GROUP DELTA

Geotechnical Feasibility Report
Proposed High-Rise Residential Development
6220 West Yucca Street
Hollywood District
Los Angeles, California

For Champion Real Estate Company

March 6, 2015
GDC Project No. LA-1183G

73718

GROUP DELTA

Champion Real Estate Company
11601 Wilshire Boulevard, Suite 1650
Los Angeles, CA 90025

March 6, 2015
GDC Project No. LA-1183G

Attention: Mr. Greg Beck

Subject: Geotechnical Feasibility Report
Proposed High-Rise Residential Development
6220 West Yucca Street, Hollywood District, Los Angeles, California

Dear Mr. Beck, Vice President

Group Delta Consultants (GDC) is pleased to submit this geotechnical feasibility report for the proposed high-rise residential development planned at 6220 West Yucca Street in the Hollywood District, Los Angeles, California. Our scope of work was conducted in general accordance with our proposal dated January 29, 2015.

We appreciate the opportunity to provide geotechnical services for this significant project. If you have any questions pertaining to this report, or if we can be of further service, please do not hesitate to contact us.

Sincerely,
Group Delta Consultants

REGISTERED PROFESSIONAL ENGINEER
THOMAS D SWANTKO
No 813
Exp 12/31/15
GEOTECHNICAL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
ETHAN TSAI
No 3004
EXP 12/31/15
GEOTECHNICAL
STATE OF CALIFORNIA

Thomas D. Swantko, G.E 813
Principal Geotechnical Engineer

Ethan Tsai, G.E. 3004
Senior Engineer

Distribution: Addressee (6)

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PROPOSED HIGH-RISE RESIDENTIAL DEVELOPMENT
6220 WEST YUCCA STREET
LOS ANGELES, CALIFORNIA

1.0 INTRODUCTION

1.1 Background

This report was prepared to address the feasibility of the proposed high-rise residential development from a geotechnical standpoint and to provide preliminary geotechnical recommendations for planning purposes. The project site is located at 6220 West Yucca Street in the Hollywood District of Los Angeles City, California. A Vicinity Map is presented in Figure 1.

1.2 Project Description

It is proposed to demolish the existing apartment buildings that currently occupy the site and construct two new, type 1, residential high-rise towers over four levels of common subterranean parking. Conceptual plans show the towers may be on the order of 20–stories, with each high-rise building having a footprint of approximately 12,000 square feet. A 2-level podium structure will be located at the base of the towers. The footprint of the podium structure will be approximately 43,000 square feet. The lowest basement floor in the 4-level parking structure will be about 30 to 40 feet below the lowest adjacent grade, at approximately Elevation 385 feet.

1.3 Purposes and Scope of Work

The purposes of this report are to address the primary geotechnical factors affecting the project and provide preliminary geotechnical recommendations for project planning. The recommendations were developed based on review of the conceptual drawings of the proposed development and the data previously collected from our fault investigations conducted for the site. Our scope of work included the following:

- Review the available data for the project, including previous subsurface data and conceptual plans.
- Performing limited geotechnical laboratory tests on selected soil samples obtained from the fault investigations.
- Performing preliminary analyses to provide preliminary recommendations for excavation, shoring, foundation design, floor slab support, basement walls, resistance to lateral loads, and construction-related issues.
- Prepare and submit six copies of our report.

1.4 Previous Reports

We previously performed a Fault Activity Investigation at the site and presented the results in a report dated September 7, 2014. The report was reviewed by the Grading Division of the City of Los Angeles and the City provided comments in their Geology Report Correction Letter, dated September 17, 2014. We subsequently conducted a supplemental fault investigation and provided the results in a response report dated February 12, 2015. The fault activity report was approved by the City in their approval letter dated February 20, 2015. The results of the fault activity investigation indicate that no active faults are present beneath the site. A copy of the City's Geologic Report Approval Letter is provided in Appendix A.

2.0 GEOTECHNICAL INVESTIGATION AND LABORATORY TESTING

2.1 Field Investigation

The soil conditions beneath the site were previously investigated during the fault investigations, by drilling 11 borings to depths of 25 to 60 feet below the existing grade and performing 13 Cone Penetration Tests (CPTs) to depths of up to 55 feet below the existing grade. In addition two 10 to 15-foot deep trenches were excavated in the east and west areas of the site. The locations of previous explorations are shown on Figure 2, Exploration Plan. The logs of the prior borings and CPTs results are presented in Appendix B.

2.2 Laboratory Testing Program

Limited laboratory testing was performed on representative samples of the cores obtained during the fault investigation, to further evaluate and correlate the physical properties and engineering characteristics of the soils encountered. The following tests were performed as part of this study:

- Corrosivity (pH, sulfate, chloride, electrical resistivity)
- Expansion index

All testing was done in general accordance with applicable ASTM specifications. Details of the limit laboratory testing program and test results are presented in Appendix C.

3.0 SITE CONDITIONS

3.1 Site Conditions

The site is located at southeast corner of West Yucca Street and North Argyle Avenue and is approximately 1.06 acre in size. The site is currently occupied by three existing 2-story apartment buildings and covered garages. A small parking lot is located at the northeast corner of the site. The topography of the site generally is ascending from southeast to northeast with elevation change of approximately 20 feet. Various service utilities are located on the site.

Topographically, the site is located on a ridge, oriented north-south and parallel to Argyle Avenue. The existing site grades range from a high of about Elevation 432 feet in the northeast corner to roughly Elevation 420 feet along the south end of the pad. The existing grade along Yucca Street slopes up from about Elevation 416 feet at Argyle Avenue to Elevation 430 feet adjacent to the northeast corner of the site. The grade along Argyle Avenue slopes down from about Elevation 416 at Yucca Street to 408 feet at the south edge of the site,

The site is located within the Alquist-Priolo Special Study Seismic Zone designated for the Hollywood Fault. As previously stated, the results of the fault investigation conducted at the site indicated that no active faults underlies the site. The results of the fault investigation was approved by the City in an approval letter dated February 20, 2015.

3.2 Subsurface Conditions

Based on the field explorations, subsurface conditions at the site are depicted in Figures 3.1 through 3.3. Fill soils, approximately 2 to 5 feet thick, were encountered below existing pavements. The fills soils consist of silty sand, clayey sand and lean clay and are medium dense to stiff. The fills soils will be removed during the basement excavation planned. The fill soils are underlain by older alluvium.

The older alluvium consists of dense, very stiff to hard, clayey sand, silty sand, and sandy clay. The alluvium is underlain by Modelo bedrock, consisting of claystone, siltstone and sandstone. As shown on the cross-sections, the contact between the old alluvium and bedrock occurs at a depth of about 15 feet (Elevation 410 feet) near the northwest corner of the site and slopes down to a depth of 50 to 60 feet (Elevation 360 feet to 365 feet) at the east and south edges of the site.

A laboratory test on a representative sample of the clayier portion of the alluvium indicated an Expansive Index (EI) of over 100, which corresponds to a highly expansive characteristic.

3.3 Groundwater

Groundwater was encountered at depths between 27 to 36 feet below existing grade, corresponding to an Elevation of 376 to 394 feet. The Seismic Hazard Zone Report for the Hollywood Quadrangle (CGS 1998) indicates that the historically highest groundwater level in the site area is deeper than 80 feet. The ground water encountered at the site appears to be sitting

on top of the bedrock or is within sandstone layers. There is also the potential for shallow ground water to be perched anywhere on the site.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 General

Based on a review of existing subsurface information and the conceptual plans, it is our opinion that the proposed project is feasible from a geotechnical standpoint. Following proper site development grading, the proposed construction can be supported on conventional spread footings or mat foundations founded in dense, old, alluvial soils. Preliminary geotechnical recommendations for design planning are discussed in the following sections. However, the previous borings and trenches at the site were performed for the fault investigations, and there was no laboratory testing. Therefore, a design-level geotechnical report will be required to develop geotechnical recommendations for final design, including drilling and sampling geotechnical borings, performing laboratory testing to confirm engineering parameters and detailed engineering analyses.

We anticipate that static design will be performed in accordance with 2014 Edition of the Los Angeles Building Code (2014 LABC). However, a performance-based seismic design may be considered for design of the proposed high-rise development, in accordance with "An Alternative Procedure for Seismic Analyses and Design of Tall Building in the Los Angeles Region" by the Los Angeles Tall Building Structural Design Council (LATBSDC), 2014 Edition. If a performance-based seismic design is selected, it is anticipated that construction cost will be significantly reduced. However, the overall design period will be longer than if the 2014 LABC is followed.

The sides of the excavation for the basement will require shoring consisting of soldier pile and tie-back anchors. During the previous explorations, groundwater was encountered at an Elevation of 376 to 394 feet. The lowest basement level is planned at Elevation 385 feet. Therefore, dewatering will be needed during basement construction and ground water is a consideration in the basement design.

4.2 Demolition

Prior to the start of earthwork, the existing buildings and improvements on the site will require demolition and removal, including the existing foundations, slabs, pavements, walls and utilities. It should be anticipated that the remnants of previous construction could be encountered anywhere on the site. The civil engineer should identify the presence and location of all existing utilities on and adjacent to the site. Precautions will be required to remove, relocate or protect existing utilities, as appropriate.

4.3 Temporary Excavation and Shoring

Excavation for the basement will be made to depth of approximately 30 to 40 feet below existing grade. The excavation will be made primarily in old alluvial soils consisting of clay, sandy clay, clayey sand and silty sand, that is dense to very stiff and hard. We anticipate that the excavation can be readily accomplished using conventional heavy construction equipment.

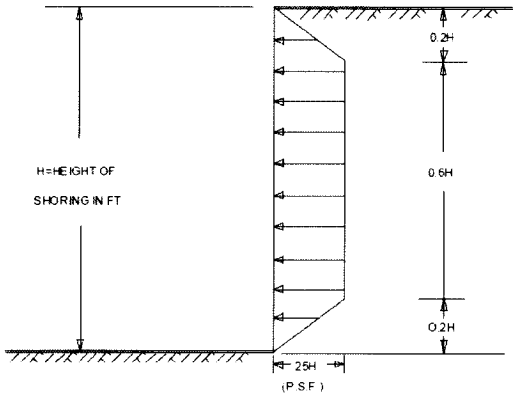
Restrained temporary shoring, consisting of tied-back or internal bracing will be required to support the walls of the excavation. The shoring will likely involve soldier piles spaced at about 8 feet on center. For the deep excavation, two levels of tied-back anchors / internal bracing will be required. Slurry should be used to backfill any voids behind lagging. The contractor will be responsible for the design of the shoring. The shoring designer should verify the depth and location of the existing utilities to select the appropriate tieback depth and inclination. City approval will be required to install anchors under streets, and the anchors will need to be detentioned when no longer needed. If anchors are to be installed under private property to the east and south, permission will also be required from the property owners.

If the excavation is exposed during periods of rainfall, provisions for collection of the runoff should be made. All surface drainage should be controlled and prevented from running down into the excavation. Ponding water should not be allowed within the excavation. Any collected water should be pumped out. Soils softened by wetting should be removed and backfilled as directed by the geotechnical engineer.

All excavation slopes and shoring systems should meet minimum requirements of the Occupational Safety and Health (OSHA) Standards. Maintaining safe and stable slopes on excavations is the responsibility of the contractor and will depend on the nature of the soils and groundwater conditions encountered and his method of excavation. Excavations during construction should be carried out in such a manner that failure or ground movement will not occur. The short-term stability of excavation depends on many factors, including slope angle, engineering characteristics of the subsurface materials, height of the excavation, and length of time the excavation remains unsupported and exposed to equipment vibrations, rainfall, and desiccation. The contractor should perform any additional studies deemed necessary to supplement the information contained in this report for the purpose of planning and executing his excavation plan. Recommendations regarding sloped temporary excavations and shoring are provided in the sections below.

4.3.1 Shoring Design

For the design of temporary tied-back or braced shoring, we recommend the use of a trapezoidal distribution of earth pressure. The recommended pressure distribution, for the case where the grade is level behind the shoring, is illustrated in the following diagram with the maximum pressure equal to 25H in pounds per square foot, where H is the height of the shoring in feet.



The recommended earth pressure provided above is a preliminary value. The final earth pressure for design of soldier piles and anchors will be provided in the during the design-level geotechnical investigation. Surcharge loads from equipment or stockpiled material should be kept behind the top of the temporary excavations a horizontal distance of at least twice the depth of the excavation.

Surcharge loads from equipment or stockpiled material should be kept behind the top of the shoring a horizontal distance of at least twice the depth of the excavation, or the shoring should be designed for the additional pressure. Foundation and traffic loads from adjacent areas should also be added to the lateral earth pressures. If traffic loading can occur near the top of the shoring, the design height of the shoring should be increased by 2 feet to account for the traffic surcharge. Surface drainage should be controlled and prevented from running down the temporary excavations or down the face of the shoring. Ponding water should not be allowed within the excavation.

Resistance to lateral loading of the shoring piles may be provided by passive pressure of the native soils below the bottom of the excavation. The allowable passive pressure of the native soils may be taken as the pressure developed from an equivalent fluid weight of 300 pcf. To account for the rounded shape of the soldier piles, when calculating the passive pressure on individual piles, the equivalent fluid pressure may be multiplied by a factor of 2.

The tieback contractor should select the design bond stress, drill hole diameter, and length of bonded zone in order to provide the design capacity specified by the structural engineers. All tiebacks should be load tested in accordance with the City of Los Angeles requirements.

4.3.2 Shoring Monitoring

A survey-monitoring program should be implemented to monitor shoring displacements during construction. In addition, prior to the start of construction, nearby improvements should also be surveyed and photographs and/or video taken to document baseline conditions. The deflection at the top of the shoring should be limited to a maximum of 1 inch, or a maximum of 1/2-inch if a structure or utility is located nearby. If the deflection of the shoring exceeds these criteria, or if distress or settlement is noted adjacent to the top of shoring, the excavation should be stopped

and an evaluation should be performed by the structural and geotechnical engineers and any appropriate corrective measures taken, as deemed necessary. The shoring should be monitored once a week until the excavation reaches full depth and further movement has stopped.

4.4 Foundations

4.4.1 Bearing Value

Following proper site development grading/excavation, the proposed structure may be supported on conventional spread footings, established in undisturbed bedrock or older alluvium. For preliminary design, footings may be designed for an allowable dead-plus-live load pressure of 6,000 psf. The allowable bearing pressure may be increased by one-third when considering temporary loads associated with wind and seismic loading. Alternatively, the proposed structure may be supported on mat foundations. The final bearing capacity of footings and mat should be based on an evaluation of settlement performance during the design-level geotechnical investigation.

Footing excavations should be observed by the project geotechnical engineer before placement of concrete to verify that the foundation conditions meet the requirements of the geotechnical report. The project geotechnical engineer may perform compaction tests, probing, or use other methods, to verify that the foundations will be supported in competent soils. If disturbed, wet, or otherwise unsuitable soils are encountered, or if water saturates the soils, the soils shall be excavated or stabilized as recommended by the project geotechnical engineer.

4.4.2 Settlement

The anticipated structural loads are not currently known. Specific sampling and consolidation tests of foundation soils will be performed and settlement performance evaluated for footings and mats during our design-level geotechnical investigation.

4.4.3 Lateral Capacity

Resistance to lateral loads can be provided by friction developed between the bottom of footings and the supporting soil, and by the passive soil pressure developed on the face of the footing. For preliminary design purposes, an allowable passive fluid pressure of 300 pcf and a coefficient of friction of 0.4 may be used for lateral sliding resistance of footings

4.5 Floor Slab

The basement floor slab may be placed on a properly prepared subgrade. To reduce the potential for moisture transmission through slabs where moisture sensitive covering will be installed, we recommend that a vapor retarder shall be used. In accordance with ACI 302.2R-06, the material must comply with the requirements of ASTM E 1745, "Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs," and have a permeance of less than 0.01 perms per ASTM E96. The installation of the moisture barrier should comply

with ASTM E 1643-09. Reference is made to ACI 302.2R, Section 7.2 concerning whether to place 2 inches of sand over the barrier. The design of floor slabs for the expansion potential of the supporting soils or bedrock will be evaluated during the design-level investigation.

4.6 Seismic Considerations

If performance based seismic design is selected for the structural design, the seismic provisions provided in "An Alternative Procedure for Seismic Analyses and Design of Tall Building in the Los Angeles Region" should be followed. Otherwise, the seismic design parameters in accordance with 2014 LABC should be used for seismic design.

The seismic design parameters were calculated using the USGS Seismic Design Maps Web Application (http://earthquake.usgs.gov/designmaps/us/application.php). The site coordinates used are:

Latitude: 34.1034 Longitude: -118.3246

Site Class C is preliminarily assumed for the site. The mapped and design spectral acceleration parameters, i.e., S_S, S_1 and S_{DS}, S_{D1}, are provided below.

Mapped

S_s = 2.57g S_1 = 0.95 g

Design

S_{DS} = 1.72g S_{D1} = 0.83g

4.7 Basement Walls

As required by the 2014 LABC, braced basement walls must be designed to resist at-rest earth pressures. Accordingly, for the case where the grade is level behind the walls, a triangular distribution of lateral earth pressure equivalent to that developed by a fluid with a density of 60 pounds per cubic foot. This earth pressure assumes that all walls are constructed with a properly designed drainage system to prevent buildup of hydrostatic pressures behind the wall. Any surcharge loadings occurring as a result of heavy crane loads, stockpiled materials or traffic should be added to this pressure. The recommended pressure should also be confirmed during the design-level geotechnical investigation and should consider the presence of expansive soils, which could require the use of higher design earth pressures.

Basement walls should also be designed for seismic earth pressure. The basement walls should be designed to resist, an active pressure combined with a seismic increment of lateral active earth pressure. Based on a peak acceleration of 0.69g, equal to S_{DS}/2.5, the adopted horizontal acceleration is 0.35g. The equivalent seismic pressure may be taken as the pressure developed from an equivalent fluid weight of 25 pcf. The recommended value should be confirmed in the design geotechnical report.

4.8 Subdrain

If the lowest basement floor will extend near the water table, either the floor and walls should be designed for hydrostatic pressures, or an underfloor drain system should be provided below the basement floor slab. The drainage system should consist of a minimum 12-inch thick layer of permeable gravel (such as Caltrans Permeable Material), which should be sloped to carry water to perforated pipes. The pipes should carry flow by gravity to sumps equipped with a float-activated pump to raise and pump the water to proper disposal. The pipes should be installed with the perforations down and should be wrapped with geotextile filter fabric, such as Mirafi 140, or equivalent. The basement wall drainage system should also connect to the sumps.

4.9 Soil Corrosivity

A representative sample was tested to evaluate corrosion characteristics. The results indicate the tested sample had a pH of 7.22, water-soluble sulfate content and soluble chloride content were negligible.

Results of laboratory electrical resistivity tests indicate a minimum resistivity value of 495 ohm-cm for the near-surface soils. To evaluate the corrosion potential of on-site soils, we used the following correlation between electrical resistivity and corrosion potential:

Electrical Resistivity (Ohm-cm)	Corrosion Potential
Less than 1,000	Severe
1,000 – 2,000	Corrosive
2,000 – 10,000	Moderate
Greater than 10,000	Mild

Based on this correlation, the tested soil has a severe corrosion potential for buried metal. All underground metal pipes/clamps/structures should consider this corrosion potential. A corrosion expert should be consulted regarding the need for further testing and to evaluate options for protection.

5.0 LIMITATIONS

This consultation was performed in accordance with generally accepted Geotechnical Engineering principles and practice. The professional engineering work and judgments presented in this report meet the standard of care of our profession at this time. No other warranty, expressed or implied, is made. This report has been prepared for Champion Real Estate Company, and their design consultants. It may not contain sufficient information for other parties or other purposes, and should not be used for other projects or other purposes without review and approval by GDC.

The recommendations for this project, to a high degree, are dependent upon proper quality control of site grading, shoring installation, fill and backfill placement, and foundation installation. The recommendations are made contingent on the opportunity for GDC to observe the earthwork operations. This firm should be notified of any pertinent changes in the project, or if conditions are encountered in the field, which differ from those described herein. If parties other than GDC are engaged to provide such services, they must be notified that they will be required to assume complete responsibility for the geotechnical phase of the project, and must either concur with the recommendations in this report or provide alternate recommendations.

6.0 REFERENCES

California Department of Conservation, Division of Mines and Geology, (1999), State of California Seismic Hazard Zones Map, Hollywood Quadrangle, Los Angeles County, California.

City of Los Angeles, "Geology Report Approval Letter," Log #85579-01, Tentative Tract Map 10149, Lot 1 and 3; 1756 and 1760 Argyle Avenue, dated February 20, 2015.

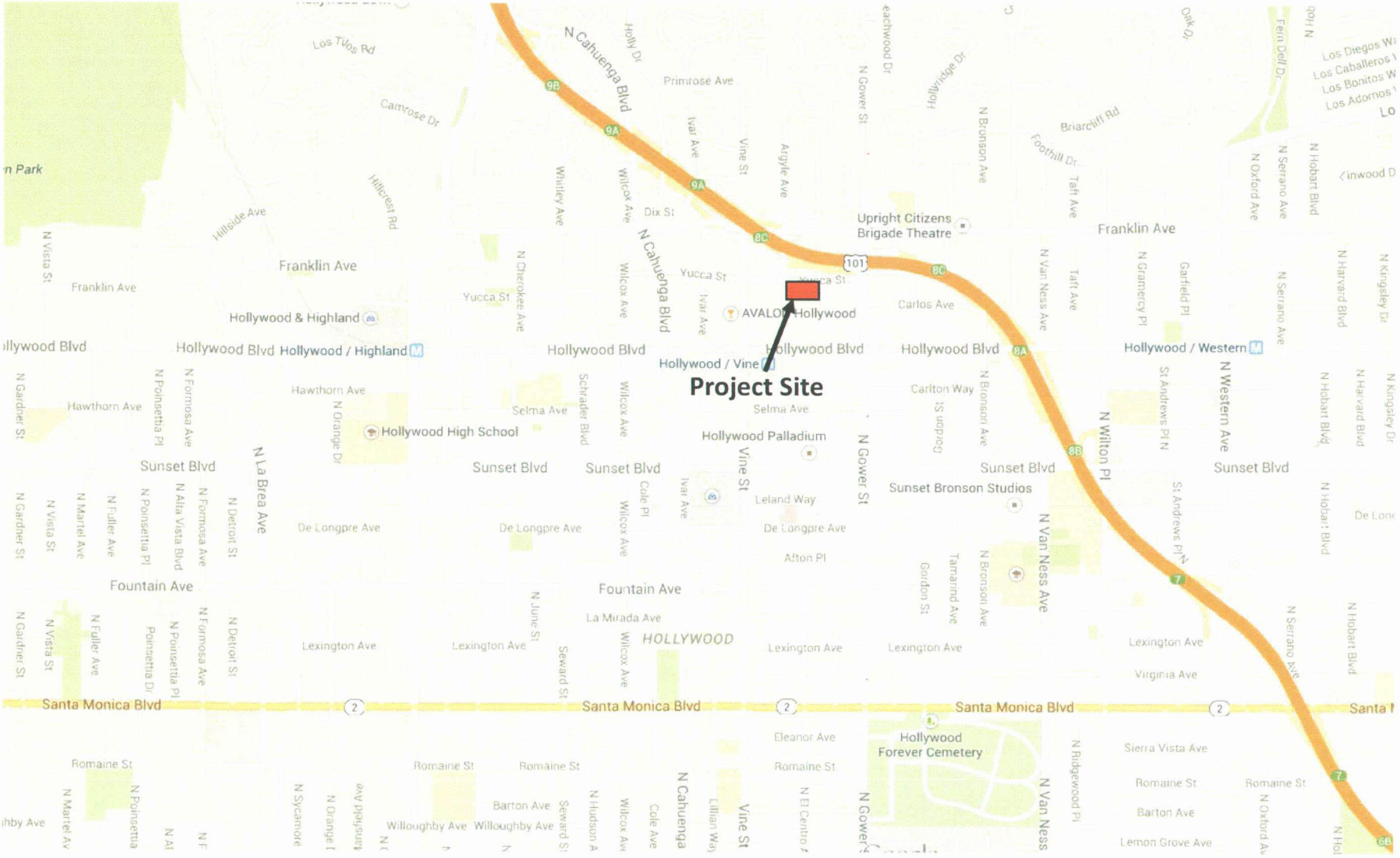
City of Los Angeles, "Geology Report Correction Letter," Log #85579, Tentative Tract Map 10149, Lot 1 and 3; 1756 and 1760 Argyle Avenue, dated September 17, 2014.

