATA HAS BEEN SUPPRESSED
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.
500 Trial Surfaces Have Been Generated.
10 Surface(s) Initiate(s) From Each Of 50 Points Equally Spaced
Along The Ground Surface Between X = 475.00(ft)
and X = 525.00(ft)
Each Surface Terminates Between X = 600.00(ft)
and X = 630.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
30.00(ft) Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And 0.0 deg.
Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Evaluated = 500
Statistical Data On All Valid FS Values:
FS Max = 6.087 FS Min = 2.640 FS Ave = 3.789
Standard Deviation = 0.907 Coefficient of Variation = 23.94 %
Failure Surface Specified By 6 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	489.29	338.60
2	518.91	333.85
3	548.89	334.89
4	578.11	341.69
5	605.47	353.99
6	629.91	371.29

Circle Center At X = 528.54 ; Y = 488.56 ; and Radius = 155.01
Factor of Safety

*** 2.640 ***

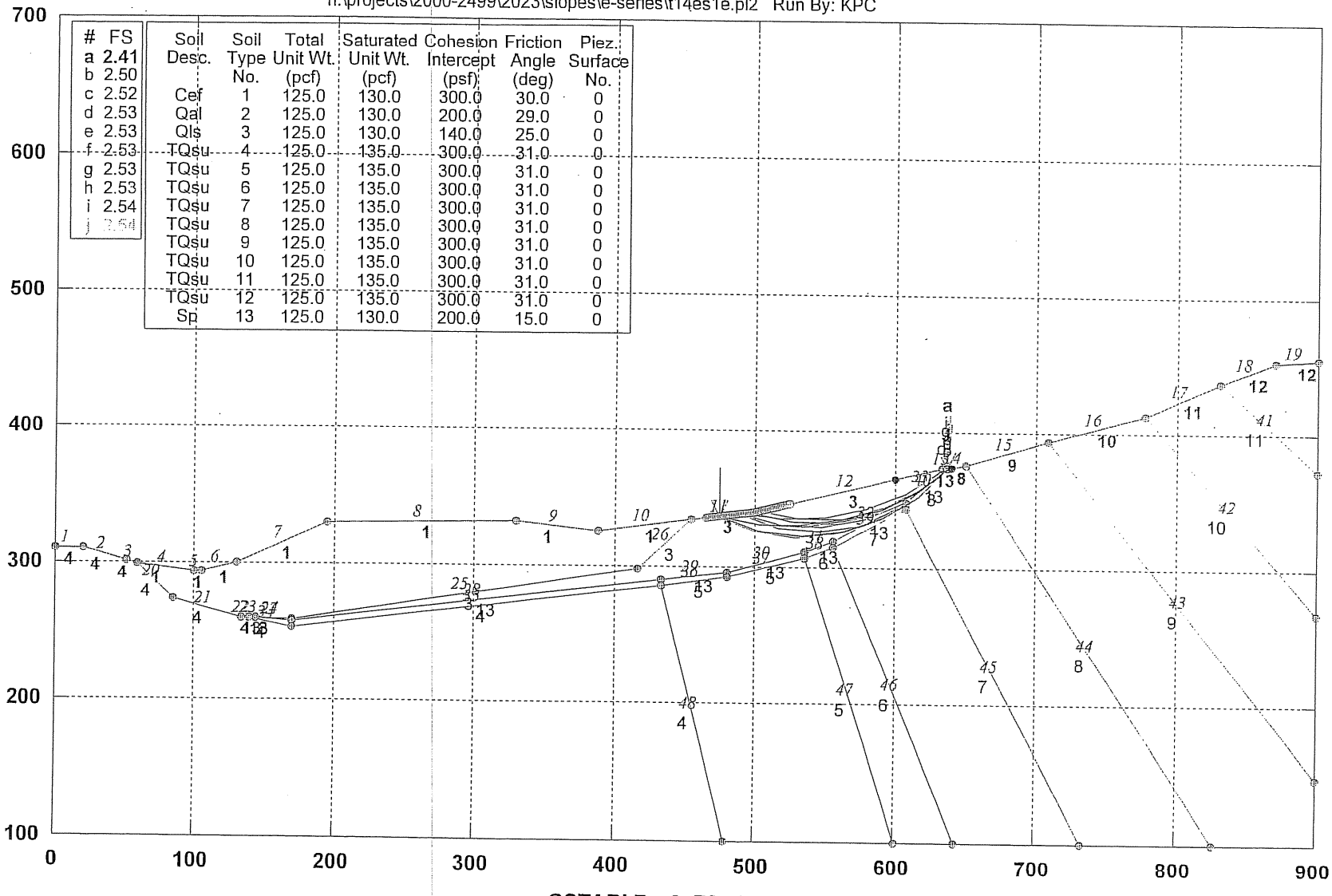
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Mesas East, x-sect 14E-14E'; Landslide Plane; Static

n:\projects\2000-2499\2023\slopes\e-series\t14es1e.pl2 Run By: KPC

#	FS
a	2.41
b	2.50
c	2.52
d	2.53
e	2.53
f	2.53
g	2.53
h	2.53
i	2.54
j	2.54

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0
Qal	2	125.0	130.0	200.0	29.0	0
Qls	3	125.0	130.0	140.0	25.0	0
TQsu	4	125.0	135.0	300.0	31.0	0
TQsu	5	125.0	135.0	300.0	31.0	0
TQsu	6	125.0	135.0	300.0	31.0	0
TQsu	7	125.0	135.0	300.0	31.0	0
TQsu	8	125.0	135.0	300.0	31.0	0
TQsu	9	125.0	135.0	300.0	31.0	0
TQsu	10	125.0	135.0	300.0	31.0	0
TQsu	11	125.0	135.0	300.0	31.0	0
TQsu	12	125.0	135.0	300.0	31.0	0
Sp	13	125.0	130.0	200.0	15.0	0



GSTABL7 v.2 FSmin=2.41

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

RUN NO. 108

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.003, June 2002 **
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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run: 10:04AM
Run By: KPC
Input Data Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es1e.in
Output Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es1e.OUT
Unit System: English
Plotted Output Filename: N:\Projects\2000-2499\2023\SlopeSeries\t14es1e.PLT
PROBLEM DESCRIPTION: Mesas East, x-sect 14E-14E';
Landslide Plane; Static

BOUNDARY COORDINATES
19 Top Boundaries
48 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	310.00	20.00	310.00	4
2	20.00	310.00	52.00	301.00	4
3	52.00	301.00	60.00	299.00	4
4	60.00	299.00	100.00	293.00	1
5	100.00	293.00	106.00	293.00	1
6	106.00	293.00	130.00	300.00	1
7	130.00	300.00	195.00	330.00	1
8	195.00	330.00	330.00	332.00	1
9	330.00	332.00	388.00	325.00	1
10	388.00	325.00	454.00	334.00	1
11	454.00	334.00	500.00	340.00	3
12	500.00	340.00	633.00	373.00	3
13	633.00	373.00	637.00	373.00	13
14	637.00	373.00	650.00	376.00	8
15	650.00	376.00	709.00	394.00	9
16	709.00	394.00	777.00	413.00	10
17	777.00	413.00	830.00	437.00	11
18	830.00	437.00	870.00	453.00	12
19	870.00	453.00	900.00	456.00	12
20	60.00	299.00	86.00	273.00	4
21	86.00	273.00	134.00	260.00	4
22	134.00	260.00	140.00	260.00	4
23	140.00	260.00	144.00	260.00	13
24	144.00	260.00	170.00	259.00	3
25	170.00	259.00	416.00	298.00	3
26	416.00	298.00	454.00	334.00	3
27	144.00	260.00	170.00	257.00	13
28	170.00	257.00	433.00	290.00	13
29	433.00	290.00	480.00	296.00	13
30	480.00	296.00	535.00	311.00	13
31	535.00	311.00	556.00	319.00	13
32	556.00	319.00	607.00	347.00	13
33	607.00	347.00	633.00	373.00	13
34	140.00	260.00	170.00	253.00	4
35	170.00	253.00	433.00	286.00	4
36	433.00	286.00	480.00	292.00	5
37	480.00	292.00	535.00	307.00	5
38	535.00	307.00	556.00	315.00	6
39	556.00	315.00	607.00	343.00	7
40	607.00	343.00	637.00	373.00	8

41	830.00	437.00	900.00	372.00	11
42	777.00	413.00	900.00	268.00	10
43	709.00	394.00	900.00	147.00	9
44	650.00	376.00	827.00	100.00	8
45	607.00	343.00	733.00	100.00	7
46	556.00	315.00	644.00	100.00	6
47	535.00	307.00	601.00	100.00	5
48	433.00	286.00	479.00	100.00	4

User Specified Y-Origin = 100.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range	Counterclockwise Direction Limit	Cohesion Intercept	Friction Angle

No.	(deg)	(psf)	(deg)
1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.
ANISOTROPIC STRENGTH DATA HAS BEEN SUPPRESSED
A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.
500 Trial Surfaces Have Been Generated.
10 Surface(s) Initiate(s) From Each Of 50 Points Equally Spaced Along The Ground Surface Between X = 465.00(ft)
and X = 525.00(ft)
Each Surface Terminates Between X = 600.00(ft)
and X = 640.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00(ft)
30.00(ft) Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -45.0
And 0.0 deg.
Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Evaluated = 500
Statistical Data On All Valid FS Values:
FS Max = 5.456 FS Min = 2.413 FS Ave = 3.643
Standard Deviation = 0.864 Coefficient of Variation = 23.73 %
Failure Surface Specified By 7 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	474.80	336.71
2	503.01	326.52
3	532.80	322.98
4	562.62	326.26
5	590.93	336.21
6	616.25	352.30
7	636.59	373.00

Circle Center At X = 533.37 ; Y = 454.76 ; and Radius = 131.78

Factor of Safety

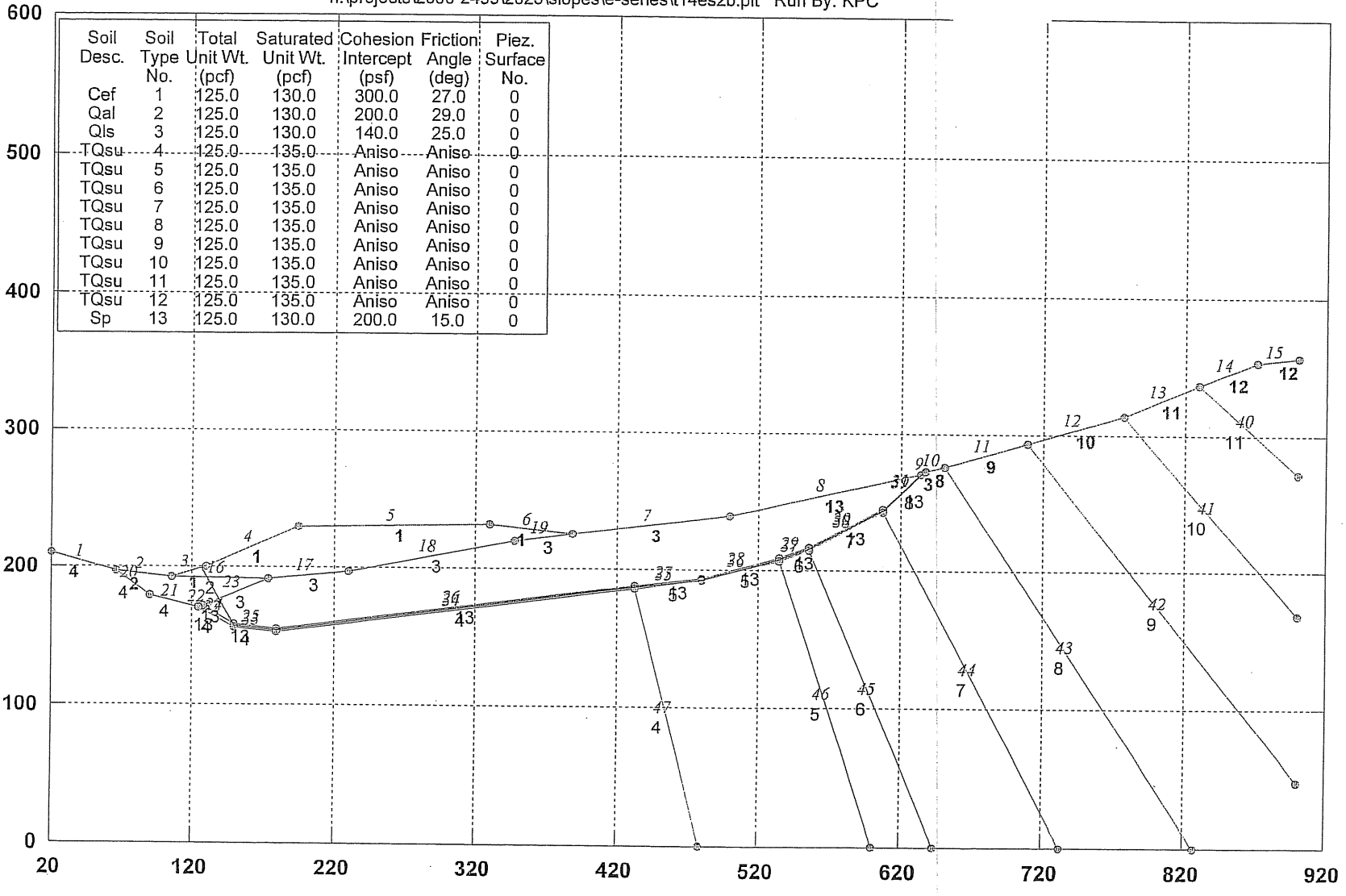
*** 2.413 ***

For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Mesas East - Sect 14E-14E'; Slide Plane specified; Static

n:\projects\2000-2499\2023\slopes\e-series\t14es2b.plt Run By: KPC

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	27.0	0
Qal	2	125.0	130.0	200.0	29.0	0
Qls	3	125.0	130.0	140.0	25.0	0
TQsu	4	125.0	135.0	Aniso	Aniso	0
TQsu	5	125.0	135.0	Aniso	Aniso	0
TQsu	6	125.0	135.0	Aniso	Aniso	0
TQsu	7	125.0	135.0	Aniso	Aniso	0
TQsu	8	125.0	135.0	Aniso	Aniso	0
TQsu	9	125.0	135.0	Aniso	Aniso	0
TQsu	10	125.0	135.0	Aniso	Aniso	0
TQsu	11	125.0	135.0	Aniso	Aniso	0
TQsu	12	125.0	135.0	Aniso	Aniso	0
Sp	13	125.0	130.0	200.0	15.0	0



GSTABL7 v.2 FSmin=2.50

Factor Of Safety Is Calculated By The Modified Bishop Method

GSTABL7

Run No. 109

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.003, June 2002 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.
****

Analysis Run Date:
Time of Run: 10:05AM
Run By: KPC
Input Data Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es2b.in
Output Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t14es2b.OUT
Unit System: English
Plotted Output Filename: N:\Projects\2000-2499\2023\SlopeSeries\t14es2b.PLT
PROBLEM DESCRIPTION: Mesas East - Sect 14E-14E';
Slide Plane specified; Static

BOUNDARY COORDINATES
15 Top Boundaries
47 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	20.00	210.00	66.00	197.00	4
2	66.00	197.00	106.00	193.00	2
3	106.00	193.00	130.00	200.00	1
4	130.00	200.00	195.00	230.00	1
5	195.00	230.00	330.00	232.00	1
6	330.00	232.00	388.00	225.00	1
7	388.00	225.00	500.00	240.00	3
8	500.00	240.00	634.00	271.00	13
9	634.00	271.00	637.00	273.00	3
10	637.00	273.00	650.00	276.00	8
11	650.00	276.00	709.00	294.00	9
12	709.00	294.00	777.00	313.00	10
13	777.00	313.00	830.00	337.00	11
14	830.00	337.00	870.00	353.00	12
15	870.00	353.00	900.00	356.00	12
16	106.00	193.00	174.00	191.00	2
17	174.00	191.00	230.00	197.00	3
18	230.00	197.00	348.00	220.00	3
19	348.00	220.00	388.00	225.00	3
20	66.00	197.00	90.00	179.00	4
21	90.00	179.00	125.00	171.00	4
22	125.00	171.00	128.00	172.00	13
23	128.00	172.00	174.00	191.00	3
24	128.00	172.00	150.00	158.00	13
25	150.00	158.00	180.00	155.00	13
26	180.00	155.00	433.00	188.00	13
27	433.00	188.00	480.00	194.00	13
28	480.00	194.00	535.00	209.00	13
29	535.00	209.00	556.00	217.00	13
30	556.00	217.00	607.00	245.00	13
31	607.00	245.00	637.00	273.00	13
32	125.00	171.00	150.00	156.00	4
33	150.00	156.00	180.00	153.00	4
34	180.00	153.00	433.00	186.00	4
35	433.00	186.00	480.00	192.00	5
36	480.00	192.00	535.00	207.00	5
37	535.00	207.00	556.00	215.00	6
38	556.00	215.00	607.00	243.00	7
39	607.00	243.00	637.00	273.00	8
40	830.00	337.00	900.00	272.00	11

41	777.00	313.00	900.00	168.00	10
42	709.00	294.00	900.00	47.00	9
43	650.00	276.00	827.00	0.00	8
44	607.00	243.00	733.00	0.00	7
45	556.00	215.00	644.00	0.00	6
46	535.00	207.00	601.00	0.00	5
47	433.00	186.00	479.00	0.00	4

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
User Specified Y-Plus Value = -100.00(ft)

ISOTROPIC SOIL PARAMETERS
13 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	125.0	130.0	300.0	27.0	0.00	0.0	0
2	125.0	130.0	200.0	29.0	0.00	0.0	0
3	125.0	130.0	140.0	25.0	0.00	0.0	0
4	125.0	135.0	300.0	31.0	0.00	0.0	0
5	125.0	135.0	300.0	31.0	0.00	0.0	0
6	125.0	135.0	300.0	31.0	0.00	0.0	0
7	125.0	135.0	300.0	31.0	0.00	0.0	0
8	125.0	135.0	300.0	31.0	0.00	0.0	0
9	125.0	135.0	300.0	31.0	0.00	0.0	0
10	125.0	135.0	300.0	31.0	0.00	0.0	0
11	125.0	135.0	300.0	31.0	0.00	0.0	0
12	125.0	135.0	300.0	31.0	0.00	0.0	0
13	125.0	130.0	200.0	15.0	0.00	0.0	0

ANISOTROPIC STRENGTH PARAMETERS
9 soil type(s)

Soil Type 4 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	11.0	300.00	31.00
2	13.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 5 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	14.0	300.00	31.00
2	16.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 6 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	19.0	300.00	31.00
2	21.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 7 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	24.0	300.00	31.00
2	26.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 8 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)

1	29.0	300.00	31.00
2	31.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 9 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	34.0	300.00	31.00
2	36.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 10 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	39.0	300.00	31.00
2	41.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 11 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	44.0	300.00	31.00
2	46.0	200.00	20.00
3	90.0	300.00	31.00

Soil Type 12 Is Anisotropic
Number Of Direction Ranges Specified = 3

Direction Range No.	Counterclockwise Direction Limit (deg)	Cohesion Intercept (psf)	Friction Angle (deg)
1	49.0	300.00	31.00
2	51.0	200.00	20.00
3	90.0	300.00	31.00

ANISOTROPIC SOIL NOTES:
(1) An input value of 0.01 for C and/or Phi will cause Aniso C and/or Phi to be ignored in that range.
(2) An input value of 0.02 for Phi will set both Phi and C equal to zero, with no water weight in the tension crack.
(3) An input value of 0.03 for Phi will set both Phi and C equal to zero, with water weight in the tension crack.

Trial Failure Surface Specified By 9 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	127.00	199.12
2	150.00	157.00
3	180.00	154.00
4	433.00	187.00
5	480.00	193.00
6	535.00	208.00
7	556.00	216.00
8	607.00	244.00
9	635.00	271.67

Circle Center At X = 306.691(ft) ; Y = 866.655(ft); and Radius = 691.292(ft)
* * Factor Of Safety Is Calculated By The Modified Bishop Method * *
Factor Of Safety For The Preceding Specified Surface = 2.499

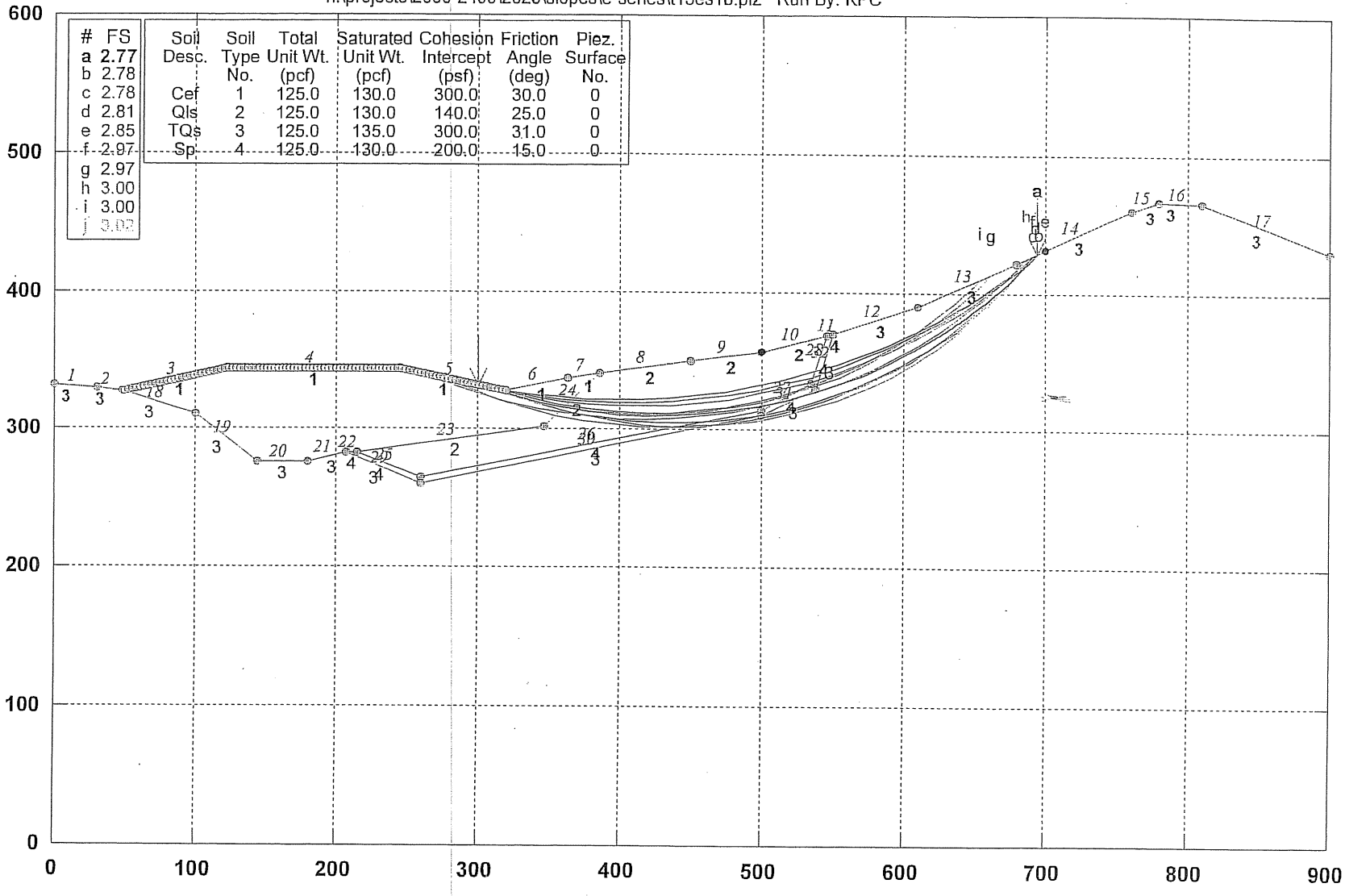
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Mesas East, x-sect 15E-15E'; Landslide Plane

n:\projects\2000-2499\2023\slopes\e-series\t15es1b.pl2 Run By: KPC

#	FS
a	2.77
b	2.78
c	2.78
d	2.81
e	2.85
f	2.97
g	2.97
h	3.00
i	3.00
j	3.02

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0
Qls	2	125.0	130.0	140.0	25.0	0
TQs	3	125.0	135.0	300.0	31.0	0
Sp	4	125.0	130.0	200.0	15.0	0



GSTABL7 v.2 FSmin=2.77

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

RUN NO. 110

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.003, June 2002 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date:
Time of Run: 10:13AM
Run By: KPC
Input Data Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t15es1b.in
Output Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t15es1b.OUT
Unit System: English
Plotted Output Filename: N:\Projects\2000-2499\2023\SlopeSeries\t15es1b.PLT
PROBLEM DESCRIPTION: Mesas East, x-sect 15E-15E';
Landslide Plane

BOUNDARY COORDINATES
17 Top Boundaries
32 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	332.00	30.00	330.00	3
2	30.00	330.00	48.00	327.00	3
3	48.00	327.00	123.00	344.00	1
4	123.00	344.00	245.00	344.00	1
5	245.00	344.00	320.00	328.00	1
6	320.00	328.00	363.00	338.00	1
7	363.00	338.00	386.00	341.00	1
8	386.00	341.00	450.00	350.00	2
9	450.00	350.00	500.00	357.00	2
10	500.00	357.00	546.00	369.00	2
11	546.00	369.00	550.00	370.00	4
12	550.00	370.00	610.00	390.00	3
13	610.00	390.00	680.00	422.00	3
14	680.00	422.00	760.00	460.00	3
15	760.00	460.00	780.00	467.00	3
16	780.00	467.00	810.00	466.00	3
17	810.00	466.00	900.00	430.00	3
18	48.00	327.00	100.00	310.00	3
19	100.00	310.00	144.00	276.00	3
20	144.00	276.00	180.00	276.00	3
21	180.00	276.00	207.00	282.00	3
22	207.00	282.00	215.00	282.00	4
23	215.00	282.00	347.00	302.00	2
24	347.00	302.00	386.00	341.00	2
25	215.00	282.00	260.00	264.00	4
26	260.00	264.00	500.00	314.00	4
27	500.00	314.00	534.00	334.00	4
28	534.00	334.00	546.00	369.00	4
29	207.00	282.00	260.00	260.00	3
30	260.00	260.00	500.00	310.00	3
31	500.00	310.00	538.00	330.00	3
32	538.00	330.00	550.00	370.00	3

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.

1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	140.0	25.0	0.00	0.0	0
3	125.0	135.0	300.0	31.0	0.00	0.0	0
4	125.0	130.0	200.0	15.0	0.00	0.0	0

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.
1000 Trial Surfaces Have Been Generated.
10 Surface(s) Initiate(s) From Each Of 100 Points Equally Spaced
Along The Ground Surface Between X = 50.00(ft)
and X = 320.00(ft)
Each Surface Terminates Between X = 500.00(ft)
and X = 700.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
20.00(ft) Line Segments Define Each Trial Failure Surface.
Restrictions Have Been Imposed Upon The Angle Of Initiation.
The Angle Has Been Restricted Between The Angles Of -50.0
And -10.0 deg.
Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Evaluated = 1000
Statistical Data On All Valid FS Values:
FS Max = 59.482 FS Min = 2.766 FS Ave = 9.453
Standard Deviation = 7.635 Coefficient of Variation = 80.77 %
Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	300.91	332.07
2	319.86	325.69
3	339.14	320.37
4	358.69	316.12
5	378.43	312.95
6	398.32	310.87
7	418.30	309.90
8	438.30	310.02
9	458.26	311.26
10	478.13	313.58
11	497.83	317.01
12	517.32	321.51
13	536.53	327.08
14	555.40	333.70
15	573.88	341.35
16	591.91	350.01
17	609.43	359.65
18	626.39	370.24
19	642.75	381.75
20	658.45	394.15
21	673.43	407.39
22	687.67	421.44
23	694.37	428.82

Circle Center At X = 425.98 ; Y = 672.36 ; and Radius = 362.55
Factor of Safety
*** 2.766 ***

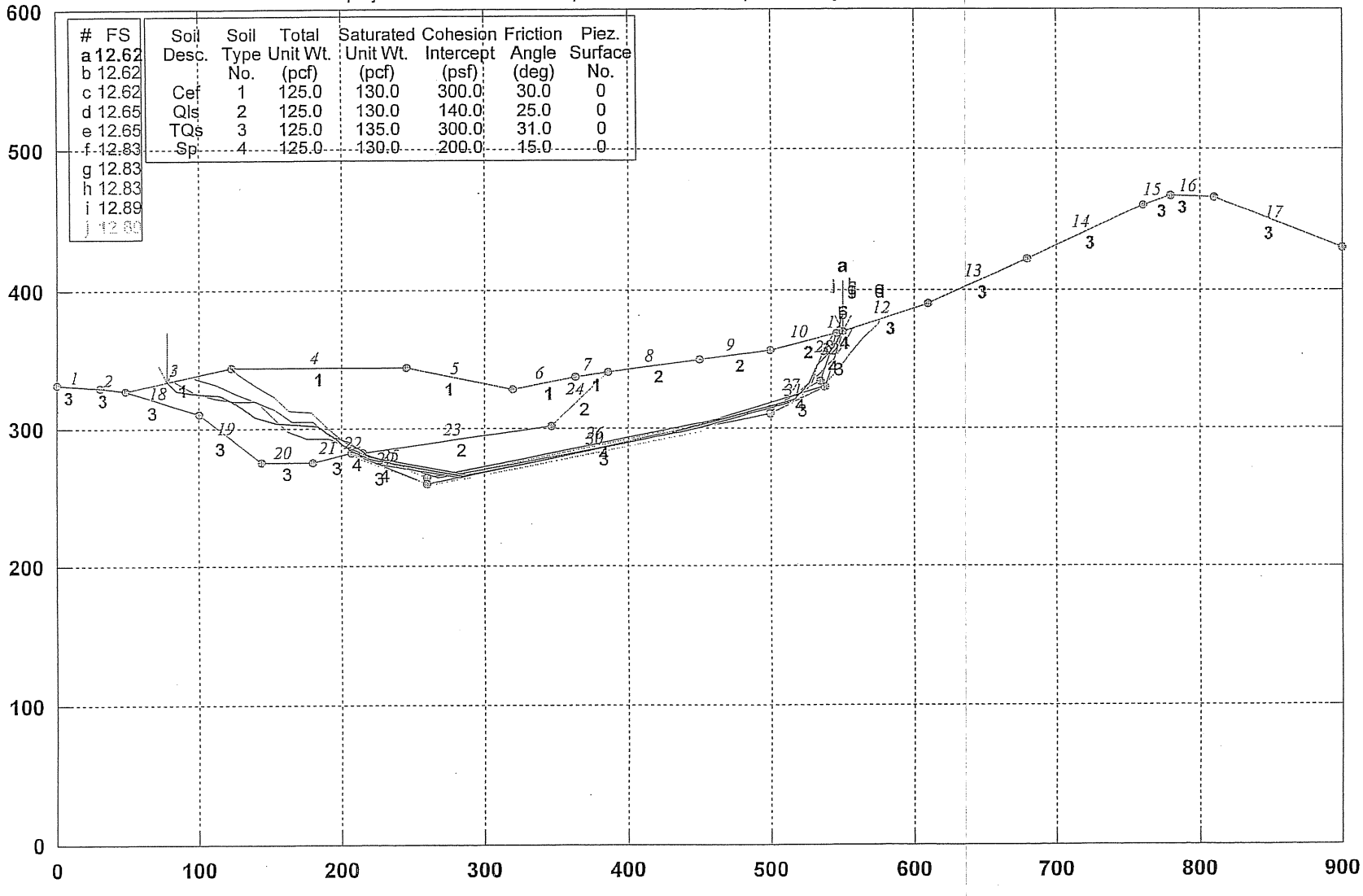
For use with report dated 04/06/2007; RTF Job No. 2004-700-22

Mesas East, x-sect 15E-15E'; Landslide Plane

n:\projects\2000-2499\2023\slopes\e-series\t15es1a.pl2 Run By: KPC

#	FS
a	12.62
b	12.62
c	12.62
d	12.65
e	12.65
f	12.83
g	12.83
h	12.83
i	12.89
j	12.90

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Cef	1	125.0	130.0	300.0	30.0	0
Qls	2	125.0	130.0	140.0	25.0	0
TQs	3	125.0	135.0	300.0	31.0	0
Sp	4	125.0	130.0	200.0	15.0	0



GSTABL7 v.2 FSmin=12.62

Safety Factors Are Calculated By The Simplified Janbu Method for the case of c & phi both > 0

GSTABL7

Run No. 111

*** GSTABL7 ***
** GSTABL7 by Garry H. Gregory, P.E. **
** Original Version 1.0, January 1996; Current Version 2.003, June 2002 **
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SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date:
Time of Run: 10:10AM
Run By: KPC
Input Data Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t15es1a.in
Output Filename: N:\Projects\2000-2499\2023\Slopes\E-Series\t15es1a.OUT
Unit System: English
Plotted Output Filename: N:\Projects\2000-2499\2023\SlopeSeries\t15es1a.PLT
PROBLEM DESCRIPTION: Mesas East, x-sect 15E-15E';
Landslide Plane

BOUNDARY COORDINATES
17 Top Boundaries
32 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	332.00	30.00	330.00	3
2	30.00	330.00	48.00	327.00	3
3	48.00	327.00	123.00	344.00	1
4	123.00	344.00	245.00	344.00	1
5	245.00	344.00	320.00	328.00	1
6	320.00	328.00	363.00	338.00	1
7	363.00	338.00	386.00	341.00	1
8	386.00	341.00	450.00	350.00	2
9	450.00	350.00	500.00	357.00	2
10	500.00	357.00	546.00	369.00	2
11	546.00	369.00	550.00	370.00	4
12	550.00	370.00	610.00	390.00	3
13	610.00	390.00	680.00	422.00	3
14	680.00	422.00	760.00	460.00	3
15	760.00	460.00	780.00	467.00	3
16	780.00	467.00	810.00	466.00	3
17	810.00	466.00	900.00	430.00	3
18	48.00	327.00	100.00	310.00	3
19	100.00	310.00	144.00	276.00	3
20	144.00	276.00	180.00	276.00	3
21	180.00	276.00	207.00	282.00	3
22	207.00	282.00	215.00	282.00	4
23	215.00	282.00	347.00	302.00	2
24	347.00	302.00	386.00	341.00	2
25	215.00	282.00	260.00	264.00	4
26	260.00	264.00	500.00	314.00	4
27	500.00	314.00	534.00	334.00	4
28	534.00	334.00	546.00	369.00	4
29	207.00	282.00	260.00	260.00	3
30	260.00	260.00	500.00	310.00	3
31	500.00	310.00	538.00	330.00	3
32	538.00	330.00	550.00	370.00	3

Default Y-Origin = 0.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.

1	125.0	130.0	300.0	30.0	0.00	0.0	0
2	125.0	130.0	140.0	25.0	0.00	0.0	0
3	125.0	135.0	300.0	31.0	0.00	0.0	0
4	125.0	130.0	200.0	15.0	0.00	0.0	0

Janbus Empirical Coef is being used for the case of c & phi both > 0
A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Sliding Block Surfaces, Has Been
Specified.
500 Trial Surfaces Have Been Generated.
4 Boxes Specified For Generation Of Central Block Base
Length Of Line Segments For Active And Passive Portions Of
Sliding Block Is 15.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	210.00	282.00	260.00	262.00	5.00
2	265.00	262.00	290.00	267.00	5.00
3	300.00	269.00	460.00	302.00	5.00
4	500.00	312.00	536.00	332.00	5.00

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Simplified Janbu Method * *
Total Number of Trial Surfaces Evaluated = 500
Statistical Data On All Valid FS Values:
FS Max = 40.956 FS Min = 12.624 FS Ave = 17.990
Standard Deviation = 4.264 Coefficient of Variation = 23.70 %
Failure Surface Specified By 20 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	77.77	333.75
2	84.54	327.64
3	99.26	324.73
4	114.25	324.32
5	127.26	316.85
6	139.35	307.97
7	153.86	304.18
8	168.72	302.14
9	183.72	302.03
10	195.70	293.00
11	206.85	282.97
12	221.02	278.04
13	284.36	265.39
14	424.48	294.34
15	516.18	321.09
16	526.78	331.70
17	532.20	345.68
18	542.63	356.47
19	549.64	369.73
20	549.87	369.97

Factor of Safety
*** 12.624 ***

RESPONSE TO LOS ANGLES COUNTY

DEPARTMENT OF PUBLIC WORKS

GEOTECHNICAL REVIEW

VESTING TENTATIVE TRACT MAP NO. 53295

THE ENTRADA PROJECT

VALENCIA, CALIFORNIA

VOLUME II OF II

FOR

NEWHALL LAND AND FARMING COMPANY

APRIL 6, 2007

JOB NO. 2004-700-22

RTF&A

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

SURVEY NOTES:

VERTICAL DATUM:

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK DESCRIBED AS FOLLOWS: LACDPW L5402 RND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O C/L THE OLD RD (W RDWY) AND 0.6 MI S/O HENRY MAYO DR @ MI MKR #6.25 NEWHALL QUAD, 1995 ADJUSTMENT (NAVD 1988) ELEVATION = 1031.951

THERE IS APPROXIMATELY 2.3 FEET DIFFERENCE BETWEEN PREVIOUS COUNTY OF LOS ANGELES DATUMS BASED UPON NAVD 1929 AND NAVD 1988 (NAVD 1988 IS 2.3 FEET HIGHER THAN NAVD 1929).

AERIAL PLANIMETRY:

THIS SURVEY WAS PREPARED BY PHOTOGRAMMETRIC PROCESSES, UTILIZING AERIAL PHOTOGRAPHY DATED SEPTEMBER 10, 1999. THE OUTLINE OF BUILDINGS AND OTHER ROOFED IMPROVEMENTS, MAY INCLUDE EAVES, CANOPIES AND BALCONIES, SINCE BUILDINGS BELOW THESE ITEMS ARE NOT VISIBLE TO THE CAMERA.

TOPOGRAPHY:

BY PHOTOGRAMMETRIC PROCESSES FROM LIDAR IMAGING DATED JUNE 24-26, 1998, AND COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.

CONTOUR INTERVAL:

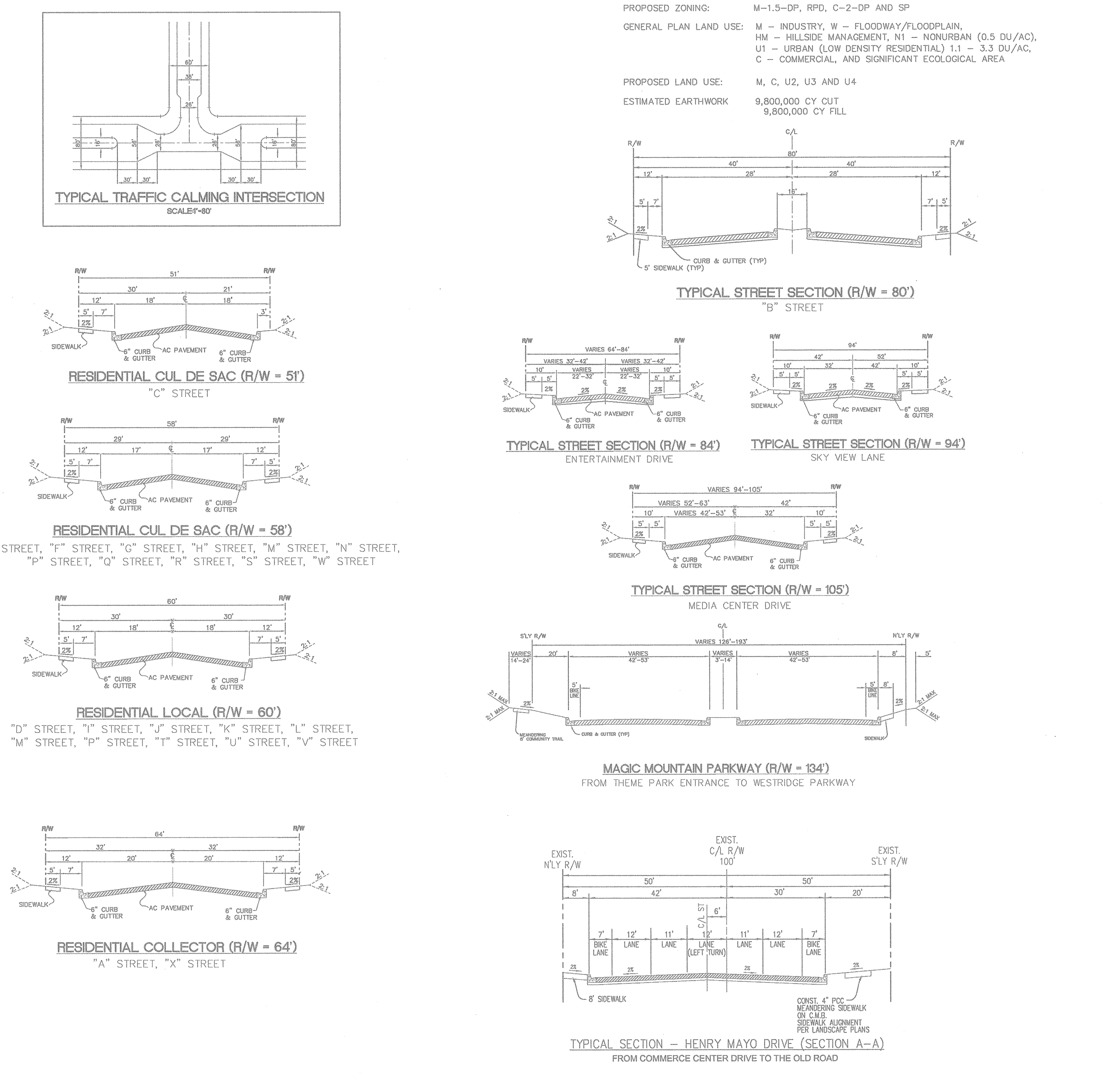
10 FOOT, UNLESS OTHERWISE NOTED.

GENERAL NOTES:

1. GRADE ELEVATIONS SHOWN ON THE VTTM ARE APPROXIMATE. THE ELEVATIONS MAY MAY CHANGE BY 10 FEET. ELEVATION CHANGES MAY BE GREATER THAN 10 FEET BUT ONLY IF DETERMINED BY DPW AND DRP THAT THE REVISIONS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL.
2. LOT LINES CAN BE ADJUSTED PROVIDED NO ADDITIONAL LOTS ARE CREATED (EXCEPT FOR OPEN SPACE LOTS). THE DEGREE OF ADJUSTMENT IS WITHIN THE DISCRETION OF THE SUBDIVIDER PROVIDED SUCH ADJUSTMENTS ARE CONSISTENT WITH THE STATE SUBDIVISION MAP ACT.
3. ALIGNMENT AND GEOMETRICS OF STREETS ARE APPROXIMATE. ADJUSTMENTS CAN BE MADE PROVIDED DPW AND DRP DETERMINE THAT THE ADJUSTMENTS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION APPROVAL.
4. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE SUBDIVISION MAP OR ACCOMPANYING EXHIBIT MAP ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS AND FOOTPRINTS MAY VARY AND WILL BE REVIEWED DURING PLOT PLAN APPROVAL AND SHALL BE GRANTED PROVIDED THE PROPOSED BUILDING SATISFIES ALL EXISTING CODES AND ORDINANCES. THIS MINOR CHANGE DOES NOT, HOWEVER, INCLUDE THE CHANGE IN PROPOSED LAND USE OR RESIDENTIAL HOUSING PRODUCT.
5. PERMISSION IS REQUESTED TO FILE "LARGE LOT" PARCEL MAPS OF 20 ACRES OR MORE (WITHOUT IMPROVEMENTS) OR 5 ACRES OR MORE (WITH IMPROVEMENTS) AS SPECIFIED IN THE COUNTY SUBDIVISION CODE.
6. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL NOT REQUIRE THE OBLIGATION OF FEES, DEDICATIONS (E.G., RIGHTS-OF-WAY OR PARKS), EXACTIONS, OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
7. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL BE CONSIDERED THE FILING OF THE FIRST UNIT FOR THE PURPOSE OF TIME EXTENSIONS PURSUANT TO THE SUBDIVISION MAP ACT.
8. PERMISSION IS REQUESTED FOR UNIT PHASING.
9. PERMISSION IS REQUESTED TO COMBINE LOTS.
10. PERMISSION IS REQUESTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
11. TRAIL LOCATIONS CAN BE RE-LOCATED THROUGH AN INFORMATION ONLY MAP.
12. THE LOCATIONS OF APPURTENANT STRUCTURES (e.g., WATER WELLS, PASEOS, PEDESTRIAN BRIDGES, TRANSIT SHELTERS, WATER QUALITY BASINS, ETC.) MAY BE RELOCATED THROUGH AN INFORMATION ONLY MAP.
13. PERMISSION TO RECORD JOINT ACCESS EASEMENTS (20' WIDE) AS LOTS REQUESTED.
14. PERMISSION REQUESTED TO MASS/BULK GRADE..
15. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LAYOUT AND PLANS.
16. PROVIDE STANDARD PROPERTY LINE RETURN RADIUS OF 13 FEET AT ALL LOCAL STREET INTERSECTIONS INCLUDING INTERSECTION OF LOCAL STREETS WITH PLANNED HIGHWAYS (THOSE ON THE COUNTY HIGHWAY PLAN). 27 FEET WHERE ALL PLANNED HIGHWAYS INTERSECT, OR 25 FEET WHERE ONE OF THE ROADS SERVES A COMMERCIAL OR INDUSTRIAL DEVELOPMENT, OR TO THE SATISFACTION OF PUBLIC WORKS.
17. MODIFIED STREET CROSS-SECTIONS AS SHOWN ON VESTING TENTATIVE TRACT MAP ARE REQUESTED. HOWEVER, PERMISSION IS SOUGHT TO CONSTRUCT STANDARD AND ALTERNATE STREET CROSS-SECTIONS AT THE DISCRETION OF THE SUBDIVIDER.
18. ALL DIMENSIONS SHOWN ARE APPROXIMATE.
19. TOPO COMPILED 6/98 FROM DATA FLOWN 6/98.

SPECIAL NOTES:

1. WATER QUALITY BASINS AND CDS UNITS WILL PROVIDE FOR TREATMENT OF STORM WATER RUN OFF
2. THE WATER QUALITY BASINS SHALL BE DEDICATED TO THE COUNTY WHEN COMPLETED AND ACCEPTED.
3. PROPOSED RECLAIMED WATER LINES WILL BE LOCATED IN PUBLIC STREETS AND TRAILS.



LEGEND:

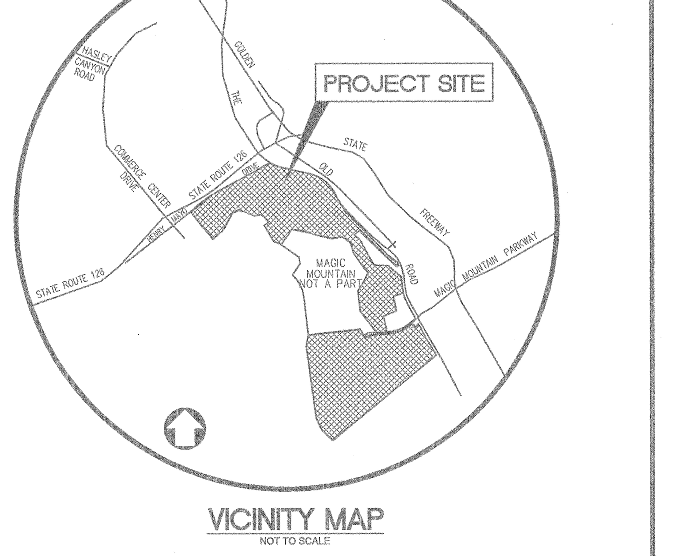
Lot 1	LOT NO.
10,000 SF	LOT AREA (SQUARE FEET)
1010.0	PAD ELEVATION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	PROPOSED RIGHT OF WAY
	PROPOSED UTILITY EASEMENT
	EXISTING EASEMENT
	FUTURE RIGHT OF WAY
1000	PROPOSED CONTOUR
	DAYLIGHT LINE
SD	STORM DRAIN
SS	SANITARY SEWER
W	WATER
	STORM DRAIN INLET/OUTLET
	CATCH BASIN
SD	EXISTING STORM DRAIN LINE
S	EXISTING SEWER LINE
W	EXISTING WATER LINE
O	EXISTING OIL LINE
G	EXISTING GAS LINE
OE	EXISTING OVERHEAD POWER LINE
	EXISTING POWER POLE
SEA	SEA, RIVER CORRIDOR LINE
FEMA	FEMA LINE
Q50	Q-CAP LIMIT LINE
	404_1603 LIMIT LINE
	PEDESTRIAN/BIKING TRAIL AND CHANNEL ACCESS
	BURIED BANK STABILIZATION
	EQUESTRIAN/HIKING TRAIL
	SIGHT DISTANCE LINE
	EXISTING OIL WELL LOCATION
OAK NO. XX TBI	OAK TREE TO BE TO BE IMPACTED
OAK NO. XX TBR	OAK TREE TO BE TO BE REMOVED

ABBREVIATIONS:

ac	ACRES
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
EX	EXISTING
FF	FINISH FLOOR
FM	FORCE MAIN
FW	FIRE WATER
GB	GRADE BREAK
HP	HIGH POINT
L	LENGTH
MIN	MINIMUM
P.C.C.	PORTLAND CEMENT CONCRETE
PROP	PROPOSED
R	RADIUS
R/W	RIGHT OF WAY
SF	SQUARE FOOT
SD	STORM DRAIN
SS	SANITARY SEWER
STD	STANDARD
TBI	TO BE IMPACTED
TBR	TO BE REMOVED
W	WATER

PROJECT SUMMARY:

GROSS AREA:	843.9 Acres
TOTAL LOTS:	695
TOTAL D.U.:	3,438 DU
EXISTING ZONING:	M-1.5, A-2-5, C-3 AND SP
PROPOSED ZONING:	M-1.5-DP, RPD, C-2-DP AND SP
GENERAL PLAN LAND USE:	M - INDUSTRY, W - FLOODWAY/FLOODPLAIN, HM - HILLSIDE MANAGEMENT, N1 - NONURBAN (0.5 DU/AC), U1 - URBAN (LOW DENSITY RESIDENTIAL) 1.1 - 3.3 DU/AC, C - COMMERCIAL, AND SIGNIFICANT ECOLOGICAL AREA
PROPOSED LAND USE:	M, C, U2, U3 AND U4
ESTIMATED EARTHWORK	9,800,000 CY CUT 9,800,000 CY FILL



VICINITY MAP

NOT TO SCALE

Lot Numbers	No. of Lots	Type (Use)	Dwelling Units	Commercial SF	Total Acres
Planning Area 1					
1-4	4	CONDOMINIUM	408		20.0
Planning Area 2					
5-40	35	COMMERCIAL		1,130.350	106.2
41	1	FLOOD CONTROL			17.3
42-43	2	OPEN SPACE (TRAIL)			2.9
44-56	13	OPEN SPACE (RIVER)			208.9
57	1	WATER QUALITY BASIN			9.7
		PUBLIC STREET			9.0
Planning Area 3					
58	1	FIRE STATION			2.7
59-76	18	COMMERCIAL		488,600	44.0
77-84	8	OPEN SPACE			7.1
Planning Area 4					
85-91	7	CONDOMINIUM	163		19.3
Planning Area 5					
92-155, 160-236	141	SINGLE-FAMILY 46'x100' MIN.	141		19.8
156	1	RECREATION CENTER			0.5
157-159	3	OPEN SPACE			0.2
Planning Area 6					
237-357	121	SINGLE-FAMILY 50'x110' MIN.	121		19.5
358-359	2	OPEN SPACE			0.1
Planning Area 7					
360-525	166	SINGLE-FAMILY 40'x90' MIN.	166		20.1
Planning Area 8					
526	1	PARK SITE			5.0
527	1	SCHOOL SITE			7.0
Planning Area 9					
528-534	7	3-STORY CONDOMINIUM	261		11.5
Planning Area 10					
535-539	4	3&4-STORY CONDOMINIUM	273		7.0
Planning Area 11					
540-546	7	2&3-STORY 16-PLEX CONDO	272		13.0
Planning Area 12					
547-551	5	2&3-STORY 6-PLEX CONDO	144		10.3
Planning Area 13					
552-559	8	2&3-STORY CONDOMINIUM	184		14.1
Planning Area 14					
560-561	2	COMMERCIAL		51,000	2.9
Miscellaneous					
562	1	RECREATION CENTER			1.7
563-584	22	PRIVATE DRIVES			29.6
585-636	52	OPEN SPACE			137.4
		PUBLIC STREET			19.2
Planning Area 15					
637	1	PRIVATE DRIVE			4.4
638-639	2	OFFICE		113,000	2.2
640	1	PARKING STRUCTURE			1.6
641	1	PARKING STRUCTURE			2.2
642-643	2	COMMERCIAL		130,000	3.2
644-646	2	COMMERCIAL/OFFICE		259,500	4.7
647	1	PARKING STRUCTURE			2.0
648	1	COMMERCIAL		9,500	1.7
649	1	WATER FEATURE			1.8
650	1	4-STORY CONDOS OVER COMMERCIAL	153	169,000	5.7
651-658	8	4-STORY CONDOMINIUMS	300		4.1
659	1	PARKING STRUCTURE			1.4
660	1	COMMERCIAL		12,000	1.1
661	1	4-STORY CONDOS OVER P.S.	100		1.8
662-672	11	3-STORY CONDOMINIUMS	64		3.5
673	1	4-STORY CONDOS OVER P.S.	132		2.9
674	1	4-STORY CONDOS OVER P.S.	72		2.0
675	1	4-STORY CONDOS OVER P.S.	160		3.4
676	1	2-STORY CONDOMINIUMS	180		1.0
677-678	2	8-STORY HOTEL (300 ROOMS)		277,000	4.8
679	1	COMMERCIAL		73,000	1.1
680	1	16-STORY CONDOMINIUMS	144		0.7
681	1	COMMERCIAL/OFFICE		216,000	1.6
682	1	PARKING STRUCTURE			2.1
683-684	2	COMMERCIAL		30,000	1.7
685	1	WATER FEATURE			3.8
686-695		OPEN SPACE			7.5
		PUBLIC STREET			3.9
TOTAL	695		3,438	2,958,950	843.9

FOR GEOTECHNICAL EXPLANATION SEE SHEET 2 OF 5

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE As Shown	DRAWN BY MN	CHECKED BY DS/DA
DATE 4-6-07	FIGURE 1.1	JOB NO. 2004-700-22

SHEET 1 — COUNTY OF LOS ANGELES — 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ________
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

ALLIANCE LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

CRAIG WHITTEKER R.C.E. 51929 DATE

REGISTERED PROFESSIONAL ENGINEER CRAIG M. WHITTEKER NO. 51929 EXP 6-30-08 CIVIL STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

I:\CAD\0201\TENTATIVE MAP 53295-ALP\ENTRADA-TMAP-SHT-01.dwg

LOT SUMMARY

LOT NUMBERS /STREET	LOT AREA SQ. FEET	LOT AREA ACRE	TOTAL BUILDING AREA (SF)	BUILDING FOOTFRINT AREA (SF)	PARKING SPACE PROVIDED	TYPE BUILDING (USE)
PLANNING AREA 2 (PA - 2)						
5	28,007	0.64			13	COMMERCIAL
6	75,706	1.74	3,000	3,000	22	
7	70,811	1.63	3,000	3,000	69	
8	136,497	3.13				
9	445,872	10.24	125,000	125,000	310	
10	321,034	7.37	175,000	175,000	465	
11	251,127	5.77			680	
12	240,898	5.53	108,000	108,000	60	
13	128,434	2.95			364	
14	115,144	2.64			311	
15	270,716	6.21	79,200	79,200		
16	52,844	1.21	5,000	5,000	103	
17	134,975	3.10	10,000	10,000	270	
18	62,259	1.43	20,000	20,000		
19	173,988	3.99	65,000	65,000	14	
20	130,580	3.00	10,000	10,000	147	
21	31,914	0.73	3,500	3,500	8	
22	193,167	4.43	85,700	85,700	110	
23	108,989	2.50	50,000	50,000		
24	159,663	3.67			463	
25	300,234	6.89	150,000	150,000	543	
26	76,486	1.76	6,500	6,500	60	
27	319,183	7.33	161,000	161,000	448	
28	154,523	3.55			459	
29	32,200	0.73				
30	27,651	0.63	7,400	7,400	2	
31	27,909	0.64			40	
32	92,710	2.13	34,000	34,000	12	
33	93,330	2.14			202	
34	24,199	0.56	5,500	5,500	12	
35	74,016	1.70	5,250	5,250	51	
36	78,602	1.80	3,300	3,300	27	
38	106,780	2.45	8,000	8,000	50	
39	55,490	1.27	7,000	7,000	32	
40	31,143	0.71				
TOTAL	4,627,081	106.22	1,130,350	1,130,350	5,347	
PLANNING AREA 1 (PA - 1)						
			DWELLING UNITS			
1	112,426	2.58	24	7,352	117	RESIDENTIAL
2	138,687	3.18	72	22,843	129	
3	247,626	5.68	192	61,177	143	
4	371,520	8.53	120	41,860	418	
TOTAL	870,259	19.98	408	133,232	807	
41	72,521	1.66				FLOOD CONTROL
44	679,849	15.61				
TOTAL	752,370	17.27				
42	25,651	0.59				EQUESTRIAN TRAIL
43	102,141	2.34				
TOTAL	127,792	2.93				
H.MAYO DR.	350,102	8.04				STREETS
TOTAL	350,102	8.04				
37	19,551	0.45				TO BE VACATED
T. OLD RD.	61,573	1.41				
TOTAL	81,124	1.86				
SUB TOTAL	6,808,527	156.30				

EASEMENTS BASED ON NORTH AMERICAN TITLE COMPANY TITLE REPORT ORDER NO. 7003023-23 DATED APRIL 28, 2006

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE	DESC. FOR ESMNTS. NOT PLOTTED
7	PACIFIC TELEPHONE AND TELEGRAPH COMPANY	POLES	JUNE 12, 1915 BOOK 6080 PAGE 40, O.R.	
8	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, etc.	FEBRUARY 27, 1920 BOOK 7068 PAGE 323, Dds.	
14	SOUTHERN CALIFORNIA TELEPHONE COMPANY	POLE LINES	APRIL 14, 1933 BOOK 12148 PAGE 89, O.R. MARCH 21, 1939 BOOK 16456 PAGE 204, O.R.	
15	STATE OF CALIFORNIA	PIPELINE	MARCH 13, 1934 BOOK 12619 PAGE 272, O.R.	
21	SOUTHERN CALIFORNIA EDISON COMPANY	POWER LINES	SEPTEMBER 20, 1941 BOOK 18111 PAGE 7, O.R.	
22	SOUTHERN PACIFIC RAILROAD COMPANY	ROADWAY	SEPTEMBER 20, 1941 BOOK 18111 PAGE 7, O.R.	
25	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES AND METERS	NOVEMBER 22, 1940 BOOK 17999 PAGE 153, O.R.	
26	SOUTHERN CALIFORNIA EDISON COMPANY	POLE LINES	JULY 28, 1948 BOOK 27828 PAGE 248, O.R.	
29	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	OCTOBER 8, 1948 BOOK 28455 PAGE 170, O.R.	
32	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	SEPTEMBER 27, 1951 BOOK 37296 PAGE 252, O.R.	
34	SOUTHERN CALIFORNIA EDISON COMPANY	POLE LINES	MAY 22, 1952 BOOK 38991 PAGE 298, O.R.	
35	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	JULY 11, 1952 BOOK 39363 PAGE 41, O.R.	
36	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	SEPTEMBER 10, 1952 BOOK 39811 PAGE 49, O.R.	
40	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	NOVEMBER 15, 1955 BOOK 49529 PAGE 249, O.R.	
44	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	JANUARY 27, 1961 BOOK D-1106 PAGE 434, O.R.	
45	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	OCTOBER 20, 1961 BOOK D-1394 PAGE 842, O.R.	
46	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	NOVEMBER 10, 1961 BOOK D-1417 PAGE 415, O.R.	
56	VALENCIA WATER COMPANY	WATER MAINS	NOVEMBER 10, 1972 BOOK D-5663 PAGE 731, O.R.	
59	COUNTY OF LOS ANGELES	COVERED STORM DRAIN	PARCEL MAP NO. 13331 BOOK 248 PAGES 46-48	
64	NEWHALL LAND & FARMING COMPANY	WATER PIPELINES	PARCEL MAP NO. 14415 BOOK 248 PAGES 51-54 DECEMBER 23, 1999 INSTR. NO.99-2360381, O.R. MARCH 17, 2000 INSTR. NO.00-399622, O.R. INSTR. NO.00-399624, O.R. INSTR. NO.00-399625, O.R.	

NOTES:

1. EXISTING HOLZER FAULT, BUILDING SETBACK LINE.
2. EXISTING 12" WATER LINE TO BE REMOVED.
3. EXISTING 10" WATER LINE TO BE REMOVED.
4. EXISTING GAS LINE TO BE REMOVED.
5. EXISTING EQUILON OIL LINE TO BE REMOVED.
6. EXISTING MOBIL OIL LINE TO BE REMOVED.
7. EXISTING OAK TREE TO BE REMOVED.
8. EXISTING EASEMENTS WHICH RUN THROUGH PROPOSED STRUCTURES WILL BE RELOCATED.
9. PRIVATE DRIVEWAY AND 28' MINIMUM FIRE LANE WIDTH.
10. THE RIGHT TO RESTRICT VEHICULAR ACCESS WILL BE DEDICATED ON FINAL MAP.
11. EXISTING BOX CULVERT
12. PROPOSED UTILITY FACILITY ACCESS EASEMENT
13. EXISTING SANITARY SEWER PUMP STATION
14. PLANNING AREA LIMIT

PSOMAS

PLANS PREPARED FOR: NEWHALL LAND

BENCHMARK: LOS ANGELES COUNTY NO. L 5402 (NEWHALL QUAD) RND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O ? THE OLD ROAD (W RDWY) AND 0.6 MI S/O HENRY MAYO DR. @ MI MKR #6.25
ELEV. 1031.951 FT. ADJUSTMENT 1995*
*DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
NOTE: NAVD 1988 MINUS APPROXIMATELY 700MM (2.3 FT) EQUALS PREVIOUS NGVD 1929 DATUMS. FOR MORE ACCURATE EQUATIONS AT INDIVIDUAL BENCH MARKS REFER TO PREVIOUS PUBLICATIONS.

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

PREPARED FOR Newhall Land & Farming Company

Visting TentativeTract Map No. 53295
Valencia, California

SCALE As Shown	DRAWN BY MN	CHECKED BY DS/DA
DATE 4-6-07	FIGURE 1.2	JOB NO. 2004-700-22

REV: ________
DATE: 11/10/06

SHEET 2 COUNTY OF LOS ANGELES 5 SHEETS

ENTRADA
MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ________
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

EASEMENTS BASED ON NORTH AMERICAN TITLE COMPANY TITLE REPORT ORDER NO. 7003023-23 DATED APRIL 28, 2006.

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE
9	SOUTHERN CALIFORNIA EDISON CO.	POLES, etc.	MAY 28, 1924 BOOK 4022 PAGE 192, O.R.
18	UNION OIL COMPANY	PIPE LINE	MAY 6, 1938 BOOK 15781 PAGE 98, O.R.
30	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	MAY 25, 1950 BOOK 33333 PAGE 24, O.R.
37	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	JULY 18, 1954 BOOK 45088 PAGE 223, O.R.
47	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	APRIL 11, 1962 BOOK D-1576 PAGE 811, O.R.
49	SOUTHERN CALIFORNIA EDISON COMPANY	POLES, ANCHORS AND WIRES	APRIL 11, 1962 BOOK D-1576 PAGE 813, O.R.
53	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	FEBRUARY 5, 1971 INSTRUMENT NO. 3026, O.R.
54	COUNTY OF LOS ANGELES	ROADWAY	APRIL 6, 1971 INSTRUMENT NO. 3104, O.R.
63	SOUTHERN CALIFORNIA GAS COMPANY	PIPE LINES	SEPTEMBER 27, 1996 INSTR. NO.96-1504307, O.R.
73	THE CITY OF SANTA CLARITA	ROADWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0307031, O.R.
79	EXXONMOBILE OIL CORPORATION	UTILITIES	DECEMBER 20, 2004 INSTR. NO. 04-3260764, O.R.
82	PACIFIC BELL TELEPHONE COMPANY	UNDERGROUND FACILITIES	MARCH 3, 2006 INSTR. NO. 06-0472539, O.R.

DETAIL "A"
NATURAL DAYLIGHT GRADING CONDITION WITHOUT TM 61105

PM 12337
EXISTING MAGIC MOUNTAIN THEME PARK

PA-3
COMMERCIAL/RETAIL SITE

TM 61105
MISSION VILLAGE

NOTE: SEE DETAIL "A" AT LEFT FOR NATURAL DAYLIGHT GRADING CONDITION WITHOUT TM 61105

PA-15
MIXED USE SITE

TPM-18654
NOT A PART

EXISTING MAGIC MOUNTAIN THEME PARK

SEE SHEET 3

SEE SHEET 5

FOR GEOTECHNICAL EXPLANATION SEE SHEET 2 OF 5

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

PREPARED FOR: Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	As Shown	DRAWN BY	MN	CHECKED BY	DS/DA
DATE	4-6-07	FIGURE 1.3		REV. DATE	2004-700-22

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE: ALEX HERRELL

ALLIANCE LAND PLANNING & ENGINEERING INC.
2140 FAIRWAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9660
FAX: (760) 931-0921
CIVIL ENGINEERING / LAND PLANNING / REGIONAL SCIENCE / SURVEYING

DAVID MEYERHOFF R.C.E. 51378 DATE

REGISTERED PROFESSIONAL ENGINEER
DAVID B. MEYERHOFF
NO. 51378
EXP. 12-31-07
CIVIL
STATE OF CALIFORNIA

LEGAL DESCRIPTION:
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO. DATE REVISIONS BY APPR.

SHEET 3 | COUNTY OF LOS ANGELES | 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

I:\CAD\2220\TENTATIVE-MAP-53295-ALP\2220ADA-TMAP-SHT-03.dwg

EASEMENTS BASED ON NORTH AMERICAN TITLE COMPANY TITLE REPORT
ORDER NO. 7003023-23 DATED APRIL 28, 2006.

TITLE REPORT ITEM NO.	OWNER	PURPOSE	REFERENCE
9	SOUTHERN CALIFORNIA EDISON CO.	POLES, etc.	MAY 26, 1924 BOOK 4022 PAGE 192, O.R.
10	SOUTHERN CALIFORNIA EDISON CO.	POLES & TOWERS	APRIL 17, 1925 BOOK 3997 PAGE 67, O.R.
11	SOUTHERN CALIFORNIA EDISON CO.	POLES, etc.	FEBRUARY 10, 1928 BOOK 7853 PAGE 11, O.R.
13	SOUTHERN CALIFORNIA EDISON COMPANY	POLES & TOWERS	JANUARY 12, 1931 BOOK 10631 PAGE 4, O.R.
18	UNION OIL COMPANY	PIPE LINE	MAY 6, 1938 BOOK 15781 PAGE 98, O.R.
50	SOUTHERN CALIFORNIA EDISON COMPANY	METAL TOWERS, POLES	JULY 12, 1966 BOOK D-3363 PAGE 475, O.R.
52	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	AUGUST 7, 1968 INSTRUMENT NO. 3513, O.R.
53	SOUTHERN CALIFORNIA EDISON COMPANY	POLES	FEBRUARY 5, 1971 INSTRUMENT NO. 3029, O.R.
54	COUNTY OF LOS ANGELES	ROADWAY	APRIL 6, 1971 INSTRUMENT NO. 3104, O.R.
55	PACIFIC LIGHTING SERVICE COMPANY	PIPE LINES	APRIL 13, 1971 INSTRUMENT NO. 2154, O.R.
62	SOUTHERN CALIFORNIA EDISON COMPANY	ELECTRICAL SUPPLY SYSTEMS	SEPTEMBER 15, 1988 INST. NO. 88-1483381, O.R.
71	LOS ANGELES COUNTY FLOOD CONTROL DISTRICT	FLOOD CONTROL	AUGUST 23, 2005 INSTR. NO. 05-2021536, O.R.
72	THE CITY OF SANTA CLARITA	ROADWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0307030, O.R.
73	THE CITY OF SANTA CLARITA	ROADWAY	FEBRUARY 9, 2006 INSTR. NO. 06-0307031, O.R.
82	PACIFIC BELL TELEPHONE COMPANY	UNDERGROUND FACILITIES	MARCH 3, 2006 INSTR. NO. 06-0472539, O.R.

FOR GEOTECHNICAL EXPLANATION SEE SHEET 2 OF 5

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE As Shown	DRAWN BY MN	CHECKED BY DS/DA
DATE 4-6-07	FIGURE 1.4	JOB NO. 2004-700-22

SHEET 4 COUNTY OF LOS ANGELES 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ________
LOCATED IN THE UNINCORPORATED AREA OF THE
COUNTY OF LOS ANGELES STATE OF CALIFORNIA

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

ALLIANCE
LAND PLANNING & ENGINEERING INC.
2248 FARADAY AVE.
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING
CRAIG WHITTEKER R.C.E. 51979 DATE

REGISTERED PROFESSIONAL ENGINEER
CRAIG M. WHITTEKER
NO. 51929
EXP 6-30-08
CIVIL
STATE OF CALIFORNIA

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

TIMS DRAWING HAS CPT'S THAT NEVER BEEN PRESENTED
BORIS GIVE ME THIS INFORMATION JUST BEFORE HE QUIT
ON 01-22-04 MOHAMMED

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	CHECKED BY
As Shown	MN	DS/DA
DATE	FIGURE1.5	JOB NO.
4-6-07		2004-700-22

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
(661) 255-6617
REPRESENTATIVE: ALEX HERRILL

ALLIANCE LAND PLANNING & ENGINEERING Inc.
2348 FAIRWAY AVE.
CARLSBAD, CA 92008
TEL (760) 431-9092
FAX (760) 431-9882
CIVIL ENGINEERING / LAND PLANNING / RELEASE DESIGN / SURVEYING
DAVID MATTSON R.C.E. 51978 DATE

LEGAL DESCRIPTION:
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APVD

SHEET 5 | COUNTY OF LOS ANGELES | 5 of 6875

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP NO. 53295

COUNTY CASE NO. _____
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

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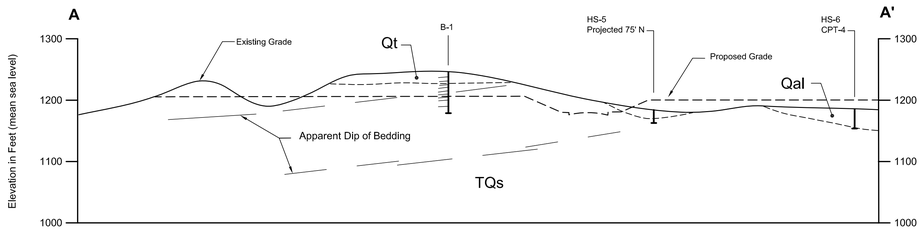

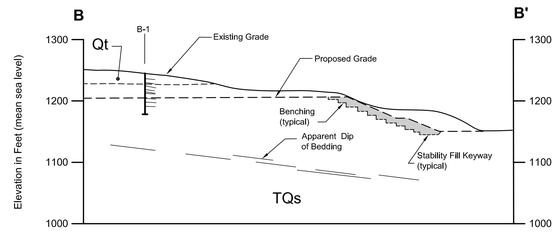

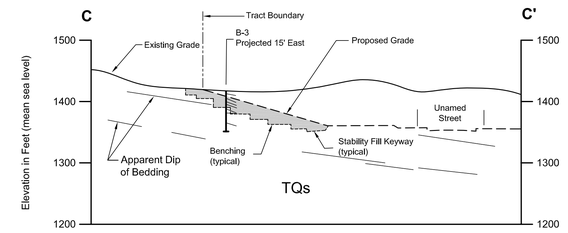

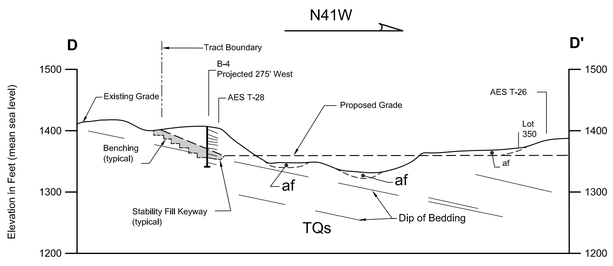

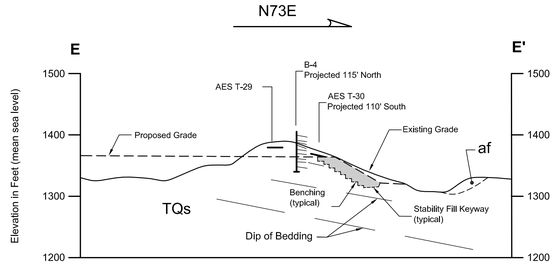

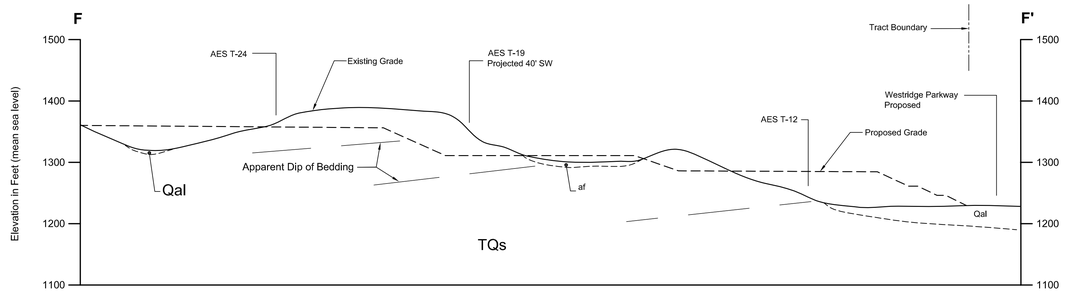

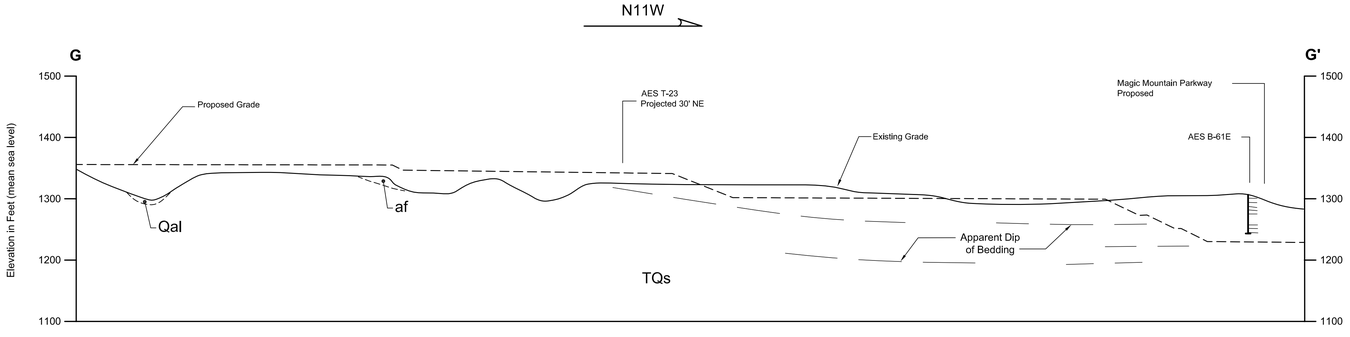

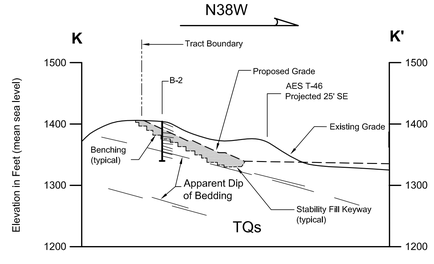

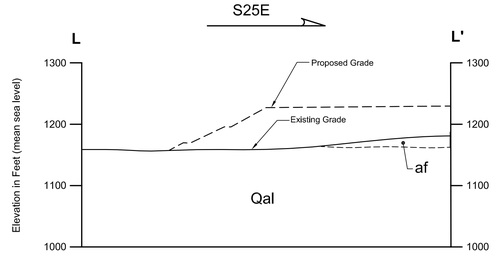

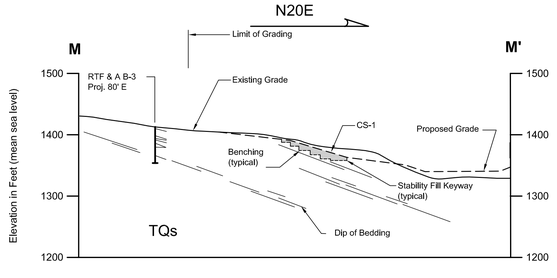

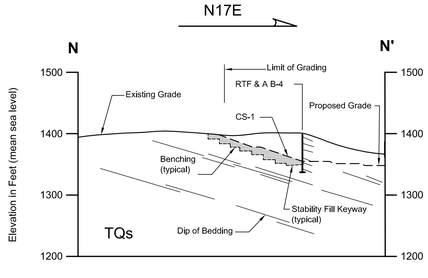

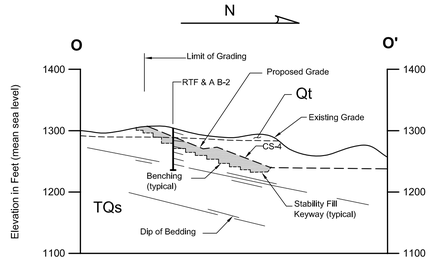

R.T. FRANKIAN & ASSOCIATES

Geologic Sections

PREPARED FOR

Newhall Land and Farming Company

Vesting Tentative Tract Map No. 53425
Valencia, California

SCALE	DRAWN BY	CHECKED BY
1" = 100'	MN	DS/DA
DATE	FIGURE 2.1	JOB NO.
4-6-07		2004-700-22

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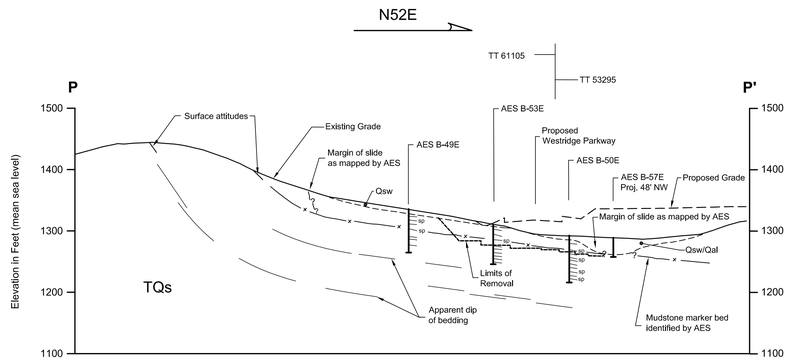

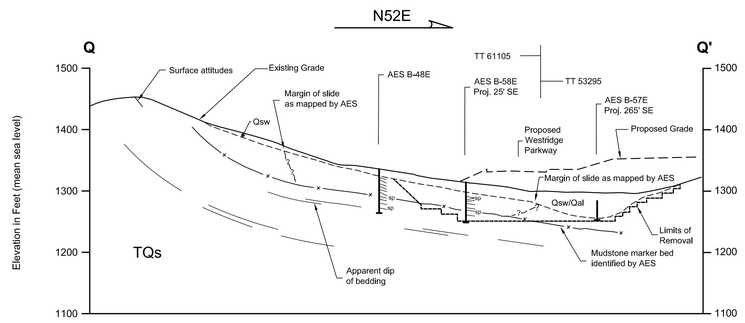

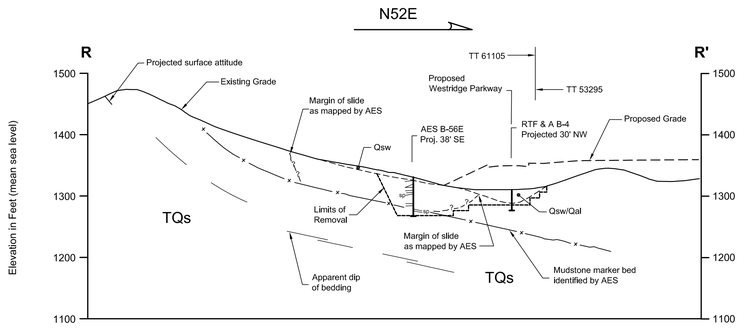

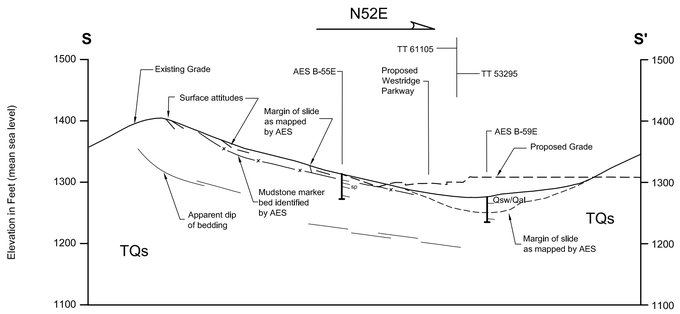

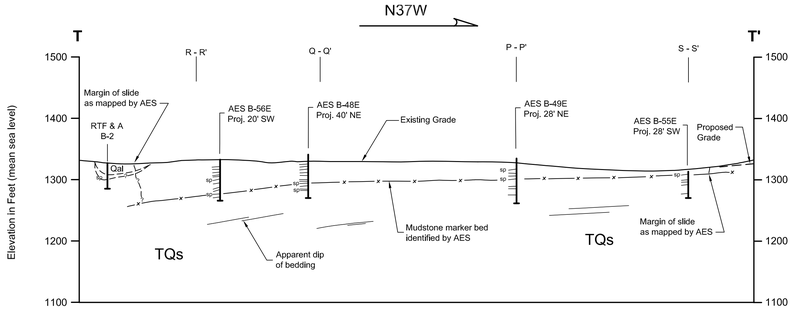

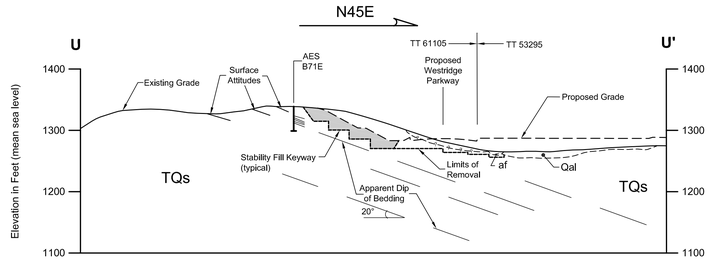

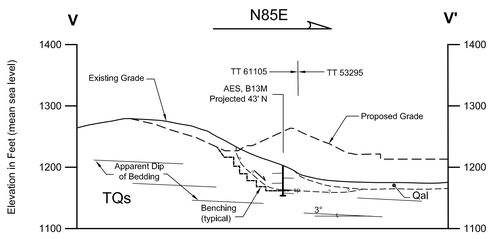

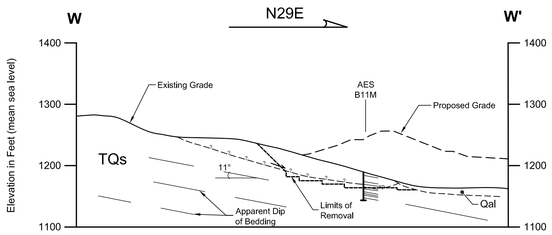

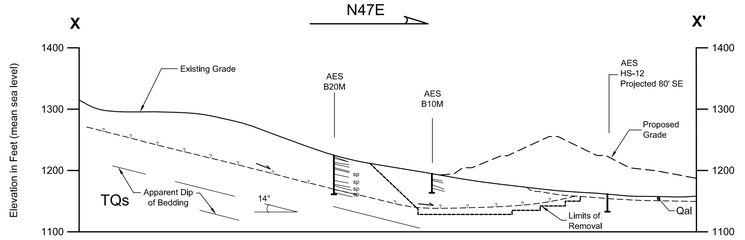

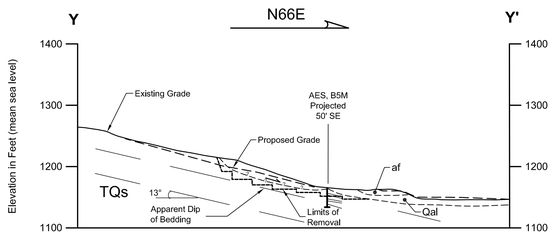

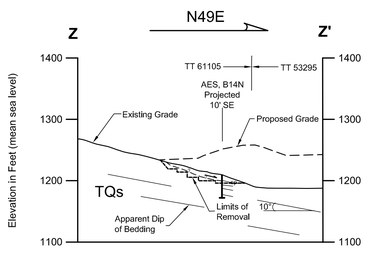

R.T. FRANKIAN & ASSOCIATES

Geologic Sections

PREPARED FOR

Newhall Land and Farming Company

Vesting Tentative Tract Map No. 53425
Valencia, California

SCALE	1" = 100'	DRAWN BY	MN	CHECKED BY	DS/DA
DATE	4-6-07	FIGURE 2.2		JOB NO.	2004-700-22

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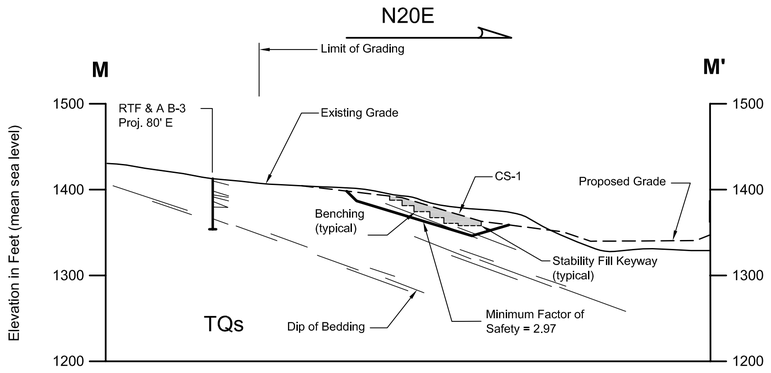

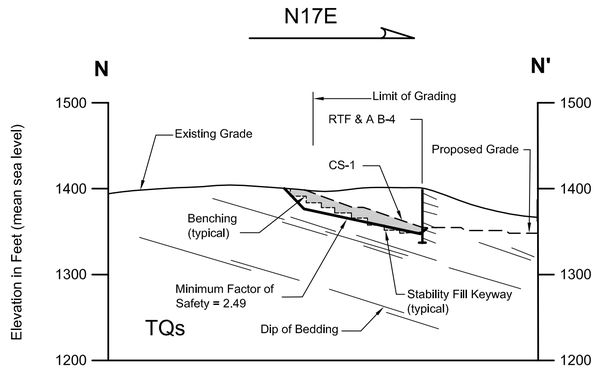

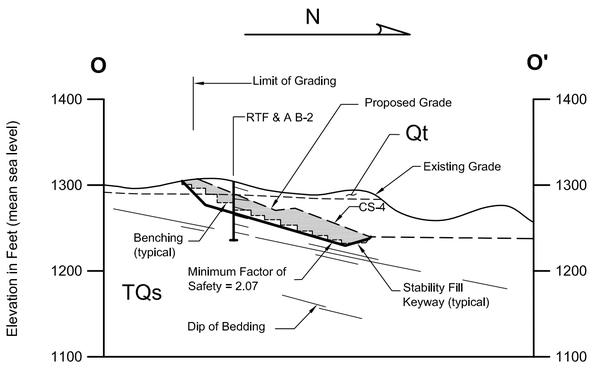

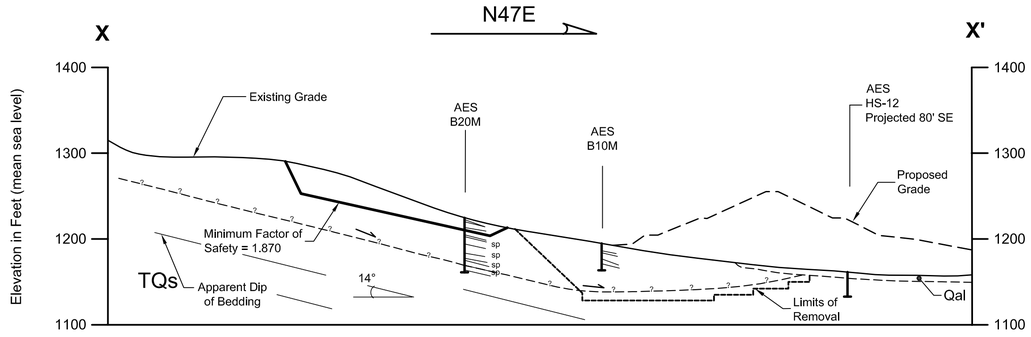

R.T. FRANKIAN & ASSOCIATES

Geotechnical Sections

PREPARED FOR

Newhall Land and Farming Company

Vesting Tentative Tract Map No. 53425
Valencia, California

SCALE	DRAWN BY	CHECKED BY
1" = 100'	MN	DS/DA
DATE		JOB NO.
4-6-07	FIGURE 3	2004-700-22

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Appendix 5.6F

100-Scale Plan Review for Vesting Tentative Tract Map No. 53295

R.T. Frankian & Associates

March 18, 2005

REPORT OF

100-SCALE PLAN REVIEW

VESTING TENTATIVE TRACT MAP NO. 53295

VALENCIA, CALIFORNIA

VOLUME I OF II

FOR

NEWHALL LAND AND FARMING COMPANY

MARCH 18, 2005

JOB NO. 2004-700-21

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

March 18, 2005

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

Job No. 2004-700-21

Attention: Mr. Alex Herrell
Community Manager

We are pleased to submit our 100-Scale Plan Review for Vesting Tentative Tract Map No. 53295 in Valencia, California. Vesting Tentative Tract Map 53295 includes the South Terraces, North Commercial, Tenderloin, and Castaic Junction sub areas. The scope of work for this investigation was planned with Mr. Alex Herrell of Newhall Land and outlined in our proposal dated September 7, 2004, Proposal No. P129-2004-21. The investigation was authorized by Newhall Land and Farming Company in their Project Authorization (PA) No. CI30012 dated November 9, 1999.

Alliance Land Planning & Engineering, Inc. provided us with a vesting parcel map plan for the site. The plan was prepared at a scale of 1 inch equals 100 feet.

Proposed grading will include excavation into ridges and upland areas resulting in cut slopes, and placement and compaction of engineered fill. Natural soils and uncertified fill will require removal and recompaction. Based on this investigation, the site is suitable for the proposed development as envisioned at the tentative tract stage. Assuming grading operations are performed in accordance with the recommendations in this report, the site will be safe from hazards of landslide, settlement, or slippage, and will not adversely affect adjacent properties.

For planning purposes, shallow footings are expected to be suitable for support of typical one- or two-story residential/industrial/commercial buildings. Perimeter footings should be continuous and extend beneath windows and doors. Floor slabs

may be supported on grade. Both the footings and the floor slabs should be reinforced. Foundations for tall, especially heavy, or settlement sensitive buildings should be evaluated by site-specific investigations.

Should you have any questions regarding the information presented in this report, please contact our office.

Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

REGISTERED GEOLOGIST NO. 5017 DOUGLAS S. SANTO Exp. 9/4/06 CERTIFIED ENGINEERING GEOLOGIST NO. 1866 STATE OF CALIFORNIA

by: Douglas S. Santo
Principal Engineering Geologist

REGISTERED PROFESSIONAL ENGINEER ALAN W. RASPLICKA No. GE 2558 Exp. 6/30/07 GEOTECHNICAL STATE OF CALIFORNIA

and: Alan W. Rasplicka
Geotechnical Engineer

DSS/AR/sjc

Distribution: (6) Newhall Land and Farming Company
Attn: Mr. Alex Herrell
(4) Alliance Land Planning & Engineering, Inc.
1- Attn: Mr. Paul Gaff
(3 for submittal to Los Angeles County)

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

Newhall Land and Farming Company
March 18, 2005
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REPORT OF

100-SCALE PLAN REVIEW

VESTING TENTATIVE TRACT MAP NO. 53295

VALENCIA, CALIFORNIA

VOLUME I OF II

FOR

NEWHALL LAND AND FARMING COMPANY

MARCH 18, 2005

JOB NO. 2004-700-21

INTRODUCTION

This presents our 100-scale plan review of Vesting Tentative Tract Map 53295 (VTTM 53295) in Valencia, California. The site is west of the Golden State Freeway (I-5), south of State Route 126 (SR 126), and north of high-power transmission lines about 1700 feet south of Magic Mountain Parkway in Valencia, California. The site is shown on Figure 1.

The purpose of this investigation was to characterize surface and subsurface geologic conditions, identify geologic hazards and liquefaction potential, and develop recommendations for bulk grading, mitigation of geologic hazards, and preliminary building and utility design. The ultimate goal was to determine if the site is suitable for the proposed development as envisioned at the tentative tract stage. Environmental conditions including the presence or absence of contaminants in the soil and groundwater were not investigated as part of this work.

Recommendations herein are based on review of previous work completed on site and the results of our current field exploration, laboratory testing, and engineering and geologic analyses. Logs of exploratory borings and laboratory test sheets are included in the appendices of this report.

This work was performed in accordance with generally accepted professional engineering geology and geotechnical engineering principles and practice in southern California at the present time. We make no other warranty either express or implied. This report was prepared for Newhall Land and Farming Company and their design consultants to be used solely in design and filing of a tentative tract map for the site. The report was not prepared for use by other parties, and may not contain sufficient information for other purposes at other times. Additional studies will be required to develop recommendations for final grading plans.

SCOPE OF WORK

The scope of work for this investigation included:

- Research and review of published and unpublished technical reports and documents including data available from the California Geological Survey, California Division of Oil, Gas, and Geothermal Resources, US Geological Survey, and private consultants;

- Review and analysis of stereo-paired aerial photographs to identify geomorphic features suggestive of landslide or fault hazards (see References);

- Compilation of previous field exploration and laboratory testing completed on site by R. T. Frankian & Associates (RTF&A) and other consultants;

- Reconnaissance geologic mapping to verify results of our literature review and imagery analysis, identify the type and areal distribution of geologic units, and collect structural information for bedrock formations;

- Preparation of geologic maps and cross sections;

- Subsurface exploration that included drilling, sampling, and geologic logging of four exploratory borings using a track-mounted bucket auger drill rig;

- Geotechnical laboratory testing of representative samples of earth materials;

- Engineering and geologic analyses to develop recommendations for design and construction of the project appropriate for the tentative tract phase of development, and

- Preparation of this report and accompanying illustrations.

PROPOSED DEVELOPMENT

VTTM 53295 was prepared by Alliance Land Planning & Engineering, Inc. and is dated December 28, 2004. The plan shows the site and sub area boundaries, proposed lots, roadways, cut and fill slopes and pad elevations. The plan was used as the base for the attached Geotechnical Map, Figures 3.1 through 3.5.

The site covers a total area of 813 acres and includes 638 lots with a total estimated earthwork quantity of 9.5 million cubic yards. The site is divided into 15 planning areas, boundaries of which are shown on Figure 1.

- Planning Area 1 includes 24 commercial lots covering about 82 acres, 4 condominium lots with 408 dwelling units covering about 18 acres, and 29 open space lots covering about 237 acres.

- Planning Area 2 includes 1 commercial lot covering 9.7 acres.

- Planning Area 3 includes 9 commercial lots covering about 38 acres, 1 water quality basin covering 4.3 acres, and 8 open space lots covering about 11.6 acres.

- Planning Areas 4 through 14 include 430 single family residential lots with 688 dwelling units covering 89.6 acres, 30 condominium/townhome lots with 1,134 dwelling units covering 56.2 acres, 1 commercial lot covering 3.4 acres, 1 recreational lot covering 1.7 acres, 22 street lots covering 35.2 acres, and 48 open space lots covering 138.3 acres.

- Planning Area 15 includes 3 condominium lots with 325 dwelling units covering 8.5 acres, 6 parking structure lots covering 11.1 acres, 10 mixed use lots with 615 dwelling units covering 23.8 acres, 8 street lots and public right of way covering 37.8 acres, 1 drainage filter site covering 3 acres, and 3 open space lots covering 4.3 acres.

Development will include extensions to Magic Mountain Parkway, Westridge Parkway and construction of numerous interior streets and associated utilities.

PREVIOUS INVESTIGATIONS

Several investigations have been completed on or adjacent to the site. We previously investigated Planning Area 1 and presented results in a geotechnical reconnaissance report (RTF&A, 1998) and a geotechnical investigation report (RTF&A, 2001a). We previously investigated the proposed relocation of the Chevron Service Station at the southwest corner of The Old Road and Magic

Mountain Parkway and investigated an ancillary haul road to be created as part of the relocation (RTF&A, 1997, 2003, 2004a, and 2004b).

Allen E. Seward Engineering Geology, Inc. (AES) completed an investigation of Planning Areas 2 through 15 and presented results in their report dated May 25, 2000 (AES, 2000b) AES performed a fault investigation for Planning Area 15 and presented results in their report dated 8/15/00. AES completed two investigations for grading of the oil well pad located in the eastern portion of Planning Areas 4 through 14 and presented results in their reports (AES, 2000c and 2000d). AES completed an investigation for the Mesas East Project, Vesting Tentative Tract Map 61105, located at the west boundary of VTTM 53295. We were provided maps, sections, and boring logs from this report, but nothing else. AES performed a fault investigation for the Airport Mesa area of VTTM 61105 and presented results in their report AES, 2004a.

Field exploration, laboratory testing, and portions of the engineering and geologic analyses from reports listed above are incorporated in this report and form a part of the basis of the findings and recommendations presented herein. All references used in this work are presented at the end of the text.

SITE CONDITIONS

The project site is an irregular shaped parcel located at the north margin of the Santa Susana Mountains at the confluence of the Santa Clara River and Castaic Creek. The south half of the site consists of two major north-draining canyons that divide mountainous areas of low relief. The middle of the site consists of an undissected, north-sloping, alluvial fan surface. The north half of the site consists of

the Santa Clara River valley and bordering fluvial terraces. The Magic Mountain Entertainment Complex is located in the center of the project area, but is not included in the current development. The bulk of the site is undeveloped and vacant of structures. Natural vegetation consists of a nearly continuous cover of grasses and weeds, with isolated patches of brush. Oak trees are common. Some portions of Planning Areas 4 through 15 were formerly used for agriculture. Planning Areas 4 through 14 are crossed by dirt roads placed for oilrig access. Access road construction involved cuts up to 45 feet tall and placement of relatively large masses of undocumented fill. Maximum fill depth is estimated to be around 25 feet. The access roads lead to drill pads of various size and configuration. The pads are generally flat and level and often consist of areas of cut and areas of fill. Buried sumps for the collection of wastewater or drilling spoils may be present, though not currently visible, at each drill pad.

ABANDONED OIL WELLS

Review of the California Division of Oil, Gas, and Geothermal Resources (DOGGR) Honor Rancho Map 252 (February 3, 1996) shows 14 abandoned oil wells on or immediately adjacent to the site. Abandoned oil well locations are shown on Figure 2. We researched DOGGR files to collect information on these wells. This information is summarized in Table 1. We understand another consultant is locating these wells in the field and investigating them for potential re-abandonment.

Table 1. Abandoned Oil Well Summary.

Well	API No.	Location			DOG	Last Produced/Injected				DOG Req's for	DOG Surface Abandonment
		Sec	T	R	Abandon Approval	Date	Oil (b/d)	Water (b/d)	Gas (mcf/d)	Concrete Plugs (depth bgs)	Requirements
NL&F 30	037-16500	19	4N	16W	11/8/1995	1/95	34	53	na	10,570'-10,325' 7,100'-7,000' 3,900'-3,800' 795'-0'	Cut casing @ 5' bgs. Weld plate w/identifier. Clean location
NL&F 31	037-16501	19	4N	16W	9/21/1994	4/86	9	34	50	10,658'-10,306' 812'-692' 100'-0'	Cut casing @ 5' bgs. Weld plate w/identifier. Clean location
NL&F 35	037-16505	19	4N	16W	10/17/1986	5/69	2.5	12.3	1	4,770'-4,400' 790'-650' 30'-5'	Install steel plate over wellhead. Cover with dirt.
NL&F 36	037-06353	19	4N	16W	9/21/1994	6/76	Na	na	na	11,275'-10,690' 803'-703' 100'-0'	Cut casing @ 5' bgs. Weld plate w/identifier. Clean location
NL&F 38	037-16506	19	4N	16W	12/4/1992	86	6	250	45	10,872'-10,480 780'-0'	Cut casing @ 5' bgs. Weld plate w/identifier. Clean location
NL&F 37	037-13506	19	4N	16W	2/13/1979	8/68	41	55	14	3,650'-3,550' 828'-728' 50'-0'	Remove wellhead. Restore surface.
NL&F 43	037-16510	19	4N	16W	11/8/1995	3/94	83	17	na	10,988'-10,650' 805'-795' 100'-0'	Cut casing @ 5' bgs. Weld plate w/identifier. Clean location
NL&F 44	037-06354	19	4N	16W	11/9/1990	4/67	24	10	188	10,993'-10,573' 1,200'-1,210' 60'-5'	Cut casing @ 5' bgs. Weld plate. Break up cellar & clean location.
NL&F 47	037-06355	19	4N	16W	2/16/1994	1/86	Na	150	na	11,308'-10,689' 802'-702' 100'-0'	Cut casing @ 5' bgs. Weld plate w/identifier. Clean location
NL&F 48	037-16513	19	4N	16W	12/4/1992	6/86	0.5	15	15	10,920'-9,700' 805'-0'	Cut & cap casing @ 5' bgs. Clean location. Remove flowlines.
NL&F 49	037-16514	19	4N	16W	5/8/1996	12/88	Na	1200	na	10,928'-10,639' 803'-703' 100'-0'	Cut casing @ 5' bgs. Weld plate w/identifier. Clean location
NL&F 51	037-13527	19	4N	16W	11/8/1995	6/94	Na	na	na	11,363'-0,724' 777'-677' 60'-0'	Cut casing @ 5' bgs. Weld plate w/identifier. Clean location
NL&F6 52-19	037-16536	19	4N	16W	5/15/1981	na	Na	na	na	100'-0'	Weld 1/2" plate
NL&F 62	037-16524	18	4N	16W	2/13/1979	na	Na	na	na	13,270'-12,921' 7,800'-7,100' 4,310'-4,210' 846'-746' 50'-0'	Remove wellhead. Restore surface.

SUBSURFACE EXPLORATION

Subsurface exploration for this investigation was performed in January, 2005 and consisted of excavation, sampling, and logging 4 bucket auger borings. These borings were located to evaluate proposed cut slopes near the south and southeast portions of Planning Areas 4 through 14. Relatively undisturbed samples and bulk samples for laboratory testing were obtained from the borings. Exploratory boring information is summarized in Table A-1, in Appendix A, and summary boring logs are in Appendix A. Boring locations are shown on the Geotechnical Map, Figures 3.1 through and 3.5.

Previous subsurface exploration is significant and included 10 bucket auger borings, 61 test pits, 4 hollow stem auger borings, 38 Cone Penetration Tests (CPTs) soundings, and 6 rotary wash borings. Previous exploration is included in Appendix B and summarized in Table A-1.

LABORATORY TESTS

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to determine their pertinent engineering properties. The results of the laboratory tests we performed as part of the current investigation and pertinent tests performed by others are presented in Appendix B. Complete laboratory testing from the previous investigations are presented in the referenced reports.

GEOLOGY

REGIONAL GEOLOGY

VTTM 53295 is located at the eastern end of the Ventura basin within the Transverse Ranges geomorphic province of California. The Ventura basin consists of a narrow, elongate sedimentary trough that generally coincides with the Santa Clara River Valley. The Ventura basin has been an area of subsidence and sediment accumulation since the beginning of the Tertiary period, with the present trough-like form developing near the beginning of the Miocene epoch (Winterer and Durham, 1962).

SITE GEOLOGY

Geologic Materials: Geologic materials observed within VTTM 53295 include the Saugus Formation, terrace deposits, alluvium, and engineered and non-engineered fill. The areal extent of the various geologic units are depicted on the Geotechnical Maps. Interpreted subsurface conditions are shown on the Geotechnical Cross Sections (Figure 4). Following is a brief description of the earth materials with emphasis on their engineering geologic characteristics.

Saugus Formation (TQs): The Plio-Pleistocene age Saugus Formation underlies the entire site, and outcrops in Planning Areas 3 and 4 through 14. The Saugus Formation was observed in outcrop and exploratory borings. The Saugus Formation consists of massive to well bedded, fine to coarse sandstone interbedded with matrix supported coarse sand and gravel conglomerate. Sandy siltstone is encountered locally. The rock is generally weakly cemented with alkaline earth

carbonates, and is friable. The rock is generally unjointed. The color is tan to light brown.

Terrace Deposits (Qt): Pleistocene age terrace deposits cap the Saugus Formation over most of Planning Areas 3 and 4 through 14. Terrace deposits consist of massive to poorly bedded sand, gravel and silt. Cobbles and boulders are common, with clast size ranging from 3 to 12 inches in diameter. The unit is loose and poorly consolidated. The color is yellowish brown to brown.

Alluvium (Qal): Holocene age alluvial deposits are present in the central portion of the site in Planning Areas 1, 2, and 15. Alluvial deposits consist loose and poorly consolidated mixtures of sand, silt, and gravel. Some alluvial areas have been disturbed by past farming activities and these areas are designated as undifferentiated artificial fill and alluvium (map unit "af/Qal").

Artificial Fill (af): Large masses of artificial fill are located in Planning Areas 4 through 14. These fill masses were placed for access roads and drill pads for oil exploration. It appears the fill was generated on site by road cuts. The method of placement and quality of these materials is unknown. They will have to be removed and recompacted during tract grading. Other smaller masses of fill were likely placed during past agricultural, construction, and investigative activities.

Certified Engineered Fill (cef): Engineered fill was placed during construction of the extension of Magic Mountain Parkway between Planning Areas 15 and 4 through 14. The characteristics of this material are not known.

Slopewash and Residual Soil: Slopewash blankets slopes in the southern portion of the site. Slopewash deposits are generally less than 5 feet thick. The material consists of loose sand, gravel, and silt. Residual soil mantles upland areas in

the southern portion of the site and is similar in compositional characteristics to that of slopewash. Residual soil is generally less than 3 feet thick. Slopewash and residual soil are shown on the geologic maps.

Surficial Slope Failures (Qsf): Surficial slope failures have been mapped on the natural slopes in Planning Areas 4 through 14. These failures include weathered bedrock, terrace materials, and slopewash. They are limited in lateral extent and have a maximum thickness of 15 feet near the toe.

Geologic Structure: Saugus Formation has been warped into a northwest striking homoclinal structure with northeast dips between 4° to 20°.

Bedding: Bedding planes within the Saugus Formation vary from diffuse and gradational to sharp and planar. A daylighted bedding condition may be present in east and northeast facing slopes.

Faults: Faults in southern California are classified active, potentially active, and inactive, based on their most recent activity. Fault activity is defined by California law and interpreted by the California Geological Survey (CGS) (Hart, 1999) for the Alquist-Priolo Earthquake Fault Zone program. A fault can be considered active if it has demonstrated movement within the Holocene epoch, or approximately the last 11,000 years. Faults that have demonstrated Quaternary movement (last 1.6 million years), but lacking strong evidence of Holocene movement, are classified as potentially active. Faults that have not moved since the beginning of the Quaternary period are deemed inactive.

San Gabriel Fault Zone: The active San Gabriel fault zone, located approximately 1.5 miles northeast of the site, consists of a northwest-trending zone of imbricate steeply north-dipping faults. Throughout most of its extent the fault has

strong geomorphic expression characterized by displaced geologic units, deflected drainages, strike valleys, notched ridges, subparallel faulting, fracturing and folding (Oakeshott, 1958; Wentworth and Yerkes, 1971). According to Oakeshott (1958), the zone of faulting ranges in width from a single plane with no more than a few inches of gouge, to a half-mile wide area of several fault planes, zones of brecciation, and complex steep-limbed folds

Holser Fault: The Holser fault consists of a south dipping, sharply folded reverse fault (Winterer and Durham, 1962) trending east-southeast from near Piru Creek to at least Castaic Junction, and possibly continuing farther southeastward. According to AES (AES, 1989a), the Holser fault represents a major structural feature of the Ventura basin, and is associated with over a mile of offset of the basal contact of the Saugus Formation. Weber (1979) states that there is no clear evidence of Holocene activity along the fault, but "plentiful evidence" that activity has occurred in the past 100,000 years. Consequently, based on CGS criteria, the fault is considered potentially active.

The location of the Holser fault on site, or absence thereof, has been established by previous subsurface investigations completed by AES. This work is documented in AES reports (AES, 1999a, 1999b, 2000a, and 2000c.) The result of this work is a 160-foot structural setback trending through the west portion of Planning Area 1. No other active faults have been identified on site.

Faults of the Airport Mesa Area: An investigation by AES (AES, 2004a) for VTT 61105 located adjacent to the subject site on the west identified two lineaments subsequently determined to be faults. These features were named the Airport Mesa Fault and the Saddle Fault by AES. Structural setback zones were established. The

faults and associated setback zones project into VTTM 53295 south of Planning Area 2 and north of Planning Area 15. The faults do not affect any currently proposed development on the subject site.

GROUNDWATER

Planning Areas 1 and 2: Groundwater levels in Planning Areas 1 and 2 are relatively high due to the proximity of the Santa Clara River and Castaic Creek. Exploration for Planning Area 1 was completed by RTF&A (RTF&A, 1998, 2001a,) groundwater was encountered from 6 to 15 feet below ground surface. Exploration for Planning Area 2 was completed by AES (AES, 2000b) groundwater was encountered from 3 to 7 feet below ground surface. Groundwater data is summarized in Table A-1 in Appendix A.

Hydrologic data on file at the County of Los Angeles Flood Control District (LACFCD), indicates one well located near VTTM 53295. This is well no. 6995D located offsite north of the intersection of The Old Road and Henry Mayo Drive. Surface elevation for this well is 1,017 feet. Historic high water is at ground surface in February 1971.

Planning Areas 3 through 15: Exploration completed in these planning areas shows that groundwater is generally deeper than 40 feet below ground surface. The exception is the two large canyons that drain the southern portion of the site. At the time of field exploration groundwater was not encountered in these canyons, but during winter season these canyons may experience intermittent surface flow and high groundwater elevations.

DEBRIS FLOW HAZARD

Debris flows, consisting of a moving mass of heterogeneous debris lubricated by water, are generated by shallow soil slips in response to heavy rainfall. Whereas landslides depend on deep percolation of groundwater and may not respond to the effects of heavy rainfall until long after a storm, debris flows "occur during, and only during, heavy rainfall" (Campbell, 1975). According to Campbell (1975), damage from debris flows is due chiefly to inundation by, or high-velocity impact of the debris mass. Campbell identifies three conditions for debris flow potential:

- a mantle of colluvial soil or a wedge of colluvial ravine soil;
- a slope angle ranging from 27 to 56 degrees (slopes steeper than 56 degrees generally do not have a continuous mantle of colluvium and are most commonly bare bedrock); and
- soil moisture equal to or greater than the colluvial soil's liquid limit.

Debris flows hazards are possible in Planning Areas 4 through 14; however, proposed grading will mitigate against this potential phenomenon.

SLOPE STABILITY ANALYSES

GENERAL

Five major cut slopes are proposed near the southern boundary of the site in Planning Areas 4 through 14. These are numbered CS-1 through CS-5 on the Geotechnical Map. Engineering geologic conditions for each cut are summarized in Table 1. Cut slope heights will be 65 feet or less. Slope ratios will be 2:1

(horizontal:vertical) or less. Geologic sections were completed through large cut-slopes (generally over 50 feet in height).

Table 1. Cut Slope Summary.

Slope No	Max Height	Length of Cut	Slope Ratio (horz:vert)	Geologic Material	Geologic Comments
CS-1	~55'	~650'	2:1	Saugus	Northwest to northeast facing cut that will expose Saugus formation along its entire length and height. Bedrock in this area is sandstone and conglomerate. Bedding plane failures are unlikely given the nature of the materials present. Cut is geologically stable, but out-of-slope bedding is likely in the eastern third of the cut. Cut will require a stabilization fill to limit surficial erosion.
CS-2	~45'	~700'	2:1	Saugus	Northwest to northeast facing cut that will expose Saugus formation along its entire length and height. Bedrock in this area is sandstone and conglomerate. Bedding plane failures are unlikely given the nature of the materials present. Cut is geologically stable, but out-of-slope bedding is likely in the eastern quarter of the cut. Cut will require a stabilization fill to limit surficial erosion.
CS-3	~38'	~300'	2:1	Saugus	Southeast facing cut that will expose Saugus formation along its entire length and height. Bedrock in this area is sandstone and conglomerate. Bedding plane failures are unlikely given the nature of the materials present. Cut is geologically stable, and bedding planes are neutral.
CS-4	~60'	~800'	2:1	Saugus	Northwest to northeast facing cut that will expose Saugus formation along its entire length and height. Some terrace deposits will also be exposed. Bedrock in this area is sandstone. Bedding plane failures are unlikely given the nature of the materials present. Cut is geologically stable, but out-of-slope bedding is likely. Cut will require a stabilization fill to limit surficial erosion in terrace and rock.
CS-5	~65'	~1,000'	2:1	Saugus	West to north facing cut that will expose Saugus formation along its entire length and height. Bedrock in this area is sandstone and conglomerate. Bedding plane failures are unlikely given the nature of the materials present. Cut is geologically stable, but out-of-slope bedding is likely. Cut will require a stabilization fill to limit surficial erosion.

GEOLOGIC FACTORS

Cut slopes proposed for the site are primarily underlain by bedrock of the Saugus Formation. The Saugus Formation can range from massive to thinly bedded sedimentary rock units of sandstone, conglomerate, siltstone, and claystone/mudstone. Bedding planes within the Saugus Formation are poorly to moderately-well developed, and can constitute significant planes of weakness, particularly where sandstone/conglomerate beds are in contact with siltstone or claystone. Where bedding is adversely oriented, or "daylighted", with respect to natural or cut slopes, potential for bedding plane, or "block-glide", failure exists.

STABILITY ANALYSES

Slope stability analyses were performed using the program Slope/W by GEO-SLOPE International Ltd., which utilized Bishop's Simplified Method or Spencer's Method.

SHEAR STRENGTH PARAMETERS

As part of the evaluation of shear strength parameters to be used in slope stability calculations, the referenced reports concerning the subject site were reviewed. The shear strength parameters used for slope stability analyses were based on laboratory testing performed for the feasibility evaluation (AES, 2003a), the Chevron Service Station relocation project (RTF&A, 2003, 2004a, and 2004b), the Geotechnical Investigation report (RTF&A, 2001), and additional tests performed by our office as part of the current investigation.

Presented below are the recommended shear strengths for use at the subject site. The shear test results are considered to be effective values; that is, they require hydrostatic pressures be considered in a stability analysis. A description of the testing procedures is included in Appendix B and the direct shear test results for the current investigation are presented in Figures B-1.1 through B-1.4.

SUMMARY OF SHEAR STRENGTH PARAMETERS

MATERIAL	Static Cohesion (psf)	Static Ø(degrees)
Landslide Failure Plane Material	200	18
Terrace Deposit Material	450	27
Saugus Cross-Bedding	400	30
Saugus Along Bedding (static)	250	22
Saugus Along Bedding (Pseudostatic)	300	30
Compacted Fill	250	29
Alluvium	100	38

GEOTECHNICAL SECTIONS AND ASSUMED CRITICAL FAILURE SURFACE

The analyses were based on subsurface conditions as depicted on the Geotechnical Cross Sections, Figure 4. The existing ground surface, proposed grading scheme, and subsurface geologic structure are shown on the sections. For analyses, where the location of weak bedding planes is unknown or uncertain, one is assumed to be located exactly at the critical location, typically near the toe of the slope. The slope stability analyses did not include the presence of any recommended stability

fills which is conservative. The Geotechnical Cross Sections and Slope Stability Analyses and calculations are presented in Figure 4 and Appendix C, respectively.

RESULTS OF STABILITY CALCULATIONS

Slope stability calculations were performed for CS-1, CS-4 and for the proposed compacted fill slope illustrated in Cross Section L-L', Figure 2. The results of the slope stability calculations are discussed below.

Presently, the grading plan does not reflect drainage terraces for the proposed 2:1 cut slopes. All slopes, both cut and fill, proposed at a gradient of 2:1 and exceeding a height of 30 feet, should include drainage terraces. The terraces should be designed and constructed in accordance with the current requirements of Los Angeles County.

Terrace deposits occur at some locations at the site. Though not anticipated, should Terrace deposits be exposed in cut slopes, stability fills may be needed to control erosion and decrease the potential for sloughing of cobbles and boulders.

Cut Slope CS-1: Proposed cut slope CS-1 is illustrated in Geotechnical Cross Section C-C', Figure 4. Stability analyses performed for potential failure along the daylighted bedding depicted on Section C-C' indicate that the proposed cut slope meets the requirements for grossly stable slopes. The slope stability calculations are presented in Appendix D. It is recommended that a stability fill be constructed for this cut slope to reduce the potential for surficial erosion.

Cut Slope CS-4: The proposed configuration of Cut slope CS-2 is illustrated on Geotechnical Cross Section K-K', Figure 4. Stability analyses performed for potential failure along the daylighted bedding depicted on Section K-K' indicate that

proposed cut slope CS-4 meets the requirements for grossly stable slopes. The slope stability calculations are presented in Appendix D. It is recommended that a stability fill be constructed for this cut slope to reduce the potential for surficial erosion.

Fill Slopes: Section L-L' on Figure 4 is representative of the highest proposed 2:1 fill slope. Slope stability calculations for the proposed fill slope shown on Section L-L indicate that proposed cut slope CS-4 meets the requirements for grossly stable slopes. The slope stability calculations are presented in Appendix D.

LIQUEFACTION POTENTIAL

Liquefaction may occur when saturated, loose to medium dense, cohesionless soils are densified by ground vibrations. The densification results in increased pore water pressures if the soils are not sufficiently permeable to dissipate these pressures during and immediately following an earthquake. When the pore water pressure is equal to or exceeds the overburden pressure, liquefaction of the affected soil layers occurs. For liquefaction to occur, three conditions are required:

- ground shaking of sufficient magnitude and duration;
- a ground water level at or above the level of the susceptible soils during the ground shaking; and
- soils that are susceptible to liquefaction.

Even if some soil layers do liquefy, the affects of the liquefaction will not be observed on the ground surface if a sufficient thickness of non-liquefiable soils overlies the liquefiable soils.

Ground settlement may occur during seismic shaking of an area. The settlement can be caused by liquefaction of loose granular soils and by consolidation of soft, but not necessarily liquefiable, soils. Lateral spreading can occur when a site is sloped or is adjacent to a free face.

Analyses: The liquefaction potential within Planning Area 1 was previously evaluated by this firm in our geotechnical investigation report (RTF&A, 2001). The liquefaction potential in Planning Areas 2 through 15 were evaluated by AES as presented in their feasibility evaluation report (AES, 2000b). The liquefaction evaluation and calculations performed by AES for Planning Areas 2 through 15 are presented in Appendix E. The analyses for Planning Area 1 is discussed below.

Planning Area 1: From our ground motion study we obtained a Peak Ground Acceleration (PGA) of 0.60g with an earthquake magnitude of 7.5 for use in the liquefaction analyses. For our analyses, we assumed that the groundwater level would rise to within 5 feet of the existing ground surface. Liquefaction analyses were performed on the CPT data using the methodology presented by Robertson and Fear (1996). Seismically induced settlements were estimated using the procedure developed by Tokimatsu and Seed (1987). The results of our liquefaction analyses are presented in Appendix D.

Conclusions: The conclusions regarding liquefaction potential of the site obtained from the referenced reports (RTF&A, 2000a) and (AES, 2000) are summarized below. Planning Area 1 which was evaluated by this firm and the remainder of the Planning Areas at the subject site were evaluated by AES.

Planning Area 1: Based on the results of our analyses using the CPT data, some sandy soil layers beneath the site may liquefy in the event of a large earthquake

on a nearby fault that produces the design-level ground motions. However, due to the proposed increase in the existing site grades shown on the attached Geotechnical Maps, the potentially liquefiable soil layers will be overlain by sufficient thicknesses of non-liquefiable soils so that surface expression of liquefaction (such as sand boils or ground cracks) would not be expected to occur. The recommended grading of the site includes removal of the upper soils, and their replacement with properly compacted fill. The recommended removals and the proposed site grades will mitigate the potential for surface expression of liquefaction. Some settlement of the ground surface is expected as a result of seismic shaking. Additional subsurface investigation should be performed as part of the rough grading plan review to further define the potential for seismic settlement across the site within Planning Area 1.

Lateral spreading can occur when a site is sloped or is adjacent to a free face. The site is essentially level, currently sloping at 30:1 or flatter towards the Santa Clara River. Except at the western end of the site, where the potential for liquefaction of the underlying soils occurring is low, the bank of the river does not currently present a free face to the site. Development of the site will result in an approximately 25-foot high slope inclined at 4:1 along the river. The proposed slope will consist entirely of compacted fill and bank protection will be buried within the slope. If the site is graded as recommended, soils that could potentially liquefy and result in lateral spreading will be removed and replaced with compacted fill. The potential for lateral spreading should be further evaluated once bank protection plans are produced and rough grading plans are available.

Planning Areas 2 through 15: The liquefaction potential and evaluation of earthquake induced settlements performed by AES is presented in Appendix E

(AES, 2000b). AES concluded that some isolated liquefaction-prone soils exist at the site at various depths. However, the thickness of the liquefiable soils below the water table are considered to be very thin layers. The total earthquake-induced settlements ranged between approximately 0 and 0.6 inches and AES recommended that a conservative maximum differential cyclic settlement of 0.4 inches would be appropriate for design use.

CONCLUSIONS

GEOLOGIC CONSIDERATIONS

General: We have reviewed geologic data and reports previously developed by AES for VTTM 53295 (AES, 2000b) and adjacent areas (AES, 1986; 1997a; 1997b; 1997c; 1999a; 1999b; 2000a; 2000b; 2000c; and 2004), particularly as it pertains to the location of the Holser fault. We concur with the AES findings, conclusions, and recommendations relative to the geologic aspects and conditions within VTTM 53295. The AES geologic data has been utilized in preparation of the Geotechnical Map and Geotechnical Sections, and their relevant findings have been incorporated into our conclusions and recommendations.

Erosion Potential: Friable sandstone beds are common within the Saugus Formation and are present at the site. If exposed in graded slopes, these beds could be subject to erosion and rilling due to the lack of cementation. Under most circumstances, the erosion can be controlled by adhering to the provisions of the grading code and establishing vegetative cover upon completion of grading. The presence of erosion-susceptible beds should be determined during rough grading. Extensive or thick deposits of the friable beds may warrant the construction of

stabilization fills during rough grading, though not necessarily during the mass grading phase.

Rippability: Grading operations can be performed using conventional grading equipment. Heavy ripping may be needed when excavating well-cemented sandstone or conglomerate beds.

Sewage Disposal: Sewage disposal is expected to be by sewers.

RESTRICTED USE AREAS

A 160-foot wide Building Setback has been established for the South Branch of the Holser fault. The area falling within the setback constitutes a Restricted Use Area (RUA) and should be shown on the recorded Final Map. Habitable structures should not be sited within the RUA. A habitable structure is defined as "any structure used or intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate exceeding 2,000 person-hours a year."

RECOMMENDATIONS

GRADING

General: The following sections present recommendations for treatment of cut and fill slopes, and grading. The applicability of the preliminary recommendations given in the following sections for foundation and retaining wall design should be confirmed at the completion of grading. Paving studies and soil corrosivity tests should be performed at the completion of rough grading to develop detailed recommendations for protection of utilities, structures, and for construction of the proposed roads.

Site Preparation: Prior to performing earthwork, the existing vegetation and any deleterious debris should be removed from the site. Existing utility lines should be relocated or properly protected in-place. All unsuitable soils and uncertified fills in the areas of grading receiving new fill should be removed to competent earth materials and replaced with engineered fill. The depth of removal and recompaction of unsuitable soils is noted on the Geotechnical Map. Any fill required to raise the site grades should be properly compacted.

All existing uncertified fill soils should be removed and recompacted prior to placement of additional fill. Removal of the exposed natural soils should extend to at least the depths indicated on the Geotechnical Map. After excavation of the upper natural soils on hillsides and in canyons, further excavation should be performed, if necessary, to remove slope wash or other unsuitable soils.

Removal Depths: The required depth of removal and recompaction of the existing compacted fill or natural soils are indicated on the Geotechnical Map. Deeper removals will be required if disturbed or unsuitable soils are encountered. After excavation of the upper natural soils on hillsides and in canyons, further excavation should be performed, if necessary, to remove slope wash or other unsuitable soils. Additional removals will also be required for transition lots and where expansive bedrock occurs.

The Geotechnical Consultant of Record may require that additional shallow excavations be made periodically in the exposed bottom to determine that sufficient removals have been made prior to recompacting the soil in-place. Deeper removals may be recommended by RTF&A based on observed field conditions during grading. During grading operations, the removal depths should be observed by a

representative of RTF&A and surveyed by the Project Civil Engineer for conformance with the recommended removal depths shown on the grading plan.

Material for Fill: The on-site soils, less any debris or organic matter, may be used in the required fills. Any expansive clays should be mixed with non-expansive soils to result in a mixture having an expansion index less than 30 if they are to be placed within the upper 8 feet of the proposed rough grades.

Rocks or hard fragments larger than 8 inches may not be placed in the fill without special treatment. Rocks or hard fragments larger than 4 inches shall not be clustered or compose more than 25% by weight of any portion of the fill or a lift. Soils containing more than 25% rock or hard fragments larger than 4 inches must be removed or crushed with successive passes (e.g., with a sheepsfoot roller) until rock or hard fragments larger than 4 inches constitute less than 25% of the fill or lift.

Oversized Material: Rock or material greater than 8 inches in diameter, but not exceeding 4 feet in largest dimension shall be considered oversize rock. The oversize rocks can be incorporated into deep fills where designated by the Geotechnical Consultant. Rocks should be placed in the lower portions of the fill and should not be placed within the upper 15 feet of compacted fill, or nearer than 15 feet to the surface of any fill slope. Rocks between 8 inches and 4 feet in diameter shall be placed in windrows or shallow trenches located so that equipment can build up and compact fill on both sides. The width of the windrows shall not exceed 4 feet. The windrows should be staggered vertically so that one windrow is not placed directly above the windrow immediately below. Rocks greater than 1 foot in diameter shall not exceed 30% of the volume of the windrows. Granular fill shall be placed on the windrow, and enough water should be applied so that soil can be

flooded into the voids. Fill should be placed along the sides of the windrows and compacted as thoroughly as possible. After the fill has been brought to the top of the rock windrow, additional granular fill should be placed and flooded into the voids. Flooding is not permitted in fill soils placed more than 1 foot above the top of the windrowed rocks.

Where utility lines or pipelines are to be located at depths greater than 15 feet, rock shall be excluded in that area. Excess rock that cannot be included in the fill, or that exceeds 4 feet in diameter, should be stockpiled for export or used for landscaping purposes.

Import Material: Import material should consist of relatively non-expansive soils with an expansion index less than 30. The imported materials should contain sufficient fines (binder material) so as to be relatively impermeable and result in a stable subgrade when compacted. The import material should be free of organic materials, debris, and rocks larger than 8 inches. A bulk sample of potential import material, weighing at least 25 pounds, should be submitted to the Geotechnical Consultant at least 48 hours in advance of fill operations. All proposed import materials should be approved by the Geotechnical Consultant prior to being placed at the site.

Compaction: After the site is cleared and excavated as recommended, the exposed soils should be carefully observed for the removal of all unsuitable material. Next, the exposed subgrade soils should be scarified to a depth of at least 6 inches, brought to above optimum moisture content, and rolled with heavy compaction equipment. The upper 6 inches of exposed soils should be compacted to at least 90%

of the maximum dry density obtainable by the ASTM D 1557-91 Method of Compaction.

After compacting the exposed subgrade soils, all required fills should be placed in loose lifts, not more than 8 inches in thickness, and compacted to at least 90% of their maximum density. For fills placed at depths greater than 40 feet below proposed finish grade a minimum compaction of 93% of the maximum dry density is required. The moisture content of the fill soils at the time of compaction should be above the optimum moisture content. Compacted fill should not be allowed to dry out before subsequent lifts are placed.

Rough grades should be sloped so as not to direct water flow over slope faces. Finished exterior grades should be sloped to drain away from building areas to prevent ponding of water adjacent to foundations.

Temporary Slopes: For purposes of construction, the soils encountered at the site should not be expected to stand vertically for any significant length of time in cuts 4 feet or higher. Where the necessary space is available, temporary unsurcharged embankments may be sloped back at a 1:l gradient without shoring, up to a height of 45 feet in competent bedrock with favorable bedding. Where any cut slope exceeds a height of 50 feet within competent bedrock, a bench at least 10 feet wide should be located at mid-height. Within alluvial or compacted fill material, temporary excavations may be made at a 1¼:1 cut to a height of 25 feet. If the temporary construction embankments are to be maintained during the rainy season, berms are recommended along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces.

Where sloped embankments are used, the tops of the slopes should be barricaded to prevent vehicles and storage loads within five feet of the tops of the slopes. A greater setback may be necessary when considering heavy vehicles, such as concrete trucks and cranes; we should be advised of such heavy vehicle loads so that specific setback requirements can be established.

All applicable safety requirements and regulations, including OSHA regulations, should be met.

Permanent Slopes: Permanent cut and fill slopes may be inclined at 2:1 or flatter. The current bulk grading plan indicates that the steepest slope to be constructed at the site during grading will be 2:1.

Proposed Cut Slopes: Cut slopes proposed for the rough grading of the subject site have been designated as shown on the Geotechnical Map. Each cut slope is discussed with specific recommendations presented in the "Slope Stability Analyses" section of this report. All grading should conform to the minimum recommendations presented in this report. If these slopes are modified from those that are discussed in this report, the modifications should be reviewed by RTF&A to ascertain the applicability of our recommendations. The cut slope designation, gradient, and proposed mitigation are summarized in Table 2.

Fill Slopes: Where the toe of a fill slope terminates on natural, fill, or cut, a keyway is required at the toe of the fill slope. The fill slope keyway should be a minimum width of 12 feet, be founded within competent material, and should extend a horizontal distance beyond the toe of the fill to the depth of the keyway. The keyway should be sloped back at a minimum gradient of 2% into the slope. The width of fill slopes shall be no less than 8 feet and under no circumstances should the

fill widths be less than what the compaction equipment being used can fully compact. Benches should be cut into the existing slope to bind the fill to the slope. Benches should be step-like in profile, with each bench not less than four feet in height and established in competent material. Compressible or other unsuitable soils should be removed from the slope prior to benching. Competent material is defined as being essentially free of loose soil, heavy fracturing, or erosion-prone material and is established by the Geotechnical Consultant during grading.

Where the top or toe of a fill slope terminates on a natural or cut slope and the natural or cut slope is steeper than a gradient of 3:1, a drainage terrace with a width of at least 6 feet is recommended along the contact. As an alternative, the natural or cut portion of the slope can be excavated and replaced as a stability fill to provide an all-fill slope condition. Where the contact between the face of the fill slope and the face of a lower natural or cut slope is inclined at 45 degrees or steeper, a drainage terrace would not be required.

When constructing fill slopes, the grading contractor shall avoid spillage of loose material down the face of the slope during the dumping and rolling operations. Preferably, the incoming load shall be dumped behind the face of the slope and bladed into place. After a maximum of four feet of compacted fill has been placed, the contractor shall backroll the outer face of the slope by backing the tamping roller over the top of the slope, thoroughly covering all of the slope surface with overlapping passes of the roller. The foregoing should be repeated after the placement of each four-foot thickness of fill. As an alternative, the fill slope can be over built and the slope cut back to expose a compacted core. If the required compaction is not obtained on the fill slope, additional rolling will be required prior

to placement of additional fill, or the slope shall be overbuilt and cut back to expose the compacted core.

Stability Fills: Stability fills have been recommended at specific locations to mitigate erosion, drainage, or surficial stability problems. Stability fills should extend for the length and height of slope as recommended in the "Slope Stability Analyses" section of this report. Additional stability fills may be required during grading due to changed field conditions. The minimum stability fill keyway widths should conform to those shown on Figure 4, but should not be less than 12 feet. The width of stability fills may taper uniformly to no less than 8 feet at the top of the slope or terrace drain. Under no circumstances should the fill widths be less than what the compaction equipment being used can fully compact. Backdrains should be provided at the backcut as described in the following section and indicated in the Stability Fill Details for Grossly Stable Slopes, Figure 5. All stability fills should be keyed and benched into competent earth materials as recommended in this report or determined by the Geotechnical Consultant during construction. Stability fills should be constructed in accordance with the recommendations for keyway, benching, and backdrain details shown in Figure 5.

Stability Fill Backdrains: Backdrains should be installed at the backcut of the stability and buttress fills with outlets at vertical intervals not exceeding 15 feet and horizontal intervals not exceeding 100 feet, and under the direction of the Geotechnical Consultant. Backdrain outlets should consist of non-perforated pipe. The gradient should be at least 2% to the discharge end. The exact location of the backdrains should be determined in the field by the Geotechnical Consultant

after the backcut has been made, so that it can be best positioned to intercept potential seepage.

The exact location of the subdrains should be determined in the field by the Geotechnical Consultant after the backcut has been made, so that they can be best positioned to intercept potential seepage.

Slope Planting: In order to reduce the potential for erosion, all cut and fill slopes should be seeded or planted with proper ground cover as soon as possible following grading operations in accordance with Section 7019 of the County of Los Angeles 1999 Building Code. The ground cover should consist of drought-resistant, deep-rooting vegetation. A landscape architect should be consulted for ground cover recommendations, plant selection, installation procedures, and plant care requirements.

DRAINAGE

Subdrains: Canyon subdrains are recommended to intercept and remove groundwater within canyon fill areas. All subdrains should extend up-canyon, with the drain inlet carried to within 15 feet of final pad grade. Specific subdrain locations and recommendations should be provided as part of the future rough grading plan review.

EXPANSIVE BEDROCK

It is anticipated that Saugus Formation bedrock materials exposed at pad grade may contain expansive claystone beds that could cause differential expansion. Therefore, within building areas at locations where expansive Saugus Formation units

are exposed at pad grade, it is recommended that the bedrock be removed and recompacted to a depth of at least eight feet below the proposed final pad elevations or five feet below the bottom of proposed footings, whichever is greater. It is also recommended that the bedrock be removed and recompacted to a depth of at least three feet below proposed soil subgrade in exposed Saugus Formation areas receiving pavement or hardscape improvements. The soils generated by these over-excavations should be mixed with non-expansive soils to yield a relatively non-expansive mixture. Should the resulting fill soil still be expansive, special construction techniques such as pad subgrade saturation or post-tensioned slabs may be required to reduce the potential for expansive soil related distress.

TRANSITION LOTS

Proposed building pads located in a cut and fill transition zone may experience cracking and movement of the footings and slab due to differing compressibility of the fill, as compared to the bedrock material. To reduce the potential for cracking and differential settlement, the portion of the lot in bedrock should be over-excavated to a depth of at least five feet below the proposed finished pad elevation; or three feet below the bottom of proposed footings, whichever is greater. The over-excavation should extend at least five feet laterally beyond the building limits. Where removal and recompaction for potentially expansive soils or bedrock is also required, it is recommended that the eight-foot removals be performed as described in the "Expansive Bedrock" section of this report.

Foundation and floor slabs for structures located within a transition zone should also contain special reinforcement as designed by the Project Structural

Engineer. Continuous footings located across the transition zone and 20 feet on either side of the contact should incorporate a minimum of two No. 4 bars, one at the top and one at the bottom.

Floor slabs located across the transition zone and 20 feet on either side of the contact should have a minimum slab thickness of at least 4 inches and should contain as a minimum No. 4 bars spaced a maximum of 18 inches on center. As an alternative, post-tensioned floor slabs may be used.

FOUNDATIONS

General: Residential buildings up to three stories in height may be supported on continuous or individual spread footings established in properly compacted fill. The following recommendations should be considered preliminary since fill will be used in some lots to raise the site grade and the final design values will depend upon the engineering characteristics of the fill soil. The preliminary design values are based upon this investigation, our experience with the soils in the area, and with the site preparation and grading recommendations for this project.

Bearing Capacity: It is assumed that the proposed residential buildings will be founded at approximately final planned grades, with column loads less than 100 kips, and have normal floor loads with no special requirements. Individual column pads or wall footings for residential buildings should have a width of at least 12 inches and be placed at a depth of at least 18 inches below the lowest final adjacent grade.

Residential structures may be placed on spread footings designed using a bearing value of 2,000 pounds per square foot (psf). The recommended bearing value

is a net value, and the weight of concrete in the footings may be taken as 50 pounds per cubic foot (pcf). The weight of soil backfill may be neglected when determining the downward loads from the footings. A one-third increase in the bearing value may be used when considering wind or seismic loads.

While the actual bearing value of the fill placed at the site will depend on the materials used and the compaction methods employed, the quoted bearing value will be applicable if acceptable soils are used and are compacted as recommended. The bearing value of the fill should be confirmed during grading.

Lateral Resistance: Lateral loads may be resisted by soil friction and by the passive resistance of the soils. A coefficient of friction of 0.4 applied to the dead loads may be used between the footings, floor slabs, and the supporting soils. The passive resistance of properly compacted fill soils may be assumed to be equal to the pressure developed by a fluid with a density of 250 pcf. The frictional resistance and the passive resistance of the soils may be combined without reduction in determining the total lateral resistance.

Settlement: Provided that light residential structures are founded in compacted fill soils as recommended, we estimate that the maximum settlement will be less than one inch, and that differential settlements will be less than ¾ inch within a horizontal distance of 30 feet.

Foundation Observations: To verify the presence of satisfactory soils at foundation design elevations, the excavations should be observed by the Geotechnical Consultant. Excavations should be deepened as necessary to extend into satisfactory soils. Where the foundation excavations are deeper than four feet, the sides of the excavations should be sloped back at ¾:1 or shored for safety.

Inspection of foundation excavations may also be required by the appropriate reviewing governmental agencies. The contractor should be familiar with the inspection requirements of the reviewing agencies.

SITE COEFFICIENT

Under the Earthquake Design regulations of Chapter 16, Divisions IV and V of the 1997 Uniform Building Code (UBC), the following coefficients and factors apply to lateral-force design for structures at the site.

SEISMIC ZONE	$Z = 0.4$
SOIL PROFILE TYPE	S_D, Stiff Soil
Near-Source Factor N_a	1.3
Near-Source Factor N_v	1.6
Seismic Coefficient C_a	0.57
Seismic Coefficient C_v	1.02

Fault Type	Distance (km)
A	>15
B	<2

RETAINING WALLS

General: Backfill placed behind retaining walls should be compacted to a minimum of 90% of the maximum dry density as determined by ASTM D 1557-91. When backfilling behind walls, it is recommended the walls be braced and heavy compaction equipment not be used closer to the back of the wall than the height of the wall.

Lateral Earth Pressures: For design of non-building retaining walls, where the surface of the backfill is level and the retained height of soils is less than 15 feet, it may be assumed that drained, non-expansive soils will exert a lateral pressure equal to that developed by a fluid with a density of 30 pcf. Where the surface of the backfill is inclined at 2:1, it may be assumed that drained soils will exert a lateral pressure equal to that developed by a fluid with a density of 45 pcf.

In addition to the recommended earth pressures, the walls should be designed to resist any applicable surcharges due to any nearby foundations, walls, storage or traffic loads. A drainage system, such as weepholes or a perforated pipe should be provided behind the walls to prevent the development of hydrostatic pressure. Recommendations for wall drains are presented as follows.

If a drainage system is not installed, the walls should be designed to resist an additional hydrostatic pressure equal to that developed by a fluid with a density of 60 pcf against the full height of the wall. In addition to the recommended earth and hydrostatic pressures, the upper 10 feet of walls adjacent to vehicular traffic areas should be designed to resist a uniform lateral pressure of 100 psf. This pressure is based on an assumed 300 psf surcharge behind the walls due to normal traffic. If the traffic is kept back at least 10 feet from the walls, the traffic surcharge may be neglected.

Wall Drainage: A drainage system should be provided behind all retaining walls or the walls should be designed to resist hydrostatic pressures. Retaining wall backfill may be drained by a perforated pipe installed at the base and back side of the wall. The perforated pipe should be at least 4 inches in diameter, placed with the perforations down, and be surrounded on all sides by at least 6 inches of gravel. The

pipe should be installed to drain at a gradient of between 0.5 to 1% and should be connected to an outlet device. The gravel should be "burrito-wrapped" with filter fabric such as Mirafi 140 or equivalent. Alternatively, the filter fabric and gravel may be omitted when using a continuous slotted pipe and graded sand which conforms to LACFCD "F1 " Designated Filter Material.

The backside of the wall should be waterproofed. A 6-inch vertical gravel chimney drain, Miradrain, or equivalent, should be placed behind retaining walls and extend to within 18 inches below the top of the wall backfill to provide a drainage path to the perforated pipe. The top of the vertical drain should be capped with 18 inches of onsite soils.

The drainage system should be observed by the Geotechnical Consultant prior to backfilling the retaining wall. Inspection of the drainage system may also be to required by the reviewing governmental agencies.

CHANNEL LINING

General: The proposed development includes a proposed soil cement channel liner. Plans for the soil cement channel liner are not yet available and will be geotechnically reviewed in a future report. The following preliminary recommendations can be used in the planning of the proposed bank protection. The grading recommendations presented in the preceding sections are also applicable to the proposed channel lining. Overexcavation of the natural soils is not expected to be required for the lining, though existing fill soils should be excavated and replaced with compacted fill. The backcut for the channel lining may be sloped back at 1¼:1.

Concrete lined and soil-cement channel liners may be inclined at 1½:1 or flatter. Grouted and ungrouted rip-rap liners may be inclined at 2:1 or flatter.

Soil Cement: It is expected that portions of the on-site alluvial soils will be suitable for use as aggregate in soil-cement. For estimating purposes, a cement content of 8 to 10%, by weight, may be used. To determine the actual required cement content, the granular soils that are to be used in a soil-cement channel lining should be stockpiled. Representative samples of the stockpiled material should be mixed with varying amounts of cement, compacted, and cured for different time intervals. Based on the results of unconfined compression tests on the samples of the soil-cement mixtures, the actual cement content to be used during construction can be determined.

The soil-cement should be placed in layers not more than 8 inches in thickness and should be compacted to at least 95% of the maximum dry density at a moisture content of no more than 2% over optimum for the soils. The placement of the soil-cement should be performed under the observation of the Geotechnical Consultant, who should perform sieve analyses, compaction, unconfined compression, and moisture-density tests.

GEOTECHNICAL OBSERVATION

The grading operations should be observed by the Geotechnical Consultant. The Geotechnical Consultant's representative should have at least the following duties:

- observe the excavation so that any necessary modifications based on variations in the soil/rock conditions encountered can be made;

- observe the exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished subgrade. The representative should also observe proof-rolling and delineation of areas requiring overexcavation;

- evaluate the suitability of on-site and import soils for fill placement; collect and submit soil samples for required or recommended laboratory testing where necessary;

- observe the fill and backfill for uniformity during placement;

- test fill for field density and compaction to determine the percentage of compaction achieved during fill placement;

- geologic observation of all cut slopes, keyways, backcuts and geologic exposures during grading to ascertain that conditions conform to those anticipated in the report;

- observe benching operations; observe canyon cleanouts for subdrains, and subdrain installation; and

- observe removal of all landslide debris where specified.

The governmental agencies having jurisdiction over the project should be notified prior to commencement of grading so that the necessary grading permits can be obtained and arrangements can be made for required inspection(s). The contractor should be familiar with the inspection requirements of the reviewing agencies.

111 STATEMENT

Based on the results of our geotechnical investigation and review of the plans furnished to us, it is our finding that the site will be safe from hazards of landslide, settlement, or slippage, and will not adversely affect adjacent properties in compliance with the Los Angeles County Code, provided our recommendations and the provisions of the Los Angeles County Code are followed.

GEOTECHNICAL CONSULTANT OF RECORD

This report has been prepared assuming that RTF&A will perform all geologic and geotechnically-related field observations and testing. If the recommendations presented in this report are to be utilized, but observation of the grading activities is performed by others, the parties performing the work must review this report and assume responsibility for recommendations contained herein or provide their own recommendations. That party would then assume the title "Geotechnical Consultant of Record" for the project.

A representative of the Geotechnical Consultant of Record should be present to observe all grading operations as well as test compacted fills. A report presenting the results of these observations and related testing should be issued upon completion of these operations. All footing excavations should be observed by a representative of the Geotechnical Consultant of Record, prior to placing steel or pouring concrete into the excavations.

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The following are attached and complete this report:

Volume I

- References
- Site Location Map - Figure 1
- Oil Well Location Map – Figure 2
- Geotechnical Maps – Figures 3.1 through 3.5 (in pocket)
- Geotechnical Cross Sections - Figure 4 (in pocket)
- Stability Fill Detail for Grossly Stable Slopes - Figure 5

Volume II

- Appendix A - Explorations
  - Explorations
  - Table A-1, Exploration Summary
  - Unified Soil Classification System - Figure A-1
  - Current Borings Logs, B-1 - B-4
  - Boring Logs From RTF&A March 23, 1998, WB-1 - WB-4
  - Boring Logs From AES May 25, 2000, RW-1 through RW-3, B-40E, B43E, B47E, B60E, B61E, HS-1 through HS-10
  - Trench Logs From RTF&A December 30, 2003
  - Trench Logs From AES May 25,2000, T-1 through T-67
- Appendix B - Laboratory Testing
  - Laboratory Tests
  - Current Direct Shear Test Data (B-1.1 through B-1.4)
  - Laboratory Data From RTF&A December 3,2001 (6 pages)
  - Laboratory Data From AES May 25, 2000 (25 pages)
- Appendix C - Slope Stability Analyses (30 pages)

Volume II

- Appendix C - Slope Stability Analyses (30 pages)
- Appendix D - Cone Penetration Test Data
  CPT Soundings From RTF&A December 3, 2001
  CPT Soundings from RTF&A March 23, 1998
  CPT Soundings From AES May 25, 2000
- Appendix E - Liquefaction Evaluation From AES May 25, 2000

Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES

REGISTERED GEOLOGIST NO. 5917 DOUGLAS S. SANTO Exp. 9/30/06 CERTIFIED ENGINEERING GEOLOGIST NO. 1866 STATE OF CALIFORNIA

by: Douglas S. Santo
Principal Engineering Geologist

REGISTERED PROFESSIONAL ENGINEER ALAN W. RASPLICKA No. GE 2558 Exp. 6/30/07 GEOTECHNICAL STATE OF CALIFORNIA

and: Alan W. Rasplicka
Geotechnical Engineer

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

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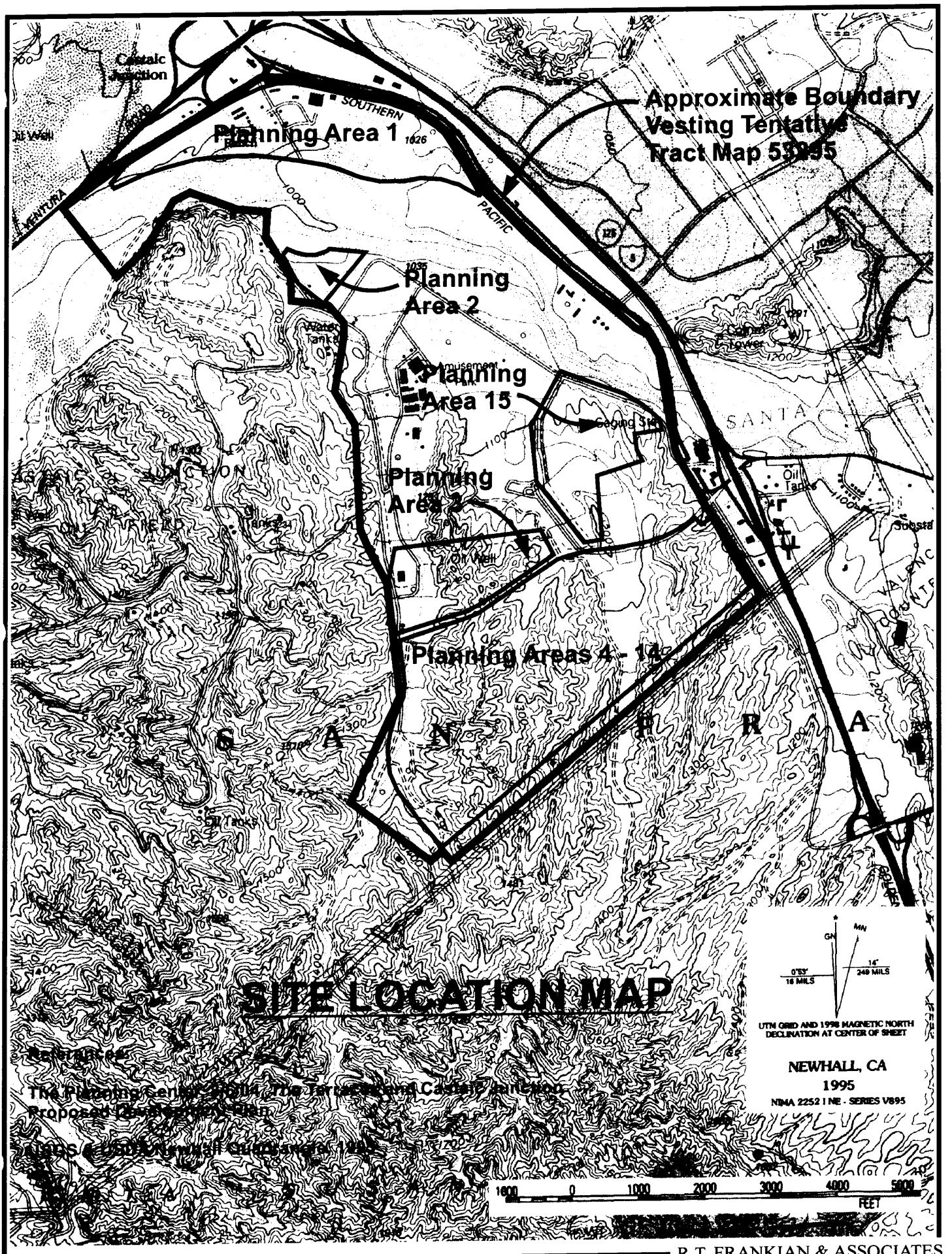
Aerial Photos Reviewed

Year	Flight	Frame	Scale	Source
1928	E	120, 121, 122	1" = 2,000'	Fairchild
1952	AXJ-2K	140, 141, 142	1" = 650'	USDA



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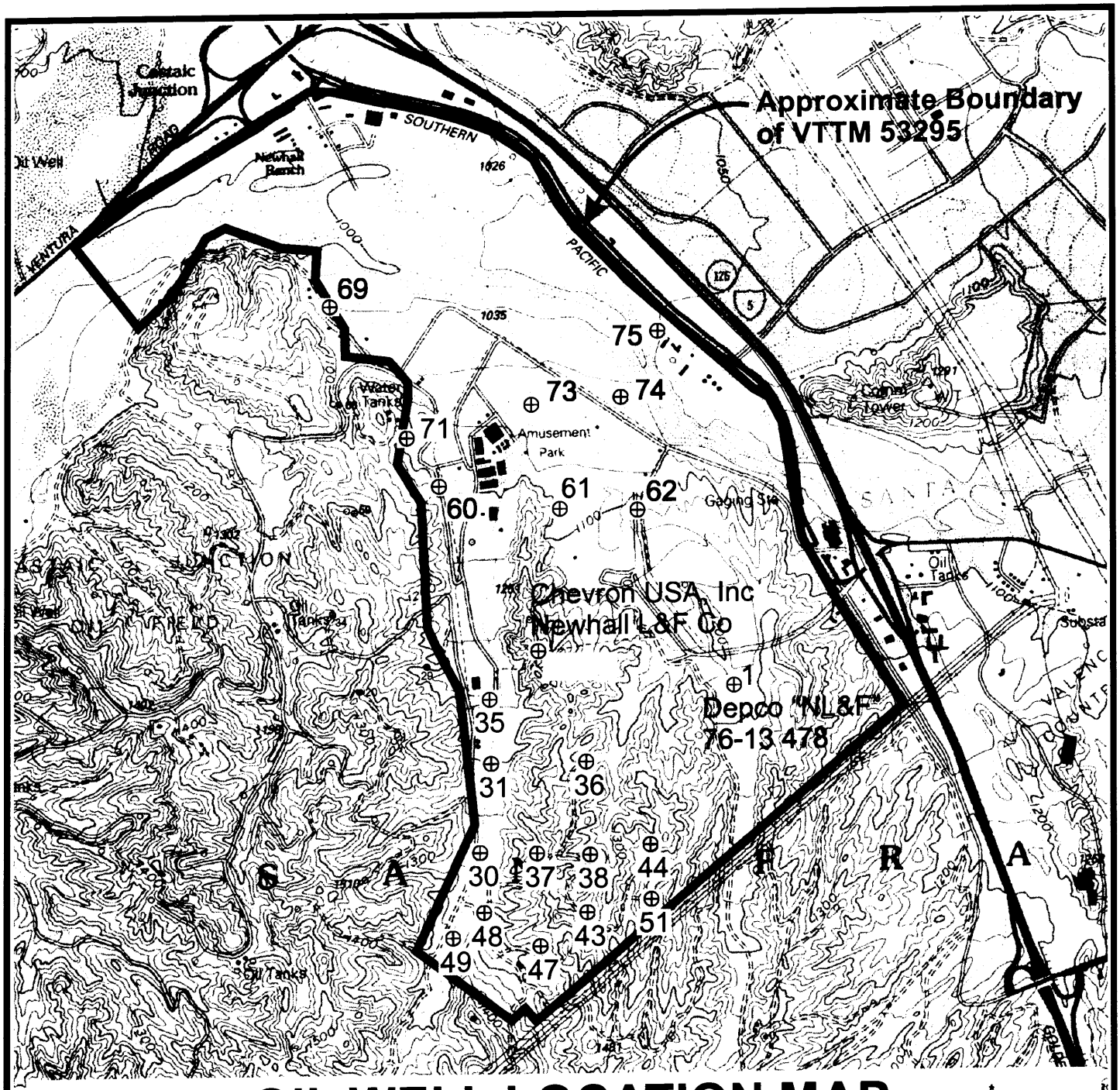
2004-700-21 VTTM 53925 REPORT DATED 3/18/05

R.T. FRANKIAN & ASSOCIATES
FIGURE 1



OIL WELL LOCATION MAP

EXPLANATION

⊕49 Plugged and abandoned oil well, showing DOG well number, well name, year drilled, and total depth when available.

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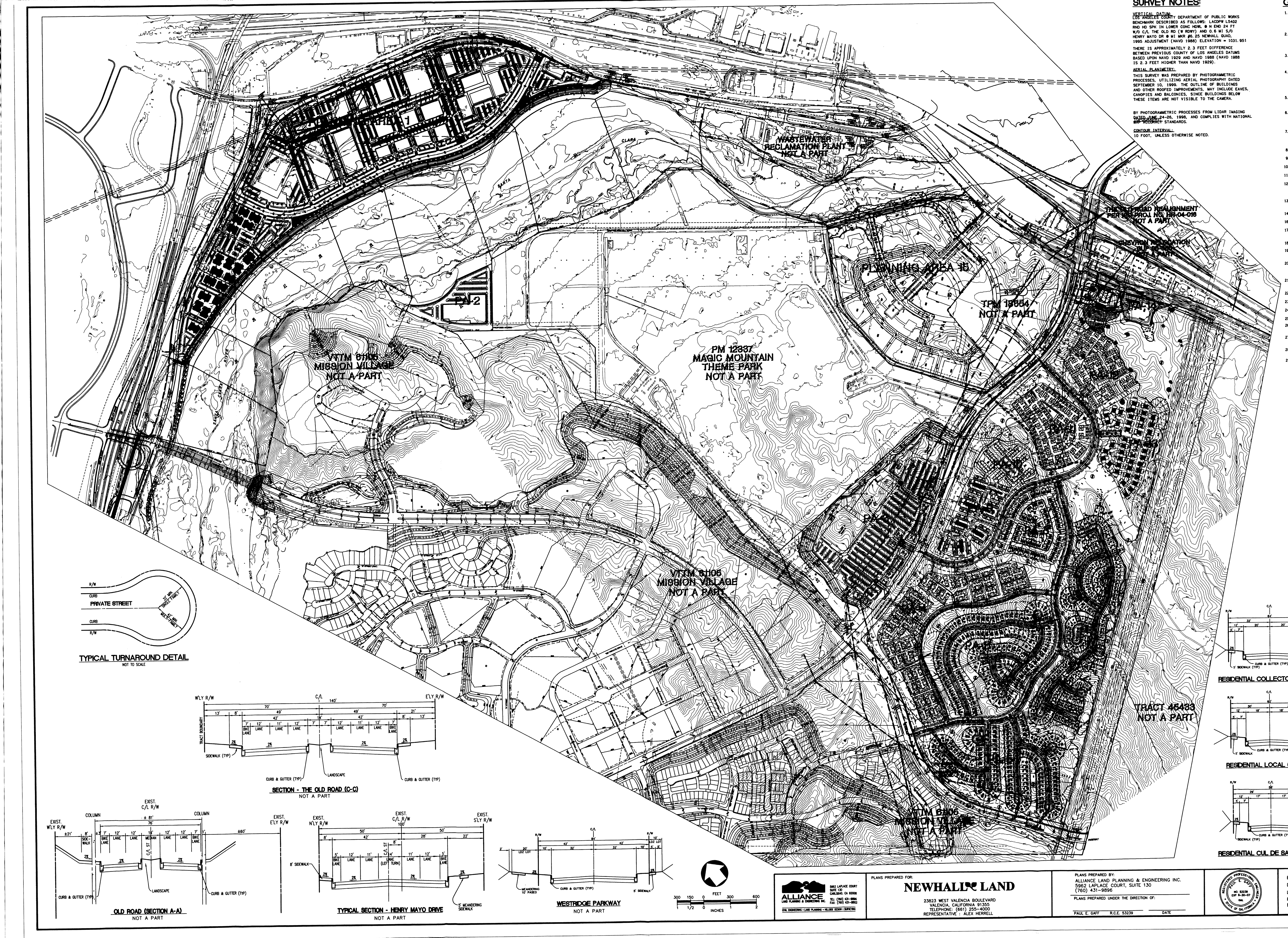
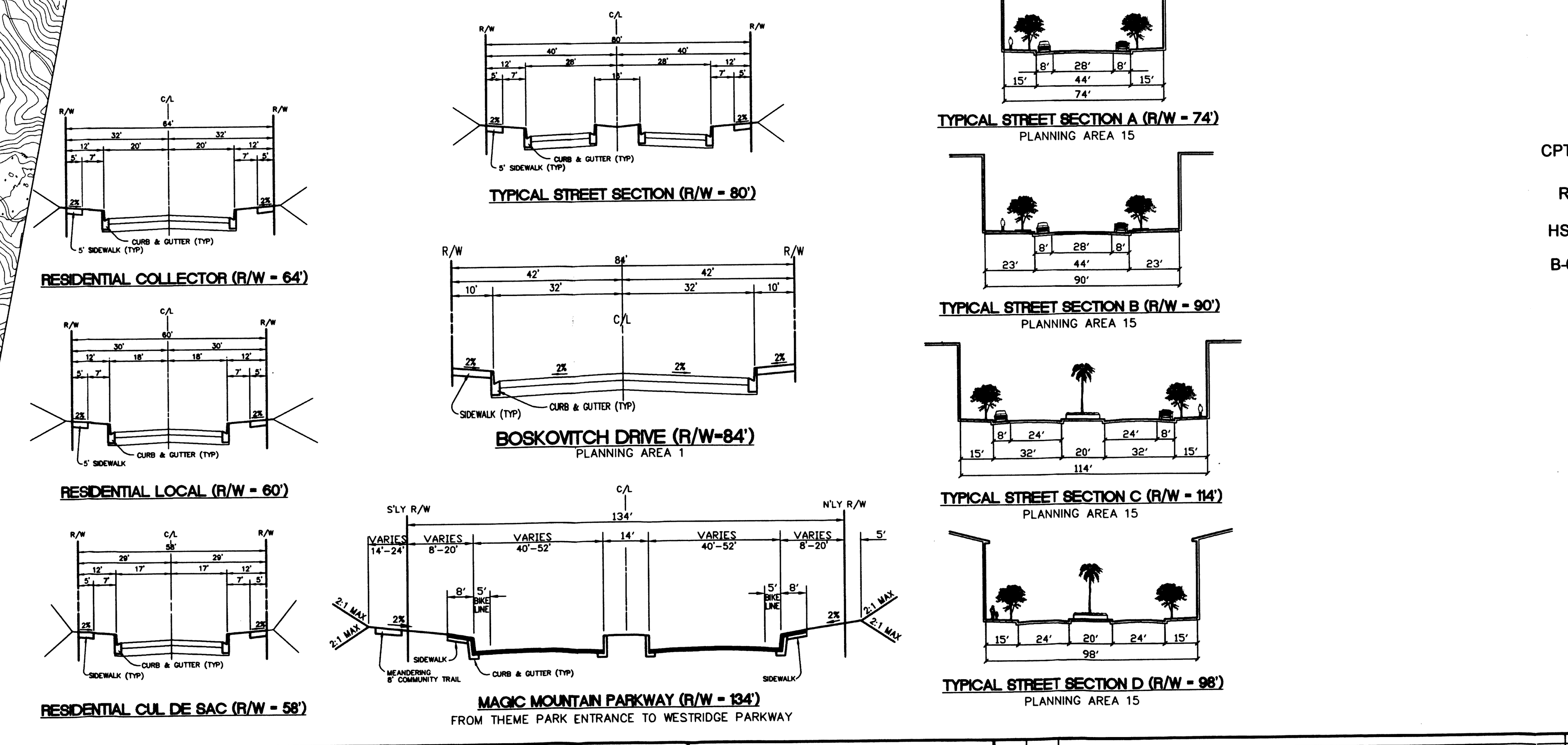
GN MN 0°53' 16 MILS 14' 249 MILS

UTN GRID AND 1998 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

NEWHALL, CA
1995
NIMA 2252 I NE - SERIES V895

1000 0 1000 2000 3000 4000 5000 FEET





SURVEY NOTES:

VERTICAL DATUM:
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS BENCHMARK DESCRIBED AS FOLLOWS: LACDPW L5402 RND HD SPK IN LOWER CONC HDWL @ N END 24 FT W/O C/L THE OLD RD (W RDWY) AND 0.6 MI S/O HENRY MAYO DR @ MI MKR #6.25 NEWHALL QUAD, 1995 ADJUSTMENT (NAVD 1988) ELEVATION = 1031.951

THERE IS APPROXIMATELY 2.3 FEET DIFFERENCE BETWEEN PREVIOUS COUNTY OF LOS ANGELES DATUMS BASED UPON NAVD 1929 AND NAVD 1988 (NAVD 1988 IS 2.3 FEET HIGHER THAN NAVD 1929).

AERIAL PLANIMETRY:
THIS SURVEY WAS PREPARED BY PHOTOGRAMMETRIC PROCESSES, UTILIZING AERIAL PHOTOGRAPHY DATED SEPTEMBER 10, 1999. THE OUTLINE OF BUILDINGS AND OTHER ROOFED IMPROVEMENTS, MAY INCLUDE EAVES, CANOPIES AND BALCONIES, SINCE BUILDINGS BELOW THESE ITEMS ARE NOT VISIBLE TO THE CAMERA.

TOPOGRAPHY:
BY PHOTOGRAMMETRIC PROCESSES FROM LIDAR IMAGING DATED JUNE 24-26, 1998, AND COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.

CONTOUR INTERVAL:
10 FOOT, UNLESS OTHERWISE NOTED.

GENERAL NOTES:

1. GRADE ELEVATIONS SHOWN ON THE VTTM ARE APPROXIMATE. THE ELEVATIONS MAY MAY CHANGE BY 10 FEET. ELEVATION CHANGES MAY BE GREATER THAN 10 FEET BUT ONLY IF DETERMINED BY DPW AND DRP THAT THE REVISIONS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION MAP APPROVAL.
2. LOT LINES CAN BE ADJUSTED PROVIDED NO ADDITIONAL LOTS ARE CREATED (EXCEPT FOR OPEN SPACE LOTS). THE DEGREE OF ADJUSTMENT IS WITHIN THE DISCRETION OF THE SUBDIVIDER PROVIDED SUCH ADJUSTMENTS ARE CONSISTENT WITH THE STATE SUBDIVISION MAP ACT.
3. ALIGNMENT AND GEOMETRICS OF STREETS ARE APPROXIMATE. ADJUSTMENTS CAN BE MADE PROVIDED DPW AND DRP DETERMINE THAT THE ADJUSTMENTS ARE CONSISTENT WITH THE INTENT OF THE SUBDIVISION APPROVAL.
4. BUILDING FOOTPRINTS THAT ARE SHOWN ON THE SUBDIVISION MAP OR ACCOMPANYING EXHIBIT MAP ARE ONLY FOR ILLUSTRATIVE PURPOSES. ACTUAL BUILDING LOCATIONS AND FOOTPRINTS MAY VARY AND WILL BE REVIEWED DURING PLOT PLAN APPROVAL AND SHALL BE GRANTED PROVIDED THE PROPOSED BUILDING SATISFIES ALL EXISTING CODES AND ORDINANCES. THIS MINOR CHANGE DOES NOT, HOWEVER, INCLUDE THE CHANGE IN PROPOSED LAND USE OR RESIDENTIAL HOUSING PRODUCT.
5. PERMISSION IS REQUESTED TO FILE "LARGE LOT" PARCEL MAPS OF 20 ACRES OR MORE (WITHOUT IMPROVEMENTS) OR 5 ACRES OR MORE (WITH IMPROVEMENTS) AS SPECIFIED IN THE COUNTY SUBDIVISION CODE.
6. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL NOT REQUIRE THE OBLIGATION OF FEES, DEDICATIONS (E.G., RIGHTS-OF-WAY OR PARKS), EXACTIONS, OR INFRASTRUCTURE AS MAY BE OTHERWISE REQUIRED FOR THE SUBDIVISION, EXCEPT AS MAY BE REQUIRED BY CHAPTER 21.32 OF THE SUBDIVISION CODE.
7. THE RECORDATION OF A "LARGE LOT" PARCEL MAP SHALL BE CONSIDERED THE FILING OF THE FIRST UNIT FOR THE PURPOSE OF TIME EXTENSIONS PURSUANT TO THE SUBDIVISION MAP ACT.
8. PERMISSION IS GRANTED FOR UNIT PHASING.
9. PERMISSION IS GRANTED TO COMBINE LOTS.
10. PERMISSION IS GRANTED TO RECORD ADDITIONAL OPEN SPACE LOTS.
11. TRAIL LOCATIONS CAN BE RE-LOCATED THROUGH AN INFORMATION ONLY MAP.
12. THE LOCATIONS OF APPURTENANT STRUCTURES (e.g., WATER WELLS, PASEOS, PEDESTRIAN BRIDGES, TRANSIT SHELTERS, WATER QUALITY BASINS, ETC.) MAY BE RELOCATED THROUGH AN INFORMATION ONLY MAP.
13. TOPOGRAPHY IS BASED ON CONTROLLED TOPO WITH CONTOUR INTERVALS OF 2 FEET. DATE OF AERIAL: SEPTEMBER 1999.
14. DEVELOPMENT IS LOCATED IN FIRE ZONE___.
16. COMMERCIAL DRIVEWAYS TO BE DESIGNATED AS "PRIVATE DRIVEWAYS AND FIRE LANE".
17. ALL SLOPES OVER 5 FEET IN HEIGHT ARE TO BE LANDSCAPED AND IRRIGATED WITH COUNTY APPROVED PLANTS AND GROUND COVER.
18. RECIPROCAL PARKING EASEMENTS TO BE RESERVED FOR ALL COMMERCIAL LOTS.
19. BOUNDARY LINE DIMENSIONS ARE TAKEN FROM RECORD DATA. LOT AREAS SHOWN IN TABLE HEREON ARE GROSS ACREAGE.
20. PERMISSION IS REQUESTED TO ABANDON ALL OF THE COUNTY EASEMENTS FOR DRAINAGE PURPOSES (IF ANY) BY THE FINAL MAP PURSUANT TO SECTION 66599.20 1/2 OF THE STATE GOVERNMENT CODE.
21. REQUEST PERMISSION TO MASS GRADE. PROPOSED BORROW SITE AND HAUL ROUTES PER VICINITY MAP.
22. ALL DIMENSIONS SHOWN ARE APPROXIMATE.
23. REQUEST PERMISSION TO HAVE NO STREET FRONTAGE FOR CERTAIN LOTS AS INDICATED ON THE VTTM.
24. ALL EXISTING STRUCTURES LOCATED ON-SITE WILL BE REMOVED.
25. ALL NOTES ON THE TITLE SHEET OF THE VTTM ARE ADOPTED AS CONDITIONS OF APPROVAL.
26. PERMISSION IS REQUESTED TO RECORD ADDITIONAL UTILITY LOTS PROVIDED MAINTENANCE EASEMENTS ARE GRANTED TO THE SATISFACTION OF THE DRP AND DPW.
27. PERMISSION TO RECORD JOINT ACCESS EASEMENTS (20' WIDE) AS LOTS REQUESTED.
28. PROPOSED STREET GRADING IS APPROXIMATE ONLY AND SUBJECT TO ADJUSTMENTS PENDING DETERMINATION OF FINAL DEVELOPMENT LAYOUT AND PLANS.
29. MODIFIED STREET CROSS-SECTIONS AS SHOWN ON VESTING TENTATIVE TRACT MAP

ARE REQUESTED. HOWEVER, PERMISSION IS SOUGHT TO CONSTRUCT STANDARD AND ALTERNATE STREET CROSS-SECTIONS AT THE DISCRETION OF THE SUBDIVIDER.

SPECIAL NOTES:

1. WATER QUALITY BASINS AND CDS UNITS WILL PROVIDE FOR TREATMENT OF STORM WATER RUN OFF
2. THE WATER QUALITY BASINS SHALL BE DEDICATED TO THE COUNTY WHEN COMPLETED AND ACCEPTED.
3. PROPOSED RECLAIMED WATER LINES WILL BE LOCATED IN PUBLIC STREETS AND TRAILS.

LEGEND:

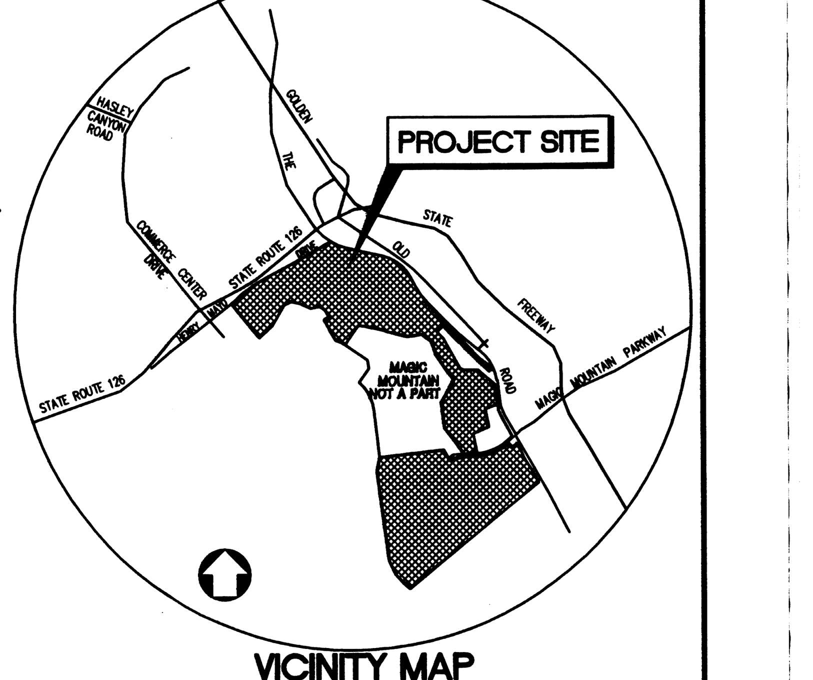
Lot 1 — LOT NO.
10,000 SF — LOT AREA (SQUARE FEET)
FF=1010.0 — FINISH FLOOR ELEVATION
PROJECT BOUNDARY
EXISTING RIGHT OF WAY
PROPOSED RIGHT OF WAY
PROPOSED UTILITY EASEMENT
EXISTING EASEMENT
FUTURE RIGHT OF WAY
1000 — PROPOSED CONTOUR
DAYLIGHT LINE
R — RIDGE LINE
SD — STORM DRAIN
SS — SANITARY SEWER
W — WATER
CMP INLET
CATCH BASIN
SD — EXISTING STORM DRAIN LINE
SS — EXISTING SEWER LINE
W — EXISTING WATER LINE
EXISTING OIL LINE
G — EXISTING GAS LINE
OHT — EXISTING OVERHEAD COMMUNICATION LINE
UGT — EXISTING UNDER COMMUNICATION LINE
OHE — EXISTING OVERHEAD POWER LINE
EXISTING POWER POLE
SEA — SEA, RIVER CORRIDOR
FEMA — FEMA
Q50 — Q-CAP
404_1603
PEDESTRIAN/BIKING TRAIL AND CHANNEL ACCESS
BURIED BANK STABILIZATION
EQUESTRIAN/HIKING TRAIL
FIRE LANE
SIGHT DISTANCE LINE
PSOMAS COMBINED OIL WELL LOCATION, FILES DATED: 08/01/01

ac	ACRES
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
P.C.C.	PORTLAND CEMENT CONCRETE
EX	EXISTING
FF	FINISH FLOOR
FM	FORCE MAIN
HP	HIGH POINT
L	LENGTH
MIN	MINIMUM
GB	GRADE BREAK
PROP	PROPOSED
R	RADIUS
SF	SQUARE FOOT
SD	STORM DRAIN
SS	SANITARY SEWER
FW	FIRE WATER
W	WATER
STD	STANDARD
R/W	RIGHT OF WAY

PROJECT SUMMARY:

GROSS AREA: 812.8 Acres
TOTAL LOTS: 638
TOTAL D.U.: 3,230 DU
EXISTING ZONING: M-1.5, A-2-5, C-3 AND SP
PROPOSED ZONING: M-1.5-DP, RPD, C-2-DP AND SP
GENERAL PLAN LAND USE: M - INDUSTRY, W - FLOODWAY/FLOODPLAIN, HM - HILLSIDE MANAGEMENT, N1 - NONURBAN (0.5 DU/AC), U1 - URBAN (LOW DENSITY RESIDENTIAL) 1.1 - 3.3 DU/AC, C - COMMERCIAL, AND SIGNIFICANT ECOLOGICAL AREA
PROPOSED LAND USE: M, C, U2, U3 AND U4
ESTIMATED EARTHWORK 9,500,000 CY

Lot Numbers	No. of Lots	Type (Use)	Dwelling Units	Commercial SF	Total Acres
Planning Area 1					
1-23, 25	24	Commercial		1,553,018	81.9
26	1	Open Space			0.1
28-30, 32	4	Condominium	408		17.7
24, 27, 31, 33-37	8	Open Space			6.7
38-55	18	Open Space (River)			222.7
56	1	Open Space			7.8
Planning Area 2					
57	1	Commercial		115,214	9.7
Planning Area 3					
58-66	9	Commercial		388,300	37.6
67	1	Water Quality Basin			4.3
68-69, 71-75	7	Open Space			11.3
70	1	Open Space (LDZ Lot)			0.2
Planning Areas 4 thru 14					
76-82	7	PA-4 Courtyard SF	153		22.0
83-214	132	PA-5 SF 46'x100' Min.	132		18.3
215-335	121	PA-6 SF 50'x110' Min.	121		18.5
336-501	166	PA-7 SF 40'x90' Min.	166		18.5
502-505	4	PA-8 SFA Duplex	116		12.3
506-512	7	PA-9 Story Condominium	261		11.5
513-516	4	PA-10 3&4 Story Condominium	273		6.7
517-523	7	PA-11 2&3 Story 16-Plex Condominium	280		13.0
524-528	5	PA-12 2&3 Story 12-Plex Condominium	144		10.4
529-535	7	PA-13 2&3 Story Townhomes/flats	176		14.6
536	1	PA-14 Commercial		28,475	3.4
537	1	Recreational Area			1.7
538-557	20	Private Drive			28.6
558-605	48	Open Space			138.3
606	1	Private & Future Street			5.5
607	1	Future Street			1.1
Planning Area 15					
608, 614, 627	3	4 Story Condominium	325	7,900	8.5
609-610	2	Residental Above Parking Structure	60		3.6
611-613	3	Parking Structure			5.9
615-616, 625-626	4	4 Story Mixed Use (Condo above Retail)	615	78,800	12.7
617, 619, 621, 624	4	5 Story Mixed Use (Commercial/Office)		831,100	9.4
620, 623	2	4 Story Mixed Use (Commerical/Office)		82,200	1.7
622	1	4 Story Parking Structure			1.6
618, 637-638	3	Open Space			4.3
629-636	8	Private Drive			13.3
628	1	Drainage Filter Site			3.0
		Public Street R/W			24.5
Total	**638**		**3230**	**3,085,007**	**812.8**



VICINITY MAP
NOT TO SCALE

EXPLANATION

cef	Certified Engineered Fill
af	Artificial Fill
af/Qal	Artificial Fill over Alluvium
Qal	Alluvium
Qsf	Surficial Failure
Qt	Terrace Deposits
TQs	Saugus Formation
	Geologic Contact
	Fault
L L'	Geologic Section Line
14	Bedding Attitude
18	Attitude of Shear Surface
B-4	Bucket Boring, RTF&A Current Investigation
CPT-19	Cone Penetration Test Sounding RTF&A 96-115-21 Dated 12-03-01
CPT-13(P)	Cone Penetration Test Sounding with Piezometer RTF&A 96-115-21 Dated 12-03-01
CPT-6	Cone Penetration Test Sounding RTF&A 96-115-21 Dated 3-23-98
WB-4	Rotary Wash Boring RTF&A 96-115-21 Dated 3-23-98
TP-3	Test Pit, RTF&A 96-149-21 Dated 12-30-03
TP-5	Test Pit, RTF&A 96-149-F Dated 12-30-03
R=10'	Recommended Minimum Depth of Removal and Recompaction
(af*)	Designates Complete Removal of (af)
(Qsf*)	Designates Complete Removal of (Qsf)
CPT-18	Cone Penetration Test Sounding, AES 5-25-00
RW-2	Rotary Wash Boring, AES 5-25-00
HS-10	Hollow Stem Boring, AES 5-25-00
B-62E	Bucket Boring, AES 5-25-00
T-64	Test Pit, AES 5-25-00

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	MN	AWR/DS
DATE 3-18-05	Figure 3.1	JOB NO. 2004-700-21

REV: ________
DATE: 12/28/04

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE: ALEX HERRELL

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LA PLACE COURT, SUITE 130
(760) 431-9896
PLANS PREPARED UNDER THE DIRECTION OF:
PAUL E. GAFF R.C.E. 53239 DATE

BENCHMARK: ________
DESCRIPTION: ________
LOCATION: ________
RECORDED FROM: ________
ELEVATION: ________

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

SHEET 1 — COUNTY OF LOS ANGELES — 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ________
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

CJ041-01.dwg 3-18-05 2004-700-21

COMMENTS:

BOUNDARY LINES . . . WERE DEVELOPED BASED ON RECORD INFORMATION PROVIDED IN THE FORM OF REFERENCED TITLE REPORT AND RECORD OF SURVEY BOOK. THE PARTS WERE PREPARED BY SUKANO ENGINEERING. A FIELD SURVEY WAS NOT PERFORMED.

EASEMENTS . . . PLOTTABLE EASEMENTS ARE SHOWN FROM AN OWNER SUPPLIED TITLE REPORT AND/OR RECORD INFORMATION. THE SURVEYOR MAKES NO GUARANTEE TO "EXPECT (P)" BECAUSE OUR SERVICE IS LIMITED TO INTERPRETING EASEMENT LOCATIONS. WE STRONGLY RECOMMEND LEGAL COUNSEL BE RETAINED TO INTERPRET THE EFFECT OF EASEMENTS.

TITLE REPORT . . . CHICAGO TITLE COMPANY PRELIMINARY TITLE REPORT NO. 2010200421-X50 DATED JUNE 16, 2010 (WHITE MOUNTAIN 24)

◯ - INDICATES TITLE REPORT EXCEPTION NO.

BASIS OF BEARINGS . . . THE BEARING NORTH 78°50'17" WEST ALONG THE PROJECT'S CENTERLINE OF HENRY MAYO DRIVE AS SHOWN ON RECORD OF SURVEY 126/14-22 ON FILE IN THE OFFICE OF THE COUNTY SURVEYOR, WAS TAKEN AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BASED UPON RECORD BEARINGS AND DISTANCES AS SHOWN HEREON, THE GROSS AREA IS

AERIAL SURVEY . . . THIS SURVEY WAS PREPARED BY PHOTOGRAMMETRIC PROCESSES, UTILIZING AERIAL PHOTOGRAPHY FLOWN BY AIRPHOTOGEN ON SEPTEMBER 23, 2009. FEATURES INCLUDED ARE LIMITED TO THOSE VISIBLE ON THE PHOTOGRAPHY AT THE TIME OF EXPOSURE AND ENLARGED, SOME BUILDINGS BELOW THESE ITEMS ARE NOT VISIBLE TO THE CAMERA.

TOPOGRAPHY . . . BY PHOTOGRAMMETRIC PROCESSES FROM AERIAL PHOTOGRAPHY DATED SEPTEMBER 23, 2009. CONTOUR INTERVAL 2 FEET. MAP ACCURACY STANDARDS FOR 40 SCALE MAPPING AND SIMILAR.

ORTHOPHOTO . . . PRODUCED FROM AERIAL PHOTOGRAPHY DATED NOVEMBER 20, 1998. PHOTOGRAPH RECTIFIED AT GROUND LEVEL ONLY SUITABLE FOR 40 SCALE AND SMALLER MAPPING PURPOSES.

CONTOUR INTERVAL . . . TWO FOOT

PROJECT SUMMARY:

GROSS AREA:	133.24 Acres
TOTAL LOTS:	43
TOTAL D.U.:	408
EXISTING ZONING:	M 1-1/2 AND A-2-5
PROPOSED ZONING:	M 1-1/2-OP, RPD
GENERAL PLAN LAND USE:	M - INDUSTRY AND B/S - FLOODWAY/FLOODPLAIN AND SIGNIFICANT ECOLOGICAL AREA
GROSS DENSITY:	
NET DENSITY:	

SURVEY NOTES:

VERTICAL DATUM:

BENCHMARK: LOS ANGELES COUNTY NO. J 2987 (NEWHALL QUAD) STAMPED "J 743 1N 16 E 29 1953" ON NORTH END OF 42 FT. LONG C.M. & E.P.T., 430 SCR & BZ FT. N/O C/L ESPUELLA LN.

ELEV. = 1,183.870 (U.S. SURVEY FEET) ADJUSTMENT=-1.0895'

•DATUM NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

NOTE: NAD 1983 MONUMENTS APPROXIMATELY 1FOOT (2.0 PPM) EAST. PREVIOUS NGVD 1929 DATUMS. FOR MORE ACCURATE EQUATIONS AT INDIVIDUAL BENCH MARKS REFER TO PREVIOUS PUBLICATIONS.

ABBREVIATIONS:

ac	ACRES
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
P.C.C.	PORTLAND CEMENT CONCRETE
EX	EXISTING
FF	FINISH FLOOR
FM	FORCE MAIN
HP	HIGH POINT
L	LENGTH
MIN	MINIMUM
GB	GRADE BREAK
PROP	PROPOSED
R	RADIUS
SF	SQUARE FOOT
SD	STORM DRAIN
SS	SANITARY SEWER
FW	FINISH WATER
W	WATER
STD	STANDARD
R/W	RIGHT OF WAY

UTILITIES AND SERVICES

1. WATER	VALENCIA WATER COMPANY
2. SEWER	LOS ANGELES SANITATION DISTRICT 32
3. GAS	SOUTHERN CALIFORNIA GAS COMPANY
4. ELECTRIC	SOUTHERN CALIFORNIA EDISON COMPANY
5. TELEPHONE	PACIFIC BELL
6. CABLE TV	SYLMAR/UNION RANCH CABLEVISION

UTILITY INFORMATION AND PLAN INDEX

UTILITY	SERVICE BY	TELEPHONE NO.	ADDRESS	PLAN INDEX
CABLE TV	SYLMAR/UNION RANCH SYSTEM			NOT INCLUDED
GAS	SOUTHERN CALIFORNIA GAS	(661) 259-9305	25631 MARKET STREET SAN CLARITA CALIFORNIA 91321	00
P.G.&E.	PACIFIC GAS & ELECTRIC	(661) 294-2000	1800 CHERRY AVENUE LONG BEACH, CALIFORNIA 90813	00
SEWER	LOS ANGELES SANITATION DISTRICT	(562) 699-7411	1955 WORKMAN MILL ROAD WHITTIER CALIFORNIA 90601	00
WATER	VALENCIA WATER CO.		25521 AVENUE ROCKEFELLER, VALENCIA, CA 91355-1826	00
CABLE T.V.	TIME WARNER	(800) 776-2614	28545 WITKOFF ROAD, SAUGUS, CALIFORNIA 91350	00
TELEPHONE	GTE		21504 SHERMAN STREET HENRY MAYO DRIVE CALIFORNIA 91355	00
M.W.D.(SPRINKLING)	METROPOLITAN WATER DISTRICT	(800) 950-4922	P.O. BOX 54153 CENTRAL, CALIFORNIA 90054	00
STORM DRAIN	LOS ANGELES COUNTY		1 GATEWAY PLAZA LOS ANGELES CALIFORNIA 90012	00
ELECTRIC	SOUTHERN CALIFORNIA EDISON		2244 WALNUT GROVE AVENUE ROSEMEAD, CALIFORNIA 91770	00
NATURAL GAS	SO. CALIFORNIA GAS		9400 OAKDALE AVE. CHATSWORTH, CALIFORNIA 91313	00
ALTERNATE CABLE T.V.	ALTERNATE CABLE T.V.	(661) 257-1776	24914 N. 3RD ST. SANTA CLARITA, CALIFORNIA 91354	00
CABLE TYPE T.V.	COMCAST	(661) 295-5219	P.O. BOX 24240, WESTLAKE, CA 91362	00

TYPICAL PARKING DETAIL

SCALE 1" = 60'

TYPICAL SECTION - BANK STABILIZATION

NOT TO SCALE

* WHERE CHANNEL LINING IS LOCATED A MINIMUM OF 75 FT. FROM 404/1603 LINE SHOWN ON THE 404 PERMIT AND 1603 STREAMBED ALTERATION AGREEMENT FOR PORTIONS OF THE SANTA CLARA RIVER AND ITS TRIBUTARIES, AUGUST, 1998, WHERE CHANNEL LINING ENCROACHES WITHIN 75 FT. OF THE 404/1603 LINE ON THE EASTERLY AND WESTERLY PORTIONS OF THE PROJECT, TEMPORARY CONSTRUCTION IMPACTS ARE DETERMINED BY THE MINIMUM CONSTRUCTION FOOTPRINT SHOWN HEREON.

