F-3 Fault Activity Investigation for NE Corner of Yucca and 1800 Argyle Avenue

GROUP DELTA

The Robert Green Company
3553 Fortuna Ranch Road
Encinitas, CA 92024

November 7, 2014

Attention: Mr. Patrick J. Russell,
Vice President of Development

Subject: Response to City of Los Angeles Geology Report
Correction Letter Dated October 1, 2014 (Log# 85580)
NE Corner of Yucca Street and Argyle Avenue
1800 Argyle Avenue,
Hollywood Area, City of Los Angeles, California
GDC Project No. LA-1175A

Dear Mr. Russell:

GROUP DELTA CONSULTANTS, INC. (GDC) is pleased to present our responses to the 10 items listed in the City of Los Angeles Department of Building and Safety (**LADBS**) Geology Report Correction Letter for the 1800 Argyle Avenue site report, dated September 7, 2014.
These corrections appear in our revised report, dated November 7, 2014.

The following lists the LADBS Correction Letter items and GDC's appropriate responses:

Item 1:

This item contains requests to correct the included Geologic Map (Figure 10), as follows:

a) Extend the map to the north to show all the exploration points (C-1 and C-2).

b) Correct the geologic contacts to reflect what was found in the subsurface exploration. A few examples of inconsistencies include the contacts shown on the map do not match with Cross-Section L-L', as well as other areas south of the site (primarily on Site 2).

c) Show the extent of the faults encountered in the subsurface exploration (offsite) to where they are estimated to be buried or truncated by younger deposits.

d) Show all of the cross-section and transect lines.

Response:

Items 1a through 1d have been compiled onto a corrected geologic map that is attached to this revised report as Figure 11. GDC references these items extensively in the text as they appear in trench logs and related sections.

Item 2:

Correct all of the cross-sections to reflect the corrected geologic map and the subsurface data. The fact that the cross-sections are titled "schematic" shall not be used as a reason to show inconsistent geologic interpretation. Extend Cross-Section L-L' to the east to beyond the eastern property line.

Response:

The corrected cross–sections are contained in the revised report as referenced, including Cross-Section L-L' that is now to scale and extended to the east.

Item 3:

A Local Fault Map (Figure 13) appears to be provided based on a request by the LADBS review letters for Sites 2 and 3. The department figure shows the Argyle and Yucca fault strands as mapped on the California Geologic Survey's preliminary A-P zone map (shown on Plate 1 of the report). However, the consultant apparently does not agree with the State map and has uncovered evidence that would justify a revised map. The intention of the previous comment regarding a separate fault map was for the consultant to provide an aerial map as they interpret. The interpretation should be based on their own investigation the interpretation should be based on their own investigation and research of the local area; including analysis of existing geologic literature, etc. Revise Figure 13 accordingly and zoom out to an area that includes strands of the Hollywood fault that possible based on analysis outlined above.

Response:

The revised report contains a map showing the GDC interpretation of local fault pattern. As noted in Item 5, below, and in Section 3.4 in the referenced report, fractured and near vertical Modelo Formation in the north part of Site 4 as opposed to the generally low to moderate dips of the south limb suggests that a fault affecting at least the Modelo Formation lies north of the study site. This fault could be responsible for upwarp of the anticline as discussed in the revised report. It is thus inferred that the traditionally mapped trace of the Hollywood Fault lies north of the study site, but its trace is not known well enough for GDC to put on a map. Projections away from hard data at the study site are not well constrained and should be taken as speculative rather than fact.

Its location awaits further regional exploration by others. In sum, Figure 13 shows the GDC geologic interpretation as far as supported by known observations and investigations.

Item 4**:**

The Geomorphic Features Map (Figure 5), based on the 1926 U.S. Geological Survey topography is unclear. Revise the figure a more detailed scale that shows (and labels) the truncated ridges in the area as well as other significant geomorphic features. Show the Cahuenga, Beechwood and Brush Canyon fans. Include the location of the Yucca Street Anticline. The figure could assist in interpreting the local faulting as requested in the above comment.