Group Delta Consultants, Inc., "Fault Activity Investigation for Yucca-Argyle Apartments, Champion Site, 1756 and 1760 Argyle Avenue, Los Angeles, California," dated September 7, 2014.

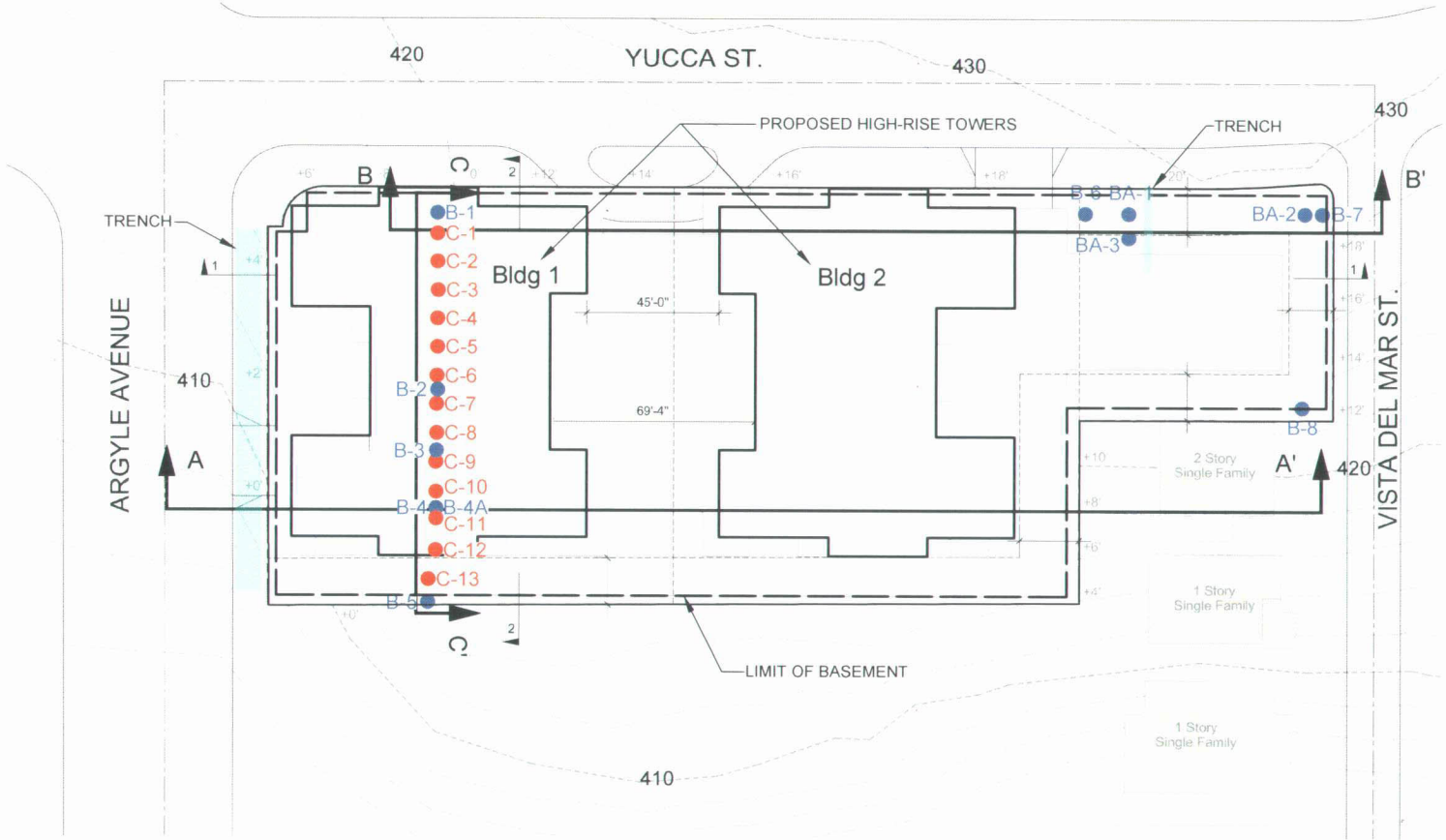
Group Delta Consultants, Inc., "Response to City of Los Angeles Geology Correction Letter #85579, 1756 and 1760 Argyle Avenue, Los Angeles, California," dated February 12, 2015.

Los Angeles Tall Buildings Structural Design Council, "An Alternative Procedure for Seismic Analysis and Design of Tall Buildings Located in the Los Angeles Region, 2014 Edition"

FIGURES



GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA 90501	**Vicinity Map** Proposed High-Rise Residential Development 6220 W. Yacca Street, Los Angeles, CA	PROJECT NUMBER: **LA-1183G** PLATE NUMBER: **1**

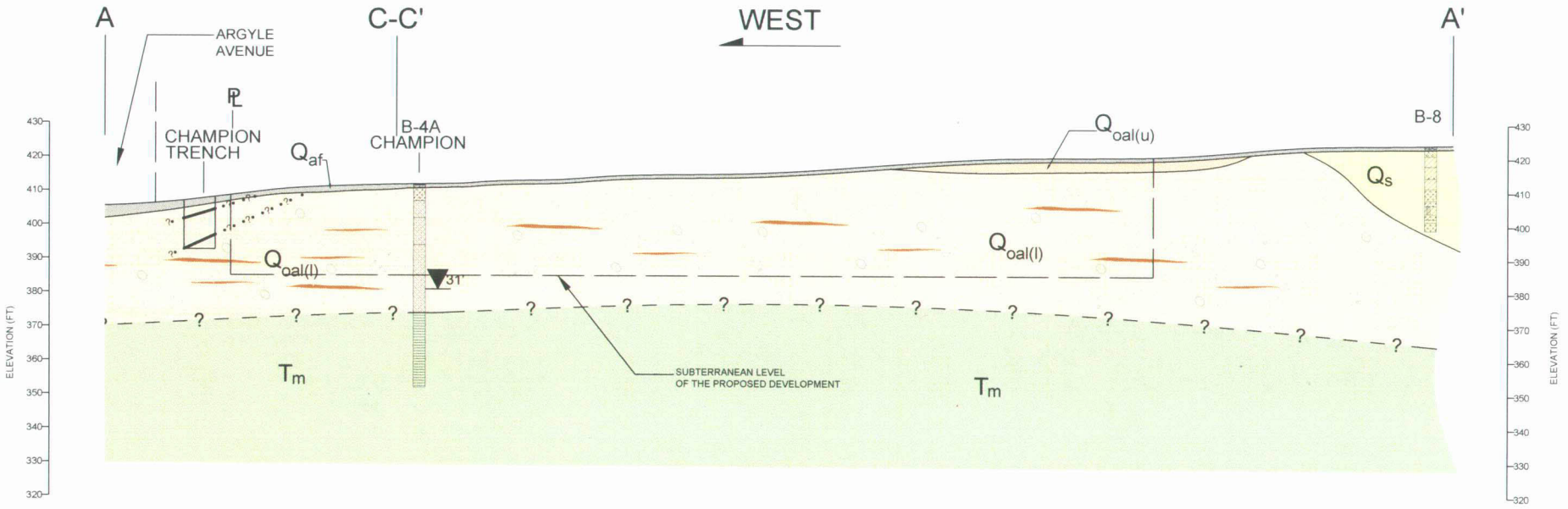


LEGEND

- B-6 — Boring Location and Number, GDC 2014
- C-20 — CPT (Cone Penetration Test) Location and Number, GDC 2014
- A A' — Location of Cross Section
- Trench Location

Scale (ft.)
0' 20' 40'

DATE 3/4/2015	DRAWN BY JMT	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	EXPLORATION MAP PROPOSED HIGH-RISE RESIDENTIAL DEVELOPMENT 6220 W. YUCCA STREET LOS ANGELES, CA.
REVISION	APPROVED BY ET		PROJECT NUMBER LA1183G SCALE AS SHOWN FIGURE 2
REVISION			



LEGEND

HOLOCENE	Artificial Fill	Q_{af}	
HOLOCENE	Argyle Sand	Q_s	0 -12 ka
PLEISTOCENE	Mud Flow	Q_m	> 50 ka (see text for discussion); ~ 80 ka -125 ka
PLEISTOCENE	Upper Older Alluvium	$Q_{oal(U)}$	> 200 ka
PLEISTOCENE	Lower Older Alluvium	$Q_{oal(L)}$	> 300 ka
MIOCENE	Modelo Formation "Bedrock"	T_m	~ 6 ma - 8 ma

—?— — ? — Geologic contact, dashed where inferred, ? where queried

• •?• • •?• • Representative Faults "Pre-Holocene" dotted where buried

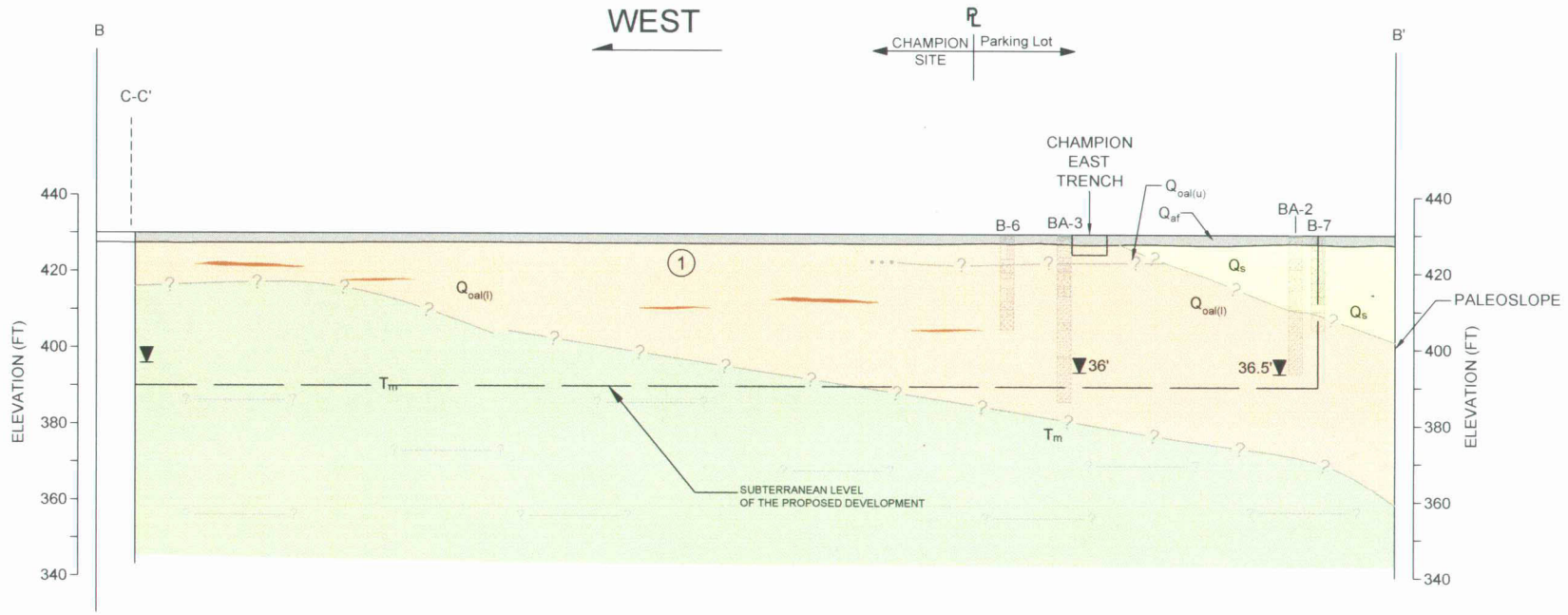
Buried Paleosol

* Data interpreted from off site borings and CPT logs to project cross section to the north

Bedding dips to south

V
30'
15'
SCALE (FT):
H
0' 15' 30'

DATE: 3/4/2015	DRAWN BY: JMT	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION A-A'
REVISION:	APPROVED BY: ET		PROPOSED HIGH-RISE RESIDENTIAL DEVELOPMENT 6220 W. YUCCA STREET LOS ANGELES, CA.
REVISION:	Modified from GDC, 2014a		PROJECT NUMBER: LA1183G SCALE: AS SHOWN PLATE NUMBER: 3.1



LEGEND

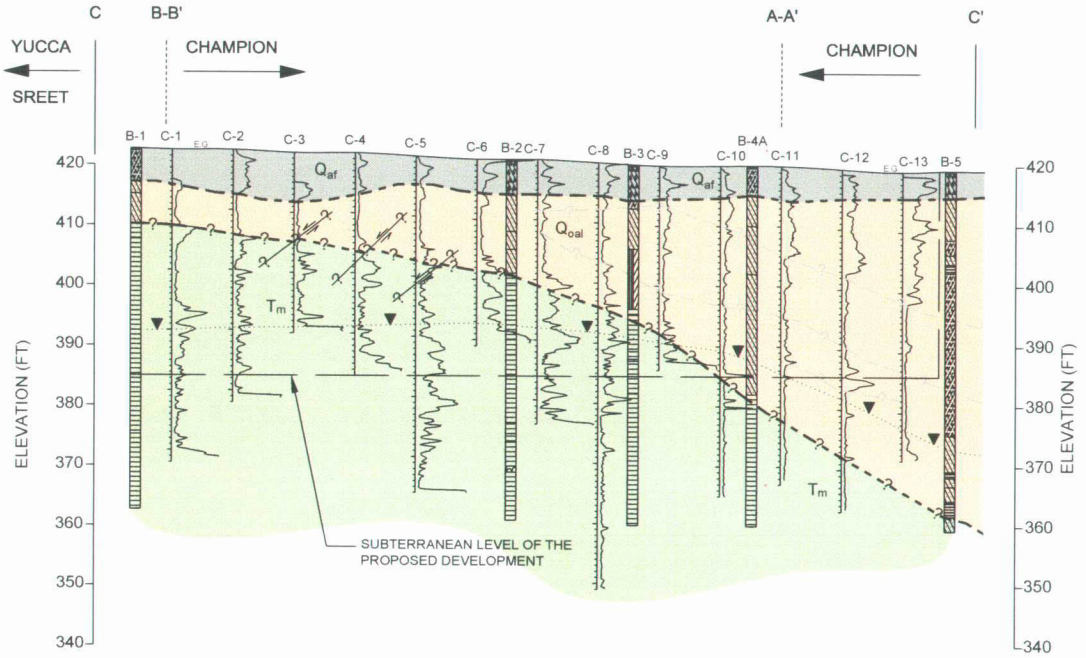
HOLOCENE	Artificial Fill	Q_{af}	
HOLOCENE	Sand	Q_s	0 - 12 ka
PLEISTOCENE	Upper Older Alluvium	$Q_{oal(u)}$	> 50 ka (See text for discussion)
PLEISTOCENE	Lower Older Alluvium	$Q_{oal(l)}$	> 300 ka
MIOCENE	Modelo Formation "Bedrock"	T_m	~ 6 ma -8 ma

(1) west section of graded $Q_{oal(U)}$ removed

Bedding dips to south

V
30'
15'
SCALE (FT):
H
0' 15' 30'

DATE: 3/5/2015	DRAWN BY: JMT	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION B-B'
REVISION: --	APPROVED BY: ET		PROPOSED HIGH-RISE RESIDENTIAL DEVELOPMENT 6220 W. YUCCA STREET LOS ANGELES, CA.
REVISION: --	Modified from GDC, 2014a		PROJECT NUMBER: LA1183G SCALE: AS SHOWN PLATE NUMBER: 3.2



LEGEND

HOLOCENE	Artificial Fill	Q_{af}	
HOLOCENE	Argyle sand	Q_s	0 - 12 ka
PLEISTOCENE	Older Alluvium Unit	$Q_{oal(l)}$	> 300 ka
MIOCENE	Modelo Formation "Bedrock"	T_m	~ 6 ma -8 ma

E.G. Existing Grade

B-1 Location and Number of Continuous Cores

C-1 Location and Number of CPT

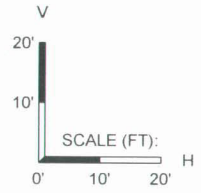
Estimated Projections of Inactive Fault

Inferred Stratigraphic Style Lines

Water Level and Inferred Ground Water Level Across Site

NOTE:

(1) Horizontal bedding Geo tech boring logged in Geotechnologies Boring



DATE 1/22/2014	DRAWN BY JMT	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION C-C'
REVISION 9/5/2014	APPROVED BY ET		PROPOSED HIGH-RISE RESIDENTIAL DEVELOPMENT 6220 W. YUCCA STREET LOS ANGELES, CA.
REVISION 2/11/2015			PROJECT NUMBER LA1183G SCALE AS SHOWN PLATE NUMBER 3.3

APPENDIX A
GEOLOGIC REPORT APPROVAL LETTER

BOARD OF
BUILDING AND SAFETY
COMMISSIONERS

VAN AMBATIELOS
PRESIDENT

E. FELICIA BRANNON
VICE-PRESIDENT

JOSELYN GEAGA-ROSENTHAL
GEORGE HOVAGUIMIAN
JAVIER NUNEZ

CITY OF LOS ANGELES
CALIFORNIA

ERIC GARCETTI
MAYOR

DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

RAYMOND S. CHAN, C.E., S.E.
GENERAL MANAGER

FRANK BUSH
EXECUTIVE OFFICER

GEOLOGY REPORT APPROVAL LETTER

February 20, 2015

LOG # 85579-01
SOILS/GEOLOGY FILE - 2
AP

Greg Beck
11601 Wilshire Boulevard, Suite 1650
Los Angeles, CA 90025

TRACT: 10149
LOT(S): 1 and 3
LOCATION: 1756 and 1760 Argyle Avenue

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE(S) OF DOCUMENT	PREPARED BY
Addendum Report	LA-1183E	02/12/2015	Group Delta
Oversized Docs.	"	"	"

PREVIOUS REFERENCE REPORT/LETTER(S)	REPORT No.	DATE(S) OF DOCUMENT	PREPARED BY
Dept. Correction Letter	85579	09/17/2014	LADBS
Geology Report	LA-1183A	09/07/2014	Group Delta

The Grading Division of the Department of Building and Safety has reviewed the referenced reports that present a fault rupture investigation at 1756 and 1760 Argyle Avenue for the future devolvement of the property. The site is currently occupied by 2-story apartment buildings.

The property is located within an Official Earthquake Fault Zone that was established (November 6, 2014) by the California Geological Survey for the Hollywood fault (on the USGS 7.5 minute Hollywood Quadrangle). The investigation included a transect of CPT soundings and continuous core borings in the west portion of the site and an exploration trench along the western edge. Additional exploration was conducted to address the Department correction letter dated 09/17/2014, which included three continuous core borings, three bucket auger borings and a trench just east of the site. Dr. Roy Shlemon (a well-known expert in soil stratigraphy, age-dating of soils and assessment of geologic hazards) provided a detailed soil stratigraphic/pedological analysis by to estimate the age of the soil horizons encountered in the recent trench. Data from offsite projects investigated by Group Delta were also used for the geologic analysis of the site.

The investigation documents folding and faulting of Pleistocene "older" alluvium (designated Qoal in the report). The age of the folding and faulting is estimated to be greater than 135,000 to 150,000

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years. No active (Holocene) faults were observed on the site or nearby the site. Therefore, no building restrictions were recommended by Group Delta.

The referenced reports are acceptable, provided the following conditions are complied with during site development:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2014 City of LA Building Code. P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. Prior to issuance of any permit, a soil engineering report shall be submitted to the Grading Division to provide design recommendations for the proposed grading/construction.

2. During construction, the project engineering geologist shall observe all excavations that expose the natural alluvial soils to verify the conclusions of the fault investigation and that no Holocene faults are exposed. The project engineering geologist shall post a notice on the job site for the City Grading Inspector and the Contractor stating that the excavation (or portion thereof) has been observed and documented and meets the conditions of the report. No fill or lagging shall be placed until the LADBS Grading Inspector has verified the documentation.

3. A supplemental report that summarizes the geologist's observations (including photographs and simple logs of excavations) shall be submitted to the Grading Division of the Department upon completion of the excavations. If evidence of active faulting is observed, the Grading Division shall be notified immediately. (7009)

Daniel C Schneidereit

DANIEL C. SCHNEIDEREIT
Engineering Geologist I

DCS/dcs
Log No. 85579-01
213-482-0480

cc: Group Delta , Project Consultant
LA District Office

APPENDIX B
PRIOR EXPORATIONS

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-1
SITE LOCATION	**DATE(S) DRILLED** 1/31/14	**LOGGED BY** TO	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 423	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Approximately 3.5 inches of Asphalt **Artificial Fill (Qaf)** **Silty SAND to Clayey SAND**, 7.5 YR 6/8 (Reddish Brown) , dry, fine to medium grained sand, some fine to coarse gravel with cobbles.				
	420												
5		1	1	30/30									
	415	2		30/30					**Older Alluvium (Qoal)** **Clayey SAND**, 7.5 YR 5/6 (Strong Brown), humid to moist, fine to medium grained sand, some coarse sand, trace fine gravel and cobbles. **Sandy Clay to Clayey Sand**, mottled 5 YR 7/1 (Yellowish red) and 5 YR 7/1 (Light Gray), humid to moist, some fine gravel and coarse sand, well developed soil.				
10		3	2	30/30									
	410	4		30/30					**Modelo Formation (TM)** **Sandstone, Siltstone, Claystone**, 10YR 6/1 (Strong brown) to 7.5YR 7/1 (light gray), thinly bedded, some oxidation, some caliche.				
15		5	3	30/30					**Poorly Graded Sand, Silt and Clay**, 10 YR 7/6 (Yellowish Brown) to 10 YR 6/1 (Light Gray) moist, mostly sand, cobbles and gravels throughout.				
	405	6		30/30									

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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32 Mauchly, Suite B
Irvine, CA 92618

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-1
SITE LOCATION	**DATE(S) DRILLED** 1/31/14	**LOGGED BY** TO	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 423	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		7	4	60/60									
	400												
25		8	5	33/60									
	395												
30		9	6	54/60					**Sandstone, Siltstone, Claystone** 7.5YR 7/1 (light gray), wet, thinly bedded, some oxidation.				Water @ 30 Ft.
	390												
35		10	7	36/60									
	385												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-1
SITE LOCATION	**DATE(S) DRILLED** 1/31/14	**LOGGED BY** TO	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 423	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
45	380	11	8	36/60					**Interbedded Sandstone, Siltstone and Claystone** 7.5 YR 7/1 (Strong Brown) to 7.5 YR 7/1 (Light Gray), wet, fine grained sand, some oxidation.				
		12	9	40/60									
50	375	13	10	11/60									
55	370	14	11	58/60									
	365												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE c

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-1
SITE LOCATION	**DATE(S) DRILLED** 1/31/14	**LOGGED BY** TO	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 423	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Total Depth: 60 Ft Groundwater: Encountered at 30 Ft Boring backfilled with tamped soil cuttings and asphalt patched.				
	360												
65													
	355												
70													
	350												
75													
	345												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE d

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-2
SITE LOCATION	**DATE(S) DRILLED** 1/30/14	**LOGGED BY** TO	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 421	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	420								**Asphalt**				
									Artificial Fill (Qaf)				
									Silty SAND, 7.5 YR 5/8 (Strong Brown) , moist, mostly medium to coarse sand, some fine sand, some fines, little fine to coarse gravel, trace cobbles.				
5		1	1	25/30									
	415								**Older Alluvium (Qoal)**				
		2		20/30					**Clayey SAND**, 7.5 YR 5/6 (Strong Brown) with grayish mottling, moist, fine sand.				
									-Trace fine gravel				
10		3	2	18/30									
	410								-Polished surfaces				
		4		25/30					**Sandy CLAY**, 5 YR 4/6 (Yellowish Red), dry to moist, fine sand.				
15		5	3	30/30					**Caliche**,10 YR 7/6 (Yellow), layers of well deveoped carbonate.				
	405												
		6		29/30					**Modelo Formation (Tm)**				

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FIGURE a

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-2
SITE LOCATION	**DATE(S) DRILLED** 1/30/14	**LOGGED BY** TO	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 421	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	400	7	4	30/30					**Sandstone**, 10YR 7/8 (Yellow), dry to moist, mostly fine to medium sand, abundant carbonate infilling. **Modelo Formation (TM)** cont.. **Clayey Sandstone**, 7.5 YR 8/1 (White) and 7.5 YR 6/8 (Reddish Yellow), dry to moist, mostly fine to medium sand, abundant carbonate.				
		8		30/30					**Sandstone**, 7.5 YR 6/8 (Reddish Yellow), moist to wet, mostly fine to medium sand, with some carbonate infilling in joints.				
25		9	5	22/30									Ground water @ 27'
	395								-Layer of Clayey Sandstone, 7.5 YR 5/8 with carbonate infilling -Wet, 7.5 YR 5/6 (Strong Brown)				
		10		25/30					-Mottled 10 YR 6/8 (Brownish Yellow) and 10 YR 8/1 (White)				
30		11	6	45/60					**Clayey Sandstone**, 7.5 YR 5/8 (Strong Brown), wet, fine to medium sand, minor white mottling.				
	390								**Sandstone**, mottled 7.5 YR 8/1 (White) and 7.5 YR 5/8 (Strong Brown), wet, fine to medium sand.				
35		12	7	38/60									
	385								-Becomes 10 YR 6/6 (Brownish Yellow) -Layer of Clayey Sandstone, 7.5 YR 6/8 (Reddish Yellow), carbonate infilling of fractures.				