LOT SUMMARY

LOT NUMBERS (DISTRICT)	LOT AREA SQ. FEET	LOT AREA ACRE	TOTAL BUILDING AREA (SF)	BUILDING FOOTPRINT AREA (SF)	PARKING SPACES PROVIDED	TYPE BUILDING (USE)
1	189,329	4.35	92,300	23,969	232	OFFICE
2	125,917	2.91	63,600	31,800	153	
3	204,814	4.70	89,760	29,920	281	
4	145,298	3.43	74,400	24,700	301	
5	164,498	3.78	86,400	28,800	299	
6	153,047	3.52	51,600	25,800	154	
7	142,576	3.27	84,600	28,200	260	
TOTAL	1,080,481	25.03	532,660	201,189	1,709	
8	86,330	2.05	38,200	23,200	113	INDUSTRIAL
9	90,683	2.20	44,160	36,193	131	
10	235,879	5.42	105,318	85,318	305	
11	84,417	1.94	29,025	24,147	59	
12	71,793	1.65	32,100	22,100	90	
13	61,656	1.42	27,600	17,600	81	
14	66,685	1.54	38,500	15,500	86	
15	136,239	3.20	53,876	35,276	201	
16	125,141	2.87	72,516	36,258	306	
17	105,738	2.43	45,804	30,644	211	
19	277,784	6.38	126,049	98,049	397	
20	301,506	9.92	128,402	108,452	440	
25	465,637	10.64	214,505	164,505	485	
TOTAL	2,527,065	58.60	949,055	705,787	3,905	
18	148,451	3.41	85,500	35,501	211	COMMERCIAL
21	95,869	2.29	110,860	23,860	183	
22	42,872	0.98	3,130	3,130	91	
23	67,149	1.58	5,250	5,250	18	
24	103,118	2.37	5,024	5,024	9	
TOTAL	441,779	10.14	209,700	72,270	569	
		DWELLING UNITS				
28	220,287	6.25	120			RESIDENTIAL
29	247,770	5.69	144			
39	175,268	4.02	120			
40	80,907	1.86	24			
TOTAL	724,232	17.82	408			
26	6,420	0.06				OPEN SPACE
31	10,465	0.24				
32	7,116	0.16				
33	66,211	1.52				
34	74,337	1.71				
35	4,935	0.11				
36	27,017	0.62				
37	8,879	0.20				
38	178,845	4.06				
42	334,273	7.67				
43	113,833	2.61				
41	72,637	1.67				
42	70,896	1.62				
43	71,708	1.65				
TOTAL	1,020,417	23.43				
RESERVOIR SITE	354,454	8.14				STARLITE
GRAND TOTAL	5,804,008	133.24	1,553,018	976,651	5,184	

NOTES:

1. EXISTING 50' WIDE VALENCIA COMPANY WATER EASEMENT TO BE VACATED.
2. EXISTING 40' WIDE SOUTHERN CALIFORNIA EDISON COMPANY POWER POLE EASEMENT TO BE VACATED.
3. EXISTING 10' WIDE SOUTHERN CALIFORNIA EDISON COMPANY POWER POLE EASEMENT TO BE VACATED.
4. EXISTING VARIABLE WIDTH SOUTHERN CALIFORNIA EDISON COMPANY POWER POLE EASEMENT TO BE VACATED.
5. EXISTING STORM DRAIN EASEMENT TO BE VACATED.
6. EXISTING 50' WIDE SOUTHERN CALIFORNIA GAS COMPANY EASEMENT TO BE VACATED.
7. EXISTING UNKNOWN WIDTH PACIFIC TELEPHONE AND TELEGRAPH EASEMENT TO BE VACATED.
8. EXISTING VARIABLE WIDTH ROADWAY / SOUTHERN PACIFIC RAILROAD EASEMENT.
9. EXISTING HOLSER FAULT, BUILDING SETBACK LINE.
10. EXISTING 12" WATER LINE TO BE REMOVED.
11. EXISTING 16" WATER LINE TO BE REMOVED.
12. EXISTING GAS LINE TO BE REMOVED.
13. EXISTING COMMUNICATION LINE TO BE REMOVED/ABANDON.
14. EXISTING EQUILON OIL LINE TO BE REMOVED.
15. EXISTING WESTERN OIL LINE TO BE REMOVED.
16. EXISTING OAK TREE TO BE REMOVED.
17. EXISTING EASEMENTS WHICH RUN THROUGH PROPOSED STRUCTURES WILL BE RELOCATED.
18. PRIVATE DRIVEWAY AND FIRE LANE.
19. THE RIGHT TO RESTRICT VEHICULAR ACCESS WILL BE DEDICATED ON FINAL MAP.
20. RIGHT TURN ONLY.
21. CDS UNIT
20. PROPOSED UTILITY FACILITY ACCESS EASEMENT

LEGEND:

Lot 1 10,000 SF FF=103.5	LOT NO. LOT AREA (SQUARE FEET) FINISH FLOOR ELEVATION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	PROPOSED RIGHT OF WAY
	PROPOSED UTILITY EASEMENT
	EXISTING EASEMENT
	FUTURE RIGHT OF WAY
1000	PROPOSED CONTOUR
	DAYLIGHT LINE
	RIDGE LINE
SD	STORM DRAIN
SS	SANITARY SEWER
W	WATER
	CMP INLET
	CATCH BASIN
SS	EXISTING STORM DRAIN LINE
SS	EXISTING SEWER LINE
W	EXISTING WATER LINE
OIL	EXISTING OIL LINE
G	EXISTING GAS LINE
ot	EXISTING OVERHEAD COMMUNICATION LINE
utl	EXISTING UNDER COMMUNICATION LINE
OHC	EXISTING OVERHEAD POWER LINE
	EXISTING POWER POLE
SCA	SCA, RIVER CORRIDOR
FEMA	FEMA
CHAP	CHAP
404_1603	404_1603
	PEDESTRIAN/BIKING TRAIL AND CHANNEL ACCESS
	BURIED BANK STABILIZATION
	EQUESTRIAN/HIKING TRAIL
	FIRE LANE
	SIGHT DISTANCE LINE
	PSOMAS COMBINED OIL WELL LOCATION, FILES DATED: 08/01/01

FOR EXPLANATION SEE FIGURE 3.1

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DESIGNED	DRAWN	CHECKED
AS SHOWN	MN		AWR/DS
JOB NO. 3-18-05	Figure 3.2		DWG NO. 2004-700-21

REV'D DATE: 12/29/04

ALLIANCE
LAND PLANNING & ENGINEERING, INC.
SUBDIVISION | LAND PLANNING | RELOCATION | ASSISTANCE

5362 LAKLACE COURT, SUITE 130
OXNARD, CA 93033
TEL (760) 431-9896
FAX (760) 431-9803

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE: ALEX MERRELL

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
5362 LAKLACE COURT, SUITE 130
(760) 431-9896
PLANS PREPARED UNDER THE DIRECTION OF:

PAUL E. GAFF R.C.E. 53234 DATE

BENCHMARK:
DESCRIPTION:
LOCATION:
RECORDED FROM:
ELEVATION:

LEGAL DESCRIPTION

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY

NO.	DATE	REVISIONS	BY	APPD

SHEET 2 COUNTY OF LOS ANGELES 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO.

LOCATED IN THE UNINCORPORATED AREA OF THE, COUNTY OF LOS ANGELES STATE OF CALIFORNIA

3-18-05 2004-700-21

LEGEND:

Symbol	Meaning
Lot 1	LOT NO.
1,000 SF	LOT AREA (SQUARE FEET)
1010.0	PAD ELEVATION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	PROPOSED RIGHT OF WAY
	PROPOSED UTILITY EASEMENT
	EXISTING EASEMENT
	FUTURE RIGHT OF WAY
1000	PROPOSED CONTOUR
o	DAYLIGHT LINE
R	RIDGE LINE
SD	STORM DRAIN
SS	SANITARY SEWER
W	WATER
	STORM DRAIN INLET
	CATCH BASIN
SD	EXISTING STORM DRAIN LINE
SS	EXISTING SEWER LINE
W	EXISTING WATER LINE
	EXISTING POWER POLE
SEA	SEA, RIVER CORRIDOR
FEMA	FEMA
Q50	Q-CAP
	404_1603
	BURIED BANK STABILIZATION
	ABANDONED OIL WELL
650 (27")	EXISTING OAK TREE DRIPLINE WITH NUMBER AND (SIZE)

EX	EXISTING
FM	FORCE MAIN
HP	HIGH POINT
L	LENGTH
MIN	MINIMUM
GB	GRADE BREAK
PROP	PROPOSED
R	RADIUS
SF	SQUARE FOOT
SD	STORM DRAIN
SS	SANITARY SEWER
STD	STANDARD
R/W	RIGHT OF WAY
W1	WATER ZONE - 1
W2	WATER ZONE - 2
W3	WATER ZONE - 3
RW	RECLAIMED WATER
CLWA	CASTAIC LAKE WATER AGENCY
PVT	PRIVATE DRIVE
P & F	PRIVATE AND FUTURE STREET
REC	RECREATION
O.S.	OPEN SPACE
RUA	RESTRICTED USE AREA

COMMERCIAL

LOT No. 57	
Lot Acreage	9.7 Acres
Building S.F.	115,214
Parking Required	576 Spaces
Parking Provided	576 Spaces

COMMERCIAL

LOT No. 58-66	
Lot Acreage	37.6 Acres
Building S.F.	388,300
Parking Required	2,367 Spaces
Parking Provided	2,367 Spaces

FEET 100 50 0 100 200

INCHES 1 1/2 0 1 2

FOR EXPLANATION SEE FIGURE 3.1

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE	DRAWN BY	CHECKED BY
AS SHOWN	MN	
DATE 3-18-05	Figure 3.3	JOB NO 2004-700-21

ALLIANCE LAND PLANNING & ENGINEERING INC. 5962 LAPLACE COURT
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACE COURT, SUITE 130
(760) 431-9896
PLANS PREPARED UNDER THE DIRECTION OF:
PAUL E. GAFF R.C.E. 53239 DATE

REGISTERED PROFESSIONAL ENGINEER PAUL E. GAFF NO. 53239 EXP 6-30-07 CIVIL STATE OF CALIFORNIA

BENCHMARK:
DESCRIPTION:
LOCATION:
RECORDED FROM:
ELEVATION:

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO. DATE REVISIONS BY APPR

REV:
DATE: 12/28/04

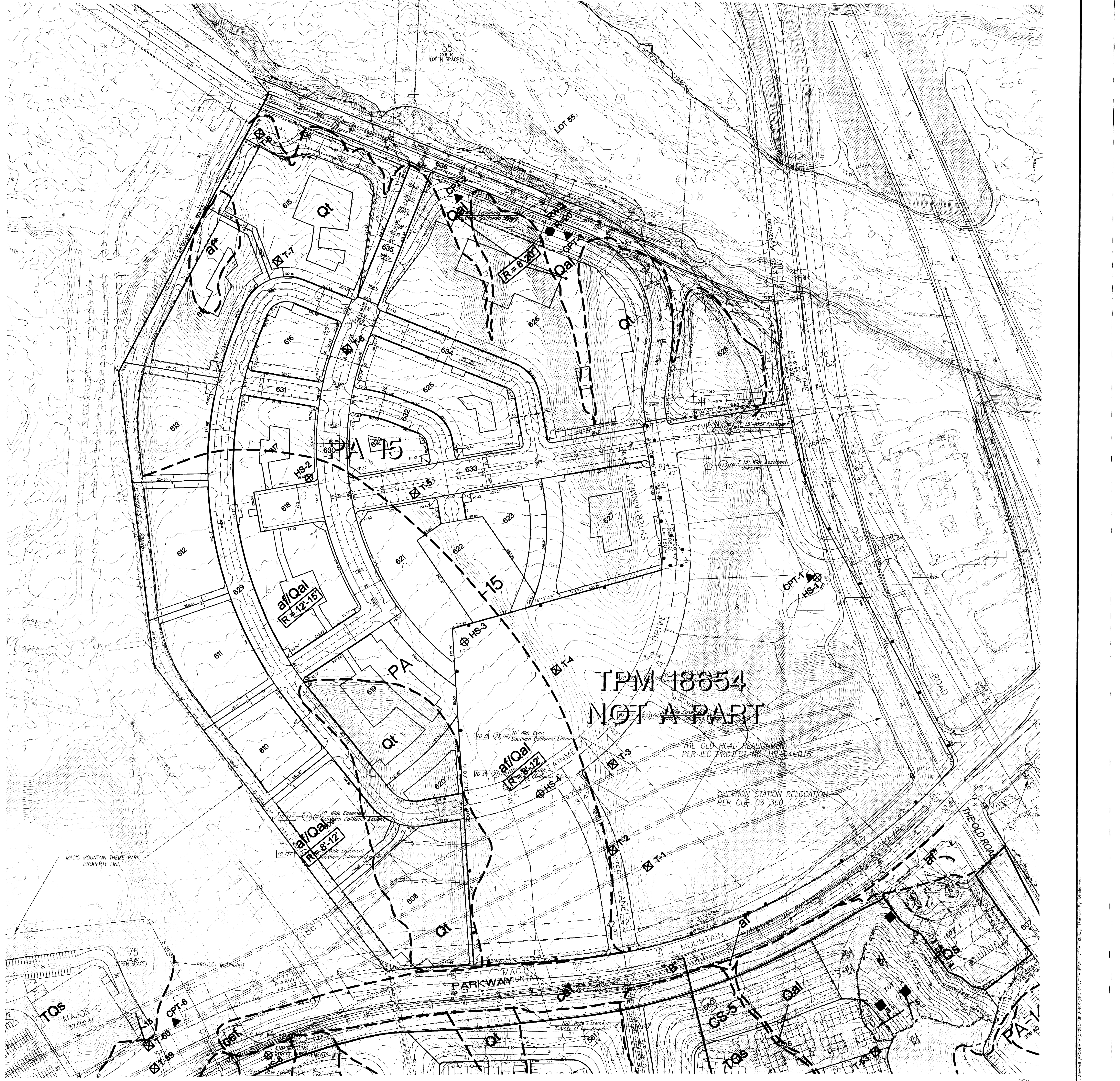
SHEET 3 COUNTY OF LOS ANGELES 5 SHEETS

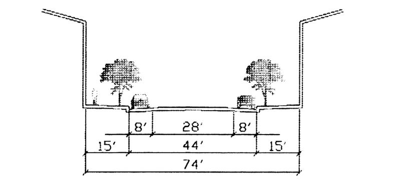
MAJOR LAND DIVISION VESTING TENTATIVE TRACT MAP NO. 53295

COUNTY CASE NO.

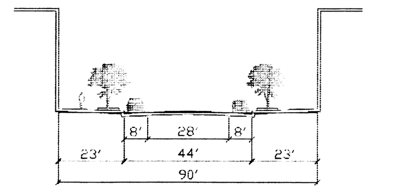
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES

Lot No.	Use	Stories	Units	Required Residential Parking	Residential Parking Provided	Retail/Office SQ. FT.	Retail/Office Parking Required	Retail/Office Parking Provided
608	4-Story Condo	4	125	281	281	0	0	0
609	Residential above Parking Structure (2 levels)	4	34	76	76	0	0	382
610	Residential above Parking Structure (2 levels)	4	26	59	59	0	0	306
611	Parking Structure	4		0	0	0	0	773
612	Parking Structure	4		0	0	0	0	767
613	Parking Structure	4		0	0	0	0	721
614	4-Story Mixed Use (Condo above Retail)	4	90	203	203	7,900	0	0
615	4-Story Mixed Use (Condo above Retail)	4	145	293	293	6,100	24	0
616	4-Story Mixed Use (Condo above Retail)	4	55	124	124	15,600	63	0
617	5-Story Mixed-Use (Commercial/Office)	5	0	0	0	374,400	1,510	0
618	Open Space		0	0	0	0	0	0
619	5-Story Mixed-Use (Commercial/Office)	5	0	0	0	210,100	848	0
620	4-Story Mixed-Use (Commercial/Office)	4	0	0	0	27,400	110	0
621	5-Story Mixed-Use (Commercial/Office)	5	0	0	0	173,500	700	0
622	4-Story Parking Structure	4	0	0	0	0	0	719
623	4-Story Mixed-Use (Commercial/Office)	4	0	0	0	54,800	221	0
624	5-Story Mixed-Use (Commercial/Office)	5	0	0	0	73,100	295	0
625	4-Story Mixed Use (Condo above Retail)	4	100	225	225	37,500	150	0
626	4-Story Mixed Use (Condo above Retail)	4	315	709	709	19,600	79	0
627	4-Story Condo	4	110	248	248	0	0	0
	On-Street Parking							332
637, 638	Open Space							
629-636	Private Drive							
628	Drainage Filter Site							
	TOTAL		1,000	2,218	2,218	1,000,000	4,000	4,000

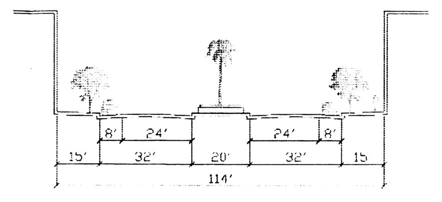




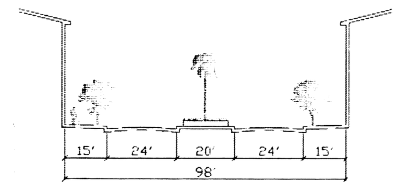
TYPICAL STREET SECTION A (R/W = 74')
PLANNING AREA 15



TYPICAL STREET SECTION B (R/W = 90')
PLANNING AREA 15



TYPICAL STREET SECTION C (R/W = 114')
PLANNING AREA 15



TYPICAL STREET SECTION D (R/W = 98')
PLANNING AREA 15

LEGEND:

Symbol	Description
Lot 1	LOT NO.
1,000 SF	LOT AREA (SQUARE FEET)
1010.0	PAD ELEVATION
	PROJECT BOUNDARY
	EXISTING RIGHT OF WAY
	PROPOSED RIGHT OF WAY
	PROPOSED UTILITY EASEMENT
	EXISTING EASEMENT
	FUTURE RIGHT OF WAY
1000	PROPOSED CONTOUR
	DAYLIGHT LINE
R	RIDGE LINE
SD	STORM DRAIN
SS	SANITARY SEWER
W	WATER
	STORM DRAIN INLET
	CATCH BASIN
SD	EXISTING STORM DRAIN LINE
SS	EXISTING SEWER LINE
W	EXISTING WATER LINE
	EXISTING POWER POLE
SEA	SEA, RIVER CORRIDOR
FEMA	FEMA
Q50	Q-CAP
	404_1603
	BURIED BANK STABILIZATION
	ABANDONED OIL WELL
#650 (27")	EXISTING OAK TREE DRIPLINE WITH NUMBER AND (SIZE)

Abbreviation	Meaning
EX	EXISTING
FM	FORCE MAIN
HP	HIGH POINT
L	LENGTH
MIN	MINIMUM
GB	GRADE BREAK
PROP	PROPOSED
R	RADIUS
SF	SQUARE FOOT
SD	STORM DRAIN
SS	SANITARY SEWER
STD	STANDARD
R/W	RIGHT OF WAY
W1	WATER ZONE - 1
W2	WATER ZONE - 2
W3	WATER ZONE - 3
RW	RECLAIMED WATER
CLWA	CASTAIC LAKE WATER AGENCY
PVT	PRIVATE DRIVE
P & F	PRIVATE AND FUTURE STREET
REC	RECREATION
O. S.	OPEN SPACE
RUA	RESTRICTED USE AREA

FEET: 100 50 0 100 200
INCHES: 1 1/2 0 1 2

FOR EXPLANATION SEE FIGURE 3.1

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

PREPARED FOR
Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE AS SHOWN	DRAWN BY MN	CHECKED BY AWR/DS
DATE 3-18-05	Figure 3.4	JOB NO. 2004-700-21

ALLIANCE
LAND PLANNING & ENGINEERING INC.
5962 LAPLACE COURT
SUITE 130
CARLSBAD, CA 92008
TEL: (760) 431-9896
FAX: (760) 431-8802
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

PLANS PREPARED BY:
ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACE COURT, SUITE 130
(760) 431-9896
PLANS PREPARED UNDER THE DIRECTION OF:
PAUL E. GAFF R.C.E. 53239 DATE

REGISTERED PROFESSIONAL ENGINEER
PAUL E. GAFF
NO. 53239
EXP 6-30-07
CIVIL
STATE OF CALIFORNIA

BENCHMARK:
DESCRIPTION:
LOCATION:
RECORDED FROM:
ELEVATION:

LEGAL DESCRIPTION:

THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

NO.	DATE	REVISIONS	BY	APPR

SHEET 4 COUNTY OF LOS ANGELES 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO.
LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

3-18-05 2004-700-21

FOR EXPLANATION SEE FIGURE 3.1

R.T. FRANKIAN & ASSOCIATES

Geotechnical Map

PREPARED FOR

Newhall Land & Farming Company

Vesting Tentative Tract Map No. 53295
Valencia, California

SCALE AS SHOWN	DRAWN BY MN	CHECKED BY AWR/DS
DATE 3-18-05	Figure 3.5	JOB NO. 2004-700-21

REV: ________
DATE: 12/28/04

SHEET 5 | COUNTY OF LOS ANGELES | 5 SHEETS

MAJOR LAND DIVISION
VESTING TENTATIVE TRACT MAP
NO. 53295

COUNTY CASE NO. ________

LOCATED IN THE UNINCORPORATED AREA OF THE COUNTY OF LOS ANGELES STATE OF CALIFORNIA

FEET 100 50 0 100 200
INCHES 1 1/2 0 1 2

ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACE COURT SUITE 130 CARLSBAD, CA 92008
TEL. (760) 431-9896 FAX: (760) 431-8802
CIVIL ENGINEERING • LAND PLANNING • HILLSIDE DESIGN • SURVEYING

PLANS PREPARED FOR:
NEWHALL LAND
23823 WEST VALENCIA BOULEVARD
VALENCIA, CALIFORNIA 91355
TELEPHONE: (661) 255-4000
REPRESENTATIVE : ALEX HERRELL

PLANS PREPARED BY.
ALLIANCE LAND PLANNING & ENGINEERING INC.
5962 LAPLACL COURT, SUITE 130
(760) 431-9896
PLANS PREPARED UNDER THE DIRECTION OF:
PAUL E. GAFF R.C.E. 53239 DATE

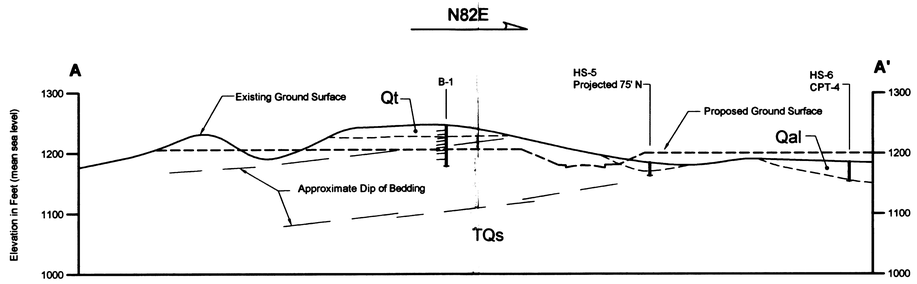
REGISTERED PROFESSIONAL ENGINEER PAUL E. GAFF NO. 53239 EXP 6-30-07 CIVIL STATE OF CALIFORNIA

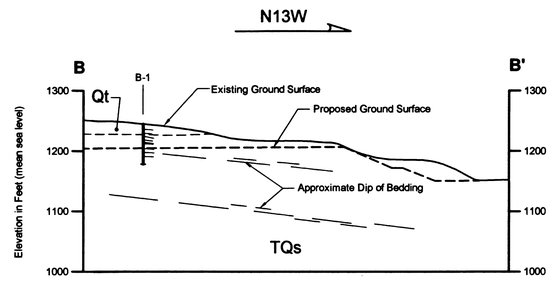
BENCHMARK:
DESCRIPTION:
LOCATION:
RECORDED FROM:
ELEVATION:

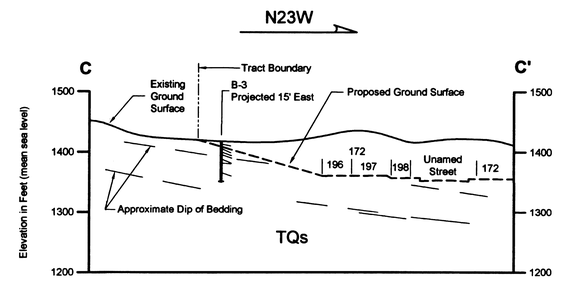
LEGAL DESCRIPTION:

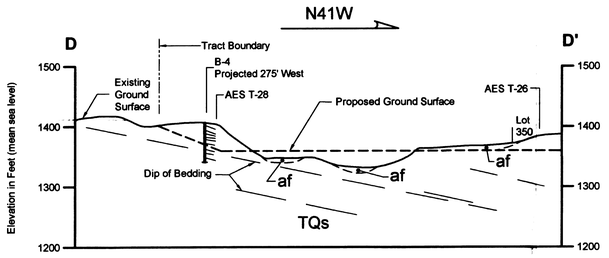
THAT PORTION OF RANCHO SAN FRANCISCO, IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON MAP RECORDED IN BOOK 1 PAGES 521 PAGES 522 OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

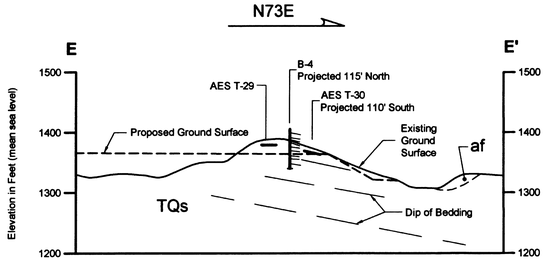
NO.	DATE	REVISIONS	BY	APPR

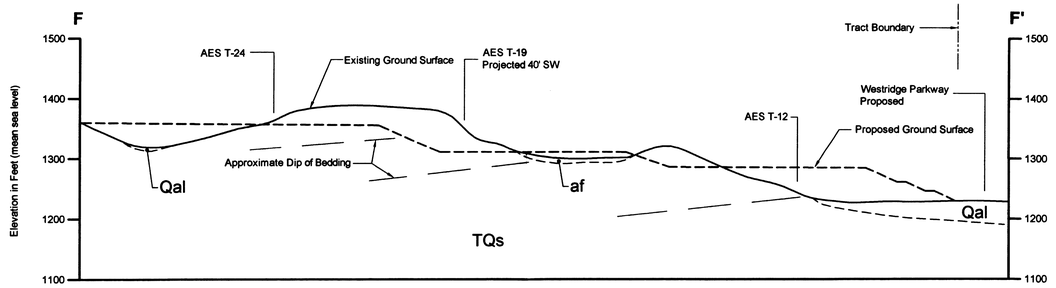


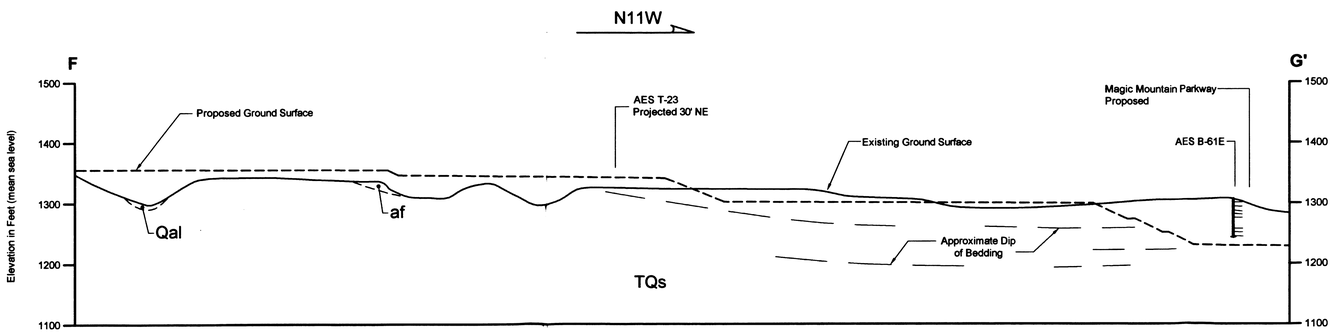


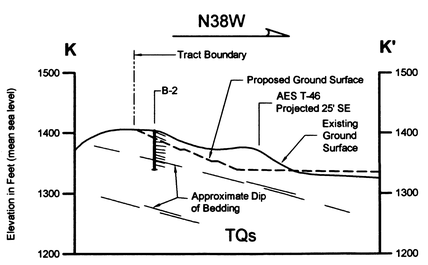


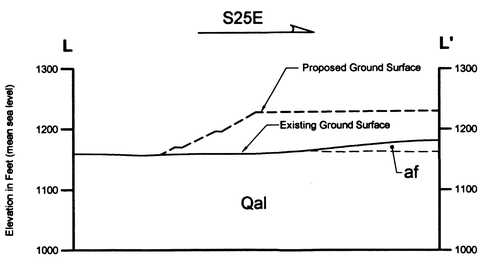












R.T. FRANKIAN & ASSOCIATES

GEOTECHNICAL SECTIONS

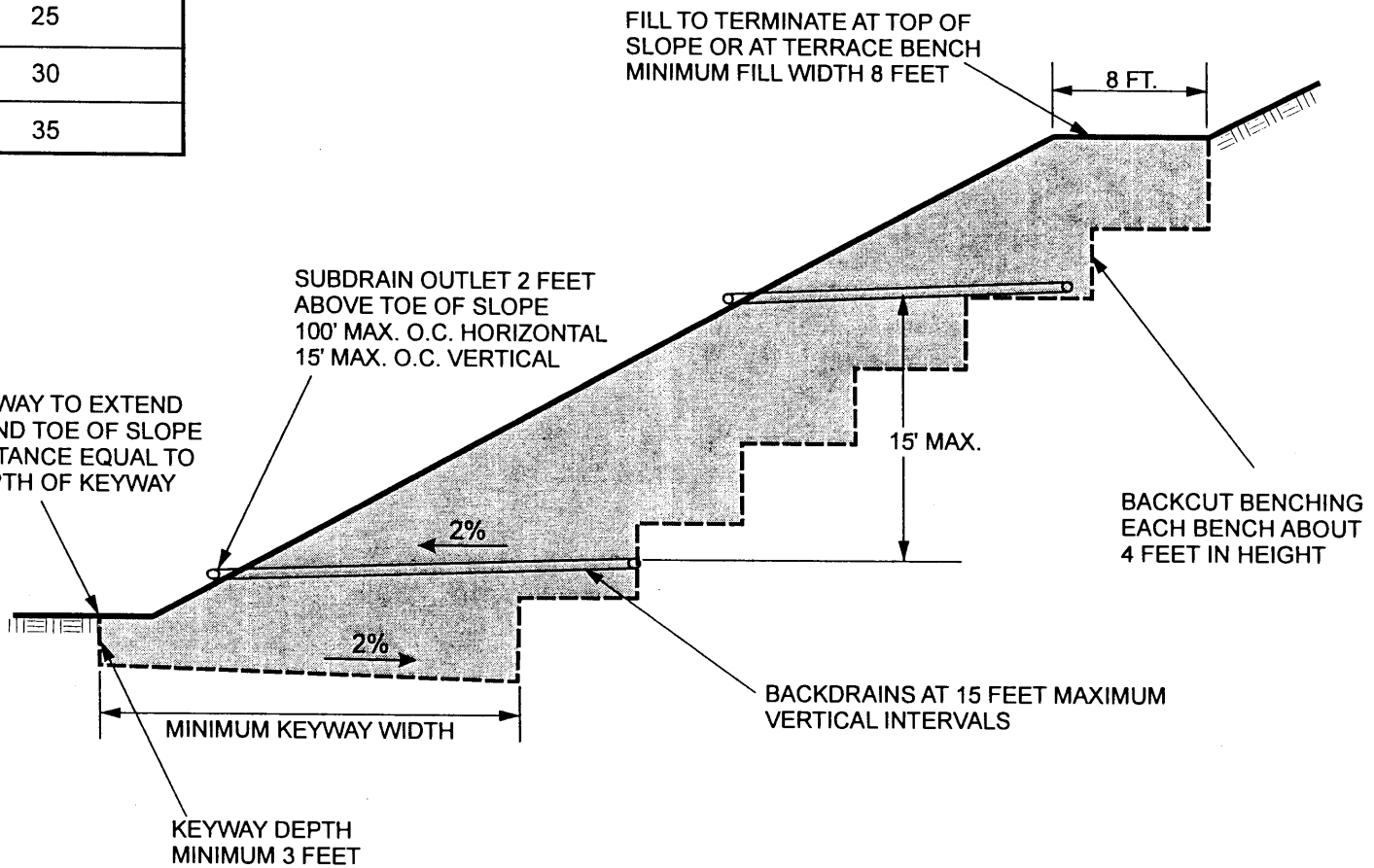
PREPARED FOR

Newhall Land and Farming

Vesting Tentative Tract Map No. 53425
Valencia, California

SCALE	DRAWN BY	CHECKED BY
1" = 100'	MN	~~AWR/DO~~
DATE 3-18-05	FIGURE 4	JOB NO 2004-700-21

STABILITY FILL HEIGHT (FEET)	MINIMUM WIDTH OF KEYWAY (FEET)
0 - 20	15
20 - 30	20
30 - 50	25
50 - 75	30
75 - 100	35



STABILITY FILL DETAILS FOR GROSSLY STABLE SLOPES

N.T.S.

Newhall Land and Farming Company
March 18, 2005
2004-700-21

APPENDIX A

EXPLORATIONS

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

APPENDIX A

EXPLORATIONS

The soil conditions beneath the site were explored by drilling borings. The soils encountered were classified in the accordance with the Unified Soil Classification System described in Figure A-1. The locations of the explorations are shown on Figures 3.1 and 3.6, Geotechnical Maps. Details of the explorations are summarized in Table A-1, Exploration Summary. The logs of the borings followed by the logs of the test pits are presented in this appendix. The results of the CPT soundings are presented in Appendix C.

CURRENT EXPLORATIONS

Current bucket borings were drilled at 4 locations to depths of 65 feet below the existing grade using 24-inch-diameter drilling equipment. Our geologist downhole logged all 4 borings.

PREVIOUS EXPLORATIONS

Previous subsurface exploration by RTF&A and Allan E. Seward Engineering Geology, Inc. is substantial and attached to this Appendix. The exploration is summarized in Table A-1 by Planning Area, consultant, and report date. The location of the previous subsurface explorations are shown on the Geotechnical Maps.

TABLE A-1
EXPLORATION SUMMARY

EXPLORATION	PLANNING AREA	CONSULTANT REPORT DATE	G. S. ELEV. (ft)	EXPL. DEPTH (ft)	FILL DEPTH (ft)	GEOLOGIC MATERIALS	BEDROCK DEPTH (ft)	BEDROCK ELEV. (ft)	GROUNDWATER DEPTH (ft)	GROUNDWATER ELEV. (ft)	REC. REMOVAL DEPTH (ft)
CONE PENETRATION TESTS											
CPT-1	PA-1	RTF&A, 11-25-02	1,012	50	NA	Qal	N/E	--	14.0	998	10
CPT-2(P)	PA-1	RTF&A, 11-25-02	1,015	45	NA	Qal	N/E	--	14.1	1,001	10
CPT-3(P)	PA-1	RTF&A, 11-25-02	1,010	50	NA	Qal	N/E	--	12.9	997	6
CPT-4(P)	PA-1	RTF&A, 11-25-02	1,012	58	NA	Qal	N/E	--	11.9	1,000	8
CPT-5(P)	PA-1	RTF&A, 11-25-02	1,020	50	NA	Qal	N/E	--	11.0	1,009	7
CPT-6(P)	PA-1	RTF&A, 11-25-02	989	50	NA	Qal	N/E	--	11.0	978	7
CPT-7(P)	PA-1	RTF&A, 11-25-02	1,002	35	NA	Qal	N/E	--	6.0	996	2
CPT-8	PA-1	RTF&A, 11-25-02	1,014	50	NA	Qal	N/E	--	8.5	1,006	4
CPT-9(P)	PA-1	RTF&A, 11-25-02	1,024	57	NA	Qal	N/E	--	12.6	1,011	8
CPT-10	PA-1	RTF&A, 11-25-02	1,016	50	NA	Qal	N/E	--	11.5	1,005	7
CPT-11(P)	PA-1	RTF&A, 11-25-02	1,024	60	NA	Qal	N/E	--	12.1	1,012	8
CPT-12	PA-1	RTF&A, 11-25-02	1,006	65	NA	Qal	N/E	--	9.8	996	6
CPT-13(P)	PA-1	RTF&A, 11-25-02	1,010	50	NA	Qal	N/E	--	9.8	1,000	6
CPT-14	PA-1	RTF&A, 11-25-02	1,008	42	NA	Qal	N/E	--	6.2	1,002	1
CPT-15	PA-1	RTF&A, 11-25-02	1,013	50	NA	Qal	N/E	--	13.8	999	9
CPT-16	PA-1	RTF&A, 11-25-02	1,018	115	NA	Qal	N/E	--	15.1	1,003	11
CPT-17	PA-1	RTF&A, 11-25-02	1,014	50	NA	Qal	N/E	--	8.1	1,006	4
CPT-18	PA-1	RTF&A, 11-25-02	1,016	50	NA	Qal	N/E	--	9.3	1,007	5
CPT-19	PA-1	RTF&A, 11-25-02	1,022	55	NA	Qal	N/E	--	12.1	1,010	8
CPT-1	PA-1	RTF&A, 3-23-98	1,030	60	NA	Qal	N/E	--	13.5	1,017	9
CPT-2	PA-1	RTF&A, 3-23-98	1,024	55	NA	Qal	N/E	--	13.1	1,011	9
CPT-3	PA-1	RTF&A, 3-23-98	1,018	38	NA	Qal	N/E	--	10.0	1,008	6
CPT-4	PA-1	RTF&A, 3-23-98	1,000	18	NA	Qal	N/E	--	10.0	990	6
CPT-5	PA-1	RTF&A, 3-23-98	998	45	NA	Qal	N/E	--	10.0	988	6
CPT-6	PA-1	RTF&A, 3-23-98	998	52	NA	Qal	N/E	--	10.0	988	6
CPT-7	PA-2	AES, 5-25-00	1,037	47	NA	Qal	N/E	--	NA	NA	--
CPT-8	PA-2	AES, 5-25-00	1,036	25	NA	Qal	N/E	--	NA	NA	--
CPT-9	PA-2	AES, 5-25-00	1,034	37	NA	Qal	N/E	--	NA	NA	--
CPT-10	PA-2	AES, 5-25-00	1,042	40	NA	Qal	N/E	--	NA	NA	--
CPT-11	PA-2	AES, 5-25-00	1,039	36	NA	Qal	N/E	--	NA	NA	--
CPT-12	PA-2	AES, 5-25-00	1,037	50	NA	Qal	N/E	--	NA	NA	--
CPT-13	PA-2	AES, 5-25-00	1,048	51	NA	Qal	N/E	--	NA	NA	--
CPT-14	PA-2	AES, 5-25-00	1,041	50	NA	Qal	N/E	--	NA	NA	--
CPT-6	PA-3 - 14	AES, 5-25-00	1,172	25	NA	Qal	N/E	--	NA	NA	--
CPT-16	PA-3	AES, 5-25-00	1,158	41	NA	Qal	N/E	--	NA	NA	--
CPT-18	PA-3 -14	AES, 5-25-00	1,175	43	NA	Qal	N/E	--	NA	NA	--
CPT-4	PA-4 - 14	AES, 5-25-00	1,185	36	NA	Qal	N/E	--	NA	NA	--
CPT-5	PA-4 - 14	AES, 5-25-00	1,215	27	NA	Qal	N/E	--	NA	NA	--
CPT-1	PA-15	AES, 5-25-00	1,081	50	NA	Qal	NE	--	NA	NA	--
CPT-2	PA-15	AES, 5-25-00	1,066	30	NA	Qal	N/E	--	NA	NA	--
CPT-3	PA-15	AES, 5-25-00	1,069	33	NA	Qal	N/E	--	NA	NA	--
ROTARY-WASH BORINGS											
RW-1	PA-2	AES, 5-25-00	1034	50	NE	Qal	NE	--	3	1,031	--
RW-2	PA-2	AES, 5-25-00	1,034	50	N/E	Qal	20	1014	7	1,027	--
WB-1	PA-1	RTF&A, 3-23-98	1,016	50	N/E	Qal	N/E	--	ND	--	--
WB-2	PA-1	RTF&A, 3-23-98	1,005	47.0	N/E	Qal	45	960	8	998	--
WB-3	PA-1	RTF&A, 3-23-98	1,003	53	N/E	Qal	NE	--	ND	--	--
WB-4	PA-1	RTF&A, 3-23-98	1,006	51.5	N/E	Qal	NE	--	13	993	--
RW-3	PA-15	AES, 5-25-00	1,068	40	NE	Qal	30	1038	25.5	1,043	--
HOLLOW STEM AUGER BORINGS											
HS-5	PA-4 - 14	AES, 5-25-00	1,180	20.0	N/E	Qal/Qt	N/E	--	NE	--	--
HS-6	PA-4 - 14	AES, 5-25-00	1,184	30	N/E	Qal	N/E	--	NE	--	--
HS-7	PA-4 - 14	AES, 5-25-00	1,209	30	N/E	Qal	N/E	--	NE	--	--
HS-8	PA-4 - 14	AES, 5-25-00	1,160	30.0	N/E	Qal	30	1130	NE	--	--
HS-10	PA-4 - 14	AES, 5-25-00	1,219	30	N/E	Qal	NE	--	NE	--	--
HS-1	PA-15	AES, 5-25-00	1,072	30	17	af/Qal	NE	--	30	1,042	--
HS-2	PA-15	AES, 5-25-00	1,123	30	5	af/Qal	NE	--	NE	--	--
HS-3	PA-15	AES, 5-25-00	1,138	30	8	af/Qal	NE	--	NE	--	--
HS-4	PA-15	AES, 5-25-00	1,151	30	5	af/Qal	NE	--	NE	--	--
BUCKET-AUGER BORINGS											
B-40E	PA-4 - 14	AES, 7/22/04	1,230	40	--	--	--	--	--	--	--

TABLE A-1
EXPLORATION SUMMARY

EXPLORATION	PLANNING AREA	CONSULTANT REPORT DATE	G. S. ELEV. (ft)	EXPL. DEPTH (ft)	FILL DEPTH (ft)	GEOLOGIC MATERIALS	BEDROCK DEPTH (ft)	BEDROCK ELEV. (ft)	GROUNDWATER DEPTH (ft)	GROUNDWATER ELEV. (ft)	REC. REMOVAL DEPTH (ft)
B-41E	PA-4 - 14	AES, 7/22/04	1,240	35	N/E	Qls/TQs	9.5	1,231	N/E	--	--
B-42E	PA-4 - 14	AES, 7/22/04	1,269	35	NE	Qls/TQs	27.5	1,242	N/E	--	--
B-43E	PA-4 - 14	AES, 7/22/04	1,312	50	NE	Qls/TQs	35	1,277	N/E	--	--
B-47E	PA-4 - 14	AES, 7/22/04	1,280	40	NE	Qls/TQs	24	1,256	N/E	--	--
B-60E	PA-3 - 14	AES, 5-25-00	1,200	43	NE	Qal/TQs	35	1,165	N/E	--	--
B-61E	PA-3 - 14	AES, 5-25-00	1,300	65	NE	TQs	0	1,300	N/E	--	3
B-62E	PA-3 - 14	AES, 5-25-00	1,164	32	N/E	Qal/TQs	11	1,153	N/E	--	--
B-1	PA-4 - 14	this report	1,242	65	N/E	Qt/TQs	14	1,228	N/E	--	4
B-2	PA-4 - 14	this report	1,302	65	N/E	Qt/TQs	16	1,286	N/E	--	4
B-3	PA-4 - 14	this report	1,415	65	N/E	TQs	7	1,408	N/E	--	5
B-4	PA-4 - 14	this report	1,405	65	N/E	TQs	4	1,401	N/E	--	4

NOTES:

N/D = Not Determined
N/E = Not Encountered

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS — LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

PARTICLE SIZE LIMITS

FIGURE A-1

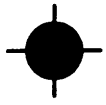
SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Coarse		
	No. 200	No. 40	No. 10	No. 4	3/4 in.	3 in.	12 in.

REFERENCE: ASTM D-2487

UNIFIED SOIL CLASSIFICATION SYSTEM

SAMPLE KEY:

- FRANKIAN LINED-BARREL SAMPLER (3.50" O.D., 2.625" I.D., 8.0" LONG SAMPLE TUBE)
- STANDARD PENETRATION TEST (ASTM D-1586)
- NO RECOVERY / DISTURBED SAMPLE
- HAND GRAB SAMPLE



Bucket Auger Boring, RTF&A
Current Investigation

BORING B-1

JOB NUMBER: 2004-700-21
DATE DRILLED: 1/26/05
EQUIPMENT USED: Track Mount Bucket Auger
ELEVATION: 1242'
LOGGED BY: DS
BORING DEPTH: 0-65'
SURFACE CONDITIONS: Unimproved ridge top

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE
				0			SM
				5			SM
11			-	10			
13			-	20			
20			-	30			
				40			

MODERN SOIL
SILTY SAND: with gravel, small roots and organic debris, loose, moist, brown

TERRACE DEPOSITS
SILTY SAND: generally massive, loose, moist, light brown

6' - dense, difficult to excavate with pick, cemented with alkaline earth carbonates, includes carbonate stringers, slightly moist, light brown

9' - N51W, 14NE: coarse sand layer 1" thick in massive fine sandstone, dense moderately hard to hard, friable, possible bedrock

BEDROCK -SAUGUS FORMATION
Matrix supported coarse sand/gravel conglomerate, hard when struck with pick, friable, dry to the touch, tan

16' - N81W, 9NE: Massive to bedded sandy siltstone and fine grained sandstone, displays fining, upwards gradation, moderately hard, friable, dry, tan

19' - N79W, 11NE: 2" thick sand/gravel conglomerate bed, loose, dry, tan

25' - N74W, 14NE: Massive fine sandstone, moderately hard, friable, dry to the touch, tan to light brown

30' - N68W, 12NE: Massive fine sandstone continued with many cut and fill channel features

31' - 2" thick matrix supported coarse sand/gravel conglomerate, loose easy to excavate with pick, dry to the touch, tan

33' - N5W, 4SW: Massive fine to coarse sandstone, displaying cross bedding and other depositional features, moderately hard but friable, dry, tan

37' - N15W, 4SW: Massive fine sandstone with numerous channel cut and fills that show variable altitudes

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

BOREHOLE _ _ 2004-700-21.GPJ FRANKIAN.GDT 3/10/05

LOG OF BORING

R.T. FRANKIAN & ASSOCIATES

BORING B-1 (CONTINUED)

JOB NUMBER: 2004-700-21
DATE DRILLED: 1/26/05
EQUIPMENT USED: Track Mount Bucket Auger
ELEVATION: 1242'
LOGGED BY: DS
BORING DEPTH: 0-65'
SURFACE CONDITIONS: Unimproved ridge top

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION / GRAPHIC LOG	SOIL TYPE

40' - N78E, 2NW: Fine to coarse sandstone with gravel beds, friable, dry, tan

46' - N78E, 5NW: massive fine sandstone with coarse sand gravel layers that define bedding, soft to moderately hard, friable, dry, tan

51' - N77E, 7NW: Interbedded massive fine sandstone and thin gravel layers, friable

54' - Coarse sand/gravel conglomerate interbedded with fine to coarse sandstone beds, beds are 3" to 12" thick, rock is moderately hard, friable, dry, tan cemented with alkaline earth carbonate

60' - Interbedded coarse sand/gravel conglomerate and sandstone

Bottom of Boring at 65 feet.
No caving
No groundwater encountered
Boring downhole logged
Hole backfilled & tamped 1/26/2005

Kelly Weights
0-15' - 1767 lbs.
15-30' - 1182 lbs.
30-45' - 757 lbs.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE ...G 2004-700-21.GPJ FRANKIAN.GDT 3/10/05

LOG OF BORING

R.T. FRANKIAN & ASSOCIATES

BORING B-2

JOB NUMBER: 2004-700-21
DATE DRILLED: 1/25/05
EQUIPMENT USED: Track Mount Bucket Auger
ELEVATION: 1302'
LOGGED BY: DS
BORING DEPTH: 0-65'
SURFACE CONDITIONS: Unimproved ridge top

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE
				0			SP
			-				
				5			
11			-				
				10			
				15			
14			-				
				20			
				25			
18			-				
				30			
				35			
				40			

TERRACE DEPOSITS
SAND: with gravel, loose, easy to excavate with pick, moist, tan to light brown

7' - N75E, 15NW: Sand (sp) with gravel, loose, moist to the touch, tan

15' - N80E, 14NW: Sand (sp) with gravel, many small channel cut & fills composed of coarse sand and gravel, loose, moist, tan
Sharp depositional contact N12W, 37NE

BEDROCK - SAUGUS FORMATION
Massive fine grained sandstone, friabel, moderately hard, moist, tan

19' - N64W, 10NE: Interbedded fine sandstone and sandy siltstone with coarse sand/gravel conglomerate layers defining bedding, friable

24' - N68W, 12NE: Massive sandy siltstone, moderately hard when struck with pick, friable, slightly moist to the touch, tan

30' - N70W, 14NE: Massive to bedded fine sandstone, beds are 1' to 3' thick with diffuse contacts, moderately hard, friable, slightly moist to the touch, tan

36' - N74W, 12NE: Sharp depositional contact with matrix supported gravel conglomerate, matrix is fine to coarse sand, friable, slightly moist, tan to brown

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON THE FOLLOWING FIGURE)

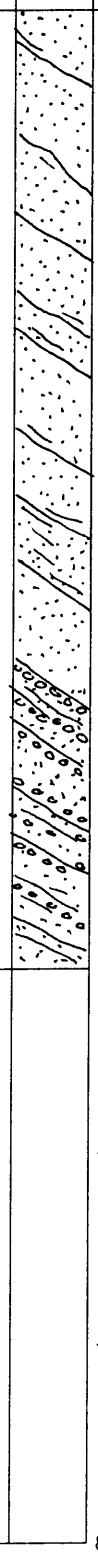
LOG OF BORING

R.T. FRANKIAN & ASSOCIATES

BORING B-2 (CONTINUED)

JOB NUMBER: 2004-700-21
DATE DRILLED: 1/25/05
EQUIPMENT USED: Track Mount Bucket Auger
ELEVATION: 1302'
LOGGED BY: DS
BORING DEPTH: 0-65'
SURFACE CONDITIONS: Unimproved ridge top

BLOWS PER FOOT | MOISTURE CONTENT (%) | DRY UNIT WEIGHT (LBS. PER CU. FT.) | N-VALUE | DEPTH (FEET) | SAMPLE LOCATION | GRAPHIC LOG | SOIL TYPE



40' - N76E, 16NW: Massive fine sandstone, moderately hard, friable, slightly moist to the touch, tan

46' - N78E, 15NW: Massive fine sandstone, moderately hard, friable, slightly moist, tan

50' - N62E, 14NW: Massive fine sandstone continues

58' - N70E, 10NW: Coarse grained sandstone with thin gravel horizons, displays cross bedding and other depositional features, loose, slightly moist, tan
60' - Fine to coarse grained sandstone

Bottom of Boring at 65 feet.
No caving
No groundwater encountered
Boring downhole logged
Hole backfilled & tamped 1/25/2005

Kelly Weights
0-15' - 1767 lbs.
15-30' - 1182 lbs.
30-45' - 757 lbs.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

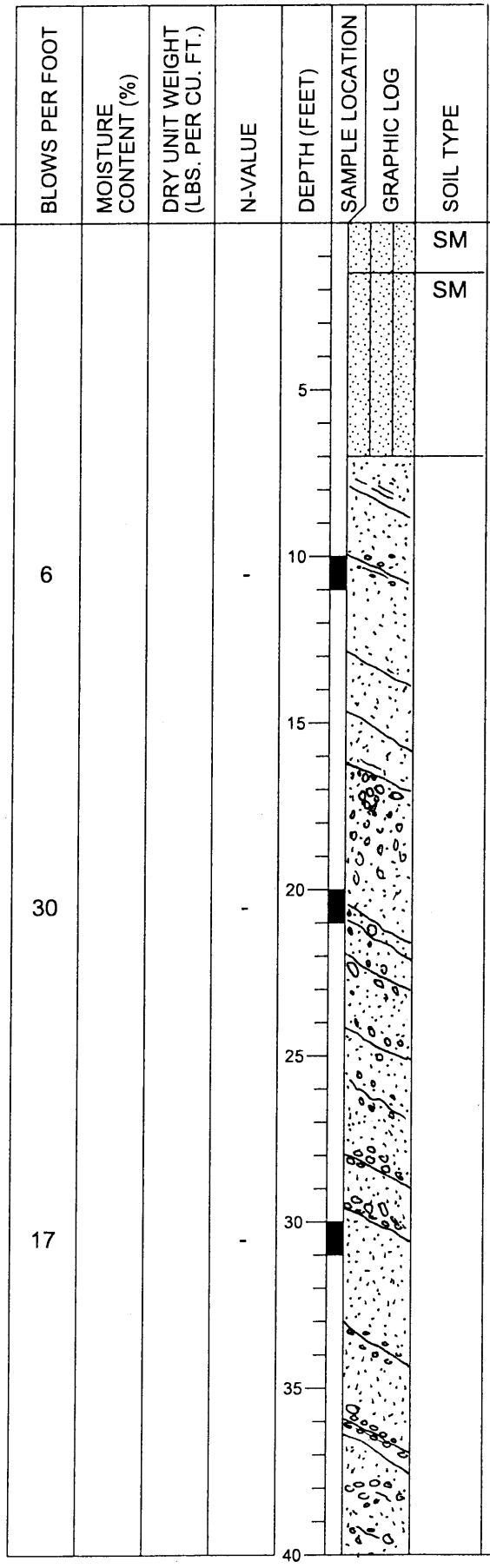
BOREHOLE LOG 2004-700-21.GPJ FRANKIAN.GDT 3/10/05

LOG OF BORING

R.T. FRANKIAN & ASSOCIATES

BORING B-3

JOB NUMBER: 2004-700-21
DATE DRILLED: 1/24/05
EQUIPMENT USED: Track Mount Bucket Auger
ELEVATION: 1415'
LOGGED BY: DS
BORING DEPTH: 0-65'
SURFACE CONDITIONS: Unimproved, brush covered, hilltop



Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

MODERN SOIL
SILTY SAND: with gravel, roots and organic debris, loose, easy to excavate with pick, moist, brown mottled gray, diffuse contact

HEAVILY WEATHERED BEDROCK
Soil-like SILTY SAND (SM) with SAND (SP) layers, massive, loose, easy to excavate with pick, moist, tan

Coarse sand/gravel stone line defines sharp contact with:

BEDROCK - SAUGUS FORMATION
Massive to bedded fine grained sandstone and silty sandstone, soft east y to excavate with pick, slightly moist to the touch, tan to light brown

9' - N39W, 17NE: Bedded fine sandstone, beds are 3" to 6" thick with diffuse contacts

12' Massive fine to coarse sandstone with gravel-sized clasts defining indistinct bedding, moderately hard, friable, slightly moist, tan

14.5' - N66W, 20NE: Massive to bedded siltstone and fine sandstone beds *" to <2' thick, increasing rock hardness

18' N70W, 10NE: Massive 12" thick siltstone to fine sandstone bed, displaying fining upwards gradation, coarse sand/gravel conglomerate below, conglomerate is matrix supported, friable, disseminated carbonate

23' - N69W, 9NE: Fine gravel conglomerate, matrix supported, matrix is fine to coarse sand, moderately hard but friable, cemented with alkaline earth carbonate, slightly moist to dry to the touch, tan

28' - N88W, 25N: 1.5' thick siltstone/fine sandstone bed displaying fining upwards gradation, matrix supported gravel conglomerate above and below, moderately hard but friable, dry to the touch, tan

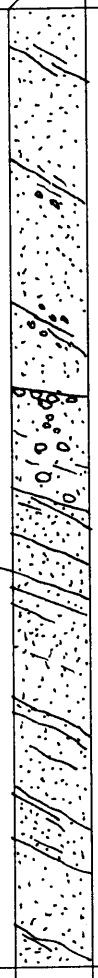
33.5' - N85W, 3NE: 3' thick siltstone/fine sandstone bed with fining upwards gradation

36.5' - Massive, matrix supported, gravel/cobble conglomerate clasts are angular to sub-rounded, up to 6" diameter, hard to excavate with pick, friable, dry, tan

(CONTINUED ON THE FOLLOWING FIGURE)

BORING B-3 (CONTINUED)

JOB NUMBER: 2004-700-21
DATE DRILLED: 1/24/05
EQUIPMENT USED: Track Mount Bucket Auger
ELEVATION: 1415'
LOGGED BY: DS
BORING DEPTH: 0-65'
SURFACE CONDITIONS: Unimproved, brush covered, hilltop

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE
				45			
				50			
				55			
				60			
				65			
				70			
				75			
				80			

40' - Sharp, irregular contact with massive fine sandstone and sandy siltstone

45' - Massive fine sandstone and siltstone weakly cemented with carbonate, hard difficult to excavate with pick, dry to the touch, tan

50' - Irregular depositional contact with sand/gravel conglomerate, hard but friable, dry to the touch, tan

53' - N77E, 21NW: Interbedded fine sandstone and sand/gravel conglomerate, tan

58' - Massive sandy siltstone, hard difficult to excavate with pick, dry to the touch, friable, tan

60' - Massive sandy siltstone continued

Bottom of Boring at 65 feet.
No caving
No groundwater encountered
Boring downhole logged
Hole backfilled & tamped 1/24/2005

Kelly Weights
0-15' - 1767 lbs.
15-30' - 1182 lbs.
30-45' - 757 lbs.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE ... 2004-700-21.GPJ FRANKIAN.GDT 3/10/05

LOG OF BORING — R.T. FRANKIAN & ASSOCIATES

BORING B-4

JOB NUMBER: 2004-700-21
DATE DRILLED: 1/25/05
EQUIPMENT USED: Track Mount Bucket Auger
ELEVATION: 1405'
LOGGED BY: DS
BORING DEPTH: 0-65'
SURFACE CONDITIONS: Unimproved, brush covered ridge

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE
11			-	10			SM
17			-	20			
20			-	30			

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

MODERN SOIL
SILTY SAND: with gravel, roots, and organic debris, loose, easy to excavate with pick, moist, brown

HEAVILY WEATHERED BEDROCK
soil-like, silty sand (sm) with sand (sp) layers, loose, easy to excavate with pick, moist, tan to brown

BEDROCK - SAUGUS FORMATION
Massive fine grained sandstone, soft to moderately hard, friable, slightly moist ot the touch, tan to light brown

8' - N72W, 24NE: Massive fine grained sandstone, unjointed, coarse sand/gravel layers define bedding

13' - N78W, 28NE: Massive fine sandstone, soft to moderately hard, friable, dry to the touch, tan

19' - N84W, 17NE: Interbedded fine sandstone and sandy siltstone, generally massive, soft to moderately hard, unjointed, dry to the touch, tan

24' - N38W, 23NE: Massive fine sandstone with coarse sand/gravel layers to 1" thick

30' - N64W, 14NE: Massive fine sandstone and sandy siltstone, unjointed, moderately hard, friable, dry to the touch, tan

35' - N70W, 16NE: Massive fine sandstone and sandy siltstone, unjointed, moderately hard, friable, dry to the touch, tan

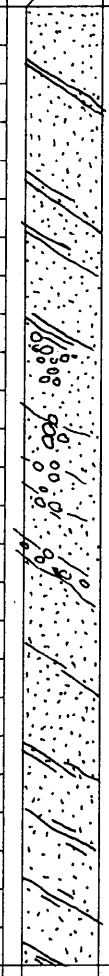
39' - 3" to 8" thick coarse sand/gravel channel cut and fill, shard but

(CONTINUED ON THE FOLLOWING FIGURE)

BORING B-4 (CONTINUED)

JOB NUMBER: 2004-700-21
DATE DRILLED: 1/25/05
EQUIPMENT USED: Track Mount Bucket Auger
ELEVATION: 1405'
LOGGED BY: DS
BORING DEPTH: 0-65'
SURFACE CONDITIONS: Unimproved, brush covered ridge

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	GRAPHIC LOG	SOIL TYPE



irregular contacts above and below

44' - N70E, 19NW: Massive fine sandstone, moderately hard, friable, unjointed, dry to the touch, tan

48' - N74E, 13NW: Massive fine to coarse sandstone, moderately hard, friable, gravel filled erosional, channels are common
49' - N68W, 16NE: Coarse sand/gravel conglomerate, matrix supported, weakly cemented with alkaline earth carbonate, friable, dry to the touch, tan

55' - Massive fine sandstone, moderately hard, friable, dry, tan

60' - N69W, 20NE: Massive fine sandstone continued

Bottom of Boring at 65 feet.
No caving
No groundwater encountered
Boring downhole logged
Hole backfilled & tamped 1/25/2005

Kelly Weights
0-15' - 1767 lbs.
15-30' - 1182 lbs.
30-45' - 757 lbs.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

BOREHOLE LOG 2004-700-21.GPJ FRANKIAN.GDT 3/10/05

LOG OF BORING

R.T. FRANKIAN & ASSOCIATES

Rotary Wash Boring
RTF&A 96-115-21 Report Dated 3-23-98

MAJOR DIVISION			GROUP SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS More than 50% retained on No. 200 (75 µm) sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 (4.75mm) sieve	CLEAN GRAVELS (Little or no fines)		GW	Well graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES (Appreciable amount of fines)		GM	Silty gravel, gravel-sand-silt mixture
				GC	Clayey gravels, gravel-sand-clay mixture
	SANDS More than 50% of coarse fraction passes No. 4 (4.75 mm) sieve	CLEAN SANDS (Little or no fines)		SW	Well graded sands, gravelly-sands, little or no fines
				SP	Poorly graded sands, gravelly-sands, little or no fines
		SANDS WITH FINES (Appreciable amount of fines)		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS 50% or more passes No. 200 (75 µm) sieve	SILTS AND CLAYS (Liquid limit LESS than 50)			ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
				OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS (Liquid limit GREATER than 50)			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS				PT	Peat and other highly organic soils

*Based on the material passing the 3-inch (76 mm) sieve.

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by a combination of group symbols.

PARTICLE SIZE LIMITS

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Coarse		
	No. 200	No. 40	No. 10	No. 4	3/4 in.	3 in.	12 in.

REFERENCE: ASTM D-2487

UNIFIED SOIL CLASSIFICATION SYSTEM

SAMPLE KEY:

FRANKIAN LINED-BARREL SAMPLER (3.25" O.D., 2.625" I.D., 8.0" LONG SAMPLE TUBE)

STANDARD PENETRATION TEST (ASTM D-1586)

NO RECOVERY

R.T. FRANKIAN & ASSOCIATES
FIGURE A-1

BORING WB-1

From 96-115-S REPORT DATED 3-23-98

BY: CLT

JOB NUMBER: 96-115-S
DATE DRILLED: 12-9-96
EQUIPMENT USED: 4-7/8" Diameter Rotary Wash Rig
ELEVATION: 1016
COORDINATES: N: 4,271,180 E: 4,106,770
SURFACE CONDITIONS: Open field, vegetation,relatively level

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SOIL TYPE	
					ML	CLAYEY SILT: damp, brown
8	28.9	84	-	5		more sand
-	-	-	14			more clay, less sand
-	-	-	10	10		(LL=30; PI= 5)
8	38.0	84	-		SM	SILTY SAND: fine to medium, moist, dark gray
-	-	-	23	15		
36	14.6	112	-		SP/ SM	SAND: fine to medium, some silt, moist, dark gray
-	-	-	62	20		7% Passing #200 sieve some gravel some cobbles
-	-	-	64/6"	25		
20	26.4	97	-		ML	CLAYEY SILT: moist, gray
-	-	-	44	30	SM	SILTY SAND: fine to medium, few gravel, moist, gray ELEVATION AND COORDINATES FROM GEOTECHNICAL MAP some gravel
				35		fine
15	37.5	-	-		ML	CLAYEY SILT: moist, dark gray (LL=38; PI=10) 82% Passing #200 sieve
				40		

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

BORING WB-1 (CONTINUED)

From 96-115-S REPORT DATED 3-23-98

JOB NUMBER: 96-115-S
DATE DRILLED: 12-9-96

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	SOIL TYPE	
-	-	-	49			SM	SILTY SAND: fine to medium, some gravel, moist
-	-	-	75/5"	45			fine
50/7"	13.6	116	-				abundant gravel
				50			END OF BORING AT 50 FEET.
				55			Driling mud used in drilling process. Water level not established. Used 400-pound hammer with 18" drop to drive Frankian sampler and used 140-pound hammer with 30" drop to drive SPT sampler.
				60			
				65			
				70			
				75			
				80			

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

LOG OF BORING

R.T. FRANKIAN & ASSOCIATES
FIGURE A-2.1b

BORING WB-2

From 96-115-S REPORT DATED 3-23-98

BY: CLT

JOB NUMBER: 96-115-S
DATE DRILLED: 12-19-96
EQUIPMENT USED: 4-7/8" Diameter Rotary Wash Rig
ELEVATION: 1005
COORDINATES: N: 4,271,525 E: 4,105,120
SURFACE CONDITIONS: Open vegetated field, relatively level

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	SOIL TYPE	
						SM	SILTY SAND: fine to medium, few gravel, damp, grayish brown
							some clay with organic material
14	10.2	111	-	5		SP	SAND: fine to coarse, damp, light brown
							abundant gravel
-	-	-	14	10			small layer of silt
							some cobbles
						SP/ SM	SAND: fine to medium, few gravel, some silt, damp, tan
82	-	-	-	15			
-	-	-	24	20			layer of clay
36	14.2	124	-				abundant gravel, light brown
							7% Passing #200 sieve
-	-	-	92	25			
							little to no gravel
-	-	-	84	30			abundant gravel
							ELEVATION AND COORDINATES FROM GEOTECHNICAL MAP
45/8"	28.4	96	-	35			layer of clay
-	-	-	91				
				40			

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

R.T. FRANKIAN & ASSOCIATES

FIGURE A-2.2a

BORING WB-2 (CONTINUED)

From 96-115-S REPORT DATED 3-23-98

JOB NUMBER: 96-115-S
DATE DRILLED: 12-19-96

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	SOIL TYPE
-	-	-	60/6"			
50/7"	15.6	122	-	45	SS	
-	-	-	40/2"			
				50		
				55		
				60		
				65		
				70		
				75		
				80		

few gravel

fine
SANDSTONE BEDROCK: massive, dark gray

END OF BORING AT 47 FEET.

Driling mud used in drilling process.
Water level at 7-1/2 feet below ground surface.
Used 400-pound hammer with 18" drop to drive Frankian sampler and Used 140-pound hammer with 30" drop to drive SPT sample.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

LOG OF BORING

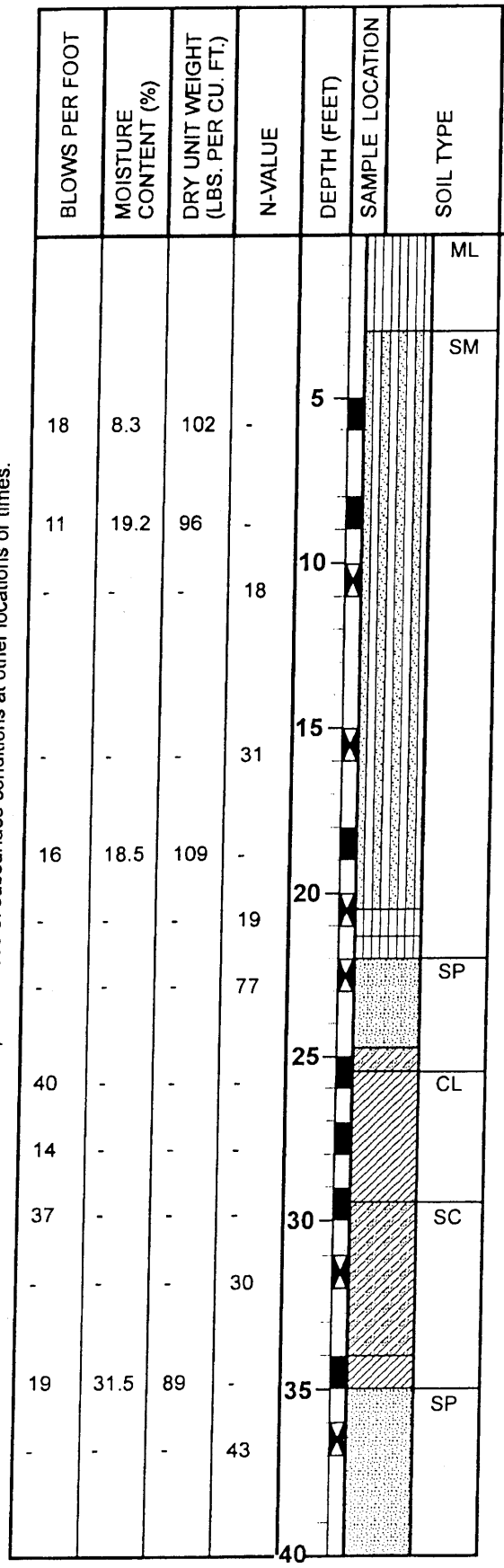
R.T. FRANKIAN & ASSOCIATES
FIGURE A-2.2b

BORING WB-3

From 96-115-S REPORT DATED 3-23-98

BY: CLT

JOB NUMBER: 96-115-S
DATE DRILLED: 12-19-96
EQUIPMENT USED: 4-7/8" Diameter Rotary Wash Rig
ELEVATION: 1003
COORDINATES: N: 4,271,780 E: 4,103,450
SURFACE CONDITIONS: Nearly level, vegetated field



SANDY SILT: moist, dark brown

SILTY SAND: fine, damp, dark reddish brown

moist

some clay

abundant gravel

26% Passing #200 sieve
fine to medium

layer of sandy silt

layer of clayey silt

SAND: fine to coarse, some gravel, moist, brown

some clay

layer of clayey sand

CLAY: moist, dark brown

CLAYEY SAND: fine to medium, moist, dark gray

ELEVATION AND COORDINATES FROM GEOTECHNICAL MAP

layer of sandy clay

SAND: fine to coarse, some gravel, moist, light brown

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

BORING WB-3 (CONTINUED)

From 96-115-S REPORT DATED 3-23-98

JOB NUMBER: 96-115-S
DATE DRILLED: 12-19-96

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	SOIL TYPE
-	-	-	69	45		more gravel
-	-	-	60	50		fine
-	-	-	59/4"	53		END OF BORING AT 53 FEET.

Drilling mud used in drilling process.
Water level not established.
Used 400-pound hammer with 18" drop to drive Frankian sampler and Used 140-pound hammer with 30" drop to drive SPT sampler.

55
60
65
70
75
80

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

LOG OF BORING

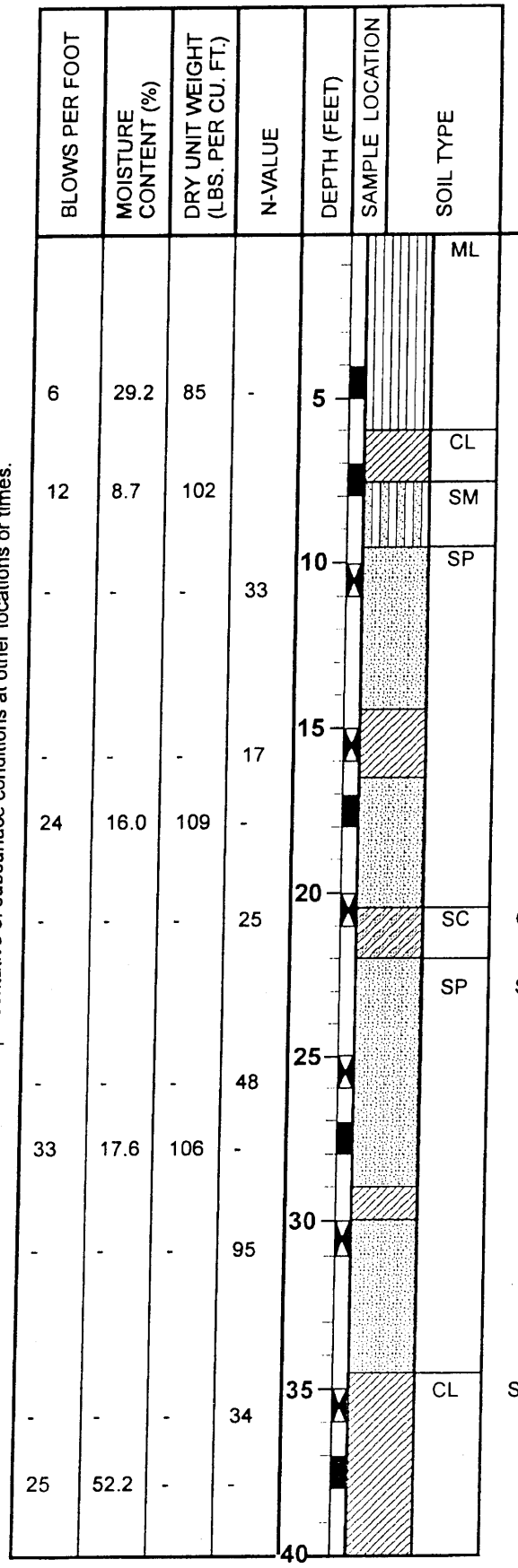
R.T. FRANKIAN & ASSOCIATES
FIGURE A-2.3b

BORING WB-4

From 96-115-S REPORT DATED 3-23-98

BY:CLT

JOB NUMBER: 96-115-S
DATE DRILLED: 12-20-96
EQUIPMENT USED: 4-7/8" Diameter Rotary Wash Rig
ELEVATION: 1006
COORDINATES: N: 4,272,260 E: 4,105,725
SURFACE CONDITIONS: Level, vegetated, open field



SANDY SILT: some clay, damp, brown

SILTY CLAY: moist, grayish brown

SILTY SAND: fine, damp, reddish brown

SAND: fine to medium, moist, light brown

layer of clay

less silt

CLAYEY SAND: fine, moist, gray
30% Passing #200 sieve
3" layer of clay

SAND: fine, moist, light grayish brown

fine to medium

layer of clay

ELEVATION AND COORDINATES FROM GEOTECHNICAL MAP

SILTY CLAY: moist, grayish brown

90% Passing #200 sieve
(Disturbed sample recovered)

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

(CONTINUED ON FOLLOWING FIGURE)

LOG OF BORING

R.T. FRANKIAN & ASSOCIATES

BORING WB-4 (CONTINUED)

From 96-115-S REPORT DATED 3-23-98

JOB NUMBER: 96-115-S
DATE DRILLED: 12-20-96

BLOWS PER FOOT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	N-VALUE	DEPTH (FEET)	SAMPLE LOCATION	SOIL TYPE	
-	-	-	35				some gravel
-	-	-	39	45			
50	-	-	-			SM	SILTY SAND: fine to coarse, some gravel, moist
-	-	-	76	50			
							END OF BORING AT 51-1/2 FEET.
							Driling mud used in drilling process Water level measured at a depth of 13 feet. Used 400-pound hammer with 18" drop to drive Frankian sampler and used 140-pound hammer with 30" drop to drive SPT sampler.
				55			
				60			
				65			
				70			
				75			
				80			

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

LOG OF BORING

Rotary Wash Boring, AES 5-25-00

DRILL HOLE LOG

BORING NO. RW-1

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Rotary Wash Boring
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1034 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - Ft.)	Excavated and logged on 3/27/00
		3 4 6 10		95.9/28.3	CL	@ 2' Lean clay, stiff, moist, light grayish-brown	% fines=75.4
5		8 14 15		29			@ 5' No recovery
		15 9 12		21			@ 6.5' No recovery
		7 8 9		91.7/32.2 17			
10		7 8 10		101.2/25.3 18		@ 11' - sandy clay	% fines=65.5
15		18 20 25		45	SC		@ 15' No recovery
		9 8 7		45			@ 16.5' No recovery
		15 20 18		121.7/14.8 40		@ 18' Clayey sand, medium dense, moist, light yellowish-brown to light grayish-brown	% fines=45.9
20		17 28 50/6"		70			@ 20' No Recovery
		35 45 40		130.9/11.2 85		@ 21.5' - dense	
25		13 16 18		34		@ 25' - dense	% fines=33.2
30		19 50/6"		50+			@ 30' No Recovery Gravels in mud pit
35		16 27 50/5"		77		@ 35' - very dense	

DRILL HOLE LOG

BORING NO. RW-1

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (In.) Rotary Wash Boring
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1034 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		40 50/ 6"		50+		@ 40' - with gravel, very dense, wet, light brown	
45		40 50/ 3"		50+		BEDROCK; TQs (45 - 50 Ft.) @ 45' Clayey sand with gravel, very dense, wet, light reddish-brown	@ 45' SPT sample looks like weathered TQs
50		60/ 5"		50+		@ 50' - very dense TOTAL DEPTH 50 Ft. (Elev. 984) No Caving Ground Water @ 3 Ft. (Elev. 1031)	
55							
60							
65							
70							
75							

DRILL HOLE LOG

BORING NO. RW-2

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Rotary Wash Boring
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1034 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 20 Ft.)	Excavated and logged on 3/28/00
		8 7 8		117.6/15.3	SC	@ 2' Clayey sand, loose, moist, brown	% fines=46.5
5		8 8 10		112.6/18.5	CL	@ 5' Sandy lean clay, stiff, moist, light brown	% fines=50.6
		7 10 18		115.6/16.0	SC	@ 8' Clayey sand, medium-dense, moist, light reddish-brown to light grayish-brown	% fines=36.4
10		10 11 12		111.4/20.8	CL	@ 11' Sandy lean clay, very stiff, moist, light brown	% fines=66.2
		14 14 18			SC	@ 14' Clayey sand, dense, moist, light brown	% fines=43.8
15		18 25 29				@ 17' - with gravel and very dense	
20		38 35 50/ 6"				BEDROCK; TQs? (20 - 50 Ft.) @ 20' - with gravel and very dense	
		50/ 6"			SM- SC	@ 23' Clayey to silty sand, very dense, moist to wet, light brown	
25		50/ 6"			SM	@ 26' Silty sand, very dense, very moist, light brown	
30		50/ 6"					
		50/ 5"				@ 32' - with gravel	
35		50/ 5"				@ 35' - with gravel	
		50/				@ 38' - with gravel	

DRILL HOLE LOG

BORING NO. RW-2

PROJECT: Valencia Company
Magic Mountain Entertainment
JOB NO.: 00-1729-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Rotary Wash Boring
HAMMER TYPE: Downhole
AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1034
LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		6"					
		50/ 4"				@ 41' - with gravel	
		50/ 5"				@ 44' - with gravel	
45		21 42 50/ 5"			CL	@ 47' Sandy lean clay, hard, very moist, light yellowish-brown	
50		6/6"				@ 50' - more sandy TOTAL DEPTH 50 Ft. (Elev. 984) Ground Water @ 7 Ft. (Elev. 1027) No Caving	
55							
60							
65							
70							
75							

DRILL HOLE LOG

BORING NO. RW-3

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Rotary Wash Boring
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1068 — LOGGED BY: DGG

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 4/4/00
		5 5 6		71.5/24.0	CL	@ 3' Lean clay, stiff, damp, grayish-brown	
5		8 9 10		72.9/23.1		@ 5' - very stiff	
		14 14 15		90.4/13.5		@ 8' - very stiff	% finess=89.6
10		15 15 18		85.1/27.2		@ 11' - very stiff	
15		11 12 15		80.2/22.5	CH	@ 15' Fat clay, very stiff, moist, grayish-brown	
20		30 45 50			SC	@ 20' Clayey sand, very dense, moist, grayish-brown	
25		28 35 45				@ 25' - reddish-brown	
30		50/ 3"			SM	BEDROCK; TQs (30 - 50 Ft.) @ 30' Silty sand with gravel, very dense, very moist, reddish-brown	
35		50/ 5"				@ 35' - grayish to reddish-brown	

DRILL HOLE LOG

BORING NO. RW-3

PROJECT: Valencia Company
Magic Mountain Entertainment
JOB NO.: 00-1729-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Rotary Wash Boring
HAMMER TYPE: Downhole
AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1068
LOGGED BY: DGG

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40		33 26 30			CL	@ 40' Lean clay with sand, hard; wet, reddish- to grayish-brown TOTAL DEPTH 40 Ft. (Elev. 1028) Ground Water @ 25.5 Ft. (Elev. 1042.5) No Caving	
45							
50							
55							
60							
65							
70							
75							

Bucket Boring, AES 5-25-00

DRILL HOLE LOG

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QIsII-1
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: DGG/BJS
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/7,10/00
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"
	ELEVATION: 1230'

BORING NO. B-40E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			TQs				Backfill tamped every 5 ft.
40						TOTAL DEPTH 40 Ft. (Elev. 1190') No Ground Water No Caving	
45							
50							
55							
60							
65							
70							
75							

DRILL HOLE LOG

CLIENT:	Newhall Ranch Company
PROJECT:	Newhall Ranch - Mesas-East Phase II Landslide Investigation
DRILLING COMPANY:	Tri-Valley Drilling/Dave
DRILLING METHOD:	Bucket-Auger (86' Rig)
HAMMER TYPE:	Telescoping Kelly Bar
DRIVING WEIGHTS:	0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.
JOB NO.:	99-1703Qlsll-1
DATE:	7/22/04
LOGGED BY:	DGG/BJS
DRILLED:	1/10/00
HOLE DIA:	24"
AVERAGE DROP (in.):	12"
ELEVATION:	1240'

BORING NO. B-41E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 2.5 Ft.)** @ 0' Yellowish-brown sandy silt with pebbles; loose to moderately dense; slightly damp; locally soft with caliche; krotovina	Downhole logged on 1/10/00 @ 0-10' Mixed Bulk Sample
			Qls			**LANDSLIDE DEBRIS; Qls (2.5 - 9.5 Ft.)** @ 2.5' Light yellowish-brown to yellowish-brown siltstone and silty sandstone; moderately dense to dense; slightly damp; caliche-filled fractures; bedrock slightly disturbed	
5		3 6 8		B:N49W,13NE 115/11.3		@ 5.7' Discontinuous pebbly sandstone interbed	
				Apx B:N51W,21NE		@ 7' Bedding slightly irregular and soft	
				B:N42W,20NE			
				SP:N62W,15NE		@ 9.5' Thin silty clay layer; slightly sheared; base of caliche	@ 10' % fines = 84.9
10		3 4 10		119/14.0		**BEDROCK; TQs (9.5 - 35 Ft.)** @ 9.5' Olive to yellowish-brown siltstone to clayey siltstone; moderately hard; damp; local discontinuous concretionary lenses; bedding is typically subtle but locally thin bedded to laminated	
				B:N54W,14NE		@ 12.5' Grades into pale reddish-brown siltstone and sandy siltstone	
				Apx B:N49W,14NE		@ 13.7' Pebbly sandstone interbeds; lensing and channeled	
15						@ 15.5' Discontinuous medium- to coarse-grained sandstone interbed	
				B:N54W,16NE		@ 17.5' Moderate to yellowish-brown siltstone/mudstone	
20		4 9 15	Qs	B:N45W,15NE 114/13.0			
25				B:N47W,18NE		@ 26' Bedding slightly irregular and cross laminated; possible primary soft sediment deformation	
				B:N46W,13NE		@ 28.3' Pale reddish-brown siltstone @ 29' Light yellowish-brown slightly silty, fine-grained sandstone; grades into yellowish-gray pebbly sandstone	
30							
35						TOTAL DEPTH 35 Ft. (Elev. 1205') No Ground Water, No Caving Slide Plane @ 9.5 Ft. (Elev. 1230.5')	Backfill tamped every 5 Ft.

DRILL HOLE LOG

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: DGG/BJS
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/10-11/00
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"
	ELEVATION: 1269'

BORING NO. B-42E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 3 Ft.)** @ 0' Yellowish-brown sandy silt with scattered pebbles and cobbles; loose to moderately dense; slightly damp; CaCO3 on clasts above 5'	Downhole logged on 1/10/00 and 1/11/00 @ 0-10 Ft. Mixed Bulk Sample
5		1 1 2		107/9.1		**LANDSLIDE DEBRIS; Qls (3 - 18.5 Ft.)** @ 3' Moderate yellowish-brown siltstone to slightly sandy siltstone with scattered pebbles; moderately dense; locally soft; damp; CaCO3 filaments; weathered	
				B:N40W,12SW		@ 8.1' Moderate-brown clayey silt layer with CaCO3; dense sandstone and pebbly sandstone interbeds below	
10		3 6 9		125/10.9 SP?:N85W,32NE		@ 9.7' Grades to silty sandstone @ 10.6' Moderate-brown clayey siltstone; slightly sheared; minor carbonate; pebble to cobble lense and sandy siltstone below; poorly bedded	
			Qls				
				B:N68W,10NE		@ 14' Interbedded moderate-brown clayey siltstone and sandstone	
15						@ 16' Fine- to medium-grained sandstone with pebbles	
				B/SP:N45W,7NE		@ 18' Siltstone/mudstone; slightly sticky and sheared	Queried landslide material looks fairly intact but correlations with B-43E indicate the basal slide plane is at 27 ft.
						LANDSLIDE?; Qls? (18.5 - 27.5 Ft.) @ 18.5' Yellowish-brown siltstone; dense to moderately hard; damp	
20		6 18		Apx B:N43W,21NE 132/9.3		@ 21' Fine- to coarse-grained pebbly sandstone with minor siltstone interbeds; cross-bedded and channeled	
			Qls?				
				B:N46W,14NE		@ 23' Moderate-brown siltstone; locally laminated	
25							
				B/SP:N44W,13NE @ 27' % fines = 95.7		@ 27' 1-2.5"-thick mudstone; slightly sheared; soft and sticky; slide plane?	@ 27' 4 hand-driven rings oriented normal to mudstone bed
				B:N42W,14NE		**BEDROCK; TQs (27.5 - 35 Ft.)** @ 27.5' Yellowish-brown siltstone; moderately hard; damp @ 29.5' Sandstone interbed	
30			TQs				
35						TOTAL DEPTH 35 Ft. (Elev. 1234') No Ground Water, No Caving Slide Plane @ 10.6 Ft. (Elev. 1258.4') and @ 18 Ft. (Elev. 1257')	Backfill tamped every 5 ft.

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: DGG/BJS		
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/11-12/00		
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"	**BORING NO. B-43E**	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"		
	ELEVATION: 1312'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
			Qsw			**SLOPEWASH; Qsw (0 - 4 Ft.)** @ 0' Light-brown to yellowish-brown sandy silt and mud with scattered pebbles; loose to moderately dense; slightly damp; includes highly weathered Qls	Downhoel logged on 1/11/00 and 1/12/00 @ 0-10' Mixed Bulk Sample
5		2 3 3		114/12.2		**LANDSLIDE DEBRIS; Qls (4 - 35.5 Ft.)** @ 4' Moderate yellowish-brown siltstone; moderately dense to dense; slightly damp; poorly bedded; CaCO3; fractures	
						@ 7.5' Sandy siltstone with scattered pebbles @ 8.5' Pebbles and cobbles; loose; slightly damp	
10		2 3 3		Apx B:N47W,25NE 110/12.2		@ 9.5' Moderate-brown siltstone/mudstone with local pebbles; dense; damp; mudstone/siltstone below	Landslide material is generally dense but slightly disrupted with local minor normal offset beds
				Apx B:N48W,18NE		@ 14' Irregular mudstone interbed with CaCO3	
15		3 6 11		120/11.6		@ 16' Pebbly sandstone lense up to 8" thick	
			Qls	Apx B:N41W,15NE			
20		2 2 4		B:N38W,24NE 113/16.4		@ 20.2' Moderate yellowish-brown clayey siltstone; irregular and moderately sheared; offset by minor normal fault	@ 20' % fines = 88.4 @ 20' Minor normal fault with apx 6" offset
						@ 23' Grades to sandy siltstone	
25				Apx B:N54W,22NE		@ 27' Pebbly sandstone lense @ 28.2' Pebbly to cobbly sandstone lense; slightly loose	
30		5 11 16		B:N55W,18NE B:N50W,14NE 120/12.8 B:N47W,16NE		@ 29.6' Moderate-brown mudstone interbeds, slightly sheared; offset by minor normal faults	@ 30' Minor normal faults with up to 5" of offset
						@ 33.5' Clayey siltstone @ 34' 1/2"-thick moderate-brown silty clay; moderately plastic and sticky; undulating and shallow-dipping @ 35.2' 1/4-1/2"-thick moderate-brown clay and silty clay	
35				SP:N38W,13NE ST:Northeast		**BEDROCK; TQs (35.5 - 50 Ft.)** @ 35.5' Yellowish-brown sandy siltstone; moderately hard; damp	Mudstone between 34 and 35.2' appears disturbed
			TQs	B:N50W,13NE			

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QIsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: DGG/BJS		
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/11-12/00		
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"	**BORING NO.** B-43E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"		
	ELEVATION: 1312'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40				B:N47W,15NE		@ 37.4' Discontinuous sandstone interbeds and pebbly lenses @ 39.5' Yellowish-brown siltstone and sandy siltstone	
45				B:N51W,16NE		@ 45.5' Fine- to medium-grained sandstone interbed @ 47' Pebbly sandstone with local cobbles; some cross bedding	
50						TOTAL DEPTH 50 Ft. (Elev. 1262') No Ground Water No Caving Slide Plane @ 35.2 Ft. (Elev. 1276.8')	Backfill tamped every 5 Ft.
55							
60							
65							
70							
75							

DRILL HOLE LOG

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703Qlsll-1
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: BJS
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/20/00
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"
	ELEVATION: 1280'

BORING NO. B-47E

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						LANDSLIDE DEBRIS; Qls (0 - 24.5 Ft.) @ 0' Yellowish-brown silty sandstone with local sandstone lenses and thin mudstone interbeds; dense, but slightly soft for TQs; slightly damp to damp; caliche-lined fractures; disturbed mudstone bleb @ 3.5' Slightly disturbed, moderate-brown mudstone interbed; slightly sticky	Downhole logged on 1/20/00 Surficial material removed for drill pad
5				B:N22W,12NE		@ 6' Slightly undulating, laminated siltstone/sandy siltstone	
				B:N54W,13NE		@ 8' Reddish-brown, fine sandy mudstone interbed @ 8.5' Moderate-brown mudstone bleb; dense to moderately hard	
10				B:N47W,17NE		@ 9' Cross-laminated fine sandstone interbed	Landslide material is generally tight and only slightly disturbed; suggesting only minor movement
			Qls			@ 13' Disturbed mudstone fragments and local hard concretions; slightly soft	
15				B:N44W,17NE		@ 16' Light reddish-brown sandy siltstone interbed	
						@ 18' Moderate-brown silty mudstone interbed; slightly sticky	
20				B:N48W,13NE		@ 19' Light yellowish-brown to yellowish-gray sandstone with interbedded siltstone and sandy siltstone; dense	
				B:N28W,15NE			
25				SP?:N30W,15NE		@ 24.4' Moderate-brown mudstone; slightly soft and sheared **BEDROCK; TQs (24.5 - 40 Ft.)** @ 24.5' Light-brown sandy siltstone with pebbles; moderately hard; damp; poorly sorted	
						@ 27' Yellowish-brown sandy mudstone	
30						@ 29' Grades brown and more clayey; slightly sticky	
			TQs	Parting: N50W, 23NE		@ 32' Minor discontinuous partings and polished pebbles; minor CaCO3 @ 32.5' Grades sandier	
35						@ 36' Discontinuous slightly silty sandstone interbeds	

CLIENT: Newhall Ranch Company	JOB NO.: 99-1703QlsII-1	**DRILL HOLE LOG**	
PROJECT: Newhall Ranch - Mesas-East Phase II Landslide Investigation	DATE: 7/22/04		
DRILLING COMPANY: Tri-Valley Drilling/Dave	LOGGED BY: BJS		
DRILLING METHOD: Bucket-Auger (86' Rig)	DRILLED: 1/20/00		
HAMMER TYPE: Telescoping Kelly Bar	HOLE DIA: 24"	**BORING NO.** B-47E	
DRIVING WEIGHTS: 0-28'=3450 lbs; 28-57'=2050 lbs; 57-85'=1140 lbs.	AVERAGE DROP (in.): 12"		
	ELEVATION: 1280'		

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40			Qs			TOTAL DEPTH 40 Ft. (Elev. 1240') No Ground Water No Caving Slide Plane @ 24.4 Ft. (Elev. 1255.6')	Backfill tamped every 5 ft.
45							
50							
55							
60							
65							
70							
75							

DRILL HOLE LOG

BORING NO. B-60E

PROJECT: Newhall Ranch - Mesas East
Phase II Landslide Investigation
JOB NO.: 00-1703CM-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Tri Valley Drilling/Dave
METHOD OF DRILLING/HOLE DIAMETER (in.) Bucket Auger 24" (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-28'=3450 lbs, 28-57=2050 lbs, 57-85'=1140 lbs
ELEVATION: 1200±
LOGGED BY: DGG

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ALLUVIUM; Qal (0 - 35 Ft.) @ 0' Yellowish-brown silt with scattered pebbles and cobbles; slightly damp @ 3' Color yellowish brown to light gray	Excavated and surface logged on 2/11/00; no downhole logging
5		Push/ 12" 1		Consol		@ 5' Medium-brown silt	@ 5' Bulk Sample
10		1 2 4		Consol		@ 10' Medium- to grayish-brown pebbly cobbly silty sand to sandy silt; damp @ 12' Yellowish- to medium-brown, fine- to medium-grained, pebbly to cobbly sand @ 13' Orangish-brown	@ 10' Bulk Sample
15		1 1 2		Consol		@ 17' Medium- to slightly orangish-brown silt to slightly sandy silt @ 18' Scattered pebbles and cobbles	% fines=47.6
20		1 3 2		123/2.5		@ 20' Orangish- to yellowish-tan, fine- to medium-grained sand @ 21' Pebbles and cobbles	@ 23' Bulk Sample
25							@ 25' Too cobbly for drive sample
						@ 28' Finer-grained	
30		2 3 3		Consol		@ 30' Medium-brown silt to slightly sandy silt @ 31' Silty sand to sandy silt with pebbles and cobbles	
35		3 8 16		120/3.5		BEDROCK; TQs (35 - 43 Ft.) @ 35' Orangish-yellow, fine- to medium-grained pebbly sandstone @ 37' Medium- to orangish-brown siltstone with pebbles	

DRILL HOLE LOG

BORING NO. B-60E

PROJECT: Newhall Ranch - Mesas East
Phase II Landslide Investigation
JOB NO.: 00-1703CM-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Tri Valley Drilling/Dave
METHOD OF DRILLING/HOLE DIAMETER (in.) Bucket Auger 24" (86' Rig)
HAMMER TYPE: Telescoping Kelly Bar
AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-28'=3450 lbs, 28-57=2050 lbs, 57-85'=1140 lbs
ELEVATION: 1200±
LOGGED BY: DGG

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40						@ 39' Pebbly cobbly sandstone	
						@ 43' Yellowish-orange; fine- to coarse-grained pebbly sandstone	
	■	3 8 16		123/2.5		TOTAL DEPTH 43 Ft. (Elev. 1157) No Ground Water No Caving	Backfill Tamped every 5 ft.
45							
50							
55							
60							
65							
70							
75							

DRILL HOLE LOG

BORING NO. B-61E

PROJECT: Newhall Ranch - Mesas East
Phase II Landslide Investigation
JOB NO.: 00-1703CM-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Tri Valley Drilling/Danny
METHOD OF DRILLING/HOLE DIAMETER (in.) Bucket-Auger 24" (4WD Rig)
HAMMER TYPE: Telescoping Kelly Bar
AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-24'=3160 lbs, 24-47'=2040 lbs, 47-72'=1120 lbs
ELEVATION: 1300±
LOGGED BY: BJS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						BEDROCK; TQs (0 - 65 Ft.)	Excavated and logged on 3/1/00 and 3/2/00
						@ 0' Light yellowish-brown sandy siltstone to silty sandstone with local interbeds and channels of sandstone and pebbly sandstone; finer beds dense, slightly damp to damp, not well sorted and poorly bedded; coarse beds dense but slightly friable, dry to slightly damp, cross bedded and locally laminated	Surface material removed for drill pad
				B:N16W,16NE (x-bedded)			
5						@ 2' Cross-bedded sandstone interbed	@ 0-10' Mixed Bulk Sample
						@ 5' Light yellowish-brown to yellowish-gray silty sandstone with local pebbles, concretions and sandy lenses	
						@ 9' Fine silty sandstone	
10		5 10 13		Consol			% fines=50.2
				B:N12W,9NE (x-bedded)		@ 13' Sandstone and pebbly sandstone channel with cross bedding	
15		5 8 13		116/7.0		@ 15.5' Light yellowish-brown to yellowish-gray silty sandstone with local pebbles and pebbly lenses, and rare, discontinuous muddy layers	@ 15' Bulk Sample
				Apx B:N30W,8NE			
				Apx B:N50W,13NE			
20		6 8 12/ 5"		B:N55W,10NE 119/3.6		@ 20' Pebbly lense; pebbly silty sandstone interbeds below	@ 20' Bulk Sample
25				B:N52W,10NE		@ 24' Pebbly to cobbly lense with underlying cross-bedded sandstone; poorly sorted silty sandstone below; dense to moderately hard; slightly damp to damp	
				B:N20W,15NE		@ 29' Thin sandstone interbed within yellowish-brown pebbly silty sandstone and local silty interbeds	@ 30' Bulk Sample Bedding is poor from 30 to 50 feet
30		7 24		132/7.5		@ 31' Pebbly sandstone lense channeled into yellowish-brown sandy siltstone and mudstone with local pebbles; poorly sorted and poorly bedded	
35						@ 37.5' Yellowish-brown to brown slightly sandy mudstone/siltstone	

DRILL HOLE LOG

BORING NO. B-61E

PROJECT: Newhall Ranch - Mesas East
Phase II Landslide Investigation
JOB NO.: 00-1703CM-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Tri Valley Drilling/Danny
METHOD OF DRILLING/HOLE DIAMETER (in.) Bucket-Auger 24" (4WD Rig)
HAMMER TYPE: Telescoping Kelly Bar
AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-24'=3160 lbs, 24-47'=2040 lbs, 47-72'=1120 lbs
ELEVATION: 1300±
LOGGED BY: BJS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
40							
		5 11 23		Consol 126/11.0		@ 40' Concretions	% fines=78
45						@ 45.5' Mudstone interbed; bedding vague but shallow	
						@ 48' Grades sandier	
50				Apx B:N20W,10NE		@ 50' Grades siltier with local concretions; local sandstone interbeds below; bedding vague	
				B:N20W,8NE			
55							
60				B:N38W,15NE (x-bedded)		@ 59.5' Grades sandier @ 60.5' Sandstone and pebbly sandstone interbed; cross bedded and channeled; lithologically identical to coarse bed at 2 ft.	
65		11 46		120/5.7		TOTAL DEPTH 65 Ft. (Elev. 1235) No Ground Water No Caving	Backfill tamped every 10 ft.
70							
75							

Allan E. Seward Engineering Geology, Inc.

For use with report dated 03/18/2005: RTF Job No. 2004-700-21

DRILL HOLE LOG

BORING NO. B-62E

PROJECT: Newhall Ranch - Mesas East
Phase II Landslide Investigation
JOB NO.: 00-1703CM-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Tri Valley Drilling/Dave
METHOD OF DRILLING/HOLE DIAMETER (in.) Bucket-Auger 24" (4WD Rig)
HAMMER TYPE: Telescoping Kelly Bar
AVERAGE DROP (in.): 12"
DRIVING WEIGHTS: 0-24'=3160 lbs, 24-47'=2040 lbs, 47-72'=1120 lbs
ELEVATION: 1164±
LOGGED BY: MAS/BJS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						SLOPEWASH/ALLUVIUM; Qsw/Qal (0 - 11 Ft.)	Excavated and logged on 3/2/00
						@ 0' Brown muddy sand with scattered pebbles; soft; moist to wet, roots; poorly sorted	
		1/ 18"		116/13.0			@ 3' Bulk Sample
5						@ 5' Grades yellowish-brown and moderately dense	@ 0-10' Mixed Bulk Sample
10		2 3 4		115/6.8			@ 10' Bulk Sample
						BEDROCK; TQs (11 - 32 Ft.)	
						@ 11' Light yellowish-brown fine sandy siltstone; soft to moderately dense; damp; weathered with roots and bioturbation	
15						@ 15' Light yellowish-brown to yellowish-gray fine silty sandstone with sandstone and pebbly sandstone lenses and interbeds; dense; slightly damp; local caliche-filled fractures	
				B:N32W,10NE B:N52W,8NE		@ 17.5' Siltstone and sandstone interbeds; moderately well bedded and thin bedded	
20		5 3/1"				@ 19' Cross-bedded yellowish-gray sandstone and pebbly sandstone with channels; slightly to moderately friable	Drive Sample @ 20' hit rock % fines= 62
						@ 23' Coarse sandstone and pebbly sandstone lense/channel; cross bedded; moderately friable but dense	@ 20' Bulk Sample
				B:N53W,6NE			
25						@ 25' Slightly clayey sandy siltstone; dense; damp	
30							
		3 11 16		123/10.1		TOTAL DEPTH 32 Ft. (Elev. 1132) No Ground Water No Caving	Backfill Tamped every 10 ft.
35							

Allan E. Seward Engineering Geology, Inc.

Hollow Stem Boring, AES 5-25-00

DRILL HOLE LOG

BORING NO. HS-1

PROJECT: Valencia Company
Magic Mountain Entertainment
JOB NO.: 00-1729-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole
AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1072
LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ARTIFICIAL FILL; af (0 - 17 Ft.)	Excavated and logged on 3/15/00
		7 6 7		120.6/9.3	SC	@ 2' Clayey sand, loose, moist, yellowish-brown	
5		7 7 8		111.4/13.3		@ 5' Light yellowish-brown	@ 0-5' Bulk Sample
		39 26 28		121.1/4.6	CL	@ 8' Sandy clay with interlayer of well graded sand, hard, moist, light brown to yellowish-brown	
10		5 7 4		130.9/11.5		@ 11' - with gravel and stiff	@ 11-15' Bulk Sample
15		8 16 18		83.4/30.8		@ 15' - less sand and very stiff	
						QUATERNARY ALLUVIUM; Qal (17 - 30 Ft.)	
20		3 4 10		84.0/33.6	CH	@ 20' Fat clay, stiff, moist, yellowish-brown	
25		8 15 15			SM	@ 25' Silty sand with gravel, medium dense, very moist, grayish-brown	% fines=21.1
30		9 20 20				@ 30' - dense TOTAL DEPTH 30 Ft. (Elev. 1042) Ground Water @ 30 Ft. (Elev. 1042) No Caving	@ 30' Ground water
35							

DRILL HOLE LOG

BORING NO. HS-2

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1123 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ARTIFICIAL FILL; af (0 - 5 Ft.)	Excavated and logged on 3/15/00
		10 11 19		117.3/11.1	SC/ CL	@ 2' Clayey sand to sandy clay, medium dense to very stiff, moist, brown	@ 0-5' Bulk Sample
5		5 5 5		89.8/11.0	CL	QUATERNARY ALLUVIUM; Qal (5 - 18 Ft.) @ 5' Lean clay with sand, stiff, moist, yellowish-brown	@ 6-8' Bulk Sample
		6 6 6		98.9/11.3			
10		3 3 7		114.6/7.8	SM	@ 11' Silty sand, loose, moist, yellowish-brown	
15		3 7 14		117.3/7.8		@ 15' - medium dense	% fines=36.1
						QUATERNARY TERRACE; Qt (18 - 30 Ft.)	
20		8 9 14		112.6/8.0		@ 20' Silty sand with gravel, medium dense, moist, yellowish-brown	
25		15 50/ 6"			SC/ CL	@ 25' Clayey sand to sandy clay, very dense to hard, moist, yellowish-brown	@ 27-30' Bulk Sample
30		20 50/ 6"				TOTAL DEPTH 30 Ft. (Elev. 1093) No Ground Water	
35							

DRILL HOLE LOG

BORING NO. HS-3

PROJECT: Valencia Company
Magic Mountain Entertainment
JOB NO.: 00-1729-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole
AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1138
LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ARTIFICIAL FILL?; af (0 - 8 Ft.)	Excavated and logged on 3/15/00
		24 21 22		111.7/4.7	SM	@ 2' Silty sand with gravel, medium dense, damp, light yellowish-brown	
5		7 9 8		105.6/8.7		@ 5' - loose	
		7 5 17		100.3/8.1		QUATERNARY ALLUVIUM; Qal (8 - 30 Ft.) @ 8' - loose	
10		9 12 13		103.3/6.6		@ 12' - moist	@ 11' No Recovery % fines=43.5
15		9 10 25		101.1/8.4			
20		7 10 19		110.7/7.6			
25		5 7 9					% fines=12.9
30		21 50/ 6"				QUATERNARY TERRACE; Qt (30 Ft.) @ 30' - very dense TOTAL DEPTH 30 Ft. (Elev. 1108) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-4

PROJECT: Valencia Company
Magic Mountain Entertainment
JOB NO.: 00-1729-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole
AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1151
LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES. DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ARTIFICIAL FILL; af? (0 - 5 Ft.)	Excavated and logged on 3/15/00
		1 36 50		118.6/8.6	SM	@ 2' Silty sand with gravel, dense, damp, light yellowish-brown	@ 0-3' Bulk Sample
5		28 50		122.6/10.6	SC	QUATERNARY ALLUVIUM; Qal (5 - 25 Ft.) @ 5' Clayey sand with gravel, dense, moist, brown	
		9 8 9		107.0/10.3	SM	@ 8' Silty sand, loose, moist, light yellowish-brown	% fines=39.0
10		9 18 36		115.3/4.8		@ 11' - with gravel and medium dense	% fines=18.7
				103.1/2.9			@ 13-15' Bulk Sample
15		12 22 15				@ 15' - with gravel and medium dense	
20		6 8 19		119.9/5.7		@ 20' - medium dense	% fines=16.3
25		48 50/ 5"			SP- SM	QUATERNARY TERRACE; Qt (25 - 30 Ft.) @ 25' Poorly graded sand with silt and gravel, very dense, moist, yellowish-brown	@ 25-30' Bulk Sample
30		58 56/ 2"				TOTAL DEPTH 30 Ft. (Elev. 1121) No Ground Water No Caving	
35							

Allan E. Seward Engineering Geology, Inc.

For use with report dated 03/18/2005: RTF Job No. 2004-700-21

DRILL HOLE LOG

BORING NO. HS-5

PROJECT: Valencia Company
Magic Mountain Entertainment
JOB NO.: 00-1729-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole **AVERAGE DROP (in.):** 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1180 **LOGGED BY:** MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 12 Ft.)	Excavated and logged on 3/21/00
		3 5 7		109.1/5.0	SM	@ 2' Silty sand, loose, moist, light brown	@ 0-2' Bulk Sample
5		15 18 25		112.0/4.4		@ 5' - medium dense	
		15 19 32		110.1/6.7		@ 8' - medium dense and yellowish-brown	@ 8-11' Bulk Sample
10		50/ 6"					@ 11' No recovery
		50/ 6"		105.0/9.1		QUARTERNARY TERRANCE; Qt (12 - 20 Ft.) @ 12' - very dense, yellowish-brown	
15		31 50/ 4"		94.3/14.8	CL	@ 15' Lean clay, hard, moist, yellowish-brown	@ 15-20' Bulk Sample
		18 46 50/ 4"					
20		33 38 50/ 6"				@ 20' - sandy TOTAL DEPTH 20 Ft. (Elev. 1160) No Ground Water No Caving	
25							
30							
35							

DRILL HOLE LOG

BORING NO. HS-6

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1184 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
		3 6 9		98.5/2.9	SM	@ 2' Silty sand, loose, damp, light yellowish-brown	
5		6 7 14		98.9/2.2		@ 5' - medium dense	
		15 21 35		110.2/3.3		@ 8' - dense	
10		5 29 32		106.0/2.9	SW-SM	@ 11' Well graded sand with silt, dense, moist, light yellowish-brown	@ 11-15' Bulk Sample % fines=9.2
15		25 27 27		108.8/2.7		@ 15' - medium dense	
20		15 17 19		107.2/4.4	SM	@ 20' Silty sand, medium dense, moist, light yellowish-brown	
25		28 40 50/4"				@ 25' - with gravel and very dense	
30		24 32 36				@ 30' - with gravel and dense TOTAL DEPTH 30 Ft. (Elev. 1154) No Ground Water No Caving	
35							

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

DRILL HOLE LOG

BORING NO. HS-7

PROJECT: Valencia Company
Magic Mountain Entertainment
JOB NO.: 00-1729-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole
AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1209
LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
		9 11 13		112.5/4.8	SP-SM	@ 2' Poorly graded sand with silt, medium dense, moist, light brown	@ 0-2' Bulk Sample % fines=8.7
5		7 11 23		92.7/2.9			% fines=2.2
		10 15 22		116.3/3.5	SW	@ 8' Well graded sand with gravel, medium dense, damp, light yellowish-brown	@ 8-11' Bulk Sample
10		15 13 15		114.5/4.6			% fines=4.8
15							@ 15' No Recovery
		9 10 15		108.5/7.1	SM	@ 16.5' Silty sand with some gravel, medium dense, damp, light yellowish-brown	% fines=26.6
20		33 44 50/ 45		118.6/2.1	SP-SM	@ 20' Poorly graded sand with silt, very dense, gravel, moist, light yellowish-brown	@ 21-25' Bulk Sample
25		11 15 26			SM	@ 25' Silty sand, medium dense, moist, light brown	
30		23 33 45			CL	QUATERNARY TERRACE; Qt (30 Ft.) @ 30' Lean clay with sand, hard, moist, light yellowish-brown TOTAL DEPTH 30 Ft. (Elev. 1179) No Ground Water	
35							

DRILL HOLE LOG

BORING NO. HS-8

PROJECT: Valencia Company — **JOB NO.:** 00-1729-1
Magic Mountain Entertainment — **DATE:** 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — **AVERAGE DROP (in.):** 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1160 — **LOGGED BY:** MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated an logged on 3/21/00
		5 6 12		93.2/7.5	CL	@ 6" Top Soil, silty, soft, moist, brown with roots and grass @ 2' Sandy clay, stiff, damp, light yellowish-brown	@ 0-5' Mixed Bulk Sample
5		13 6 9		98.3/4.3	SM-SC	@ 5' Clayey, silty sand, loose, moist, yellowish-brown	
		15 27 27		101.7/3.9		@ 8' - medium dense	@ 8' Rock
10		5 6 8		99.3/7.7			
15		8 8 8		112.5/8.9			@ 15-18' Bulk Sample
20		9 9 9		109.9/4.8	SM	@ 20' Silty sand with gravel, loose, moist, yellowish-brown	% fines=17.(
25		15 7 8			SM	@ 25' - medium dense	% fines=14.(
30		19 28 40			CL	BEDROCK?; TQs? (30 Ft.) @ 30' Lean clay, hard, moist, light yellow TOTAL DEPTH 30 Ft. (Elev. 1130) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-10

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1219 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
		2 2 2		107.7/7.8	SM	@ 2' Silty sand with gravel, loose, moist, light brown	
5		8 11 25		108.2/3.5		@ 5' - less gravel and medium dense	
		11 13 11		107.9/5.3		@ 8' - less gravel and medium dense	
10		17 22 34		110.1/4.1		@ 11' - dense	% fines=19.8
15		31 36 50/ 6"					@ 15' No Recovery
		13 25 40		103.1/7.6		@ 16.5' - dense, light yellowish-brown	
20		50/ 4"					@ 20' No Recovery
		50/ 4"		110.3/2.5	SP-SM	@ 21' Poorly graded sand with silt and gravel, very dense, moist, light yellowish-brown	
		48 50/ 5"					
25		32 36 50/ 5"					
30		50			SM	@ 30' Silty sand wtih gravel, very dense, moist, yellowish-brown	
						TOTAL DEPTH 30 Ft. (Elev. 1189) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-11

PROJECT: Valencia Company
Magic Mountain Entertainment
JOB NO.: 00-1729-1
DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole
AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1176
LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
		13 16 17		91.8/3.8	SP	@ 2' Poorly graded sand, medium dense, damp, light yellowish-brown	@ 0-5' Bulk Sample
5		7 8 32		105.7/4.1		@ 5' - with some gravel	@ 5' Bulk Sample % fines=3.9
		50/ 6"		104.4/5.5	SM	@ 9' Silty sand, dense, damp, yellowish-brown	% fines=21.9
10		12 20 47					@ 11' No Recovery
		24 50/ 6"		113.8/1.9	SW	@ 13' Well graded sand with gravel, dense, damp, yellowish-brown	
15		50/ 6"		110.0/2.3	SW- SM	@ 15' Well graded sand with silt and gravel, dense, damp, yellowish-brown	110.0/2.3
20		15 15 17		102.8/6.7	SM	@ 20' Silty sand, medium dense, moist, yellowish-brown	% fines=33.0
25		17 21 17				@ 25' - with gravel	@ 25-30' Bul Sample
30		17 20 21				@ 30' - with gravel TOTAL DEPTH 30 Ft. (Elev. 1146) No Ground Water No Caving	
35							

DRILL HOLE LOG

BORING NO. HS-12

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1163 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 8 Ft.)	Excavated and logged on 3/21/00
		3 3 6		112.3/6.6	SM	@ 2' Silty sand with gravel, loose, moist, yellowish-brown	@ 0-5' Bulk Sample
5		12 13 15		109.6/3.5		@ 5' - medium dense, damp, light yellowish-brown	
		18 32 21		124.2/2.8		BEDROCK; TQs (8 - 30 Ft.) @ 8' - medium dense	
10		36 22 30		116.1/3.3		@ 12' - medium dense	
15		33 28 30		116.6/2.8		@ 15' - dense	@ 17-20' Bulk Sample
20		30 20 17		107.0/5.0		@ 20' - medium dense	
25		30 42 42			SP-SM	@ 25' Poorly graded sand with silt and gravel, very dense, damp, light yellowish-brown	
30		50/ 5"				TOTAL DEPTH 30 Ft. (Elev. 1133) No Ground Water No Caving	
35							

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

DRILL HOLE LOG

BORING NO. HS-13

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1085 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						ARTIFICIAL FILL; af (0 - 5 Ft.)	@ 0-2' Bulk Sample
		50/5"		113.1/4.1			@ 2' No Recovery
		11 13 16			SM	@ 3' Silty sand, medium dense, moist, light brown	
5		13 8 9		97.5/11.0		QUATERNARY ALLUVIUM; Qal (5 - 23 Ft.)	% fines=12.5
		5 4 7		102.0/12.2	CL	@ 8' Sandy clay, stiff, moist, brown	% fines=65.6
10		5 7 12		91.0/22.9		@ 11' - less sand and very stiff	@ 11-15' Bul Sample
15		7 6 7		104.5/6.8	SC	@ 15' Clayey sand with gravel, loose, moist, light reddish-brown	% fines=34.5
20		16 21 31		122.1/10.2		@ 20' - medium dense	@ 20-23' Bul Sample
		27 44 50				QUATERNARY TERRACE; Qt/TQs?, (23 - 25 Ft.) @ 23' - very dense	@ 23' may be TQs
25		13 40 50/4				@ 25' - very dense TOTAL DEPTH 25 Ft. (Elev. 1060) No Ground Water No Caving	
30							
35							

DRILL HOLE LOG

BORING NO. HS-10

PROJECT: Valencia Company — JOB NO.: 00-1729-1
Magic Mountain Entertainment — DATE: 5/25/00
DRILLING COMPANY/DRILLER: Valley Well Drilling
METHOD OF DRILLING/HOLE DIAMETER (in.) Hollow-Stem Auger
HAMMER TYPE: Downhole — AVERAGE DROP (in.): 30"
DRIVING WEIGHTS: 140 lbs.
ELEVATION: 1219 — LOGGED BY: MAS

DEPTH (feet)	SAMPLE TYPE	BLOWS / 6"	GRAPHIC LOG	ATTITUDES, DRY DENSITY (pcf)/ MOISTURE CONTENT (%)	USCS SYMBOL	Description Soils: description; consistency/density; moisture; color; other Bedrock: color, lithology; hardness; moisture; other	Remarks
						QUATERNARY ALLUVIUM; Qal (0 - 30 Ft.)	Excavated and logged on 3/21/00
		2 2 2		107.7/7.8	SM	@ 2' Silty sand with gravel, loose, moist, light brown	
5		8 11 25		108.2/3.5		@ 5' - less gravel and medium dense	
		11 13 11		107.9/5.3		@ 8' - less gravel and medium dense	
10		17 22 34		110.1/4.1		@ 11' - dense	% fines=19.8
15		31 36 50/ 6"					@ 15' No Recovery
		13 25 40		103.1/7.6		@ 16.5' - dense, light yellowish-brown	
20		50/ 4"					@ 20' No Recovery
		50/ 4"		110.3/2.5	SP-SM	@ 21' Poorly graded sand with silt and gravel, very dense, moist, light yellowish-brown	
		48 50/ 6"					
25		32 36 50/ 5"					
30		50			SM	@ 30' Silty sand wtih gravel, very dense, moist, yellowish-brown	
						TOTAL DEPTH 30 Ft. (Elev. 1189) No Ground Water No Caving	
35							

Test Pit,
RTF&A 96-149-21 Report Dated 12-30-03

LOG OF TEST PIT TP-1

JOB NUMBER 96-149-01 CLIENT Newhall Land & Farming LOGGED BY DGF

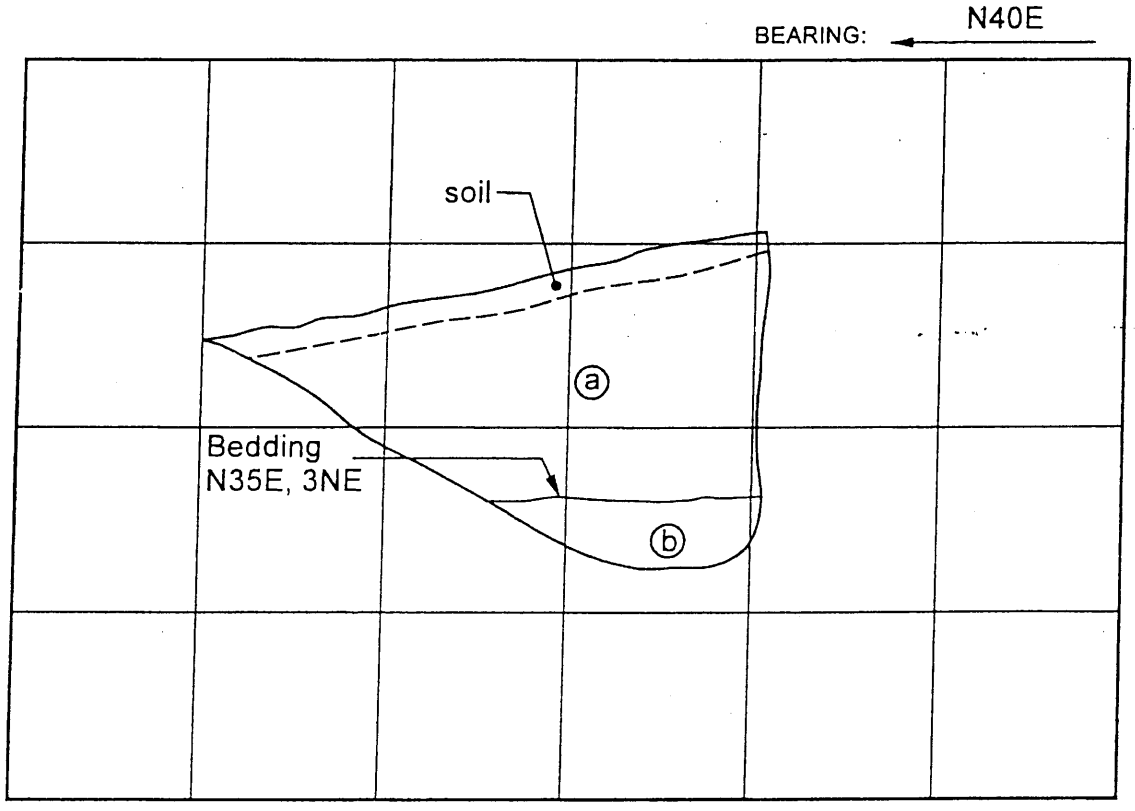
LOCATION Chevron Station ELEVATION 1215+/- feet DATE LOGGED 9-30-03

0-1 foot: soil

1-8.5 feet: Terrace Deposites; (Qt)

a) Reddish brown, fine to coarse grained sand with pebbles to small boulders (up to 2 ft.), moderately soft, dry, poorly cemented, poorly bedded

b) Light yellowish brown, fine to medium grained silty sand, moderately soft, dry



NOTE:
THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC TEST PIT LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES

LOG OF TEST PIT TP-2

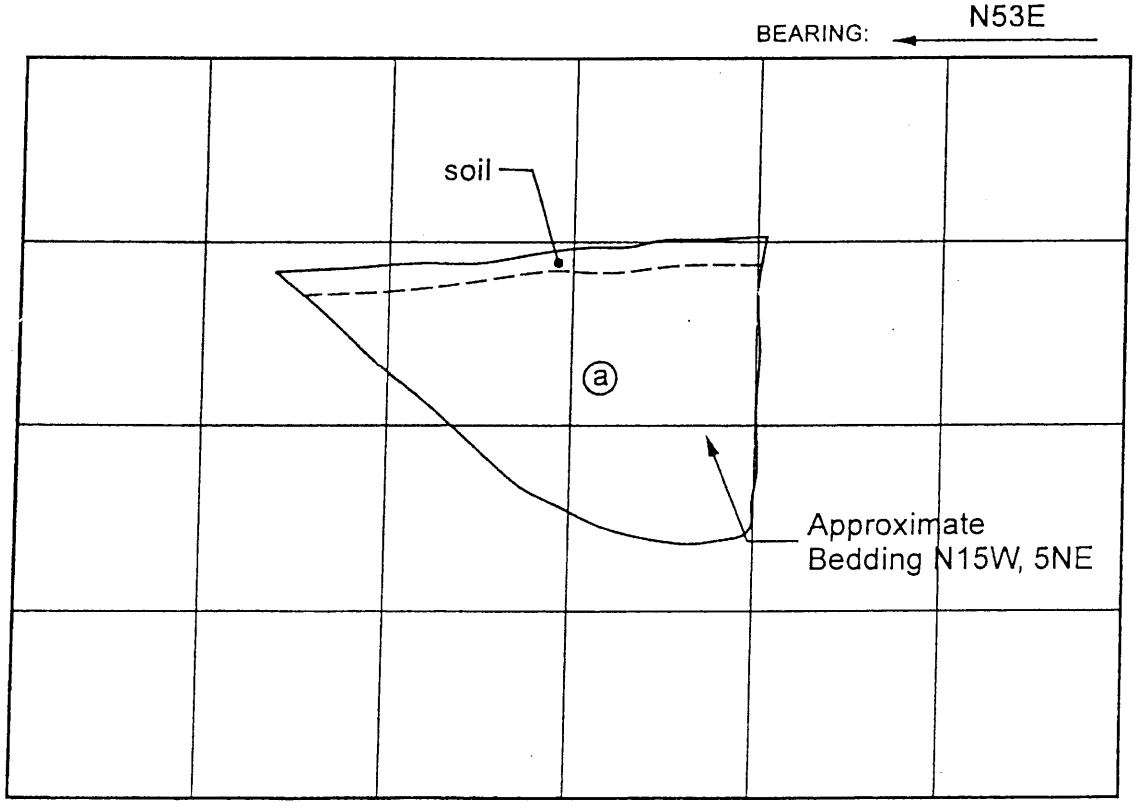
JOB NUMBER 96-149-01 CLIENT Newhall Land & Farming LOGGED BY DGF

LOCATION Chevron Station ELEVATION 1203+/- feet DATE LOGGED 9-30-03

0-8 inches: soil

8"-8.5 feet: Terrace Deposits; (Qt)

a) Reddish brown, fine to coarse grained sand with pebbles and cobbles moderately soft, dry, poorly bedded



NOTE:
THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC TEST PIT LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES

LOG OF TEST PIT TP-3

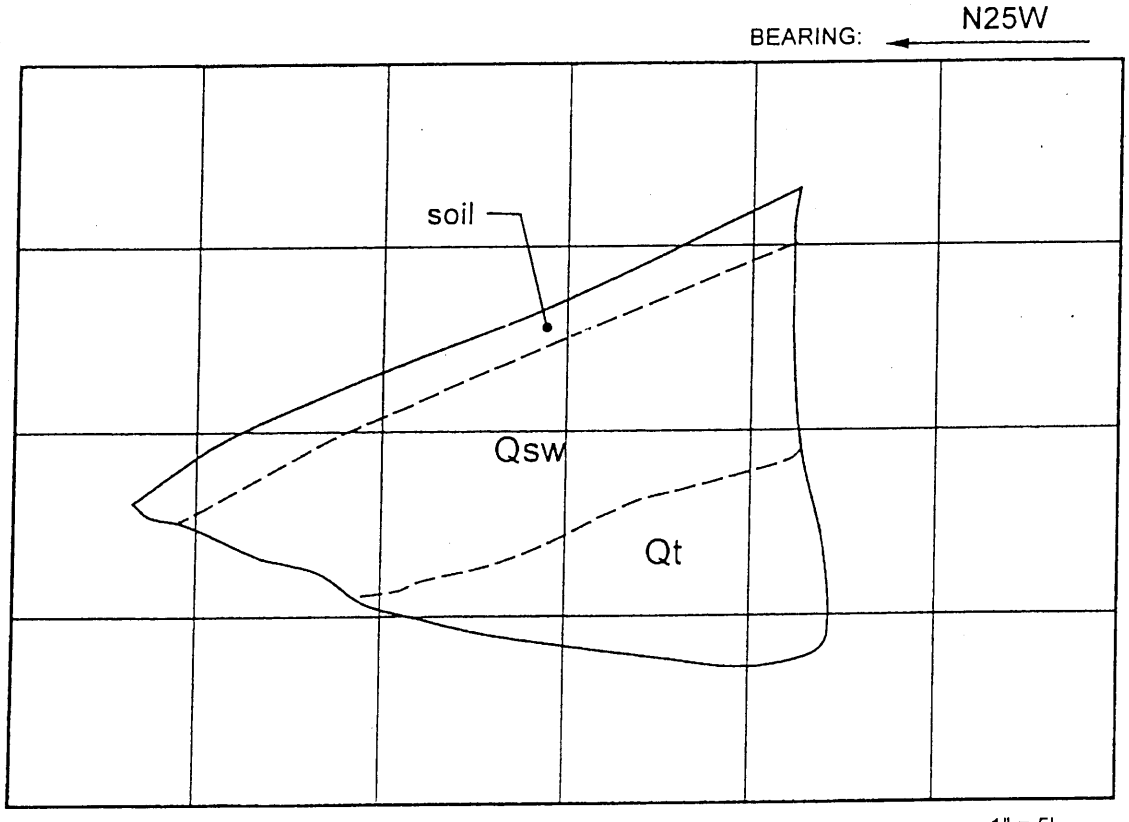
JOB NUMBER 96-149-01 CLIENT Newhall Land & Farming LOGGED BY DGF

LOCATION Chevron Station ELEVATION 1127 +/- feet DATE LOGGED 9-30-03-

0-1.5 feet: soil

1.5-6 feet: Slope Wash (Qsw)
Dark brown, fine to coarse grained silty sand with pebbles to small cobbles, loose, moist

6-12 feet: Terrace Deposits (Qt)
Yellowish brown, fine to medium grained sand, moderately dense, moist, massive bedding



NOTE:
THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC TEST PIT LOCATION AND AT THE DATE INDICATED IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES

Test Pit,
RTF&A 96-149-F Report Dated 5-20-03

TEST PIT TP-1

FROM 96-149-K REPORT DATED 5-20-97

BY: CT

JOB NUMBER: 96-149-K
DATE DRILLED: 1-10-97
EQUIPMENT USED: BACKHOE
ELEVATION: 1105
COORDINATES:
SURFACE CONDITIONS: Near center of nearly level bench

BLOWS PER FOOT OR (N-VALUE)	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	% PASSING # 200 SIEVE	DEPTH (FEET)	SAMPLE LOCATION	SOIL TYPE	
						SM	SILTY SAND: fine, grayish to yellowish light brown
-	8	110	-	5			SANDSTONE: fine, silty, moist to damp, light yellowish brown
-	-	-	-				brown
				10			END OF TEST PIT AT 11 FEET. No water. No caving.
				15			
				20			

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

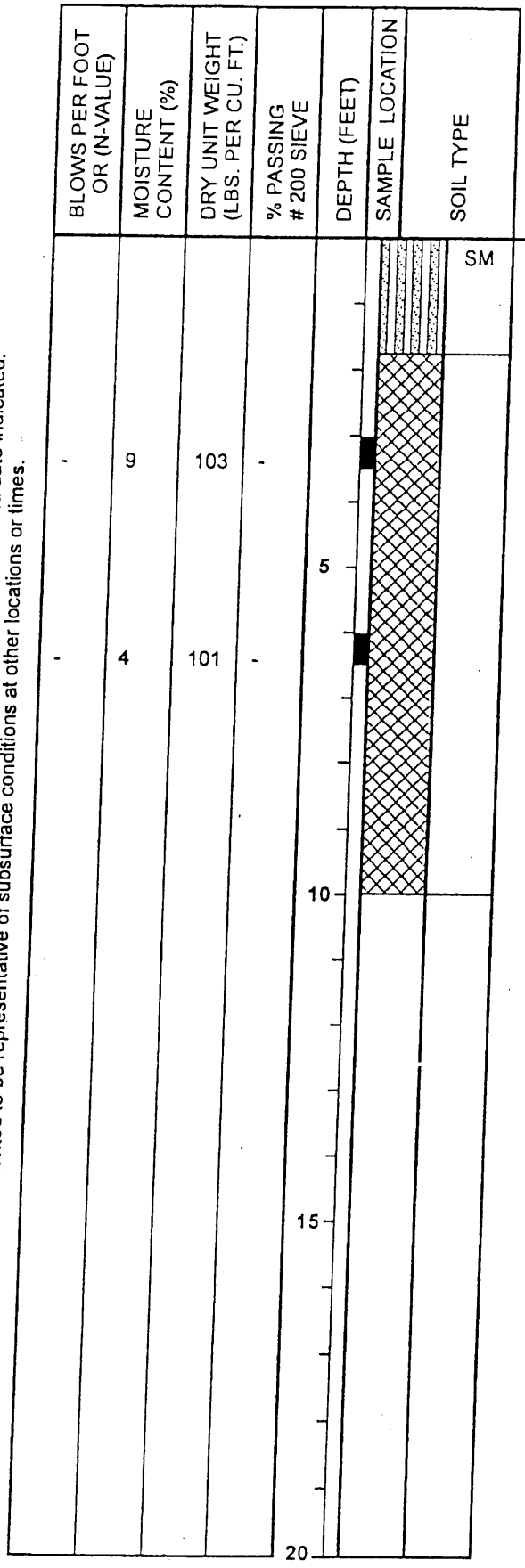
LOG OF TEST PIT

TEST PIT TP-2

96-149-K REPORT DATED 5-20-97

BY: CT

JOB NUMBER: 96-149-K
DATE DRILLED: 1-10-97
EQUIPMENT USED: BACKHOE
ELEVATION: 1106
COORDINATES:
SURFACE CONDITIONS: Edge of low slope



SILTY SAND: fine, some gravel and cobbles, loose, dry to damp, brown

SANDSTONE: fine, silty, some gravel and cobbles, dry, light yellowish brown

no cobbles

END OF TEST PIT AT 10 FEET.
No water.
Some caving.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

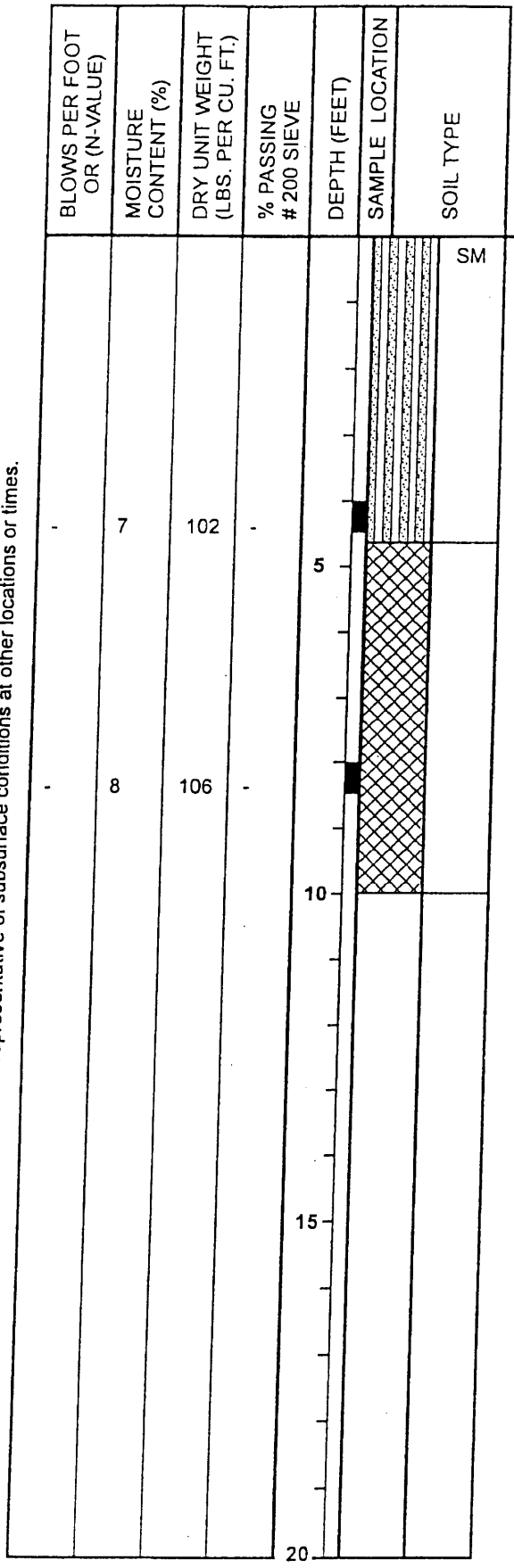
LOG OF TEST PIT

TEST PIT TP-3

96-149-K REPORT DATED 5-20-97

BY: CT

JOB NUMBER: 96-149-K
DATE DRILLED: 1-10-97
EQUIPMENT USED: BACKHOE
ELEVATION: 1106
COORDINATES:
SURFACE CONDITIONS: Toe of 2:1 natural slope located behind service station.



BLOWS PER FOOT OR (N-VALUE)	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	% PASSING # 200 SIEVE	SOIL TYPE	
				SM	SILTY SAND: fine, loose to medium dense, damp to moist, medium to dark brown
-	7	102	-		
					SANDSTONE: weathered, fine, silty, some cobbles, some clay, medium to dark brown
					fine to coarse, light brown
-	8	106	-		
					END OF TEST PIT AT 10 FEET. No water. No caving.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

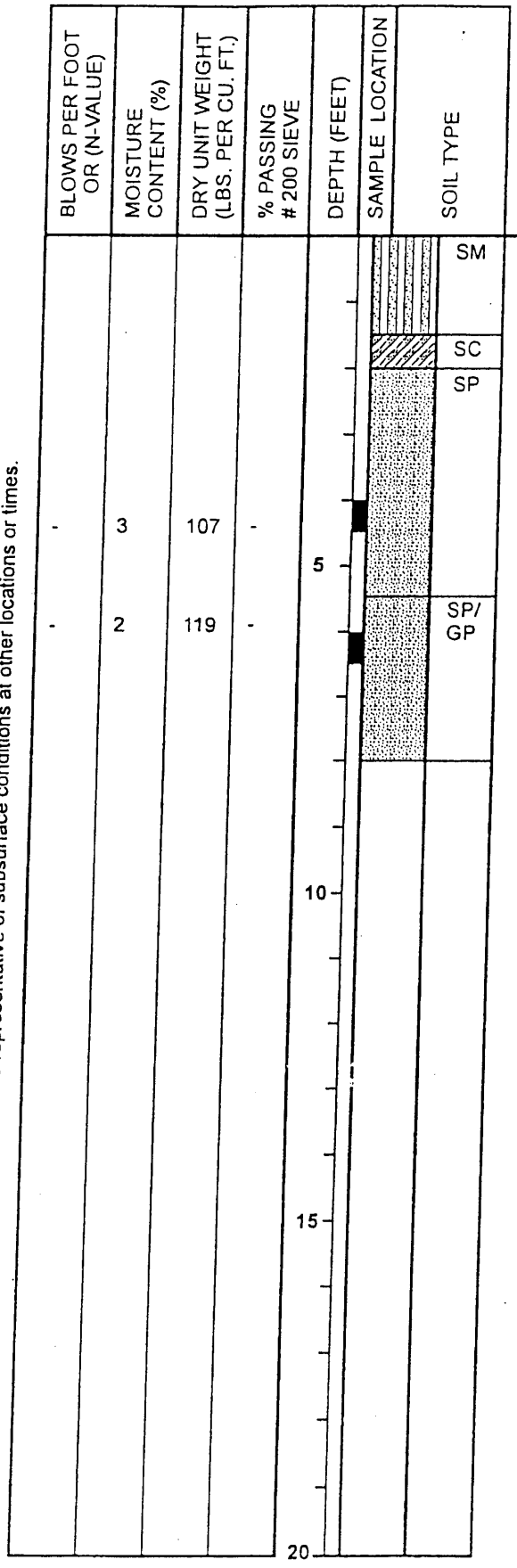
LOG OF TEST PIT

TEST PIT TP-4

96-149-K REPORT DATED 5-20-97

JOB NUMBER: 96-149-K
DATE DRILLED: 1-10-97
EQUIPMENT USED: BACKHOE
ELEVATION: 1094
COORDINATES:
SURFACE CONDITIONS: Near center of canyon, eastern end of disposal site.

BY: CT



BLOWS PER FOOT OR (N-VALUE)	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	% PASSING # 200 SIEVE	SOIL TYPE	
				SM	SILTY SAND: fine, some gravel, loose, damp, light brown
				SC	CLAYEY SAND: fine to medium, medium dense, moist, brown
				SP	SAND: fine to coarse, some gravel, medium dense, moist, brown
-	3	107	-		1/2"- thick clay layer
					damp, dense, light reddish brown
-	2	119	-	SP/ GP	GRAVELLY SAND: fine to coarse, some cobbles, dry, light brown
					END OF TEST PIT AT 8 FEET. No water. No caving.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

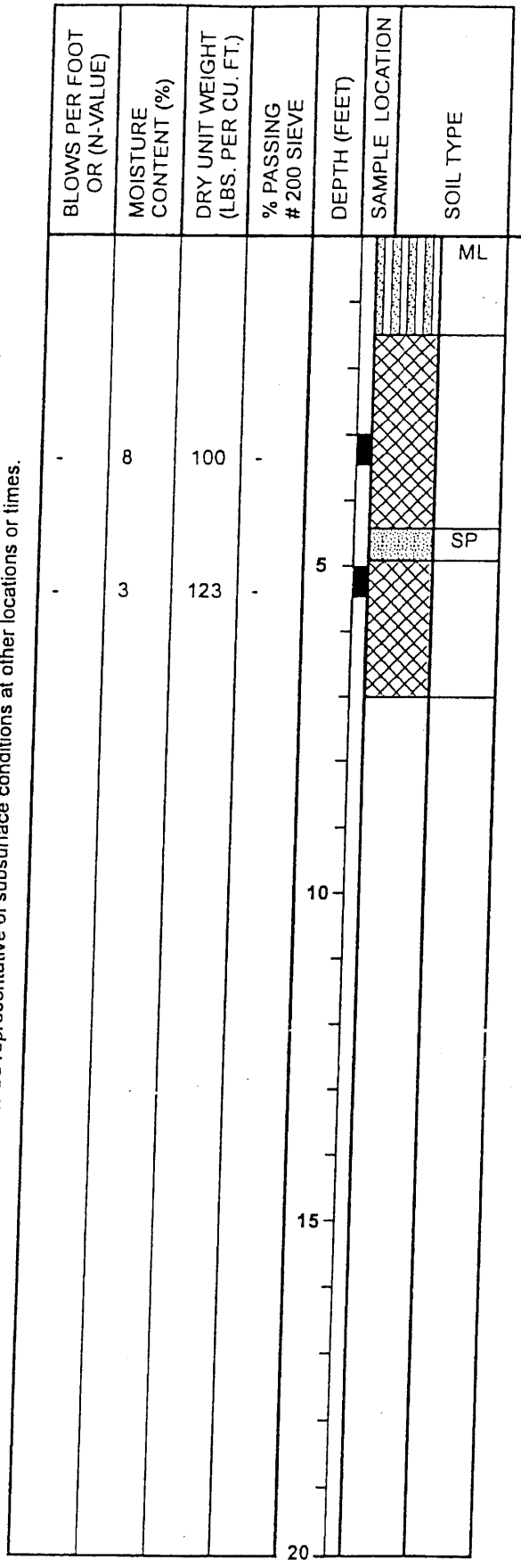
LOG OF TEST PIT

TEST PIT TP-5

96-149-K REPORT DATED 5-20-97

JOB NUMBER: 96-149-K
DATE DRILLED: 1-10-97
EQUIPMENT USED: BACKHOE
ELEVATION: 1123
COORDINATES:
SURFACE CONDITIONS: At toe of 4:1 natural slope near western end of disposal site

BY: CT



BLOWS PER FOOT OR (N-VALUE)	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (LBS. PER CU. FT.)	% PASSING # 200 SIEVE	SOIL TYPE	
-	8	100	-	ML	CLAYEY SILT: dark brown
					SAND STONE: fine, silty, weathered, moist, yellowish gray
					dry
				SP	SAND: SLIDE PLANE: fine, some gravel, loose, dry, yellowish gray
-	3	123	-		SAND STONE: fine, dry, yellowish gray
					END OF TEST PIT AT 7 FEET.
					No water.
					No caving.

Note: The log of subsurface conditions shown hereon applies only at the specific location and date indicated. It is not warranted to be representative of subsurface conditions at other locations or times.

LOG OF TEST PIT

Test Pit, AES 5-25-00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-1

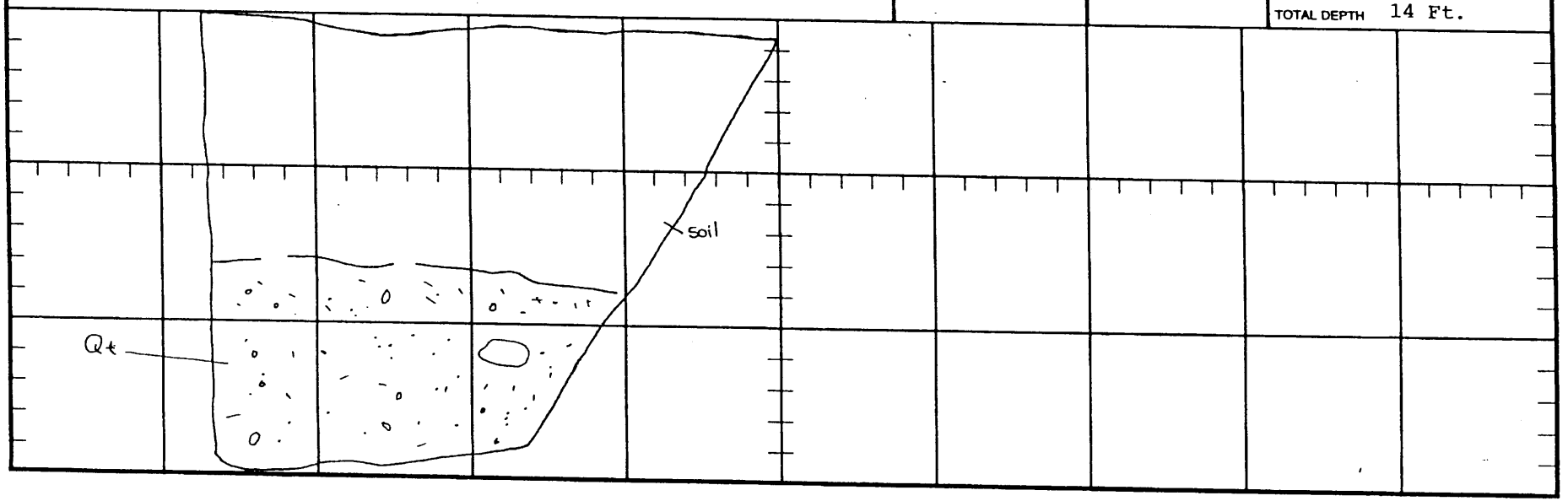
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SOIL; s, Medium to dark brown sandy silt to silty sand with pebbles and cobbles; loose; dry to damp 8 - 14' QUATERNARY TERRACE; Qt, Light reddish-tan sand and gravel with boulders; friable; dense; damp			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 70 W



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-2

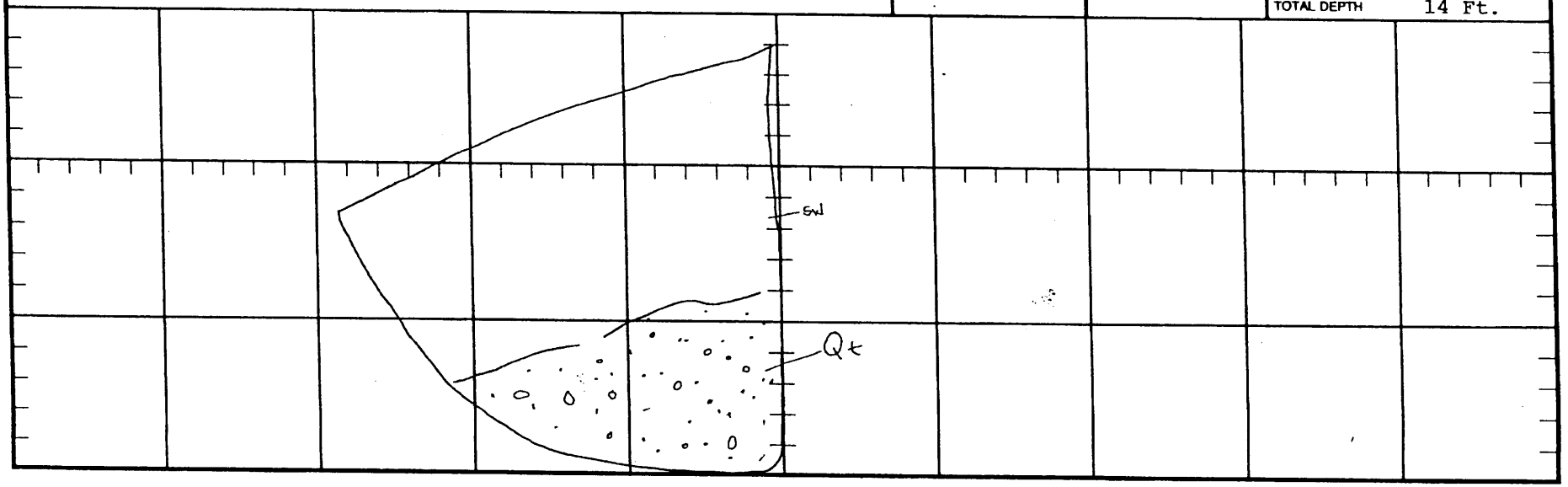
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SOIL/SLOPEWASH; sw, Medium to dark brown sandy silt to silty sand with pebble and cobbles; loose to moderately dense; dry to damp 8 - 14' QUATERNARY TERRACE; Qt, Light reddish-tan sand and gravel with boulders; friable; dense; damp			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 76 W



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-3

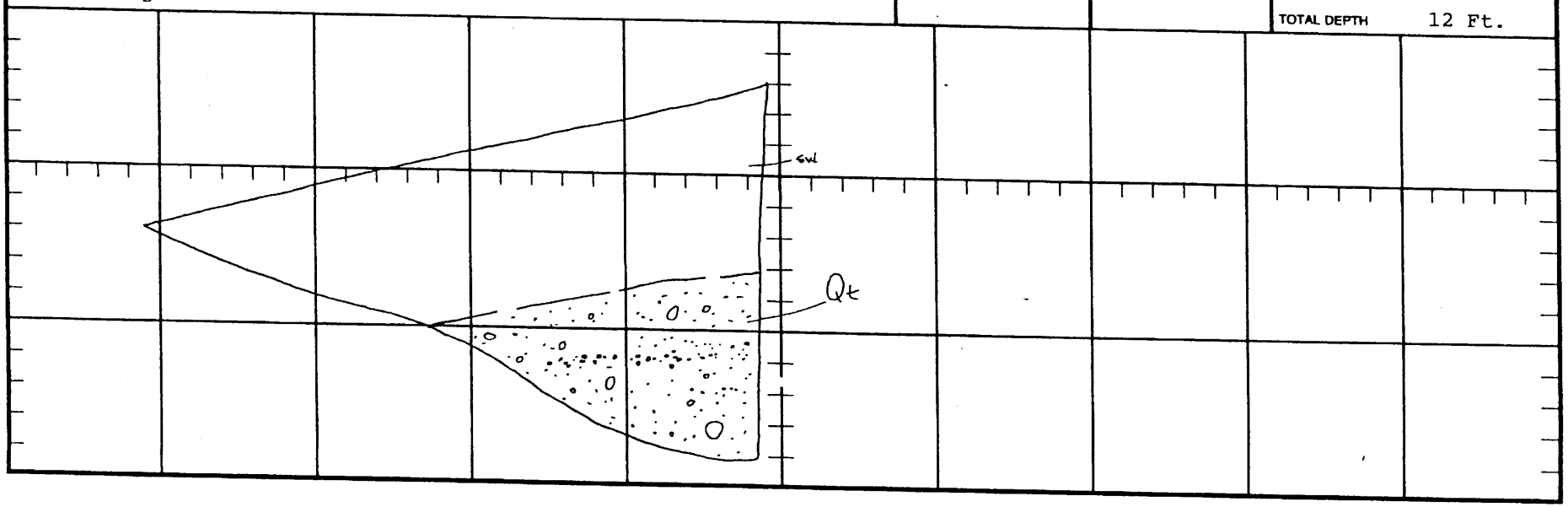
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SLOPEWASH; sw, Light to medium grayish brown sandy silty with pebbles and cobbles; dense; hard; dry 6 - 12' QUATERNARY TERRACE; Qt, Light brown to tan sands and gravels with cobbles; moderately friable; moderately hard; dry to damp			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 60 W



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-4

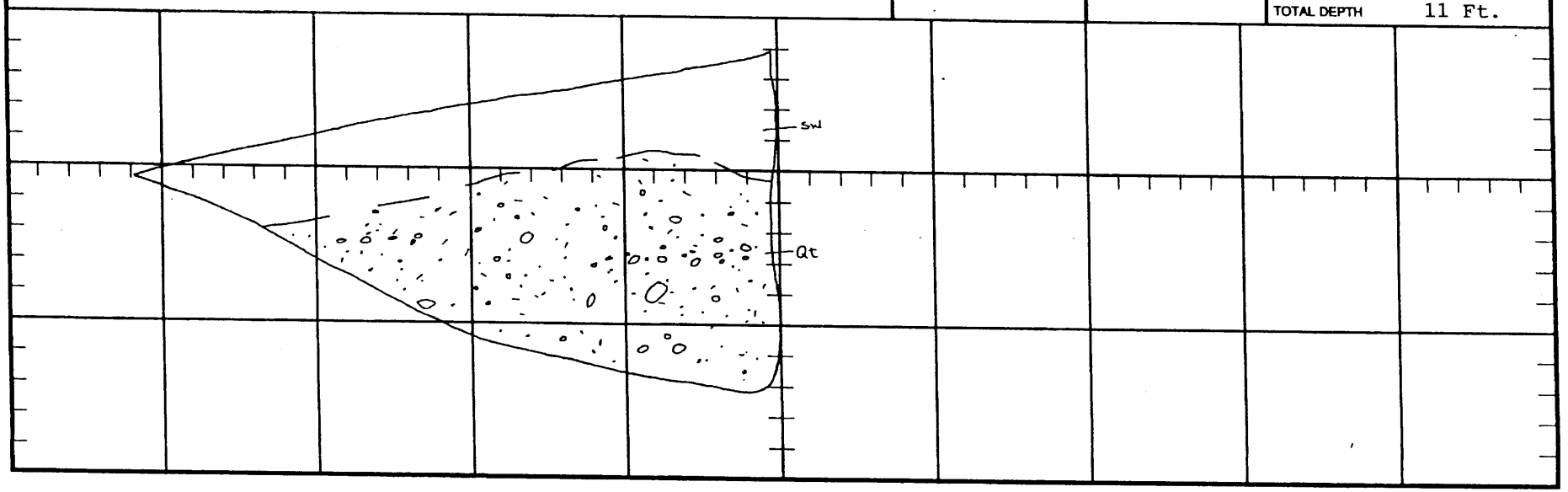
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; sw, Medium brown silty sand to sandy silt; moderately dense; dry 3 - 11' QUATERNARY TERRACE; Qt, Light brown to tan sands and gravel with cobbles; moderately friable; damp			No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 75 W



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-5

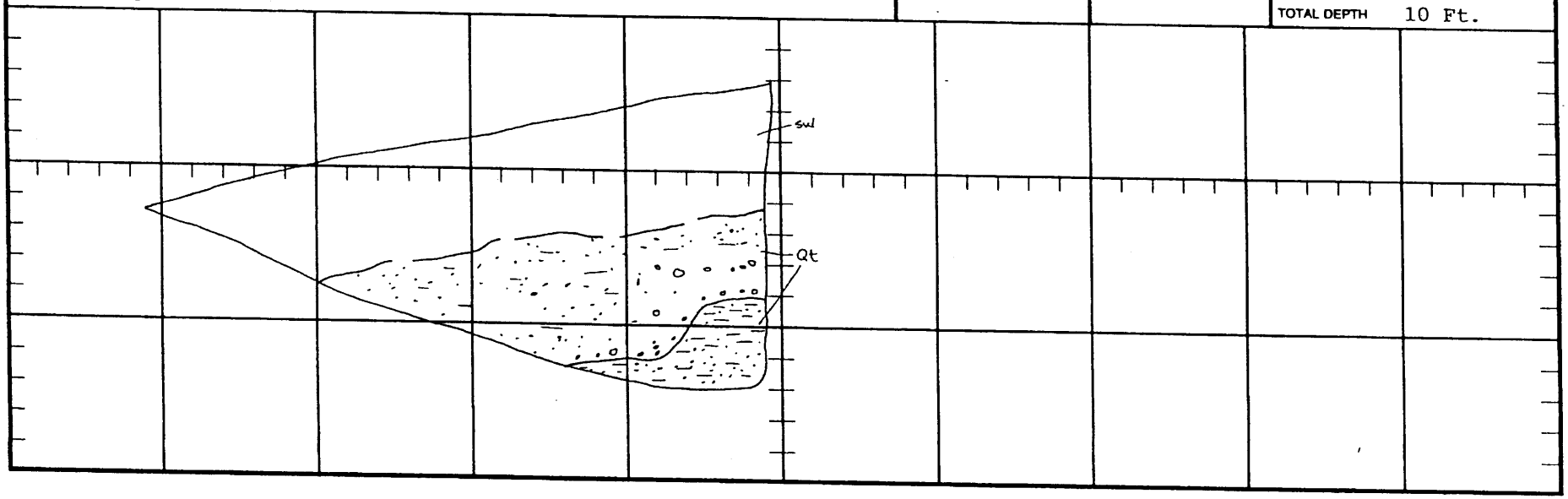
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; sw, Medium brown silty sand to sandy silt; moderately dense; dry 4 - 10' QUATERNARY TERRACE; Qt, Light grayish-brown silty gravel with cobbles, siltstone and silty sand; moderately hard to moderately friable; damp			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

East



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-6

PROJECT Magic Mountain Entertainment

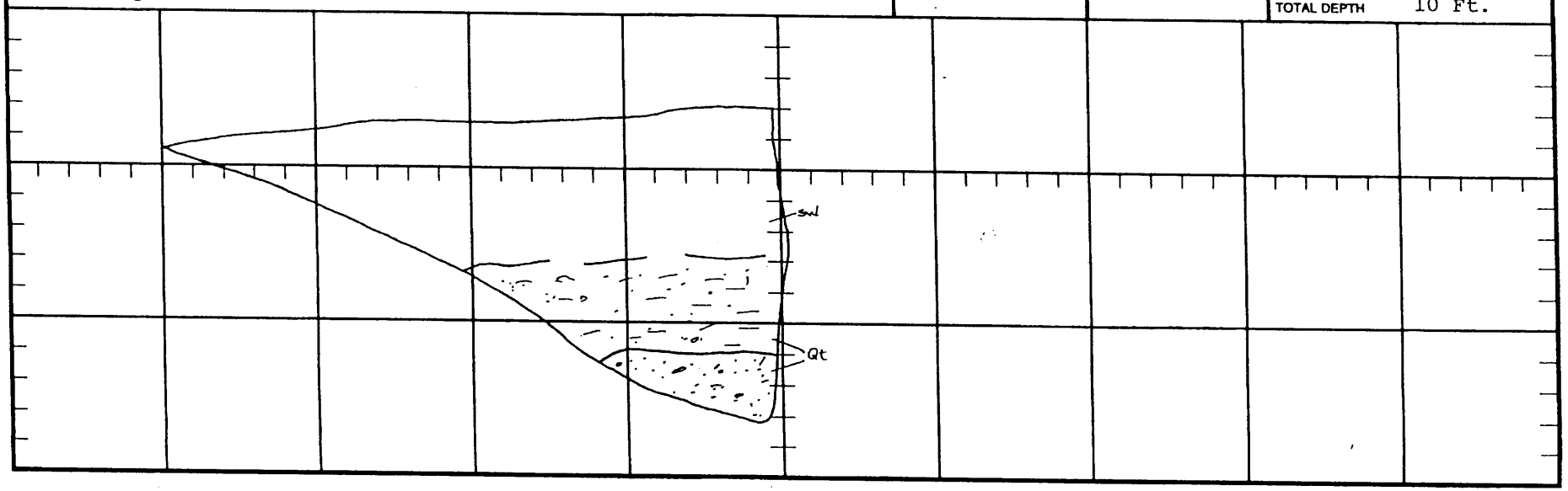
DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SLOPEWASH; sw, Light to medium brown silty sand to sandy silt; moderately dense; dry to damp			
5 - 10' QUATERNARY TERRACE; Qt, Light brown to tan sandy siltstone/pebbles and friable sand and gravel; moderately hard; damp			Upper 3 ft. of Qt is massive sandy silt with pebbles

No Ground Water
No Caving
TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

East



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-7

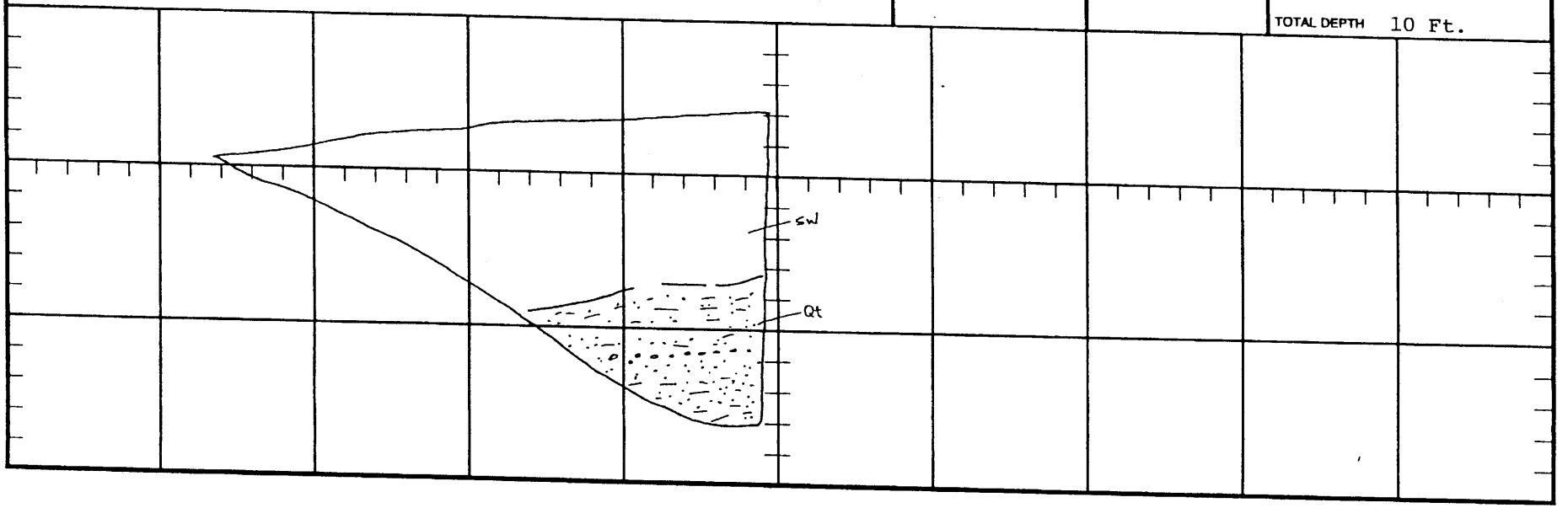
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SLOPEWASH; sw, Medium brown sandy silt; moderately dense; dry to damp 5 - 10' QUATERNARY TERRACE; Qt, Light brown to tan; slightly silty gravel and silty sand; moderately friable and moderately hard; damp			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

East



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-8

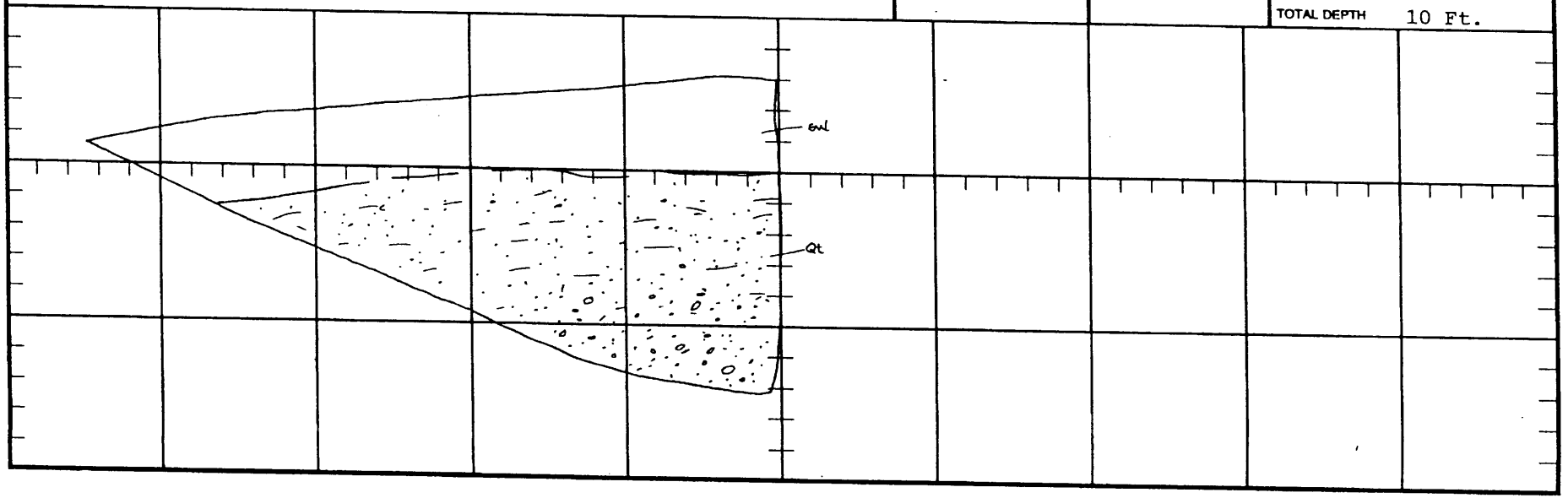
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; sw, Medium brown sandy silt with pebbles; dense; hard; dry to damp 4 - 10' QUATERNARY TERRACE; Qt, Light brown silty sands and gravel; moderately hard to moderately friable; damp			No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 63 E



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-9

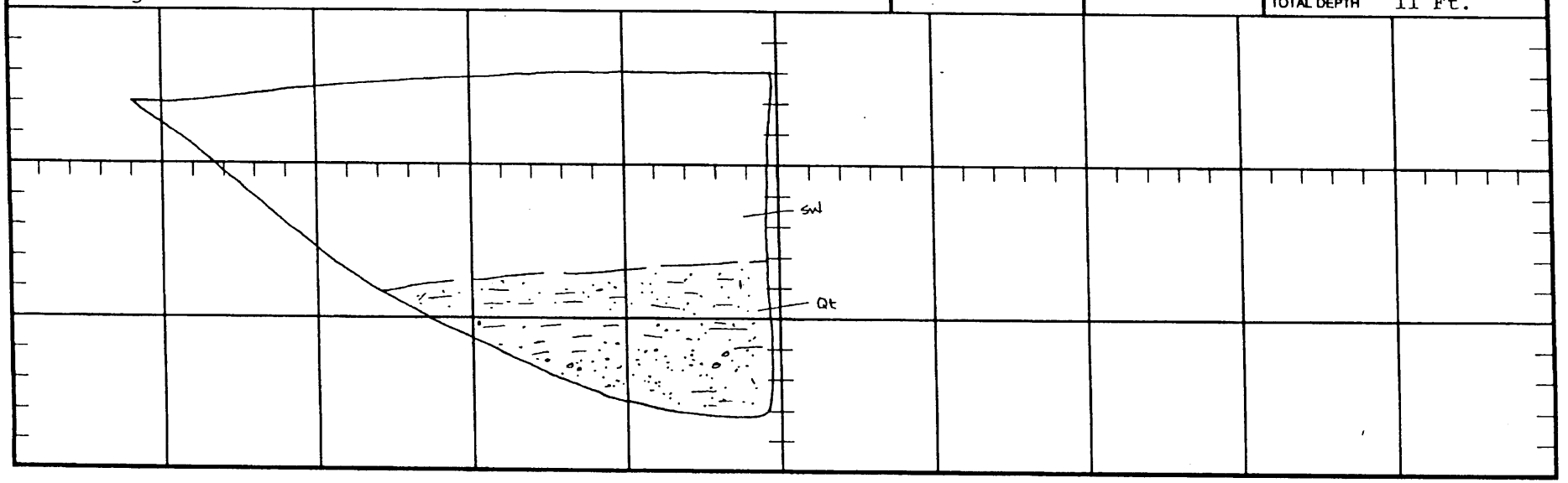
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SLOPEWASH; sw, Medium grayish-brown sandy silt with pebbles; moderately dense; dry to damp 6 - 11' QUATERNARY TERRACE; Qt, Light brown to dark brown silty sand to sandy silt and sand with pebbles and some cobbles; moderately hard; damp			Qt is very poorly sorted No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 88 E



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-10

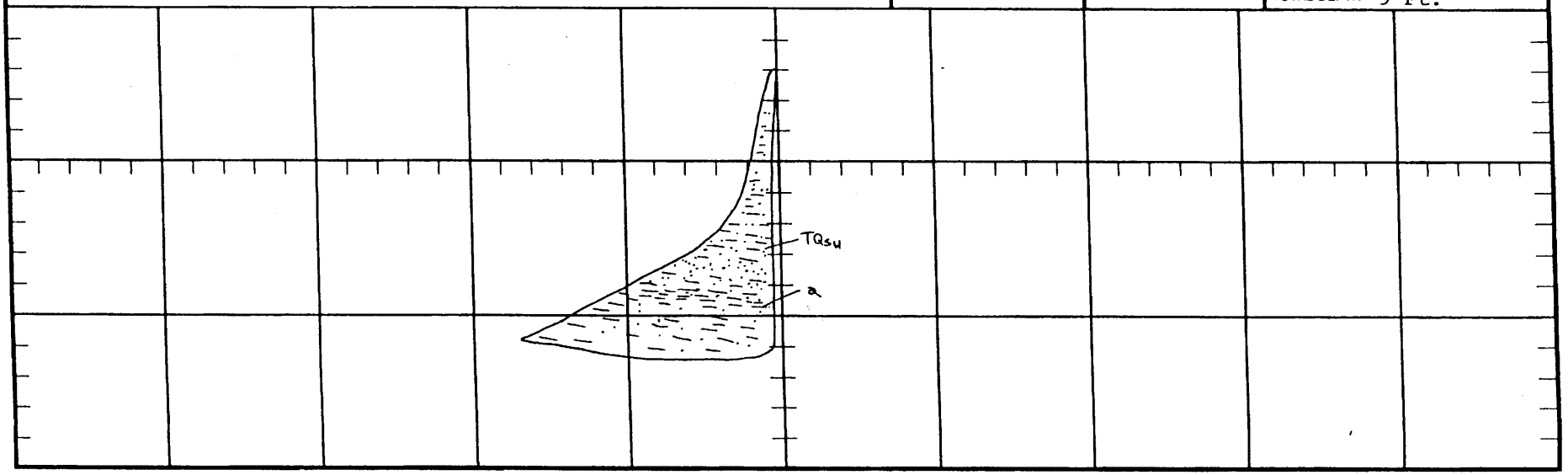
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light brown, tan and medium to dark brown sandstone, pebbly sandstone, sandy siltstone, siltstone and clayey siltstone; moderately hard to hard; dry to damp	a) N27W,15 NE (v. good)	Within clayey seam in siltstone	Excavated in near vertical oil pad "backcut" No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 78 E



ALLAN E. SEWARD

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-11

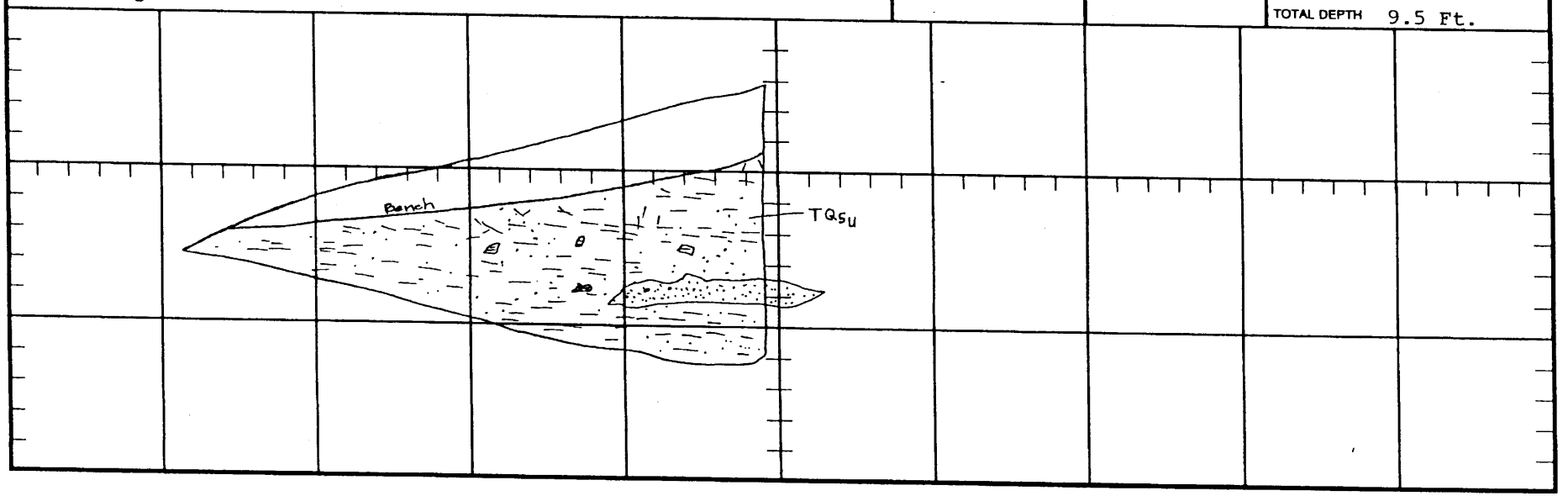
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9.5' BEDROCK; TQs, Light yellowish-brown silty sandstone to sandy siltstone with silty pebbly sandstone channels; moderately hard to hard; dry to damp	N39W,14NE (silty layer)		Upper 2-3 Ft. widened (soil removed) Weathered down to 3 ft. Ripup clasts of brown (TQs?) silt-stone 1-2" diameter between 4-5' No Ground Water No Caving TOTAL DEPTH 9.5 Ft.

SCALE 1" = 5'

N 58 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-12

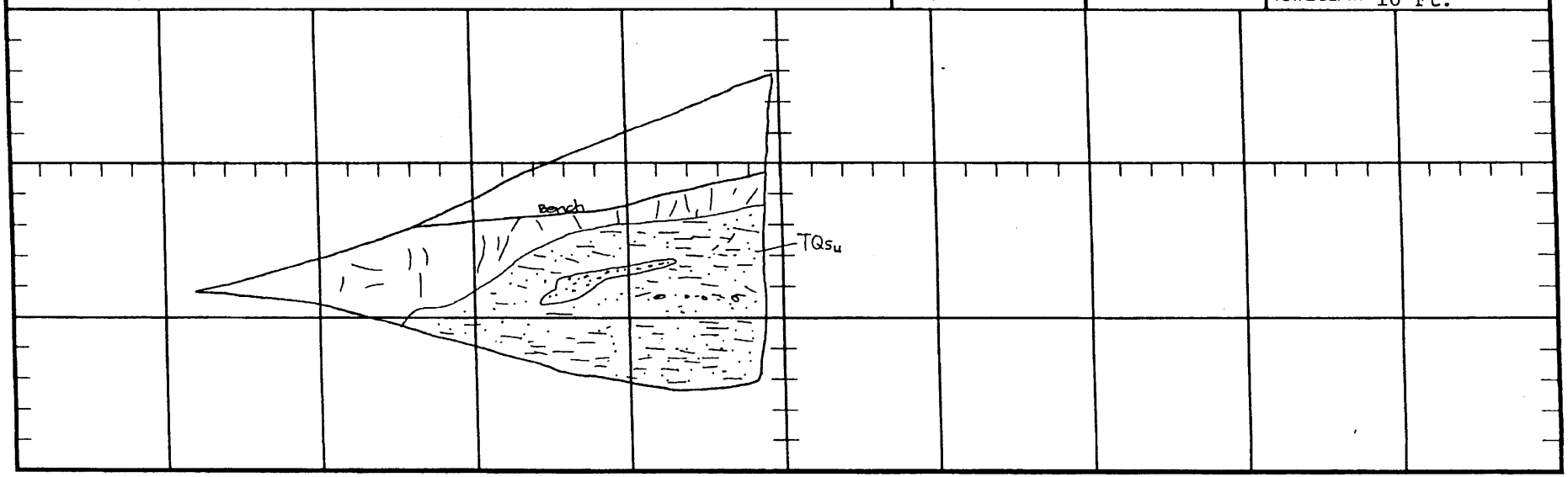
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 10' BEDROCK; TQs, Light yellowish-brown silty sandstone to sandy siltstone with pebbly sandstone lenses; moderately hard to hard; dry to damp	N42W,12NE (pebble string)		Upper 2-3 Ft. widened (soil removed) Weathered down to 4.5 Ft. No Ground Water No Caving TOTAL DEPTH 10 Ft.

SCALE 1" = 5'

N 76 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-13

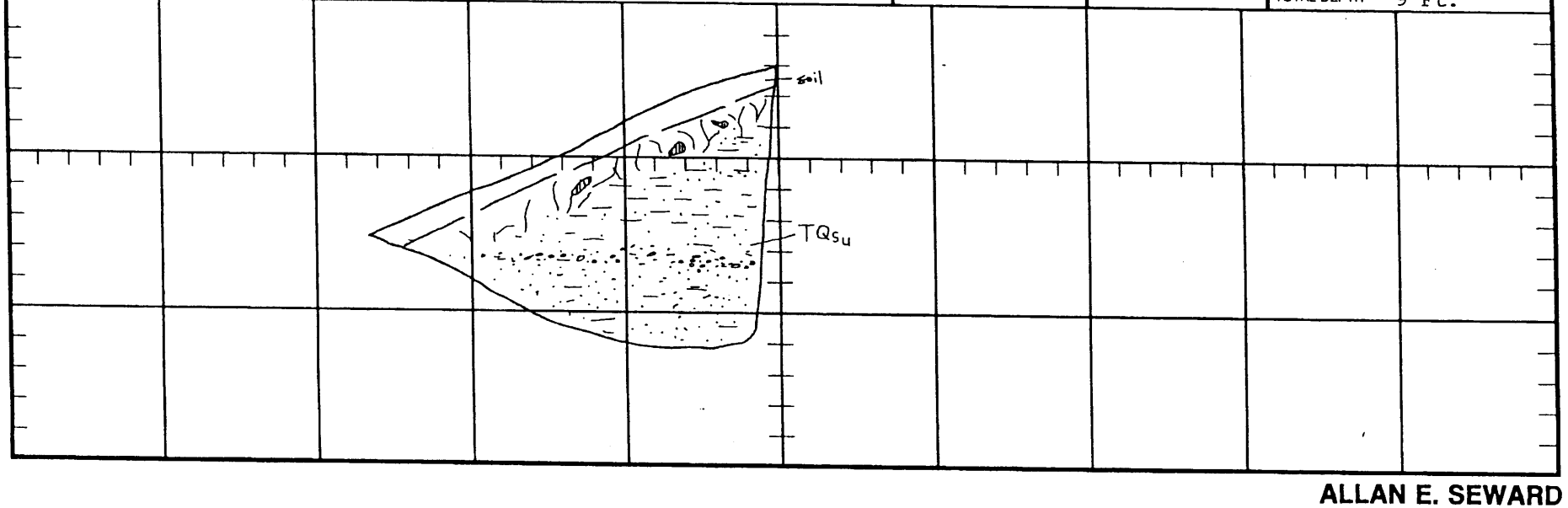
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8" SOIL; s, Light yellowish-brown sandy silt with pebbles; loose; dry			Weathered down to 3 ft.
8" - 9' BEDROCK; TQs, Light yellowish-brown, light brown and light grayish-brown siltstone, silty sandstone and cobbly sandstone; moderately hard and friable; dry to damp	N37W,10NE		Lenses of friable laminated pebbly sand
			No Ground Water No Caving
			TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 83 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-14

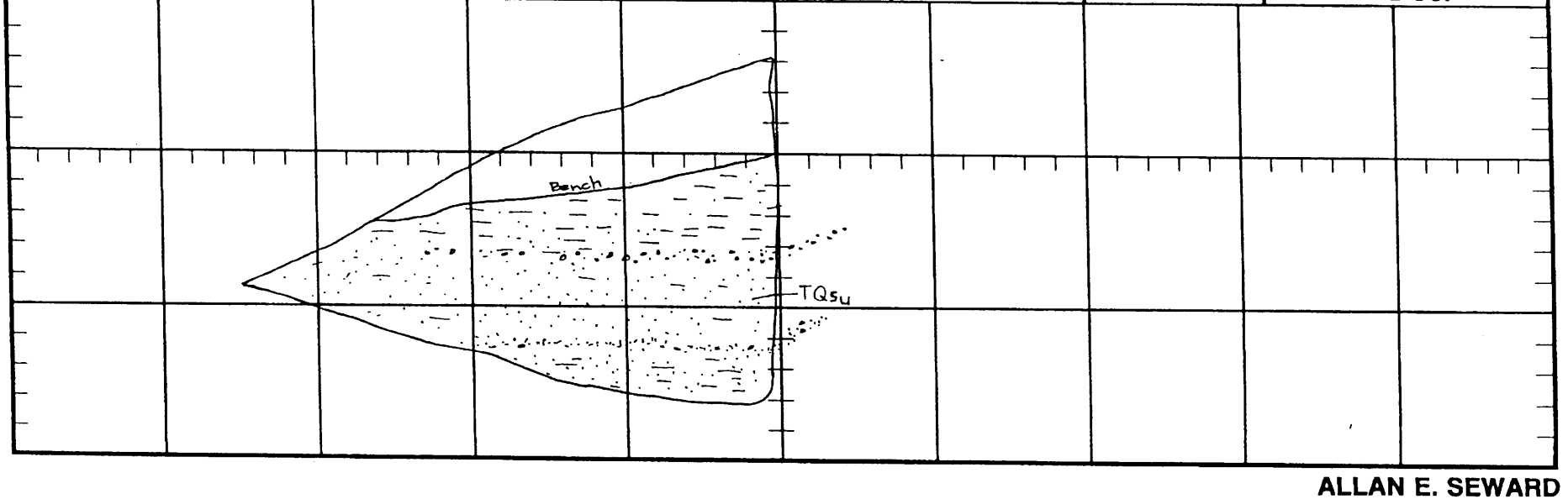
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11' BEDROCK; TQs, Light brown, light yellowish-brown and light grayish-brown siltstone, silty sandstone and pebbly sandstone; moderately hard and friable; dry to damp	N44W,14NE		Upper 2-3 ft. widened i.e. soil removed Weathered down to 3.5 ft. No Ground Water No Caving TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 60 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-15

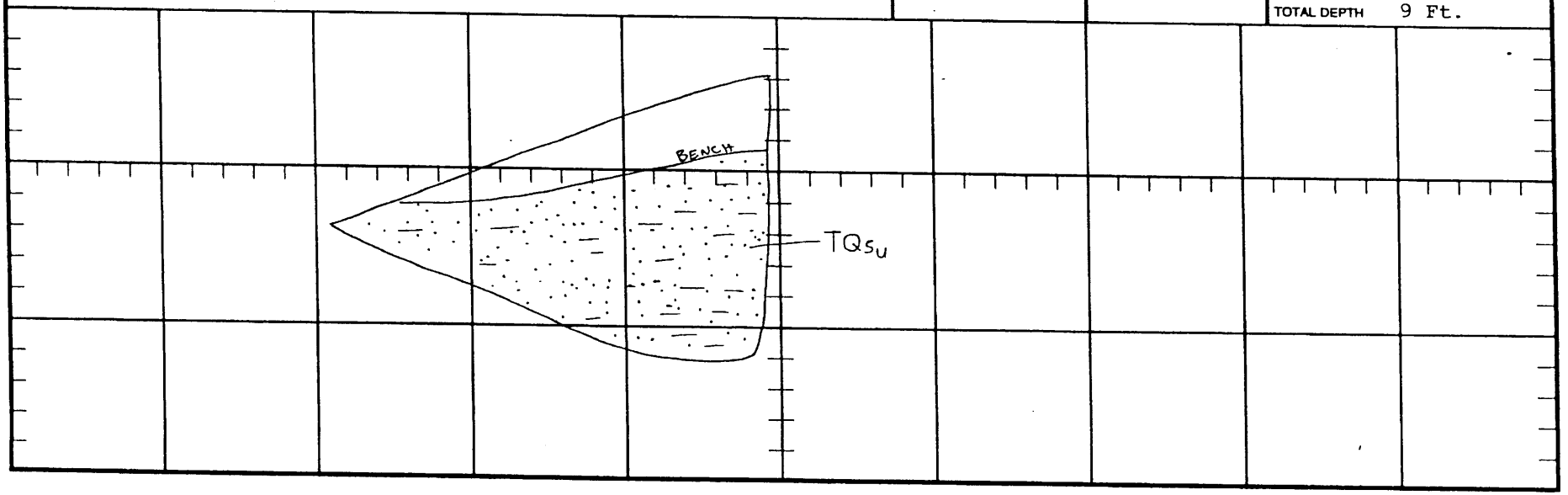
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light yellowish-brown silty sandstone and pebbly sandstone; moderately hard and friable; dry	N60W,10NE		Weathered down to 3.5 Ft. Upper 2-3 Ft. widened No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 62 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-16

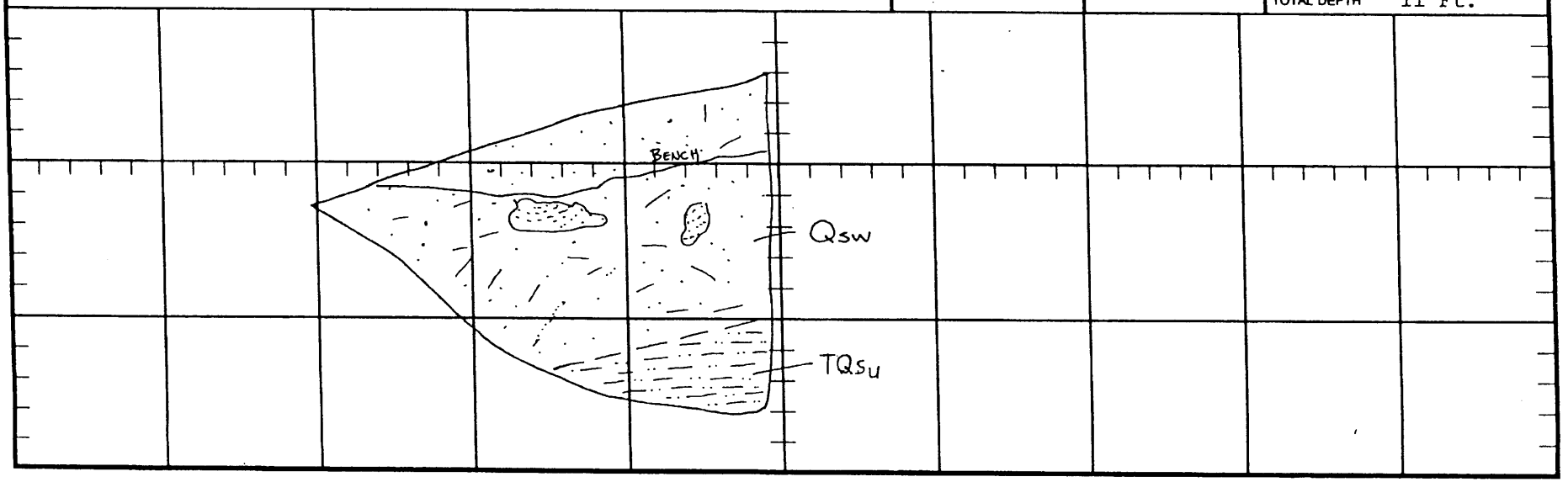
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SURFICIAL FAILURE; Qsw, Light yellowish-brown silty sand and laminated sands disturbed ("rotated back" laminae) loose to moderately dense; dry	Massive	Slip Surface N75W,21NE	Upper 2-3' widened Weathered down to 4 ft.
8 - 11' BEDROCK; TQs, Light yellowish-brown sandy siltstone; moderately hard; dry to damp			Softer above planar surface at 8 ft. harder below and no rotated laminae below
			No Ground Water No Caving
			TOTAL DEPTH 11 Ft.