Response:

A revised map and discussion thereof is in the revised report.

Item 5:

Describe the inclinations of the various lithologic contacts, bedding planes, and other structural features observed in the core borings. Discuss how the angle of the contacts and bedding planes may relate to the folding documented at the site, Provide more description of the bedrock, including shearing and deformation observed.

Response:

The features are both illustrated in cross-sections and discussed in the text of the revised report. For example, north of Yucca Street, bedding within the Modelo Formation dips almost vertically as shown in core samples, in contrast to the low to moderate dips near the anticlinal axis and on its south limb. The cores were not oriented with respect to north, therefore, the directions of dips are indeterminate. The Modelo Formation along Argyle Avenue is thus in distinct angular conformity with the overlying more gently dipping Pleistocene older alluvium and mudflow deposits. Much of the Modelo deformation obviously took place long before deposition of the Pleistocene units. The steepened limb of the Yucca Street Anticline could indicate long (>~300ka) ceased deformation along a Hollywood Fault strand north of Site 4, as shown on Cross-Section K-K' (Plate 13). It is thus inferred that the traditionally mapped trace of the Hollywood Fault lies north of the study site, but its trace is not known well enough for GDC to put on a map. Its location awaits further regional exploration by others. In sum, Figure 13 shows the GDC geologic interpretations based on the literature, tectonic-geomorphic assessment and recent detailed subsurface investigations and Figure 5 shows the GDC regional fault map based on presently available information.

Item 6:

The borings logs for "Green Trench" borings B1 to B5 (Plates A-41a to A-45c) appear to be repeated on Plates A-79 to A-94, whicha ppear inconsistent. Remove the incorrect set of logs.

Response:

The correct logs are now in the revised report.

Item 7:

Provide unit designations on the bucketauger logs (Plates A49a to A-50a).

Response:

The logs now include unit designations.

Item 8:

There appears to be several inconsistencies between the boring logs and he cross-sections. In addition, there appears to be some arbitrary unit contacts shown on the logs. .A few examples are listed below

a) Unit contacts as indicated on the boring logs B-8 and B-9 are different than what is shown on Cross-Section L-L'.
b) Boring 7 is not shown on Cross-Section L-L'. Based on the log of B-7, a significant change in strtigraphy may be occurring in the area.
c) The contact between the "upper sand" and the "mudflow"appears arbitrary in boring logs B-2 to B-5, where there are several 7.5YR clayey sand above the mudflow contact. In B-8, it seems like the contact should be at 28 feet and at 15 feet in B-9.
d) Cross-Sections J-J' and K-K' overlap and coincided for about 20 feet on Plate 1. The geologic contacts do not match and the "debris flow" deposits abruptly disappears.

Response:

a) Revision of Cross Section L-L' (originally drawn in a schematic manner), as well as redefinition of the stratigraphic section have been accomplished since issuance of the September 7, 2014 report. The revised report incorporates those revisions.
b) B-7 is now shown. Based on the latest stratigraphic interpretation, B-7 is consistent with the interpreted subsurface geology. Borings in the area of B-3, B-4 and B-7, for example, are on on or near the west slope of Argyle Channel so that, as explained below and in the text, depending where the boring is located on the cross-section, the depth and thickness of various units will vary.

c) The contact between the upper sand and the mudflow appears arbitrary in boring logs B-2 to B-5, where there are several layers of 7.5YR clayey sands above the mudflow contact. In B-8, it the contact should be at 28 feet and at 15 feet in B-9.

d) Since issuance of the September 7, 2014 report, the stratigraphic section has been revised and such is reflected in the cross-sections. The elevations of unit contacts differ on the two sections. They Very because of their positions on the Argyle Channel slope. Cross-Section L-L' shows the geometry of same.