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-2
SITE LOCATION	**DATE(S) DRILLED** 1/30/14	**LOGGED BY** TO	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 421	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	380	13	8	60/60					**Sandy Claystone**, mottled 7.5 YR 8/1 (White) and 7.5 YR 5/8 (Strong Brown), wet, fine sand.				
45	375	14	9	44/60					**Sandstone**, 7.5 YR 5/6 (Strong Brown), wet, fine sand. **Sandy Claystone to Clayey Sandstone** mottled 7.5 YR 8/1 (White) to 7.5 YR 5/8 (Strong Brown), wet, fine to medium sand.				
50	370	15	10	30/60					**Conglomerate Bed** **Sandy Claystone to Clayey Sandstone** mottled 7.5 YR 4/1 (Dark Gray) and 7.5 YR 5/8 (Strong Brown), wet, mostly fine sand.				
55	365	16	11	30/60					-Sand lense with carbonate infilled fracture				

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE c

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-2
SITE LOCATION	**DATE(S) DRILLED** 1/30/14	**LOGGED BY** TO	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 421	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	ROCK CORE: BOX NO.	ROCK CORE: RECOVERY, %	ROCK CORE: FRAC. FREQ.	ROCK CORE: R.Q.D., %	ROCK CORE: FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	360								Total Depth: 60 Ft Groundwater: Encountered at 27 Ft Boring backfilled with tamped cuttigns and asphalt patched.		-		
65	355												
70	350												
75	345												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE d

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-3
SITE LOCATION	**DATE(S) DRILLED** 1/30/14	**LOGGED BY** TO	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420.5	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
0	420								**Asphalt**				
									Artificial Fill (Qaf) **Silty SAND**, 7.5 YR (Strong Brown), moist, mostly medium to coarse sand, some fine sand, few fine gravel, trace cobbles.				
5	415	1	1	32/30					**Older Alluvium (Qoal)** **Silty SAND**, 7.5 YR 5/8 (Strong Brown), moist, mostly fine sand.				
		2		19/30					**Clayey SAND**, 7.5 YR 5/8 (Strong Brown), moist, mostly fine sand, trace fine gravel.				
10	410	3	2	19/30					-Few medium sand and trace coarse sand				
		4		29/30					**Sandy Clay**, mottled 7.5 YR 6/8 (Reddish yellow) to 7.5 YR 7/1 (Light Gray), moist, fine sand, oxide staining, polished surface along bedding, very weathered.				
15	405	5	3	21/30									
		6		30/30					-Carbonate infilled fractures				

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-3
SITE LOCATION	**DATE(S) DRILLED** 1/30/14	**LOGGED BY** TO	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420.5	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	400	7	4	29/30					-Coarsening sand, carbonate infilling fractures				
		8		22/30					**Modelo Formation (Tm)**				
25	395	9	5	30/30					**Sandstone**, mottled 7.5 YR 8/2 (Pinkish White) and 7.5 YR 6/8 (Reddish Yellow), moist to wet, mostly fine to medium sand.				
		10		25/30					**Clayey Sandstone**, mottled 7.5 YR 5/6 (Strong Brown) with 7.5 YR 7/1 (Light Gray), moist to wet, mostly fine sand with some medium sand, trace black oxide staining.				
30	390	11	6	29/30					**Sandstone** mottled 7.5 YR 5/6 (Strong Brown) and 7.5 YR 7.1 (Light Gray), wet, mostly fine to medium sand, few fine to coarse gravel, trace cobbles, trace black peat.				
									Clayey Sandstone, 7.5 YR 5/8 (Strong Brown), wet, mostly fine to medium sand with a minor gravel and cobble layer and lamination of sandstone.				
		12		30/30					**Clayey Sandstone**, mottled 7.5 YR 5/8 (Strong Brown) and 7.5 YR 8/1 (Gray), wet, mostly fine to medium sand, abundant carbonate infilling.				
35	385	13	7	29/30					-Sandstone Layer				
		14		30/30					**Clayey Sandstone to Sandy Claystone** mottled 7.5 YR 5/8 (Strong Brown) and 7.5 YR 7/1 (Light Gray), wet, mostly fine to medium sandstone, carbonate infilling of fractures.				

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FIGURE b

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-3
SITE LOCATION	**DATE(S) DRILLED** 1/30/14	**LOGGED BY** TO	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420.5	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	380	15	8	12/30					-Well cemented zone				
		16		22/30									
45	375	17	9	54/60									
50	370	18	10	59/60									
55	365	19	11	60/60					-Gravel and Cobble Layer				

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE c

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-3
SITE LOCATION	**DATE(S) DRILLED** 1/30/14	**LOGGED BY** TO	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420.5	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	360								Total Depth: 60 Ft Groundwater: Encountered at 28 Ft Boring backfilled with tamped cuttings and asphalt patched.				
65	355												
70	350												
75	345												

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FIGURE d

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-4
SITE LOCATION	**DATE(S) DRILLED** 1/29/14	**LOGGED BY** TO	**SHEET NO.** 1 of 2
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 36
DRILL RIG TYPE Mari M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Asphalt				
									Artificial Fill (Qaf)				
									Silty SAND, 7.5 YR 5/8 (Strong Brown), moist, fine to medium sand, little fine gravel, trace cobbles.				
5	415	1	1	21/30					**Clayey SAND**7.5 YR 4/6 (Strong Brown), moist, medium to coarse sand, some fine sand, few fine to coarse gravel, trace cobbles.				
		2		27/30									
									Older Alluvium (Qoal)				
10	410	3	2	27/30					**Clayey SAND**, 7.5 YR 5/8 (Strong Brown), moist, fine to medium sand, little coarse sand, some fine gravel, trace cobbles.				
									Silty SAND, 7.5 YR 5/8 (Strong Brown), moist, medium to coarse sand, some fine sand, trace fine gravel.				
		4		6/30					**Clayey SAND**, 7.5 YR 5/8 (Strong Brown), moist, medium to coarse sand, some fine sand, trace fine gravel.				
15	405	5	3	0/30					-No recovery				
		6		0/30									
	400												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-4
SITE LOCATION	**DATE(S) DRILLED** 1/29/14	**LOGGED BY** TO	**SHEET NO.** 2 of 2
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 36
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		7	4	30/30					**Sandy CLAY**, mottled 7.5 YR 4/6 (Strong Brown) and 7.5 YR 6/1 (Gray), moist, fine to medium sand, trace coarse sand, trace cobbles.				
		8		30/30									
25	395	9	5	30/30									
		10		30/30									
30	390	11	6	60/60					-Thin layer of Sandstone, wet, medium to coarse sand				
35	385	12	7	12/12					-Very hard drilling Total Depth: Refusal at 36 ft Groundwater: Encountered at 31 Ft Boring backfilled with tamped cuttings and concrete patched.				
	380												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-4A
SITE LOCATION	**DATE(S) DRILLED** 1/31/14	**LOGGED BY** TO	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Asphalt				
									Artificial Fill (Qaf)				
									Silty SAND, 7.5 YR 5/8 (Strong Brown), moist, mostly fine to medium sand, little fine gravel, trace cobbles.				
5	415		1						**Older Alluvium (Qoal)**				
									Clayey SAND7.5 YR 4/6 (Strong Brown), moist, mostly medium to coarse sand, some fine sand, few fine to coarse gravel, trace cobbles.				
10	410	1	2	19/30					**Clayey SAND**, 7.5 YR 5/8 (Strong Brown), moist, mostly fine to medium sand, few coarse sand, trace fine gravel, trace cobbles.				
		2		0/30									
15	405	3	3	30/30					-Becomes 7.5 YR 4/4 (Reddish Brown)				
		4		30/30					**Clayey Sand to Sandy Clays**, mottled 7.5 YR 5/8 (Strong Brown) and 7.5 YR 7/1 (Light Gray), moist, mostly fine grained sand, few medium to coarse sand, trace fine gravel, some silt.				
	400												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-4A
SITE LOCATION	**DATE(S) DRILLED** 1/31/14	**LOGGED BY** TO	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		5	4	30/30									
		6		30/30					-5 YR 4/4 (Reddish Brown) and 5 YR 6/1 (Gray), with white carbonate infilling.				
25	395		5										
30	390		6						Ground Water @ 31 ft.				
35	385		7						-Mottled 10 YR 6/6 (Brownish Yellow) and 10 YR 7/1 (Light Gray), abundant carbonate infilling				
	380								**Modelo Formation (TM)** **Sandstone, Siltstone, Claystone** 10YR 6/1 (Strong brown) to 7.5YR 7/1 (light gray), thinly bedded, some oxidation.				

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-4A
SITE LOCATION	**DATE(S) DRILLED** 1/31/14	**LOGGED BY** TO	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		7	8	60/60									
45	375	8	9	57/60									
50	370	9	10	59/60									
55	365	10	11	53/60									
	360												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE c

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-4A
SITE LOCATION	**DATE(S) DRILLED** 1/31/14	**LOGGED BY** TO	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 420	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
65	355								Total Depth: 60 Ft Groundwater: Encountered at 31 Ft Boring backfilled with tamped cuttings and asphalt patched.				
70	350												
75	345												
	340												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE d

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-5
SITE LOCATION	**DATE(S) DRILLED** 1/29/14	**LOGGED BY** TO	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 421	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	420								**Asphalt** **Artificial Fill (Qaf)** **Silty SAND**, 7.5 YR 4/3 (Brown), moist, mostly fine sand, few medium sand, some fine to coarse gravel, trace cobbles.				
5	415	1	1	30/30					**Older Alluvium (Qoal)** **Clayey SAND**, 7.5 YR 4/6 (Strong Brown), moist, mostly fine to medium sand, some coarse sand, some fine gravel.				
		2		28/30									
10	410	3	2	29/30					**Sandy SILT**, mottled 10 YR 7/3 (Pale Brown), and 7.5 YR 5/8 (Strong Brown), moist, mostly fine sand, trace fine gravel.				
		4		25/30					**Clayey SAND**, 7.5 YR 4/6 (Strong Brown), moist, mostly fine to medium sand, some cobbles and gravel.				
15	405	5	3	26/30					**SAND**, 7.5 YR 5/8 (Strong Brown), moist, mostly medium to coarse sand, few fine gravel, trace cobbles.				
		6		21/30					**Silty SAND**, 7.5 YR 4/6 (Yellowish Brown), moist, mostly fine sand, trace fine gravel.				

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-5
SITE LOCATION	**DATE(S) DRILLED** 1/29/14	**LOGGED BY** TO	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 421	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	400	7	4	28/30									
		8		28/30									
25		9	5	22/30									
	395												
		10		30/30									
30		11	6	60/60									
	390												
35		12	7	60/60					**Buried Paleosol**, Mottled 5YR 3/3 (Dark Reddish Brown) to 5YR 6/1 (Gray).				
	385												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-5
SITE LOCATION	**DATE(S) DRILLED** 1/29/14	**LOGGED BY** TO	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 421	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	380	13	8	47/60									
45	375	14	9	30/30					**Clayey Sand**, 5 YR 5/6 (Yellowish Brown), moist, mostly fine to medium sand, few coarse sand, trace fine gravel. Ground water @ 45 ft.				
									-Mottled 5YR 5/6 (Yellowish Brown) to 5YR 6/1 (Gray)				
50	370	15	10	22/30					**Sand**, 7.5 YR 6/2 (Strong Brown), wet, mostly medium to coarse sand, some fine sand, few fine gravel.				
									Clayey Sand, 5YR 4/4 (Reddish Brown) mottled with 7.5YR 6/2 (Pinkish Gray), wet, mostly fine to medium sand, trace coarse sand, trace fine gravel.				
									Clayey Sand, 5YR 4/4 (Reddish Brown), wet, mostly fine sand, few medium sand.				
55	365	16	11	50/60					**Sand** 5YR 5/6 (Yellowish Brown), wet, mostly medium to coarse sand, some fine sand, few fine gravel.				
									Modelo Formation (Tm) **Sandy Claystone**5YR 4/4 (Reddish Brown), wet, mostly fine sand, some fines.				

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FIGURE c

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 2/13/15

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation	**PROJECT NUMBER** LA-1183		**BORING** B-5
SITE LOCATION	**DATE(S) DRILLED** 1/29/14	**LOGGED BY** TO	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 6"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE Mari M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 421	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	360								Total Depth: 60 Ft Groundwater: Encountered at 45 Ft Boring backfilled with tamped cuttings and asphalt patched.				
65	355												
70	350												
75	345												

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FIGURE d

LOG OF CORE BORING

PROJECT NAME Champion Supplemental Fault Trench Borings	**PROJECT NUMBER** LA1183C	**BORING** B-6	
SITE LOCATION	**DATE(S) DRILLED** 10/1/2014	**LOGGED BY** K.Neill	**SHEET NO.** 1 of 2
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY**	**TOTAL DEPTH DRILLED (feet)** 25
DRILL RIG TYPE CME 75	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 432	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Concrete approximatly 6 in thick				
	430								**Artificial Fill (Qaf)**				
									SAND with SILT 7.5YR 4/4 Brown, moist, mostly medium to fine SAND, some coarse to fine GRAVEL, trace micas and FE oxides.				
									OLDER ALLUVIUM (Qoal (u))				
		1	1	24/24					**SAND with SILT** 7.5YR 5/6 Strong Brown, moist, mostly mostly fine SAND, few medium SAND, trace coarse SAND and fine GRAVELS.				
5		2		30/30									
	425								**SAND** 10YR 4/6 Strong Brown, moist, mostly medium to fine SAND, interbedded clay lenses at 7.5ft.				
		3		30/30					-interbedded clay lenses				
									OLDER ALLUVIUM (Qoal (l))				
									SAND with SILT7.5YR 4/4 Brown, moist, mostly fine SAND few medium SAND, trace coarse SAND, section fining with depth.				
10		4	2	30/30					**SAND with CLAY** 7.5 4/6 Strong Brown, moist, mostly fine to medium SAND, few coarse SAND, trace coarse to fine GRAVELS, interbedded clay lenses.				
	420								-Gravel Lense				
		5		30/30					**SAND** 7.5YR 4/6 Strong Brown, moist, mostly fine to medium SAND, some coarse SAND, few fine GRAVELS, massive bedded, micacous.				
									SAND with CLAY 7.5YR 4/6 Strong Brown, moist, mostly fine SAND, few medium SAND, trace coarse SAND and fine GRAVELS and COBBLES.				
15		6	3	30/30									
	415								-Higher CLAY content, no GRAVELS or COBBLES.				
		7		34/30					**Silty SAND**7.5YR 4/4 Brown, moist, mostly fine SAND, interbedded clay lenses, gleying.				

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Irvine, CA 92618

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FIGURE a

GDC_ROCK_CORE_ENG LA1183C CHAMPION SUPPLEMENTAL BORINGS B-6_B-8.GPJ ROCK2.GDT 2/13/15

LOG OF CORE BORING

PROJECT NAME Champion Supplemental Fault Trench Borings	**PROJECT NUMBER** LA1183C		**BORING** B-6
SITE LOCATION	**DATE(S) DRILLED** 10/1/2014	**LOGGED BY** K.Neill	**SHEET NO.** 2 of 2
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY**	**TOTAL DEPTH DRILLED (feet)** 25
DRILL RIG TYPE CME 75	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 432	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		8	4	32/30					**SAND with Clay** 7.5YR 4/4 Strong Brown, moist. mostly medium to fine SAND, clay nodules.				
	410								**Silty SAND** 7.5YR 5/6 Strong Brown, moist, mostly fine to medium SAND, few coarse SAND, trace fine to coarse GRAVELS.				
		9		30/30									
25		10		31/30					Total Depth: 25 Ft Groundwater: No encountered Boring backfilled with tamped cuttings and concrete patch.				
	405												
30													
	400												
35													
	395												

GDC_ROCK_CORE_ENG LA1183C CHAMPION SUPPLEMENTAL BORINGS B-6_B-8.GPJ ROCK2.GDT 2/13/15

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32 Mauchly, Suite B
Irvine, CA 92618

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Champion Supplemental Fault Trench Borings	**PROJECT NUMBER** LA1183C	**BORING** B-7	
SITE LOCATION	**DATE(S) DRILLED** 10/2/2014	**LOGGED BY** K.Neill	**SHEET NO.** 1 of 2
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY**	**TOTAL DEPTH DRILLED (feet)** 25
DRILL RIG TYPE CME 75	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 431	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	430								Concrete approximately 6 in thick **Artificial Fill (Qaf)** **Clayey SAND** 7.5YR 3/2 Dark Brown, moist, mostly fine SAND, some medium SAND, trace fine GRAVEL.				
		1	1	26/24					**Sand (Qs)** **Clayey Silty SAND** 7.5YR 4/6 Strong Brown, moist, mostly fine SAND, few medium SAND, trace coarse SAND.				
5	425	2		30/30					**SAND with CLAY** 7.5YR 4/4 Strong Brown, moist, mostly fine to medium SAND, few coarse SAND, soil development.				
		3		30/30					**Sitly SAND** 7.5YR 4/4 Brown, moist, mostly medium to fine SAND, some coarse SAND and GRAVEL. Massive, finnning down section to SANDS.				
10	420	4	2	30/30									
		5		30/30					**Silty SAND** 7.5YR 4/6 Strong Brown, moist, mostly fine SAND, few medium SAND, trace coarse SAND. **SAND with SILT** 5YR 4/4 Reddish Brown, moist, loose, mostly fine to medium SAND, sub rounded to rounded grains, minor bedding structure, micas.				
15	415	6	3	30/30					**SAND with SILT** 7.5YR 4/6 Strong Brown, moist mostly fine SAND, few medium SAND, trace fine GRAVELS, massive, micacous. **Silty SAND** 7.5YR Reddish Brown, mostly fine SAND, few fine GRAVELS and medium SAND, massive bedded, micas.				
		7		30/30					**SAND** 7.5YR 4/5 Strong Brown, moist, mostly medium SAND, some coarse to fine SAND, micacous.				

GDC_ROCK_CORE_ENG LA1183C CHAMPION SUPPLEMENTAL BORINGS B-6_B-8.GPJ ROCK2.GDT 2/13/15

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32 Mauchly, Suite B
Irvine, CA 92618

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Champion Supplemental Fault Trench Borings	**PROJECT NUMBER** LA1183C	**BORING** B-7	
SITE LOCATION	**DATE(S) DRILLED** 10/2/2014	**LOGGED BY** K.Neill	**SHEET NO.** 2 of 2
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY**	**TOTAL DEPTH DRILLED (feet)** 25
DRILL RIG TYPE CME 75	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 431	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
	410	8	4	30/30					**GRAVELS** Coarse to fine GRAVEL, sub angular to angular. **OLDER ALLUVIUM (Qoal(u))** **Clayey SAND**, 7.5YR 5/6 Strong Brown, moist, mostly fine SAND, some medium to coarse SAND, few fine GRAVEL, grussification, micas, interbedded black clay laminations.				
		9		30/30									
25	405	10		30/30					Total Depth: 25 Ft Groundwater: No encountered Boring backfilled with tamped cuttings and concrete patch.				
30	400												
35	395												

GDC_ROCK_CORE_ENG LA1183C CHAMPION SUPPLEMENTAL BORINGS B-6_B-8.GPJ ROCK2.GDT 2/13/15

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32 Mauchly, Suite B
Irvine, CA 92618

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Champion Supplemental Fault Trench Borings	**PROJECT NUMBER** LA1183C	**BORING** B-8	
SITE LOCATION	**DATE(S) DRILLED** 10/2/2014	**LOGGED BY** K.Neill	**SHEET NO.** 1 of 2
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY**	**TOTAL DEPTH DRILLED (feet)** 25
DRILL RIG TYPE CME 75	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 424	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Concrete approximatly 6 in thick				
									Artificial Fill (Qaf) **Clayey SAND** 7.5YR 4/6 Strong Brown, moist, mostly medium to fine SAND, few fine GRAVEL.				
	420								**Sand (Qs)** **Clayey SAND**7.5YR 5/6 Strong Brown, moist. mostly fine to medium SAND, few coarse SAND, micacous, roots.				
5		1	1	24/30									
									Sand with CLAY7.5YR 4/4 Brown, moist, mostly fine SAND, trace medium SAND.				
		2		24/30									
	415								**GRAVEL** mostly coarse GRAVEL, few fine GRAVEL, Grussification of granite clasts.				
10		3	2	30/30									
		4		30/30					**Silty SAND**7.5YR 4/4 Brown, moist, fine to medium SAND, few coarse SAND, trace fine GRAVEL, interbedded CLAY lenses.				
	410												
15		5	3	28/30					**Silty SAND**10YR 5/6 Yellowish Brown, moist mostly fine SAND and trace medium SAND.				
		6		26/30					**Clayey, Silty, SAND** 7.5YR 4/6 Strong Brown, moist, mostly fine to medium SAND, trace coarse SAND. Large quartzite clasts, gleying in soild maxtrix.				
	405												

GDC_ROCK_CORE_ENG LA1183C CHAMPION SUPPLEMENTAL BORINGS B-6_B-8.GPJ ROCK2.GDT 2/13/15

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Irvine, CA 92618

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Champion Supplemental Fault Trench Borings	**PROJECT NUMBER** LA1183C	**BORING** B-8	
SITE LOCATION	**DATE(S) DRILLED** 10/2/2014	**LOGGED BY** K.Neill	**SHEET NO.** 2 of 2
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY**	**TOTAL DEPTH DRILLED (feet)** 25
DRILL RIG TYPE CME 75	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 424	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
		7	4	24/30					**Silty SAND** 5YR 4/4 Reddish Brown, moist, medium dense, mostly medium to fine SAND, some coarse SAND, few large GRAVELS, interbedded at 21.0 with black clay lenses.				
									Clayed SAND 7.5YR 4/6 Strong Brown, moist, mostly fine SAND, interbedded black clay lenses.				
		8		27/30					**Silty SAND** 7.5YR 4/6 Strong Brown, moist, mostly medium to fine SAND, some coarse SAND, few large GRAVELS.				
	400												
25									Total Depth: 25 Ft Groundwater: No encountered Boring backfilled with tamped cuttings and concrete patch.				
	395												
30													
	390												
35													
	385												

GDC_ROCK_CORE_ENG LA1183C CHAMPION SUPPLEMENTAL BORINGS B-6_B-8.GPJ ROCK2.GDT 2/13/15

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D	**BORING** BA-1	
SITE LOCATION	**DATE(S) DRILLED** 11/19/2014	**LOGGED BY** KN	**SHEET NO.** 1 of 2
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 30
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 428	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Concrete, 3"				
									ARTIFICIAL FILL (Qaf)				
									Silty Clayey SAND 7.5YR 4/4 (dark brown); moist; mostly fine to medium sand; few fine to coarse gravel, subrounded to subangular clasts; micaceous; roots; white evaporate layer.				
	425								**ORGANIC HORIZON (Qor)**				
									OLDER ALLUVIUM (Qoal (u))				
5									**Poorly Graded Sand with Clay** 7.5YR 5/4 (Strong Brown); moist, mostly fine to medium sand; some coarse sand; some fines; micaceous.				
									Clayey Sand 7.5YR 5/6 (Strong Brown); moist; mostly fine to medium sand; few coarse sand; trace fine gravels; roots.				
									-2" gravel layer				
									- perched groundwater.				
	420								-Conglomerate lens above 8 ft contact.				
									Silty Sand 7.5YR 5/6 (Brown); moist; mostly medium to fine sand; few fine to coarse gravel lenses; micaceous,				
10									N55E, vertical erosion by sand, irregular surface; sub rounded to rounded clasts 1/8 to 1/4 in.				
									Silty Sand 7.5YR 5/8 (strong brown); moist; mostly fine to medium sand; few coarse sand; few fines; trace fine and coarse gravel.				
	415								- Interbeds of clayey sand and silty clay with some sand.				
									- 9" thick horizontal sand bed.				
									- Gravel 4" thick lens.				
15									Some fine and coarse gravel.				
									Clay layers in bucket auger cuttings ~ 1/8 in thick.				
									North side 1/4" root; offset bed; gray clayey bed; 6" carbonate nodules, well developed gleying.				
									- Fracture.				
	410								**OLDER ALLUVIUM (Qoal (l))**				
									Silty Clayey SAND 7.5YR 5/4 (brown); moist; mostly fine to medium sand, few coarse sand; clay films on gravel; clay lenses in cuttings.				