SCALE 1" = 5'

N 24 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-17

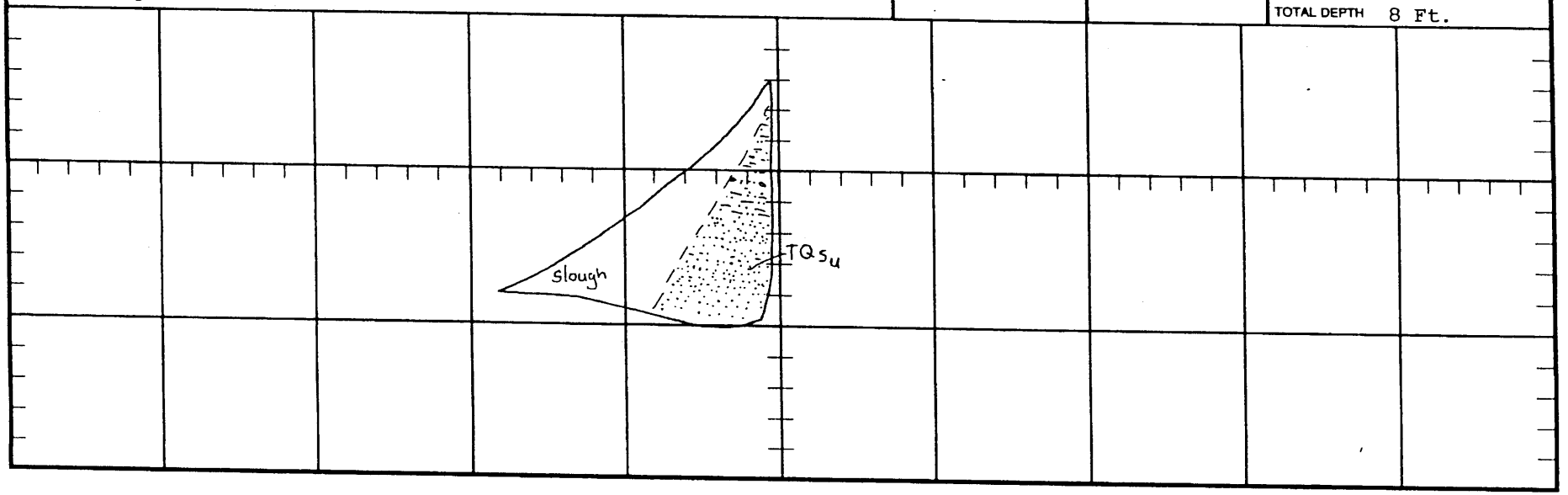
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' BEDROCK; TQs, Light yellowish-brown and light grayish-brown silty sandstone, sandstone and pebbly sand to gravel, laminated lenses; friable to moderately hard; dry	a)N51W,10NE b)N38W,15NE		Excavated in oil pad "backcut" Friable at base of trench Moderately hard at top Upper portion looks like our Qp while friable lower portion has a more Qt appearance, but is dipping with regional No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 33 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-18

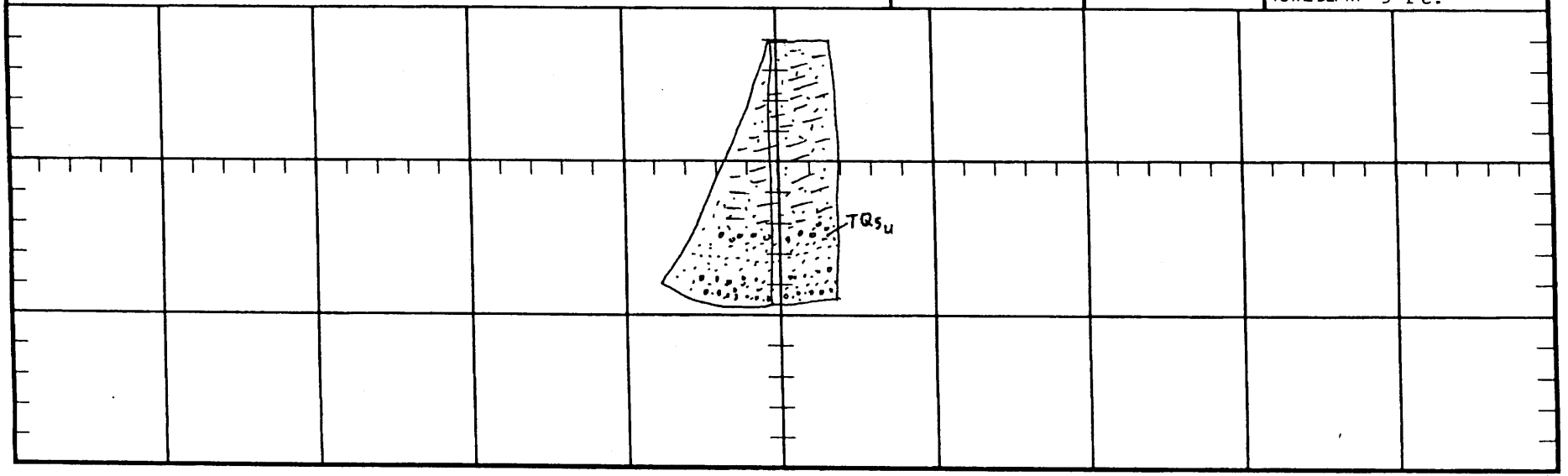
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light yellowish to grayish-brown sandy siltstone, pebbly sandstone and pebble conglomerate; moderately friable to moderately hard; dry to damp	N23E,9SW N30E,9SE		Trenches T-18 thru T-32 excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 21 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-19

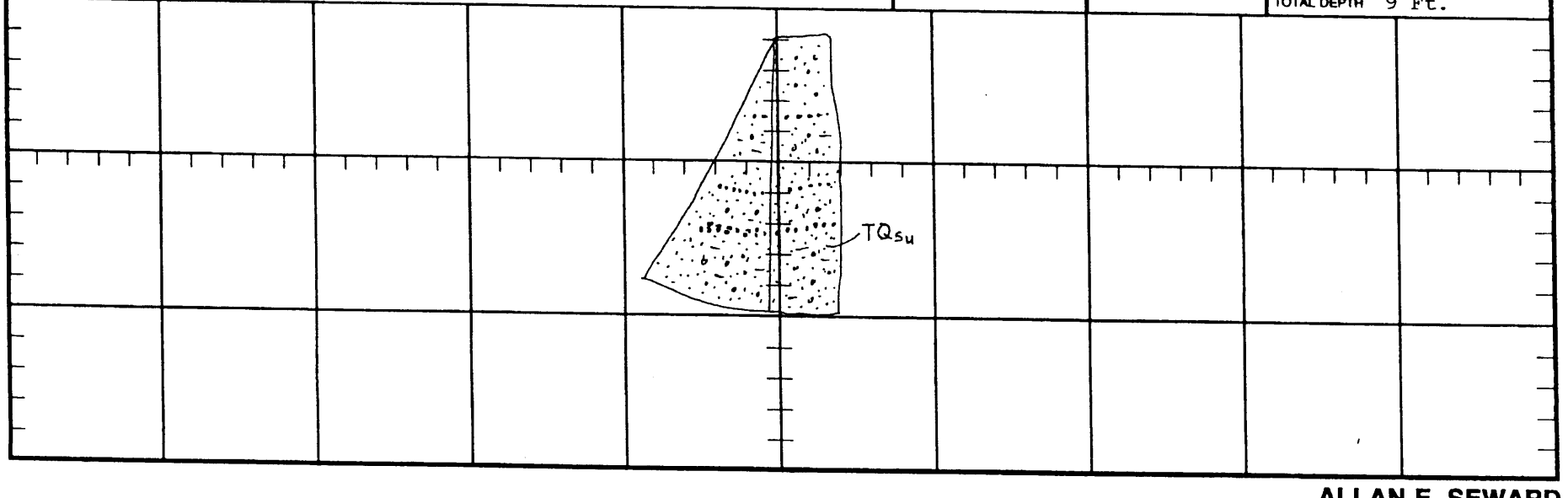
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light grayish-brown and yellowish-brown interbedded pebble conglomerate and pebbly silty sandstone and pebbly sandy siltstone; moderately friable; dry to damp	N38W,12NE		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 70 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-20

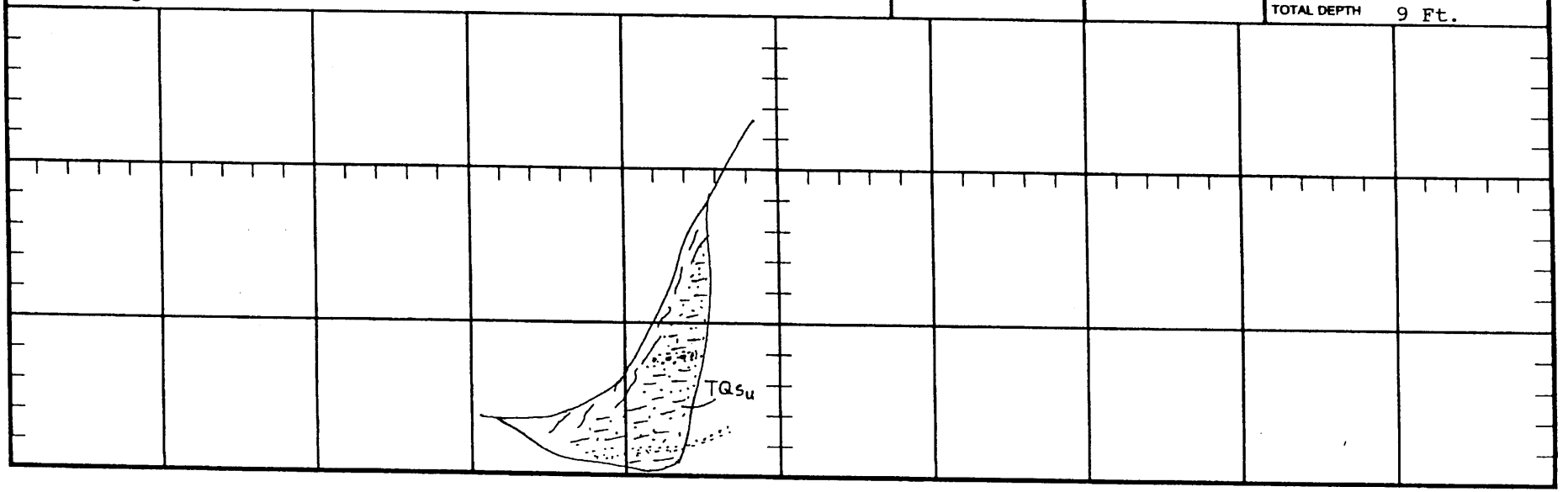
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light orangish-brown sandy siltstone with lenses of silty pebbly sandstone; moderately hard; dry to damp	North, 15E		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 6 E



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JOB NO. 00-1729-1

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Trench Log No. T-21

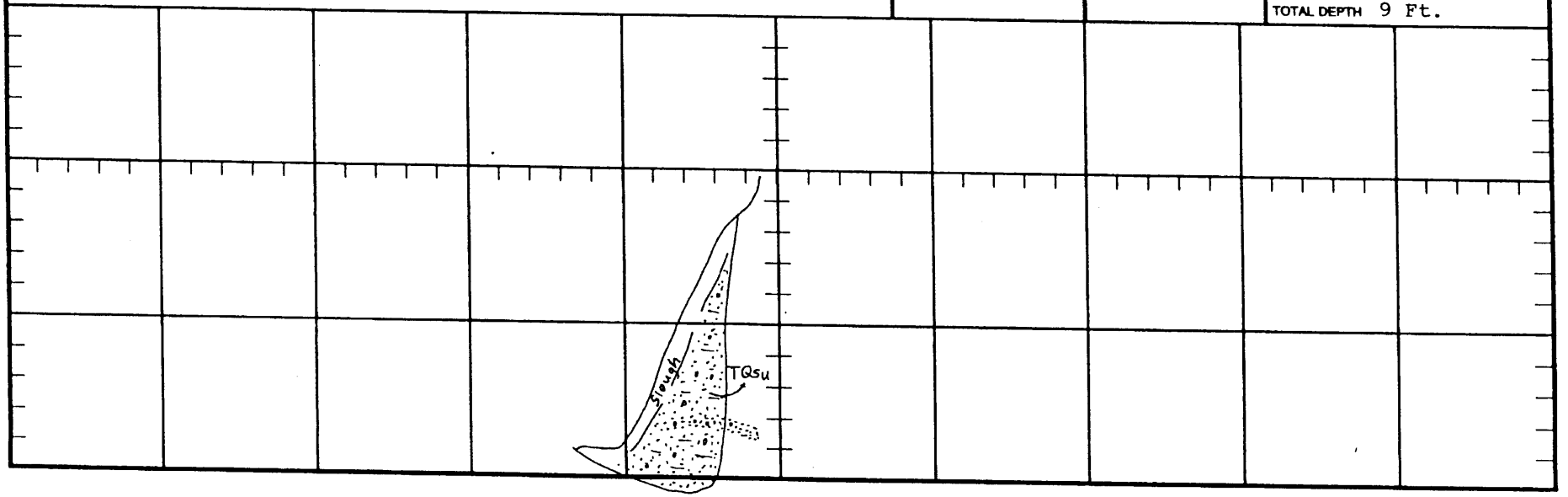
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light yellowish-brown silty sandstone, sandy siltstone and silty pebbly sandstone; moderately hard; dry to damp	N12W,14NE		Excavated in existing oil pad cut No soil/slopewash No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 20 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-22

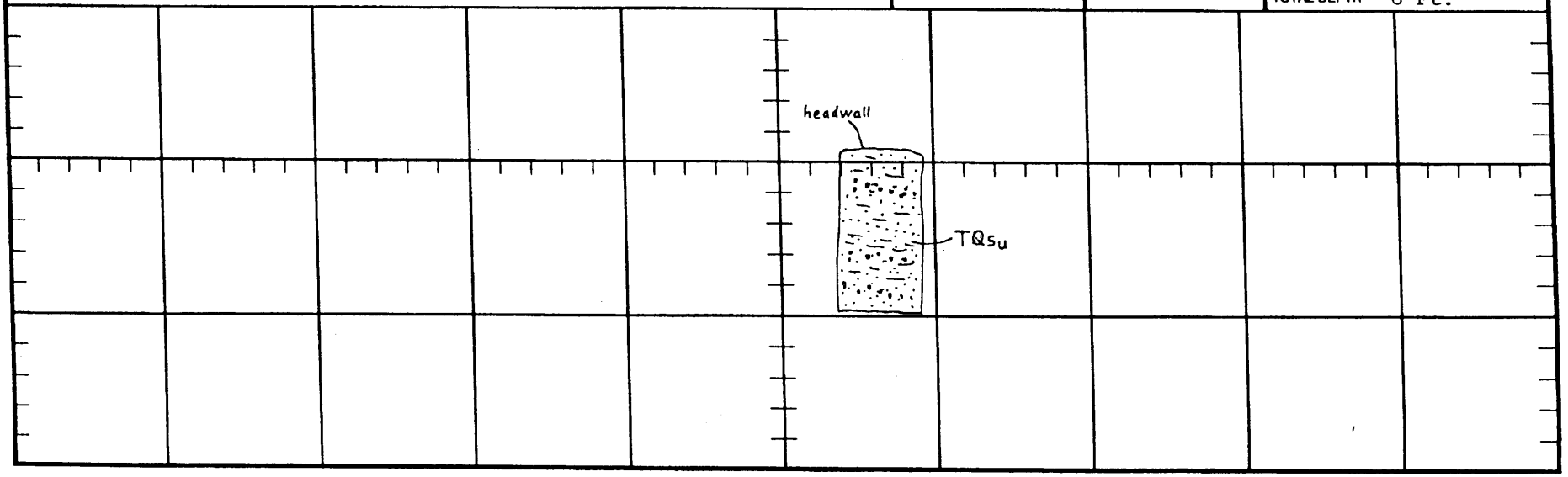
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' BEDROCK; TQs, Light yellowish to grayish-brown interbedded silty sandstone, sandstone and pebble conglomerate; moderately hard; dry to damp	N44W,12NE		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 30 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-23

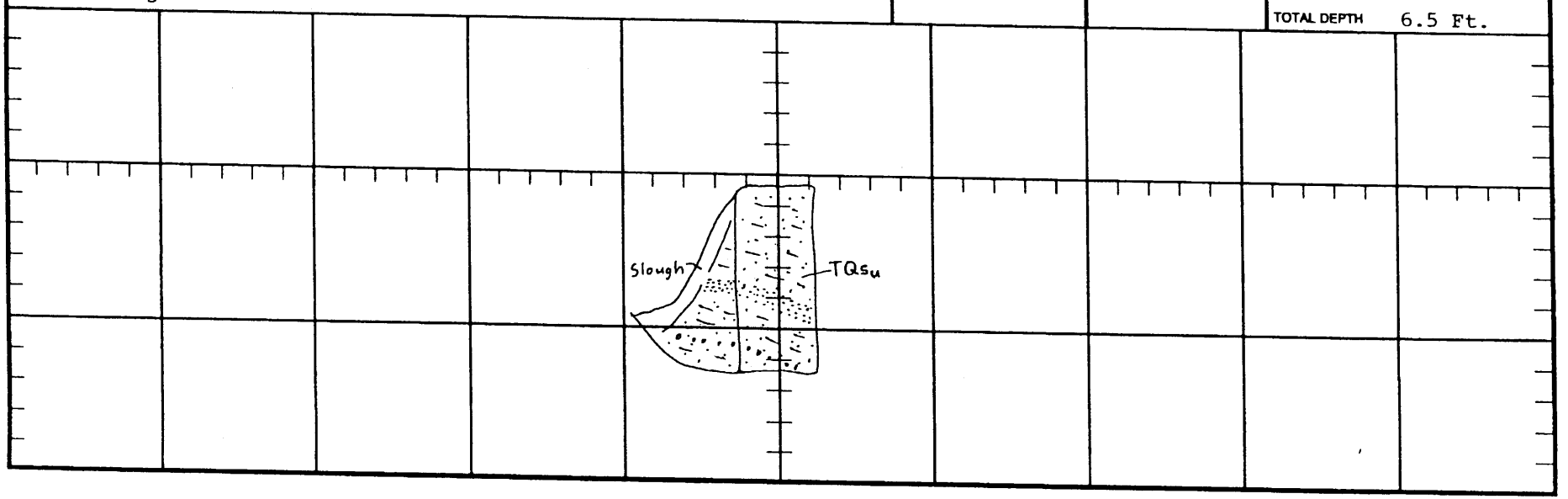
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6.5' BEDROCK; TQs, Light yellowish-brown silty sandstone and pebbly sandstone; moderately hard; dry to damp	N50W,14NE		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 6.5 Ft.

SCALE 1" = 5'

N 12 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-24

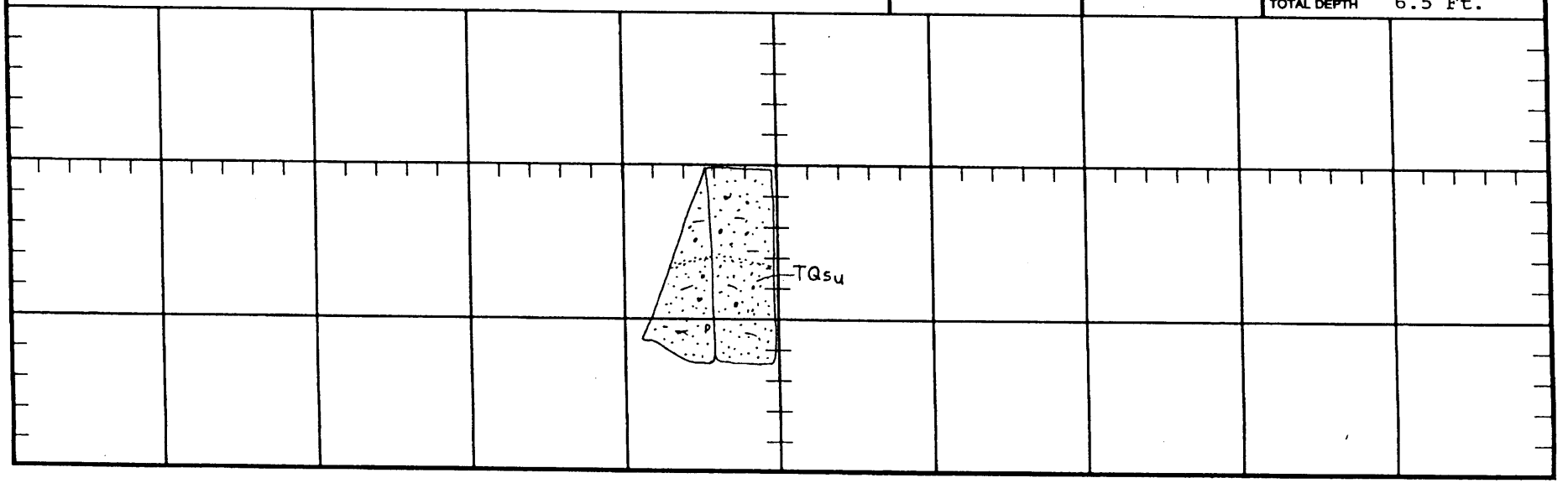
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6.5' BEDROCK; TQs, Light yellowish-brown silty sandstone and pebbly silty sandstone; moderately hard; dry to damp	N38W,11NE apx.		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 6.5 Ft.

SCALE 1" = 5'

N 64 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-25

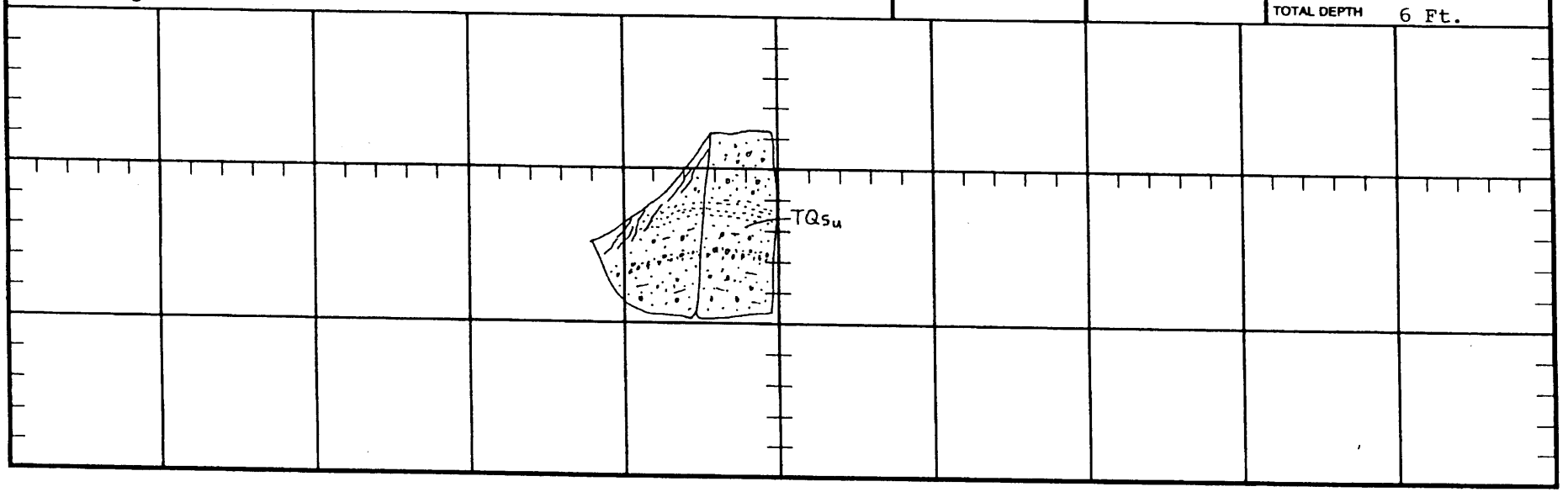
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' BEDROCK; TQs, Light yellowish-brown to tan interbedded pebble conglomerate silty sandstone and sandstone; soft to moderately hard; dry to damp	N18W,15NE (apx) N37W,14NE (good)		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 72 E



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JOB NO. 00-1729-1 PROJECT Magic Mountain Ent. Center

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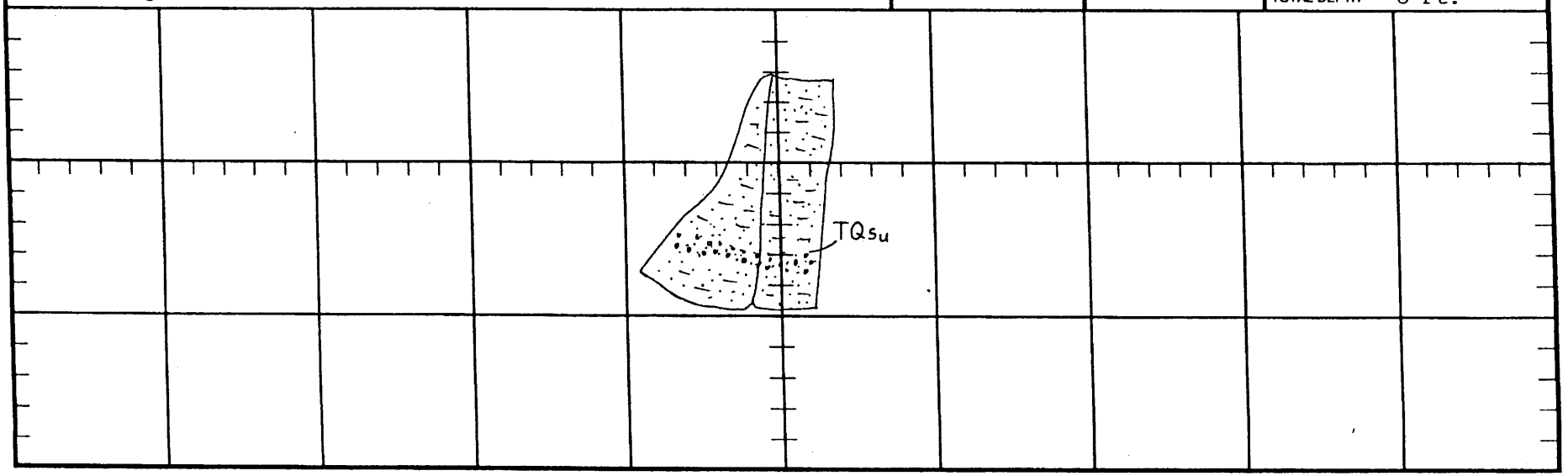
Trench Log No. T-26

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' BEDROCK; TQs, Light yellowish-brown and light brown silty conglomerate and sandy siltstone; moderately hard; dry to damp	N28W,15NE		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 57 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-27

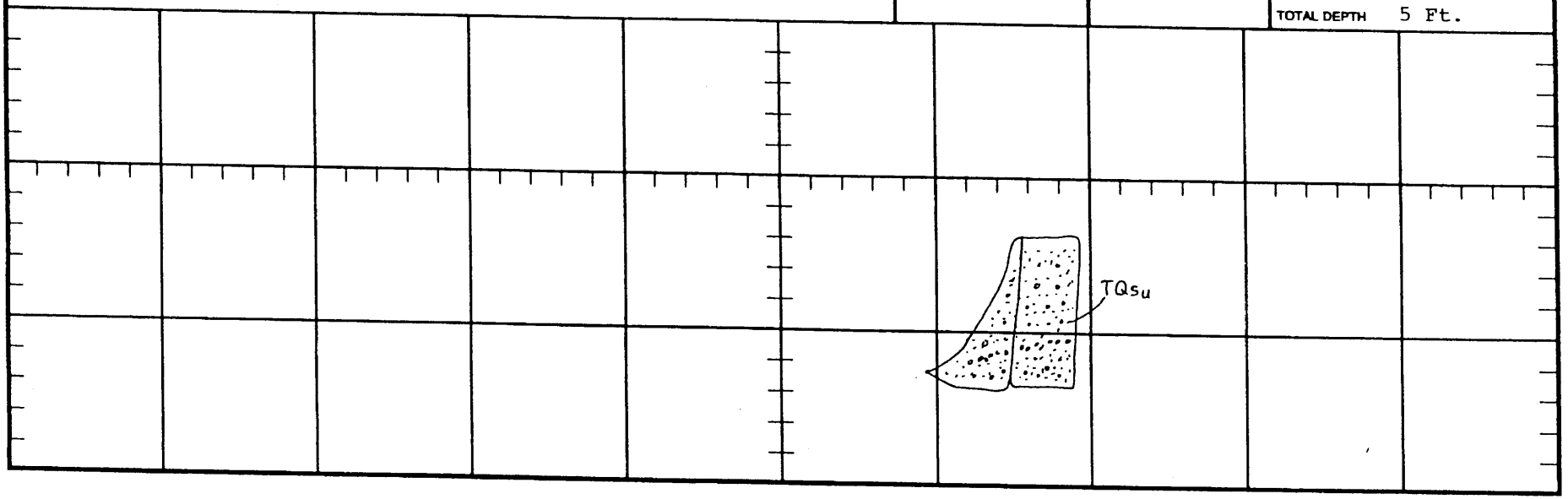
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' BEDROCK; TQs, Light grayish-brown interbedded sandstone, pebbly sandstone and conglomerate friable; dry to damp	N34W,12NE		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 5 Ft.

SCALE 1" = 5'

N 55 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-28

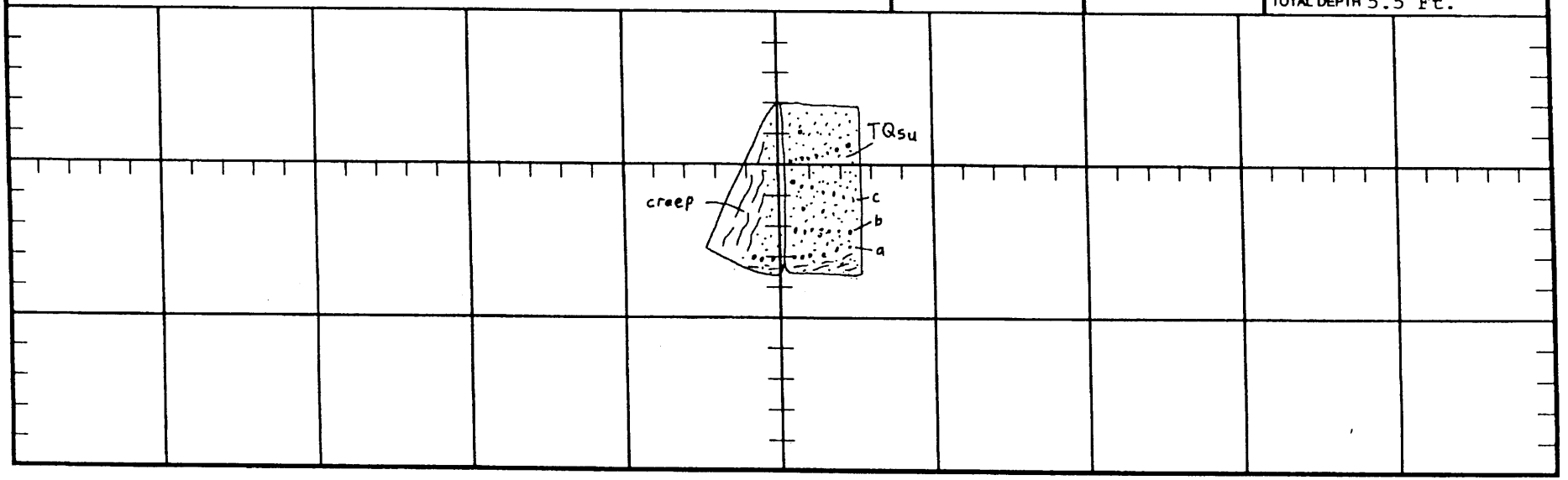
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5.5' BEDROCK; TQs, Light grayish-brown and light yellowish-brown pebble conglomerate and sandy siltstone with pebbles friable to moderately hard; dry to damp	a) North, 17E (erosional b) Horizontal c) N40W, 21SW		Excavated in existing oil pad cut Pebbles of (light yellow) TQs siltstone to sandy siltstone in conglomerate No Ground Water No Caving TOTAL DEPTH 5.5 Ft.

SCALE 1" = 5'

N 23 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-29

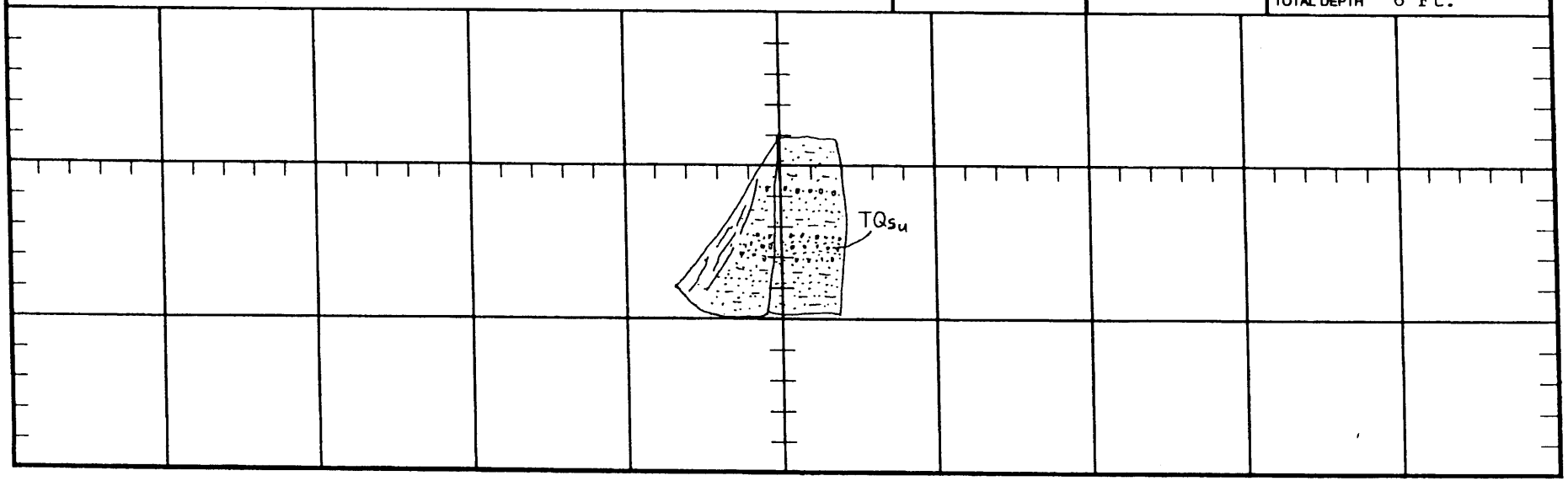
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' BEDROCK; TQs, Light yellowish-tan and light grayish-brown pebble conglomerate, pebbly sandstone, sandy siltstone and silty sandstone; moderately friable to soft; dry to damp	Horizontal and cross bedded		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 79 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-30

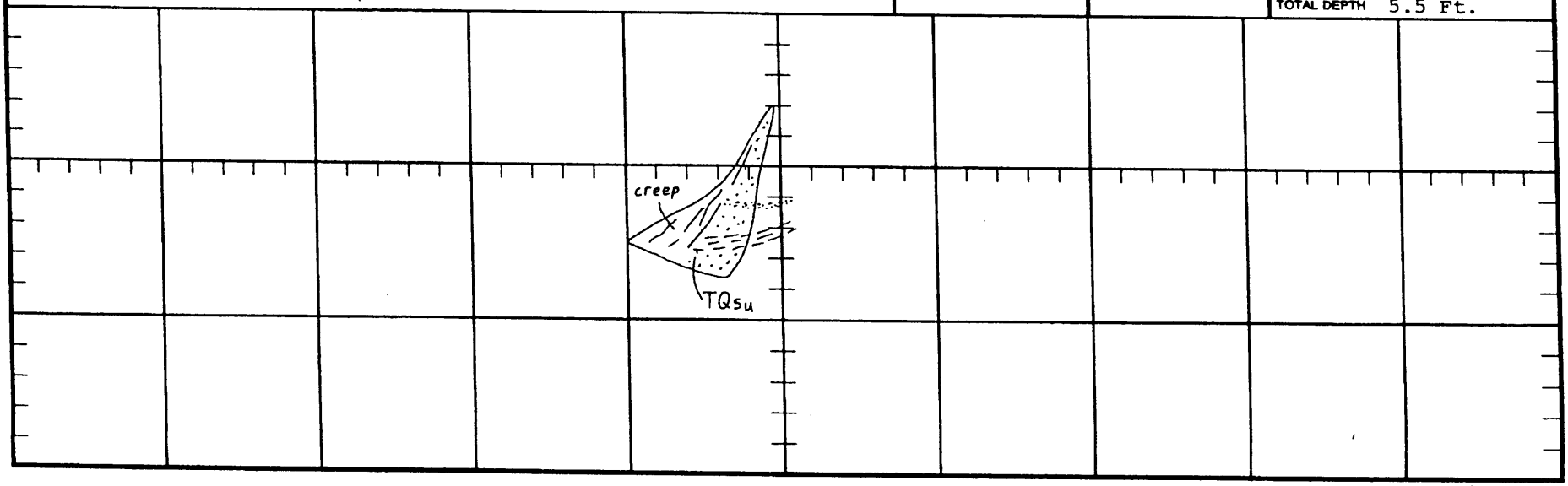
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5.5' BEDROCK; TQs, Light yellowish-brown and light brown silty sandstone and clayey sandy silt; moderately friable and moderately hard; dry to damp	North, 10E		Excavated in existing oil pad cut May be disturbed due to downhill movement No Ground Water No Caving TOTAL DEPTH 5.5 Ft.

SCALE 1" = 5'

N 3 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-31

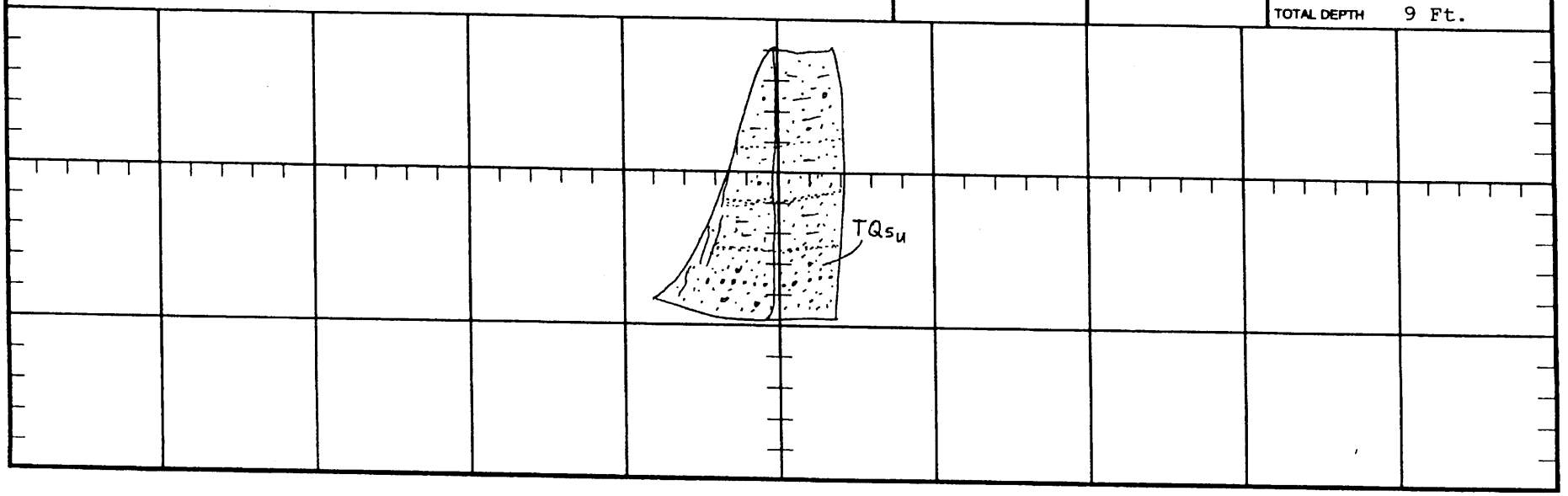
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light yellowish-brown interbedded silty sandstone and pebbly sandstone; moderately friable; dry to damp	N35W,11NE		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 16 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-32

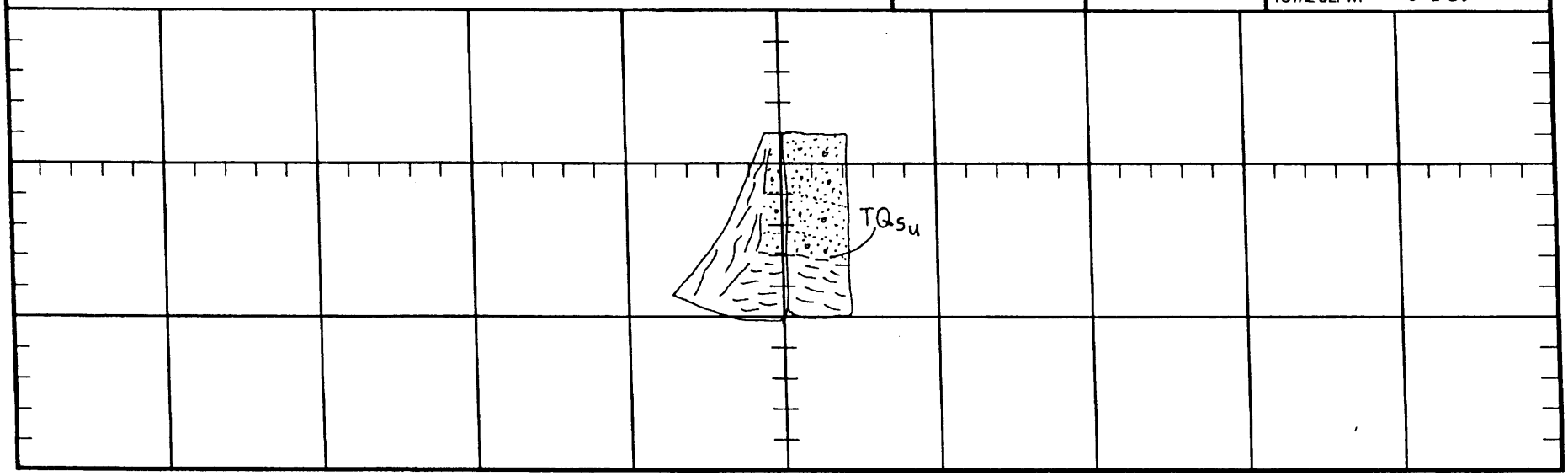
PROJECT Magic Mountain Ent. Center

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' BEDROCK; TQs, Light grayish-brown and light yellowish-brown pebbly sandstone and sandy siltstone, moderately friable to moderately hard; dry to damp	N82E,9NW		Excavated in existing oil pad cut No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 87 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-33

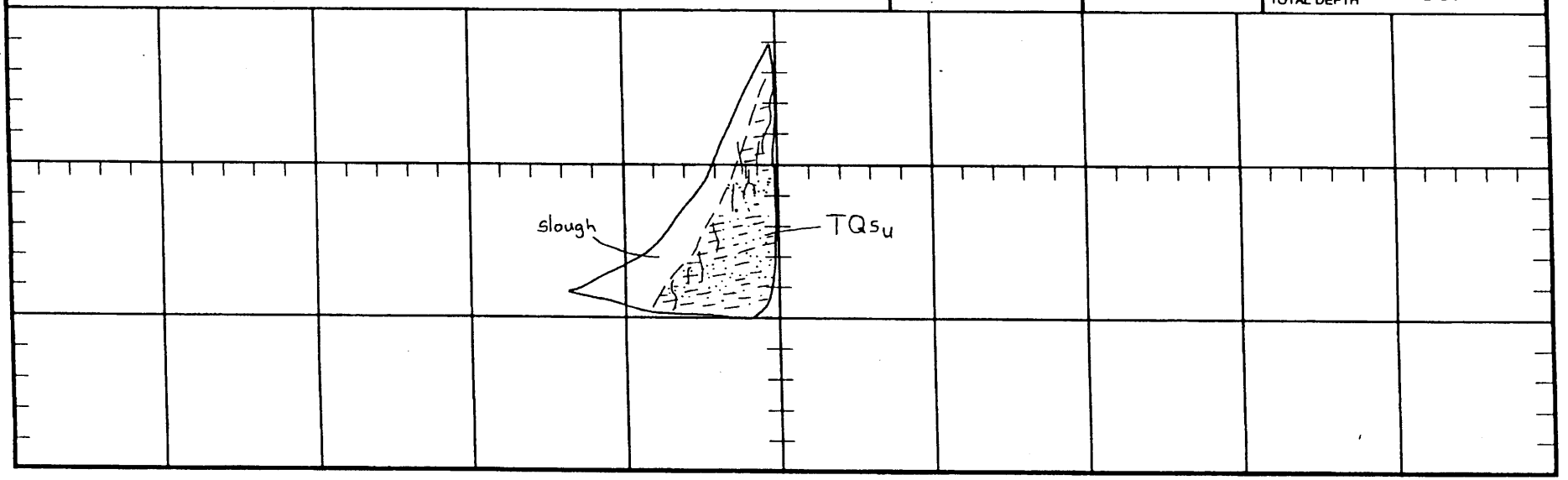
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 9' BEDROCK; TQs, Light yellowish-brown and light brown silty sandstone, sandy siltstone and siltstone; moderately hard; dry to damp	N44W,15NE		Trenches T-33 thru T-46 excavated on 1/13/00 Excavated in existing road cut No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 87 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-34

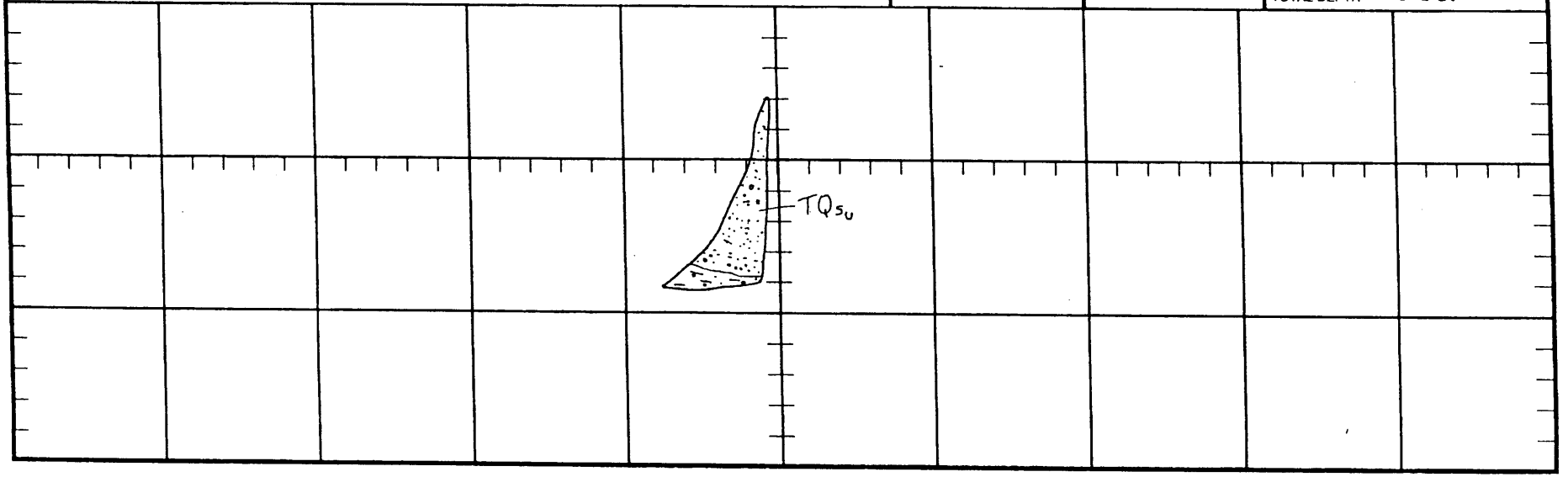
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' BEDROCK; TQs, Light yellowish-brown and light grayish-brown sandstone, pebbly sandstone and sandy pebbly siltstone; moderately friable to moderately hard; dry to damp	N57W,9NE		Excavated in oil pad "backcut" No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 50 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-35

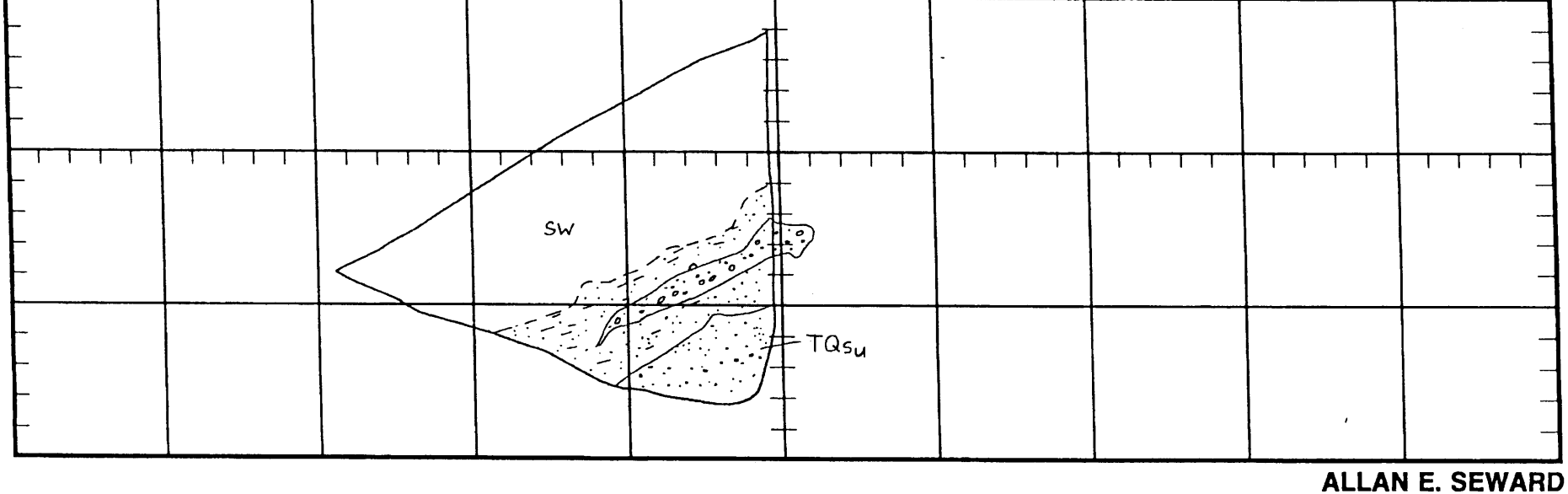
PROJECT Magic Mountain Entertainmen

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SLOPEWASH; sw, Light brown to tan sandy silt with pebbles; loose; dry 5 - 12' BEDROCK; TQs, Light grayish-brown and light yellowish-brown pebble conglomerate (friable) and silty sandstone (moderately friable); dry to damp	Massive		From 5 to 9' appears creep affected or slumped Pebbles in pebble conglomerate are subangular to sub-rounded (high pebble content, low sand content) No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

East



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For use with report dated 03/18/2005; RTF Job No. 2004-700-21

JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-36

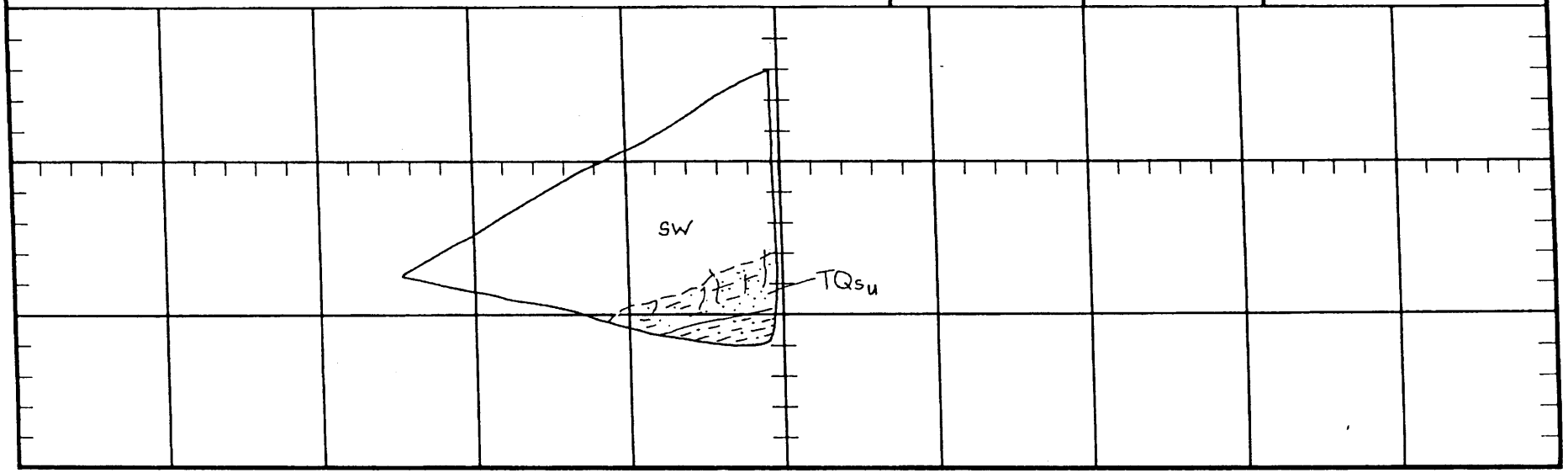
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6' SLOPEWASH; sw, Light brown pebbly sandy silt; loose to dense; dry to damp			Weathered down to 7 ft.
6 - 9' BEDROCK; TQs, Light yellowish-brown and light to medium brown silty sandstone and siltstone; moderately hard to hard; dry to damp	N42W,14NE		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 72 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-37

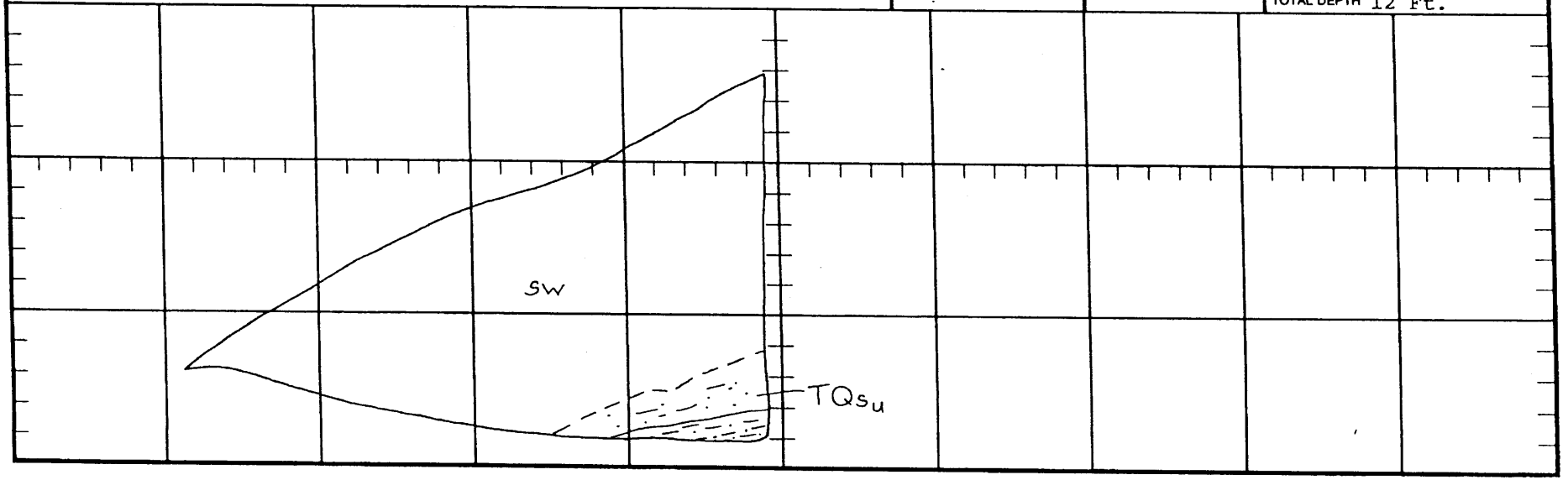
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 11' SLOPEWASH; sw, Light brown to light yellowish-brown sandy silt to silty sand; loose to moderately dense; dry to damp			Upper 3-4 feet widened
11 - 12' BEDROCK; TQs, Light to medium brown siltstone; moderately hard; damp	N60W,11NE (apx)		From 9-11 ft. may be surficial failure
			No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 83 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-38

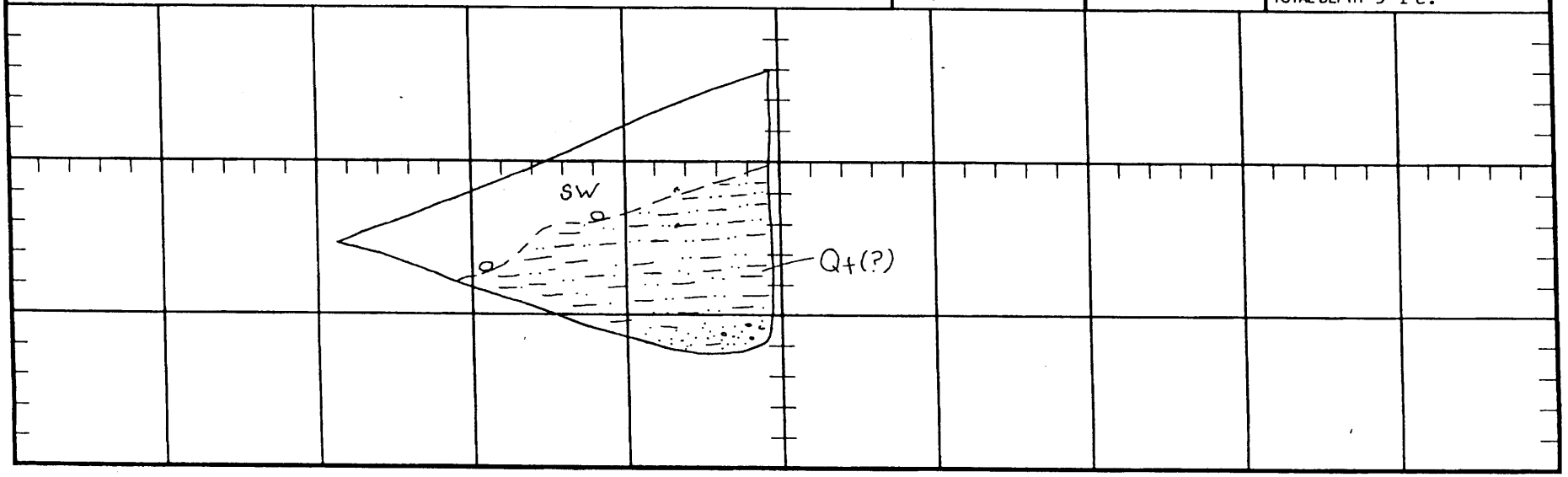
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3' SLOPEWASH; sw, Light brown sandy silt with pebbles and cobbles; loose; dry 3 - 9' QUATERNARY TERRACE; Qt (?), Light yellowish-brown to light reddish-brown sandy siltstone, sandstone and pebbly sandstone	N70W,8NE apx		Generally massive No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 80 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-39

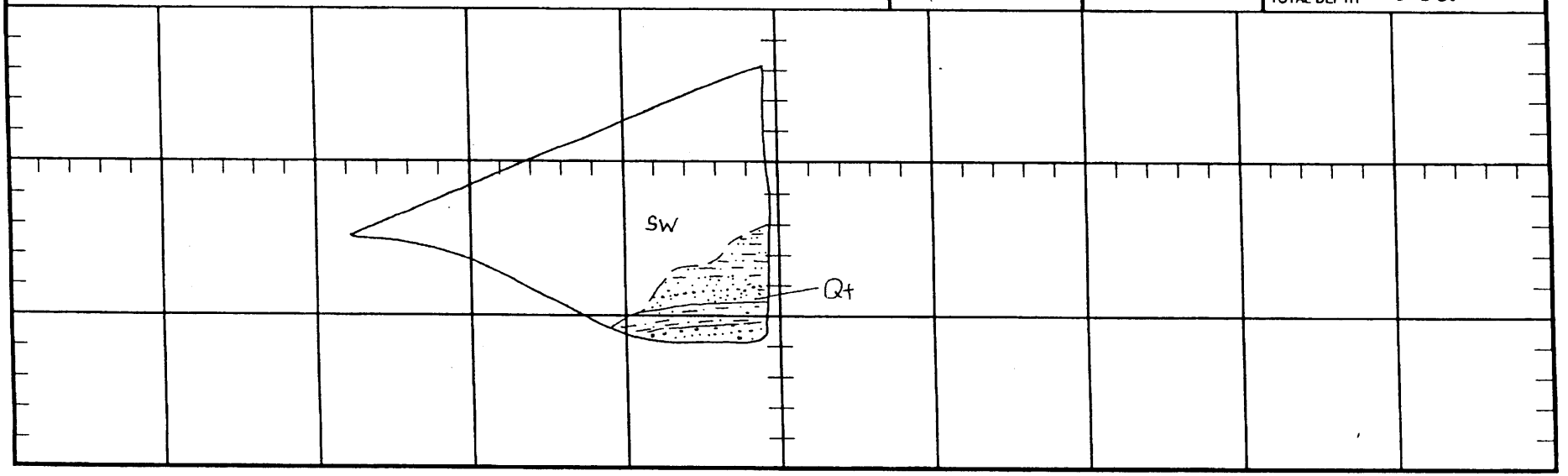
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 5' SLOPEWASH; sw, Light yellowish-brown sandy silt to silty sand with pebbles and cobbles; loose to moderately dense; dry to damp 5 - 9' QUATERNARY TERRACE; Qt, Light brown and light grayish-brown sandy siltstone, siltstone and pebbly sandstone; moderately hard and friable; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 83 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-40

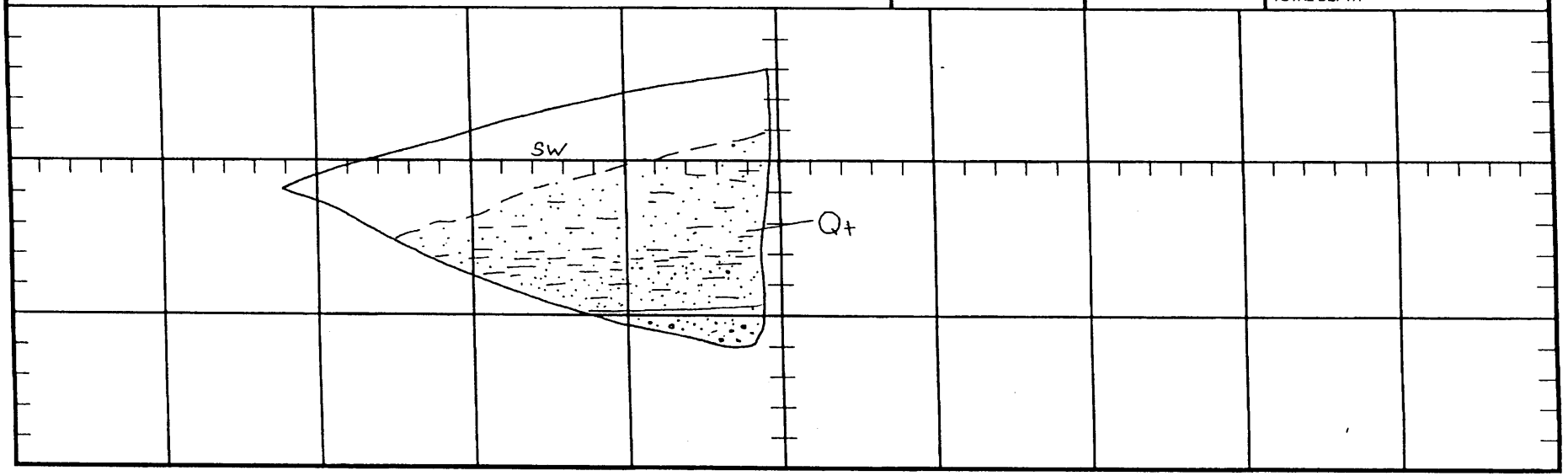
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SLOPEWASH; sw, Light brown sandy silt with pebbles; loose; dry 2 - 9' QUATERNARY TERRACE; Qt, Light yellowish-brown silty sandstone, siltstone and pebbly sandstone to conglomerate; moderately hard and friable; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 60 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-41

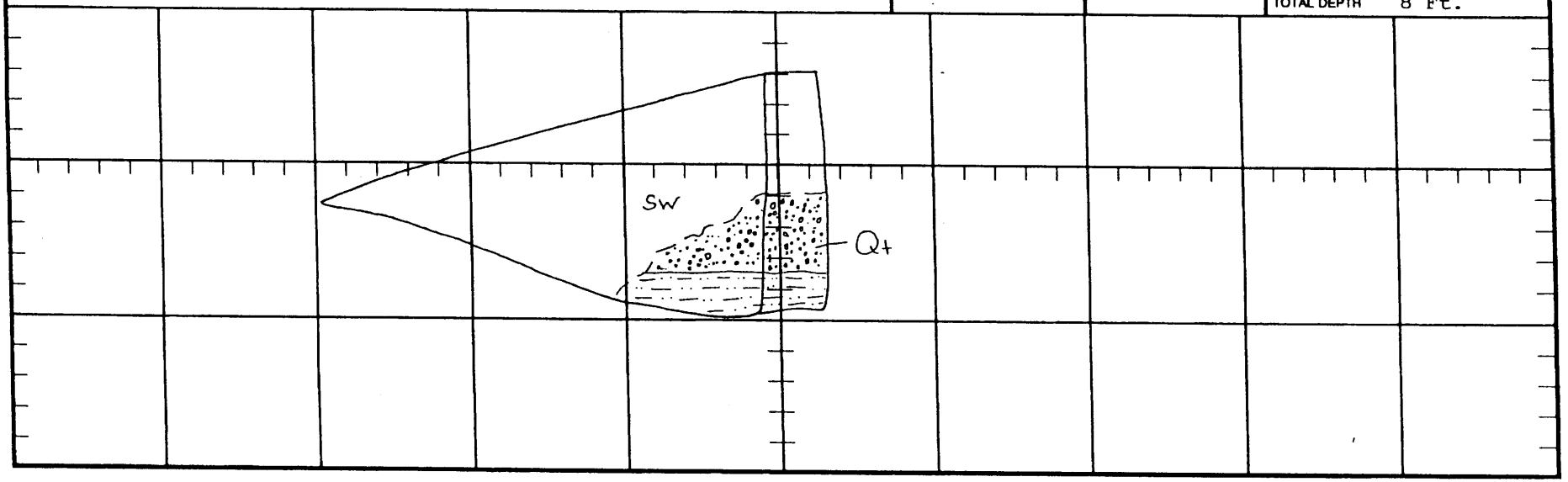
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; sw, Light brown sandy silt, loose; dry 4 - 8' QUATERNARY TERRACE; Qt, Light grayish-brown and light yellowish-brown to light brown pebble conglomerate and sandy siltstone; moderately hard and friable; dry to damp			No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 47 W



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JOB NO. 00-1729-1 PROJECT Magic Mountain Entertainment

LOGGED BY SKM

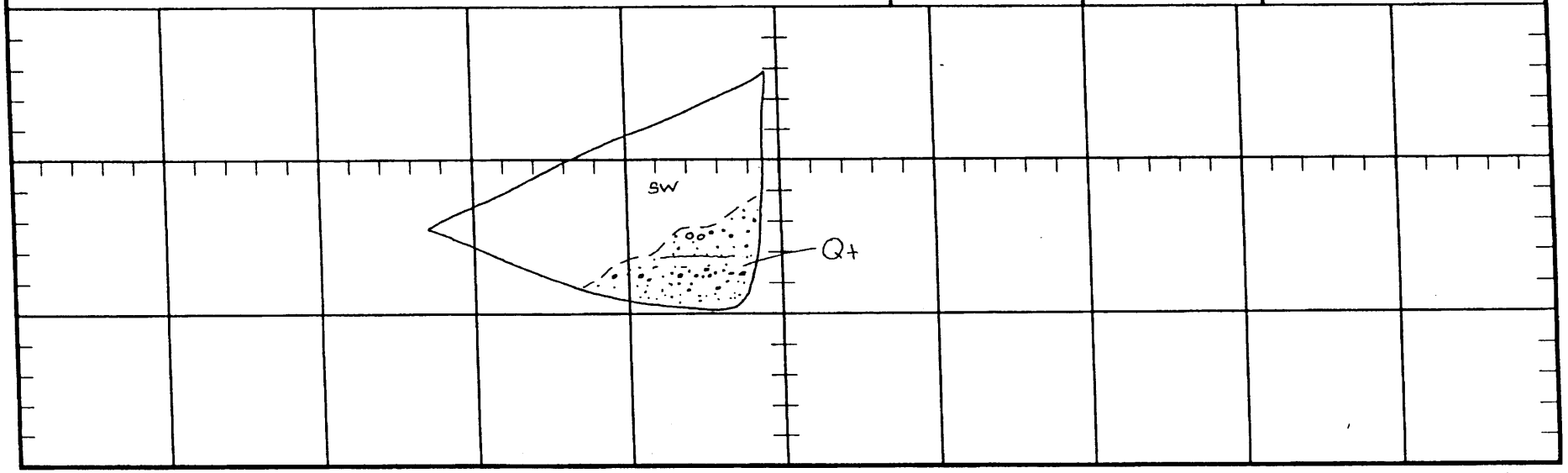
Trench Log No. T-42

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; sw, Light brown sandy silt; loose; dry			
4 - 8' QUATERNARY TERRACE; Qt, Light grayish-brown pebbly sandstone and pebble conglomerate; moderately friable; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 58 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-43

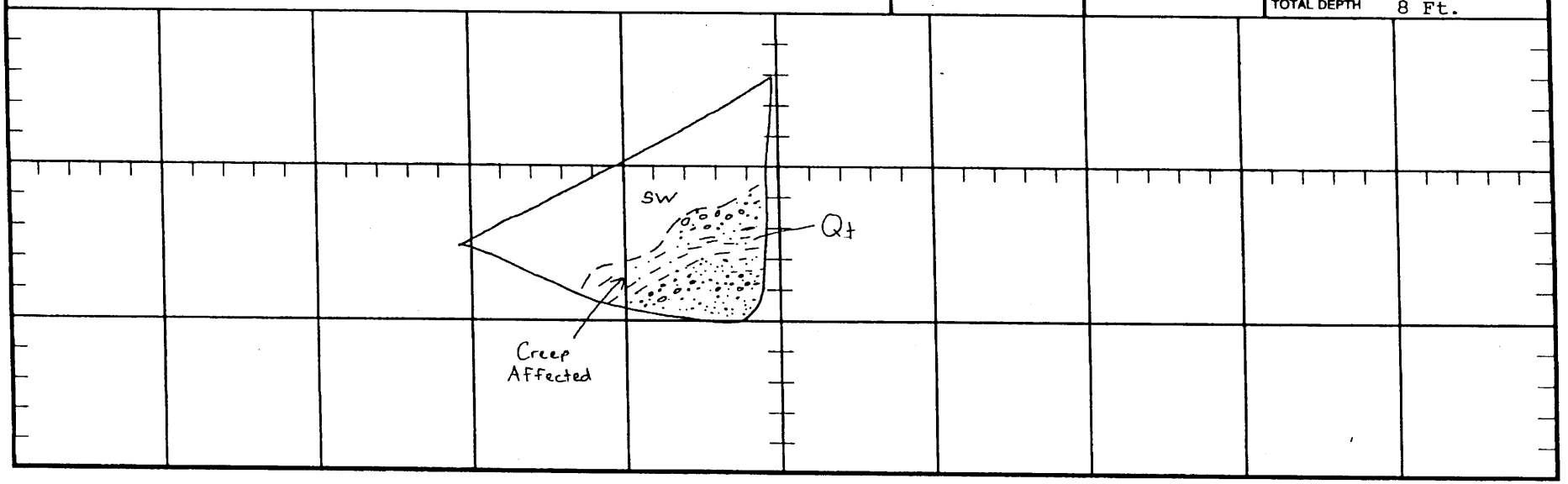
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 3.5' SLOPEWASH; sw, Medium brown sandy silt with pebbles; loose to moderately dense; dry			
3.5 - 8' QUATERNARY TERRACE; Qt, Light grayish-brown and light yellowish-brown sandy siltstone and pebble conglomerate; moderately hard and friable; dry to damp	Horizontal with local cross bedding		Weathered down to 5 ft.
			No Ground Water No Caving
			TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 54 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-44

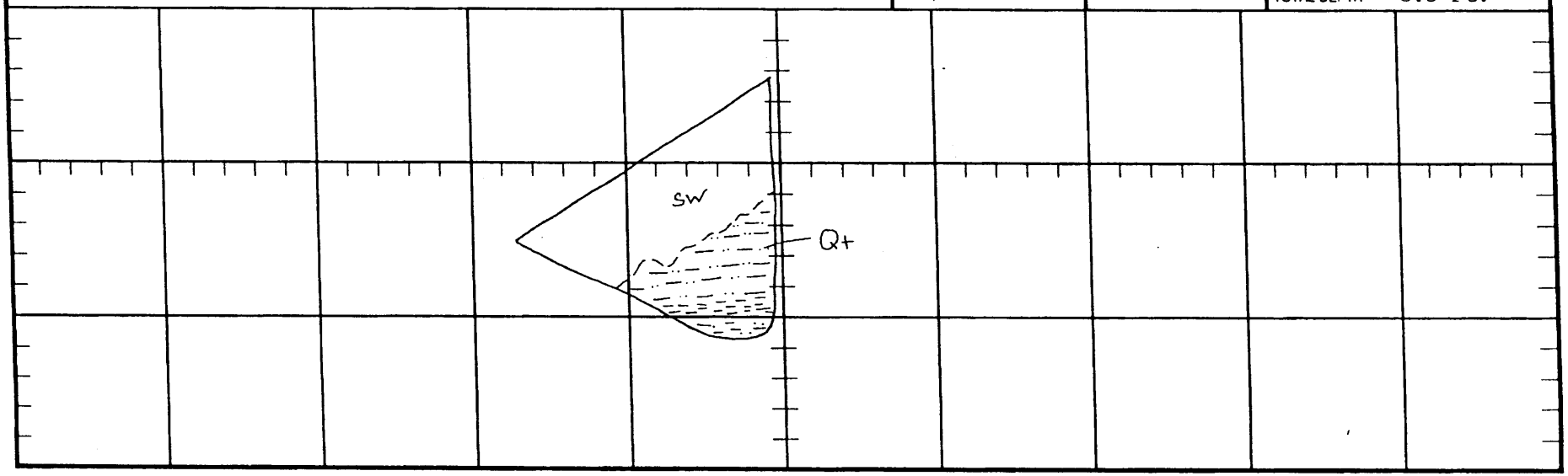
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; sw, Light medium brown and light brown sandy silt with pebles and sandier silt with pebbles; loose to moderately dense; dry to damp			Weathered down to 5.5 ft.
4 - 8.5' QUATERNARY TERRACE; Qt, Light brown to brownish-tan sandy siltstone and siltstone; moderately hard to hard; dry to damp	Horizontal		
			No Ground Water No Caving TOTAL DEPTH 8.5 Ft.

SCALE 1" = 5'

N 87 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-45

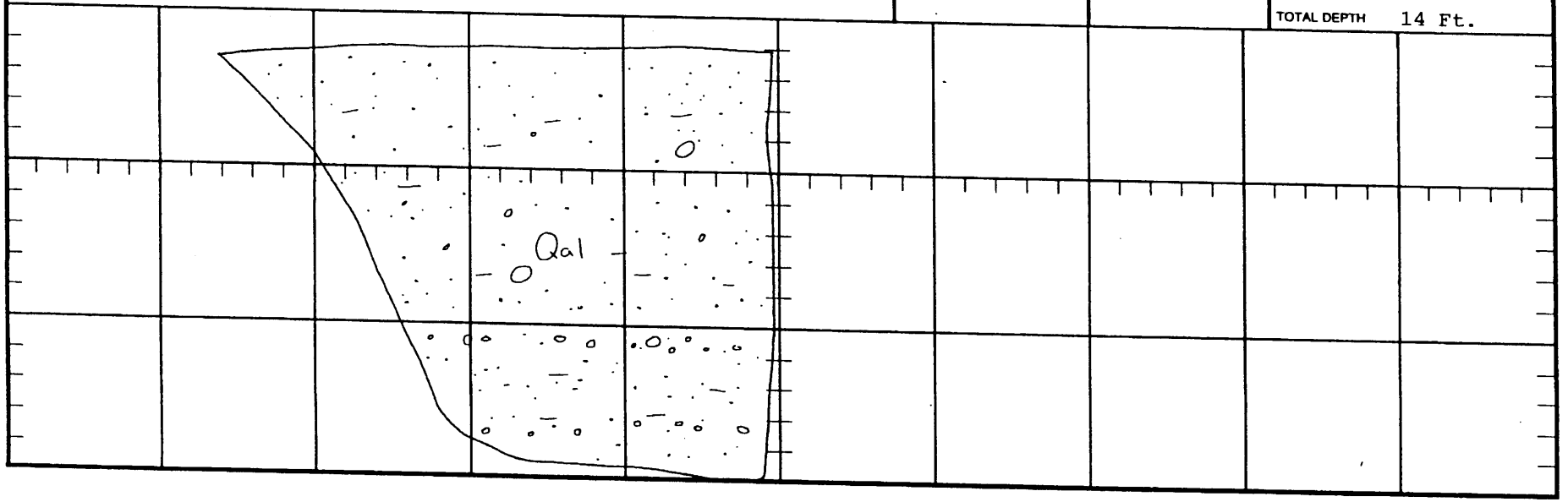
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 14' QUATERNARY ALLUVIUM; Qal, Light yellowish-brown silty sand (fine-grained) with pebbles and cobbles; loose and friable; dry to damp			Excavated in center of alluvial valley Surface logged No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 5 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-46

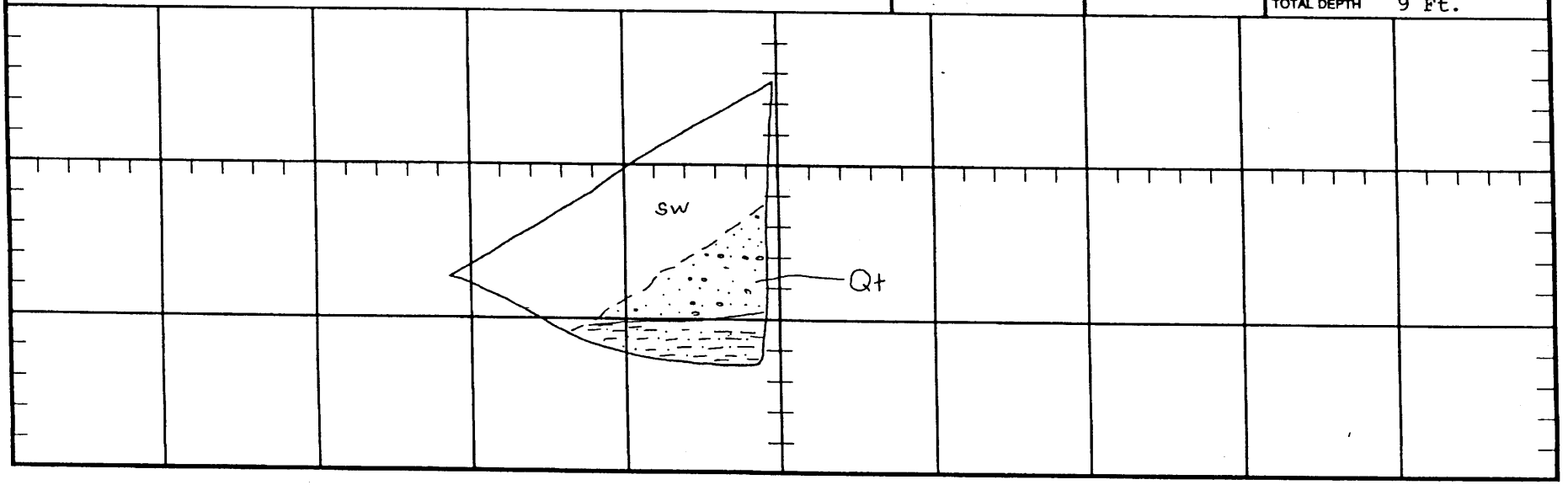
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; sw, Light yellowish-brown silty sand to sandy silt; loose to moderately dense; dry 4 - 9' QUATERNARY TERRACE; Qt, Light grayish-brown and light reddish-brown pebbly sandstone to conglomerate and siltstone; friable and moderately hard; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 74 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-47

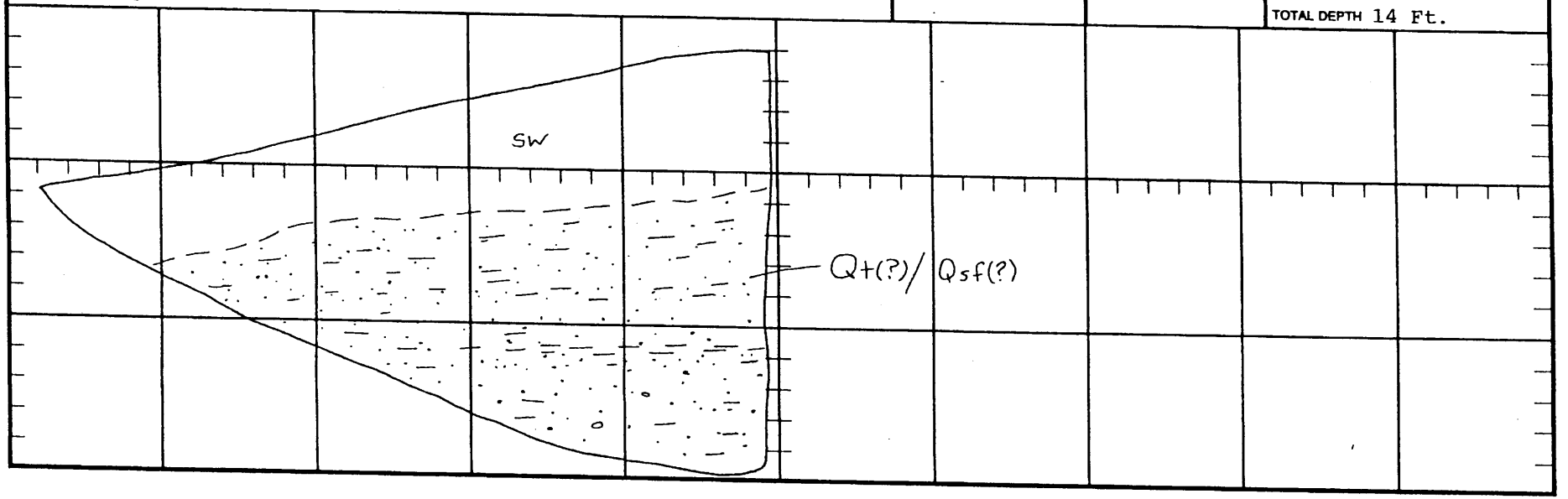
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4.5' SLOPEWASH; sw, Light brown sandy silt with pebbles; loose to moderately dense; dry to damp 4.5 - 14' QUATERNARY TERRACE; Qt (?), Light yellowish-brown silty sandstone, pebbly sandstone and sandy siltstone; moderately hard and friable in places; dry to damp			Trenches T-47 thru T-54 excavated on 1/14/00. Surface logged Upper 4' widened May have experienced movement-appears slightly disturbed No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

East



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-48

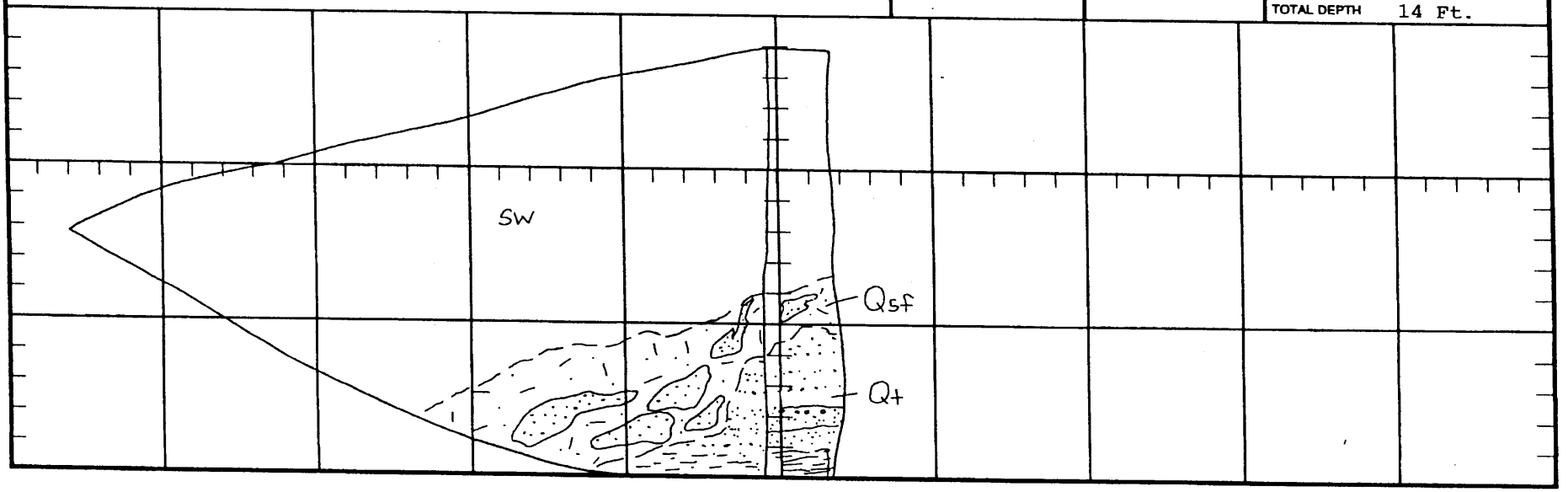
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 8' SLOPEWASH; sw, Light brown sandy silt with pebbles; loose to moderately dense; dry to damp			
8 - 10' SURFICIAL FAILURE/LANDSLIDE; sf/Qls, Weathered Qt fragments/blocks intermixed with slopewash; loose; dry to damp			
10 - 14' QUATERNARY TERRACE; Qt, Light yellowish-brown slightly silty sandstone, pebbly sandstone and silty sandstone; moderately hard and moderately friable; damp			No Ground Water No Caving TOTAL DEPTH 14 Ft.

SCALE 1" = 5'

N 72 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-49

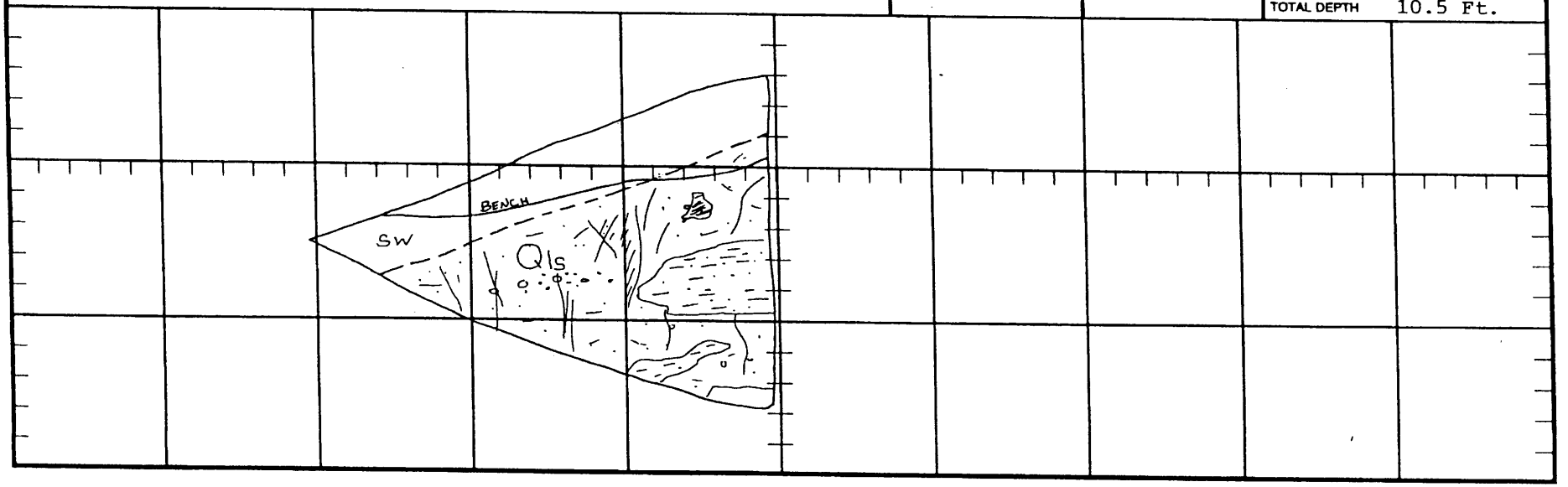
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2' SLOPEWASH; sw, Light to medium brown, slightly sandy silt with pebbles; loose to moderately dense; dry to damp 2 - 10.5' LANDSLIDE; Qls, Jumbled Qt lithologies and soil backfill, loose to moderately dense; dry to damp			No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5'

N 70 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-50

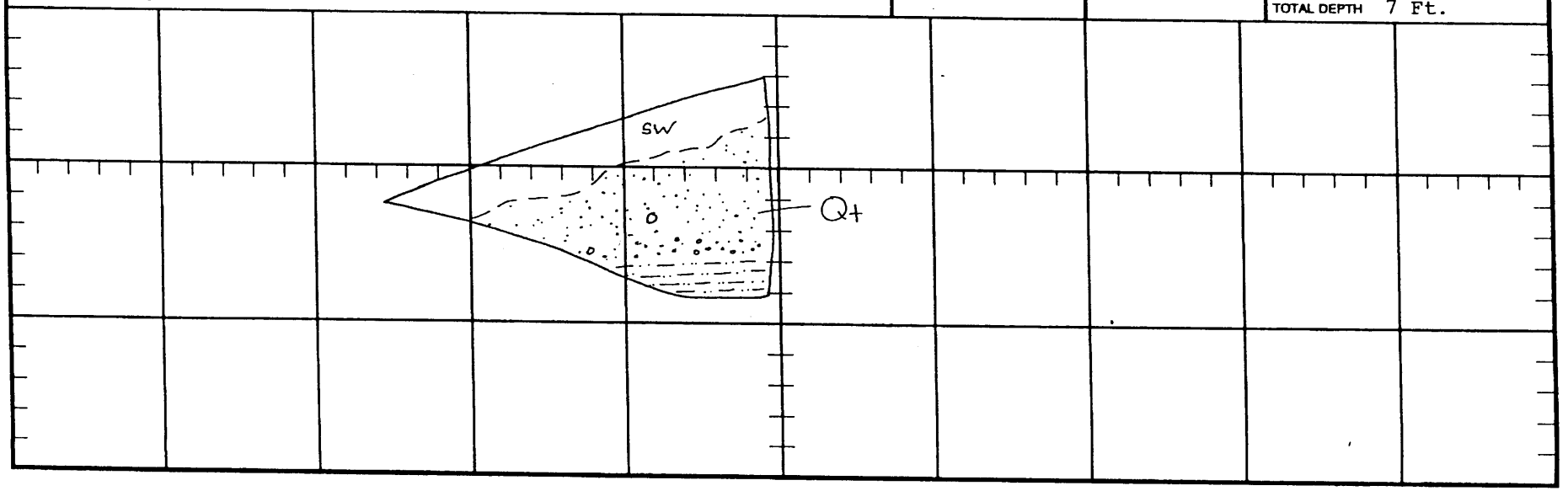
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SLOPEWASH; sw, Light brown to light reddish-brown sandy silt with pebbles; loose to moderately dense; dry 1.5 - 7' QUATERNARY TERRACE; Qt, Light reddish-brown silty pebbly sandstone, and sandy siltstone with pebbles; moderately hard to hard; damp	Horizontal		Hard siltstone at base with 2-3" grooves cut by backhoe teeth No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 44 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-51

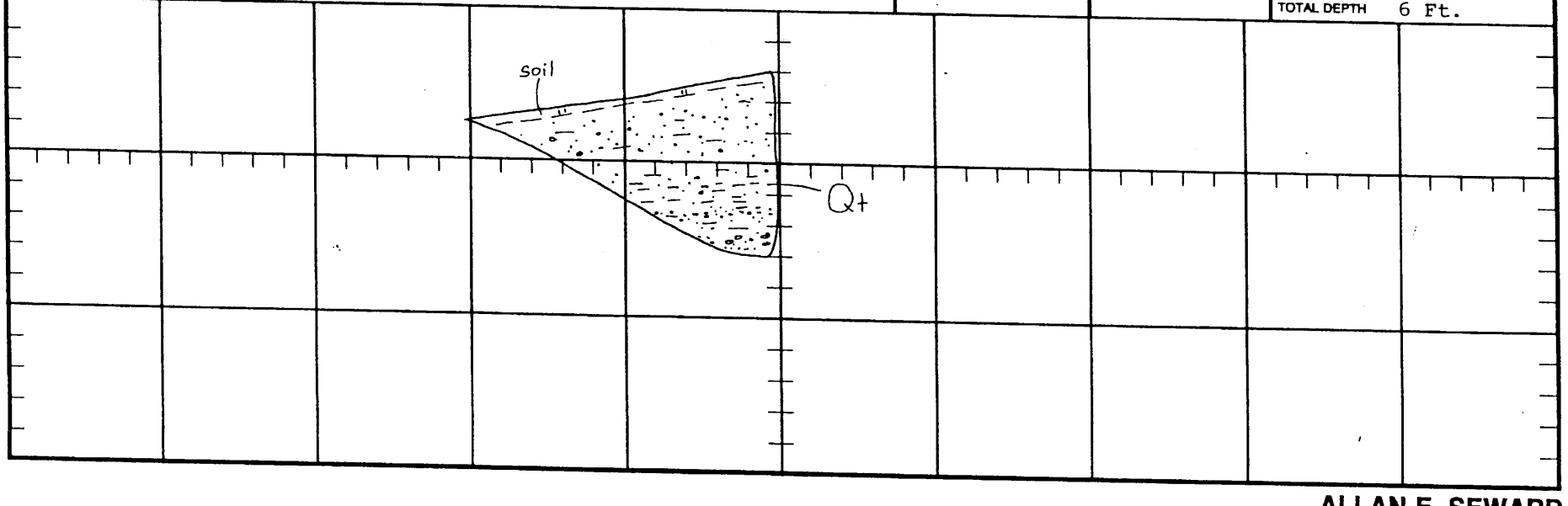
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6" SOIL; s, Light brown to light reddish-brown sandy silt with pebbles; loose; dry			Digs very hard
6" - 6' QUATERNARY TERRACE; Qt, Light reddish-brown silty sandstone to sandy siltstone with pebbles and pebbly sandstone; hard; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 6 Ft.

SCALE 1" = 5'

N 20 W



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-52

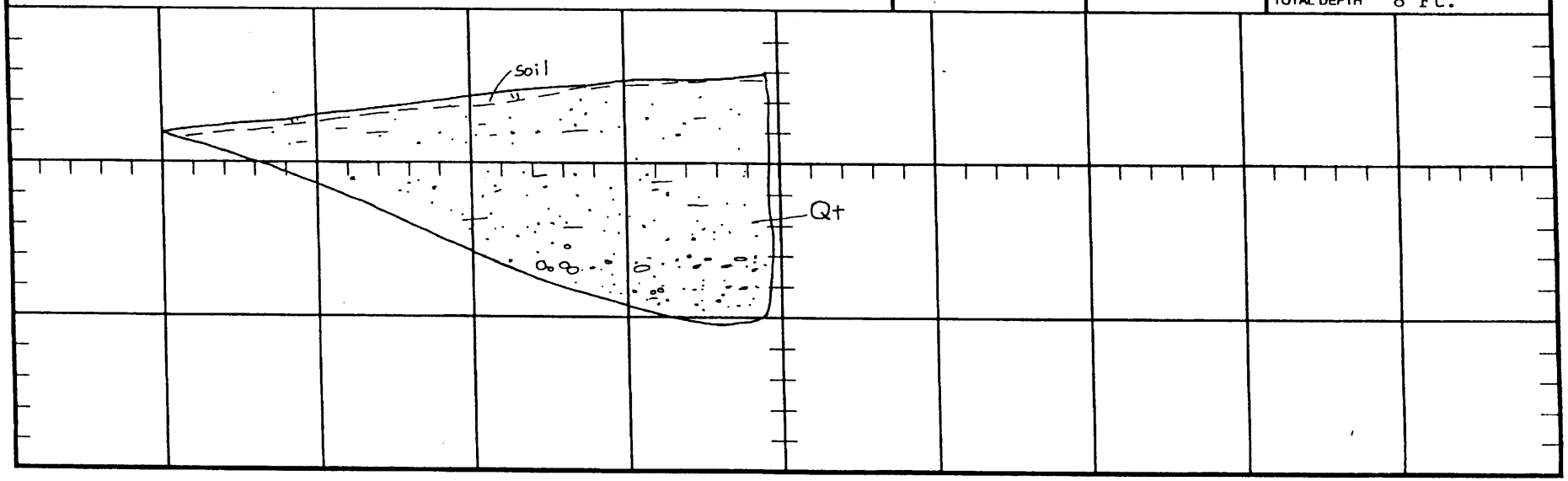
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 2" SOIL; s, Light brown silty sand to sandy silt; loose; dry 2" - 8' QUATERNARY TERRACE; Qt, Light brown and light reddish-brown silty pebbly sandstone and pebbly sandstone; moderately hard to moderately friable; dry to damp	Horizontal		No Ground Water No Caving TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 17 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-53

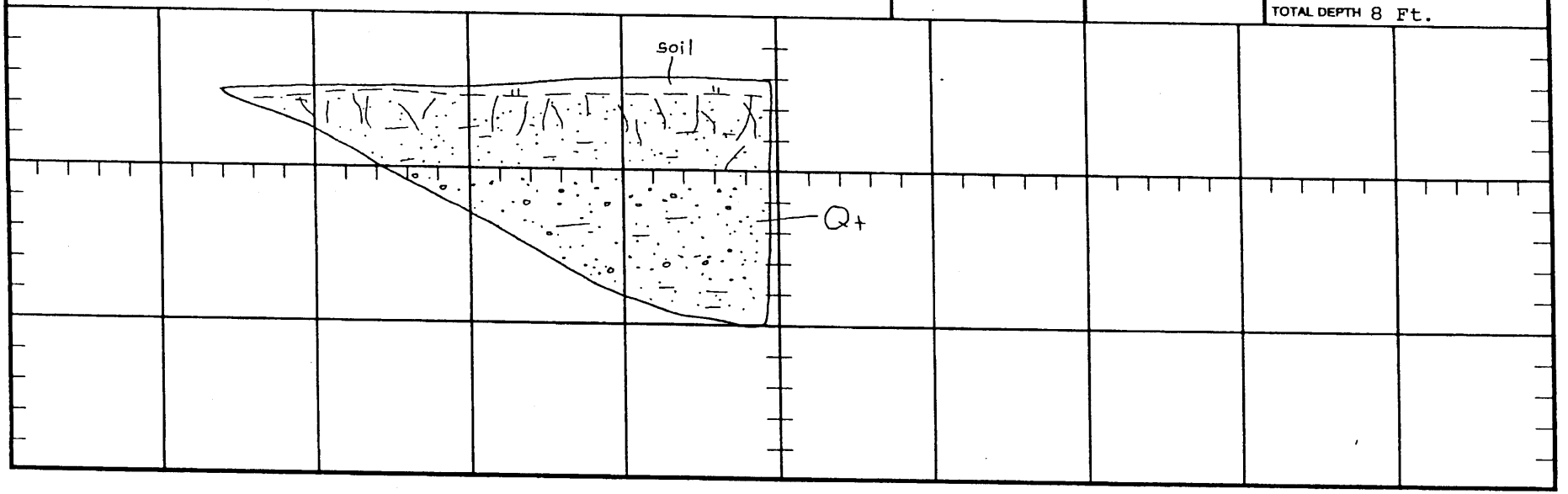
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6" SOIL; s, Light brown sandy silt with pebbles; loose; dry			
6" - 8' QUATERNARY TERRACE; Qt, Light brown to light reddish-brown silty sandstone and pebbly sandstone; moderately hard; friable in places; dry to damp	Horizontal		Weathered down to 2'
			No Ground Water No Caving
			TOTAL DEPTH 8 Ft.

SCALE 1" = 5'

N 79 E



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JOB NO. 00-1729-1

LOGGED BY SKM

Trench Log No. T-54

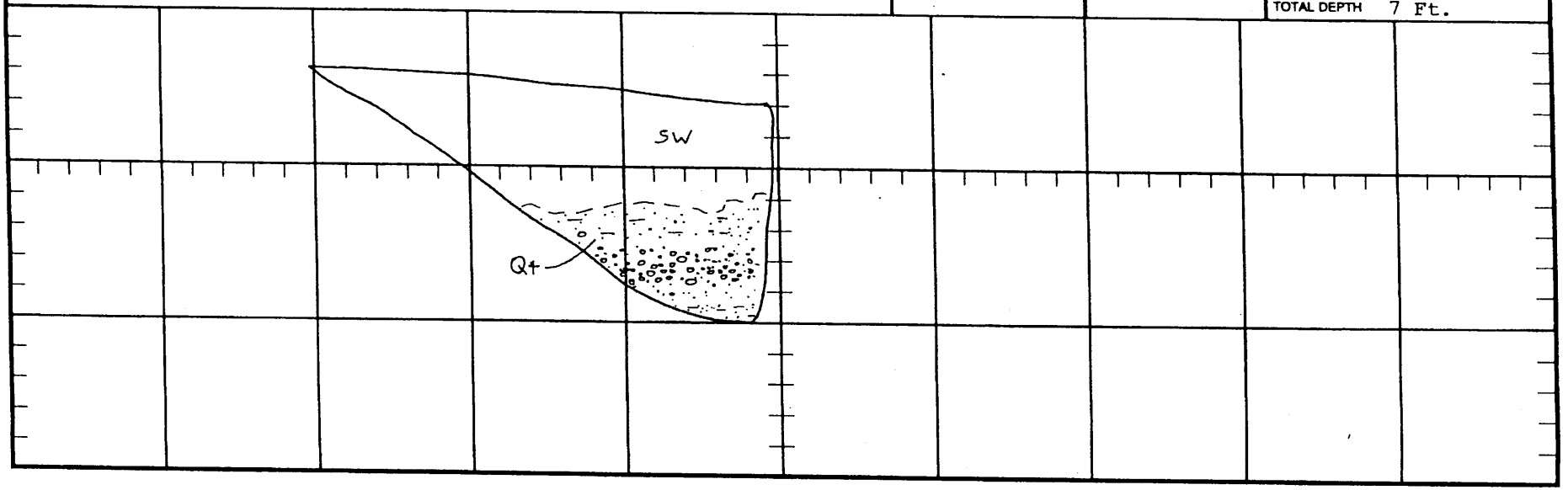
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 4' SLOPEWASH; sw, Light yellowish-brown sandy silt with pebbles; loose; dry 4 - 7' QUATERNARY TERRACE; Qt, Light yellowish-brown to light brown and light grayish-brown silty pebbly sandstone and pebble conglomerate; moderately hard and friable; dry to damp	Horizontal		Weathered down to 5 ft. Slopewash weathered in place Qt? Pebble conglomerate is very friable minor sand and portions have black coating on pebbles No Ground Water No Caving TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 3 W



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-55

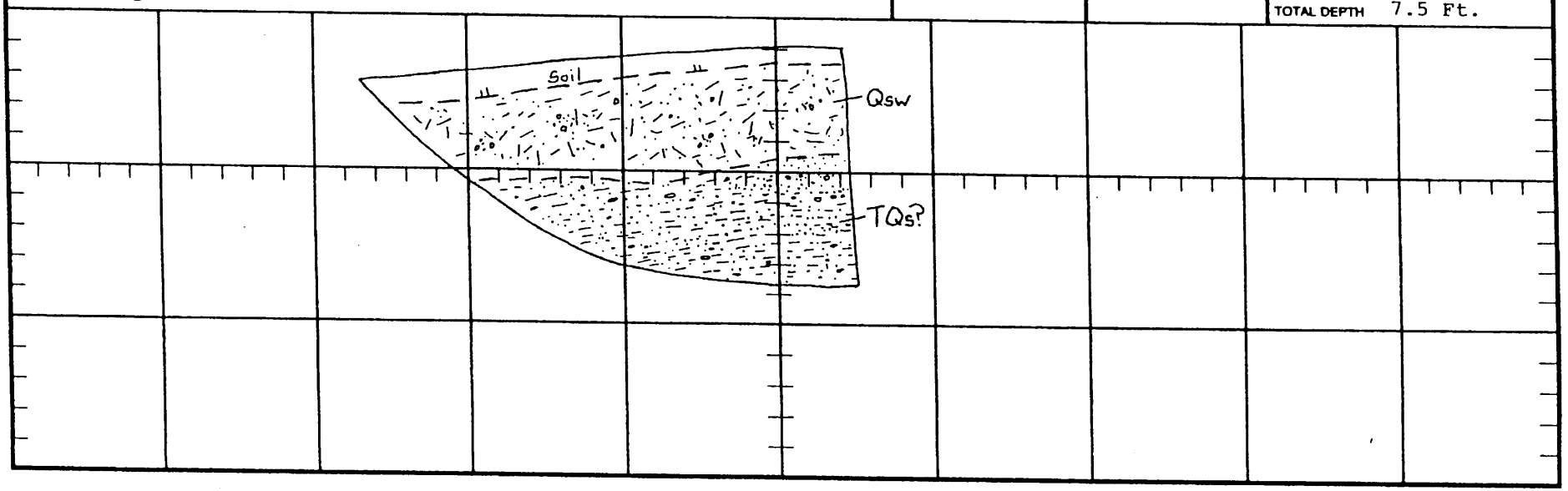
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 6" SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 6" - 3.5' SLOPEWASH; Qsw, Yellowish-brown silt to sandy silt within scattered pebbles and local pods of pebbles; loose to moderately dense; slightly damp to damp 3.5 - 7.5' BEDROCK; TQs?, Yellowish- to light-brown siltstone, sandy siltstone with scattered pebbles, and fine- to coarse-grained pebbly sandstone; dense to slightly friable; slightly damp to damp; top 1.5' weathered	N46W,8NE		T-55 thru T-67 excavated 2/18/00 using a track mounted backhoe with a 24" bucket Lithology is transitional between TQs and Qt but bedding attitude indicates probable young TQs No Ground Water No Caving TOTAL DEPTH 7.5 Ft.

SCALE 1" = 5'

N 16 E



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-56

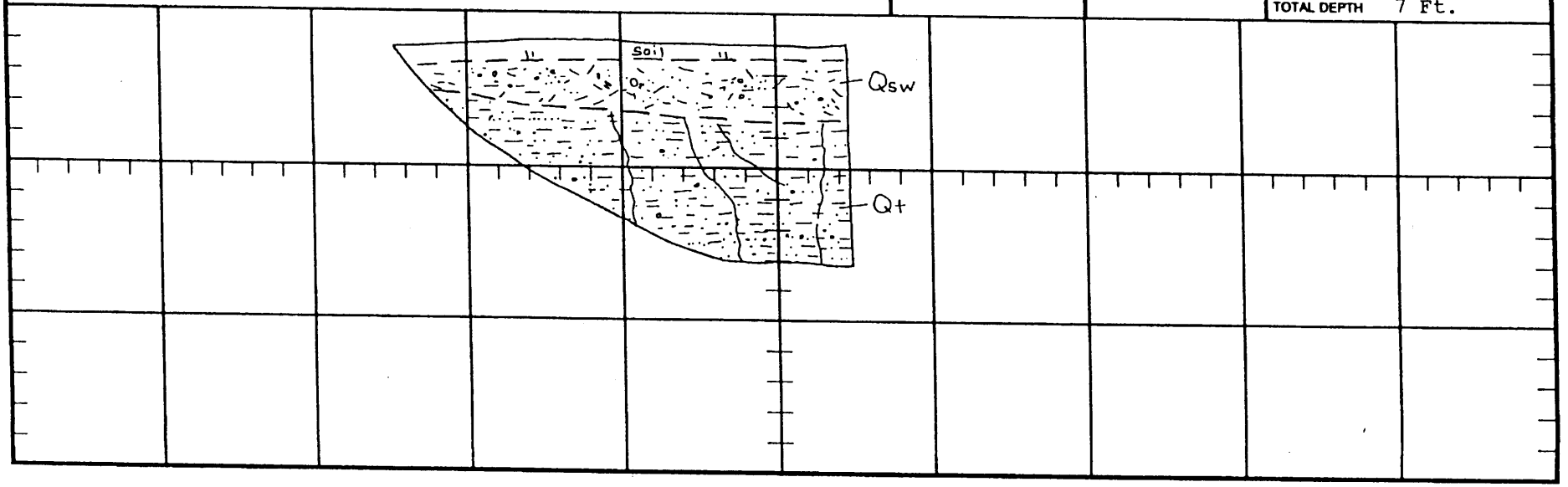
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 0.5' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
0.5 - 2.5' SLOPEWASH; Qsw, Yellowish-brown silt to sandy silt within scattered pebbles and local pods of pebbles; loose to moderately dense; slightly damp to damp		f:N34E,85NW	Fractures may be shattered ridge effects
2.5 - 7' QUATERNARY TERRACE DEPOSITS; Qt, Yellowish- to slightly pale reddish-brown siltstone to sandy siltstone with scattered pebbles; moderately dense to dense; damp; locally fractured	N82E,3NW		Lithology is transitional between TQs and Qt but bedding attitude indicates Qt
			No Ground Water No Caving
			TOTAL DEPTH 7 Ft.

SCALE 1" = 5'

N 15 E



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-57

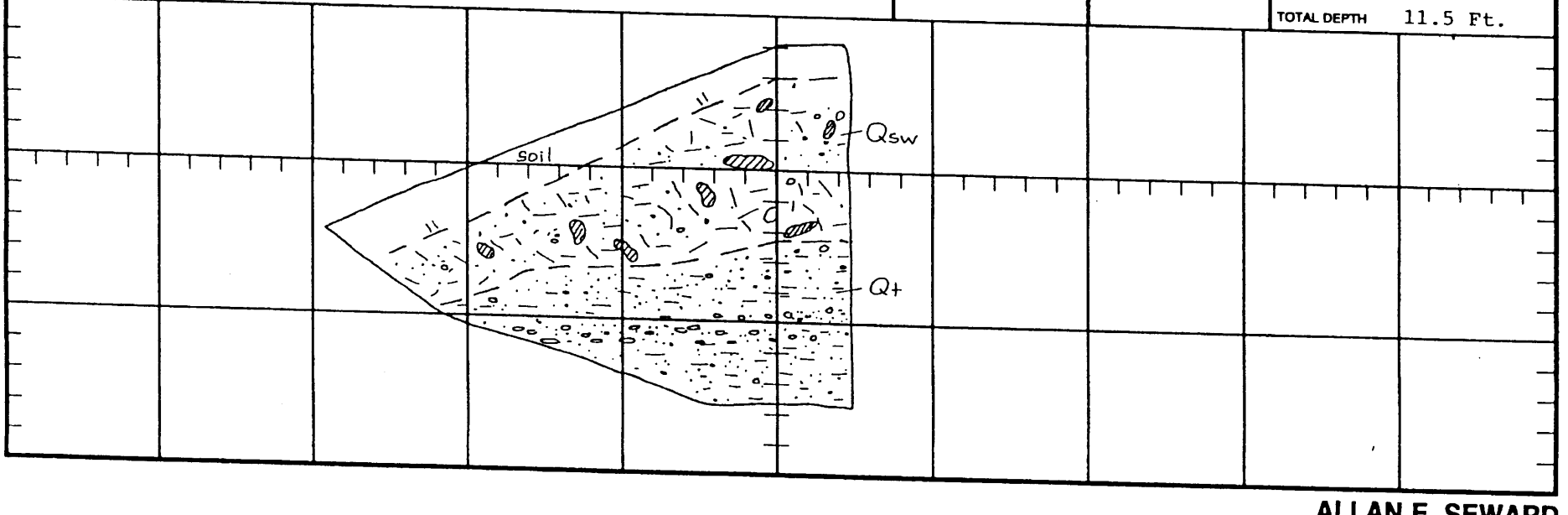
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 6.5' SLOPEWASH; Qsw, Yellowish-brown silt to sandy silt with scattered pebbles and a few scattered cobbles; soft to firm; damp; abundant krotovina			
6.5 - 11.5' QUATERNARY TERRACE DEPOSITS; Qt, Yellowish-brown to light yellowish-brown siltstone, sandy siltstone and pebbly to cobbly sandstone and sandstone; moderately dense to dense but friable; damp; cross-bedding and channeling in sandstone	Apx. Horizontal		Lithology and bedding attitude indicate Qt unit
			No Ground Water No Caving
			TOTAL DEPTH 11.5 Ft.

SCALE 1" = 5'

N 65 W



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-58

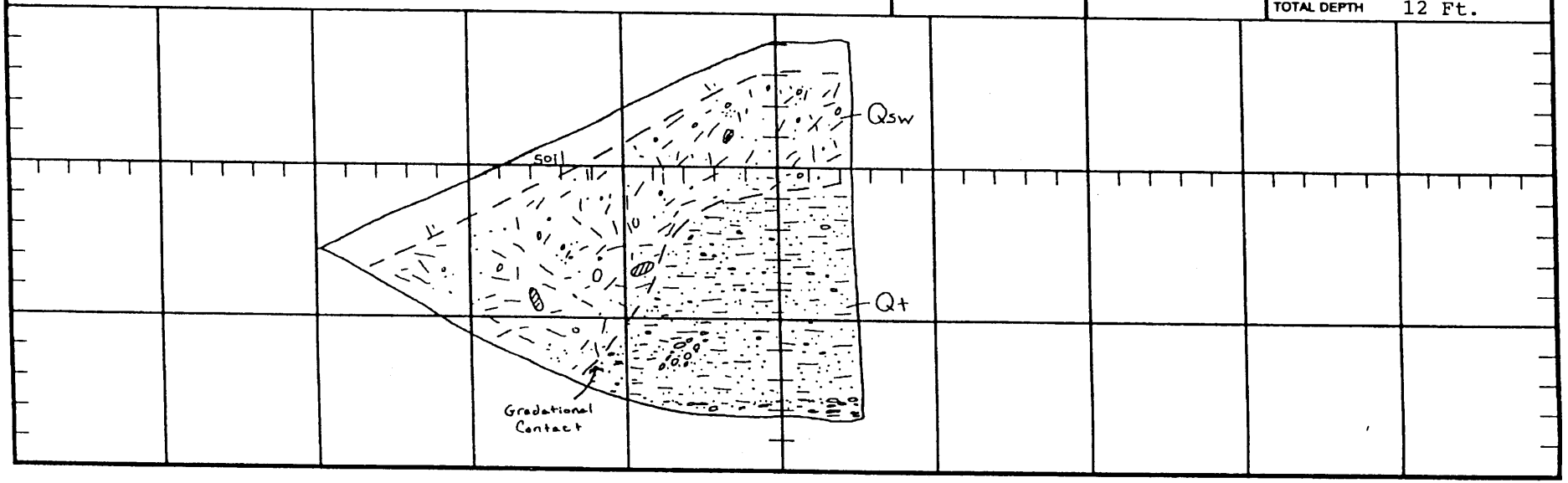
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1.5' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1.5 - 4' SLOPEWASH; Qsw, Yellowish-brown silt to sandy silt with scattered pebbles and a few scattered cobbles; soft to firm; damp; scattered krotovina 4 - 12' QUATERNARY TERRACE DEPOSITS; Qt, Yellowish-brown to light yellowish-brown siltstone, sandy siltstone; pebbly to cobbly sandstone and sandstone; moderately dense to dense but friable; damp; cross-bedding and channeling in sandstone	Apx: Horizontal		Lithology and bedding attitude indicate Qt unit No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 60 W



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-59

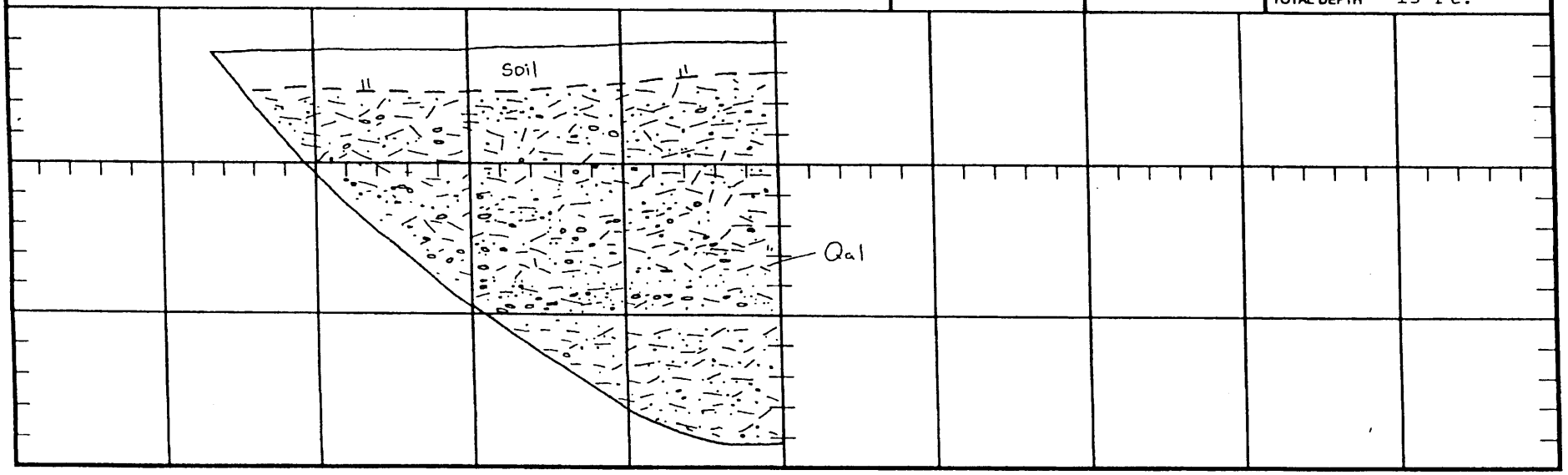
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 13' QUATERNARY ALLUVIUM; Qal, Yellowish-brown to light brown silt to sandy silt with scattered pebbles and local sandy pebbly pockets; loose/soft; damp			No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 40 E



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-60

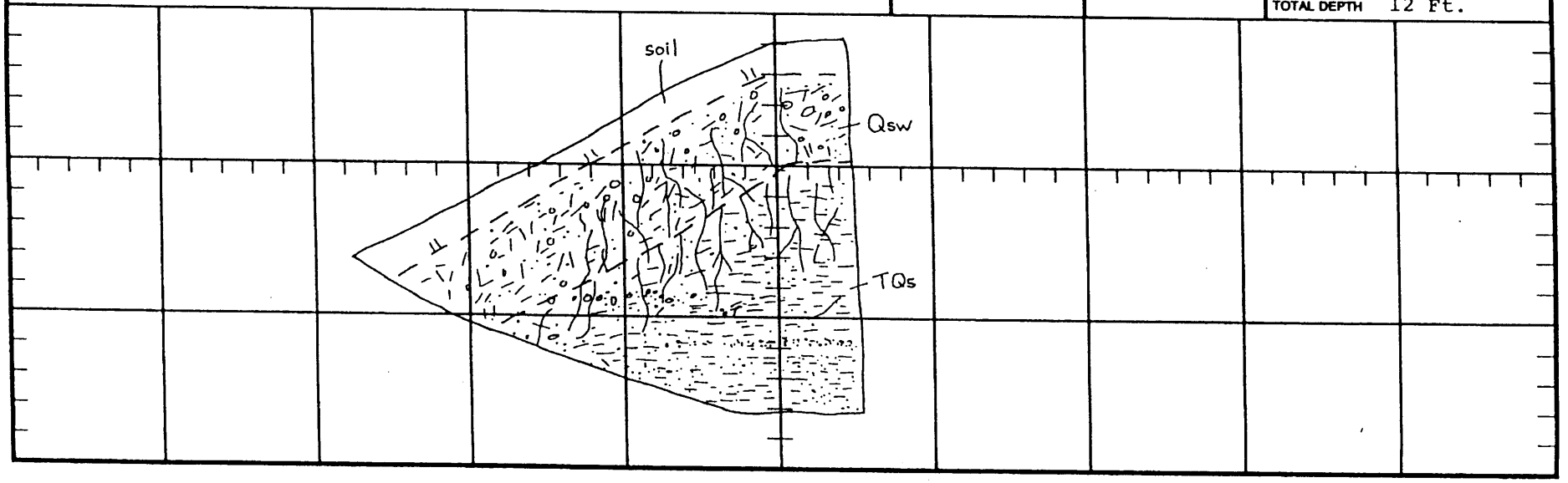
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 4' SLOPEWASH; Qsw, Yellowish-to light-brown silt to sandy silt with pebbles and cobbles; loose; damp 4 - 12' BEDROCK; TQs?; Yellowish-to light-brown siltstone, sandy siltstone, and sandstone, with scattered pebbles and few scattered cobbles; local concretions; moderately dense to dense but slightly loose; damp	Apx: N15W,10NE		Lithology is transitional between TQs and Qt but bedding attitude indicates TQs Upper 5' of bedrock highly fractured, weakened and creep affected No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 38 W



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-61

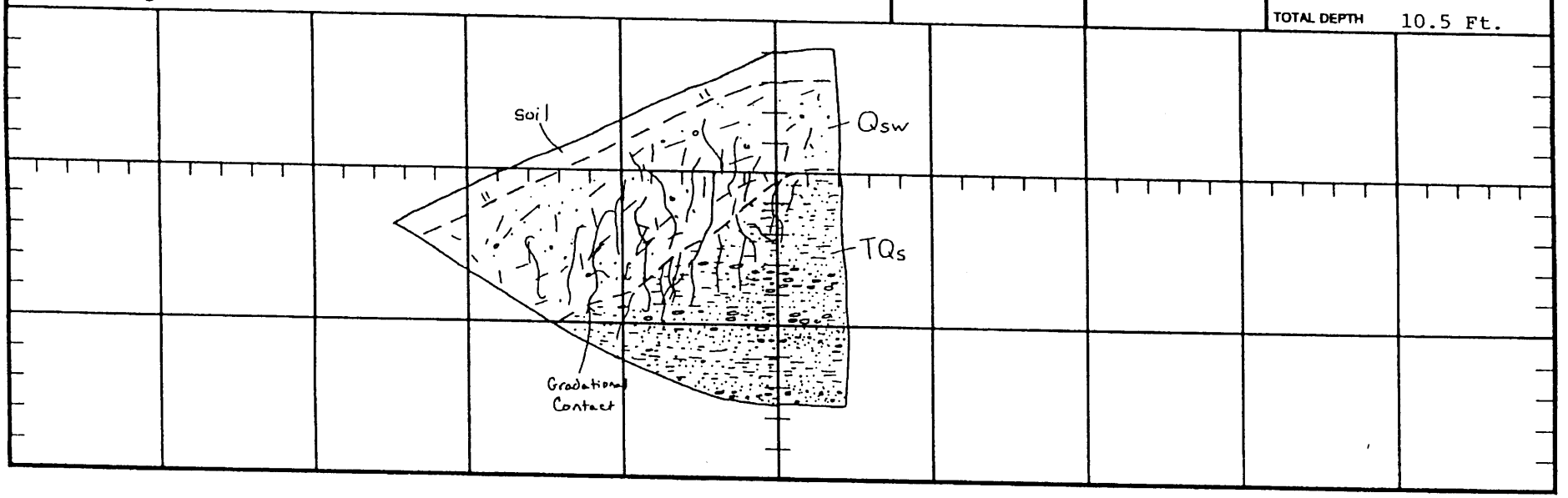
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 4' SLOPEWASH; Qsw, Yellowish- to light-brown silt to sandy silt with scattered pebbles; loose/soft; damp; fractured 4 - 10.5' BEDROCK; TQs?, Yellowish- to light-brown siltstone, sandy siltstone, pebbly cobbley sandstone and sandstone; loose to moderately dense; damp	N15W,8NE		Lithology is transitional between TQs and Qt but bedding attitude indicates TQs No Ground Water No Caving TOTAL DEPTH 10.5 Ft.

SCALE 1" = 5'

N 47 W



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-62

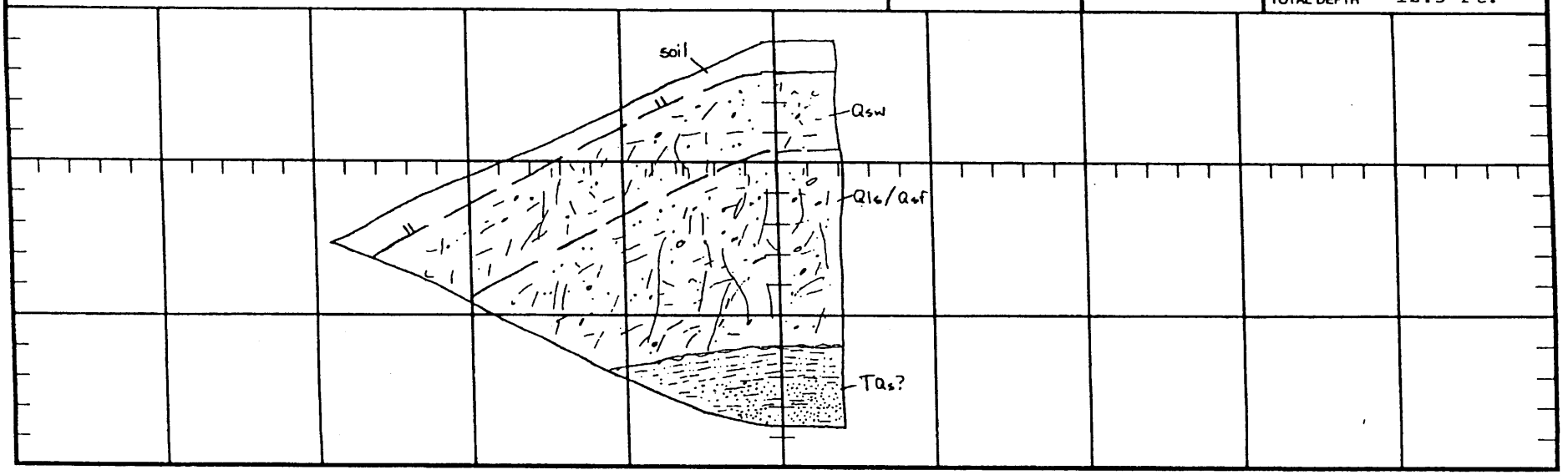
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 3.5' SLOPEWASH; Qsw, Yellowish- to light-brown silt to sandy silt with scattered pebbles; loose; damp			
3.5 - 10' LANDSLIDE/SURFICIAL FAILURE; Qls/Qsf, Yellowish-brown silt and sandy silt with scattered pebbles and few scattered cobbles; damp; 2-3% void space			
10 - 12.5' BEDROCK; TQs?, Yellowish- to light-brown siltstone, sandy siltstone and fine- to coarse-grained sandstone; moderately dense to dense; damp; top 4" of bedrock sheared with caliche	N27W,5NE		Lithology and bedding attitude are transitional between TQs and Qt No Ground Water No Caving TOTAL DEPTH 12.5 Ft.

SCALE 1" = 5'

N 71 W



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-63

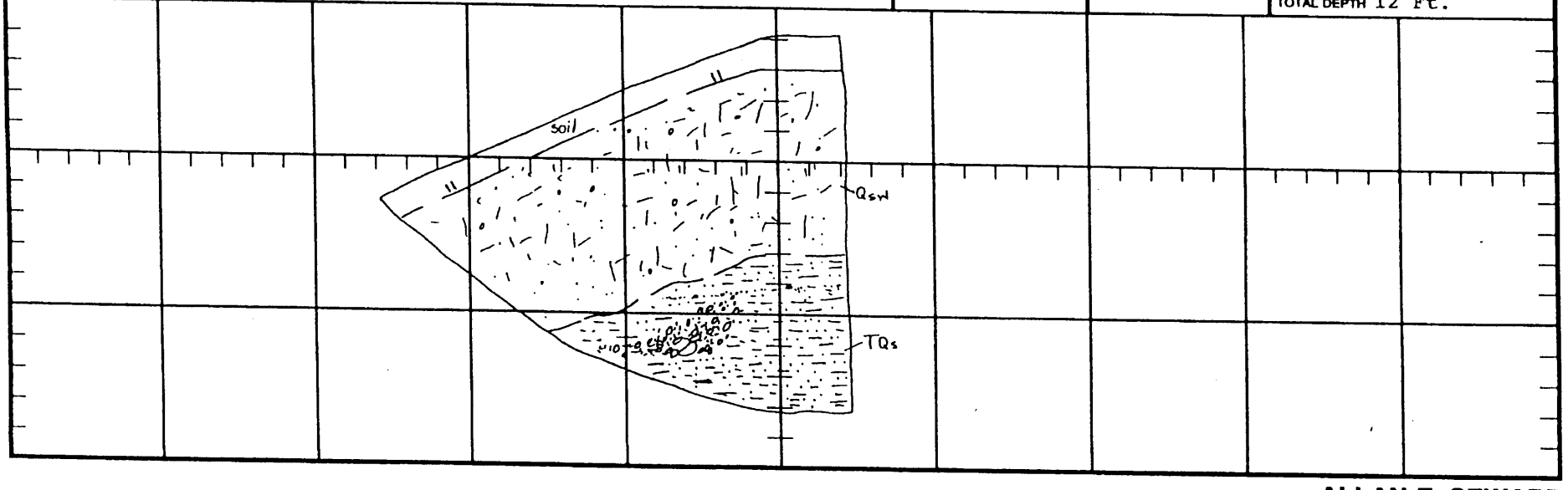
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 6' SLOPEWASH; Qsw, Yellowish- to medium-brown silt to sandy silt with scattered pebbles; loose; damp 6 - 12' BEDROCK; TQs?, Yellowish-brown siltstone to sandy siltstone, with lenses of fine- to medium-grained sandstone and channel of pebbly cobbly sandstone; dense; slightly damp	Apx:N60W,5NE		Lithology and bedding attitude are transitional between TQs and Qt Upper 4' of bedrock highly weathered No Ground Water No Caving TOTAL DEPTH 12 Ft.

SCALE 1" = 5'

N 10 E



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-64

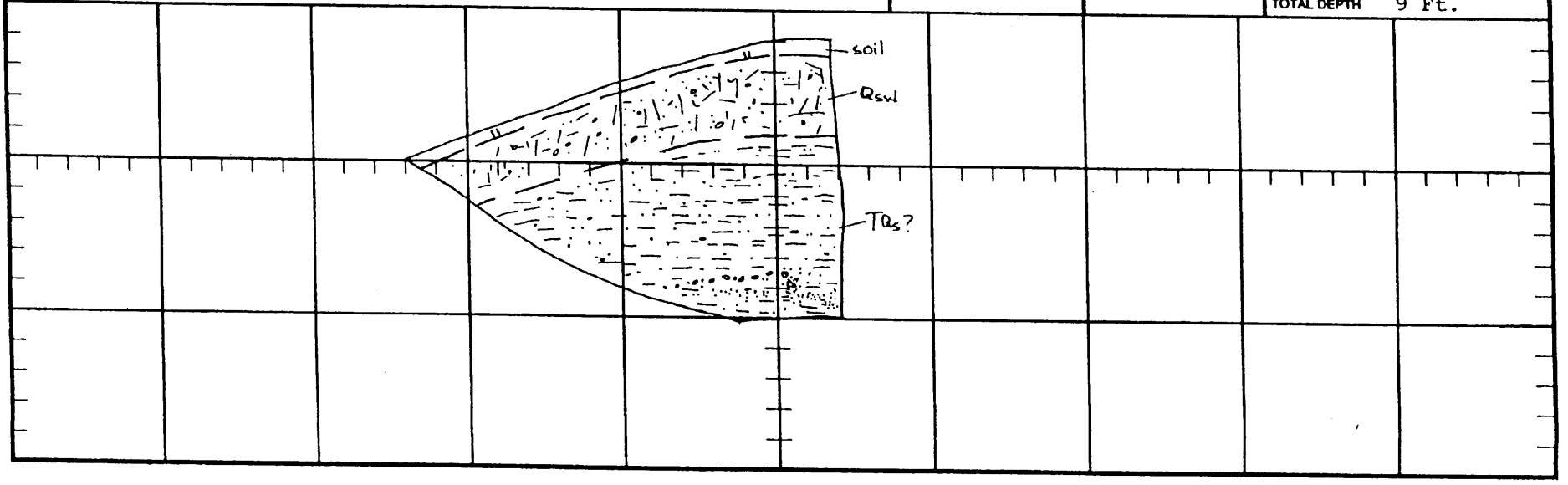
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - .5' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist .5 - 3' SLOPEWASH: Qsw, Yellowish- to light-brown silt to sandy silt with scattered pebbles; loose; damp 3 - 9' BEDROCK; TQs?, Yellowish- to light-brown siltstone with scattered pebbles, sandy siltstone; fine-grained sandstone and pebbly sandstone; moderately dense to moderately hard; damp	Apx: N61W,13NE		Lithology transitional between TQs and Qt but bedding attitude indicates TQs Upper 2' of bedrock weathered No Ground Water No Caving TOTAL DEPTH 9 Ft.

SCALE 1" = 5'

N 74 W



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-65

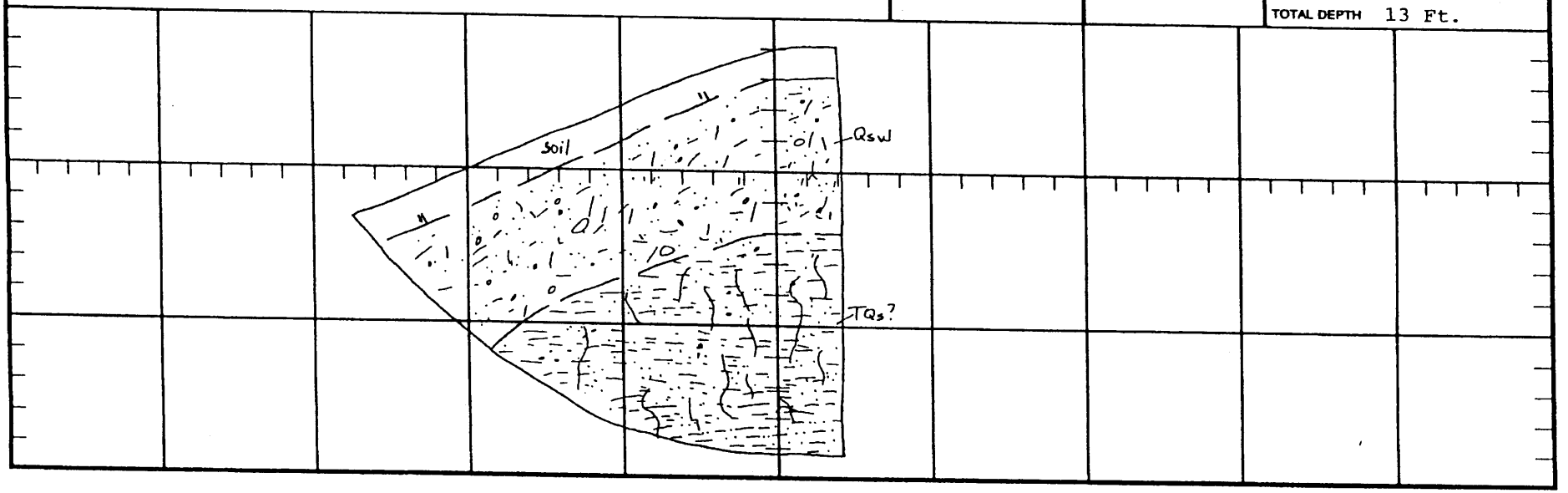
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 6' SLOPEWASH; Qsw, Yellowish- to medium-brown silt to sandy silt with scattered pebbles and a few cobbles; loose to dense; slightly damp 6 - 13' BEDROCK; TQs?, Yellowish- to light-brown siltstone and sandy siltstone with scattered pebbles; upper 6 ft. moderately dense, weathered and fractured, but bottom ft. moderately hard; damp; caliche along fractures	Apx:N66W,11NE		Lithology is transitional between TQs and Qt but bedding attitude indicates TQs No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 14 E



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-66

PROJECT Magic Mountain Entertainment

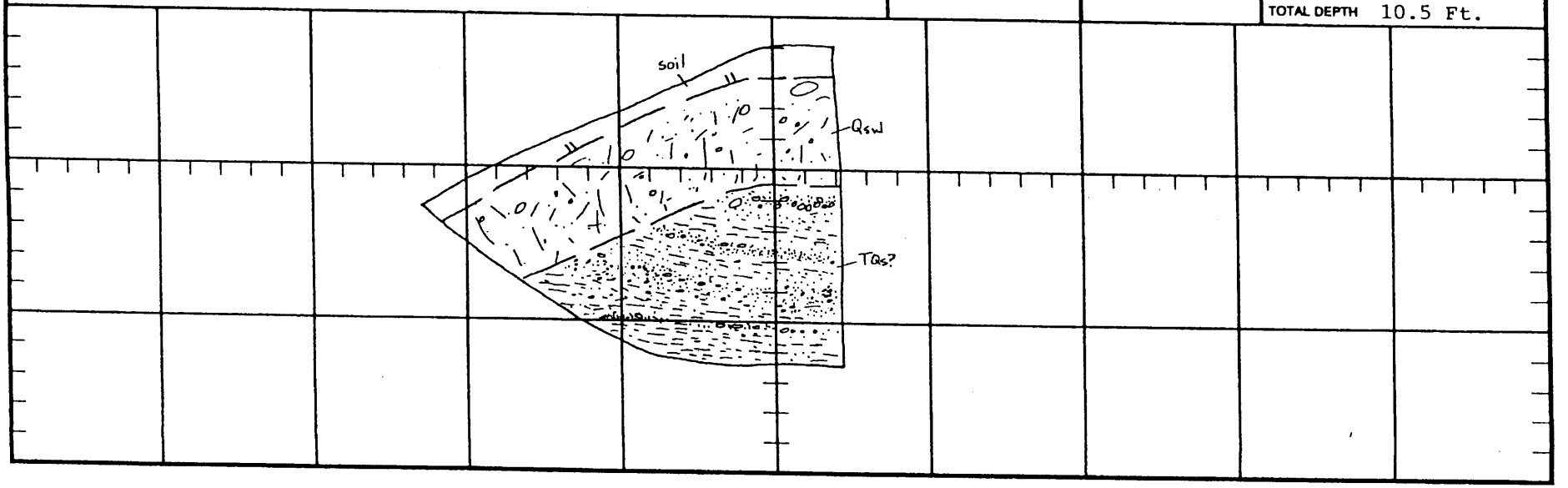
DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist 1 - 4.5' SLOPEWASH: Qsw, Yellowish- to medium brown silt to sandy silt with scattered pebbles and cobbles 4.5 - 10.5' BEDROCK; TQs?, Light-brown to light-gray fine- to coarse-grained sandstone, silty sandstone and pebbly sandstone with cobbles; dense but moderately friable; slightly damp	N63W,11NE		Lithology is transitional between TQs and Qt but bedding attitude indicates TQs

SCALE 1" = 5'

N 57 E

TOTAL DEPTH 10.5 Ft.



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JOB NO. 00-1703CM-1

LOGGED BY DGG

Trench Log No. T-67

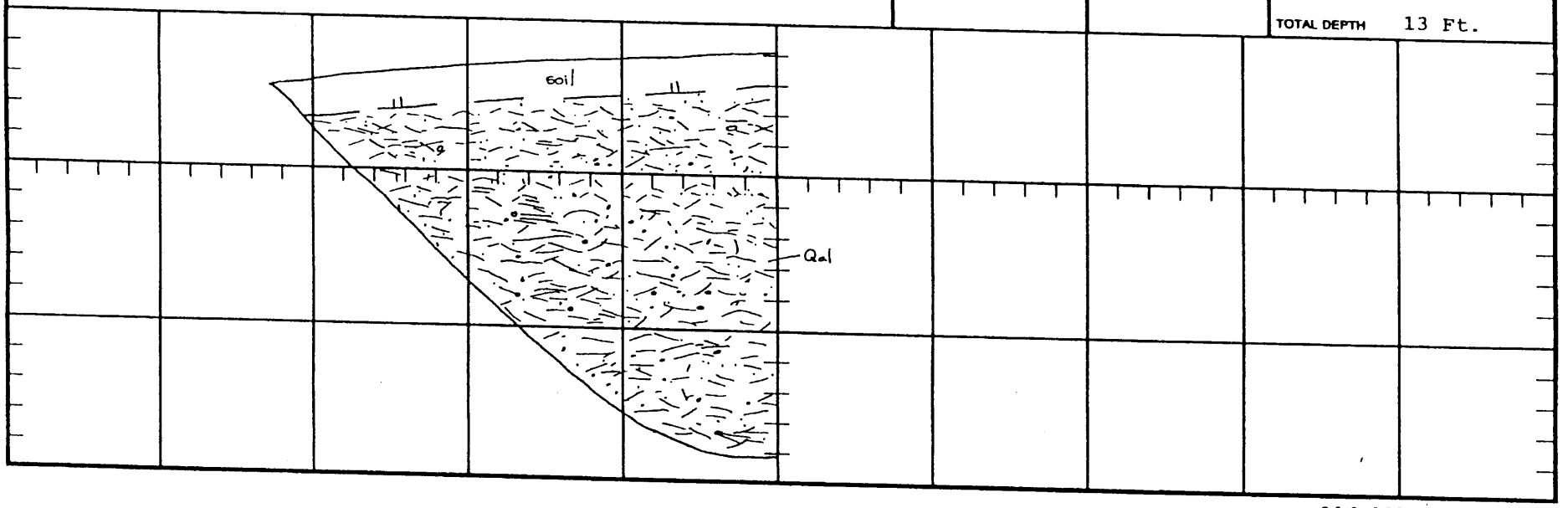
PROJECT Magic Mountain Entertainment

DATE 5/25/00

LITHOLOGY	BEDDING	OTHER	COMMENTS
0 - 1' SOIL; s, Medium-brown silt to slightly sandy silt with rootlets and scattered pebbles; soft to firm; damp to moist			
1 - 13' QUATERNARY ALLUVIUM; Qal, Medium-brown, locally yellowish-brown silt to sandy silt with scattered pebbles and local cobbles; loose to moderately dense; slightly damp to damp			2-3% voids; 1/4" to 3/8" diameter to bottom of trench No Ground Water No Caving TOTAL DEPTH 13 Ft.

SCALE 1" = 5'

N 78 E



ALLAN E. SEWARD

Newhall Land and Farming Company
March 18, 2005
2004-700-21

APPENDIX B

LABORATORY TESTS

APPENDIX B

LABORATORY TESTS

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to determine their engineering properties.

The field moisture content and dry density of the soils encountered were determined by performing tests on the undisturbed samples. The results of the tests are shown to the left of the boring logs in Appendix A.

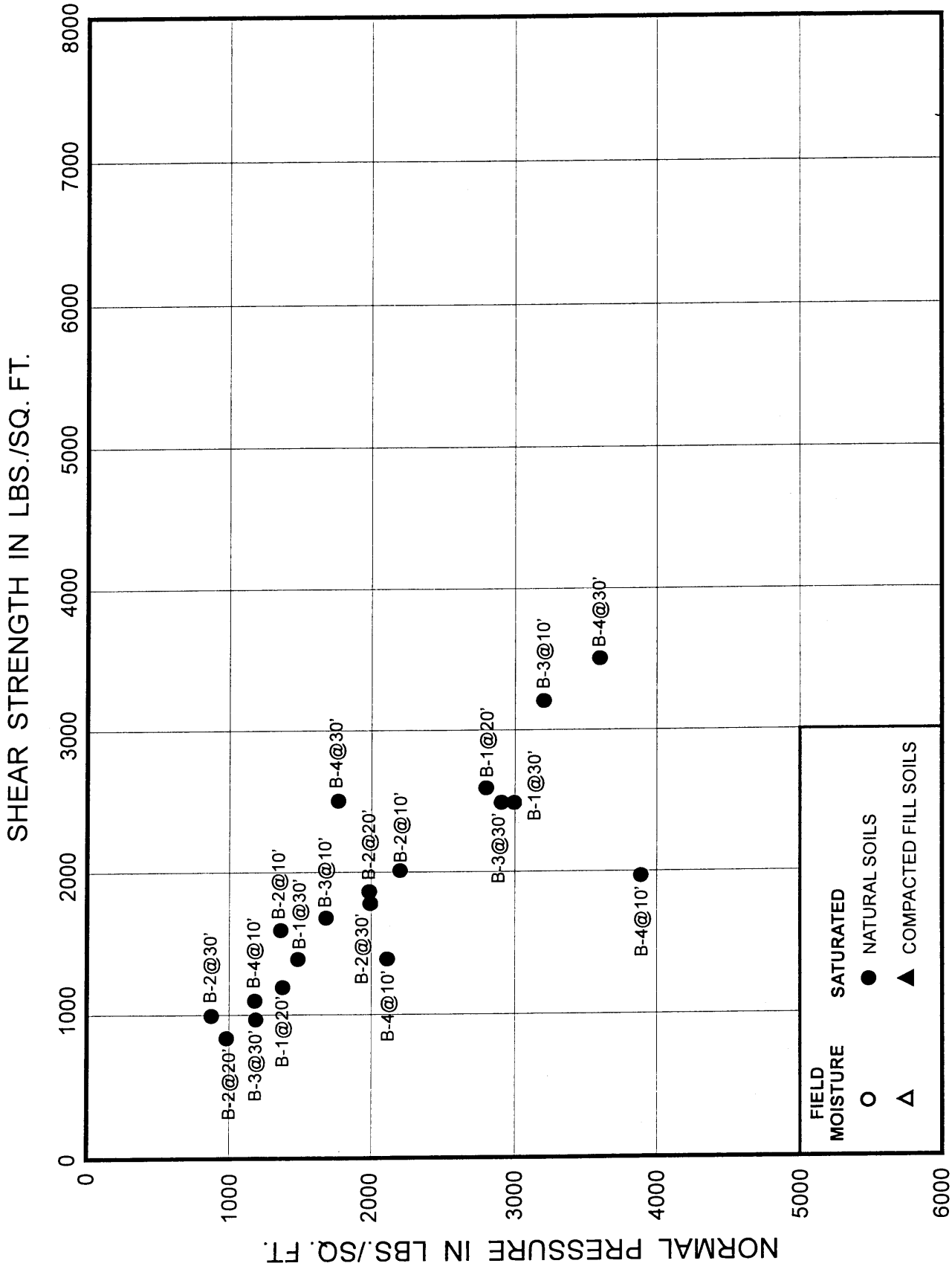
Direct shear tests were performed on selected undisturbed and remolded samples to determine the shear strength of the soils. Saugus Formation cross-bedding strengths are presented in Figure B-1.1. Terrace deposit cross-bedding strengths are presented on Figure B-1.2. The results of multi-shear direct shear tests to determine Saugus Formation along bedding strengths that present peak, ultimate, residual, and multi-shear residual. The remolded sample consisted of the upper soils prepared at a relative compaction of 90% of the maximum dry density obtainable using ASTM D1557. The tests on the samples from the current borings were performed after soaking the samples to near-saturated moisture content and at various surcharge pressures. The shear strength values determined from the direct shear tests as part of the current investigation are presented on Figures B-1.1 through B-1.4 Summary of Shear Test Data. Direct shear tests from our previous investigation of Planning Area 1 (RTF&A, 2001) and direct shear testing by AES are also presented in this Appendix.

Confined consolidation tests were performed on undisturbed samples from the previous investigations. Water was added during the tests to most of the undisturbed samples to illustrate the effect of moisture on the compressibility. The results of the tests are presented on Figures B-2.1 through B-2.3, Consolidation Test Data.

Sieve analysis tests to determine grain size distribution were performed on several samples obtained from the previous investigation (RTF&A, 2001). The results of the sieve analysis and hydrometer tests are shown on the attached grain size distribution sheets.

Additional laboratory test results from the previous feasibility evaluation (AES, 2000) are also presented in this appendix. These tests consist of hydroconsolidation tests, particle size distribution, Atterburg limits, consolidation tests, and direct shear tests.

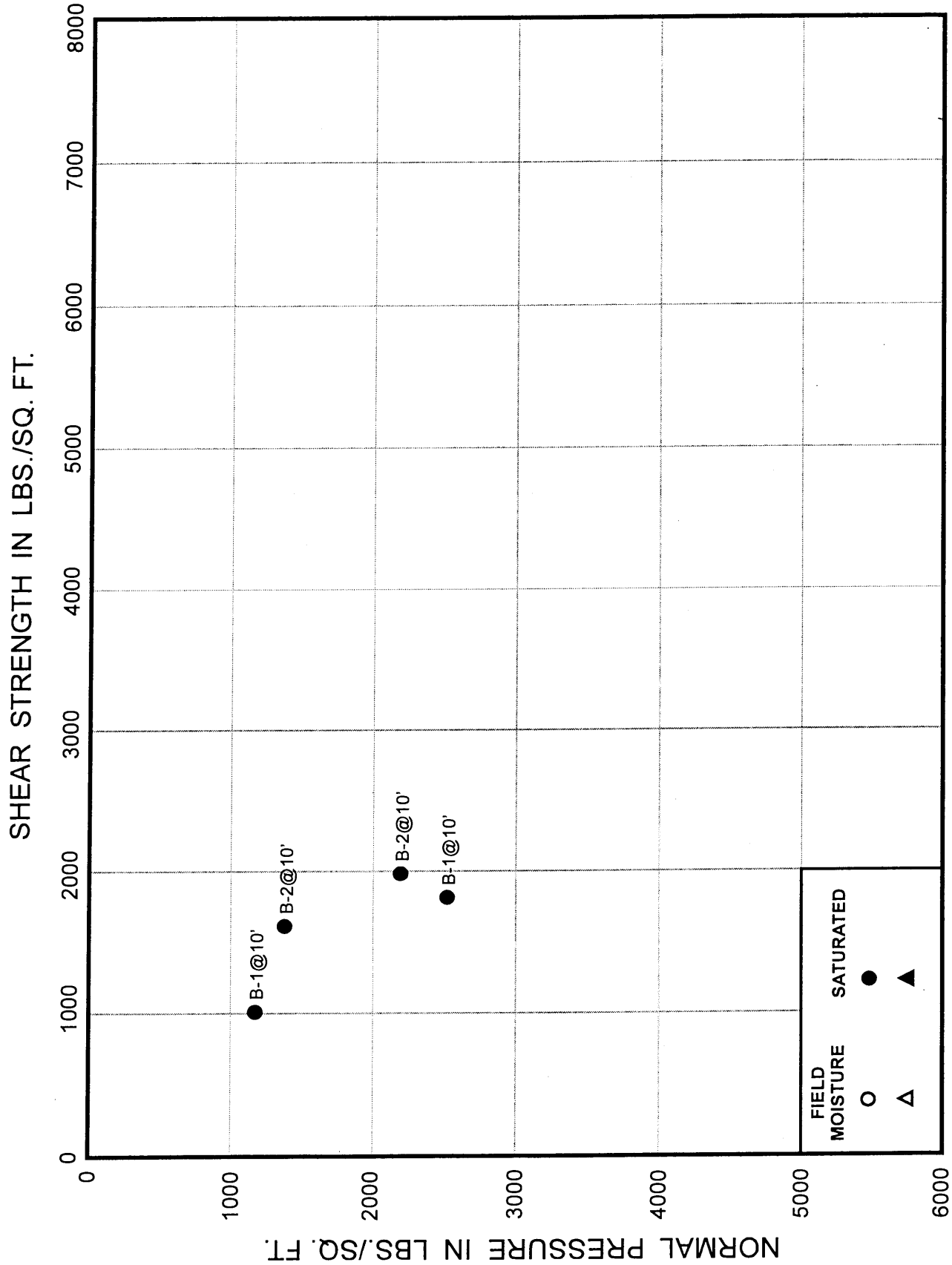
SUMMARY OF SHEAR TEST DATA



R.T. FRANKIAN & ASSOCIATES

FIGURE B-1.1

SUMMARY OF SHEAR TEST DATA



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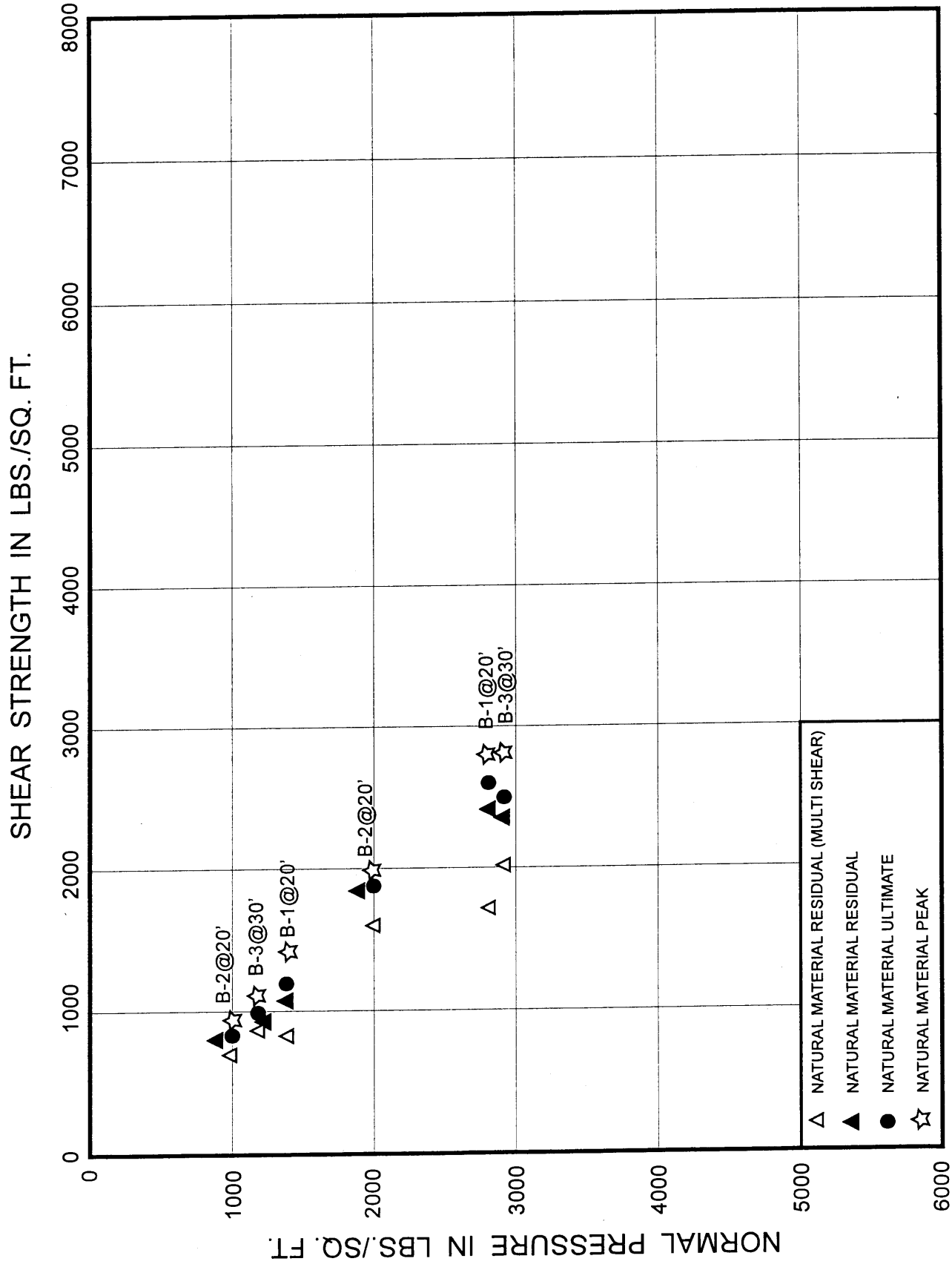
2004-700-21 REPORT DATED 3-18-05

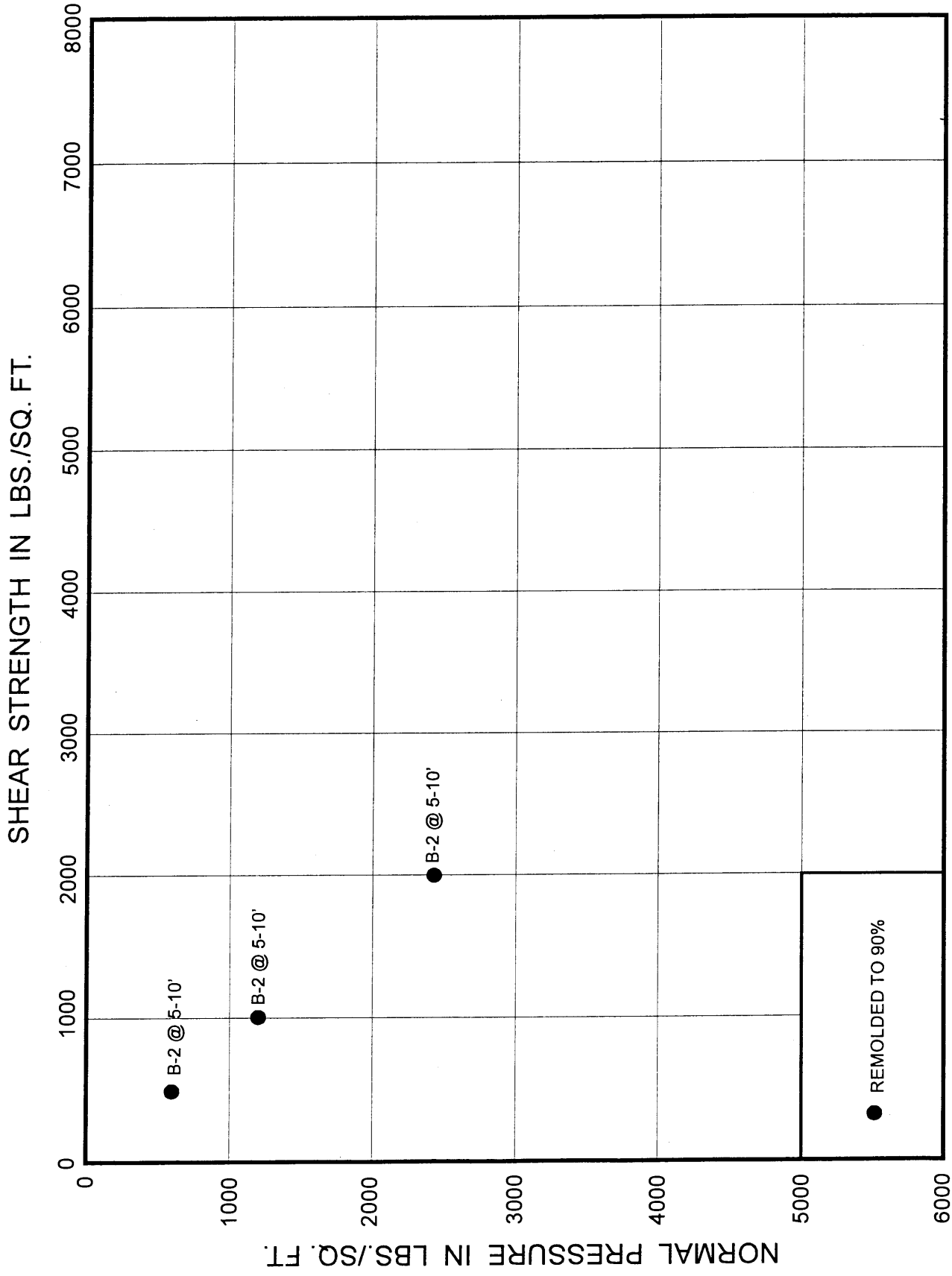
FIGURE B-1.2

SUMMARY OF SHEAR TEST DATA



R.T. FRANKIAN & ASSOCIATES
FIGURE B-1.3

SUMMARY OF SHEAR TEST DATA



R.T. FRANKIAN & ASSOCIATES

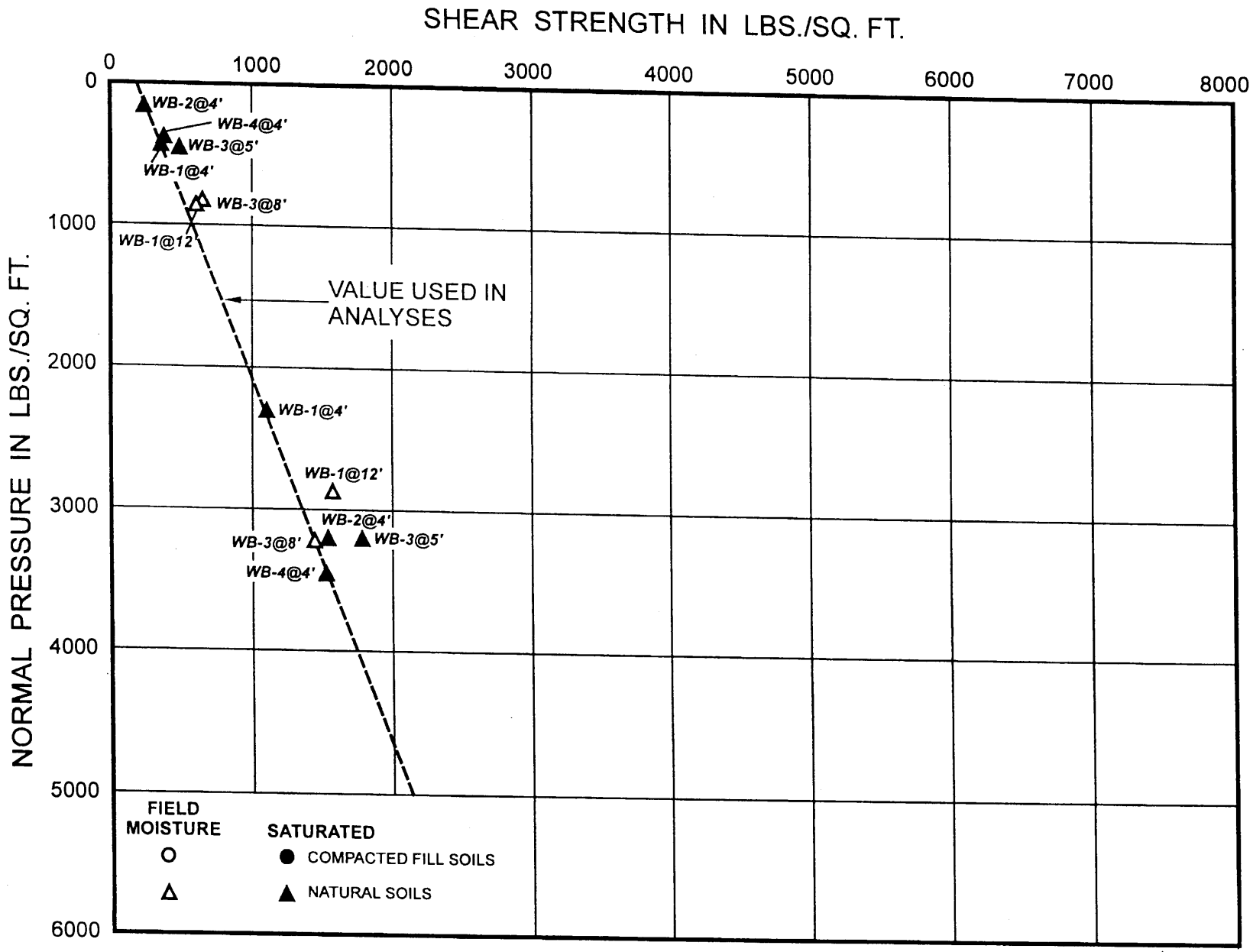
2004-700-21 REPORT DATED 3-18-05

FIGURE B-1.4

JOB NO. 96-115-S DATE

96-115-S REPORT DATED 12-3-01
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

SUMMARY OF SHEAR TEST DATA

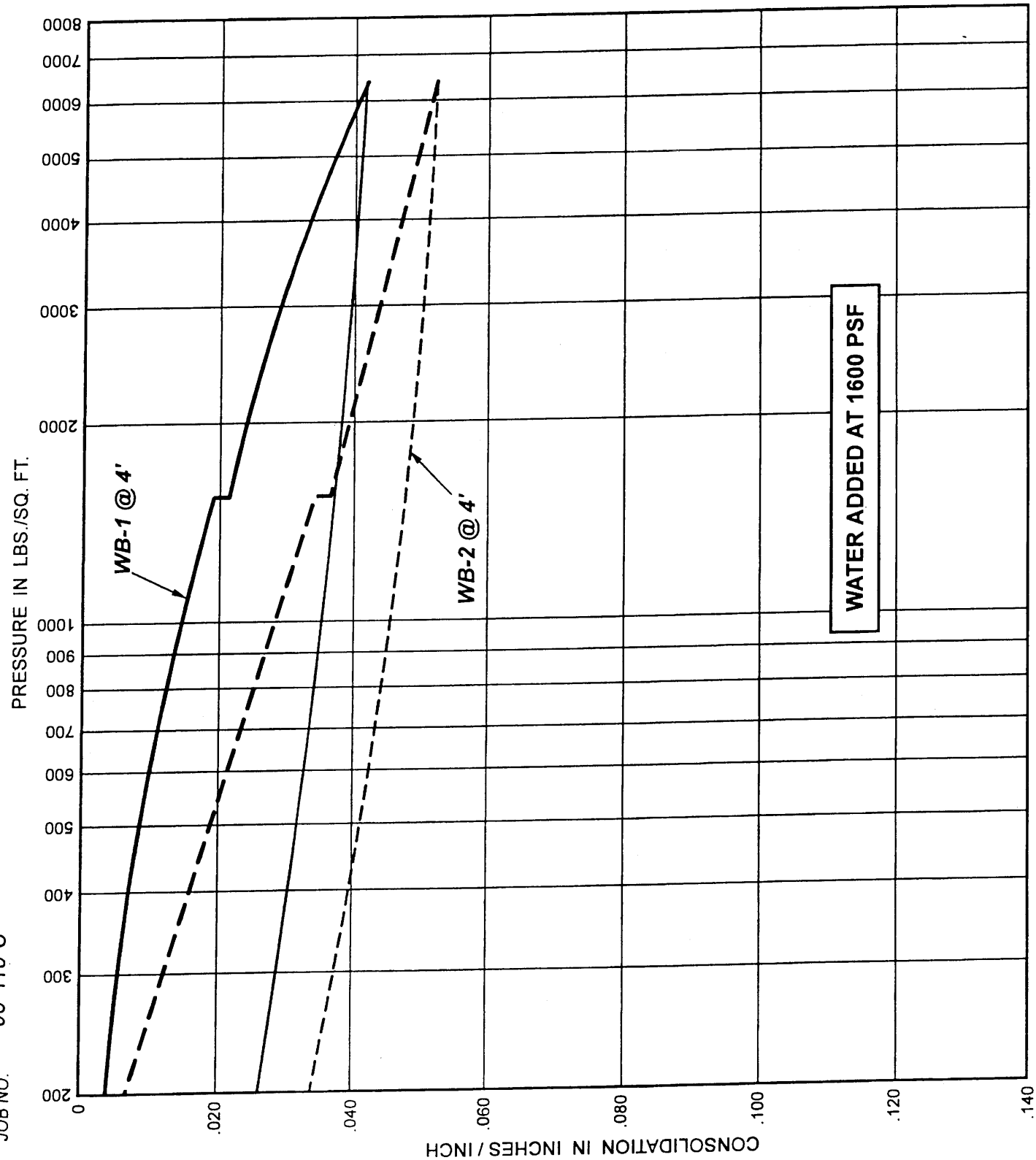


R.T. FRANKIAN & ASSOCIATES

FIGURE B-1

CONSOLIDATION TEST DATA

From 96-115-S REPORT DATED 3-23-98



JOB NO. 96-115-S

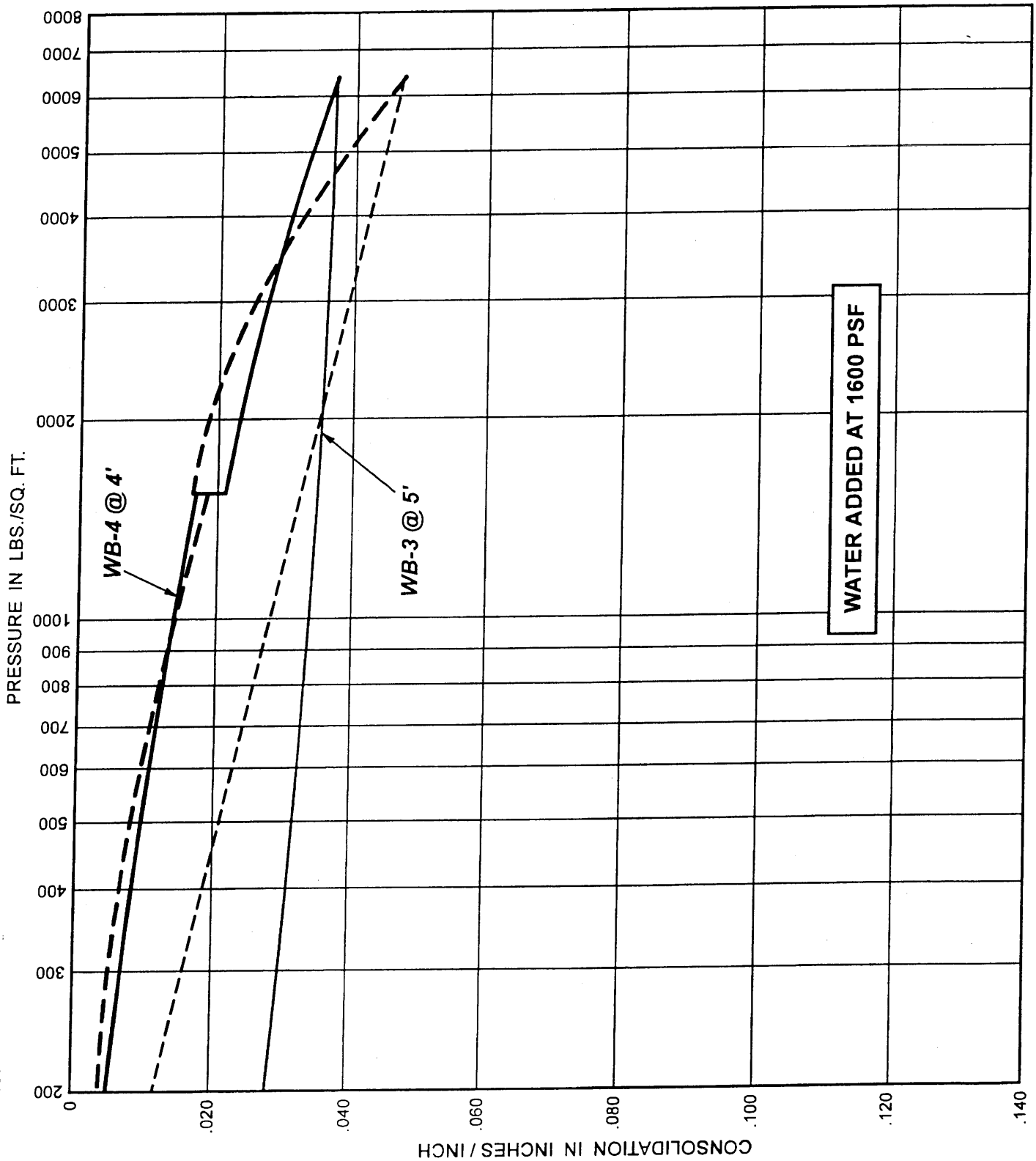
R.T. FRANKIAN & ASSOCIATES
FIGURE B-2.1

96-115-S REPORT DATED 12-3-01

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

CONSOLIDATION TEST DATA

From 96-115-S REPORT DATED 3-23-98



JOB NO. 96-115-S

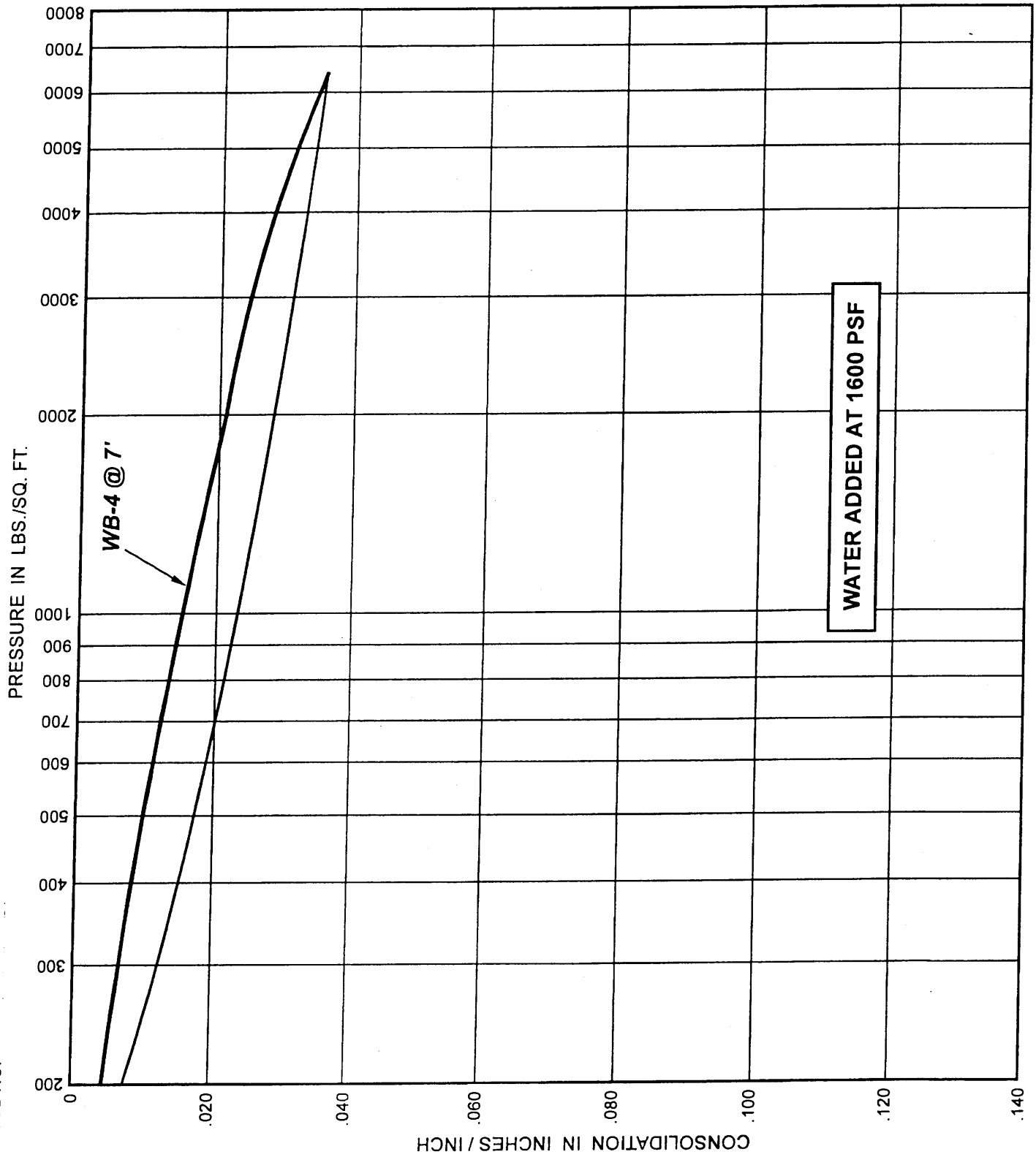
R.T. FRANKIAN & ASSOCIATES
FIGURE B-2.2

96-115-S REPORT DATED 12-3-01

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

CONSOLIDATION TEST DATA

From 96-115-S REPORT DATED 3-23-98



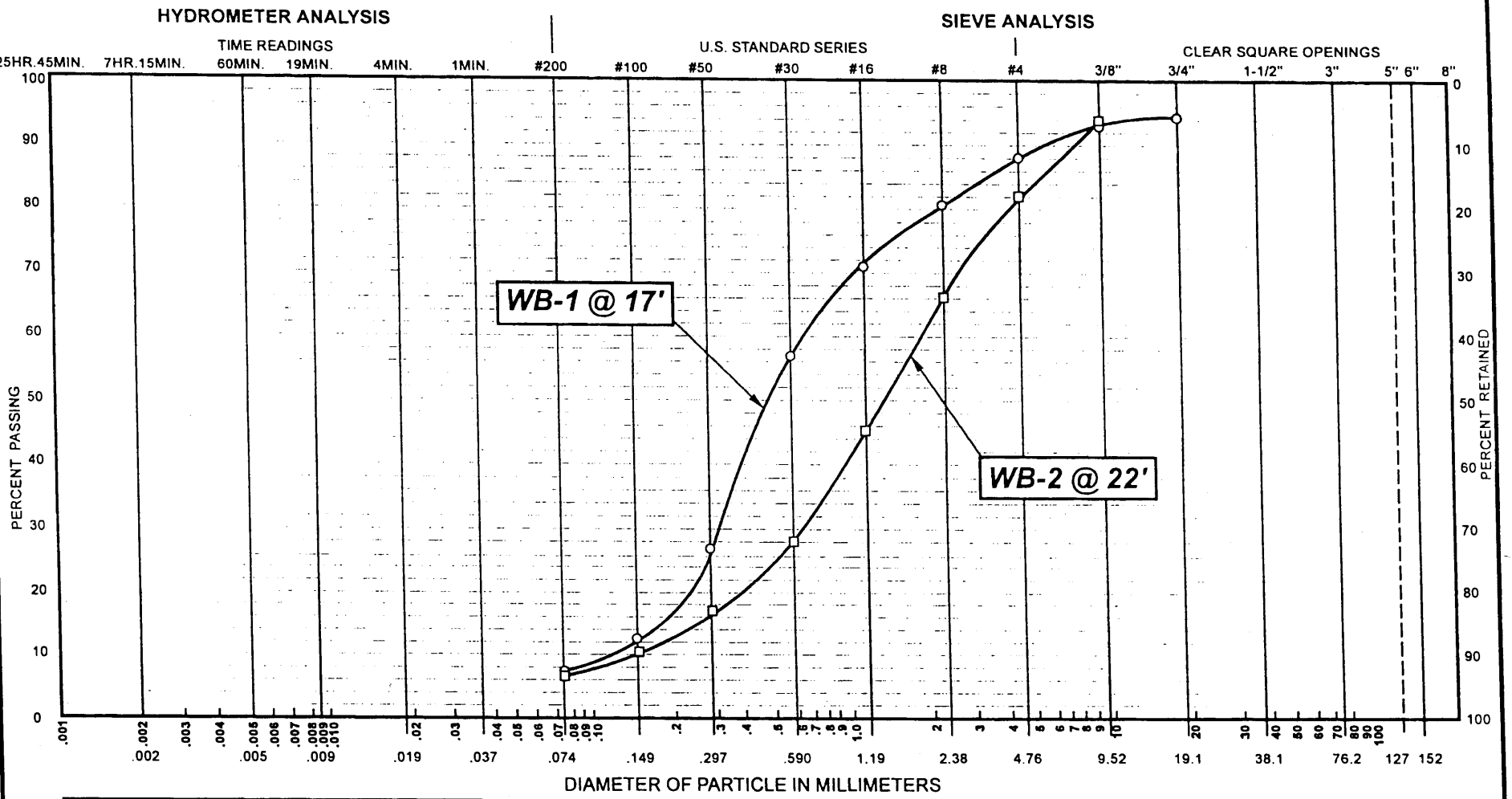
JOB NO. 96-115-S

R.T. FRANKIAN & ASSOCIATES
FIGURE B-2.3

96-115-S REPORT DATED 12-3-01

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

96-115-S REPORT DATED 12-3-01
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

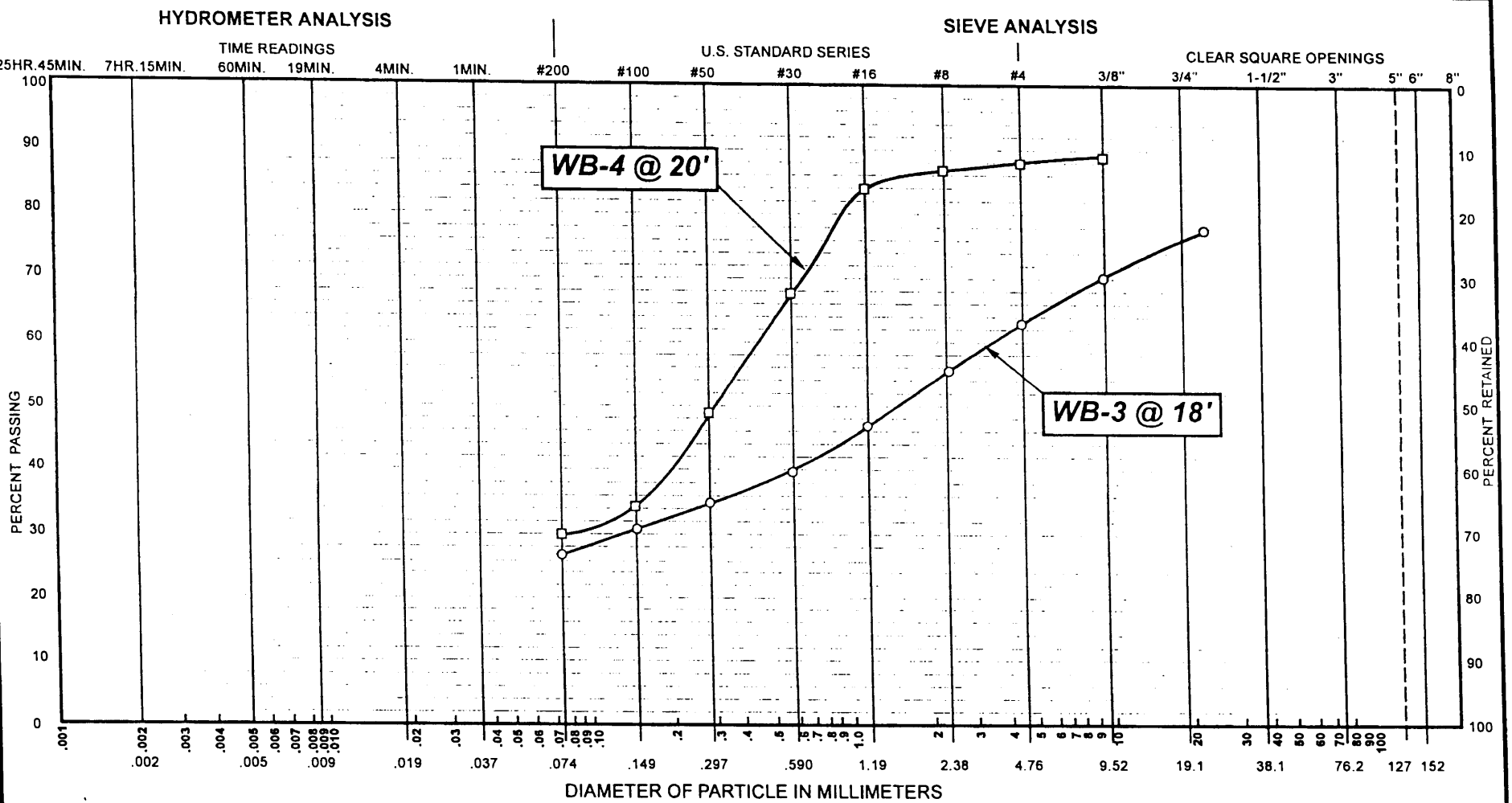


CLAY (PLASTIC) TO SILT (NON-PLASTIC)	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

GRADATION TEST DATA

From 96-115-S REPORT DATED 3-23-98

FIGURE B-3.1



CLAY (PLASTIC) TO SILT (NON-PLASTIC)	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

GRADATION TEST DATA

From 96-115-S REPORT DATED 3-23-98

FIGURE B-3.2

GEOTECHNICAL LABORATORY INVESTIGATION

1. General

   a. The purpose of the laboratory investigation was to evaluate the geotechnical engineering characteristics of the various materials encountered during the field investigation. The investigation program was carried out employing, wherever practical, currently accepted test procedures of the American Society of Testing and Materials (ASTM) and California Test Standards.

   b. Relatively undisturbed ring samples and bag samples were obtained during the course of the field investigation. Laboratory sample identification is by project name and number, drill hole number or trench number and depth.

   c. Geotechnical laboratory testing is classified in two major subgroups:
      - Index Properties Tests, and
      - Geotechnical Engineering Properties Tests

2. Index Properties Tests

   The following Index Properties test were performed on native soils collected during the field exploration.

Test Type	No. of Tests Performed	Testing Standard
Moisture Content & Unit Weight	85	ASTM D 2216 (Water Content)
Percent-Finer Than # 200	17	ASTM D 1140
Particle-size Analysis	18	ASTM D 422 and D 1140
Atterberg Limits	12	ASTM D 4318

The purpose of each test is briefly described below.

   a. The natural water content and in-situ unit dry weight of soils provided an indication of the strength of natural soils before additional testing was performed. These data, in conjunction with field blow count data, served in the selection of samples for additional testing. Test results are presented on the Drill Hole Logs and Trench Logs within **Appendix A**.

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

b. Minus No. 200 wash-sieve analyses were performed on some samples to evaluate only the percentage of fine particles smaller than 75 microns within the soil. These tests were conducted to aid in classifying the soils in accordance with the Unified Soil Classification System (USCS). Test results are presented on the Drill Hole Logs and Trench Logs within **Appendix A.**

c. Complete mechanical particle-size analyses of soil fractions larger and smaller than 75 microns (No. 200 sieve) were conducted to aid in classifying the soils in accordance with the Unified Soil Classification System (USCS). Test results are presented on **Figures B1.1 through B1.4** within this **Appendix.**

d. Liquid and plastic limit tests (Atterberg limits) were conducted on selected samples to aid in classifying the soils in accordance with USCS (by evaluating soil plasticity). Test results are presented on **Figures B2.1 through B2.4** within this **Appendix.**

3. Geotechnical Engineering Properties Tests

The following Geotechnical Engineering Property Tests were performed on relatively undisturbed ring samples collected at this site.