Item 9:

Discussion of anticline faults. See attached Correction Letter.

Response:

The revised report includes discussion of the presence of bending-moment and lateral shear faults, and how they were coeval.

Item 10:

Revise the conclusions and reccomendations based on the above corrections, if necessary, recommendations are listed in the revised report.

Response:

Revised conclusions and recommendations are in the revised report.

GDC appreciates the opportunity to provide geotechnical and geological services for this project. Should you have any questions, please call at 310 320-5100.

Yours Sincerely,
GROUP DELTA CONSULTANTS, INC.

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GEOLOGY REPORT CORRECTION LETTER

October 1, 2014

LOG # 85580
SOILS/GEOLOGY FILE - 2
LIQ/AP

Robert Green Company
3553 Fortuna Ranch Road
Encinita, CA 92024

TRACT: Grand View Boulevard (MP 7-22)
LOT(S): 21 (Arb 2)
LOCATION: 1800 N. Argyle Avenue

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE(S) OF DOCUMENT	PREPARED BY
Geology Report	LA-1175A	09/07/2014	Group Delta
Oversized Doc(s).	``	``	``

The Grading Division of the Department of Building and Safety has reviewed the referenced report that presents a fault rupture investigation at 1800 Argyle Avenue for the future devolvement of the property. The site is currently occupied by a vacant office building with a partially subterranean parking structure. According to the report, Group Delta is conducting a total of four fault investigations in the site area. The subject site has been designated as "Site 4".

The property is located within a Preliminary Earthquake Fault Zone that was established (January 8, 2012) by the California Geological Survey for the Hollywood fault (on the USGS 7.5 minute Hollywood Quadrangle). A strand of the Hollywood fault ("Argyle Strand") is shown on the State's map to be located west and south of the property.

The investigation included an exploration trench within the subterranean parking structure at the eastern portion of the site. A transect of CPT soundings, continuous core borings and a two bucket-auger borings was located west of the site in Argyle Avenue. Data from offsite projects (Sites 2 and 3) were also used for the geologic analysis of the site.

The review of the subject report can not be completed at this time and will be continued upon submittal of an addendum to the report which shall include, but not be limited to, the following:

1. The following comment contains items to correct the included Geologic Map (Figure 12):

   a. Extend the map to the north to show all of the exploration points (C-1 and C-2).

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b. Correct the geologic contacts to reflect what was found in the subsurface exploration. A few examples of inconsistencies include the contacts shown on the map do not match with Cross Section L-L', as well as other areas south of the site (primarily on Site 2).

c. Show the extent of the faults encountered in the subsurface exploration (offsite) to where they are estimated to be buried or truncated by younger deposits.

d. Show all of the cross sections and transect lines.

2. Correct all of the cross sections to reflect the corrected geologic map and the subsurface data. The fact that the cross section are titled "schematic" shall not be used as a reason to show inconsistent geologic interpretation. Extend Cross Section L-L' to the east to beyond the eastern property line.

3. The Local Fault Map (Figure 13) appears to be provided based on a request in the previous Department review letters for Sites 2 and 3. The figure shows the Argyle and Yucca fault strands as mapped on the California Geologic Survey's preliminary A-P Zone map (shown o also n Plate 1 of the report). However, the consultant apparently does not agree with the State map and has uncovered evidence that would justify a revised map. The intention of the previous comment regarding a separate fault map was for the consultant to provide an areal fault map that shows the local segment of the Hollywood Fault as they interpret. The interpretation should be based on their own investigation and research of the local area; including analysis of geomorphology from aerial photographs and old topographic maps, and analysis of existing geologic literature, etc. Revise Figure 13 accordingly and zoom out to an area that includes strands of the Hollywood fault that possible based on the analysis outlined above.