GDC_ROCK_CORE_ENG LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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32 Mauchly, Suite B
Irvine, CA 92618

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D		**BORING** BA-1
SITE LOCATION	**DATE(S) DRILLED** 11/19/2014	**LOGGED BY** KN	**SHEET NO.** 2 of 2
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 30
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 428	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									- 2 feet of clay fractures, massive.				
	405								- Increase in medium sand. - Soil development.				
25													
	400								**Clayey Sand** 7.5YR 5/6 (strong brown); moist; mostly fine sand; some medium sand; clay lenses, 7.5YR 4/1 (dark gray); clay films on grains; soil development.				
30									Total Depth: 30 Feet bgs No groundwater				
	395												
35													
	390												

GDC_ROCK_CORE_ENG LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D	**BORING** BA-2	
SITE LOCATION	**DATE(S) DRILLED** 11/19/2014	**LOGGED BY** KN	**SHEET NO.** 1 of 2
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 36.5
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 428	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Concrete, 4".				
									ARTIFICIAL FILL (Qaf)				
									Lean Clay with Sand 7.5YR 5/4 (strong brown); moist; some fine to medium sand.				
	425												
5									- Cobble lense; hard drilling.				
									SAND (Qs)				
	420								**Silty Sand** 7.5YR 5/8 (strong brown); mostly medium to coarse sand; some fine sand; micaceous; massive. - Gravel lense; large cobble; horizontal bedding channel fill, interbedded with red sand lenses.				
10									**Clayey Sand** 7.5YR 4/6 (strong brown); mostly medium to coarse sand; some fine sand; roots. - Horizontal bed fill, 2" gravel.				
	415								**Silty Sand** 7.5YR 4/6 (strong brown); moist; mostly fine to medium sand; some coarse sand; micaceous.				
15									**Poorly Graded Sand** 7.5 YR 6/8 (reddish yellow); moist; mostly medium sand; few coarse sand. - Few gravels, subrounded to subangular. Angular horizontal sandy clay with krotovinas. Massive bedding to 20.5 feet. Increase in clayey sand lenses.				
	410								- Increase in gravels and cobbles on southwest side of boring.				

GDC_ROCK_CORE_ENG LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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32 Mauchly, Suite B
Irvine, CA 92618

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FIGURE a

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D	**BORING** BA-2	
SITE LOCATION	**DATE(S) DRILLED** 11/19/2014	**LOGGED BY** KN	**SHEET NO.** 2 of 2
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 36.5
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE PILE TOP ELEVATION (feet)** 428	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									-- Contact N56°E, 18°S.				
									OLDER ALLUVIUM (Qoal (u))				
									Silty Clayey Sand 7.5YR 4/4 (brown); moist; mostly fine to medium sand; few coarse sand; gleying in section.				
	405								**Clayey Sand** 7.5YR 4/3 (brown); moist; mostly fine sand; few medium to coarse sand.				
25									-Gleying interbed in section.				
	400								- Gley lens interbedded on massive unit.				
30													
	395												
35									- Perched groundwater.				
	390								Total Depth: 36.5 Feet bgs Groundwater at 36.5 feet bgs				

GDC_ROCK_CORE_ENG LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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32 Mauchly, Suite B
Irvine, CA 92618

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D	**BORING** BA-3	
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 1/19/2015 to 1/20/2015	**LOGGED BY** KN	**SHEET NO.** 1 of 5
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 44
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH Not Measured		**APPROXIMATE SURFACE ELEVATION (feet)** 430	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									Concrete, 3"				
									Conducer Casing - Not logged in field to 30 inches below ground surface.				
									ARTIFICIAL FILL (Qaf)				
									Silty Clayey SAND 7.5YR 4/4 (dark brown); moist; mostly fine to medium sand; few fine to coarse gravel.				
									ORGANIC HORIZON (Qor)				
									OLD ALLUVIUM (Qoal (u))				
									Sandy Clay 7.5YR 5/6 (Strong Brown); mostly fine sand; few medium sand; trace coarse sand; trace fine to coarse gravels; moist; dense; roots; glaying,7.5YR black minor, vertical, massive; micaceous; subrounded clasts.				
									- soil development.				
5	425								- Interbeded sand lense, 10YR 5/6 (Yellowish Brown), sub-rounded clasts, krotovina. Soil development at 6 ft contact.				
									-**Clayey Silty Sand** 7.5YR 6/6 (Reddish Yellow); moist; mostly fine sand; few medium sand; roots; trace fine gravel; magnesium oxide staining.				
									OLD ALLUVIUM (Qoal (l))				
									Buried paleosol, minor clay films along peds.				
									Sandy Clay 7.5YR 4/4 (Brown); moist; trace roots.				
									Fault is truncated by the over lying clayey Sand. -roots along fault surface				
									Silty Sand 10YR 5/6 (Yellowish Brown); moist; mostly fine sand; few medium sand; trace gravels.				
									Sand with Gravel 10YR 5/4 (Yellowish Brown); moist; mostly fine sand; few fine to coarse gravel, rounded to				

GDC_ROCK_CORE_ENG_REV LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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32 Mauchly, Suite B
Irvine, CA 92618

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE a

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D	**BORING** BA-3	
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 1/19/2015 to 1/20/2015	**LOGGED BY** KN	**SHEET NO.** 2 of 5
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 44
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH Not Measured		**APPROXIMATE SURFACE ELEVATION (feet)** 430	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	ROCK CORE: BOX NO.	ROCK CORE: RECOVERY, %	ROCK CORE: FRAC. FREQ.	ROCK CORE: R.Q.D., %	ROCK CORE: FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
15	415								subrounded clats; gravel lens at base. **Silty Sand** 7.5YR 5/6 (Strong Brown); moist; mostly fine sand; micaceous; roots; magnesium oxide staining. Coarse Sand lens off-set approximately 6-inches along fault. - 6" of Basal gravels and cobbles 1/8" - 6", subrounded to subangular, grussification. Fault = N76E, 74S **Silty Sand** 10YR 5/6 (Yellowish Brown); moist; mostly fine to medium sand; few coarse sand; trace fine gravel, roots along fracture. Laminated bedding ~1/8" - 1/4" thick, subrounded to rounded clasts. From 11 to 13 feet laminated Sand beds off set approximately 1.8 feet along the fault. Iron oxide staining within the sand beds. Fault appears to be a growth fault given the difference in off-set at 8 feet and at 11 feet. - Increase in coarse sand and gravel. - 10YR 5/6 (Yellow Brown); moist; mostly fine sand. **Silty Sand** unconformity; 7.5YR 4/4 (Brown); moist; mostly fine to medium sand; trace sand lenses with fine gravel; roots in sand lenses; magnesium oxide staining. **Silty Sand with Gravel** 10YR 6/6 (Brownish Yellow); moist; mostly medium sand; few fine to coarse sand; trace fine to coarse gravel; roots; micas; grussification; subrounded to rounded clasts; horizontal bedding 1/4" - 1/2" thick, 7.5 YR 5/5 (strong brown). **Silty Sand** 7.5YR 4/6 (Strong Brown); moist; mostly fine sand; trace course sand, fine gravel; fracture gleying. **Clayey Silty Sand** 7.5YR 4/6 (Strong Brown); moist; mostly fine sand; some medium sand; few coarse sand; trace gravel; massive; grussification clasts; roots along glaying, 7.5YR 2.5/1 (black); magnesium oxide staining, 7.5YR 6/2 (pinkish gray); increased sand along gleying zones; basalt and quartzite gravels. 16.8 ft- fine to coarse gravel along the base of the fault. From 17 to 19 feet: Fractures observed with gleying along fracture surface. - approximate attitude of fracture = N56°E 75°S 6-inch thick silty sand lens. Approximately 6 to 12 long				

GDC_ROCK_CORE_ENG_REV LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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Irvine, CA 92618

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FIGURE b

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D		**BORING** BA-3
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 1/19/2015 to 1/20/2015	**LOGGED BY** KN	**SHEET NO.** 3 of 5
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 44
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH Not Measured		**APPROXIMATE SURFACE ELEVATION (feet)** 430	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
									fractures below the base of silty sand lens with manganese oxide staining along fracture surface.				
									- Increase in clay content.				
									Silty Sand 7.5YR 5/6 (Strong Brown); moist; mostly fine to medium sand; few coarse sand, gravels; subrounded to rounded clasts; grussification; roots; Gleying 7.5YR 2.5/1 (black), 7.5YR 6/2 (pinkish gray); increase fine sand along gleying zones.				
									Silty Sand Lens - undulatory contact along the upper and lower surface. Coarse sand and fine to coarse gravel along the base fining upwards. Gleying along fracture surfaces which extend through the silty sand lens.				
25	405								**Clayey Silty Sand** 7.5YR 4/6 (Strong Brown); moist; mostly fine sand; few medium sand; trace coarse sand; fine gravel; gleying root zones; massive - Increase in gravel, subrounded to rounded; grussification; trace sand lenses. - Minor soil development; magnesium oxide zone; no gravel; massive unit - Increase in gleying zone.				

GDC_ROCK_CORE_ENG_REV LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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FIGURE c

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D		**BORING** BA-3
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 1/19/2015 to 1/20/2015	**LOGGED BY** KN	**SHEET NO.** 4 of 5
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 44
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH Not Measured		**APPROXIMATE SURFACE ELEVATION (feet)** 430	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
35	395								**Clayey Sand with Gravel** 7.5YR 5/6 (Strong Brown); moist; mostly fine to medium sand; some coarse sand; few fine to coarse gravel; gleying zone. No observed gleying to the bottom of boring. **Clayey Silty Sand** 7.5YR 4/6 (Strong Brown); moist; mostly fine sand; few medium sand; trace coarse sand; and fine gravel; gleying root zones; massive Groundwater, no down-hole logging occured below this depth.				

GDC_ROCK_CORE_ENG_REV LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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FIGURE d

LOG OF CORE BORING

PROJECT NAME Champion Site	**PROJECT NUMBER** LA1183D	**BORING** BA-3	
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 1/19/2015 to 1/20/2015	**LOGGED BY** KN	**SHEET NO.** 5 of 5
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 44
DRILL RIG TYPE Calweld 42 LS	**DRILLED BY** Tri-Valley	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH Not Measured		**APPROXIMATE SURFACE ELEVATION (feet)** 430	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	ROCK CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, FEET/HOUR	FIELD NOTES
45	385								Total Depth 44 Feet bgs Groudwater at 36 feet				

GDC_ROCK_CORE_ENG_REV LA-1183D BUCKET AUGER BORINGS.GPJ ROCK2.GDT 2/13/15

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FIGURE e

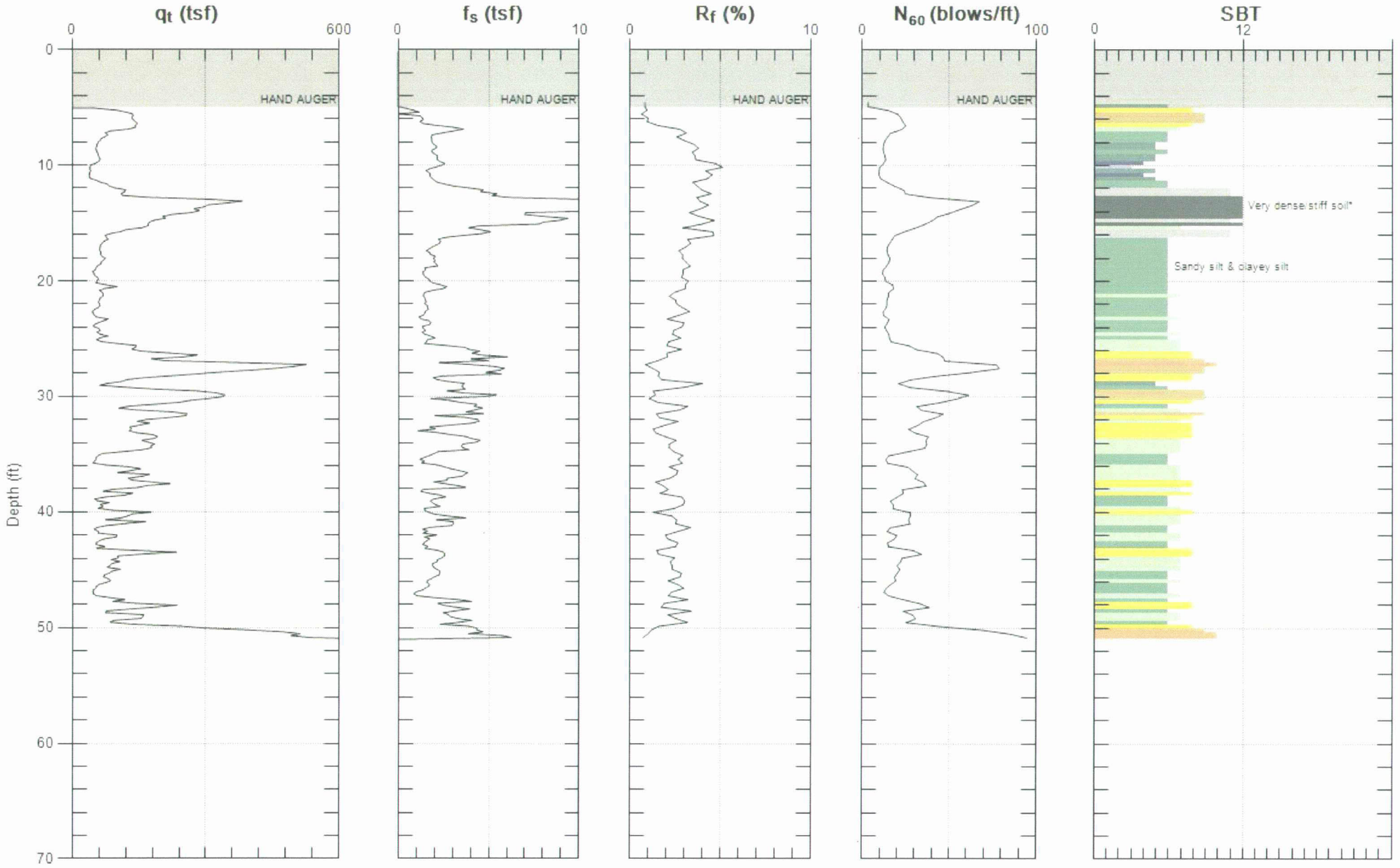
Figure A - 1

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-1

Engineer: S.KOLTHOFF
Date: 1/21/2014 07:17



Max. Depth: 51.181 (ft)
Avg. Interval: 0.328 (ft)

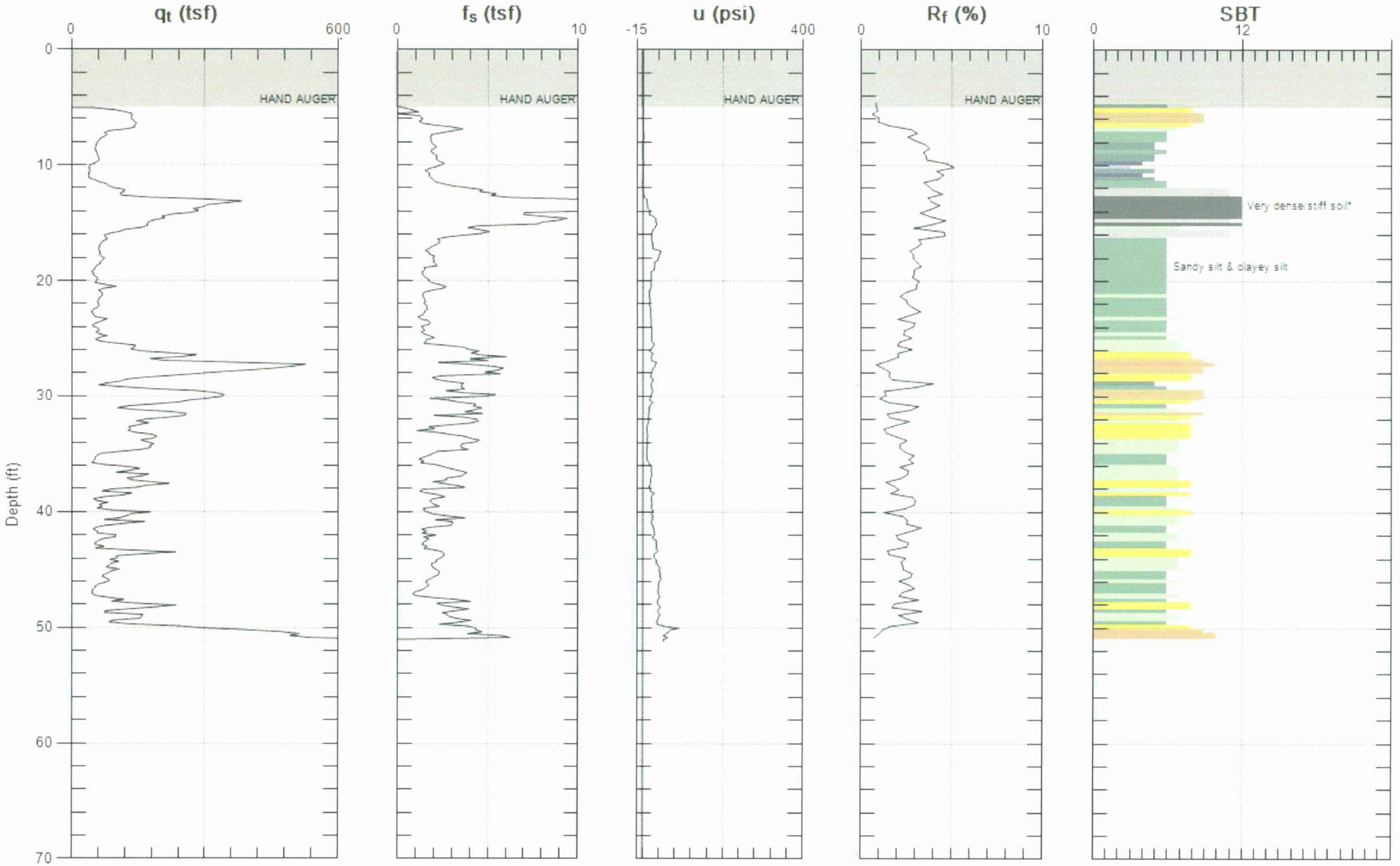
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 2