Test Type	Test No.	Testing Standard
Consolidation	11	ASTM D 2435
Direct Shear	2	ASTM D 3080

The purpose of each test is briefly described below.

a. One-dimensional consolidation tests were performed on selected ring samples to assess the soils compressibility characteristics by subjecting the specimens to loads ranging from 150 psf to 16,000 psf, and with the addition of water at loads near the overburden pressure. Test results are plotted on **Figures B3.1 through B3.11** within this **Appendix.**

b. Direct shear tests were performed on relatively undisturbed test specimens using a displacement-controlled direct shear machine. Samples were tested at normal pressures ranging from approximately 2.0 ksf to 5.0 ksf in order to define both the

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

peak and residual shear strength parameters. The samples were consolidated under the normal load at saturated conditions and then sheared horizontally at a controlled displacement rate until a residual strength was attained. Tests results are plotted on **Figures B4.1 and B4.2** within this **Appendix.**

The following attachments completed this Appendix

Laboratory Test Results

• Soil Collapse Potential of Shallow Soils to Receive Fill	Table B1
• Particle Size Distribution Test Report	Figures B1.1 through B1.4
• Liquid and Plastic Limits Test Report	Figures B2.1 through B2.4
• Consolidation Test Reports	Figures B3.1 through B3.11
• Direct Shear Test Results	Figures B4.1 and B1.2

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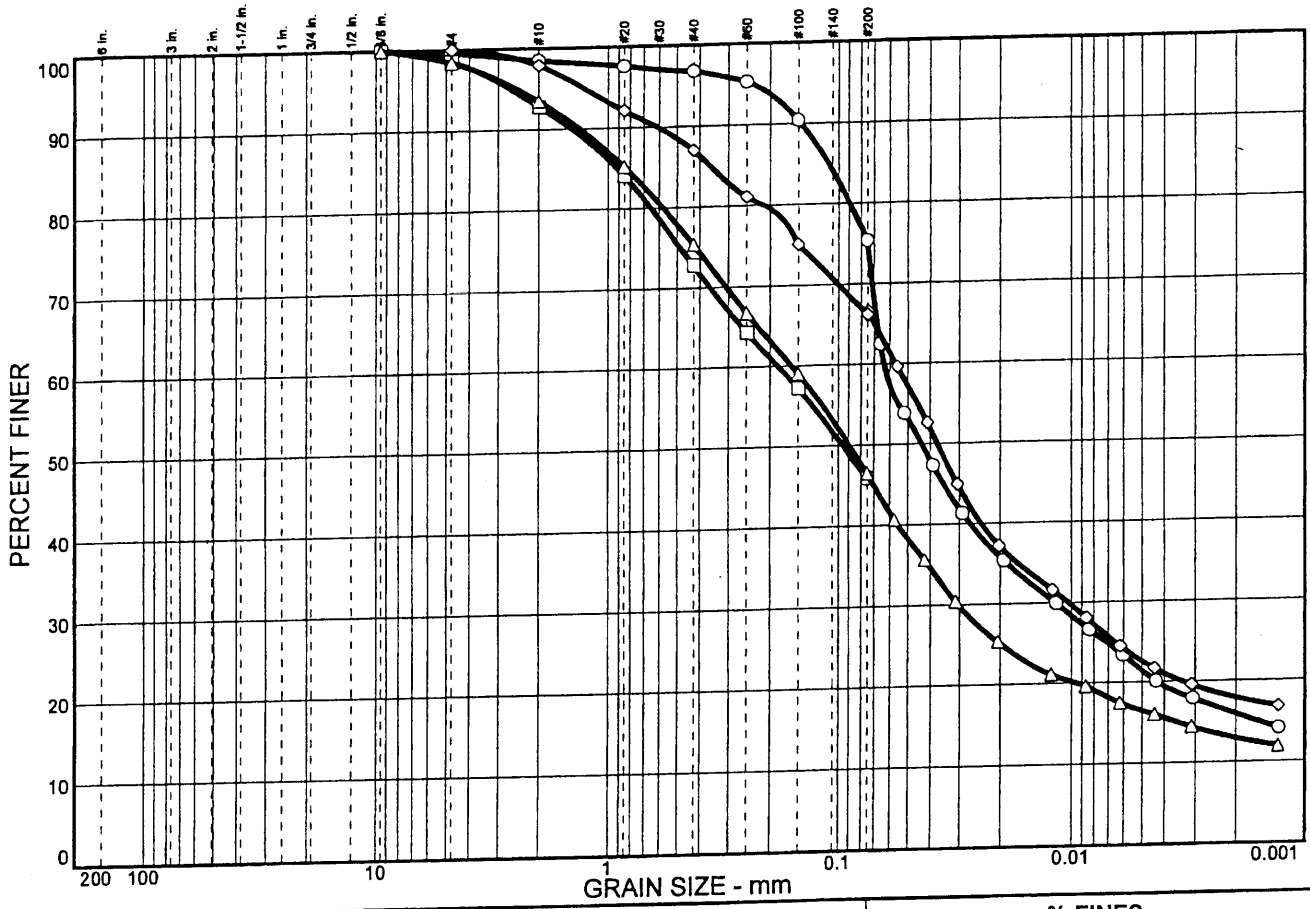
SOIL COLLAPSE POTENTIAL OF SHALLOW SOILS TO RECEIVE FILL

Location	Depth (ft.)	% Hydroconsolidation	Hydroconsolidation Classification (per L.A. County)
HS-1	2'	- (expansion)	-
HS-2	5'	0.0	Low (<2%)
HS-3	5'	0.2	Low (<2%)
HS-5	5'	0.7	Low (<2%)
HS-6	5'	2.1	High (>2%)
HS-8	5'	2.9	High (>2%)
HS-10	2'	0.0	Low (<2%)
HS-12	5'	0.0	Low (<2%)
HS-13	3'	1.2	Low (<2%)
RW-2	11'	0.3	Low (<2%)
RW-3	5'	- (expansion)	-

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	0.4	1.1	1.7	21.4	54.0	21.4
□	0.0	0.0	1.4	5.8	20.0	26.9	45.9	
△	0.0	0.0	1.6	4.9	18.1	28.9	30.0	16.5
◇	0.0	0.0	0.0	2.1	10.9	20.8	43.6	22.6

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	RW-1	1	2'	Lean clay with sand	CL
□	RW-1	3	18'	Silty sand	SC
△	RW-2	1	2'	Clayey sand	SC
◇	RW-2	3	11'	Sandy lean clay	CL

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Valencia Company

Project: Magic Mountain Entertainment

Project No.: 00-1729-1

Figure B1.1

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

PARTICLE SIZE DISTRIBUTION TEST REPORT

	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	10.3	5.4	21.0	27.2	36.1	
□	0.0	3.8	15.4	16.1	33.8	18.0	12.9	
△	0.0	0.0	3.1	1.2	20.8	56.2	18.7	
◇	0.0	0.0	6.7	9.3	41.7	33.1	9.2	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	HS-2	3	15'	Silty sand	SM
□	HS-3	2	25'	Silty sand with gravel	SM
△	HS-4	1	11'	Silty sand	SM
◇	HS-6	2	15'	Well-graded sand with silt	SW-SM

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

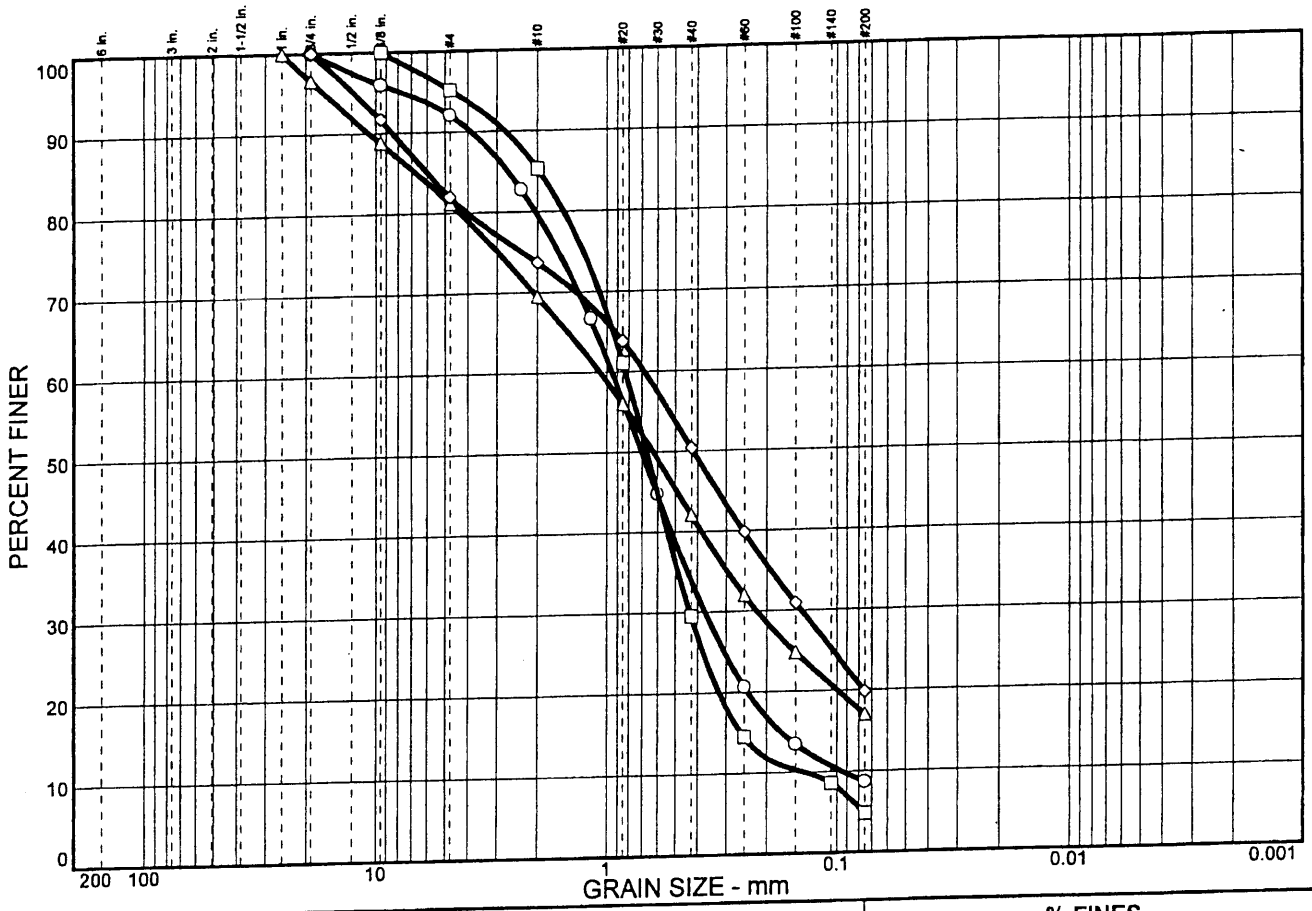
Client: Valencia Company

Project: Magic Mountain Entertainment

Project No.: 00-1729-1

Figure B1.2

PARTICLE SIZE DISTRIBUTION TEST REPORT



	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	7.9	12.5	45.7	25.2	8.7	
□	0.0	0.0	4.8	9.9	55.8	24.7	4.8	
△	0.0	3.4	15.4	11.7	27.4	25.1	17.0	
◇	0.0	0.0	18.0	8.3	23.3	30.6	19.8	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	HS-7	1	2'-3.5'	Well-graded sand with silt	SW-SM
□	HS-7	2	11'	Well-graded sand	SW
△	HS-8	3	20'	Silty sand with gravel	SM
◇	HS-10	2	11'	Silty sand with gravel	SM

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

Client: Valencia Company

Project: Magic Mountain Entertainment

Project No.: 00-1729-1

Figure B1.3

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

PARTICLE SIZE DISTRIBUTION TEST REPORT

	% COBBLES	% GRAVEL		% SAND			% FINES	
		CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
○	0.0	0.0	3.1	6.6	31.9	54.5	3.9	
□	0.0	0.0	7.2	6.6	27.7	36.6	21.9	
△	0.0	0.0	1.7	1.2	12.1	52.0	33.0	
◇	0.0	1.5	9.7	17.0	43.6	15.7	12.5	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	DESCRIPTION	USCS
○	HS-11	1	2'-3.5'	Poorly graded sand	SP
□	HS-11	2	9'	Silty sand	SM
△	HS-11	3	20'	Silty sand	SM
◇	HS-13	1	3'	Silty sand	SM

PARTICLE SIZE DISTRIBUTION TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

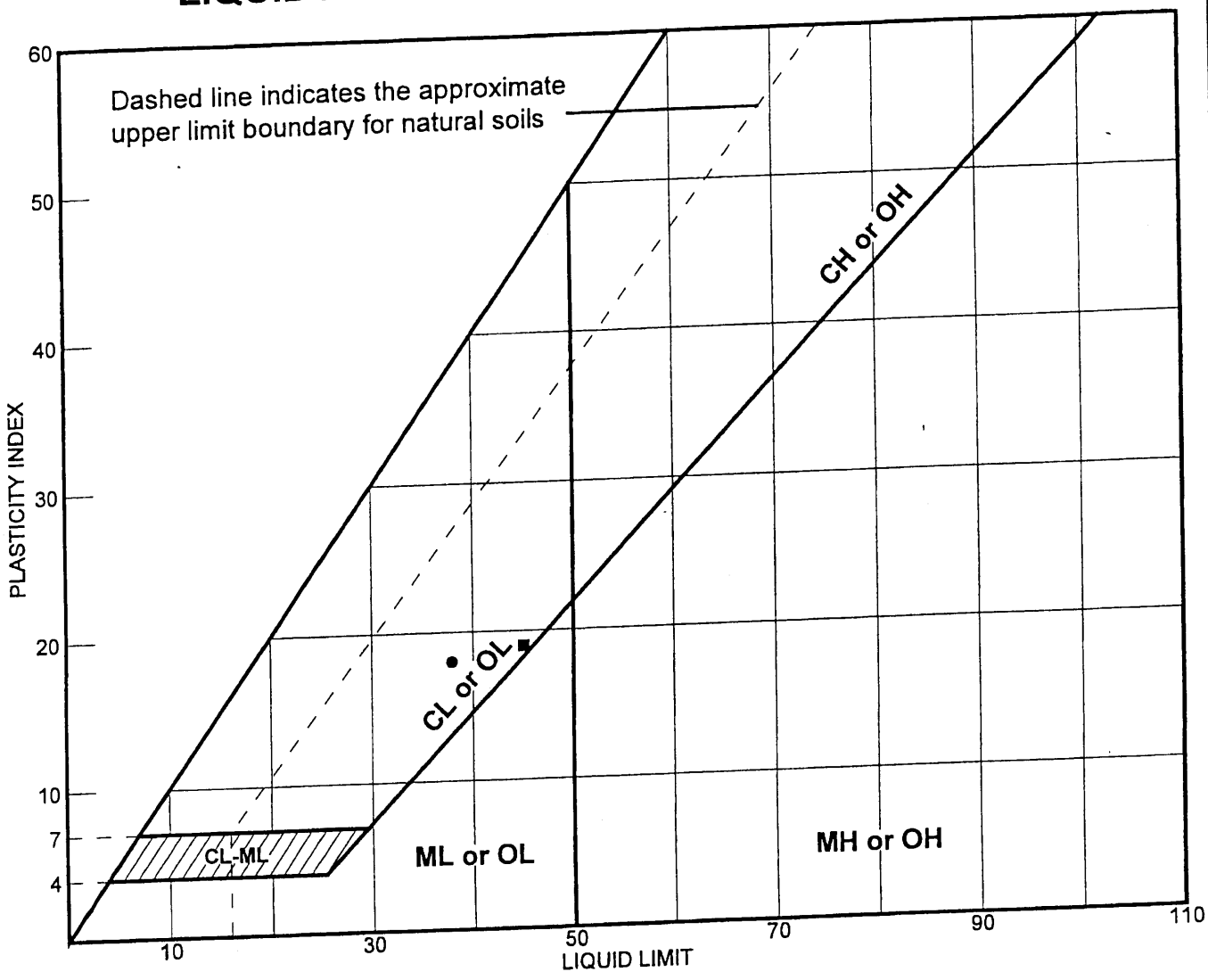
Client: Valencia Company

Project: Magic Mountain Entertainment

Project No.: 00-1729-1

Figure B1.4

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	RW-1	1	2'		20	38	18	CL
■	RW-1	2	8'		26	45	19	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Client: Valencia Company

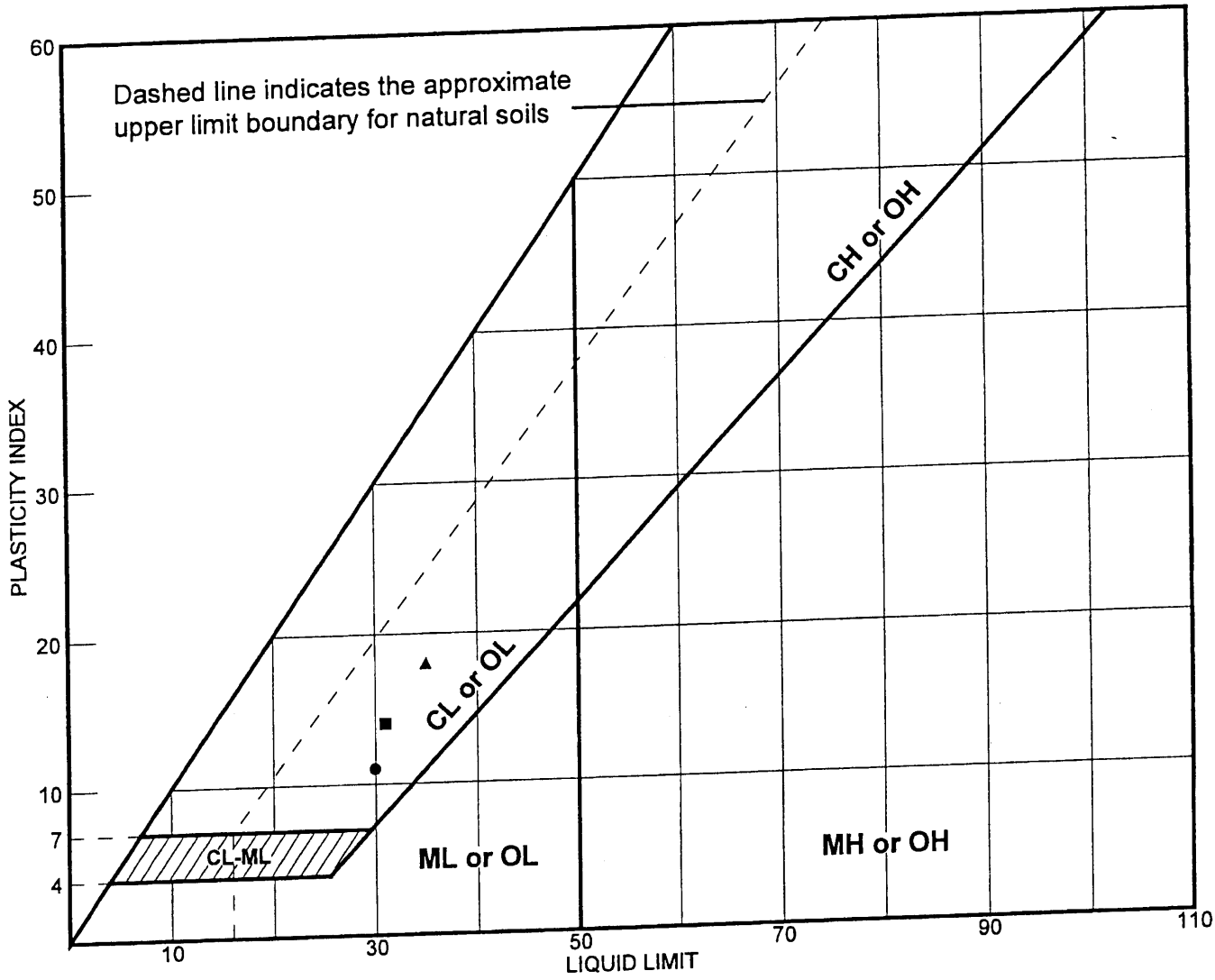
Project: Magic Mountain Entertainment

Project No.: 00-1729-1

Figure B2.1

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	RW-2	1	2'		19	30	11	SC
■	RW-2	2	8'		17	31	14	SC
▲	RW-2	3	11'		17	35	18	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

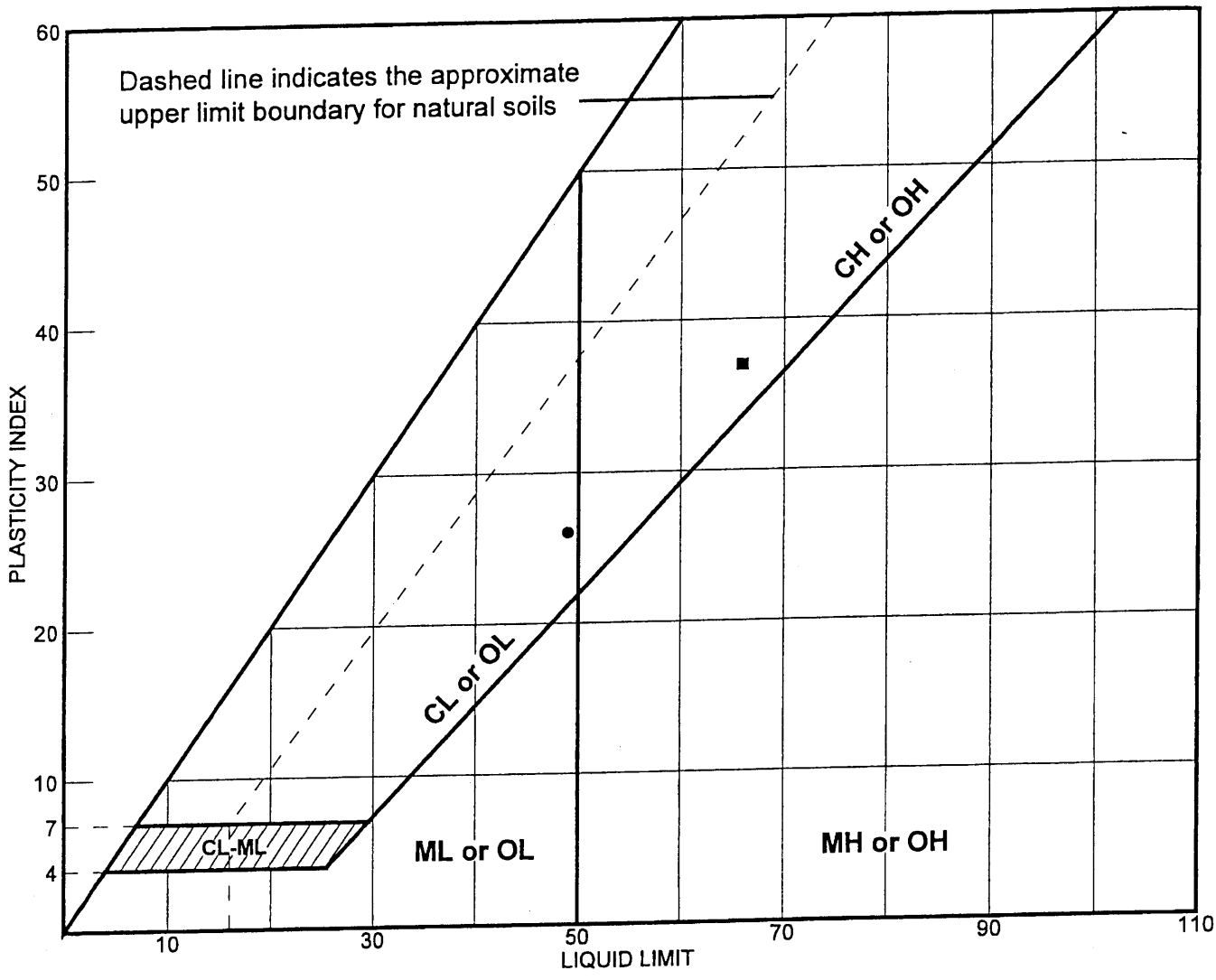
Client: Valencia Company

Project: Magic Mountain Entertainment

Project No.: 00-1729-1

Figure B2.2

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	RW-3	1	3'		23	49	26	CL
■	RW-3	4	15'		29	66	37	CH

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

ENGINEERING GEOLOGY, INC.

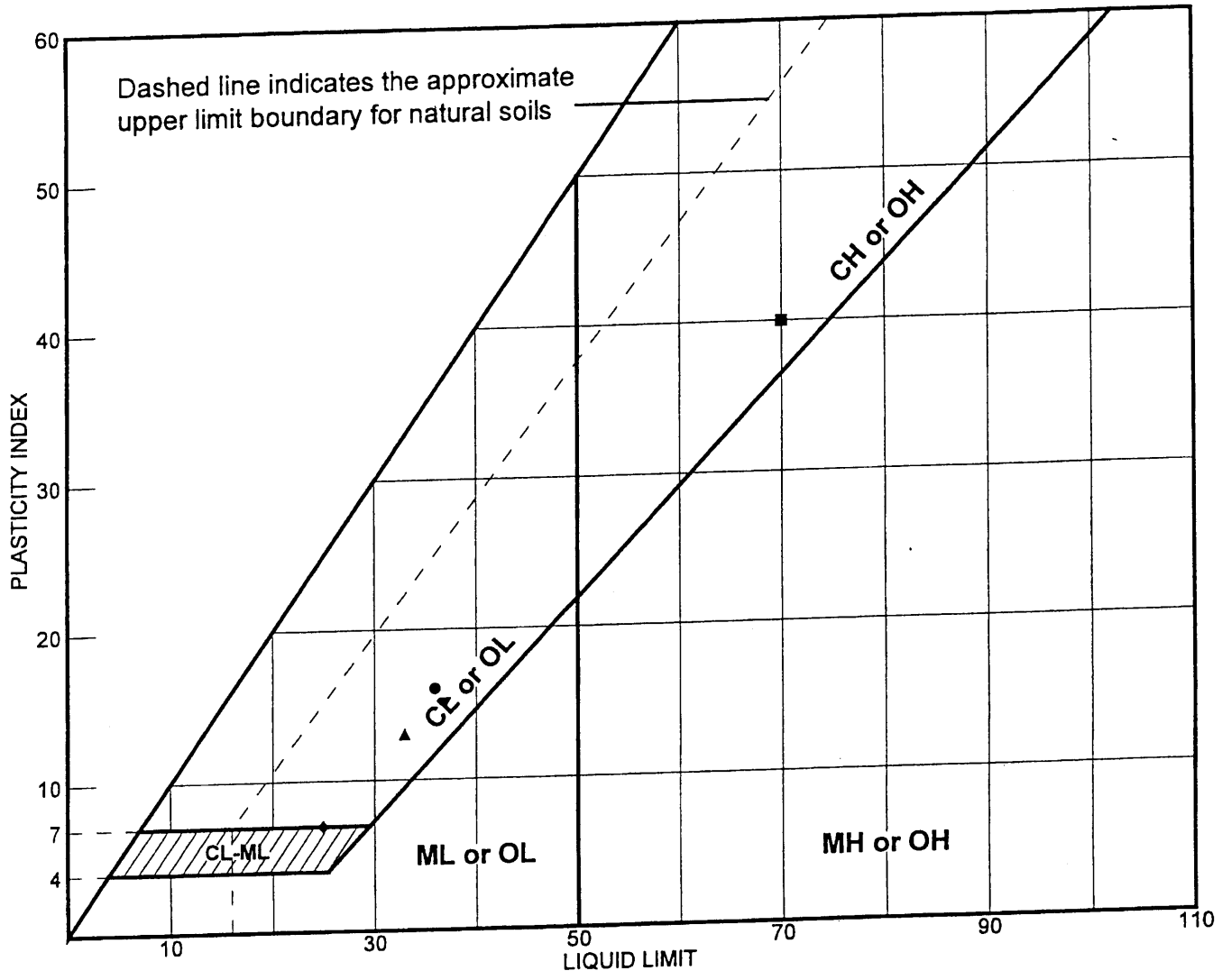
Client: Valencia Company

Project: Magic Mountain Entertainment

Project No.: 00-1729-1

Figure B2.3

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	HS-1	2	8'		20	36	16	CL
■	HS-1	4	20'		30	70	40	CH
▲	HS-2	2	8'		20	33	13	CL
◆	HS-8	2	15'		18	25	7	SC-SM
▼	HS-13	4	11'		22	37	15	CL

LIQUID AND PLASTIC LIMITS TEST REPORT

ALLAN E. SEWARD

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Client: Valencia Company

Project: Magic Mountain Entertainment

Project No.: 00-1729-1

Figure B2.4

CONSOLIDATION TEST REPORT

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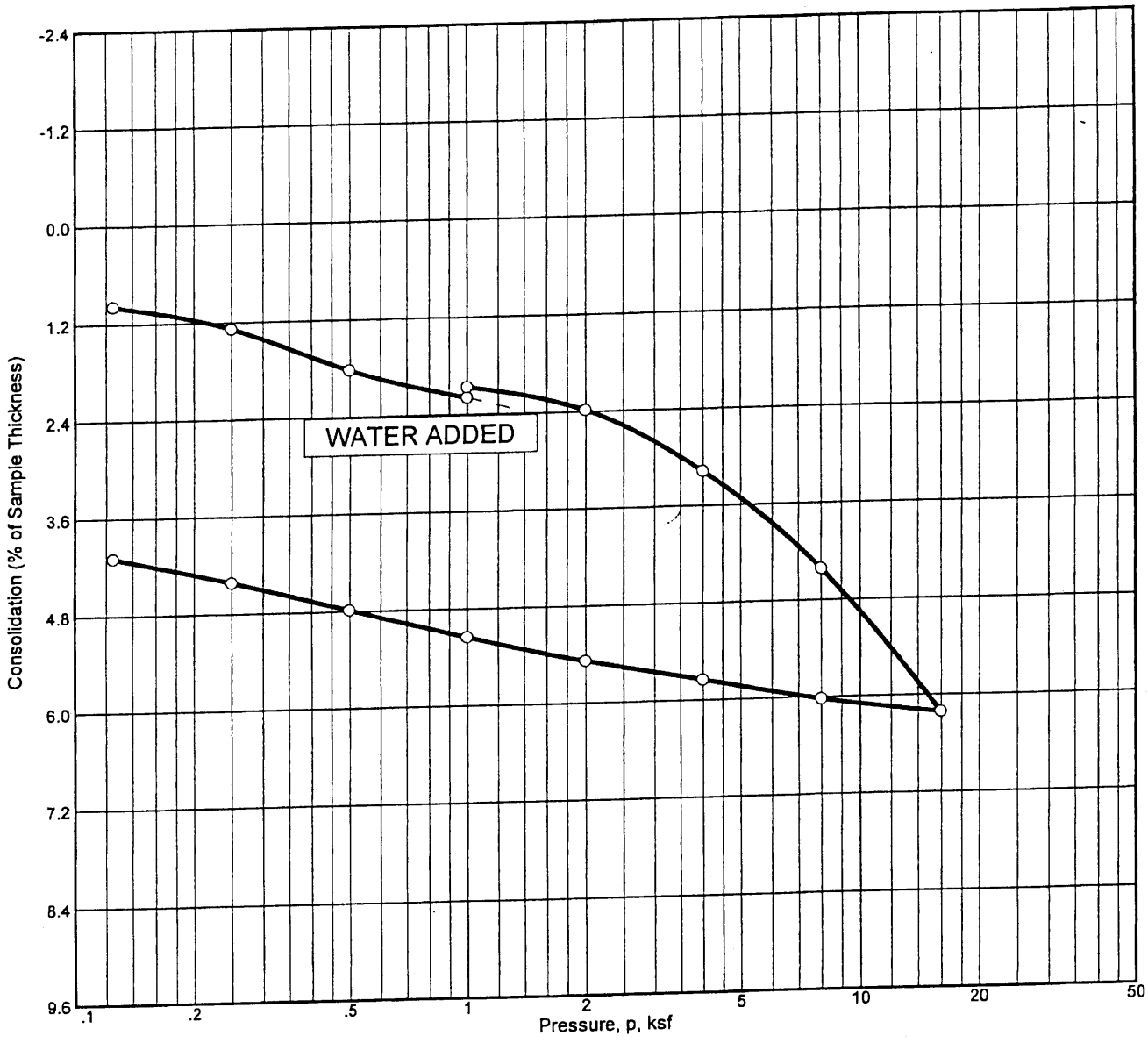

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	119.8	13.0	90.2	1.000	0.381	2.65	0.08	0.24	4.23	SC
FINAL	124.9	12.7	100.0	0.959	0.325					

Source: HS-1 **Sample No.:** 1 **Elev./Depth:** 2'-3.5'
Material Description: Yellowish brown clayey sand
Remarks:

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Client: Valencia Company
Project: Magic Mountain Entertainment
Job No.: 00-1729-1 **Figure** B3.1

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

CONSOLIDATION TEST REPORT

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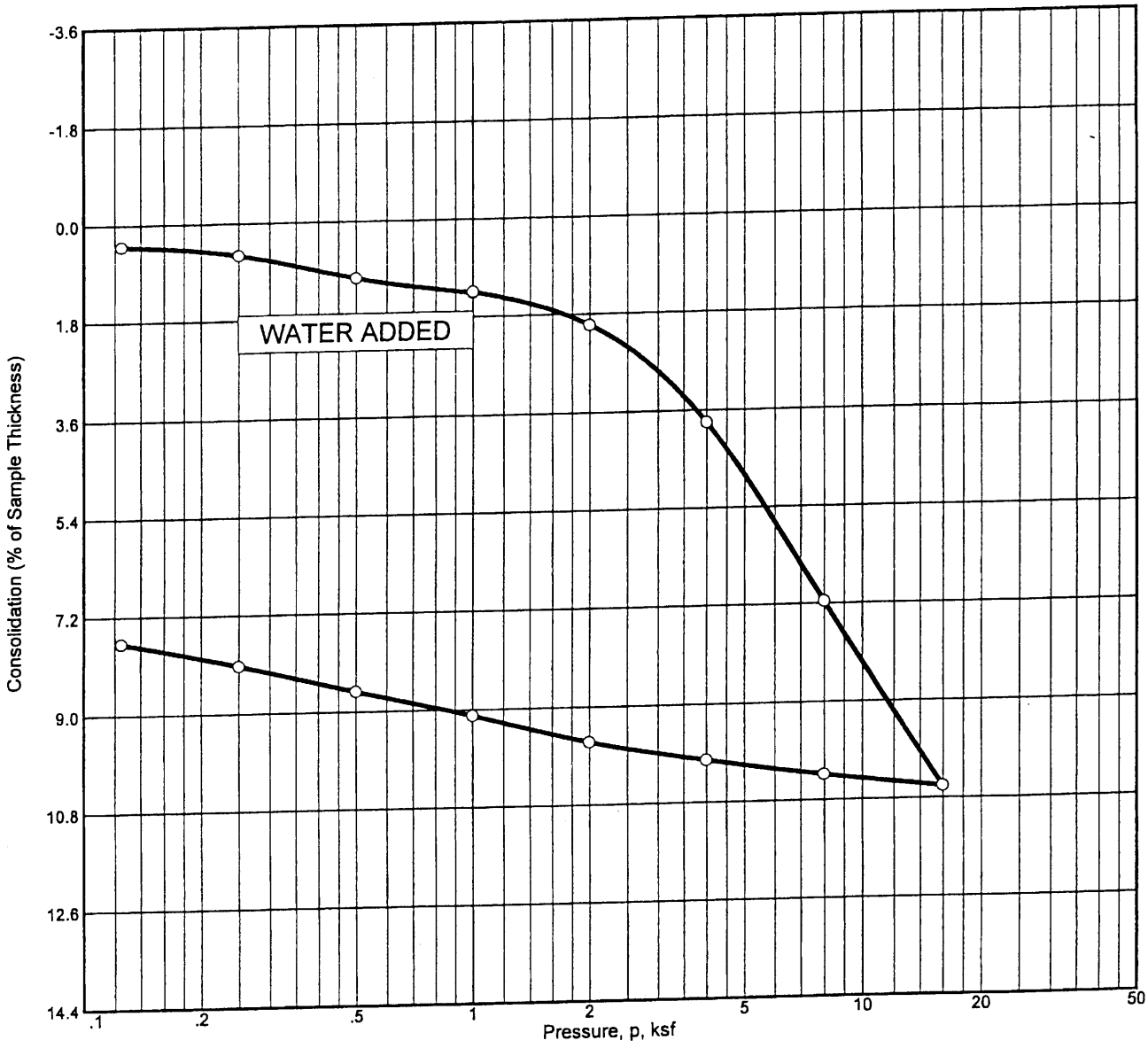

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	117.6	15.1	98.2	1.000	0.407	2.65	0.16	0.60	3.21	CL
FINAL	127.4	12.7	100.0	0.923	0.299					

Source: HS-2 **Sample No.:** 1 **Elev./Depth:** 5'-6.5'
Material Description: Light brown sandy lean clay
Remarks:

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ENGINEERING GEOLOGY, INC.

Client: Valencia Company
Project: Magic Mountain Entertainment
Job No.: 00-1729-1 **Figure** B3.2

CONSOLIDATION TEST REPORT

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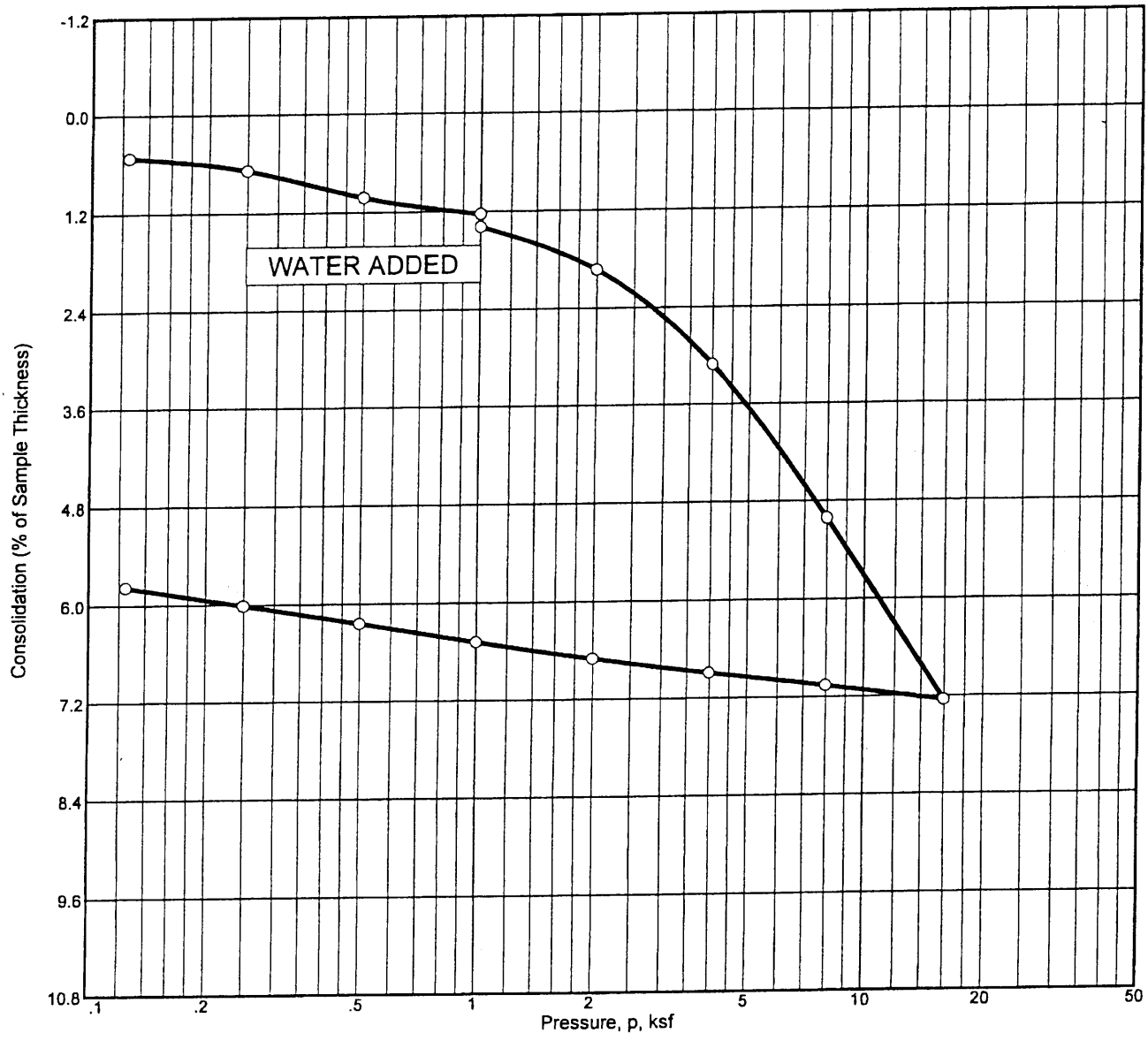

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	95.0	26.8	95.7	1.000	0.742	2.65	0.13	0.60	3.44	SM
FINAL	100.8	25.5	100.0	0.942	0.641					

Source: HS-3 **Sample No.:** 1 **Elev./Depth:** 5'-6.5'
Material Description: Light yellowish brown silty sand
Remarks:

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ENGINEERING GEOLOGY, INC.

Client: Valencia Company
Project: Magic Mountain Entertainment
Job No.: 00-1729-1 **Figure** B3.3

CONSOLIDATION TEST REPORT

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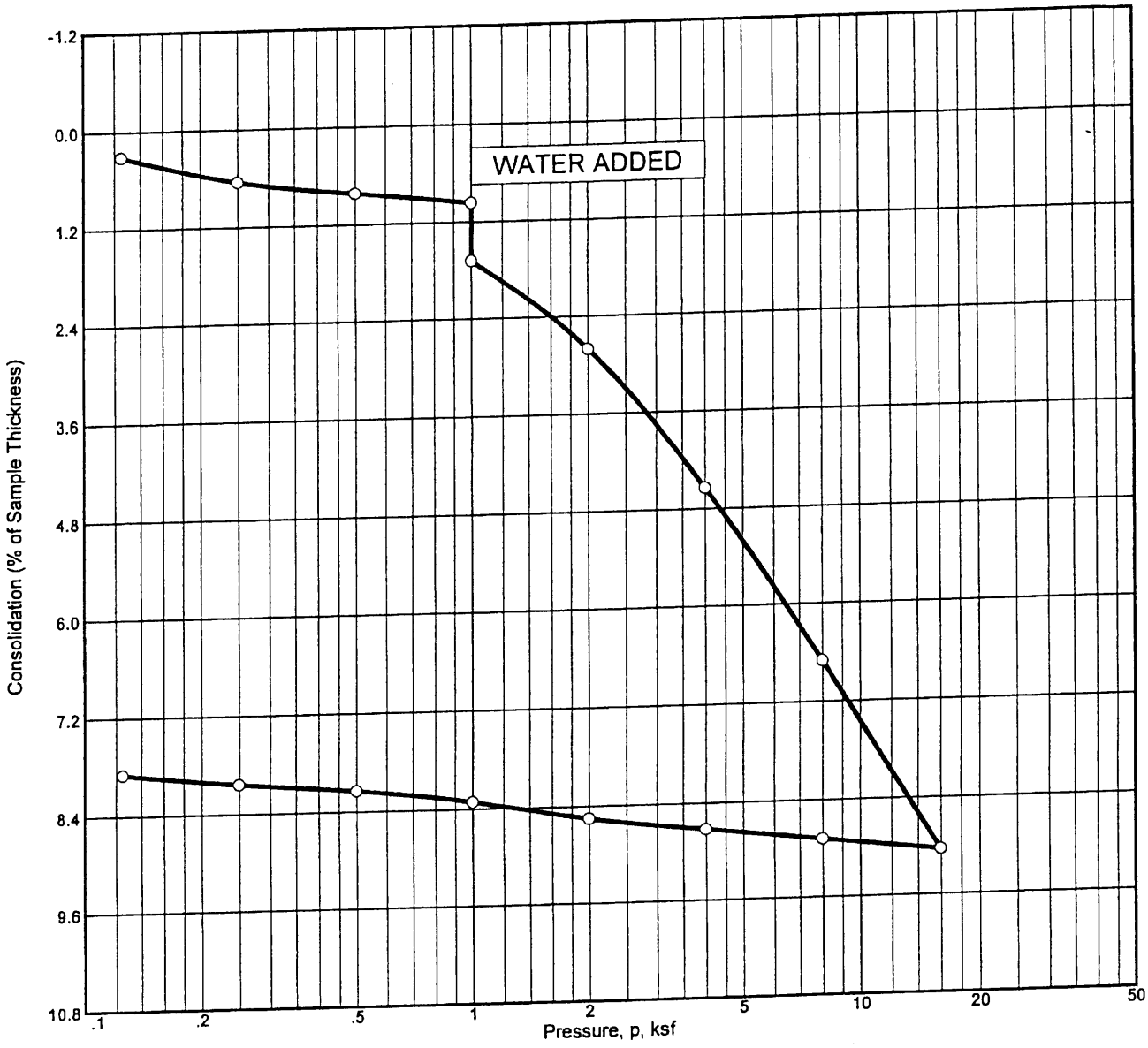

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	95.0	27.3	97.3	1.000	0.742	2.65	0.14	0.60	2.81	SM
FINAL	103.1	23.5	100.0	0.921	0.605					

Source: HS-5 **Sample No.:** 1 **Elev./Depth:** 5'-6.5'
Material Description: Light brown silty sand
Remarks:

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Client: Valencia Company
Project: Magic Mountain Entertainment
Job No.: 00-1729-1
Figure B3.4

CONSOLIDATION TEST REPORT

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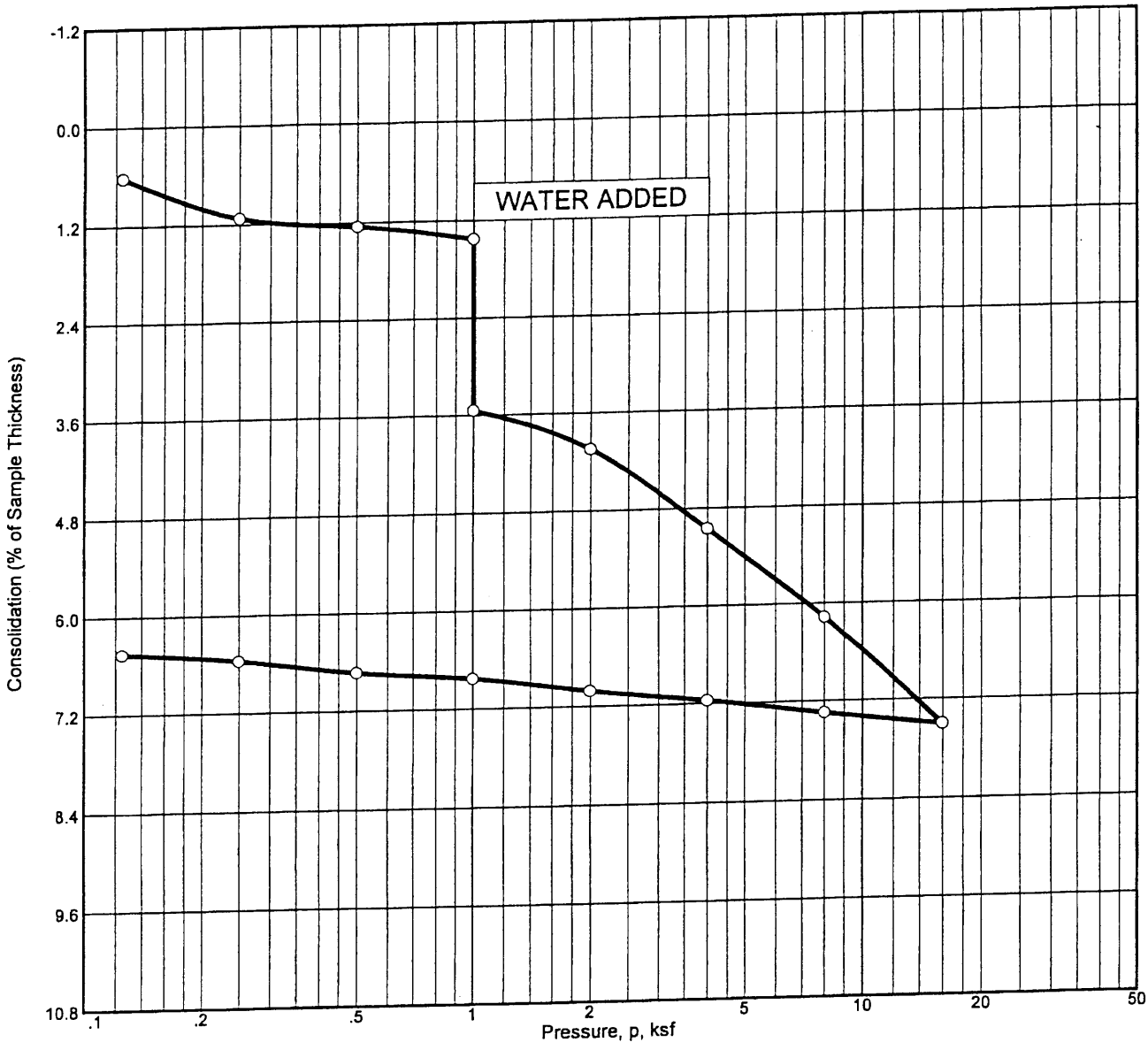

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	68.7	50.7	95.5	1.000	1.409	2.65	0.11	0.60	3.05	SM
FINAL	73.4	49.0	100.0	0.935	1.253					

Source: HS-6 **Sample No.:** 1 **Elev./Depth:** 5'-6.5'
Material Description: Light yellowish brown silty sand
Remarks:

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Client: Valencia Company
Project: Magic Mountain Entertainment
Job No.: 00-1729-1 **Figure** B3.5

CONSOLIDATION TEST REPORT

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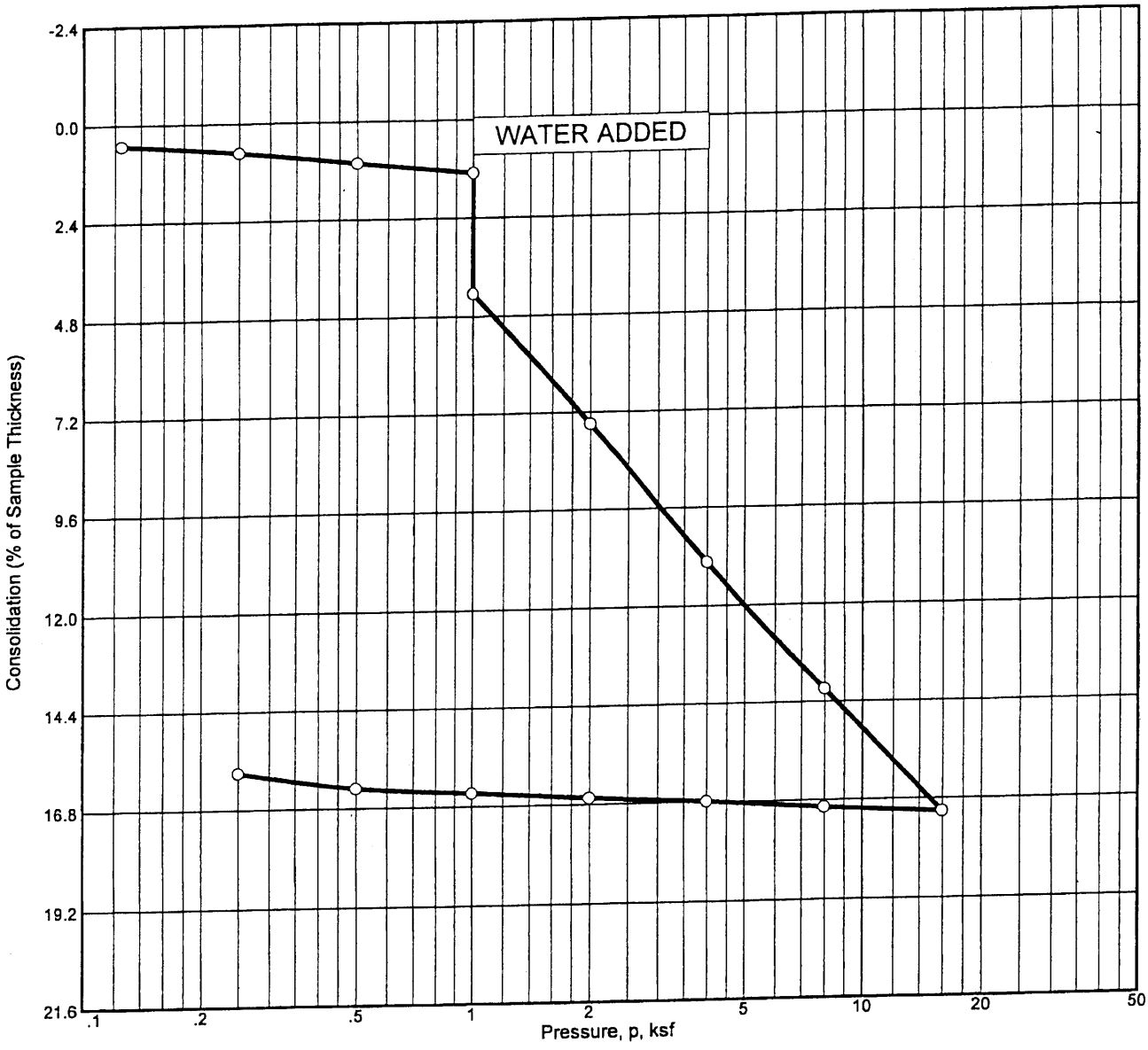

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	73.0	46.3	96.8	1.000	1.267	2.65	0.23	0.60	3.78	SM
FINAL	86.8	35.2	100.0	0.841	0.906					

Source: HS-8 **Sample No.:** 1 **Elev./Depth:** 5'-6.5'
Material Description: Yellowish brown clayey/silty sand
Remarks:

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ENGINEERING GEOLOGY, INC.

Client: Valencia Company
Project: Magic Mountain Entertainment
Job No.: 00-1729-1 **Figure** B3.6

CONSOLIDATION TEST REPORT

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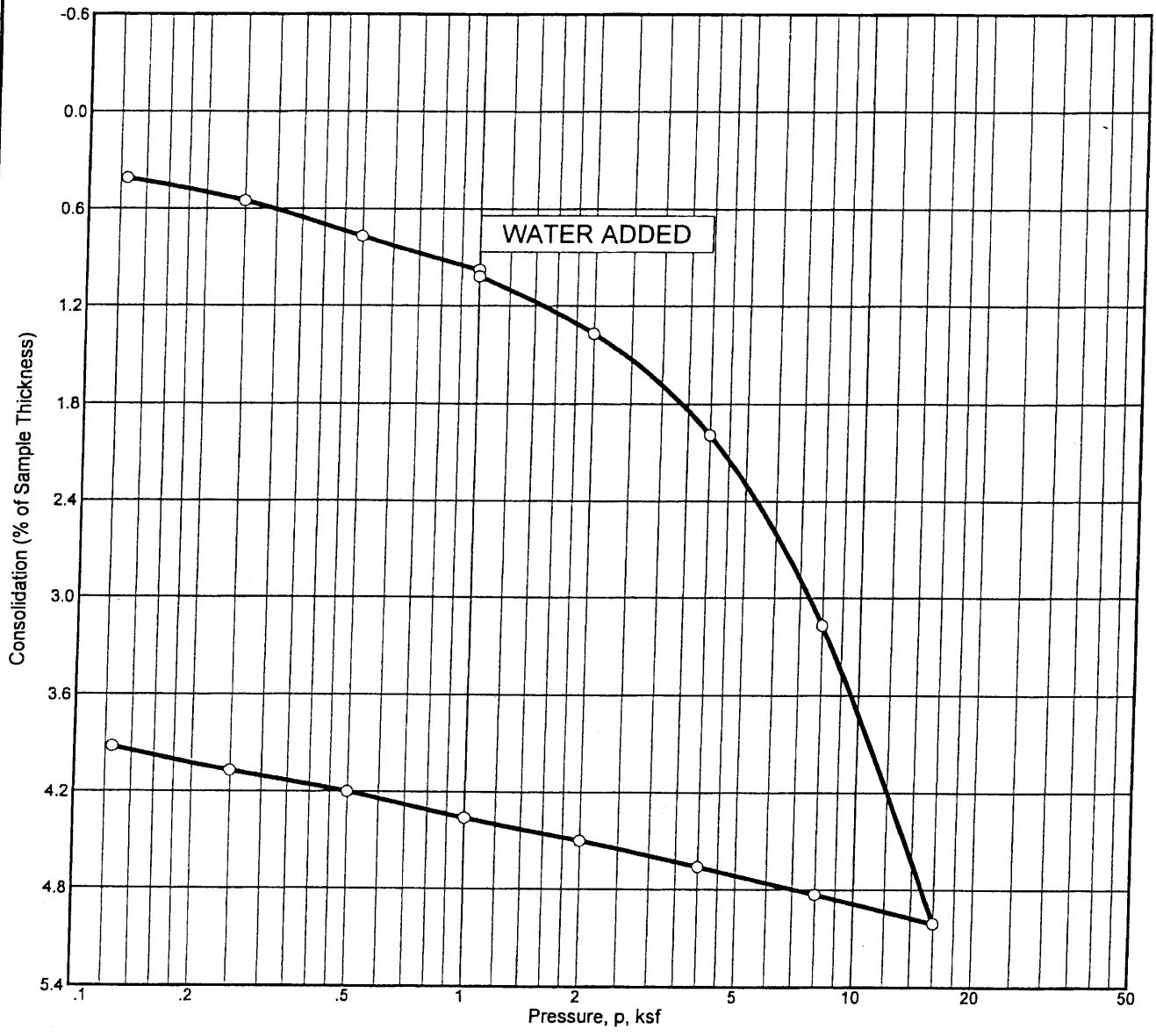

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	107.0	19.1	92.5	1.000	0.546	2.65	0.10	0.24	5.85	SM
FINAL	111.4	20.1	100.0	0.961	0.486					

Source: HS-10 **Sample No.:** 1 **Elev./Depth:** 2'-3.5'
Material Description: Light brown silty sand
Remarks:

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Client: Valencia Company
Project: Magic Mountain Entertainment
Job No.: 00-1729-1 **Figure** B3.7

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

CONSOLIDATION TEST REPORT

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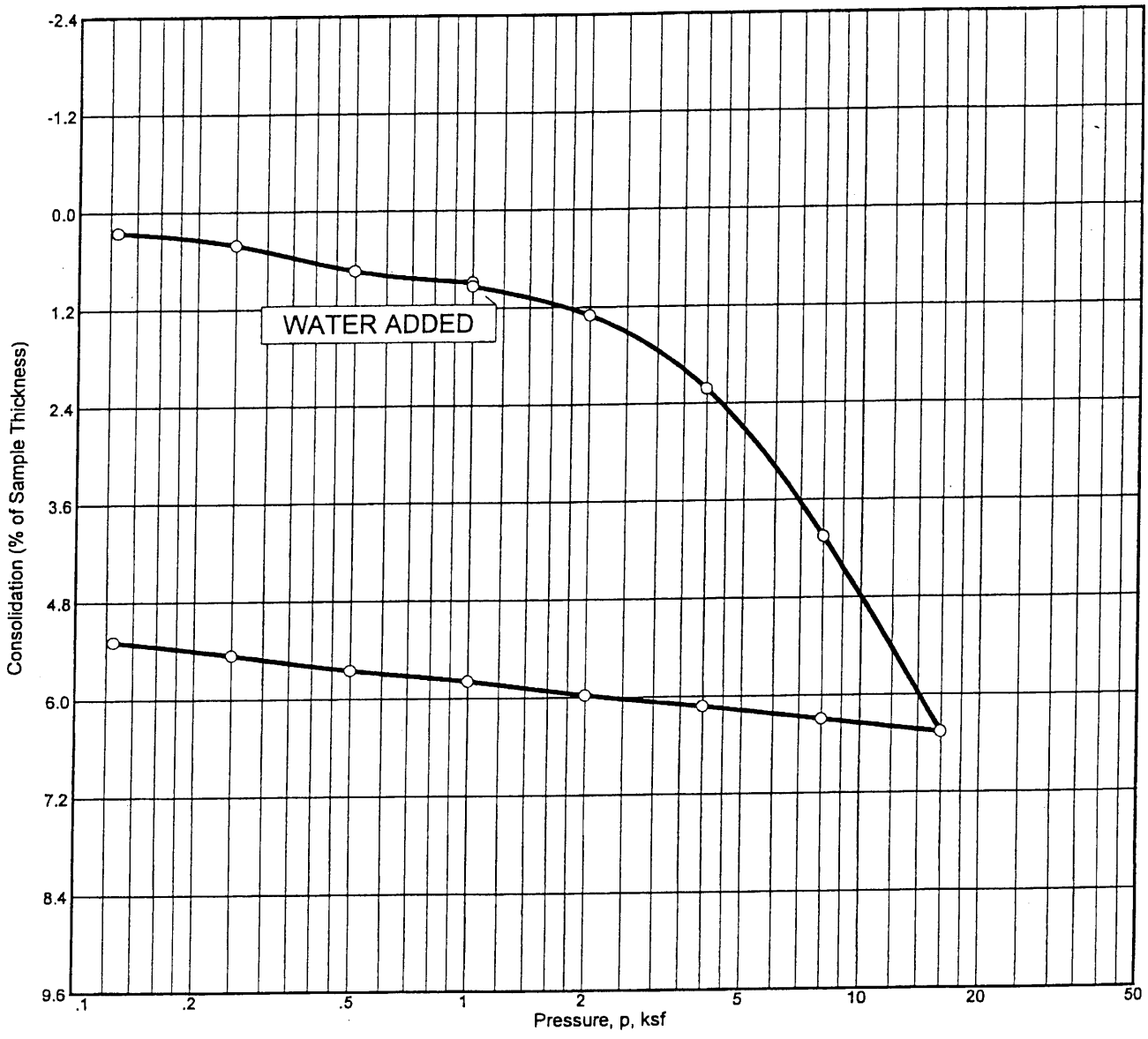

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	101.8	21.3	90.2	1.000	0.625	2.65	0.13	0.24	4.66	SM
FINAL	107.5	21.3	100.0	0.947	0.539					

Source: HS-12 **Sample No.:** 1 **Elev./Depth:** 2'-3.5'
Material Description: Yellow brown silty sand
Remarks:

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ENGINEERING GEOLOGY, INC.

Client: Valencia Company
Project: Magic Mountain Entertainment
Job No.: 00-1729-1 **Figure** B3.8

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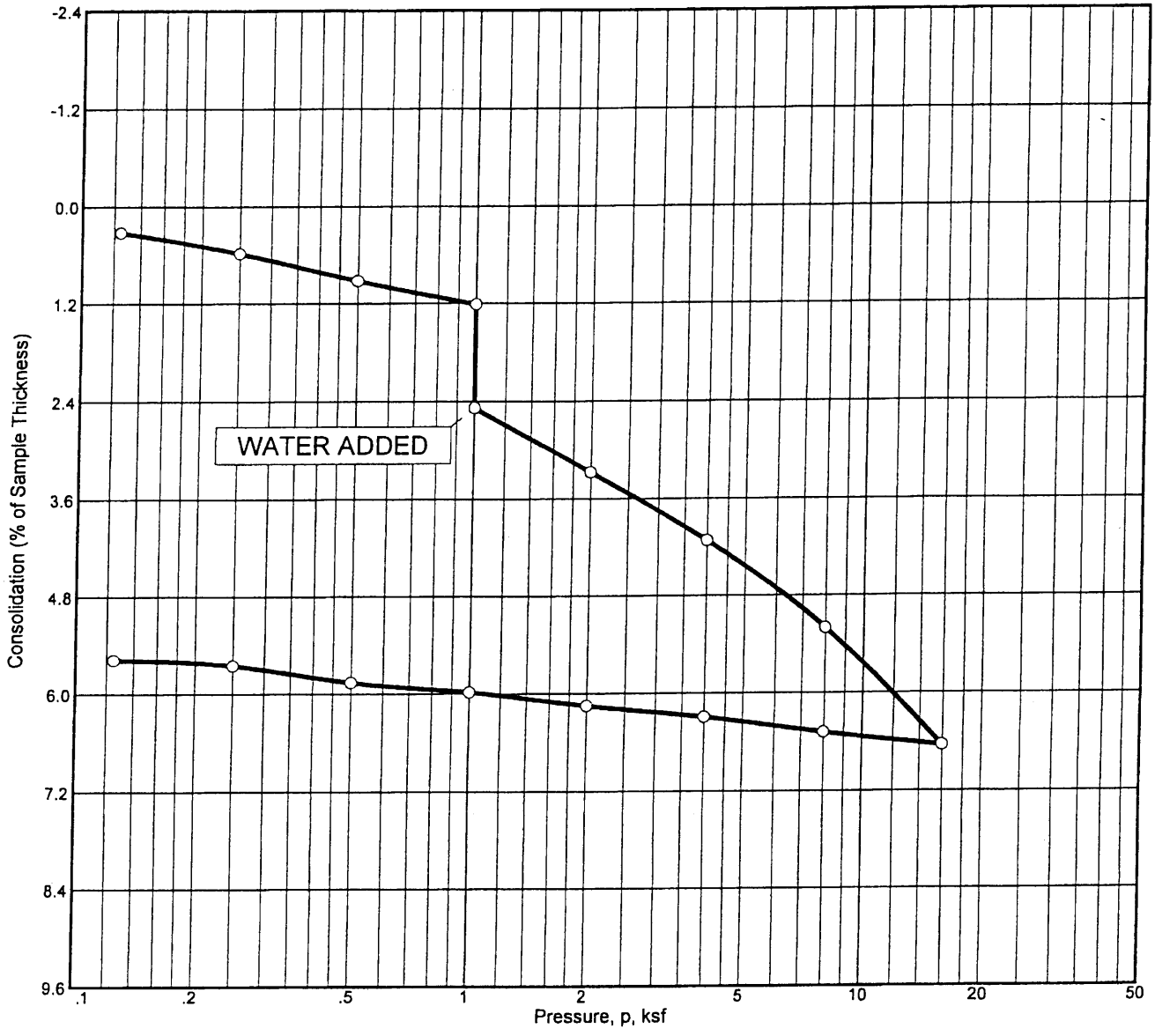
CONSOLIDATION TEST REPORT



SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	65.0	55.8	95.6	1.000	1.545	2.65	0.12	0.60	8.28	SP
FINAL	68.8	53.0	100.0	0.944	1.403					

Source: HS-13 **Sample No.:** 3 **Elev./Depth:** 5'-6.5'
Material Description: Brown silty sandy clay
Remarks:

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.	**Client:** Valencia Company **Project:** Magic Mountain Entertainment **Job No.:** 00-1729-1 **Figure** B3.9

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

CONSOLIDATION TEST REPORT

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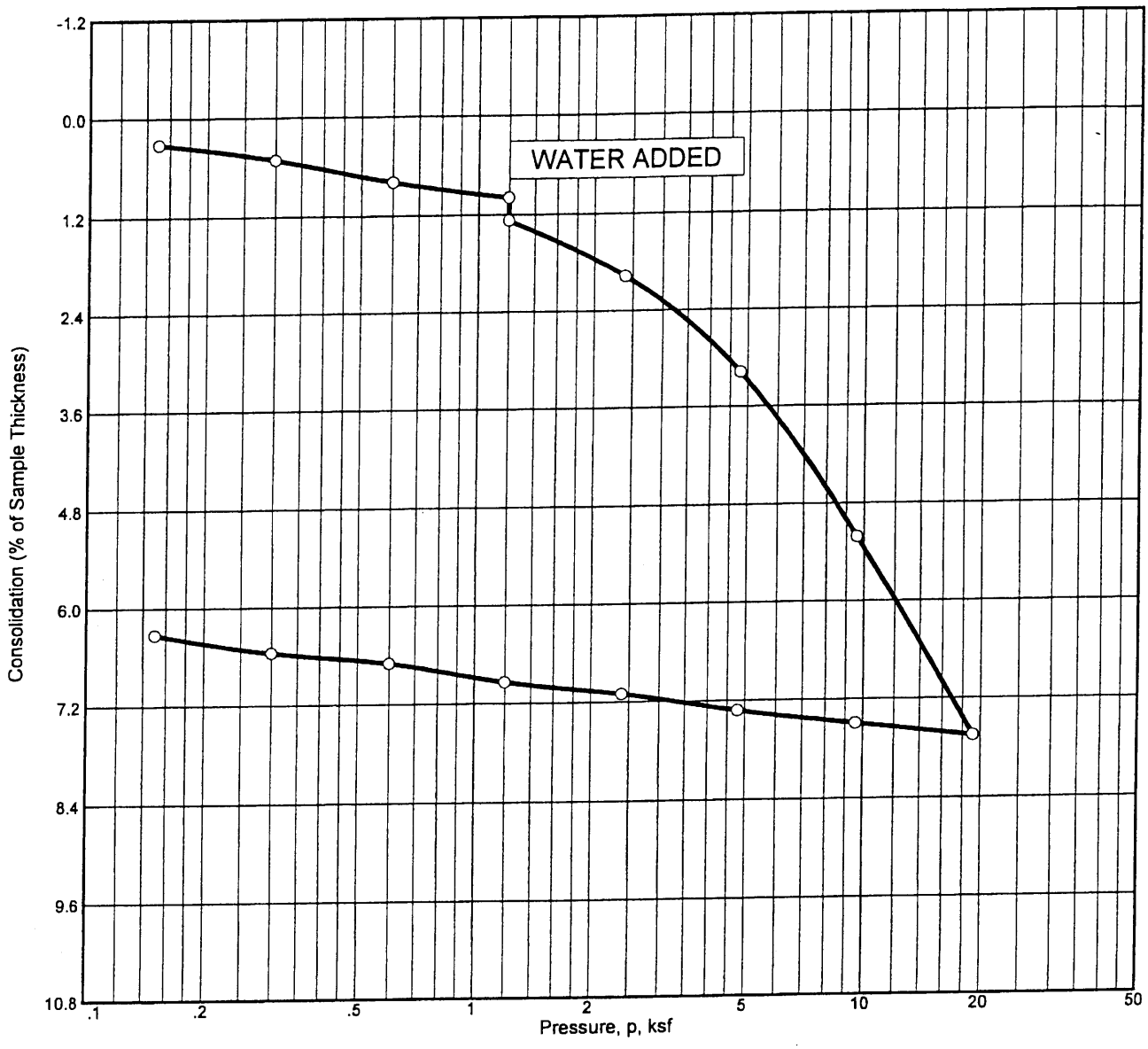

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	110.1	15.8	83.2	1.000	0.503	2.65	0.12	1.32	5.43	SM
FINAL	117.5	19.8	100.0	0.937	0.408					

Source: RW-2 **Sample No.:** 4 **Elev./Depth:** 11'-12.5'
Material Description: Light brown sandy lean clay
Remarks:

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ENGINEERING GEOLOGY, INC.

Client: Valencia Company
Project: Magic Mountain Entertainment

Job No.: 00-1729-1 **Figure** B3.10

CONSOLIDATION TEST REPORT

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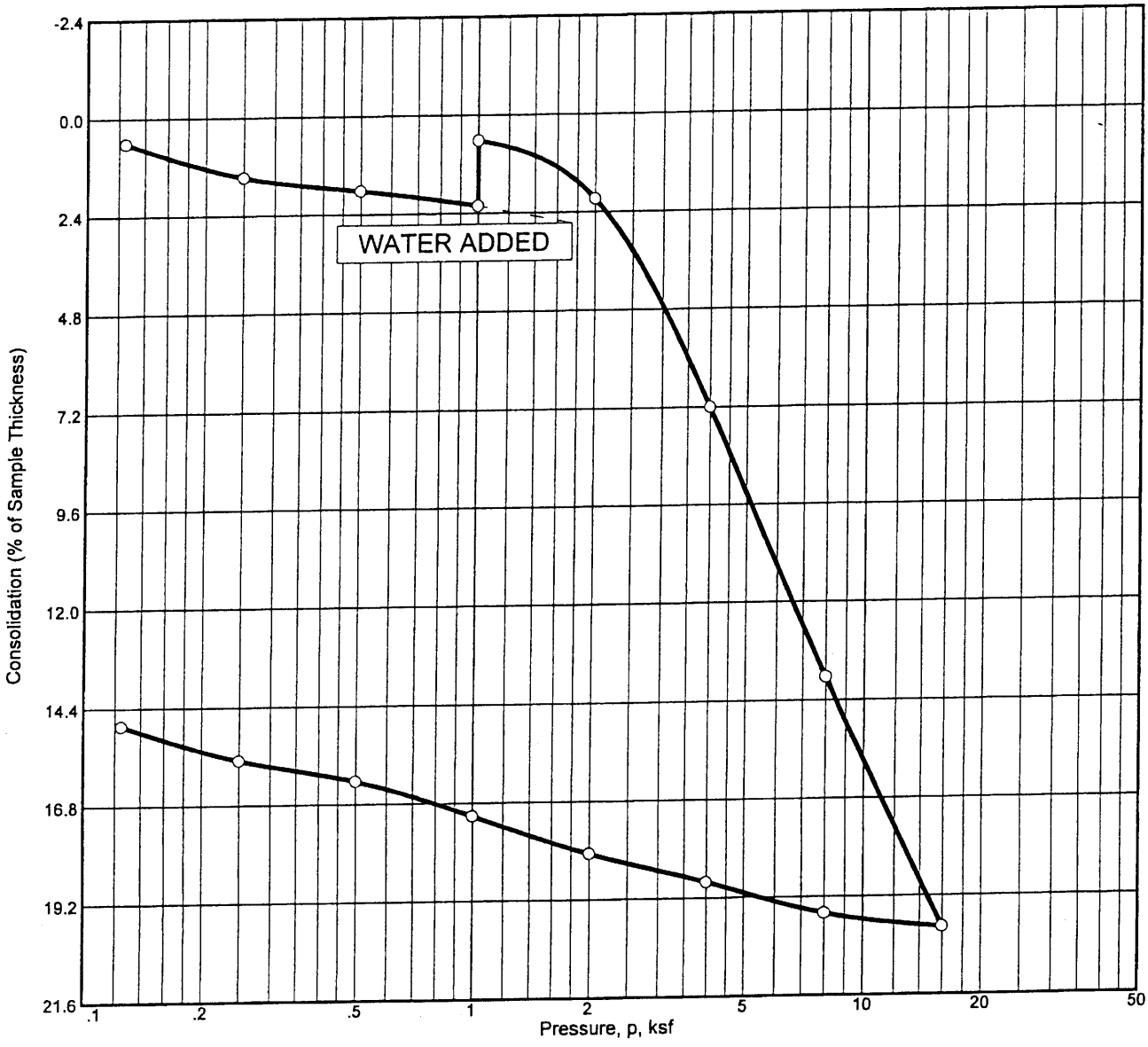

SUMMARY OF TEST RESULTS

	DRY DENSITY (pcf)	MOISTURE CONTENT, (%)	SATURATION (%)	HEIGHT (in.)	VOID RATIO	SPECIFIC GRAVITY	C_c	P'_o (ksf)	P_c (ksf)	USCS
INITIAL	53.7	64.4	82.1	1.000	2.079	2.65	0.62	0.60	2.09	SC-SM
FINAL	63.1	81.9	100.0	0.852	1.622					

Source: RW-3 **Sample No.:** 3 **Elev./Depth:** 5'-6.5'
Material Description: Grayish brown lean clay
Remarks:

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ENGINEERING GEOLOGY, INC.

Client: Valencia Company
Project: Magic Mountain Entertainment

Job No.: 00-1729-1 **Figure** B3.11

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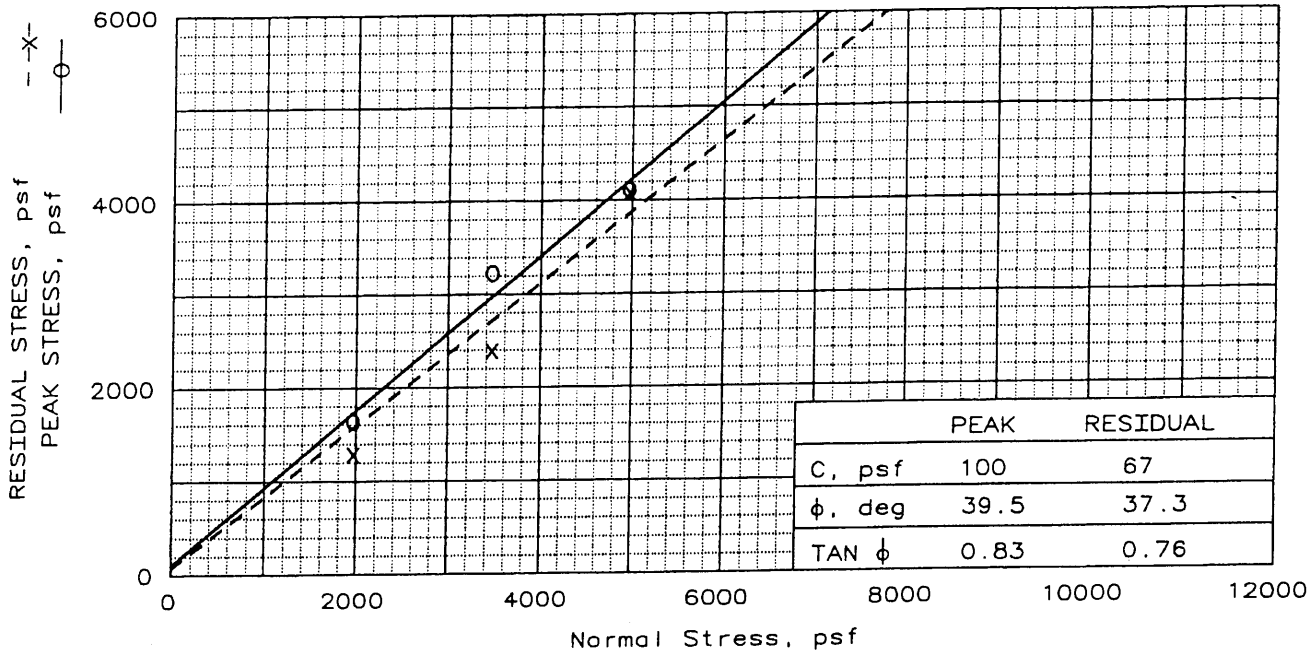
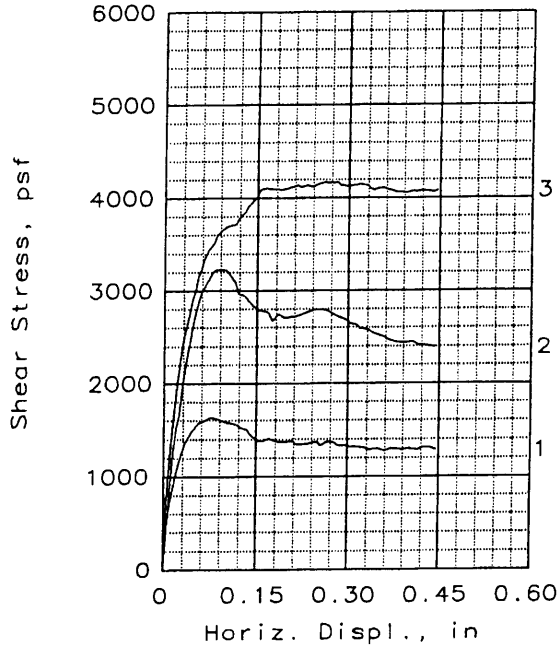


	PEAK	RESIDUAL
C, psf	100	67
ϕ, deg	39.5	37.3
TAN ϕ	0.83	0.76



SAMPLE No:		1	2	3
INITIAL	WATER CONTENT, %	31.2	30.1	27.8
	DRY DENSITY, pcf	89.9	90.8	94.2
	SATURATION, %	98.6	97.2	97.4
	VOID RATIO	0.840	0.821	0.756
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	30.6	29.1	26.2
	DRY DENSITY, pcf	91.2	92.8	97.1
	SATURATION, %	99.7	98.5	98.4
	VOID RATIO	0.815	0.783	0.705
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.99	0.98	0.97
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1632	3228	4109
DISPLACEMENT, in		0.08	0.09	0.17
RESIDUAL STRESS, psf		1284	2388	4081
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: SP

SPECIFIC GRAVITY= 2.65
REMARKS: % -#200 = 8.7

Fig. No.: B4.1

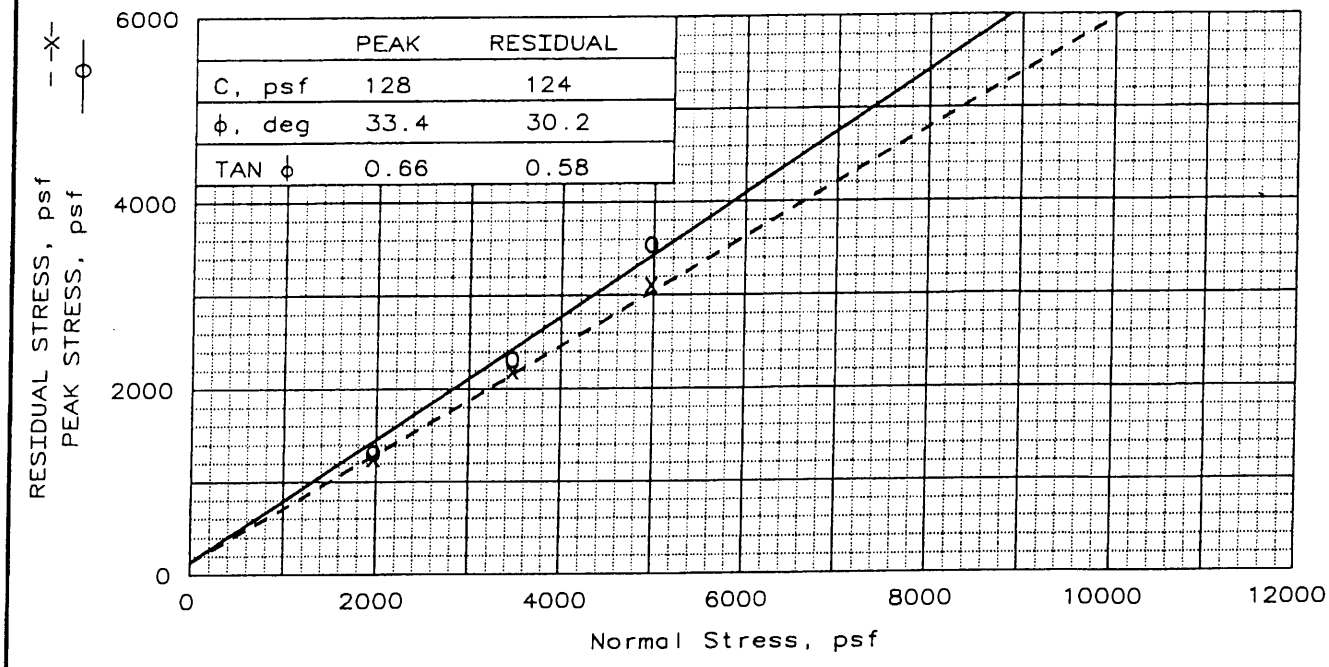
CLIENT: Newhall Land

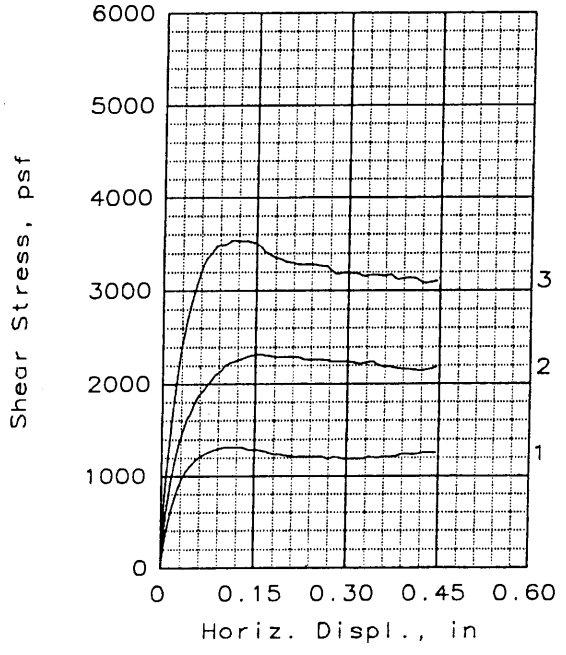
PROJECT: Magic Mtn. Entertainment

SAMPLE LOCATION: HS-7 @ 2'-3.5'

PROJ. NO.: 00-1729-1 DATE: 5/25/00

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.





SAMPLE No:		1	2	3
INITIAL	WATER CONTENT, %	62.0	54.4	42.4
	DRY DENSITY, pcf	61.0	66.3	76.4
	SATURATION, %	96.1	96.3	96.3
	VOID RATIO	1.710	1.497	1.166
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	1.00	1.00	1.00
AT TEST	WATER CONTENT, %	52.9	53.2	41.5
	DRY DENSITY, pcf	68.8	68.0	78.8
	SATURATION, %	99.8	98.2	99.9
	VOID RATIO	1.403	1.435	1.100
	DIAMETER, in	2.42	2.42	2.42
	HEIGHT, in	0.89	0.98	0.97
NORMAL STRESS, psf		2000	3500	5000
PEAK STRESS, psf		1308	2316	3540
DISPLACEMENT, in		0.10	0.15	0.11
RESIDUAL STRESS, psf		1248	2184	3109
DISPLACEMENT, in		0.45	0.45	0.45
Strain rate, in/min		0.0100	0.0100	0.0100

SAMPLE TYPE: Undisturbed
DESCRIPTION: SP w/gravel

SPECIFIC GRAVITY= 2.65
REMARKS:

Fig. No.: B4.2

CLIENT: Newhall Land

PROJECT: Magic Moutain Entertainment

SAMPLE LOCATION: HS-11 @ 2'-3.5'

PROJ. NO.: 00-1729-1 DATE: 5/25/00

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.

Newhall Land and Farming Company
March 18, 2005
2004-700-21

APPENDIX C

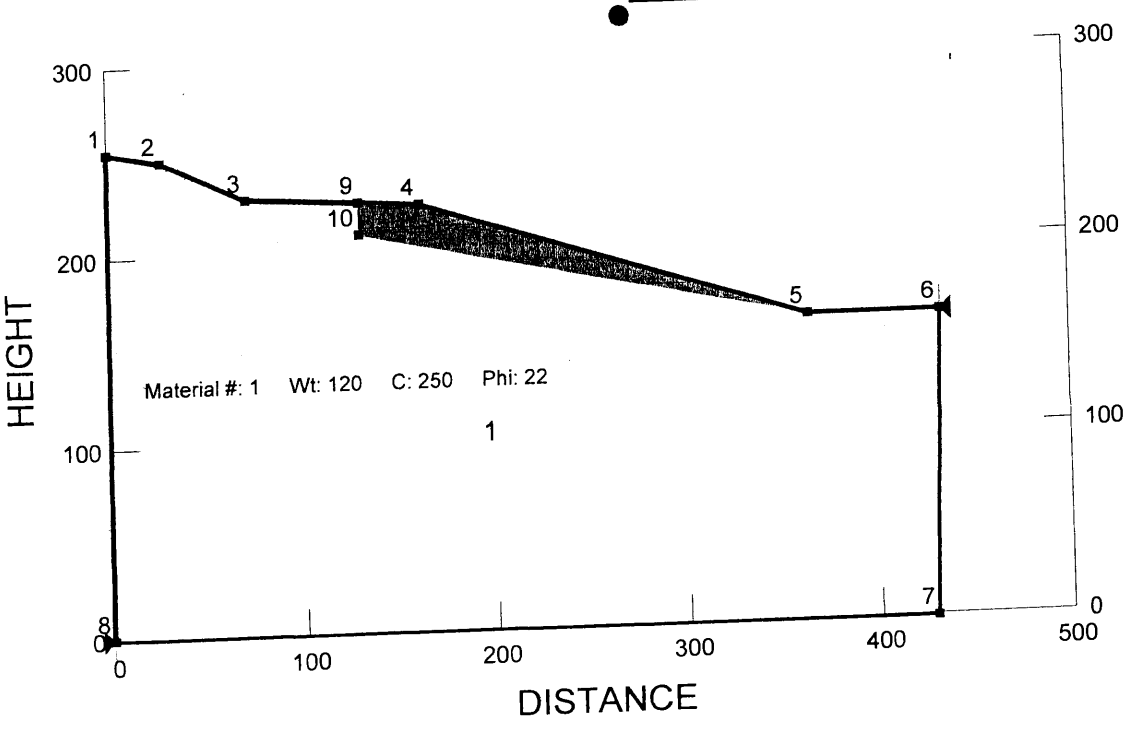
SLOPE STABILITY ANALYSES

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

Title: SLOPE STABILITY ANALYSIS - SECTION C-C
Comments: BEDDING FAILURE
Name: 200-700-Sec C 1.gsz
Directory: E:\Slope Stability Calculations\200-700\
Date: 3/18/05Time: 2:40:21 PM

Material #: 1 Wt: 120 C: 250 Phi: 22 Model: MohrCoulomb

Slip Surface Option: FullySpecified
Analysis Method□Spencer
P.W.P. Option□Piezometric Lines / Ru
Horz Seismic Load: 0



SLOPE STABILITY ANALYSIS - SECTION C-C
BEDDING FAILURE
DATESTAMP 3/18/05
TIMESTAMP 2:40:21 PM

Center_X	Center_Y	Radius	Slip_Surface	Method
2.702500e+002	3.187500e+002	1.779467e+002	1	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	1.310000e+002	2.257582e+002	2.090000e+002	1.390000e+002	2.253187e+002	2.073176e+002	1.737966e+001	8.174991e+000
2	1.390000e+002	2.253187e+002	2.073176e+002	1.470000e+002	2.248791e+002	2.056352e+002	1.862251e+001	8.174991e+000
3	1.470000e+002	2.248791e+002	2.056352e+002	1.550000e+002	2.244396e+002	2.039528e+002	1.986535e+001	8.174991e+000
4	1.550000e+002	2.244396e+002	2.039528e+002	1.630000e+002	2.240000e+002	2.022704e+002	2.110819e+001	8.174991e+000
5	1.630000e+002	2.240000e+002	2.022704e+002	1.707308e+002	2.215385e+002	2.006446e+002	2.131174e+001	7.899871e+000
6	1.707308e+002	2.215385e+002	2.006446e+002	1.784615e+002	2.190769e+002	1.990188e+002	2.047598e+001	7.899871e+000
7	1.784615e+002	2.190769e+002	1.990188e+002	1.861923e+002	2.166154e+002	1.973930e+002	1.964023e+001	7.899871e+000
8	1.861923e+002	2.166154e+002	1.973930e+002	1.939231e+002	2.141538e+002	1.957672e+002	1.880447e+001	7.899871e+000
9	1.939231e+002	2.141538e+002	1.957672e+002	2.016538e+002	2.116923e+002	1.941415e+002	1.796872e+001	7.899871e+000
10	2.016538e+002	2.116923e+002	1.941415e+002	2.093846e+002	2.092308e+002	1.925157e+002	1.713296e+001	7.899871e+000
11	2.093846e+002	2.092308e+002	1.925157e+002	2.171154e+002	2.067692e+002	1.908899e+002	1.629721e+001	7.899871e+000
12	2.171154e+002	2.067692e+002	1.908899e+002	2.248462e+002	2.043077e+002	1.892641e+002	1.546146e+001	7.899871e+000
13	2.248462e+002	2.043077e+002	1.892641e+002	2.325769e+002	2.018462e+002	1.876383e+002	1.462570e+001	7.899871e+000
14	2.325769e+002	2.018462e+002	1.876383e+002	2.403077e+002	1.993846e+002	1.860125e+002	1.378995e+001	7.899871e+000
15	2.403077e+002	1.993846e+002	1.860125e+002	2.480385e+002	1.969231e+002	1.843868e+002	1.295419e+001	7.899871e+000
16	2.480385e+002	1.969231e+002	1.843868e+002	2.557692e+002	1.944615e+002	1.827610e+002	1.211844e+001	7.899871e+000
17	2.557692e+002	1.944615e+002	1.827610e+002	2.635000e+002	1.920000e+002	1.811352e+002	1.128268e+001	7.899871e+000
18	2.635000e+002	1.920000e+002	1.811352e+002	2.712308e+002	1.895385e+002	1.795094e+002	1.044693e+001	7.899871e+000
19	2.712308e+002	1.895385e+002	1.795094e+002	2.789615e+002	1.870769e+002	1.778836e+002	9.611175e+000	7.899871e+000
20	2.789615e+002	1.870769e+002	1.778836e+002	2.866923e+002	1.846154e+002	1.762578e+002	8.775421e+000	7.899871e+000
21	2.866923e+002	1.846154e+002	1.762578e+002	2.944231e+002	1.821538e+002	1.746321e+002	7.939667e+000	7.899871e+000
22	2.944231e+002	1.821538e+002	1.746321e+002	3.021538e+002	1.796923e+002	1.730063e+002	7.103912e+000	7.899871e+000
23	3.021538e+002	1.796923e+002	1.730063e+002	3.098846e+002	1.772308e+002	1.713805e+002	6.268158e+000	7.899871e+000
24	3.098846e+002	1.772308e+002	1.713805e+002	3.176154e+002	1.747692e+002	1.697547e+002	5.432403e+000	7.899871e+000
25	3.176154e+002	1.747692e+002	1.697547e+002	3.253462e+002	1.723077e+002	1.681289e+002	4.596649e+000	7.899871e+000
26	3.253462e+002	1.723077e+002	1.681289e+002	3.330769e+002	1.698462e+002	1.665031e+002	3.760895e+000	7.899871e+000
27	3.330769e+002	1.698462e+002	1.665031e+002	3.408077e+002	1.673846e+002	1.648774e+002	2.925140e+000	7.899871e+000
28	3.408077e+002	1.673846e+002	1.648774e+002	3.485385e+002	1.649231e+002	1.632516e+002	2.089386e+000	7.899871e+000
29	3.485385e+002	1.649231e+002	1.632516e+002	3.562692e+002	1.624615e+002	1.616258e+002	1.253632e+000	7.899871e+000
30	3.562692e+002	1.624615e+002	1.616258e+002	3.640000e+002	1.600000e+002	1.600000e+002	4.178772e-001	7.899871e+000

SL#	Weight	Pore_Water	Alpha	Force Fn.	Seismic_F	Seismic_Y	Pore_Air	Phi_B	Liquified
1	1.6684e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
2	1.7878e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
3	1.9071e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
4	2.0264e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
5	1.9771e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
6	1.8995e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
7	1.8220e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
8	1.7445e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
9	1.6669e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
10	1.5894e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
11	1.5119e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
12	1.4343e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
13	1.3568e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
14	1.2793e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
15	1.2018e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
16	1.1242e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
17	1.0467e+004	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
18	9.6915e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
19	8.9162e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
20	8.1409e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
21	7.3656e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
22	6.5902e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
23	5.8149e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
24	5.0396e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
25	4.2643e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
26	3.4890e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
27	2.7136e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
28	1.9383e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
29	1.1630e+003	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
30	3.8766e+002	0.0000e+000	1.1876e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0

Spencer_Method_Fm= 2.7884534 Applied_Lambda= 0.1834

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	1.6337e+004	-3.1001e+003	2.2000e+001	2.5000e+002	0.0000e+000	0.0000e+000	-3.2147e+002	5.8950e+001
2	1.7507e+004	-3.2696e+003	2.2000e+001	2.5000e+002	3.2147e+002	-5.8950e+001	-7.1741e+002	1.3156e+002
3	1.8677e+004	-3.4390e+003	2.2000e+001	2.5000e+002	7.1741e+002	-1.3156e+002	-1.1878e+003	2.1783e+002
4	1.9846e+004	-3.6085e+003	2.2000e+001	2.5000e+002	1.1878e+003	-2.1783e+002	-1.7328e+003	3.1775e+002
5	1.9363e+004	-3.5139e+003	2.2000e+001	2.5000e+002	1.7328e+003	-3.1775e+002	-2.2711e+003	4.1648e+002
6	1.8603e+004	-3.4037e+003	2.2000e+001	2.5000e+002	2.2711e+003	-4.1648e+002	-2.7611e+003	5.0633e+002
7	1.7843e+004	-3.2936e+003	2.2000e+001	2.5000e+002	2.7611e+003	-5.0633e+002	-3.2026e+003	5.8730e+002
8	1.7083e+004	-3.1835e+003	2.2000e+001	2.5000e+002	3.2026e+003	-5.8730e+002	-3.5958e+003	6.5940e+002
9	1.6323e+004	-3.0734e+003	2.2000e+001	2.5000e+002	3.5958e+003	-6.5940e+002	-3.9406e+003	7.2262e+002
10	1.5563e+004	-2.9632e+003	2.2000e+001	2.5000e+002	3.9406e+003	-7.2262e+002	-4.2369e+003	7.7697e+002
11	1.4803e+004	-2.8531e+003	2.2000e+001	2.5000e+002	4.2369e+003	-7.7697e+002	-4.4849e+003	8.2244e+002
12	1.4043e+004	-2.7430e+003	2.2000e+001	2.5000e+002	4.4849e+003	-8.2244e+002	-4.6844e+003	8.5903e+002
13	1.3283e+004	-2.6329e+003	2.2000e+001	2.5000e+002	4.6844e+003	-8.5903e+002	-4.8356e+003	8.8675e+002
14	1.2523e+004	-2.5227e+003	2.2000e+001	2.5000e+002	4.8356e+003	-8.8675e+002	-4.9384e+003	9.0560e+002
15	1.1763e+004	-2.4126e+003	2.2000e+001	2.5000e+002	4.9384e+003	-9.0560e+002	-4.9927e+003	9.1557e+002
16	1.1003e+004	-2.3025e+003	2.2000e+001	2.5000e+002	4.9927e+003	-9.1557e+002	-4.9987e+003	9.1666e+002
17	1.0243e+004	-2.1924e+003	2.2000e+001	2.5000e+002	4.9987e+003	-9.1666e+002	-4.9562e+003	9.0887e+002
18	9.4827e+003	-2.0822e+003	2.2000e+001	2.5000e+002	4.9562e+003	-9.0887e+002	-4.8654e+003	8.9221e+002
19	8.7226e+003	-1.9721e+003	2.2000e+001	2.5000e+002	4.8654e+003	-8.9221e+002	-4.7261e+003	8.6668e+002
20	7.9626e+003	-1.8620e+003	2.2000e+001	2.5000e+002	4.7261e+003	-8.6668e+002	-4.5385e+003	8.3227e+002
21	7.2025e+003	-1.7519e+003	2.2000e+001	2.5000e+002	4.5385e+003	-8.3227e+002	-4.3024e+003	7.8898e+002
22	6.4425e+003	-1.6417e+003	2.2000e+001	2.5000e+002	4.3024e+003	-7.8898e+002	-4.0180e+003	7.3682e+002
23	5.6824e+003	-1.5316e+003	2.2000e+001	2.5000e+002	4.0180e+003	-7.3682e+002	-3.6852e+003	6.7578e+002
24	4.9224e+003	-1.4215e+003	2.2000e+001	2.5000e+002	3.6852e+003	-6.7578e+002	-3.3039e+003	6.0587e+002
25	4.1623e+003	-1.3114e+003	2.2000e+001	2.5000e+002	3.3039e+003	-6.0587e+002	-2.8743e+003	5.2708e+002
26	3.4022e+003	-1.2012e+003	2.2000e+001	2.5000e+002	2.8743e+003	-5.2708e+002	-2.3962e+003	4.3942e+002
27	2.6422e+003	-1.0911e+003	2.2000e+001	2.5000e+002	2.3962e+003	-4.3942e+002	-1.8698e+003	3.4288e+002
28	1.8821e+003	-9.8097e+002	2.2000e+001	2.5000e+002	1.8698e+003	-3.4288e+002	-1.2949e+003	2.3746e+002
29	1.1221e+003	-8.7085e+002	2.2000e+001	2.5000e+002	1.2949e+003	-2.3746e+002	-6.7165e+002	1.2317e+002
30	3.6203e+002	-7.6072e+002	2.2000e+001	2.5000e+002	6.7165e+002	-1.2317e+002	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Spencer Method	2.7996e+003	3.3596e+005	2.6173e+007	9.3862e+006	1.8824e+005	6.7659e+004	2.7884534

SUMMARY OF MINIMUM FACTORS OF SAFETY

MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD 177.9467=RADIUS 2.7884534=F.S. 1=SLIP#
270.2500=X-COOR. 318.7500=Y-COOR.

MOST_CRITICAL #	SLIP_SURFACE #
1	1

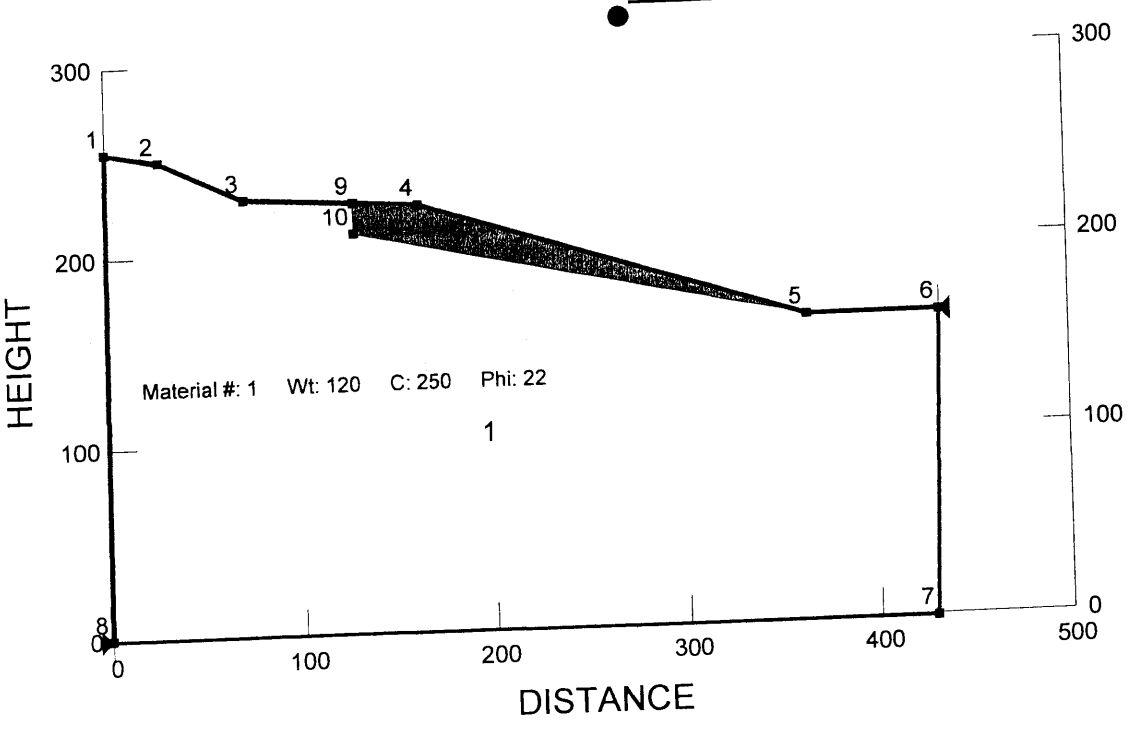
SLIP_SURFACE #	AUTOTENSIONELEV

Title: SLOPE STABILITY ANALYSIS - SECTION C-C
Comments: EARTQUAKE - BEDDING FAILURE
Name: 200-700-Sec C 2.gsz
Directory: E:\Slope Stability Calculations\200-700\
Date: 3/18/05Time: 2:43:19 PM

Material #: 1 Wt: 120 C: 250 Phi: 22 Model: MohrCoulomb

Slip Surface Option: FullySpecified
Analysis Method: Spencer
P.W.P. Option□Piezometric Lines / Ru
Horz Seismic Load: 0.15

1.59



SLOPE STABILITY ANALYSIS - SECTION C-C
EARTQUAKE - BEDDING FAILURE
DATESTAMP 3/18/05
TIMESTAMP 2:43:19 PM

Center_X	Center_Y	Radius	Slip_Surface	Method
2.702500e+002	3.187500e+002	1.784630e+002	1	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	1.290000e+002	2.258681e+002	2.100000e+002	1.375000e+002	2.254011e+002	2.081915e+002	1.653887e+001	8.690265e+000
2	1.375000e+002	2.254011e+002	2.081915e+002	1.460000e+002	2.249341e+002	2.063830e+002	1.788035e+001	8.690265e+000
3	1.460000e+002	2.249341e+002	2.063830e+002	1.545000e+002	2.244670e+002	2.045745e+002	1.922183e+001	8.690265e+000
4	1.545000e+002	2.244670e+002	2.045745e+002	1.630000e+002	2.240000e+002	2.027660e+002	2.056330e+001	8.690265e+000
5	1.630000e+002	2.240000e+002	2.027660e+002	1.707308e+002	2.215385e+002	2.011211e+002	2.082570e+001	7.903816e+000
6	1.707308e+002	2.215385e+002	2.011211e+002	1.784615e+002	2.190769e+002	1.994763e+002	2.000900e+001	7.903816e+000
7	1.784615e+002	2.190769e+002	1.994763e+002	1.861923e+002	2.166154e+002	1.978314e+002	1.919231e+001	7.903816e+000
8	1.861923e+002	2.166154e+002	1.978314e+002	1.939231e+002	2.141538e+002	1.961866e+002	1.837561e+001	7.903816e+000
9	1.939231e+002	2.141538e+002	1.961866e+002	2.016538e+002	2.116923e+002	1.945417e+002	1.755892e+001	7.903816e+000
10	2.016538e+002	2.116923e+002	1.945417e+002	2.093846e+002	2.092308e+002	1.928969e+002	1.674223e+001	7.903816e+000
11	2.093846e+002	2.092308e+002	1.928969e+002	2.171154e+002	2.067692e+002	1.912520e+002	1.592553e+001	7.903816e+000
12	2.171154e+002	2.067692e+002	1.912520e+002	2.248462e+002	2.043077e+002	1.896072e+002	1.510884e+001	7.903816e+000
13	2.248462e+002	2.043077e+002	1.896072e+002	2.325769e+002	2.018462e+002	1.879624e+002	1.429214e+001	7.903816e+000
14	2.325769e+002	2.018462e+002	1.879624e+002	2.403077e+002	1.993846e+002	1.863175e+002	1.347545e+001	7.903816e+000
15	2.403077e+002	1.993846e+002	1.863175e+002	2.480385e+002	1.969231e+002	1.846727e+002	1.265876e+001	7.903816e+000
16	2.480385e+002	1.969231e+002	1.846727e+002	2.557692e+002	1.944615e+002	1.830278e+002	1.184206e+001	7.903816e+000
17	2.557692e+002	1.944615e+002	1.830278e+002	2.635000e+002	1.920000e+002	1.813830e+002	1.102537e+001	7.903816e+000
18	2.635000e+002	1.920000e+002	1.813830e+002	2.712308e+002	1.895385e+002	1.797381e+002	1.020867e+001	7.903816e+000
19	2.712308e+002	1.895385e+002	1.797381e+002	2.789615e+002	1.870769e+002	1.780933e+002	9.391980e+000	7.903816e+000
20	2.789615e+002	1.870769e+002	1.780933e+002	2.866923e+002	1.846154e+002	1.764484e+002	8.575286e+000	7.903816e+000
21	2.866923e+002	1.846154e+002	1.764484e+002	2.944231e+002	1.821538e+002	1.748036e+002	7.758592e+000	7.903816e+000
22	2.944231e+002	1.821538e+002	1.748036e+002	3.021538e+002	1.796923e+002	1.731588e+002	6.941899e+000	7.903816e+000
23	3.021538e+002	1.796923e+002	1.731588e+002	3.098846e+002	1.772308e+002	1.715139e+002	6.125205e+000	7.903816e+000
24	3.098846e+002	1.772308e+002	1.715139e+002	3.176154e+002	1.747692e+002	1.698691e+002	5.308511e+000	7.903816e+000
25	3.176154e+002	1.747692e+002	1.698691e+002	3.253462e+002	1.723077e+002	1.682242e+002	4.491817e+000	7.903816e+000
26	3.253462e+002	1.723077e+002	1.682242e+002	3.330769e+002	1.698462e+002	1.665794e+002	3.675123e+000	7.903816e+000
27	3.330769e+002	1.698462e+002	1.665794e+002	3.408077e+002	1.673846e+002	1.649345e+002	2.858429e+000	7.903816e+000
28	3.408077e+002	1.673846e+002	1.649345e+002	3.485385e+002	1.649231e+002	1.632897e+002	2.041735e+000	7.903816e+000
29	3.485385e+002	1.649231e+002	1.632897e+002	3.562692e+002	1.624615e+002	1.616448e+002	1.225041e+000	7.903816e+000
30	3.562692e+002	1.624615e+002	1.616448e+002	3.640000e+002	1.600000e+002	1.600000e+002	4.083470e-001	7.903816e+000

SL#	Weight	Pore_Water	Alpha	Force Fn.	Seismic_F	Seismic_Y	Pore_Air	Phi_B	Liquified
1	1.6870e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.5304e+003	2.1737e+002	0.0000e+000	0.0000e+000	0
2	1.8238e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.7357e+003	2.1623e+002	0.0000e+000	0.0000e+000	0
3	1.9606e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.9409e+003	2.1509e+002	0.0000e+000	0.0000e+000	0
4	2.0975e+004	0.0000e+000	1.2011e+001	1.0000e+000	3.1462e+003	2.1395e+002	0.0000e+000	0.0000e+000	0
5	1.9320e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.8980e+003	2.1236e+002	0.0000e+000	0.0000e+000	0
6	1.8562e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.7843e+003	2.1030e+002	0.0000e+000	0.0000e+000	0
7	1.7805e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.6707e+003	2.0825e+002	0.0000e+000	0.0000e+000	0
8	1.7047e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.5570e+003	2.0620e+002	0.0000e+000	0.0000e+000	0
9	1.6289e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.4434e+003	2.0414e+002	0.0000e+000	0.0000e+000	0
10	1.5532e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.3297e+003	2.0209e+002	0.0000e+000	0.0000e+000	0
11	1.4774e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.2161e+003	2.0004e+002	0.0000e+000	0.0000e+000	0
12	1.4016e+004	0.0000e+000	1.2011e+001	1.0000e+000	2.1025e+003	1.9798e+002	0.0000e+000	0.0000e+000	0
13	1.3259e+004	0.0000e+000	1.2011e+001	1.0000e+000	1.9888e+003	1.9593e+002	0.0000e+000	0.0000e+000	0
14	1.2501e+004	0.0000e+000	1.2011e+001	1.0000e+000	1.8752e+003	1.9388e+002	0.0000e+000	0.0000e+000	0
15	1.1743e+004	0.0000e+000	1.2011e+001	1.0000e+000	1.7615e+003	1.9182e+002	0.0000e+000	0.0000e+000	0
16	1.0986e+004	0.0000e+000	1.2011e+001	1.0000e+000	1.6479e+003	1.8977e+002	0.0000e+000	0.0000e+000	0
17	1.0228e+004	0.0000e+000	1.2011e+001	1.0000e+000	1.5342e+003	1.8772e+002	0.0000e+000	0.0000e+000	0
18	9.4705e+003	0.0000e+000	1.2011e+001	1.0000e+000	1.4206e+003	1.8566e+002	0.0000e+000	0.0000e+000	0
19	8.7129e+003	0.0000e+000	1.2011e+001	1.0000e+000	1.3069e+003	1.8361e+002	0.0000e+000	0.0000e+000	0
20	7.9552e+003	0.0000e+000	1.2011e+001	1.0000e+000	1.1933e+003	1.8156e+002	0.0000e+000	0.0000e+000	0
21	7.1976e+003	0.0000e+000	1.2011e+001	1.0000e+000	1.0796e+003	1.7951e+002	0.0000e+000	0.0000e+000	0
22	6.4399e+003	0.0000e+000	1.2011e+001	1.0000e+000	9.6599e+002	1.7745e+002	0.0000e+000	0.0000e+000	0
23	5.6823e+003	0.0000e+000	1.2011e+001	1.0000e+000	8.5235e+002	1.7540e+002	0.0000e+000	0.0000e+000	0
24	4.9247e+003	0.0000e+000	1.2011e+001	1.0000e+000	7.3870e+002	1.7335e+002	0.0000e+000	0.0000e+000	0
25	4.1670e+003	0.0000e+000	1.2011e+001	1.0000e+000	6.2505e+002	1.7129e+002	0.0000e+000	0.0000e+000	0
26	3.4094e+003	0.0000e+000	1.2011e+001	1.0000e+000	5.1141e+002	1.6924e+002	0.0000e+000	0.0000e+000	0
27	2.6517e+003	0.0000e+000	1.2011e+001	1.0000e+000	3.9776e+002	1.6719e+002	0.0000e+000	0.0000e+000	0
28	1.8941e+003	0.0000e+000	1.2011e+001	1.0000e+000	2.8412e+002	1.6513e+002	0.0000e+000	0.0000e+000	0
29	1.1365e+003	0.0000e+000	1.2011e+001	1.0000e+000	1.7047e+002	1.6308e+002	0.0000e+000	0.0000e+000	0
30	3.7882e+002	0.0000e+000	1.2011e+001	1.0000e+000	5.6823e+001	1.6103e+002	0.0000e+000	0.0000e+000	0

Spencer_Method_Fm= 1.5897298 Applied_Lambda= 0.4889

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	1.5827e+004	-5.3889e+003	2.2000e+001	2.5000e+002	0.0000e+000	0.0000e+000	-5.4888e+002	2.6832e+002
2	1.7081e+004	-5.7076e+003	2.2000e+001	2.5000e+002	5.4888e+002	-2.6832e+002	-1.2520e+003	6.1204e+002
3	1.8335e+004	-6.0263e+003	2.2000e+001	2.5000e+002	1.2520e+003	-6.1204e+002	-2.1093e+003	1.0312e+003
4	1.9589e+004	-6.3451e+003	2.2000e+001	2.5000e+002	2.1093e+003	-1.0312e+003	-3.1209e+003	1.5257e+003
5	1.8039e+004	-5.8275e+003	2.2000e+001	2.5000e+002	3.1209e+003	-1.5257e+003	-4.0684e+003	1.9888e+003
6	1.7345e+004	-5.6511e+003	2.2000e+001	2.5000e+002	4.0684e+003	-1.9888e+003	-4.9304e+003	2.4103e+003
7	1.6650e+004	-5.4746e+003	2.2000e+001	2.5000e+002	4.9304e+003	-2.4103e+003	-5.7071e+003	2.7899e+003
8	1.5956e+004	-5.2981e+003	2.2000e+001	2.5000e+002	5.7071e+003	-2.7899e+003	-6.3984e+003	3.1279e+003
9	1.5262e+004	-5.1217e+003	2.2000e+001	2.5000e+002	6.3984e+003	-3.1279e+003	-7.0043e+003	3.4241e+003
10	1.4567e+004	-4.9452e+003	2.2000e+001	2.5000e+002	7.0043e+003	-3.4241e+003	-7.5247e+003	3.6785e+003
11	1.3873e+004	-4.7687e+003	2.2000e+001	2.5000e+002	7.5247e+003	-3.6785e+003	-7.9598e+003	3.8912e+003
12	1.3178e+004	-4.5922e+003	2.2000e+001	2.5000e+002	7.9598e+003	-3.8912e+003	-8.3095e+003	4.0621e+003
13	1.2484e+004	-4.4158e+003	2.2000e+001	2.5000e+002	8.3095e+003	-4.0621e+003	-8.5737e+003	4.1913e+003
14	1.1790e+004	-4.2393e+003	2.2000e+001	2.5000e+002	8.5737e+003	-4.1913e+003	-8.7526e+003	4.2787e+003
15	1.1095e+004	-4.0628e+003	2.2000e+001	2.5000e+002	8.7526e+003	-4.2787e+003	-8.8461e+003	4.3244e+003
16	1.0401e+004	-3.8863e+003	2.2000e+001	2.5000e+002	8.8461e+003	-4.3244e+003	-8.8541e+003	4.3284e+003
17	9.7066e+003	-3.7099e+003	2.2000e+001	2.5000e+002	8.8541e+003	-4.3284e+003	-8.7768e+003	4.2906e+003
18	9.0122e+003	-3.5334e+003	2.2000e+001	2.5000e+002	8.7768e+003	-4.2906e+003	-8.6141e+003	4.2110e+003
19	8.3178e+003	-3.3569e+003	2.2000e+001	2.5000e+002	8.6141e+003	-4.2110e+003	-8.3659e+003	4.0897e+003
20	7.6235e+003	-3.1804e+003	2.2000e+001	2.5000e+002	8.3659e+003	-4.0897e+003	-8.0324e+003	3.9267e+003
21	6.9291e+003	-3.0040e+003	2.2000e+001	2.5000e+002	8.0324e+003	-3.9267e+003	-7.6134e+003	3.7219e+003
22	6.2347e+003	-2.8275e+003	2.2000e+001	2.5000e+002	7.6134e+003	-3.7219e+003	-7.1091e+003	3.4753e+003
23	5.5403e+003	-2.6510e+003	2.2000e+001	2.5000e+002	7.1091e+003	-3.4753e+003	-6.5194e+003	3.1870e+003
24	4.8459e+003	-2.4745e+003	2.2000e+001	2.5000e+002	6.5194e+003	-3.1870e+003	-5.8442e+003	2.8570e+003
25	4.1516e+003	-2.2981e+003	2.2000e+001	2.5000e+002	5.8442e+003	-2.8570e+003	-5.0837e+003	2.4852e+003
26	3.4572e+003	-2.1216e+003	2.2000e+001	2.5000e+002	5.0837e+003	-2.4852e+003	-4.2378e+003	2.0716e+003
27	2.7628e+003	-1.9451e+003	2.2000e+001	2.5000e+002	4.2378e+003	-2.0716e+003	-3.3064e+003	1.6164e+003
28	2.0684e+003	-1.7686e+003	2.2000e+001	2.5000e+002	3.3064e+003	-1.6164e+003	-2.2897e+003	1.1193e+003
29	1.3741e+003	-1.5922e+003	2.2000e+001	2.5000e+002	2.2897e+003	-1.1193e+003	-1.1875e+003	5.8053e+002
30	6.7968e+002	-1.4157e+003	2.2000e+001	2.5000e+002	1.1875e+003	-5.8053e+002	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Spencer Method	2.7648e+003	3.3177e+005	2.5388e+007	1.5970e+007	1.8290e+005	1.1514e+005	1.5897298

SUMMARY OF MINIMUM FACTORS OF SAFETY

MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
270.2500=X-COOR. 318.7500=Y-COOR. 178.4630=RADIUS 1.5897298=F.S. 1=SLIP#

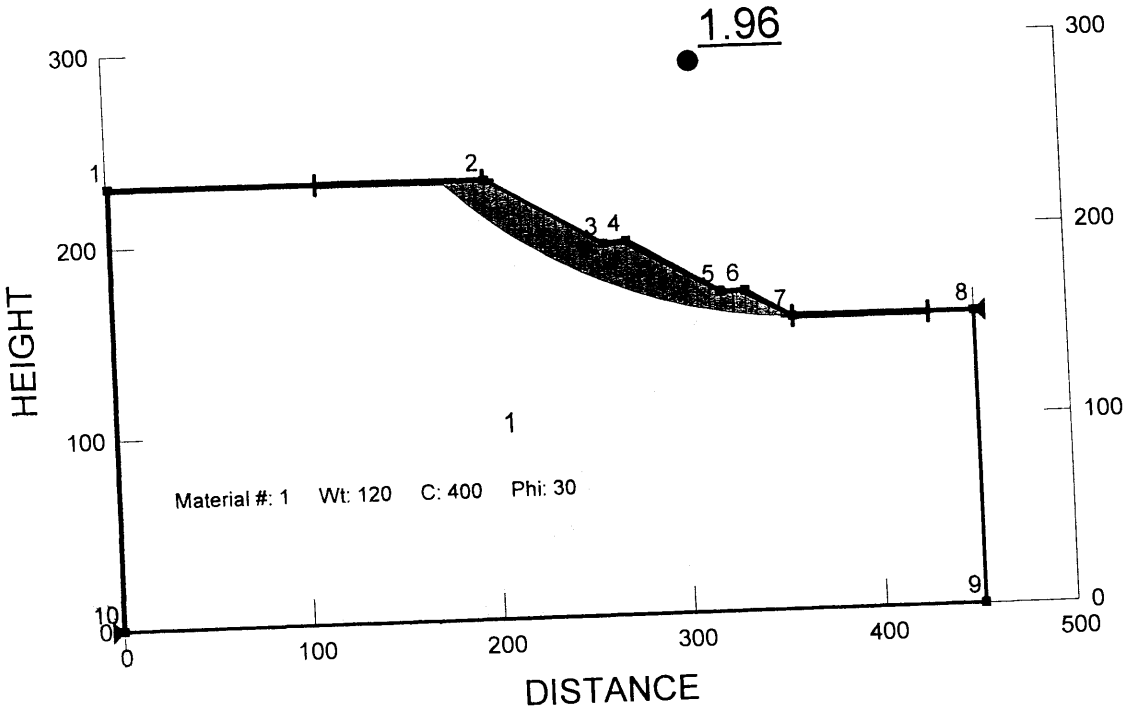
MOST_CRITICAL #	SLIP_SURFACE #
1	1

SLIP_SURFACE # AUTOTENSIONELEV

Title: SLOPE STABILITY ANALYSIS - SECTION L-L
Comments: CIRCULAR FAILURE
Name: 200-700-Sec L11.gsz
Directory: E:\Slope Stability Calculations\200-700\
Date: 3/18/05Time: 10:05:25 AM

Material #: 1 Wt: 120 C: 400 Phi: 30 Model: MohrCoulomb

Slip Surface Option: EntryAndExit
Analysis Method: Bishop
P.W.P. Option□Piezometric Lines / Ru
Horz Seismic Load: 0



SLOPE STABILITY ANALYSIS - SECTION L-L
CIRCULAR FAILURE
DATESTAMP 3/18/05
TIMESTAMP 10:05:25 AM

Center_X	Center_Y	Radius	Slip_Surface	Method
3.671890e+002	4.314920e+002	2.776789e+002	77	1

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	1.759993e+002	2.301162e+002	2.301162e+002	1.817495e+002	2.300871e+002	2.248089e+002	2.676625e+000	7.825318e+000
2	1.817495e+002	2.300871e+002	2.248089e+002	1.874997e+002	2.300581e+002	2.197907e+002	7.807626e+000	7.632218e+000
3	1.874997e+002	2.300581e+002	2.197907e+002	1.932498e+002	2.300290e+002	2.150414e+002	1.266002e+001	7.458124e+000
4	1.932498e+002	2.300290e+002	2.150414e+002	1.990000e+002	2.300000e+002	2.105437e+002	1.725247e+001	7.300471e+000
5	1.990000e+002	2.300000e+002	2.105437e+002	2.051000e+002	2.265000e+002	2.060306e+002	1.999513e+001	7.588259e+000
6	2.051000e+002	2.265000e+002	2.060306e+002	2.112000e+002	2.230000e+002	2.017680e+002	2.088116e+001	7.441980e+000
7	2.112000e+002	2.230000e+002	2.017680e+002	2.173000e+002	2.195000e+002	1.977422e+002	2.152375e+001	7.308909e+000
8	2.173000e+002	2.195000e+002	1.977422e+002	2.234000e+002	2.160000e+002	1.939411e+002	2.193576e+001	7.187544e+000
9	2.234000e+002	2.160000e+002	1.939411e+002	2.295000e+002	2.125000e+002	1.903542e+002	2.212849e+001	7.076625e+000
10	2.295000e+002	2.125000e+002	1.903542e+002	2.356000e+002	2.090000e+002	1.869720e+002	2.211193e+001	6.975088e+000
11	2.356000e+002	2.090000e+002	1.869720e+002	2.417000e+002	2.055000e+002	1.837861e+002	2.189498e+001	6.882024e+000
12	2.417000e+002	2.055000e+002	1.837861e+002	2.478000e+002	2.020000e+002	1.807891e+002	2.148556e+001	6.796659e+000
13	2.478000e+002	2.020000e+002	1.807891e+002	2.539000e+002	1.985000e+002	1.779742e+002	2.089074e+001	6.718324e+000
14	2.539000e+002	1.985000e+002	1.779742e+002	2.600000e+002	1.950000e+002	1.753354e+002	2.011687e+001	6.646443e+000
15	2.600000e+002	1.950000e+002	1.753354e+002	2.660000e+002	1.955000e+002	1.729065e+002	2.114939e+001	6.473139e+000
16	2.660000e+002	1.955000e+002	1.729065e+002	2.720000e+002	1.960000e+002	1.706382e+002	2.399747e+001	6.414608e+000
17	2.720000e+002	1.960000e+002	1.706382e+002	2.780000e+002	1.925000e+002	1.685262e+002	2.468711e+001	6.360973e+000
18	2.780000e+002	1.925000e+002	1.685262e+002	2.840000e+002	1.890000e+002	1.665670e+002	2.322225e+001	6.311920e+000
19	2.840000e+002	1.890000e+002	1.665670e+002	2.900000e+002	1.855000e+002	1.647571e+002	2.160643e+001	6.267176e+000
20	2.900000e+002	1.855000e+002	1.647571e+002	2.960000e+002	1.820000e+002	1.630934e+002	1.984285e+001	6.226499e+000
21	2.960000e+002	1.820000e+002	1.630934e+002	3.020000e+002	1.785000e+002	1.615734e+002	1.793437e+001	6.189678e+000
22	3.020000e+002	1.785000e+002	1.615734e+002	3.080000e+002	1.750000e+002	1.601945e+002	1.588354e+001	6.156527e+000
23	3.080000e+002	1.750000e+002	1.601945e+002	3.140000e+002	1.715000e+002	1.589547e+002	1.369264e+001	6.126884e+000
24	3.140000e+002	1.715000e+002	1.589547e+002	3.200000e+002	1.680000e+002	1.578520e+002	1.136368e+001	6.100609e+000
25	3.200000e+002	1.680000e+002	1.578520e+002	3.265000e+002	1.680000e+002	1.568103e+002	1.068861e+001	6.583102e+000
26	3.265000e+002	1.680000e+002	1.568103e+002	3.330000e+002	1.680000e+002	1.559258e+002	1.165153e+001	6.560059e+000
27	3.330000e+002	1.680000e+002	1.559258e+002	3.390000e+002	1.645000e+002	1.552475e+002	1.067988e+001	6.038332e+000
28	3.390000e+002	1.645000e+002	1.552475e+002	3.450000e+002	1.610000e+002	1.547010e+002	7.792173e+000	6.024960e+000
29	3.450000e+002	1.610000e+002	1.547010e+002	3.510000e+002	1.575000e+002	1.542853e+002	4.773186e+000	6.014497e+000
30	3.510000e+002	1.575000e+002	1.542853e+002	3.570000e+002	1.540000e+002	1.540000e+002	1.623603e+000	6.006897e+000

SL#	Weight	Pore_Water	Alpha	Force Fn.	Seismic_F	Seismic_Y	Pore_Air	Phi_B	Liquified
1	1.8469e+003	0.0000e+000	4.2706e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
2	5.3874e+003	0.0000e+000	4.1112e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
3	8.7357e+003	0.0000e+000	3.9555e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
4	1.1905e+004	0.0000e+000	3.8032e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
5	1.4636e+004	0.0000e+000	3.6496e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
6	1.5285e+004	0.0000e+000	3.4945e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
7	1.5755e+004	0.0000e+000	3.3423e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
8	1.6057e+004	0.0000e+000	3.1928e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
9	1.6198e+004	0.0000e+000	3.0456e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
10	1.6186e+004	0.0000e+000	2.9007e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
11	1.6027e+004	0.0000e+000	2.7577e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
12	1.5727e+004	0.0000e+000	2.6166e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
13	1.5292e+004	0.0000e+000	2.4771e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
14	1.4726e+004	0.0000e+000	2.3393e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
15	1.5228e+004	0.0000e+000	2.2039e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
16	1.7278e+004	0.0000e+000	2.0709e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
17	1.7775e+004	0.0000e+000	1.9391e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
18	1.6720e+004	0.0000e+000	1.8084e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
19	1.5557e+004	0.0000e+000	1.6786e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
20	1.4287e+004	0.0000e+000	1.5497e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
21	1.2913e+004	0.0000e+000	1.4216e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
22	1.1436e+004	0.0000e+000	1.2942e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
23	9.8587e+003	0.0000e+000	1.1675e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
24	8.1818e+003	0.0000e+000	1.0414e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
25	8.3371e+003	0.0000e+000	9.1051e+000	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
26	9.0882e+003	0.0000e+000	7.7492e+000	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
27	7.6895e+003	0.0000e+000	6.4494e+000	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
28	5.6104e+003	0.0000e+000	5.2049e+000	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
29	3.4367e+003	0.0000e+000	3.9628e+000	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
30	1.1690e+003	0.0000e+000	2.7225e+000	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0

Bishop_Method_Fm= 1.9647508 Applied_Lambda= 0.0000

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	8.2205e+002	-1.8347e+003	3.0000e+001	4.0000e+002	0.0000e+000	0.0000e+000	8.5983e+002	0.0000e+000
2	4.6143e+003	-2.9097e+003	3.0000e+001	4.0000e+002	-8.5983e+002	0.0000e+000	1.2509e+002	0.0000e+000
3	8.1113e+003	-3.9019e+003	3.0000e+001	4.0000e+002	-1.2509e+002	0.0000e+000	-1.8917e+003	0.0000e+000
4	1.1348e+004	-4.8208e+003	3.0000e+001	4.0000e+002	1.8917e+003	0.0000e+000	-4.9165e+003	0.0000e+000
5	1.4021e+004	-5.6649e+003	3.0000e+001	4.0000e+002	4.9165e+003	0.0000e+000	-8.5068e+003	0.0000e+000
6	1.4596e+004	-5.8042e+003	3.0000e+001	4.0000e+002	8.5068e+003	0.0000e+000	-1.1914e+004	0.0000e+000
7	1.4992e+004	-5.8936e+003	3.0000e+001	4.0000e+002	1.1914e+004	0.0000e+000	-1.5058e+004	0.0000e+000
8	1.5224e+004	-5.9370e+003	3.0000e+001	4.0000e+002	1.5058e+004	0.0000e+000	-1.7878e+004	0.0000e+000
9	1.5304e+004	-5.9378e+003	3.0000e+001	4.0000e+002	1.7878e+004	0.0000e+000	-2.0327e+004	0.0000e+000
10	1.5241e+004	-5.8986e+003	3.0000e+001	4.0000e+002	2.0327e+004	0.0000e+000	-2.2373e+004	0.0000e+000
11	1.5044e+004	-5.8220e+003	3.0000e+001	4.0000e+002	2.2373e+004	0.0000e+000	-2.3996e+004	0.0000e+000
12	1.4721e+004	-5.7096e+003	3.0000e+001	4.0000e+002	2.3996e+004	0.0000e+000	-2.5188e+004	0.0000e+000
13	1.4278e+004	-5.5633e+003	3.0000e+001	4.0000e+002	2.5188e+004	0.0000e+000	-2.5950e+004	0.0000e+000
14	1.3718e+004	-5.3842e+003	3.0000e+001	4.0000e+002	2.5950e+004	0.0000e+000	-2.6292e+004	0.0000e+000
15	1.4207e+004	-5.4927e+003	3.0000e+001	4.0000e+002	2.6292e+004	0.0000e+000	-2.6368e+004	0.0000e+000
16	1.6183e+004	-6.0614e+003	3.0000e+001	4.0000e+002	2.6368e+004	0.0000e+000	-2.6242e+004	0.0000e+000
17	1.6667e+004	-6.1926e+003	3.0000e+001	4.0000e+002	2.6242e+004	0.0000e+000	-2.5752e+004	0.0000e+000
18	1.5668e+004	-5.8892e+003	3.0000e+001	4.0000e+002	2.5752e+004	0.0000e+000	-2.4845e+004	0.0000e+000
19	1.4574e+004	-5.5586e+003	3.0000e+001	4.0000e+002	2.4845e+004	0.0000e+000	-2.3571e+004	0.0000e+000
20	1.3386e+004	-5.2010e+003	3.0000e+001	4.0000e+002	2.3571e+004	0.0000e+000	-2.1984e+004	0.0000e+000
21	1.2102e+004	-4.8164e+003	3.0000e+001	4.0000e+002	2.1984e+004	0.0000e+000	-2.0148e+004	0.0000e+000
22	1.0723e+004	-4.4045e+003	3.0000e+001	4.0000e+002	2.0148e+004	0.0000e+000	-1.8129e+004	0.0000e+000
23	9.2486e+003	-3.9651e+003	3.0000e+001	4.0000e+002	1.8129e+004	0.0000e+000	-1.6003e+004	0.0000e+000
24	7.6768e+003	-3.4979e+003	3.0000e+001	4.0000e+002	1.6003e+004	0.0000e+000	-1.3849e+004	0.0000e+000
25	7.8593e+003	-3.6497e+003	3.0000e+001	4.0000e+002	1.3849e+004	0.0000e+000	-1.1383e+004	0.0000e+000
26	8.6452e+003	-3.8760e+003	3.0000e+001	4.0000e+002	1.1383e+004	0.0000e+000	-8.5946e+003	0.0000e+000
27	7.3557e+003	-3.3908e+003	3.0000e+001	4.0000e+002	8.5946e+003	0.0000e+000	-5.9522e+003	0.0000e+000
28	5.3782e+003	-2.8070e+003	3.0000e+001	4.0000e+002	5.9522e+003	0.0000e+000	-3.5619e+003	0.0000e+000
29	3.2933e+003	-2.1922e+003	3.0000e+001	4.0000e+002	3.5619e+003	0.0000e+000	-1.5376e+003	0.0000e+000
30	1.0969e+003	-1.5453e+003	3.0000e+001	4.0000e+002	1.5376e+003	0.0000e+000	0.0000e+000	0.0000e+000

Slip_Surface_Summary Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Bishop Method	2.9861e+003	3.5833e+005	7.6174e+007	3.8770e+007			1.9647508

SUMMARY OF MINIMUM FACTORS OF SAFETY

MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
367.1887=X-COOR. 431.4919=Y-COOR. 277.6789=RADIUS 1.9647508=F.S. 77=SLIP#

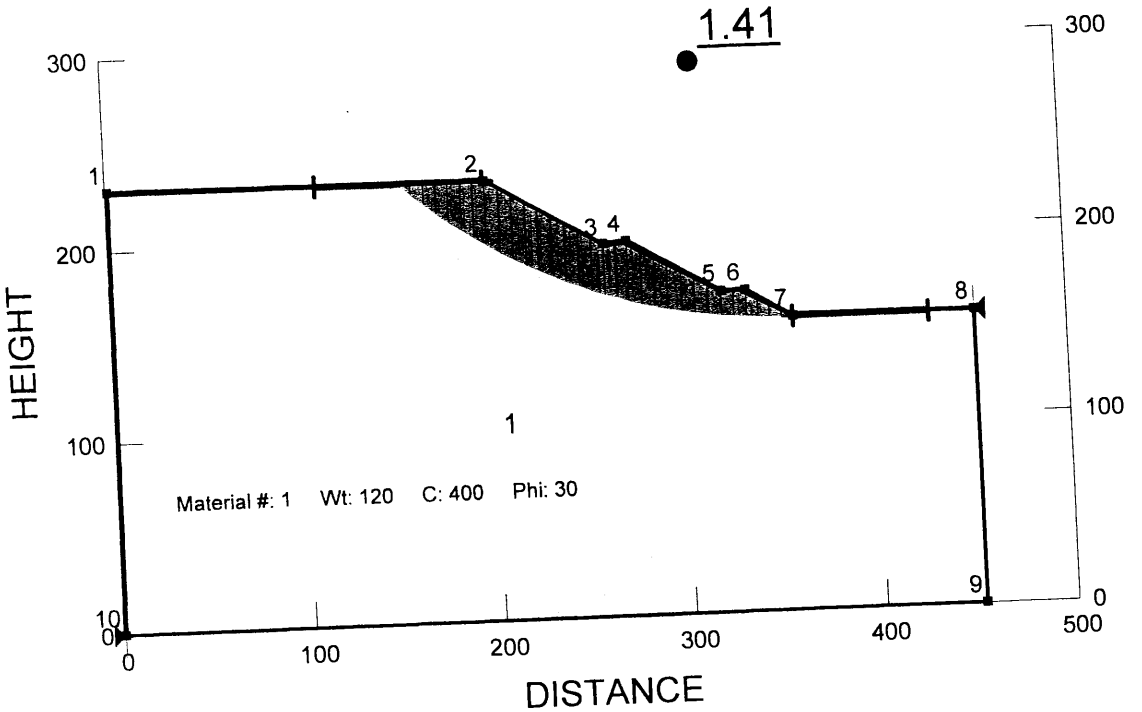
MOST_CRITICAL #	SLIP_SURFACE #
1	77

SLIP_SURFACE # AUTOTENSIONELEV

Title: SLOPE STABILITY ANALYSIS - SECTION L-L
Comments: EARTHQUAKE - CIRCULAR FAILURE
Name: 200-700-Sec L12.gsz
Directory: E:\Slope Stability Calculations\200-700\
Date: 3/18/05Time: 10:11:33 AM

Material #: 1 Wt: 120 C: 400 Phi: 30 Model: MohrCoulomb

Slip Surface Option: EntryAndExit
Analysis Method: Bishop
P.W.P. Option□Piezometric Lines / Ru
Horz Seismic Load: 0.15



SLOPE STABILITY ANALYSIS - SECTION L-L
EARTHQUAKE - CIRCULAR FAILURE
DATESTAMP 3/18/05
TIMESTAMP 10:11:33 AM

Center_X	Center_Y	Radius	Slip_Surface	Method
3.519130e+002	4.488720e+002	2.949163e+002	52	1

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	1.539986e+002	2.302273e+002	2.302273e+002	1.604274e+002	2.301948e+002	2.245756e+002	2.850946e+000	8.560108e+000
2	1.604274e+002	2.301948e+002	2.245756e+002	1.668562e+002	2.301623e+002	2.192428e+002	8.307777e+000	8.352992e+000
3	1.668562e+002	2.301623e+002	2.192428e+002	1.732849e+002	2.301299e+002	2.142071e+002	1.345703e+001	8.166480e+000
4	1.732849e+002	2.301299e+002	2.142071e+002	1.797137e+002	2.300974e+002	2.094498e+002	1.831888e+001	7.997810e+000
5	1.797137e+002	2.300974e+002	2.094498e+002	1.861425e+002	2.300649e+002	2.049546e+002	2.291078e+001	7.844727e+000
6	1.861425e+002	2.300649e+002	2.049546e+002	1.925712e+002	2.300325e+002	2.007072e+002	2.724795e+001	7.705369e+000
7	1.925712e+002	2.300325e+002	2.007072e+002	1.990000e+002	2.300000e+002	1.966952e+002	3.134374e+001	7.578186e+000
8	1.990000e+002	2.300000e+002	1.966952e+002	2.057778e+002	2.261111e+002	1.927079e+002	3.338443e+001	7.863838e+000
9	2.057778e+002	2.261111e+002	1.927079e+002	2.125556e+002	2.222222e+002	1.889585e+002	3.336252e+001	7.745963e+000
10	2.125556e+002	2.222222e+002	1.889585e+002	2.193333e+002	2.183333e+002	1.854367e+002	3.310804e+001	7.638356e+000
11	2.193333e+002	2.183333e+002	1.854367e+002	2.261111e+002	2.144444e+002	1.821336e+002	3.263056e+001	7.540038e+000
12	2.261111e+002	2.144444e+002	1.821336e+002	2.328889e+002	2.105556e+002	1.790410e+002	3.193857e+001	7.450174e+000
13	2.328889e+002	2.105556e+002	1.790410e+002	2.396667e+002	2.066667e+002	1.761519e+002	3.103967e+001	7.368044e+000
14	2.396667e+002	2.066667e+002	1.761519e+002	2.464444e+002	2.027778e+002	1.734598e+002	2.994062e+001	7.293029e+000
15	2.464444e+002	2.027778e+002	1.734598e+002	2.532222e+002	1.988889e+002	1.709590e+002	2.864748e+001	7.224592e+000
16	2.532222e+002	1.988889e+002	1.709590e+002	2.600000e+002	1.950000e+002	1.686445e+002	2.716566e+001	7.162268e+000
17	2.600000e+002	1.950000e+002	1.686445e+002	2.660000e+002	1.955000e+002	1.667472e+002	2.757179e+001	6.292951e+000
18	2.660000e+002	1.955000e+002	1.667472e+002	2.720000e+002	1.960000e+002	1.649893e+002	2.989901e+001	6.252316e+000
19	2.720000e+002	1.960000e+002	1.649893e+002	2.788571e+002	1.920000e+002	1.631478e+002	2.995353e+001	7.100275e+000
20	2.788571e+002	1.920000e+002	1.631478e+002	2.857143e+002	1.880000e+002	1.614817e+002	2.770694e+001	7.056824e+000
21	2.857143e+002	1.880000e+002	1.614817e+002	2.925714e+002	1.840000e+002	1.599879e+002	2.528655e+001	7.018132e+000
22	2.925714e+002	1.840000e+002	1.599879e+002	2.994286e+002	1.800000e+002	1.586638e+002	2.269521e+001	6.983984e+000
23	2.994286e+002	1.800000e+002	1.586638e+002	3.062857e+002	1.760000e+002	1.575070e+002	1.993541e+001	6.954194e+000
24	3.062857e+002	1.760000e+002	1.575070e+002	3.131429e+002	1.720000e+002	1.565156e+002	1.700929e+001	6.928604e+000
25	3.131429e+002	1.720000e+002	1.565156e+002	3.200000e+002	1.680000e+002	1.556878e+002	1.391868e+001	6.907080e+000
26	3.200000e+002	1.680000e+002	1.556878e+002	3.265000e+002	1.680000e+002	1.550530e+002	1.264774e+001	6.531055e+000
27	3.265000e+002	1.680000e+002	1.550530e+002	3.330000e+002	1.680000e+002	1.545632e+002	1.320996e+001	6.518567e+000
28	3.330000e+002	1.680000e+002	1.545632e+002	3.390000e+002	1.645000e+002	1.542389e+002	1.186428e+001	6.008858e+000
29	3.390000e+002	1.645000e+002	1.542389e+002	3.450000e+002	1.610000e+002	1.540371e+002	8.627249e+000	6.003496e+000
30	3.450000e+002	1.610000e+002	1.540371e+002	3.510000e+002	1.575000e+002	1.539575e+002	5.267929e+000	6.000632e+000
31	3.510000e+002	1.575000e+002	1.539575e+002	3.570000e+002	1.540000e+002	1.540000e+002	1.786496e+000	6.000254e+000

SL#	Weight	Pore_Water	Alpha	Force Fn.	Seismic_F	Seismic_Y	Pore_Air	Phi_B	Liquified
1	2.1994e+003	0.0000e+000	4.1319e+001	1.0000e+000	3.2991e+002	2.2879e+002	0.0000e+000	0.0000e+000	0
2	6.4091e+003	0.0000e+000	3.9676e+001	1.0000e+000	9.6136e+002	2.2602e+002	0.0000e+000	0.0000e+000	0
3	1.0381e+004	0.0000e+000	3.8072e+001	1.0000e+000	1.5572e+003	2.2342e+002	0.0000e+000	0.0000e+000	0
4	1.4132e+004	0.0000e+000	3.6502e+001	1.0000e+000	2.1198e+003	2.2095e+002	0.0000e+000	0.0000e+000	0
5	1.7675e+004	0.0000e+000	3.4963e+001	1.0000e+000	2.6512e+003	2.1863e+002	0.0000e+000	0.0000e+000	0
6	2.1020e+004	0.0000e+000	3.3452e+001	1.0000e+000	3.1531e+003	2.1642e+002	0.0000e+000	0.0000e+000	0
7	2.4180e+004	0.0000e+000	3.1967e+001	1.0000e+000	3.6270e+003	2.1434e+002	0.0000e+000	0.0000e+000	0
8	2.7153e+004	0.0000e+000	3.0467e+001	1.0000e+000	4.0729e+003	2.1136e+002	0.0000e+000	0.0000e+000	0
9	2.7135e+004	0.0000e+000	2.8951e+001	1.0000e+000	4.0702e+003	2.0749e+002	0.0000e+000	0.0000e+000	0
10	2.6928e+004	0.0000e+000	2.7457e+001	1.0000e+000	4.0392e+003	2.0372e+002	0.0000e+000	0.0000e+000	0
11	2.6540e+004	0.0000e+000	2.5982e+001	1.0000e+000	3.9809e+003	2.0007e+002	0.0000e+000	0.0000e+000	0
12	2.5977e+004	0.0000e+000	2.4526e+001	1.0000e+000	3.8965e+003	1.9653e+002	0.0000e+000	0.0000e+000	0
13	2.5246e+004	0.0000e+000	2.3087e+001	1.0000e+000	3.7868e+003	1.9309e+002	0.0000e+000	0.0000e+000	0
14	2.4352e+004	0.0000e+000	2.1663e+001	1.0000e+000	3.6528e+003	1.8975e+002	0.0000e+000	0.0000e+000	0
15	2.3300e+004	0.0000e+000	2.0252e+001	1.0000e+000	3.4950e+003	1.8651e+002	0.0000e+000	0.0000e+000	0
16	2.2095e+004	0.0000e+000	1.8855e+001	1.0000e+000	3.3142e+003	1.8336e+002	0.0000e+000	0.0000e+000	0
17	1.9852e+004	0.0000e+000	1.7548e+001	1.0000e+000	2.9778e+003	1.8146e+002	0.0000e+000	0.0000e+000	0
18	2.1527e+004	0.0000e+000	1.6329e+001	1.0000e+000	3.2291e+003	1.8080e+002	0.0000e+000	0.0000e+000	0
19	2.4647e+004	0.0000e+000	1.5032e+001	1.0000e+000	3.6971e+003	1.7902e+002	0.0000e+000	0.0000e+000	0
20	2.2799e+004	0.0000e+000	1.3657e+001	1.0000e+000	3.4198e+003	1.7615e+002	0.0000e+000	0.0000e+000	0
21	2.0807e+004	0.0000e+000	1.2290e+001	1.0000e+000	3.1211e+003	1.7336e+002	0.0000e+000	0.0000e+000	0
22	1.8675e+004	0.0000e+000	1.0930e+001	1.0000e+000	2.8012e+003	1.7065e+002	0.0000e+000	0.0000e+000	0
23	1.6404e+004	0.0000e+000	9.5756e+000	1.0000e+000	2.4606e+003	1.6803e+002	0.0000e+000	0.0000e+000	0
24	1.3996e+004	0.0000e+000	8.2270e+000	1.0000e+000	2.0994e+003	1.6550e+002	0.0000e+000	0.0000e+000	0
25	1.1453e+004	0.0000e+000	6.8830e+000	1.0000e+000	1.7180e+003	1.6304e+002	0.0000e+000	0.0000e+000	0
26	9.8652e+003	0.0000e+000	5.5777e+000	1.0000e+000	1.4798e+003	1.6168e+002	0.0000e+000	0.0000e+000	0
27	1.0304e+004	0.0000e+000	4.3100e+000	1.0000e+000	1.5456e+003	1.6140e+002	0.0000e+000	0.0000e+000	0
28	8.5423e+003	0.0000e+000	3.0931e+000	1.0000e+000	1.2813e+003	1.6032e+002	0.0000e+000	0.0000e+000	0
29	6.2116e+003	0.0000e+000	1.9263e+000	1.0000e+000	9.3174e+002	1.5844e+002	0.0000e+000	0.0000e+000	0
30	3.7929e+003	0.0000e+000	7.6019e-001	1.0000e+000	5.6894e+002	1.5662e+002	0.0000e+000	0.0000e+000	0
31	1.2863e+003	0.0000e+000	-4.0557e-001	1.0000e+000	1.9294e+002	1.5486e+002	0.0000e+000	0.0000e+000	0

Bishop_Method_Fm= 1.4055923 Applied_Lambda= 0.0000

Sl#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	5.8094e+002	-2.6746e+003	3.0000e+001	4.0000e+002	0.0000e+000	0.0000e+000	1.4007e+003	0.0000e+000
2	4.7445e+003	-4.3259e+003	3.0000e+001	4.0000e+002	-1.4007e+003	0.0000e+000	9.0816e+002	0.0000e+000
3	8.6055e+003	-5.8587e+003	3.0000e+001	4.0000e+002	-9.0816e+002	0.0000e+000	-1.1176e+003	0.0000e+000
4	1.2198e+004	-7.2862e+003	3.0000e+001	4.0000e+002	1.1176e+003	0.0000e+000	-4.3581e+003	0.0000e+000
5	1.5550e+004	-8.6195e+003	3.0000e+001	4.0000e+002	4.3581e+003	0.0000e+000	-8.5298e+003	0.0000e+000
6	1.8685e+004	-9.8677e+003	3.0000e+001	4.0000e+002	8.5298e+003	0.0000e+000	-1.3379e+004	0.0000e+000
7	2.1625e+004	-1.1039e+004	3.0000e+001	4.0000e+002	1.3379e+004	0.0000e+000	-1.8678e+004	0.0000e+000
8	2.4321e+004	-1.2228e+004	3.0000e+001	4.0000e+002	1.8678e+004	0.0000e+000	-2.4090e+004	0.0000e+000
9	2.4284e+004	-1.2179e+004	3.0000e+001	4.0000e+002	2.4090e+004	0.0000e+000	-2.8808e+004	0.0000e+000
10	2.4086e+004	-1.2067e+004	3.0000e+001	4.0000e+002	2.8808e+004	0.0000e+000	-3.2802e+004	0.0000e+000
11	2.3736e+004	-1.1895e+004	3.0000e+001	4.0000e+002	3.2802e+004	0.0000e+000	-3.6052e+004	0.0000e+000
12	2.3239e+004	-1.1666e+004	3.0000e+001	4.0000e+002	3.6052e+004	0.0000e+000	-3.8556e+004	0.0000e+000
13	2.2601e+004	-1.1380e+004	3.0000e+001	4.0000e+002	3.8556e+004	0.0000e+000	-4.0321e+004	0.0000e+000
14	2.1824e+004	-1.1040e+004	3.0000e+001	4.0000e+002	4.0321e+004	0.0000e+000	-4.1367e+004	0.0000e+000
15	2.0914e+004	-1.0646e+004	3.0000e+001	4.0000e+002	4.1367e+004	0.0000e+000	-4.1725e+004	0.0000e+000
16	1.9870e+004	-1.0200e+004	3.0000e+001	4.0000e+002	4.1725e+004	0.0000e+000	-4.1435e+004	0.0000e+000
17	1.7930e+004	-9.1557e+003	3.0000e+001	4.0000e+002	4.1435e+004	0.0000e+000	-4.0755e+004	0.0000e+000
18	1.9562e+004	-9.8142e+003	3.0000e+001	4.0000e+002	4.0755e+004	0.0000e+000	-3.9706e+004	0.0000e+000
19	2.2501e+004	-1.1263e+004	3.0000e+001	4.0000e+002	3.9706e+004	0.0000e+000	-3.7948e+004	0.0000e+000
20	2.0893e+004	-1.0590e+004	3.0000e+001	4.0000e+002	3.7948e+004	0.0000e+000	-3.5620e+004	0.0000e+000
21	1.9150e+004	-9.8631e+003	3.0000e+001	4.0000e+002	3.5620e+004	0.0000e+000	-3.2816e+004	0.0000e+000
22	1.7269e+004	-9.0809e+003	3.0000e+001	4.0000e+002	3.2816e+004	0.0000e+000	-2.9637e+004	0.0000e+000
23	1.5248e+004	-8.2420e+003	3.0000e+001	4.0000e+002	2.9637e+004	0.0000e+000	-2.6199e+004	0.0000e+000
24	1.3082e+004	-7.3450e+003	3.0000e+001	4.0000e+002	2.6199e+004	0.0000e+000	-2.2625e+004	0.0000e+000
25	1.0766e+004	-6.3879e+003	3.0000e+001	4.0000e+002	2.2625e+004	0.0000e+000	-1.9049e+004	0.0000e+000
26	9.3563e+003	-5.7017e+003	3.0000e+001	4.0000e+002	1.9049e+004	0.0000e+000	-1.5546e+004	0.0000e+000
27	9.8878e+003	-5.9165e+003	3.0000e+001	4.0000e+002	1.5546e+004	0.0000e+000	-1.1708e+004	0.0000e+000
28	8.2790e+003	-5.1106e+003	3.0000e+001	4.0000e+002	1.1708e+004	0.0000e+000	-8.1346e+003	0.0000e+000
29	6.0740e+003	-4.2034e+003	3.0000e+001	4.0000e+002	8.1346e+003	0.0000e+000	-4.9052e+003	0.0000e+000
30	3.7502e+003	-3.2481e+003	3.0000e+001	4.0000e+002	4.9052e+003	0.0000e+000	-2.1479e+003	0.0000e+000
31	1.3022e+003	-2.2424e+003	3.0000e+001	4.0000e+002	2.1479e+003	0.0000e+000	0.0000e+000	0.0000e+000

Slip_Surface_Summary Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Bishop Method	4.4574e+003	5.3488e+005	1.0825e+008	7.7014e+007			1.4055923

SUMMARY OF MINIMUM FACTORS OF SAFETY

MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
351.9126=X-COOR. 448.8724=Y-COOR. 294.9163=RADIUS 1.4055923=F.S. 52=SLIP#

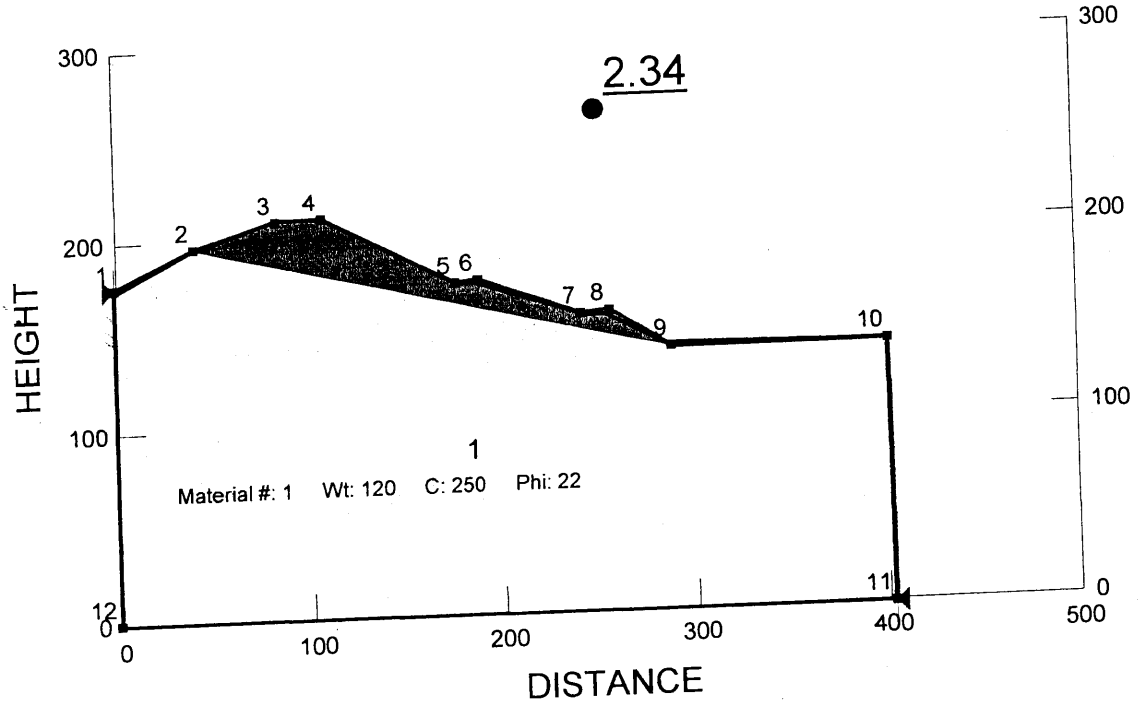
MOST_CRITICAL #	SLIP_SURFACE #
1	52

SLIP_SURFACE # AUTOTENSIONELEV

Title: SLOPE STABILITY ANALYSIS - SECTION K-K
Comments: BEDDING FAILURE
Name: 200-700-Sec K11.gsz
Directory: E:\Slope Stability Calculations\200-700\
Date: 3/18/05Time: 10:34:50 AM

Material #: 1 Wt: 120 C: 250 Phi: 22 Model: MohrCoulomb

Slip Surface Option: FullySpecified
Analysis Method: Spencer
P.W.P. Option□Piezometric Lines / Ru
Horz Seismic Load: 0



SLOPE STABILITY ANALYSIS - SECTION K-K
BEDDING FAILURE
DATESTAMP 3/18/05
TIMESTAMP 10:34:50 AM

Center_X	Center_Y	Radius	Slip_Surface	Method
2.515000e+002	2.627500e+002	1.884504e+002	1	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	4.100000e+001	1.960000e+002	1.960000e+002	4.960000e+001	1.986000e+002	1.939540e+002	2.322984e+000	8.840022e+000
2	4.960000e+001	1.986000e+002	1.939540e+002	5.820000e+001	2.012000e+002	1.919081e+002	6.968952e+000	8.840022e+000
3	5.820000e+001	2.012000e+002	1.919081e+002	6.680000e+001	2.038000e+002	1.898621e+002	1.161492e+001	8.840022e+000
4	6.680000e+001	2.038000e+002	1.898621e+002	7.540000e+001	2.064000e+002	1.878161e+002	1.626089e+001	8.840022e+000
5	7.540000e+001	2.064000e+002	1.878161e+002	8.400000e+001	2.090000e+002	1.857702e+002	2.090685e+001	8.840022e+000
6	8.400000e+001	2.090000e+002	1.857702e+002	9.200000e+001	2.093333e+002	1.838669e+002	2.434812e+001	8.223276e+000
7	9.200000e+001	2.093333e+002	1.838669e+002	1.000000e+002	2.096667e+002	1.819637e+002	2.658468e+001	8.223276e+000
8	1.000000e+002	2.096667e+002	1.819637e+002	1.080000e+002	2.100000e+002	1.800605e+002	2.882124e+001	8.223276e+000
9	1.080000e+002	2.100000e+002	1.800605e+002	1.166250e+002	2.055000e+002	1.780086e+002	2.871547e+001	8.865719e+000
10	1.166250e+002	2.055000e+002	1.780086e+002	1.252500e+002	2.010000e+002	1.759567e+002	2.626739e+001	8.865719e+000
11	1.252500e+002	2.010000e+002	1.759567e+002	1.338750e+002	1.965000e+002	1.739047e+002	2.381930e+001	8.865719e+000
12	1.338750e+002	1.965000e+002	1.739047e+002	1.425000e+002	1.920000e+002	1.718528e+002	2.137122e+001	8.865719e+000
13	1.425000e+002	1.920000e+002	1.718528e+002	1.511250e+002	1.875000e+002	1.698009e+002	1.892314e+001	8.865719e+000
14	1.511250e+002	1.875000e+002	1.698009e+002	1.597500e+002	1.830000e+002	1.677490e+002	1.647505e+001	8.865719e+000
15	1.597500e+002	1.830000e+002	1.677490e+002	1.683750e+002	1.785000e+002	1.656971e+002	1.402697e+001	8.865719e+000
16	1.683750e+002	1.785000e+002	1.656971e+002	1.770000e+002	1.740000e+002	1.636452e+002	1.157888e+001	8.865719e+000
17	1.770000e+002	1.740000e+002	1.636452e+002	1.890000e+002	1.750000e+002	1.607903e+002	1.228226e+001	1.233491e+001
18	1.890000e+002	1.750000e+002	1.607903e+002	1.978333e+002	1.718333e+002	1.586888e+002	1.367708e+001	9.079867e+000
19	1.978333e+002	1.718333e+002	1.586888e+002	2.066667e+002	1.686667e+002	1.565874e+002	1.261190e+001	9.079867e+000
20	2.066667e+002	1.686667e+002	1.565874e+002	2.155000e+002	1.655000e+002	1.544859e+002	1.154671e+001	9.079867e+000
21	2.155000e+002	1.655000e+002	1.544859e+002	2.243333e+002	1.623333e+002	1.523844e+002	1.048152e+001	9.079867e+000
22	2.243333e+002	1.623333e+002	1.523844e+002	2.331667e+002	1.591667e+002	1.502829e+002	9.416331e+000	9.079867e+000
23	2.331667e+002	1.591667e+002	1.502829e+002	2.420000e+002	1.560000e+002	1.481815e+002	8.351142e+000	9.079867e+000
24	2.420000e+002	1.560000e+002	1.481815e+002	2.495000e+002	1.565000e+002	1.463972e+002	8.960685e+000	7.709321e+000
25	2.495000e+002	1.565000e+002	1.463972e+002	2.570000e+002	1.570000e+002	1.446129e+002	1.124496e+001	7.709321e+000
26	2.570000e+002	1.570000e+002	1.446129e+002	2.650000e+002	1.520000e+002	1.427097e+002	1.083871e+001	8.223276e+000
27	2.650000e+002	1.520000e+002	1.427097e+002	2.730000e+002	1.470000e+002	1.408065e+002	7.741935e+000	8.223276e+000
28	2.730000e+002	1.470000e+002	1.408065e+002	2.810000e+002	1.420000e+002	1.389032e+002	4.645161e+000	8.223276e+000
29	2.810000e+002	1.420000e+002	1.389032e+002	2.890000e+002	1.370000e+002	1.370000e+002	1.548387e+000	8.223276e+000

SL#	Weight	Pore_Water	Alpha	Force Fn.	Seismic_F	Seismic_Y	Pore_Air	Phi_B	Liquified
1	2.3973e+003	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
2	7.1920e+003	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
3	1.1987e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
4	1.6781e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
5	2.1576e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
6	2.3374e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
7	2.5521e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
8	2.7668e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
9	2.9721e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
10	2.7187e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
11	2.4653e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
12	2.2119e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
13	1.9585e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
14	1.7052e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
15	1.4518e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
16	1.1984e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
17	1.7686e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
18	1.4498e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
19	1.3369e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
20	1.2240e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
21	1.1110e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
22	9.9813e+003	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
23	8.8522e+003	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
24	8.0646e+003	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
25	1.0120e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
26	1.0405e+004	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
27	7.4323e+003	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
28	4.4594e+003	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0
29	1.4865e+003	0.0000e+000	1.3382e+001	1.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0.0000e+000	0

Spencer_Method_Fm= 2.3351548 Applied_Lambda= 0.2306

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	2.3269e+003	-1.3490e+003	2.2000e+001	2.5000e+002	0.0000e+000	0.0000e+000	7.7439e+002	-1.7858e+002
2	6.9935e+003	-2.1564e+003	2.2000e+001	2.5000e+002	-7.7439e+002	1.7858e+002	1.2545e+003	-2.8931e+002
3	1.1660e+004	-2.9638e+003	2.2000e+001	2.5000e+002	-1.2545e+003	2.8931e+002	1.4404e+003	-3.3218e+002
4	1.6327e+004	-3.7713e+003	2.2000e+001	2.5000e+002	-1.4404e+003	3.3218e+002	1.3321e+003	-3.0720e+002
5	2.0993e+004	-4.5787e+003	2.2000e+001	2.5000e+002	-1.3321e+003	3.0720e+002	9.2955e+002	-2.1436e+002
6	2.2744e+004	-4.8156e+003	2.2000e+001	2.5000e+002	-9.2955e+002	2.1436e+002	3.5233e+002	-8.1251e+001
7	2.4834e+004	-5.1771e+003	2.2000e+001	2.5000e+002	-3.5233e+002	8.1251e+001	-3.5665e+002	8.2247e+001
8	2.6924e+004	-5.5387e+003	2.2000e+001	2.5000e+002	3.5665e+002	-8.2247e+001	-1.1974e+003	2.7613e+002
9	2.8921e+004	-5.9530e+003	2.2000e+001	2.5000e+002	1.1974e+003	-2.7613e+002	-2.0971e+003	4.8361e+002
10	2.6455e+004	-5.5263e+003	2.2000e+001	2.5000e+002	2.0971e+003	-4.8361e+002	-2.8413e+003	6.5524e+002
11	2.3988e+004	-5.0996e+003	2.2000e+001	2.5000e+002	2.8413e+003	-6.5524e+002	-3.4300e+003	7.9100e+002
12	2.1522e+004	-4.6729e+003	2.2000e+001	2.5000e+002	3.4300e+003	-7.9100e+002	-3.8633e+003	8.9091e+002
13	1.9056e+004	-4.2462e+003	2.2000e+001	2.5000e+002	3.8633e+003	-8.9091e+002	-4.1410e+003	9.5496e+002
14	1.6590e+004	-3.8195e+003	2.2000e+001	2.5000e+002	4.1410e+003	-9.5496e+002	-4.2633e+003	9.8315e+002
15	1.4124e+004	-3.3929e+003	2.2000e+001	2.5000e+002	4.2633e+003	-9.8315e+002	-4.2300e+003	9.7548e+002
16	1.1658e+004	-2.9662e+003	2.2000e+001	2.5000e+002	4.2300e+003	-9.7548e+002	-4.0413e+003	9.3196e+002
17	1.7205e+004	-4.2974e+003	2.2000e+001	2.5000e+002	4.0413e+003	-9.3196e+002	-3.8408e+003	8.8574e+002
18	1.4104e+004	-3.4124e+003	2.2000e+001	2.5000e+002	3.8408e+003	-8.8574e+002	-3.7840e+003	8.7263e+002
19	1.3005e+004	-3.2222e+003	2.2000e+001	2.5000e+002	3.7840e+003	-8.7263e+002	-3.6579e+003	8.4355e+002
20	1.1906e+004	-3.0321e+003	2.2000e+001	2.5000e+002	3.6579e+003	-8.4355e+002	-3.4625e+003	7.9850e+002
21	1.0807e+004	-2.8419e+003	2.2000e+001	2.5000e+002	3.4625e+003	-7.9850e+002	-3.1979e+003	7.3746e+002
22	9.7083e+003	-2.6518e+003	2.2000e+001	2.5000e+002	3.1979e+003	-7.3746e+002	-2.8639e+003	6.6044e+002
23	8.6093e+003	-2.4617e+003	2.2000e+001	2.5000e+002	2.8639e+003	-6.6044e+002	-2.4606e+003	5.6744e+002
24	7.8437e+003	-2.1825e+003	2.2000e+001	2.5000e+002	2.4606e+003	-5.6744e+002	-2.1519e+003	4.9625e+002
25	9.8447e+003	-2.5287e+003	2.2000e+001	2.5000e+002	2.1519e+003	-4.9625e+002	-1.9693e+003	4.5415e+002
26	1.0121e+004	-2.6316e+003	2.2000e+001	2.5000e+002	1.9693e+003	-4.5415e+002	-1.7507e+003	4.0372e+002
27	7.2279e+003	-2.1309e+003	2.2000e+001	2.5000e+002	1.7507e+003	-4.0372e+002	-1.3495e+003	3.1122e+002
28	4.3343e+003	-1.6303e+003	2.2000e+001	2.5000e+002	1.3495e+003	-3.1122e+002	-7.6599e+002	1.7665e+002
29	1.4408e+003	-1.1297e+003	2.2000e+001	2.5000e+002	7.6599e+002	-1.7665e+002	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Spencer Method	3.6085e+003	4.3302e+005	2.6588e+007	1.1386e+007	2.2758e+005	9.7499e+004	2.3351548

SUMMARY OF MINIMUM FACTORS OF SAFETY

MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
251.5000=X-COOR. 262.7500=Y-COOR. 188.4504=RADIUS 2.3351548=F.S. 1=SLIP#

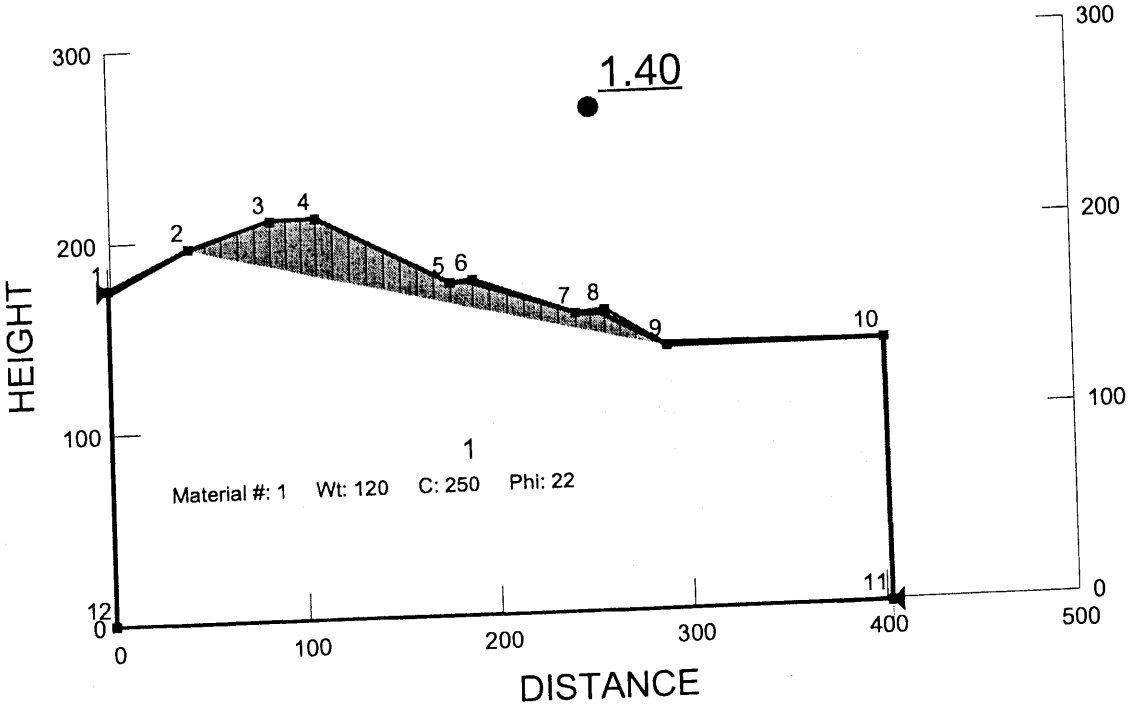
MOST_CRITICAL #	SLIP_SURFACE #
1	1

SLIP_SURFACE #	AUTOTENSIONELEV

Title: SLOPE STABILITY ANALYSIS - SECTION K - K
Comments: EARTQUAKE - BEDDING FAILURE
Name: 200-700-Sec K12.gsz
Directory: E:\Slope Stability Calculations\200-700\
Date: 3/18/05Time: 10:41:26 AM

Material #: 1 Wt: 120 C: 250 Phi: 22 Model: MohrCoulomb

Slip Surface Option: FullySpecified
Analysis Method: Spencer
P.W.P. Option Piezometric Lines / Ru
Horz Seismic Load: 0.15



SLOPE STABILITY ANALYSIS - SECTION K - K
EARTQUAKE - BEDDING FAILURE
DATESTAMP 3/18/05
TIMESTAMP 10:41:26 AM

Center_X	Center_Y	Radius	Slip_Surface	Method
2.515000e+002	2.627500e+002	1.884504e+002	1	2

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	4.100000e+001	1.960000e+002	1.960000e+002	4.960000e+001	1.986000e+002	1.939540e+002	2.322984e+000	8.840022e+000
2	4.960000e+001	1.986000e+002	1.939540e+002	5.820000e+001	2.012000e+002	1.919081e+002	6.968952e+000	8.840022e+000
3	5.820000e+001	2.012000e+002	1.919081e+002	6.680000e+001	2.038000e+002	1.898621e+002	1.161492e+001	8.840022e+000
4	6.680000e+001	2.038000e+002	1.898621e+002	7.540000e+001	2.064000e+002	1.878161e+002	1.626089e+001	8.840022e+000
5	7.540000e+001	2.064000e+002	1.878161e+002	8.400000e+001	2.090000e+002	1.857702e+002	2.090685e+001	8.840022e+000
6	8.400000e+001	2.090000e+002	1.857702e+002	9.200000e+001	2.093333e+002	1.838669e+002	2.434812e+001	8.223276e+000
7	9.200000e+001	2.093333e+002	1.838669e+002	1.000000e+002	2.096667e+002	1.819637e+002	2.658468e+001	8.223276e+000
8	1.000000e+002	2.096667e+002	1.819637e+002	1.080000e+002	2.100000e+002	1.800605e+002	2.882124e+001	8.223276e+000
9	1.080000e+002	2.100000e+002	1.800605e+002	1.166250e+002	2.055000e+002	1.780086e+002	2.871547e+001	8.865719e+000
10	1.166250e+002	2.055000e+002	1.780086e+002	1.252500e+002	2.010000e+002	1.759567e+002	2.626739e+001	8.865719e+000
11	1.252500e+002	2.010000e+002	1.759567e+002	1.338750e+002	1.965000e+002	1.739047e+002	2.381930e+001	8.865719e+000
12	1.338750e+002	1.965000e+002	1.739047e+002	1.425000e+002	1.920000e+002	1.718528e+002	2.137122e+001	8.865719e+000
13	1.425000e+002	1.920000e+002	1.718528e+002	1.511250e+002	1.875000e+002	1.698009e+002	1.892314e+001	8.865719e+000
14	1.511250e+002	1.875000e+002	1.698009e+002	1.597500e+002	1.830000e+002	1.677490e+002	1.647505e+001	8.865719e+000
15	1.597500e+002	1.830000e+002	1.677490e+002	1.683750e+002	1.785000e+002	1.656971e+002	1.402697e+001	8.865719e+000
16	1.683750e+002	1.785000e+002	1.656971e+002	1.770000e+002	1.740000e+002	1.636452e+002	1.157888e+001	8.865719e+000
17	1.770000e+002	1.740000e+002	1.636452e+002	1.890000e+002	1.750000e+002	1.607903e+002	1.228226e+001	1.233491e+001
18	1.890000e+002	1.750000e+002	1.607903e+002	1.978333e+002	1.718333e+002	1.586888e+002	1.367708e+001	9.079867e+000
19	1.978333e+002	1.718333e+002	1.586888e+002	2.066667e+002	1.686667e+002	1.565874e+002	1.261190e+001	9.079867e+000
20	2.066667e+002	1.686667e+002	1.565874e+002	2.155000e+002	1.655000e+002	1.544859e+002	1.154671e+001	9.079867e+000
21	2.155000e+002	1.655000e+002	1.544859e+002	2.243333e+002	1.623333e+002	1.523844e+002	1.048152e+001	9.079867e+000
22	2.243333e+002	1.623333e+002	1.523844e+002	2.331667e+002	1.591667e+002	1.502829e+002	9.416331e+000	9.079867e+000
23	2.331667e+002	1.591667e+002	1.502829e+002	2.420000e+002	1.560000e+002	1.481815e+002	8.351142e+000	9.079867e+000
24	2.420000e+002	1.560000e+002	1.481815e+002	2.495000e+002	1.565000e+002	1.463972e+002	8.960685e+000	7.709321e+000
25	2.495000e+002	1.565000e+002	1.463972e+002	2.570000e+002	1.570000e+002	1.446129e+002	1.124496e+001	7.709321e+000
26	2.570000e+002	1.570000e+002	1.446129e+002	2.650000e+002	1.520000e+002	1.427097e+002	1.083871e+001	8.223276e+000
27	2.650000e+002	1.520000e+002	1.427097e+002	2.730000e+002	1.470000e+002	1.408065e+002	7.741935e+000	8.223276e+000
28	2.730000e+002	1.470000e+002	1.408065e+002	2.810000e+002	1.420000e+002	1.389032e+002	4.645161e+000	8.223276e+000
29	2.810000e+002	1.420000e+002	1.389032e+002	2.890000e+002	1.370000e+002	1.370000e+002	1.548387e+000	8.223276e+000

SL#	Weight	Pore_Water	Alpha	Force Fn.	Seismic_F	Seismic_Y	Pore_Air	Phi_B	Liquified
1	2.3973e+003	0.0000e+000	1.3382e+001	1.0000e+000	3.5960e+002	1.9614e+002	0.0000e+000	0.0000e+000	0
2	7.1920e+003	0.0000e+000	1.3382e+001	1.0000e+000	1.0788e+003	1.9642e+002	0.0000e+000	0.0000e+000	0
3	1.1987e+004	0.0000e+000	1.3382e+001	1.0000e+000	1.7980e+003	1.9669e+002	0.0000e+000	0.0000e+000	0
4	1.6781e+004	0.0000e+000	1.3382e+001	1.0000e+000	2.5172e+003	1.9697e+002	0.0000e+000	0.0000e+000	0
5	2.1576e+004	0.0000e+000	1.3382e+001	1.0000e+000	3.2364e+003	1.9725e+002	0.0000e+000	0.0000e+000	0
6	2.3374e+004	0.0000e+000	1.3382e+001	1.0000e+000	3.5061e+003	1.9699e+002	0.0000e+000	0.0000e+000	0
7	2.5521e+004	0.0000e+000	1.3382e+001	1.0000e+000	3.8282e+003	1.9621e+002	0.0000e+000	0.0000e+000	0
8	2.7668e+004	0.0000e+000	1.3382e+001	1.0000e+000	4.1503e+003	1.9542e+002	0.0000e+000	0.0000e+000	0
9	2.9721e+004	0.0000e+000	1.3382e+001	1.0000e+000	4.4581e+003	1.9339e+002	0.0000e+000	0.0000e+000	0
10	2.7187e+004	0.0000e+000	1.3382e+001	1.0000e+000	4.0780e+003	1.9012e+002	0.0000e+000	0.0000e+000	0
11	2.4653e+004	0.0000e+000	1.3382e+001	1.0000e+000	3.6979e+003	1.8684e+002	0.0000e+000	0.0000e+000	0
12	2.2119e+004	0.0000e+000	1.3382e+001	1.0000e+000	3.3179e+003	1.8356e+002	0.0000e+000	0.0000e+000	0
13	1.9585e+004	0.0000e+000	1.3382e+001	1.0000e+000	2.9378e+003	1.8029e+002	0.0000e+000	0.0000e+000	0
14	1.7052e+004	0.0000e+000	1.3382e+001	1.0000e+000	2.5578e+003	1.7701e+002	0.0000e+000	0.0000e+000	0
15	1.4518e+004	0.0000e+000	1.3382e+001	1.0000e+000	2.1777e+003	1.7374e+002	0.0000e+000	0.0000e+000	0
16	1.1984e+004	0.0000e+000	1.3382e+001	1.0000e+000	1.7976e+003	1.7046e+002	0.0000e+000	0.0000e+000	0
17	1.7686e+004	0.0000e+000	1.3382e+001	1.0000e+000	2.6530e+003	1.6836e+002	0.0000e+000	0.0000e+000	0
18	1.4498e+004	0.0000e+000	1.3382e+001	1.0000e+000	2.1747e+003	1.6658e+002	0.0000e+000	0.0000e+000	0
19	1.3369e+004	0.0000e+000	1.3382e+001	1.0000e+000	2.0053e+003	1.6394e+002	0.0000e+000	0.0000e+000	0
20	1.2240e+004	0.0000e+000	1.3382e+001	1.0000e+000	1.8359e+003	1.6131e+002	0.0000e+000	0.0000e+000	0
21	1.1110e+004	0.0000e+000	1.3382e+001	1.0000e+000	1.6666e+003	1.5868e+002	0.0000e+000	0.0000e+000	0
22	9.9813e+003	0.0000e+000	1.3382e+001	1.0000e+000	1.4972e+003	1.5604e+002	0.0000e+000	0.0000e+000	0
23	8.8522e+003	0.0000e+000	1.3382e+001	1.0000e+000	1.3278e+003	1.5341e+002	0.0000e+000	0.0000e+000	0
24	8.0646e+003	0.0000e+000	1.3382e+001	1.0000e+000	1.2097e+003	1.5177e+002	0.0000e+000	0.0000e+000	0
25	1.0120e+004	0.0000e+000	1.3382e+001	1.0000e+000	1.5181e+003	1.5113e+002	0.0000e+000	0.0000e+000	0
26	1.0405e+004	0.0000e+000	1.3382e+001	1.0000e+000	1.5608e+003	1.4908e+002	0.0000e+000	0.0000e+000	0
27	7.4323e+003	0.0000e+000	1.3382e+001	1.0000e+000	1.1148e+003	1.4563e+002	0.0000e+000	0.0000e+000	0
28	4.4594e+003	0.0000e+000	1.3382e+001	1.0000e+000	6.6890e+002	1.4218e+002	0.0000e+000	0.0000e+000	0
29	1.4865e+003	0.0000e+000	1.3382e+001	1.0000e+000	2.2297e+002	1.3873e+002	0.0000e+000	0.0000e+000	0

Spencer_Method_Fm= 1.4013778 Applied_Lambda= 0.8672

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	3.0711e+003	-2.4624e+003	2.2000e+001	2.5000e+002	0.0000e+000	0.0000e+000	1.3369e+003	-1.1593e+003
2	7.2599e+003	-3.6701e+003	2.2000e+001	2.5000e+002	-1.3369e+003	1.1593e+003	2.1659e+003	-1.8782e+003
3	1.1449e+004	-4.8778e+003	2.2000e+001	2.5000e+002	-2.1659e+003	1.8782e+003	2.4868e+003	-2.1565e+003
4	1.5638e+004	-6.0854e+003	2.2000e+001	2.5000e+002	-2.4868e+003	2.1565e+003	2.2998e+003	-1.9943e+003
5	1.9826e+004	-7.2931e+003	2.2000e+001	2.5000e+002	-2.2998e+003	1.9943e+003	1.6048e+003	-1.3916e+003
6	2.1329e+004	-7.6164e+003	2.2000e+001	2.5000e+002	-1.6048e+003	1.3916e+003	6.0828e+002	-5.2748e+002
7	2.3205e+004	-8.1572e+003	2.2000e+001	2.5000e+002	-6.0828e+002	5.2748e+002	-6.1573e+002	5.3394e+002
8	2.5081e+004	-8.6980e+003	2.2000e+001	2.5000e+002	6.1573e+002	-5.3394e+002	-2.0672e+003	1.7926e+003
9	2.6945e+004	-9.3500e+003	2.2000e+001	2.5000e+002	2.0672e+003	-1.7926e+003	-3.6205e+003	3.1396e+003
10	2.4731e+004	-8.7118e+003	2.2000e+001	2.5000e+002	3.6205e+003	-3.1396e+003	-4.9053e+003	4.2538e+003
11	2.2518e+004	-8.0736e+003	2.2000e+001	2.5000e+002	4.9053e+003	-4.2538e+003	-5.9217e+003	5.1352e+003
12	2.0304e+004	-7.4354e+003	2.2000e+001	2.5000e+002	5.9217e+003	-5.1352e+003	-6.6697e+003	5.7838e+003
13	1.8090e+004	-6.7972e+003	2.2000e+001	2.5000e+002	6.6697e+003	-5.7838e+003	-7.1491e+003	6.1996e+003
14	1.5877e+004	-6.1590e+003	2.2000e+001	2.5000e+002	7.1491e+003	-6.1996e+003	-7.3602e+003	6.3826e+003
15	1.3663e+004	-5.5208e+003	2.2000e+001	2.5000e+002	7.3602e+003	-6.3826e+003	-7.3028e+003	6.3328e+003
16	1.1449e+004	-4.8826e+003	2.2000e+001	2.5000e+002	7.3028e+003	-6.3328e+003	-6.9770e+003	6.0502e+003
17	1.6815e+004	-7.0483e+003	2.2000e+001	2.5000e+002	6.9770e+003	-6.0502e+003	-6.6309e+003	5.7502e+003
18	1.3669e+004	-5.5607e+003	2.2000e+001	2.5000e+002	6.6309e+003	-5.7502e+003	-6.5328e+003	5.6651e+003
19	1.2683e+004	-5.2763e+003	2.2000e+001	2.5000e+002	6.5328e+003	-5.6651e+003	-6.3151e+003	5.4763e+003
20	1.1696e+004	-4.9919e+003	2.2000e+001	2.5000e+002	6.3151e+003	-5.4763e+003	-5.9778e+003	5.1838e+003
21	1.0710e+004	-4.7075e+003	2.2000e+001	2.5000e+002	5.9778e+003	-5.1838e+003	-5.5209e+003	4.7876e+003
22	9.7234e+003	-4.4231e+003	2.2000e+001	2.5000e+002	5.5209e+003	-4.7876e+003	-4.9443e+003	4.2876e+003
23	8.7369e+003	-4.1387e+003	2.2000e+001	2.5000e+002	4.9443e+003	-4.2876e+003	-4.2481e+003	3.6838e+003
24	7.8974e+003	-3.6522e+003	2.2000e+001	2.5000e+002	4.2481e+003	-3.6838e+003	-3.7151e+003	3.2216e+003
25	9.6935e+003	-4.1700e+003	2.2000e+001	2.5000e+002	3.7151e+003	-3.2216e+003	-3.3999e+003	2.9483e+003
26	9.9990e+003	-4.3498e+003	2.2000e+001	2.5000e+002	3.3999e+003	-2.9483e+003	-3.0224e+003	2.6209e+003
27	7.4017e+003	-3.6010e+003	2.2000e+001	2.5000e+002	3.0224e+003	-2.6209e+003	-2.3299e+003	2.0204e+003
28	4.8045e+003	-2.8522e+003	2.2000e+001	2.5000e+002	2.3299e+003	-2.0204e+003	-1.3224e+003	1.1468e+003
29	2.2072e+003	-2.1033e+003	2.2000e+001	2.5000e+002	1.3224e+003	-1.1468e+003	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Spencer Method	3.6085e+003	4.3302e+005	2.5909e+007	1.8488e+007	2.2167e+005	1.5897e+005	1.4013778

SUMMARY OF MINIMUM FACTORS OF SAFETY

MOMENT AND FORCE EQUILIBRIUM: SPENCER METHOD
251.5000=X-COOR. 262.7500=Y-COOR. 188.4504=RADIUS 1.4013778=F.S. 1=SLIP#

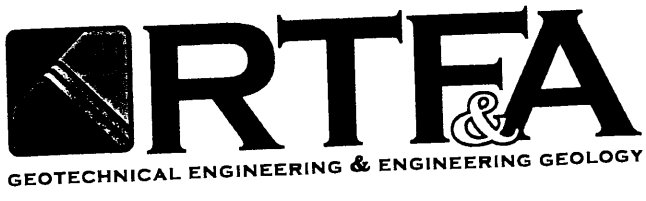
MOST_CRITICAL #	SLIP_SURFACE #
1	1

SLIP_SURFACE # AUTOTENSIONELEV

Newhall Land and Farming Company
March 18, 2005
2004-700-21

APPENDIX D

CONE PENETRATION TEST DATA



Cone Penetration Test Sounding
RTF&A 96-115-21 Report Dated 12-03-01

Cone Penetration Test Sounding
with Piezometer
RTF&A 96-115-21 Report Dated 12-03-01

PRESENTATION OF CONE PENETRATION TEST DATA

TRACT #53295

VALENCIA, CALIFORNIA

Prepared for:
R.T. Frankian & Associates
Burbank, California

Prepared by:

GREGG IN SITU, INC.
Signal Hill, California
01-031sh

Prepared on:

February 6, 2001

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

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3.2 Interpreted Output
3.3 Summary of Seismic Results
3.4 Pore Pressure Dissipation Tests

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- Figure 3: Soil Classification Chart
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- CPT Data Disk
- CPT Interpretation Method

PRESENTATION OF CONE PENETRATION TEST DATA

1.0 INTRODUCTION

This report presents the results of a Cone Penetration Testing (CPT) program carried out at the Tract 53295 site located in Valencia, Ca.. The work was performed on December 19th, 2000 and January 31st, 2001. The work is part of a geotechnical program being carried out by R.T. Frankian & Associates. The enclosed information consists of the CPT data from the referenced project. We recommend that all data be carefully reviewed by qualified personnel to verify the data and make appropriate recommendations.

2.0 FIELD EQUIPMENT & PROCEDURES

2.1 Electronic Cone Penetration Testing

The Cone Penetration Tests (CPT) were carried out by GREGG IN SITU, INC. of Signal Hill, CA using an integrated electronic cone system. A 20 ton capacity cone was used for the soundings. This cone has a tip area of 15 sq.cm. and friction sleeve area of 225 sq.cm. A piezometer element of 5 mm. thickness is located immediately behind the cone tip. The subtraction cone used has an equal end area friction sleeve and a tip end area ratio of 0.85 (Refer to Figure 1).

The cone used during the program was capable of recording the following parameters at 5 cm depth intervals:

- Tip Resistance (Qc)
- Sleeve Friction (Fs)
- Dynamic Pore Pressure (Ut)

The above parameters, excluding the seismic wave velocities were printed simultaneously on a printer and stored on a computer diskette for future analysis and reference. CPT logs are included as well as interpreted parameters based on the CPT measurements.

A complete set of baseline readings was taken prior to and at the completion of the sounding to determine temperature shifts and any zero load offsets. Establishing temperature shifts and load offsets enables the engineer to make corrections to the cone data if necessary. The cone was hydraulically pushed using an integrated 25-ton cone rig.

20 CPT soundings were performed to a depth of 45 to 75 feet below the ground surface. Downhole seismic measurements were taken at SCPT-12 at approximately 10 foot intervals and 5 foot intervals at SCPT-16. R.T. Frankian & Associates personnel specified the CPT sounding locations.

2.2 Seismic Cone Penetration Testing

The seismic equipment and procedures used in this investigation, in general, were as developed at UBC and reported by Rice, 1984, Laing, 1985 and Robertson et al, 1986. The procedure was incorporated within the cone penetration test (CPT) and conducted when the cone penetration test was stopped at the desired test depth.

For shear wave generation, the beam was struck using a 10 lb. sledge hammer in a horizontal direction, parallel to the active axis of the transducer, first from one end and then the other. The wave traces were recorded using a digital oscilloscope card within our Pentium II portable computer. Each wave was inspected and the procedure was repeated, if necessary. A contact trigger between the beam and the hammer produced accurate triggering times and allowed for the accurate timing of shear wave markers (figure 2).

After each pair of shear wave traces was recorded, inspected and saved, the two traces were overlaid on a digital oscilloscope screen and the arrival times were selected. Each of the wave traces are presented in the Appendix. Some judgement is required on deciding the time of seismic wave arrival. A summary of the seismic wave data is presented in tabular form following the text of the report. We recommend qualified personnel review the wave arrival times and make any appropriate corrections.

3.0 CONE PENETRATION TEST DATA & INTERPRETATION

The cone penetration test data is presented in graphical form. Penetration depths are referenced to existing ground surface. This data includes CPT logs of measured soil parameters and a computer tabulation of interpreted soil types along with additional geotechnical parameters and pore pressure dissipation data.

GREGG IN SITU, INC.
01-031sh
February 6, 2001

R.T. Frankian
Tract 53295
Valencia, Ca.

The stratigraphic interpretation is based on relationships between cone bearing (Qc), sleeve friction (Fs), and penetration pore pressure (Ut). The friction ratio (Rf), which is sleeve friction divided by cone bearing, is a calculated parameter which is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone bearing and generate large excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little in the way of excess pore water pressures.

The interpretation of soils encountered on this project was carried out using recent correlations developed by Robertson et al, 1988. It should be noted that it is not always possible to clearly identify a soil type based on Qc, Fs and Ut. In these situations, experience and judgement and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type. The soil classification chart used to interpret soil types based on Qc and Rf is provided in the Appendix (figure 3).

Pore Pressure Dissipation Tests (PPDT's) were taken at various intervals in order to measure hydrostatic water pressures and approximate depth to groundwater table. In addition, the PPDT data can be used to estimate the horizontal permeability (k_h) of the soil. The correlation to permeability is based on the time required for 50 percent of the measured dynamic pore pressure to dissipate (t_{50}). The PPDT plots and correlation figure (figure 4) is provided in the Appendix.

Interpreted output requires that depth of water be entered for calculation purposes, where depth to water is unknown. A depth greater than the sounding termination depth is entered. An arbitrary depth equal to the depth of the sounding plus 10 feet is entered as the groundwater depth.

3.1 CPT Plots

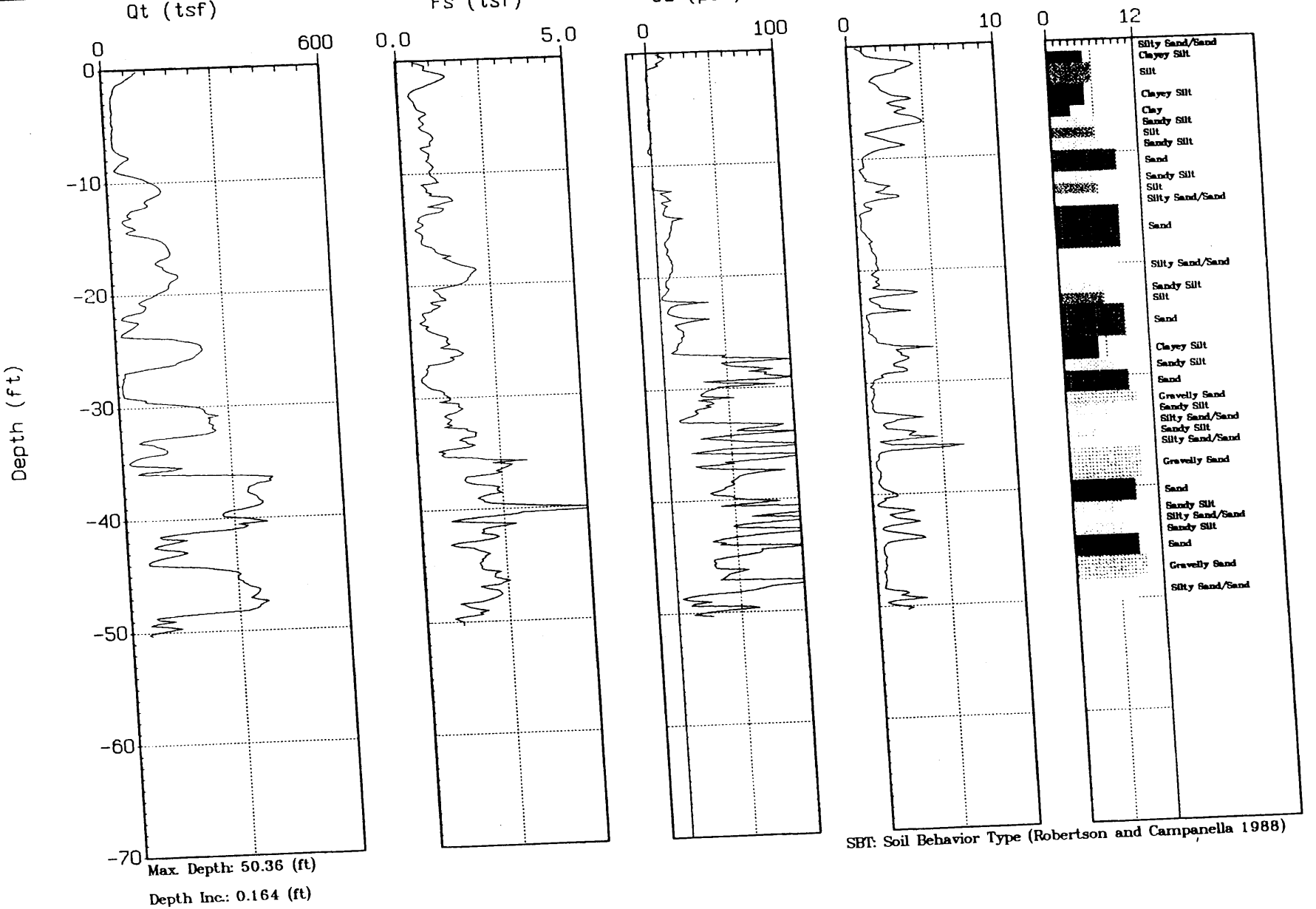
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-1

Engineer : MARK FRANKIAN
Date : 01:31:01 15:16



Max. Depth: 50.36 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

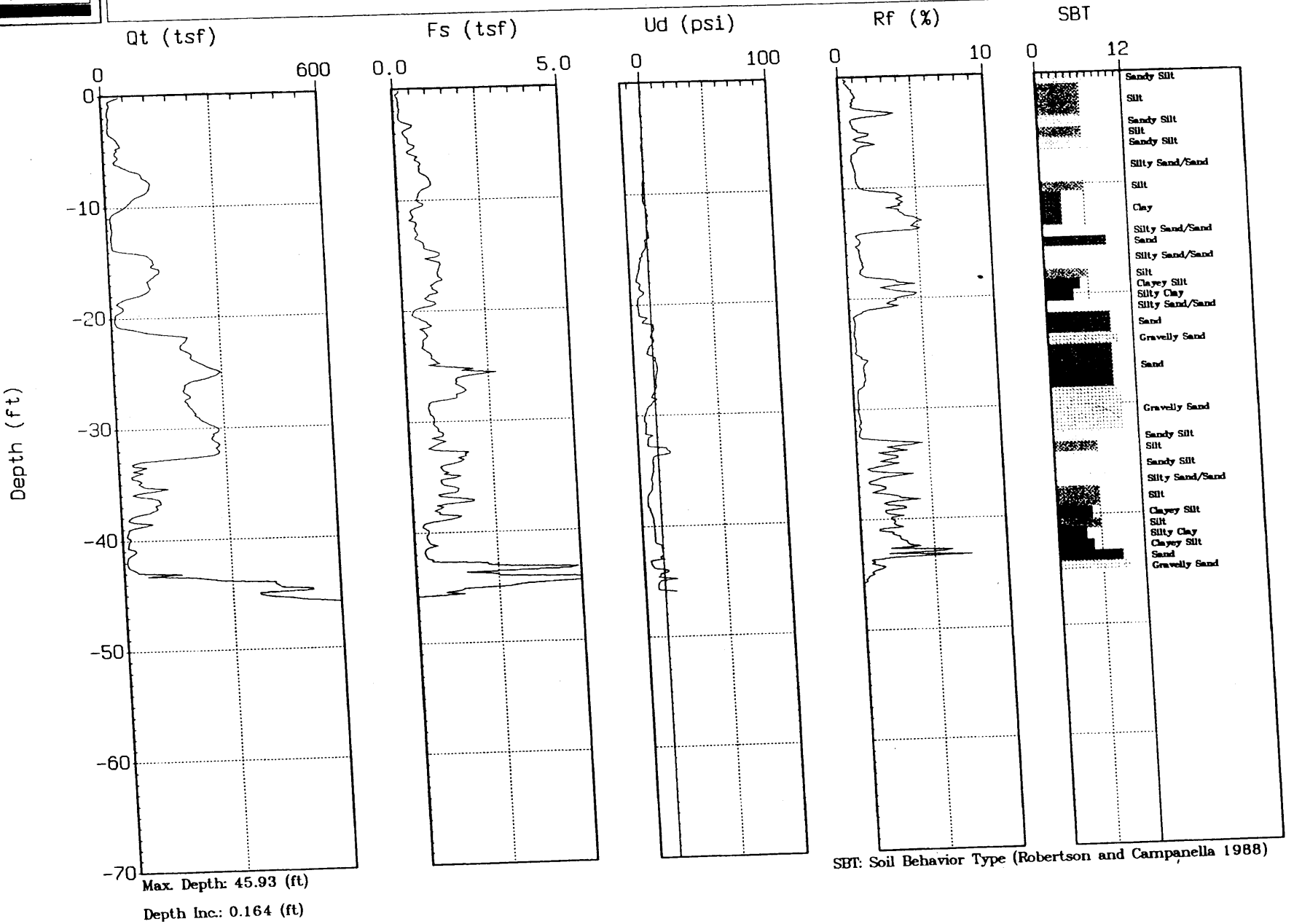
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-2

Engineer : MARK FRANKIAN
Date : 12:19:01 07:39



Max. Depth: 45.93 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

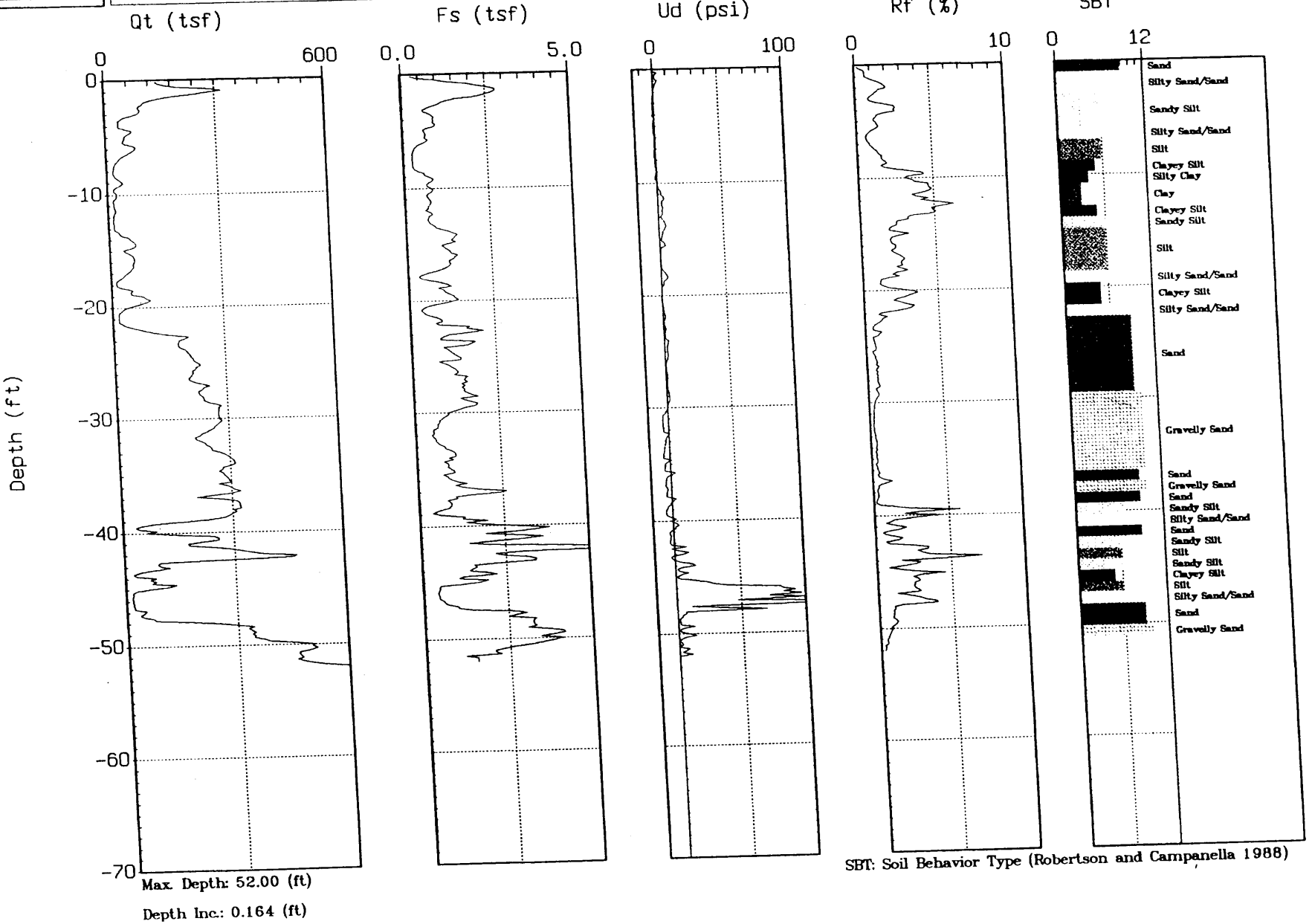
For use with report dated 03/18/2005: RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-3

Engineer : MARK FRANKIAN
Date : 12:19:01 14:37



Max. Depth: 52.00 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

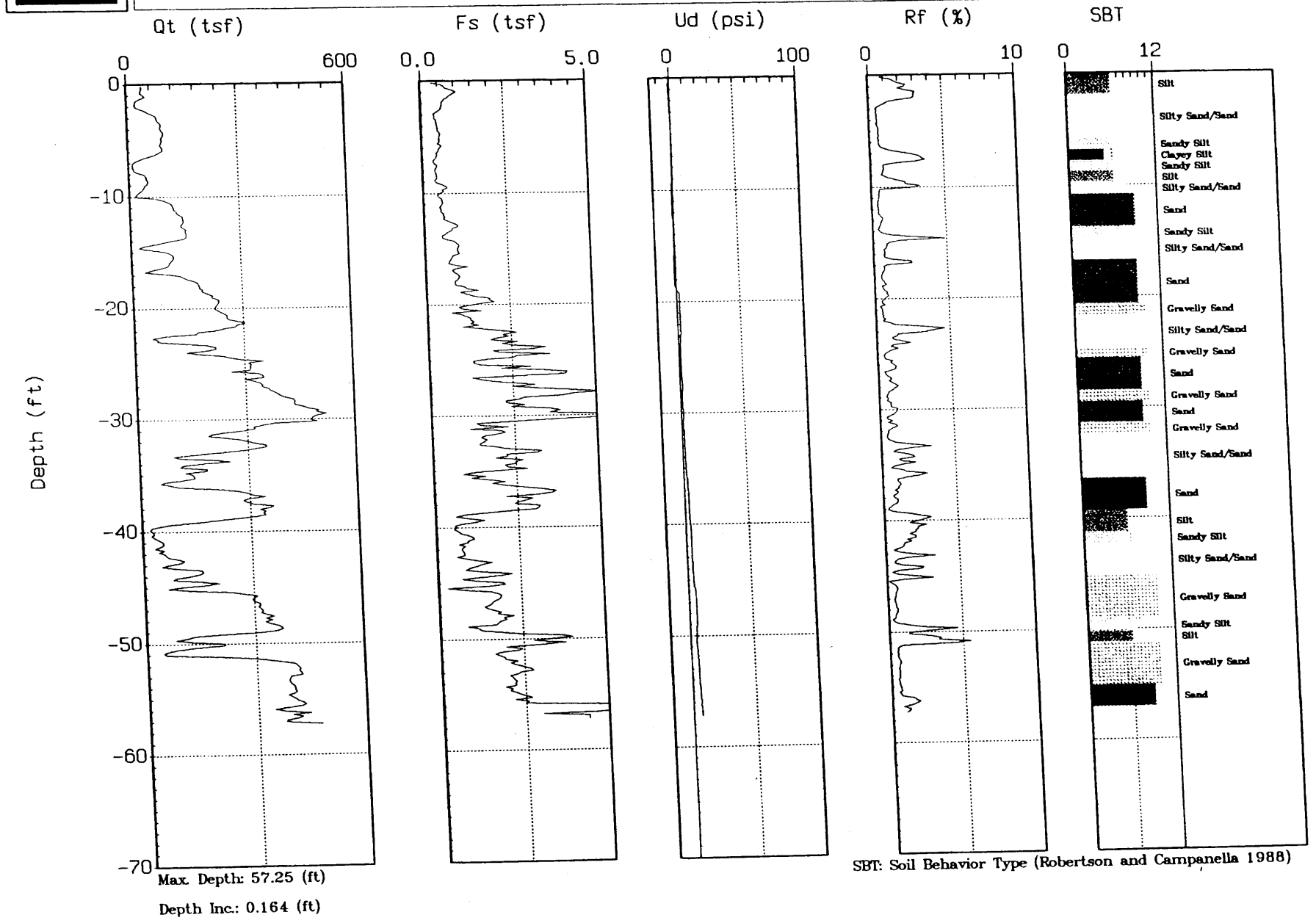
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-4

Engineer : MARK FRANKIAN
Date : 12:19:01 12:34



Max. Depth: 57.25 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

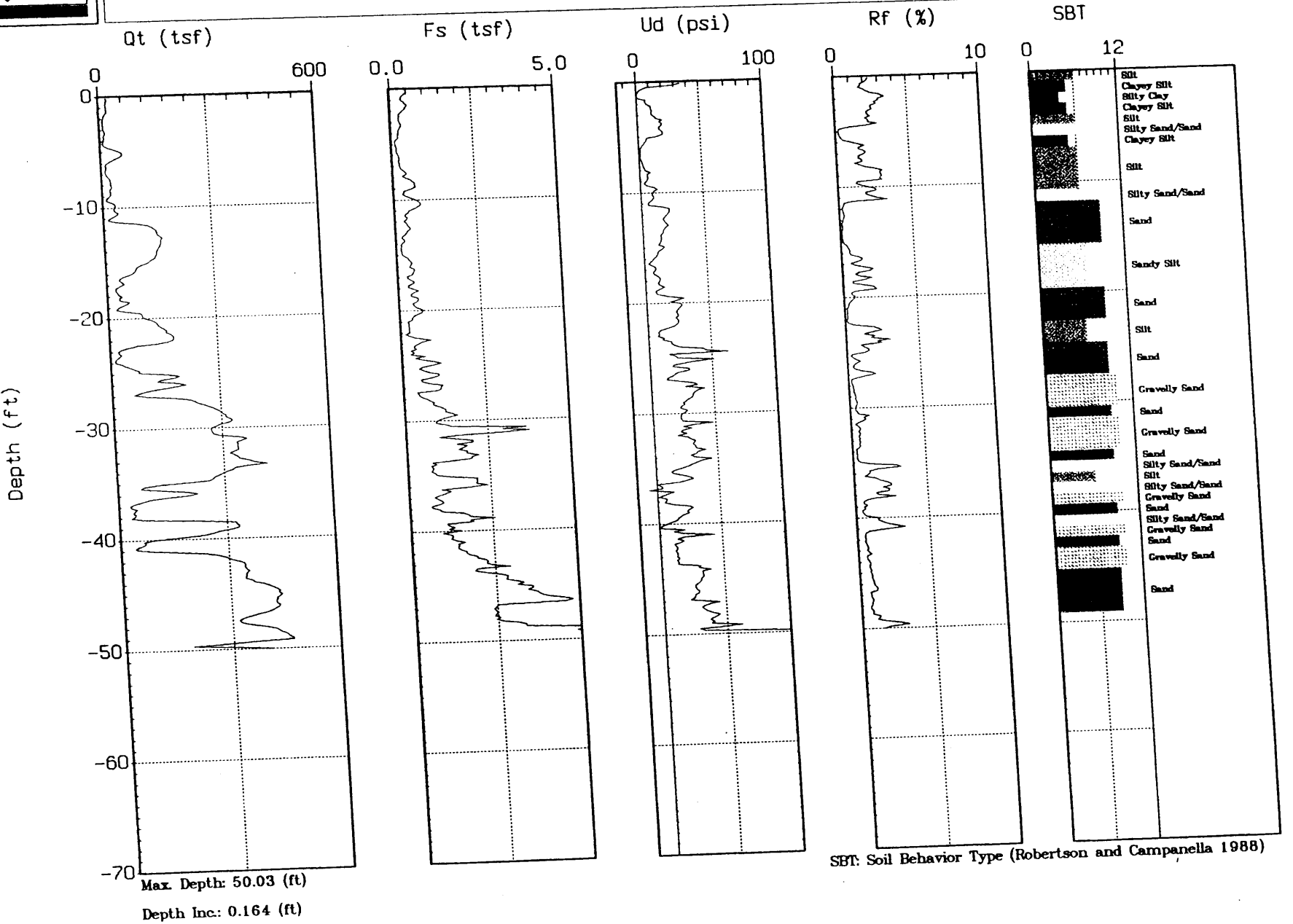
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-5

Engineer : MARK FRANKIAN
Date : 01:31:01 12:48



Max. Depth: 50.03 (ft)

Depth Inc: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

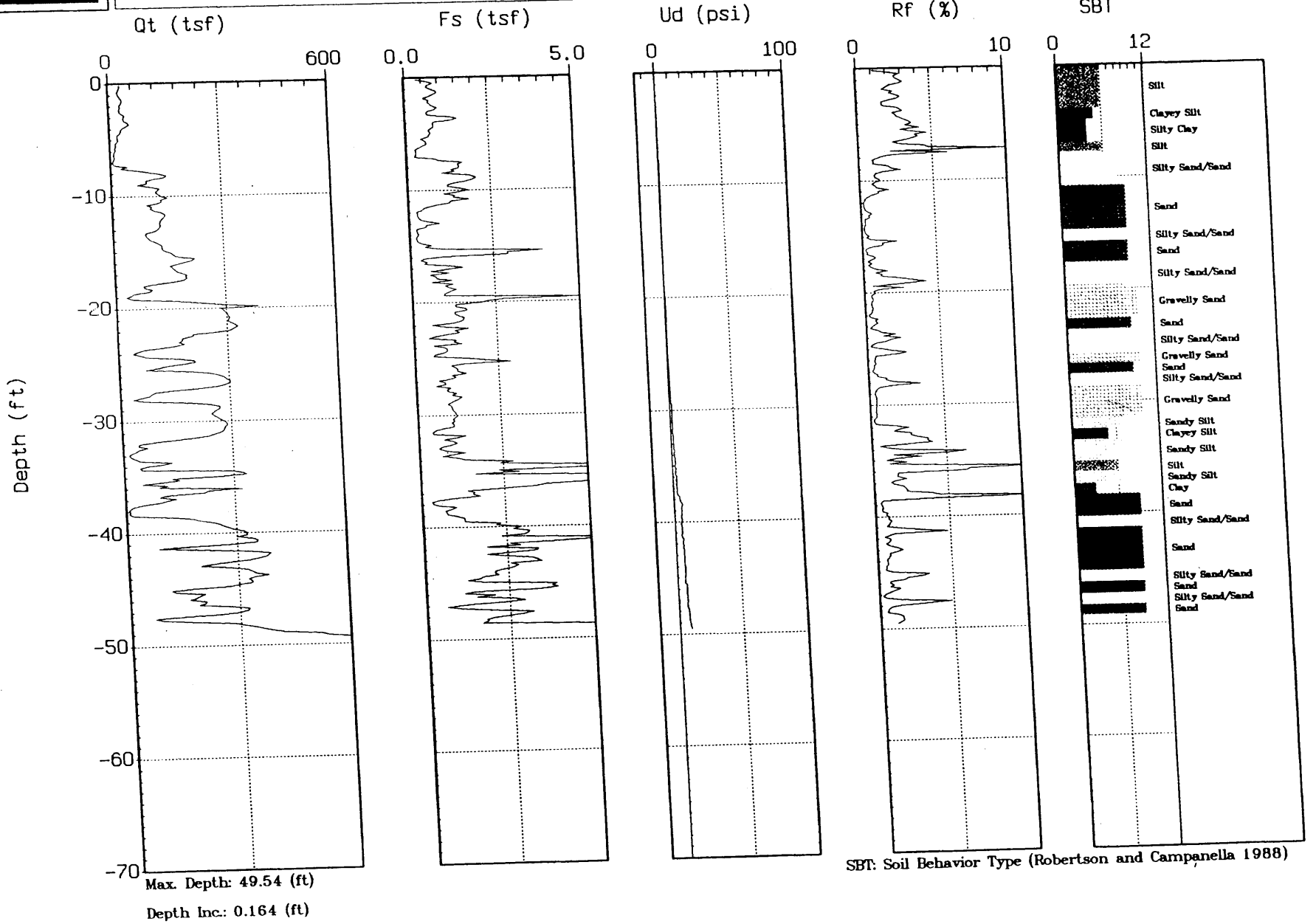
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-6

Engineer : MARK FRANKIAN
Date : 12:19:01 13:51



Max. Depth: 49.54 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

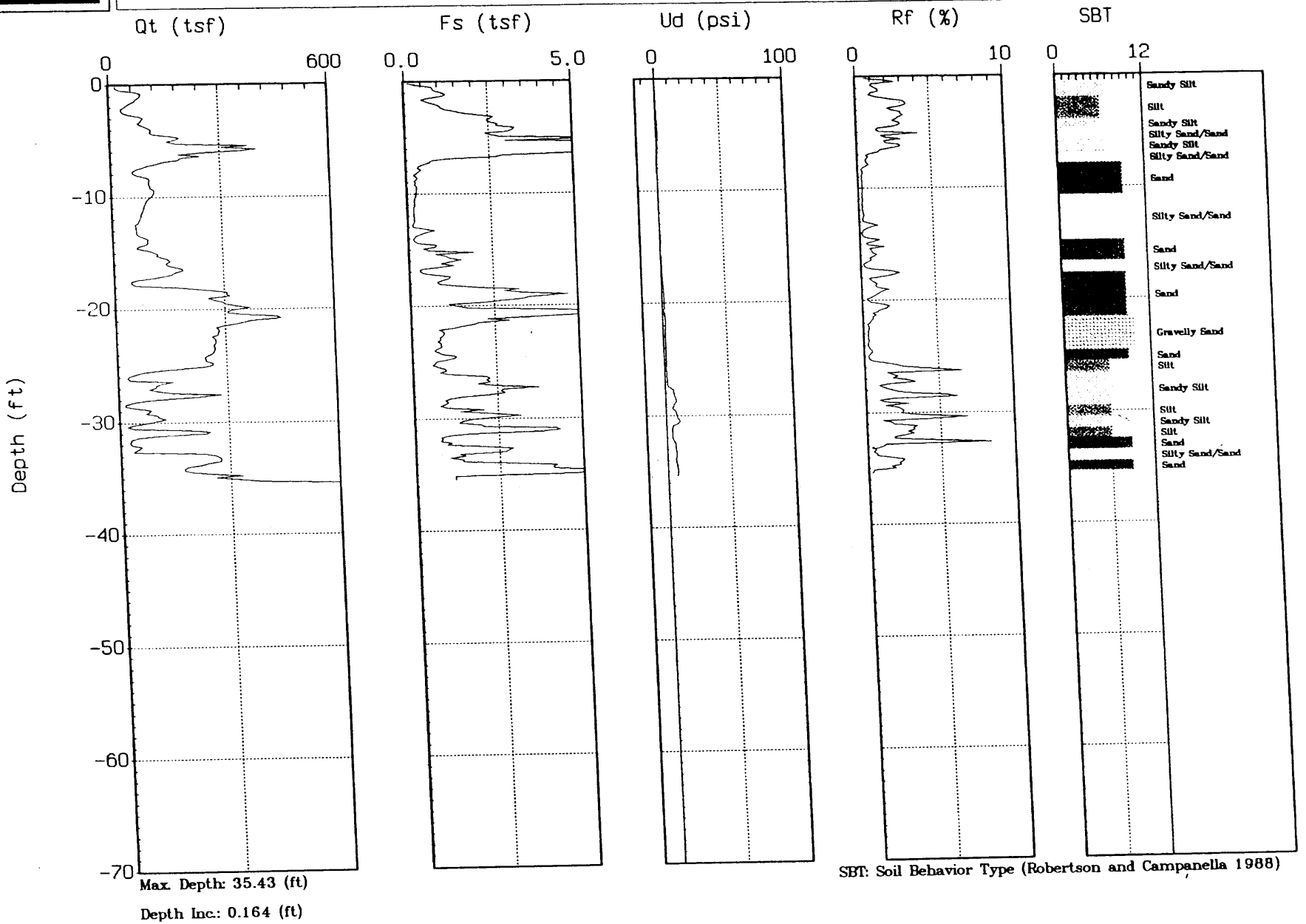
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-7

Engineer : MARK FRANKIAN
Date : 12:19:01 13:08



Max. Depth: 35.43 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

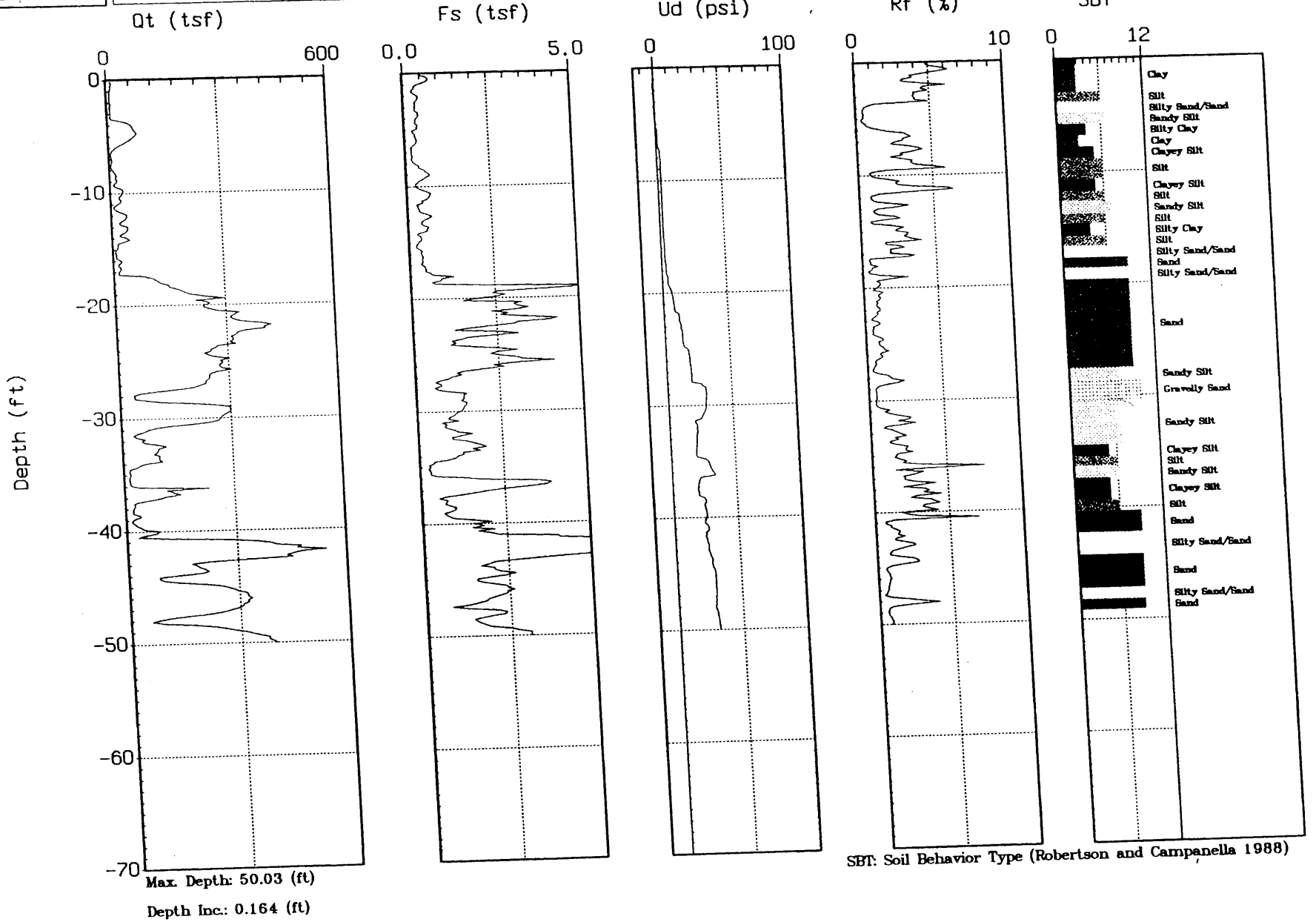
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-8

Engineer : MARK FRANKIAN
Date : 01:31:01 16:42



Max. Depth: 50.03 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

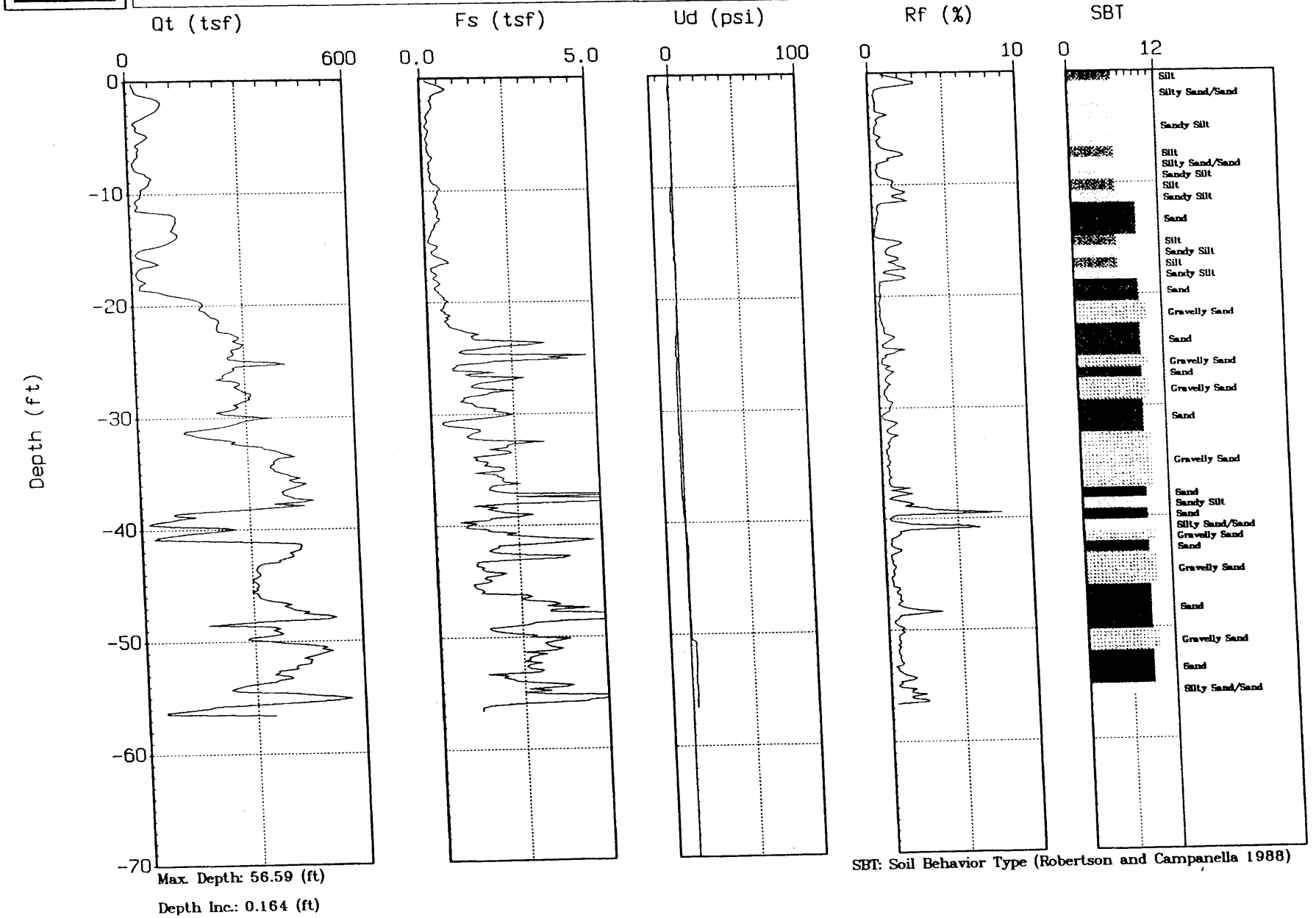
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-9

Engineer : MARK FRANKIAN
Date : 12:19:01 10:23



Max. Depth: 56.59 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

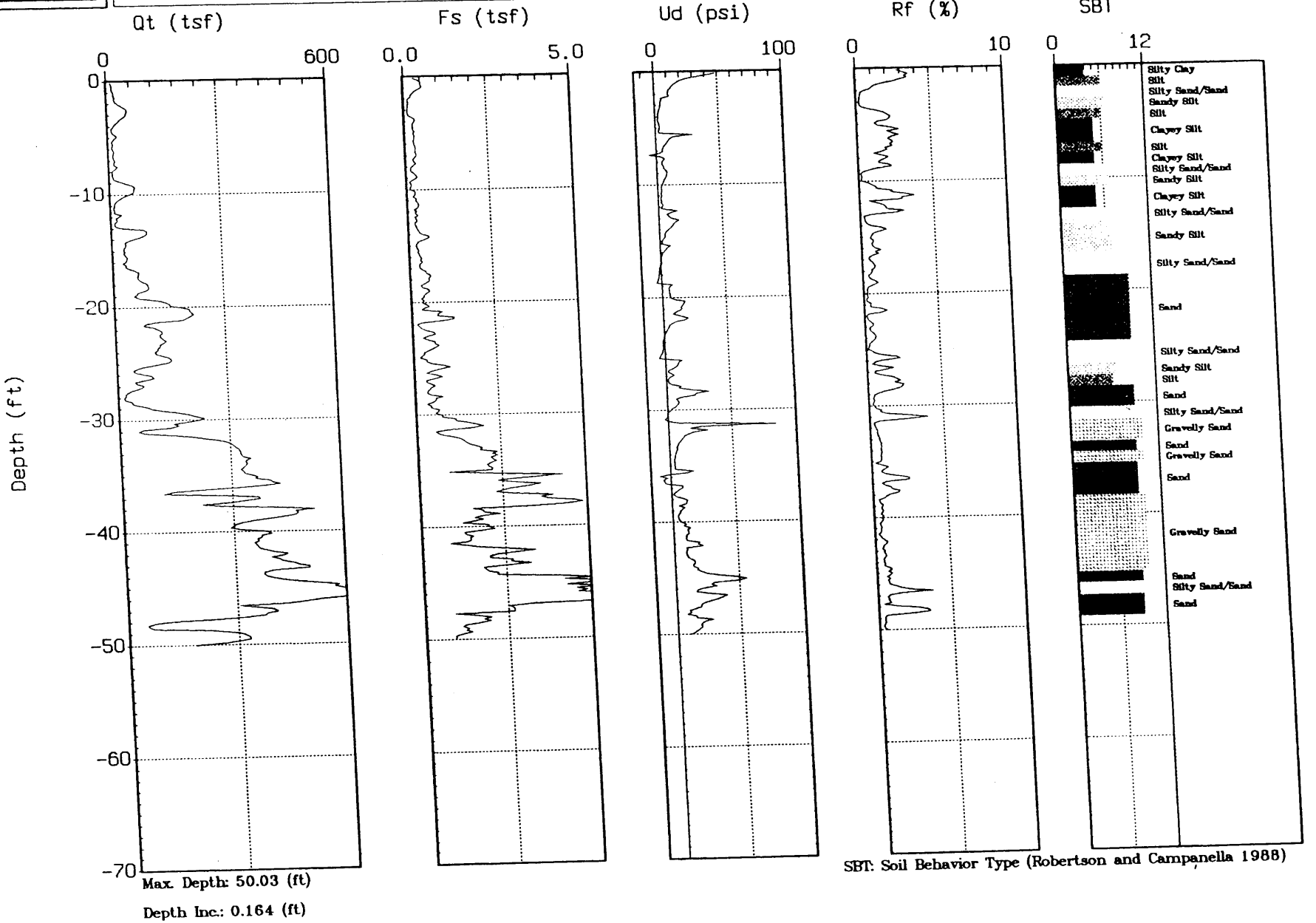
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-10

Engineer : MARK FRANKIAN
Date : 01:31:01 12:16



Max. Depth: 50.03 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

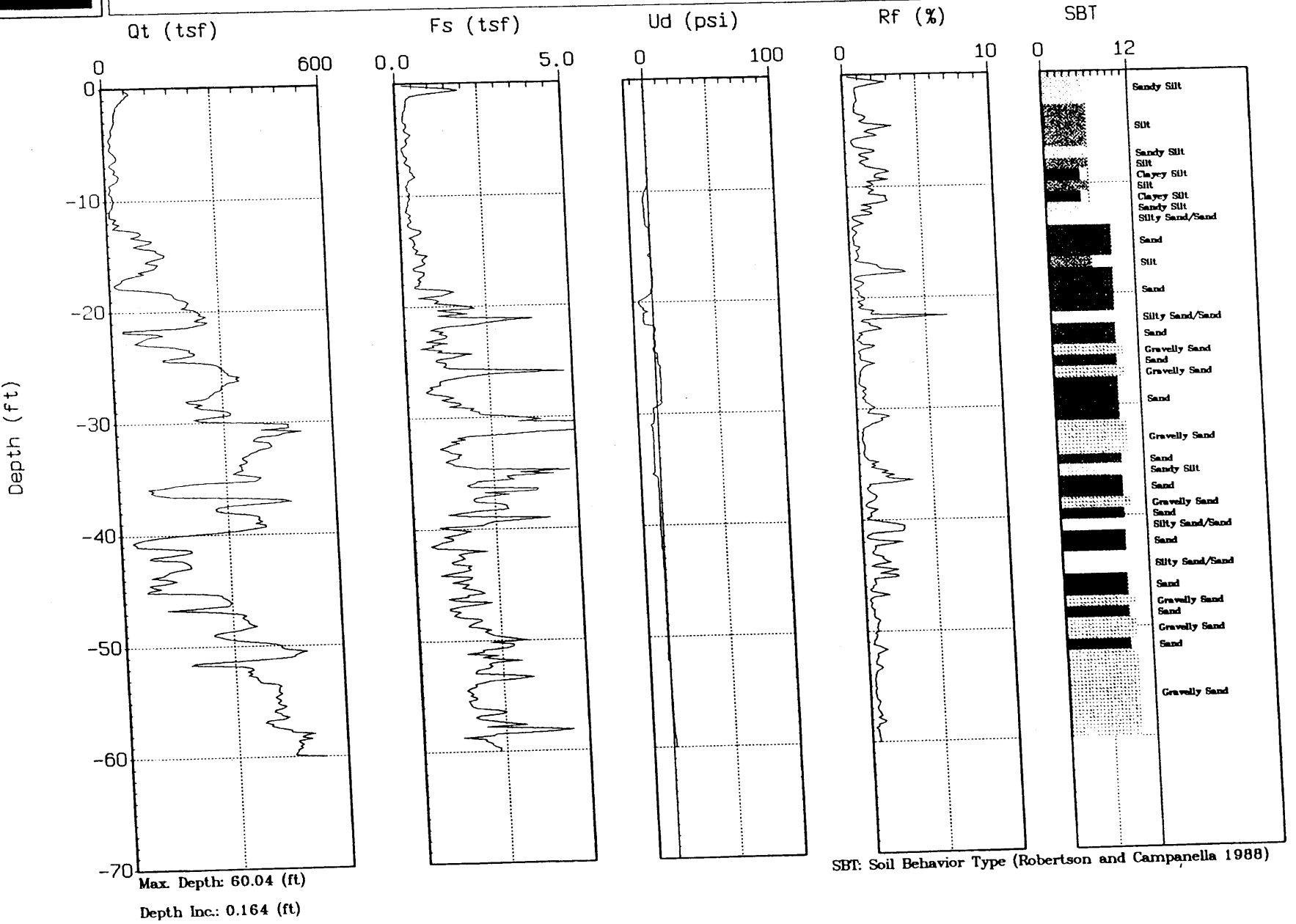
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-11

Engineer : MARK FRANKIAN
Date : 12:19:01 09:31



Max. Depth: 60.04 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

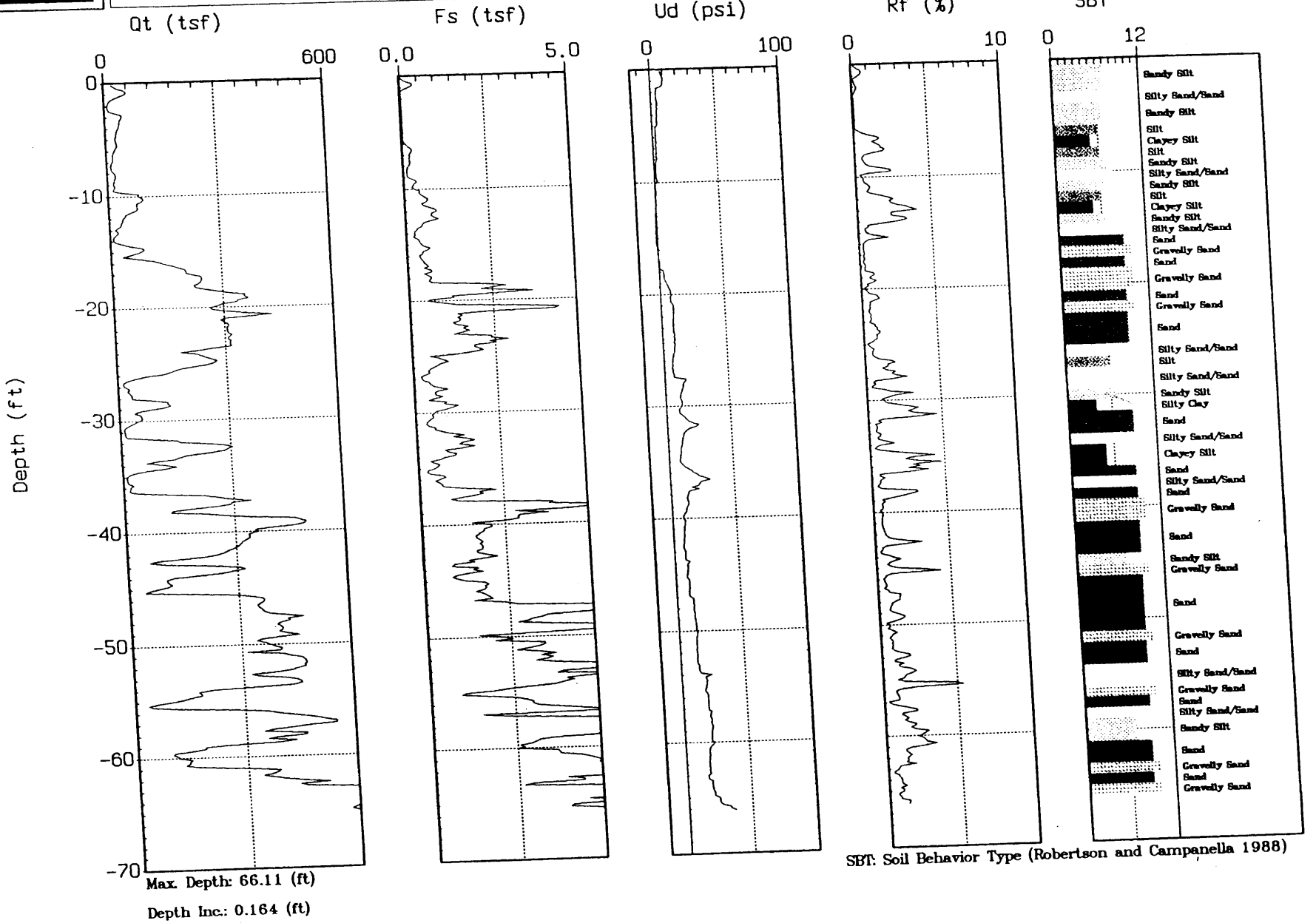
For use with report dated 03/18/2005: RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : SCPT-12

Engineer : MARK FRANKIAN
Date : 01:31:01 15:54



Max. Depth: 66.11 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

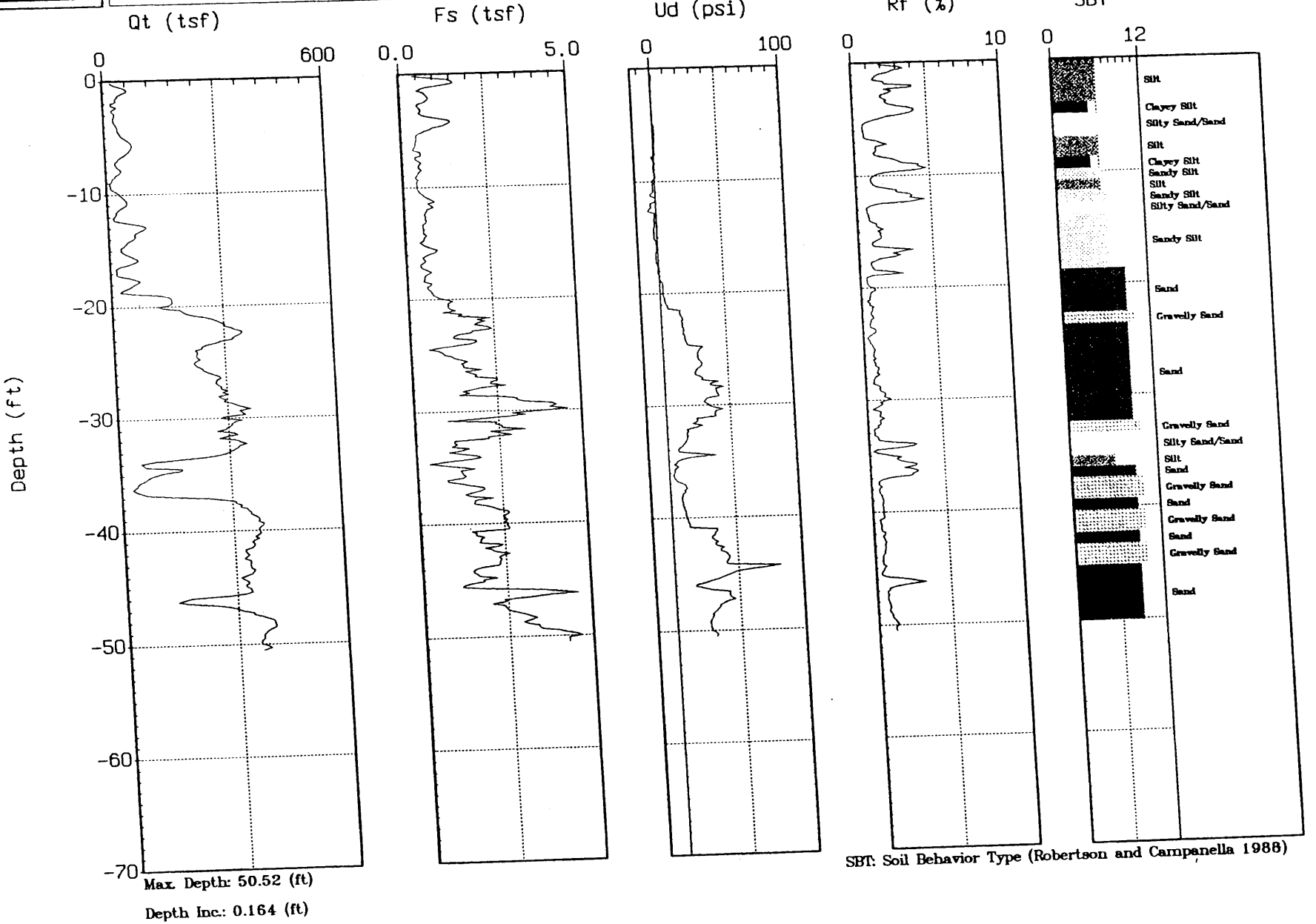
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : ~~CPT-4~~ CPT-13

Engineer : MARK FRANKIAN
Date : 01:31:01 14:14



Max. Depth: 50.52 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

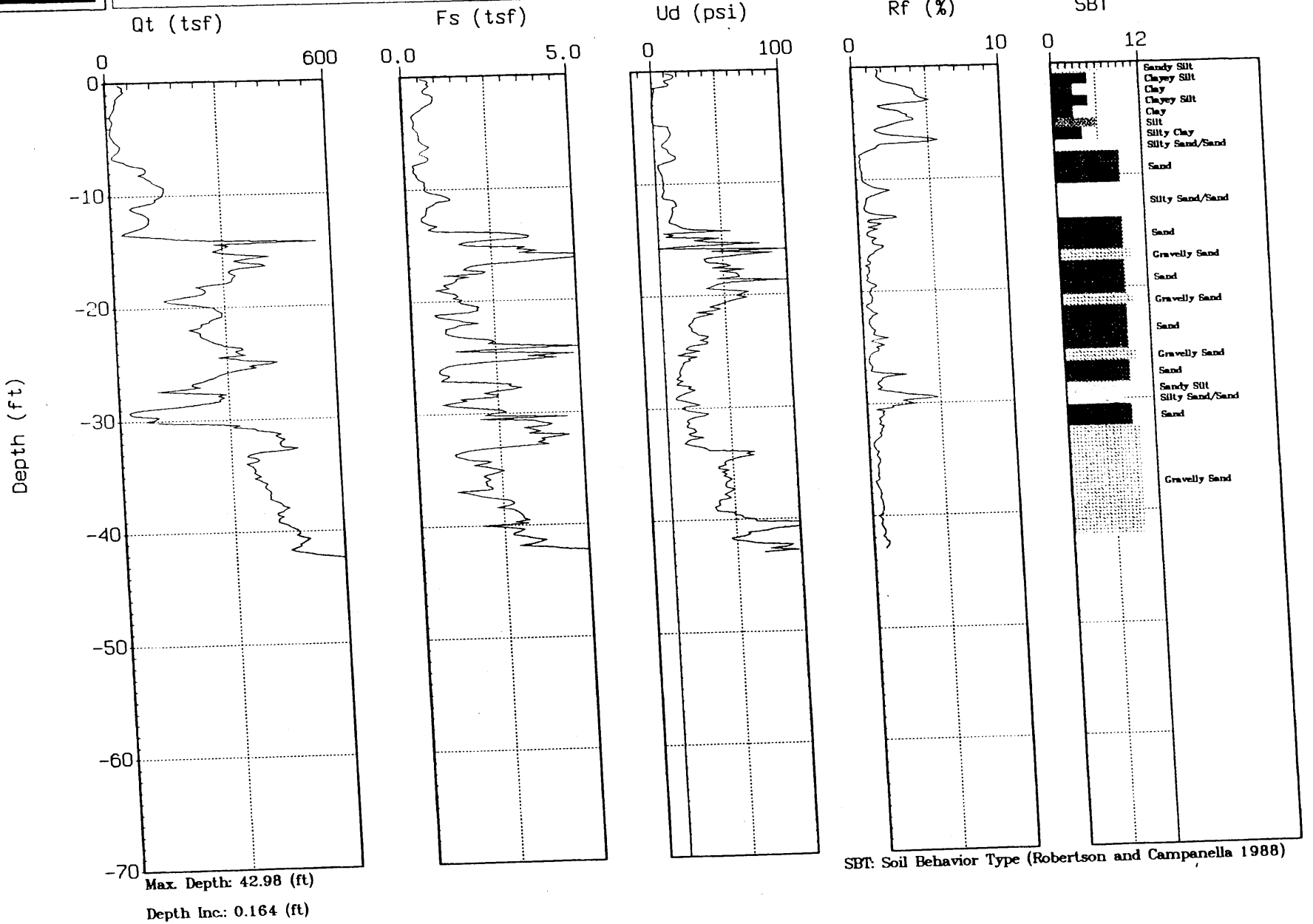
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-14

Engineer : MARK FRANKIAN
Date : 01:31:01 13:46



Max. Depth: 42.98 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

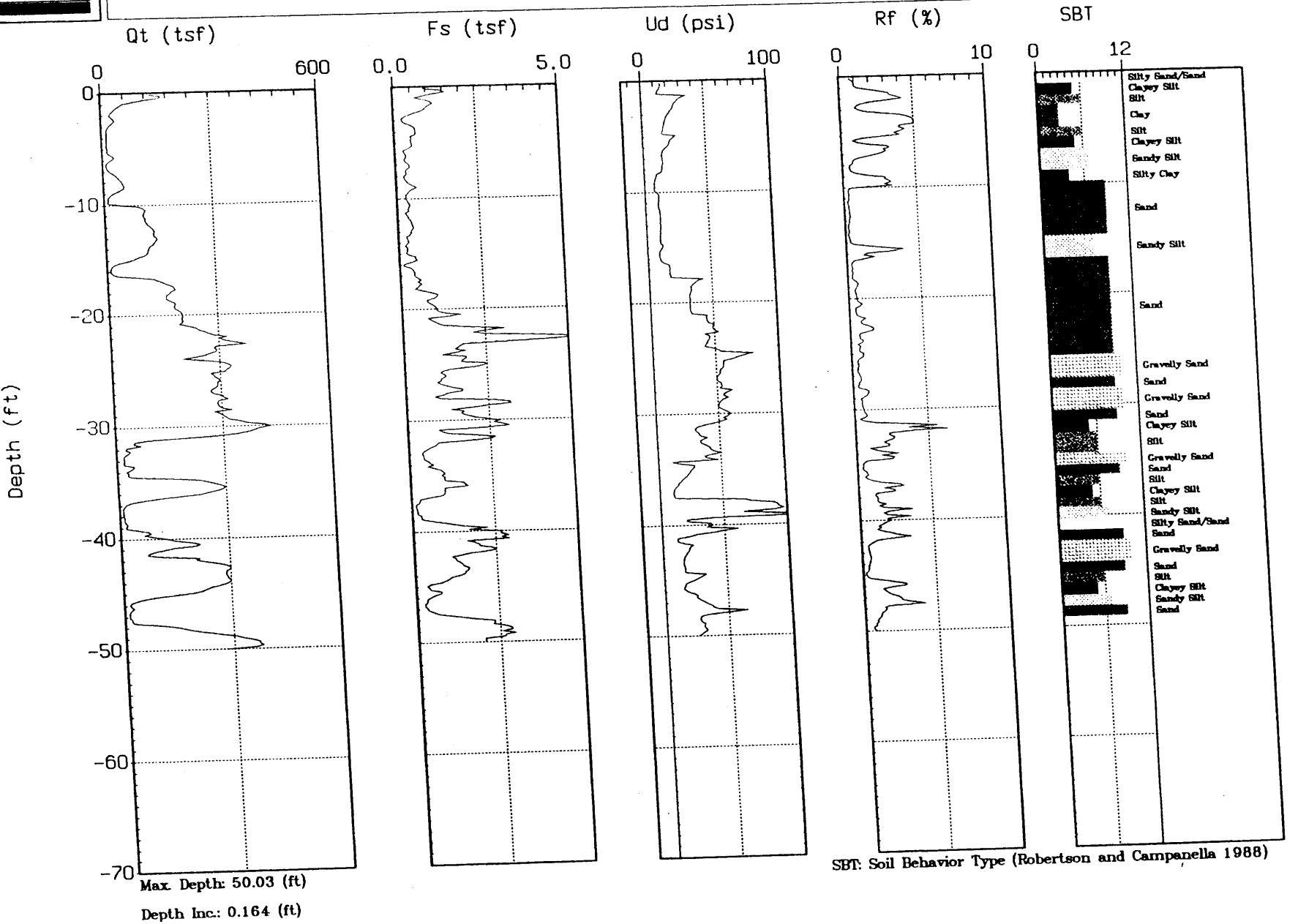
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-15

Engineer : MARK FRANKIAN
Date : 01:31:01 13:19



Max. Depth: 50.03 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

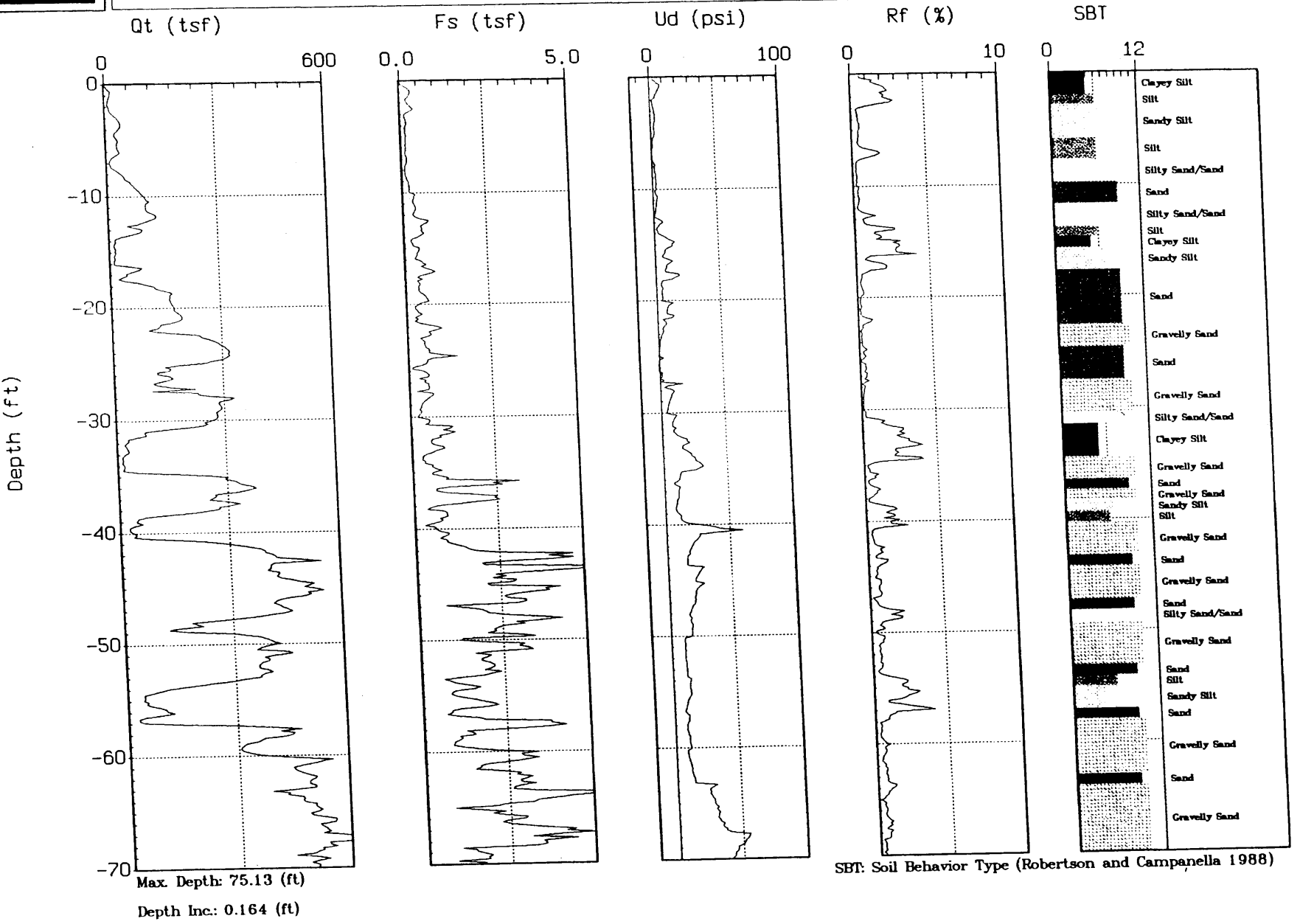
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : SCPT-16

Engineer : MARK FRANKIAN
Date : 01:31:01 08:09



Max. Depth: 75.13 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

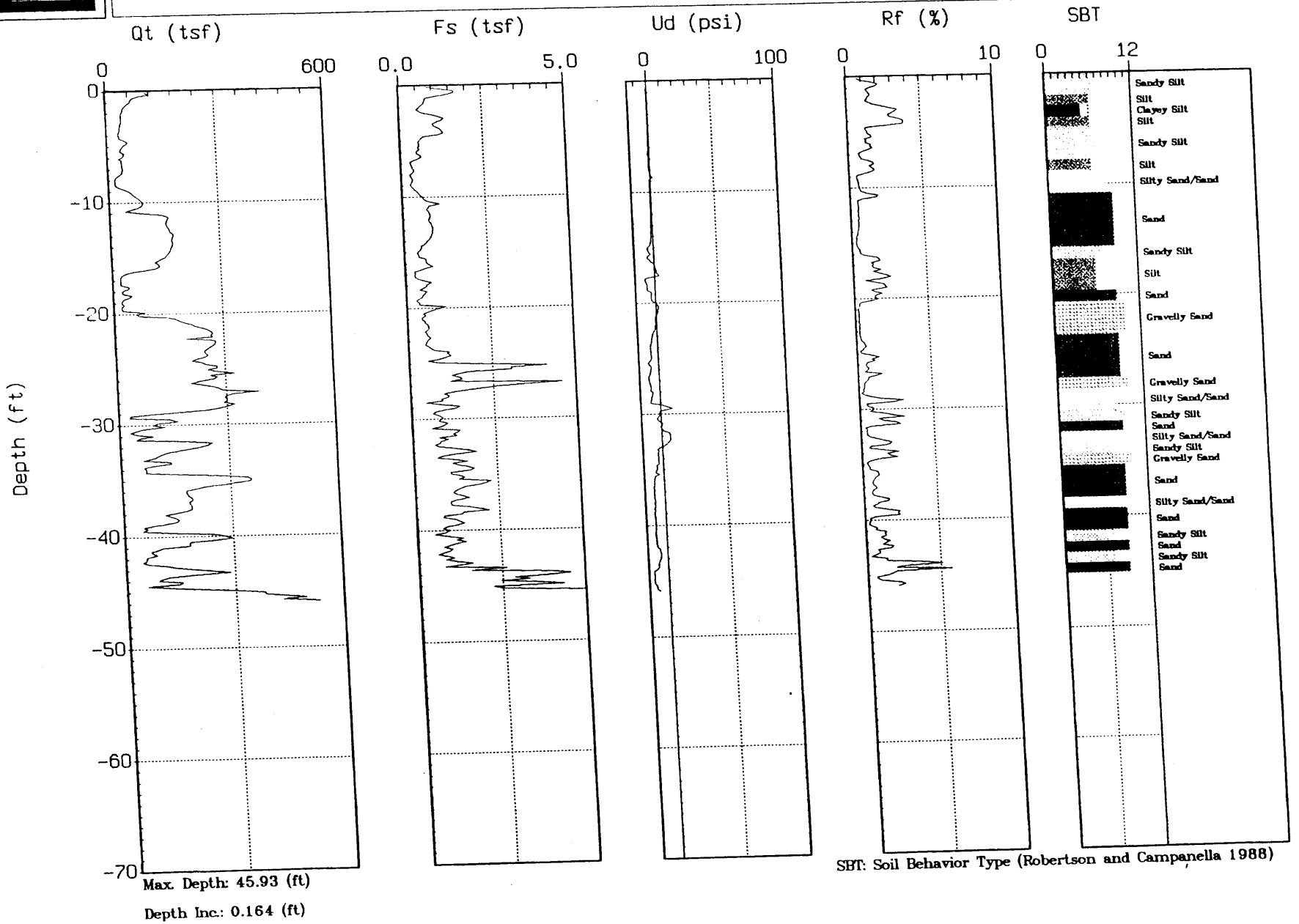
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-16

Engineer : MARK FRANKIAN
Date : 12:19:01 08:49



Max. Depth: 45.93 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

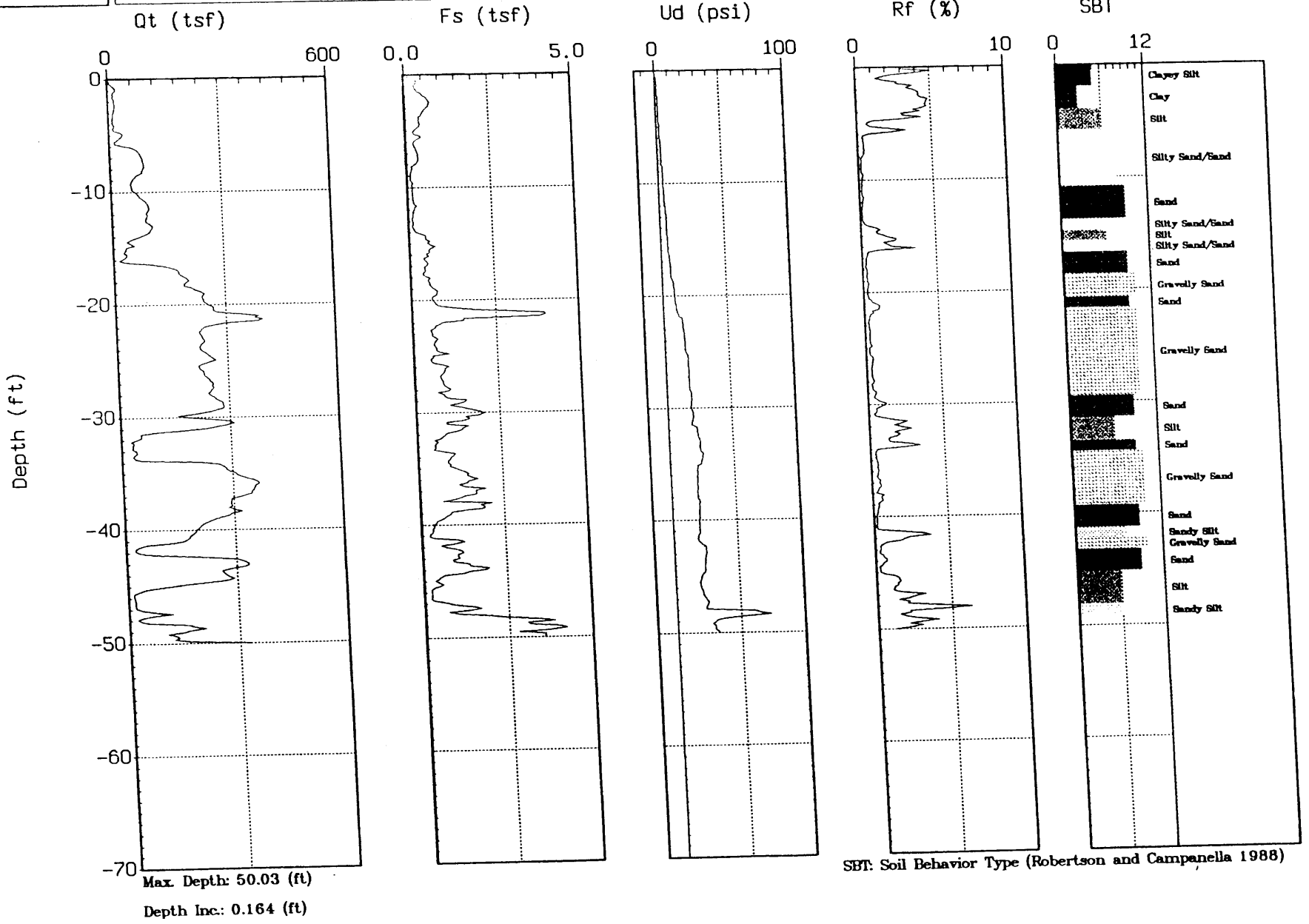
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : CPT-17

Engineer : MARK FRANKIAN
Date : 01:31:01 11:27



Max. Depth: 50.03 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

3.2 Interpreted Output

Gregg In S , Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4425
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-1
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 15:16
CPT File: 031C01.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.30 (ft): 14.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	79.9	0.79	0.99	24.2	8	120.9	0.03	0.03	0.00	2.00	19.1	38.2	UnDef	0.41
1.48	35.8	1.30	3.63	5.2	5	114.6	0.09	0.09	0.00	2.00	17.1	34.2	2.85	0.00
2.46	23.1	0.56	2.42	-0.9	6	114.6	0.14	0.14	0.00	2.00	8.8	17.7	1.84	0.10
3.44	22.3	0.42	1.90	-0.7	6	114.6	0.20	0.20	0.00	2.00	8.5	17.1	1.77	0.10
4.43	20.8	0.67	3.25	-0.6	5	114.6	0.26	0.26	0.00	1.97	10.0	19.6	1.64	0.13
5.41	21.0	0.65	3.12	-1.0	5	114.6	0.31	0.31	0.00	1.79	10.1	18.0	1.66	0.13
6.40	19.6	0.87	4.40	-1.4	3	111.4	0.37	0.37	0.00	1.65	18.8	31.0	1.54	0.31
7.30	40.6	0.85	2.09	0.9	6	114.6	0.42	0.42	0.00	1.54	15.6	24.0	3.22	0.15
8.20	42.6	0.78	1.83	-1.6	7	117.8	0.47	0.47	0.00	1.46	13.6	19.8	UnDef	0.14
9.19	56.6	0.88	1.55	-0.5	7	117.8	0.53	0.53	0.00	1.37	18.1	24.8	UnDef	0.17
10.17	130.7	0.91	0.70	0.6	9	124.1	0.59	0.59	0.00	1.30	25.0	32.6	UnDef	0.00
11.15	128.3	0.74	0.57	0.2	9	124.1	0.65	0.65	0.00	1.24	24.6	30.5	UnDef	0.43
12.14	86.8	1.20	1.39	10.0	8	120.9	0.71	0.71	0.00	1.19	20.8	24.6	UnDef	0.25
13.21	47.0	0.92	1.95	22.3	6	114.6	0.77	0.77	0.00	1.14	18.0	20.5	3.70	0.16
14.27	63.2	0.47	0.74	24.1	8	120.9	0.84	0.83	0.01	1.10	15.1	16.6	UnDef	0.13
15.26	140.6	0.43	0.31	30.3	9	124.1	0.90	0.86	0.04	1.08	26.9	29.0	UnDef	0.38
16.24	160.2	0.61	0.38	23.7	9	124.1	0.96	0.89	0.07	1.06	30.7	32.5	UnDef	0.00
17.22	132.9	1.10	0.82	18.2	9	124.1	1.02	0.92	0.10	1.04	25.4	26.5	UnDef	0.35
18.21	171.4	1.76	1.03	22.5	9	124.1	1.08	0.95	0.13	1.03	32.8	33.7	UnDef	0.00
19.19	153.1	1.87	1.22	26.1	8	120.9	1.14	0.98	0.16	1.01	36.7	37.0	UnDef	0.00
20.18	97.2	1.09	1.13	16.7	8	120.9	1.20	1.01	0.19	1.00	23.3	23.2	UnDef	0.23
21.16	77.4	0.91	1.18	13.7	8	120.9	1.26	1.04	0.22	0.98	18.5	18.2	UnDef	0.17
22.15	40.6	0.65	1.61	28.9	7	117.8	1.32	1.07	0.25	0.97	13.0	12.5	UnDef	0.14
23.13	30.7	0.42	1.38	21.8	6	114.6	1.38	1.09	0.28	0.96	11.8	11.2	2.35	0.13
24.11	178.6	0.71	0.39	45.4	9	124.1	1.43	1.12	0.31	0.94	34.2	32.3	UnDef	0.00
25.10	229.2	1.05	0.46	38.8	9	124.1	1.50	1.15	0.34	0.93	43.9	40.9	UnDef	0.00
26.08	153.8	1.38	0.90	28.9	9	124.1	1.56	1.18	0.37	0.92	29.5	27.1	UnDef	0.40
27.07	24.7	0.65	2.65	116.2	5	114.6	1.61	1.21	0.40	0.91	11.8	10.8	1.85	0.20
28.05	12.6	0.32	2.54	144.3	5	114.6	1.67	1.24	0.44	0.90	6.0	5.4	0.88	0.10
29.04	38.6	0.57	1.48	171.1	7	117.8	1.73	1.26	0.47	0.89	12.3	11.0	UnDef	0.15
30.02	205.9	1.02	0.49	99.6	9	124.1	1.79	1.29	0.50	0.88	39.4	34.7	UnDef	0.00
31.00	250.6	1.27	0.51	82.2	9	124.1	1.85	1.32	0.53	0.87	48.0	41.8	UnDef	0.00
31.99	253.3	1.00	0.39	57.8	10	127.3	1.91	1.35	0.56	0.86	40.4	34.8	UnDef	0.00
32.97	92.8	1.55	1.67	105.8	7	117.8	1.97	1.38	0.59	0.85	29.6	25.2	UnDef	0.25
33.96	101.6	1.49	1.47	140.7	8	120.9	2.03	1.41	0.62	0.84	24.3	20.5	UnDef	0.25
34.94	62.7	0.96	1.52	171.4	7	117.8	2.09	1.44	0.65	0.83	20.0	16.7	UnDef	0.18
35.92	196.6	2.63	1.34	190.6	8	120.9	2.15	1.47	0.68	0.83	47.1	38.9	UnDef	0.00
36.91	371.4	1.87	0.50	107.5	10	127.3	2.21	1.50	0.71	0.82	59.3	48.5	UnDef	0.00
37.89	357.0	2.06	0.58	128.4	10	127.3	2.27	1.53	0.74	0.81	57.0	46.1	UnDef	0.00
38.88	349.4	1.99	0.57	96.9	10	127.3	2.33	1.56	0.77	0.80	55.8	44.6	UnDef	0.00
39.86	315.1	3.98	1.26	130.3	9	124.1	2.40	1.59	0.80	0.79	60.4	47.9	UnDef	0.00
40.85	263.7	1.91	0.73	344.3	9	124.1	2.46	1.62	0.84	0.79	50.5	39.7	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Run No: 01-0316-0548-4425
CPT File: 031C01.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	114.8	2.03	1.77	203.0	7	117.8	2.52	1.65	0.87	0.78	36.6	28.5	UnDef	0.34
42.81	125.2	1.50	1.20	185.5	8	120.9	2.57	1.68	0.90	0.77	30.0	23.1	UnDef	0.28
43.80	98.6	1.79	1.81	137.2	7	117.8	2.63	1.71	0.93	0.77	31.5	24.1	UnDef	0.30
44.78	288.0	1.73	0.60	127.1	9	124.1	2.69	1.74	0.96	0.76	55.2	41.9	UnDef	0.00
45.77	324.5	2.13	0.66	82.7	9	124.1	2.75	1.77	0.99	0.75	62.2	46.8	UnDef	0.00
46.75	350.4	2.16	0.62	133.9	10	127.3	2.82	1.80	1.02	0.75	55.9	41.7	UnDef	0.00
47.74	356.6	2.08	0.58	184.0	10	127.3	2.88	1.83	1.05	0.74	56.9	42.1	UnDef	0.00
48.72	113.0	1.42	1.25	32.7	8	120.9	2.94	1.86	1.08	0.73	27.1	19.8	UnDef	0.25
49.70	84.9	1.14	1.34	76.8	8	120.9	3.00	1.89	1.11	0.73	20.3	14.8	UnDef	0.20

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4425
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-1
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 15:16
CPT File: 031C01.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.30 (ft): 14.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-03	0.01	1000.0	0.99	10	153.0	0.0	153.0	0.5	50	95.0	1.0	-0.40	0.0	38.2
1.48	5.0E-06	0.00	406.6	3.64	12	68.5	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
2.46	5.0E-05	0.00	159.3	2.43	7	44.2	14.5	58.7	14.2	44	52.4	10.0	-0.35	3.2	20.9
3.44	5.0E-05	0.00	110.1	1.91	7	42.7	15.5	58.2	15.0	42	46.7	10.0	-0.27	3.4	20.5
4.43	5.0E-06	0.00	79.9	3.29	7	39.8	41.0	80.9	24.0	UnDef	UnDef	10.0	UnDef	9.1	28.8
5.41	5.0E-06	0.00	66.1	3.16	7	36.8	45.6	82.3	25.7	UnDef	UnDef	10.0	UnDef	9.5	27.5
6.40	5.0E-08	0.00	52.3	4.49	6	31.7	102.6	134.3	33.6	UnDef	UnDef	10.0	UnDef	28.4	59.4
7.30	5.0E-05	0.00	95.7	2.12	7	61.3	29.7	91.1	17.2	42	53.3	10.0	-0.27	6.2	30.2
8.20	5.0E-04	0.00	89.2	1.85	7	60.7	27.3	88.0	16.6	42	52.9	1.0	-0.24	4.8	24.6
9.19	5.0E-04	0.00	105.8	1.56	9	76.1	22.5	98.6	13.5	42	59.4	1.0	-0.24	4.1	29.0
10.17	5.0E-02	0.00	220.7	0.70	9	166.6	0.0	166.6	3.6	46	81.9	1.0	-0.23	0.0	32.6
11.15	5.0E-02	0.00	196.1	0.58	9	155.6	0.0	155.6	3.3	46	80.0	1.0	-0.20	0.0	30.5
12.14	5.0E-03	0.00	121.0	1.40	9	100.7	21.3	122.0	11.5	42	67.5	1.0	-0.24	3.0	27.7
13.21	5.0E-05	0.02	59.7	1.99	7	52.3	41.6	93.8	21.6	40	48.7	10.0	-0.21	7.8	28.3
14.27	5.0E-03	0.01	75.1	0.75	9	67.9	13.5	81.4	11.2	40	56.2	1.0	-0.13	1.9	18.5
15.26	5.0E-02	0.01	162.4	0.31	9	148.3	0.0	148.3	2.1	44	78.6	1.0	-0.13	0.0	29.0
16.24	5.0E-02	0.00	178.7	0.38	9	166.1	0.0	166.1	2.3	44	81.8	1.0	-0.16	0.0	32.5
17.22	5.0E-02	0.00	143.1	0.83	9	135.5	7.2	142.6	6.9	44	76.0	1.0	-0.20	0.9	27.4
18.21	5.0E-02	0.00	179.0	1.03	9	171.9	8.4	180.4	6.8	44	82.8	1.0	-0.25	1.0	34.7
19.19	5.0E-03	0.00	154.9	1.23	9	151.3	17.1	168.3	8.8	44	79.1	1.0	-0.25	2.5	39.5
20.18	5.0E-03	0.00	95.0	1.14	9	94.6	21.7	116.4	12.0	42	65.7	1.0	-0.19	3.1	26.2
21.16	5.0E-03	0.00	73.3	1.20	7	74.3	26.1	100.4	14.7	40	58.8	1.0	-0.17	3.5	21.7
22.15	5.0E-04	0.02	36.8	1.66	7	38.5	48.6	87.1	25.9	38	39.9	1.0	-0.14	6.7	19.3
23.13	5.0E-05	0.01	26.8	1.44	7	28.7	51.7	80.5	29.1	36	31.5	6.0	-0.09	7.6	18.8
24.11	5.0E-02	0.01	158.0	0.40	9	165.1	0.0	165.1	3.0	44	81.6	1.0	-0.15	0.0	32.3
25.10	5.0E-02	0.00	197.7	0.46	9	209.0	0.0	209.0	2.4	46	88.4	1.0	-0.18	0.0	40.9
26.08	5.0E-02	0.00	128.8	0.90	9	138.4	12.4	150.9	8.1	44	76.6	1.0	-0.20	1.5	28.6
27.07	5.0E-06	0.14	19.1	2.83	6	22.0	88.1	110.1	43.4	UnDef	UnDef	6.0	UnDef	10.8	21.5
28.05	5.0E-06	0.37	8.9	2.93	4	11.1	44.4	55.6	60.8	UnDef	UnDef	3.0	UnDef	5.4	10.9
29.04	5.0E-04	0.13	29.2	1.55	7	33.6	56.9	90.5	28.5	36	36.0	1.0	-0.09	7.1	18.1
30.02	5.0E-02	0.01	158.1	0.50	9	177.4	0.0	177.4	3.9	44	83.7	1.0	-0.17	0.0	34.7
31.00	5.0E-02	0.01	188.2	0.51	9	213.3	0.0	213.3	3.0	44	89.0	1.0	-0.18	0.0	41.8
31.99	5.0E+00	0.00	185.9	0.40	9	213.1	0.0	213.1	2.2	44	89.0	1.0	-0.16	0.0	34.8
32.97	5.0E-04	0.03	65.7	1.71	7	77.2	46.1	123.3	19.0	40	59.9	1.0	-0.20	7.7	32.9
33.96	5.0E-03	0.04	70.6	1.50	7	83.7	39.5	123.3	17.0	40	62.2	1.0	-0.19	5.1	25.6
34.94	5.0E-04	0.08	42.1	1.58	7	51.2	50.1	101.3	23.5	38	48.1	1.0	-0.14	7.5	24.2
35.92	5.0E-03	0.03	132.6	1.35	9	158.9	27.8	186.7	10.6	44	80.5	1.0	-0.24	4.0	42.9
36.91	5.0E+00	0.01	246.8	0.51	9	297.1	0.0	297.1	1.8	46	95.0	1.0	-0.21	0.0	48.5
37.89	5.0E+00	0.01	232.1	0.58	9	282.6	0.0	282.6	2.5	46	95.0	1.0	-0.21	0.0	46.1
38.88	5.0E+00	0.01	222.4	0.57	9	273.7	0.0	273.7	2.7	46	95.0	1.0	-0.21	0.0	44.6
39.86	5.0E-02	0.01	196.5	1.27	9	244.5	17.7	262.2	7.5	46	92.9	1.0	-0.28	2.1	50.0
40.85	5.0E-02	0.04	161.1	0.73	9	202.7	2.6	205.2	5.5	44	87.5	1.0	-0.20	0.3	40.0

Gregg In Situ, Inc.
Run No: 01-0316-0548-4425
CPT File: 031C01.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-04	0.05	68.0	1.81	7	87.4	53.4	140.8	19.2	40	63.4	1.0	-0.21	8.9	37.4
42.81	5.0E-03	0.04	73.0	1.23	7	94.5	34.3	128.9	15.0	40	65.7	1.0	-0.17	4.6	27.8
43.80	5.0E-04	0.03	56.2	1.86	7	73.9	59.0	132.9	21.6	40	58.6	1.0	-0.19	9.3	33.4
44.78	5.0E-02	0.01	164.4	0.61	9	213.9	0.0	213.9	4.5	44	89.1	1.0	-0.19	0.0	41.9
45.77	5.0E-02	0.00	182.2	0.66	9	239.0	0.0	239.0	4.3	44	92.3	1.0	-0.20	0.0	46.8
46.75	5.0E+00	0.01	193.5	0.62	9	255.8	0.0	255.8	3.7	44	94.2	1.0	-0.20	0.0	41.7
47.74	5.0E+00	0.01	193.4	0.59	9	258.0	0.0	258.0	3.5	44	94.4	1.0	-0.20	0.0	42.1
48.72	5.0E-03	0.00	59.2	1.29	7	81.1	40.9	122.1	17.6	40	61.3	1.0	-0.16	5.3	25.1
49.70	5.0E-03	0.02	43.4	1.39	7	60.5	49.8	110.3	21.9	38	52.9	1.0	-0.14	5.8	20.6

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4447
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-2
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 07:39
CPT File: 890C02.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.30 (ft): 14.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	26.7	0.14	0.51	1.3	7	117.8	0.03	0.03	0.00	2.00	8.5	17.1	UnDef	0.09
1.48	16.1	0.16	0.97	0.8	6	114.6	0.09	0.09	0.00	2.00	6.2	12.3	1.28	0.08
2.46	16.0	0.16	1.01	-0.2	6	114.6	0.14	0.14	0.00	2.00	6.1	12.2	1.27	0.08
3.44	22.7	0.39	1.73	0.5	6	114.6	0.20	0.20	0.00	2.00	8.7	17.4	1.80	0.10
4.43	41.3	0.37	0.90	0.2	7	117.8	0.26	0.26	0.00	1.98	13.2	26.1	UnDef	0.13
5.41	33.2	0.48	1.43	-0.6	6	114.6	0.31	0.31	0.00	1.79	12.7	22.7	2.63	0.12
6.40	58.1	0.67	1.15	-0.3	7	117.8	0.37	0.37	0.00	1.64	18.5	30.5	UnDef	0.18
7.30	108.2	0.73	0.68	-0.6	8	120.9	0.42	0.42	0.00	1.54	25.9	39.8	UnDef	0.00
8.20	122.6	1.00	0.81	-0.5	9	124.1	0.48	0.48	0.00	1.44	23.5	33.9	UnDef	0.00
9.19	80.5	0.73	0.90	-2.5	8	120.9	0.54	0.54	0.00	1.36	19.3	26.2	UnDef	0.22
10.17	37.3	0.65	1.76	-3.4	6	114.6	0.60	0.60	0.00	1.29	14.3	18.5	2.94	0.13
11.15	10.5	0.41	3.87	0.0	3	111.4	0.65	0.65	0.00	1.24	10.1	12.5	0.79	0.00
12.14	12.1	0.47	3.88	2.9	3	111.4	0.71	0.71	0.00	1.19	11.6	13.8	0.91	0.00
13.21	11.3	0.56	4.96	2.3	3	111.4	0.77	0.77	0.00	1.14	10.8	12.3	0.84	0.00
14.27	93.6	0.88	0.94	-1.9	8	120.9	0.83	0.82	0.01	1.10	22.4	24.7	UnDef	0.22
15.26	127.4	1.06	0.83	-8.9	9	124.1	0.89	0.85	0.04	1.08	24.4	26.4	UnDef	0.34
16.24	120.5	1.13	0.94	-15.4	8	120.9	0.95	0.88	0.07	1.06	28.8	30.7	UnDef	0.32
17.22	108.7	1.08	0.99	-20.0	8	120.9	1.01	0.91	0.10	1.05	26.0	27.3	UnDef	0.27
18.21	46.9	0.93	1.98	-18.5	6	114.6	1.07	0.94	0.13	1.03	18.0	18.6	3.67	0.17
19.19	25.1	0.80	3.20	-17.0	5	114.6	1.12	0.96	0.16	1.02	12.0	12.2	1.92	0.26
20.18	10.9	0.34	3.15	-21.8	4	114.6	1.18	0.99	0.19	1.00	7.0	7.0	0.78	0.00
21.16	97.2	0.68	0.70	-14.2	8	120.9	1.24	1.02	0.22	0.99	23.3	23.1	UnDef	0.19
22.15	200.0	0.64	0.32	3.1	9	124.1	1.30	1.05	0.25	0.98	38.3	37.4	UnDef	0.00
23.13	207.2	0.57	0.27	0.7	9	124.1	1.36	1.08	0.28	0.96	39.7	38.2	UnDef	0.00
24.11	245.0	0.82	0.34	-6.7	10	127.3	1.42	1.11	0.31	0.95	39.1	37.1	UnDef	0.00
25.10	279.2	1.58	0.57	5.8	9	124.1	1.48	1.14	0.34	0.94	53.5	50.1	UnDef	0.00
26.08	200.2	1.70	0.85	6.1	9	124.1	1.54	1.17	0.37	0.92	38.4	35.5	UnDef	0.00
27.07	201.1	1.67	0.83	3.4	9	124.1	1.61	1.20	0.40	0.91	38.5	35.2	UnDef	0.00
28.05	209.3	1.04	0.50	-1.2	9	124.1	1.67	1.23	0.44	0.90	40.1	36.1	UnDef	0.00
29.04	234.0	0.66	0.28	-9.2	10	127.3	1.73	1.26	0.47	0.89	37.3	33.2	UnDef	0.00
30.02	277.1	0.79	0.29	-19.5	10	127.3	1.79	1.29	0.50	0.88	44.2	38.9	UnDef	0.00
31.00	273.2	0.92	0.34	-18.8	10	127.3	1.85	1.33	0.53	0.87	43.6	37.9	UnDef	0.00
31.99	278.4	0.82	0.30	-15.1	10	127.3	1.92	1.36	0.56	0.86	44.4	38.1	UnDef	0.00
32.97	95.3	1.51	1.58	7.5	7	117.8	1.98	1.39	0.59	0.85	30.4	25.8	UnDef	0.25
33.96	46.6	1.12	2.40	-8.1	6	114.6	2.03	1.41	0.62	0.84	17.8	15.0	3.56	0.41
34.94	72.8	1.13	1.55	-10.0	7	117.8	2.09	1.44	0.65	0.83	23.2	19.4	UnDef	0.19
35.92	73.7	1.23	1.67	-13.2	7	117.8	2.15	1.47	0.68	0.83	23.5	19.4	UnDef	0.21
36.91	102.1	1.32	1.30	-17.7	8	120.9	2.21	1.50	0.71	0.82	24.4	20.0	UnDef	0.23
37.89	38.7	0.79	2.03	-21.8	6	114.6	2.27	1.52	0.74	0.81	14.8	12.0	2.92	0.42
38.88	40.2	0.85	2.10	-16.5	6	114.6	2.32	1.55	0.77	0.80	15.4	12.4	3.03	0.45
39.86	16.5	0.38	2.30	-13.4	5	114.6	2.38	1.57	0.80	0.80	7.9	6.3	1.13	0.10
40.85	24.7	0.46	1.88	-12.5	6	114.6	2.43	1.60	0.84	0.79	9.4	7.5	1.78	0.16

Gregg In Situ, Inc.
Run No: 01-0316-0548-4447
CPT File: 890C02.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	10.7	0.31	2.93	-3.4	4	114.6	2.49	1.63	0.87	0.78	6.8	5.4	0.66	0.00
42.81	56.6	2.22	3.92	-8.7	5	114.6	2.55	1.65	0.90	0.78	27.1	21.1	4.32	0.00
43.80	332.4	3.79	1.14	-7.8	9	124.1	2.61	1.68	0.93	0.77	63.7	49.1	UnDef	0.00
44.78	441.3	3.14	0.71	-3.1	10	127.3	2.67	1.71	0.96	0.76	70.4	53.9	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4447
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-2
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 07:39
CPT File: 890C02.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.30 (ft): 14.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-04	0.00	920.7	0.51	10	51.2	0.0	51.2	0.0	50	79.6	1.0	-0.33	0.0	17.1
1.48	5.0E-05	0.00	185.5	0.97	9	30.8	1.0	31.8	6.2	44	49.4	10.0	-0.24	0.2	12.6
2.46	5.0E-05	0.00	111.0	1.02	9	30.6	4.7	35.3	10.0	42	42.0	10.0	-0.20	1.1	13.3
3.44	5.0E-05	0.00	112.9	1.75	7	43.4	13.6	57.0	14.0	42	47.2	10.0	-0.26	3.1	20.4
4.43	5.0E-04	0.00	160.5	0.91	9	79.2	3.7	82.8	6.7	44	60.9	1.0	-0.22	0.7	26.8
5.41	5.0E-05	0.00	105.0	1.45	9	58.0	15.7	73.8	13.0	42	51.7	10.0	-0.23	3.5	26.2
6.40	5.0E-04	0.00	155.7	1.16	9	93.4	9.2	102.6	8.4	44	65.3	1.0	-0.24	1.8	32.3
7.30	5.0E-03	0.00	254.0	0.68	9	162.6	0.0	162.6	2.8	46	81.2	1.0	-0.24	0.0	39.8
8.20	5.0E-02	0.00	254.6	0.82	9	173.2	0.0	173.2	3.6	46	83.0	1.0	-0.26	0.0	33.9
9.19	5.0E-03	0.00	148.1	0.91	9	107.2	6.6	113.7	7.2	44	69.3	1.0	-0.22	1.0	27.2
10.17	5.0E-05	0.00	61.4	1.78	7	47.2	32.2	79.4	20.2	40	45.8	10.0	-0.20	6.3	24.8
11.15	5.0E-08	0.00	15.1	4.13	1	12.8	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
12.14	5.0E-08	0.01	16.1	4.13	1	14.1	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
13.21	5.0E-08	0.01	13.7	5.32	1	12.6	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
14.27	5.0E-03	0.00	112.6	0.94	9	100.9	13.2	114.1	9.3	42	67.5	1.0	-0.19	1.9	26.6
15.26	5.0E-02	0.00	148.3	0.84	9	135.0	6.4	141.4	6.7	44	75.9	1.0	-0.21	0.8	27.2
16.24	5.0E-03	0.00	135.3	0.95	9	125.5	11.0	136.5	8.0	44	73.8	1.0	-0.21	1.6	32.3
17.22	5.0E-03	-0.01	118.1	1.00	9	111.4	14.6	126.0	9.3	42	70.4	1.0	-0.20	2.1	29.4
18.21	5.0E-05	-0.02	48.8	2.02	7	47.4	50.1	97.5	24.2	38	45.9	6.0	-0.19	8.8	27.3
19.19	5.0E-06	-0.03	24.8	3.35	6	25.0	100.0	125.0	41.1	UnDef	UnDef	6.0	UnDef	12.2	24.5
20.18	5.0E-07	-0.09	9.8	3.53	1	10.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
21.16	5.0E-03	-0.01	94.3	0.71	9	94.3	11.3	105.5	9.0	42	65.6	1.0	-0.15	1.6	24.7
22.15	5.0E-02	0.00	189.7	0.32	9	191.3	0.0	191.3	1.5	44	85.9	1.0	-0.15	0.0	37.4
23.13	5.0E-02	0.00	191.1	0.28	9	195.4	0.0	195.4	1.1	44	86.5	1.0	-0.13	0.0	38.2
24.11	5.0E+00	0.00	219.7	0.34	9	227.7	0.0	227.7	1.0	46	90.9	1.0	-0.16	0.0	37.1
25.10	5.0E-02	0.00	243.6	0.57	9	255.9	0.0	255.9	2.3	46	94.2	1.0	-0.22	0.0	50.1
26.08	5.0E-02	0.00	169.8	0.85	9	181.1	4.8	186.0	6.0	44	84.3	1.0	-0.22	0.6	36.0
27.07	5.0E-02	0.00	166.2	0.84	9	179.6	4.9	184.5	6.0	44	84.1	1.0	-0.22	0.6	35.8
28.05	5.0E-02	0.00	168.7	0.50	9	184.6	0.0	184.6	3.5	44	84.9	1.0	-0.17	0.0	36.1
29.04	5.0E+00	0.00	184.0	0.28	9	203.8	0.0	203.8	1.3	44	87.7	1.0	-0.13	0.0	33.2
30.02	5.0E+00	0.00	212.7	0.29	10	238.4	0.0	238.4	0.7	46	92.2	1.0	-0.15	0.0	38.9
31.00	5.0E+00	0.00	204.7	0.34	9	232.2	0.0	232.2	1.3	46	91.4	1.0	-0.16	0.0	37.9
31.99	5.0E+00	0.00	203.6	0.30	9	233.8	0.0	233.8	1.0	46	91.6	1.0	-0.15	0.0	38.1
32.97	5.0E-04	0.00	67.2	1.61	7	79.1	43.1	122.3	18.2	40	60.6	1.0	-0.20	7.3	33.1
33.96	5.0E-05	-0.02	31.5	2.51	6	38.3	114.7	153.0	33.1	36	39.8	6.0	-0.17	13.2	28.2
34.94	5.0E-04	-0.01	49.1	1.60	7	59.4	47.9	107.3	21.7	38	52.3	1.0	-0.16	7.5	26.9
35.92	5.0E-04	-0.02	48.8	1.72	7	59.6	52.3	111.9	22.5	38	52.4	1.0	-0.17	8.0	27.5
36.91	5.0E-03	-0.01	66.8	1.32	7	81.7	36.3	118.0	16.5	40	61.5	1.0	-0.18	4.8	24.8
37.89	5.0E-05	-0.04	23.9	2.15	6	30.7	122.8	153.6	35.6	34	33.4	6.0	-0.12	12.0	24.0
38.88	5.0E-05	-0.03	24.5	2.23	6	31.6	126.6	158.2	35.6	34	34.3	6.0	-0.13	12.4	24.8
39.86	5.0E-06	-0.09	9.0	2.68	4	12.9	51.5	64.4	59.1	UnDef	UnDef	3.0	UnDef	6.3	12.6
40.85	5.0E-05	-0.06	13.9	2.09	6	19.1	76.3	95.4	45.5	32	30.0	6.0	-0.06	7.5	14.9

Gregg In Situ, Inc.
Run No: 01-0316-0548-4447
CPT File: 890C02.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-07	-0.12	5.1	3.82	1	8.2	UnDef	UnDef	100.0	UnDef	UnDef	1.5	UnDef	UnDef	UnDef
42.81	5.0E-06	-0.02	32.7	4.11	6	43.1	172.3	215.4	39.4	UnDef	UnDef	6.0	UnDef	21.1	42.2
43.80	5.0E-02	0.00	196.4	1.15	9	251.0	13.2	264.2	6.9	46	93.7	1.0	-0.27	1.6	50.7
44.78	5.0E+00	0.00	256.5	0.72	9	330.2	0.0	330.2	3.0	46	95.0	1.0	-0.24	0.0	53.9

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4469
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-3
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 14:37
CPT File: 890C03.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 5.70 (ft): 18.7
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	210.9	1.20	0.57	4.7	9	124.1	0.03	0.03	0.00	2.00	40.4	80.8	UnDef	0.00
1.48	181.0	2.57	1.42	3.0	8	120.9	0.09	0.09	0.00	2.00	43.3	86.7	UnDef	0.00
2.46	93.8	1.14	1.21	-0.8	8	120.9	0.15	0.15	0.00	2.00	22.5	44.9	UnDef	0.00
3.44	44.4	0.79	1.78	-2.1	7	117.8	0.21	0.21	0.00	2.00	14.2	28.3	UnDef	0.16
4.43	56.2	0.84	1.49	-1.4	7	117.8	0.27	0.27	0.00	1.94	17.9	34.7	UnDef	0.23
5.41	58.2	0.67	1.15	-1.6	7	117.8	0.33	0.33	0.00	1.75	18.6	32.6	UnDef	0.19
6.40	55.1	0.36	0.65	-1.3	8	120.9	0.38	0.38	0.00	1.61	13.2	21.3	UnDef	0.14
7.30	23.7	0.25	1.07	-1.8	6	114.6	0.44	0.44	0.00	1.51	9.1	13.8	1.86	0.09
8.20	20.3	0.35	1.71	-1.3	6	114.6	0.49	0.49	0.00	1.43	7.8	11.1	1.59	0.10
9.19	28.4	0.73	2.55	-1.1	6	114.6	0.55	0.55	0.00	1.35	10.9	14.8	2.23	0.14
10.17	19.7	0.73	3.71	1.8	4	114.6	0.60	0.60	0.00	1.29	12.6	16.3	1.53	0.26
11.15	16.8	0.71	4.24	8.5	3	111.4	0.66	0.66	0.00	1.23	16.1	19.8	1.29	0.00
12.14	13.5	0.68	5.05	7.6	3	111.4	0.71	0.71	0.00	1.19	13.0	15.4	1.03	0.00
13.21	25.0	0.86	3.42	9.0	5	114.6	0.77	0.77	0.00	1.14	12.0	13.6	1.94	0.33
14.27	64.0	1.40	2.19	7.8	7	117.8	0.83	0.83	0.00	1.10	20.4	22.4	UnDef	0.22
15.26	52.9	1.17	2.20	6.2	6	114.6	0.89	0.89	0.00	1.06	20.3	21.5	4.16	0.19
16.24	60.2	1.33	2.20	1.3	6	114.6	0.95	0.95	0.00	1.03	23.0	23.7	4.74	0.21
17.22	31.2	0.84	2.69	1.9	6	114.6	1.00	1.00	0.00	1.00	11.9	11.9	2.41	0.41
18.21	32.5	0.76	2.34	9.3	6	114.6	1.06	1.06	0.00	0.97	12.4	12.1	2.51	0.28
19.19	84.5	1.12	1.33	2.2	8	120.9	1.12	1.10	0.02	0.95	20.2	19.3	UnDef	0.20
20.18	30.3	0.89	2.94	-0.3	5	114.6	1.18	1.13	0.05	0.94	14.5	13.6	2.33	0.33
21.16	20.6	0.57	2.75	2.2	5	114.6	1.23	1.16	0.08	0.93	9.9	9.2	1.55	0.16
22.15	112.2	1.34	1.20	3.1	8	120.9	1.29	1.18	0.11	0.92	26.9	24.7	UnDef	0.27
23.13	178.7	1.24	0.70	3.6	9	124.1	1.35	1.21	0.14	0.91	34.2	31.1	UnDef	0.00
24.11	202.0	1.28	0.63	5.9	9	124.1	1.41	1.24	0.17	0.90	38.7	34.7	UnDef	0.00
25.10	222.3	1.19	0.54	5.7	9	124.1	1.47	1.27	0.20	0.89	42.6	37.7	UnDef	0.00
26.08	205.6	1.21	0.59	2.8	9	124.1	1.53	1.30	0.23	0.88	39.4	34.5	UnDef	0.00
27.07	233.0	1.53	0.66	3.1	9	124.1	1.60	1.33	0.26	0.87	44.6	38.6	UnDef	0.00
28.05	235.1	1.60	0.68	3.2	9	124.1	1.66	1.36	0.29	0.86	45.0	38.5	UnDef	0.00
29.04	275.6	1.63	0.59	4.6	9	124.1	1.72	1.39	0.32	0.85	52.8	44.7	UnDef	0.00
30.02	276.5	1.00	0.36	-0.6	10	127.3	1.78	1.43	0.35	0.84	44.1	37.0	UnDef	0.00
31.00	244.5	0.65	0.27	-9.1	10	127.3	1.84	1.46	0.38	0.83	39.0	32.3	UnDef	0.00
31.99	226.7	0.53	0.23	-5.7	10	127.3	1.90	1.49	0.41	0.82	36.2	29.6	UnDef	0.00
32.97	277.7	0.85	0.31	-6.0	10	127.3	1.97	1.52	0.45	0.81	44.3	35.9	UnDef	0.00
33.96	299.4	1.00	0.33	-9.7	10	127.3	2.03	1.55	0.48	0.80	47.8	38.3	UnDef	0.00
34.94	285.1	0.95	0.33	-5.8	10	127.3	2.09	1.59	0.51	0.79	45.5	36.1	UnDef	0.00
35.92	298.7	1.07	0.36	-3.2	10	127.3	2.16	1.62	0.54	0.79	47.7	37.5	UnDef	0.00
36.91	276.3	1.81	0.66	-7.7	9	124.1	2.22	1.65	0.57	0.78	52.9	41.2	UnDef	0.00
37.89	314.0	0.95	0.30	-2.2	10	127.3	2.28	1.68	0.60	0.77	50.1	38.7	UnDef	0.00
38.88	188.9	0.80	0.42	-7.8	9	124.1	2.34	1.71	0.63	0.76	36.2	27.7	UnDef	0.34
39.86	105.3	2.53	2.41	1.3	7	117.8	2.40	1.74	0.66	0.76	33.6	25.5	UnDef	0.46
40.85	222.2	2.74	1.23	-1.8	8	120.9	2.46	1.77	0.69	0.75	53.2	40.0	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	380.5	4.18	1.10	-1.1	9	124.1	2.52	1.80	0.72	0.75	72.9	54.4	UnDef	0.00
42.81	125.9	2.85	2.26	5.9	7	117.8	2.58	1.83	0.75	0.74	40.2	29.7	UnDef	0.00
43.80	54.6	1.70	3.11	15.3	6	114.6	2.64	1.85	0.78	0.73	20.9	15.4	4.16	0.00
44.78	73.5	1.28	1.75	13.7	7	117.8	2.69	1.88	0.81	0.73	23.5	17.1	UnDef	0.25
45.77	17.7	0.45	2.55	134.0	5	114.6	2.75	1.91	0.85	0.72	8.5	6.1	1.20	0.10
46.75	32.2	0.72	2.22	200.4	6	114.6	2.81	1.93	0.88	0.72	12.3	8.9	2.35	0.22
47.74	152.6	2.63	1.72	102.8	8	120.9	2.86	1.96	0.91	0.71	36.5	26.1	UnDef	0.00
48.72	340.8	3.31	0.97	6.1	9	124.1	2.93	1.99	0.94	0.71	65.3	46.3	UnDef	0.00
49.70	427.5	3.91	0.92	16.3	9	124.1	2.99	2.02	0.97	0.70	81.9	57.6	UnDef	0.00
50.69	481.3	2.63	0.55	5.3	10	127.3	3.05	2.05	1.00	0.70	76.8	53.7	UnDef	0.00

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4469
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-3
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 14:37
CPT File: 890C03.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 5.70 (ft): 18.7
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-02	0.00	1000.0	0.57	10	403.9	0.0	403.9	0.0	50	95.0	1.0	-0.34	0.0	80.8
1.48	5.0E-03	0.00	1000.0	1.42	12	346.6	UnDef	UnDef	0.0	50	95.0	1.0	-0.45	UnDef	UnDef
2.46	5.0E-03	0.00	622.9	1.22	9	179.7	0.0	179.7	2.4	50	92.0	1.0	-0.38	0.0	44.9
3.44	5.0E-04	0.00	211.1	1.79	9	84.9	11.9	96.8	9.6	46	65.8	1.0	-0.33	2.3	30.7
4.43	5.0E-04	0.00	209.3	1.49	9	106.4	10.2	116.5	8.3	46	69.0	1.0	-0.30	2.0	36.7
5.41	5.0E-04	0.00	178.0	1.15	9	99.9	7.1	106.9	7.5	44	67.2	1.0	-0.26	1.4	34.0
6.40	5.0E-03	0.00	142.7	0.66	9	87.1	1.6	88.7	5.7	44	63.3	1.0	-0.18	0.2	21.5
7.30	5.0E-05	0.00	53.3	1.09	7	35.2	17.3	52.5	17.3	40	37.3	10.0	-0.14	3.6	17.3
8.20	5.0E-05	0.00	40.6	1.75	7	28.5	33.0	61.5	25.1	38	31.3	6.0	-0.15	5.6	16.8
9.19	5.0E-05	0.00	51.2	2.60	7	37.7	50.9	88.6	26.5	38	39.3	10.0	-0.23	8.3	23.0
10.17	5.0E-07	0.00	31.8	3.82	6	24.9	99.7	124.6	38.8	UnDef	UnDef	6.0	UnDef	16.3	32.5
11.15	5.0E-08	0.02	24.5	4.42	1	20.2	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
12.14	5.0E-08	0.02	18.0	5.33	1	15.7	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
13.21	5.0E-06	0.01	31.4	3.53	6	27.9	111.5	139.3	37.8	UnDef	UnDef	6.0	UnDef	13.6	27.3
14.27	5.0E-04	0.00	75.7	2.22	7	68.5	46.2	114.8	20.1	40	56.4	1.0	-0.25	7.5	29.9
15.26	5.0E-05	0.00	58.3	2.24	7	54.8	51.7	106.5	23.2	40	50.1	10.0	-0.22	9.4	30.8
16.24	5.0E-05	0.00	62.5	2.24	7	60.5	52.2	112.7	22.3	40	52.9	10.0	-0.23	9.7	33.3
17.22	5.0E-05	0.00	30.0	2.78	6	30.4	121.7	152.2	35.1	36	33.2	6.0	-0.17	11.9	23.8
18.21	5.0E-05	0.01	29.6	2.42	6	30.9	99.2	130.1	33.6	36	33.6	6.0	-0.15	11.0	23.1
19.19	5.0E-03	0.00	75.6	1.35	7	78.8	30.3	109.0	15.4	40	60.4	1.0	-0.19	4.0	23.3
20.18	5.0E-06	0.00	25.7	3.05	6	27.9	111.5	139.4	39.1	UnDef	UnDef	6.0	UnDef	13.6	27.3
21.16	5.0E-06	0.00	16.8	2.93	6	18.8	75.1	93.9	46.5	UnDef	UnDef	6.0	UnDef	9.2	18.4
22.15	5.0E-03	0.00	93.7	1.21	9	100.9	25.5	126.4	12.6	42	67.5	1.0	-0.20	3.6	28.3
23.13	5.0E-02	0.00	146.2	0.70	9	158.8	3.7	162.4	5.8	44	80.5	1.0	-0.19	0.4	31.5
24.11	5.0E-02	0.00	161.4	0.64	9	177.3	0.0	177.3	4.8	44	83.7	1.0	-0.19	0.0	34.7
25.10	5.0E-02	0.00	173.4	0.54	9	192.8	0.0	192.8	3.7	44	86.1	1.0	-0.18	0.0	37.7
26.08	5.0E-02	0.00	156.6	0.60	9	176.3	0.0	176.3	4.6	44	83.5	1.0	-0.18	0.0	34.5
27.07	5.0E-02	0.00	173.5	0.66	9	197.4	0.0	197.4	4.6	44	86.8	1.0	-0.20	0.0	38.6
28.05	5.0E-02	0.00	171.1	0.69	9	196.9	0.0	196.9	4.8	44	86.7	1.0	-0.20	0.0	38.5
29.04	5.0E-02	0.00	196.4	0.59	9	228.4	0.0	228.4	3.4	46	90.9	1.0	-0.20	0.0	44.7
30.02	5.0E+00	0.00	192.7	0.37	9	226.6	0.0	226.6	1.8	44	90.7	1.0	-0.16	0.0	37.0
31.00	5.0E+00	0.00	166.5	0.27	9	198.2	0.0	198.2	1.6	44	86.9	1.0	-0.12	0.0	32.3
31.99	5.0E+00	0.00	150.9	0.23	9	181.7	0.0	181.7	1.8	44	84.4	1.0	-0.10	0.0	29.6
32.97	5.0E+00	0.00	181.2	0.31	9	220.3	0.0	220.3	1.6	44	89.9	1.0	-0.14	0.0	35.9
33.96	5.0E+00	0.00	191.4	0.33	9	235.1	0.0	235.1	1.5	44	91.8	1.0	-0.15	0.0	38.3
34.94	5.0E+00	0.00	178.5	0.34	9	221.6	0.0	221.6	1.9	44	90.1	1.0	-0.15	0.0	36.1
35.92	5.0E+00	0.00	183.3	0.36	9	229.8	0.0	229.8	2.0	44	91.1	1.0	-0.15	0.0	37.5
36.91	5.0E-02	0.00	166.3	0.66	9	210.6	0.0	210.6	4.8	44	88.6	1.0	-0.20	0.0	41.2
37.89	5.0E+00	0.00	185.6	0.30	9	237.1	0.0	237.1	1.4	44	92.0	1.0	-0.14	0.0	38.7
38.88	5.0E-02	0.00	109.0	0.43	9	141.3	0.0	141.3	5.0	42	77.2	1.0	-0.12	0.0	27.7
39.86	5.0E-04	-0.01	59.1	2.46	7	78.1	81.1	159.2	24.1	40	60.2	1.0	-0.24	11.9	37.4
40.85	5.0E-03	0.00	124.3	1.25	9	163.6	28.0	191.5	10.5	42	81.4	1.0	-0.23	4.0	44.0

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	0.00	210.3	1.11	9	277.8	9.5	287.3	6.2	46	95.0	1.0	-0.27	1.2	55.5
42.81	5.0E-04	0.00	67.5	2.31	7	91.2	74.1	165.3	21.8	40	64.6	1.0	-0.24	11.6	41.3
43.80	5.0E-05	-0.01	28.1	3.27	6	39.3	157.1	196.4	38.6	36	40.5	6.0	-0.19	15.4	30.8
44.78	5.0E-04	-0.01	37.7	1.81	7	52.5	70.9	123.4	26.5	38	48.8	1.0	-0.15	9.6	26.7
45.77	5.0E-06	0.22	7.9	3.01	4	12.6	50.2	62.8	64.4	UnDef	UnDef	3.0	UnDef	6.1	12.3
46.75	5.0E-05	0.18	15.2	2.43	6	22.7	90.7	113.4	45.7	32	30.0	6.0	-0.05	8.9	17.8
47.74	5.0E-03	0.02	76.5	1.76	7	106.7	54.5	161.2	17.7	40	69.1	1.0	-0.22	7.0	33.1
48.72	5.0E-02	0.00	170.0	0.98	9	236.6	11.6	248.1	6.7	44	92.0	1.0	-0.24	1.4	47.7
49.70	5.0E-02	0.00	210.3	0.92	9	294.5	1.5	296.0	5.2	46	95.0	1.0	-0.25	0.2	57.8
50.69	5.0E+00	0.00	233.4	0.55	9	329.0	0.0	329.0	2.3	46	95.0	1.0	-0.21	0.0	53.7

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 01-0316-0548-4512
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-4
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 12:34
CPT File: 890C04.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.35 (ft): 11.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	40.5	0.74	1.82	-0.9	6	114.6	0.03	0.03	0.00	2.00	15.5	31.0	3.24	0.00
1.48	28.9	0.77	2.67	-1.3	6	114.6	0.08	0.08	0.00	2.00	11.1	22.1	2.30	0.00
2.46	58.7	0.52	0.88	-0.6	8	120.9	0.14	0.14	0.00	2.00	14.1	28.1	UnDef	0.21
3.44	86.6	0.42	0.49	0.2	8	120.9	0.20	0.20	0.00	2.00	20.7	41.5	UnDef	0.00
4.43	93.6	0.50	0.54	0.3	8	120.9	0.26	0.26	0.00	1.96	22.4	43.8	UnDef	0.00
5.41	90.7	0.52	0.58	0.3	8	120.9	0.32	0.32	0.00	1.76	21.7	38.3	UnDef	0.44
6.40	51.9	0.44	0.84	0.0	7	117.8	0.38	0.38	0.00	1.62	16.6	26.9	UnDef	0.14
7.30	11.2	0.37	3.28	-0.1	4	114.6	0.43	0.43	0.00	1.52	7.2	10.9	0.86	0.13
8.20	42.3	0.38	0.90	-0.1	7	117.8	0.48	0.48	0.00	1.44	13.5	19.4	UnDef	0.11
9.19	37.3	0.53	1.42	-0.7	7	117.8	0.54	0.54	0.00	1.36	11.9	16.2	UnDef	0.12
10.17	68.9	0.50	0.73	-1.8	8	120.9	0.60	0.60	0.00	1.29	16.5	21.3	UnDef	0.16
11.15	122.4	0.52	0.42	-1.8	9	124.1	0.66	0.66	0.00	1.23	23.4	28.9	UnDef	0.38
12.14	141.3	0.64	0.45	-1.6	9	124.1	0.72	0.69	0.04	1.21	27.1	32.6	UnDef	0.00
13.21	148.0	0.78	0.53	-0.9	9	124.1	0.79	0.72	0.07	1.18	28.3	33.4	UnDef	0.00
14.27	63.3	0.81	1.28	-1.2	7	117.8	0.85	0.75	0.10	1.15	20.2	23.3	UnDef	0.16
15.26	106.1	0.92	0.86	-1.2	8	120.9	0.91	0.78	0.13	1.13	25.4	28.8	UnDef	0.27
16.24	76.6	0.86	1.13	-1.8	8	120.9	0.97	0.81	0.16	1.11	18.3	20.4	UnDef	0.18
17.22	142.2	0.91	0.64	-1.8	9	124.1	1.03	0.84	0.19	1.09	27.2	29.7	UnDef	0.41
18.21	188.4	1.07	0.57	-1.5	9	124.1	1.09	0.87	0.23	1.07	36.1	38.7	UnDef	0.00
19.19	227.6	1.57	0.69	3.7	9	124.1	1.15	0.90	0.26	1.06	43.6	46.0	UnDef	0.00
20.18	237.0	1.19	0.50	5.1	9	124.1	1.22	0.93	0.29	1.04	45.4	47.1	UnDef	0.00
21.16	278.7	1.22	0.44	5.1	10	127.3	1.28	0.96	0.32	1.02	44.5	45.4	UnDef	0.00
22.15	158.4	1.86	1.18	5.1	8	120.9	1.34	0.99	0.35	1.00	37.9	38.1	UnDef	0.00
23.13	149.0	2.29	1.54	4.8	8	120.9	1.40	1.02	0.38	0.99	35.7	35.3	UnDef	0.00
24.11	217.5	2.83	1.30	3.5	8	120.9	1.46	1.05	0.41	0.98	52.1	50.9	UnDef	0.00
25.10	321.6	1.89	0.59	3.6	10	127.3	1.52	1.08	0.44	0.96	51.3	49.4	UnDef	0.00
26.08	321.2	2.97	0.93	3.6	9	124.1	1.58	1.11	0.47	0.95	61.5	58.4	UnDef	0.00
27.07	358.2	2.50	0.70	4.1	9	124.1	1.64	1.14	0.50	0.94	68.6	64.3	UnDef	0.00
28.05	416.1	3.91	0.94	4.0	9	124.1	1.70	1.17	0.53	0.92	79.7	73.7	UnDef	0.00
29.04	480.7	2.88	0.60	3.6	10	127.3	1.76	1.20	0.56	0.91	76.7	70.0	UnDef	0.00
30.02	444.7	4.37	0.98	4.4	9	124.1	1.83	1.23	0.59	0.90	85.2	76.7	UnDef	0.00
31.00	260.6	1.75	0.67	3.7	9	124.1	1.89	1.26	0.62	0.89	49.9	44.4	UnDef	0.00
31.99	309.3	1.60	0.52	4.2	10	127.3	1.95	1.29	0.66	0.88	49.4	43.4	UnDef	0.00
32.97	196.7	2.37	1.20	4.5	8	120.9	2.01	1.32	0.69	0.87	47.1	40.9	UnDef	0.00
33.96	174.0	2.34	1.34	4.8	8	120.9	2.07	1.35	0.72	0.86	41.7	35.8	UnDef	0.00
34.94	143.9	1.76	1.22	5.1	8	120.9	2.13	1.38	0.75	0.85	34.5	29.3	UnDef	0.38
35.92	131.0	1.90	1.45	6.2	8	120.9	2.19	1.41	0.78	0.84	31.4	26.4	UnDef	0.36
36.91	303.3	3.13	1.03	7.4	9	124.1	2.25	1.44	0.81	0.83	58.1	48.4	UnDef	0.00
37.89	339.7	2.85	0.84	7.9	9	124.1	2.31	1.47	0.84	0.82	65.1	53.7	UnDef	0.00
38.88	225.1	1.26	0.56	8.0	9	124.1	2.37	1.50	0.87	0.82	43.1	35.2	UnDef	0.00
39.86	29.3	0.73	2.48	8.8	6	114.6	2.43	1.53	0.90	0.81	11.2	9.1	2.15	0.22
40.85	46.5	0.95	2.04	9.5	6	114.6	2.49	1.55	0.93	0.80	17.8	14.3	3.52	0.34

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	53.2	0.76	1.43	9.5	7	117.8	2.54	1.58	0.96	0.80	17.0	13.5	UnDef	0.17
42.81	85.5	1.08	1.27	9.1	8	120.9	2.60	1.61	0.99	0.79	20.5	16.1	UnDef	0.19
43.80	128.5	1.41	1.10	9.8	8	120.9	2.66	1.64	1.02	0.78	30.8	24.0	UnDef	0.28
44.78	138.5	1.43	1.03	10.3	8	120.9	2.72	1.67	1.05	0.77	33.2	25.7	UnDef	0.30
45.77	286.9	1.35	0.47	12.2	10	127.3	2.78	1.70	1.09	0.77	45.8	35.2	UnDef	0.00
46.75	317.6	1.58	0.50	13.3	10	127.3	2.85	1.73	1.12	0.76	50.7	38.6	UnDef	0.00
47.74	340.5	1.91	0.56	13.3	10	127.3	2.91	1.76	1.15	0.75	54.4	41.0	UnDef	0.00
48.72	332.3	1.41	0.42	13.2	10	127.3	2.97	1.79	1.18	0.75	53.0	39.6	UnDef	0.00
49.70	146.5	3.01	2.06	11.8	7	117.8	3.03	1.82	1.21	0.74	46.8	34.6	UnDef	0.00
50.69	96.0	2.54	2.65	11.3	6	114.6	3.09	1.85	1.24	0.74	36.8	27.0	7.43	0.00
51.67	372.6	1.93	0.52	12.1	10	127.3	3.15	1.88	1.27	0.73	59.5	43.4	UnDef	0.00
52.66	413.0	2.47	0.60	12.9	10	127.3	3.21	1.91	1.30	0.72	65.9	47.7	UnDef	0.00
53.64	396.9	2.17	0.55	13.3	10	127.3	3.27	1.94	1.33	0.72	63.4	45.5	UnDef	0.00
54.63	401.2	2.20	0.55	13.8	10	127.3	3.34	1.97	1.36	0.71	64.0	45.6	UnDef	0.00
55.61	397.4	3.54	0.89	14.4	9	124.1	3.40	2.00	1.39	0.71	76.1	53.8	UnDef	0.00
56.59	405.2	5.36	1.32	15.6	9	124.1	3.46	2.03	1.42	0.70	77.6	54.4	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4512
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-4
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 12:34
CPT File: 890C04.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.35 (ft): 11.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-05	0.00	1000.0	1.83	12	77.5	UnDef	UnDef	0.0	50	91.9	10.0	-0.50	UnDef	UnDef
1.48	5.0E-05	0.00	340.6	2.68	12	55.3	UnDef	UnDef	0.0	48	66.5	10.0	-0.46	UnDef	UnDef
2.46	5.0E-03	0.00	410.9	0.89	9	112.5	0.0	112.5	2.1	48	79.3	1.0	-0.31	0.0	28.1
3.44	5.0E-03	0.00	427.8	0.49	10	165.9	0.0	165.9	0.0	48	85.5	1.0	-0.25	0.0	41.5
4.43	5.0E-03	0.00	357.0	0.54	10	179.2	0.0	179.2	0.6	48	84.0	1.0	-0.25	0.0	43.8
5.41	5.0E-03	0.00	281.5	0.58	9	156.6	0.0	156.6	1.7	46	80.1	1.0	-0.23	0.0	38.3
6.40	5.0E-04	0.00	135.5	0.85	9	82.3	5.6	87.9	7.4	44	61.7	1.0	-0.20	1.1	28.0
7.30	5.0E-07	0.00	24.9	3.41	6	16.7	66.7	83.4	41.3	UnDef	UnDef	6.0	UnDef	10.9	21.8
8.20	5.0E-04	0.00	86.3	0.92	9	59.4	12.0	71.4	11.3	42	52.4	1.0	-0.17	2.3	21.7
9.19	5.0E-04	0.00	67.7	1.44	7	49.5	23.7	73.2	17.1	40	47.1	1.0	-0.19	4.1	20.3
10.17	5.0E-03	0.00	113.5	0.73	9	86.9	7.0	93.9	7.8	42	63.3	1.0	-0.17	1.0	22.3
11.15	5.0E-02	0.00	185.3	0.42	9	147.8	0.0	147.8	2.4	44	78.5	1.0	-0.17	0.0	28.9
12.14	5.0E-02	0.00	204.5	0.46	9	166.7	0.0	166.7	2.2	46	81.9	1.0	-0.18	0.0	32.6
13.21	5.0E-02	0.00	204.4	0.53	9	170.6	0.0	170.6	2.8	46	82.6	1.0	-0.20	0.0	33.4
14.27	5.0E-04	0.00	83.1	1.30	9	71.5	23.2	94.7	14.2	42	57.6	1.0	-0.19	4.2	27.5
15.26	5.0E-03	0.00	134.9	0.87	9	117.6	8.6	126.1	7.5	44	71.9	1.0	-0.20	1.3	30.0
16.24	5.0E-03	0.00	93.6	1.14	9	83.4	19.6	103.0	12.1	42	62.1	1.0	-0.19	2.8	23.2
17.22	5.0E-02	0.00	168.4	0.64	9	152.0	0.0	152.0	4.6	44	79.3	1.0	-0.20	0.0	29.7
18.21	5.0E-02	0.00	215.7	0.57	9	197.8	0.0	197.8	2.8	46	86.8	1.0	-0.21	0.0	38.7
19.19	5.0E-02	0.00	252.0	0.69	9	234.9	0.0	234.9	2.9	46	91.8	1.0	-0.24	0.0	46.0
20.18	5.0E-02	0.00	253.9	0.51	9	240.7	0.0	240.7	1.6	46	92.4	1.0	-0.21	0.0	47.1
21.16	5.0E+00	0.00	289.0	0.44	10	278.4	0.0	278.4	0.7	46	95.0	1.0	-0.21	0.0	45.4
22.15	5.0E-03	0.00	158.6	1.19	9	155.7	15.6	171.3	8.4	44	80.0	1.0	-0.25	2.3	40.4
23.13	5.0E-03	0.00	144.8	1.55	9	144.4	27.5	171.9	11.0	44	77.8	1.0	-0.27	3.9	39.3
24.11	5.0E-03	0.00	206.2	1.31	9	207.9	14.6	222.5	7.4	46	88.3	1.0	-0.29	2.2	53.0
25.10	5.0E+00	0.00	296.8	0.59	9	303.1	0.0	303.1	1.6	46	95.0	1.0	-0.24	0.0	49.4
26.08	5.0E-02	0.00	288.1	0.93	9	298.4	0.0	298.4	3.7	46	95.0	1.0	-0.28	0.0	58.4
27.07	5.0E-02	0.00	312.8	0.70	9	328.3	0.0	328.3	2.1	46	95.0	1.0	-0.26	0.0	64.3
28.05	5.0E-02	0.00	354.1	0.94	9	376.4	0.0	376.4	3.0	48	95.0	1.0	-0.30	0.0	73.7
29.04	5.0E+00	0.00	398.7	0.60	10	429.2	0.0	429.2	0.7	48	95.0	1.0	-0.27	0.0	70.0
30.02	5.0E-02	0.00	359.3	0.99	9	392.0	0.0	392.0	3.1	48	95.0	1.0	-0.31	0.0	76.7
31.00	5.0E-02	0.00	204.9	0.68	9	226.9	0.0	226.9	3.8	46	90.8	1.0	-0.22	0.0	44.4
31.99	5.0E+00	0.00	237.5	0.52	9	266.1	0.0	266.1	2.0	46	95.0	1.0	-0.21	0.0	43.4
32.97	5.0E-03	0.00	147.0	1.22	9	167.3	20.5	187.7	9.1	44	82.0	1.0	-0.24	3.0	43.9
33.96	5.0E-03	0.00	127.1	1.36	9	146.4	27.6	174.0	10.9	44	78.2	1.0	-0.24	3.9	39.8
34.94	5.0E-03	0.00	102.6	1.24	9	119.8	27.4	147.2	12.0	42	72.5	1.0	-0.21	3.9	33.2
35.92	5.0E-03	0.00	91.3	1.48	7	107.9	36.1	144.0	14.4	42	69.5	1.0	-0.22	4.9	31.3
36.91	5.0E-02	0.00	209.0	1.04	9	247.3	6.2	253.5	5.9	46	93.2	1.0	-0.26	0.7	49.2
37.89	5.0E-02	0.00	229.4	0.85	9	274.1	0.0	274.1	4.3	46	95.0	1.0	-0.25	0.0	53.7
38.88	5.0E-02	0.00	148.4	0.57	9	179.8	0.0	179.8	4.7	44	84.1	1.0	-0.17	0.0	35.2
39.86	5.0E-05	-0.02	17.6	2.70	6	23.2	92.7	115.9	44.3	32	30.0	6.0	-0.11	9.1	18.1
40.85	5.0E-05	-0.01	28.3	2.15	6	36.5	105.0	141.5	32.8	36	38.4	6.0	-0.14	12.4	26.7

Gregg In Situ, Inc.
Run No: 01-0316-0548-4512
CPT File: 890C04.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-04	-0.01	32.1	1.50	7	41.4	57.7	99.2	26.8	36	42.0	1.0	-0.11	7.7	21.3
42.81	5.0E-03	-0.01	51.5	1.31	7	65.9	40.7	106.6	19.3	38	55.3	1.0	-0.15	5.1	21.2
43.80	5.0E-03	-0.01	76.8	1.12	9	98.3	30.2	128.4	13.8	40	66.8	1.0	-0.17	4.1	28.2
44.78	5.0E-03	-0.01	81.5	1.05	9	105.0	27.4	132.4	12.8	42	68.7	1.0	-0.17	3.8	29.5
45.77	5.0E+00	0.00	167.4	0.47	9	215.5	0.0	215.5	3.3	44	89.3	1.0	-0.17	0.0	35.2
46.75	5.0E+00	0.00	182.1	0.50	9	236.4	0.0	236.4	3.1	44	91.9	1.0	-0.18	0.0	38.6
47.74	5.0E+00	0.00	191.7	0.57	9	251.1	0.0	251.1	3.3	44	93.7	1.0	-0.20	0.0	41.0
48.72	5.0E+00	0.00	183.7	0.43	9	242.9	0.0	242.9	2.5	44	92.7	1.0	-0.17	0.0	39.6
49.70	5.0E-04	-0.01	78.7	2.10	7	106.2	64.2	170.4	19.1	42	69.0	1.0	-0.25	10.7	45.3
50.69	5.0E-05	-0.01	50.2	2.74	7	69.1	102.7	171.8	27.4	38	56.7	10.0	-0.23	16.2	43.2
51.67	5.0E+00	0.00	196.8	0.52	9	266.1	0.0	266.1	2.9	46	95.0	1.0	-0.19	0.0	43.4
52.66	5.0E+00	0.00	214.6	0.60	9	292.5	0.0	292.5	3.1	46	95.0	1.0	-0.21	0.0	47.7
53.64	5.0E+00	0.00	202.8	0.55	9	278.8	0.0	278.8	3.0	46	95.0	1.0	-0.20	0.0	45.5
54.63	5.0E+00	0.00	201.6	0.55	9	279.5	0.0	279.5	3.0	46	95.0	1.0	-0.20	0.0	45.6
55.61	5.0E-02	0.00	196.5	0.90	9	274.7	3.1	277.8	5.4	46	95.0	1.0	-0.24	0.4	54.1
56.59	5.0E-02	0.00	197.4	1.34	9	278.0	22.7	300.7	7.8	46	95.0	1.0	-0.28	2.7	57.1

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4540
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-5
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 12:48
CPT File: 031C05.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.35 (ft): 11.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	20.3	0.41	2.03	30.9	6	114.6	0.03	0.03	0.00	2.00	7.8	15.6	1.62	0.00
1.48	16.7	0.44	2.62	9.4	5	114.6	0.08	0.08	0.00	2.00	8.0	16.0	1.33	0.09
2.46	9.8	0.26	2.67	26.3	4	114.6	0.14	0.14	0.00	2.00	6.3	12.6	0.78	0.08
3.44	11.7	0.26	2.21	40.0	5	114.6	0.20	0.20	0.00	2.00	5.6	11.2	0.92	0.09
4.43	21.2	0.15	0.72	41.5	6	114.6	0.25	0.25	0.00	1.99	8.1	16.1	1.68	0.09
5.41	43.7	0.14	0.32	10.8	8	120.9	0.31	0.31	0.00	1.79	10.5	18.8	UnDef	0.12
6.40	11.8	0.20	1.68	2.8	5	114.6	0.37	0.37	0.00	1.64	5.7	9.3	0.91	0.09
7.30	19.2	0.31	1.63	5.8	6	114.6	0.42	0.42	0.00	1.54	7.4	11.4	1.51	0.10
8.20	23.2	0.50	2.17	13.5	6	114.6	0.47	0.47	0.00	1.45	8.9	12.9	1.82	0.12
9.19	18.7	0.41	2.20	16.6	5	114.6	0.53	0.53	0.00	1.37	8.9	12.3	1.45	0.12
10.17	33.9	0.70	2.06	22.0	6	114.6	0.59	0.59	0.00	1.31	13.0	17.0	2.67	0.13
11.15	49.2	0.40	0.81	30.3	7	117.8	0.64	0.64	0.00	1.25	15.7	19.7	UnDef	0.12
12.14	143.0	0.36	0.25	43.1	9	124.1	0.70	0.67	0.04	1.22	27.4	33.5	UnDef	0.00
13.21	154.4	0.26	0.17	40.5	9	124.1	0.77	0.70	0.07	1.20	29.6	35.4	UnDef	0.00
14.27	139.3	0.15	0.11	31.8	9	124.1	0.83	0.73	0.10	1.17	26.7	31.2	UnDef	0.46
15.26	96.6	0.31	0.33	29.3	9	124.1	0.90	0.76	0.13	1.14	18.5	21.2	UnDef	0.20
16.24	49.0	0.44	0.90	14.7	7	117.8	0.96	0.79	0.16	1.12	15.6	17.6	UnDef	0.12
17.22	30.4	0.36	1.19	20.2	7	117.8	1.01	0.82	0.19	1.11	9.7	10.7	UnDef	0.10
18.21	41.5	0.42	1.00	26.8	7	117.8	1.07	0.85	0.23	1.09	13.3	14.4	UnDef	0.11
19.19	53.8	0.49	0.92	37.1	7	117.8	1.13	0.87	0.26	1.07	17.2	18.4	UnDef	0.12
20.18	119.2	0.56	0.47	57.4	9	124.1	1.19	0.90	0.29	1.05	22.8	24.0	UnDef	0.25
21.16	160.6	0.26	0.16	55.5	9	124.1	1.25	0.93	0.32	1.04	30.8	31.8	UnDef	0.00
22.15	129.9	0.37	0.29	38.2	9	124.1	1.31	0.96	0.35	1.02	24.9	25.4	UnDef	0.28
23.13	23.5	0.44	1.87	29.4	6	114.6	1.37	0.99	0.38	1.00	9.0	9.1	1.77	0.22
24.11	35.4	0.55	1.54	81.2	6	114.6	1.43	1.02	0.41	0.99	13.5	13.4	2.72	0.13
25.10	135.7	0.77	0.57	68.1	9	124.1	1.48	1.04	0.44	0.98	26.0	25.4	UnDef	0.30
26.08	150.4	0.83	0.55	53.0	9	124.1	1.55	1.08	0.47	0.96	28.8	27.8	UnDef	0.35
27.07	140.9	0.89	0.63	56.9	9	124.1	1.61	1.11	0.50	0.95	27.0	25.7	UnDef	0.31
28.05	270.5	0.71	0.26	81.5	10	127.3	1.67	1.14	0.53	0.94	43.2	40.5	UnDef	0.00
29.04	318.3	1.28	0.40	58.2	10	127.3	1.73	1.17	0.56	0.93	50.8	47.0	UnDef	0.00
30.02	277.3	1.13	0.41	55.4	10	127.3	1.79	1.20	0.59	0.91	44.3	40.4	UnDef	0.00
31.00	341.7	2.63	0.77	69.2	9	124.1	1.86	1.23	0.62	0.90	65.4	59.0	UnDef	0.00
31.99	335.2	1.77	0.53	60.0	10	127.3	1.92	1.26	0.66	0.89	53.5	47.6	UnDef	0.00
32.97	372.6	1.89	0.51	77.6	10	127.3	1.98	1.29	0.69	0.88	59.5	52.3	UnDef	0.00
33.96	303.8	0.87	0.29	79.9	10	127.3	2.04	1.33	0.72	0.87	48.5	42.1	UnDef	0.00
34.94	160.0	1.31	0.82	45.6	9	124.1	2.11	1.36	0.75	0.86	30.6	26.3	UnDef	0.38
35.92	161.3	1.77	1.10	45.6	8	120.9	2.17	1.39	0.78	0.85	38.6	32.8	UnDef	0.43
36.91	43.5	0.93	2.14	11.5	6	114.6	2.22	1.41	0.81	0.84	16.7	14.0	3.30	0.33
37.89	77.2	0.94	1.22	22.8	8	120.9	2.28	1.44	0.84	0.83	18.5	15.4	UnDef	0.17
38.88	318.2	1.83	0.57	52.6	10	127.3	2.34	1.47	0.87	0.82	50.8	41.9	UnDef	0.00
39.86	150.0	1.22	0.81	19.3	9	124.1	2.40	1.50	0.90	0.82	28.7	23.4	UnDef	0.32
40.85	105.0	1.37	1.30	48.8	8	120.9	2.46	1.53	0.93	0.81	25.1	20.3	UnDef	0.24

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	311.8	1.63	0.52	32.9	10	127.3	2.53	1.56	0.96	0.80	49.8	39.8	UnDef	0.00
42.81	348.2	2.35	0.68	30.7	9	124.1	2.59	1.59	0.99	0.79	66.7	52.8	UnDef	0.00
43.80	370.9	2.40	0.65	61.1	10	127.3	2.65	1.63	1.02	0.78	59.2	46.4	UnDef	0.00
44.78	434.6	3.28	0.75	73.1	10	127.3	2.71	1.66	1.05	0.78	69.4	53.9	UnDef	0.00
45.77	430.9	3.94	0.91	63.1	9	124.1	2.77	1.69	1.09	0.77	82.5	63.5	UnDef	0.00
46.75	380.9	3.21	0.84	68.8	9	124.1	2.84	1.72	1.12	0.76	73.0	55.7	UnDef	0.00
47.74	364.2	2.51	0.69	81.1	9	124.1	2.90	1.75	1.15	0.76	69.8	52.7	UnDef	0.00
48.72	453.4	4.32	0.95	98.2	9	124.1	2.96	1.78	1.18	0.75	86.8	65.1	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 01-0316-0548-4540
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-5
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 12:48
CPT File: 031C05.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.35 (ft): 11.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-05	0.05	720.1	2.03	12	38.9	UnDef	UnDef	0.0	50	72.1	10.0	-0.48	UnDef	UnDef
1.48	5.0E-06	0.02	197.0	2.64	7	32.1	9.4	41.4	13.5	UnDef	UnDef	10.0	UnDef	2.6	18.7
2.46	5.0E-07	0.08	68.8	2.71	7	18.8	18.1	37.0	23.4	UnDef	UnDef	10.0	UnDef	5.6	18.1
3.44	5.0E-06	0.11	58.3	2.25	7	22.4	21.2	43.7	23.2	UnDef	UnDef	10.0	UnDef	4.9	16.1
4.43	5.0E-05	0.06	82.5	0.73	9	40.6	6.6	47.2	10.2	42	41.8	10.0	-0.14	1.5	17.7
5.41	5.0E-03	0.01	139.3	0.32	9	76.7	0.0	76.7	3.0	44	59.7	1.0	-0.12	0.0	18.8
6.40	5.0E-06	0.01	30.9	1.74	7	19.0	33.6	52.6	28.9	UnDef	UnDef	6.0	UnDef	6.2	15.5
7.30	5.0E-05	0.01	44.7	1.66	7	29.0	27.7	56.8	23.3	38	31.8	6.0	-0.16	5.0	16.4
8.20	5.0E-05	0.02	48.1	2.21	7	33.0	39.7	72.7	25.4	38	35.5	6.0	-0.20	6.7	19.6
9.19	5.0E-06	0.03	34.3	2.26	7	25.1	53.3	78.4	30.5	UnDef	UnDef	6.0	UnDef	9.1	21.4
10.17	5.0E-05	0.02	56.9	2.10	7	43.4	39.0	82.4	22.7	40	43.3	10.0	-0.21	7.1	24.1
11.15	5.0E-04	0.02	76.2	0.83	9	60.3	13.2	73.5	11.7	40	52.8	1.0	-0.14	2.5	22.2
12.14	5.0E-02	0.01	213.3	0.25	10	171.3	0.0	171.3	0.4	46	82.7	1.0	-0.14	0.0	33.5
13.21	5.0E-02	0.01	219.6	0.17	10	180.7	0.0	180.7	0.0	46	84.2	1.0	-0.11	0.0	35.4
14.27	5.0E-02	0.01	188.9	0.11	10	159.2	0.0	159.2	0.0	44	80.6	1.0	-0.05	0.0	31.2
15.26	5.0E-02	0.01	125.5	0.33	9	108.3	0.0	108.3	3.7	44	69.6	1.0	-0.11	0.0	21.2
16.24	5.0E-04	0.01	60.7	0.92	9	53.9	18.8	72.6	14.7	40	49.5	1.0	-0.13	3.4	21.0
17.22	5.0E-04	0.01	35.8	1.23	7	32.8	31.4	64.2	23.3	38	35.3	1.0	-0.11	4.7	15.4
18.21	5.0E-04	0.02	47.8	1.03	7	44.2	23.8	68.0	18.1	38	43.9	1.0	-0.12	4.0	18.5
19.19	5.0E-04	0.02	60.3	0.94	9	56.3	20.1	76.4	14.8	40	50.8	1.0	-0.13	3.6	22.0
20.18	5.0E-02	0.01	130.8	0.47	9	122.8	0.0	122.8	4.7	44	73.2	1.0	-0.14	0.0	24.0
21.16	5.0E-02	0.01	170.8	0.16	9	162.7	0.0	162.7	0.5	44	81.2	1.0	-0.08	0.0	31.8
22.15	5.0E-02	0.01	133.5	0.29	9	129.6	0.0	129.6	2.9	44	74.7	1.0	-0.11	0.0	25.4
23.13	5.0E-05	0.02	22.4	1.98	6	23.1	92.5	115.7	35.7	34	30.0	6.0	-0.10	9.1	18.1
24.11	5.0E-05	0.06	33.4	1.61	7	34.3	48.6	83.0	27.0	36	36.6	6.0	-0.12	7.8	21.2
25.10	5.0E-02	0.01	128.4	0.57	9	129.9	2.4	132.2	5.7	44	74.8	1.0	-0.16	0.3	25.7
26.08	5.0E-02	0.01	138.5	0.56	9	141.9	0.3	142.2	5.1	44	77.3	1.0	-0.16	0.0	27.8
27.07	5.0E-02	0.01	126.0	0.64	9	131.2	4.8	136.0	6.3	44	75.1	1.0	-0.17	0.6	26.3
28.05	5.0E+00	0.01	236.6	0.27	10	248.3	0.0	248.3	0.1	46	93.3	1.0	-0.15	0.0	40.5
29.04	5.0E+00	0.00	271.0	0.40	10	288.2	0.0	288.2	0.7	46	95.0	1.0	-0.20	0.0	47.0
30.02	5.0E+00	0.00	229.5	0.41	9	247.7	0.0	247.7	1.4	46	93.3	1.0	-0.18	0.0	40.4
31.00	5.0E-02	0.00	276.0	0.77	9	301.3	0.0	301.3	3.0	46	95.0	1.0	-0.26	0.0	59.0
31.99	5.0E+00	0.00	264.0	0.53	9	291.9	0.0	291.9	1.7	46	95.0	1.0	-0.22	0.0	47.6
32.97	5.0E+00	0.00	286.3	0.51	9	320.5	0.0	320.5	1.2	46	95.0	1.0	-0.22	0.0	52.3
33.96	5.0E+00	0.01	227.5	0.29	10	258.1	0.0	258.1	0.4	46	94.5	1.0	-0.15	0.0	42.1
34.94	5.0E-02	0.00	116.3	0.83	9	134.3	13.0	147.3	8.3	42	75.7	1.0	-0.18	1.5	27.8
35.92	5.0E-03	0.00	114.7	1.11	9	134.0	22.0	156.0	10.3	42	75.7	1.0	-0.21	3.2	36.0
36.91	5.0E-05	-0.01	29.2	2.25	6	35.8	104.1	139.9	32.9	36	37.8	6.0	-0.14	12.2	26.2
37.89	5.0E-03	0.00	52.0	1.26	7	62.9	36.9	99.8	18.9	38	54.0	1.0	-0.15	4.6	20.0
38.88	5.0E+00	0.00	214.6	0.58	9	256.7	0.0	256.7	2.9	46	94.3	1.0	-0.21	0.0	41.9
39.86	5.0E-02	0.00	98.2	0.83	9	119.7	16.6	136.3	9.6	42	72.4	1.0	-0.17	1.9	25.4
40.85	5.0E-03	0.01	66.9	1.34	7	83.0	37.1	120.1	16.6	40	61.9	1.0	-0.18	4.9	25.2

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E+00	0.00	197.9	0.53	9	244.1	0.0	244.1	2.9	46	92.9	1.0	-0.19	0.0	39.8
42.81	5.0E-02	0.00	216.8	0.68	9	269.9	0.0	269.9	3.5	46	95.0	1.0	-0.22	0.0	52.8
43.80	5.0E+00	0.00	226.6	0.65	9	284.7	0.0	284.7	3.1	46	95.0	1.0	-0.22	0.0	46.4
44.78	5.0E+00	0.00	260.6	0.76	9	330.4	0.0	330.4	3.2	46	95.0	1.0	-0.25	0.0	53.9
45.77	5.0E-02	0.00	253.6	0.92	9	324.5	0.0	324.5	4.2	46	95.0	1.0	-0.27	0.0	63.5
46.75	5.0E-02	0.00	220.0	0.85	9	284.3	0.0	284.3	4.5	46	95.0	1.0	-0.25	0.0	55.7
47.74	5.0E-02	0.00	206.6	0.69	9	269.5	0.0	269.5	3.9	46	95.0	1.0	-0.22	0.0	52.7
48.72	5.0E-02	0.00	253.1	0.96	9	332.6	0.0	332.6	4.5	46	95.0	1.0	-0.27	0.0	65.1

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 01-0316-0548-4562
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-6
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 13:51
CPT File: 890C06.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.35 (ft): 11.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	28.8	0.67	2.35	0.1	6	114.6	0.03	0.03	0.00	2.00	11.0	22.1	2.30	0.00
1.48	33.2	0.80	2.40	0.1	6	114.6	0.08	0.08	0.00	2.00	12.7	25.4	2.65	0.00
2.46	34.4	0.81	2.34	0.6	6	114.6	0.14	0.14	0.00	2.00	13.2	26.3	2.74	0.12
3.44	43.8	1.08	2.46	1.2	6	114.6	0.20	0.20	0.00	2.00	16.8	33.6	3.49	0.18
4.43	25.3	0.77	3.03	1.5	5	114.6	0.25	0.25	0.00	1.99	12.1	24.1	2.01	0.14
5.41	16.2	0.59	3.67	1.5	4	114.6	0.31	0.31	0.00	1.80	10.3	18.5	1.27	0.16
6.40	9.5	0.31	3.29	1.5	4	114.6	0.37	0.37	0.00	1.65	6.1	10.1	0.73	0.12
7.30	30.6	1.05	3.44	1.5	5	114.6	0.42	0.42	0.00	1.55	14.7	22.7	2.41	0.19
8.20	122.1	1.46	1.20	2.2	8	120.9	0.47	0.47	0.00	1.46	29.2	42.6	UnDef	0.00
9.19	108.1	1.60	1.48	2.0	8	120.9	0.53	0.53	0.00	1.37	25.9	35.5	UnDef	0.46
10.17	133.9	1.46	1.09	2.1	8	120.9	0.59	0.59	0.00	1.30	32.1	41.7	UnDef	0.00
11.15	115.7	1.05	0.91	1.9	8	120.9	0.65	0.65	0.00	1.25	27.7	34.5	UnDef	0.36
12.14	132.7	0.29	0.22	1.6	9	124.1	0.71	0.67	0.04	1.22	25.4	30.9	UnDef	0.45
13.21	103.5	0.45	0.43	1.2	9	124.1	0.78	0.71	0.07	1.19	19.8	23.6	UnDef	0.24
14.27	122.1	0.24	0.19	1.0	9	124.1	0.84	0.74	0.10	1.16	23.4	27.2	UnDef	0.33
15.26	176.0	1.97	1.12	1.0	8	120.9	0.90	0.77	0.13	1.14	42.1	48.0	UnDef	0.00
16.24	168.1	0.61	0.36	1.3	9	124.1	0.96	0.80	0.16	1.12	32.2	36.0	UnDef	0.00
17.22	183.4	0.93	0.51	1.0	9	124.1	1.02	0.83	0.19	1.10	35.1	38.6	UnDef	0.00
18.21	81.4	0.98	1.21	0.9	8	120.9	1.08	0.86	0.23	1.08	19.5	21.0	UnDef	0.20
19.19	134.6	2.20	1.63	1.6	8	120.9	1.14	0.89	0.26	1.06	32.2	34.2	UnDef	0.00
20.18	311.9	1.68	0.54	2.4	10	127.3	1.21	0.92	0.29	1.04	49.8	51.9	UnDef	0.00
21.16	314.5	1.38	0.44	2.6	10	127.3	1.27	0.95	0.32	1.03	50.2	51.5	UnDef	0.00
22.15	248.9	1.14	0.46	2.4	10	127.3	1.33	0.98	0.35	1.01	39.7	40.1	UnDef	0.00
23.13	146.0	0.98	0.67	2.3	9	124.1	1.39	1.01	0.38	0.99	28.0	27.8	UnDef	0.36
24.11	99.1	0.81	0.82	2.2	8	120.9	1.45	1.04	0.41	0.98	23.7	23.2	UnDef	0.20
25.10	149.2	1.61	1.08	2.4	8	120.9	1.51	1.07	0.44	0.97	35.7	34.5	UnDef	0.44
26.08	284.0	1.25	0.44	3.0	10	127.3	1.57	1.10	0.47	0.95	45.3	43.2	UnDef	0.00
27.07	186.6	0.84	0.45	3.1	9	124.1	1.64	1.13	0.50	0.94	35.7	33.6	UnDef	0.00
28.05	111.3	1.11	1.00	3.2	8	120.9	1.70	1.16	0.53	0.93	26.6	24.7	UnDef	0.25
29.04	259.8	1.02	0.39	3.9	10	127.3	1.76	1.19	0.56	0.92	41.5	38.0	UnDef	0.00
30.02	280.2	1.12	0.40	4.3	10	127.3	1.82	1.23	0.59	0.90	44.7	40.4	UnDef	0.00
31.00	251.8	0.79	0.31	4.4	10	127.3	1.88	1.26	0.62	0.89	40.2	35.8	UnDef	0.00
31.99	70.0	0.98	1.40	4.5	7	117.8	1.94	1.29	0.66	0.88	22.3	19.7	UnDef	0.17
32.97	29.0	0.90	3.10	5.3	5	114.6	2.00	1.31	0.69	0.87	13.9	12.1	2.16	0.26
33.96	115.1	2.09	1.82	5.7	7	117.8	2.06	1.34	0.72	0.86	36.7	31.7	UnDef	0.36
34.94	218.1	4.63	2.12	6.2	7	117.8	2.11	1.37	0.75	0.86	69.6	59.6	UnDef	0.00
35.92	170.7	5.39	3.16	6.6	6	114.6	2.17	1.39	0.78	0.85	65.4	55.4	13.48	0.00
36.91	98.8	1.61	1.63	6.6	7	117.8	2.23	1.42	0.81	0.84	31.5	26.5	UnDef	0.27
37.89	13.3	0.57	4.31	11.5	3	111.4	2.29	1.45	0.84	0.83	12.8	10.6	0.88	0.00
38.88	207.8	0.95	0.46	13.6	9	124.1	2.34	1.47	0.87	0.82	39.8	32.8	UnDef	0.00
39.86	308.3	2.43	0.79	12.7	9	124.1	2.40	1.50	0.90	0.82	59.0	48.2	UnDef	0.00
40.85	270.7	3.92	1.45	12.4	8	120.9	2.46	1.53	0.93	0.81	64.8	52.3	UnDef	0.00

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	342.8	2.82	0.82	13.8	9	124.1	2.52	1.56	0.96	0.80	65.7	52.5	UnDef	0.00
42.81	273.2	2.84	1.04	14.4	9	124.1	2.59	1.59	0.99	0.79	52.3	41.5	UnDef	0.00
43.80	347.0	2.37	0.68	14.7	9	124.1	2.65	1.62	1.02	0.79	66.5	52.2	UnDef	0.00
44.78	222.6	2.35	1.06	14.6	9	124.1	2.71	1.65	1.05	0.78	42.6	33.2	UnDef	0.00
45.77	193.3	2.26	1.17	16.0	8	120.9	2.77	1.68	1.09	0.77	46.3	35.7	UnDef	0.00
46.75	277.5	1.81	0.65	16.3	9	124.1	2.83	1.71	1.12	0.76	53.1	40.6	UnDef	0.00
47.74	175.9	2.42	1.38	17.1	8	120.9	2.89	1.74	1.15	0.76	42.1	31.9	UnDef	0.00
48.72	429.2	5.16	1.20	18.6	9	124.1	2.95	1.77	1.18	0.75	82.2	61.8	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. '2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4562
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-6
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 13:51
CPT File: 890C06.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.35 (ft): 11.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-05	0.00	1000.0	2.35	12	55.1	UnDef	UnDef	0.0	50	82.1	10.0	-0.55	UnDef	UnDef
1.48	5.0E-05	0.00	391.0	2.41	12	63.5	UnDef	UnDef	0.0	48	70.4	10.0	-0.45	UnDef	UnDef
2.46	5.0E-05	0.00	242.7	2.35	9	65.8	12.6	78.4	11.0	46	64.1	10.0	-0.39	3.0	29.3
3.44	5.0E-05	0.00	221.1	2.47	9	84.0	19.5	103.5	12.1	46	66.3	10.0	-0.39	4.5	38.1
4.43	5.0E-06	0.00	98.8	3.06	7	48.5	35.8	84.3	20.9	UnDef	UnDef	10.0	UnDef	8.7	32.8
5.41	5.0E-07	0.00	51.1	3.74	6	28.4	66.8	95.2	31.3	UnDef	UnDef	10.0	UnDef	14.5	33.0
6.40	5.0E-07	0.01	25.0	3.42	6	15.4	61.7	77.1	41.2	UnDef	UnDef	6.0	UnDef	10.1	20.1
7.30	5.0E-06	0.00	72.2	3.49	6	46.3	58.7	105.0	25.9	UnDef	UnDef	10.0	UnDef	12.2	34.8
8.20	5.0E-03	0.00	257.9	1.20	9	174.0	3.3	177.2	5.7	46	83.1	1.0	-0.30	0.5	43.1
9.19	5.0E-03	0.00	202.7	1.49	9	145.2	14.7	159.9	8.4	46	78.0	1.0	-0.30	2.2	37.7
10.17	5.0E-03	0.00	225.7	1.10	9	170.5	3.7	174.2	5.8	46	82.6	1.0	-0.27	0.6	42.3
11.15	5.0E-03	0.00	178.3	0.91	9	141.0	4.0	145.0	6.0	44	77.1	1.0	-0.23	0.6	35.1
12.14	5.0E-02	0.00	195.6	0.22	10	158.0	0.0	158.0	0.4	44	80.4	1.0	-0.12	0.0	30.9
13.21	5.0E-02	0.00	145.2	0.43	9	120.5	0.0	120.5	3.8	44	72.6	1.0	-0.15	0.0	23.6
14.27	5.0E-02	0.00	163.8	0.20	9	138.9	0.0	138.9	1.0	44	76.7	1.0	-0.09	0.0	27.2
15.26	5.0E-03	0.00	227.3	1.13	9	196.2	5.1	201.3	5.9	46	86.6	1.0	-0.28	0.8	48.8
16.24	5.0E-02	0.00	208.9	0.37	9	183.9	0.0	183.9	1.4	46	84.7	1.0	-0.17	0.0	36.0
17.22	5.0E-02	0.00	219.7	0.51	9	197.0	0.0	197.0	2.3	46	86.7	1.0	-0.20	0.0	38.6
18.21	5.0E-03	0.00	93.4	1.22	9	85.9	22.1	108.0	12.7	42	62.9	1.0	-0.20	3.1	24.1
19.19	5.0E-03	0.00	150.2	1.64	9	139.8	27.7	167.4	11.2	44	76.9	1.0	-0.28	3.9	38.1
20.18	5.0E+00	0.00	338.1	0.54	10	318.4	0.0	318.4	0.8	48	95.0	1.0	-0.24	0.0	51.9
21.16	5.0E+00	0.00	329.4	0.44	10	315.6	0.0	315.6	0.3	48	95.0	1.0	-0.22	0.0	51.5
22.15	5.0E+00	0.00	252.0	0.46	9	245.8	0.0	245.8	1.3	46	93.0	1.0	-0.20	0.0	40.1
23.13	5.0E-02	0.00	142.7	0.68	9	141.9	3.2	145.1	5.8	44	77.3	1.0	-0.19	0.4	28.2
24.11	5.0E-03	0.00	93.6	0.83	9	94.9	14.5	109.5	10.0	42	65.8	1.0	-0.16	2.1	25.3
25.10	5.0E-03	0.00	137.8	1.09	9	141.0	16.0	157.0	8.8	44	77.1	1.0	-0.23	2.3	36.8
26.08	5.0E+00	0.00	256.2	0.44	9	264.7	0.0	264.7	1.2	46	95.0	1.0	-0.20	0.0	43.2
27.07	5.0E-02	0.00	163.1	0.45	9	171.5	0.0	171.5	3.3	44	82.7	1.0	-0.16	0.0	33.6
28.05	5.0E-03	0.00	94.2	1.02	9	101.0	20.2	121.2	11.3	42	67.6	1.0	-0.18	2.9	27.6
29.04	5.0E+00	0.00	216.2	0.40	9	232.7	0.0	232.7	1.5	46	91.5	1.0	-0.18	0.0	38.0
30.02	5.0E+00	0.00	227.2	0.40	9	247.7	0.0	247.7	1.3	46	93.3	1.0	-0.18	0.0	40.4
31.00	5.0E+00	0.00	198.7	0.32	9	219.7	0.0	219.7	1.2	46	89.8	1.0	-0.15	0.0	35.8
31.99	5.0E-04	-0.01	52.9	1.44	7	60.4	39.6	99.9	19.8	40	52.8	1.0	-0.16	6.5	26.2
32.97	5.0E-06	-0.02	20.6	3.33	6	24.8	99.1	123.9	44.5	UnDef	UnDef	6.0	UnDef	12.1	24.2
33.96	5.0E-04	0.00	84.3	1.85	7	97.3	46.8	144.0	17.2	42	66.5	1.0	-0.24	8.1	39.8
34.94	5.0E-04	0.00	158.0	2.15	7	182.5	50.4	233.0	13.1	44	84.5	1.0	-0.33	9.3	68.9
35.92	5.0E-05	0.00	121.0	3.20	7	141.5	88.9	230.5	19.5	42	77.2	10.0	-0.38	17.6	73.0
36.91	5.0E-04	-0.01	68.0	1.67	7	81.1	45.3	126.4	18.4	40	61.3	1.0	-0.20	7.6	34.1
37.89	5.0E-08	-0.04	7.7	5.20	1	10.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
38.88	5.0E-02	0.00	139.5	0.46	9	167.6	0.0	167.6	4.2	44	82.1	1.0	-0.15	0.0	32.8
39.86	5.0E-02	0.00	203.5	0.80	9	246.1	0.0	246.1	4.6	46	93.1	1.0	-0.23	0.0	48.2
40.85	5.0E-03	0.00	175.0	1.46	9	213.9	27.2	241.2	9.2	44	89.1	1.0	-0.28	4.0	56.3

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Run No: 01-0316-0548-4562
CPT File: 890C06.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	0.00	217.8	0.83	9	268.4	0.0	268.4	4.4	46	95.0	1.0	-0.24	0.0	52.5
42.81	5.0E-02	0.00	169.9	1.05	9	211.9	13.0	224.9	7.2	44	88.8	1.0	-0.24	1.6	43.0
43.80	5.0E-02	0.00	212.2	0.69	9	266.6	0.0	266.6	3.7	46	95.0	1.0	-0.22	0.0	52.2
44.78	5.0E-02	0.00	133.0	1.07	9	169.4	19.8	189.2	8.9	44	82.4	1.0	-0.22	2.3	35.5
45.77	5.0E-03	0.00	113.2	1.19	9	145.8	27.0	172.8	10.8	42	78.1	1.0	-0.22	3.9	39.5
46.75	5.0E-02	0.00	160.4	0.66	9	207.5	0.0	207.5	5.0	44	88.2	1.0	-0.19	0.0	40.6
47.74	5.0E-03	0.00	99.3	1.40	9	130.4	36.5	166.9	13.2	42	74.9	1.0	-0.22	5.1	37.0
48.72	5.0E-02	0.00	240.6	1.21	9	315.6	9.3	324.9	6.1	46	95.0	1.0	-0.29	1.1	62.9

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4584
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-7
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 13:08
CPT File: 890C07.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 1.83 (ft): 6.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	53.2	0.71	1.33	0.3	7	117.8	0.03	0.03	0.00	2.00	17.0	34.0	UnDef	0.18
1.48	62.5	0.87	1.39	1.2	7	117.8	0.09	0.09	0.00	2.00	19.9	39.9	UnDef	0.24
2.46	54.3	1.47	2.71	1.6	6	114.6	0.14	0.14	0.00	2.00	20.8	41.6	4.33	0.00
3.44	92.0	2.62	2.84	2.3	6	114.6	0.20	0.20	0.00	2.00	35.3	70.5	7.35	0.00
4.43	147.1	2.90	1.97	3.1	7	117.8	0.26	0.26	0.00	1.97	47.0	92.5	UnDef	0.00
5.41	296.5	6.63	2.24	2.8	8	120.9	0.32	0.32	0.00	1.78	71.0	126.2	UnDef	0.00
6.40	200.7	4.16	2.07	1.6	7	117.8	0.38	0.36	0.01	1.66	64.1	106.4	UnDef	0.00
7.30	88.7	0.54	0.60	-0.3	8	120.9	0.43	0.39	0.04	1.60	21.2	34.1	UnDef	0.33
8.20	87.6	0.31	0.36	0.0	8	120.9	0.48	0.41	0.07	1.55	21.0	32.6	UnDef	0.30
9.19	110.1	0.26	0.23	0.5	9	124.1	0.54	0.44	0.10	1.50	21.1	31.6	UnDef	0.00
10.17	99.6	0.24	0.24	0.6	9	124.1	0.60	0.47	0.13	1.45	19.1	27.7	UnDef	0.34
11.15	84.0	0.19	0.22	0.6	8	120.9	0.67	0.50	0.16	1.41	20.1	28.3	UnDef	0.22
12.14	70.1	0.18	0.25	0.9	8	120.9	0.72	0.53	0.19	1.37	16.8	23.0	UnDef	0.16
13.21	72.9	0.38	0.52	1.4	8	120.9	0.79	0.56	0.22	1.33	17.4	23.2	UnDef	0.16
14.27	84.3	0.40	0.48	1.6	8	120.9	0.85	0.60	0.26	1.30	20.2	26.2	UnDef	0.19
15.26	130.3	1.01	0.77	0.8	9	124.1	0.91	0.62	0.29	1.27	25.0	31.6	UnDef	0.00
16.24	165.8	1.02	0.62	2.1	9	124.1	0.98	0.66	0.32	1.24	31.8	39.2	UnDef	0.00
17.22	91.9	0.80	0.87	2.2	8	120.9	1.04	0.68	0.35	1.21	22.0	26.6	UnDef	0.23
18.21	223.3	1.87	0.84	3.6	9	124.1	1.10	0.71	0.38	1.18	42.8	50.6	UnDef	0.00
19.19	296.4	3.33	1.12	4.3	9	124.1	1.16	0.74	0.41	1.16	56.8	65.8	UnDef	0.00
20.18	353.1	3.68	1.04	4.0	9	124.1	1.22	0.78	0.44	1.14	67.6	76.8	UnDef	0.00
21.16	346.3	3.00	0.87	4.8	9	124.1	1.28	0.81	0.47	1.11	66.3	73.9	UnDef	0.00
22.15	276.7	1.06	0.38	4.9	10	127.3	1.34	0.84	0.50	1.09	44.2	48.3	UnDef	0.00
23.13	270.7	0.84	0.31	4.4	10	127.3	1.40	0.87	0.53	1.07	43.2	46.4	UnDef	0.00
24.11	251.1	0.94	0.38	4.4	10	127.3	1.47	0.90	0.57	1.05	40.1	42.2	UnDef	0.00
25.10	185.3	0.78	0.42	4.3	9	124.1	1.53	0.93	0.60	1.04	35.5	36.8	UnDef	0.00
26.08	67.9	1.59	2.34	4.2	6	114.6	1.59	0.96	0.63	1.02	26.0	26.5	5.30	0.26
27.07	139.5	2.62	1.88	6.4	7	117.8	1.64	0.99	0.66	1.01	44.5	44.8	UnDef	0.00
28.05	87.5	1.57	1.80	16.7	7	117.8	1.70	1.01	0.69	0.99	27.9	27.8	UnDef	0.26
29.04	83.5	1.40	1.67	16.0	7	117.8	1.76	1.04	0.72	0.98	26.6	26.1	UnDef	0.23
30.02	66.1	2.01	3.04	21.1	6	114.6	1.82	1.07	0.75	0.97	25.3	24.5	5.15	0.39
31.00	145.1	2.84	1.96	13.1	7	117.8	1.87	1.09	0.78	0.96	46.3	44.3	UnDef	0.00
31.99	39.1	1.06	2.73	12.5	6	114.6	1.93	1.12	0.81	0.95	15.0	14.1	2.97	0.46
32.97	224.8	2.02	0.90	16.0	9	124.1	1.99	1.15	0.84	0.93	43.1	40.2	UnDef	0.00
33.96	199.1	3.02	1.52	16.3	8	120.9	2.05	1.18	0.87	0.92	47.7	43.9	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4584
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-7
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 13:08
CPT File: 890C07.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 1.83 (ft): 6.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-04	0.00	1000.0	1.33	9	101.9	0.0	101.9	1.8	50	95.0	1.0	-0.44	0.0	34.0
1.48	5.0E-04	0.00	717.6	1.40	9	119.6	0.0	119.6	2.8	50	88.2	1.0	-0.42	0.0	39.9
2.46	5.0E-05	0.00	375.7	2.72	12	104.0	UnDef	UnDef	0.0	48	76.9	10.0	-0.47	UnDef	UnDef
3.44	5.0E-05	0.00	458.0	2.85	12	176.3	UnDef	UnDef	0.0	48	87.3	10.0	-0.51	UnDef	UnDef
4.43	5.0E-04	0.00	570.1	1.97	12	281.8	UnDef	UnDef	0.0	50	95.0	1.0	-0.45	UnDef	UnDef
5.41	5.0E-03	0.00	936.0	2.24	12	515.8	UnDef	UnDef	0.0	50	95.0	1.0	-0.53	UnDef	UnDef
6.40	5.0E-04	0.00	552.2	2.08	12	326.1	UnDef	UnDef	0.0	50	95.0	1.0	-0.46	UnDef	UnDef
7.30	5.0E-03	0.00	227.2	0.61	9	139.2	0.0	139.2	2.8	46	76.8	1.0	-0.22	0.0	34.1
8.20	5.0E-03	0.00	210.0	0.36	9	133.1	0.0	133.1	1.4	46	75.5	1.0	-0.17	0.0	32.6
9.19	5.0E-02	0.00	246.5	0.23	10	161.6	0.0	161.6	0.0	46	81.0	1.0	-0.14	0.0	31.6
10.17	5.0E-02	0.00	208.5	0.24	10	141.4	0.0	141.4	0.4	46	77.2	1.0	-0.13	0.0	27.7
11.15	5.0E-03	0.00	165.2	0.23	9	115.7	0.0	115.7	1.3	44	71.5	1.0	-0.11	0.0	28.3
12.14	5.0E-03	0.00	130.2	0.26	9	94.0	0.0	94.0	2.8	44	65.5	1.0	-0.10	0.0	23.0
13.21	5.0E-03	0.00	127.7	0.52	9	94.9	0.8	95.7	5.3	44	65.8	1.0	-0.15	0.1	23.3
14.27	5.0E-03	0.00	140.1	0.48	9	106.9	0.0	106.9	4.4	44	69.2	1.0	-0.15	0.0	26.2
15.26	5.0E-02	0.00	207.0	0.78	9	161.3	0.0	161.3	4.4	46	81.0	1.0	-0.23	0.0	31.6
16.24	5.0E-02	0.00	251.5	0.62	9	200.4	0.0	200.4	2.5	46	87.2	1.0	-0.23	0.0	39.2
17.22	5.0E-03	0.00	132.6	0.88	9	108.6	8.5	117.1	7.7	44	69.6	1.0	-0.20	1.3	27.8
18.21	5.0E-02	0.00	311.1	0.84	9	258.6	0.0	258.6	2.9	46	94.5	1.0	-0.28	0.0	50.6
19.19	5.0E-02	0.00	396.4	1.13	9	336.1	0.0	336.1	3.4	48	95.0	1.0	-0.33	0.0	65.8
20.18	5.0E-02	0.00	454.0	1.05	9	392.5	0.0	392.5	2.6	48	95.0	1.0	-0.34	0.0	76.8
21.16	5.0E-02	0.00	428.4	0.87	9	377.6	0.0	377.6	1.9	48	95.0	1.0	-0.31	0.0	73.9
22.15	5.0E+00	0.00	329.1	0.39	10	296.0	0.0	296.0	0.0	48	95.0	1.0	-0.21	0.0	48.3
23.13	5.0E+00	0.00	310.1	0.31	10	284.3	0.0	284.3	0.0	46	95.0	1.0	-0.19	0.0	46.4
24.11	5.0E+00	0.00	277.3	0.38	10	259.0	0.0	259.0	0.4	46	94.6	1.0	-0.19	0.0	42.2
25.10	5.0E-02	0.00	197.3	0.42	9	187.9	0.0	187.9	2.1	46	85.4	1.0	-0.17	0.0	36.8
26.08	5.0E-05	-0.01	69.1	2.39	7	67.8	55.9	123.7	21.9	40	56.1	10.0	-0.25	10.5	37.0
27.07	5.0E-04	0.00	139.8	1.90	9	137.4	37.0	174.5	12.9	44	76.4	1.0	-0.29	6.9	51.7
28.05	5.0E-04	0.00	84.7	1.83	7	85.1	40.3	125.4	17.0	42	62.6	1.0	-0.24	7.0	34.7
29.04	5.0E-04	0.00	78.5	1.71	7	80.1	38.4	118.4	17.1	42	60.9	1.0	-0.22	6.6	32.8
30.02	5.0E-05	0.00	60.3	3.13	7	62.7	86.7	149.3	26.7	40	53.9	10.0	-0.28	14.0	38.5
31.00	5.0E-04	0.00	131.0	1.98	7	135.8	42.0	177.8	13.9	44	76.0	1.0	-0.29	7.7	52.0
31.99	5.0E-05	-0.01	33.1	2.87	6	36.1	123.9	160.0	34.0	36	38.1	6.0	-0.19	13.3	27.4
32.97	5.0E-02	0.00	194.1	0.91	9	205.3	3.1	208.4	5.6	44	87.9	1.0	-0.24	0.4	40.6
33.96	5.0E-03	0.00	167.4	1.53	9	179.6	26.9	206.5	9.9	44	84.1	1.0	-0.28	3.9	47.8

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 01-0316-0548-4606
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-8
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 16:42
CPT File: 031C08.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.59 (ft): 8.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
0.49	11.6	0.63	5.40	0.5	3	111.4	0.03	0.03	0.00	2.00	11.1	22.3	0.93	0.00
1.48	7.9	0.32	4.05	-1.0	3	111.4	0.08	0.08	0.00	2.00	7.6	15.1	0.62	0.00
2.46	8.5	0.36	4.28	-0.7	3	111.4	0.14	0.14	0.00	2.00	8.1	16.3	0.67	0.09
3.44	27.8	0.38	1.35	-0.6	6	114.6	0.19	0.19	0.00	2.00	10.6	21.3	2.21	0.10
4.43	71.9	0.35	0.48	-0.1	8	120.9	0.25	0.25	0.00	2.00	17.2	34.4	UnDef	0.32
5.41	46.4	0.29	0.62	1.8	7	117.8	0.31	0.31	0.00	1.80	14.8	26.6	UnDef	0.13
6.40	8.1	0.23	2.88	2.5	4	114.6	0.37	0.37	0.00	1.65	5.1	8.5	0.61	0.11
7.30	6.0	0.18	3.09	5.5	3	111.4	0.42	0.42	0.00	1.55	5.7	8.8	0.44	0.09
8.20	13.0	0.39	2.98	6.6	4	114.6	0.47	0.47	0.00	1.46	8.3	12.1	1.00	0.15
9.19	18.1	0.52	2.87	6.3	5	114.6	0.52	0.50	0.02	1.41	8.7	12.2	1.40	0.19
10.17	28.4	0.43	1.52	6.2	6	114.6	0.58	0.53	0.05	1.37	10.9	14.9	2.22	0.11
11.15	15.2	0.50	3.31	6.2	4	114.6	0.64	0.55	0.08	1.34	9.7	13.0	1.16	0.17
12.14	33.7	0.43	1.26	6.1	7	117.8	0.69	0.58	0.11	1.31	10.8	14.1	UnDef	0.11
13.21	33.3	0.49	1.48	6.1	6	114.6	0.76	0.61	0.15	1.28	12.7	16.3	2.60	0.11
14.27	26.9	0.35	1.31	6.1	6	114.6	0.82	0.64	0.18	1.25	10.3	12.9	2.08	0.10
15.26	8.5	0.26	3.09	6.6	4	114.6	0.87	0.66	0.21	1.23	5.5	6.7	0.61	0.09
16.24	17.9	0.36	2.02	7.0	6	114.6	0.93	0.69	0.24	1.20	6.9	8.3	1.36	0.19
17.22	57.4	0.44	0.77	7.3	8	120.9	0.99	0.72	0.27	1.18	13.7	16.2	UnDef	0.13
18.21	149.5	0.84	0.56	8.5	9	124.1	1.05	0.75	0.30	1.16	28.6	33.2	UnDef	0.00
19.19	236.0	3.36	1.42	11.7	8	120.9	1.11	0.78	0.33	1.14	56.5	64.2	UnDef	0.00
20.18	269.6	2.56	0.95	16.9	9	124.1	1.17	0.80	0.36	1.11	51.6	57.6	UnDef	0.00
21.16	336.7	2.96	0.88	19.3	9	124.1	1.23	0.84	0.40	1.09	64.5	70.6	UnDef	0.00
22.15	374.2	3.10	0.83	27.1	9	124.1	1.29	0.87	0.43	1.07	71.7	77.0	UnDef	0.00
23.13	308.8	2.07	0.67	30.1	9	124.1	1.35	0.90	0.46	1.06	59.1	62.5	UnDef	0.00
24.11	253.9	1.81	0.71	31.6	9	124.1	1.41	0.93	0.49	1.04	48.6	50.5	UnDef	0.00
25.10	284.7	2.97	1.04	39.4	9	124.1	1.47	0.96	0.52	1.02	54.5	55.7	UnDef	0.00
26.08	260.6	2.10	0.81	42.4	9	124.1	1.54	0.99	0.55	1.01	49.9	50.2	UnDef	0.00
27.07	195.4	0.90	0.46	43.7	9	124.1	1.60	1.02	0.58	0.99	37.4	37.1	UnDef	0.00
28.05	60.5	0.96	1.59	57.6	7	117.8	1.66	1.05	0.61	0.98	19.3	18.9	UnDef	0.17
29.04	278.6	1.41	0.51	68.1	10	127.3	1.72	1.08	0.64	0.96	44.5	42.9	UnDef	0.00
30.02	256.4	1.18	0.46	66.3	10	127.3	1.78	1.11	0.67	0.95	40.9	38.9	UnDef	0.00
31.00	70.9	0.89	1.26	55.5	7	117.8	1.84	1.14	0.70	0.94	22.6	21.2	UnDef	0.16
31.99	72.1	1.19	1.65	49.1	7	117.8	1.90	1.16	0.73	0.93	23.0	21.3	UnDef	0.20
32.97	95.6	1.72	1.80	47.5	7	117.8	1.96	1.19	0.76	0.92	30.5	27.9	UnDef	0.28
33.96	61.9	1.02	1.66	45.9	7	117.8	2.01	1.22	0.79	0.91	19.8	17.9	UnDef	0.18
34.94	15.4	0.30	1.93	62.9	5	114.6	2.07	1.25	0.83	0.90	7.4	6.6	1.06	0.11
35.92	73.0	1.93	2.65	70.0	6	114.6	2.13	1.27	0.86	0.89	28.0	24.8	5.67	0.36
36.91	97.0	2.34	2.41	47.2	7	117.8	2.18	1.30	0.89	0.88	31.0	27.2	UnDef	0.39
37.89	21.6	0.71	3.28	49.7	5	114.6	2.24	1.32	0.92	0.87	10.4	9.0	1.55	0.15
38.88	25.7	0.84	3.27	57.0	5	114.6	2.30	1.35	0.95	0.86	12.3	10.6	1.87	0.20
39.86	56.1	1.55	2.76	57.4	6	114.6	2.35	1.38	0.98	0.85	21.5	18.3	4.30	0.00
40.85	266.2	2.69	1.01	58.1	9	124.1	2.41	1.40	1.01	0.84	51.0	43.0	UnDef	0.00

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	476.1	7.23	1.52	56.4	9	124.1	2.47	1.43	1.04	0.84	91.2	76.2	UnDef	0.00
42.81	261.8	4.78	1.83	59.2	8	120.9	2.53	1.46	1.07	0.83	62.7	51.8	UnDef	0.00
43.80	156.1	2.00	1.28	63.7	8	120.9	2.59	1.49	1.10	0.82	37.4	30.6	UnDef	0.43
44.78	209.4	1.99	0.95	67.4	9	124.1	2.65	1.52	1.13	0.81	40.1	32.5	UnDef	0.00
45.77	320.7	2.40	0.75	68.3	9	124.1	2.72	1.55	1.16	0.80	61.4	49.3	UnDef	0.00
46.75	295.8	1.79	0.60	68.1	9	124.1	2.78	1.58	1.19	0.80	56.7	45.1	UnDef	0.00
47.74	121.2	1.80	1.48	66.9	8	120.9	2.84	1.61	1.23	0.79	29.0	22.9	UnDef	0.31
48.72	263.7	1.62	0.62	69.8	9	124.1	2.90	1.64	1.26	0.78	50.5	39.4	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4606
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-8
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 16:42
CPT File: 031C08.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.59 (ft): 8.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-08	0.00	423.7	5.41	11	22.3	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
1.48	5.0E-08	0.00	94.9	4.09	11	15.1	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
2.46	5.0E-08	0.00	61.1	4.35	6	16.3	37.2	53.5	31.1	UnDef	UnDef	10.0	UnDef	12.5	28.8
3.44	5.0E-05	0.00	143.2	1.36	9	53.2	8.4	61.6	10.1	44	53.5	10.0	-0.25	2.0	23.3
4.43	5.0E-03	0.00	285.8	0.48	10	137.7	0.0	137.7	1.0	46	77.0	1.0	-0.22	0.0	34.4
5.41	5.0E-04	0.00	149.0	0.63	9	81.6	0.4	82.0	5.2	44	61.5	1.0	-0.18	0.1	26.7
6.40	5.0E-07	0.01	21.0	3.02	6	13.0	52.1	65.1	42.6	UnDef	UnDef	6.0	UnDef	8.5	17.0
7.30	5.0E-08	0.03	13.3	3.32	4	9.0	36.1	45.2	53.4	UnDef	UnDef	6.0	UnDef	8.8	17.7
8.20	5.0E-07	0.02	26.7	3.09	6	18.6	74.3	92.9	38.6	UnDef	UnDef	6.0	UnDef	12.1	24.2
9.19	5.0E-06	0.01	34.9	2.96	6	24.9	81.2	106.1	33.7	UnDef	UnDef	6.0	UnDef	11.2	23.4
10.17	5.0E-05	0.01	52.5	1.55	7	38.2	27.3	65.5	20.6	38	39.7	10.0	-0.17	5.3	20.2
11.15	5.0E-07	0.01	26.2	3.46	6	20.0	79.8	99.8	40.6	UnDef	UnDef	6.0	UnDef	13.0	26.0
12.14	5.0E-04	0.00	56.8	1.29	7	43.3	23.1	66.4	18.0	40	43.3	1.0	-0.16	3.9	18.0
13.21	5.0E-05	0.00	53.3	1.52	7	41.7	28.6	70.2	20.2	40	42.2	10.0	-0.17	5.6	21.9
14.27	5.0E-05	0.00	40.9	1.35	7	32.9	28.7	61.7	22.4	38	35.4	6.0	-0.13	5.3	18.2
15.26	5.0E-07	0.00	11.6	3.44	4	10.3	41.1	51.4	57.1	UnDef	UnDef	3.0	UnDef	6.7	13.4
16.24	5.0E-05	0.00	24.6	2.13	6	21.1	84.1	105.2	34.9	34	30.0	6.0	-0.12	8.3	16.5
17.22	5.0E-03	0.00	78.7	0.78	9	66.4	12.8	79.2	11.1	42	55.5	1.0	-0.14	1.8	18.1
18.21	5.0E-02	0.00	199.0	0.57	9	169.4	0.0	169.4	3.2	46	82.4	1.0	-0.20	0.0	33.2
19.19	5.0E-03	0.00	302.9	1.43	9	262.3	7.2	269.5	6.0	46	94.9	1.0	-0.33	1.1	65.3
20.18	5.0E-02	0.00	333.4	0.95	9	294.0	0.0	294.0	3.2	48	95.0	1.0	-0.30	0.0	57.6
21.16	5.0E-02	0.00	401.7	0.88	9	360.6	0.0	360.6	2.2	48	95.0	1.0	-0.31	0.0	70.6
22.15	5.0E-02	0.00	430.8	0.83	9	393.6	0.0	393.6	1.7	48	95.0	1.0	-0.31	0.0	77.0
23.13	5.0E-02	0.00	343.1	0.67	9	319.2	0.0	319.2	1.6	48	95.0	1.0	-0.26	0.0	62.5
24.11	5.0E-02	0.00	272.5	0.72	9	258.1	0.0	258.1	2.7	46	94.5	1.0	-0.25	0.0	50.5
25.10	5.0E-02	0.00	296.0	1.05	9	284.8	0.0	284.8	4.2	46	95.0	1.0	-0.29	0.0	55.7
26.08	5.0E-02	0.00	262.4	0.81	9	256.7	0.0	256.7	3.5	46	94.3	1.0	-0.26	0.0	50.2
27.07	5.0E-02	0.00	190.5	0.47	9	189.6	0.0	189.6	2.6	44	85.6	1.0	-0.18	0.0	37.1
28.05	5.0E-04	0.02	56.3	1.63	7	57.9	40.1	98.0	20.3	40	51.6	1.0	-0.18	6.5	25.4
29.04	5.0E+00	0.01	257.4	0.51	9	262.9	0.0	262.9	1.6	46	95.0	1.0	-0.21	0.0	42.9
30.02	5.0E+00	0.01	229.9	0.46	9	238.4	0.0	238.4	1.8	46	92.2	1.0	-0.19	0.0	38.9
31.00	5.0E-04	0.01	60.7	1.29	7	65.0	31.8	96.9	17.3	40	54.9	1.0	-0.16	5.5	26.7
31.99	5.0E-04	0.01	60.3	1.70	7	65.4	43.1	108.5	19.9	40	55.1	1.0	-0.19	7.1	28.4
32.97	5.0E-04	0.01	78.5	1.83	7	85.7	44.5	130.1	17.8	42	62.8	1.0	-0.23	7.6	35.5
33.96	5.0E-04	0.01	49.1	1.71	7	54.8	47.6	102.5	22.4	38	50.1	1.0	-0.17	7.3	25.2
34.94	5.0E-06	0.09	10.7	2.23	6	13.5	54.0	67.4	52.1	UnDef	UnDef	3.0	UnDef	6.6	13.2
35.92	5.0E-05	0.02	55.7	2.73	7	63.4	80.9	144.3	26.0	40	54.2	10.0	-0.24	13.4	38.2
36.91	5.0E-04	0.01	73.0	2.47	7	83.3	66.6	149.9	21.6	40	62.0	1.0	-0.26	10.5	37.6
37.89	5.0E-06	0.03	14.6	3.65	4	18.4	73.6	92.0	52.8	UnDef	UnDef	6.0	UnDef	9.0	18.0
38.88	5.0E-06	0.04	17.3	3.59	4	21.6	86.6	108.2	49.0	UnDef	UnDef	6.0	UnDef	10.6	21.2
39.86	5.0E-05	0.02	39.1	2.89	6	46.8	114.5	161.3	31.6	38	45.5	6.0	-0.21	14.6	33.0
40.85	5.0E-02	0.00	188.0	1.02	9	219.9	8.5	228.4	6.4	44	89.9	1.0	-0.25	1.0	44.1