GREGG **GROUP DELTA**

Site: YUCCA CHAMPION
Sounding: CPT-1

Engineer: S.KOLTHOFF
Date: 1/21/2014 07:17



Max. Depth: 51.181 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

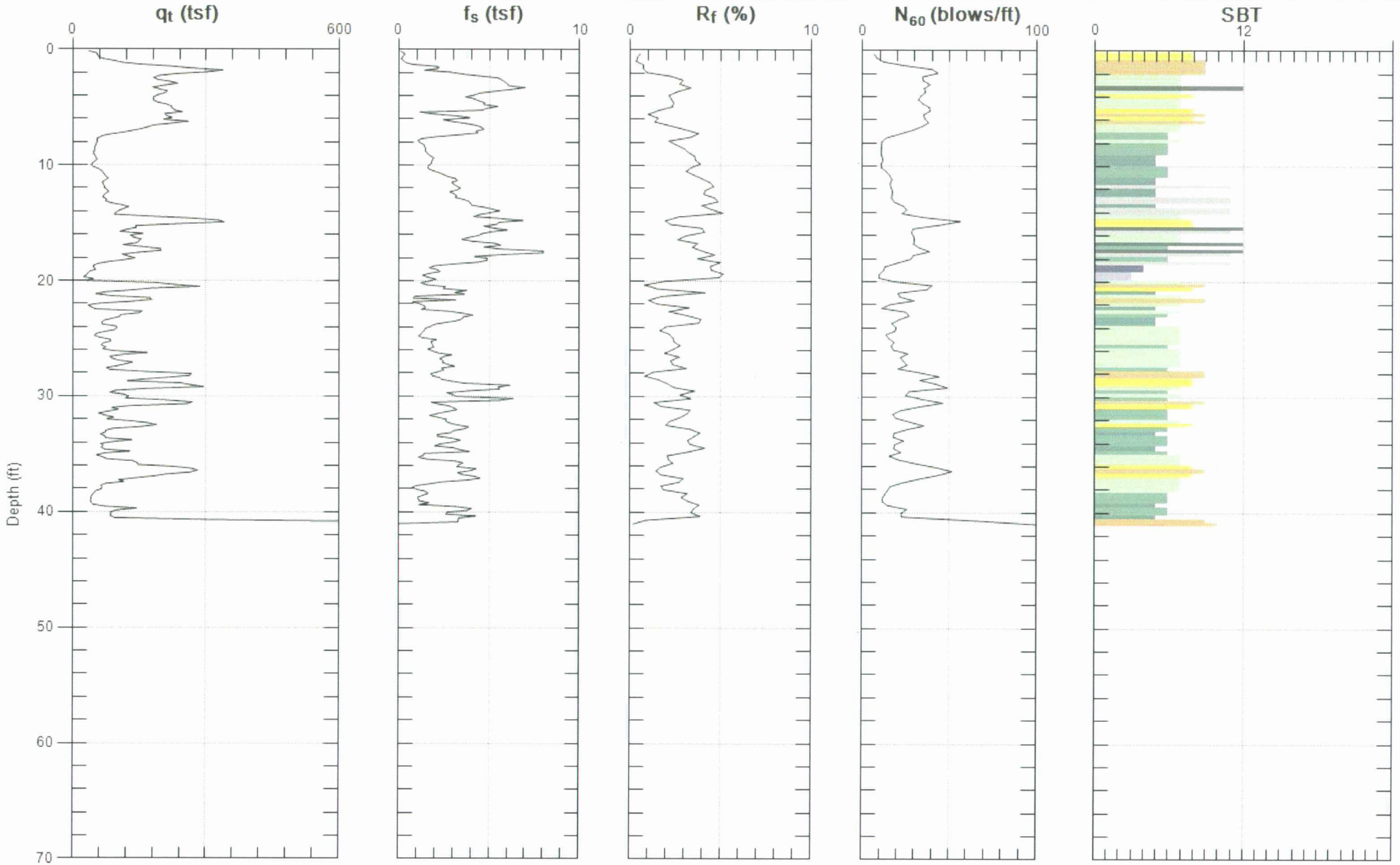
Figure A - 3

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-2

Engineer: S.KOLTHOFF
Date: 1/21/2014 08:52



Max. Depth: 41.175 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

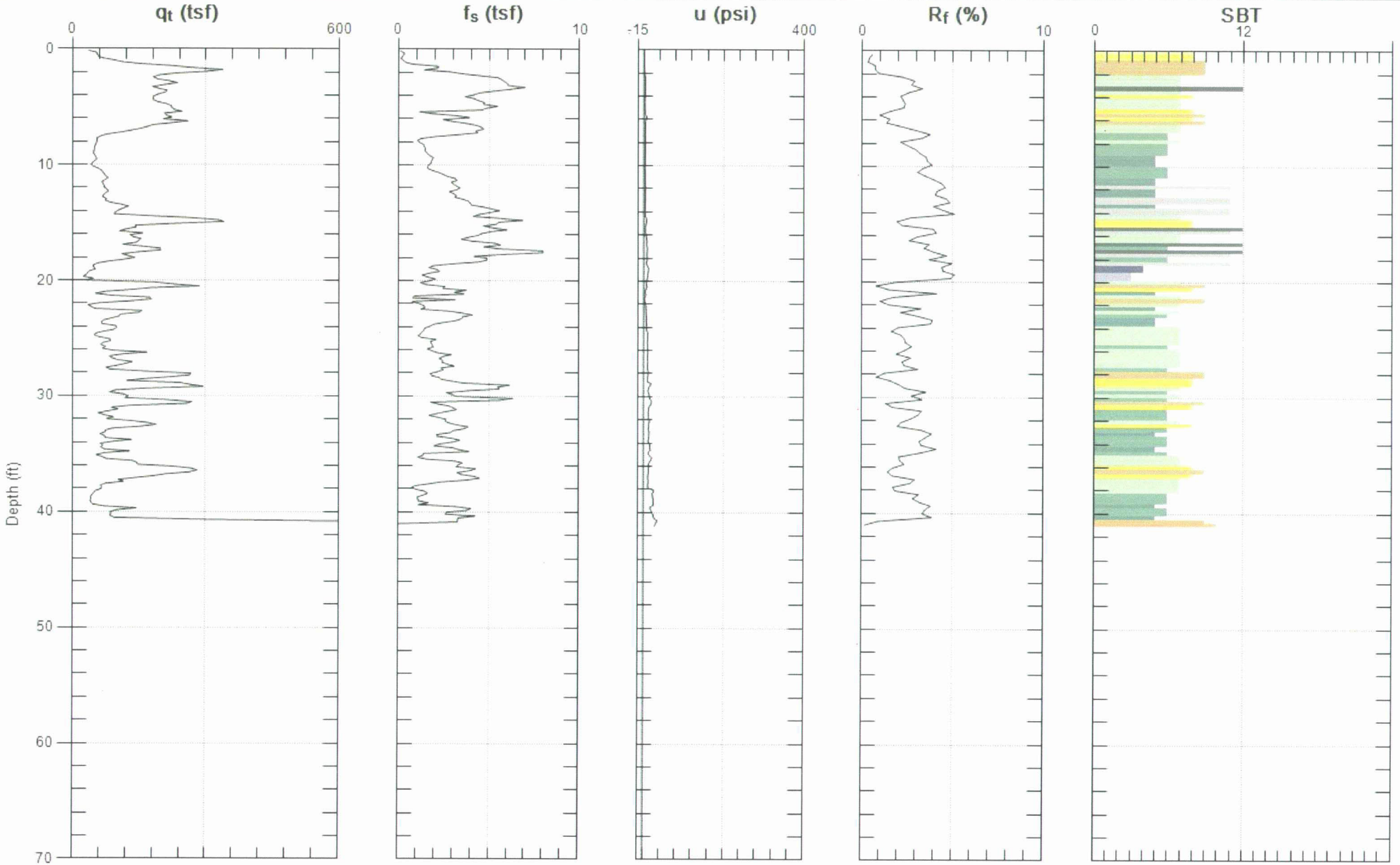
Figure A - 4

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-2

Engineer: S.KOLTHOFF
Date: 1/21/2014 08:52



Max. Depth: 41.175 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

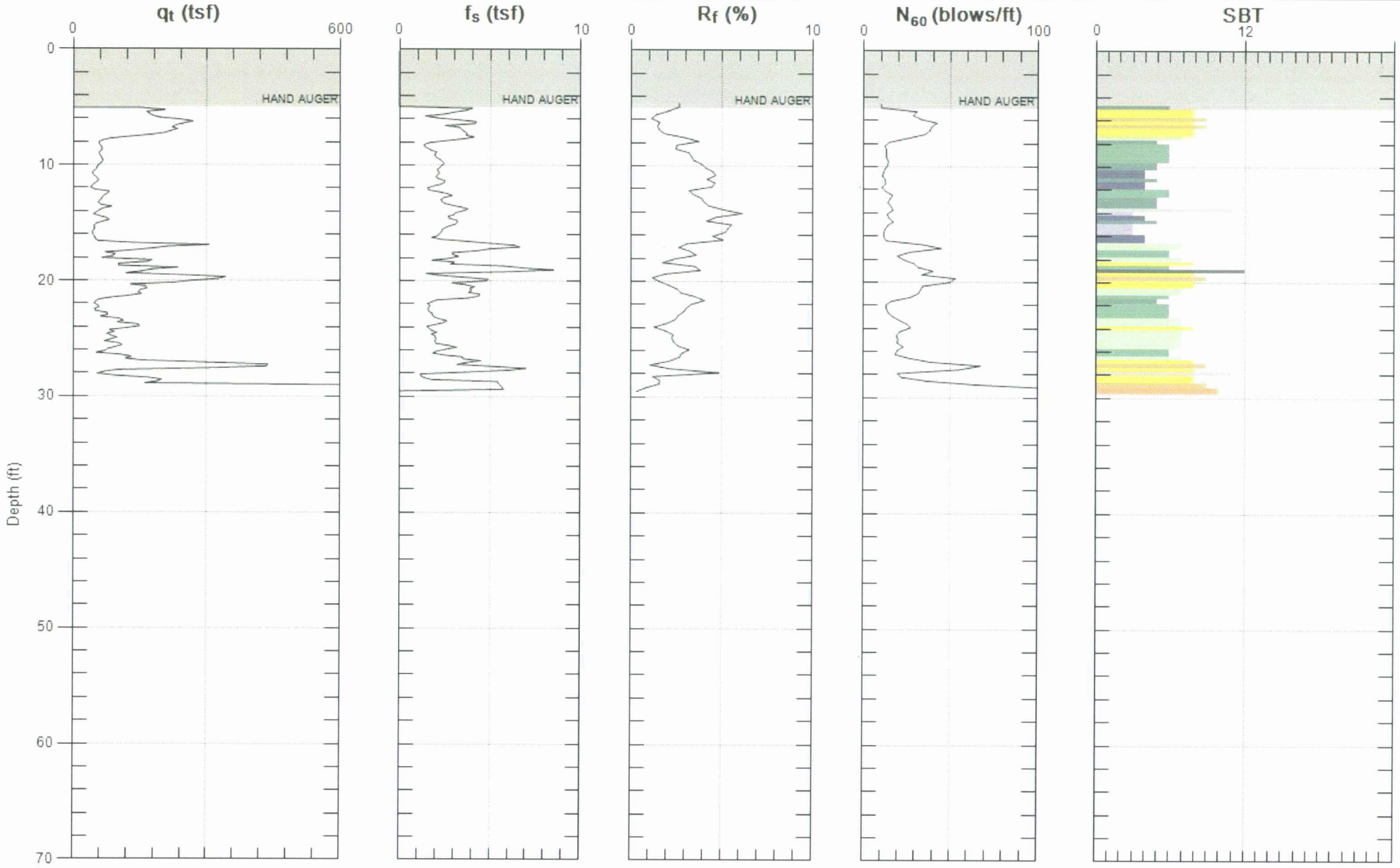
Figure A - 5

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-3

Engineer: S.KOLTHOFF
Date: 1/21/2014 09:18



Max. Depth: 29.692 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

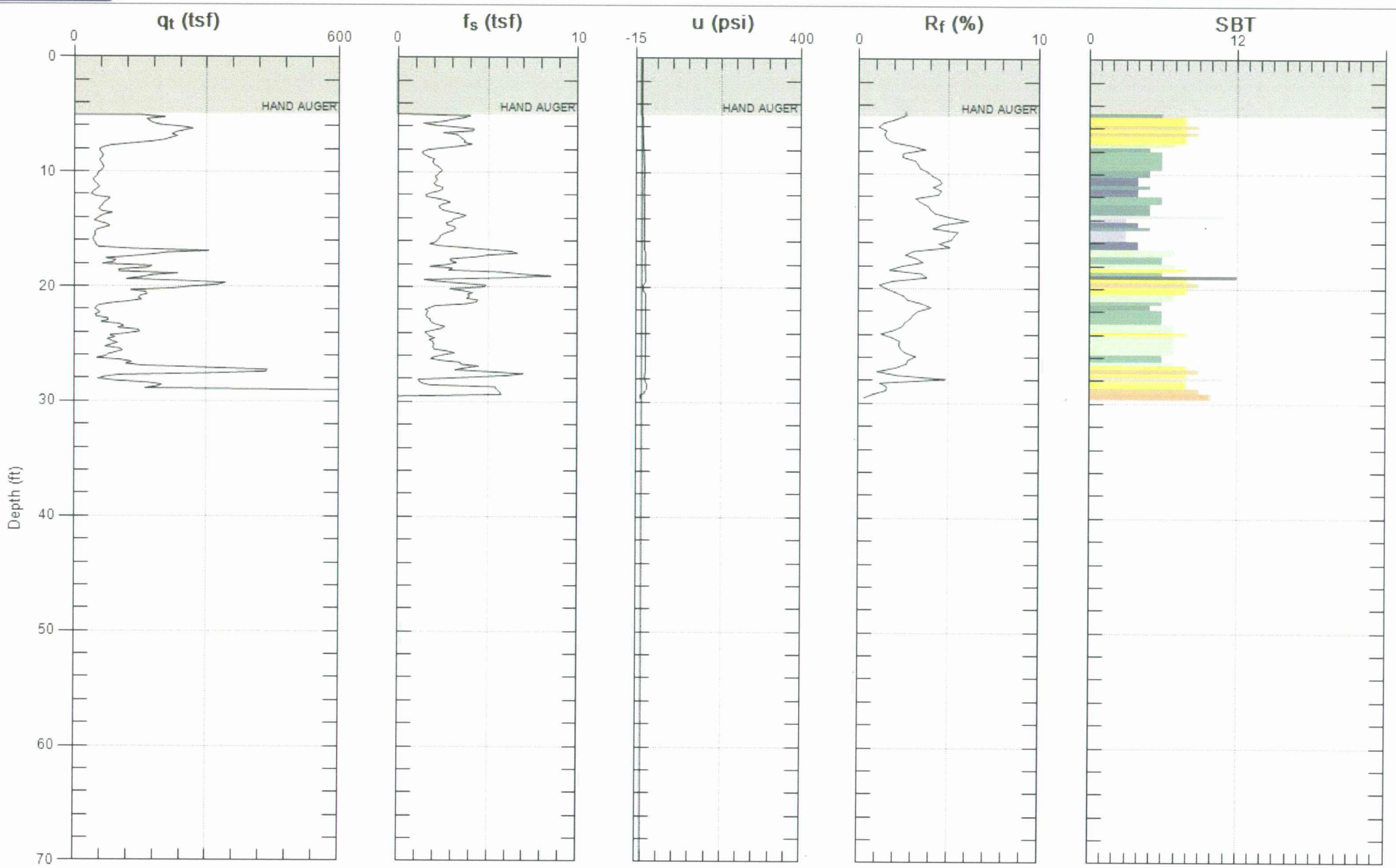
Figure A - 6

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-3

Engineer: S.KOLTHOFF
Date: 1/21/2014 09:18



Max. Depth: 29.692 (ft)
Avg. Interval: 0.328 (ft)

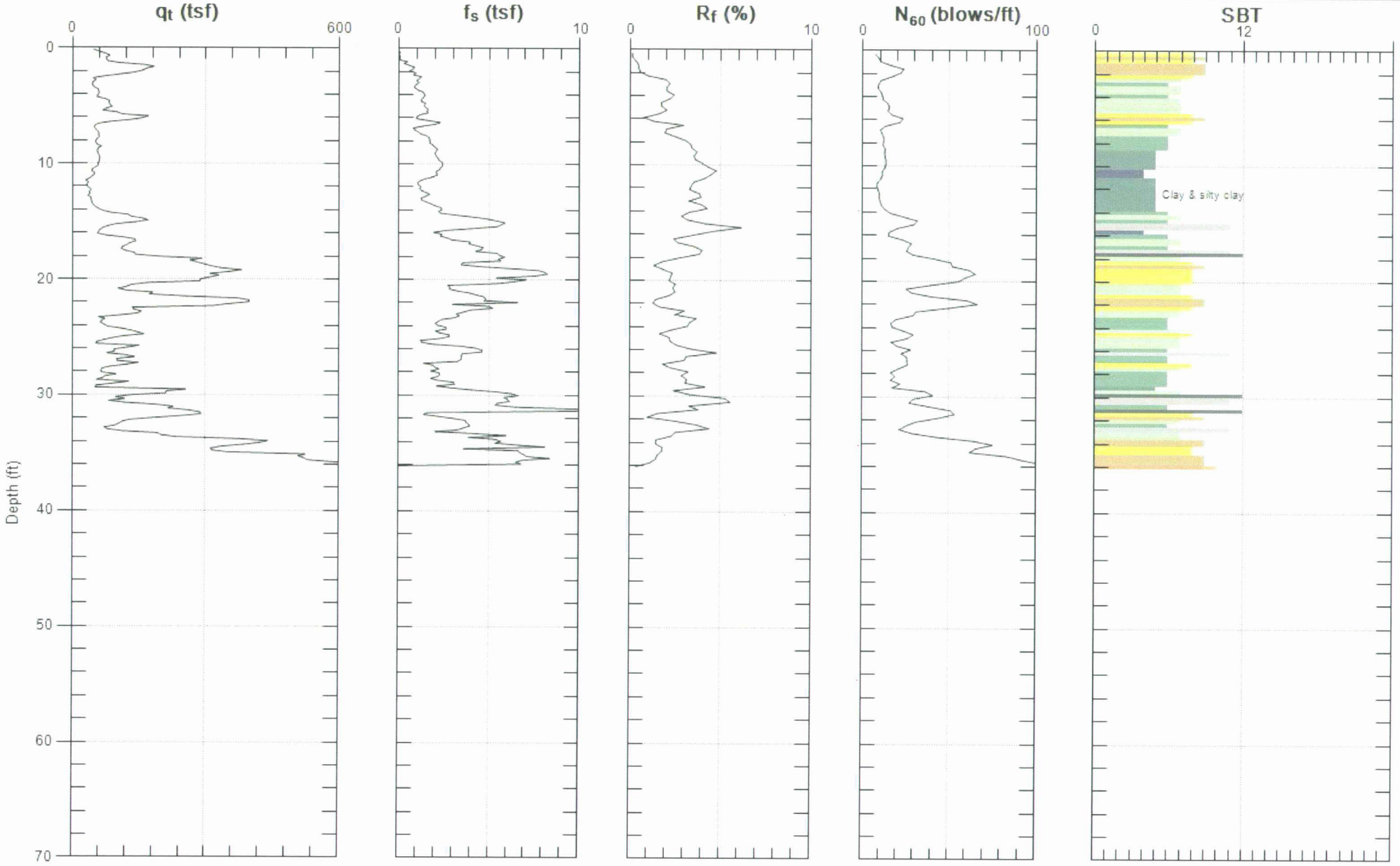
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 7

GREGG **GROUP DELTA**

Site: YUCCA CHAMPION
Sounding: CPT-4

Engineer: S.KOLTHOFF
Date: 1/21/2014 10:02



Max. Depth: 36.253 (ft)
Avg. Interval: 0.328 (ft)

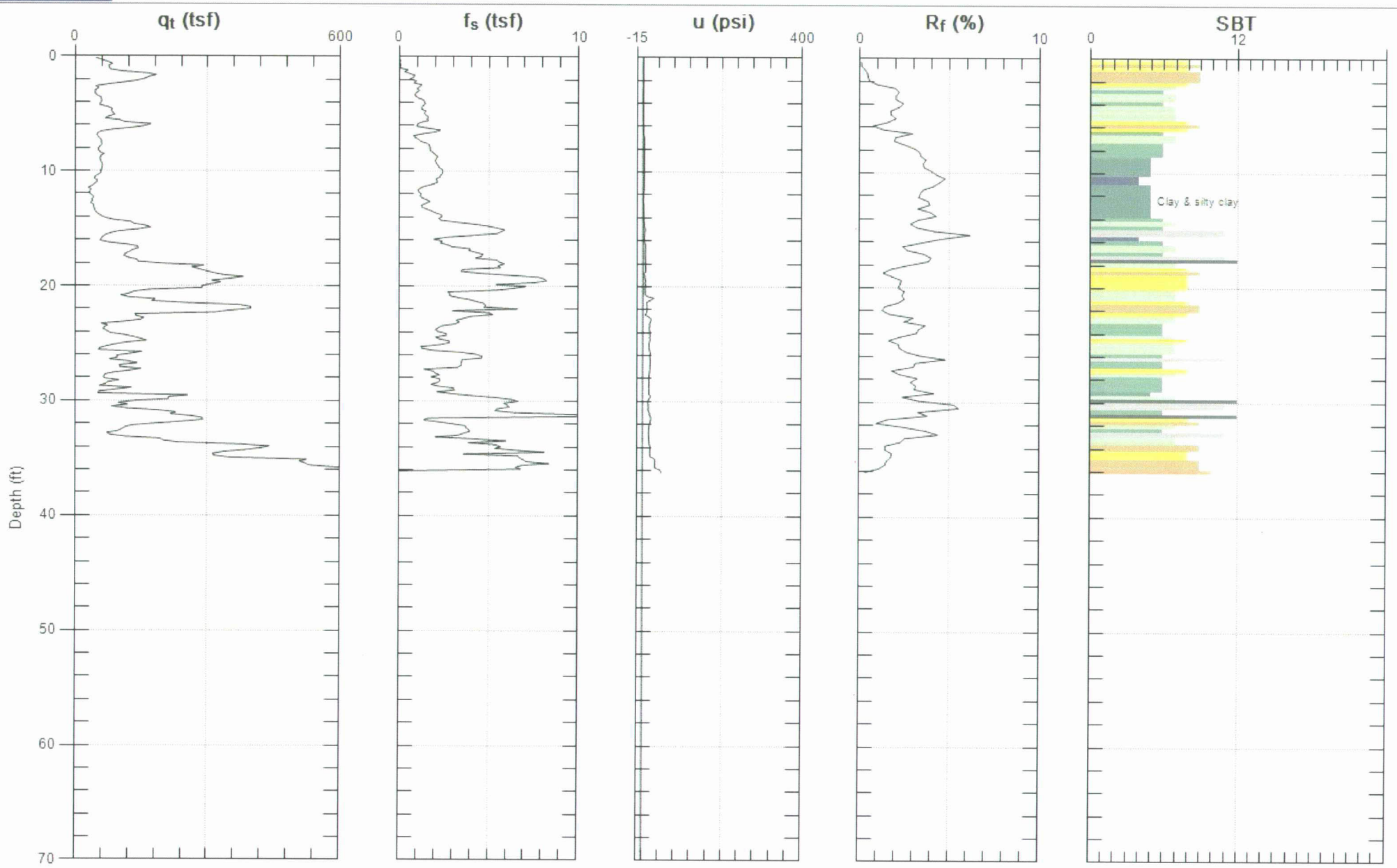
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 8

GREGG **GROUP DELTA**

Site: YUCCA CHAMPION
Sounding: CPT-4

Engineer: S.KOLTHOFF
Date: 1/21/2014 10:02



Max. Depth: 36.253 (ft)
Avg. Interval: 0.328 (ft)

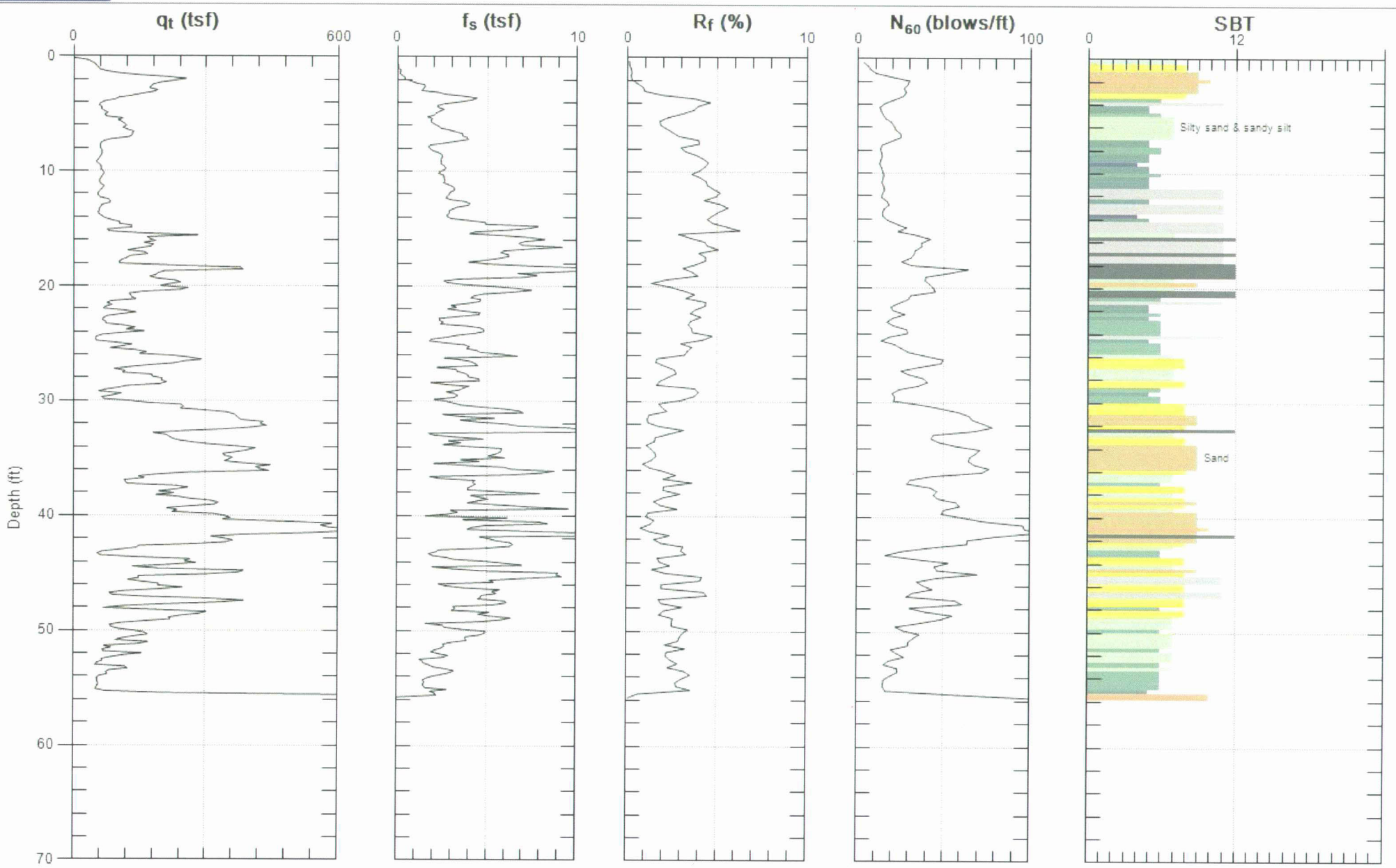
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 9

GREGG GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-5

Engineer: S.KOLTHOFF
Date: 1/21/2014 10:27



Max. Depth: 55.938 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

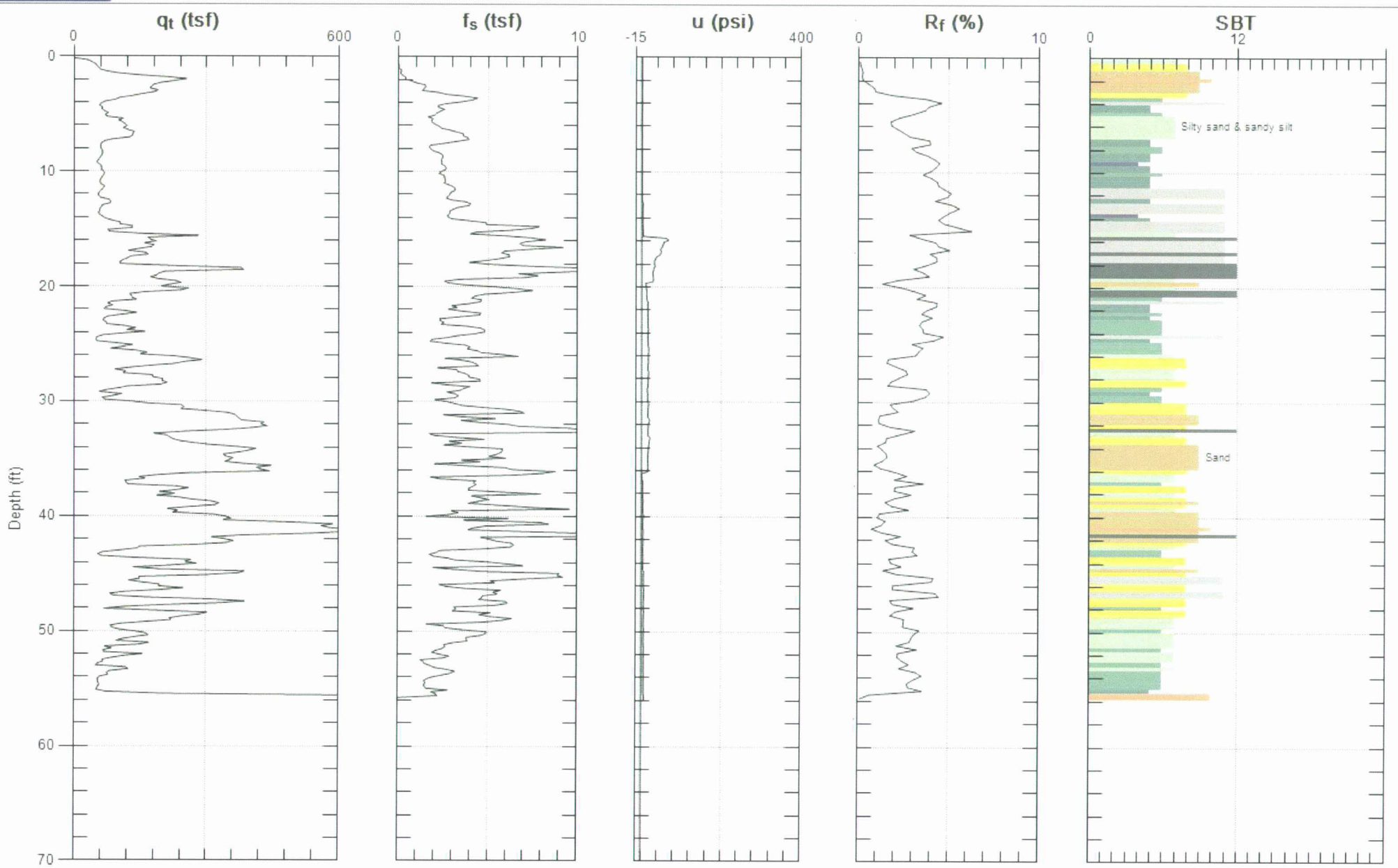
Figure A - 10

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-5

Engineer: S.KOLTHOFF
Date: 1/21/2014 10:27



Max. Depth: 55.938 (ft)
Avg. Interval: 0.328 (ft)