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	0.00	330.4	1.53	9	389.2	11.0	400.2	6.0	48	95.0	1.0	-0.35	1.3	77.5
42.81	5.0E-03	0.00	177.2	1.84	9	211.8	40.1	252.0	11.0	44	88.8	1.0	-0.31	5.7	57.6
43.80	5.0E-03	0.01	102.9	1.31	9	125.0	30.5	155.5	12.3	42	73.7	1.0	-0.22	4.3	34.9
44.78	5.0E-02	0.00	135.9	0.96	9	166.1	15.0	181.1	8.1	44	81.8	1.0	-0.21	1.8	34.3
45.77	5.0E-02	0.00	204.9	0.75	9	252.0	0.0	252.0	4.3	46	93.8	1.0	-0.23	0.0	49.3
46.75	5.0E-02	0.00	185.2	0.61	9	230.2	0.0	230.2	3.8	44	91.2	1.0	-0.20	0.0	45.1
47.74	5.0E-03	0.01	73.4	1.52	7	93.4	42.6	136.0	16.7	40	65.3	1.0	-0.20	5.6	28.4
48.72	5.0E-02	0.00	158.9	0.62	9	201.5	0.0	201.5	4.8	44	87.4	1.0	-0.19	0.0	39.4

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 01-0316-0548-4633
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-9
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 10:23
CPT File: 890C09.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.81 (ft): 12.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	20.1	0.46	2.27	0.1	6	114.6	0.03	0.03	0.00	2.00	7.7	15.4	1.61	0.00
1.48	71.0	0.41	0.57	-1.6	8	120.9	0.09	0.09	0.00	2.00	17.0	34.0	UnDef	0.31
2.46	79.4	0.30	0.38	0.4	8	120.9	0.15	0.15	0.00	2.00	19.0	38.0	UnDef	0.41
3.44	30.2	0.17	0.56	0.6	7	117.8	0.20	0.20	0.00	2.00	9.6	19.3	UnDef	0.10
4.43	37.1	0.16	0.42	0.7	7	117.8	0.26	0.26	0.00	1.95	11.8	23.1	UnDef	0.11
5.41	33.4	0.14	0.41	0.6	7	117.8	0.32	0.32	0.00	1.77	10.7	18.9	UnDef	0.10
6.40	25.9	0.16	0.63	0.4	7	117.8	0.38	0.38	0.00	1.63	8.3	13.5	UnDef	0.09
7.30	13.9	0.24	1.71	0.2	5	114.6	0.43	0.43	0.00	1.52	6.6	10.1	1.08	0.10
8.20	42.5	0.20	0.47	-0.1	7	117.8	0.48	0.48	0.00	1.44	13.6	19.5	UnDef	0.10
9.19	47.0	0.31	0.65	-0.2	7	117.8	0.54	0.54	0.00	1.36	15.0	20.4	UnDef	0.11
10.17	27.3	0.43	1.56	-2.5	6	114.6	0.60	0.60	0.00	1.29	10.5	13.5	2.14	0.11
11.15	25.3	0.34	1.33	-3.8	6	114.6	0.65	0.65	0.00	1.24	9.7	12.0	1.97	0.10
12.14	122.4	0.42	0.34	-2.3	9	124.1	0.71	0.71	0.00	1.18	23.4	27.8	UnDef	0.35
13.21	120.3	0.28	0.23	-1.0	9	124.1	0.78	0.76	0.02	1.15	23.0	26.5	UnDef	0.31
14.27	99.2	0.14	0.14	-2.0	9	124.1	0.85	0.79	0.06	1.12	19.0	21.4	UnDef	0.20
15.26	19.8	0.26	1.33	-1.4	6	114.6	0.90	0.82	0.09	1.11	7.6	8.4	1.51	0.11
16.24	47.2	0.49	1.03	-0.5	7	117.8	0.96	0.84	0.12	1.09	15.1	16.4	UnDef	0.12
17.22	15.8	0.21	1.35	2.1	6	114.6	1.02	0.87	0.15	1.07	6.1	6.5	1.19	0.13
18.21	31.1	0.30	0.96	1.1	7	117.8	1.08	0.90	0.18	1.06	9.9	10.5	UnDef	0.10
19.19	140.0	0.40	0.28	0.8	9	124.1	1.14	0.93	0.21	1.04	26.8	27.9	UnDef	0.35
20.18	190.6	0.51	0.27	0.7	9	124.1	1.20	0.96	0.24	1.02	36.5	37.3	UnDef	0.00
21.16	225.0	0.56	0.25	-0.1	10	127.3	1.26	0.99	0.27	1.01	35.9	36.1	UnDef	0.00
22.15	243.8	0.79	0.32	-0.7	10	127.3	1.32	1.02	0.30	0.99	38.9	38.5	UnDef	0.00
23.13	287.8	1.94	0.68	-2.7	9	124.1	1.38	1.05	0.33	0.98	55.1	53.8	UnDef	0.00
24.11	269.4	1.65	0.61	-4.0	9	124.1	1.44	1.08	0.36	0.96	51.6	49.6	UnDef	0.00
25.10	315.5	2.84	0.90	-3.8	9	124.1	1.51	1.11	0.39	0.95	60.4	57.3	UnDef	0.00
26.08	246.9	1.07	0.43	-3.9	10	127.3	1.57	1.14	0.42	0.94	39.4	36.9	UnDef	0.00
27.07	280.1	1.88	0.67	-4.2	9	124.1	1.63	1.17	0.45	0.92	53.6	49.5	UnDef	0.00
28.05	307.8	1.66	0.54	-4.5	10	127.3	1.69	1.21	0.49	0.91	49.1	44.8	UnDef	0.00
29.04	262.3	1.30	0.50	-4.3	10	127.3	1.75	1.24	0.52	0.90	41.9	37.6	UnDef	0.00
30.02	299.0	1.80	0.60	-4.2	9	124.1	1.82	1.27	0.55	0.89	57.3	50.9	UnDef	0.00
31.00	177.6	0.84	0.48	-4.3	9	124.1	1.88	1.30	0.58	0.88	34.0	29.9	UnDef	0.41
31.99	236.1	1.59	0.67	-3.9	9	124.1	1.94	1.33	0.61	0.87	45.2	39.2	UnDef	0.00
32.97	384.4	2.23	0.58	-3.8	10	127.3	2.00	1.36	0.64	0.86	61.4	52.6	UnDef	0.00
33.96	373.1	1.50	0.40	-4.0	10	127.3	2.06	1.39	0.67	0.85	59.5	50.5	UnDef	0.00
34.94	402.0	1.82	0.45	-3.9	10	127.3	2.12	1.42	0.70	0.84	64.2	53.8	UnDef	0.00
35.92	431.3	2.11	0.49	-3.7	10	127.3	2.19	1.46	0.73	0.83	68.8	57.1	UnDef	0.00
36.91	418.0	3.01	0.72	-3.7	10	127.3	2.25	1.49	0.76	0.82	66.7	54.7	UnDef	0.00
37.89	350.2	3.93	1.12	-3.0	9	124.1	2.31	1.52	0.79	0.81	67.1	54.4	UnDef	0.00
38.88	91.8	2.15	2.34	-2.3	7	117.8	2.37	1.55	0.82	0.80	29.3	23.6	UnDef	0.38
39.86	153.4	1.18	0.77	-0.1	9	124.1	2.43	1.58	0.85	0.80	29.4	23.4	UnDef	0.31
40.85	183.9	2.88	1.56	1.3	8	120.9	2.49	1.61	0.89	0.79	44.0	34.7	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Run No: 01-0316-0548-4633
CPT File: 890C09.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	427.9	2.41	0.56	2.6	10	127.3	2.55	1.64	0.92	0.78	68.3	53.4	UnDef	0.00
42.81	370.3	2.60	0.70	3.5	9	124.1	2.61	1.67	0.95	0.77	70.9	54.9	UnDef	0.00
43.80	317.4	1.45	0.46	2.9	10	127.3	2.68	1.70	0.98	0.77	50.7	38.9	UnDef	0.00
44.78	310.0	1.50	0.48	2.8	10	127.3	2.74	1.73	1.01	0.76	49.5	37.6	UnDef	0.00
45.77	315.0	1.48	0.47	2.3	10	127.3	2.80	1.76	1.04	0.75	50.3	37.9	UnDef	0.00
46.75	390.4	3.06	0.78	2.1	9	124.1	2.86	1.79	1.07	0.75	74.8	55.8	UnDef	0.00
47.74	463.3	5.16	1.11	2.2	9	124.1	2.92	1.82	1.10	0.74	88.7	65.7	UnDef	0.00
48.72	312.3	3.80	1.22	2.2	9	124.1	2.99	1.85	1.13	0.73	59.8	43.9	UnDef	0.00
49.70	337.1	2.53	0.75	2.7	9	124.1	3.05	1.88	1.16	0.73	64.6	47.0	UnDef	0.00
50.69	488.1	3.42	0.70	8.3	10	127.3	3.11	1.92	1.19	0.72	77.9	56.3	UnDef	0.00
51.67	445.9	2.75	0.62	10.6	10	127.3	3.17	1.95	1.22	0.72	71.2	51.0	UnDef	0.00
52.66	384.5	2.84	0.74	10.9	9	124.1	3.23	1.98	1.25	0.71	73.6	52.4	UnDef	0.00
53.64	321.3	2.16	0.67	9.8	9	124.1	3.29	2.01	1.28	0.71	61.5	43.4	UnDef	0.00
54.63	404.5	3.25	0.80	10.1	9	124.1	3.36	2.04	1.32	0.70	77.5	54.3	UnDef	0.00
55.61	290.8	4.57	1.57	9.9	8	120.9	3.42	2.07	1.35	0.70	69.6	48.4	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4633
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-9
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 10:23
CPT File: 890C09.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.81 (ft): 12.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-05	0.00	713.6	2.28	12	38.6	UnDef	UnDef	0.0	50	71.9	10.0	-0.50	UnDef	UnDef
1.48	5.0E-03	0.00	822.9	0.57	10	135.9	0.0	135.9	0.0	50	92.0	1.0	-0.33	0.0	34.0
2.46	5.0E-03	0.00	544.4	0.38	10	152.2	0.0	152.2	0.0	50	87.7	1.0	-0.25	0.0	38.0
3.44	5.0E-04	0.00	146.6	0.56	9	57.8	0.0	57.8	4.8	44	55.1	1.0	-0.17	0.0	19.3
4.43	5.0E-04	0.00	140.4	0.43	9	70.9	0.0	70.9	3.9	44	57.4	1.0	-0.14	0.0	23.1
5.41	5.0E-04	0.00	103.4	0.42	9	57.8	0.0	57.8	5.0	42	51.6	1.0	-0.12	0.0	18.9
6.40	5.0E-04	0.00	67.5	0.63	9	41.2	8.2	49.4	11.2	40	41.9	1.0	-0.11	1.6	15.0
7.30	5.0E-06	0.00	31.2	1.76	7	20.7	36.6	57.3	28.9	UnDef	UnDef	6.0	UnDef	6.7	16.9
8.20	5.0E-04	0.00	86.9	0.48	9	59.8	0.0	59.8	5.0	42	52.5	1.0	-0.11	0.0	19.5
9.19	5.0E-04	0.00	85.8	0.66	9	62.5	8.2	70.7	9.3	42	53.8	1.0	-0.14	1.6	22.0
10.17	5.0E-05	0.00	44.7	1.59	7	34.6	31.6	66.2	22.9	38	36.8	6.0	-0.15	5.8	19.3
11.15	5.0E-05	0.00	37.6	1.37	7	30.6	30.4	60.9	23.7	38	33.3	6.0	-0.12	5.4	17.4
12.14	5.0E-02	0.00	170.6	0.35	9	141.8	0.0	141.8	2.2	44	77.3	1.0	-0.14	0.0	27.8
13.21	5.0E-02	0.00	157.8	0.23	9	135.3	0.0	135.3	1.5	44	75.9	1.0	-0.10	0.0	26.5
14.27	5.0E-02	0.00	124.4	0.14	9	109.1	0.0	109.1	1.8	42	69.8	1.0	-0.04	0.0	21.4
15.26	5.0E-05	-0.01	23.1	1.40	7	21.4	49.4	70.9	31.1	34	30.0	6.0	-0.08	6.5	14.9
16.24	5.0E-04	0.00	54.7	1.05	7	50.2	23.0	73.3	16.8	40	47.5	1.0	-0.13	4.0	20.4
17.22	5.0E-05	-0.01	17.0	1.44	6	16.6	66.4	83.0	36.8	32	30.0	6.0	-0.05	6.5	13.0
18.21	5.0E-04	0.00	33.4	1.00	7	32.1	27.8	59.9	22.4	36	34.7	1.0	-0.08	4.3	14.8
19.19	5.0E-02	0.00	149.9	0.29	9	142.4	0.0	142.4	2.3	44	77.4	1.0	-0.12	0.0	27.9
20.18	5.0E-02	0.00	197.9	0.27	9	190.6	0.0	190.6	0.9	46	85.8	1.0	-0.14	0.0	37.3
21.16	5.0E+00	0.00	226.4	0.25	10	221.5	0.0	221.5	0.2	46	90.1	1.0	-0.14	0.0	36.1
22.15	5.0E+00	0.00	237.7	0.32	10	236.2	0.0	236.2	0.6	46	91.9	1.0	-0.17	0.0	38.5
23.13	5.0E-02	0.00	272.5	0.68	9	274.7	0.0	274.7	2.5	46	95.0	1.0	-0.24	0.0	53.8
24.11	5.0E-02	0.00	247.8	0.61	9	253.5	0.0	253.5	2.5	46	93.9	1.0	-0.23	0.0	49.6
25.10	5.0E-02	0.00	282.4	0.91	9	292.8	0.0	292.8	3.7	46	95.0	1.0	-0.28	0.0	57.3
26.08	5.0E+00	0.00	214.6	0.44	9	226.0	0.0	226.0	1.9	46	90.6	1.0	-0.18	0.0	36.9
27.07	5.0E-02	0.00	237.2	0.67	9	253.0	0.0	253.0	3.1	46	93.9	1.0	-0.23	0.0	49.5
28.05	5.0E+00	0.00	254.0	0.54	9	274.4	0.0	274.4	1.9	46	95.0	1.0	-0.22	0.0	44.8
29.04	5.0E+00	0.00	210.6	0.50	9	230.8	0.0	230.8	2.4	46	91.3	1.0	-0.19	0.0	37.6
30.02	5.0E-02	0.00	234.3	0.61	9	259.8	0.0	259.8	2.7	46	94.6	1.0	-0.22	0.0	50.9
31.00	5.0E-02	0.00	135.3	0.48	9	152.5	0.0	152.5	4.6	44	79.4	1.0	-0.15	0.0	29.9
31.99	5.0E-02	0.00	176.2	0.68	9	200.4	0.0	200.4	4.6	44	87.2	1.0	-0.20	0.0	39.2
32.97	5.0E+00	0.00	281.2	0.58	9	322.6	0.0	322.6	1.8	46	95.0	1.0	-0.23	0.0	52.6
33.96	5.0E+00	0.00	266.5	0.41	10	309.4	0.0	309.4	0.7	46	95.0	1.0	-0.20	0.0	50.5
34.94	5.0E+00	0.00	280.8	0.46	10	329.7	0.0	329.7	0.9	46	95.0	1.0	-0.21	0.0	53.8
35.92	5.0E+00	0.00	294.8	0.49	10	349.8	0.0	349.8	1.0	46	95.0	1.0	-0.22	0.0	57.1
36.91	5.0E+00	0.00	279.4	0.72	9	335.3	0.0	335.3	2.7	46	95.0	1.0	-0.25	0.0	54.7
37.89	5.0E-02	0.00	229.0	1.13	9	278.0	6.9	285.0	5.9	46	95.0	1.0	-0.28	0.8	55.3
38.88	5.0E-04	-0.01	57.8	2.40	7	72.2	75.0	147.2	24.1	40	57.9	1.0	-0.23	11.0	34.6
39.86	5.0E-02	-0.01	95.7	0.78	9	119.5	16.1	135.6	9.4	42	72.4	1.0	-0.16	1.9	25.3
40.85	5.0E-03	0.00	112.9	1.58	9	142.0	39.3	181.3	13.1	42	77.3	1.0	-0.25	5.4	40.2

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Run No: 01-0316-0548-4633
CPT File: 890C09.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E+00	0.00	259.9	0.57	9	327.3	0.0	327.3	2.0	46	95.0	1.0	-0.22	0.0	53.4
42.81	5.0E-02	0.00	220.5	0.71	9	280.6	0.0	280.6	3.6	46	95.0	1.0	-0.23	0.0	54.9
43.80	5.0E+00	0.00	185.2	0.46	9	238.3	0.0	238.3	2.7	44	92.2	1.0	-0.17	0.0	38.9
44.78	5.0E+00	0.00	177.5	0.49	9	230.6	0.0	230.6	3.1	44	91.2	1.0	-0.18	0.0	37.6
45.77	5.0E+00	0.00	177.1	0.47	9	232.2	0.0	232.2	3.1	44	91.4	1.0	-0.17	0.0	37.9
46.75	5.0E-02	0.00	216.1	0.79	9	285.3	0.0	285.3	4.3	46	95.0	1.0	-0.24	0.0	55.8
47.74	5.0E-02	0.00	252.4	1.12	9	335.7	3.3	339.0	5.4	46	95.0	1.0	-0.29	0.4	66.1
48.72	5.0E-02	0.00	166.8	1.23	9	224.4	21.8	246.2	8.3	44	90.4	1.0	-0.26	2.6	46.5
49.70	5.0E-02	0.00	177.2	0.76	9	240.3	0.6	240.9	5.1	44	92.4	1.0	-0.22	0.1	47.1
50.69	5.0E+00	0.00	253.1	0.70	9	345.1	0.0	345.1	3.0	46	95.0	1.0	-0.24	0.0	56.3
51.67	5.0E+00	0.00	227.3	0.62	9	312.7	0.0	312.7	2.9	46	95.0	1.0	-0.22	0.0	51.0
52.66	5.0E-02	0.00	192.7	0.74	9	267.5	0.0	267.5	4.6	44	95.0	1.0	-0.22	0.0	52.4
53.64	5.0E-02	0.00	158.3	0.68	9	221.8	1.2	223.0	5.2	44	90.1	1.0	-0.19	0.1	43.6
54.63	5.0E-02	0.00	196.7	0.81	9	277.2	0.0	277.2	4.9	46	95.0	1.0	-0.23	0.0	54.3
55.61	5.0E-03	0.00	138.9	1.59	9	197.9	41.5	239.4	11.5	44	86.8	1.0	-0.27	5.9	54.3

For use with report dated 03/18/2005. RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4655
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-10
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 12:16
CPT File: 031C10.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.57 (ft): 15.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	14.6	0.47	3.23	69.4	4	114.6	0.03	0.03	0.00	2.00	9.3	18.6	1.16	0.00
1.48	21.7	0.28	1.28	28.7	6	114.6	0.08	0.08	0.00	2.00	8.3	16.6	1.73	0.09
2.46	48.1	0.11	0.23	14.3	8	120.9	0.14	0.14	0.00	2.00	11.5	23.1	UnDef	0.15
3.44	31.1	0.19	0.61	7.7	7	117.8	0.20	0.20	0.00	2.00	9.9	19.8	UnDef	0.10
4.43	14.9	0.26	1.72	6.6	6	114.6	0.26	0.26	0.00	1.97	5.7	11.2	1.17	0.09
5.41	12.2	0.26	2.16	23.9	5	114.6	0.31	0.31	0.00	1.78	5.9	10.4	0.95	0.10
6.40	13.2	0.30	2.24	17.0	5	114.6	0.37	0.37	0.00	1.64	6.3	10.4	1.03	0.11
7.30	17.1	0.27	1.56	6.3	6	114.6	0.42	0.42	0.00	1.54	6.5	10.1	1.33	0.09
8.20	9.7	0.18	1.86	12.1	5	114.6	0.47	0.47	0.00	1.45	4.6	6.7	0.74	0.11
9.19	55.7	0.18	0.32	15.6	8	120.9	0.53	0.53	0.00	1.37	13.3	18.3	UnDef	0.12
10.17	36.6	0.18	0.49	8.3	7	117.8	0.59	0.59	0.00	1.30	11.7	15.2	UnDef	0.10
11.15	10.7	0.30	2.75	6.1	5	114.6	0.65	0.65	0.00	1.24	5.1	6.4	0.81	0.11
12.14	17.3	0.24	1.38	15.3	6	114.6	0.70	0.70	0.00	1.19	6.6	7.9	1.33	0.11
13.21	69.3	0.25	0.36	25.5	8	120.9	0.77	0.77	0.00	1.14	16.6	18.9	UnDef	0.12
14.27	41.2	0.43	1.03	11.5	7	117.8	0.83	0.83	0.00	1.10	13.2	14.4	UnDef	0.11
15.26	35.0	0.24	0.69	9.2	7	117.8	0.89	0.88	0.01	1.07	11.2	11.9	UnDef	0.10
16.24	39.8	0.32	0.81	3.1	7	117.8	0.95	0.91	0.04	1.05	12.7	13.3	UnDef	0.10
17.22	69.9	0.46	0.66	-1.7	8	120.9	1.01	0.94	0.07	1.03	16.7	17.3	UnDef	0.13
18.21	86.9	0.43	0.50	-5.6	8	120.9	1.07	0.97	0.10	1.02	20.8	21.2	UnDef	0.16
19.19	98.5	0.42	0.43	14.8	9	124.1	1.13	1.00	0.13	1.00	18.9	18.9	UnDef	0.16
20.18	193.8	0.39	0.20	28.0	9	124.1	1.19	1.03	0.16	0.99	37.1	36.7	UnDef	0.00
21.16	142.5	0.97	0.68	28.4	9	124.1	1.25	1.06	0.19	0.97	27.3	26.6	UnDef	0.34
22.15	119.3	0.30	0.25	24.3	9	124.1	1.31	1.09	0.22	0.96	22.9	21.9	UnDef	0.21
23.13	125.1	0.52	0.42	3.2	9	124.1	1.37	1.12	0.25	0.95	24.0	22.7	UnDef	0.22
24.11	122.7	0.51	0.42	-2.5	9	124.1	1.43	1.15	0.28	0.93	23.5	21.9	UnDef	0.21
25.10	94.7	0.43	0.45	-0.6	8	120.9	1.49	1.18	0.32	0.92	22.7	20.9	UnDef	0.14
26.08	71.8	0.70	0.98	15.9	8	120.9	1.55	1.21	0.35	0.91	17.2	15.7	UnDef	0.15
27.07	50.1	0.47	0.94	7.7	7	117.8	1.61	1.23	0.38	0.90	16.0	14.4	UnDef	0.12
28.05	24.6	0.50	2.03	38.5	6	114.6	1.67	1.26	0.41	0.89	9.4	8.4	1.84	0.20
29.04	116.8	0.51	0.43	25.5	9	124.1	1.73	1.29	0.44	0.88	22.4	19.7	UnDef	0.18
30.02	193.0	0.86	0.44	5.3	9	124.1	1.79	1.32	0.47	0.87	37.0	32.2	UnDef	0.00
31.00	108.1	1.43	1.32	44.8	8	120.9	1.85	1.35	0.50	0.86	25.9	22.3	UnDef	0.26
31.99	285.3	1.12	0.39	41.0	10	127.3	1.91	1.38	0.53	0.85	45.5	38.8	UnDef	0.00
32.97	333.1	1.97	0.59	17.6	10	127.3	1.97	1.41	0.56	0.84	53.2	44.8	UnDef	0.00
33.96	339.2	2.24	0.66	10.6	9	124.1	2.03	1.44	0.59	0.83	65.0	54.1	UnDef	0.00
34.94	362.1	2.36	0.65	14.1	10	127.3	2.09	1.47	0.62	0.82	57.8	47.6	UnDef	0.00
35.92	317.4	3.10	0.98	-3.4	9	124.1	2.16	1.50	0.65	0.82	60.8	49.6	UnDef	0.00
36.91	294.2	3.02	1.03	10.7	9	124.1	2.22	1.53	0.68	0.81	56.4	45.5	UnDef	0.00
37.89	400.0	3.81	0.95	18.8	9	124.1	2.28	1.56	0.71	0.80	76.6	61.3	UnDef	0.00
38.88	383.2	1.91	0.50	15.4	10	127.3	2.34	1.60	0.75	0.79	61.2	48.4	UnDef	0.00
39.86	347.2	1.79	0.52	15.5	10	127.3	2.40	1.63	0.78	0.78	55.4	43.5	UnDef	0.00
40.85	364.8	1.40	0.38	26.4	10	127.3	2.47	1.66	0.81	0.78	58.2	45.2	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Run No: 01-0316-0548-4655
CPT File: 031C10.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	408.0	2.15	0.53	35.3	10	127.3	2.53	1.69	0.84	0.77	65.1	50.1	UnDef	0.00
42.81	465.7	2.49	0.53	23.7	10	127.3	2.59	1.72	0.87	0.76	74.3	56.6	UnDef	0.00
43.80	398.3	2.12	0.53	36.8	10	127.3	2.65	1.75	0.90	0.75	63.6	48.0	UnDef	0.00
44.78	571.0	4.75	0.83	89.4	10	127.3	2.72	1.79	0.93	0.75	91.1	68.2	UnDef	0.00
45.77	603.2	5.59	0.93	55.6	9	124.1	2.78	1.82	0.96	0.74	115.5	85.7	UnDef	0.00
46.75	383.2	5.91	1.54	69.4	8	120.9	2.84	1.85	0.99	0.74	91.7	67.5	UnDef	0.00
47.74	200.9	1.93	0.96	31.5	9	124.1	2.90	1.88	1.02	0.73	38.5	28.1	UnDef	0.00
48.72	209.8	1.40	0.67	45.2	9	124.1	2.96	1.91	1.05	0.72	40.2	29.1	UnDef	0.46

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4655
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-10
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 12:16
CPT File: 031C10.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.57 (ft): 15.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-07	0.15	516.2	3.24	12	27.9	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
1.48	5.0E-05	0.04	255.7	1.28	9	41.6	1.3	42.9	6.1	46	58.3	10.0	-0.30	0.3	17.0
2.46	5.0E-03	0.01	336.8	0.23	10	92.2	0.0	92.2	0.0	48	73.6	1.0	-0.17	0.0	23.1
3.44	5.0E-04	0.01	153.4	0.62	9	59.5	0.0	59.5	4.9	44	56.1	1.0	-0.18	0.0	19.8
4.43	5.0E-05	0.01	56.5	1.75	7	28.5	21.1	49.6	20.9	40	31.4	10.0	-0.19	4.1	15.3
5.41	5.0E-06	0.06	37.8	2.22	7	21.3	37.0	58.3	28.8	UnDef	UnDef	6.0	UnDef	6.9	17.3
6.40	5.0E-06	0.04	34.5	2.31	7	21.2	45.6	66.7	30.6	UnDef	UnDef	6.0	UnDef	7.7	18.1
7.30	5.0E-05	0.01	39.3	1.60	7	25.7	28.2	53.9	24.6	38	30.0	6.0	-0.14	4.9	14.9
8.20	5.0E-06	0.04	19.4	1.96	6	13.8	55.1	68.8	38.1	UnDef	UnDef	6.0	UnDef	6.7	13.5
9.19	5.0E-03	0.01	103.6	0.33	9	74.7	0.0	74.7	4.9	42	58.9	1.0	-0.09	0.0	18.3
10.17	5.0E-04	0.01	60.9	0.50	9	46.6	8.7	55.3	10.9	40	45.4	1.0	-0.08	1.7	16.9
11.15	5.0E-06	0.02	15.6	2.93	6	13.0	52.2	65.2	48.0	UnDef	UnDef	6.0	UnDef	6.4	12.8
12.14	5.0E-05	0.03	23.5	1.44	7	20.2	46.6	66.8	31.1	34	30.0	6.0	-0.08	6.1	14.0
13.21	5.0E-03	0.01	89.2	0.36	9	77.4	0.0	77.4	5.0	42	59.9	1.0	-0.09	0.0	18.9
14.27	5.0E-04	0.01	48.6	1.05	7	44.2	23.9	68.1	18.1	38	43.9	1.0	-0.12	4.1	18.5
15.26	5.0E-04	0.01	38.7	0.71	7	36.5	19.1	55.6	17.9	38	38.4	1.0	-0.07	3.3	15.2
16.24	5.0E-04	0.00	42.8	0.83	7	40.9	21.1	62.0	17.8	38	41.6	1.0	-0.09	3.6	17.0
17.22	5.0E-03	0.00	73.5	0.67	9	70.7	12.7	83.4	10.7	40	57.3	1.0	-0.12	1.8	19.1
18.21	5.0E-03	0.00	88.9	0.50	9	86.5	6.6	93.2	7.7	42	63.1	1.0	-0.12	1.0	22.2
19.19	5.0E-02	0.00	97.9	0.44	9	96.7	0.0	96.7	5.0	42	66.3	1.0	-0.11	0.0	18.9
20.18	5.0E-02	0.00	187.9	0.20	10	187.3	0.0	187.3	0.5	44	85.3	1.0	-0.11	0.0	36.7
21.16	5.0E-02	0.00	133.8	0.69	9	135.7	4.9	140.6	6.3	44	76.0	1.0	-0.18	0.6	27.2
22.15	5.0E-02	0.00	108.7	0.26	9	112.0	0.0	112.0	3.8	42	70.5	1.0	-0.08	0.0	21.9
23.13	5.0E-02	0.00	110.9	0.42	9	115.9	0.0	115.9	5.0	42	71.5	1.0	-0.12	0.0	22.7
24.11	5.0E-02	0.00	105.7	0.42	9	112.1	0.0	112.1	5.0	42	70.5	1.0	-0.12	0.0	21.9
25.10	5.0E-03	0.00	79.2	0.46	9	85.4	0.0	85.4	5.0	42	62.8	1.0	-0.10	0.0	20.9
26.08	5.0E-03	0.00	58.3	1.00	7	64.0	25.6	89.6	15.7	40	54.5	1.0	-0.14	3.4	19.1
27.07	5.0E-04	0.00	39.3	0.97	7	44.2	29.6	73.8	20.0	38	43.9	1.0	-0.10	4.8	19.2
28.05	5.0E-05	0.03	18.2	2.18	6	21.5	86.0	107.5	40.6	32	30.0	6.0	-0.08	8.4	16.8
29.04	5.0E-02	0.00	89.4	0.44	9	100.8	0.0	100.8	5.0	42	67.5	1.0	-0.11	0.0	19.7
30.02	5.0E-02	0.00	145.1	0.45	9	164.5	0.0	164.5	3.9	44	81.5	1.0	-0.15	0.0	32.2
31.00	5.0E-03	0.01	78.9	1.34	7	91.2	33.0	124.2	15.0	42	64.6	1.0	-0.19	4.4	26.8
31.99	5.0E+00	0.00	205.7	0.39	9	237.9	0.0	237.9	1.7	46	92.1	1.0	-0.17	0.0	38.8
32.97	5.0E+00	0.00	234.9	0.59	9	274.5	0.0	274.5	2.6	46	95.0	1.0	-0.22	0.0	44.8
33.96	5.0E-02	0.00	234.0	0.66	9	276.5	0.0	276.5	3.1	46	95.0	1.0	-0.23	0.0	54.1
34.94	5.0E+00	0.00	244.6	0.66	9	292.1	0.0	292.1	2.8	46	95.0	1.0	-0.23	0.0	47.6
35.92	5.0E-02	0.00	209.7	0.98	9	253.3	3.9	257.2	5.6	46	93.9	1.0	-0.26	0.5	50.1
36.91	5.0E-02	0.00	190.4	1.03	9	232.5	9.0	241.5	6.4	44	91.5	1.0	-0.25	1.1	46.6
37.89	5.0E-02	0.00	254.3	0.96	9	313.0	0.0	313.0	4.4	46	95.0	1.0	-0.27	0.0	61.3
38.88	5.0E+00	0.00	238.8	0.50	9	297.0	0.0	297.0	1.9	46	95.0	1.0	-0.21	0.0	48.4
39.86	5.0E+00	0.00	211.9	0.52	9	266.4	0.0	266.4	2.5	46	95.0	1.0	-0.20	0.0	43.5
40.85	5.0E+00	0.00	218.4	0.39	9	277.1	0.0	277.1	1.4	46	95.0	1.0	-0.17	0.0	45.2

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E+00	0.00	239.8	0.53	9	307.0	0.0	307.0	2.1	46	95.0	1.0	-0.21	0.0	50.1
42.81	5.0E+00	0.00	268.8	0.54	9	347.2	0.0	347.2	1.6	46	95.0	1.0	-0.22	0.0	56.6
43.80	5.0E+00	0.00	225.5	0.54	9	294.3	0.0	294.3	2.4	46	95.0	1.0	-0.21	0.0	48.0
44.78	5.0E+00	0.00	318.1	0.84	9	418.0	0.0	418.0	2.8	46	95.0	1.0	-0.28	0.0	68.2
45.77	5.0E-02	0.00	330.3	0.93	9	437.8	0.0	437.8	3.2	48	95.0	1.0	-0.29	0.0	85.7
46.75	5.0E-03	0.00	205.9	1.55	9	275.9	29.9	305.8	8.7	46	95.0	1.0	-0.31	4.4	71.9
47.74	5.0E-02	0.00	105.5	0.97	9	143.5	22.3	165.8	10.0	42	77.6	1.0	-0.19	2.6	30.7
48.72	5.0E-02	0.00	108.5	0.68	9	148.7	11.3	160.0	7.6	42	78.6	1.0	-0.16	1.3	30.4

For use with report dated 03/18/2005, RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4677
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-11
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 09:31
CPT File: 890C11.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.69 (ft): 12.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	65.5	1.11	1.69	-0.8	7	117.8	0.03	0.03	0.00	2.00	20.9	41.8	UnDef	0.00
1.48	41.4	0.35	0.83	-0.2	7	117.8	0.09	0.09	0.00	2.00	13.2	26.5	UnDef	0.13
2.46	30.9	0.25	0.80	0.0	7	117.8	0.14	0.14	0.00	2.00	9.9	19.7	UnDef	0.10
3.44	23.7	0.24	1.03	0.0	6	114.6	0.20	0.20	0.00	2.00	9.1	18.2	1.88	0.09
4.43	17.3	0.32	1.82	0.2	6	114.6	0.26	0.26	0.00	1.97	6.6	13.1	1.37	0.10
5.41	20.1	0.22	1.10	0.5	6	114.6	0.31	0.31	0.00	1.78	7.7	13.7	1.59	0.09
6.40	24.4	0.22	0.89	0.4	6	114.6	0.37	0.37	0.00	1.64	9.3	15.3	1.92	0.09
7.30	26.3	0.31	1.18	0.5	6	114.6	0.42	0.42	0.00	1.54	10.1	15.5	2.07	0.10
8.20	26.9	0.41	1.53	-0.2	6	114.6	0.47	0.47	0.00	1.45	10.3	15.0	2.12	0.10
9.19	13.6	0.26	1.90	0.0	5	114.6	0.53	0.53	0.00	1.37	6.5	8.9	1.04	0.13
10.17	18.1	0.28	1.56	-6.4	6	114.6	0.59	0.59	0.00	1.30	6.9	9.0	1.40	0.10
11.15	11.3	0.22	1.92	-8.6	5	114.6	0.64	0.64	0.00	1.25	5.4	6.7	0.85	0.11
12.14	28.1	0.28	0.99	-7.9	7	117.8	0.70	0.70	0.00	1.20	9.0	10.7	UnDef	0.10
13.21	94.6	0.43	0.45	-3.3	8	120.9	0.76	0.73	0.03	1.17	22.6	26.5	UnDef	0.20
14.27	110.2	0.38	0.34	-0.6	9	124.1	0.83	0.76	0.07	1.15	21.1	24.2	UnDef	0.26
15.26	131.9	0.57	0.43	-1.0	9	124.1	0.89	0.79	0.10	1.12	25.3	28.4	UnDef	0.36
16.24	102.6	0.51	0.50	0.3	9	124.1	0.95	0.82	0.13	1.10	19.6	21.7	UnDef	0.21
17.22	28.2	0.58	2.06	1.8	6	114.6	1.01	0.85	0.16	1.08	10.8	11.7	2.17	0.16
18.21	128.9	0.75	0.58	2.4	9	124.1	1.07	0.88	0.19	1.07	24.7	26.3	UnDef	0.31
19.19	205.2	0.97	0.47	-6.8	9	124.1	1.13	0.91	0.22	1.05	39.3	41.2	UnDef	0.00
20.18	245.8	1.68	0.69	-21.1	9	124.1	1.19	0.94	0.25	1.03	47.1	48.6	UnDef	0.00
21.16	203.7	2.37	1.17	-15.7	9	124.1	1.25	0.97	0.28	1.02	39.0	39.6	UnDef	0.00
22.15	94.2	1.08	1.15	-3.7	8	120.9	1.31	1.00	0.31	1.00	22.6	22.6	UnDef	0.22
23.13	157.5	0.96	0.61	0.5	9	124.1	1.37	1.03	0.34	0.99	30.2	29.7	UnDef	0.41
24.11	194.3	1.27	0.65	0.6	9	124.1	1.43	1.06	0.38	0.97	37.2	36.2	UnDef	0.00
25.10	301.2	1.13	0.37	5.5	10	127.3	1.50	1.09	0.41	0.96	48.1	46.0	UnDef	0.00
26.08	330.6	2.51	0.76	8.9	9	124.1	1.56	1.12	0.44	0.94	63.3	59.8	UnDef	0.00
27.07	286.0	0.85	0.30	9.3	10	127.3	1.62	1.15	0.47	0.93	45.6	42.5	UnDef	0.00
28.05	229.4	1.03	0.45	8.6	9	124.1	1.68	1.18	0.50	0.92	43.9	40.4	UnDef	0.00
29.04	291.5	1.74	0.60	4.6	9	124.1	1.74	1.21	0.53	0.91	55.8	50.7	UnDef	0.00
30.02	377.0	4.10	1.09	-6.4	9	124.1	1.80	1.24	0.56	0.90	72.2	64.7	UnDef	0.00
31.00	435.8	6.47	1.48	-9.3	9	124.1	1.87	1.27	0.59	0.89	83.5	73.9	UnDef	0.00
31.99	413.4	1.49	0.36	-9.4	10	127.3	1.93	1.31	0.62	0.88	66.0	57.7	UnDef	0.00
32.97	363.2	1.22	0.34	-9.4	10	127.3	1.99	1.34	0.65	0.86	58.0	50.1	UnDef	0.00
33.96	344.3	1.34	0.39	-9.5	10	127.3	2.05	1.37	0.68	0.85	54.9	47.0	UnDef	0.00
34.94	344.3	3.37	0.98	-10.0	9	124.1	2.11	1.40	0.71	0.84	65.9	55.7	UnDef	0.00
35.92	110.7	2.38	2.15	-5.0	7	117.8	2.17	1.43	0.74	0.84	35.3	29.6	UnDef	0.40
36.91	361.0	2.48	0.69	-4.0	9	124.1	2.23	1.46	0.77	0.83	69.2	57.3	UnDef	0.00
37.89	308.2	2.51	0.82	-3.7	9	124.1	2.29	1.49	0.81	0.82	59.0	48.4	UnDef	0.00
38.88	392.0	2.36	0.60	-3.5	10	127.3	2.36	1.52	0.84	0.81	62.6	50.7	UnDef	0.00
39.86	217.5	1.57	0.72	-3.6	9	124.1	2.42	1.55	0.87	0.80	41.7	33.5	UnDef	0.00
40.85	78.5	1.00	1.27	-3.4	8	120.9	2.48	1.58	0.90	0.80	18.8	15.0	UnDef	0.18

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Run No: 01-0316-0548-4677
CPT File: 890C11.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	137.6	1.28	0.93	-2.9	9	124.1	2.54	1.61	0.93	0.79	26.4	20.8	UnDef	0.28
42.81	172.2	1.36	0.79	-1.8	9	124.1	2.60	1.64	0.96	0.78	33.0	25.7	UnDef	0.38
43.80	118.6	1.35	1.14	-1.6	8	120.9	2.66	1.67	0.99	0.77	28.4	22.0	UnDef	0.25
44.78	101.5	1.44	1.42	-1.3	8	120.9	2.72	1.70	1.02	0.77	24.3	18.6	UnDef	0.24
45.77	286.3	1.63	0.57	-1.1	9	124.1	2.78	1.73	1.05	0.76	54.8	41.7	UnDef	0.00
46.75	254.3	1.44	0.57	-1.0	9	124.1	2.84	1.76	1.08	0.75	48.7	36.7	UnDef	0.00
47.74	343.7	1.45	0.42	-0.8	10	127.3	2.90	1.79	1.11	0.75	54.9	41.0	UnDef	0.00
48.72	284.9	1.82	0.64	-1.2	9	124.1	2.96	1.82	1.14	0.74	54.6	40.4	UnDef	0.00
49.70	376.6	2.54	0.68	-1.4	10	127.3	3.03	1.85	1.17	0.73	60.1	44.2	UnDef	0.00
50.69	461.0	2.27	0.49	-1.2	10	127.3	3.09	1.88	1.20	0.73	73.6	53.6	UnDef	0.00
51.67	282.3	2.32	0.82	-1.8	9	124.1	3.15	1.92	1.24	0.72	54.1	39.1	UnDef	0.00
52.66	350.3	2.01	0.57	1.2	10	127.3	3.21	1.95	1.27	0.72	55.9	40.1	UnDef	0.00
53.64	410.2	2.28	0.56	1.2	10	127.3	3.28	1.98	1.30	0.71	65.5	46.6	UnDef	0.00
54.63	417.1	1.50	0.36	1.1	10	127.3	3.34	2.01	1.33	0.71	66.6	47.0	UnDef	0.00
55.61	418.8	1.52	0.36	1.5	10	127.3	3.40	2.04	1.36	0.70	66.8	46.8	UnDef	0.00
56.59	409.0	2.04	0.50	2.2	10	127.3	3.46	2.07	1.39	0.69	65.3	45.3	UnDef	0.00
57.58	449.8	2.95	0.66	2.3	10	127.3	3.53	2.11	1.42	0.69	71.8	49.5	UnDef	0.00
58.56	477.3	2.20	0.46	3.4	10	127.3	3.59	2.14	1.45	0.68	76.2	52.1	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4677
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-11
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 09:31
CPT File: 890C11.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.69 (ft): 12.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-04	0.00	1000.0	1.69	12	125.5	UnDef	UnDef	0.0	50	95.0	1.0	-0.48	UnDef	UnDef
1.48	5.0E-04	0.00	475.6	0.84	9	79.4	0.0	79.4	1.4	48	76.4	1.0	-0.32	0.0	26.5
2.46	5.0E-04	0.00	212.5	0.80	9	59.2	0.0	59.2	4.4	46	60.7	1.0	-0.24	0.0	19.7
3.44	5.0E-05	0.00	116.5	1.04	9	45.5	6.5	52.0	9.7	42	48.4	10.0	-0.21	1.5	19.7
4.43	5.0E-05	0.00	66.1	1.85	7	33.2	21.5	54.7	19.7	40	35.8	10.0	-0.21	4.3	17.3
5.41	5.0E-05	0.00	62.9	1.12	7	35.1	14.2	49.3	15.8	40	37.3	10.0	-0.15	3.0	16.8
6.40	5.0E-05	0.00	64.6	0.91	9	39.1	12.2	51.3	13.9	40	40.4	10.0	-0.14	2.7	18.0
7.30	5.0E-05	0.00	61.1	1.20	7	39.5	17.8	57.4	16.6	40	40.7	10.0	-0.16	3.7	19.2
8.20	5.0E-05	0.00	55.8	1.55	7	38.3	25.4	63.6	19.9	40	39.7	10.0	-0.17	5.0	20.0
9.19	5.0E-06	0.00	24.5	1.97	6	18.2	63.3	81.5	34.1	UnDef	UnDef	6.0	UnDef	8.4	17.3
10.17	5.0E-05	-0.01	29.8	1.61	7	23.1	39.6	62.7	28.7	36	30.0	6.0	-0.11	5.9	15.0
11.15	5.0E-06	-0.03	16.5	2.04	6	13.8	55.1	68.8	41.6	UnDef	UnDef	6.0	UnDef	6.7	13.5
12.14	5.0E-04	-0.01	39.1	1.01	7	32.8	23.1	55.9	20.4	38	35.3	1.0	-0.10	3.7	14.4
13.21	5.0E-03	0.00	128.5	0.46	9	108.3	0.0	108.3	4.7	44	69.6	1.0	-0.14	0.0	26.5
14.27	5.0E-02	0.00	143.6	0.35	9	123.6	0.0	123.6	3.1	44	73.3	1.0	-0.13	0.0	24.2
15.26	5.0E-02	0.00	165.3	0.43	9	145.0	0.0	145.0	3.1	44	77.9	1.0	-0.16	0.0	28.4
16.24	5.0E-02	0.00	123.5	0.51	9	110.7	1.1	111.8	5.4	42	70.2	1.0	-0.15	0.1	21.8
17.22	5.0E-05	0.00	32.0	2.13	7	29.9	66.2	96.1	30.8	36	32.7	6.0	-0.15	8.9	20.6
18.21	5.0E-02	0.00	145.4	0.59	9	134.5	0.1	134.6	5.0	44	75.8	1.0	-0.17	0.0	26.3
19.19	5.0E-02	0.00	224.5	0.48	9	210.6	0.0	210.6	2.0	46	88.6	1.0	-0.19	0.0	41.2
20.18	5.0E-02	0.00	260.4	0.69	9	248.2	0.0	248.2	2.7	46	93.3	1.0	-0.24	0.0	48.6
21.16	5.0E-02	0.00	208.7	1.17	9	202.4	9.3	211.7	6.7	46	87.5	1.0	-0.27	1.1	40.7
22.15	5.0E-03	0.00	93.0	1.16	9	92.3	22.4	114.7	12.3	42	65.0	1.0	-0.20	3.1	25.7
23.13	5.0E-02	0.00	151.7	0.61	9	152.0	0.0	152.0	5.0	44	79.3	1.0	-0.18	0.0	29.7
24.11	5.0E-02	0.00	182.1	0.66	9	184.8	0.0	184.8	4.3	44	84.9	1.0	-0.20	0.0	36.2
25.10	5.0E+00	0.00	274.8	0.38	10	282.2	0.0	282.2	0.4	46	95.0	1.0	-0.19	0.0	46.0
26.08	5.0E-02	0.00	293.3	0.76	9	305.5	0.0	305.5	2.7	46	95.0	1.0	-0.26	0.0	59.8
27.07	5.0E+00	0.00	246.7	0.30	10	260.7	0.0	260.7	0.2	46	94.7	1.0	-0.16	0.0	42.5
28.05	5.0E-02	0.00	192.3	0.45	9	206.3	0.0	206.3	2.5	44	88.0	1.0	-0.18	0.0	40.4
29.04	5.0E-02	0.00	238.7	0.60	9	258.9	0.0	258.9	2.6	46	94.5	1.0	-0.22	0.0	50.7
30.02	5.0E-02	0.00	301.5	1.09	9	330.7	0.0	330.7	4.4	46	95.0	1.0	-0.30	0.0	64.7
31.00	5.0E-02	0.00	340.4	1.49	9	377.7	7.6	385.3	5.7	48	95.0	1.0	-0.35	0.9	74.9
31.99	5.0E+00	0.00	315.0	0.36	10	354.0	0.0	354.0	0.0	46	95.0	1.0	-0.20	0.0	57.7
32.97	5.0E+00	0.00	270.0	0.34	10	307.3	0.0	307.3	0.2	46	95.0	1.0	-0.18	0.0	50.1
33.96	5.0E+00	0.00	249.8	0.39	10	287.8	0.0	287.8	0.9	46	95.0	1.0	-0.19	0.0	47.0
34.94	5.0E-02	0.00	244.2	0.98	9	284.6	0.0	284.6	4.8	46	95.0	1.0	-0.27	0.0	55.7
35.92	5.0E-04	-0.01	75.9	2.20	7	90.6	60.3	150.9	20.0	40	64.4	1.0	-0.25	9.8	39.4
36.91	5.0E-02	0.00	246.0	0.69	9	292.5	0.0	292.5	3.0	46	95.0	1.0	-0.24	0.0	57.3
37.89	5.0E-02	0.00	205.4	0.82	9	247.2	0.0	247.2	4.7	46	93.2	1.0	-0.24	0.0	48.4
38.88	5.0E+00	0.00	256.3	0.60	9	311.1	0.0	311.1	2.3	46	95.0	1.0	-0.23	0.0	50.7
39.86	5.0E-02	0.00	138.6	0.73	9	170.9	6.5	177.4	6.4	44	82.6	1.0	-0.19	0.8	34.2
40.85	5.0E-03	-0.01	48.1	1.31	7	61.1	41.4	102.5	20.1	38	53.2	1.0	-0.14	5.1	20.0

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	-0.01	83.9	0.95	9	106.1	23.3	129.4	11.8	42	69.0	1.0	-0.17	2.6	23.4
42.81	5.0E-02	-0.01	103.3	0.80	9	131.5	15.7	147.2	9.0	42	75.1	1.0	-0.17	1.8	27.6
43.80	5.0E-03	-0.01	69.4	1.17	7	89.8	33.2	122.9	15.1	40	64.2	1.0	-0.17	4.5	26.4
44.78	5.0E-03	-0.01	58.1	1.45	7	76.2	44.7	120.9	18.9	40	59.5	1.0	-0.17	5.6	24.3
45.77	5.0E-02	0.00	164.0	0.57	9	213.1	0.0	213.1	4.2	44	89.0	1.0	-0.18	0.0	41.7
46.75	5.0E-02	0.00	142.9	0.57	9	187.6	0.1	187.7	5.0	44	85.3	1.0	-0.17	0.0	36.7
47.74	5.0E+00	0.00	190.4	0.42	9	251.4	0.0	251.4	2.3	44	93.7	1.0	-0.17	0.0	41.0
48.72	5.0E-02	0.00	154.8	0.65	9	206.6	0.6	207.1	5.1	44	88.1	1.0	-0.19	0.1	40.5
49.70	5.0E+00	0.00	201.7	0.68	9	270.8	0.0	270.8	3.9	46	95.0	1.0	-0.22	0.0	44.2
50.69	5.0E+00	0.00	243.0	0.49	9	328.6	0.0	328.6	1.8	46	95.0	1.0	-0.21	0.0	53.6
51.67	5.0E-02	0.00	145.7	0.83	9	199.6	9.8	209.4	6.8	44	87.1	1.0	-0.21	1.2	40.3
52.66	5.0E+00	0.00	178.3	0.58	9	245.7	0.0	245.7	3.8	44	93.0	1.0	-0.19	0.0	40.1
53.64	5.0E+00	0.00	205.7	0.56	9	285.4	0.0	285.4	3.0	46	95.0	1.0	-0.20	0.0	46.6
54.63	5.0E+00	0.00	205.8	0.36	9	287.8	0.0	287.8	1.5	46	95.0	1.0	-0.16	0.0	47.0
55.61	5.0E+00	0.00	203.4	0.37	9	286.8	0.0	286.8	1.5	46	95.0	1.0	-0.16	0.0	46.8
56.59	5.0E+00	0.00	195.5	0.50	9	277.9	0.0	277.9	2.8	46	95.0	1.0	-0.19	0.0	45.3
57.58	5.0E+00	0.00	211.9	0.66	9	303.3	0.0	303.3	3.5	46	95.0	1.0	-0.22	0.0	49.5
58.56	5.0E+00	0.00	221.5	0.47	9	319.4	0.0	319.4	1.9	46	95.0	1.0	-0.19	0.0	52.1

For use with report dated 03/18/2005; RTF Job No 2004-700-21

Gregg In Si... ...c.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4705
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: SCPT-12
Engineer: MARK FRANKIAN
CPT Date: 1/31/01
CPT Time: 15:54
CPT File: 031S12.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.99 (ft): 9.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	43.5	0.22	0.51	21.3	7	117.8	0.03	0.03	0.00	2.00	13.9	27.8	UnDef	0.13
1.48	20.4	0.04	0.18	16.2	7	117.8	0.09	0.09	0.00	2.00	6.5	13.1	UnDef	0.09
2.46	24.6	0.02	0.08	10.5	7	117.8	0.14	0.14	0.00	2.00	7.8	15.7	UnDef	0.09
3.44	39.0	0.02	0.05	10.4	8	120.9	0.20	0.20	0.00	2.00	9.3	18.7	UnDef	0.12
4.43	28.4	0.02	0.07	9.5	7	117.8	0.26	0.26	0.00	1.95	9.1	17.7	UnDef	0.09
5.41	26.2	0.03	0.11	6.0	7	117.8	0.32	0.32	0.00	1.77	8.4	14.8	UnDef	0.09
6.40	17.0	0.20	1.20	5.8	6	114.6	0.38	0.38	0.00	1.63	6.5	10.6	1.33	0.09
7.30	11.0	0.19	1.75	5.8	5	114.6	0.43	0.43	0.00	1.53	5.3	8.0	0.85	0.11
8.20	18.9	0.12	0.62	4.7	6	114.6	0.48	0.48	0.00	1.44	7.3	10.5	1.48	0.09
9.19	19.5	0.25	1.30	3.9	6	114.6	0.54	0.54	0.00	1.36	7.5	10.2	1.52	0.09
10.17	86.1	0.41	0.47	2.8	8	120.9	0.60	0.58	0.01	1.31	20.6	27.0	UnDef	0.20
11.15	67.8	0.62	0.91	1.6	8	120.9	0.65	0.61	0.04	1.28	16.2	20.7	UnDef	0.16
12.14	35.3	0.86	2.45	0.2	6	114.6	0.71	0.64	0.07	1.25	13.5	16.9	2.76	0.16
13.21	15.5	0.45	2.91	-1.1	5	114.6	0.77	0.67	0.11	1.22	7.4	9.1	1.18	0.15
14.27	47.1	0.30	0.63	-1.8	7	117.8	0.84	0.70	0.14	1.20	15.0	18.0	UnDef	0.11
15.26	70.9	0.52	0.74	-1.6	8	120.9	0.89	0.72	0.17	1.18	17.0	20.0	UnDef	0.15
16.24	171.4	0.44	0.25	-0.1	9	124.1	0.95	0.75	0.20	1.15	32.8	37.8	UnDef	0.00
17.22	232.6	0.59	0.25	1.6	10	127.3	1.02	0.78	0.23	1.13	37.1	41.9	UnDef	0.00
18.21	253.3	1.31	0.52	8.4	9	124.1	1.08	0.82	0.26	1.11	48.5	53.7	UnDef	0.00
19.19	344.1	2.23	0.65	14.9	10	127.3	1.14	0.85	0.29	1.09	54.9	59.7	UnDef	0.00
20.18	317.4	1.91	0.60	18.3	10	127.3	1.20	0.88	0.32	1.07	50.7	54.0	UnDef	0.00
21.16	314.1	2.10	0.67	22.1	9	124.1	1.26	0.91	0.35	1.05	60.2	63.1	UnDef	0.00
22.15	310.9	1.51	0.48	21.2	10	127.3	1.33	0.94	0.39	1.03	49.6	51.1	UnDef	0.00
23.13	306.4	2.13	0.70	20.9	9	124.1	1.39	0.97	0.42	1.01	58.7	59.5	UnDef	0.00
24.11	228.6	2.03	0.89	21.3	9	124.1	1.45	1.00	0.45	1.00	43.8	43.7	UnDef	0.00
25.10	223.2	0.91	0.41	19.2	9	124.1	1.51	1.03	0.48	0.98	42.8	42.1	UnDef	0.00
26.08	73.5	0.52	0.70	15.9	8	120.9	1.57	1.06	0.51	0.97	17.6	17.1	UnDef	0.14
27.07	23.2	0.36	1.55	19.9	6	114.6	1.63	1.09	0.54	0.96	8.9	8.5	1.73	0.20
28.05	79.0	0.74	0.94	33.3	8	120.9	1.69	1.12	0.57	0.95	18.9	17.9	UnDef	0.16
29.04	83.1	0.86	1.04	27.5	8	120.9	1.75	1.15	0.60	0.93	19.9	18.6	UnDef	0.17
30.02	42.2	0.57	1.36	26.0	7	117.8	1.81	1.17	0.63	0.92	13.5	12.4	UnDef	0.13
31.00	12.1	0.41	3.37	34.5	4	114.6	1.86	1.20	0.66	0.91	7.7	7.1	0.82	0.00
31.99	207.5	1.25	0.60	41.0	9	124.1	1.92	1.23	0.69	0.90	39.7	35.9	UnDef	0.00
32.97	214.9	1.22	0.57	26.3	9	124.1	1.98	1.26	0.72	0.89	41.2	36.7	UnDef	0.00
33.96	101.6	0.75	0.74	22.2	8	120.9	2.04	1.29	0.75	0.88	24.3	21.4	UnDef	0.19
34.94	15.9	0.42	2.63	22.7	5	114.6	2.10	1.32	0.78	0.87	7.6	6.7	1.11	0.11
35.92	19.7	0.64	3.25	46.1	5	114.6	2.16	1.34	0.82	0.86	9.4	8.1	1.40	0.00
36.91	255.5	1.58	0.62	53.2	9	124.1	2.22	1.37	0.85	0.85	48.9	41.8	UnDef	0.00
37.89	202.8	2.82	1.39	30.9	8	120.9	2.28	1.40	0.88	0.85	48.6	41.1	UnDef	0.00
38.88	425.9	3.74	0.88	28.4	9	124.1	2.34	1.43	0.91	0.84	81.6	68.3	UnDef	0.00
39.86	376.1	2.16	0.57	22.0	10	127.3	2.40	1.46	0.94	0.83	60.0	49.7	UnDef	0.00
40.85	319.3	1.70	0.53	21.0	10	127.3	2.46	1.49	0.97	0.82	51.0	41.7	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	240.9	1.74	0.72	19.1	9	124.1	2.52	1.52	1.00	0.81	46.1	37.4	UnDef	0.00
42.81	185.2	1.73	0.93	19.0	9	124.1	2.58	1.55	1.03	0.80	35.5	28.5	UnDef	0.00
43.80	179.8	1.31	0.73	22.8	9	124.1	2.64	1.58	1.06	0.79	34.4	27.4	UnDef	0.40
44.78	86.1	1.28	1.48	21.7	7	117.8	2.70	1.61	1.09	0.79	27.5	21.6	UnDef	0.22
45.77	316.9	1.74	0.55	23.7	10	127.3	2.76	1.64	1.12	0.78	50.6	39.5	UnDef	0.00
46.75	361.3	2.67	0.74	25.4	9	124.1	2.83	1.67	1.15	0.77	69.2	53.5	UnDef	0.00
47.74	430.5	5.17	1.20	29.8	9	124.1	2.89	1.70	1.18	0.77	82.5	63.2	UnDef	0.00
48.72	422.2	4.37	1.04	30.5	9	124.1	2.95	1.73	1.22	0.76	80.9	61.4	UnDef	0.00
49.70	373.3	3.47	0.93	32.3	9	124.1	3.01	1.76	1.25	0.75	71.5	53.8	UnDef	0.00
50.69	406.8	2.99	0.74	31.7	9	124.1	3.07	1.79	1.28	0.75	77.9	58.2	UnDef	0.00
51.67	468.4	3.49	0.75	30.8	10	127.3	3.13	1.83	1.31	0.74	74.8	55.3	UnDef	0.00
52.66	391.8	5.21	1.33	31.1	9	124.1	3.19	1.86	1.34	0.73	75.0	55.1	UnDef	0.00
53.64	349.6	4.57	1.31	38.7	9	124.1	3.26	1.89	1.37	0.73	67.0	48.8	UnDef	0.00
54.63	137.4	2.12	1.54	44.4	8	120.9	3.32	1.92	1.40	0.72	32.9	23.8	UnDef	0.37
55.61	205.2	2.73	1.33	44.2	8	120.9	3.38	1.95	1.43	0.72	49.1	35.2	UnDef	0.00
56.59	502.7	3.66	0.73	45.6	10	127.3	3.44	1.98	1.46	0.71	80.2	57.1	UnDef	0.00
57.58	427.1	6.05	1.42	49.2	9	124.1	3.50	2.01	1.49	0.71	81.8	57.8	UnDef	0.00
58.56	339.2	5.35	1.58	49.8	8	120.9	3.56	2.04	1.52	0.70	81.2	56.9	UnDef	0.00
59.55	127.1	2.83	2.22	49.1	7	117.8	3.62	2.06	1.55	0.70	40.6	28.3	UnDef	0.00
60.53	171.8	4.19	2.44	45.0	7	117.8	3.68	2.09	1.58	0.69	54.9	37.9	UnDef	0.00
61.52	377.2	5.28	1.40	42.4	9	124.1	3.73	2.12	1.61	0.69	72.2	49.6	UnDef	0.00
62.42	499.5	5.91	1.18	42.3	9	124.1	3.79	2.15	1.64	0.68	95.7	65.3	UnDef	0.00
63.32	719.9	4.46	0.62	41.9	10	127.3	3.85	2.18	1.67	0.68	114.9	77.9	UnDef	0.00
64.30	636.3	5.85	0.92	46.8	10	127.3	3.91	2.21	1.70	0.67	101.6	68.3	UnDef	0.00
65.29	662.9	5.61	0.85	61.0	10	127.3	3.97	2.24	1.73	0.67	105.8	70.7	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ,
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4705
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: SCPT-12
Engineer: MARK FRANKIAN
CPT Date: 1/31/01
CPT Time: 15:54
CPT File: 031S12.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.99 (ft): 9.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	0.00	0.02	1000.0	0.51	10	83.3	0.0	83.3	0.0	50	93.5	1.0	-0.33	0.0	27.8
1.48	0.00	0.02	234.2	0.18	10	39.2	0.0	39.2	0.0	46	56.2	1.0	-0.11	0.0	13.1
2.46	0.00	0.01	168.5	0.08	10	47.0	0.0	47.0	0.0	44	54.1	1.0	-0.02	0.0	15.7
3.44	0.01	0.01	190.8	0.05	10	74.8	0.0	74.8	0.0	44	62.5	1.0	0.01	0.0	18.7
4.43	0.00	0.01	107.1	0.07	9	54.2	0.0	54.2	2.1	42	49.7	1.0	0.03	0.0	17.7
5.41	0.00	0.01	80.9	0.11	9	45.3	0.0	45.3	4.1	42	44.6	1.0	0.02	0.0	14.8
6.40	0.00	0.01	44.0	1.23	7	27.0	19.4	46.4	20.6	38	30.0	6.0	-0.13	3.7	14.3
7.30	0.00	0.02	24.6	1.82	6	16.4	49.0	65.4	33.0	UnDef	UnDef	6.0	UnDef	7.1	15.1
8.20	0.00	0.01	38.4	0.63	7	26.7	12.9	39.6	17.2	38	30.0	6.0	-0.06	2.7	13.1
9.19	0.00	0.01	35.3	1.34	7	26.1	27.7	53.7	24.3	38	30.0	6.0	-0.11	4.8	15.0
10.17	0.01	0.00	146.6	0.48	9	110.3	0.0	110.3	4.1	44	70.1	1.0	-0.16	0.0	27.0
11.15	0.01	0.00	109.6	0.92	9	84.7	11.2	96.0	9.4	42	62.5	1.0	-0.19	1.6	22.4
12.14	0.00	0.00	54.0	2.50	7	43.1	51.5	94.6	25.4	40	43.2	10.0	-0.23	8.7	25.6
13.21	0.00	-0.01	22.1	3.06	6	18.6	74.4	92.9	41.8	UnDef	UnDef	6.0	UnDef	9.1	18.2
14.27	0.00	0.00	66.4	0.64	9	55.2	11.4	66.6	11.4	40	50.3	1.0	-0.11	2.2	20.2
15.26	0.01	0.00	96.7	0.74	9	81.5	9.9	91.5	9.1	42	61.4	1.0	-0.16	1.5	21.4
16.24	0.05	0.00	226.2	0.26	10	193.2	0.0	193.2	0.2	46	86.2	1.0	-0.14	0.0	37.8
17.22	5.00	0.00	295.2	0.25	10	257.0	0.0	257.0	0.0	46	94.3	1.0	-0.17	0.0	41.9
18.21	0.05	0.00	309.2	0.52	10	274.5	0.0	274.5	1.0	46	95.0	1.0	-0.23	0.0	53.7
19.19	5.00	0.00	404.9	0.65	10	365.9	0.0	365.9	0.9	48	95.0	1.0	-0.28	0.0	59.7
20.18	5.00	0.00	359.7	0.61	9	331.3	0.0	331.3	1.0	48	95.0	1.0	-0.26	0.0	54.0
21.16	0.05	0.00	343.8	0.67	9	322.2	0.0	322.2	1.6	48	95.0	1.0	-0.26	0.0	63.1
22.15	5.00	0.00	328.9	0.49	10	313.6	0.0	313.6	0.6	48	95.0	1.0	-0.23	0.0	51.1
23.13	0.05	0.00	313.6	0.70	9	304.0	0.0	304.0	2.1	46	95.0	1.0	-0.26	0.0	59.5
24.11	0.05	0.00	226.6	0.90	9	223.4	0.0	223.4	4.7	46	90.3	1.0	-0.25	0.0	43.7
25.10	0.05	0.00	214.6	0.41	9	214.9	0.0	214.9	1.6	46	89.2	1.0	-0.18	0.0	42.1
26.08	0.01	0.00	67.7	0.72	9	69.8	15.8	85.6	11.9	40	57.0	1.0	-0.12	2.2	19.3
27.07	0.00	0.00	19.8	1.67	6	21.8	87.1	108.8	35.8	34	30.0	6.0	-0.07	8.5	17.0
28.05	0.01	0.01	69.2	0.96	9	73.2	22.0	95.1	13.6	40	58.3	1.0	-0.15	3.0	20.9
29.04	0.01	0.00	71.0	1.06	9	75.9	24.5	100.4	14.1	40	59.4	1.0	-0.16	3.3	21.9
30.02	0.00	0.00	34.4	1.42	7	38.1	44.8	82.9	25.2	38	39.6	1.0	-0.12	6.3	18.8
31.00	0.00	0.04	8.5	3.98	1	10.8	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
31.99	0.05	0.00	167.4	0.61	9	183.2	0.0	183.2	4.4	44	84.6	1.0	-0.19	0.0	35.9
32.97	0.05	0.00	169.1	0.58	9	187.4	0.0	187.4	4.1	44	85.3	1.0	-0.19	0.0	36.7
33.96	0.01	0.00	77.3	0.75	9	87.6	16.6	104.2	11.0	40	63.5	1.0	-0.14	2.4	23.8
34.94	0.00	-0.01	10.5	3.03	4	13.6	54.4	68.0	57.2	UnDef	UnDef	3.0	UnDef	6.7	13.3
35.92	0.00	0.04	13.1	3.65	1	16.6	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
36.91	0.05	0.00	185.0	0.62	9	213.7	0.0	213.7	3.9	44	89.0	1.0	-0.20	0.0	41.8
37.89	0.01	0.00	143.4	1.40	9	167.8	27.6	195.5	10.3	44	82.1	1.0	-0.26	4.0	45.0
38.88	0.05	0.00	296.6	0.88	9	348.8	0.0	348.8	3.3	46	95.0	1.0	-0.28	0.0	68.3
39.86	5.00	0.00	256.1	0.58	9	304.7	0.0	304.7	2.1	46	95.0	1.0	-0.22	0.0	49.7
40.85	5.00	0.00	212.5	0.54	9	255.9	0.0	255.9	2.6	46	94.2	1.0	-0.20	0.0	41.7

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	0.05	0.00	156.6	0.73	9	191.1	3.2	194.3	5.6	44	85.8	1.0	-0.20	0.4	37.8
42.81	0.05	0.00	117.6	0.95	9	145.5	17.5	162.9	9.0	42	78.0	1.0	-0.20	2.0	30.5
43.80	0.05	0.00	111.9	0.74	9	139.8	11.8	151.6	7.9	42	76.9	1.0	-0.17	1.4	28.8
44.78	0.00	0.00	51.7	1.53	7	66.4	47.9	114.2	20.7	38	55.5	1.0	-0.16	7.7	29.3
45.77	5.00	0.00	191.4	0.55	9	242.1	0.0	242.1	3.3	44	92.6	1.0	-0.19	0.0	39.5
46.75	0.05	0.00	214.3	0.75	9	273.4	0.0	273.4	4.0	46	95.0	1.0	-0.23	0.0	53.5
47.74	0.05	0.00	251.1	1.21	9	322.8	7.5	330.3	5.9	46	95.0	1.0	-0.30	0.9	64.1
48.72	0.05	0.00	241.9	1.04	9	313.8	1.4	315.2	5.2	46	95.0	1.0	-0.28	0.2	61.6
49.70	0.05	0.00	210.0	0.94	9	275.1	2.1	277.2	5.3	46	95.0	1.0	-0.25	0.3	54.1
50.69	0.05	0.00	225.0	0.74	9	297.2	0.0	297.2	3.7	46	95.0	1.0	-0.23	0.0	58.2
51.67	5.00	0.00	254.9	0.75	9	339.3	0.0	339.3	3.2	46	95.0	1.0	-0.25	0.0	55.3
52.66	0.05	0.00	209.3	1.34	9	281.4	20.3	301.7	7.5	46	95.0	1.0	-0.29	2.4	57.5
53.64	0.05	0.00	183.6	1.32	9	249.1	23.2	272.3	8.2	44	93.4	1.0	-0.27	2.7	51.5
54.63	0.01	0.00	70.0	1.58	7	97.1	49.2	146.4	17.6	40	66.4	1.0	-0.20	6.3	30.1
55.61	0.01	0.00	103.8	1.35	9	144.0	36.4	180.4	12.6	42	77.7	1.0	-0.22	5.1	40.3
56.59	5.00	0.00	252.8	0.73	9	350.0	0.0	350.0	3.2	46	95.0	1.0	-0.24	0.0	57.1
57.58	0.05	0.00	211.1	1.43	9	295.0	24.7	319.8	7.9	46	95.0	1.0	-0.30	2.9	60.7
58.56	0.01	0.00	164.8	1.59	9	232.6	38.2	270.8	10.3	44	91.5	1.0	-0.29	5.5	62.4
59.55	0.00	0.00	59.8	2.29	7	86.6	81.0	167.6	23.1	40	63.2	1.0	-0.23	12.2	40.5
60.53	0.00	0.00	80.4	2.49	7	116.3	83.9	200.2	20.7	42	71.6	1.0	-0.27	13.5	51.4
61.52	0.05	0.00	176.1	1.42	9	253.5	29.9	283.4	8.9	44	93.9	1.0	-0.28	3.5	53.1
62.42	0.05	0.00	230.8	1.19	9	333.6	11.0	344.6	6.2	46	95.0	1.0	-0.29	1.3	66.6
63.32	5.00	0.00	329.0	0.62	9	477.5	0.0	477.5	1.4	48	95.0	1.0	-0.25	0.0	77.9
64.30	5.00	0.00	286.3	0.93	9	419.0	0.0	419.0	3.7	46	95.0	1.0	-0.28	0.0	68.3
65.29	5.00	0.00	294.1	0.85	9	433.4	0.0	433.4	3.2	46	95.0	1.0	-0.27	0.0	70.7

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4732
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-14
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 13:46
CPT File: 031C14.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 1.77 (ft): 5.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	43.1	0.74	1.72	31.9	7	117.8	0.03	0.03	0.00	2.00	13.8	27.5	UnDef	0.00
1.48	27.5	0.78	2.83	12.7	5	114.6	0.09	0.09	0.00	2.00	13.2	26.4	2.20	0.00
2.46	16.6	0.73	4.38	0.7	3	111.4	0.14	0.14	0.00	2.00	15.9	31.9	1.32	0.00
3.44	12.6	0.32	2.52	-0.9	5	114.6	0.20	0.20	0.00	2.00	6.0	12.1	0.99	0.09
4.43	9.6	0.34	3.56	3.9	3	111.4	0.25	0.25	0.00	1.99	9.2	18.3	0.75	0.15
5.41	27.1	0.48	1.77	29.0	6	114.6	0.31	0.31	0.00	1.80	10.4	18.7	2.14	0.11
6.40	17.7	0.60	3.39	18.8	4	114.6	0.36	0.35	0.02	1.70	11.3	19.2	1.39	0.15
7.30	70.7	0.64	0.90	31.1	8	120.9	0.42	0.37	0.05	1.64	16.9	27.8	UnDef	0.22
8.20	97.4	0.27	0.28	16.4	9	124.1	0.47	0.40	0.07	1.58	18.7	29.6	UnDef	0.40
9.19	137.2	0.48	0.35	11.7	9	124.1	0.53	0.43	0.11	1.53	26.3	40.1	UnDef	0.00
10.17	129.3	0.78	0.60	14.3	9	124.1	0.60	0.46	0.14	1.48	24.8	36.6	UnDef	0.00
11.15	70.3	0.95	1.35	18.9	7	117.8	0.65	0.49	0.17	1.43	22.4	32.1	UnDef	0.22
12.14	99.7	0.53	0.53	30.5	8	120.9	0.71	0.52	0.20	1.39	23.9	33.3	UnDef	0.31
13.21	71.4	0.68	0.95	27.0	8	120.9	0.78	0.55	0.23	1.35	17.1	23.1	UnDef	0.18
14.27	319.0	2.94	0.92	48.5	9	124.1	0.84	0.58	0.26	1.31	61.1	80.3	UnDef	0.00
15.26	336.1	2.89	0.86	83.0	9	124.1	0.90	0.61	0.30	1.28	64.4	82.5	UnDef	0.00
16.24	363.2	4.31	1.19	147.9	9	124.1	0.97	0.64	0.33	1.25	69.6	87.0	UnDef	0.00
17.22	324.7	1.78	0.55	110.1	10	127.3	1.03	0.67	0.36	1.22	51.8	63.3	UnDef	0.00
18.21	255.1	1.32	0.52	148.4	9	124.1	1.09	0.70	0.39	1.19	48.9	58.3	UnDef	0.00
19.19	178.9	1.18	0.66	114.7	9	124.1	1.15	0.73	0.42	1.17	34.3	40.1	UnDef	0.00
20.18	275.1	1.72	0.63	135.0	9	124.1	1.21	0.76	0.45	1.15	52.7	60.3	UnDef	0.00
21.16	257.9	1.26	0.49	90.8	10	127.3	1.27	0.79	0.48	1.12	41.2	46.2	UnDef	0.00
22.15	223.3	1.39	0.62	56.4	9	124.1	1.34	0.82	0.51	1.10	42.8	47.1	UnDef	0.00
23.13	282.5	1.70	0.60	60.2	9	124.1	1.40	0.86	0.54	1.08	54.1	58.5	UnDef	0.00
24.11	326.8	3.01	0.92	65.8	9	124.1	1.46	0.89	0.57	1.06	62.6	66.5	UnDef	0.00
25.10	382.2	3.26	0.85	45.3	9	124.1	1.52	0.92	0.60	1.04	73.2	76.5	UnDef	0.00
26.08	268.3	0.89	0.33	34.6	10	127.3	1.58	0.95	0.63	1.03	42.8	44.0	UnDef	0.00
27.07	183.1	1.75	0.96	26.7	9	124.1	1.64	0.98	0.66	1.01	35.1	35.5	UnDef	0.00
28.05	273.3	2.60	0.95	37.8	9	124.1	1.70	1.01	0.69	1.00	52.4	52.1	UnDef	0.00
29.04	74.4	1.31	1.76	28.9	7	117.8	1.76	1.04	0.73	0.98	23.8	23.3	UnDef	0.21
30.02	164.1	2.69	1.64	48.2	8	120.9	1.82	1.07	0.76	0.97	39.3	38.1	UnDef	0.00
31.00	388.9	3.68	0.95	44.8	9	124.1	1.88	1.09	0.79	0.96	74.5	71.2	UnDef	0.00
31.99	440.3	3.94	0.90	43.9	9	124.1	1.94	1.13	0.82	0.94	84.3	79.5	UnDef	0.00
32.97	397.4	2.56	0.64	44.5	10	127.3	2.00	1.16	0.85	0.93	63.4	59.0	UnDef	0.00
33.96	360.4	1.57	0.43	119.4	10	127.3	2.07	1.19	0.88	0.92	57.5	52.8	UnDef	0.00
34.94	368.9	2.19	0.59	98.9	10	127.3	2.13	1.22	0.91	0.91	58.9	53.3	UnDef	0.00
35.92	393.5	2.03	0.52	102.9	10	127.3	2.19	1.25	0.94	0.89	62.8	56.1	UnDef	0.00
36.91	408.6	1.77	0.43	105.0	10	127.3	2.26	1.28	0.97	0.88	65.2	57.6	UnDef	0.00
37.89	436.7	2.59	0.59	97.2	10	127.3	2.32	1.32	1.00	0.87	69.7	60.8	UnDef	0.00
38.88	428.1	2.98	0.70	87.7	10	127.3	2.38	1.35	1.03	0.86	68.3	58.9	UnDef	0.00
39.86	468.1	2.83	0.60	166.4	10	127.3	2.44	1.38	1.06	0.85	74.7	63.6	UnDef	0.00
40.85	490.3	3.13	0.64	185.7	10	127.3	2.51	1.41	1.09	0.84	78.3	65.9	UnDef	0.00

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	498.7	3.93	0.79	140.9	10	127.3	2.57	1.44	1.12	0.83	79.6	66.3	UnDef	0.00

For use with report dated 03/18/2005. RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No: 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4732
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-14
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 13:46
CPT File: 031C14.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 1.77 (ft): 5.8
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-04	0.02	1000.0	1.73	12	82.6	UnDef	UnDef	0.0	50	93.3	1.0	-0.48	UnDef	UnDef
1.48	5.0E-06	0.01	318.8	2.84	12	52.8	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
2.46	5.0E-08	0.00	116.3	4.42	11	31.9	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
3.44	5.0E-06	0.00	62.8	2.56	7	24.1	24.3	48.4	23.8	UnDef	UnDef	10.0	UnDef	5.5	17.6
4.43	5.0E-08	0.01	37.1	3.65	6	18.4	73.8	92.2	35.7	UnDef	UnDef	6.0	UnDef	18.3	36.7
5.41	5.0E-05	0.03	86.8	1.79	7	47.8	21.3	69.1	16.6	42	46.1	10.0	-0.23	4.5	23.2
6.40	5.0E-07	0.03	50.1	3.46	6	29.5	62.7	92.1	30.5	UnDef	UnDef	10.0	UnDef	14.2	33.4
7.30	5.0E-03	0.01	189.4	0.91	9	113.6	2.1	115.7	5.7	44	70.9	1.0	-0.24	0.3	28.1
8.20	5.0E-02	0.00	243.3	0.28	10	151.0	0.0	151.0	0.1	46	79.1	1.0	-0.16	0.0	29.6
9.19	5.0E-02	0.00	318.8	0.35	10	205.1	0.0	205.1	0.0	46	87.9	1.0	-0.20	0.0	40.1
10.17	5.0E-02	0.00	280.5	0.61	9	186.8	0.0	186.8	1.9	46	85.2	1.0	-0.24	0.0	36.6
11.15	5.0E-04	0.01	142.8	1.36	9	98.5	15.5	114.0	10.1	44	66.8	1.0	-0.25	3.0	35.1
12.14	5.0E-03	0.01	192.0	0.54	9	135.9	0.0	135.9	3.1	44	76.1	1.0	-0.19	0.0	33.3
13.21	5.0E-03	0.01	129.0	0.96	9	94.4	9.5	103.9	8.4	44	65.6	1.0	-0.21	1.4	24.5
14.27	5.0E-02	0.00	549.5	0.92	9	410.2	0.0	410.2	1.4	50	95.0	1.0	-0.34	0.0	80.3
15.26	5.0E-02	0.01	550.2	0.86	9	421.4	0.0	421.4	1.1	50	95.0	1.0	-0.33	0.0	82.5
16.24	5.0E-02	0.01	566.3	1.19	9	444.4	0.0	444.4	2.6	50	95.0	1.0	-0.37	0.0	87.0
17.22	5.0E+00	0.01	482.6	0.55	10	388.0	0.0	388.0	0.0	48	95.0	1.0	-0.28	0.0	63.3
18.21	5.0E-02	0.02	361.9	0.52	10	298.0	0.0	298.0	0.5	48	95.0	1.0	-0.24	0.0	58.3
19.19	5.0E-02	0.02	242.8	0.66	9	204.6	0.0	204.6	2.9	46	87.8	1.0	-0.23	0.0	40.1
20.18	5.0E-02	0.01	359.1	0.63	9	308.3	0.0	308.3	1.2	48	95.0	1.0	-0.26	0.0	60.3
21.16	5.0E+00	0.01	323.3	0.49	10	283.3	0.0	283.3	0.7	48	95.0	1.0	-0.23	0.0	46.2
22.15	5.0E-02	0.01	269.0	0.63	9	240.6	0.0	240.6	2.2	46	92.4	1.0	-0.23	0.0	47.1
23.13	5.0E-02	0.00	328.6	0.60	9	298.9	0.0	298.9	1.3	48	95.0	1.0	-0.25	0.0	58.5
24.11	5.0E-02	0.00	367.4	0.93	9	339.8	0.0	339.8	2.7	48	95.0	1.0	-0.30	0.0	66.5
25.10	5.0E-02	0.00	415.5	0.86	9	390.7	0.0	390.7	1.9	48	95.0	1.0	-0.31	0.0	76.5
26.08	5.0E+00	0.00	281.6	0.33	10	269.8	0.0	269.8	0.0	46	95.0	1.0	-0.18	0.0	44.0
27.07	5.0E-02	0.00	185.4	0.97	9	181.1	5.8	186.9	6.2	44	84.3	1.0	-0.24	0.7	36.2
28.05	5.0E-02	0.00	269.3	0.96	9	266.3	0.0	266.3	4.2	46	95.0	1.0	-0.28	0.0	52.1
29.04	5.0E-04	0.00	70.0	1.80	7	71.5	41.7	113.2	18.8	40	57.7	1.0	-0.21	7.0	30.3
30.02	5.0E-03	0.00	152.4	1.66	9	155.6	30.6	186.2	11.2	44	80.0	1.0	-0.28	4.4	42.4
31.00	5.0E-02	0.00	353.5	0.95	9	363.7	0.0	363.7	3.0	48	95.0	1.0	-0.30	0.0	71.2
31.99	5.0E-02	0.00	389.5	0.90	9	406.2	0.0	406.2	2.4	48	95.0	1.0	-0.30	0.0	79.5
32.97	5.0E+00	0.00	341.9	0.65	9	361.7	0.0	361.7	1.4	48	95.0	1.0	-0.26	0.0	59.0
33.96	5.0E+00	0.01	301.5	0.44	10	323.5	0.0	323.5	0.5	46	95.0	1.0	-0.21	0.0	52.8
34.94	5.0E+00	0.01	300.6	0.60	9	326.8	0.0	326.8	1.6	46	95.0	1.0	-0.24	0.0	53.3
35.92	5.0E+00	0.01	312.5	0.52	10	344.2	0.0	344.2	1.0	46	95.0	1.0	-0.23	0.0	56.1
36.91	5.0E+00	0.01	316.4	0.43	10	352.8	0.0	352.8	0.4	46	95.0	1.0	-0.22	0.0	57.6
37.89	5.0E+00	0.00	330.1	0.60	9	372.5	0.0	372.5	1.2	48	95.0	1.0	-0.25	0.0	60.8
38.88	5.0E+00	0.00	315.8	0.70	9	360.9	0.0	360.9	2.0	46	95.0	1.0	-0.26	0.0	58.9
39.86	5.0E+00	0.01	337.5	0.61	9	390.0	0.0	390.0	1.2	48	95.0	1.0	-0.25	0.0	63.6
40.85	5.0E+00	0.01	345.5	0.64	9	403.8	0.0	403.8	1.4	48	95.0	1.0	-0.26	0.0	65.9

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E+00	0.01	343.7	0.79	9	406.2	0.0	406.2	2.3	48	95.0	1.0	-0.28	0.0	66.3

For use with report dated 03/18/2005. RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 01-0316-0548-4760
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-15
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 13:19
CPT File: 031C15.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.90 (ft): 9.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	121.8	1.12	0.92	33.9	8	120.9	0.03	0.03	0.00	2.00	29.2	58.3	UnDef	0.00
1.48	34.7	1.05	3.03	62.4	5	114.6	0.09	0.09	0.00	2.00	16.6	33.2	2.77	0.00
2.46	28.3	0.46	1.62	54.2	6	114.6	0.14	0.14	0.00	2.00	10.9	21.7	2.25	0.10
3.44	13.4	0.51	3.80	42.7	3	111.4	0.20	0.20	0.00	2.00	12.9	25.7	1.06	0.11
4.43	12.2	0.54	4.41	41.3	3	111.4	0.25	0.25	0.00	1.98	11.7	23.2	0.96	0.23
5.41	21.1	0.38	1.79	48.8	6	114.6	0.31	0.31	0.00	1.80	8.1	14.5	1.66	0.10
6.40	11.7	0.31	2.65	35.5	5	114.6	0.37	0.37	0.00	1.65	5.6	9.2	0.90	0.15
7.30	32.3	0.34	1.07	34.5	7	117.8	0.42	0.42	0.00	1.55	10.3	15.9	UnDef	0.10
8.20	51.1	0.29	0.56	27.5	8	120.9	0.47	0.47	0.00	1.45	12.2	17.8	UnDef	0.12
9.19	16.7	0.42	2.51	18.5	5	114.6	0.53	0.53	0.00	1.37	8.0	11.0	1.29	0.17
10.17	78.9	0.30	0.39	23.2	8	120.9	0.59	0.57	0.02	1.33	18.9	25.1	UnDef	0.18
11.15	108.6	0.29	0.27	24.5	9	124.1	0.65	0.60	0.05	1.29	20.8	26.9	UnDef	0.32
12.14	127.6	0.39	0.31	26.1	9	124.1	0.71	0.63	0.08	1.26	24.4	30.9	UnDef	0.44
13.21	133.4	0.32	0.24	25.9	9	124.1	0.78	0.66	0.12	1.23	25.6	31.4	UnDef	0.00
14.27	108.9	0.23	0.21	25.5	9	124.1	0.84	0.69	0.15	1.20	20.9	25.0	UnDef	0.27
15.26	35.1	0.38	1.08	24.0	7	117.8	0.90	0.72	0.18	1.18	11.2	13.2	UnDef	0.10
16.24	45.3	0.29	0.63	29.3	7	117.8	0.96	0.75	0.21	1.16	14.5	16.7	UnDef	0.10
17.22	167.3	0.52	0.31	39.2	9	124.1	1.02	0.78	0.24	1.13	32.0	36.3	UnDef	0.00
18.21	164.8	0.70	0.42	83.4	9	124.1	1.08	0.81	0.27	1.11	31.6	35.1	UnDef	0.00
19.19	185.2	0.91	0.49	73.8	9	124.1	1.14	0.84	0.30	1.09	35.5	38.7	UnDef	0.00
20.18	201.3	1.26	0.63	72.5	9	124.1	1.20	0.87	0.33	1.07	38.6	41.4	UnDef	0.00
21.16	238.3	1.14	0.48	92.7	9	124.1	1.26	0.90	0.36	1.05	45.6	48.1	UnDef	0.00
22.15	324.2	3.40	1.05	113.0	9	124.1	1.32	0.93	0.39	1.04	62.1	64.4	UnDef	0.00
23.13	282.7	2.44	0.86	102.5	9	124.1	1.39	0.96	0.43	1.02	54.2	55.3	UnDef	0.00
24.11	276.5	1.67	0.60	122.2	9	124.1	1.45	0.99	0.46	1.00	53.0	53.2	UnDef	0.00
25.10	300.7	1.89	0.63	142.4	9	124.1	1.51	1.02	0.49	0.99	57.6	57.0	UnDef	0.00
26.08	291.4	1.10	0.38	122.6	10	127.3	1.57	1.05	0.52	0.97	46.5	45.4	UnDef	0.00
27.07	292.7	1.40	0.48	119.3	10	127.3	1.63	1.08	0.55	0.96	46.7	44.9	UnDef	0.00
28.05	299.2	2.01	0.67	130.3	9	124.1	1.69	1.12	0.58	0.95	57.3	54.3	UnDef	0.00
29.04	309.0	1.83	0.59	118.6	10	127.3	1.76	1.15	0.61	0.93	49.3	46.1	UnDef	0.00
30.02	396.9	2.64	0.67	130.0	10	127.3	1.82	1.18	0.64	0.92	63.4	58.4	UnDef	0.00
31.00	165.4	1.70	1.03	88.1	9	124.1	1.88	1.21	0.67	0.91	31.7	28.8	UnDef	0.00
31.99	35.9	1.24	3.46	81.0	5	114.6	1.94	1.24	0.70	0.90	17.2	15.5	2.72	0.45
32.97	23.9	0.43	1.80	96.6	6	114.6	2.00	1.26	0.73	0.89	9.2	8.1	1.75	0.18
33.96	33.2	0.68	2.05	74.4	6	114.6	2.05	1.29	0.76	0.88	12.7	11.2	2.49	0.35
34.94	246.6	1.02	0.41	60.4	10	127.3	2.11	1.32	0.79	0.87	39.4	34.3	UnDef	0.00
35.92	222.8	1.34	0.60	41.7	9	124.1	2.17	1.35	0.83	0.86	42.7	36.8	UnDef	0.00
36.91	24.6	0.53	2.18	26.9	6	114.6	2.23	1.38	0.86	0.85	9.4	8.0	1.79	0.18
37.89	10.8	0.13	1.23	164.6	5	114.6	2.29	1.40	0.89	0.84	5.2	4.3	0.68	0.09
38.88	30.9	0.58	1.89	197.6	6	114.6	2.35	1.43	0.92	0.84	11.8	9.9	2.28	0.27
39.86	119.1	2.29	1.93	83.0	7	117.8	2.40	1.45	0.95	0.83	38.0	31.5	UnDef	0.39
40.85	144.6	2.17	1.50	63.7	8	120.9	2.46	1.48	0.98	0.82	34.6	28.4	UnDef	0.42

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	185.1	1.91	1.03	45.3	9	124.1	2.52	1.51	1.01	0.81	35.4	28.8	UnDef	0.00
42.81	293.6	1.40	0.48	40.5	10	127.3	2.58	1.54	1.04	0.81	46.9	37.7	UnDef	0.00
43.80	289.9	1.36	0.47	38.4	10	127.3	2.65	1.58	1.07	0.80	46.3	36.9	UnDef	0.00
44.78	188.4	0.54	0.29	59.2	9	124.1	2.71	1.61	1.10	0.79	36.1	28.5	UnDef	0.37
45.77	28.1	0.51	1.83	41.8	6	114.6	2.77	1.63	1.13	0.78	10.8	8.4	2.02	0.20
46.75	14.8	0.30	2.04	68.6	5	114.6	2.82	1.66	1.16	0.78	7.1	5.5	0.96	0.10
47.74	97.3	1.56	1.61	98.1	7	117.8	2.88	1.69	1.19	0.77	31.1	23.9	UnDef	0.26
48.72	283.5	2.70	0.95	66.0	9	124.1	2.94	1.72	1.22	0.76	54.3	41.5	UnDef	0.00

For use with report dated 03/18/2005. RTF Job No 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4760
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-15
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 13:19
CPT File: 031C15.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.90 (ft): 9.5
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-03	0.01	1000.0	0.92	10	233.3	0.0	233.3	0.1	50	95.0	1.0	-0.39	0.0	58.3
1.48	5.0E-06	0.06	394.7	3.04	12	66.5	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
2.46	5.0E-05	0.06	195.6	1.62	9	54.3	7.0	61.3	9.3	44	58.3	10.0	-0.30	1.7	23.4
3.44	5.0E-08	0.10	66.2	3.85	6	25.7	42.4	68.1	28.3	UnDef	UnDef	10.0	UnDef	16.4	42.1
4.43	5.0E-08	0.11	47.0	4.50	6	23.4	93.6	117.0	35.2	UnDef	UnDef	6.0	UnDef	23.2	46.4
5.41	5.0E-05	0.07	66.9	1.81	7	37.0	23.0	60.0	19.4	40	38.8	10.0	-0.20	4.6	19.1
6.40	5.0E-06	0.10	30.8	2.74	6	18.9	70.2	89.1	34.5	UnDef	UnDef	6.0	UnDef	9.0	18.2
7.30	5.0E-04	0.03	76.0	1.08	9	48.8	14.6	63.4	13.6	40	46.7	1.0	-0.17	2.7	18.6
8.20	5.0E-03	0.02	107.0	0.57	9	72.7	3.8	76.5	6.9	42	58.1	1.0	-0.14	0.6	18.4
9.19	5.0E-06	0.04	30.4	2.60	6	22.4	77.4	99.8	34.0	UnDef	UnDef	6.0	UnDef	10.3	21.3
10.17	5.0E-03	0.01	138.0	0.39	9	102.5	0.0	102.5	3.7	44	68.0	1.0	-0.13	0.0	25.1
11.15	5.0E-02	0.01	180.7	0.27	9	137.5	0.0	137.5	1.3	44	76.4	1.0	-0.13	0.0	26.9
12.14	5.0E-02	0.01	202.2	0.31	9	157.6	0.0	157.6	1.1	46	80.3	1.0	-0.15	0.0	30.9
13.21	5.0E-02	0.01	200.8	0.24	10	160.7	0.0	160.7	0.5	46	80.9	1.0	-0.13	0.0	31.4
14.27	5.0E-02	0.01	155.8	0.21	9	127.9	0.0	127.9	1.4	44	74.3	1.0	-0.10	0.0	25.0
15.26	5.0E-04	0.02	47.4	1.11	7	40.4	23.7	64.1	18.8	38	41.3	1.0	-0.12	4.0	17.2
16.24	5.0E-04	0.02	59.2	0.64	9	51.3	12.9	64.2	12.5	40	48.1	1.0	-0.10	2.4	19.1
17.22	5.0E-02	0.01	213.7	0.31	9	185.6	0.0	185.6	0.9	46	85.0	1.0	-0.15	0.0	36.3
18.21	5.0E-02	0.01	202.5	0.42	9	179.4	0.0	179.4	2.0	46	84.0	1.0	-0.17	0.0	35.1
19.19	5.0E-02	0.01	219.4	0.49	9	197.9	0.0	197.9	2.2	46	86.8	1.0	-0.19	0.0	38.7
20.18	5.0E-02	0.01	230.2	0.63	9	211.3	0.0	211.3	2.9	46	88.7	1.0	-0.22	0.0	41.4
21.16	5.0E-02	0.01	263.5	0.48	9	245.9	0.0	245.9	1.3	46	93.1	1.0	-0.21	0.0	48.1
22.15	5.0E-02	0.01	347.1	1.05	9	328.9	0.0	328.9	3.6	48	95.0	1.0	-0.31	0.0	64.4
23.13	5.0E-02	0.01	292.9	0.87	9	282.3	0.0	282.3	3.3	46	95.0	1.0	-0.27	0.0	55.3
24.11	5.0E-02	0.01	277.7	0.61	9	271.9	0.0	271.9	2.0	46	95.0	1.0	-0.23	0.0	53.2
25.10	5.0E-02	0.01	293.1	0.63	9	291.3	0.0	291.3	1.9	46	95.0	1.0	-0.24	0.0	57.0
26.08	5.0E+00	0.01	275.5	0.38	10	278.0	0.0	278.0	0.4	46	95.0	1.0	-0.19	0.0	45.4
27.07	5.0E+00	0.01	268.5	0.48	9	275.1	0.0	275.1	1.3	46	95.0	1.0	-0.21	0.0	44.9
28.05	5.0E-02	0.01	266.8	0.68	9	277.2	0.0	277.2	2.6	46	95.0	1.0	-0.24	0.0	54.3
29.04	5.0E+00	0.01	268.0	0.59	9	282.4	0.0	282.4	2.0	46	95.0	1.0	-0.23	0.0	46.1
30.02	5.0E+00	0.01	335.3	0.67	9	357.8	0.0	357.8	1.6	48	95.0	1.0	-0.26	0.0	58.4
31.00	5.0E-02	0.01	135.2	1.04	9	147.2	15.7	162.8	8.6	44	78.4	1.0	-0.22	1.8	30.7
31.99	5.0E-06	0.05	27.5	3.66	6	31.6	126.5	158.1	40.6	UnDef	UnDef	6.0	UnDef	15.5	30.9
32.97	5.0E-05	0.10	17.3	1.96	6	20.8	83.3	104.1	40.2	32	30.0	6.0	-0.06	8.1	16.3
33.96	5.0E-05	0.05	24.1	2.18	6	28.6	114.3	142.9	35.6	34	31.4	6.0	-0.11	11.2	22.4
34.94	5.0E+00	0.00	185.6	0.42	9	210.2	0.0	210.2	2.4	44	88.6	1.0	-0.17	0.0	34.3
35.92	5.0E-02	0.00	163.6	0.61	9	187.8	0.0	187.8	4.5	44	85.3	1.0	-0.19	0.0	36.8
36.91	5.0E-05	0.00	16.2	2.39	6	20.5	81.9	102.4	44.2	32	30.0	6.0	-0.08	8.0	16.0
37.89	5.0E-06	0.50	6.0	1.56	4	8.9	35.6	44.4	61.1	UnDef	UnDef	1.5	UnDef	4.3	8.7
38.88	5.0E-05	0.18	20.0	2.04	6	25.3	101.1	126.4	38.1	34	30.0	6.0	-0.07	9.9	19.8
39.86	5.0E-04	0.01	80.2	1.97	7	96.6	52.9	149.6	18.3	42	66.3	1.0	-0.24	9.0	40.5
40.85	5.0E-03	0.01	95.9	1.53	7	116.2	38.0	154.3	14.2	42	71.6	1.0	-0.23	5.2	33.6

For use with report dated 03/18/2005, RTF Job No. '2004-700-21

For use with report dated 03/18/2005, RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Run No: 01-0316-0548-4760
CPT File: 031C15.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-02	0.00	120.7	1.04	9	147.3	19.9	167.2	9.5	42	78.4	1.0	-0.21	2.3	31.2
42.81	5.0E+00	0.00	188.6	0.48	9	231.3	0.0	231.3	2.8	44	91.3	1.0	-0.18	0.0	37.7
43.80	5.0E+00	0.00	182.4	0.47	9	226.1	0.0	226.1	2.9	44	90.7	1.0	-0.18	0.0	36.9
44.78	5.0E-02	0.00	115.6	0.29	9	145.5	0.0	145.5	3.8	42	78.0	1.0	-0.09	0.0	28.5
45.77	5.0E-05	0.01	15.5	2.03	6	21.5	86.0	107.4	42.9	32	30.0	6.0	-0.06	8.4	16.8
46.75	5.0E-06	0.08	7.2	2.52	4	11.3	45.1	56.4	63.5	UnDef	UnDef	3.0	UnDef	5.5	11.0
47.74	5.0E-04	0.02	56.0	1.65	7	73.3	51.7	125.1	20.5	40	58.4	1.0	-0.18	8.4	32.3
48.72	5.0E-02	0.00	163.6	0.96	9	211.8	11.2	223.0	6.9	44	88.8	1.0	-0.23	1.3	42.8

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4782
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: SCPT-16
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 08:09
CPT File: 031S16.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.57 (ft): 15.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	11.2	0.17	1.53	14.6	5	114.6	0.03	0.03	0.00	2.00	5.3	10.7	0.89	0.00
1.48	10.3	0.24	2.28	10.9	5	114.6	0.08	0.08	0.00	2.00	5.0	9.9	0.82	0.00
2.46	18.7	0.28	1.50	6.0	6	114.6	0.14	0.14	0.00	2.00	7.2	14.4	1.49	0.09
3.44	39.0	0.15	0.38	8.3	7	117.8	0.20	0.20	0.00	2.00	12.4	24.9	UnDef	0.12
4.43	27.3	0.13	0.49	6.6	7	117.8	0.26	0.26	0.00	1.98	8.7	17.2	UnDef	0.09
5.41	31.0	0.13	0.42	4.2	7	117.8	0.31	0.31	0.00	1.78	9.9	17.7	UnDef	0.09
6.40	20.8	0.12	0.60	1.7	6	114.6	0.37	0.37	0.00	1.64	8.0	13.1	1.63	0.09
7.30	14.7	0.13	0.86	2.2	6	114.6	0.42	0.42	0.00	1.54	5.6	8.6	1.14	0.09
8.20	45.9	0.09	0.20	5.4	8	120.9	0.48	0.48	0.00	1.45	11.0	15.9	UnDef	0.11
9.19	78.1	0.18	0.23	6.4	8	120.9	0.54	0.54	0.00	1.37	18.7	25.5	UnDef	0.19
10.17	103.0	0.28	0.27	6.1	9	124.1	0.60	0.60	0.00	1.30	19.7	25.6	UnDef	0.29
11.15	110.4	0.33	0.30	6.4	9	124.1	0.66	0.66	0.00	1.23	21.1	26.1	UnDef	0.30
12.14	100.5	0.48	0.47	3.9	9	124.1	0.72	0.72	0.00	1.18	19.2	22.7	UnDef	0.23
13.21	63.6	0.53	0.84	9.5	8	120.9	0.78	0.78	0.00	1.13	15.2	17.2	UnDef	0.14
14.27	14.9	0.25	1.70	21.4	6	114.6	0.85	0.85	0.00	1.09	5.7	6.2	1.13	0.13
15.26	13.8	0.39	2.82	23.7	5	114.6	0.90	0.89	0.01	1.06	6.6	7.0	1.03	0.11
16.24	50.3	0.50	0.99	21.6	7	117.8	0.96	0.92	0.04	1.04	16.1	16.7	UnDef	0.12
17.22	43.1	0.60	1.40	26.3	7	117.8	1.02	0.95	0.07	1.03	13.8	14.1	UnDef	0.13
18.21	132.5	0.38	0.28	17.8	9	124.1	1.08	0.98	0.10	1.01	25.4	25.7	UnDef	0.29
19.19	162.8	0.55	0.34	11.0	9	124.1	1.14	1.01	0.13	1.00	31.2	31.1	UnDef	0.45
20.18	177.8	0.32	0.18	18.7	9	124.1	1.20	1.04	0.16	0.98	34.1	33.4	UnDef	0.00
21.16	166.9	0.32	0.19	20.1	9	124.1	1.26	1.07	0.19	0.97	32.0	30.9	UnDef	0.45
22.15	169.1	0.80	0.47	12.6	9	124.1	1.32	1.10	0.22	0.95	32.4	30.9	UnDef	0.45
23.13	292.4	0.48	0.16	5.8	10	127.3	1.38	1.13	0.25	0.94	46.7	43.9	UnDef	0.00
24.11	315.1	0.80	0.25	2.0	10	127.3	1.45	1.16	0.28	0.93	50.3	46.7	UnDef	0.00
25.10	194.2	0.48	0.25	1.5	9	124.1	1.51	1.19	0.32	0.92	37.2	34.1	UnDef	0.00
26.08	138.1	0.41	0.29	0.9	9	124.1	1.57	1.22	0.35	0.90	26.4	23.9	UnDef	0.25
27.07	156.7	0.53	0.34	11.6	9	124.1	1.63	1.25	0.38	0.89	30.0	26.8	UnDef	0.32
28.05	286.4	0.53	0.18	19.3	10	127.3	1.69	1.28	0.41	0.88	45.7	40.3	UnDef	0.00
29.04	286.9	0.32	0.11	15.2	10	127.3	1.75	1.32	0.44	0.87	45.8	39.9	UnDef	0.00
30.02	259.5	0.38	0.15	18.2	10	127.3	1.82	1.35	0.47	0.86	41.4	35.7	UnDef	0.00
31.00	99.8	1.04	1.04	21.2	8	120.9	1.88	1.38	0.50	0.85	23.9	20.4	UnDef	0.20
31.99	26.3	0.69	2.62	32.1	5	114.6	1.94	1.41	0.53	0.84	12.6	10.6	1.95	0.20
32.97	20.5	0.65	3.20	41.3	5	114.6	1.99	1.43	0.56	0.84	9.8	8.2	1.48	0.13
33.96	15.2	0.42	2.74	56.9	5	114.6	2.05	1.46	0.59	0.83	7.3	6.0	1.05	0.10
34.94	231.5	0.76	0.33	54.1	10	127.3	2.11	1.49	0.62	0.82	36.9	30.3	UnDef	0.00
35.92	351.2	1.84	0.52	24.4	10	127.3	2.17	1.52	0.65	0.81	56.1	45.5	UnDef	0.00
36.91	280.6	1.84	0.66	26.2	9	124.1	2.23	1.55	0.68	0.80	53.7	43.2	UnDef	0.00
37.89	242.4	0.95	0.39	22.3	10	127.3	2.30	1.58	0.71	0.80	38.7	30.8	UnDef	0.00
38.88	53.7	0.86	1.61	23.4	7	117.8	2.36	1.61	0.75	0.79	17.1	13.5	UnDef	0.20
39.86	32.2	0.61	1.90	57.3	6	114.6	2.41	1.64	0.78	0.78	12.3	9.7	2.39	0.25
40.85	247.1	0.92	0.37	78.0	10	127.3	2.47	1.67	0.81	0.78	39.4	30.6	UnDef	0.00

For use with report dated 03/18/2005, RTF Job No. 2004-700-21

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	407.5	2.22	0.55	45.7	10	127.3	2.53	1.70	0.84	0.77	65.0	49.9	UnDef	0.00
42.81	447.9	3.23	0.72	37.7	10	127.3	2.60	1.73	0.87	0.76	71.5	54.4	UnDef	0.00
43.80	432.4	3.82	0.88	52.1	9	124.1	2.66	1.76	0.90	0.75	82.8	62.4	UnDef	0.00
44.78	519.3	2.78	0.54	53.3	10	127.3	2.72	1.79	0.93	0.75	82.9	61.9	UnDef	0.00
45.77	472.7	3.19	0.68	51.8	10	127.3	2.78	1.82	0.96	0.74	75.5	55.9	UnDef	0.00
46.75	440.0	2.26	0.51	45.8	10	127.3	2.85	1.86	0.99	0.73	70.2	51.6	UnDef	0.00
47.74	288.5	3.04	1.05	37.8	9	124.1	2.91	1.89	1.02	0.73	55.3	40.2	UnDef	0.00
48.72	215.9	2.59	1.20	38.4	8	120.9	2.97	1.92	1.05	0.72	51.7	37.3	UnDef	0.00
49.70	399.1	2.15	0.54	36.1	10	127.3	3.03	1.95	1.08	0.72	63.7	45.7	UnDef	0.00
50.69	407.0	2.76	0.68	24.9	10	127.3	3.09	1.98	1.11	0.71	65.0	46.2	UnDef	0.00
51.67	378.4	1.99	0.53	24.8	10	127.3	3.16	2.01	1.15	0.71	60.4	42.6	UnDef	0.00
52.66	374.1	2.10	0.56	25.6	10	127.3	3.22	2.04	1.18	0.70	59.7	41.8	UnDef	0.00
53.64	184.9	1.13	0.61	29.2	9	124.1	3.28	2.07	1.21	0.69	35.4	24.6	UnDef	0.34
54.63	50.7	1.10	2.17	31.0	6	114.6	3.34	2.10	1.24	0.69	19.4	13.4	3.79	0.00
55.61	90.9	1.80	1.98	26.5	7	117.8	3.40	2.13	1.27	0.69	29.0	19.9	UnDef	0.37
56.59	61.0	1.15	1.89	22.7	7	117.8	3.45	2.15	1.30	0.68	19.5	13.3	UnDef	0.46
57.58	411.6	3.27	0.79	24.3	9	124.1	3.51	2.18	1.33	0.68	78.8	53.3	UnDef	0.00
58.56	360.1	1.20	0.33	23.4	10	127.3	3.57	2.21	1.36	0.67	57.5	38.6	UnDef	0.00
59.55	333.3	1.69	0.51	26.4	10	127.3	3.64	2.25	1.39	0.67	53.2	35.5	UnDef	0.00
60.53	497.3	2.80	0.56	22.1	10	127.3	3.70	2.28	1.42	0.66	79.4	52.6	UnDef	0.00
61.52	483.0	2.11	0.44	26.1	10	127.3	3.76	2.31	1.45	0.66	77.1	50.7	UnDef	0.00
62.42	499.0	3.04	0.61	30.0	10	127.3	3.82	2.34	1.48	0.65	79.6	52.1	UnDef	0.00
63.32	443.5	3.79	0.85	53.2	9	124.1	3.88	2.37	1.51	0.65	85.0	55.2	UnDef	0.00
64.30	499.9	3.23	0.65	62.5	10	127.3	3.94	2.40	1.54	0.65	79.8	51.5	UnDef	0.00
65.29	524.1	2.00	0.38	70.1	10	127.3	4.00	2.43	1.57	0.64	83.7	53.7	UnDef	0.00
66.27	533.9	2.79	0.52	74.2	10	127.3	4.06	2.46	1.60	0.64	85.2	54.3	UnDef	0.00
67.26	618.2	4.19	0.68	91.7	10	127.3	4.13	2.50	1.63	0.63	98.7	62.5	UnDef	0.00
68.24	524.3	2.69	0.51	119.4	10	127.3	4.19	2.53	1.66	0.63	83.7	52.7	UnDef	0.00
69.22	499.9	1.58	0.32	102.2	10	127.3	4.25	2.56	1.69	0.63	79.8	49.9	UnDef	0.00
70.21	512.0	2.32	0.45	72.4	10	127.3	4.31	2.59	1.72	0.62	81.7	50.8	UnDef	0.00
71.19	551.7	4.02	0.73	58.8	10	127.3	4.38	2.62	1.75	0.62	88.1	54.4	UnDef	0.00
72.18	446.7	5.67	1.27	63.8	9	124.1	4.44	2.65	1.79	0.61	85.6	52.5	UnDef	0.00
73.16	212.0	1.56	0.73	66.1	9	124.1	4.50	2.68	1.82	0.61	40.6	24.8	UnDef	0.40
74.15	68.2	1.27	1.87	75.5	7	117.8	4.56	2.71	1.85	0.61	21.8	13.2	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4782
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: SCPT-16
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 08:09
CPT File: 031S16.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.57 (ft): 15.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-06	0.04	394.9	1.53	9	21.4	0.2	21.5	5.3	UnDef	UnDef	10.0	UnDef	0.1	10.7
1.48	5.0E-06	0.03	121.3	2.30	7	19.8	8.1	27.9	15.9	UnDef	UnDef	10.0	UnDef	2.2	12.1
2.46	5.0E-05	0.01	131.9	1.51	9	35.9	7.5	43.4	11.5	44	46.7	10.0	-0.26	1.7	16.1
3.44	5.0E-04	0.01	195.6	0.38	9	74.6	0.0	74.6	1.8	44	62.8	1.0	-0.16	0.0	24.9
4.43	5.0E-04	0.00	105.7	0.49	9	52.3	0.0	52.3	5.0	42	49.0	1.0	-0.13	0.0	17.2
5.41	5.0E-05	0.00	97.8	0.42	9	54.2	0.0	54.2	5.0	42	49.7	1.0	-0.11	0.0	17.7
6.40	5.0E-05	0.00	55.0	0.61	9	33.4	9.0	42.3	12.9	40	35.8	10.0	-0.09	2.0	15.1
7.30	5.0E-03	0.00	33.7	0.89	7	22.1	17.0	39.1	21.3	36	30.0	6.0	-0.07	3.2	11.9
8.20	5.0E-03	0.00	95.5	0.20	9	65.2	0.0	65.2	4.0	42	55.0	1.0	-0.05	0.0	15.9
9.19	5.0E-03	0.00	144.8	0.23	9	104.4	0.0	104.4	2.0	44	68.5	1.0	-0.10	0.0	25.5
10.17	5.0E-02	0.00	171.8	0.27	9	130.5	0.0	130.5	1.5	44	74.9	1.0	-0.12	0.0	25.6
11.15	5.0E-02	0.00	167.0	0.30	9	133.2	0.0	133.2	1.9	44	75.5	1.0	-0.13	0.0	26.1
12.14	5.0E-02	0.00	138.9	0.48	9	116.0	0.0	116.0	4.4	44	71.5	1.0	-0.15	0.0	22.7
13.21	5.0E-03	0.00	80.2	0.85	9	70.3	14.6	85.0	11.4	42	57.2	1.0	-0.15	2.1	19.3
14.27	5.0E-05	0.05	16.6	1.80	6	15.9	63.5	79.4	39.9	32	30.0	6.0	-0.06	6.2	12.4
15.26	5.0E-06	0.06	14.4	3.02	6	14.3	57.1	71.3	50.1	UnDef	UnDef	6.0	UnDef	7.0	14.0
16.24	5.0E-04	0.01	53.6	1.01	7	51.3	23.3	74.6	16.7	40	48.2	1.0	-0.13	4.1	20.8
17.22	5.0E-04	0.02	44.4	1.43	7	43.3	35.7	79.1	21.9	38	43.3	1.0	-0.14	5.6	19.7
18.21	5.0E-02	0.00	134.5	0.29	9	131.2	0.0	131.2	2.9	44	75.1	1.0	-0.11	0.0	25.7
19.19	5.0E-02	0.00	160.4	0.34	9	158.7	0.0	158.7	2.4	44	80.5	1.0	-0.14	0.0	31.1
20.18	5.0E-02	0.00	170.2	0.18	9	170.8	0.0	170.8	0.7	44	82.6	1.0	-0.09	0.0	33.4
21.16	5.0E-02	0.00	155.1	0.19	9	158.0	0.0	158.0	1.3	44	80.4	1.0	-0.09	0.0	30.9
22.15	5.0E-02	0.00	152.7	0.47	9	157.8	0.0	157.8	3.8	44	80.4	1.0	-0.16	0.0	30.9
23.13	5.0E+00	0.00	257.6	0.17	10	269.2	0.0	269.2	0.0	46	95.0	1.0	-0.12	0.0	43.9
24.11	5.0E+00	0.00	270.0	0.26	10	286.1	0.0	286.1	0.0	46	95.0	1.0	-0.16	0.0	46.7
25.10	5.0E-02	0.00	161.5	0.25	9	174.0	0.0	174.0	1.6	44	83.1	1.0	-0.11	0.0	34.1
26.08	5.0E-02	0.00	111.6	0.30	9	122.2	0.0	122.2	4.1	42	73.0	1.0	-0.09	0.0	23.9
27.07	5.0E-02	0.00	123.7	0.34	9	136.9	0.0	136.9	3.9	42	76.3	1.0	-0.11	0.0	26.8
28.05	5.0E+00	0.00	221.6	0.19	10	247.2	0.0	247.2	0.0	46	93.2	1.0	-0.11	0.0	40.3
29.04	5.0E+00	0.00	216.6	0.11	10	244.7	0.0	244.7	0.0	46	92.9	1.0	-0.07	0.0	39.9
30.02	5.0E+00	0.00	191.1	0.15	10	218.7	0.0	218.7	0.0	44	89.7	1.0	-0.08	0.0	35.7
31.00	5.0E-03	0.00	71.0	1.06	9	83.2	26.7	109.9	14.1	40	62.0	1.0	-0.16	3.6	24.0
31.99	5.0E-06	0.02	17.3	2.82	6	21.7	86.9	108.6	45.3	UnDef	UnDef	6.0	UnDef	10.6	21.3
32.97	5.0E-06	0.04	12.9	3.54	4	16.7	67.0	83.7	55.1	UnDef	UnDef	6.0	UnDef	8.2	16.4
33.96	5.0E-06	0.09	9.0	3.17	4	12.3	49.2	61.4	61.8	UnDef	UnDef	3.0	UnDef	6.0	12.0
34.94	5.0E+00	0.00	154.3	0.33	9	185.8	0.0	185.8	2.6	44	85.0	1.0	-0.13	0.0	30.3
35.92	5.0E+00	0.00	229.9	0.53	9	278.9	0.0	278.9	2.2	46	95.0	1.0	-0.21	0.0	45.5
36.91	5.0E-02	0.00	179.7	0.66	9	220.6	0.0	220.6	4.4	44	90.0	1.0	-0.20	0.0	43.2
37.89	5.0E+00	0.00	152.0	0.40	9	188.7	0.0	188.7	3.2	44	85.5	1.0	-0.14	0.0	30.8
38.88	5.0E-04	0.00	31.9	1.68	7	41.4	66.5	107.9	28.1	36	42.0	1.0	-0.12	8.5	22.0
39.86	5.0E-05	0.03	18.2	2.05	6	24.7	98.6	123.3	39.8	32	30.0	6.0	-0.08	9.7	19.3
40.85	5.0E+00	0.01	146.9	0.37	9	187.4	0.0	187.4	3.2	44	85.3	1.0	-0.14	0.0	30.6

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E+00	0.00	238.6	0.55	9	306.1	0.0	306.1	2.2	46	95.0	1.0	-0.21	0.0	49.9
42.81	5.0E+00	0.00	257.5	0.73	9	333.3	0.0	333.3	3.0	46	95.0	1.0	-0.25	0.0	54.4
43.80	5.0E-02	0.00	244.2	0.89	9	319.0	0.0	319.0	4.2	46	95.0	1.0	-0.26	0.0	62.4
44.78	5.0E+00	0.00	288.4	0.54	9	379.7	0.0	379.7	1.4	46	95.0	1.0	-0.23	0.0	61.9
45.77	5.0E+00	0.00	257.8	0.68	9	342.6	0.0	342.6	2.7	46	95.0	1.0	-0.24	0.0	55.9
46.75	5.0E+00	0.00	235.7	0.52	9	316.1	0.0	316.1	2.0	46	95.0	1.0	-0.21	0.0	51.6
47.74	5.0E-02	0.00	151.4	1.06	9	205.6	17.8	223.4	8.0	44	87.9	1.0	-0.23	2.1	42.4
48.72	5.0E-03	0.00	111.1	1.22	9	152.6	30.2	182.8	11.2	42	79.4	1.0	-0.22	4.3	41.6
49.70	5.0E+00	0.00	203.5	0.54	9	279.9	0.0	279.9	2.9	46	95.0	1.0	-0.20	0.0	45.7
50.69	5.0E+00	0.00	204.2	0.68	9	283.2	0.0	283.2	3.8	46	95.0	1.0	-0.22	0.0	46.2
51.67	5.0E+00	0.00	186.7	0.53	9	261.2	0.0	261.2	3.2	44	94.8	1.0	-0.19	0.0	42.6
52.66	5.0E+00	0.00	181.6	0.57	9	256.2	0.0	256.2	3.6	44	94.2	1.0	-0.19	0.0	41.8
53.64	5.0E-02	0.00	87.6	0.62	9	125.7	14.5	140.2	8.9	42	73.8	1.0	-0.13	1.7	26.3
54.63	5.0E-05	-0.01	22.5	2.32	6	34.2	136.9	171.1	37.6	34	36.5	6.0	-0.12	13.4	26.8
55.61	5.0E-04	-0.01	41.1	2.06	7	61.0	84.3	145.3	26.7	38	53.1	1.0	-0.17	11.3	31.2
56.59	5.0E-04	-0.01	26.7	2.01	6	40.7	118.6	159.3	32.9	36	41.5	1.0	-0.12	11.6	24.8
57.58	5.0E-02	0.00	186.9	0.80	9	272.6	0.6	273.2	5.1	44	95.0	1.0	-0.23	0.1	53.4
58.56	5.0E+00	0.00	161.0	0.34	9	236.8	0.0	236.8	2.4	44	92.0	1.0	-0.14	0.0	38.6
59.55	5.0E+00	0.00	146.7	0.51	9	217.6	0.0	217.6	4.4	44	89.6	1.0	-0.16	0.0	35.5
60.53	5.0E+00	0.00	216.6	0.57	9	322.4	0.0	322.4	2.8	46	95.0	1.0	-0.21	0.0	52.6
61.52	5.0E+00	0.00	207.4	0.44	9	311.0	0.0	311.0	2.0	46	95.0	1.0	-0.18	0.0	50.7
62.42	5.0E+00	0.00	211.6	0.61	9	319.3	0.0	319.3	3.2	46	95.0	1.0	-0.21	0.0	52.1
63.32	5.0E-02	0.00	185.7	0.86	9	282.1	3.8	285.9	5.5	44	95.0	1.0	-0.23	0.5	55.7
64.30	5.0E+00	0.00	206.7	0.65	9	315.8	0.0	315.8	3.6	46	95.0	1.0	-0.21	0.0	51.5
65.29	5.0E+00	0.00	213.9	0.39	9	328.9	0.0	328.9	1.5	46	95.0	1.0	-0.17	0.0	53.7
66.27	5.0E+00	0.00	215.1	0.53	9	332.9	0.0	332.9	2.5	46	95.0	1.0	-0.20	0.0	54.3
67.26	5.0E+00	0.00	246.1	0.68	9	383.0	0.0	383.0	3.0	46	95.0	1.0	-0.24	0.0	62.5
68.24	5.0E+00	0.00	205.8	0.52	9	322.8	0.0	322.8	2.6	46	95.0	1.0	-0.19	0.0	52.7
69.22	5.0E+00	0.00	193.7	0.32	9	305.8	0.0	305.8	1.4	44	95.0	1.0	-0.15	0.0	49.9
70.21	5.0E+00	0.00	196.0	0.46	9	311.3	0.0	311.3	2.4	46	95.0	1.0	-0.18	0.0	50.8
71.19	5.0E+00	0.00	208.7	0.73	9	333.3	0.0	333.3	4.1	46	95.0	1.0	-0.23	0.0	54.4
72.18	5.0E-02	0.00	166.7	1.28	9	268.4	28.6	296.9	8.6	44	95.0	1.0	-0.26	3.4	55.9
73.16	5.0E-02	0.00	77.3	0.75	9	126.6	24.0	150.7	11.0	40	74.0	1.0	-0.14	2.7	27.5
74.15	5.0E-04	0.01	23.5	2.00	6	40.5	163.1	203.6	35.0	34	41.4	1.0	-0.11	13.3	26.5

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4809
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-16
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 08:49
CPT File: 890C16.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.57 (ft): 15.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	89.9	1.32	1.47	-0.3	7	117.8	0.03	0.03	0.00	2.00	28.7	57.4	UnDef	0.00
1.48	49.6	0.72	1.45	-0.1	7	117.8	0.09	0.09	0.00	2.00	15.8	31.7	UnDef	0.16
2.46	40.6	0.89	2.20	-0.3	6	114.6	0.14	0.14	0.00	2.00	15.6	31.1	3.24	0.14
3.44	35.4	1.13	3.19	-0.5	5	114.6	0.20	0.20	0.00	2.00	16.9	33.9	2.81	0.00
4.43	45.1	0.94	2.09	-0.4	6	114.6	0.26	0.26	0.00	1.97	17.3	34.1	3.59	0.19
5.41	40.7	0.54	1.33	-0.9	7	117.8	0.31	0.31	0.00	1.78	13.0	23.2	UnDef	0.13
6.40	37.6	0.47	1.25	-1.5	7	117.8	0.37	0.37	0.00	1.64	12.0	19.7	UnDef	0.12
7.30	33.7	0.33	0.99	-1.2	7	117.8	0.43	0.43	0.00	1.53	10.8	16.5	UnDef	0.10
8.20	20.1	0.29	1.46	0.4	6	114.6	0.48	0.48	0.00	1.45	7.7	11.1	1.57	0.10
9.19	65.3	0.36	0.55	-1.0	8	120.9	0.54	0.54	0.00	1.37	15.6	21.4	UnDef	0.15
10.17	82.1	0.74	0.89	-1.2	8	120.9	0.59	0.59	0.00	1.30	19.7	25.5	UnDef	0.21
11.15	124.8	0.77	0.62	-1.4	9	124.1	0.66	0.66	0.00	1.24	23.9	29.5	UnDef	0.40
12.14	158.6	0.80	0.51	-1.5	9	124.1	0.72	0.72	0.00	1.18	30.4	35.9	UnDef	0.00
13.21	170.6	0.84	0.49	-2.5	9	124.1	0.78	0.78	0.00	1.13	32.7	36.9	UnDef	0.00
14.27	162.0	0.57	0.35	-3.9	9	124.1	0.85	0.85	0.00	1.09	31.0	33.7	UnDef	0.00
15.26	132.7	0.48	0.36	-8.7	9	124.1	0.91	0.90	0.01	1.05	25.4	26.8	UnDef	0.32
16.24	56.7	0.58	1.03	-4.1	7	117.8	0.97	0.93	0.04	1.04	18.1	18.8	UnDef	0.13
17.22	28.3	0.43	1.51	1.9	6	114.6	1.03	0.96	0.07	1.02	10.8	11.1	2.18	0.13
18.21	33.5	0.55	1.65	-15.2	6	114.6	1.08	0.98	0.10	1.01	12.8	13.0	2.59	0.14
19.19	23.1	0.39	1.68	-8.1	6	114.6	1.14	1.01	0.13	1.00	8.9	8.8	1.76	0.20
20.18	119.8	0.75	0.63	2.3	9	124.1	1.20	1.04	0.16	0.98	22.9	22.5	UnDef	0.25
21.16	233.3	0.51	0.22	0.4	10	127.3	1.26	1.07	0.19	0.97	37.2	36.0	UnDef	0.00
22.15	259.0	0.58	0.23	-3.2	10	127.3	1.32	1.10	0.22	0.95	41.3	39.4	UnDef	0.00
23.13	256.6	0.57	0.22	-9.4	10	127.3	1.39	1.13	0.25	0.94	41.0	38.5	UnDef	0.00
24.11	236.8	1.06	0.45	-12.3	9	124.1	1.45	1.16	0.28	0.93	45.4	42.1	UnDef	0.00
25.10	279.1	2.35	0.84	-14.5	9	124.1	1.51	1.19	0.32	0.92	53.5	49.0	UnDef	0.00
26.08	247.7	1.46	0.59	-14.9	9	124.1	1.57	1.22	0.35	0.90	47.4	42.9	UnDef	0.00
27.07	313.8	2.64	0.84	-17.1	9	124.1	1.63	1.25	0.38	0.89	60.1	53.7	UnDef	0.00
28.05	301.1	0.92	0.31	-13.9	10	127.3	1.69	1.28	0.41	0.88	48.1	42.4	UnDef	0.00
29.04	119.9	1.00	0.84	-1.6	8	120.9	1.75	1.31	0.44	0.87	28.7	25.0	UnDef	0.24
30.02	98.7	0.90	0.92	-3.2	8	120.9	1.81	1.34	0.47	0.86	23.6	20.4	UnDef	0.19
31.00	74.8	1.12	1.50	0.9	7	117.8	1.87	1.37	0.50	0.85	23.9	20.4	UnDef	0.19
31.99	201.6	0.81	0.40	15.1	9	124.1	1.93	1.40	0.53	0.85	38.6	32.6	UnDef	0.00
32.97	108.0	1.24	1.15	-1.5	8	120.9	1.99	1.43	0.56	0.84	25.8	21.6	UnDef	0.23
33.96	87.5	1.45	1.66	-7.5	7	117.8	2.05	1.46	0.59	0.83	27.9	23.1	UnDef	0.24
34.94	323.7	1.34	0.41	-11.1	10	127.3	2.11	1.49	0.62	0.82	51.7	42.4	UnDef	0.00
35.92	192.5	1.74	0.90	-16.6	9	124.1	2.17	1.52	0.65	0.81	36.9	29.9	UnDef	0.00
36.91	188.8	1.28	0.68	-18.0	9	124.1	2.23	1.55	0.68	0.80	36.2	29.1	UnDef	0.44
37.89	150.3	1.54	1.02	-17.7	9	124.1	2.29	1.58	0.71	0.80	28.8	22.9	UnDef	0.34
38.88	101.8	1.14	1.12	-18.5	8	120.9	2.35	1.61	0.75	0.79	24.4	19.2	UnDef	0.21
39.86	210.4	0.86	0.41	-18.2	9	124.1	2.41	1.64	0.78	0.78	40.3	31.5	UnDef	0.00
40.85	134.4	1.16	0.87	-18.7	9	124.1	2.48	1.67	0.81	0.77	25.7	19.9	UnDef	0.26

For use with report dated 03/18/2005. RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Run No: 01-0316-0548-4809
CPT File: 890C16.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60 (blows/ft)	Su (tsf)	CRR
41.83	64.0	0.83	1.29	-15.9	7	117.8	2.54	1.70	0.84	0.77	20.4	15.7	UnDef	0.17
42.81	169.9	1.11	0.66	-12.6	9	124.1	2.60	1.73	0.87	0.76	32.5	24.8	UnDef	0.33
43.80	134.7	3.27	2.43	-19.7	7	117.8	2.65	1.76	0.90	0.75	43.0	32.5	UnDef	0.00
44.78	247.1	3.08	1.25	-24.9	9	124.1	2.71	1.78	0.93	0.75	47.3	35.4	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4809
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-16
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 08:49
CPT File: 890C16.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 4.57 (ft): 15.0
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-04	0.00	1000.0	1.47	12	172.3	UnDef	UnDef	0.0	50	95.0	1.0	-0.46	UnDef	UnDef
1.48	5.0E-04	0.00	570.0	1.46	9	95.1	0.0	95.1	3.7	50	81.6	1.0	-0.40	0.0	31.7
2.46	5.0E-05	0.00	280.7	2.21	9	77.8	11.0	88.7	9.6	46	68.6	10.0	-0.39	2.6	33.7
3.44	5.0E-06	0.00	175.4	3.21	12	67.7	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
4.43	5.0E-05	0.00	174.5	2.11	9	86.4	20.6	107.0	12.2	44	63.3	10.0	-0.33	4.7	38.7
5.41	5.0E-04	0.00	128.5	1.34	9	71.0	12.9	83.9	10.7	44	57.5	1.0	-0.24	2.5	25.6
6.40	5.0E-04	0.00	100.1	1.26	9	60.3	14.6	75.0	12.3	42	52.8	1.0	-0.21	2.7	22.4
7.30	5.0E-04	0.00	78.3	1.00	9	50.6	13.2	63.8	12.8	42	47.8	1.0	-0.16	2.5	19.0
8.20	5.0E-05	0.00	41.1	1.49	7	28.4	27.2	55.7	23.3	38	31.2	6.0	-0.14	4.9	16.0
9.19	5.0E-03	0.00	120.9	0.55	9	87.3	2.1	89.4	5.9	42	63.4	1.0	-0.15	0.3	21.7
10.17	5.0E-03	0.00	137.1	0.90	9	104.2	7.9	112.1	7.6	44	68.5	1.0	-0.21	1.2	26.7
11.15	5.0E-02	0.00	189.5	0.62	9	150.9	0.0	150.9	3.8	44	79.1	1.0	-0.20	0.0	29.5
12.14	5.0E-02	0.00	220.4	0.51	9	183.4	0.0	183.4	2.3	46	84.7	1.0	-0.20	0.0	35.9
13.21	5.0E-02	0.00	217.0	0.49	9	188.7	0.0	188.7	2.2	46	85.5	1.0	-0.19	0.0	36.9
14.27	5.0E-02	0.00	189.9	0.35	9	172.1	0.0	172.1	1.7	44	82.8	1.0	-0.15	0.0	33.7
15.26	5.0E-02	0.00	146.1	0.36	9	136.7	0.0	136.7	3.1	44	76.2	1.0	-0.13	0.0	26.8
16.24	5.0E-04	0.00	59.9	1.05	7	57.5	23.2	80.7	15.8	40	51.4	1.0	-0.14	4.1	22.9
17.22	5.0E-05	0.00	28.5	1.56	7	28.3	50.5	78.8	29.0	36	31.1	6.0	-0.11	7.4	18.5
18.21	5.0E-05	-0.02	33.0	1.70	7	33.1	51.0	84.1	27.7	36	35.6	6.0	-0.13	7.9	20.9
19.19	5.0E-05	-0.02	21.8	1.76	6	22.5	86.9	109.4	34.7	34	30.0	6.0	-0.09	8.7	17.5
20.18	5.0E-02	0.00	114.4	0.63	9	115.2	6.3	121.5	6.9	42	71.3	1.0	-0.16	0.8	23.3
21.16	5.0E+00	0.00	217.4	0.22	10	221.0	0.0	221.0	0.1	46	90.0	1.0	-0.13	0.0	36.0
22.15	5.0E+00	0.00	234.4	0.23	10	241.8	0.0	241.8	0.0	46	92.6	1.0	-0.14	0.0	39.4
23.13	5.0E+00	0.00	225.6	0.23	10	236.1	0.0	236.1	0.0	46	91.9	1.0	-0.13	0.0	38.5
24.11	5.0E-02	0.00	202.5	0.45	9	214.9	0.0	214.9	2.2	46	89.2	1.0	-0.18	0.0	42.1
25.10	5.0E-02	0.00	232.8	0.85	9	250.1	0.0	250.1	4.2	46	93.6	1.0	-0.25	0.0	49.0
26.08	5.0E-02	0.00	201.2	0.59	9	219.2	0.0	219.2	3.3	46	89.8	1.0	-0.20	0.0	42.9
27.07	5.0E-02	0.00	249.1	0.84	9	274.3	0.0	274.3	3.9	46	95.0	1.0	-0.26	0.0	53.7
28.05	5.0E+00	0.00	233.1	0.31	10	260.0	0.0	260.0	0.5	46	94.7	1.0	-0.16	0.0	42.4
29.04	5.0E-03	0.00	89.8	0.85	9	102.3	17.4	119.7	10.5	42	67.9	1.0	-0.16	2.5	27.5
30.02	5.0E-03	-0.01	72.1	0.93	9	83.3	22.8	106.1	13.0	40	62.0	1.0	-0.15	3.2	23.6
31.00	5.0E-04	-0.01	53.1	1.54	7	62.5	43.7	106.1	20.4	40	53.8	1.0	-0.17	7.1	27.4
31.99	5.0E-02	0.00	142.5	0.41	9	166.7	0.0	166.7	3.6	44	81.9	1.0	-0.14	0.0	32.6
32.97	5.0E-03	-0.01	74.1	1.17	9	88.3	30.0	118.3	14.5	40	63.7	1.0	-0.17	4.1	25.7
33.96	5.0E-04	-0.01	58.6	1.70	7	70.9	48.5	119.4	20.2	40	57.4	1.0	-0.19	7.9	31.0
34.94	5.0E+00	0.00	216.1	0.42	9	259.7	0.0	259.7	1.7	46	94.6	1.0	-0.18	0.0	42.4
35.92	5.0E-02	-0.01	125.3	0.91	9	152.9	14.9	167.8	8.3	44	79.4	1.0	-0.20	1.8	31.7
36.91	5.0E-02	-0.01	120.4	0.69	9	148.4	8.4	156.8	7.0	42	78.6	1.0	-0.17	1.0	30.1
37.89	5.0E-02	-0.01	93.7	1.04	9	117.0	24.4	141.4	11.5	42	71.8	1.0	-0.19	2.8	25.7
38.88	5.0E-03	-0.01	61.8	1.15	7	78.5	33.3	111.9	16.2	40	60.3	1.0	-0.16	4.4	23.6
39.86	5.0E-02	-0.01	126.9	0.41	9	160.8	0.0	160.8	4.4	44	80.9	1.0	-0.13	0.0	31.5
40.85	5.0E-02	-0.01	79.1	0.88	9	101.8	22.6	124.4	11.8	42	67.8	1.0	-0.15	2.6	22.5

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-04	-0.02	36.2	1.34	7	48.0	49.5	97.5	24.0	38	46.3	1.0	-0.12	7.3	23.0
42.81	5.0E-02	-0.01	96.9	0.67	9	126.5	12.7	139.3	8.4	42	74.0	1.0	-0.15	1.5	26.3
43.80	5.0E-04	-0.01	75.2	2.48	7	99.5	77.2	176.7	21.4	40	67.1	1.0	-0.27	12.2	44.7
44.78	5.0E-02	-0.01	137.0	1.26	9	181.0	26.8	207.8	9.8	44	84.3	1.0	-0.24	3.1	38.5

For use with report dated 03/18/2005. RTF Job No. 2004-700-21

For use with report dated 03/18/2005. RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 01-0316-0548-4837
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-17
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 11:27
CPT File: 031C17.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.47 (ft): 8.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	11.9	0.28	2.35	2.5	5	114.6	0.03	0.03	0.00	2.00	5.7	11.4	0.95	0.00
1.48	14.5	0.44	3.07	3.6	5	114.6	0.08	0.08	0.00	2.00	6.9	13.8	1.15	0.00
2.46	15.8	0.69	4.37	4.2	3	111.4	0.14	0.14	0.00	2.00	15.1	30.2	1.25	0.00
3.44	10.7	0.48	4.44	4.3	3	111.4	0.20	0.20	0.00	2.00	10.3	20.6	0.84	0.13
4.43	19.7	0.37	1.88	4.8	6	114.6	0.25	0.25	0.00	2.00	7.5	15.0	1.55	0.10
5.41	23.2	0.31	1.32	5.1	6	114.6	0.31	0.31	0.00	1.80	8.9	16.1	1.83	0.10
6.40	74.9	0.26	0.35	6.3	8	120.9	0.36	0.36	0.00	1.66	17.9	29.7	UnDef	0.25
7.30	88.5	0.33	0.38	6.7	8	120.9	0.42	0.42	0.00	1.54	21.2	32.7	UnDef	0.30
8.20	81.4	0.17	0.21	7.3	8	120.9	0.47	0.47	0.00	1.46	19.5	28.4	UnDef	0.23
9.19	56.1	0.10	0.18	8.6	8	120.9	0.53	0.50	0.03	1.41	13.4	19.0	UnDef	0.12
10.17	70.5	0.13	0.18	8.9	8	120.9	0.59	0.53	0.06	1.38	16.9	23.2	UnDef	0.16
11.15	97.2	0.17	0.17	9.6	9	124.1	0.65	0.56	0.10	1.34	18.6	24.9	UnDef	0.27
12.14	93.4	0.15	0.16	10.7	9	124.1	0.71	0.59	0.13	1.30	17.9	23.3	UnDef	0.24
13.21	101.1	0.12	0.11	11.7	9	124.1	0.78	0.62	0.16	1.27	19.4	24.6	UnDef	0.26
14.27	54.0	0.42	0.78	11.8	8	120.9	0.85	0.65	0.19	1.24	12.9	16.0	UnDef	0.12
15.26	33.1	0.60	1.82	12.6	6	114.6	0.90	0.68	0.22	1.21	12.7	15.4	2.58	0.13
16.24	75.8	0.47	0.62	13.6	8	120.9	0.96	0.71	0.25	1.19	18.2	21.6	UnDef	0.16
17.22	181.5	0.41	0.23	15.3	9	124.1	1.02	0.74	0.28	1.16	34.8	40.5	UnDef	0.00
18.21	199.9	0.51	0.26	16.7	9	124.1	1.08	0.77	0.32	1.14	38.3	43.7	UnDef	0.00
19.19	238.6	0.70	0.29	20.4	10	127.3	1.15	0.80	0.35	1.12	38.1	42.6	UnDef	0.00
20.18	262.6	0.77	0.29	21.4	10	127.3	1.21	0.83	0.38	1.10	41.9	46.0	UnDef	0.00
21.16	365.7	3.03	0.83	24.2	9	124.1	1.27	0.86	0.41	1.08	70.0	75.5	UnDef	0.00
22.15	237.6	0.84	0.35	32.2	10	127.3	1.33	0.89	0.44	1.06	37.9	40.1	UnDef	0.00
23.13	233.6	0.61	0.26	34.5	10	127.3	1.39	0.92	0.47	1.04	37.3	38.8	UnDef	0.00
24.11	237.9	0.66	0.28	35.9	10	127.3	1.46	0.96	0.50	1.02	38.0	38.8	UnDef	0.00
25.10	241.6	0.62	0.26	38.7	10	127.3	1.52	0.99	0.53	1.01	38.6	38.8	UnDef	0.00
26.08	235.4	0.89	0.38	40.5	10	127.3	1.58	1.02	0.56	0.99	37.6	37.2	UnDef	0.00
27.07	255.4	0.80	0.31	40.7	10	127.3	1.64	1.05	0.59	0.97	40.8	39.7	UnDef	0.00
28.05	257.1	0.89	0.35	41.2	10	127.3	1.71	1.08	0.62	0.96	41.0	39.4	UnDef	0.00
29.04	273.7	1.26	0.46	43.0	10	127.3	1.77	1.12	0.65	0.95	43.7	41.3	UnDef	0.00
30.02	236.6	1.75	0.74	43.2	9	124.1	1.83	1.15	0.68	0.93	45.3	42.3	UnDef	0.00
31.00	179.3	1.24	0.69	43.6	9	124.1	1.89	1.18	0.72	0.92	34.3	31.6	UnDef	0.00
31.99	39.3	0.80	2.05	51.2	6	114.6	1.95	1.21	0.75	0.91	15.0	13.7	2.98	0.24
32.97	33.7	0.57	1.68	54.5	6	114.6	2.01	1.23	0.78	0.90	12.9	11.7	2.54	0.20
33.96	186.7	0.97	0.52	57.9	9	124.1	2.07	1.26	0.81	0.89	35.8	31.9	UnDef	0.00
34.94	310.9	1.17	0.38	52.7	10	127.3	2.13	1.29	0.84	0.88	49.6	43.7	UnDef	0.00
35.92	363.9	1.46	0.40	47.9	10	127.3	2.19	1.32	0.87	0.87	58.1	50.5	UnDef	0.00
36.91	323.8	1.61	0.50	47.1	10	127.3	2.25	1.35	0.90	0.86	51.7	44.4	UnDef	0.00
37.89	299.0	1.46	0.49	48.0	10	127.3	2.32	1.39	0.93	0.85	47.7	40.5	UnDef	0.00
38.88	259.0	1.09	0.42	48.8	10	127.3	2.38	1.42	0.96	0.84	41.3	34.7	UnDef	0.00
39.86	198.4	0.43	0.22	47.9	9	124.1	2.44	1.45	0.99	0.83	38.0	31.6	UnDef	0.00
40.85	143.5	0.41	0.29	46.9	9	124.1	2.50	1.48	1.02	0.82	27.5	22.6	UnDef	0.22

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	54.2	0.94	1.73	47.7	7	117.8	2.56	1.51	1.05	0.81	17.3	14.1	UnDef	0.21
42.81	307.4	1.03	0.34	56.7	10	127.3	2.62	1.54	1.08	0.81	49.1	39.6	UnDef	0.00
43.80	274.8	1.54	0.56	54.2	9	124.1	2.68	1.57	1.11	0.80	52.6	42.0	UnDef	0.00
44.78	154.8	0.48	0.31	49.1	9	124.1	2.75	1.60	1.15	0.79	29.6	23.4	UnDef	0.24
45.77	18.4	0.26	1.42	45.0	6	114.6	2.80	1.63	1.18	0.78	7.0	5.5	1.25	0.11
46.75	29.3	0.61	2.07	51.7	6	114.6	2.86	1.65	1.21	0.78	11.2	8.7	2.12	0.21
47.74	53.9	1.52	2.81	84.1	6	114.6	2.92	1.68	1.24	0.77	20.7	15.9	4.08	0.00
48.72	160.6	3.63	2.26	96.1	7	117.8	2.97	1.71	1.27	0.77	51.3	39.3	UnDef	0.00

For use with report dated 03/18/2005. RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4837
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-17
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 11:27
CPT File: 031C17.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.47 (ft): 8.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-06	0.01	420.1	2.36	12	22.7	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
1.48	5.0E-06	0.01	169.9	3.09	12	27.7	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
2.46	5.0E-08	0.01	111.6	4.41	11	30.2	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
3.44	5.0E-08	0.01	54.0	4.52	6	20.6	63.2	83.7	33.3	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
4.43	5.0E-05	0.01	77.4	1.90	7	37.6	20.7	58.4	18.3	40	39.9	10.0	-0.23	4.3	19.3
5.41	5.0E-05	0.01	74.6	1.34	7	41.0	16.0	57.0	15.5	40	41.7	10.0	-0.19	3.4	19.5
6.40	5.0E-03	0.00	204.2	0.35	9	121.3	0.0	121.3	1.4	46	72.8	1.0	-0.16	0.0	29.7
7.30	5.0E-03	0.00	210.0	0.38	9	133.7	0.0	133.7	1.5	46	75.6	1.0	-0.17	0.0	32.7
8.20	5.0E-03	0.00	171.8	0.21	9	116.1	0.0	116.1	0.9	44	71.5	1.0	-0.10	0.0	28.4
9.19	5.0E-03	0.00	111.2	0.19	9	77.6	0.0	77.6	2.9	42	60.0	1.0	-0.06	0.0	19.0
10.17	5.0E-03	0.00	132.3	0.18	9	94.9	0.0	94.9	1.9	44	65.8	1.0	-0.07	0.0	23.2
11.15	5.0E-02	0.00	173.1	0.17	9	127.4	0.0	127.4	0.6	44	74.2	1.0	-0.09	0.0	24.9
12.14	5.0E-02	0.00	157.6	0.16	9	119.2	0.0	119.2	0.8	44	72.3	1.0	-0.07	0.0	23.3
13.21	5.0E-02	0.00	161.5	0.12	10	125.5	0.0	125.5	0.3	44	73.8	1.0	-0.05	0.0	24.6
14.27	5.0E-03	0.00	81.4	0.79	9	65.4	12.2	77.6	10.9	42	55.1	1.0	-0.15	1.7	17.7
15.26	5.0E-05	0.01	47.4	1.87	7	39.3	39.6	78.9	23.8	38	40.5	6.0	-0.18	7.0	22.4
16.24	5.0E-03	0.00	105.8	0.62	9	88.2	6.1	94.3	7.4	42	63.7	1.0	-0.15	0.9	22.5
17.22	5.0E-02	0.00	244.7	0.23	10	206.8	0.0	206.8	0.0	46	88.1	1.0	-0.14	0.0	40.5
18.21	5.0E-02	0.00	258.9	0.26	10	223.2	0.0	223.2	0.0	46	90.3	1.0	-0.16	0.0	43.7
19.19	5.0E+00	0.00	297.2	0.29	10	261.2	0.0	261.2	0.0	46	94.8	1.0	-0.18	0.0	42.6
20.18	5.0E+00	0.00	314.6	0.30	10	281.9	0.0	281.9	0.0	46	95.0	1.0	-0.18	0.0	46.0
21.16	5.0E-02	0.00	422.8	0.83	9	385.5	0.0	385.5	1.7	48	95.0	1.0	-0.30	0.0	75.5
22.15	5.0E+00	0.00	264.6	0.35	10	246.1	0.0	246.1	0.4	46	93.1	1.0	-0.18	0.0	40.1
23.13	5.0E+00	0.00	251.0	0.26	10	237.7	0.0	237.7	0.0	46	92.1	1.0	-0.15	0.0	38.8
24.11	5.0E+00	0.00	247.1	0.28	10	238.0	0.0	238.0	0.1	46	92.1	1.0	-0.16	0.0	38.8
25.10	5.0E+00	0.00	242.8	0.26	10	237.8	0.0	237.8	0.0	46	92.1	1.0	-0.15	0.0	38.8
26.08	5.0E+00	0.00	229.1	0.38	9	228.0	0.0	228.0	1.2	46	90.9	1.0	-0.18	0.0	37.2
27.07	5.0E+00	0.00	241.0	0.32	10	243.6	0.0	243.6	0.4	46	92.8	1.0	-0.17	0.0	39.7
28.05	5.0E+00	0.00	235.4	0.35	10	241.5	0.0	241.5	0.8	46	92.6	1.0	-0.17	0.0	39.4
29.04	5.0E+00	0.00	243.5	0.46	9	253.5	0.0	253.5	1.5	46	93.9	1.0	-0.20	0.0	41.3
30.02	5.0E-02	0.00	204.6	0.74	9	216.1	0.0	216.1	4.2	46	89.4	1.0	-0.23	0.0	42.3
31.00	5.0E-02	0.00	150.6	0.70	9	161.7	2.7	164.4	5.6	44	81.0	1.0	-0.19	0.3	32.0
31.99	5.0E-05	0.02	30.9	2.15	6	35.0	83.7	118.7	31.4	36	37.2	6.0	-0.14	10.8	24.5
32.97	5.0E-05	0.03	25.8	1.78	7	29.8	77.6	107.4	32.1	36	32.5	6.0	-0.10	9.6	21.3
33.96	5.0E-02	0.01	146.6	0.53	9	162.8	0.0	162.8	4.5	44	81.2	1.0	-0.16	0.0	31.9
34.94	5.0E+00	0.00	239.2	0.38	10	267.8	0.0	267.8	1.0	46	95.0	1.0	-0.18	0.0	43.7
35.92	5.0E+00	0.00	273.4	0.40	10	309.6	0.0	309.6	0.7	46	95.0	1.0	-0.20	0.0	50.5
36.91	5.0E+00	0.00	237.4	0.50	9	272.3	0.0	272.3	1.9	46	95.0	1.0	-0.20	0.0	44.4
37.89	5.0E+00	0.00	214.0	0.49	9	248.5	0.0	248.5	2.3	46	93.4	1.0	-0.19	0.0	40.5
38.88	5.0E+00	0.00	180.9	0.42	9	212.8	0.0	212.8	2.5	44	88.9	1.0	-0.17	0.0	34.7
39.86	5.0E-02	0.00	135.2	0.22	9	161.3	0.0	161.3	2.2	44	81.0	1.0	-0.09	0.0	31.6
40.85	5.0E-02	0.00	95.3	0.29	9	115.4	0.0	115.4	5.0	42	71.4	1.0	-0.08	0.0	22.6

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-04	0.01	34.2	1.81	7	43.2	67.9	111.1	27.9	38	43.2	1.0	-0.14	8.7	22.8
42.81	5.0E+00	0.00	198.1	0.34	9	242.6	0.0	242.6	1.4	46	92.7	1.0	-0.15	0.0	39.6
43.80	5.0E-02	0.00	173.4	0.56	9	214.7	0.0	214.7	3.9	44	89.2	1.0	-0.19	0.0	42.0
44.78	5.0E-02	0.00	95.0	0.32	9	119.8	0.0	119.8	5.0	42	72.4	1.0	-0.08	0.0	23.4
45.77	5.0E-05	0.01	9.6	1.67	6	14.1	56.4	70.5	50.6	30	30.0	3.0	0.00	5.5	11.0
46.75	5.0E-05	0.02	16.0	2.29	6	22.3	89.3	111.6	43.8	32	30.0	6.0	-0.08	8.7	17.5
47.74	5.0E-05	0.03	30.4	2.97	6	40.7	162.9	203.7	35.9	36	41.5	6.0	-0.18	15.9	31.9
48.72	5.0E-04	0.01	92.4	2.30	7	120.3	67.3	187.6	18.4	42	72.6	1.0	-0.28	11.4	50.6

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4864
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-18
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 11:01
CPT File: 031C18.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.83 (ft): 9.3
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	10.0	0.34	3.38	8.9	3	111.4	0.03	0.03	0.00	2.00	9.6	19.2	0.80	0.00
1.48	23.8	0.98	4.11	36.2	4	114.6	0.08	0.08	0.00	2.00	15.2	30.3	1.89	0.00
2.46	19.3	0.78	4.06	31.6	3	111.4	0.14	0.14	0.00	2.00	18.5	36.9	1.53	0.00
3.44	20.3	0.34	1.69	19.0	6	114.6	0.19	0.19	0.00	2.00	7.8	15.5	1.61	0.09
4.43	9.9	0.24	2.43	8.0	5	114.6	0.25	0.25	0.00	2.00	4.7	9.5	0.77	0.10
5.41	18.4	0.31	1.69	10.8	6	114.6	0.31	0.31	0.00	1.80	7.0	12.7	1.45	0.10
6.40	47.6	0.26	0.55	24.9	8	120.9	0.36	0.36	0.00	1.66	11.4	18.9	UnDef	0.12
7.30	27.7	0.24	0.88	17.9	7	117.8	0.42	0.42	0.00	1.55	8.8	13.6	UnDef	0.10
8.20	13.0	0.50	3.84	27.1	3	111.4	0.47	0.47	0.00	1.46	12.4	18.1	1.00	0.15
9.19	25.1	0.81	3.23	55.9	5	114.6	0.53	0.53	0.00	1.38	12.0	16.6	1.97	0.20
10.17	42.3	0.80	1.89	62.4	6	114.6	0.58	0.56	0.03	1.34	16.2	21.7	3.34	0.14
11.15	14.9	0.45	3.03	43.7	5	114.6	0.64	0.58	0.06	1.31	7.1	9.4	1.14	0.16
12.14	110.8	0.59	0.54	140.1	9	124.1	0.70	0.61	0.09	1.28	21.2	27.2	UnDef	0.33
13.21	149.9	0.56	0.37	87.8	9	124.1	0.76	0.64	0.12	1.25	28.7	35.8	UnDef	0.00
14.27	125.0	0.36	0.29	63.3	9	124.1	0.83	0.67	0.16	1.22	23.9	29.2	UnDef	0.39
15.26	23.3	0.52	2.22	54.3	6	114.6	0.89	0.70	0.19	1.19	8.9	10.7	1.79	0.16
16.24	28.6	0.83	2.89	101.6	5	114.6	0.95	0.73	0.22	1.17	13.7	16.0	2.21	0.25
17.22	137.4	0.74	0.54	157.1	9	124.1	1.00	0.76	0.25	1.15	26.3	30.3	UnDef	0.42
18.21	157.9	0.36	0.23	94.8	9	124.1	1.06	0.79	0.28	1.13	30.2	34.1	UnDef	0.00
19.19	142.9	0.36	0.25	62.8	9	124.1	1.13	0.82	0.31	1.11	27.4	30.3	UnDef	0.42
20.18	170.6	0.55	0.32	82.9	9	124.1	1.19	0.85	0.34	1.09	32.7	35.5	UnDef	0.00
21.16	254.5	1.51	0.59	133.4	9	124.1	1.25	0.88	0.37	1.07	48.8	52.0	UnDef	0.00
22.15	240.3	1.64	0.68	94.6	9	124.1	1.31	0.91	0.40	1.05	46.0	48.3	UnDef	0.00
23.13	233.4	1.33	0.57	69.1	9	124.1	1.37	0.94	0.43	1.03	44.7	46.1	UnDef	0.00
24.11	260.9	1.43	0.55	93.1	9	124.1	1.43	0.97	0.46	1.02	50.0	50.8	UnDef	0.00
25.10	266.9	1.05	0.39	114.0	10	127.3	1.49	1.00	0.49	1.00	42.6	42.6	UnDef	0.00
26.08	267.4	1.14	0.42	61.7	10	127.3	1.56	1.03	0.52	0.98	42.7	42.0	UnDef	0.00
27.07	288.9	1.46	0.50	61.6	10	127.3	1.62	1.06	0.55	0.97	46.1	44.7	UnDef	0.00
28.05	276.3	1.18	0.43	101.5	10	127.3	1.68	1.10	0.59	0.96	44.1	42.1	UnDef	0.00
29.04	270.5	1.55	0.57	65.6	9	124.1	1.74	1.13	0.62	0.94	51.8	48.8	UnDef	0.00
30.02	266.4	1.66	0.62	50.1	9	124.1	1.80	1.16	0.65	0.93	51.0	47.4	UnDef	0.00
31.00	253.8	1.49	0.59	75.5	9	124.1	1.87	1.19	0.68	0.92	48.6	44.6	UnDef	0.00
31.99	220.8	2.00	0.91	75.4	9	124.1	1.93	1.22	0.71	0.91	42.3	38.3	UnDef	0.00
32.97	352.8	2.06	0.58	78.0	10	127.3	1.99	1.25	0.74	0.89	56.3	50.4	UnDef	0.00
33.96	440.1	4.36	0.99	171.6	9	124.1	2.05	1.28	0.77	0.88	84.3	74.5	UnDef	0.00
34.94	222.8	3.02	1.35	106.5	8	120.9	2.11	1.31	0.80	0.87	53.3	46.6	UnDef	0.00
35.92	72.1	1.35	1.87	64.7	7	117.8	2.17	1.34	0.83	0.86	23.0	19.9	UnDef	0.23
36.91	96.1	1.41	1.46	66.1	8	120.9	2.23	1.37	0.86	0.86	23.0	19.7	UnDef	0.24
37.89	22.0	0.62	2.83	115.0	5	114.6	2.29	1.39	0.89	0.85	10.5	8.9	1.58	0.15
38.88	36.1	0.39	1.08	164.8	7	117.8	2.34	1.42	0.92	0.84	11.5	9.7	UnDef	0.13
39.86	23.8	0.42	1.78	191.3	6	114.6	2.40	1.45	0.95	0.83	9.1	7.6	1.72	0.16
40.85	83.2	0.76	0.91	37.5	8	120.9	2.46	1.47	0.98	0.82	19.9	16.4	UnDef	0.16

For use with report dated 03/18/2005, RTF Job No. 2004-700-21

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	75.8	1.18	1.56	64.7	7	117.8	2.52	1.50	1.02	0.82	24.2	19.8	UnDef	0.20
42.81	302.0	2.03	0.67	42.3	9	124.1	2.58	1.53	1.05	0.81	57.8	46.8	UnDef	0.00
43.80	278.5	1.63	0.59	32.7	9	124.1	2.64	1.56	1.08	0.80	53.3	42.7	UnDef	0.00
44.78	232.2	2.24	0.96	30.6	9	124.1	2.70	1.59	1.11	0.79	44.5	35.3	UnDef	0.00
45.77	300.3	2.29	0.76	35.1	9	124.1	2.76	1.62	1.14	0.79	57.5	45.2	UnDef	0.00
46.75	321.9	1.39	0.43	48.1	10	127.3	2.82	1.65	1.17	0.78	51.4	40.0	UnDef	0.00
47.74	283.7	1.47	0.52	49.0	10	127.3	2.88	1.68	1.20	0.77	45.3	34.9	UnDef	0.00
48.72	182.3	3.74	2.05	38.1	7	117.8	2.94	1.71	1.23	0.76	58.2	44.5	UnDef	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e

Run No: 01-0316-0548-4864
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-18
Engineer: MARK FRANKIAN
CPT Date: 01/31/01
CPT Time: 11:01
CPT File: 031C18.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 2.83 (ft): 9.3
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-08	0.03	364.9	3.39	12	19.2	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
1.48	5.0E-07	0.05	285.1	4.12	12	45.5	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
2.46	5.0E-08	0.05	138.0	4.09	12	36.9	UnDef	UnDef	0.0	UnDef	UnDef	10.0	UnDef	UnDef	UnDef
3.44	5.0E-05	0.03	103.5	1.70	7	38.9	13.2	52.1	14.5	42	44.4	10.0	-0.24	2.9	18.5
4.43	5.0E-06	0.03	38.6	2.49	7	19.0	37.6	56.6	29.9	UnDef	UnDef	6.0	UnDef	6.7	16.2
5.41	5.0E-05	0.02	58.9	1.72	7	32.5	22.4	54.9	20.3	40	35.0	10.0	-0.19	4.4	17.1
6.40	5.0E-03	0.02	129.4	0.55	9	77.1	1.0	78.1	5.5	44	59.8	1.0	-0.16	0.1	19.0
7.30	5.0E-04	0.02	65.1	0.89	9	41.8	12.7	54.5	13.7	40	42.3	1.0	-0.13	2.3	16.0
8.20	5.0E-08	0.07	26.6	3.98	6	18.5	74.1	92.6	42.5	UnDef	UnDef	6.0	UnDef	18.1	36.2
9.19	5.0E-06	0.07	46.8	3.30	6	33.9	75.1	109.0	30.8	UnDef	UnDef	6.0	UnDef	12.6	29.1
10.17	5.0E-05	0.05	75.1	1.92	7	55.5	32.0	87.6	18.7	40	50.4	10.0	-0.22	6.5	28.2
11.15	5.0E-06	0.09	24.5	3.16	6	19.1	76.5	95.6	40.4	UnDef	UnDef	6.0	UnDef	9.4	18.7
12.14	5.0E-02	0.04	180.8	0.54	9	138.9	0.0	138.9	3.4	44	76.7	1.0	-0.18	0.0	27.2
13.21	5.0E-02	0.02	232.4	0.37	9	183.1	0.0	183.1	1.0	46	84.6	1.0	-0.18	0.0	35.8
14.27	5.0E-02	0.01	184.1	0.29	9	149.0	0.0	149.0	1.4	44	78.7	1.0	-0.13	0.0	29.2
15.26	5.0E-05	0.07	31.9	2.31	6	27.2	68.3	95.5	31.8	36	30.0	6.0	-0.15	8.6	19.3
16.24	5.0E-06	0.11	38.0	2.98	6	32.8	90.1	122.9	32.5	UnDef	UnDef	6.0	UnDef	13.6	29.6
17.22	5.0E-02	0.03	180.3	0.54	9	154.6	0.0	154.6	3.5	44	79.8	1.0	-0.18	0.0	30.3
18.21	5.0E-02	0.02	199.3	0.23	10	174.2	0.0	174.2	0.5	46	83.2	1.0	-0.12	0.0	34.1
19.19	5.0E-02	0.01	173.5	0.25	9	154.7	0.0	154.7	1.3	44	79.8	1.0	-0.12	0.0	30.3
20.18	5.0E-02	0.01	199.9	0.32	9	181.4	0.0	181.4	1.3	46	84.3	1.0	-0.15	0.0	35.5
21.16	5.0E-02	0.01	288.6	0.60	9	265.9	0.0	265.9	1.7	46	95.0	1.0	-0.24	0.0	52.0
22.15	5.0E-02	0.01	263.1	0.69	9	246.7	0.0	246.7	2.7	46	93.2	1.0	-0.24	0.0	48.3
23.13	5.0E-02	0.01	247.2	0.57	9	235.8	0.0	235.8	2.2	46	91.9	1.0	-0.22	0.0	46.1
24.11	5.0E-02	0.01	267.8	0.55	9	259.4	0.0	259.4	1.7	46	94.6	1.0	-0.22	0.0	50.8
25.10	5.0E+00	0.01	265.4	0.40	10	261.2	0.0	261.2	0.7	46	94.8	1.0	-0.19	0.0	42.6
26.08	5.0E+00	0.01	257.7	0.43	9	257.6	0.0	257.6	1.0	46	94.4	1.0	-0.20	0.0	42.0
27.07	5.0E+00	0.00	270.1	0.51	9	274.1	0.0	274.1	1.4	46	95.0	1.0	-0.22	0.0	44.7
28.05	5.0E+00	0.01	250.7	0.43	9	258.3	0.0	258.3	1.1	46	94.5	1.0	-0.19	0.0	42.1
29.04	5.0E-02	0.01	238.5	0.58	9	249.4	0.0	249.4	2.4	46	93.5	1.0	-0.22	0.0	48.8
30.02	5.0E-02	0.00	228.6	0.63	9	242.3	0.0	242.3	2.9	46	92.6	1.0	-0.22	0.0	47.4
31.00	5.0E-02	0.01	212.1	0.59	9	227.9	0.0	227.9	3.0	46	90.9	1.0	-0.21	0.0	44.6
31.99	5.0E-02	0.01	179.7	0.92	9	195.8	5.5	201.3	6.0	44	86.5	1.0	-0.23	0.7	39.0
32.97	5.0E+00	0.00	280.9	0.59	9	309.0	0.0	309.0	1.8	46	95.0	1.0	-0.23	0.0	50.4
33.96	5.0E-02	0.01	342.2	0.99	9	380.6	0.0	380.6	3.4	48	95.0	1.0	-0.30	0.0	74.5
34.94	5.0E-03	0.01	168.5	1.37	9	190.5	22.7	213.2	9.0	44	85.8	1.0	-0.27	3.3	49.9
35.92	5.0E-04	0.02	52.2	1.93	7	61.0	55.8	116.7	22.9	40	53.1	1.0	-0.19	8.5	28.4
36.91	5.0E-03	0.01	68.7	1.50	7	80.4	39.4	119.8	17.3	40	61.0	1.0	-0.19	5.1	24.8
37.89	5.0E-06	0.14	14.2	3.16	4	18.3	73.0	91.3	51.2	UnDef	UnDef	6.0	UnDef	8.9	17.9
38.88	5.0E-04	0.13	23.8	1.15	7	29.6	51.3	80.9	28.7	34	32.4	1.0	-0.05	6.3	16.0
39.86	5.0E-05	0.23	14.8	1.98	6	19.4	77.6	97.0	43.4	32	30.0	6.0	-0.03	7.6	15.2
40.85	5.0E-03	0.00	54.8	0.94	7	67.1	27.5	94.5	15.9	40	55.8	1.0	-0.12	3.6	20.1

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E-04	0.01	48.8	1.61	7	60.6	49.7	110.2	21.9	38	52.9	1.0	-0.16	7.8	27.5
42.81	5.0E-02	0.00	195.7	0.68	9	238.9	0.0	238.9	4.0	46	92.2	1.0	-0.21	0.0	46.8
43.80	5.0E-02	0.00	176.8	0.59	9	218.2	0.0	218.2	4.0	44	89.6	1.0	-0.19	0.0	42.7
44.78	5.0E-02	0.00	144.3	0.97	9	180.1	14.3	194.5	7.8	44	84.1	1.0	-0.22	1.7	37.0
45.77	5.0E-02	0.00	183.6	0.77	9	230.8	0.0	230.8	5.0	44	91.3	1.0	-0.22	0.0	45.2
46.75	5.0E+00	0.00	193.1	0.44	9	245.1	0.0	245.1	2.3	44	93.0	1.0	-0.17	0.0	40.0
47.74	5.0E+00	0.00	166.8	0.52	9	214.0	0.0	214.0	3.8	44	89.1	1.0	-0.18	0.0	34.9
48.72	5.0E-04	0.00	104.7	2.08	7	136.3	58.5	194.8	16.3	42	76.2	1.0	-0.28	10.3	54.8

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4886
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-19
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 09:59
CPT File: 890C19.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.69 (ft): 12.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	70.3	0.27	0.39	0.9	8	120.9	0.03	0.03	0.00	2.00	16.8	33.6	UnDef	0.31
1.48	102.3	0.41	0.40	1.2	9	124.1	0.09	0.09	0.00	2.00	19.6	39.2	UnDef	0.00
2.46	75.9	0.31	0.41	1.2	8	120.9	0.15	0.15	0.00	2.00	18.2	36.4	UnDef	0.37
3.44	77.9	0.27	0.34	1.3	8	120.9	0.21	0.21	0.00	2.00	18.6	37.3	UnDef	0.39
4.43	54.2	0.20	0.37	0.8	8	120.9	0.27	0.27	0.00	1.93	13.0	25.0	UnDef	0.18
5.41	66.9	0.25	0.38	0.5	8	120.9	0.33	0.33	0.00	1.74	16.0	27.9	UnDef	0.22
6.40	99.1	0.35	0.35	0.5	9	124.1	0.39	0.39	0.00	1.60	19.0	30.4	UnDef	0.43
7.30	87.6	0.37	0.42	0.5	8	120.9	0.44	0.44	0.00	1.50	21.0	31.5	UnDef	0.28
8.20	43.8	0.36	0.82	0.2	7	117.8	0.50	0.50	0.00	1.42	14.0	19.8	UnDef	0.11
9.19	38.0	0.18	0.47	-0.6	7	117.8	0.56	0.56	0.00	1.34	12.1	16.3	UnDef	0.09
10.17	62.3	0.24	0.39	-0.9	8	120.9	0.62	0.62	0.00	1.28	14.9	19.0	UnDef	0.12
11.15	88.1	0.25	0.28	-0.8	9	124.1	0.68	0.68	0.00	1.22	16.9	20.5	UnDef	0.19
12.14	97.5	0.15	0.15	-0.7	9	124.1	0.74	0.74	0.00	1.17	18.7	21.8	UnDef	0.21
13.21	112.6	0.18	0.16	-0.5	9	124.1	0.80	0.77	0.03	1.14	21.6	24.6	UnDef	0.26
14.27	119.3	0.18	0.15	-0.4	9	124.1	0.87	0.80	0.07	1.12	22.8	25.5	UnDef	0.29
15.26	98.3	0.15	0.15	-0.2	9	124.1	0.93	0.83	0.10	1.10	18.8	20.6	UnDef	0.19
16.24	37.3	0.41	1.11	-0.2	7	117.8	0.99	0.86	0.13	1.08	11.9	12.8	UnDef	0.11
17.22	24.6	0.34	1.39	0.3	6	114.6	1.05	0.89	0.16	1.06	9.4	10.0	1.88	0.12
18.21	26.8	0.41	1.53	0.5	6	114.6	1.10	0.91	0.19	1.05	10.3	10.7	2.05	0.13
19.19	106.8	0.27	0.25	2.1	9	124.1	1.16	0.94	0.22	1.03	20.5	21.1	UnDef	0.20
20.18	173.5	1.03	0.60	2.7	9	124.1	1.22	0.97	0.25	1.02	33.2	33.7	UnDef	0.00
21.16	197.1	0.91	0.46	4.4	9	124.1	1.28	1.00	0.28	1.00	37.7	37.7	UnDef	0.00
22.15	202.1	0.38	0.19	6.5	9	124.1	1.34	1.03	0.31	0.98	38.7	38.1	UnDef	0.00
23.13	216.4	0.47	0.22	6.5	10	127.3	1.41	1.06	0.34	0.97	34.5	33.5	UnDef	0.00
24.11	205.8	0.91	0.44	6.4	9	124.1	1.47	1.09	0.38	0.96	39.4	37.7	UnDef	0.00
25.10	260.9	1.19	0.46	8.4	10	127.3	1.53	1.12	0.41	0.94	41.6	39.3	UnDef	0.00
26.08	259.9	1.39	0.53	10.0	9	124.1	1.59	1.16	0.44	0.93	49.8	46.3	UnDef	0.00
27.07	278.3	0.95	0.34	10.8	10	127.3	1.65	1.19	0.47	0.92	44.4	40.8	UnDef	0.00
28.05	298.4	2.74	0.92	9.0	9	124.1	1.72	1.22	0.50	0.91	57.1	51.8	UnDef	0.00
29.04	262.2	0.84	0.32	6.3	10	127.3	1.78	1.25	0.53	0.89	41.9	37.5	UnDef	0.00
30.02	176.0	2.02	1.15	5.8	8	120.9	1.84	1.28	0.56	0.88	42.1	37.3	UnDef	0.00
31.00	244.0	1.67	0.68	6.1	9	124.1	1.90	1.31	0.59	0.87	46.7	40.9	UnDef	0.00
31.99	145.8	1.19	0.82	5.6	9	124.1	1.96	1.34	0.62	0.86	27.9	24.1	UnDef	0.32
32.97	300.3	1.81	0.60	5.7	9	124.1	2.02	1.37	0.65	0.85	57.5	49.2	UnDef	0.00
33.96	361.3	3.05	0.85	3.1	9	124.1	2.08	1.40	0.68	0.85	69.2	58.5	UnDef	0.00
34.94	309.3	1.79	0.58	3.3	10	127.3	2.14	1.43	0.71	0.84	49.4	41.3	UnDef	0.00
35.92	181.9	2.45	1.35	3.9	8	120.9	2.21	1.46	0.74	0.83	43.5	36.0	UnDef	0.00
36.91	136.8	2.54	1.86	5.5	7	117.8	2.26	1.49	0.77	0.82	43.7	35.8	UnDef	0.46
37.89	256.5	1.25	0.49	6.6	10	127.3	2.32	1.52	0.81	0.81	40.9	33.2	UnDef	0.00
38.88	111.5	0.41	0.37	5.4	9	124.1	2.39	1.55	0.84	0.80	21.4	17.2	UnDef	0.14
39.86	98.3	0.69	0.70	5.1	8	120.9	2.45	1.58	0.87	0.80	23.5	18.7	UnDef	0.17
40.85	283.5	1.01	0.35	4.0	10	127.3	2.51	1.61	0.90	0.79	45.2	35.7	UnDef	0.00

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	284.7	1.33	0.47	-0.7	10	127.3	2.57	1.64	0.93	0.78	45.4	35.5	UnDef	0.00
42.81	297.3	1.11	0.37	-1.4	10	127.3	2.63	1.67	0.96	0.77	47.4	36.7	UnDef	0.00
43.80	303.5	1.24	0.41	-1.9	10	127.3	2.70	1.71	0.99	0.77	48.4	37.1	UnDef	0.00
44.78	312.7	1.29	0.41	-2.2	10	127.3	2.76	1.74	1.02	0.76	49.9	37.9	UnDef	0.00
45.77	314.0	1.61	0.51	-2.8	10	127.3	2.82	1.77	1.05	0.75	50.1	37.7	UnDef	0.00
46.75	357.5	1.88	0.53	-2.7	10	127.3	2.88	1.80	1.08	0.75	57.1	42.5	UnDef	0.00
47.74	373.8	1.83	0.49	-2.5	10	127.3	2.95	1.83	1.11	0.74	59.7	44.1	UnDef	0.00
48.72	368.5	1.28	0.35	-1.7	10	127.3	3.01	1.87	1.14	0.73	58.8	43.1	UnDef	0.00
49.70	323.2	1.20	0.37	-2.3	10	127.3	3.07	1.90	1.17	0.73	51.6	37.5	UnDef	0.00
50.69	298.4	1.44	0.48	-2.9	10	127.3	3.13	1.93	1.20	0.72	47.6	34.3	UnDef	0.00
51.67	277.8	1.35	0.49	-3.2	10	127.3	3.20	1.96	1.24	0.71	44.3	31.7	UnDef	0.00
52.66	198.1	0.73	0.37	-3.3	9	124.1	3.26	1.99	1.27	0.71	37.9	26.9	UnDef	0.32
53.64	68.1	0.90	1.32	-3.5	7	117.8	3.32	2.02	1.30	0.70	21.7	15.3	UnDef	0.19
54.63	78.9	2.22	2.81	-3.4	6	114.6	3.38	2.05	1.33	0.70	30.2	21.1	6.04	0.00

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Gregg In Situ, Inc.
Interpretation Output - Release 1.00.19e
Run No: 01-0316-0548-4886
Job No: 01-031SH
Client: R.T. FRANKIAN
Project: CPT Site Investigation
Site: TRACT #53295
Location: CPT-19
Engineer: MARK FRANKIAN
CPT Date: 01/19/12
CPT Time: 09:59
CPT File: 890C19.COR
Northing (m): 0.000
Easting (m): 0.000
Elevation (m): 0.000

Water Table (m): 3.69 (ft): 12.1
Su Nkt used: 12.50
Averaging Increment (m): 0.30
Phi Method : Robertson and Campanella, 1983
Dr Method : Jamiolkowski - All Sands
State Parameter M: 1.20
Used Unit Weights Assigned to Soil Zones
Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
0.49	5.0E-03	0.00	1000.0	0.39	10	134.6	0.0	134.6	0.0	50	95.0	1.0	-0.31	0.0	33.6
1.48	5.0E-02	0.00	1000.0	0.40	10	195.9	0.0	195.9	0.0	50	95.0	1.0	-0.31	0.0	39.2
2.46	5.0E-03	0.00	503.9	0.41	10	145.4	0.0	145.4	0.0	48	85.9	1.0	-0.25	0.0	36.4
3.44	5.0E-03	0.00	370.1	0.34	10	149.2	0.0	149.2	0.0	48	81.9	1.0	-0.21	0.0	37.3
4.43	5.0E-03	0.00	200.1	0.37	9	102.1	0.0	102.1	1.6	46	67.9	1.0	-0.16	0.0	25.0
5.41	5.0E-03	0.00	202.4	0.38	9	114.2	0.0	114.2	1.7	46	71.1	1.0	-0.17	0.0	27.9
6.40	5.0E-02	0.00	253.5	0.35	10	155.4	0.0	155.4	0.5	46	79.9	1.0	-0.18	0.0	30.4
7.30	5.0E-03	0.00	196.2	0.42	9	128.6	0.0	128.6	2.1	46	74.5	1.0	-0.17	0.0	31.5
8.20	5.0E-04	0.00	86.9	0.83	9	60.7	10.6	71.3	10.6	42	53.0	1.0	-0.16	2.0	21.8
9.19	5.0E-04	0.00	67.3	0.48	9	49.9	0.0	49.9	5.0	40	47.3	1.0	-0.09	0.0	16.3
10.17	5.0E-03	0.00	100.2	0.40	9	77.7	0.0	77.7	5.0	42	60.0	1.0	-0.11	0.0	19.0
11.15	5.0E-02	0.00	129.4	0.29	9	104.9	0.0	104.9	3.1	44	68.6	1.0	-0.10	0.0	20.5
12.14	5.0E-02	0.00	131.7	0.15	9	111.3	0.0	111.3	1.6	44	70.3	1.0	-0.05	0.0	21.8
13.21	5.0E-02	0.00	145.5	0.16	9	125.7	0.0	125.7	1.2	44	73.8	1.0	-0.07	0.0	24.6
14.27	5.0E-02	0.00	147.9	0.15	9	130.4	0.0	130.4	1.0	44	74.9	1.0	-0.06	0.0	25.5
15.26	5.0E-02	0.00	117.1	0.15	9	105.5	0.0	105.5	2.2	42	68.8	1.0	-0.04	0.0	20.6
16.24	5.0E-04	0.00	42.2	1.14	7	39.3	27.8	67.1	20.5	38	40.5	1.0	-0.12	4.5	17.3
17.22	5.0E-05	-0.01	26.6	1.45	7	25.6	47.3	72.9	29.3	36	30.0	6.0	-0.09	6.8	16.9
18.21	5.0E-05	-0.01	28.1	1.60	7	27.4	51.6	79.0	29.5	36	30.2	6.0	-0.11	7.4	18.2
19.19	5.0E-02	0.00	112.3	0.25	9	107.8	0.0	107.8	3.6	42	69.4	1.0	-0.08	0.0	21.1
20.18	5.0E-02	0.00	177.5	0.60	9	172.3	0.0	172.3	4.0	44	82.9	1.0	-0.19	0.0	33.7
21.16	5.0E-02	0.00	195.6	0.47	9	192.8	0.0	192.8	2.5	44	86.1	1.0	-0.18	0.0	37.7
22.15	5.0E-02	0.00	194.7	0.19	10	194.7	0.0	194.7	0.2	44	86.4	1.0	-0.11	0.0	38.1
23.13	5.0E+00	0.00	202.3	0.22	10	205.4	0.0	205.4	0.3	46	87.9	1.0	-0.12	0.0	33.5
24.11	5.0E-02	0.00	186.8	0.45	9	192.6	0.0	192.6	2.6	44	86.1	1.0	-0.17	0.0	37.7
25.10	5.0E+00	0.00	230.6	0.46	9	240.8	0.0	240.8	1.7	46	92.5	1.0	-0.19	0.0	39.3
26.08	5.0E-02	0.00	223.4	0.54	9	236.5	0.0	236.5	2.4	46	92.0	1.0	-0.20	0.0	46.3
27.07	5.0E+00	0.00	233.0	0.34	10	249.9	0.0	249.9	0.8	46	93.5	1.0	-0.17	0.0	40.8
28.05	5.0E-02	0.00	243.5	0.92	9	264.6	0.0	264.6	4.5	46	95.0	1.0	-0.26	0.0	51.8
29.04	5.0E+00	0.00	208.5	0.32	9	229.6	0.0	229.6	1.1	46	91.1	1.0	-0.15	0.0	37.5
30.02	5.0E-03	0.00	136.1	1.16	9	152.3	19.8	172.1	9.3	44	79.3	1.0	-0.23	2.9	40.2
31.00	5.0E-02	0.00	184.9	0.69	9	208.7	0.0	208.7	4.4	44	88.4	1.0	-0.21	0.0	40.9
31.99	5.0E-02	0.00	107.4	0.83	9	123.2	14.3	137.5	8.9	42	73.3	1.0	-0.18	1.7	25.8
32.97	5.0E-02	0.00	217.8	0.61	9	251.1	0.0	251.1	3.0	46	93.7	1.0	-0.21	0.0	49.2
33.96	5.0E-02	0.00	256.5	0.85	9	298.8	0.0	298.8	3.8	46	95.0	1.0	-0.26	0.0	58.5
34.94	5.0E+00	0.00	214.6	0.58	9	253.0	0.0	253.0	2.9	46	93.9	1.0	-0.21	0.0	41.3
35.92	5.0E-03	0.00	122.9	1.36	9	147.2	29.3	176.5	11.2	42	78.4	1.0	-0.24	4.2	40.2
36.91	5.0E-04	0.00	90.3	1.89	7	109.7	49.8	159.5	16.7	42	69.9	1.0	-0.25	8.7	44.5
37.89	5.0E+00	0.00	167.3	0.49	9	203.6	0.0	203.6	3.5	44	87.7	1.0	-0.17	0.0	33.2
38.88	5.0E-02	-0.01	70.4	0.38	9	87.6	0.0	87.6	5.0	40	63.5	1.0	-0.07	0.0	17.2
39.86	5.0E-03	-0.01	60.7	0.72	9	76.6	20.7	97.3	13.0	40	59.6	1.0	-0.11	2.9	21.6
40.85	5.0E+00	0.00	174.5	0.36	9	218.6	0.0	218.6	2.2	44	89.7	1.0	-0.15	0.0	35.7

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Param	Del(n1)60	(N1)60cs
41.83	5.0E+00	0.00	171.8	0.47	9	217.4	0.0	217.4	3.2	44	89.5	1.0	-0.17	0.0	35.5
42.81	5.0E+00	0.00	176.0	0.38	9	224.8	0.0	224.8	2.3	44	90.5	1.0	-0.15	0.0	36.7
43.80	5.0E+00	0.00	176.3	0.41	9	227.4	0.0	227.4	2.6	44	90.8	1.0	-0.16	0.0	37.1
44.78	5.0E+00	0.00	178.3	0.42	9	232.1	0.0	232.1	2.6	44	91.4	1.0	-0.16	0.0	37.9
45.77	5.0E+00	0.00	175.8	0.52	9	231.0	0.0	231.0	3.4	44	91.3	1.0	-0.18	0.0	37.7
46.75	5.0E+00	0.00	196.8	0.53	9	260.6	0.0	260.6	3.0	46	94.7	1.0	-0.19	0.0	42.5
47.74	5.0E+00	0.00	202.2	0.49	9	270.1	0.0	270.1	2.5	46	95.0	1.0	-0.19	0.0	44.1
48.72	5.0E+00	0.00	195.9	0.35	9	264.0	0.0	264.0	1.6	46	95.0	1.0	-0.16	0.0	43.1
49.70	5.0E+00	0.00	168.7	0.37	9	229.6	0.0	229.6	2.5	44	91.1	1.0	-0.15	0.0	37.5
50.69	5.0E+00	0.00	153.0	0.49	9	210.2	0.0	210.2	3.9	44	88.6	1.0	-0.16	0.0	34.3
51.67	5.0E+00	0.00	140.0	0.49	9	194.1	0.0	194.1	4.5	44	86.3	1.0	-0.16	0.0	31.7
52.66	5.0E-02	-0.01	97.8	0.37	9	137.3	0.0	137.3	5.0	42	76.4	1.0	-0.10	0.0	26.9
53.64	5.0E-04	-0.02	32.0	1.39	7	46.9	60.1	106.9	26.0	36	45.6	1.0	-0.11	8.3	23.6
54.63	5.0E-05	-0.02	36.9	2.94	6	54.0	152.9	206.9	32.7	38	49.6	6.0	-0.21	18.2	39.3

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

3.3 Summary of Seismic Results

GREGG

Project No: 01-031SH
Client: R.T. Frankian
Location: Tract #53295 Valencia, Ca.
Sounding: SCPT-12
Sounding Date: January 31st, 2001

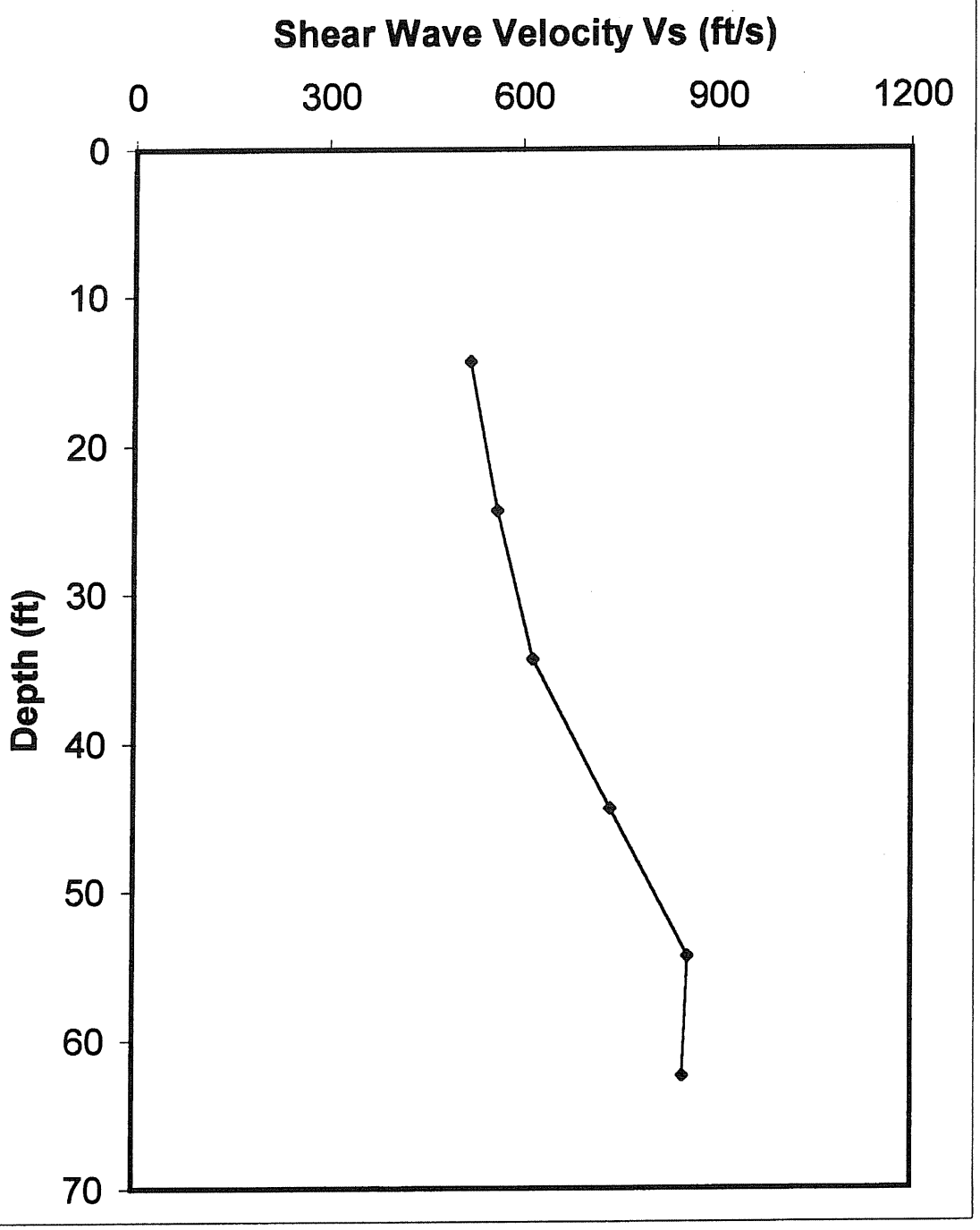
Shear Wave Velocity Calculations

Geophone Offset (feet) 0.66
Source Offset (feet) 3.00

Test Depth (feet)	Geophone Depth (feet)	Ray Path (feet)	Incremental Distance (feet)	Time Interval (ms)	Interval Velocity (ft/s)	Interval Depth (feet)
10.01	9.35	9.82				
20.01	19.35	19.58	9.76	18.80	519	14.35
30.01	29.35	29.51	9.92	17.67	562	24.35
40.02	39.36	39.48	9.97	16.16	617	34.36
50.02	49.36	49.45	9.98	13.54	737	44.36
60.02	59.36	59.44	9.98	11.65	857	54.36
66.09	65.43	65.50	6.06	7.14	849	62.40

Shear Wave Velocity Profile

Project: 01-031sh Tract # 53295 Valencia, Ca.
Location: SCPT-12
Sounding Date: January 31st, 2001



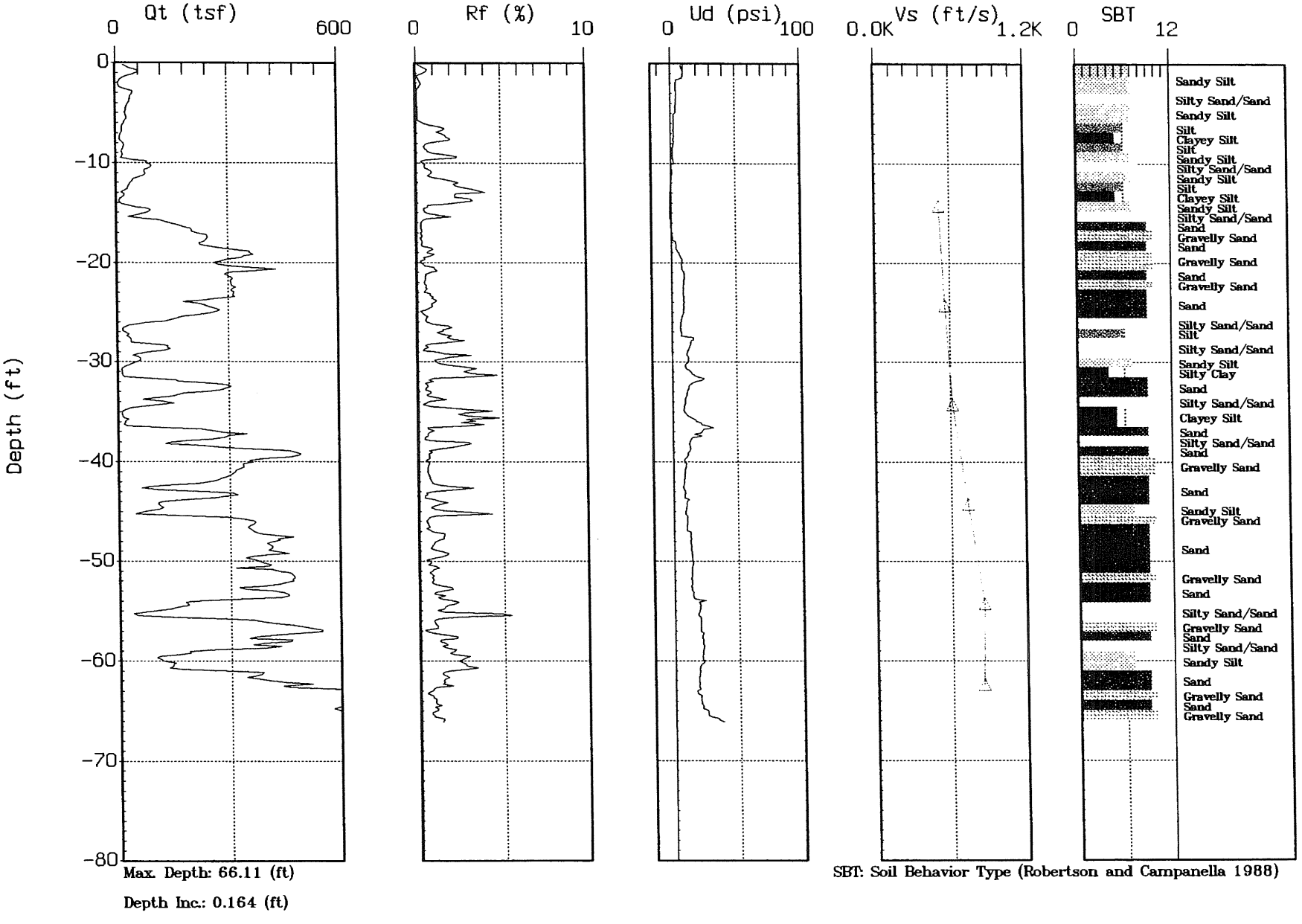
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : SCPT-12

Engineer : MARK FRANKIAN
Date : 01:31:01 15:54

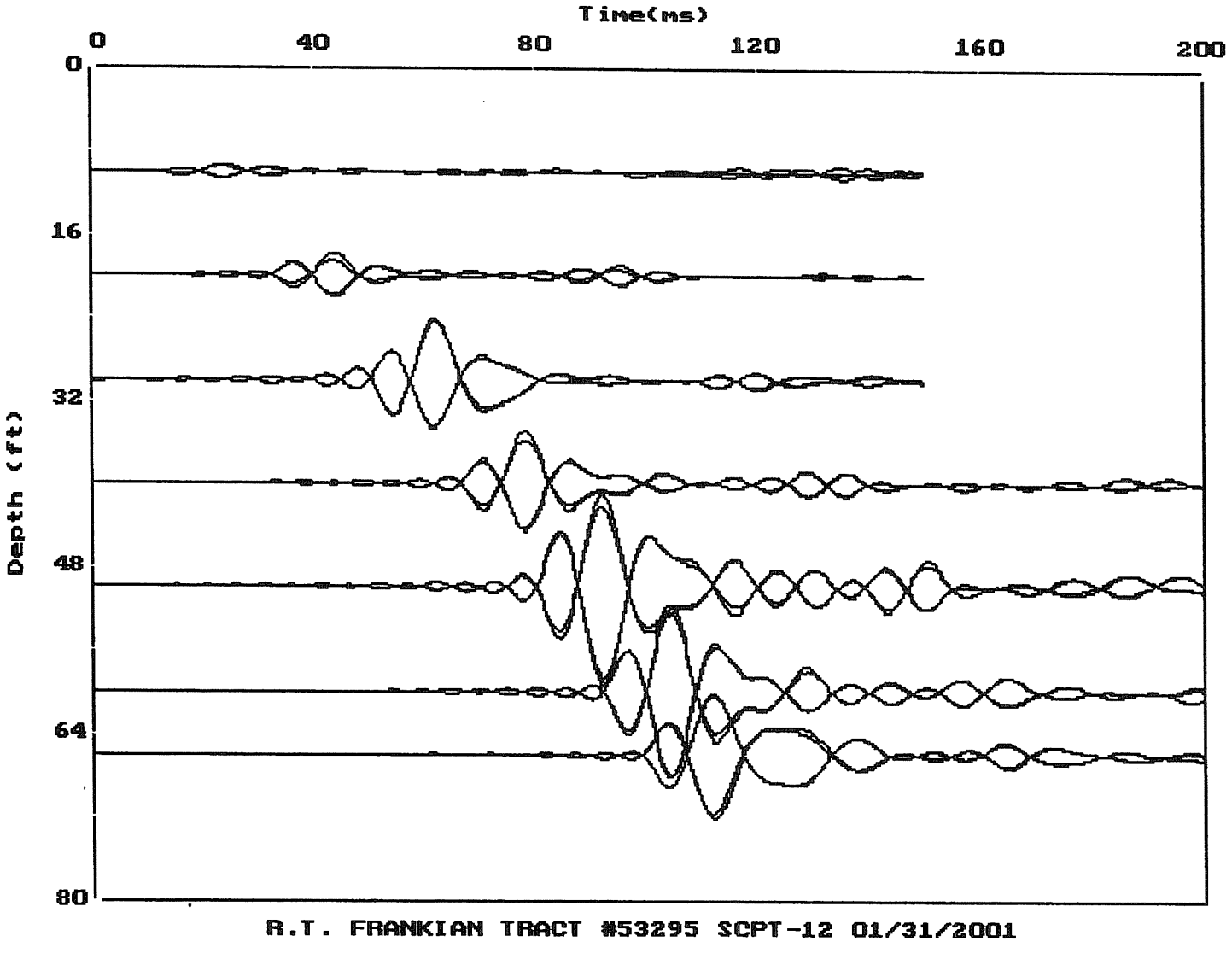


Max. Depth: 66.11 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

For use with report dated 03/18/2005; RTF Job No. 2004-700-21



GREGG

Project No: 01-031sh
Client: R.T. Frankian
Location: Tract #53295 Valencia, Ca.
Sounding: SCPT-16
Sounding Date: January 31st, 2001

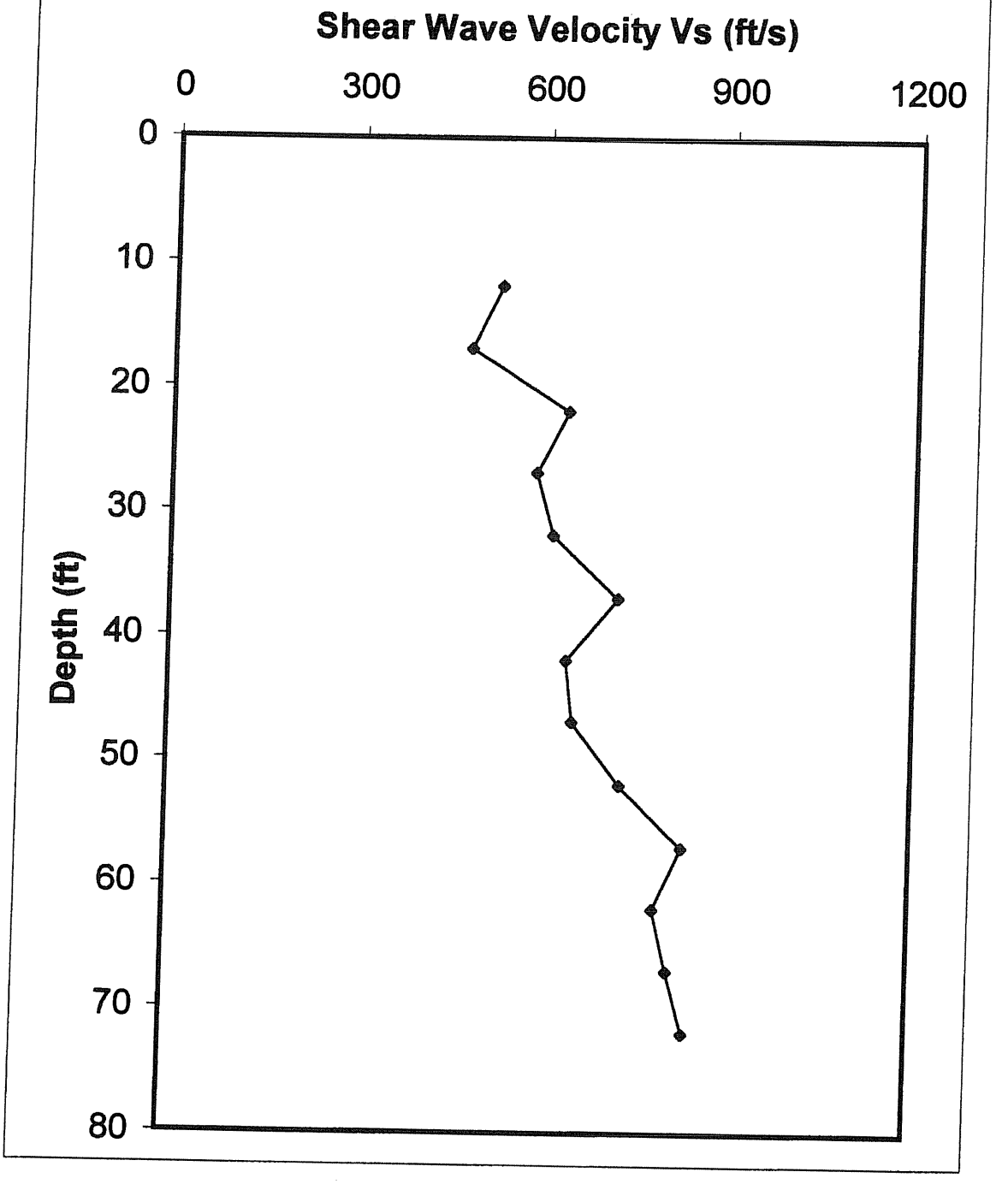
Shear Wave Velocity Calculations

Geophone Offset (feet) 0.66
Source Offset (feet) 3.00

Test Depth (feet)	Geophone Depth (feet)	Ray Path (feet)	Incremental Distance (feet)	Time Interval (ms)	Interval Velocity (ft/s)	Interval Depth (feet)
10.00	9.34	9.81				
15.09	14.43	14.74	4.93	9.40	524	11.89
20.01	19.35	19.58	4.84	10.15	477	16.89
25.09	24.43	24.62	5.03	7.89	638	21.89
29.98	29.32	29.48	4.86	8.27	588	26.88
35.10	34.44	34.57	5.10	8.27	616	31.88
40.02	39.36	39.48	4.90	6.77	724	36.90
45.10	44.44	44.54	5.07	7.90	641	41.90
50.02	49.36	49.45	4.91	7.51	654	46.90
55.27	54.61	54.70	5.24	7.15	733	51.99
59.99	59.33	59.41	4.71	5.64	836	56.97
65.11	64.45	64.52	5.11	6.46	792	61.89
70.03	69.37	69.44	4.92	6.02	816	66.91
75.11	74.45	74.51	5.08	6.01	845	71.91

Shear Wave Velocity Profile

Project: 01-031sh Tract #53295 Valencia, Ca.
Location: SCPT-16
Sounding Date: January 31st, 2001



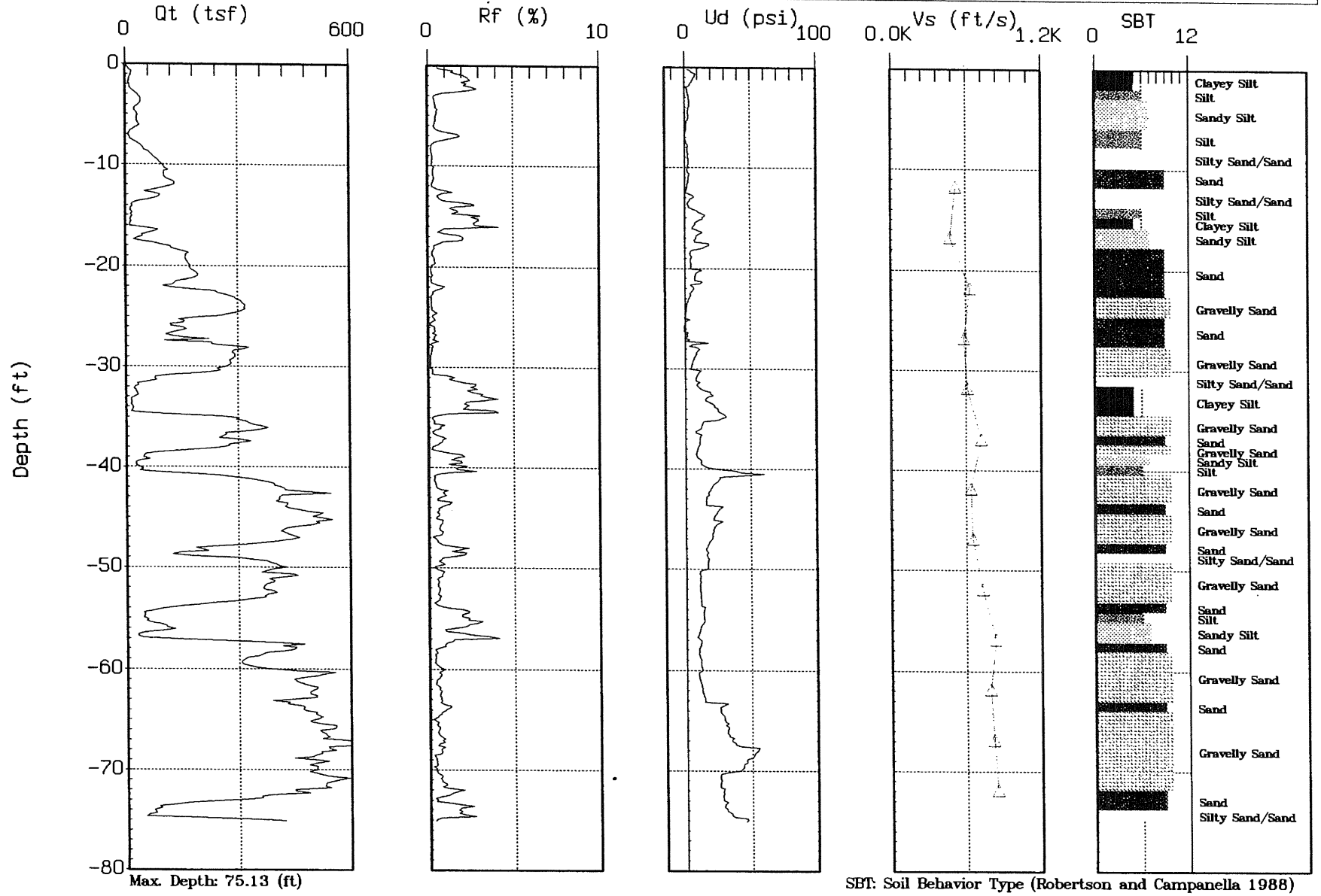
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

Site : TRACT #53295
Location : SCPT-16

Engineer : MARK FRANKIAN
Date : 01:31:01 08:09

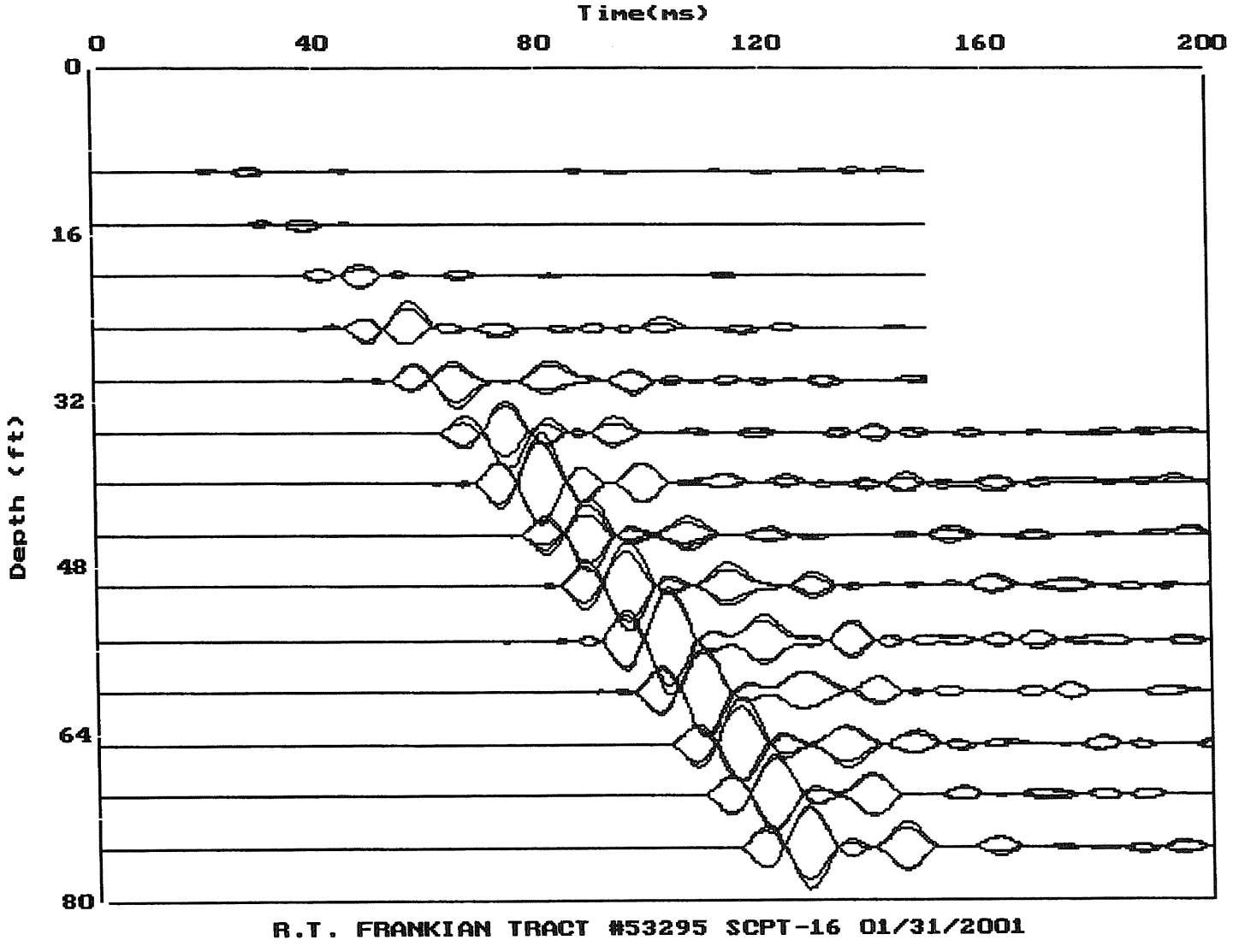


Max. Depth: 75.13 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

For use with report dated 03/18/2005; RTF Job No. 2004-700-21



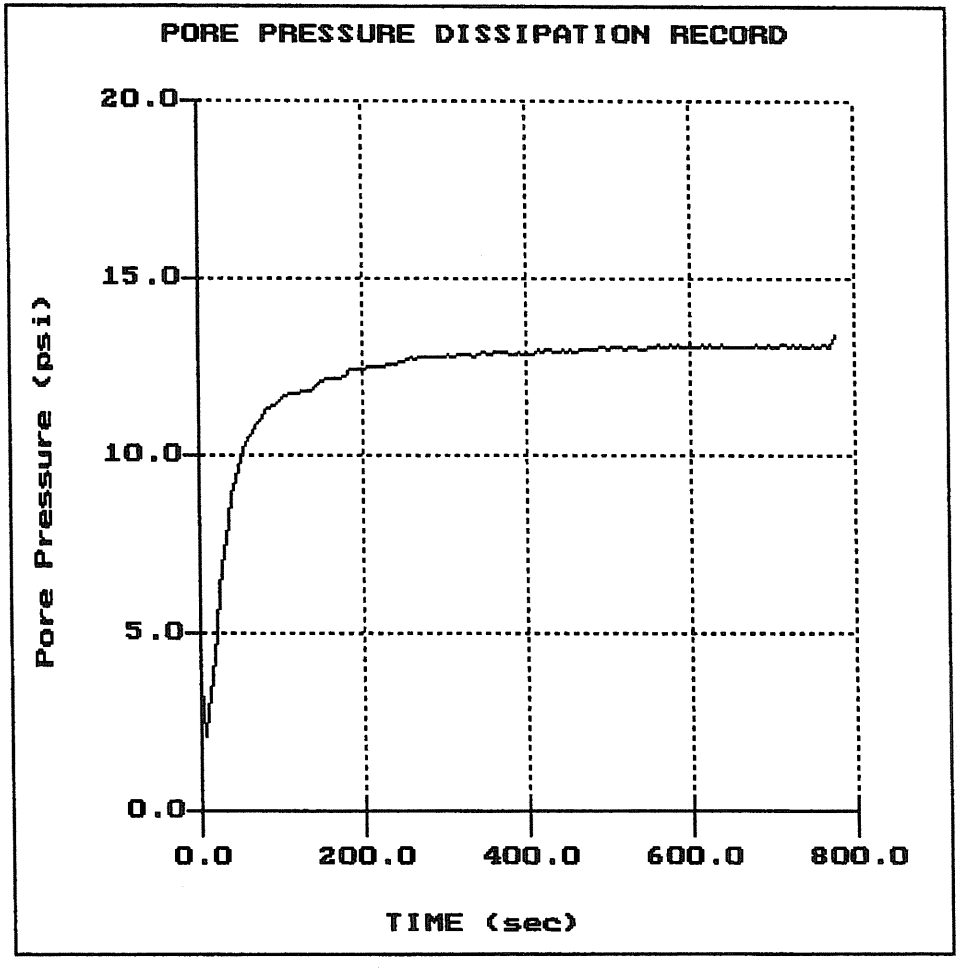
3.4 Pore Pressure Dissipation Tests

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

R.T. FRANKIAN

Site: TRACT #53295
Location: CPT-2

Engineer: MARK FRANKIAN
Date:12:19:01 07:39



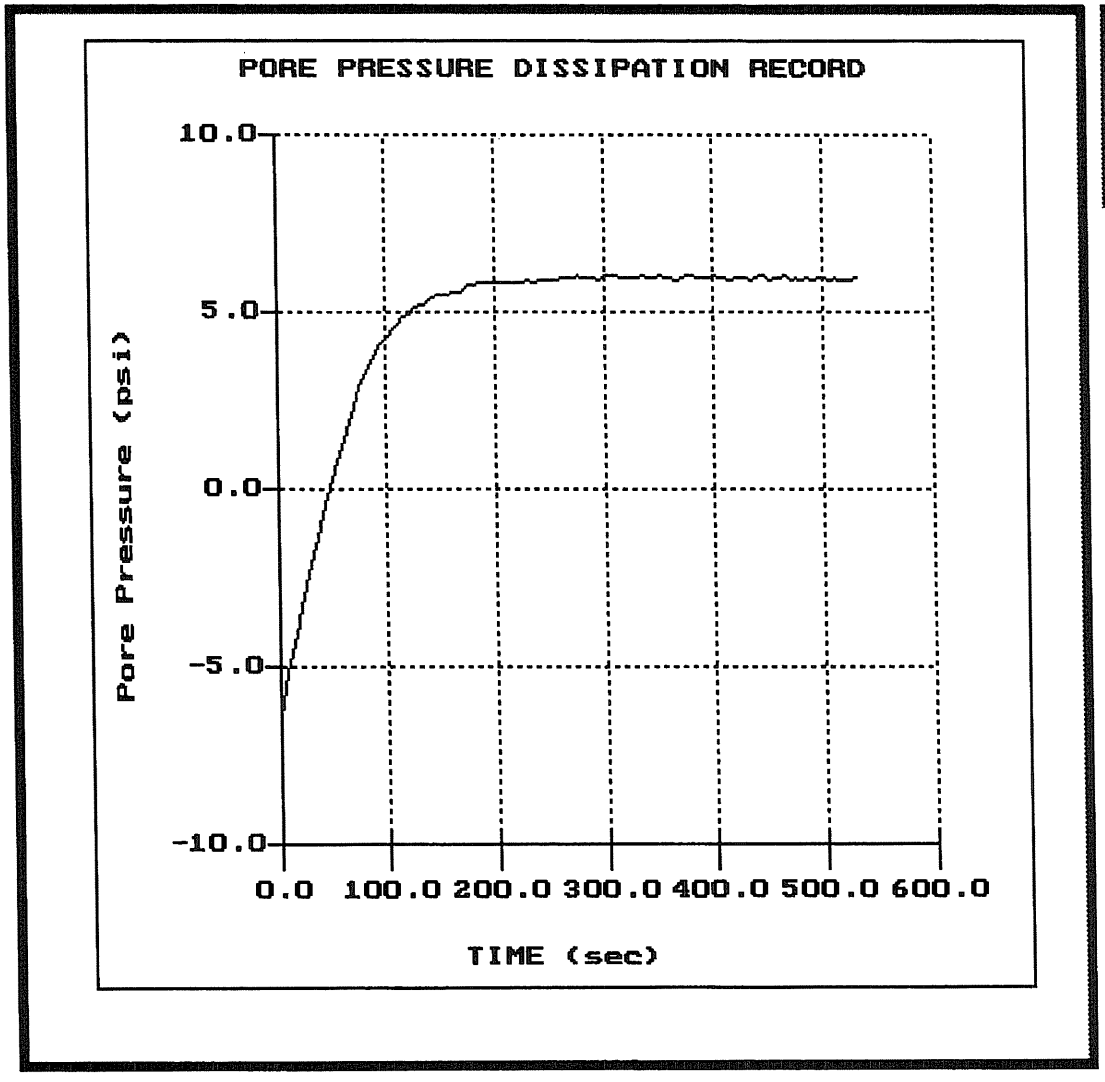
File: 890C02.PPC
Depth (m): 13.95
(ft): 45.77
Duration : 775.0s
U-min: 2.05 5.0s
U-max: 13.41 775.0s

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

R.T. FRANKIAN

Site: TRACT #53295
Location: CPT-16

Engineer: MARK FRANKIAN
Date:12:19:01 08:49



File: 890C16.PPC
Depth (m): 8.85
(ft): 29.04
Duration : 530.0s
U-min: -6.43 0.0s
U-max: 6.06 380.0s

GREGG IN SITU, INC.
01-031sh
February 6, 2001

R.T. Frankian
Tract 53295
Valencia, Ca.

We hope the information presented is sufficient for your purposes. If you have any questions, please do not hesitate to contact our office at (562) 427-6899.

Sincerely,
GREGG IN SITU, INC.

Brian Savela
Operations Manager

APPENDIX

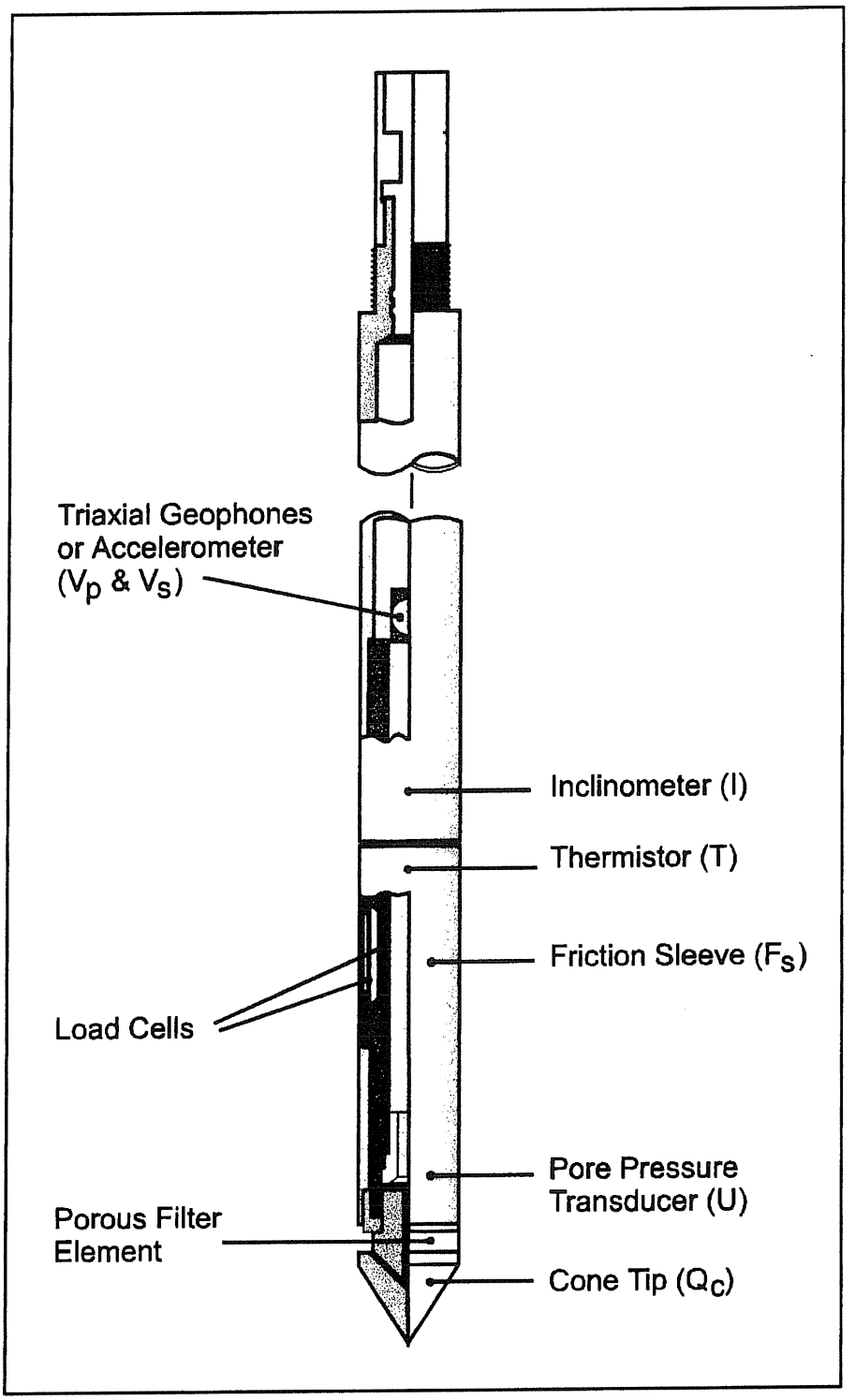

Triaxial Geophones
or Accelerometer
(V_p & V_s)
Inclinometer (I)
Thermistor (T)
Friction Sleeve (F_s)
Load Cells
Pore Pressure
Transducer (U)
Porous Filter
Element
Cone Tip (Q_c)

Figure 1

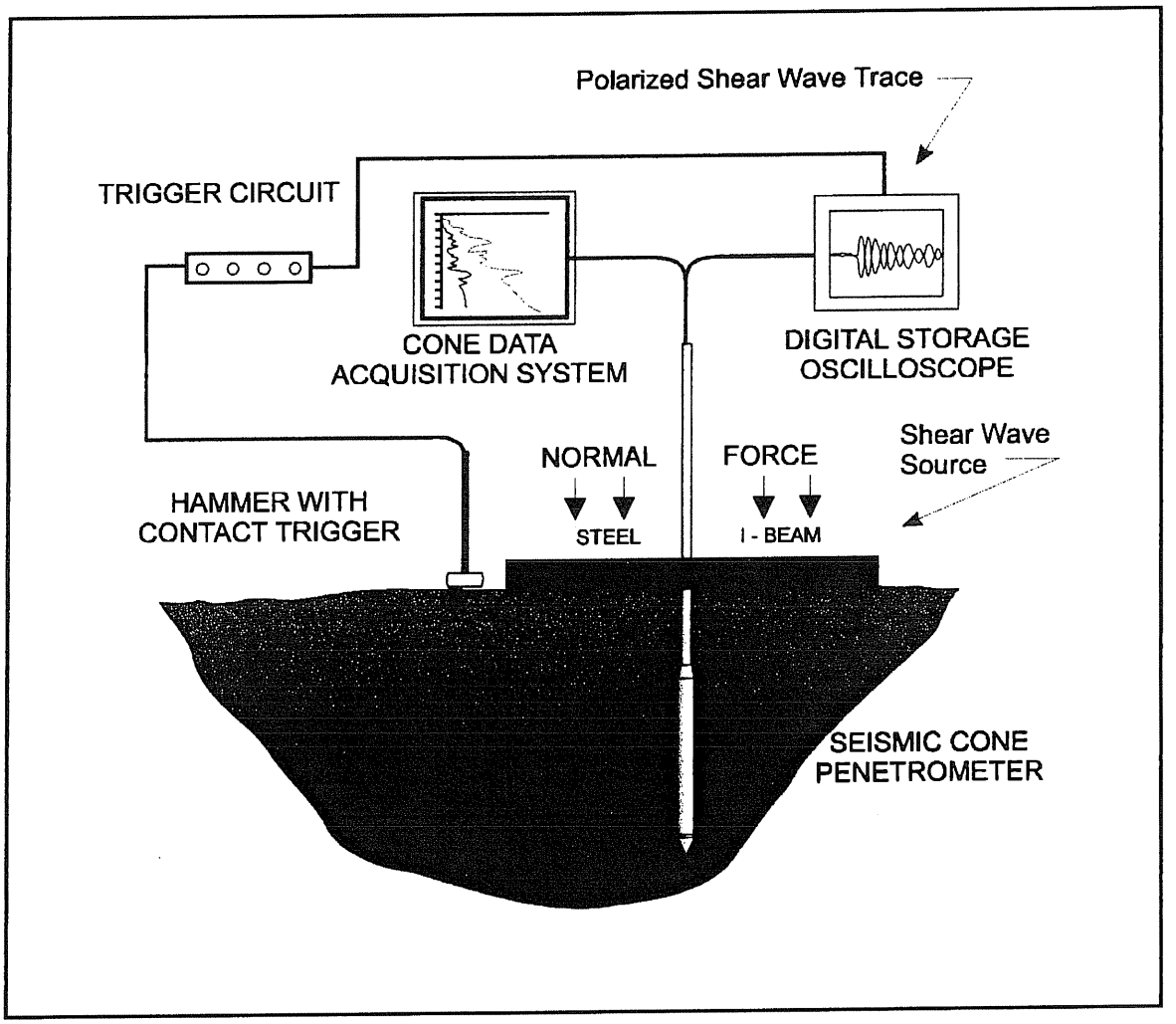
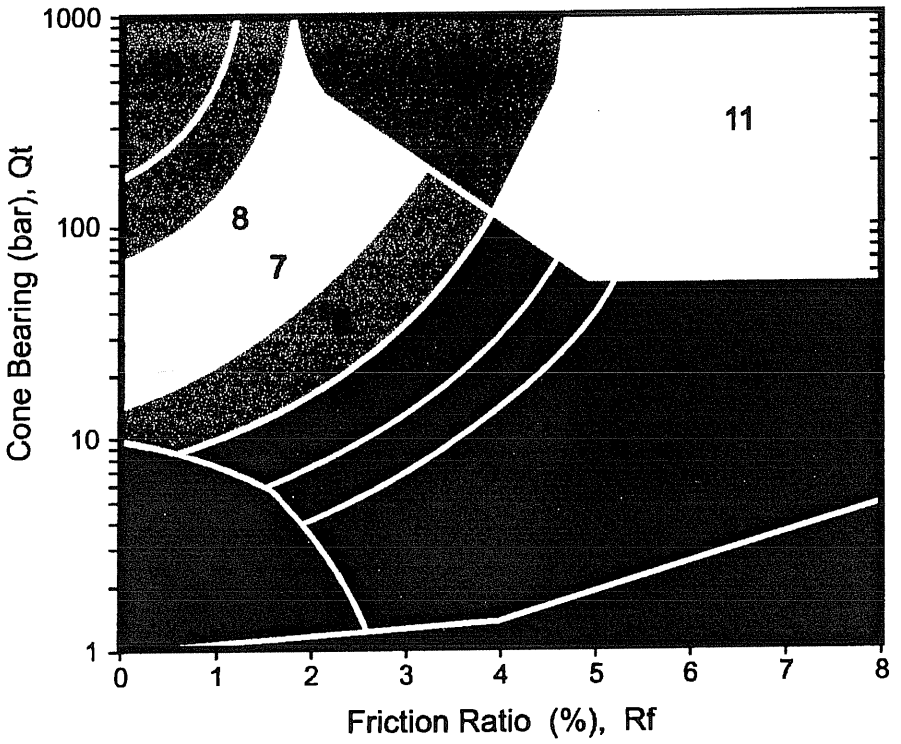

Polarized Shear Wave Trace
TRIGGER CIRCUIT
CONE DATA
ACQUISITION SYSTEM
DIGITAL STORAGE
OSCILLOSCOPE
Shear Wave
Source
NORMAL
FORCE
HAMMER WITH
CONTACT TRIGGER
STEEL
I - BEAM
SEISMIC CONE
PENETROMETER

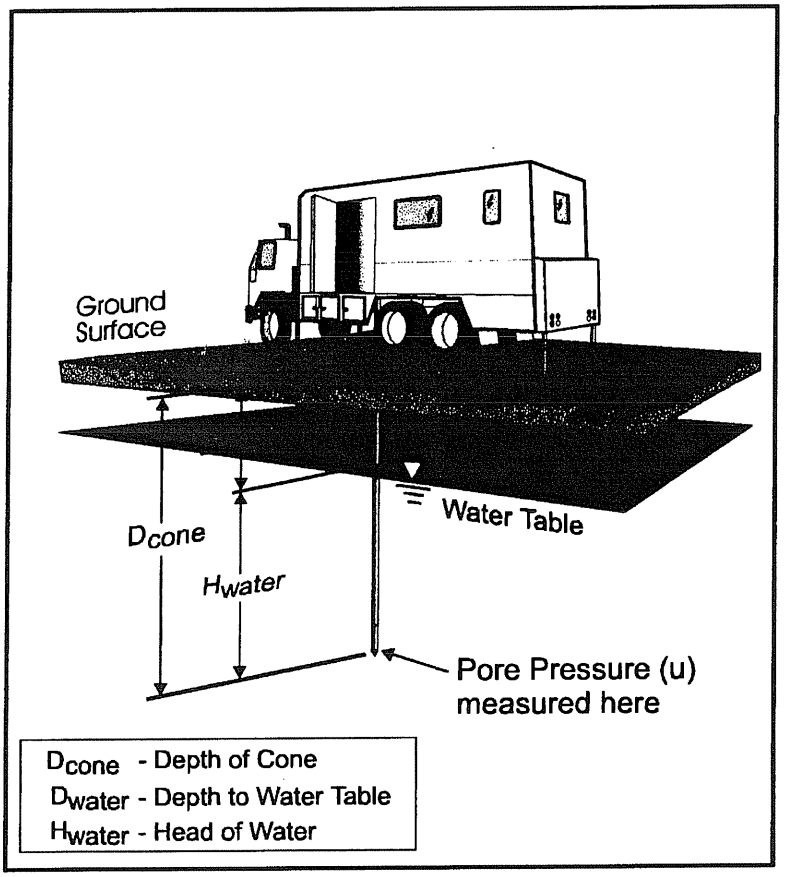
Figure 2

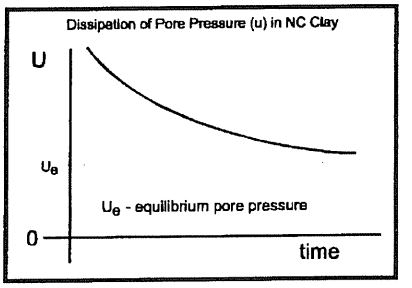


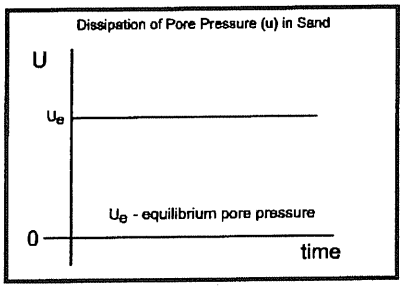
Zone	Q_t / N	Soil Behaviour Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	silty sand to sandy silt
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

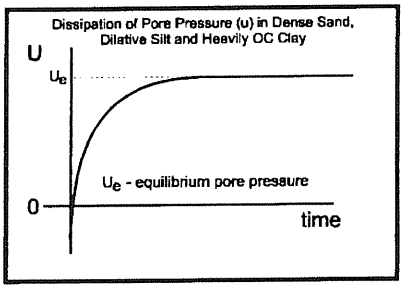
* overconsolidated or cemented

Figure 3









Water Table Calculation

$$D_{water} = D_{cone} - H_{water}$$

where $H_{water} = U_e$ (depth units)

Useful Conversion Factors: 1psi = 0.704m = 2.31 feet (water)
1tsf = 0.958 bar = 13.9 psi
1m = 3.28 feet

Figure 4

REFERENCES

Robertson, P.K. and Campanella, R.G. and Wightman, A., 1983 "SPT-CPT Correlations", Journal of the Geotechnical Division, ASCE, Vol. 109, No. GT11, Nov., pp. 1449-1460.

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Robertson, P.K., Campanella, R.G., Gillespie, D. and Rice, A., 1986, "Seismic CPT to Measure In Situ Shear Wave Velocity", Journal of Geotechnical Engineering, ASCE, Vol. 112, No. 8, pp. 791-803.

Gregg In Situ CPT Interpretations as of January 7, 1999 (Release 1.00.19)

Gregg In Situ's interpretation routine should be considered a calculator of current published CPT correlations and is subject to change to reflect the current state of practice. The interpreted values are not considered valid for all soil types. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design. Reference to current literature is strongly recommended.

The CPT interpretations are based on values of tip, sleeve friction and pore pressure averaged over a user specified interval (typically 0.25m). Note that Qt is the recorded tip value, Qc, corrected for pore pressure effects. Since all Gregg In Situ cones have equal end area friction sleeves, pore pressure corrections to sleeve friction, Fs, are not required.

The tip correction is: $Qt = Qc + (1-a) \bullet Ud$

where: *Qt* is the corrected tip load
Qc is the recorded tip load
Ud is the recorded dynamic pore pressure
a is the Net Area Ratio for the cone (typically 0.85 for Gregg In Situ cones)

Effective vertical overburden stresses are calculated based on a hydrostatic distribution of equilibrium pore pressures below the water table or from a user defined equilibrium pore pressure profile (this can be obtained from CPT dissipation tests). The stress calculations use unit weights assigned to the Soil Behavior Type zones or from a user defined unit weight profile.

Details regarding the interpretation methods for all of the interpreted parameters is given in table 1. The appropriate references referred to in table 1 are listed in table 2.

The estimated Soil Behavior Type is based on the charts developed by Robertson and Campanella shown in figure 1.

Table 1 CPT Interpretation Methods

Interpreted Parameter	Description	Equation	Ref
Depth	mid layer depth		
AvgQt	Averaged corrected tip (Qt)	$AvgQt = \frac{1}{n}\sum_{i=1}^{n} Qt_i$	
AvgFs	Averaged sleeve friction (Fs)	$AvgFs = \frac{1}{n}\sum_{i=1}^{n} Fs_i$	
AvgRf	Averaged friction ratio (Rf)	$AvgRf = 100\% \bullet \frac{AvgFs}{AvgQt}$	
AvgUd	Averaged dynamic pore pressure (Ud)	$AvgUd = \frac{1}{n}\sum_{i=1}^{n} Ud_i$	
SBT	Soil Behavior Type as defined by Robertson and Campanella		1

CPT Interpretations

U.Wt.	Unit Weight of soil determined from: 1) uniform value or 2) value assigned to each SBT zone 3) user supplied unit weight profile		
TStress	Total vertical overburden stress at mid layer depth	$TStress = \sum_{i=1}^{n} \gamma_i h_i$ where γ_i is layer unit weight h_i is layer thickness	
EStress	Effective vertical overburden stress at mid layer depth	$EStress = TStress - Ueq$	
Ueq	Equilibrium pore pressure determined from: 1) hydrostatic from water table depth 2) user supplied profile		
Cn	SPT N_{60} overburden correction factor	$Cn=(\sigma_v')^{-0.5}$ where σ_v' is in tsf $0.5 < C_n < 2.0$	
N_{60}	SPT N value at 60% energy calculated from Qt/N ratios assigned to each SBT zone		3
$(N1)_{60}$	SPT N_{60} value corrected for overburden pressure	$N1_{60} = Cn \bullet N_{60}$	3
$\Delta(N1)_{60}$	Equivalent Clean Sand Correction to $(N1)_{60}$	$\Delta(N1)_{60} = \frac{K_{SPT}}{1 - K_{SPT}} \bullet (N1)_{60}$ Where: K_{SPT} is defined as: 0.0 for FC < 5% 0.0167 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	7
$(N1)_{60cs}$	Equivalent Clean Sand $(N1)_{60}$	$(N1)_{60cs} = (N1)_{60} + \Delta(N1)_{60}$	7
Su	Undrained shear strength - Nkt is use selectable	$Su = \frac{Qt - \sigma_v}{N_{kt}}$	2
k	Coefficient of permeability (assigned to each SBT zone)		6
Bq	Pore pressure parameter	$Bq = \frac{\Delta u}{Qt - \sigma_v}$	2
Qtn	Normalized Qt for Soil Behavior Type classification as defined by Robertson, 1990	$Qtn = \frac{Qt - \sigma_v}{\sigma'_v}$	4
Rfn	Normalized Rf for Soil Behavior Type classification as defined by Robertson, 1990	$Rfn = 100\% \bullet \frac{f_s}{Qt - \sigma_v}$	4
SBTn	Normalized Soil Behavior Type (slightly modified from that published by Robertson, 1990. This version includes all the soil zones of the original non-normalized SBT chart - see figure 1)		4
Qc1	Normalized Qt for seismic analysis	$qc1 = qc \bullet (Pa/\sigma_v')^{0.5}$ where: Pa = atm. pressure	5
Qc1N	Dimensionless Normalized Qt1	qc1N = qc1 / Pa where: Pa = atm. pressure	

CPT Interpretations

ΔQc1N1	Equivalent clean sand correction	$\Delta qc1N = \frac{K_{CPT}}{1 - K_{CPT}} \bullet qc1N$ Where: K_{CPT} is defined as: 0.0 for FC < 5% 0.0267 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	5
Qc1Ncs	Clean Sand equivalent Qc1N	$qc1Ncs = qc1N + \Delta qc1N$	5
Ic	Soil index for estimating grain characteristics	$Ic = [(3.47 - logQ)^2 + (log F + 1.22)^2]^{0.5}$	5
FC	Fines content (%)	$FC=1.75(Ic^{3.25}) - 3.7$ $FC=100$ for $Ic > 3.5$ $FC=0$ for $Ic < 1.26$ $FC = 5\%$ if $1.64 < Ic < 2.6$ AND $Rfn<0.5$	8
PHI	Friction Angle	Campanella and Robertson Durunoglu and Mitchel Janbu	1
Dr	Relative Density	Ticino Sand Hokksund Sand Schmertmann 1976 Jamiolkowski - All Sands	1
OCR	Over Consolidation Ratio		1
State Parameter			9
CRR	Cyclic Resistance Ratio		7

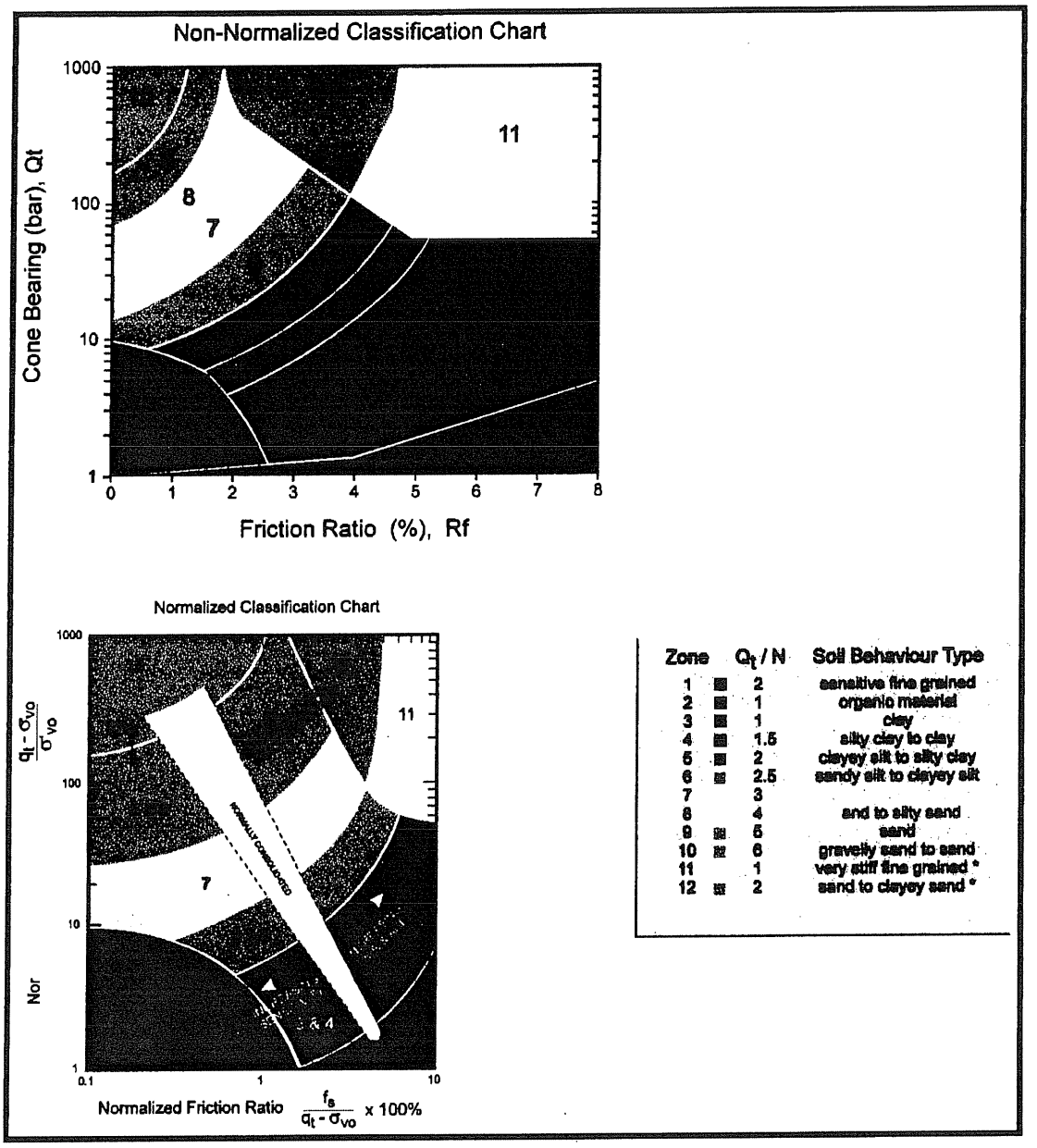

Figure 1 Non-Normalized and Normalized Soil Behavior Type Classification Charts

Table 2 References

No.	Reference
1	Robertson, P.K. and Campanella, R.G., 1986, "Guidelines for Use, Interpretation and Application of the CPT and CPTU", UBC, Soil Mechanics Series No. 105, Civil Eng. Dept., Vancouver, B.C., Canada
2	Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
3	Robertson, P.K. and Campanella, R.G., 1989, "Guidelines for Geotechnical Design Using CPT and CPTU", UBC, Soil Mechanics Series No. 120, Civil Eng. Dept., Vancouver, B.C., Canada
4	Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27.
5	Robertson, P.K. and Fear, C.E., 1995, "Liquefaction of Sands and its Evaluation", Keynote Lecture, First International Conference on Earthquake Geotechnical Engineering, Tokyo, Japan.
6	Gregg In Situ Internal Report
7	Robertson, P.K. and Wride, C.E., 1997, "Cyclic Liquefaction and its Evaluation Based on SPT and CPT", NCEER Workshop Paper, January 22, 1997
8	Wride, C.E. and Robertson, P.K., 1997, "Phase II Data Review Report (Massey and Kidd Sites, Fraser River Delta)", Volume 1 - Data Report (June 1997), University of Alberta.
9	Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1992, "CPT Based Screening Procedure for Evaluating Liquefaction Susceptibility", 45th Canadian Geotechnical Conference, Toronto, Ontario, October 1992.

Cone Penetration Test Sounding
RTF&A 96-115-21 Report Dated 3-23-98

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

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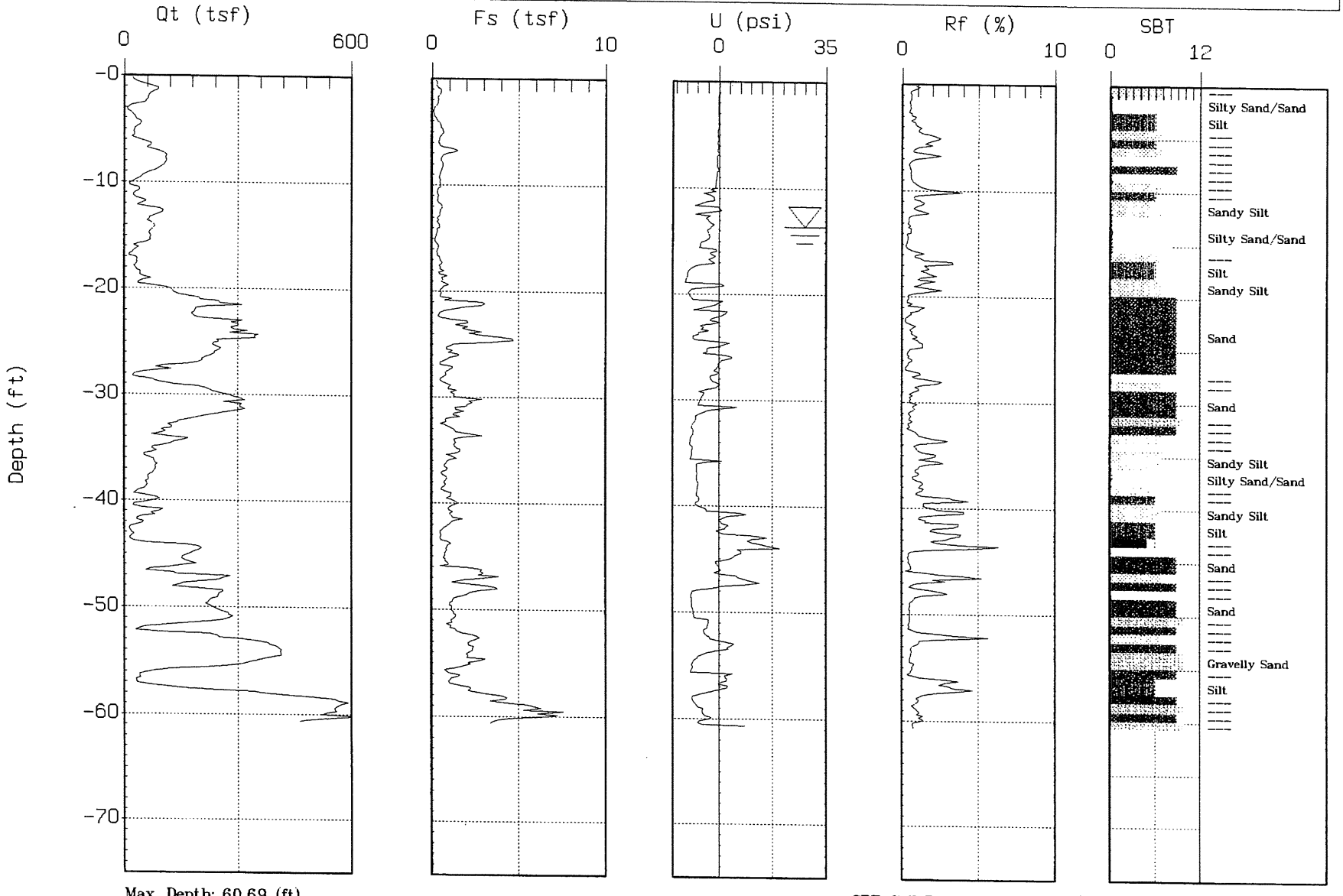

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Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

Estimated Phreatic Surface

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

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Engineer : A. SIMITOB
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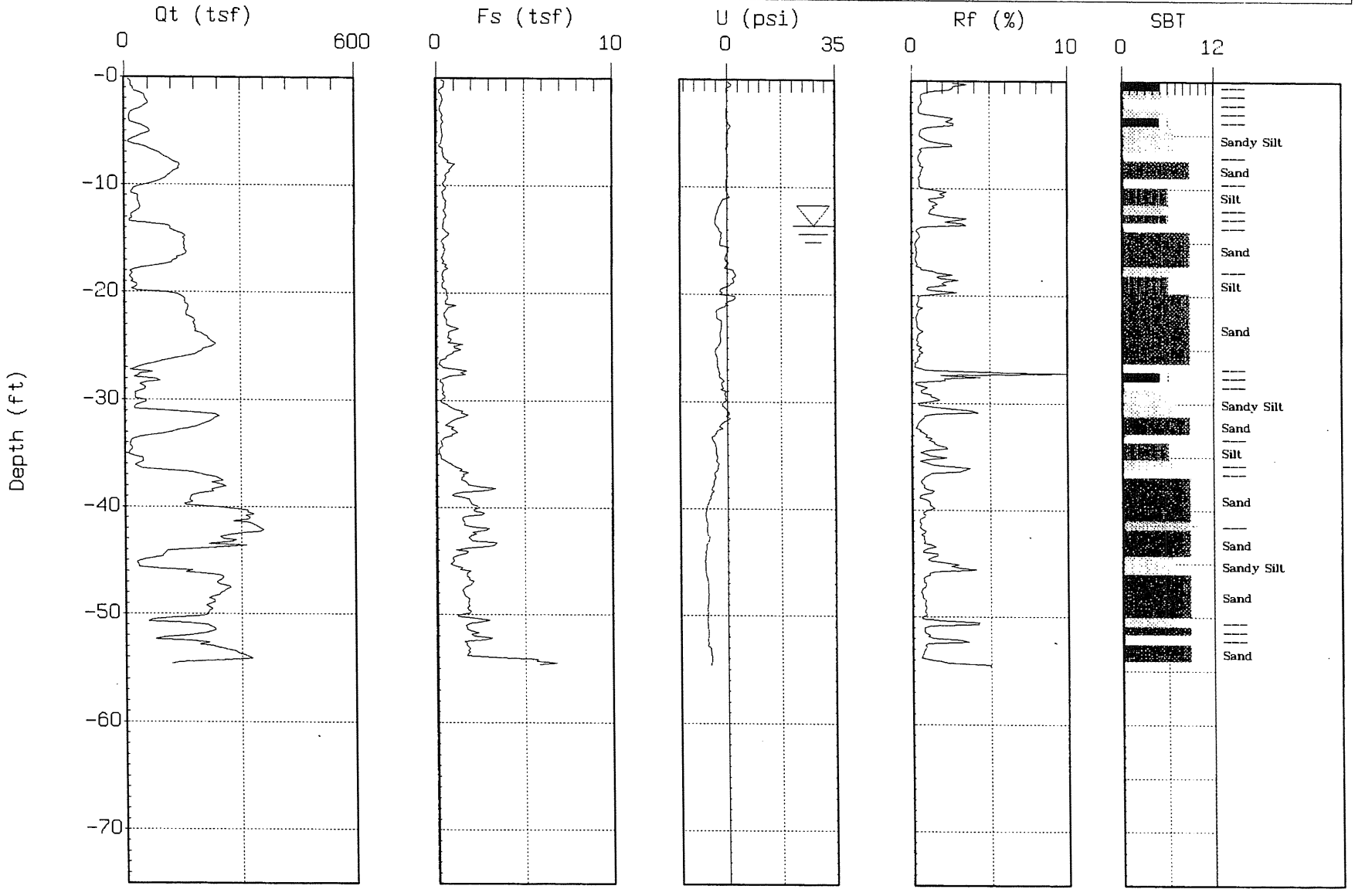

Max. Depth: 54.63 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

Estimated Phreatic Surface

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

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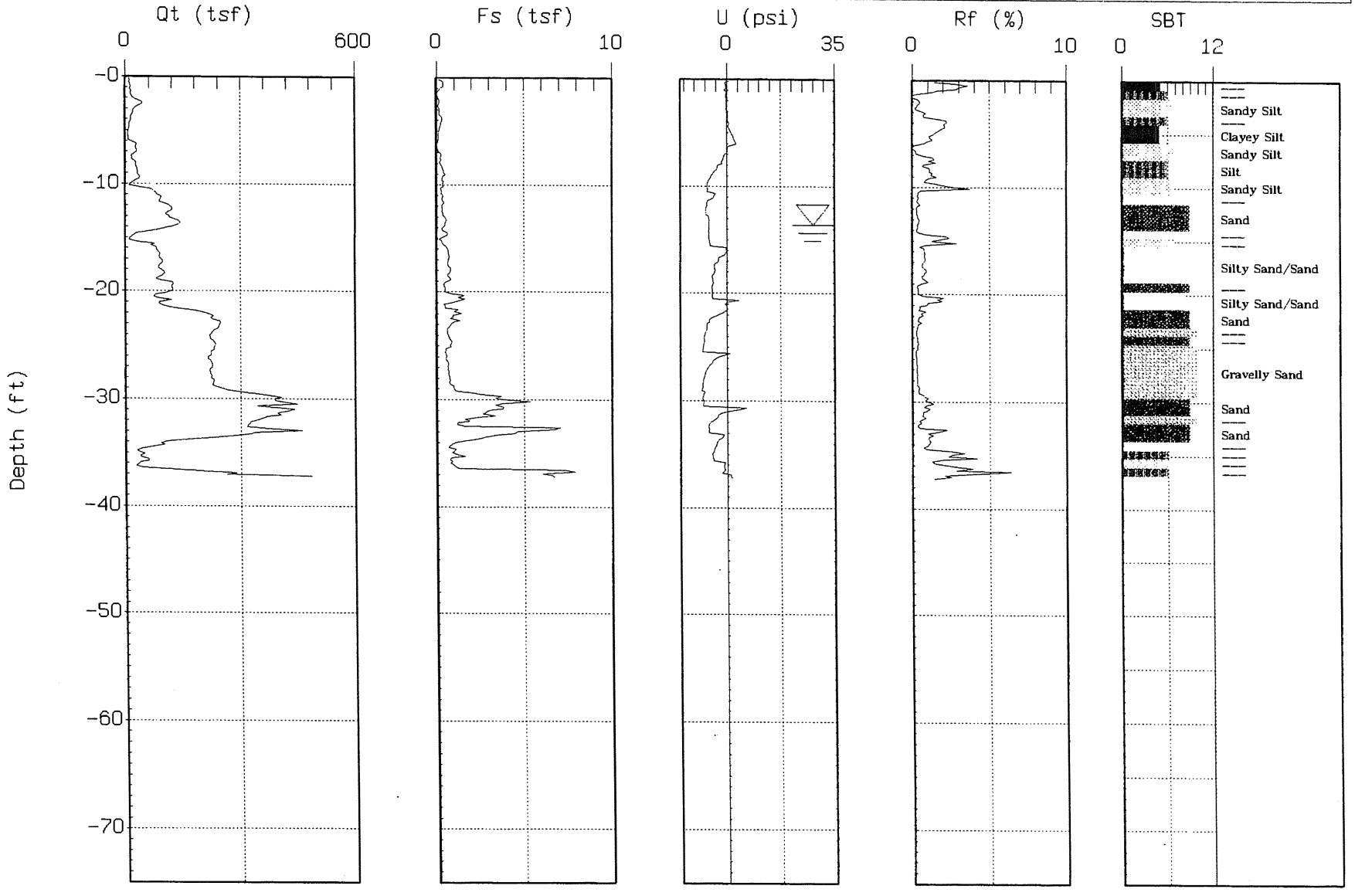

Max. Depth: 37.24 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

Estimated Phreatic Surface

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

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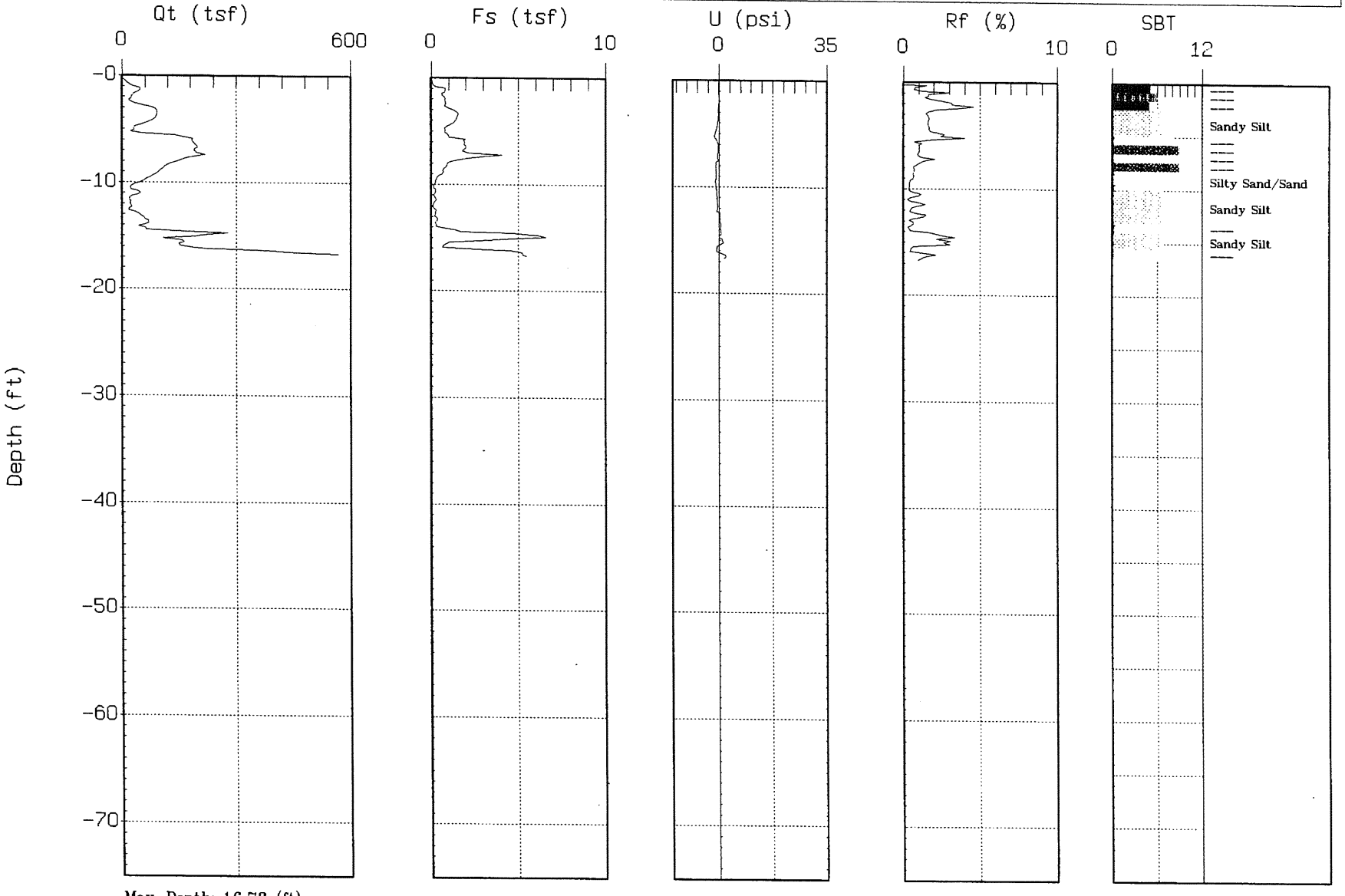

Max. Depth: 16.73 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

R.T. FRANKIAN

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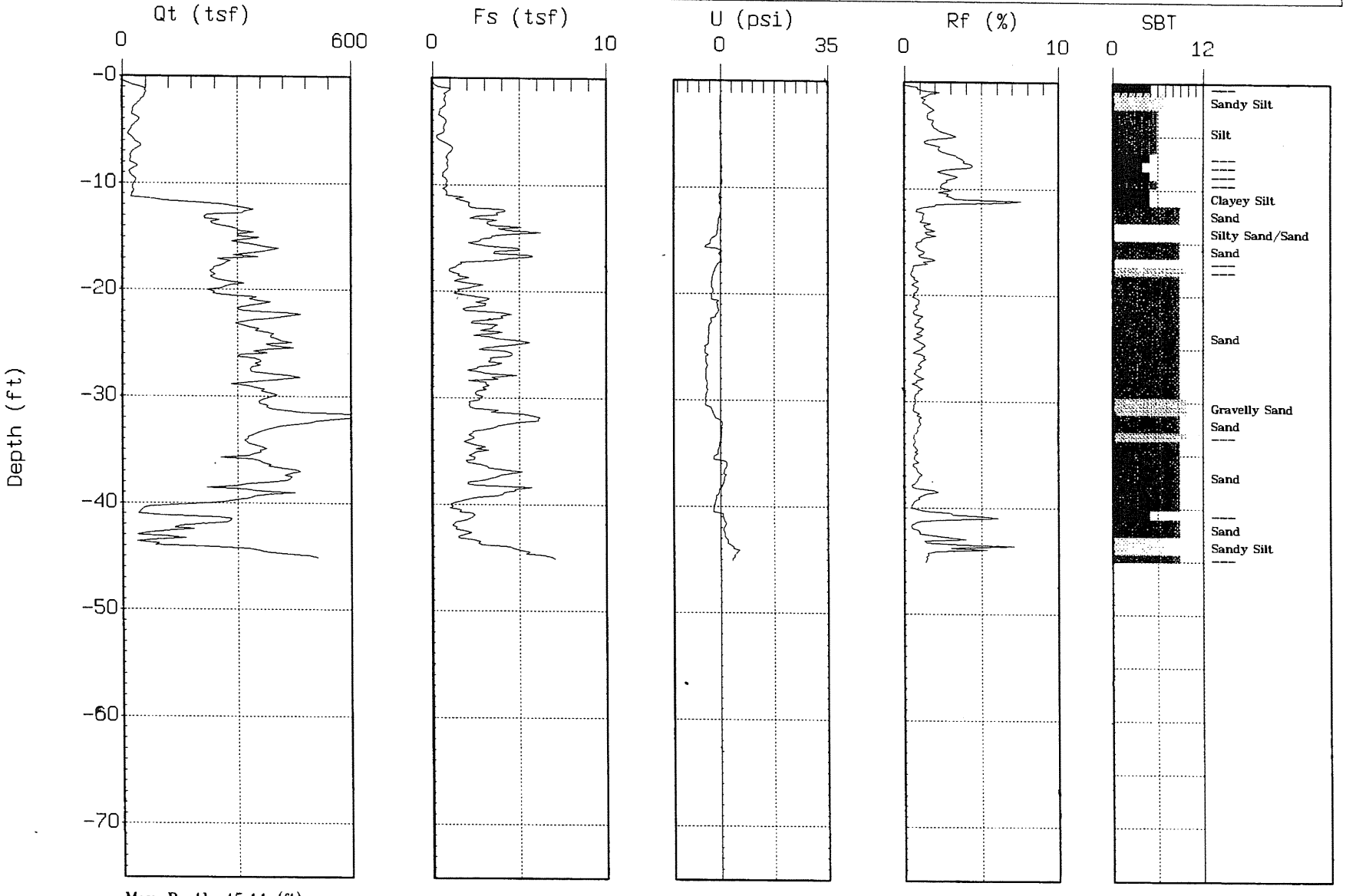

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Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

GREGG

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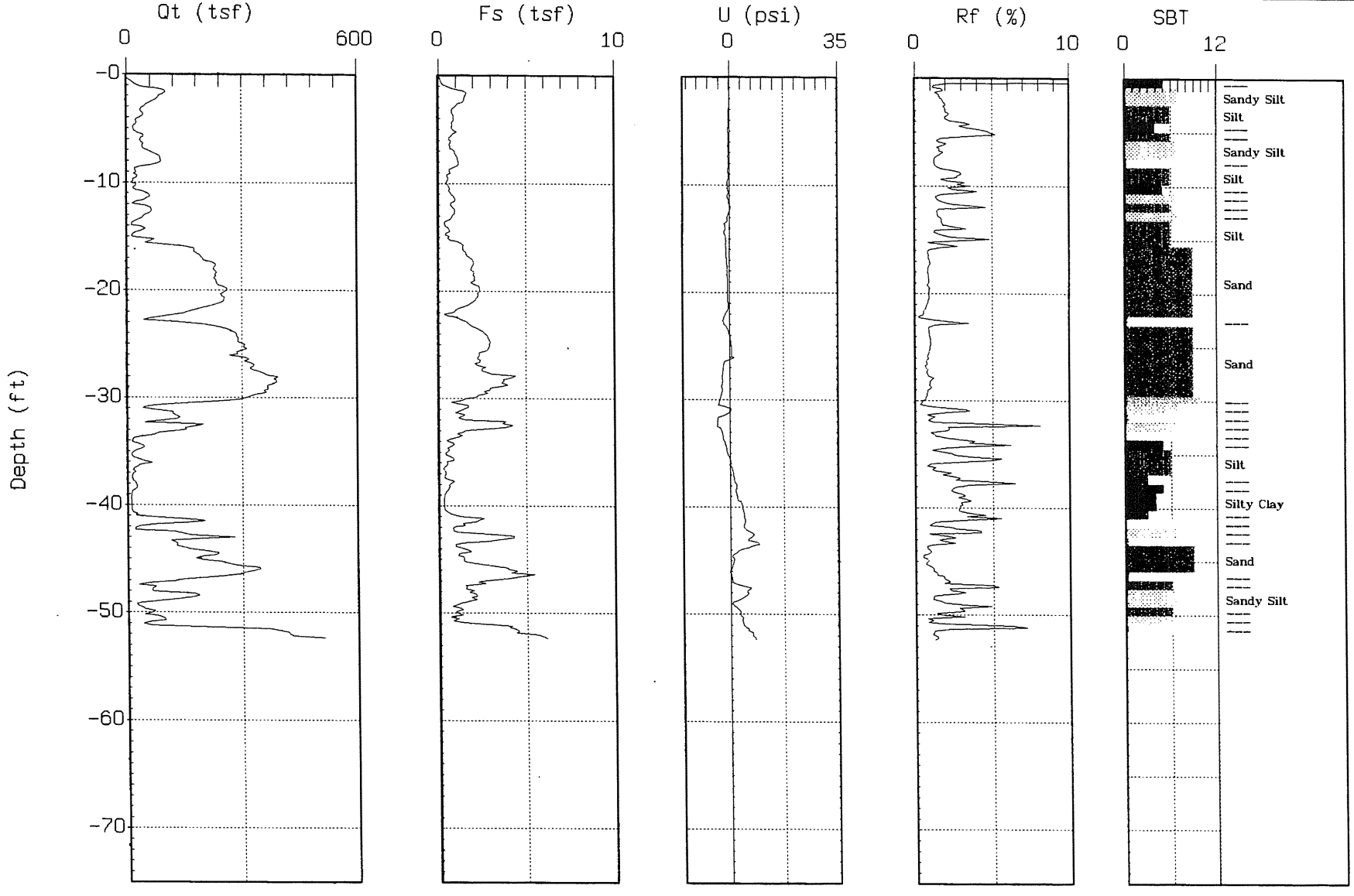

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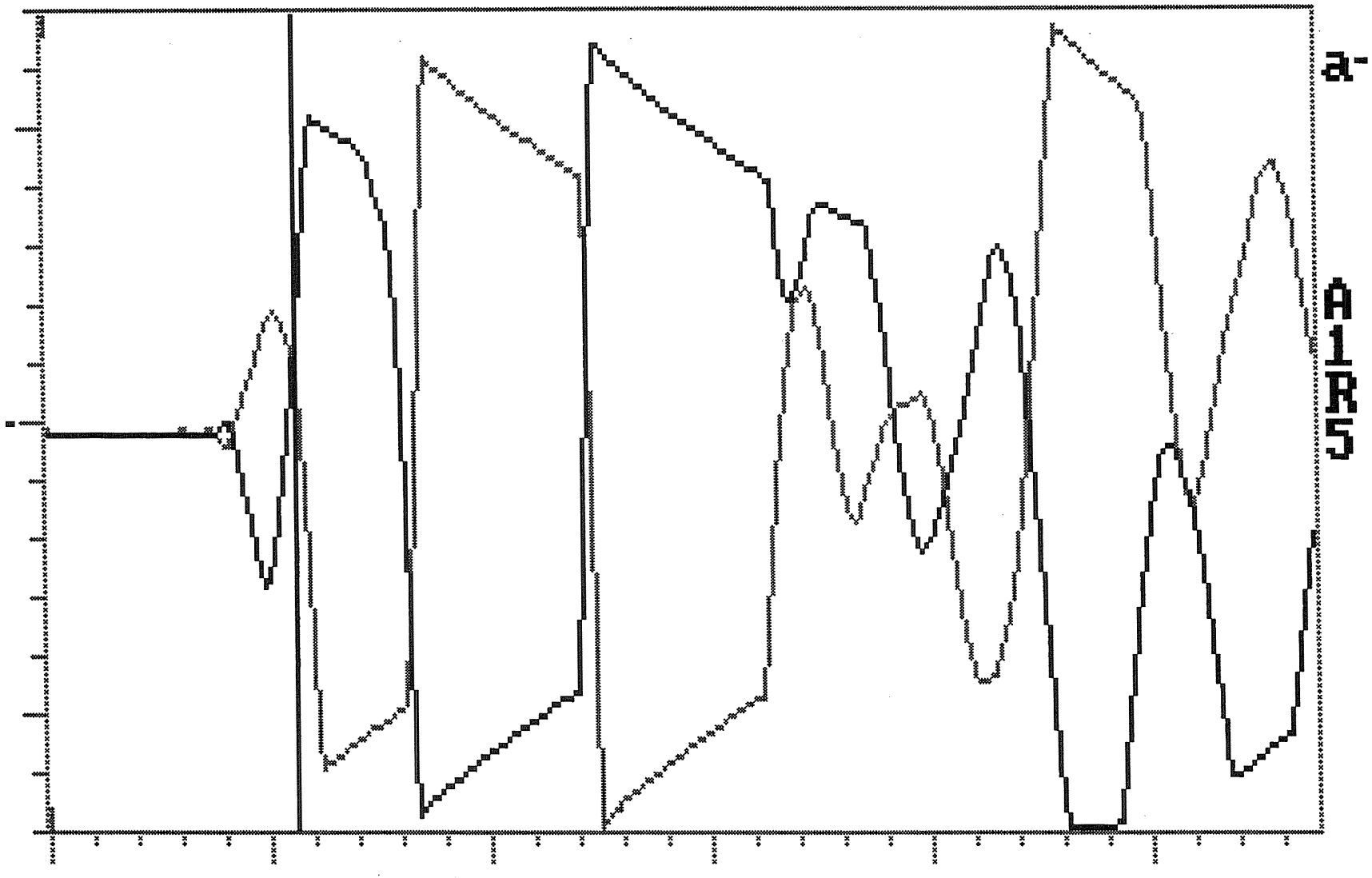

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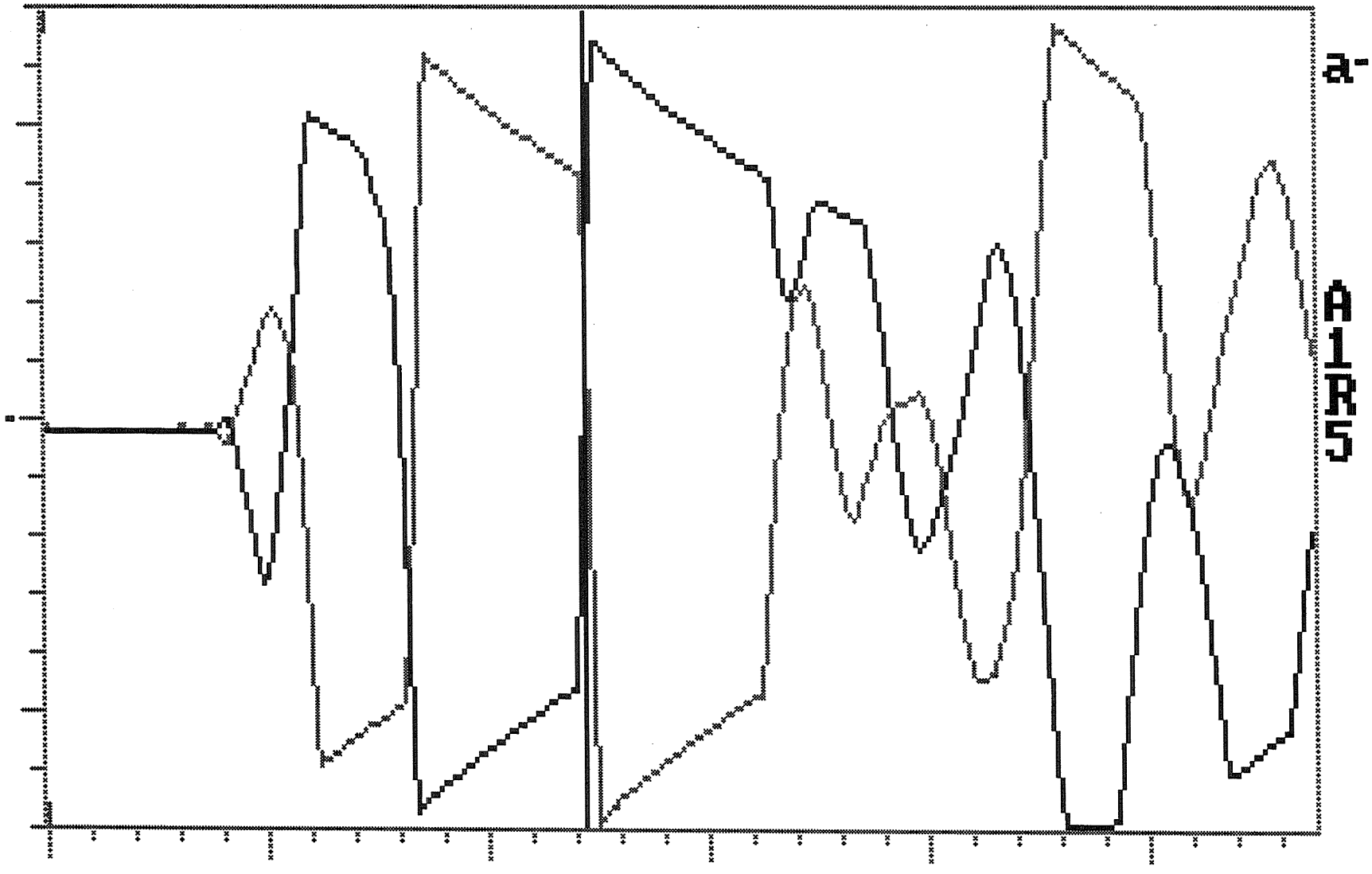

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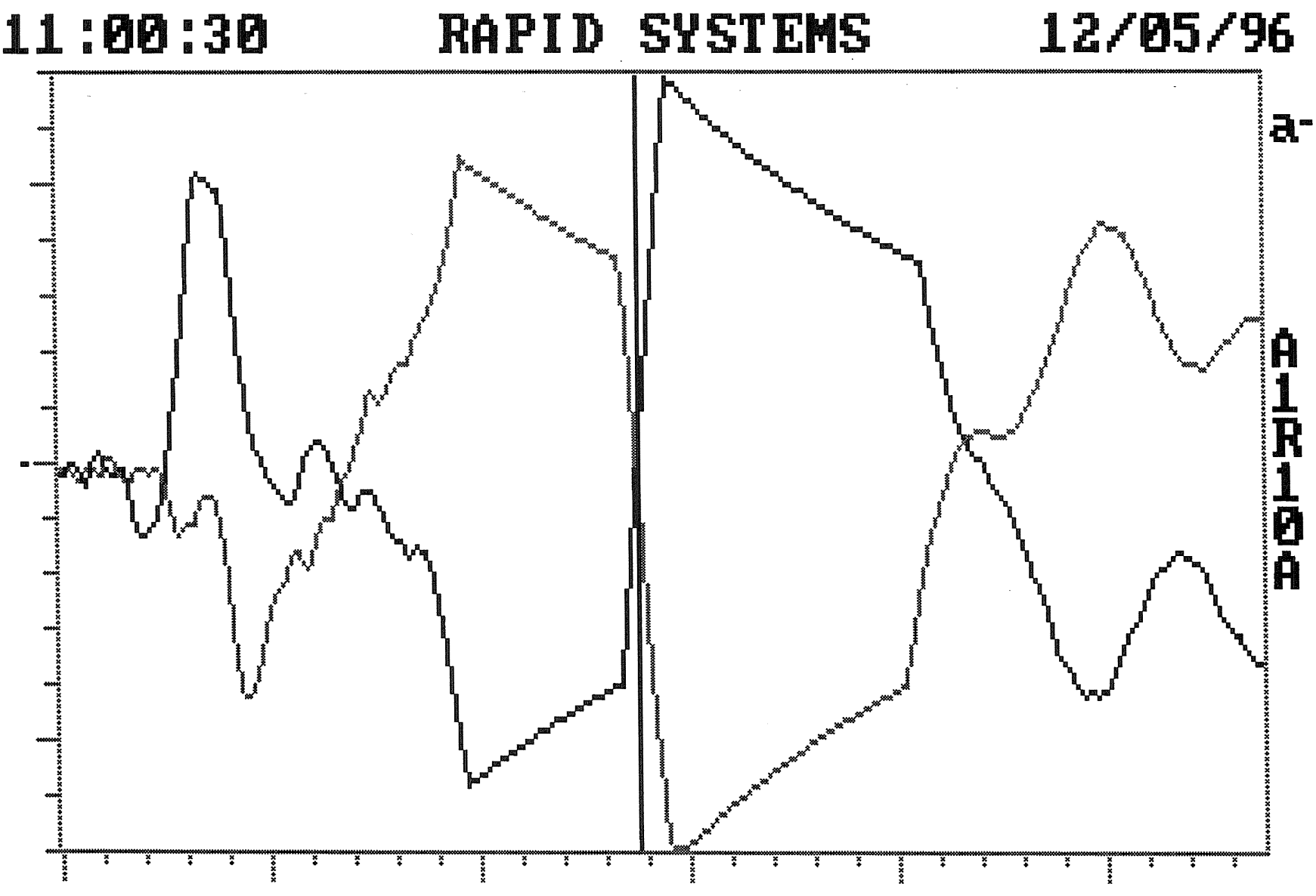

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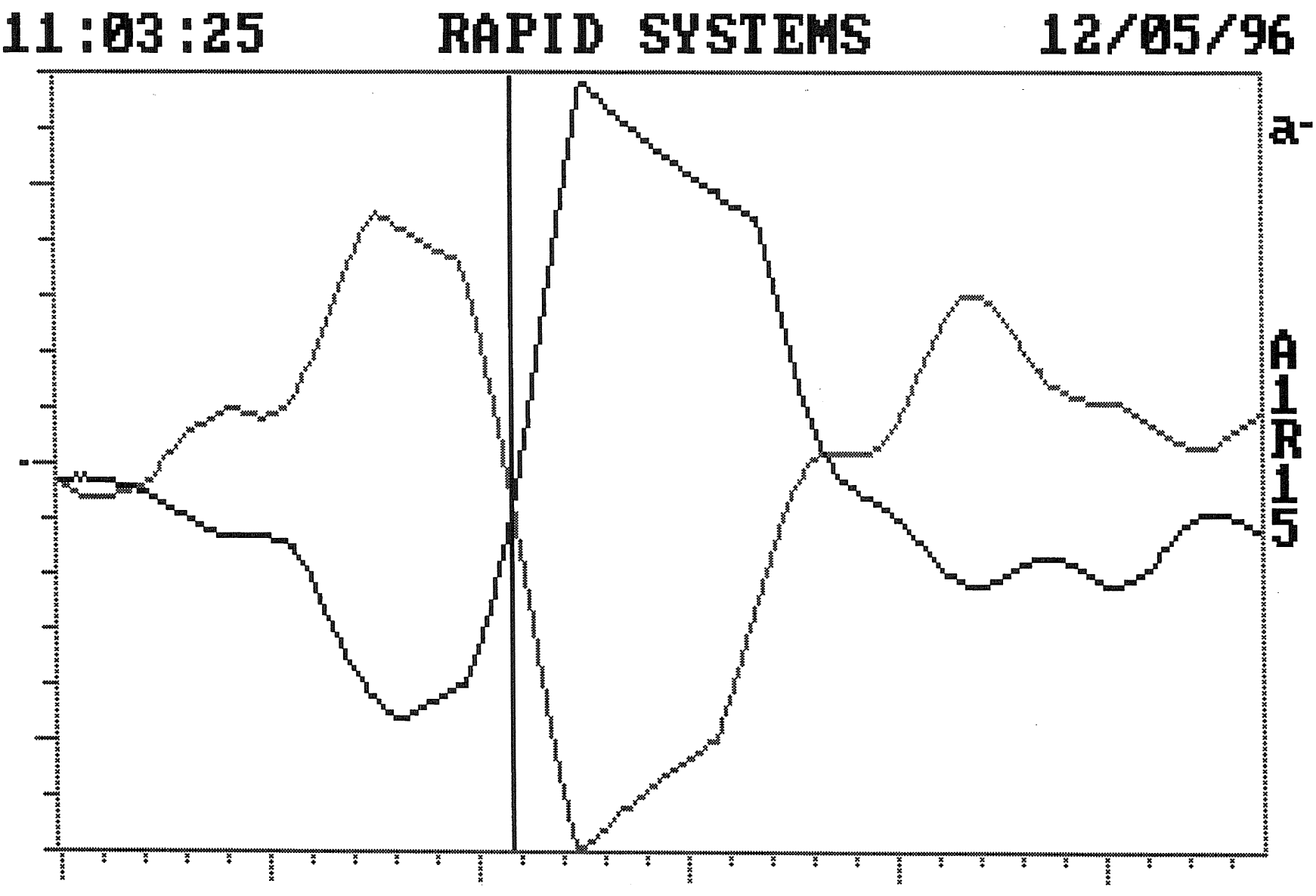

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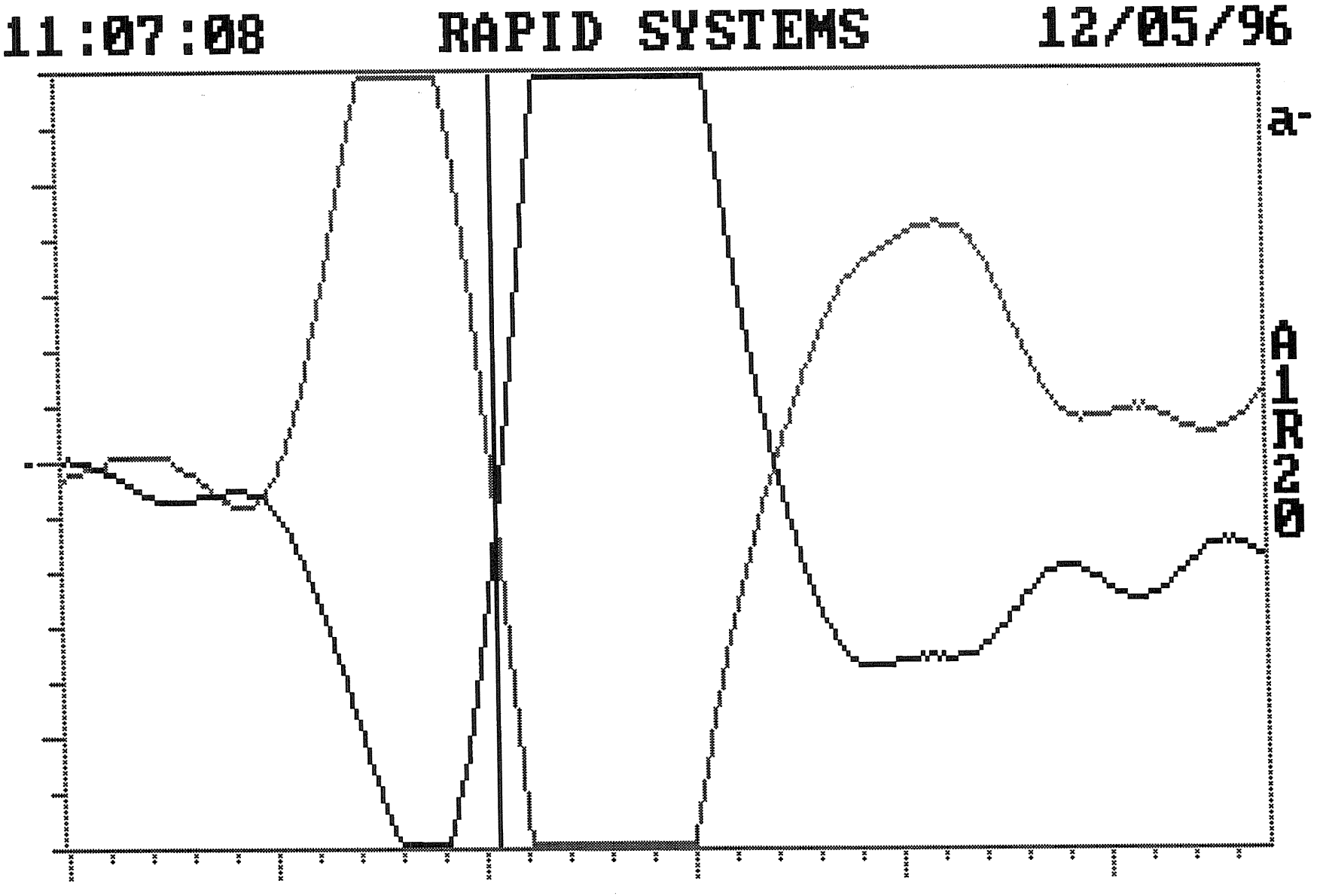

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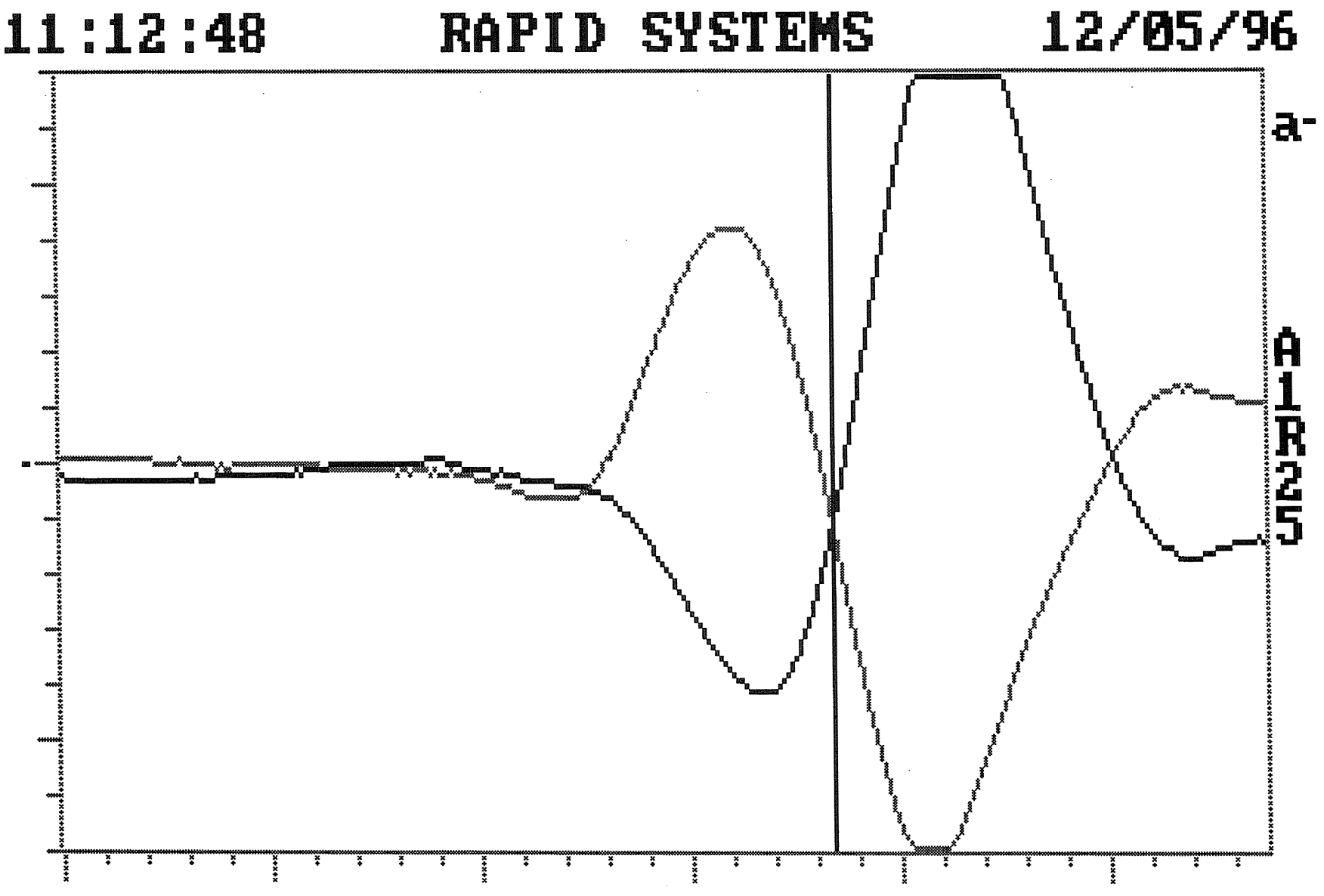

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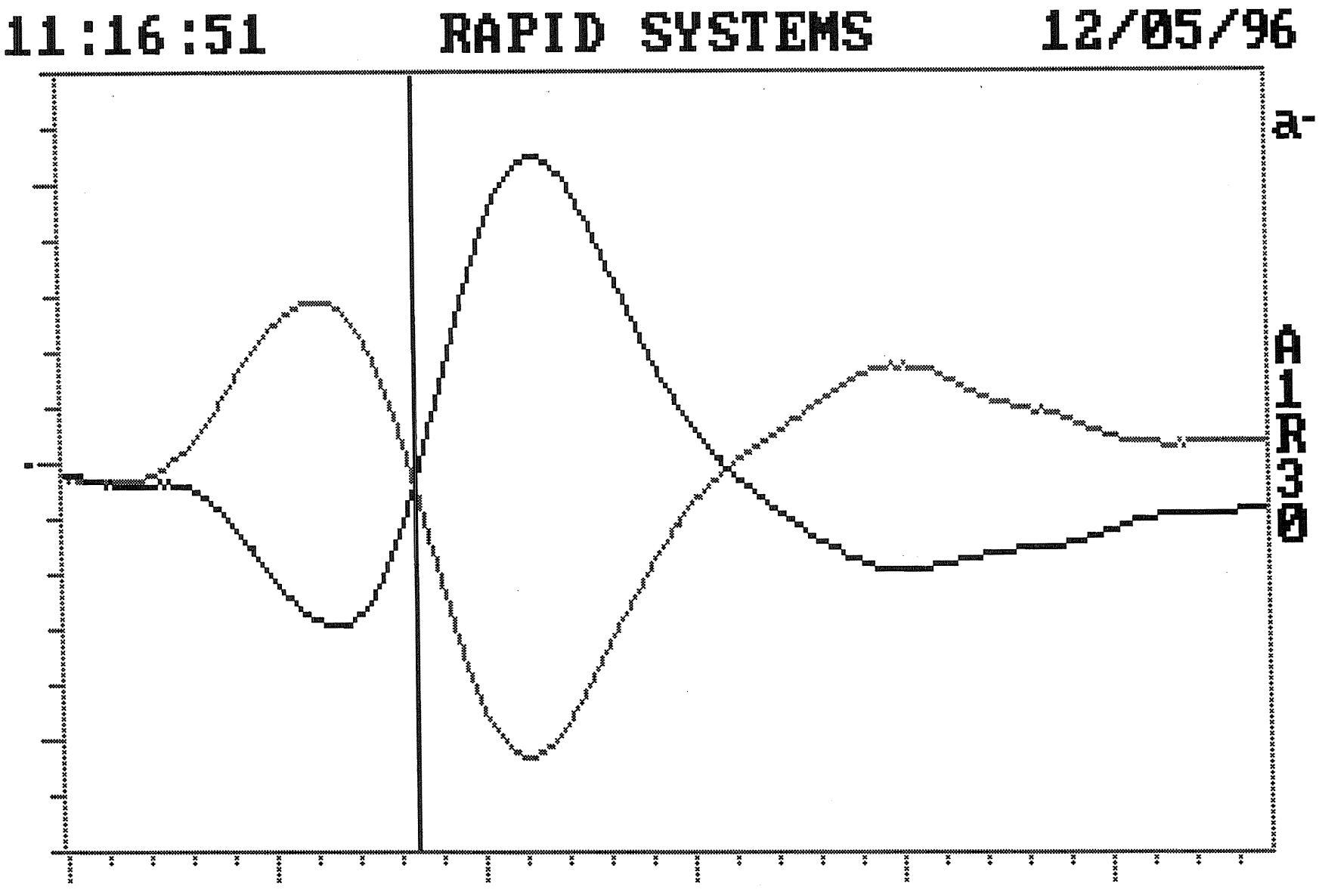

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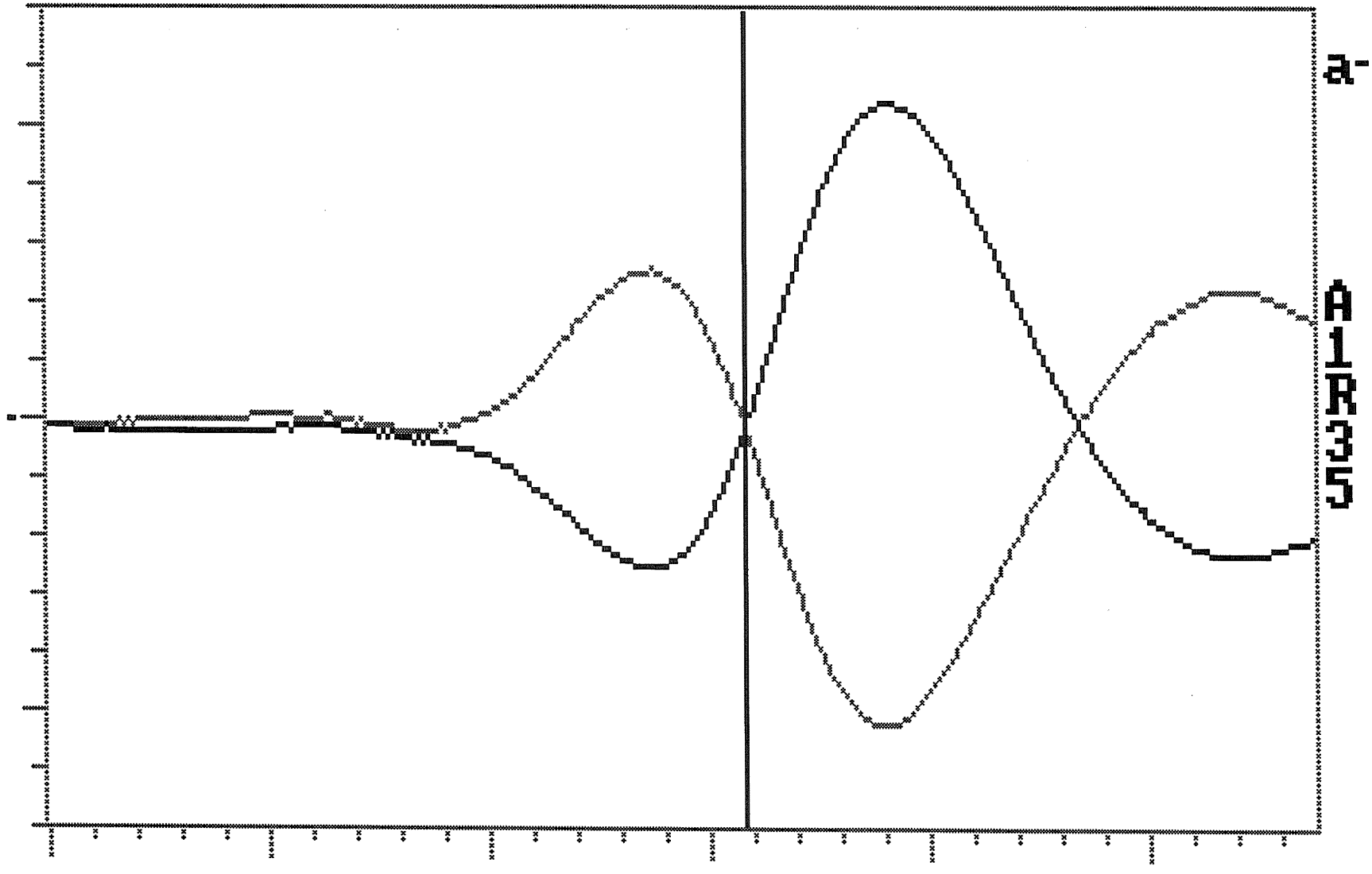

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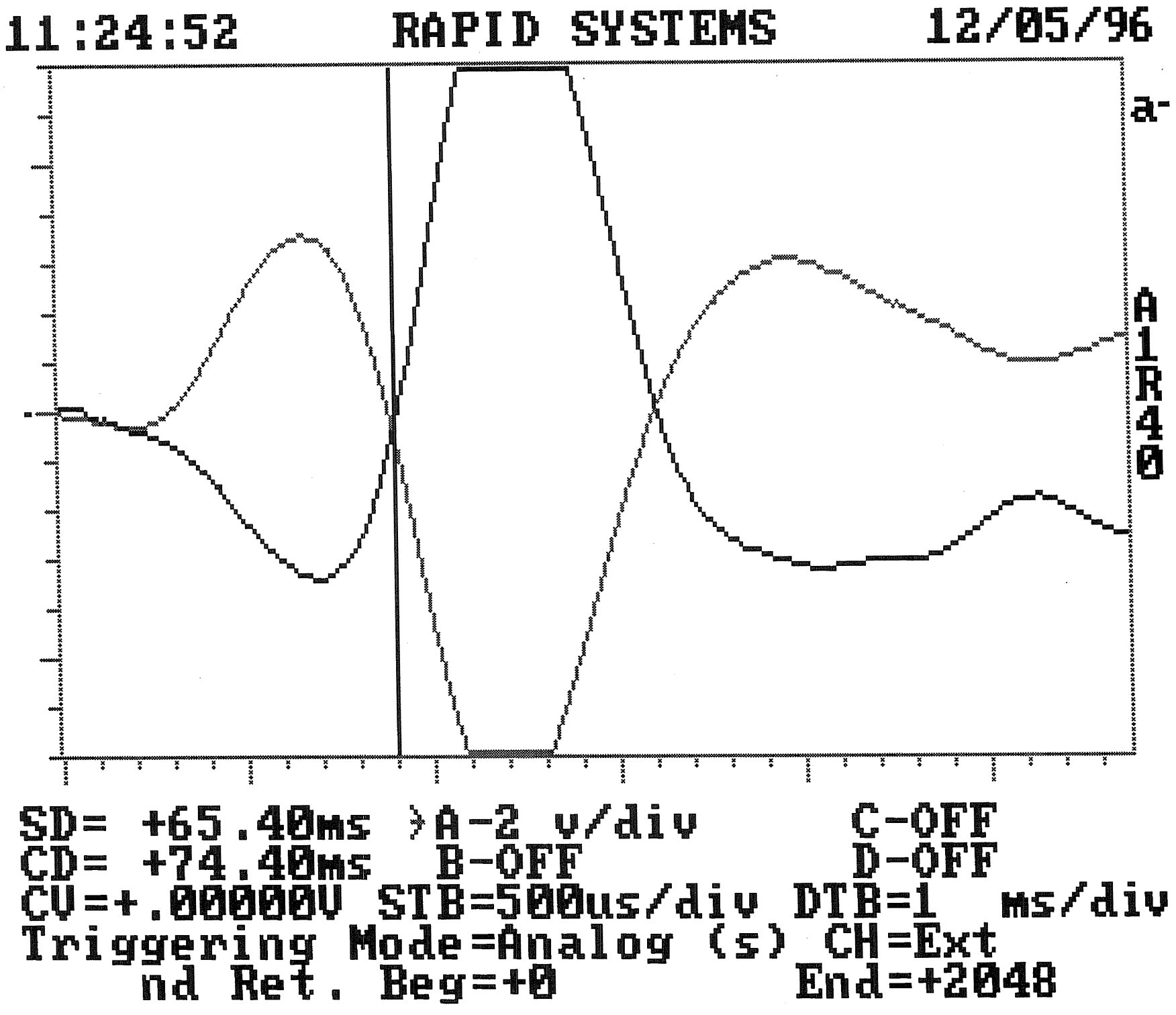

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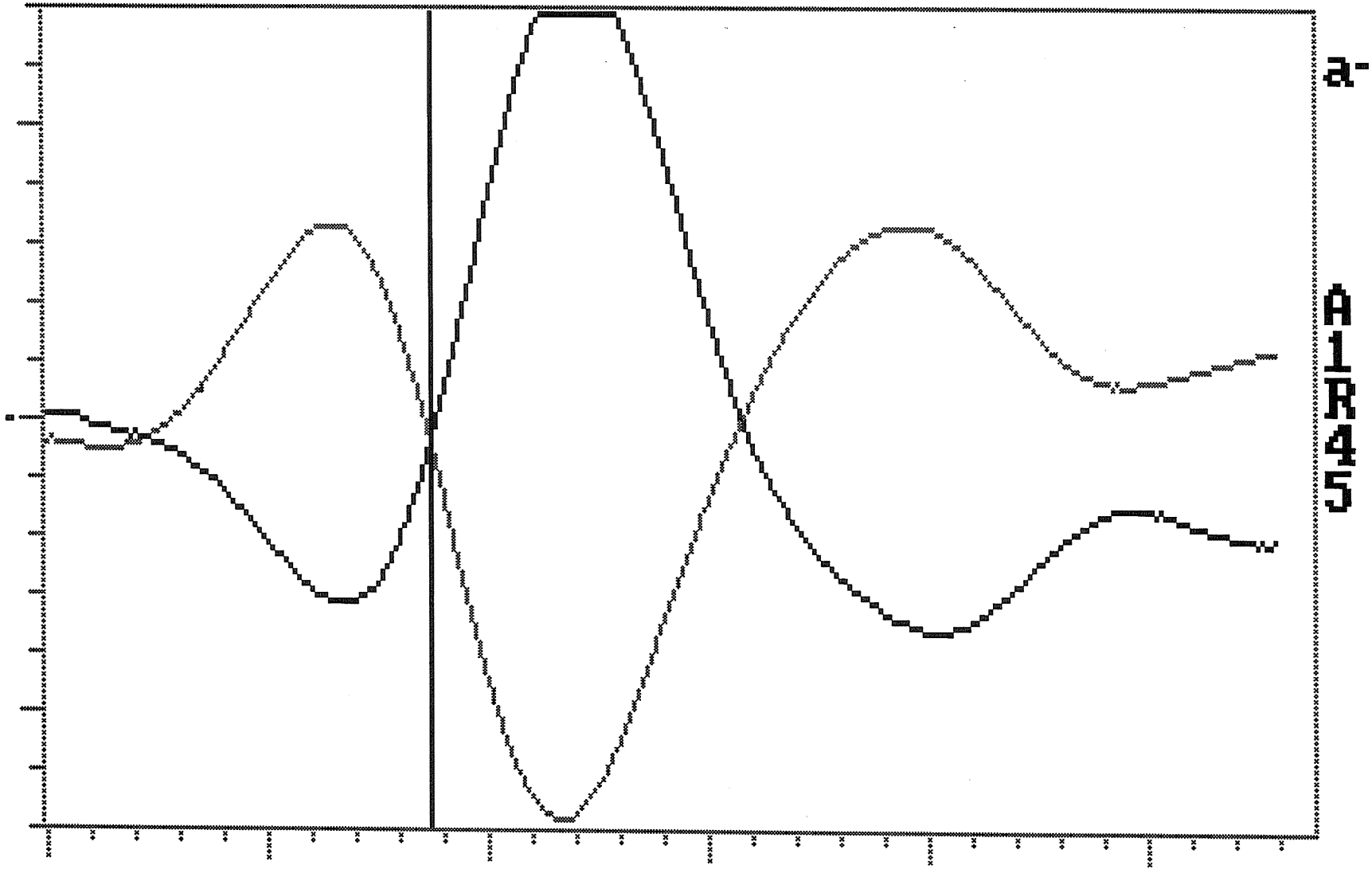

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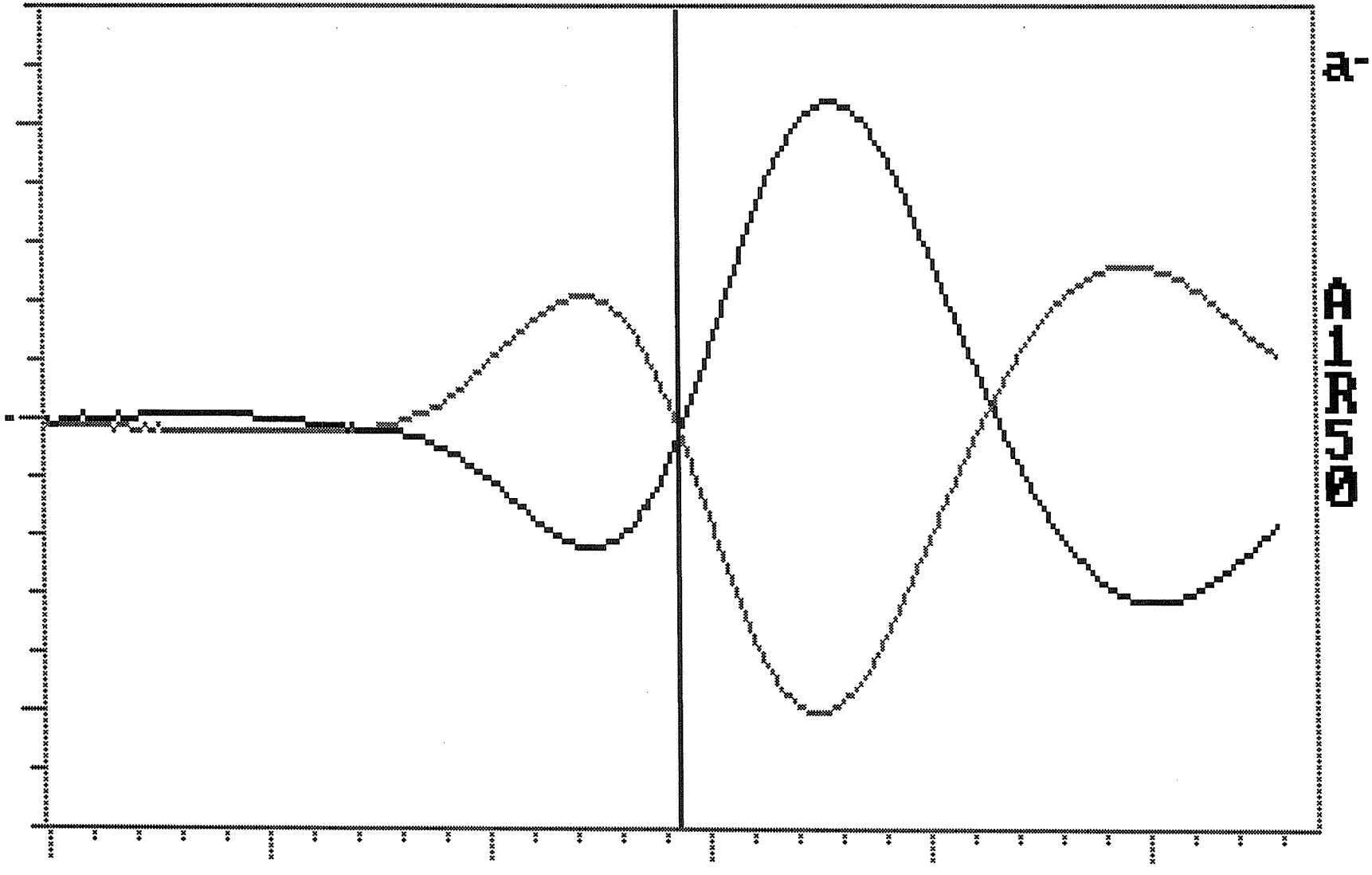

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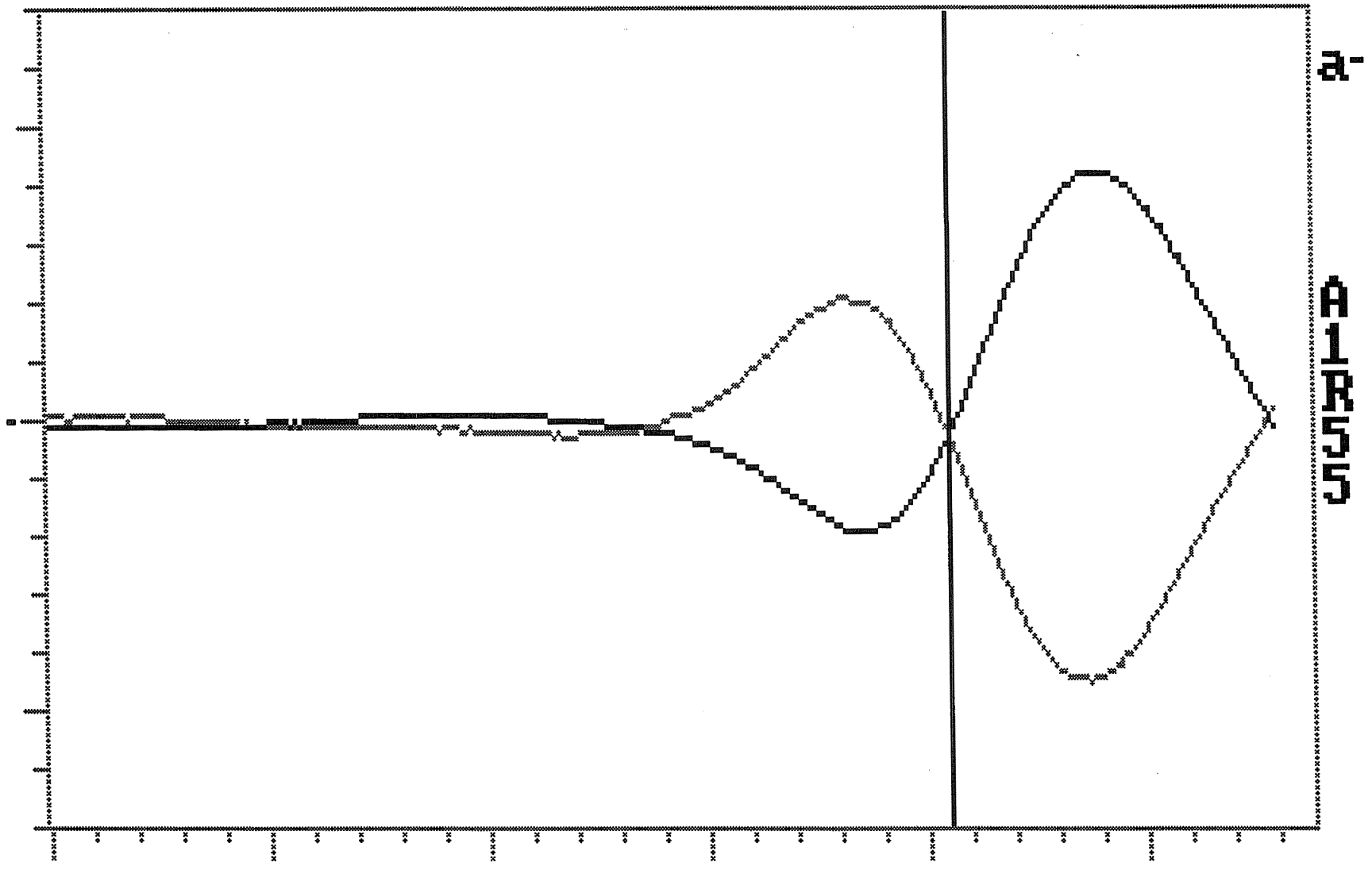

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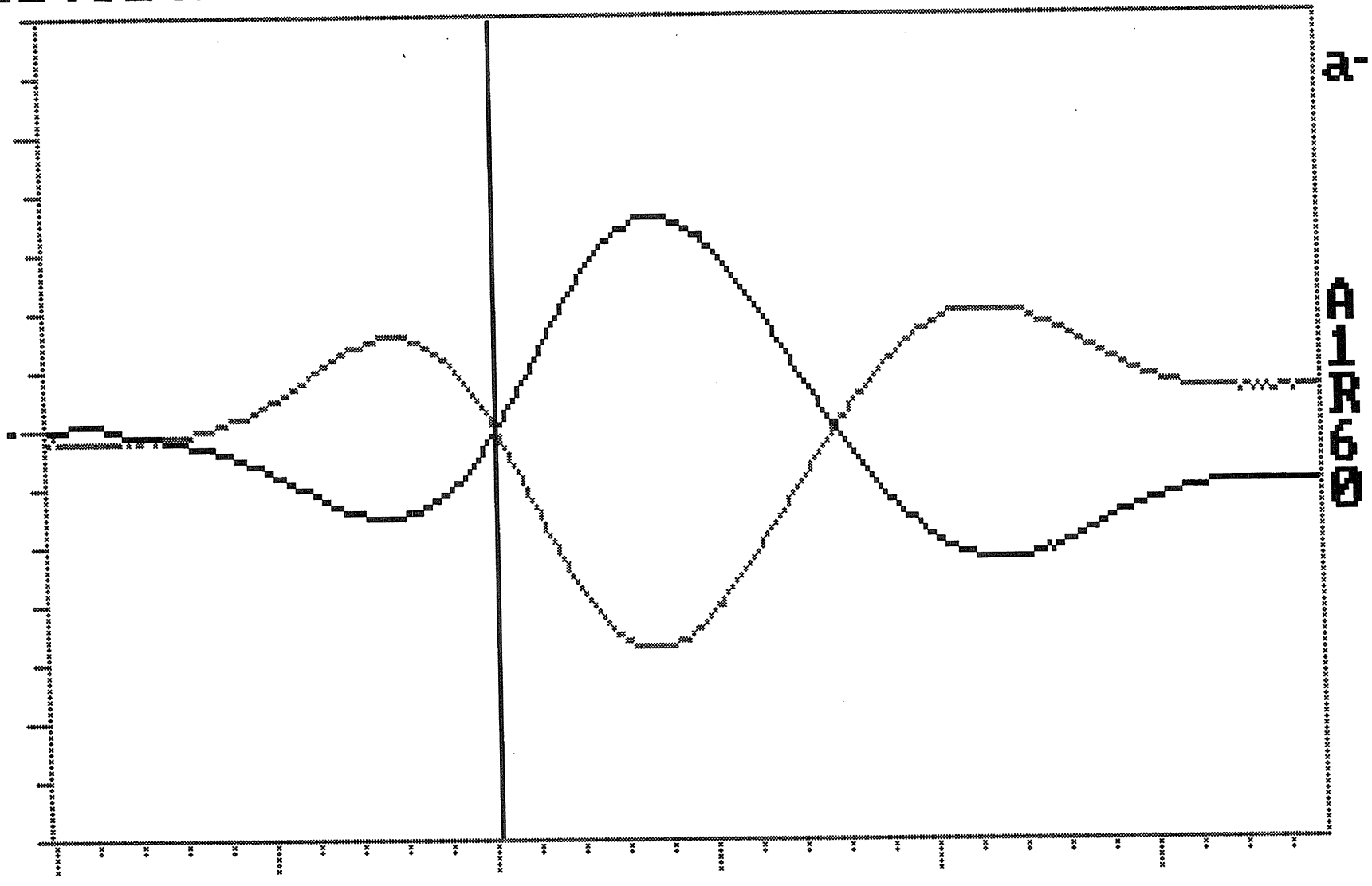

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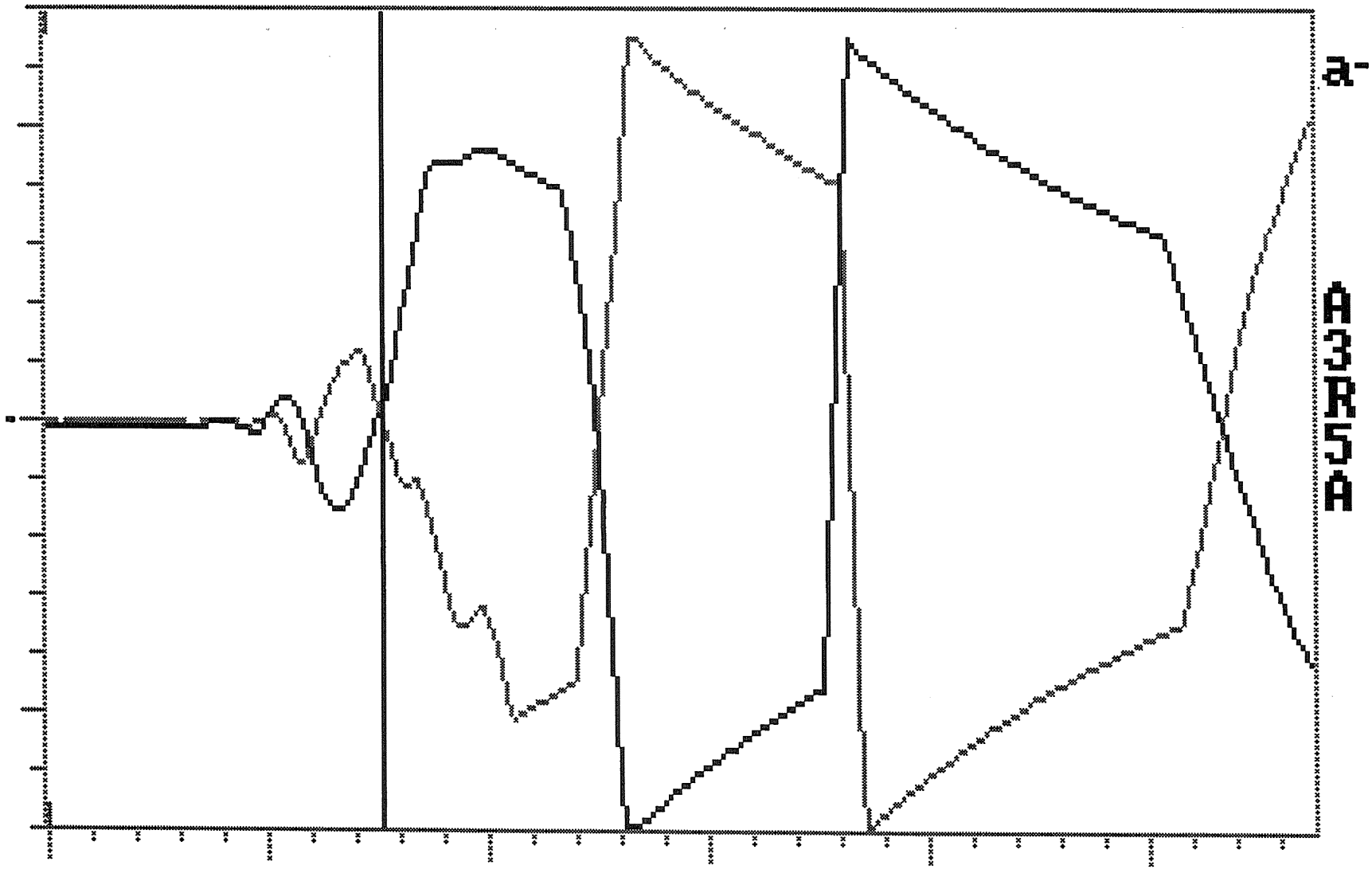

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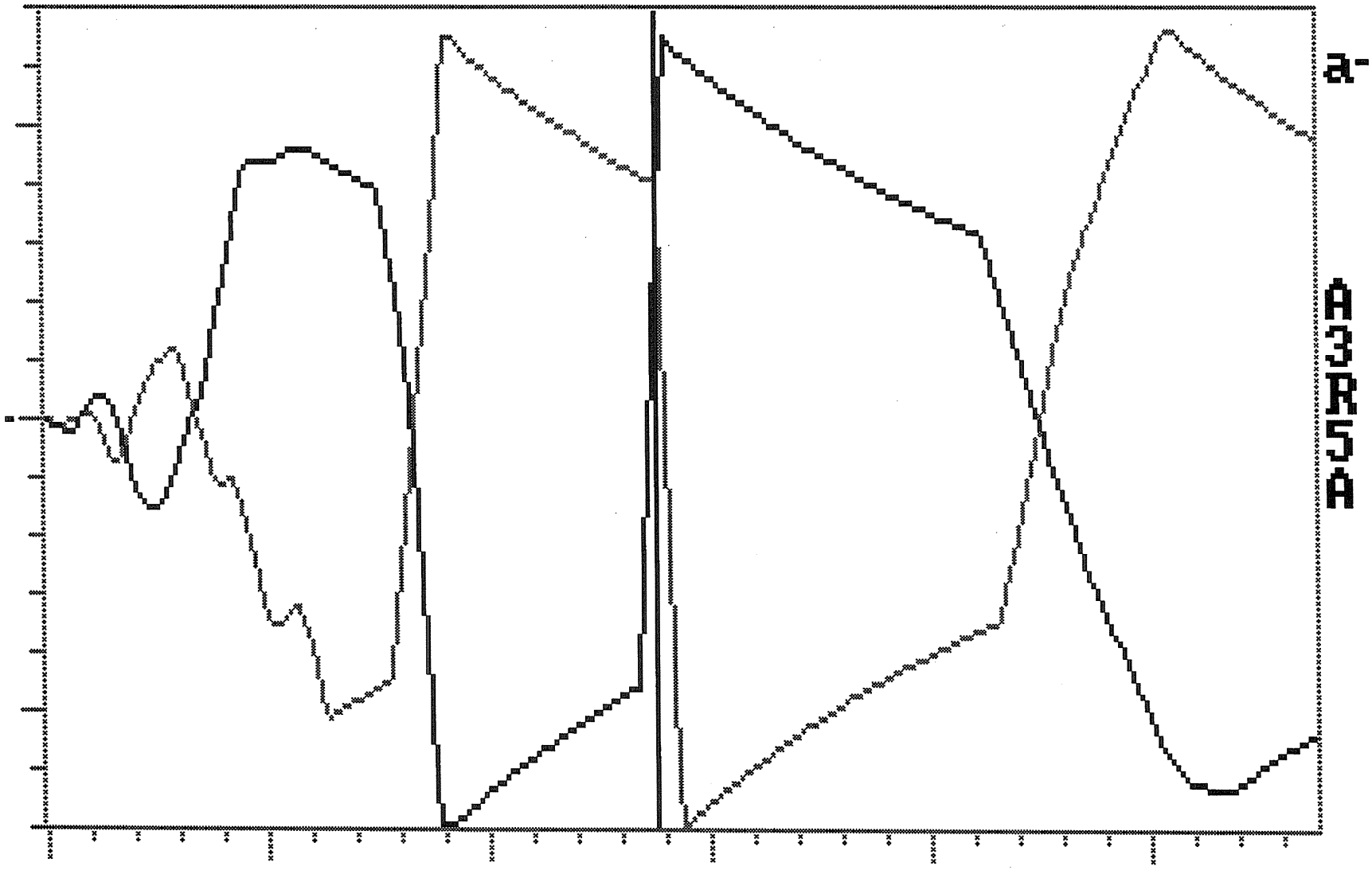

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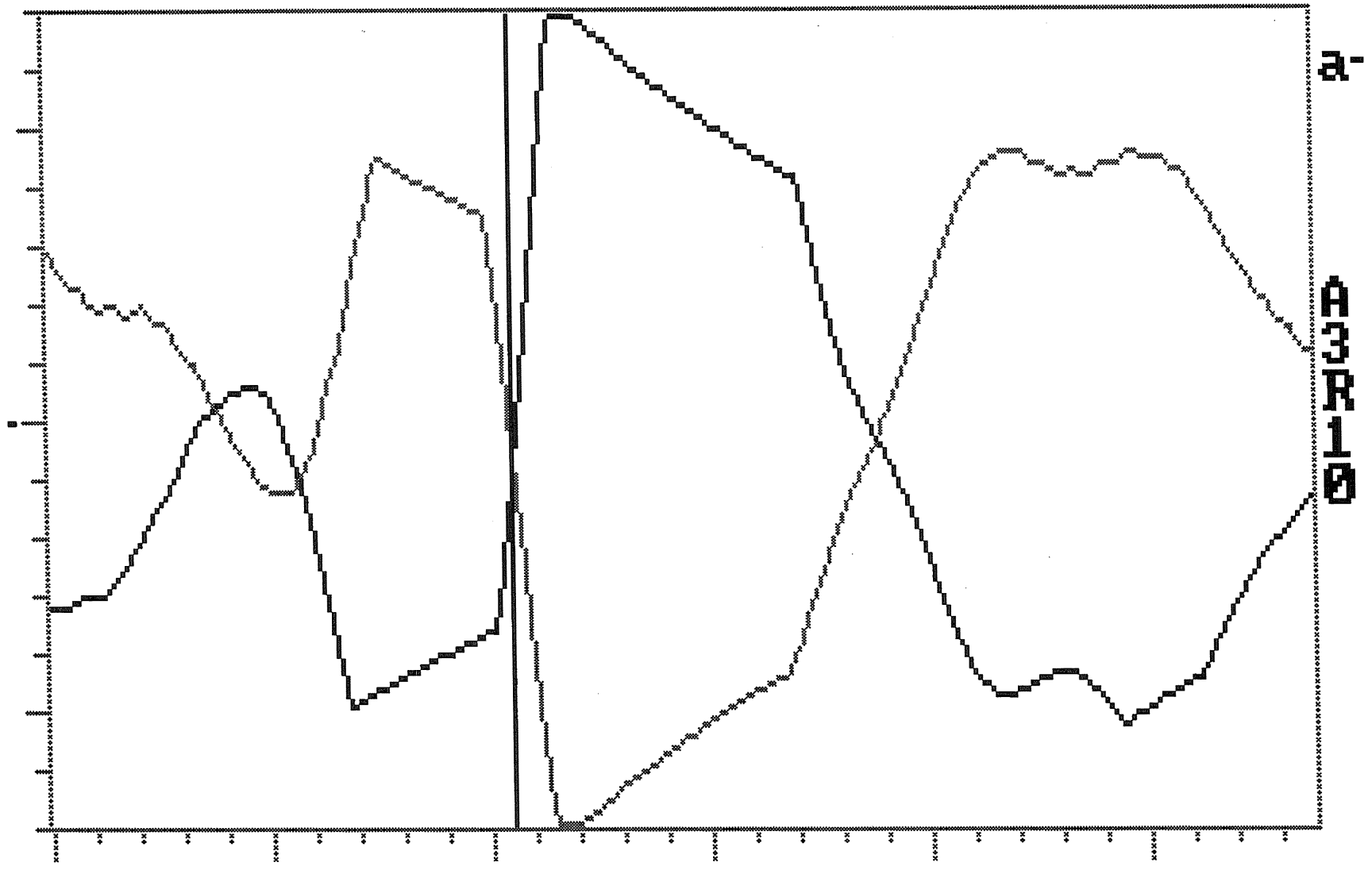

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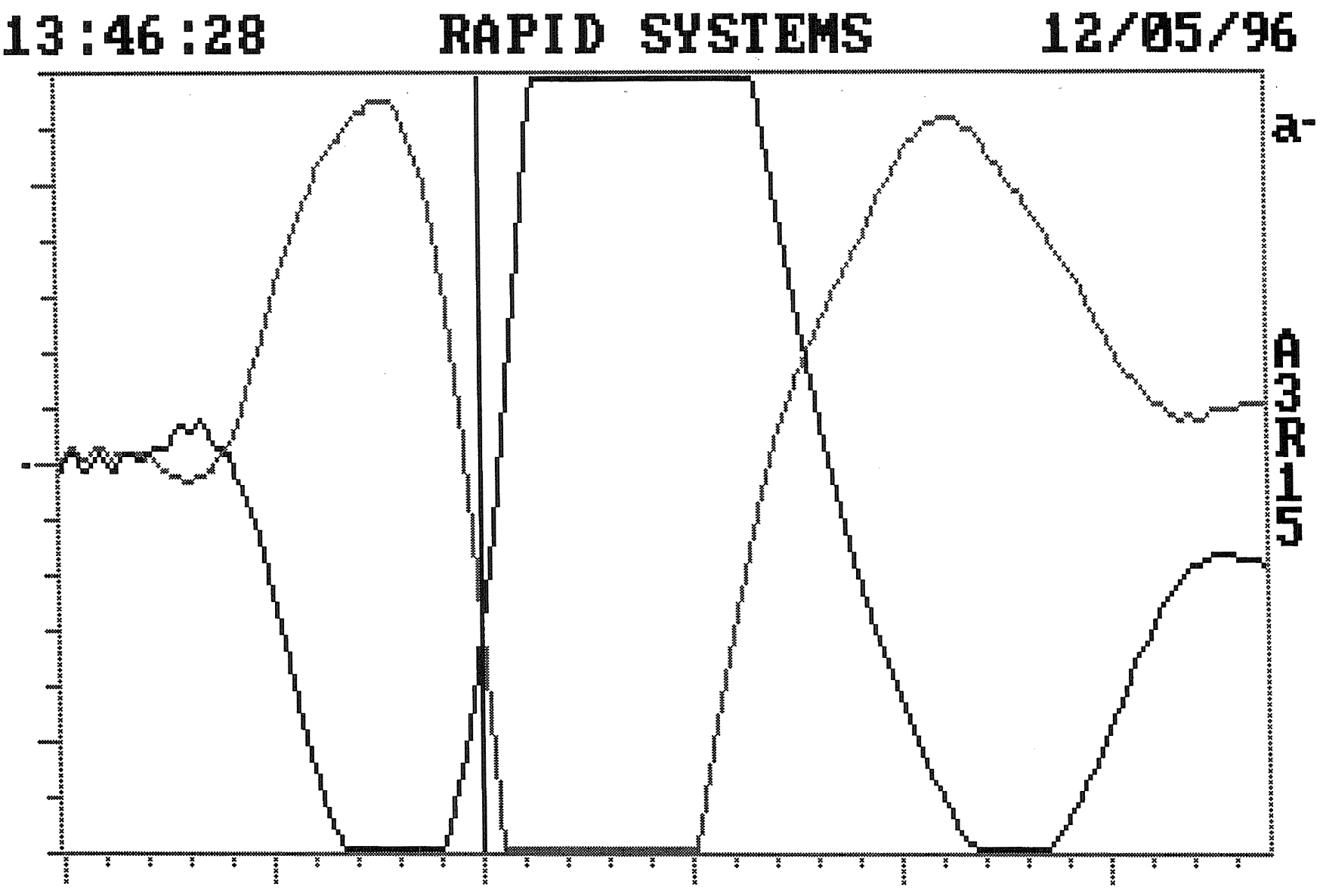
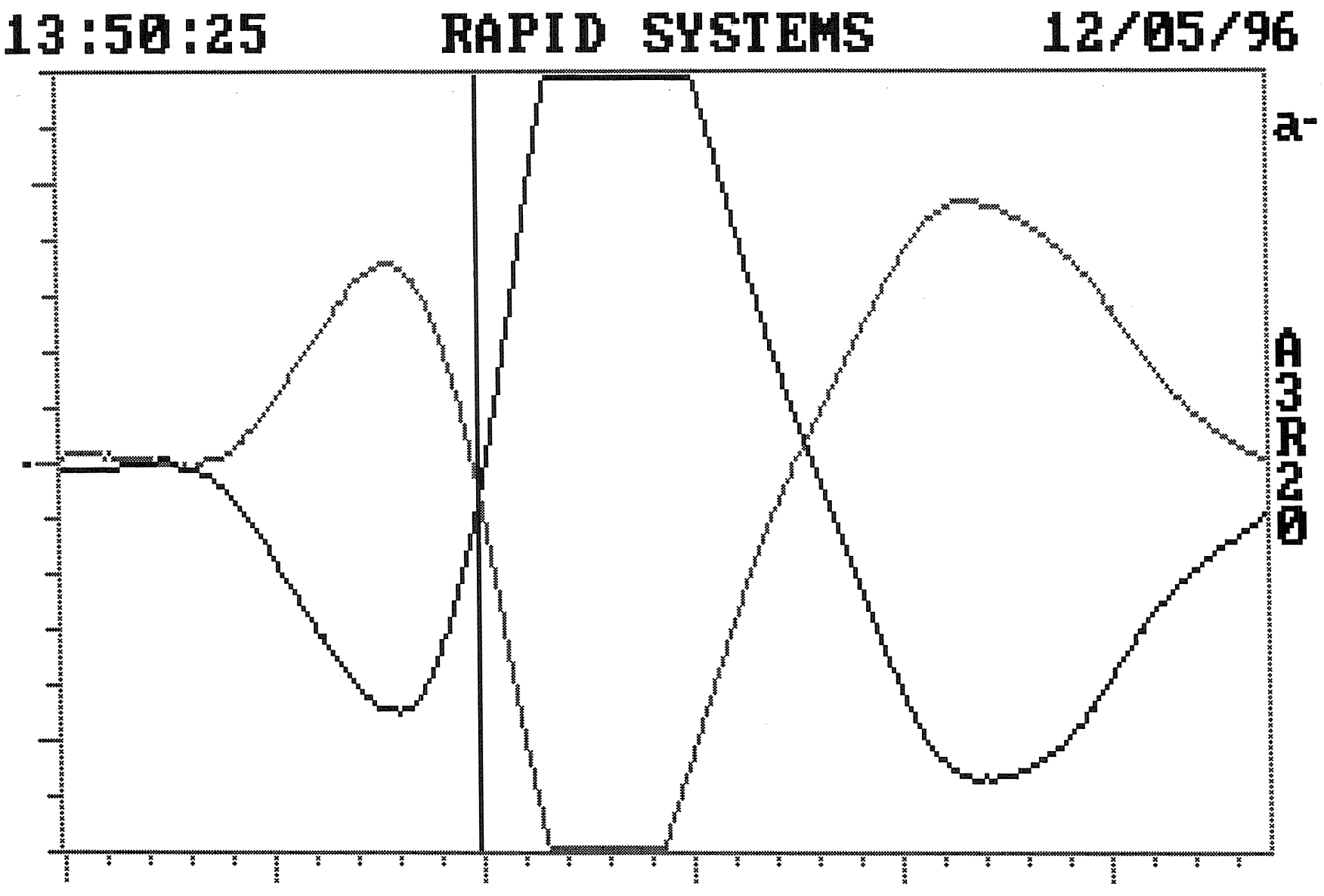
For use with report dated 03/18/2005; RTF Job No. 2004-700-21



For use with report dated 03/18/2005; RTF Job No. 2004-700-21



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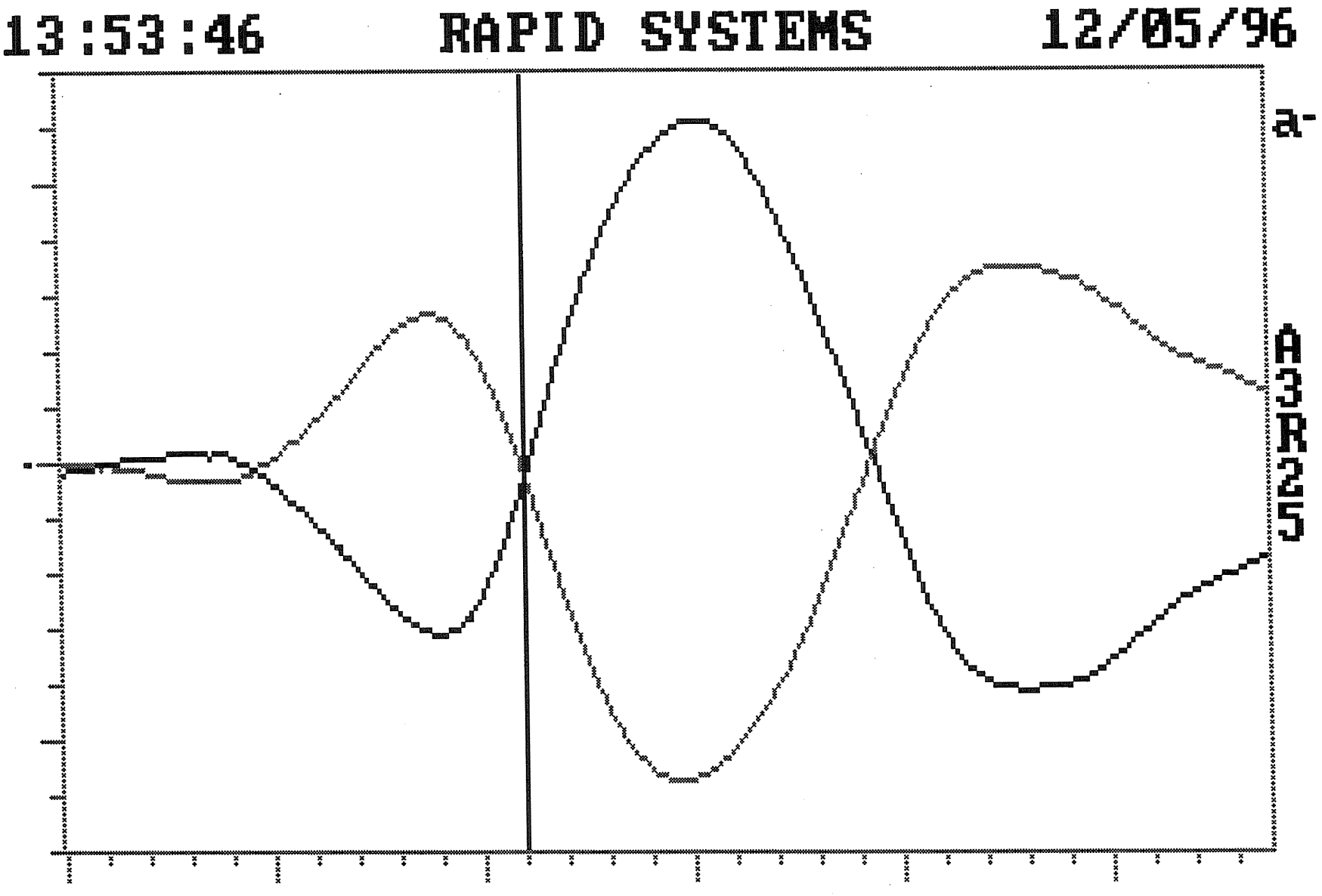
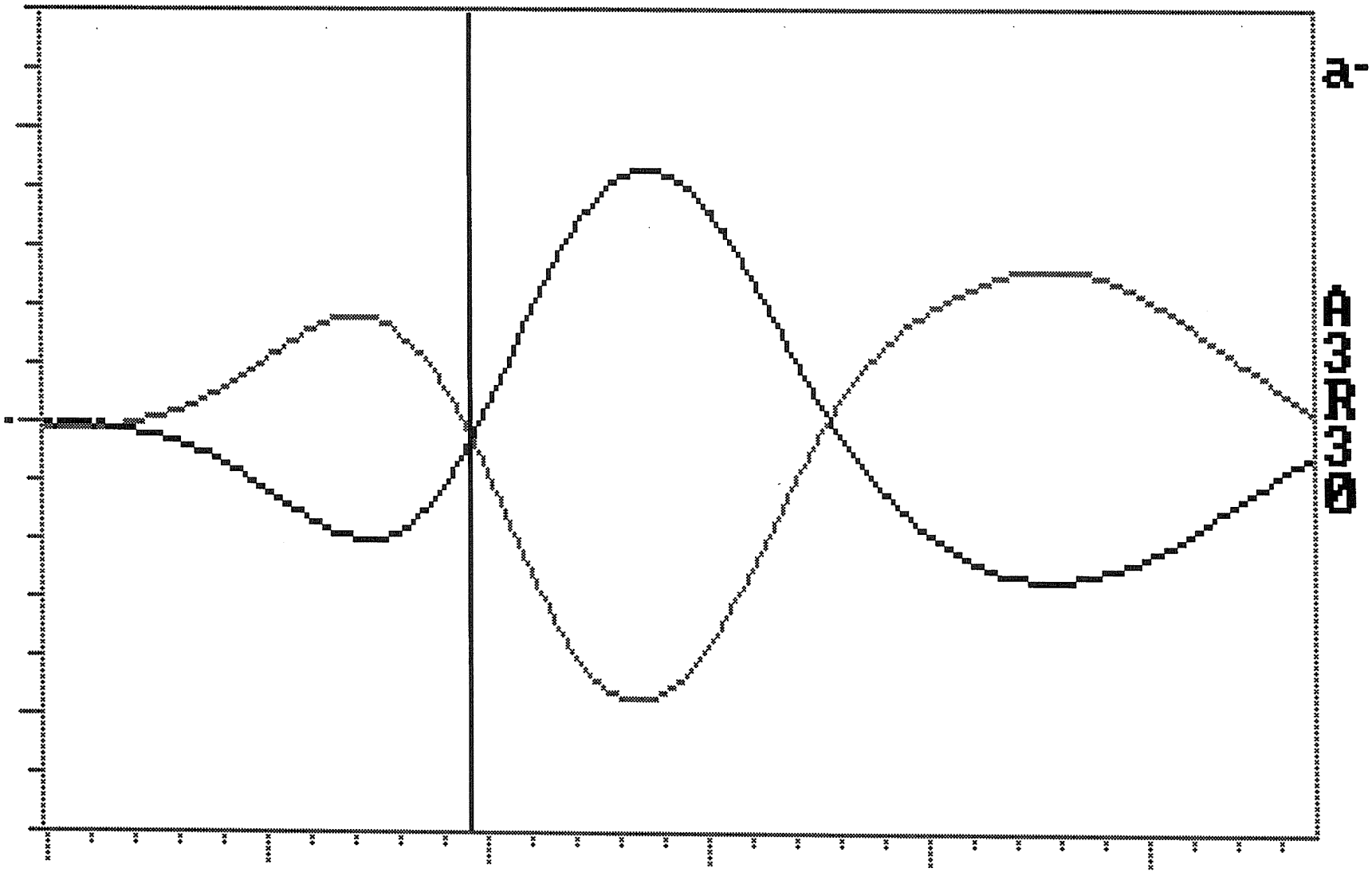


For use with report dated 03/18/2005; RTF Job No. 2004-700-21

13:57:22 RAPID SYSTEMS 12/05/96



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CV=+.00000V STB=500us/div DTB=1 ms/div
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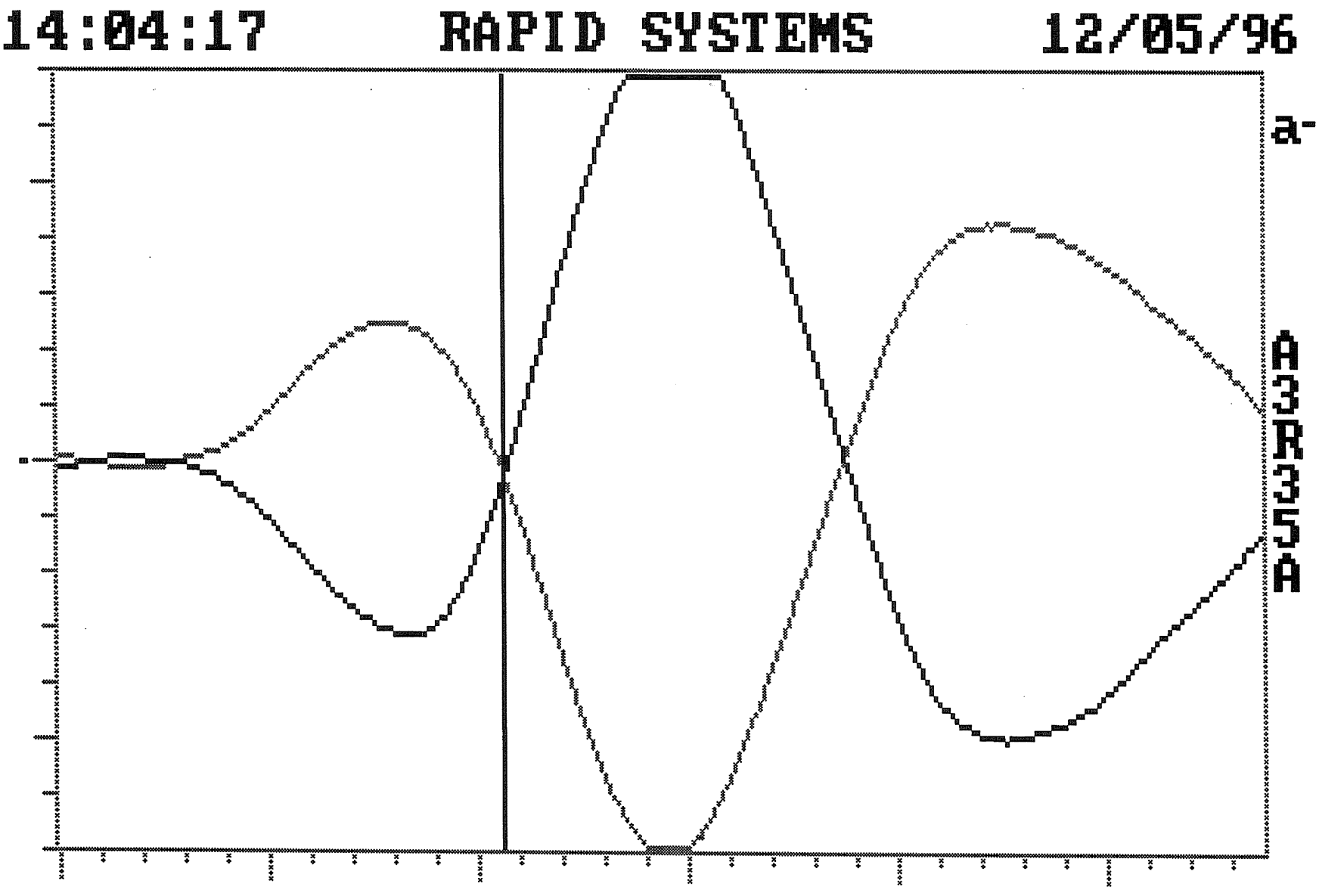
CR=End Ret. Beg=+0 End=+2048

For use with report dated 03/18/2005; RTF Job No. 2004-700-21



For use with report dated 03/18/2005; RTF Job No. 2004-700-21

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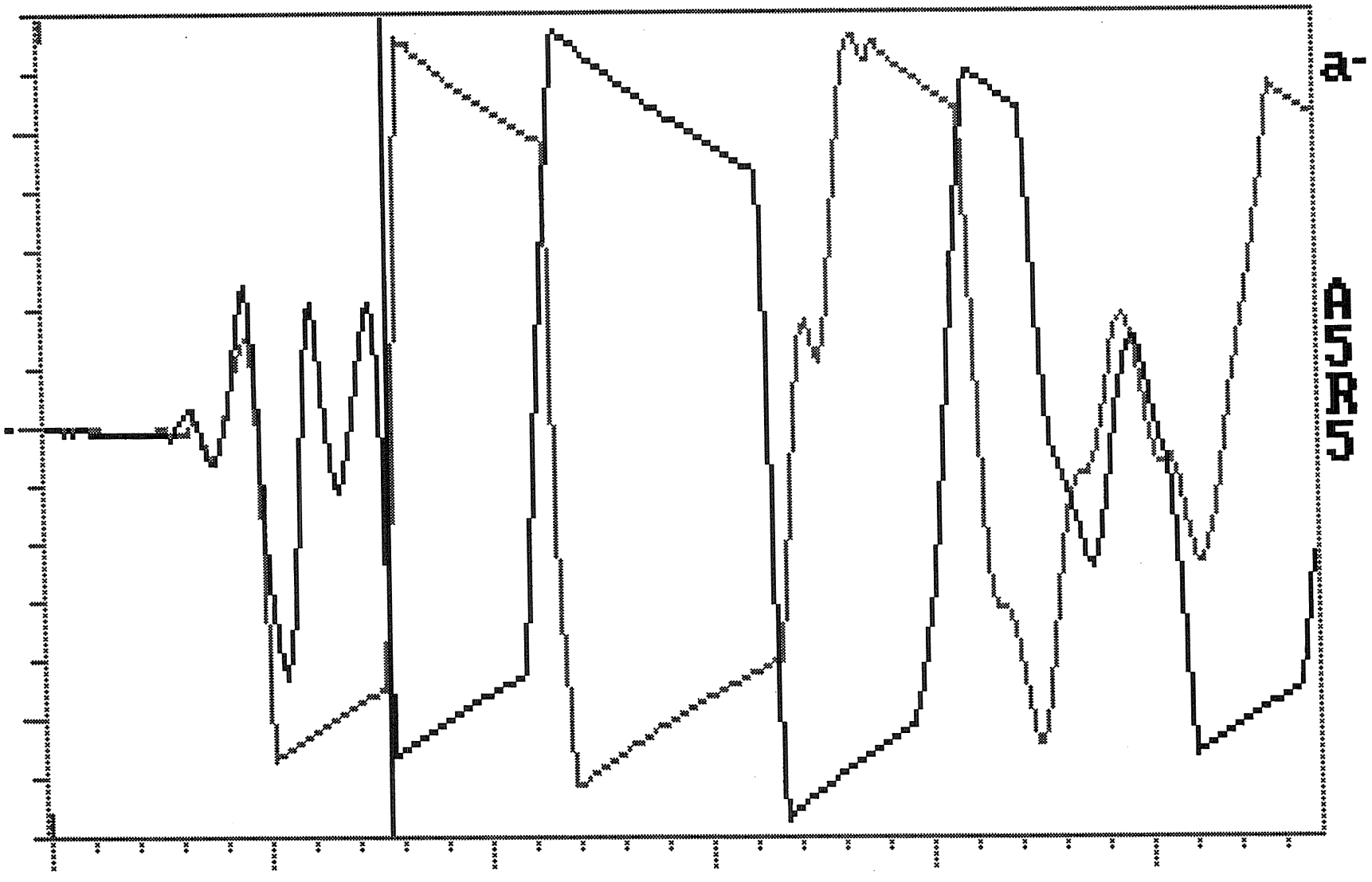

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CD= +7.70ms B-OFF D-OFF
CV=+.00000V STB=500us/div DTB=1 ms/div
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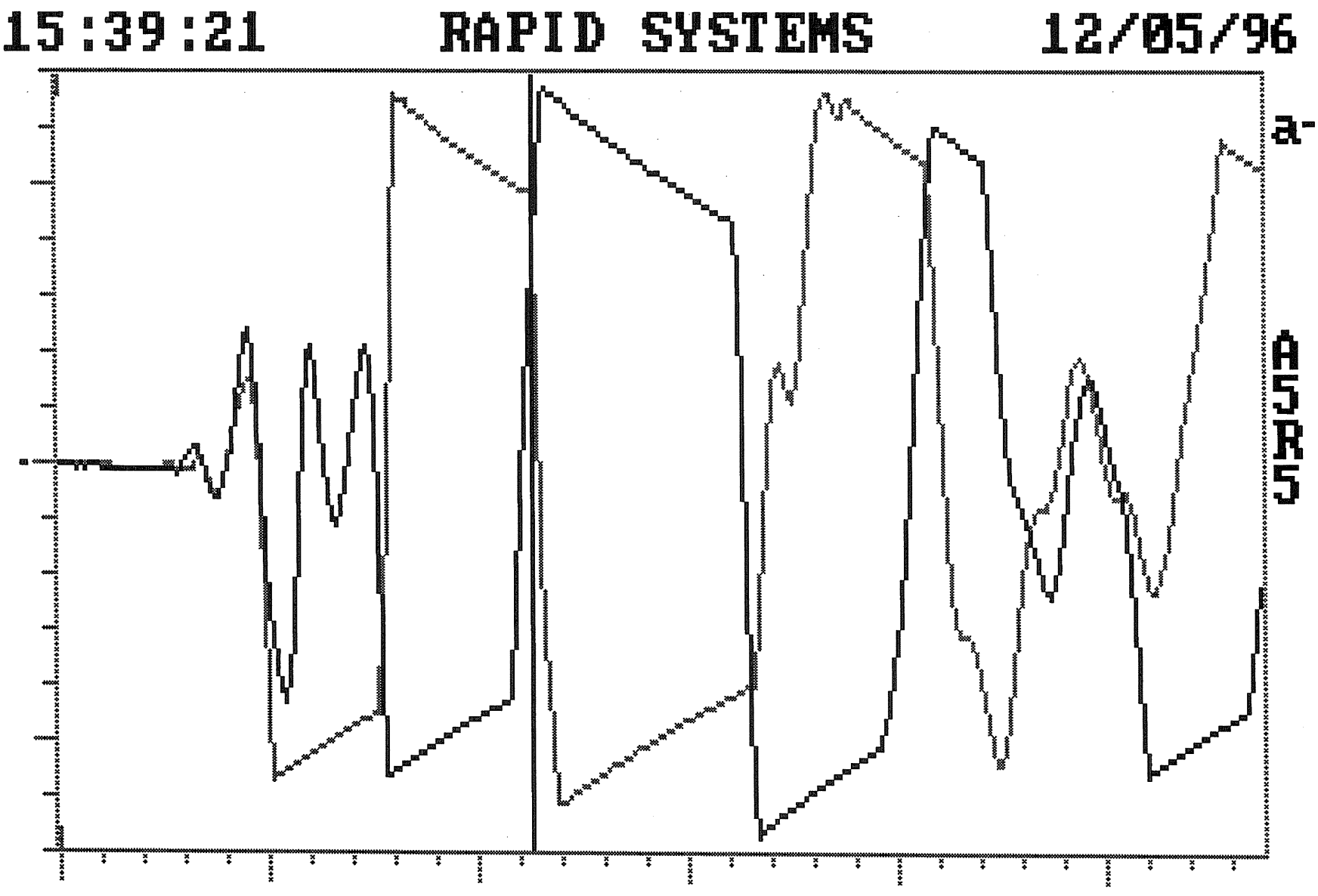
d Ret. Beg=+0 End=+2048

For use with report dated 03/18/2005; RTF Job No. 2004-700-21



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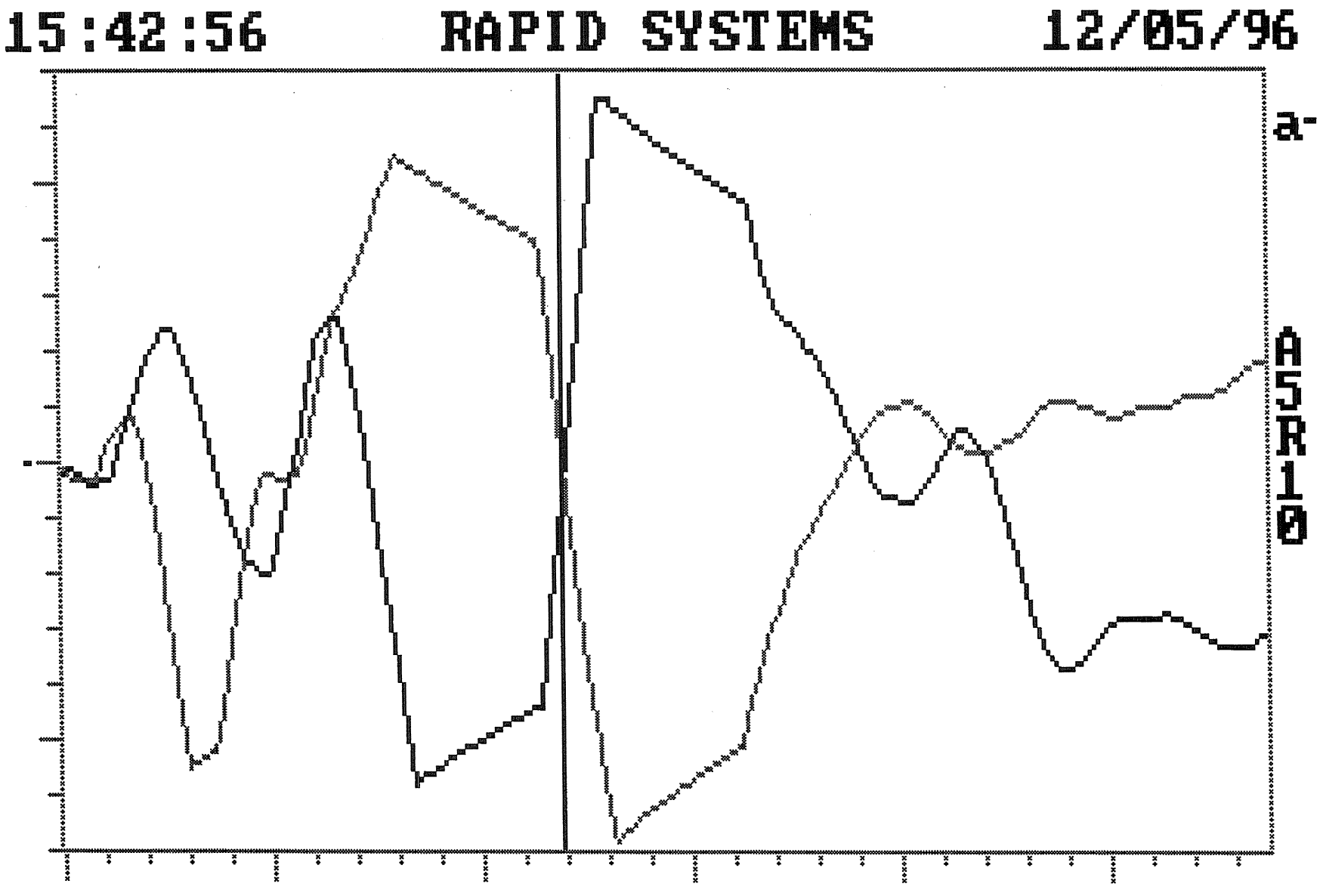
=t. Beg=+0 End=+2048

For use with report dated 03/18/2005; RTF Job No. 2004-700-21



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For use with report dated 03/18/2005; RTF Job No. 2004-700-21

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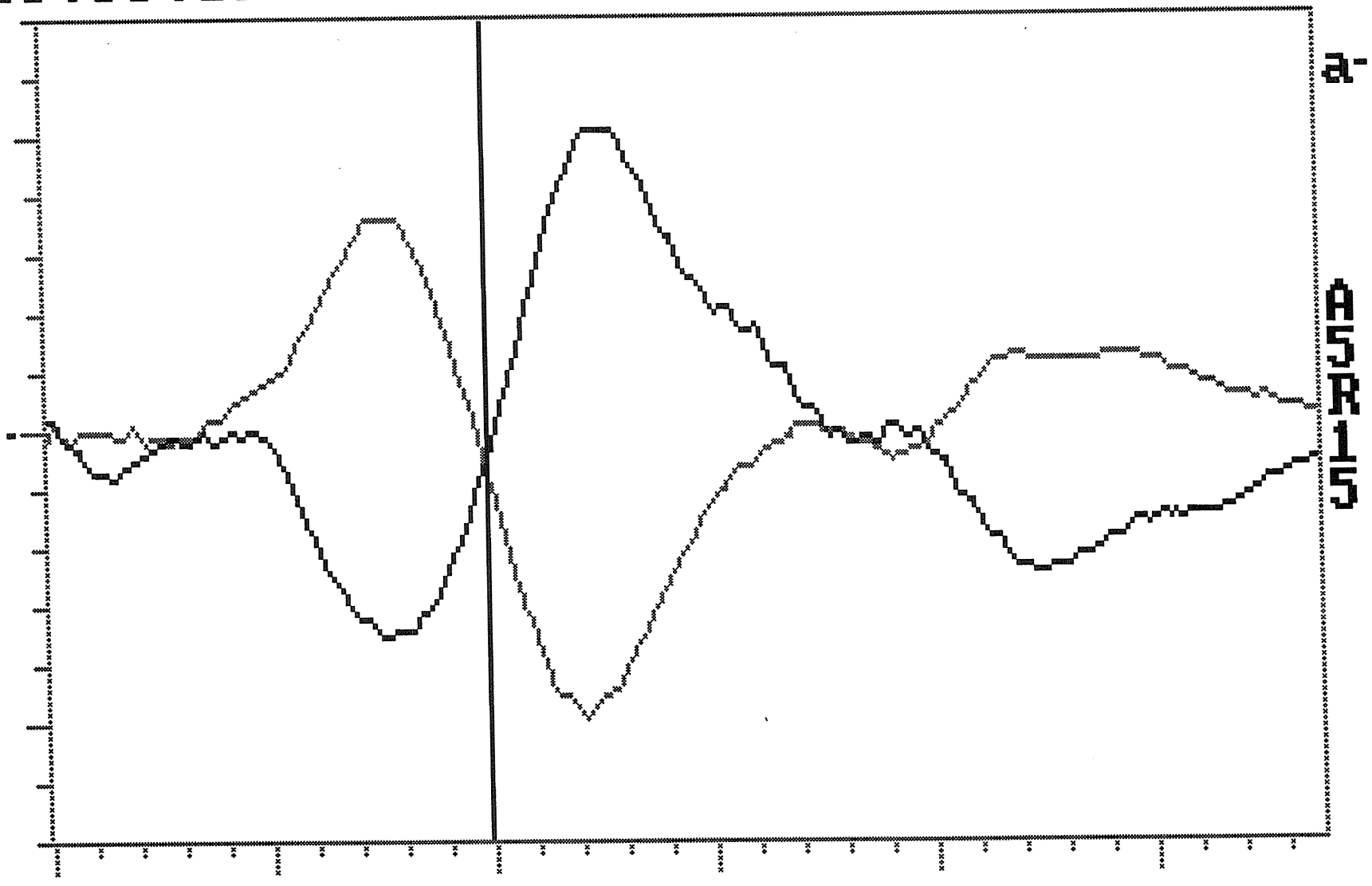

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CV=+.00000V STB=500us/div DTB=1 ms/div
Triggering Mode=Analog (s) CH=Ext
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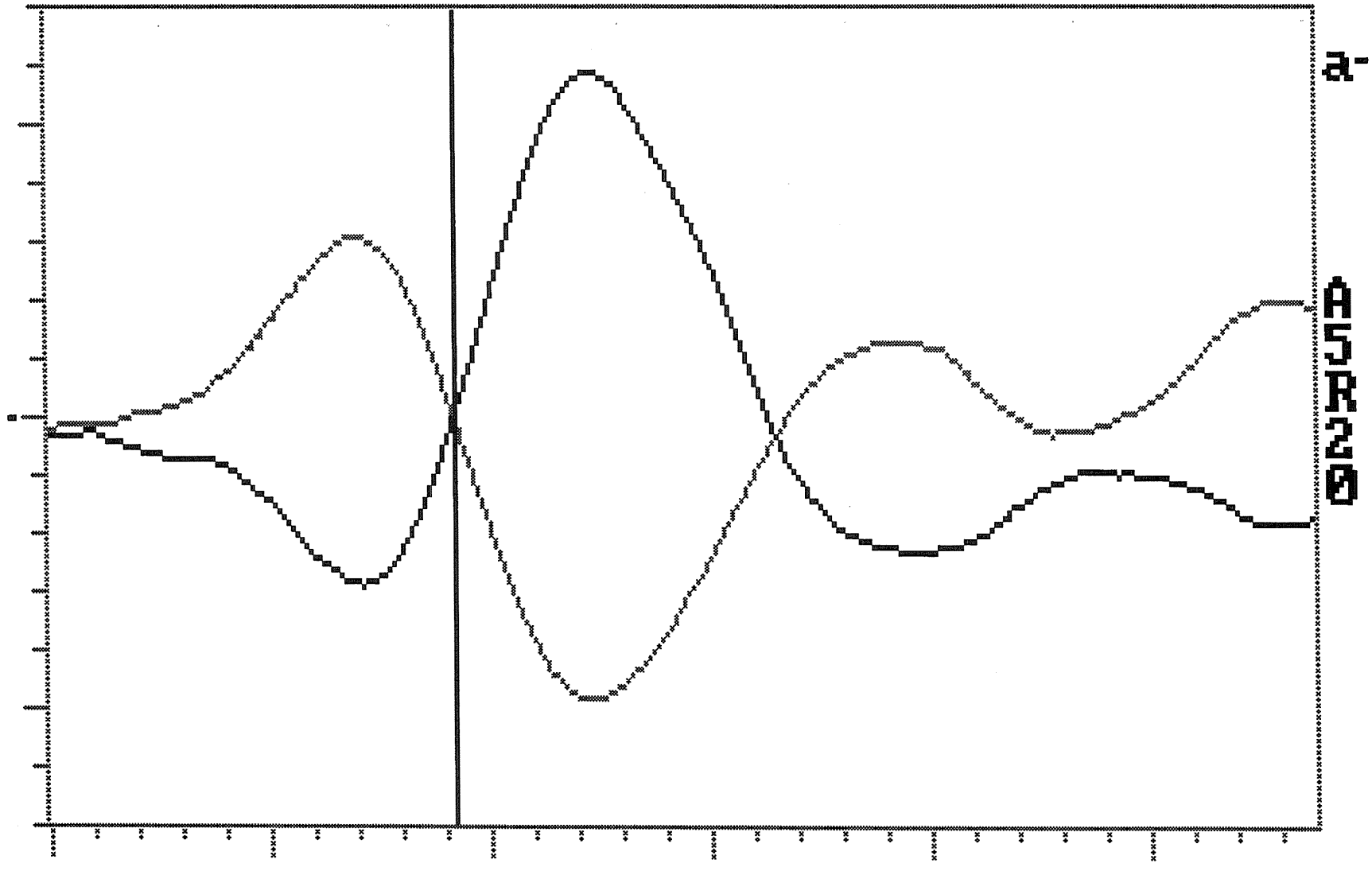
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

15:57:37 RAPID SYSTEMS 12/05/96



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CD= +36.20ms B-OFF D-OFF
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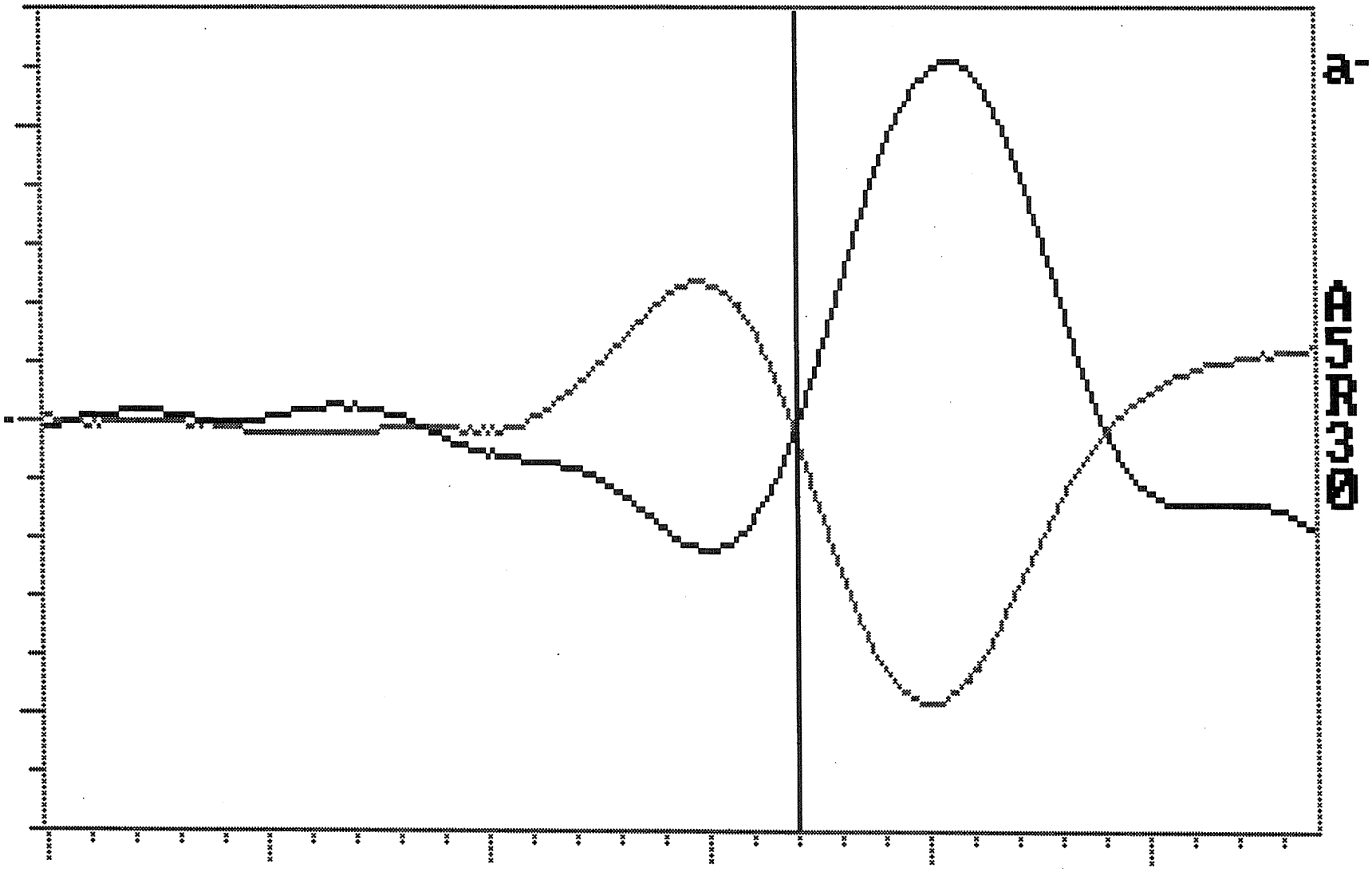
Triggering Mode=Analog (s) CH=Ext
CR Beg=+0 End=+2048

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

16:10:21 RAPID SYSTEMS 12/05/96



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CD= +50.20ms B-OFF D-OFF
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Triggering Mode=Analog (s) CH=Ext
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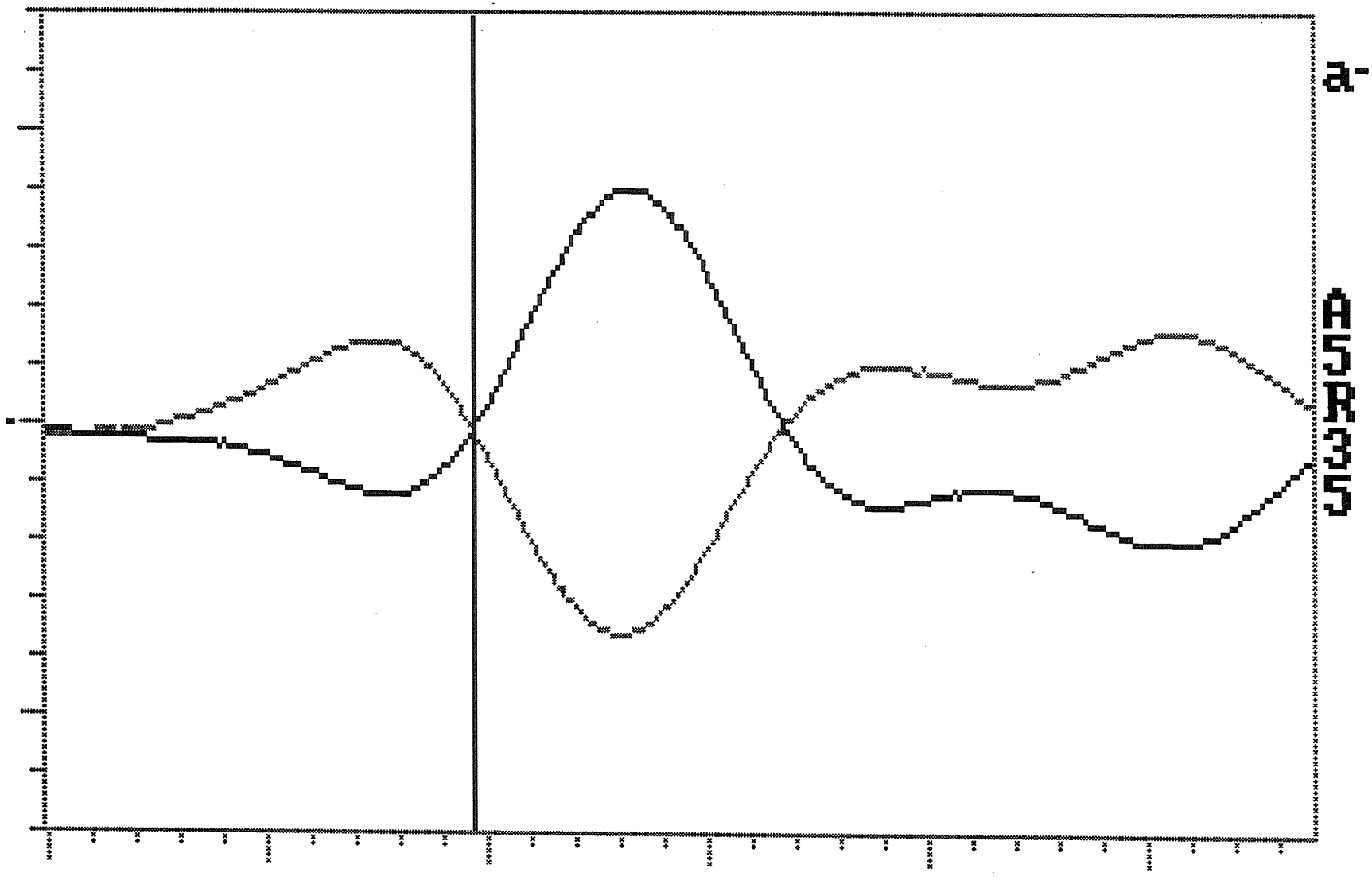
For use with report dated 03/18/2005; RTF Job No. 2004-700-21

16:18:51 RAPID SYSTEMS 12/05/96



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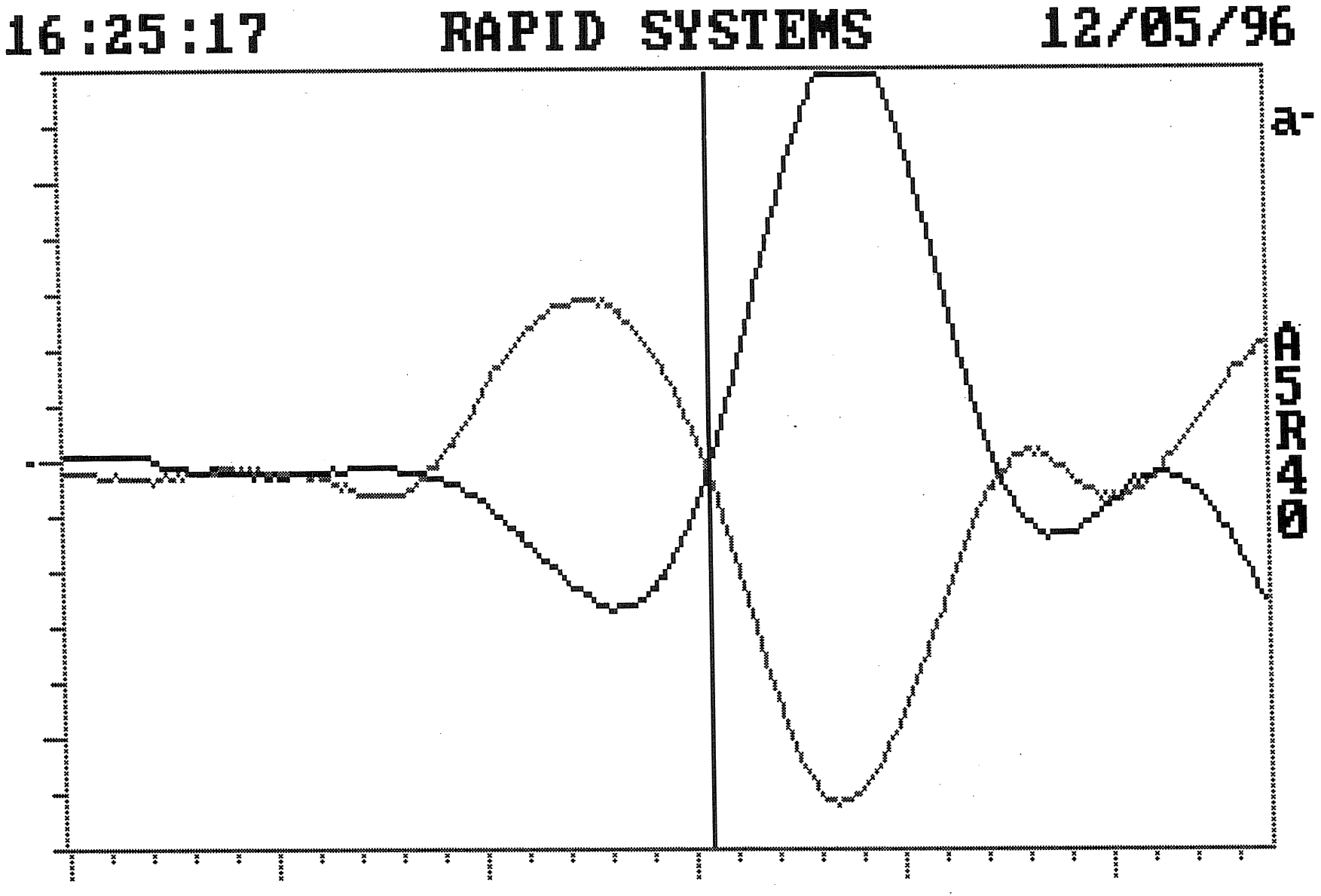
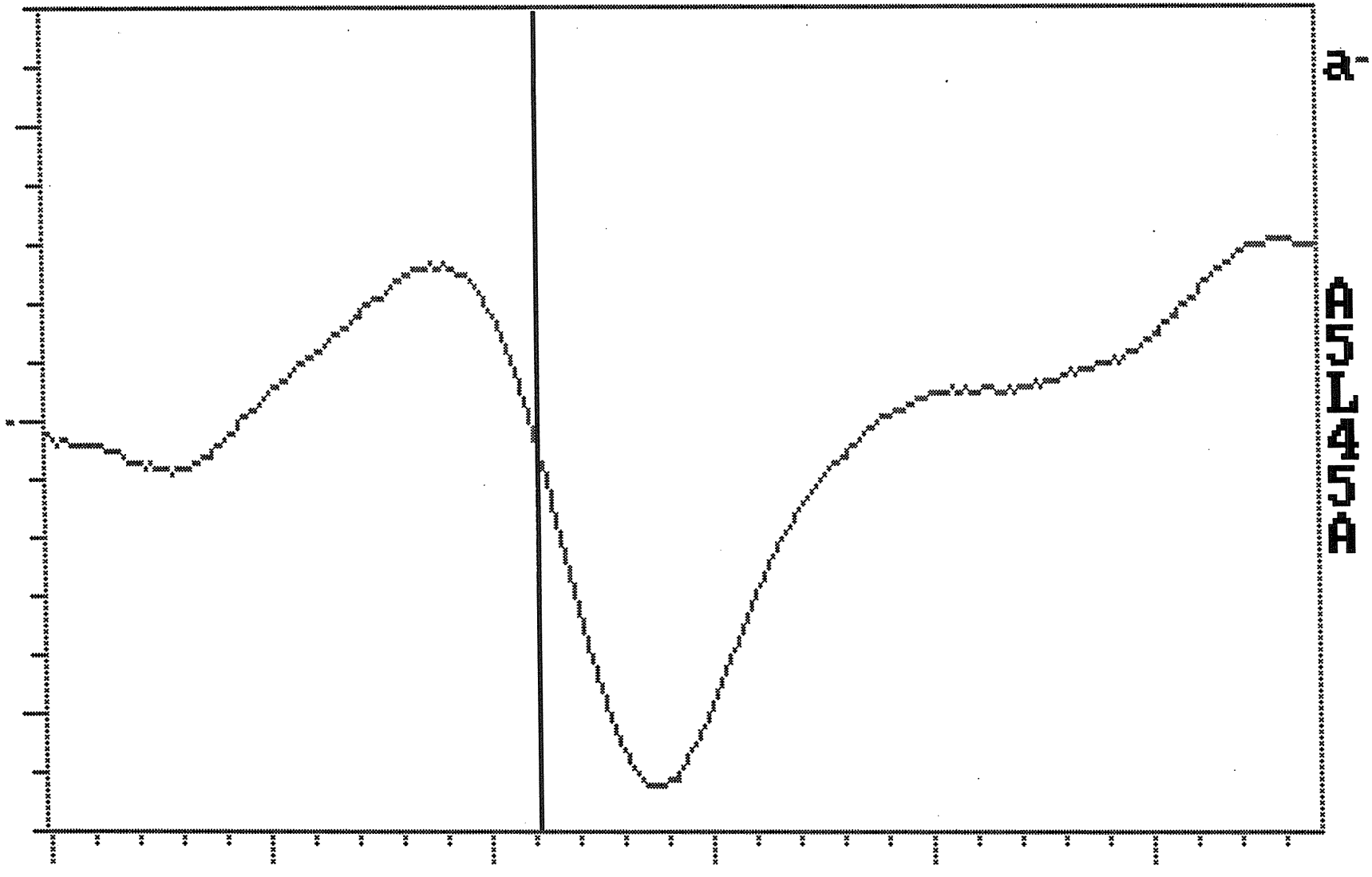
CR=End Ret. Beg=+0 End=+2048