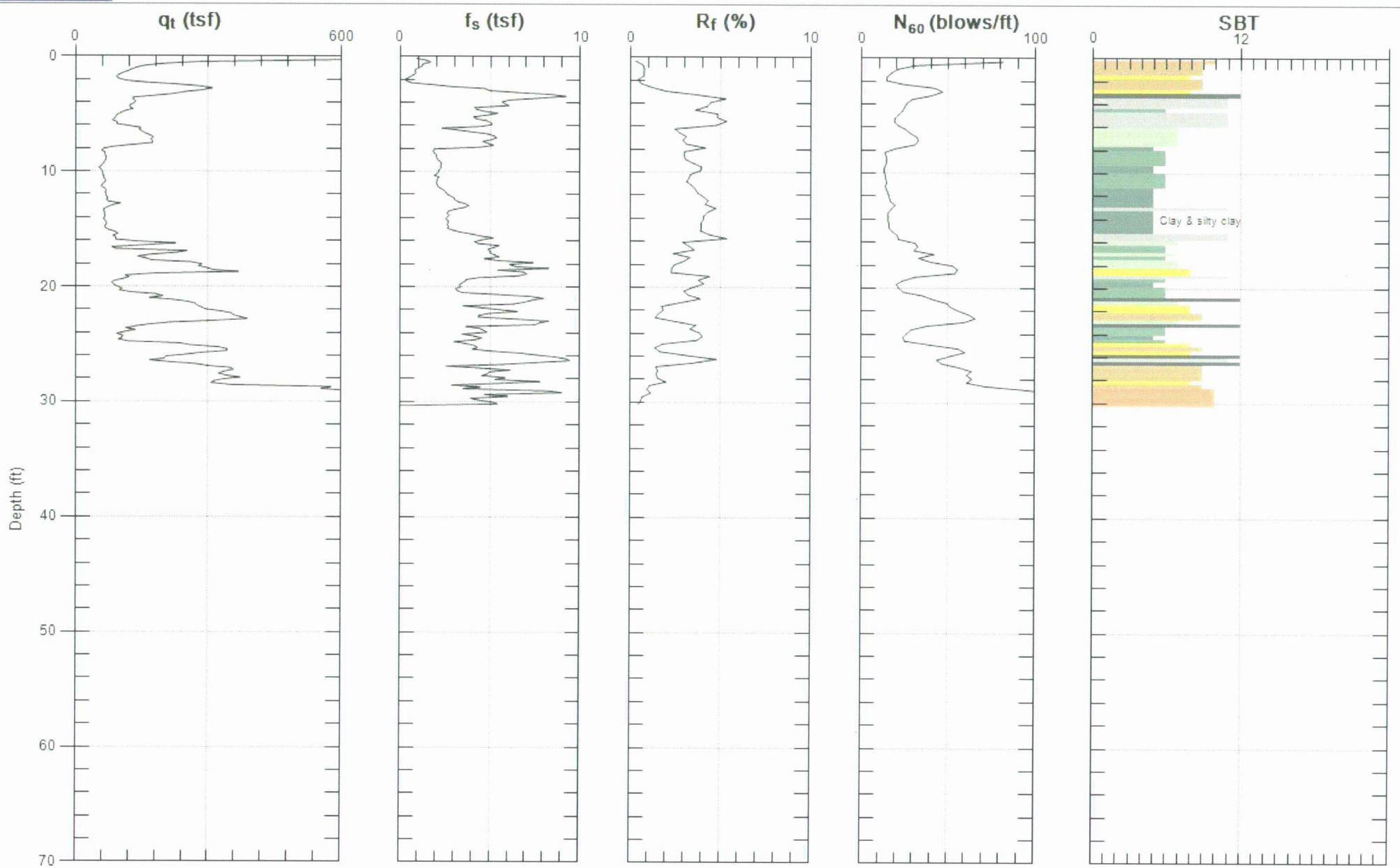
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 11

GREGG **GROUP DELTA**

Site: YUCCA CHAMPION
Sounding: CPT-6A

Engineer: S.KOLTHOFF
Date: 1/21/2014 12:05



Max. Depth: 30.512 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

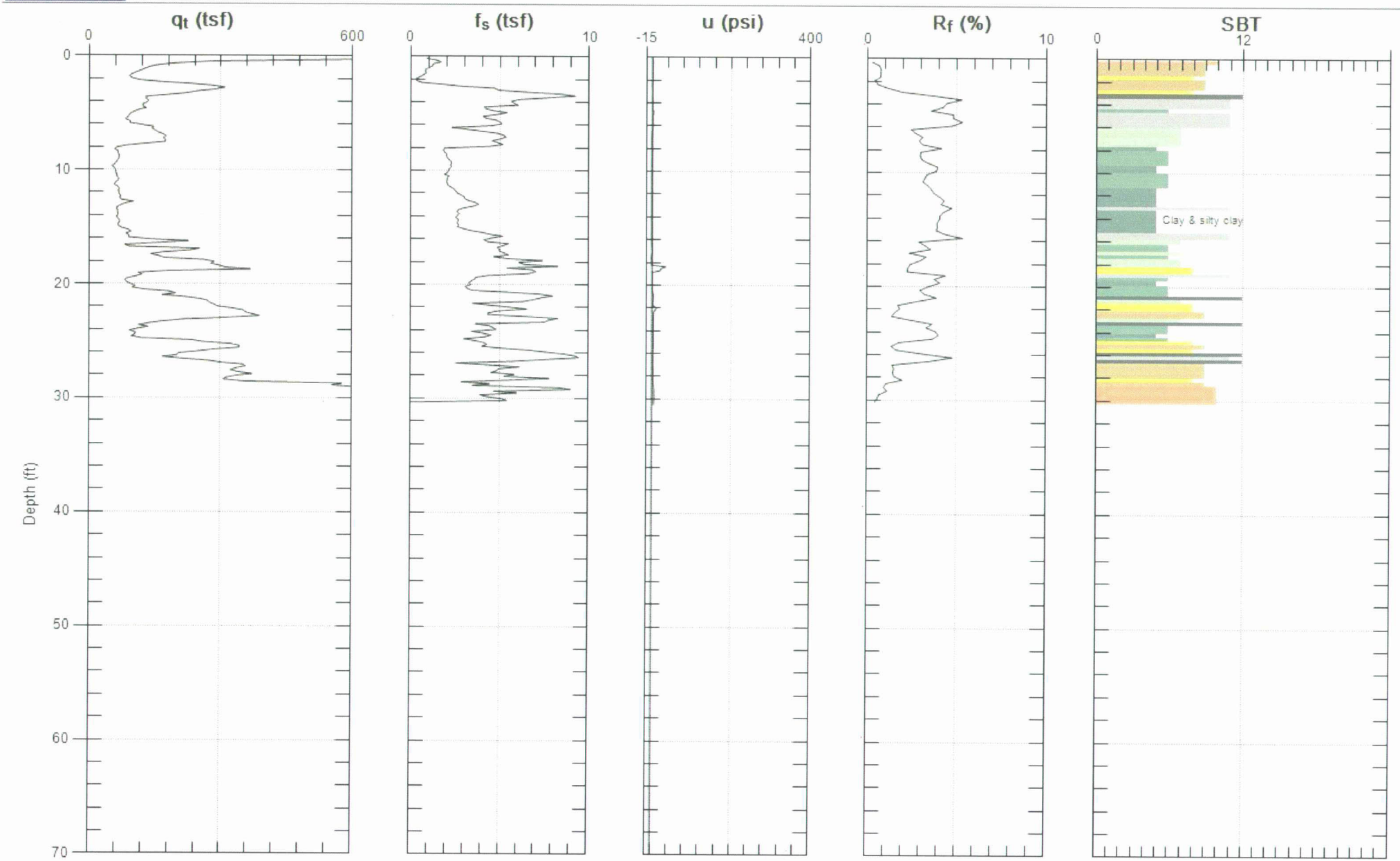
Figure A - 12

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-6A

Engineer: S.KOLTHOFF
Date: 1/21/2014 12:05



Max. Depth: 30.512 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

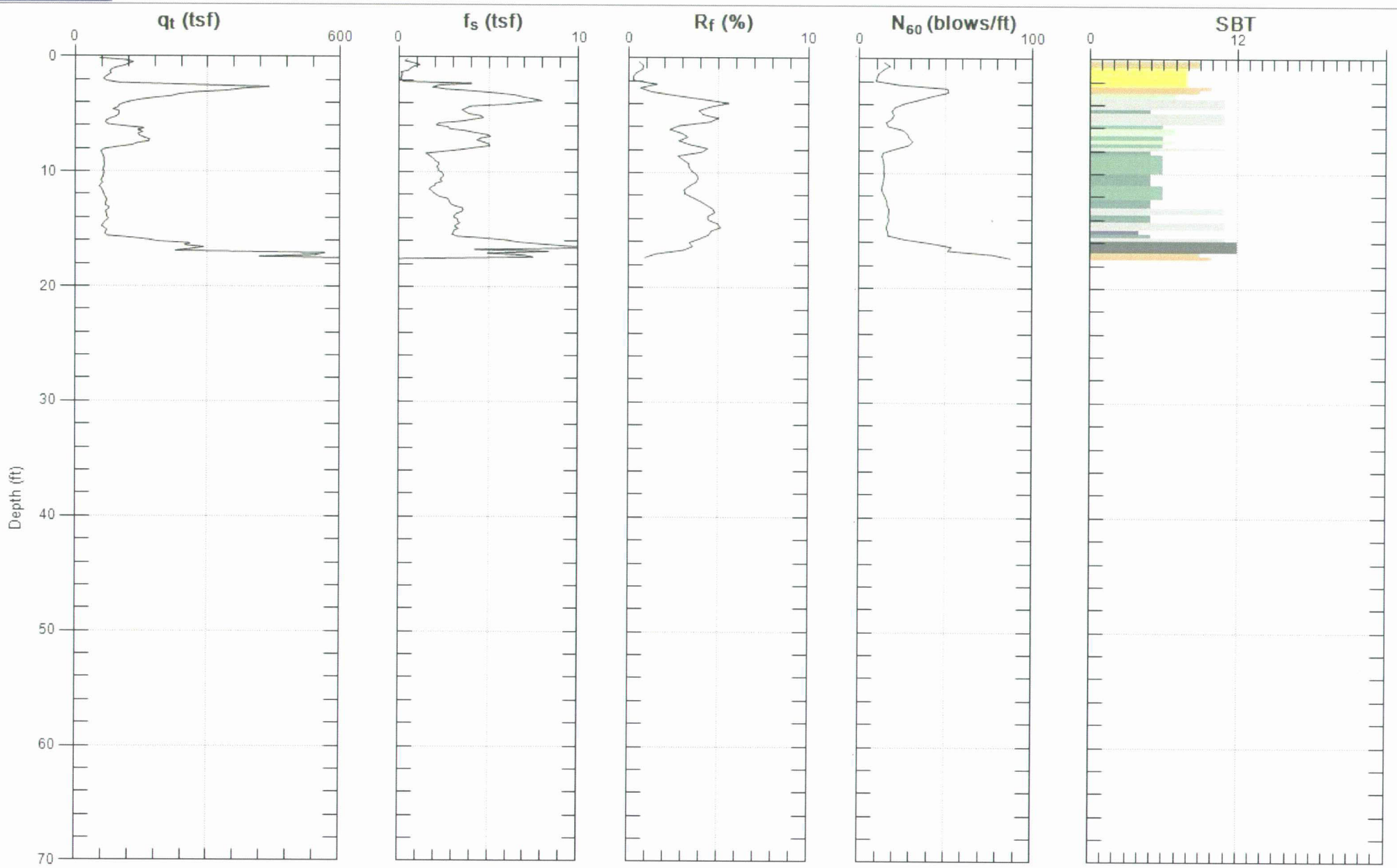
Figure A - 13

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-6

Engineer: S.KOLTHOFF
Date: 1/21/2014 11:32



Max. Depth: 17.717 (ft)
Avg. Interval: 0.328 (ft)

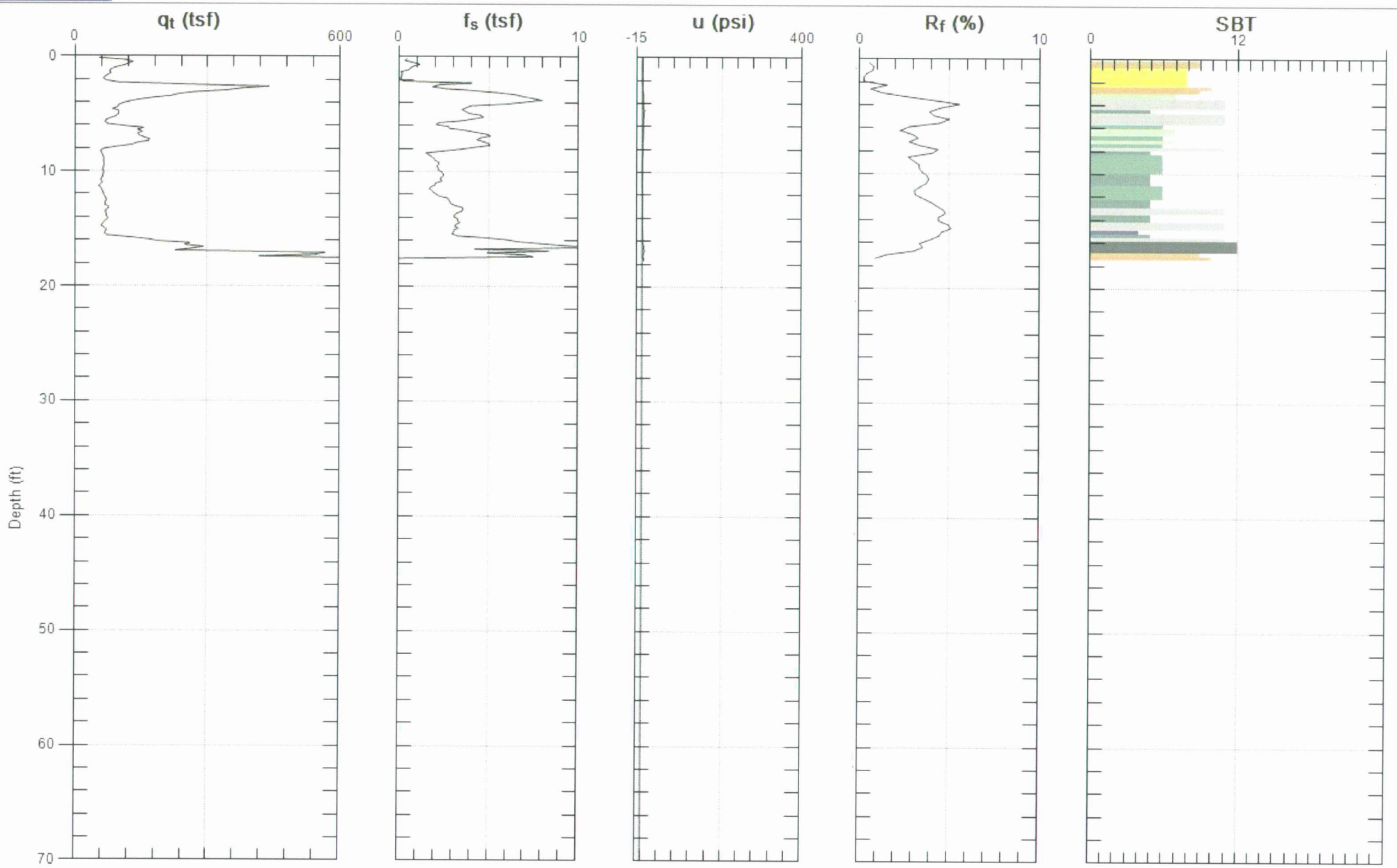
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 14

GREGG **GROUP DELTA**

Site: YUCCA CHAMPION
Sounding: CPT-6

Engineer: S.KOLTHOFF
Date: 1/21/2014 11:32



Max. Depth: 17.717 (ft)
Avg. Interval: 0.328 (ft)

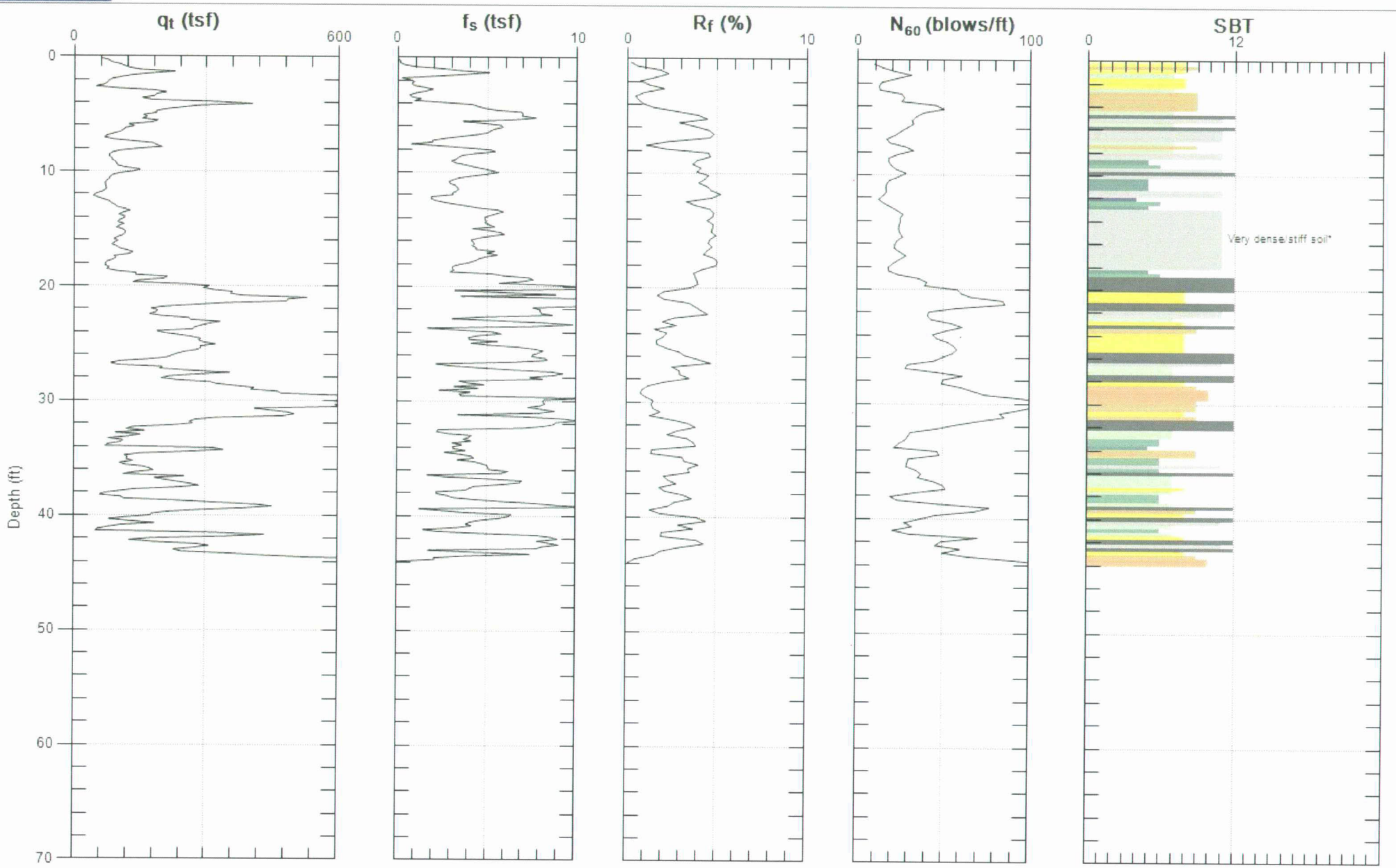
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-7

Engineer: S.KOLTHOFF
Date: 1/21/2014 12:34



Max. Depth: 44.127 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

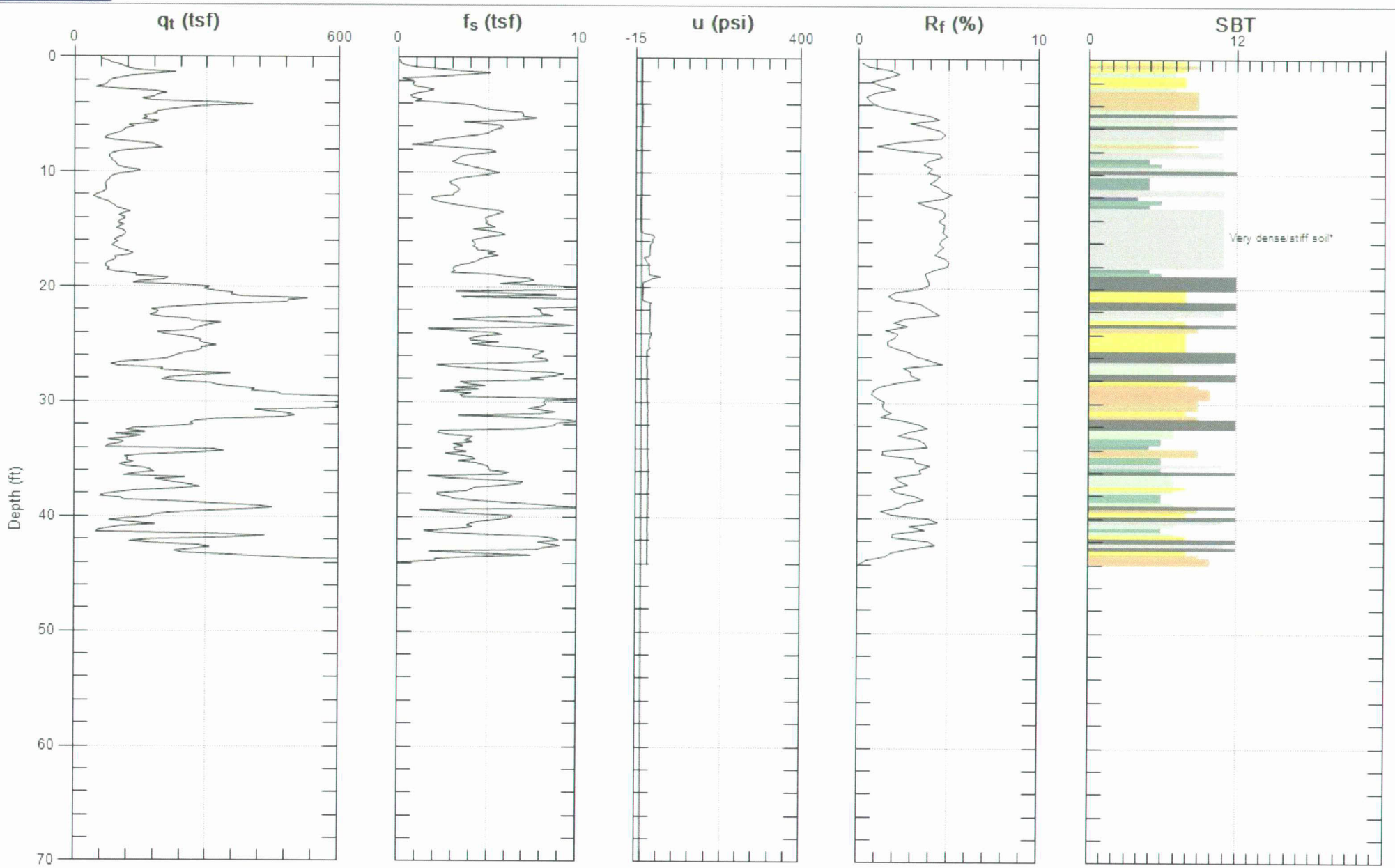
Figure A - 16

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-7

Engineer: S.KOLTHOFF
Date: 1/21/2014 12:34



Max. Depth: 44.127 (ft)
Avg. Interval: 0.328 (ft)

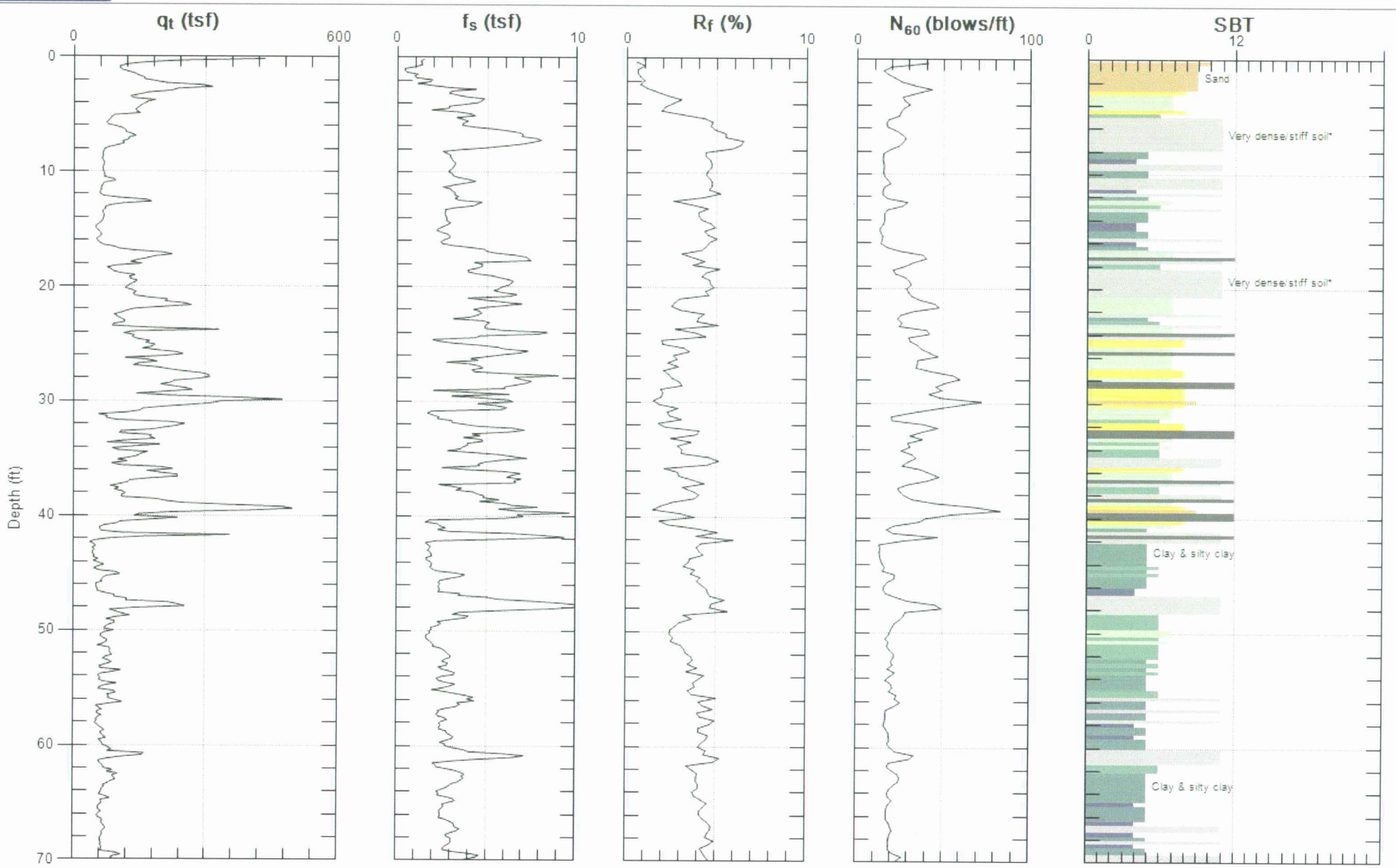
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-8

Engineer: S.KOLTHOFF
Date: 1/21/2014 01:10



Max. Depth: 70.866 (ft)
Avg. Interval: 0.328 (ft)

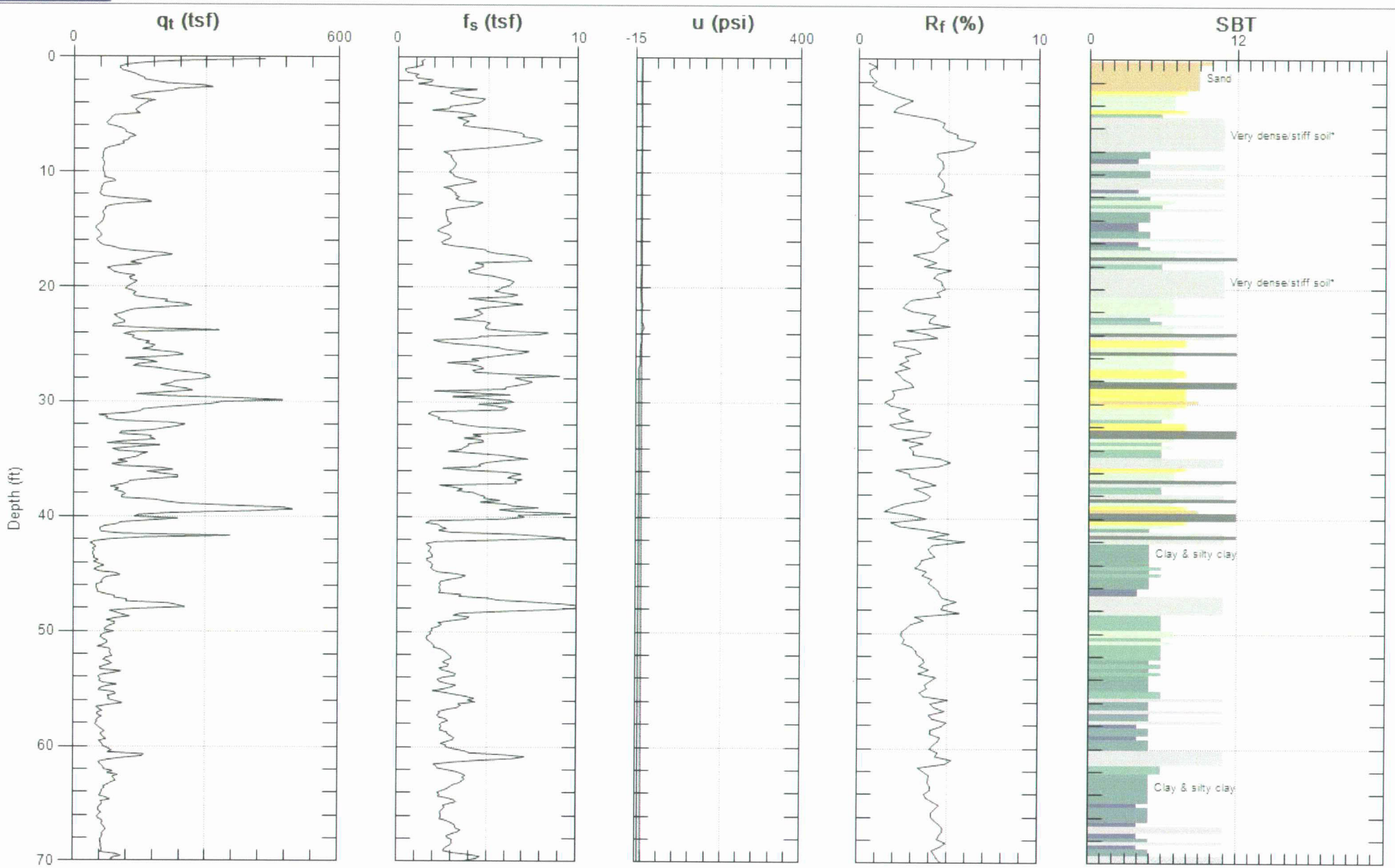
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-8

Engineer: S.KOLTHOFF
Date: 1/21/2014 01:10



Max. Depth: 70.866 (ft)
Avg. Interval: 0.328 (ft)

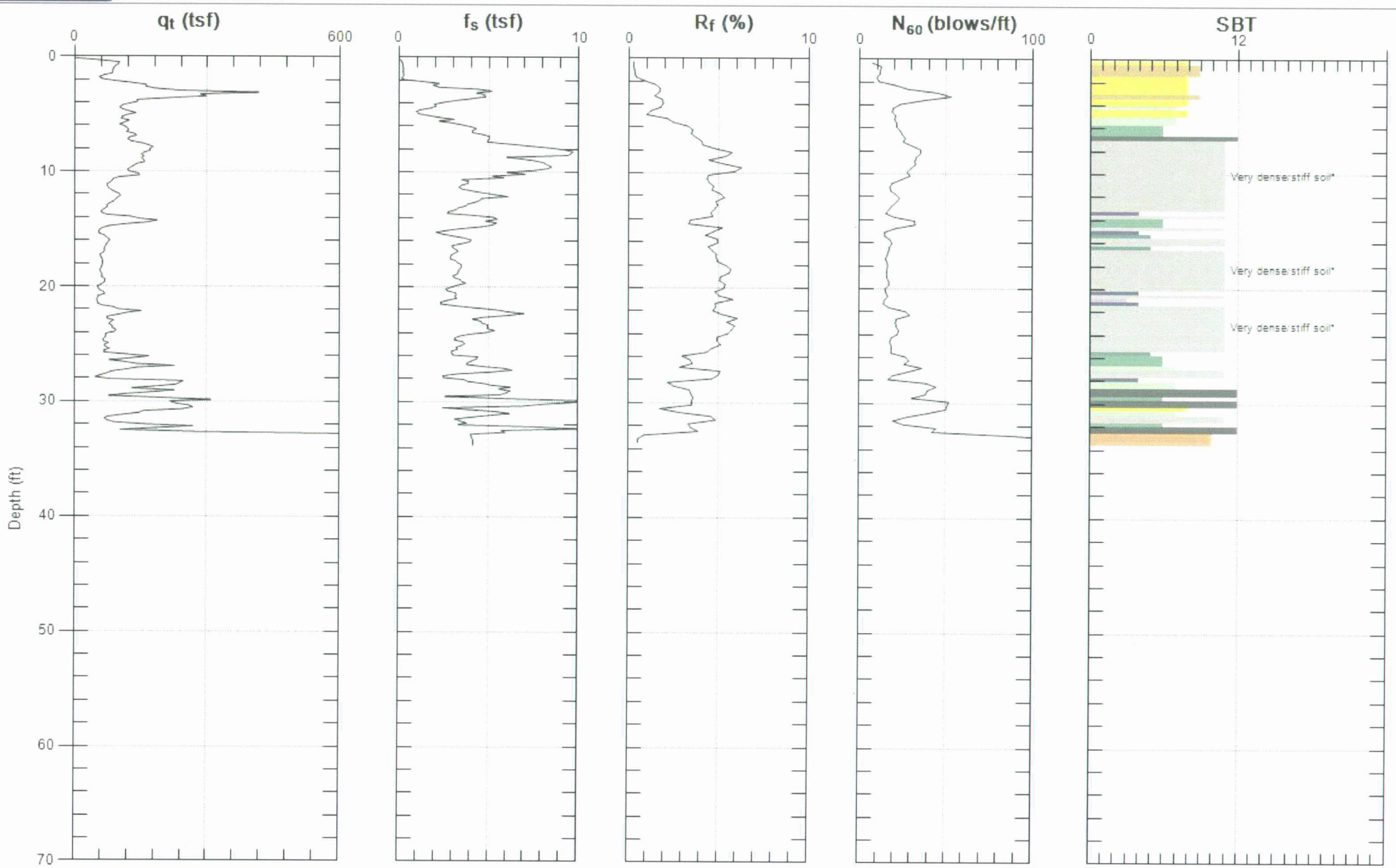
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-9

Engineer: S.KOLTHOFF
Date: 1/22/2014 02:38



Max. Depth: 33.793 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

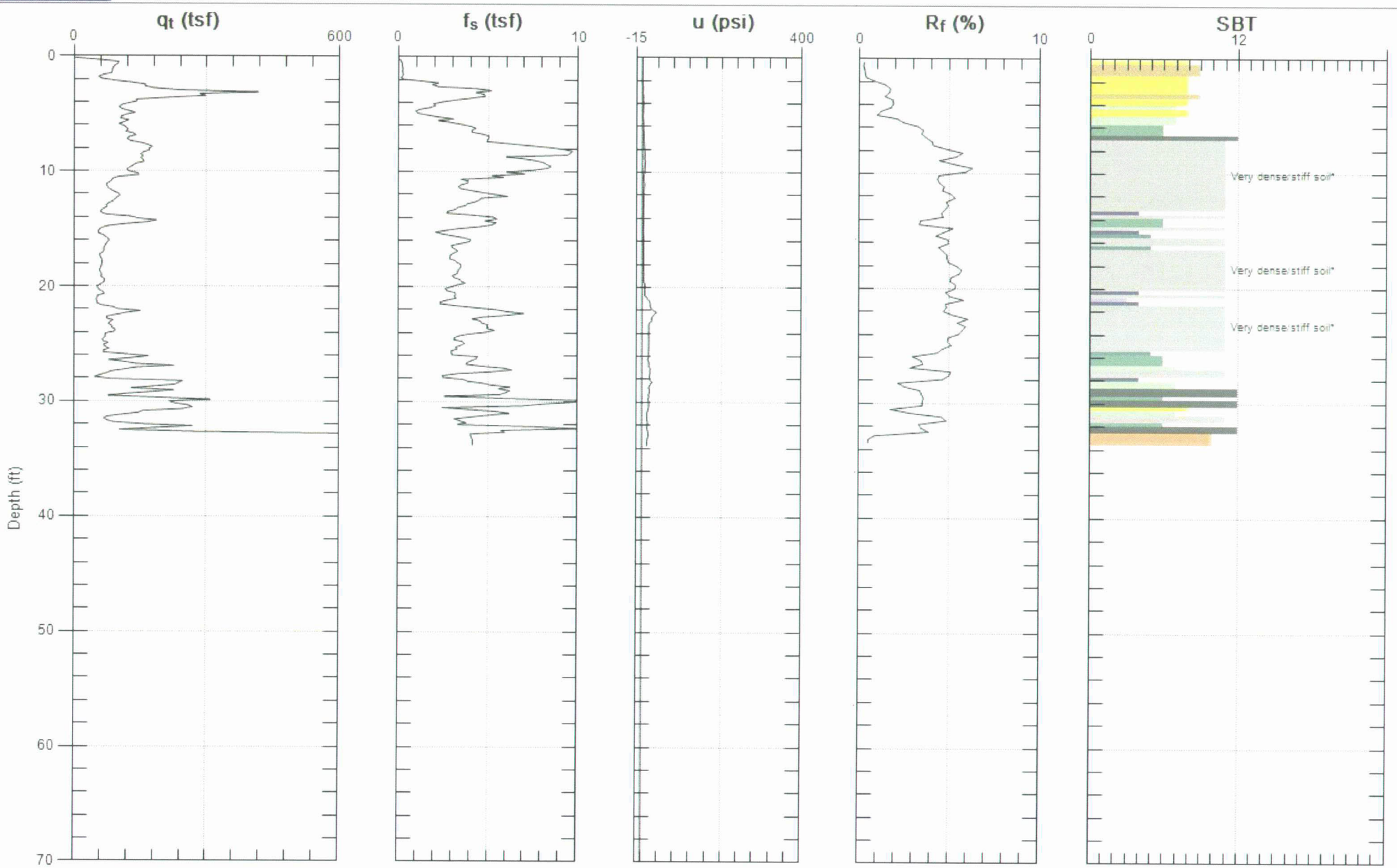
Figure A - 20

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-9

Engineer: S.KOLTHOFF
Date: 1/22/2014 02:38



Max. Depth: 33.793 (ft)
Avg. Interval: 0.328 (ft)

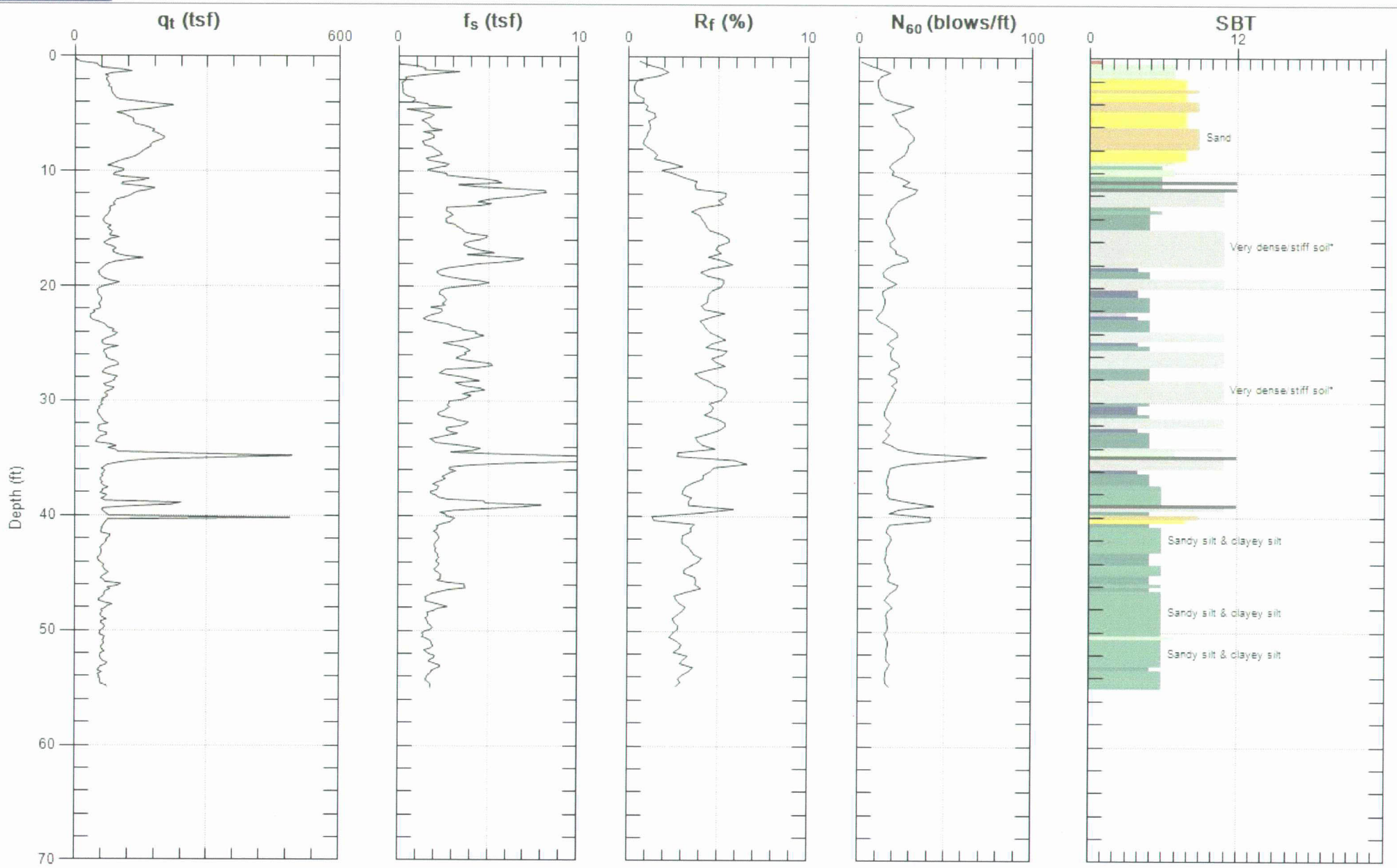
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 21