For use with report dated 03/18/2005; RTF Job No. 2004-700-21



For use with report dated 03/18/2005; RTF Job No. 2004-700-21

16:33:50 RAPID SYSTEMS 12/05/96



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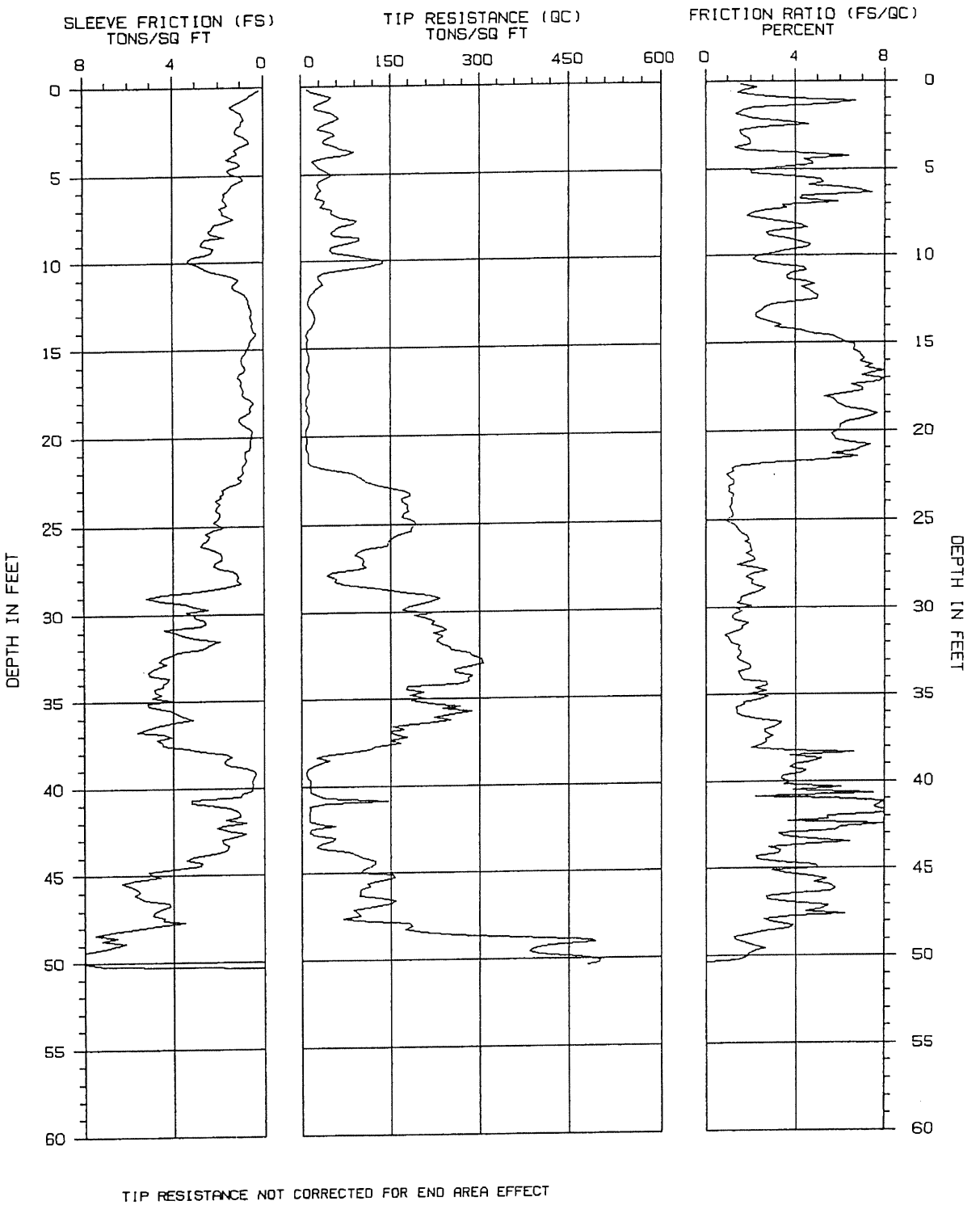
CD= +68.70ms B-OFF D-OFF
CV=+.00000V STB=500us/div DTB=1 ms/div
Triggering Mode=Analog (s) CH=Ext
C Beg=+0 End=+2048

Cone Penetration Test Sounding,
AES 5-25-00



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-01

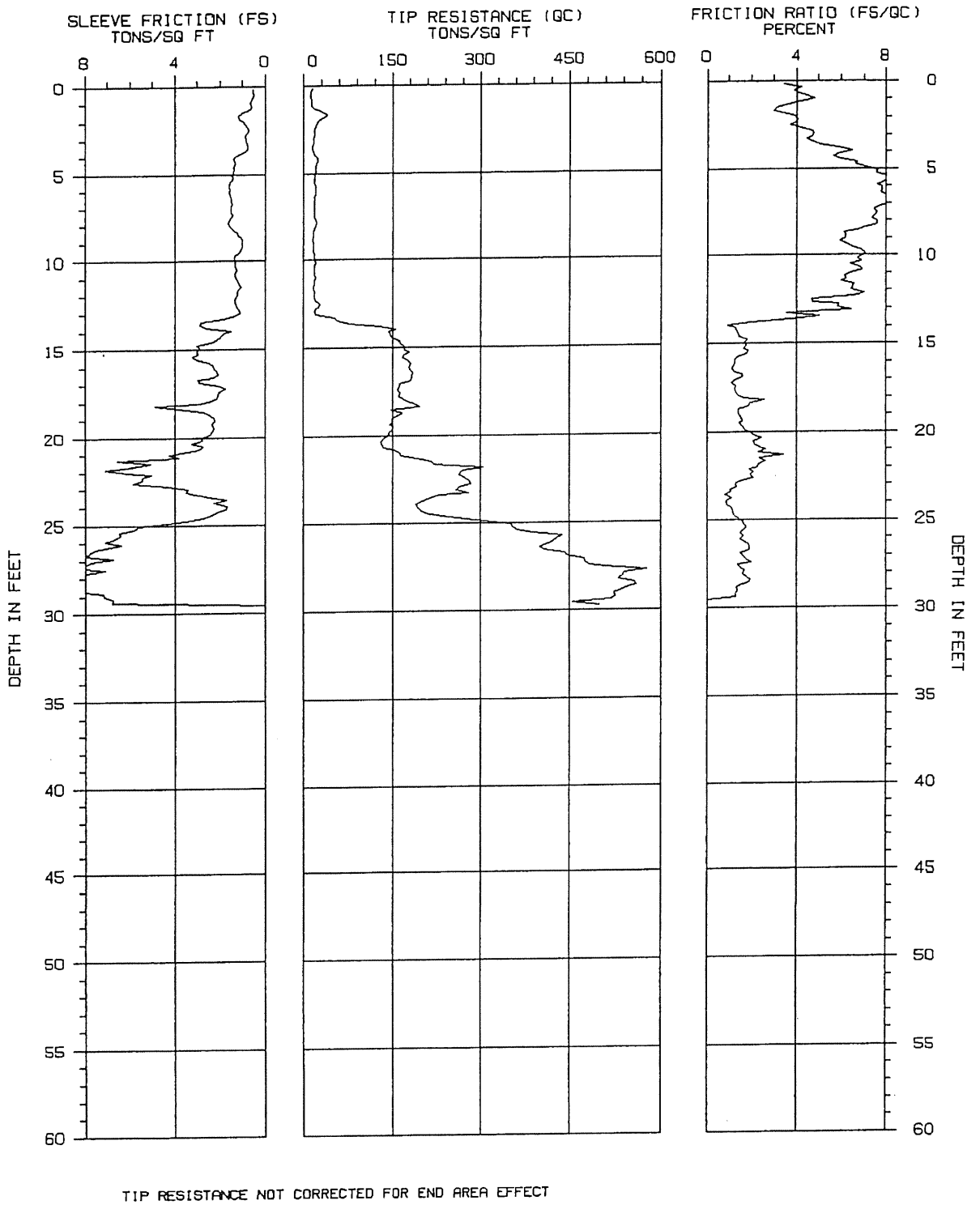
PROJECT NAME : AES/MAGIC MTN

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.VO/R□3

DATE/TIME: 03-20-00 08:16

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-02

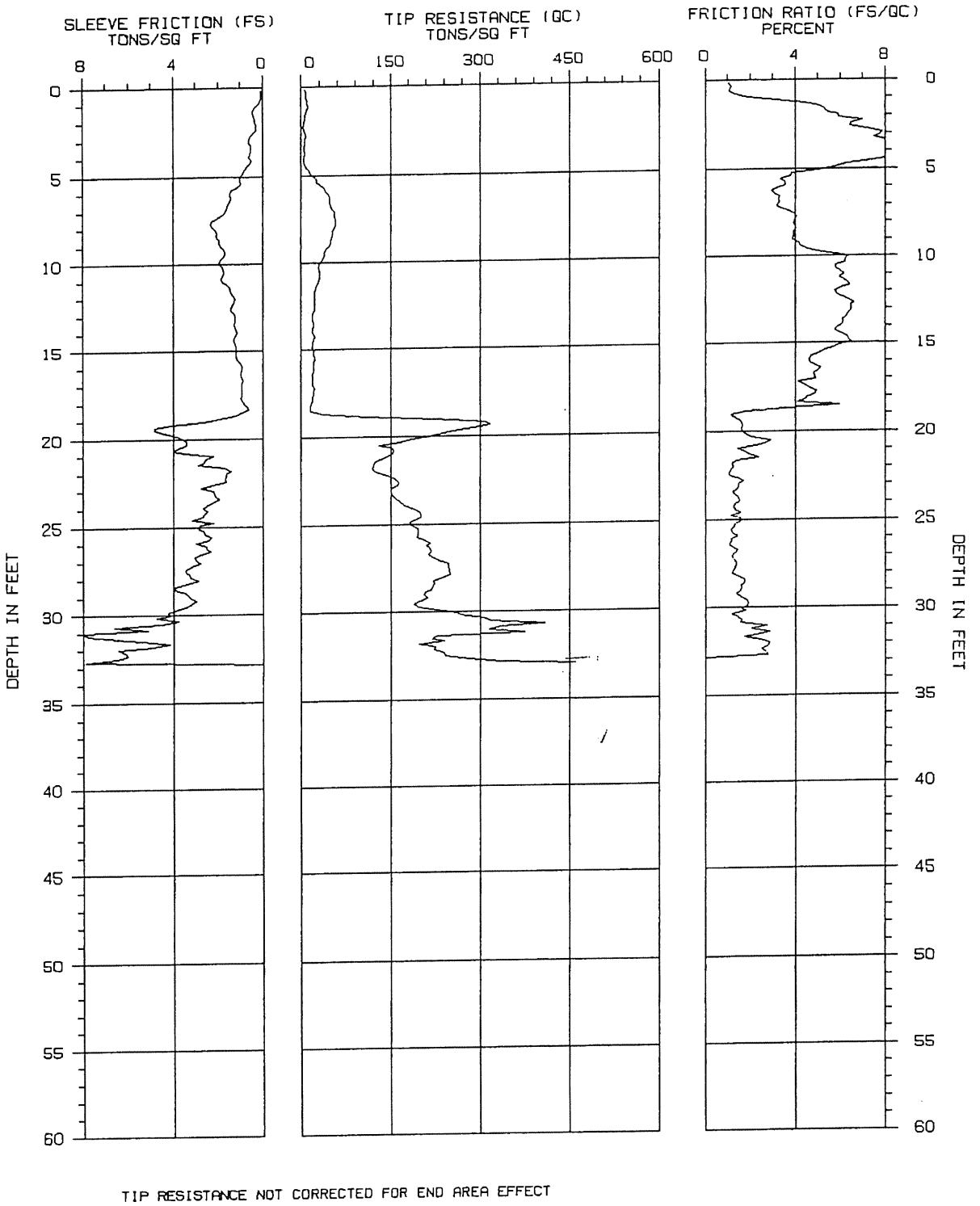
PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH,V0/R□3

DATE/TIME: 03-20-00 10:12

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-03

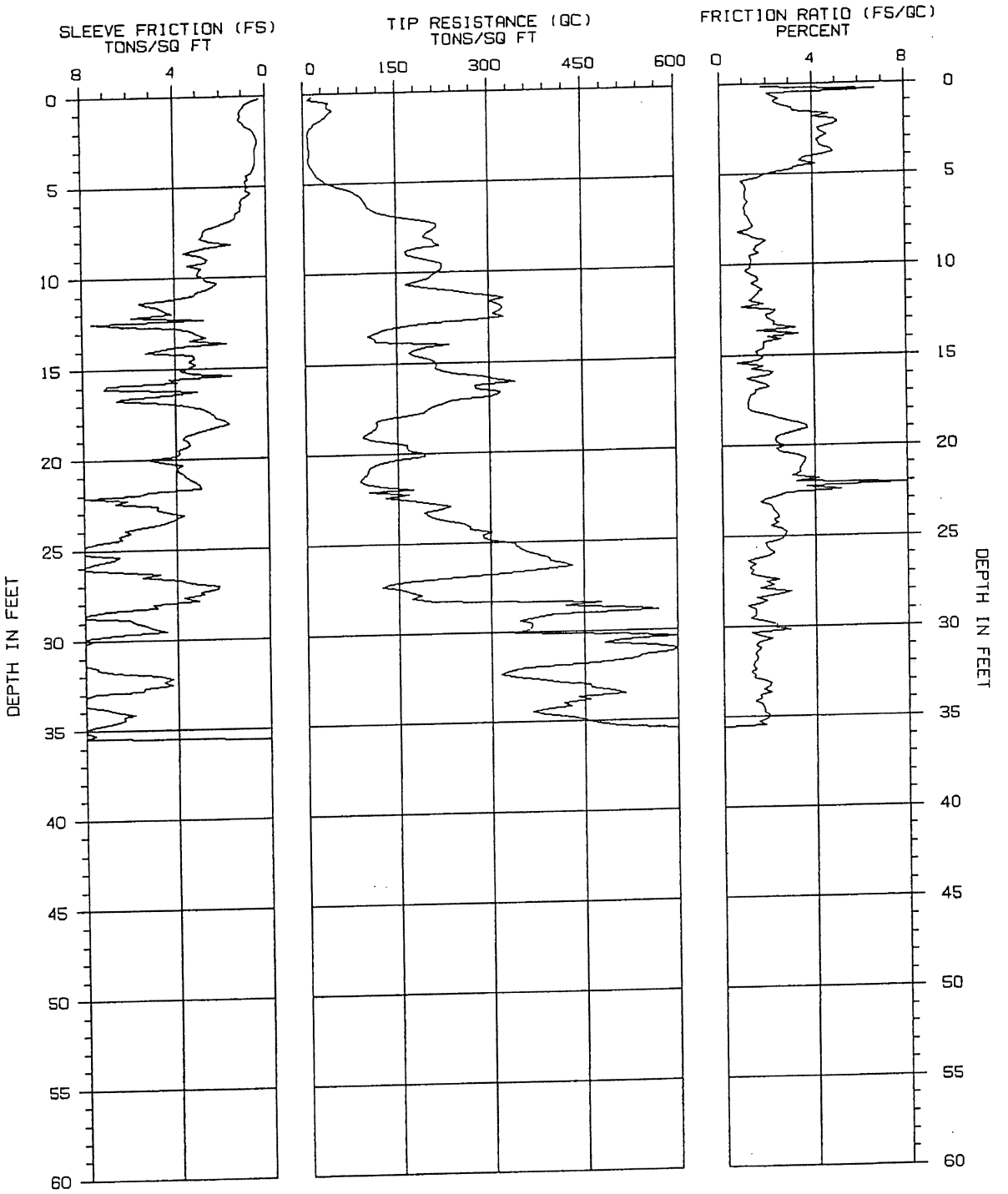
PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-20-00 09:27

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-04 SEIS

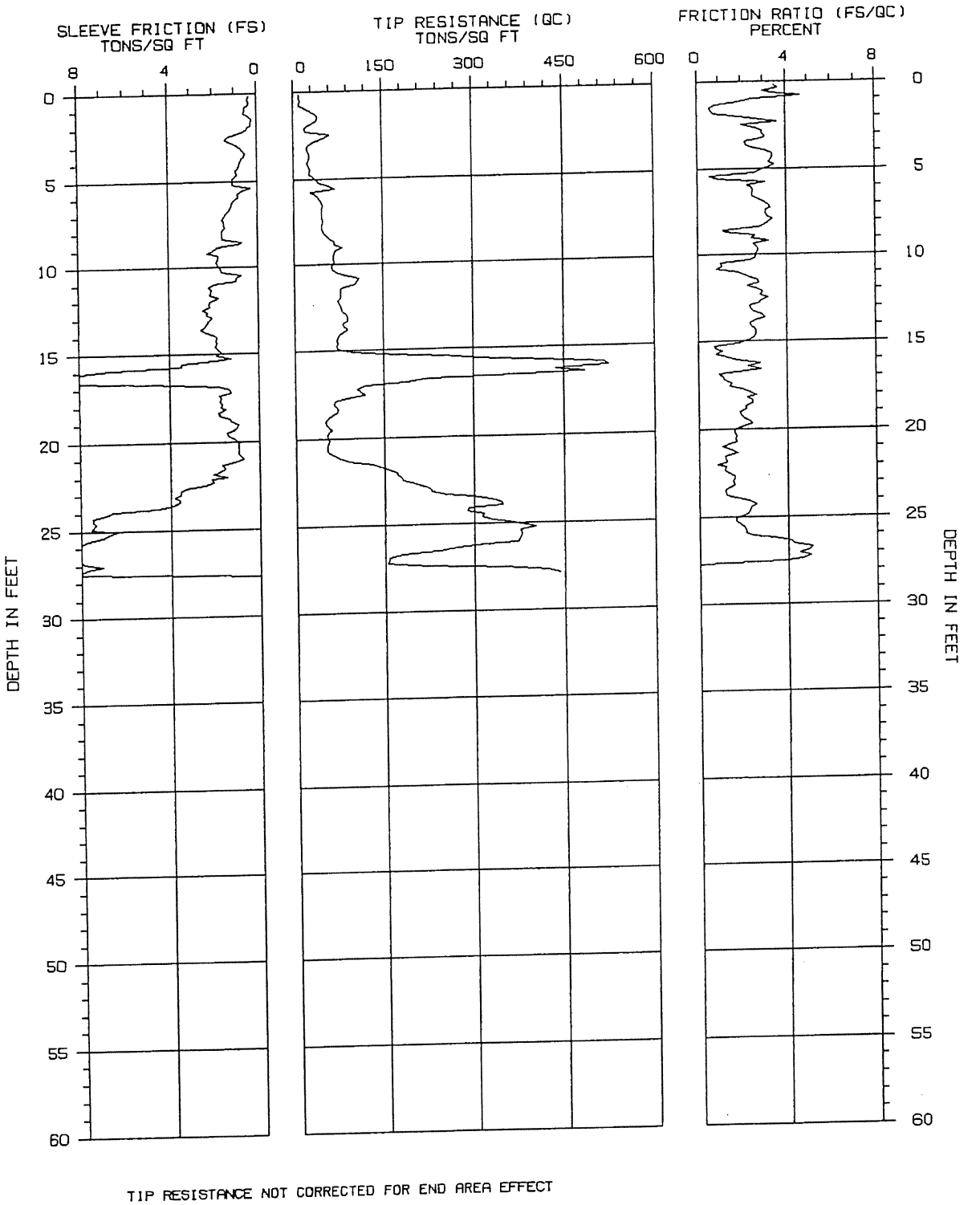
PROJECT NAME : AES/MAGIC MTN

PROJECT NUMBER : 00-1729-1

CONE/RIG : 722/BH.JH/R#3

DATE/TIME: 04-08-00 10:46

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-05

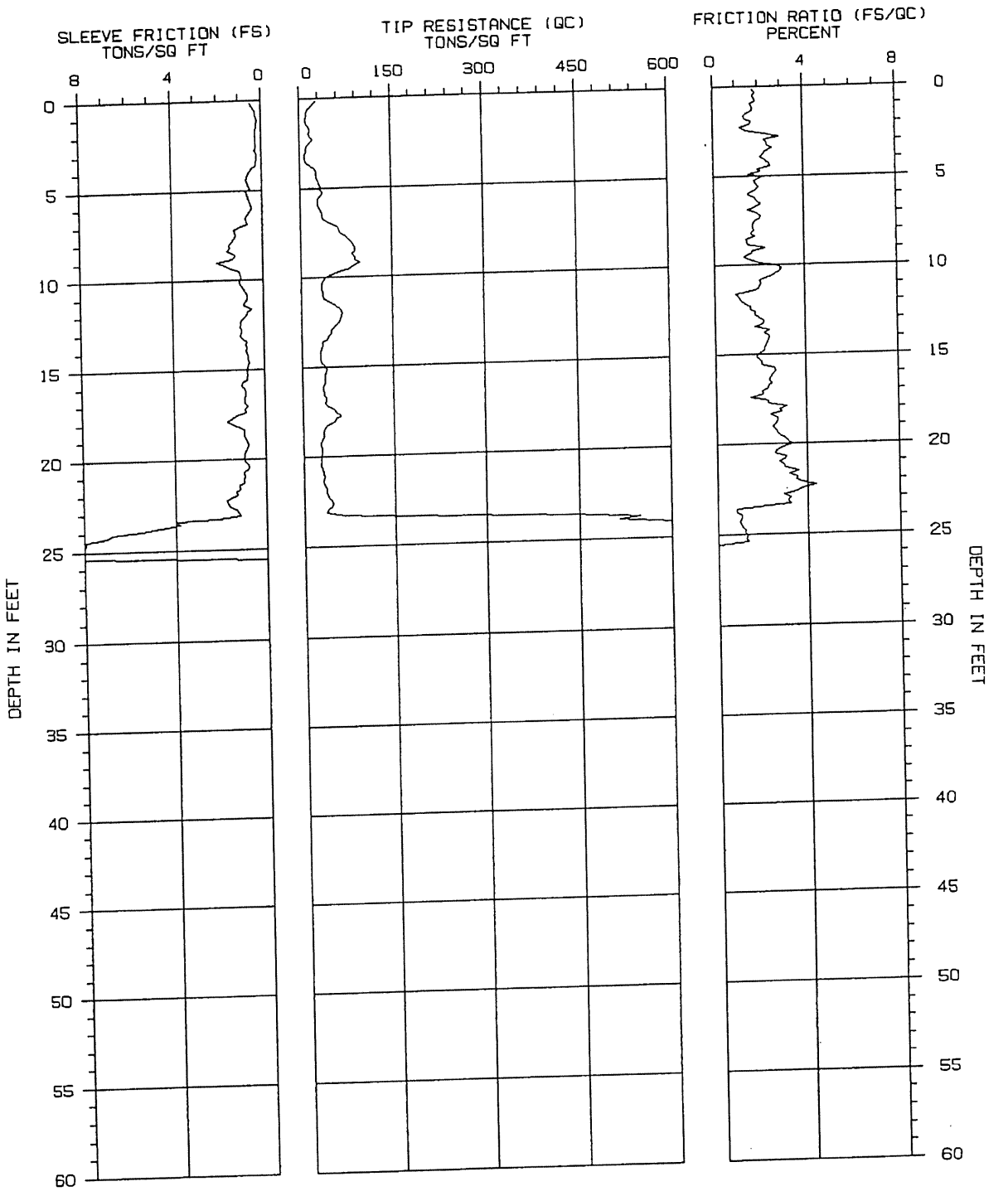
PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-21-00 10:18

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-06

PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-21-00 09:24

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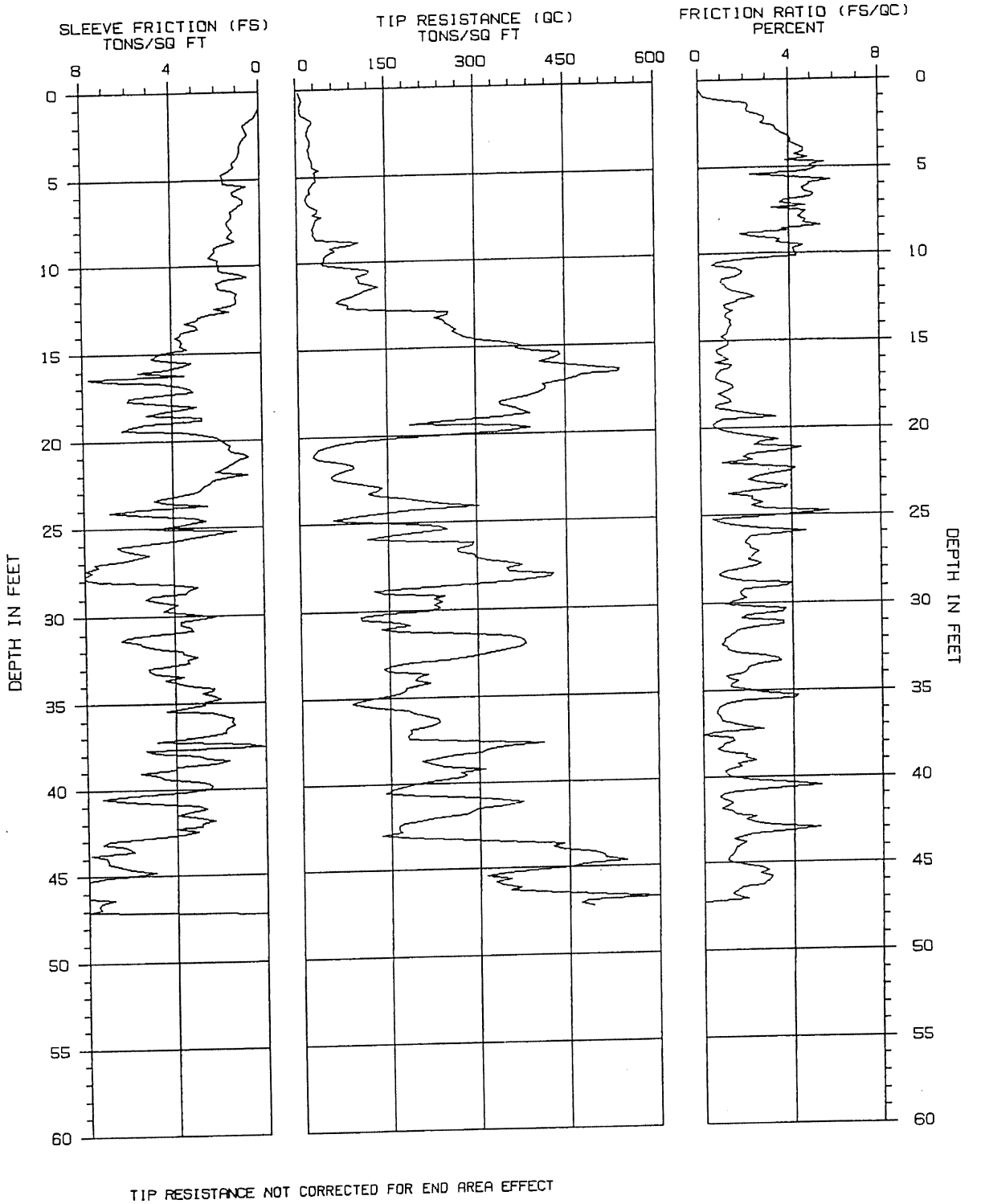

TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

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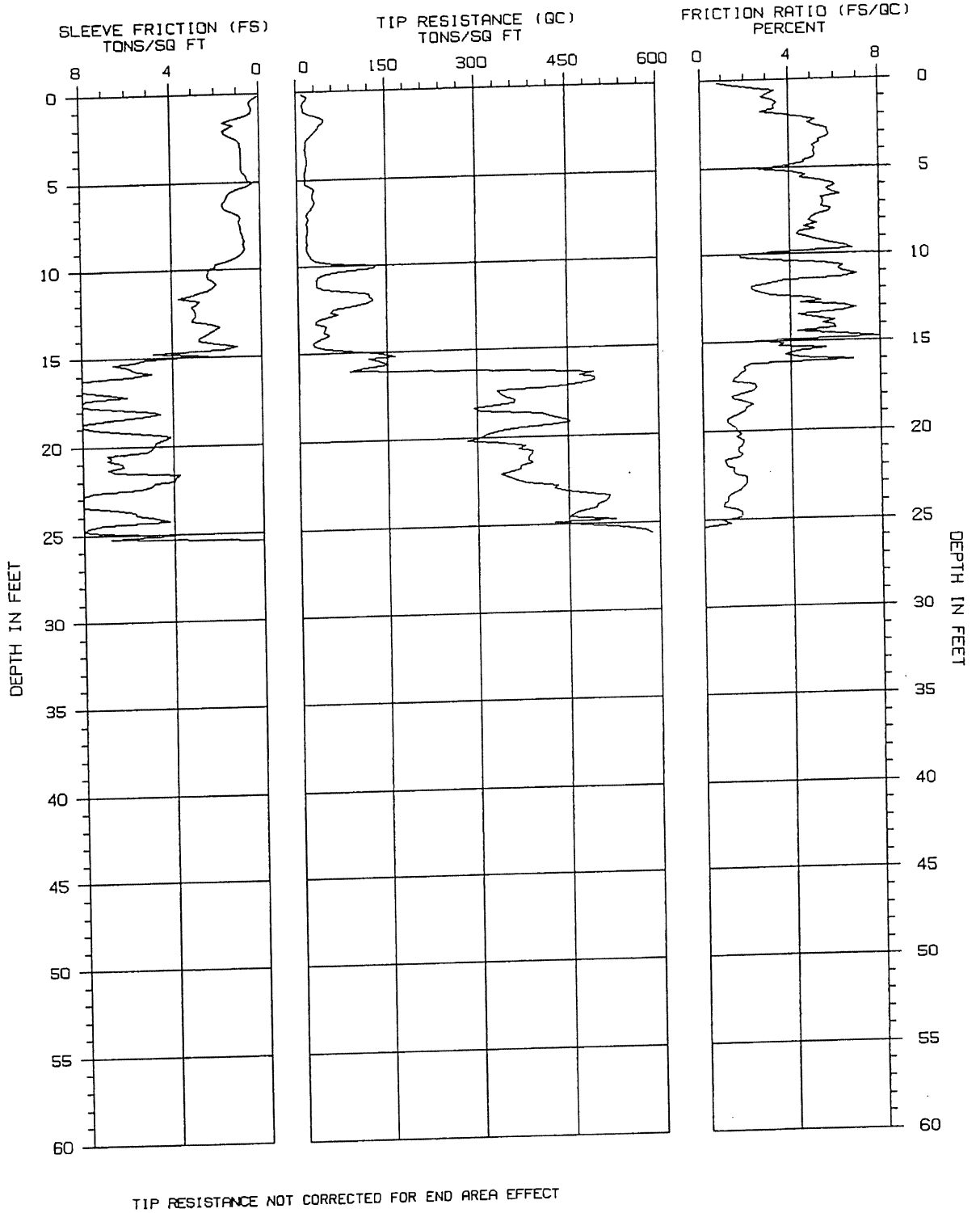
PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-21-00 08:02

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-08

PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-20-00 16:15

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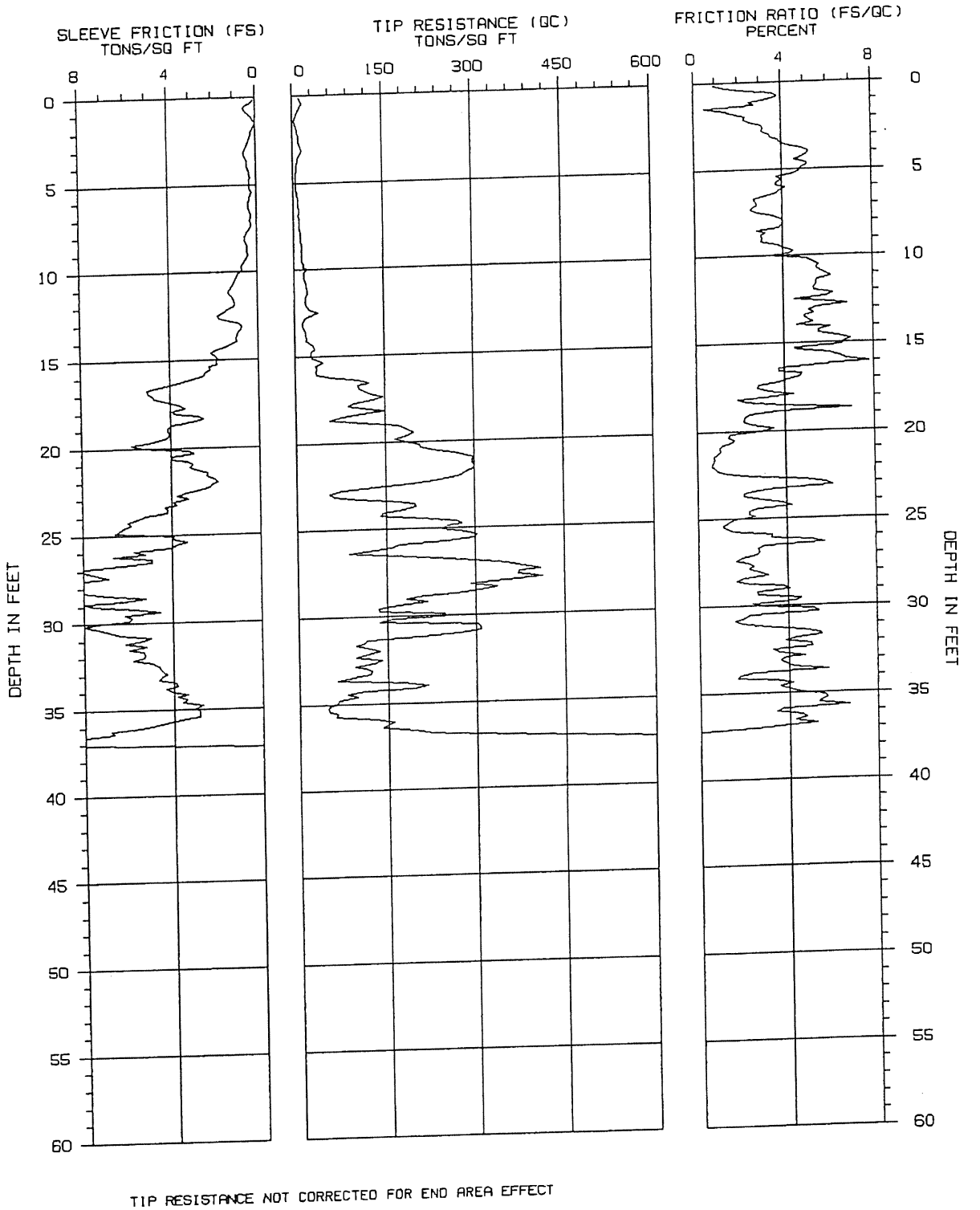

TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

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PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.VO/R#3

DATE/TIME: 03-20-00 15:34

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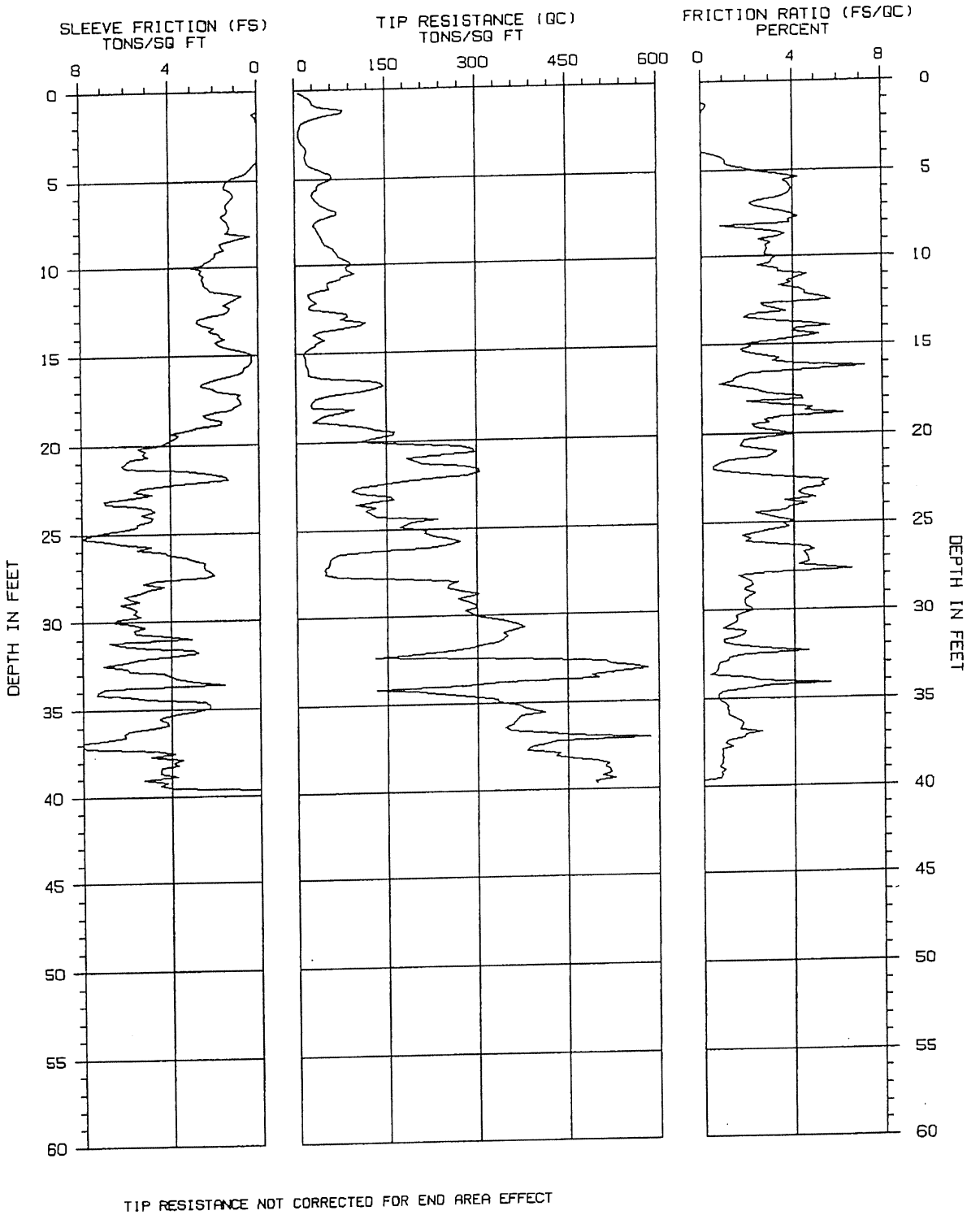


TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-10

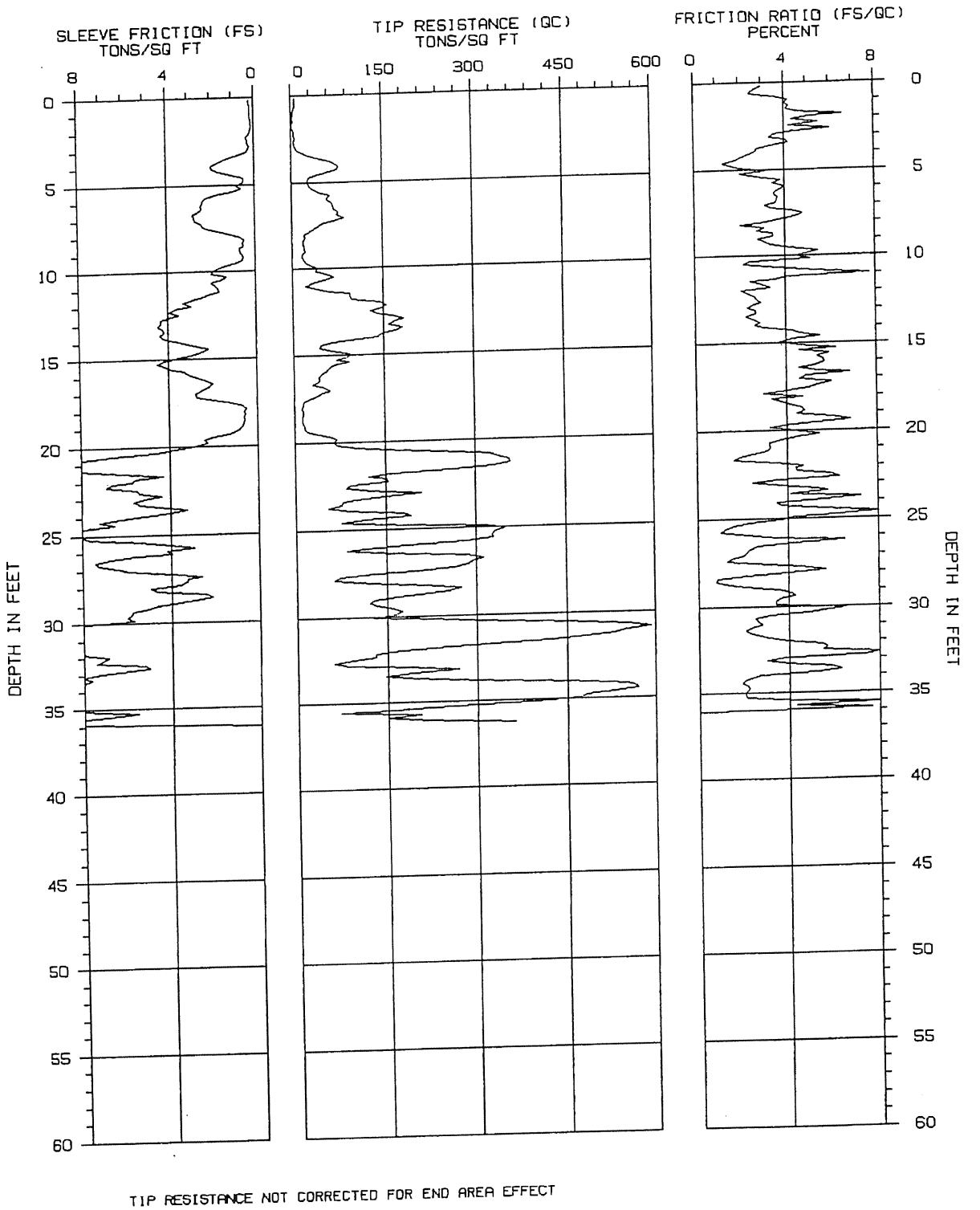
PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-21-00 07:21

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-11 SEIS

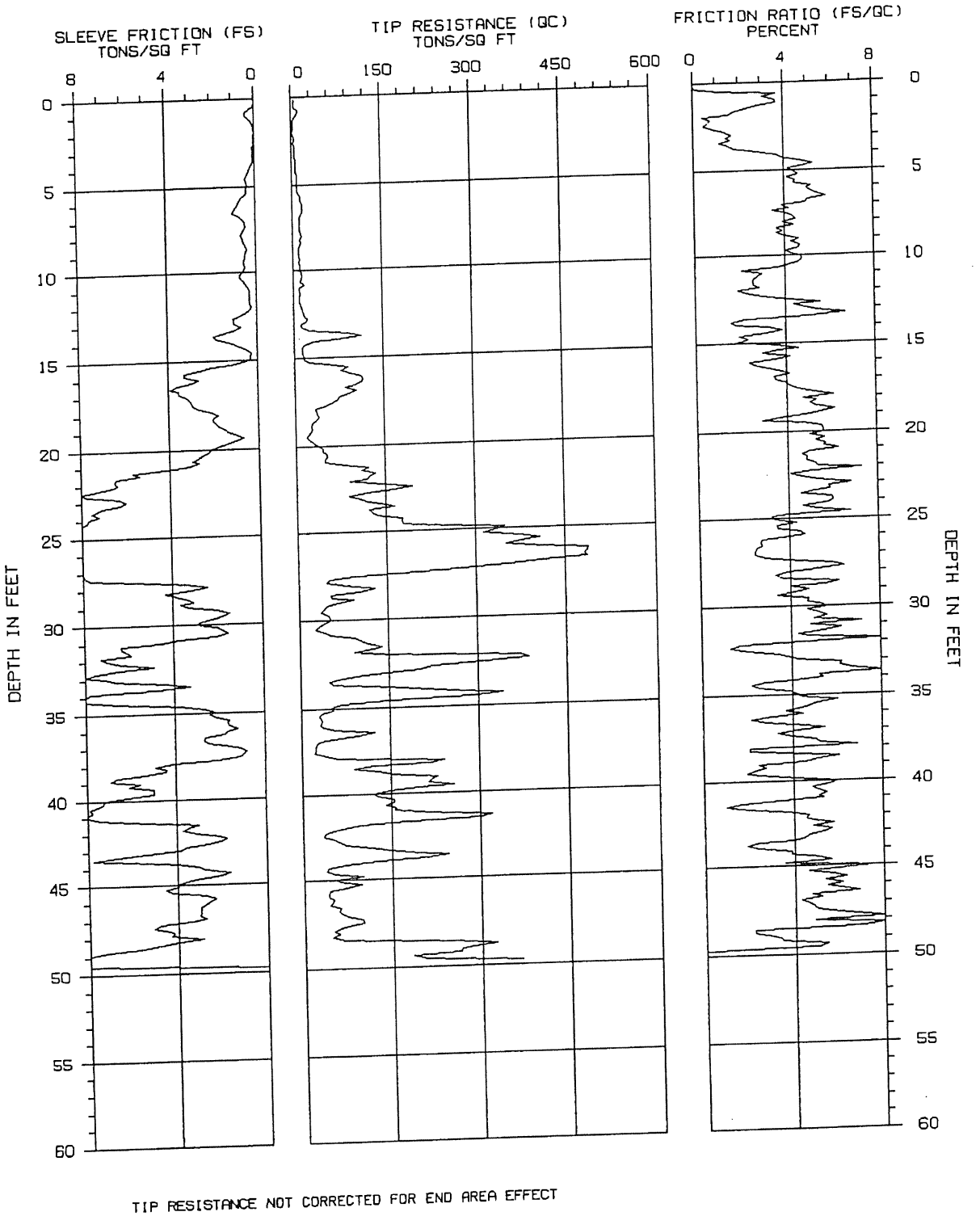
PROJECT NAME : AES/MAGIC MTN

PROJECT NUMBER : 00-1729-1

CONE/RIG : 722/BH.GO/R#3

DATE/TIME: 04-06-00 16:40

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-12

PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-20-00 14:51

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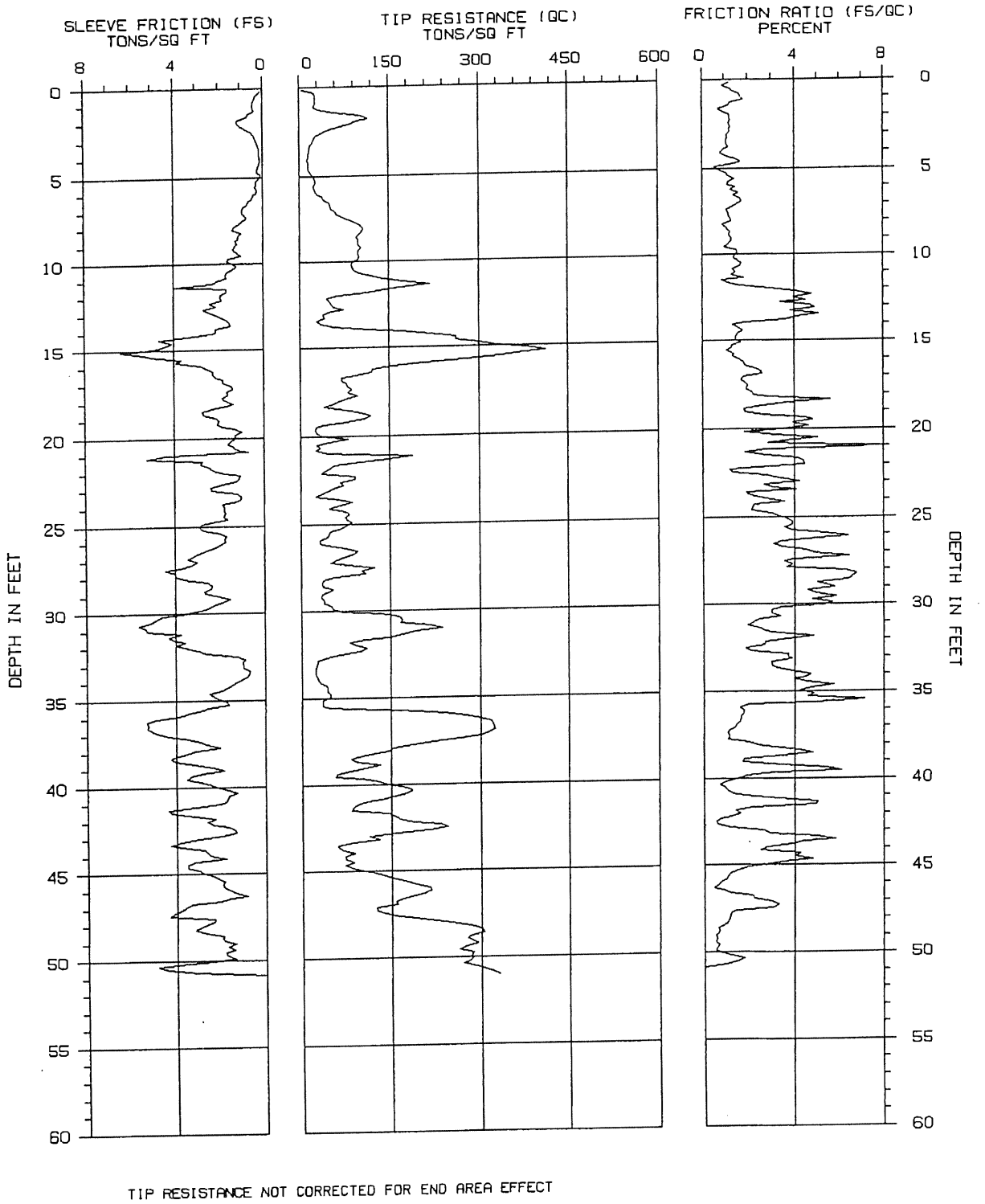


TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-13

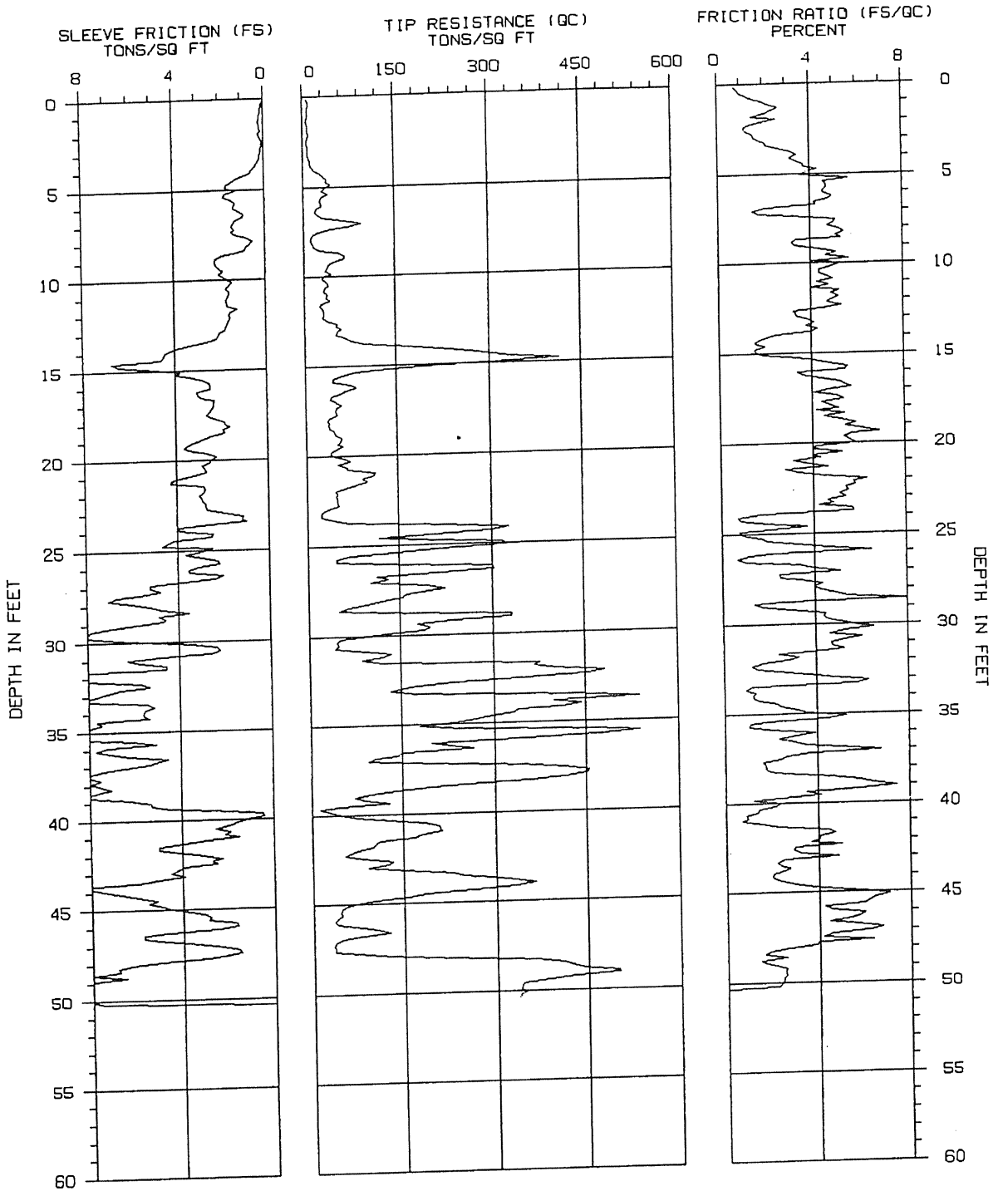
PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-20-00 12:32

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-14

PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

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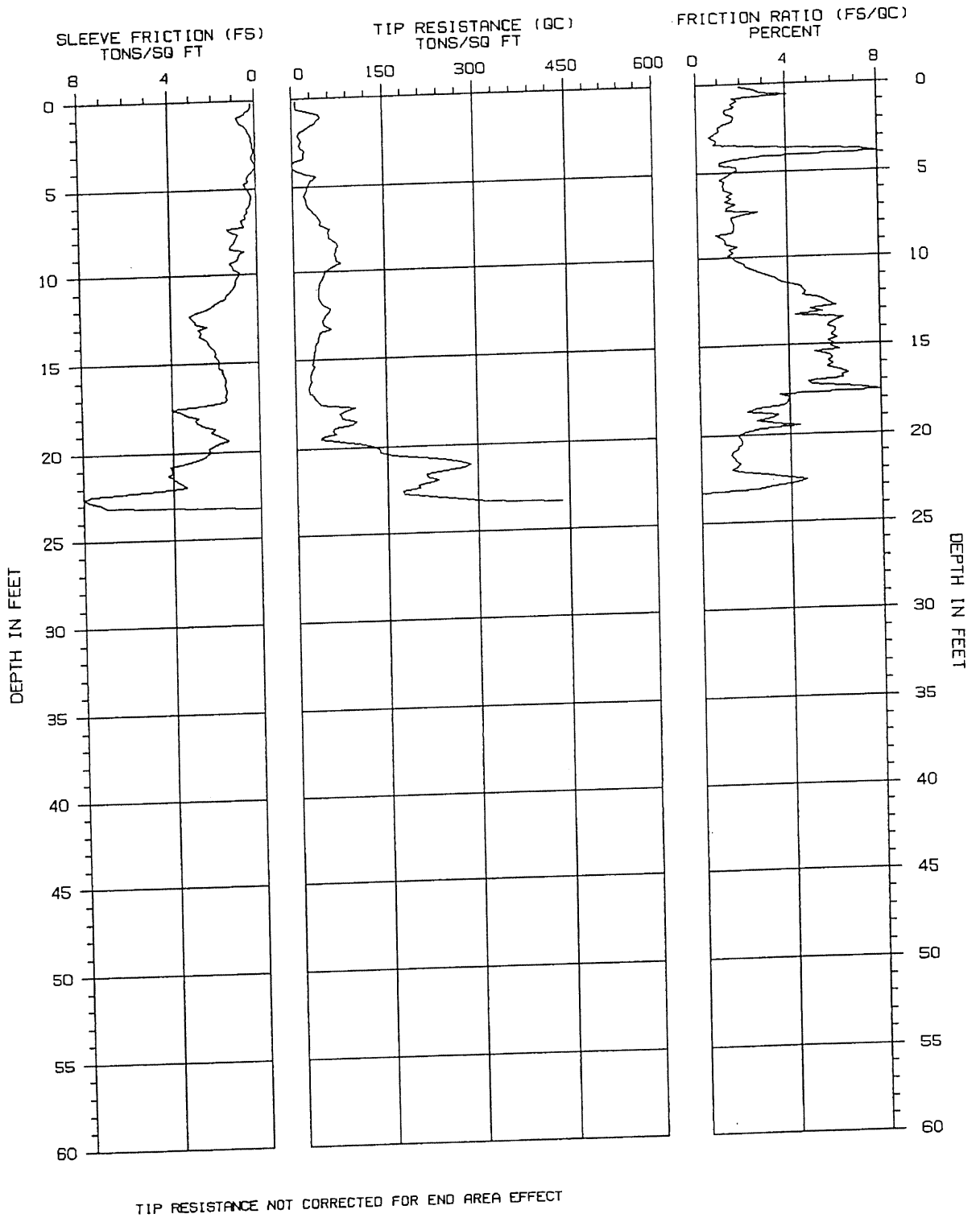
DATE/TIME: 03-20-00 14:03

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-15

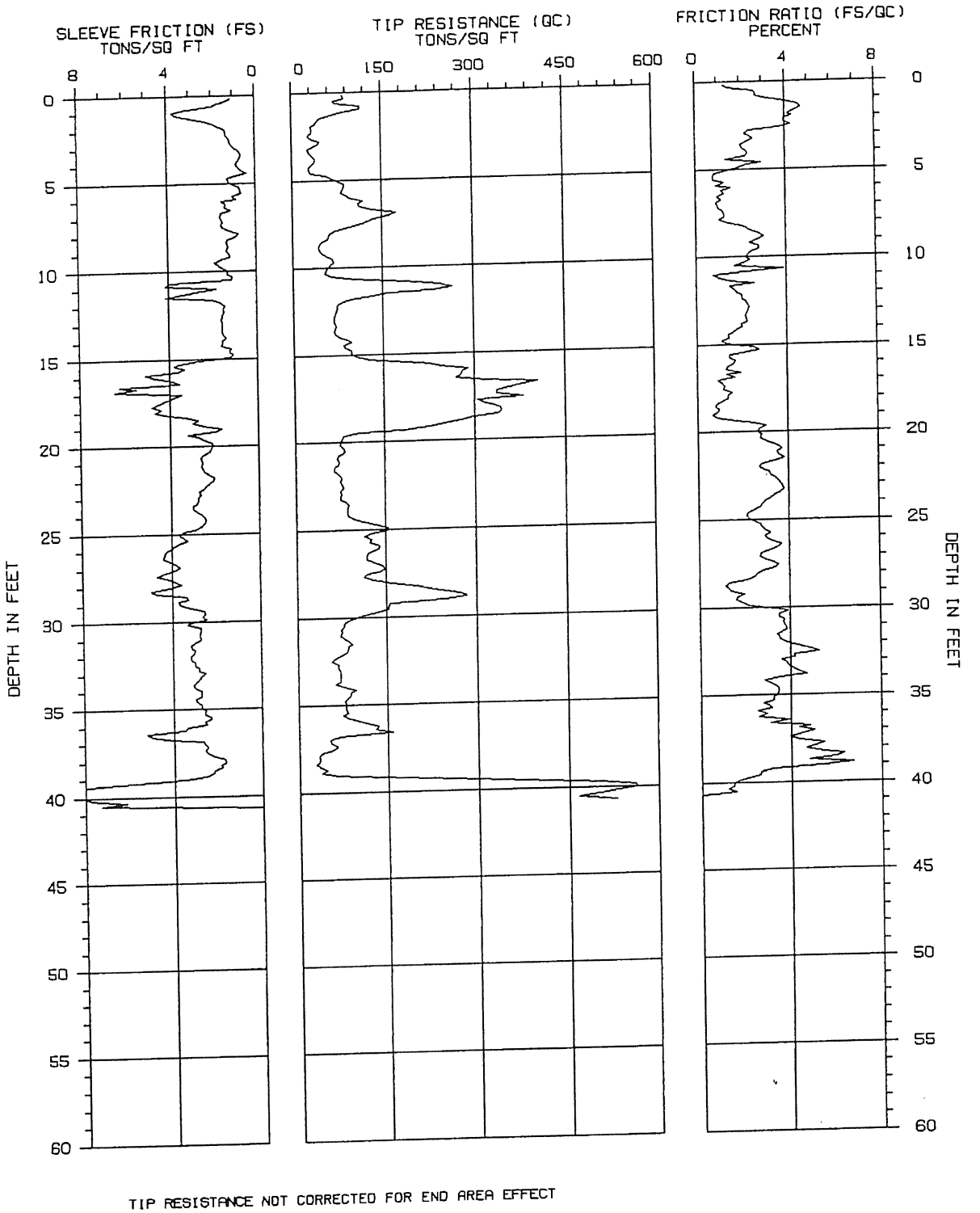
PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.VO/R#3

DATE/TIME: 03-20-00 11:30

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-16 SEIS

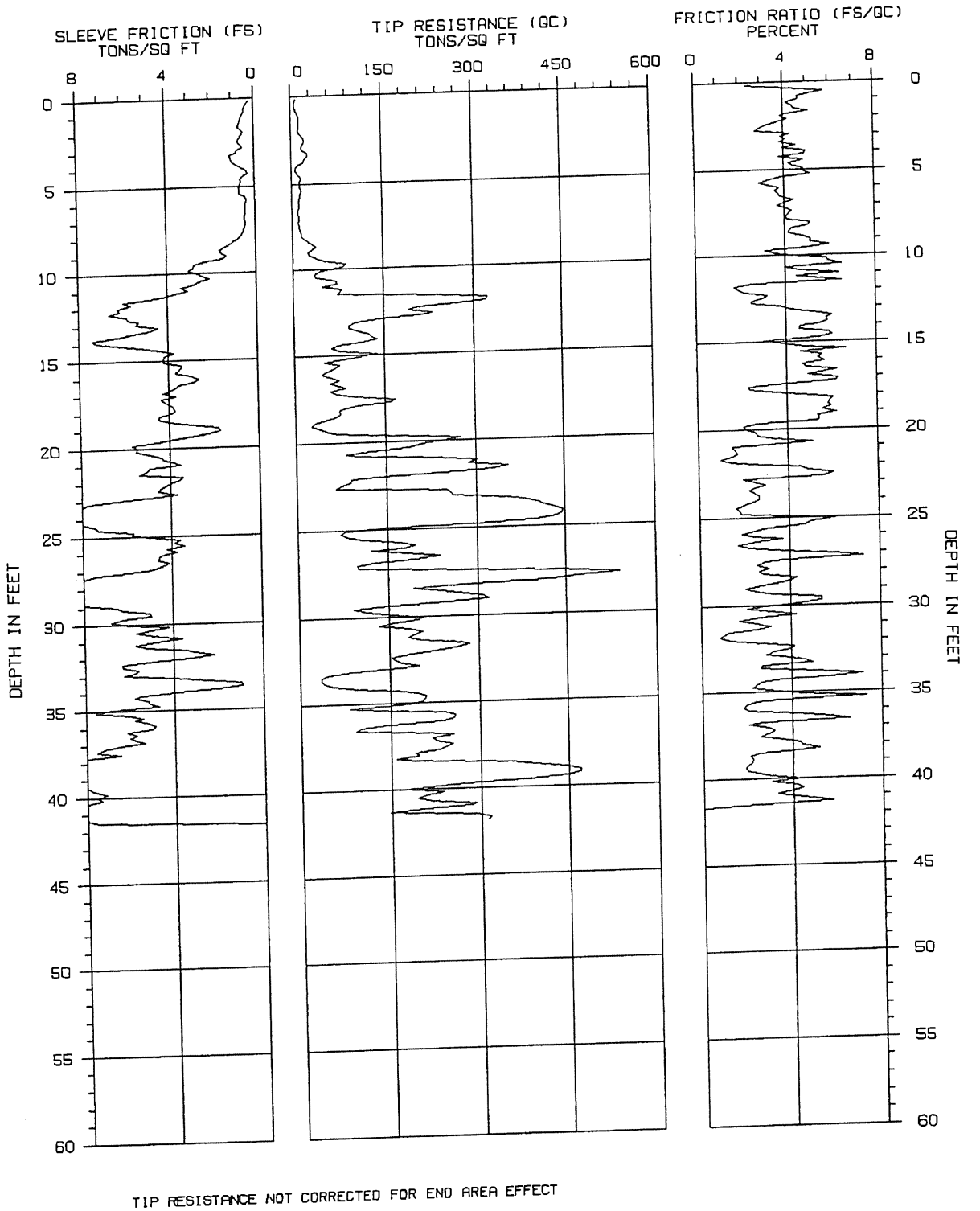
PROJECT NAME : AES/MAGIC MTN

PROJECT NUMBER : 00-1729-1

CONE/RIG : 722/BH.GO/R#3

DATE/TIME: 04-05-90 16:36

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-17

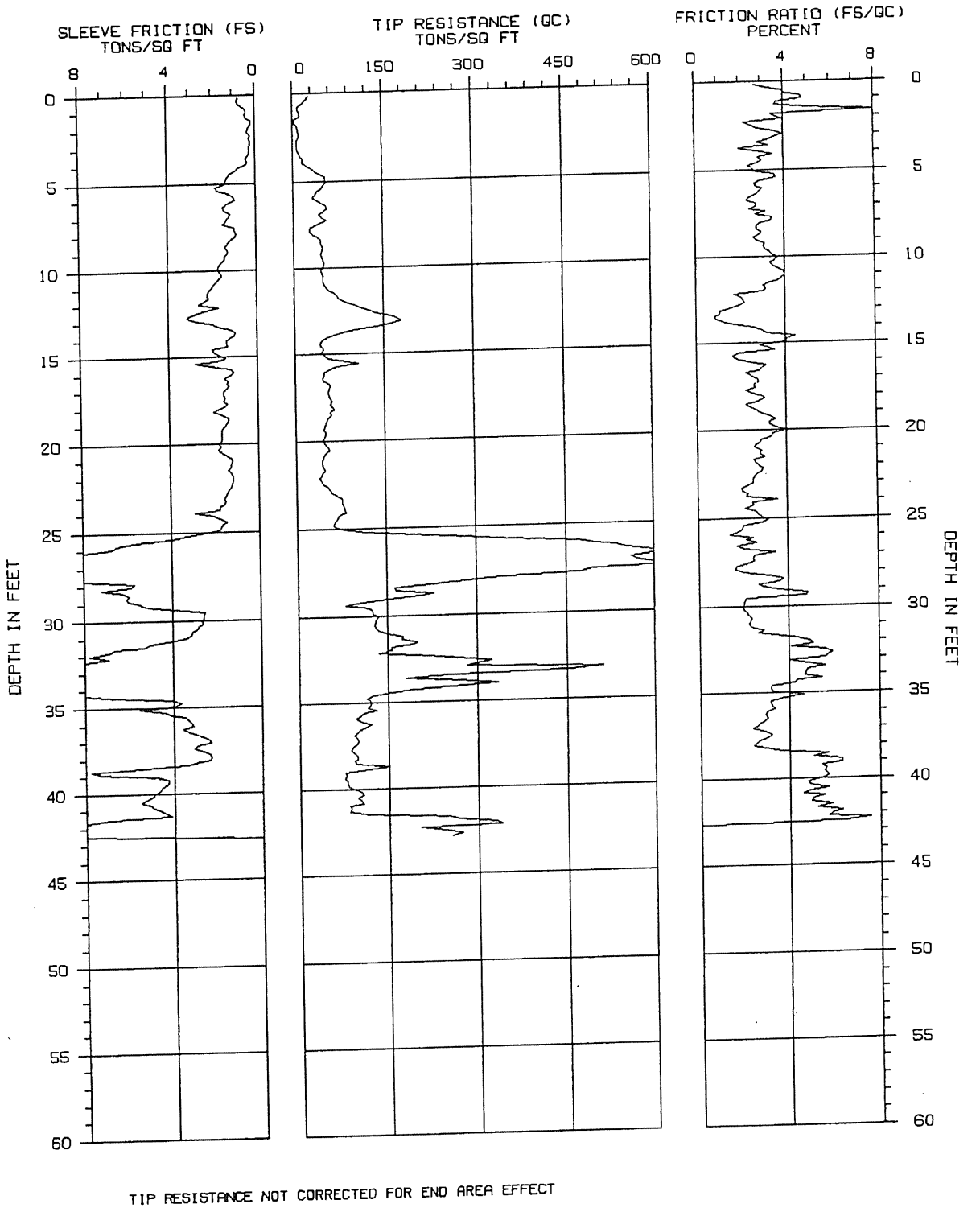
PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R□3

DATE/TIME: 03-23-00 03:33

HFA



TIP RESISTANCE NOT CORRECTED FOR END AREA EFFECT

CONE PENETRATION TEST

SOUNDING NUMBER: CPT-18

PROJECT NAME : AES/MAGIC MTN.

PROJECT NUMBER : 00-1729-1

CONE/RIG : 473/BH.V0/R=3

DATE/TIME: 03-23-00 04:37

HFA

Newhall Land and Farming Company
March 18, 2005
2004-700-21

APPENDIX E

LIQUEFACTION ANALYSIS FROM AES, MAY 25,2000

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

PRELIMINARY LIQUEFACTION POTENTIAL ASSESSMENT AND EVALUATION OF EARTHQUAKE-INDUCED SETTLEMENTS

1.0 INTRODUCTION

By an examination of continuous, enhanced CPT data for the site, subsurface soils at certain depths consist of medium dense granular materials. Liquefaction may occur at some critical locations where these materials are present below the historical high ground water level. Thus, we have performed liquefaction potential and seismic settlement analyses for this site. Seismic settlements were assessed for materials above and below the historic groundwater level.

2.0 DATA AND ASSUMPTIONS

A seismicity study was performed for this site which has been included in our report, which includes the ground shaking parameters.

Basic data also included soil types and continuous blow counts obtained from CPT data generated by field explorations. Approximate CPT locations are shown on Plate 1.

Historic high ground water below the existing ground surface was used for analyses. Per boring log data, ground water depths at the time of the explorations ranged between 3 feet and 30 feet. A detailed discussion on the ground water surface is given in this report on Section 5.6.

3.0 ASSESSMENT OF LIQUEFACTION POTENTIAL AND SEISMIC SETTLEMENT

3.1 Liquefaction Potential Assessment

3.1.1 Methodology

Liquefaction is a phenomenon whereby a saturated granular soil temporarily loses its strength because of the buildup of pore water pressure during seismic excitation. This loss of strength may cause structures founded on these soils to experience subsidence and/or lateral movement.

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

The analyses presented in this report are based on the attached references. The principal references used were: Bartlett & Youd (1995); Ishihara (1996); Robertson & Fear (1995); Seed, Idriss and Arango (1983); Seed, Tokimatsu, et al (1984); Tokimatsu & Seed (1987); USC (1999); Youd, Hanson, et al (1999); and Youd & Idriss (1997).

3.1.2 Results of Liquefaction Potential Assessment

Theoretical depth interval-specific induced cyclic stress and cyclic resistive stresses were calculated. These results are shown in the Figures E-1 through E-18. The potentially liquefiable soil layers will have a lower cyclic strength that the induced stress. As shown, for the locations analyzed, potentially liquefiable soils were identified at various depths below the existing ground surface. However, those layers found below ground water table are thin isolated layers and are considered to be not significant in liquefaction.

3.2 Earthquake-Induced Settlement

3.2.1 Methodology

Earthquake-induced settlements were estimated using procedures presented by Tokimatsu and Seed (1987) for dry/moist soils (above the water table) and saturated sands. Settlement analyses were performed for the same exploration locations analyzed for liquefaction potential to estimate possible range of settlements to be expected at the project site.

Volumetric strain was estimated using the calculated earthquake-induced cyclic shear stress and corrected blow count. The settlement was obtained by multiplying the thickness of the liquefied soil layer by the volumetric strain.

3.2.2 Results of Earthquake-Induced Settlement Analysis

The results of our detailed analyses are presented on the computer outputs in Figures E-1 through E-18. Based on the analysis the maximum estimated settlement is on the order of 0.6 inches. Based on the guidelines for implementation of CDMG SP 117, actual differential seismic settlement will be 0.4 inches (2/3x0.6=0.4).

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4.0 CONCLUSIONS

1. The results of the preliminary liquefaction assessment indicate that some isolated liquefaction-prone soils exist at the site at various depths. However, the thickness of the liquefiable soils below water table are considered to be very thin layers.

2. The results of our liquefaction and cyclic settlement analyses are documented in the attached computerized output Figures No. E-1 through E-18. The results indicate that based upon conservative historic high ground water data, potential earthquake-induced total settlements range between approximately 0 and 0.6".

3. Based on Los Angeles County-adopted Recommended Procedures for Implementation of CDMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California, by the Southern California Earthquake Center (SCEC, 1999), and the respective workshop held on June 17,1999, a conservative maximum differential cyclic settlement of 0.4 inches (2/3 x 0.6=0.4) between adjacent footings within the site may be used for County compliance.

5.0 RECOMMENDATIONS

Based on the results of our analysis considering the current and historic ground water surface, the seismic potential and settlement and not considered a prominent problem. Hence, no special consideration is necessary in planning of any structures.

The ground water surface at southern part of the site is located at 30 feet or below. If the ground water surface in raised due to the proposed development, the anticipated water surface should be incorporated in the detailed future seismic evaluations. If ground water surface is expected to be shallower than 10 feet in the southern part of the site, some localized areas (e.g. CPT–6) may require more detailed investigation and seismic potential evaluation.

The following attachments complete this appendix.

- Results of Preliminary Assessment of Liquefaction Potential and Earthquake-Induced Settlements: Figures E-1 through E-18

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-1

Figure E-1 (a)

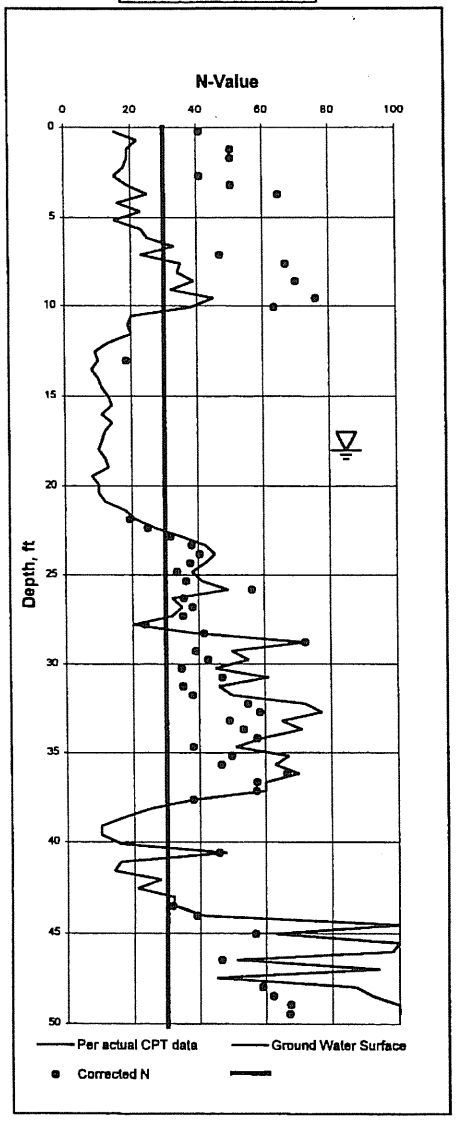


Figure E-1 (b)

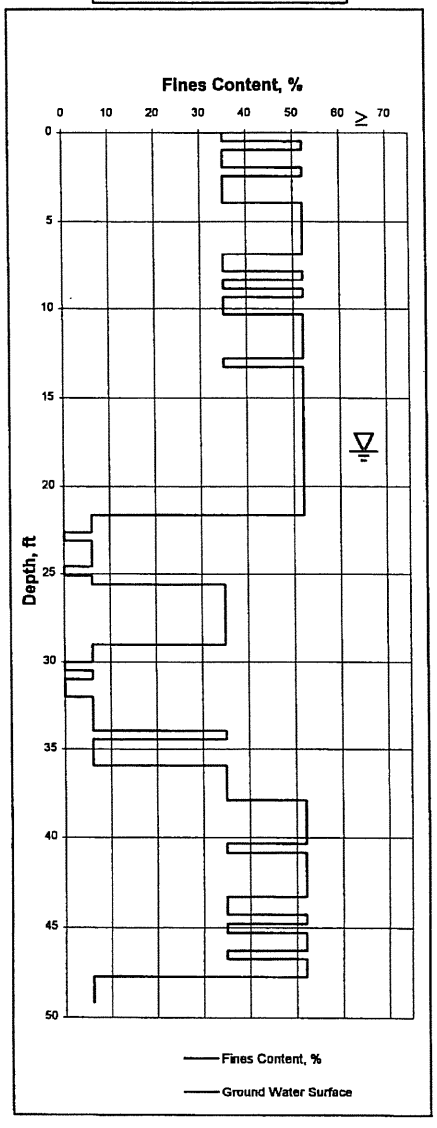


Figure E-1 (c)

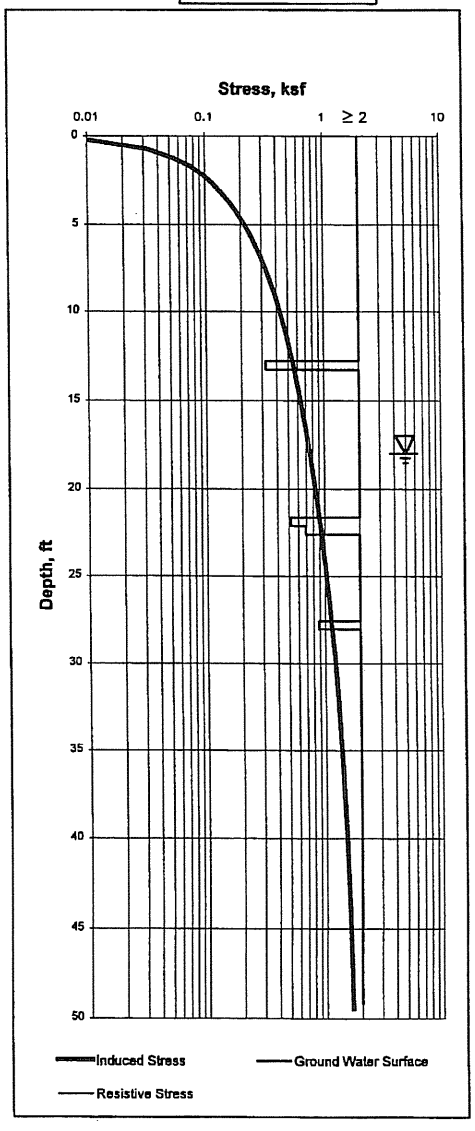
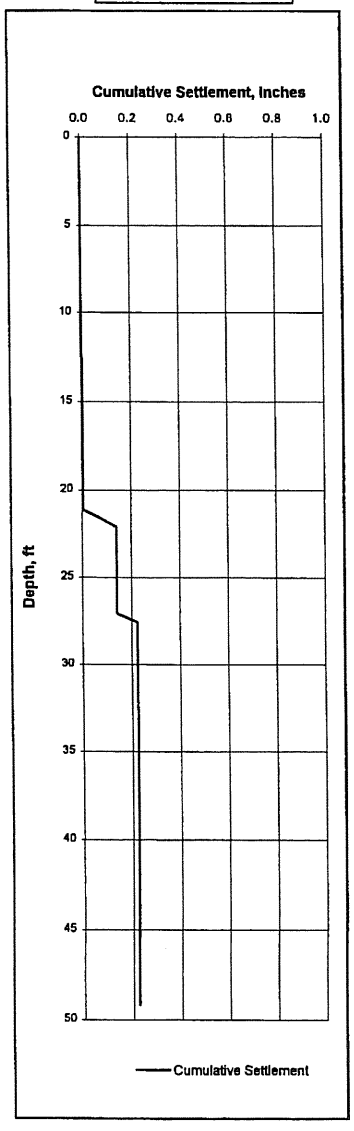


Figure E-1 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-1
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-2

Figure E-2 (a)

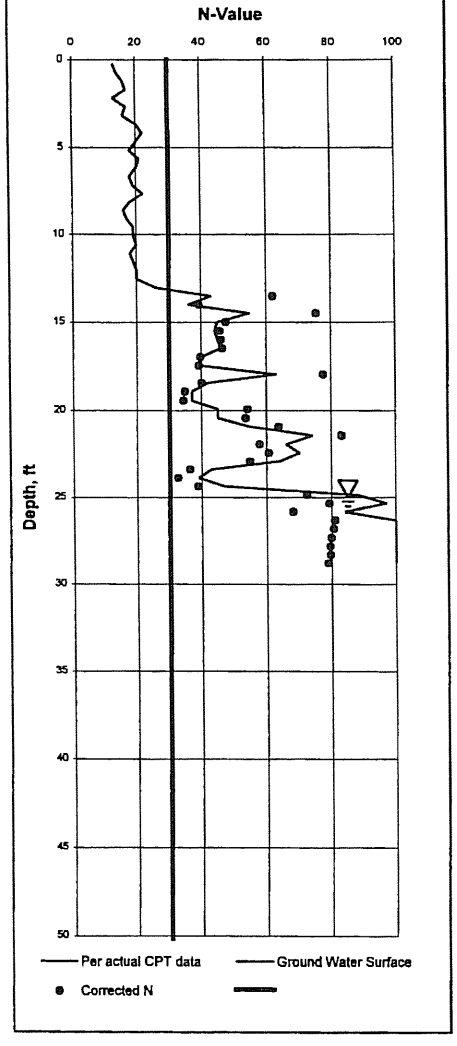
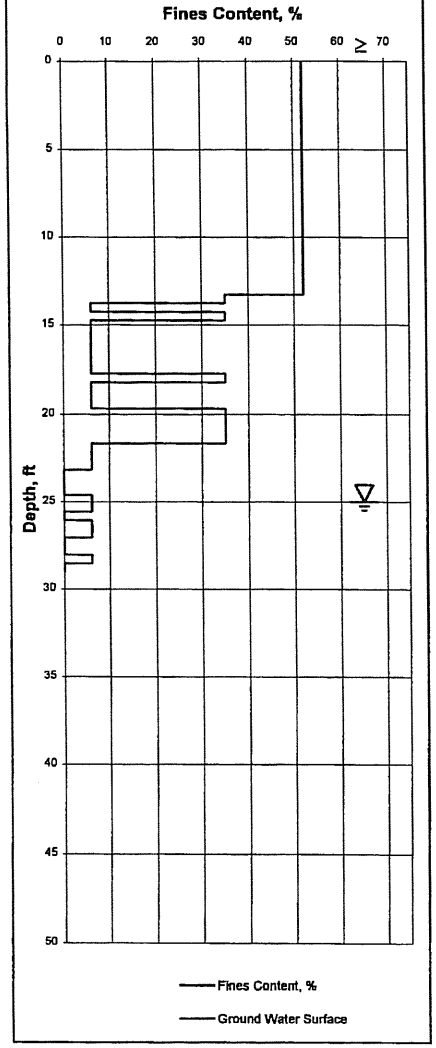


Figure E-2 (b)



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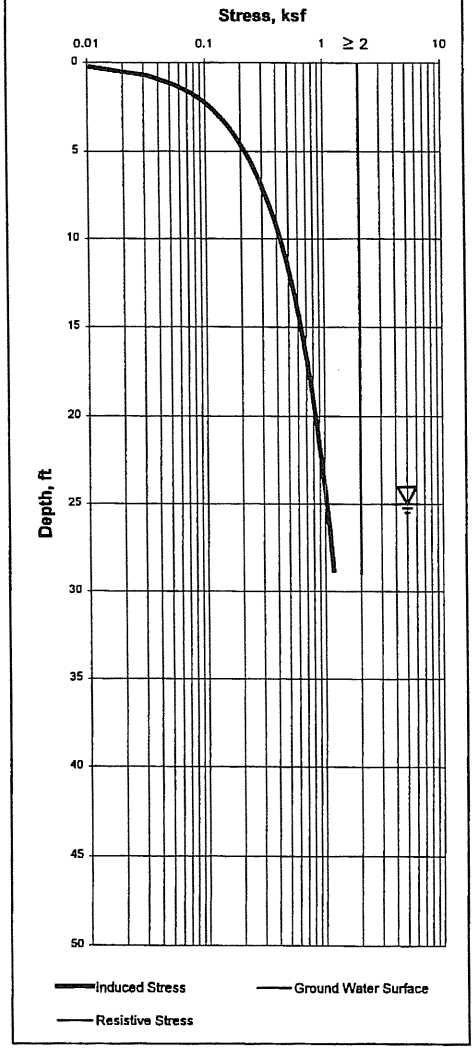
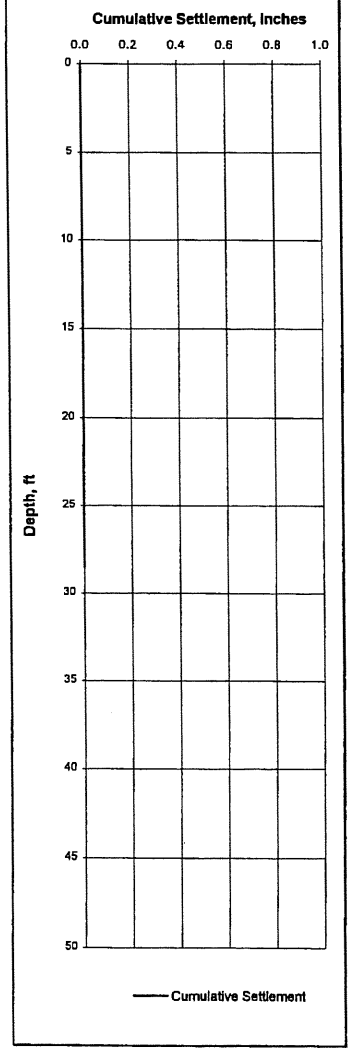


Figure E-2 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-2
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-3

Figure 3-E (a)

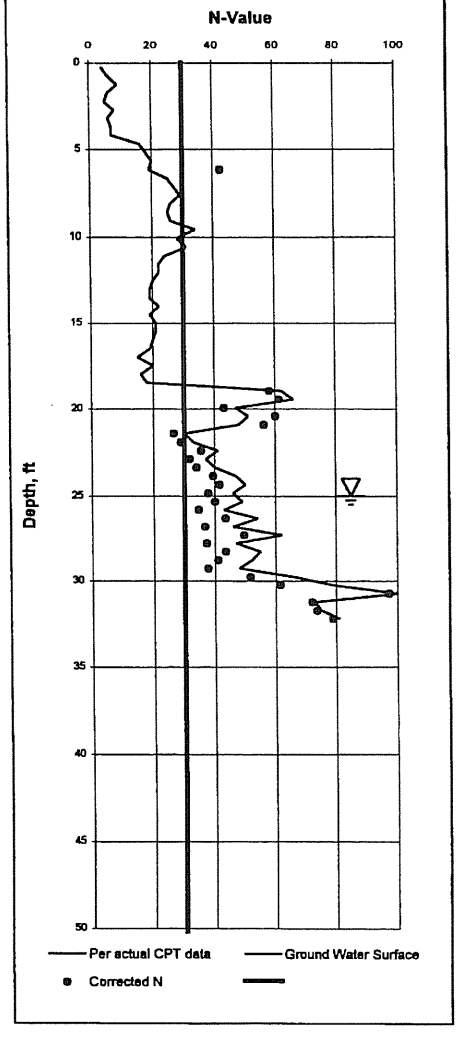


Figure 3-E (b)

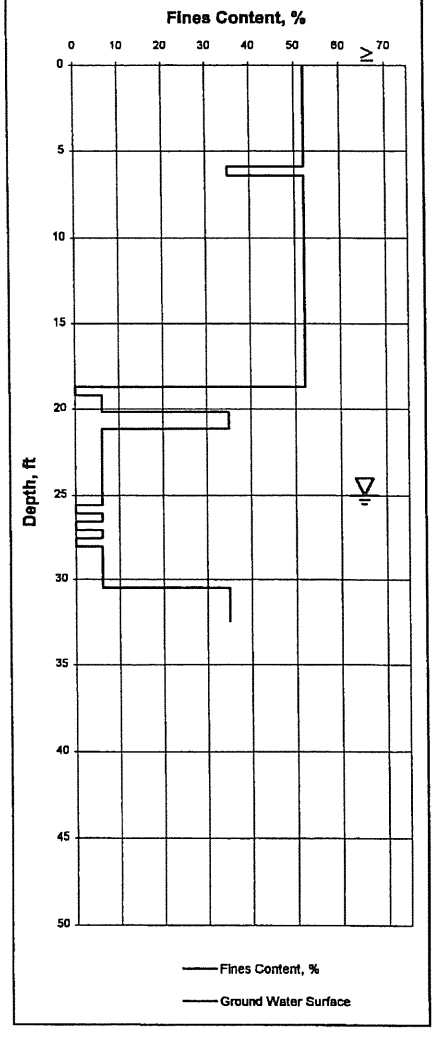


Figure 3-E (c)

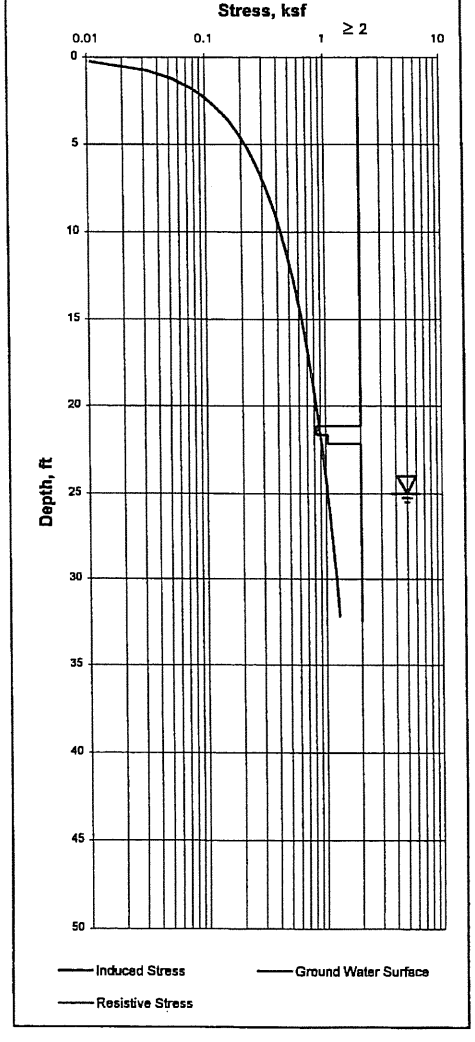
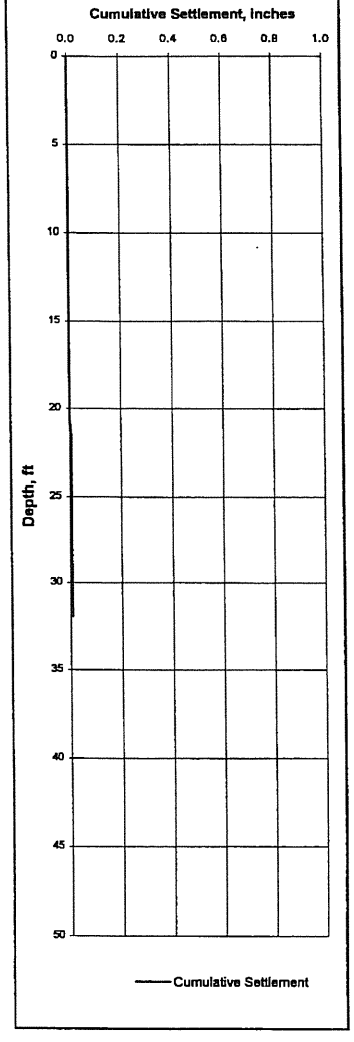


Figure 3-E (d)



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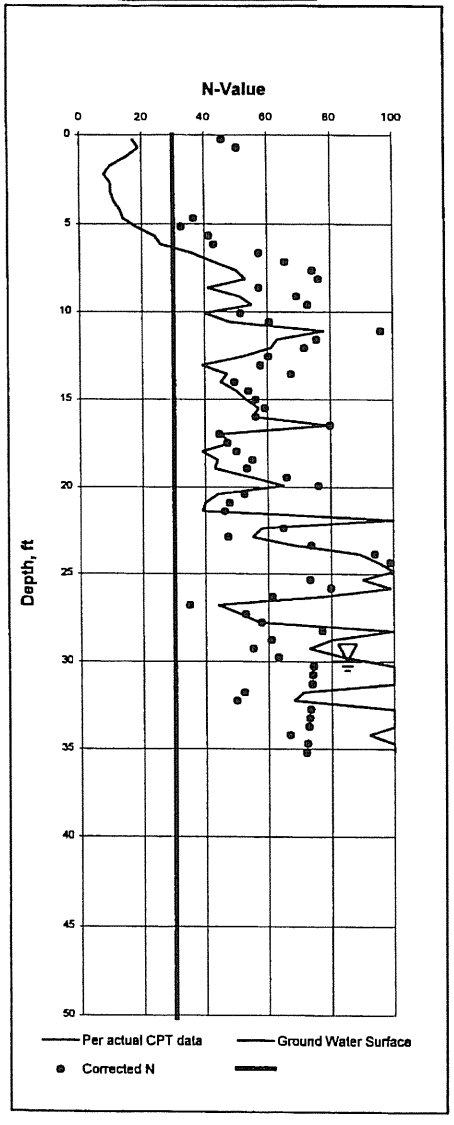
Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-3
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-4

Figure E-4 (a)



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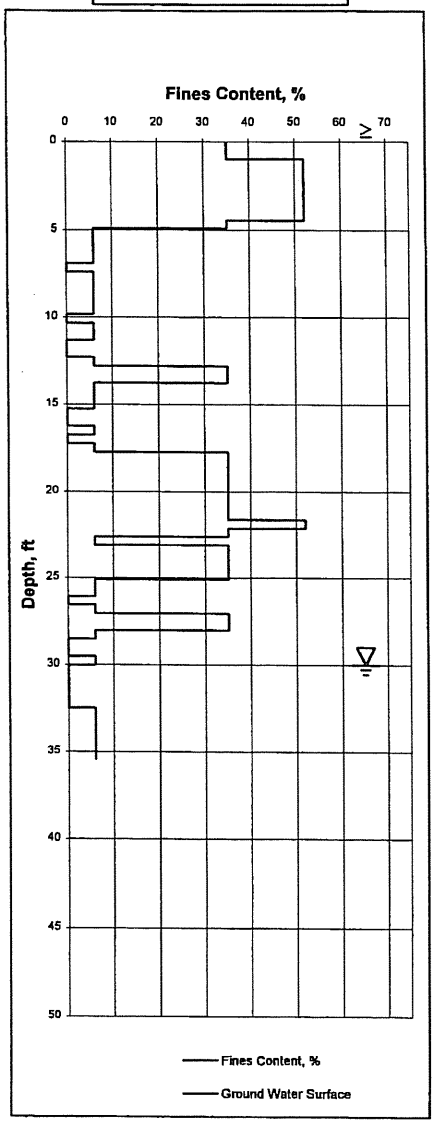

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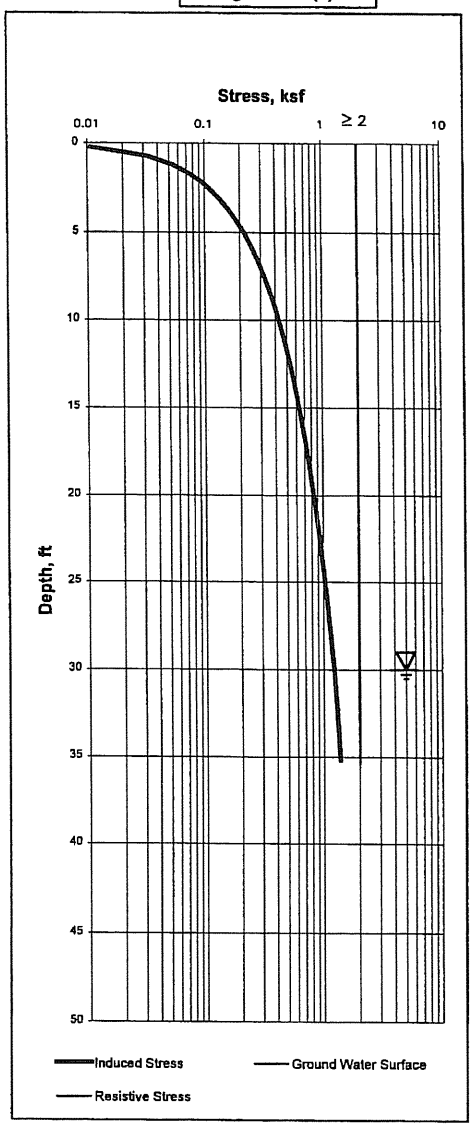

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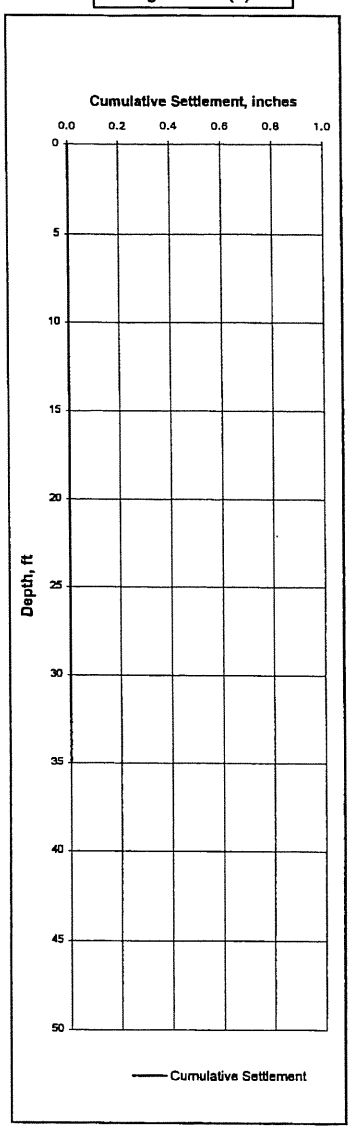

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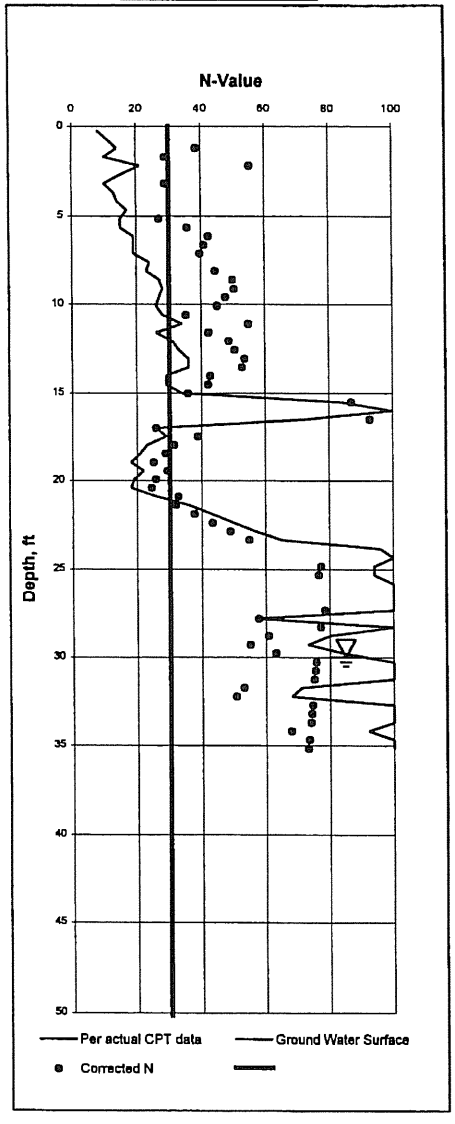
Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-4
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-5

Figure 5-E (a)



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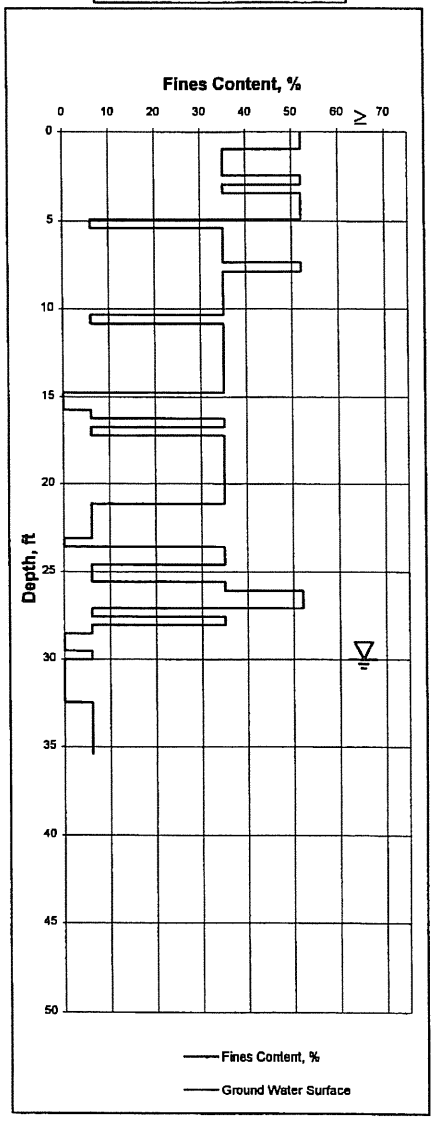

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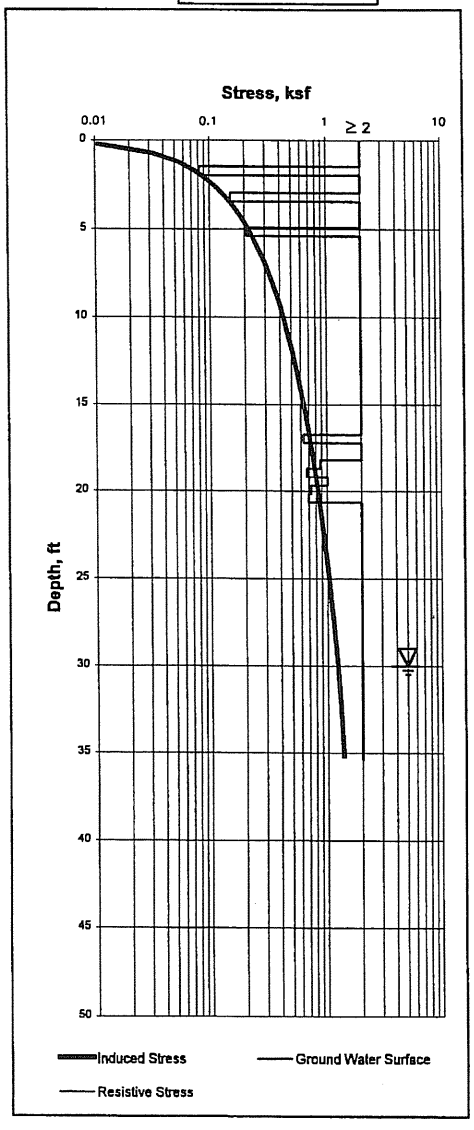

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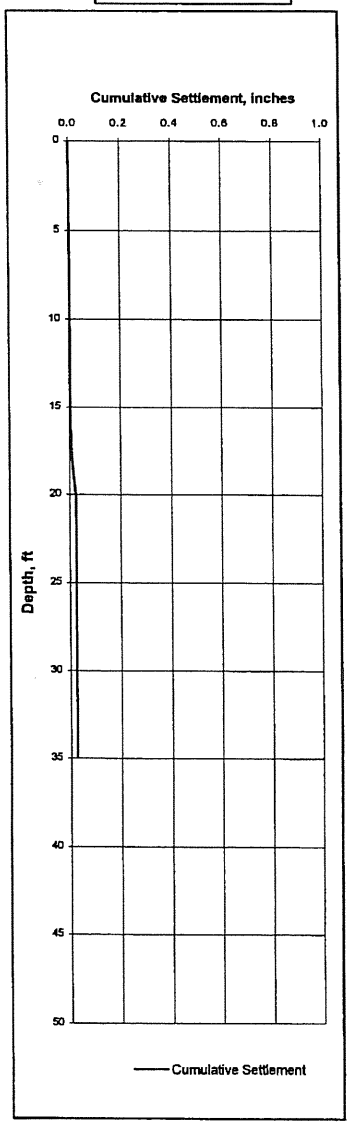

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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-5
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-6

Figure E-6 (a)

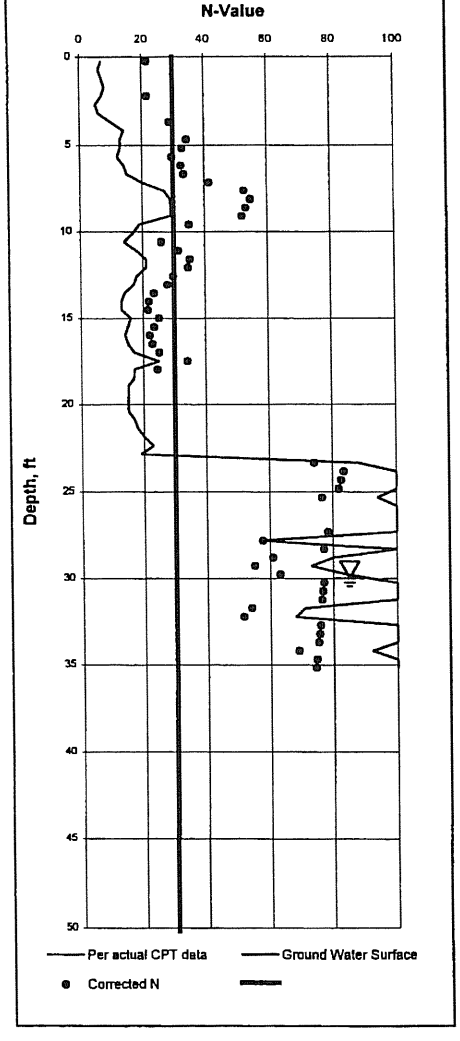
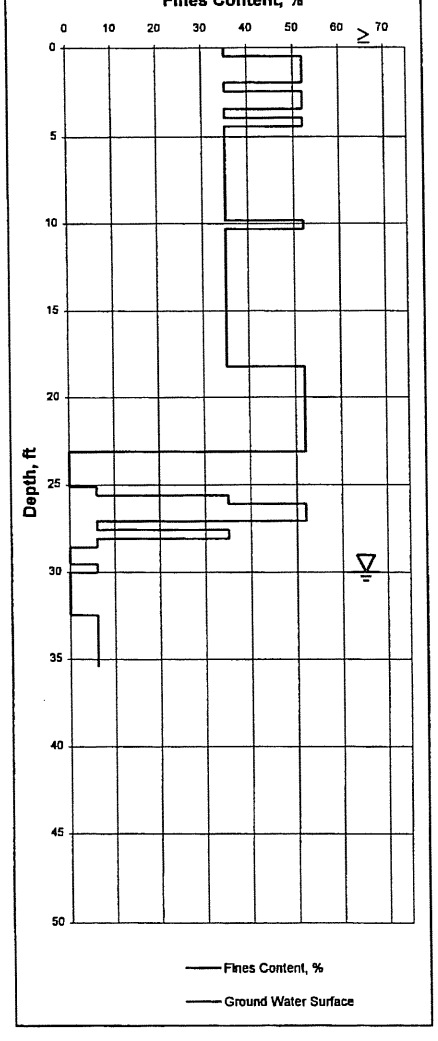


Figure E-6 (b)



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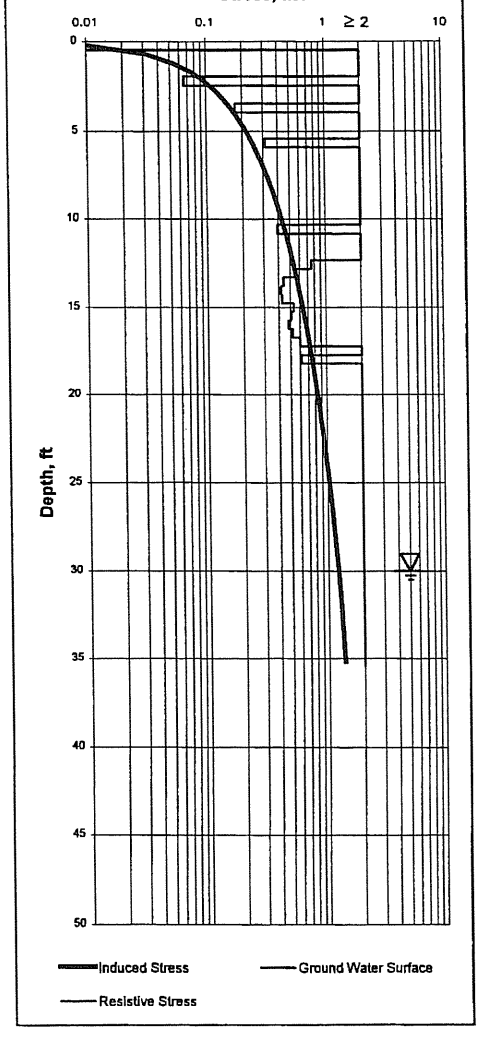
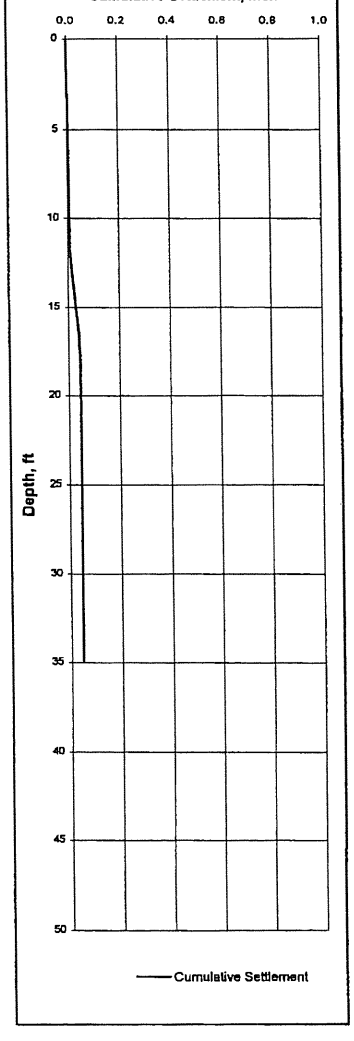


Figure E-6 (d)



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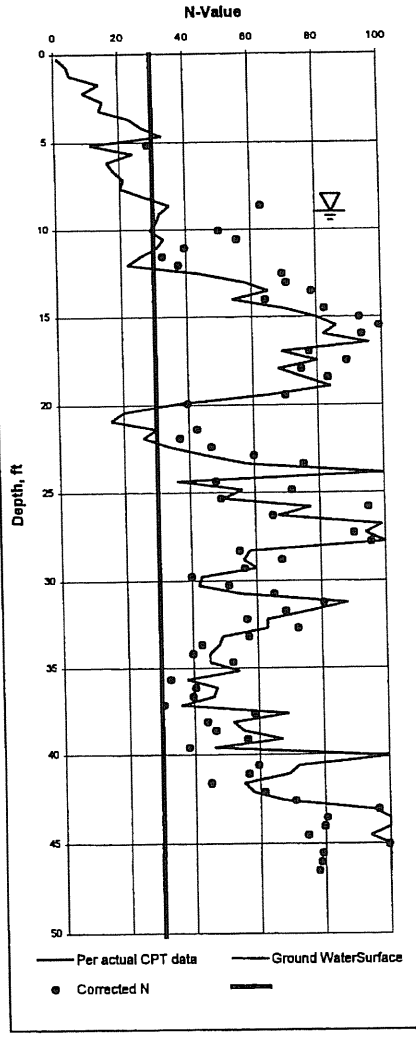
Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-6
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-7

Figure E-7 (a)



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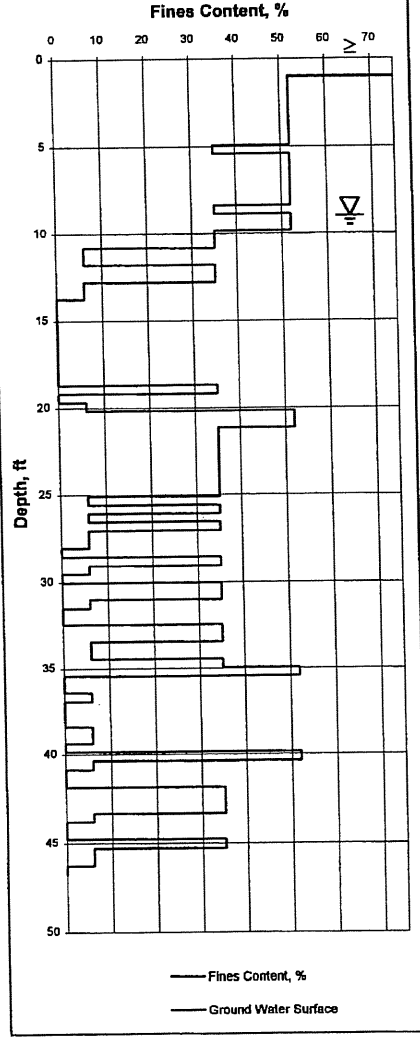

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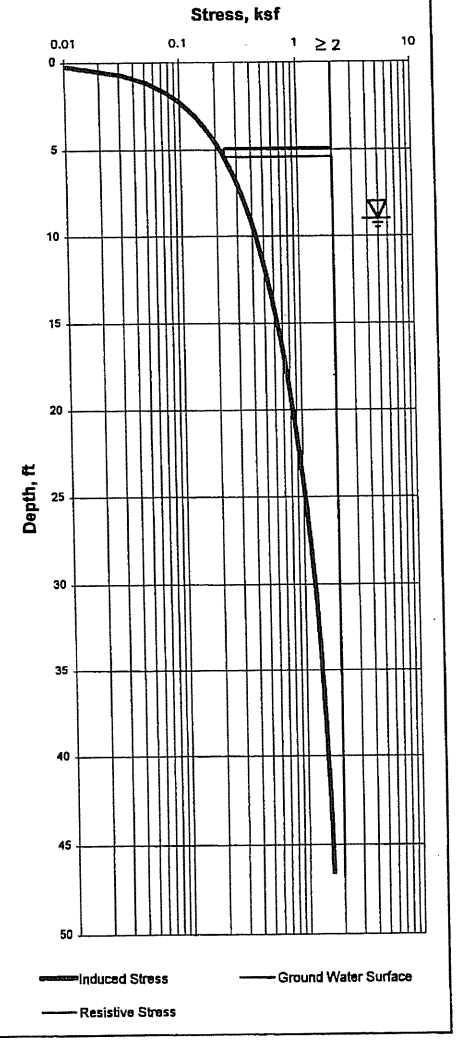

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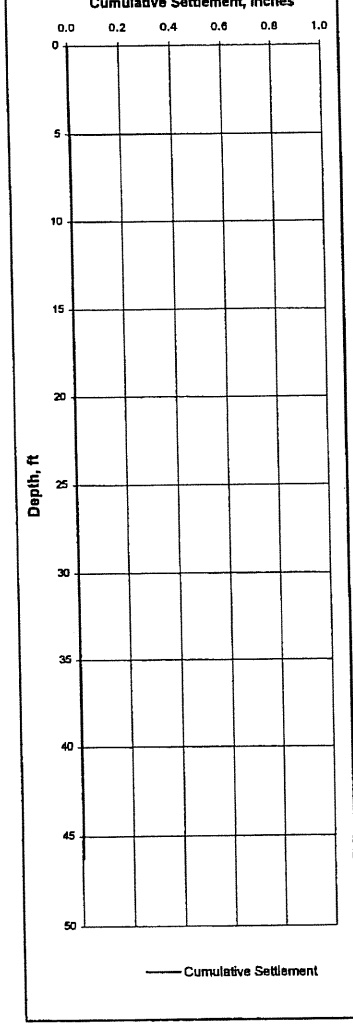

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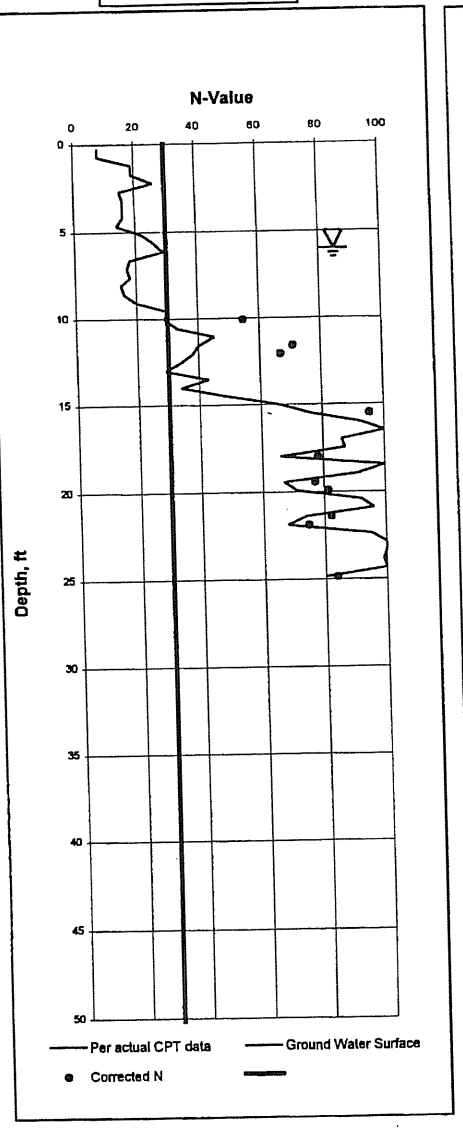
Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-7
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-8

Figure E-8 (a)



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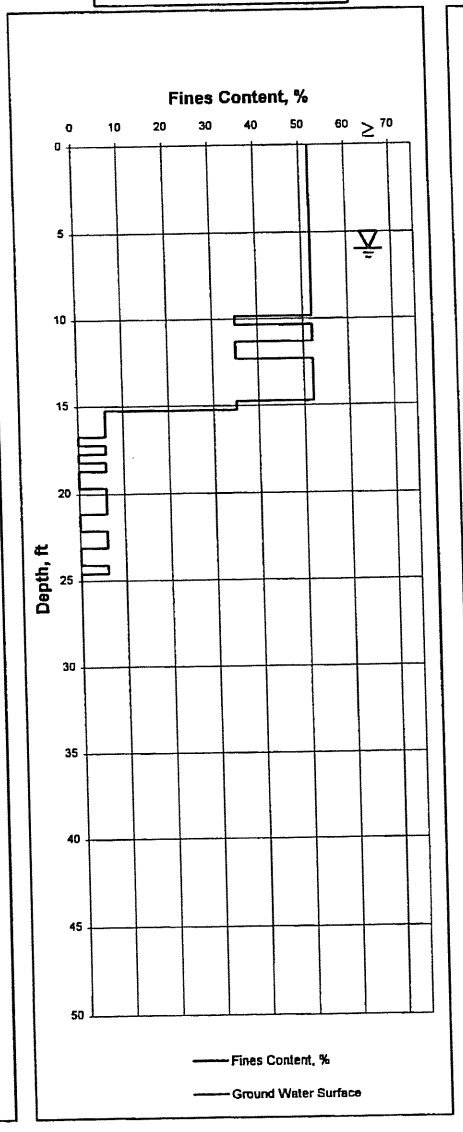

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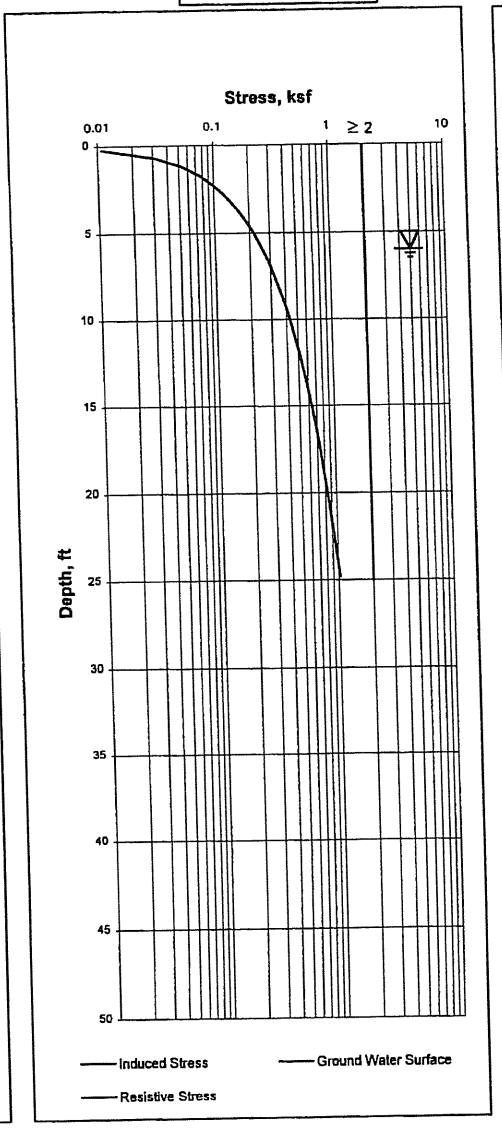

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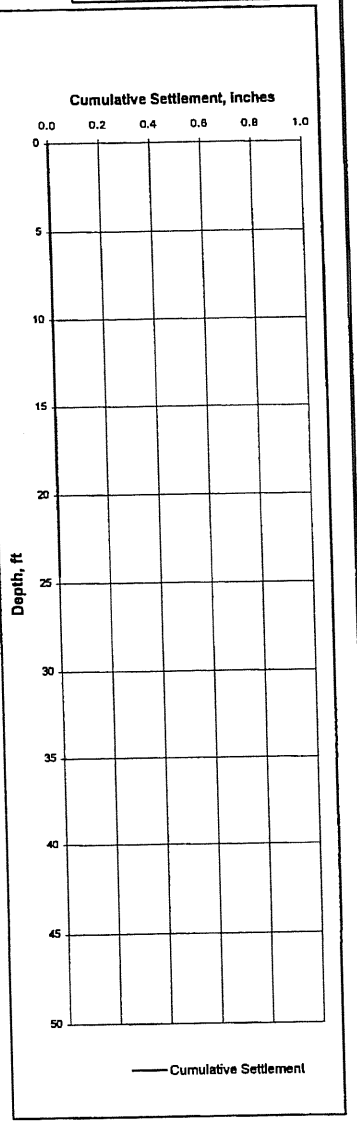

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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-8
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-9

Figure E-9 (a)

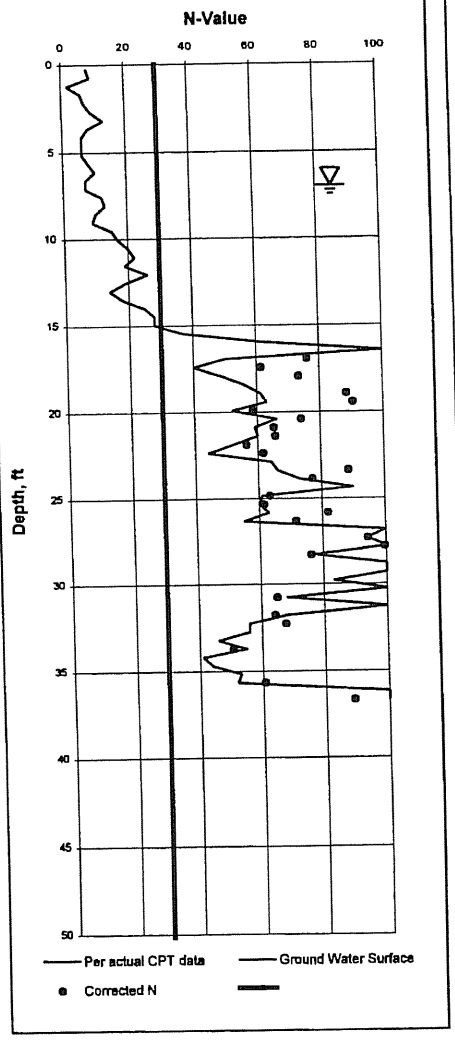
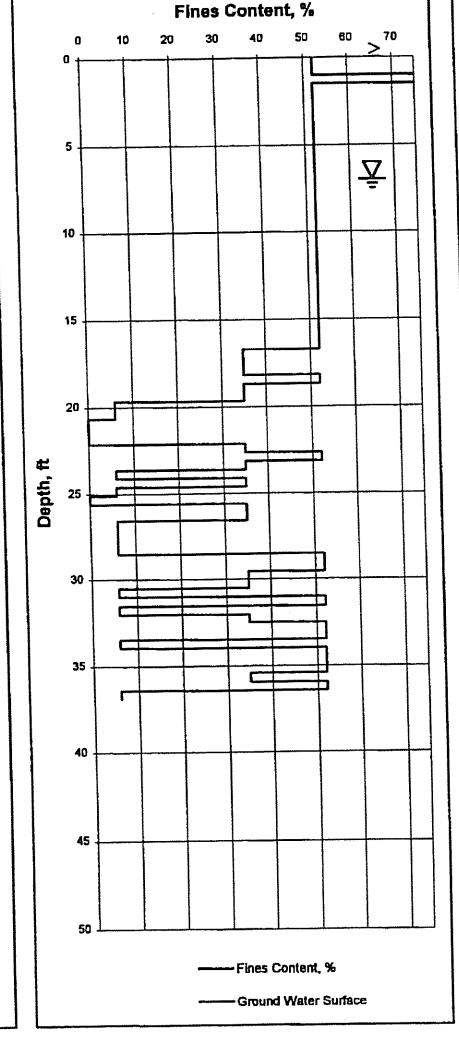


Figure E-9 (b)



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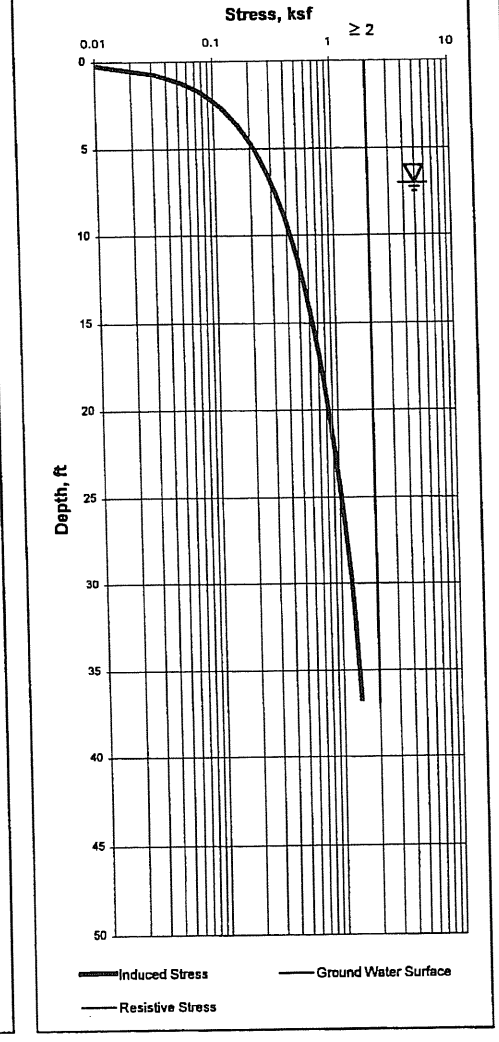

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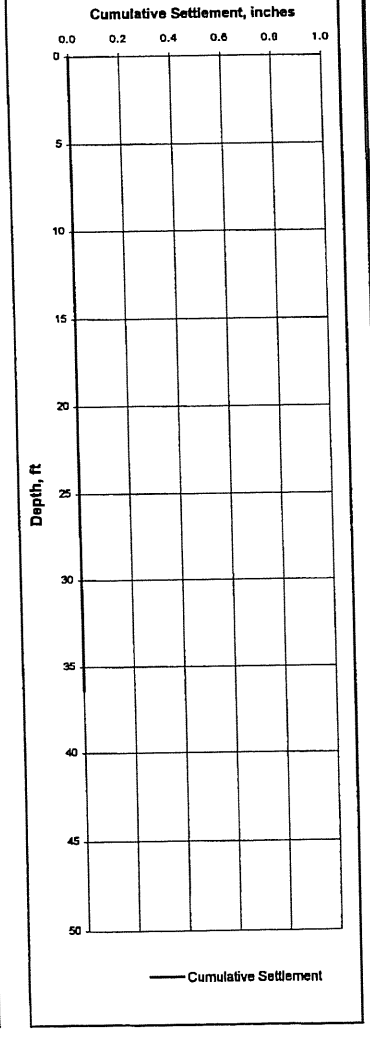

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Geological and Geotechnical Consultants

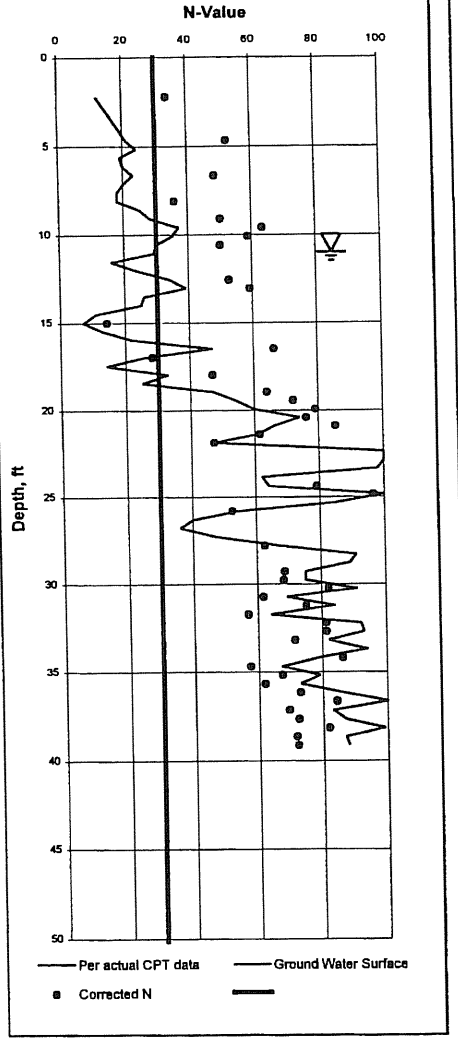
Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-9
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-10

Figure E-10 (a)



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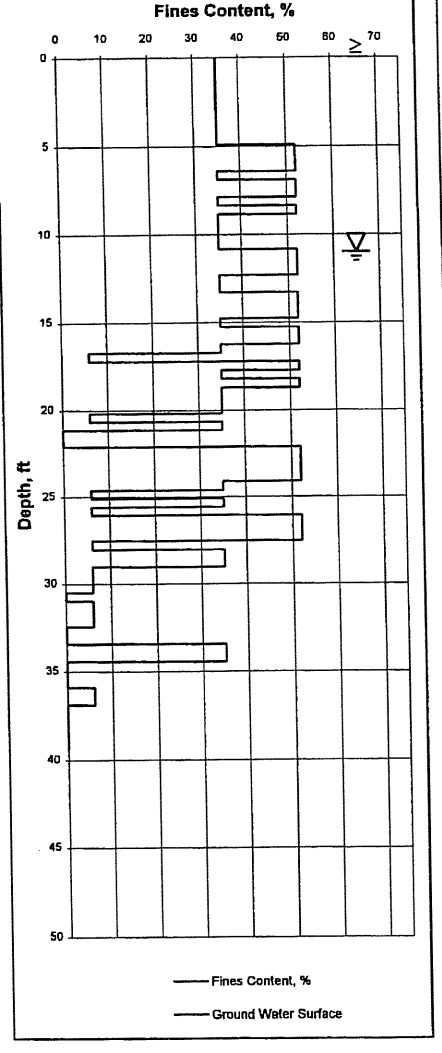

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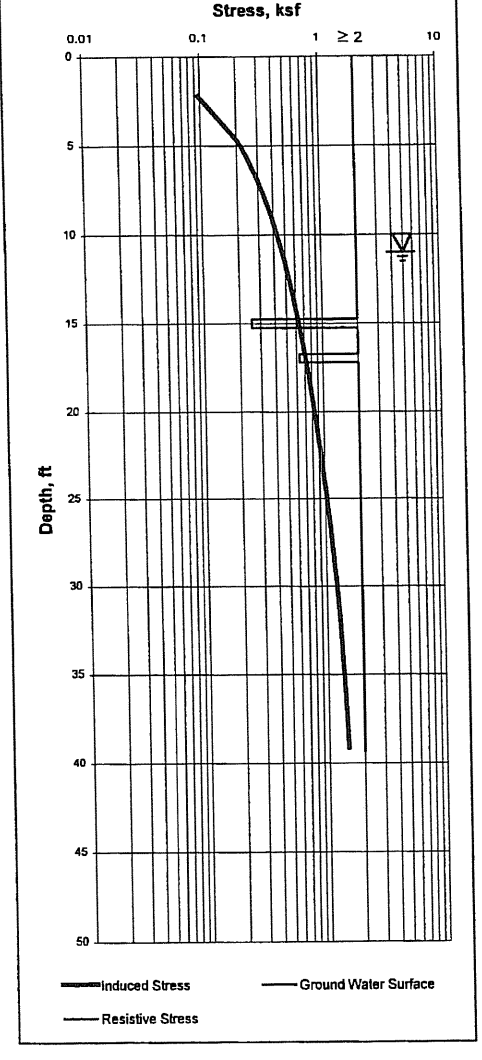

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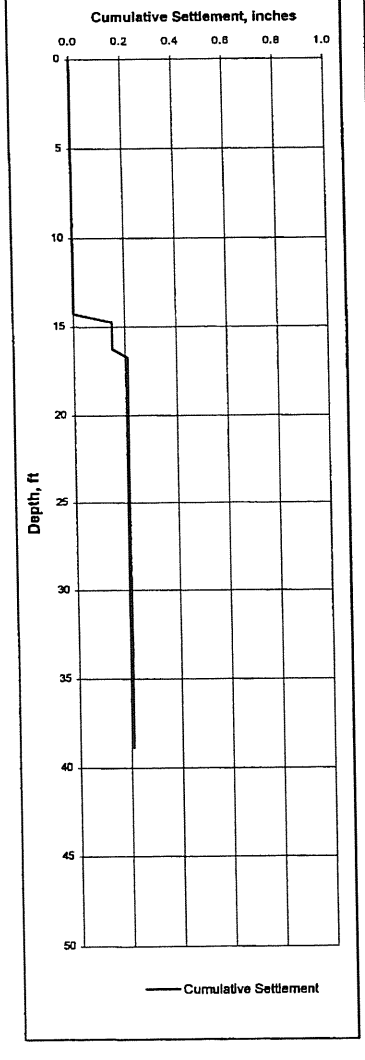

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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-10
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-11

Figure E11 (a)

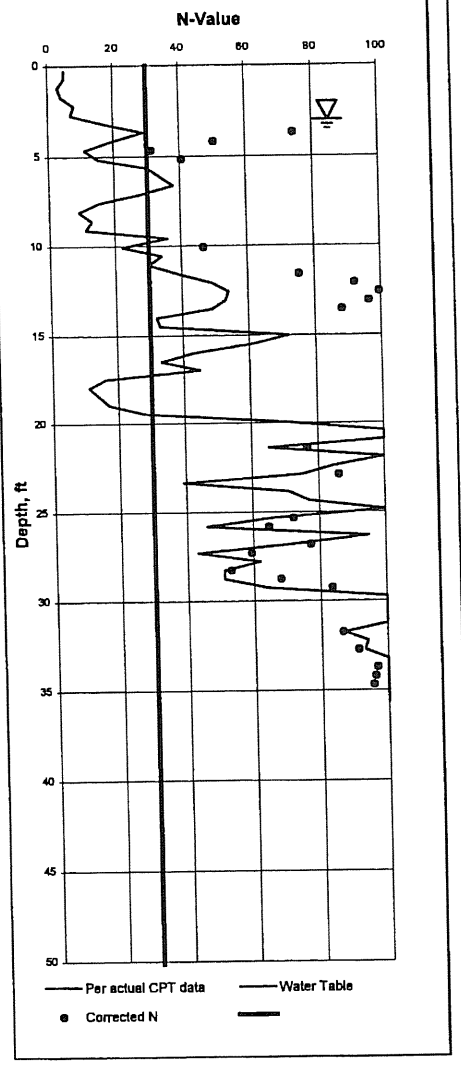


Figure E-11 (b)

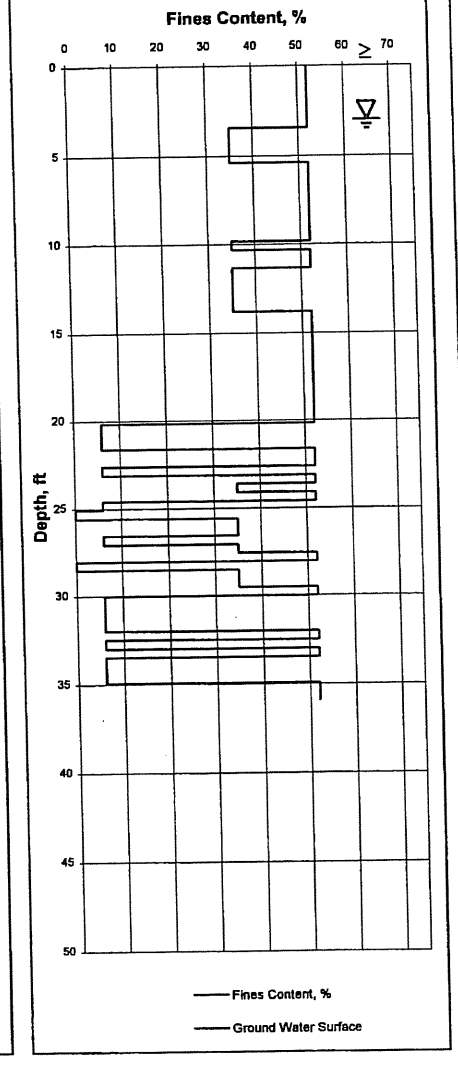


Figure E-11 (c)

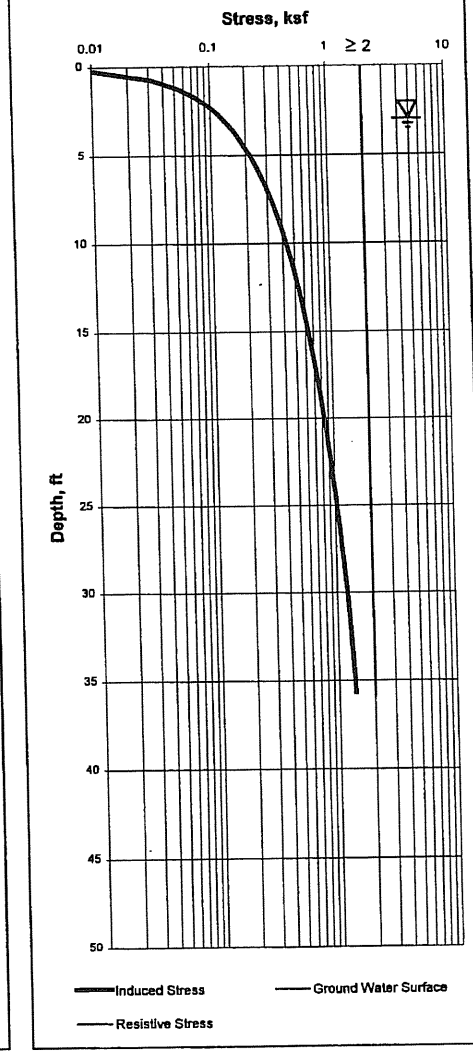
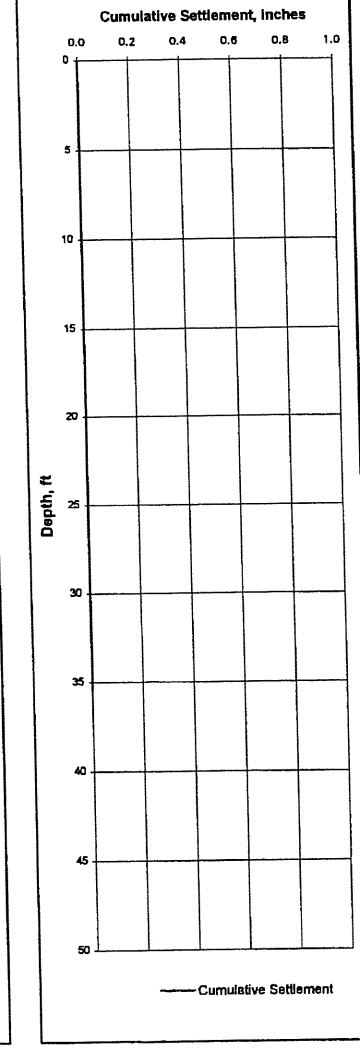


Figure E-11 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-11
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-12

Figure E-12 (a)

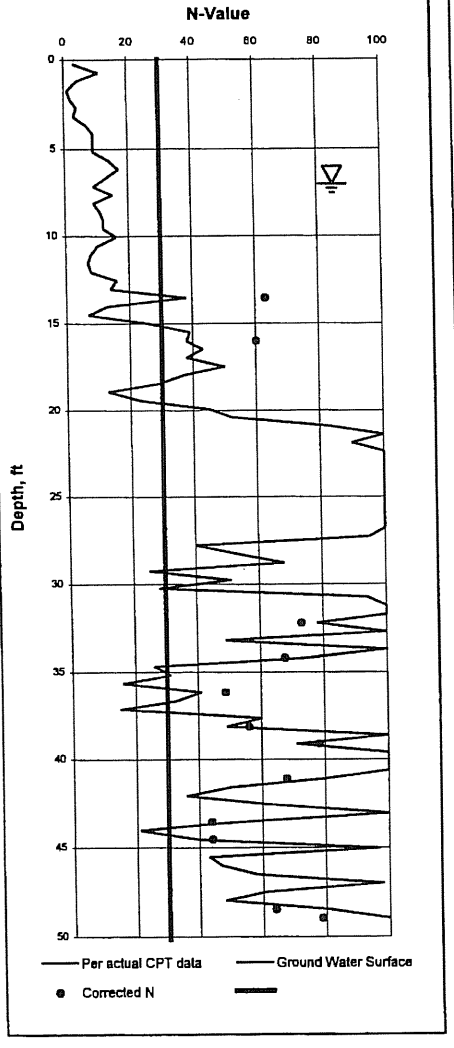


Figure E-12 (b)

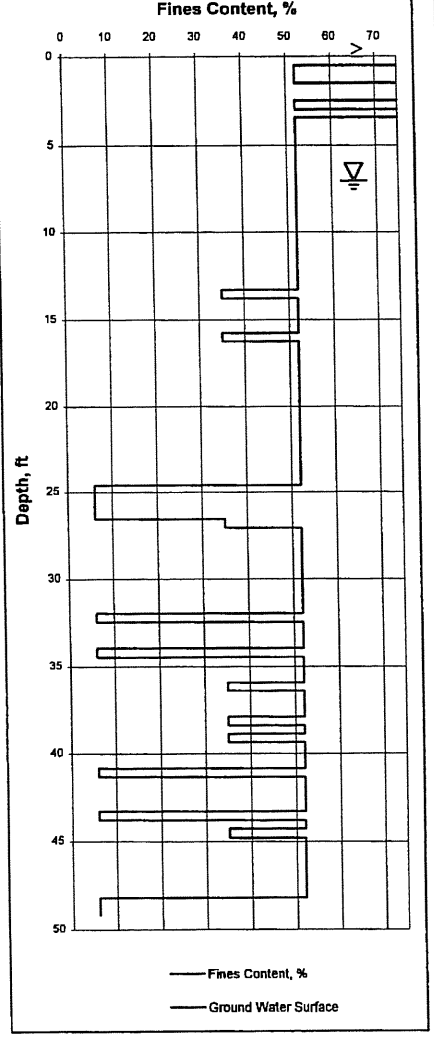


Figure E-12 (c)

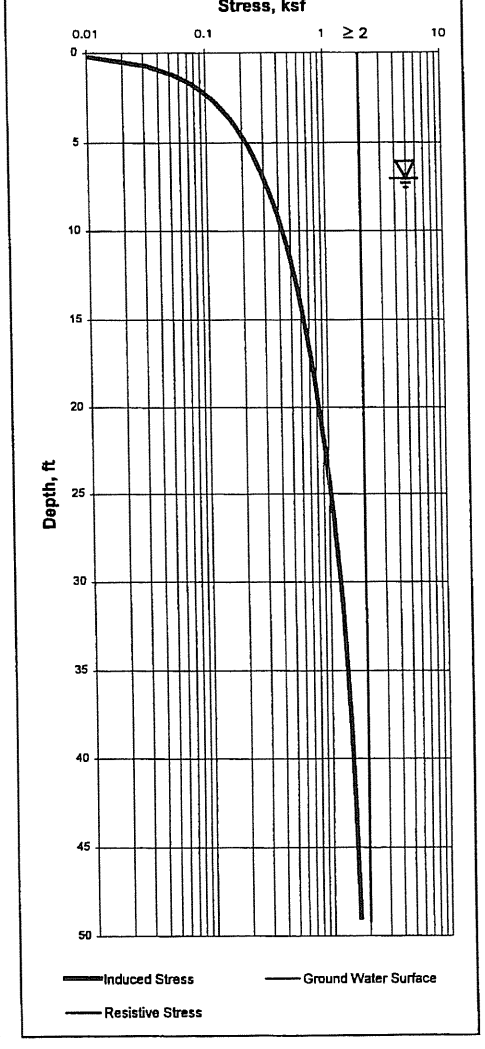
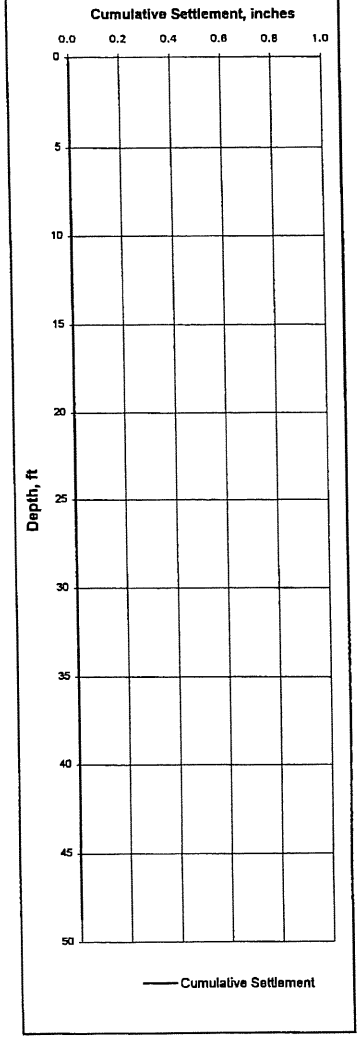


Figure E-12 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-12
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-13

Figure E-13 (a)

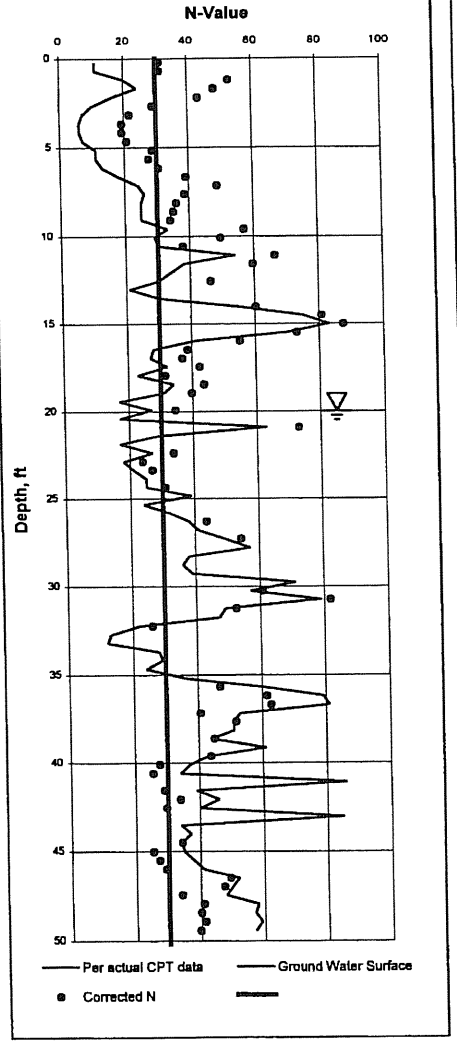


Figure E-13 (b)

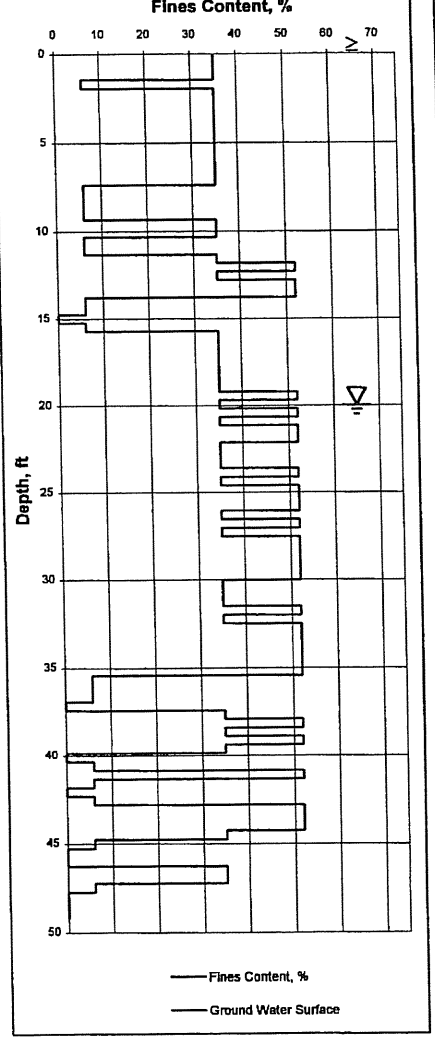


Figure E-13 (c)

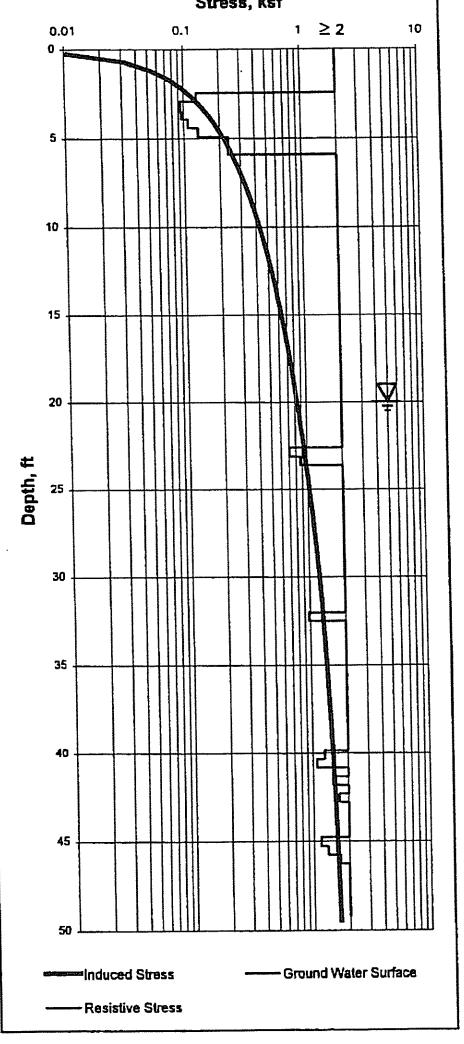
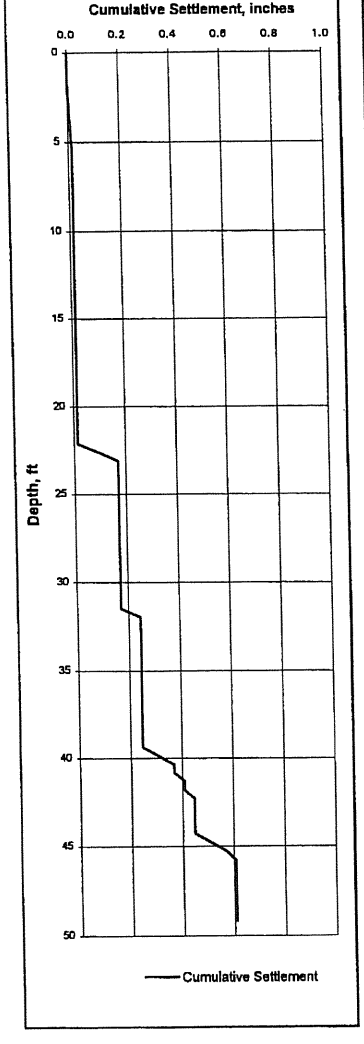


Figure E-13 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-13
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-14

Figure E-14 (a)

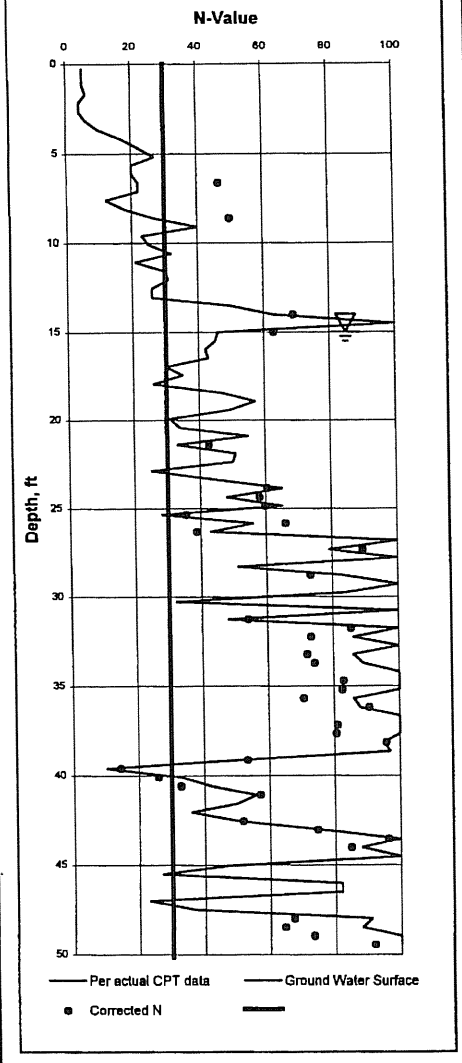


Figure E-14 (b)

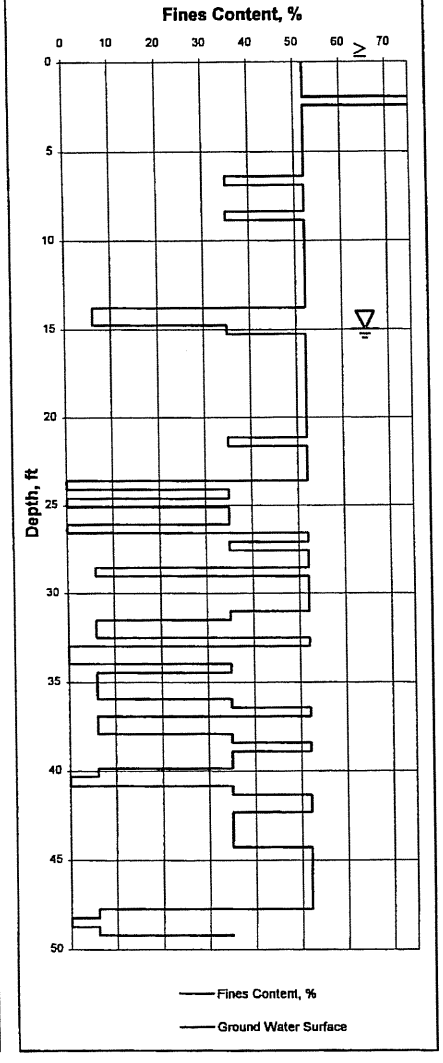


Figure E-14 (c)

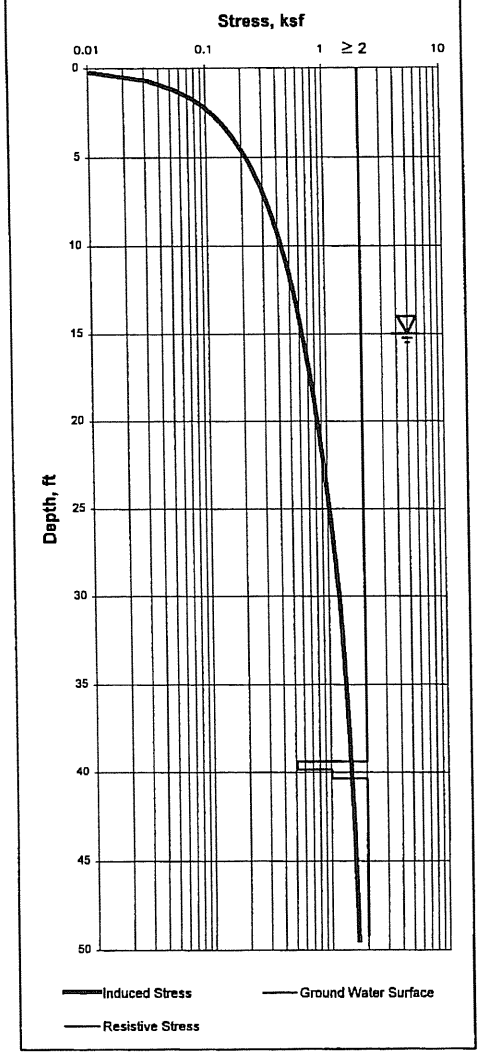
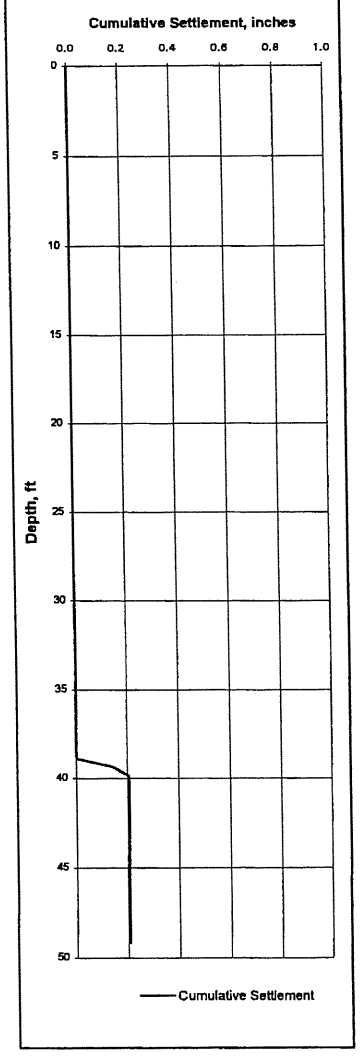


Figure E-14 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-14
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-15

Figure E-15 (a)

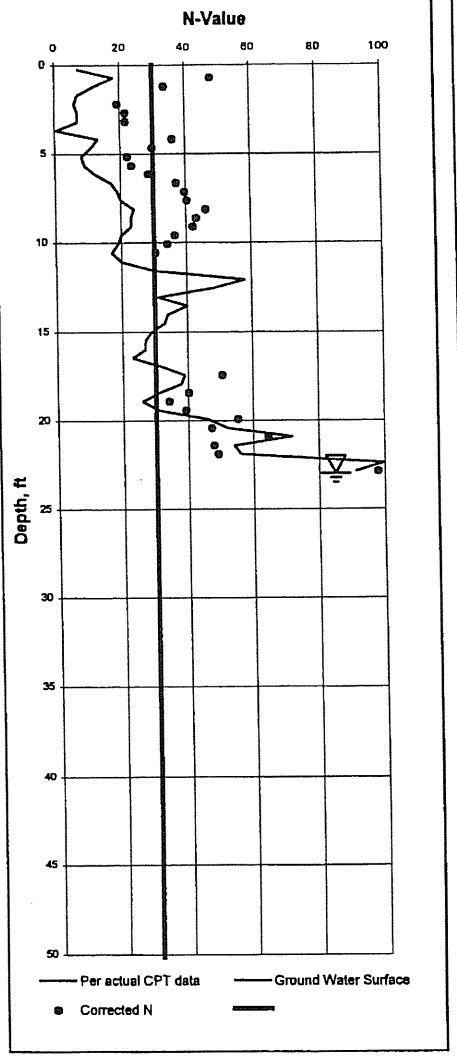


Figure E-15 (b)

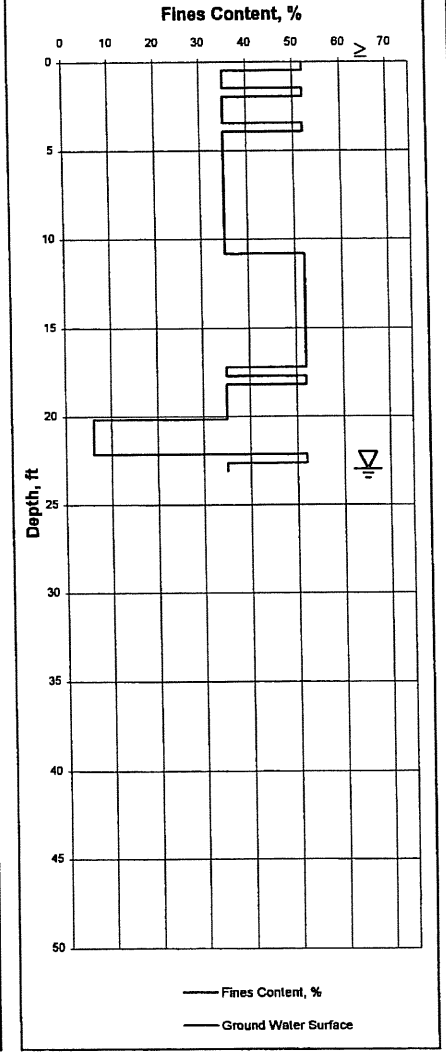


Figure E-15 (c)

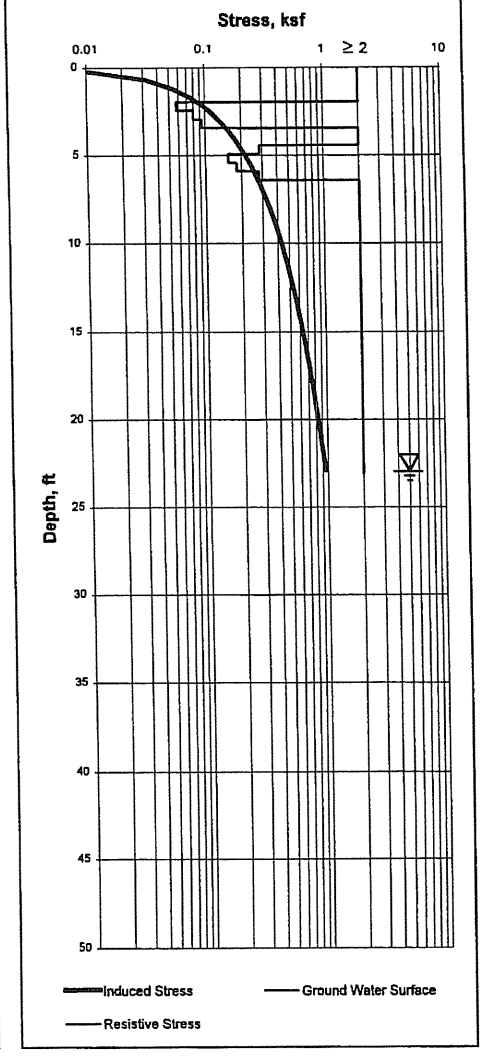
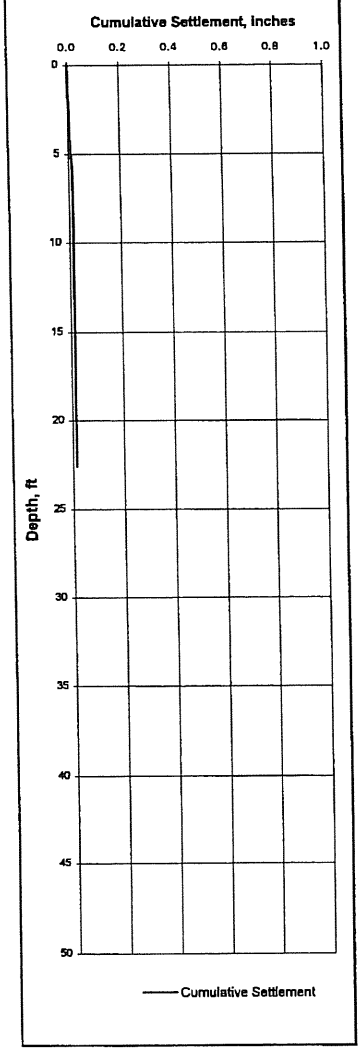


Figure E-15 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-15
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-16

Figure E-16 (a)

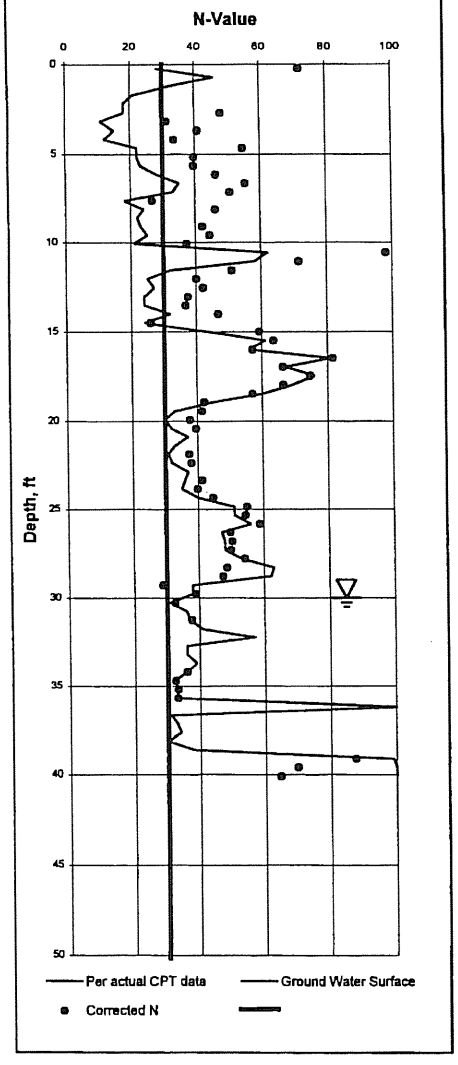


Figure E-16 (b)

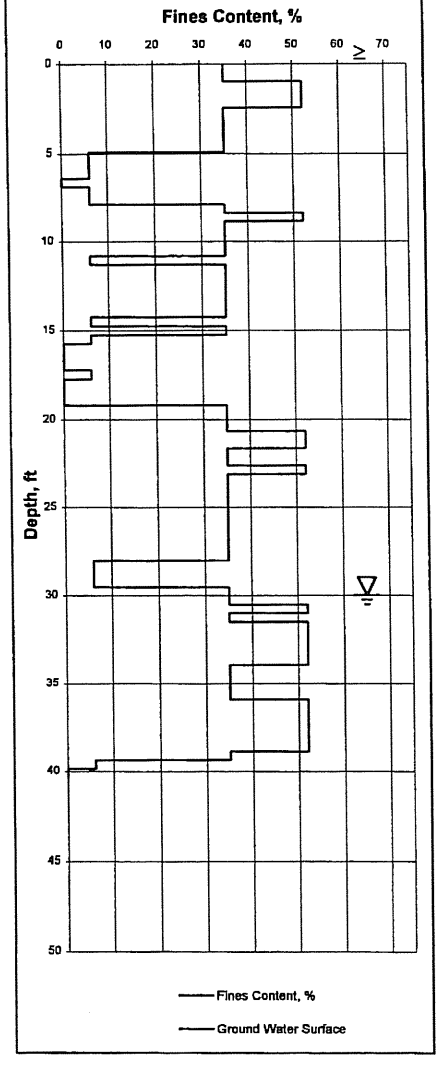


Figure E-16 (c)

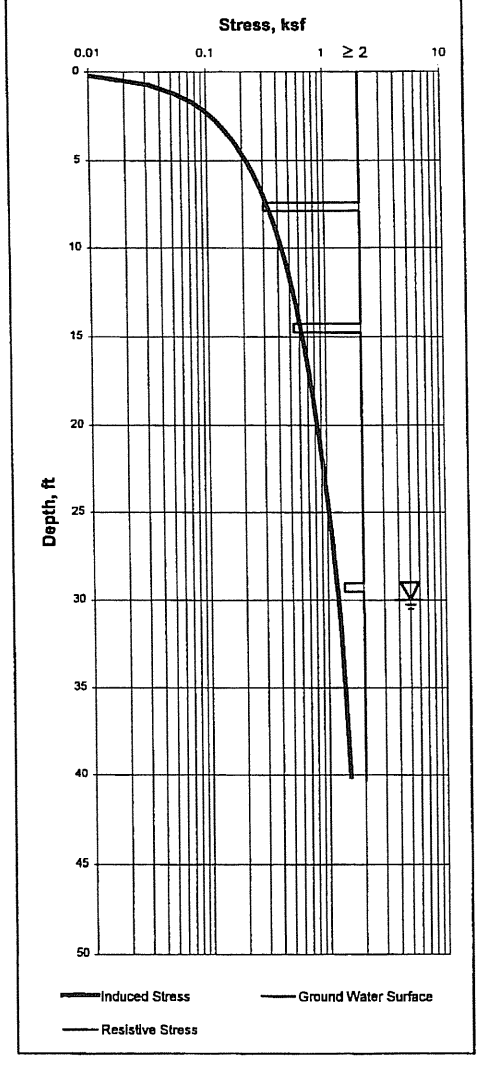
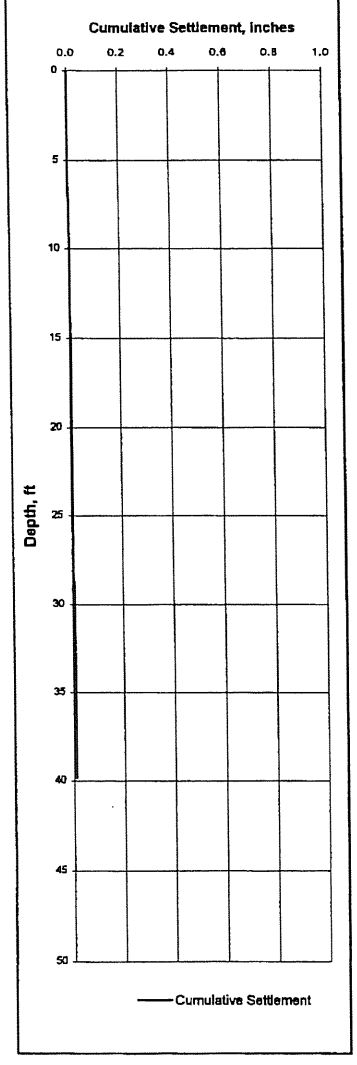


Figure E-16 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-16
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-17

Figure E-17 (a)

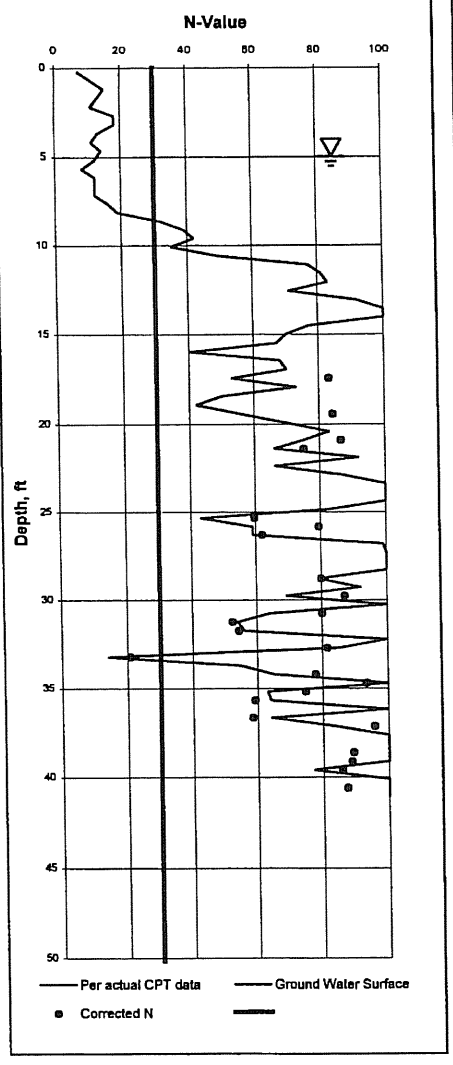


Figure E-17 (b)

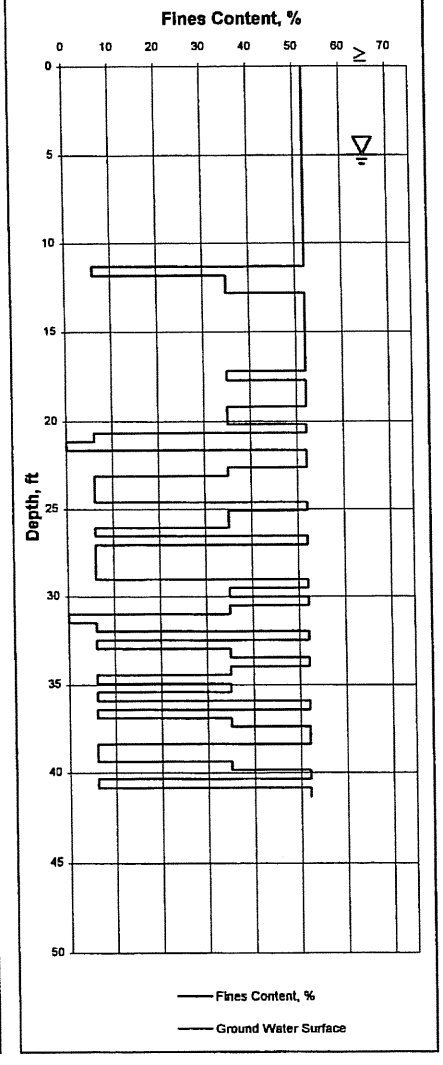


Figure E-17 (c)

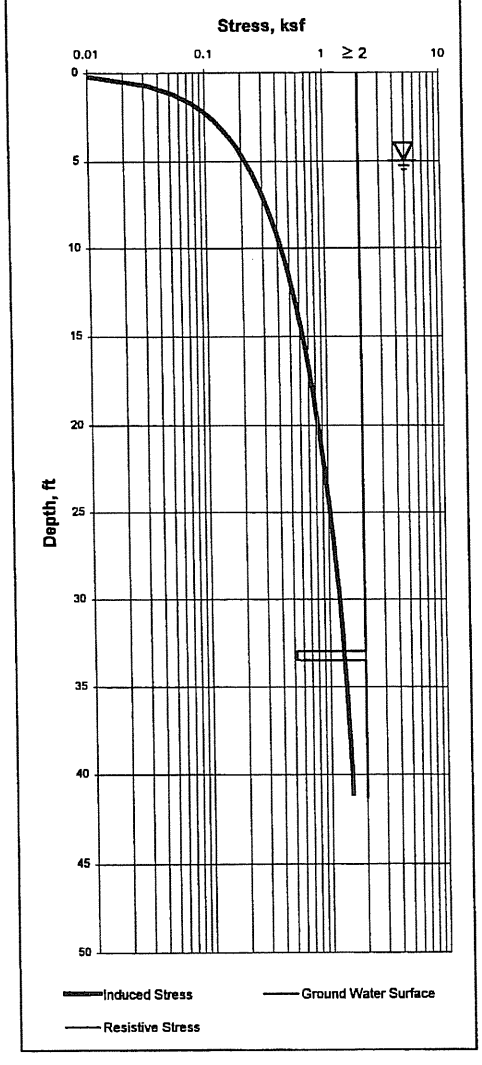
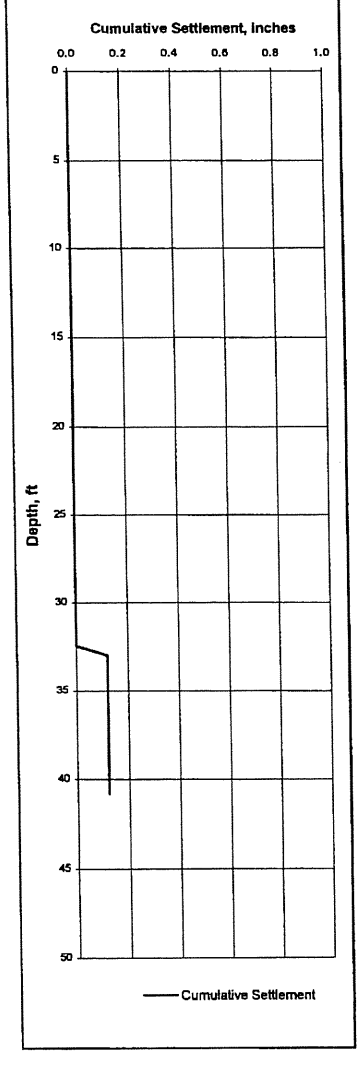


Figure E-17 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-17
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000

For use with report dated 03/18/2005; RTF Job No. 2004-700-21

Sounding Location: CPT-18

Figure E-18 (a)

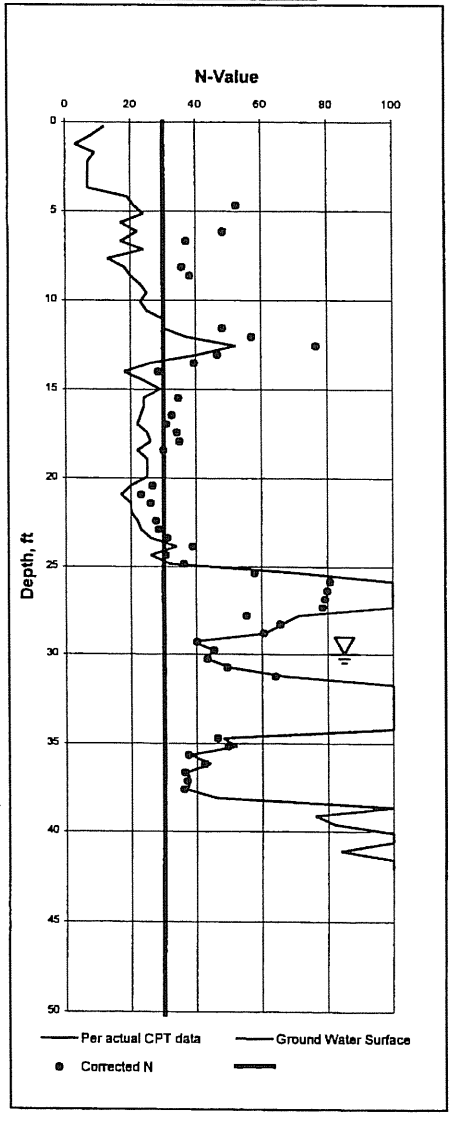


Figure E-18 (b)

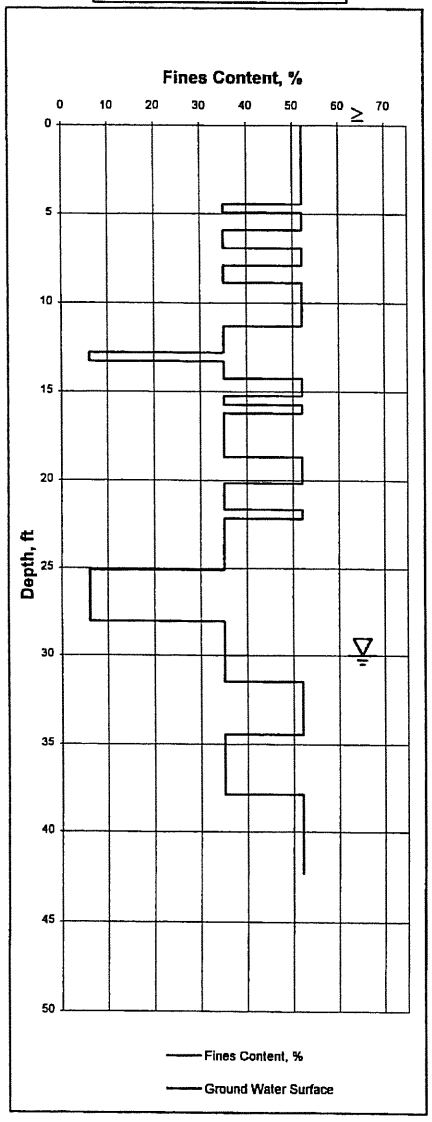


Figure E-18 (c)

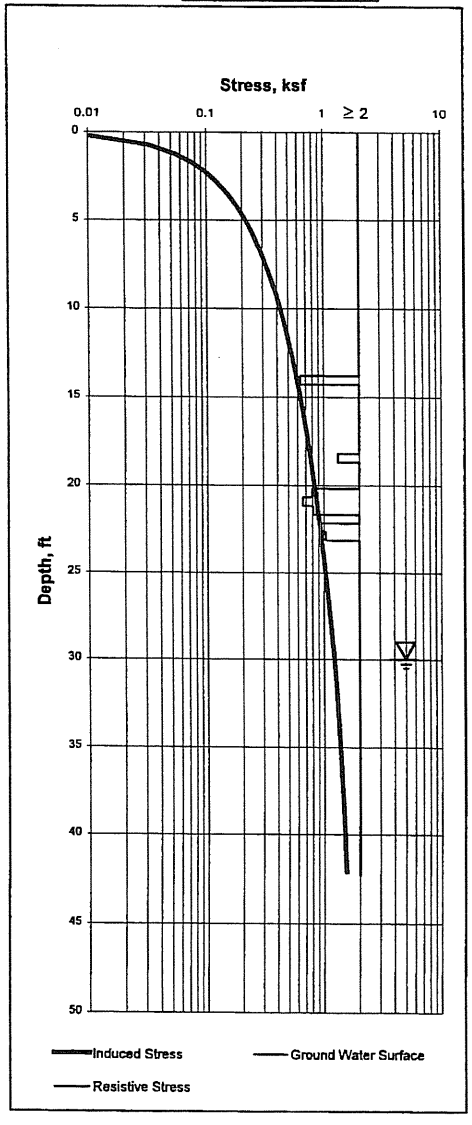
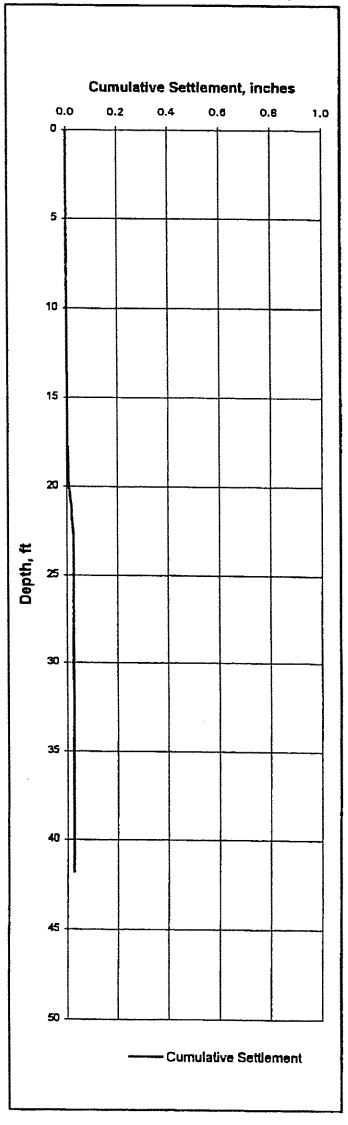


Figure E-18 (d)



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Analysis of Liquefaction Potential Based on N-Value (Interpreted from CPT Data)

Magic Mountain Entertaintment	Peak Gr. Acc. (M=7.5)	0.56	Project No.	00-1729-1
Santa Clarita, California	Design Magnitude	6.5	Figure No.	E-18
For: Valencia Company	Magnification Factor	1	Date.	4/17/2000