GREGG **GROUP DELTA**

Site: YUCCA CHAMPION
Sounding: CPT-10

Engineer: S.KOLTHOFF
Date: 1/22/2014 03:25



Max. Depth: 54.954 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

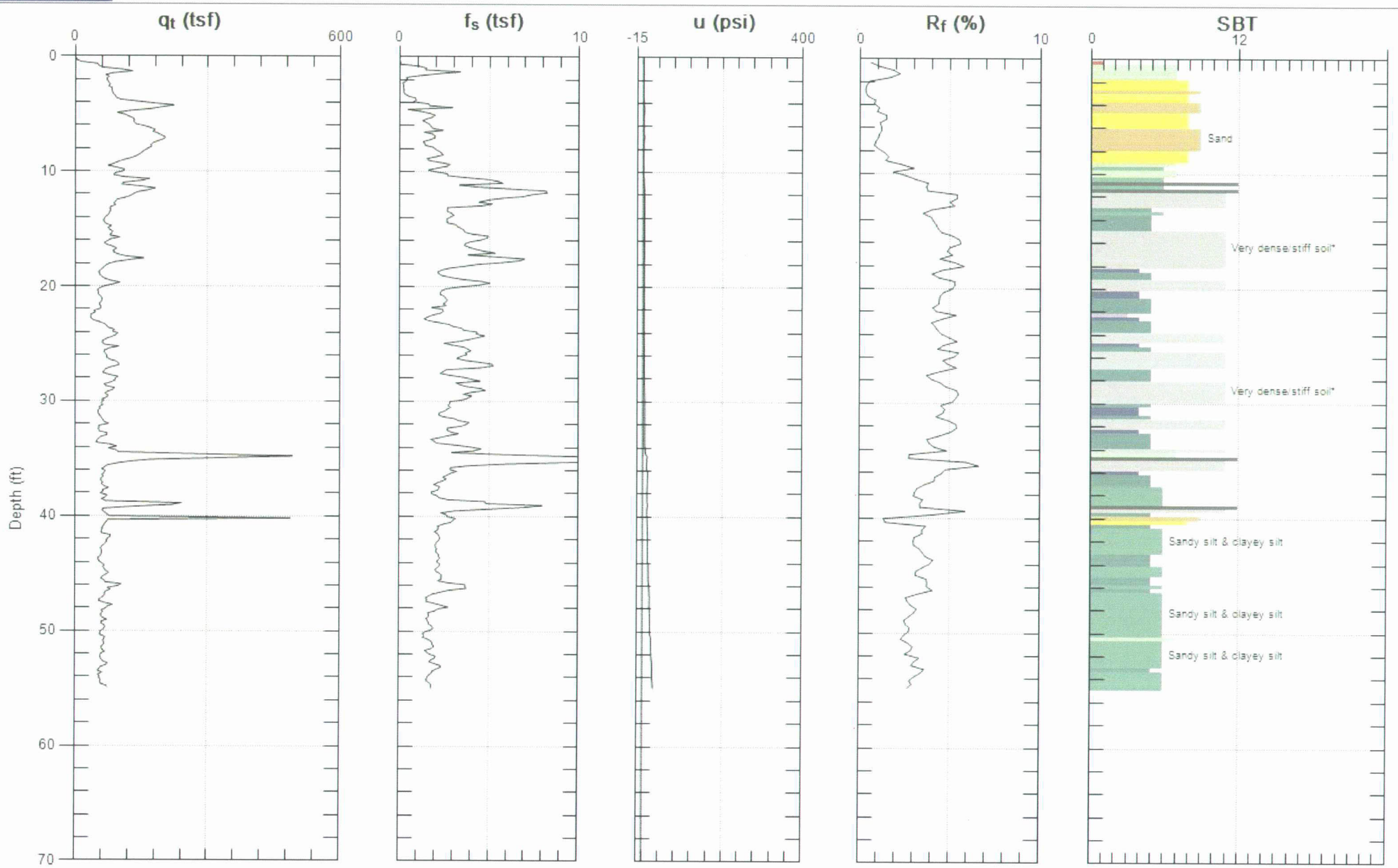
Figure A - 22

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-10

Engineer: S.KOLTHOFF
Date: 1/22/2014 03:25



Max. Depth: 54.954 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

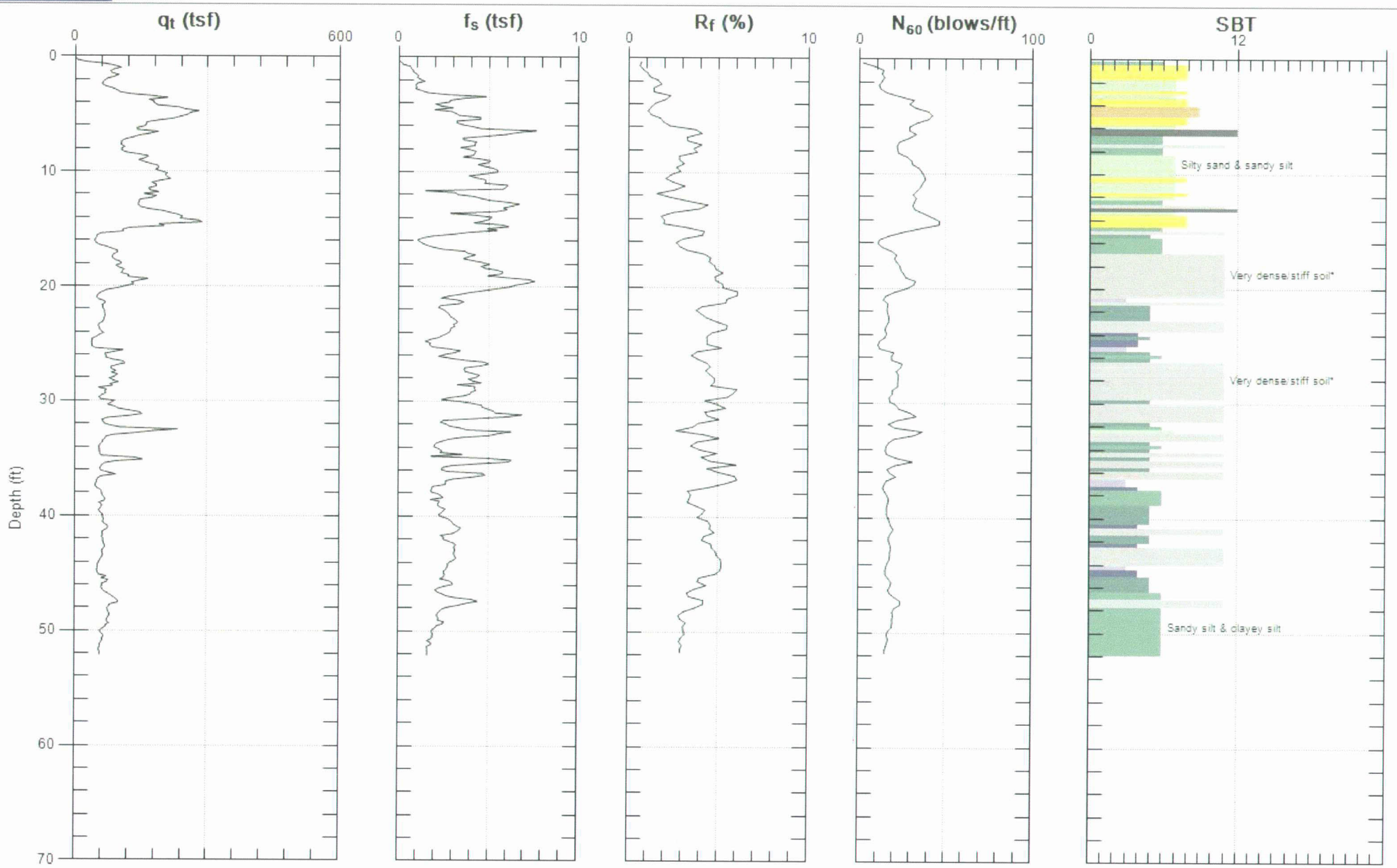
Figure A - 23

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-11

Engineer: S.KOLTHOFF
Date: 1/22/2014 04:12



Max. Depth: 52.165 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

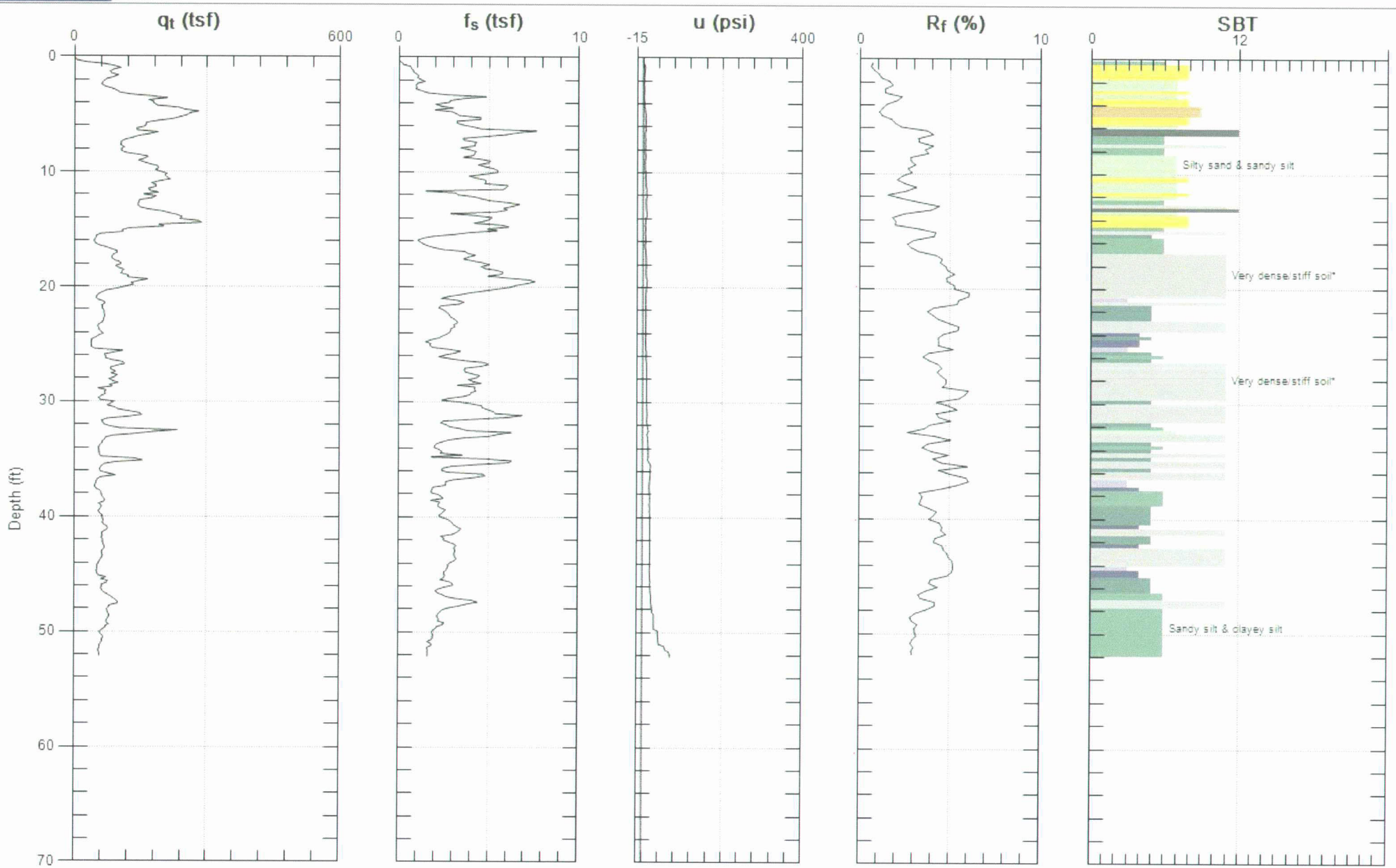
Figure A - 24

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-11

Engineer: S.KOLTHOFF
Date: 1/22/2014 04:12



Max. Depth: 52.165 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

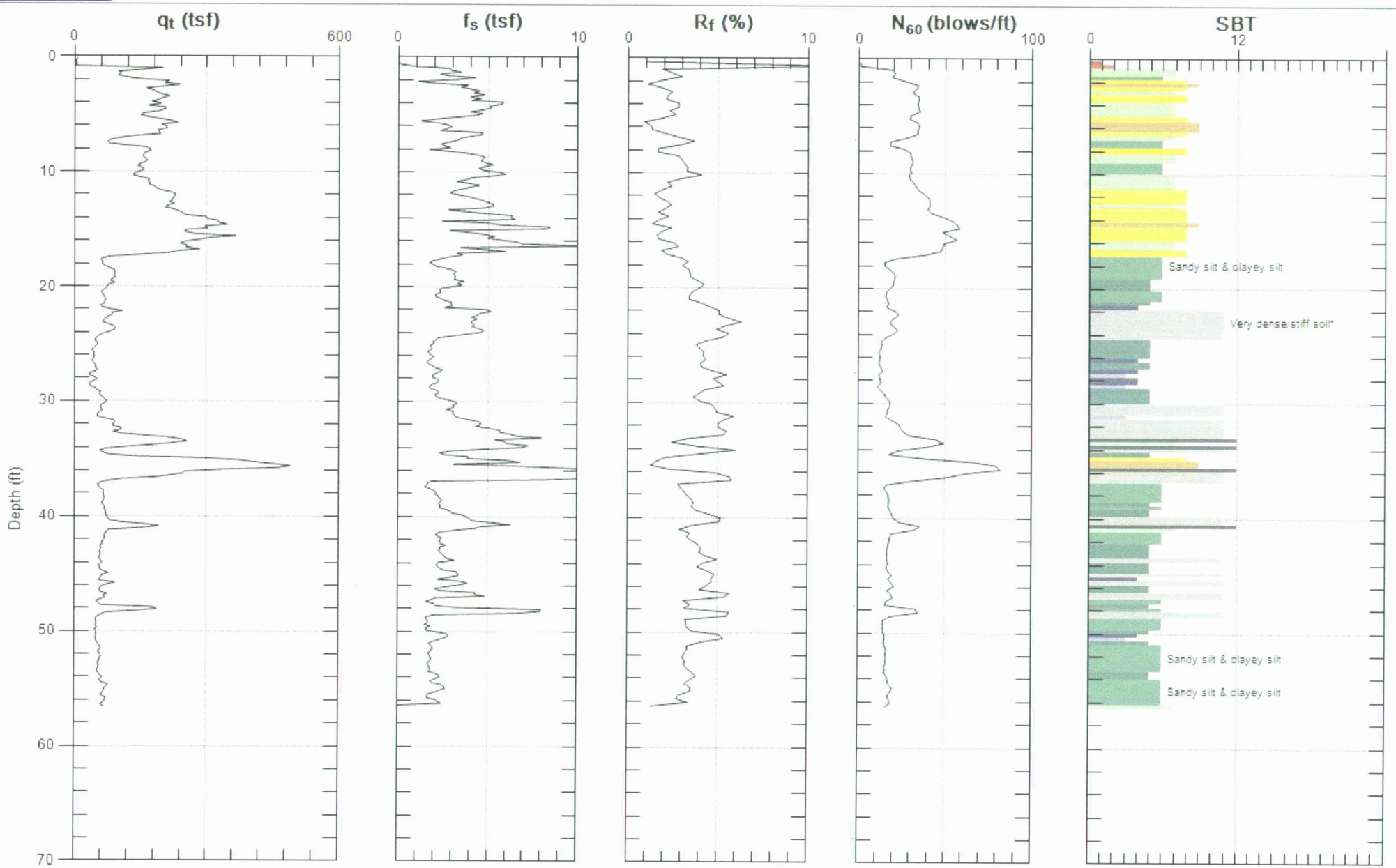
Figure A - 25

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-12

Engineer: S.KOLTHOFF
Date: 1/22/2014 04:52



Max. Depth: 56.594 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

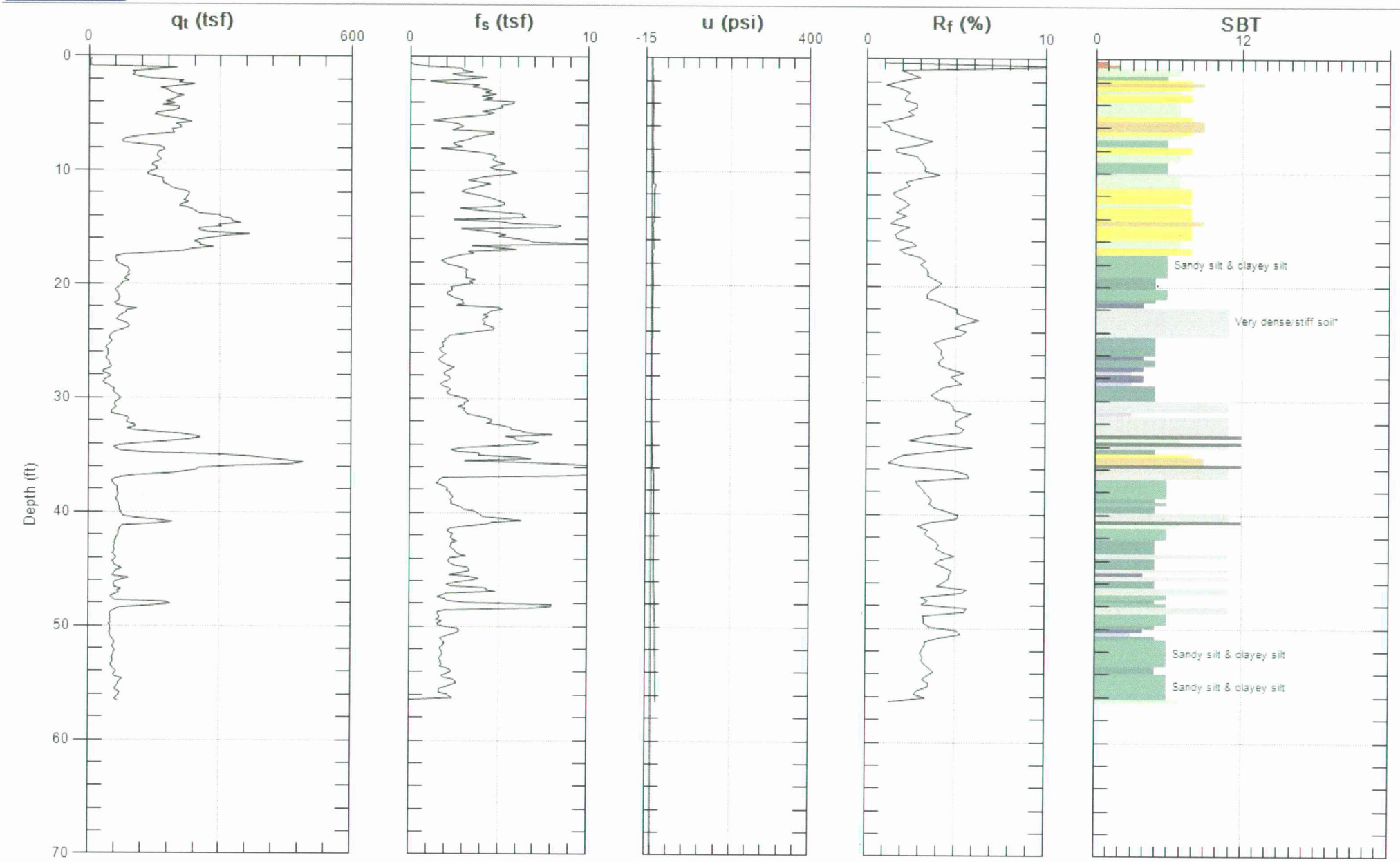
Figure A - 26

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-12

Engineer: S.KOLTHOFF
Date: 1/22/2014 04:52



Max. Depth: 56.594 (ft)
Avg. Interval: 0.328 (ft)

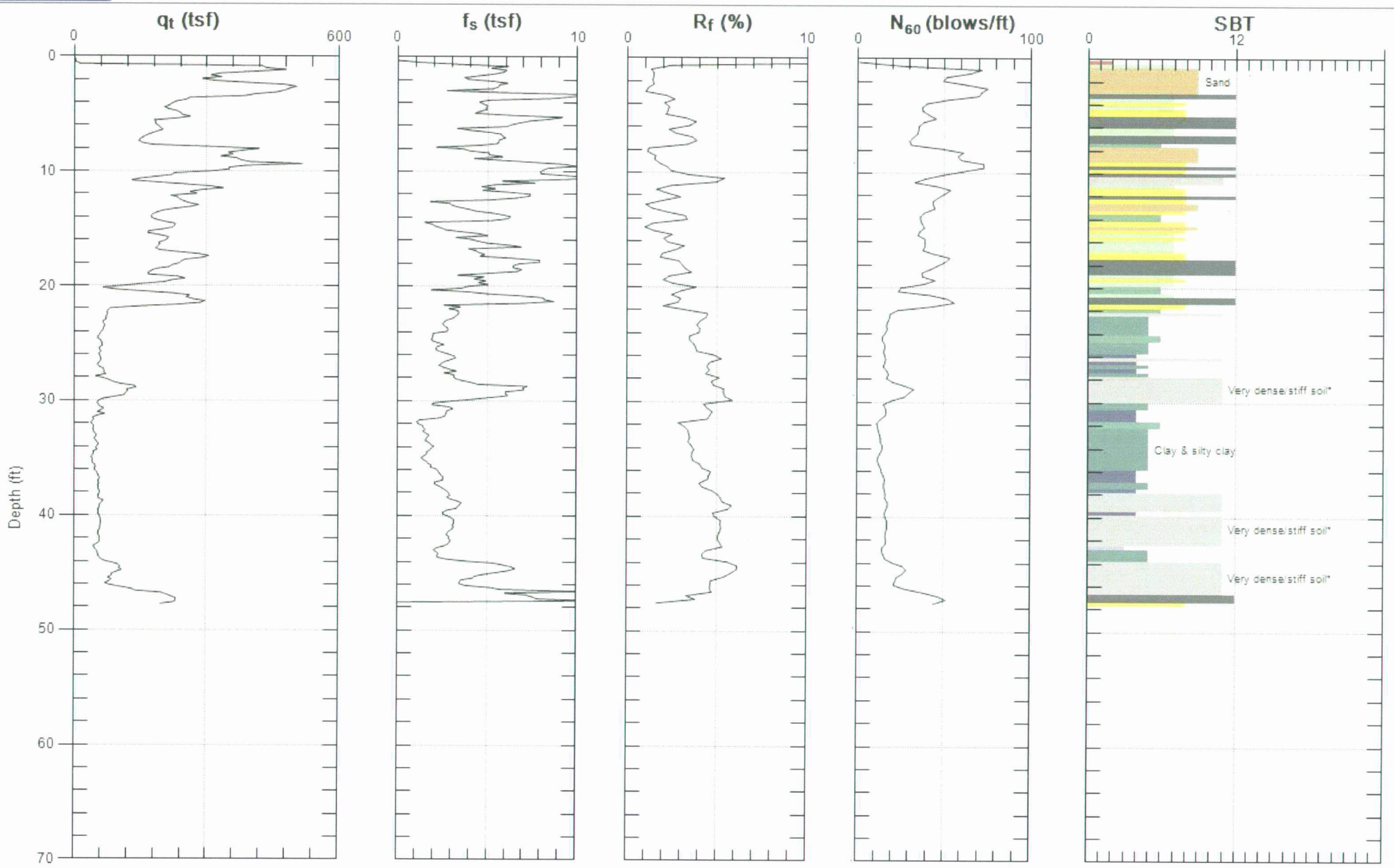
SBT: Soil Behavior Type (Robertson 1990)

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-13

Engineer: S.KOLTHOFF
Date: 1/22/2014 12:18



Max. Depth: 47.736 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

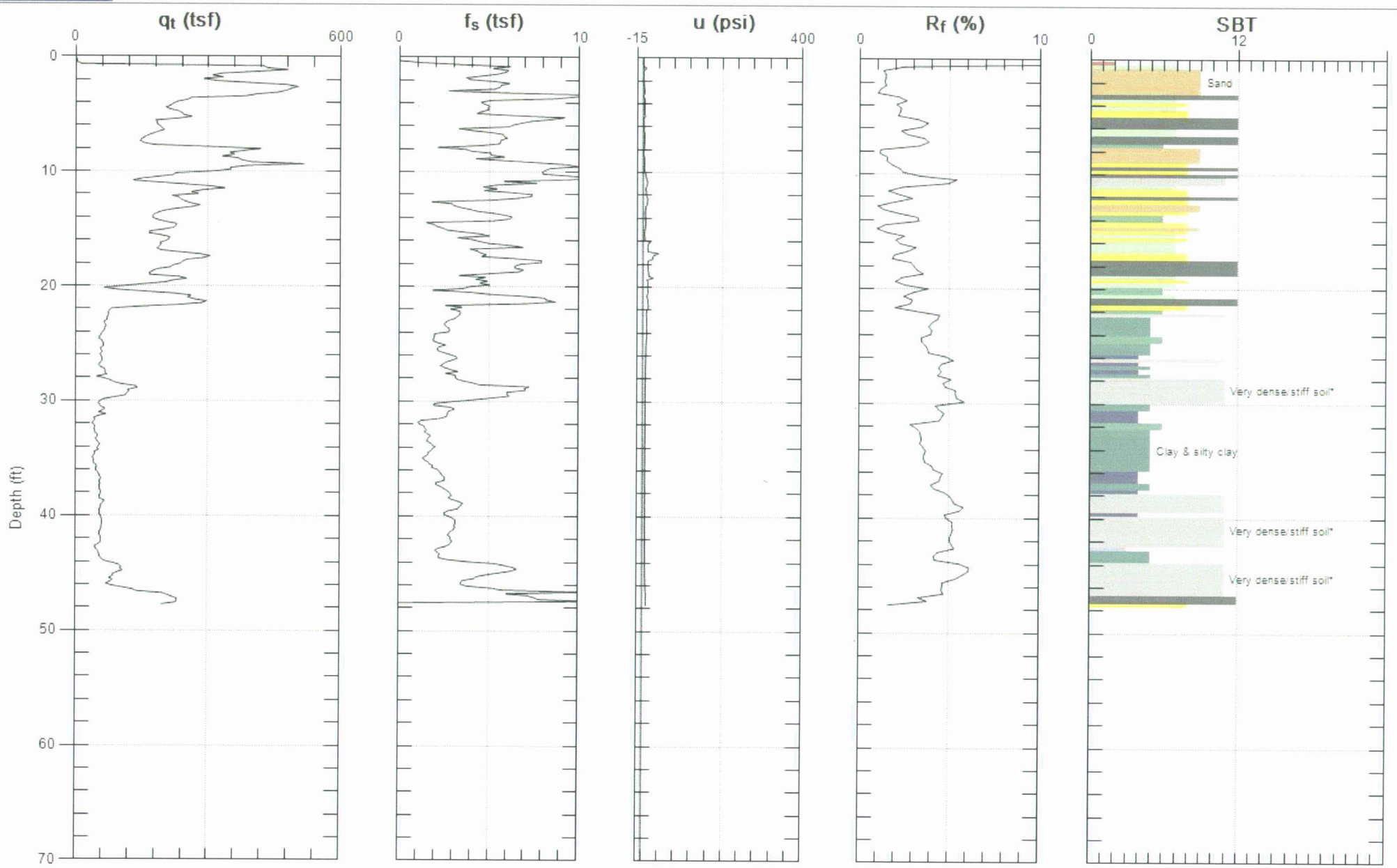
Figure A - 28

GREGG

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-13

Engineer: S.KOLTHOFF
Date: 1/22/2014 12:18



Max. Depth: 47.736 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

APPENDIX C
LABORATORY TESTING

APPENDIX C
LIMITED LABORATORY TESTING

C.1 General

The laboratory testing was performed using appropriate American Society for Testing and Materials (ASTM) and Caltrans Test Methods (CTM).

The samples of earth materials were obtained from the prior fault investigation. Laboratory testing for this investigation included:

- Expansion Index
- Soil Corrosivity:
  - pH (CTM 643);
  - Water-Soluble Sulfate (ASTM D 516, CTM 417);
  - Water-Soluble Chloride(Ion-Specific Probe, CTM 422);
  - Minimum Electrical Resistivity (CTM 643).

Brief descriptions of the laboratory testing program and test results are presented below.

C.2 Expansion Index

The Expansion Index of the soils was determined by testing a sample in accordance with the California Building Code Standard No. 29-2 method. The results of the tests is presented in the table below. The details of the tests results are included in this appendix.

Sample No.	Expansion Index
B-3@16'	106 (High)

C.3 Soil Corrosivity

Tests were performed in order to determine corrosion potential of site soils on concrete and ferrous metals. Corrosivity testing included minimum electrical resistivity and soil pH, water-soluble chlorides (Orion 170A+ Ion Probe), and water-soluble sulfates (ASTM D 516). The test results are presented in the table below. The details of the tests results are included in this appendix.

Boring No.	Depth (ft)	USCS Soil Type	Minimum Resistivity CTM 643 (ohm-cm)	pH CTM 643	Soluble Sulfate Content CTM 417 (%)	Soluble Chloride Content CTM 422 (%)
B-3	16	CL	495	7.22	0.02	0.01