4. The Geomorphic Features Map (Figure 5), based on the 1926 U.S. Geological Survey topography, is unclear. Revise the figure at a more detailed scale that shows (and labels) the truncated ridges in the area, as well as other significant geomorphic features. Show the Cahuenga, Argyle, Beachwood and Brush Canyon fans. Include the location of the Yucca Street Anticline. This figure could assist in interpreting the local faulting as requested in the above comment.

5. Describe the inclinations of the various lithologic contacts, bedding planes, and other structural features observed in the core borings. Discuss how the angle of the contacts and bedding planes may relate to the folding documented at the site. Provide more description of the bedrock, including shearing and deformation observed.

6. The boring logs for "Green Trench" borings B1 to B5 (Plates A-41a to A-45c) appear to be repeated on Plates A-79 to A-94, which appear inconsistent. Remove the incorrect set of logs.

7. Provide unit designations on the bucket auger logs (Plates A49a to A-50c).

8. There appears to be several inconsistencies between the boring logs and the cross sections. In addition, there appears to be some arbitrary unit contacts shown on the logs. A few examples are listed below:

a. Unit contacts as indicated on the boring logs B-8 and B-9 are different than what is shown on Cross Section L-L'.

b. Boring B-7 is not shown on Cross Section L-L'. Based on the log of B-7, a significant change of stratigraphy may be occurring in the area.

c. The contact between the "upper sand" and the "mudflow" appears arbitrary in boring logs B-2 to B-5, where there are several 7.5YR clayey sand above the mudflow contact. In B-8, it seems like the contact should be at 28 feet and at 15 feet in B-9.

d. Cross Sections J-J' and K-K' over lap and coincided for about 20 feet on Plate 1. The geologic contacts do not match and the "debris flow" deposits abruptly disappears.

Based on these inconsistencies, the geologic interpretation presented in the cross section does not appear to be that well documented. Additional exploration may be warranted.

9. The report indicates that the faults observed have normal displacement (hanging wall down) and are likely to be local "bending moment" structures that are typically not through-going, relatively shallow, and non-seismogenic. However, observations documented on the trench log indicate the bedding thicknesses and patterns do not match that well across all of the faults. This suggests a significant amount of lateral slip could have occurred (see station 58 to 60 for an example). In addition, the fault at station 20 to 22 indicates compression as well as lateral movement. Provide additional discussion regarding the fault origins and tectonic setting based on these observations. Consider the typical complexity of strike-slip fault zones, including en échelon patterns, folds related to constraining step-overs of major splays.

10. Revise the conclusions and recommendations based on the above corrections, if necessary.

The geologist is encouraged to contact the undersigned reviewer if any of the above comments are unclear or require further explanation. A meeting to discuss the review issues may be scheduled if desired.

DANIEL C. SCHNEIDEREIT
Engineering Geologist Associate II

DCS/dcs
Log No. 85580
213-482-0480

cc: Group Delta, Project Consultant
LA District Office

GROUP DELTA

Fault Activity Investigation

1800 Argyle Avenue
NE Corner of Yucca Street and Argyle Avenue
Hollywood District, City of Los Angeles, California
GDC Project No. LA-1175A

November 10, 2014 (Supersedes 9-7-14 Report)
GDC Project No. LA-1175A

GROUP DELTA

The Robert Green Company
3553 Fortuna Ranch Road
Encinitas, CA 92024

November 10, 2014

Attention: Mr. Patrick J. Russell,
Vice President of Development

Subject: Fault Activity Investigation
NE Corner of Yucca Street and Argyle Avenue
1800 Argyle Avenue
Hollywood Area, City of Los Angeles, California
GDC Project No. LA-1175A

Dear Mr. Russell:

Group Delta Consultants (GDC) is pleased to submit this Revised Fault Activity Investigation report for the proposed 1800 Argyle Avenue ("Argyle" or "Green") site in the Hollywood District of the City of Los Angeles. Under the Alquist-Priolo (AP) Earthquake Fault Zoning Act of 1972, the City of Los Angeles, Department of Building and Safety, and the California Mining and Geology Board issued a Preliminary Review Map showing several inferred "active faults" that are part of the Hollywood Fault Zone. The preliminary zone encompassed the Argyle site, and thus required geologic standard-of-practice investigation. Although the zoning was then still preliminary, the City of Los Angeles required that all sites within the zone be investigated in conformance with the AP Act. GDC has thus completed a standard-of-practice geological investigation based on the Preliminary Map. On November 7, 2014, the State issued the Official Map depicting a different pattern. Nonetheless, the breadth of the geological investigation yielded information permitting assessment of the newly mapped fault strands in accordance with the AP Act. In sum, the GDC investigation illustrates that faults either do not exist onsite or are demonstrably "not active" according to current State of California definitions.

GDC appreciates the opportunity to provide geotechnical and geological services for this project. Should you have any questions, please call at 310-320-5100.

Yours Sincerely,
GROUP DELTA CONSULTANTS, INC.

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TECHNICAL SUMMARY

Based on the GDC geologic investigations at and near 1800 Argyle Avenue ("Argyle"), this firm concludes that, from a fault rupture potential viewpoint, the project site is suitable for development.

The investigation included:

- Initial evaluation of published reports, aerial photographs, and other pertinent geologic information, and advancement and interpretation of 20 CPT-soundings, 9 core borings and 2 bucket-auger borings up to 60 feet deep.

- Observation and documentation of one 90 foot long trench placed within the existing onsite parking structure as shown on Plate 1 and Photograph 1. The trench trended north-south and was up to 16 feet deep.

- The geologic information gathered at the Argyle site was correlated and extrapolated to the geologic structure and numeric/relative dates of sediments identified in the adjacent properties (Plate 1).

Principal findings for the Argyle site are:

- Up to perhaps ten feet of artificial fill caps Holocene channel deposits and upper Pleistocene mudflow and older alluvium sediments judged to be at least 30-35ka and 300ka (thousands of years old), respectively. These deposits rest on bedrock of the Miocene-aged Modelo Formation. The GDC CPT-soundings, borings, and trench encountered Pleistocene and Holocene sediments useful for determining the presence or absence of an AP-defined active fault; in essence, a fault that has ruptured the ground surface or near-surface in the last ~11,700 years.

- A heretofore unknown anticline (fold) underlies the site and its surroundings. The folding affects the bedrock and the older alluvium, but it is covered by unbroken and unwarped ~30-35ka mudflows overlain by ~8ka-12ka Argyle "Channel Sands."

- The onsite exploratory trench exposed small-displacement (<2 feet), south-dipping generally normal, bending-moment faults, some of which also show oblique lateral-slip - both associated with the formation of the anticline.

- These faults affect the older alluvium at Argyle. But, importantly, the at least 30-35ka mudflow is not affected, nor do the small faults extend great distances from the anticline.

For example, the faults on the south limb of the anticline and those on the north limb trend toward GDC core hole-CPT traverses along Argyle Avenue Site 2 exploration trenches and core hole-CPT traverses, yet the faults are absent in those explorations.

- The GDC comparison and extrapolation of the geology exposed in Sites 2 and 3.

- CPT-traverses and trenches southwest and south, respectively, of Argyle showed that anticlinal folding and that coeval slip along the anticline faults ceased prior to deposition of mudflows at least 30-35ka.

- Based on site-specific and nearby investigations, GDC finds that no active faults exist within the subject site nor within 50 feet of the site boundaries. Therefore, the site is suitable for development according to the requirements of the State of California Alquist-Priolo Act and the City of Los Angeles.

- No structural setbacks pertaining to potential fault rupture are required for the site.

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1.0 INTRODUCTION

This report presents the Group Delta Consultants, Inc. (GDC) Fault Activity Investigation of the "Argyle" site on the northeast corner of Yucca Street and Argyle Avenue in the Hollywood District of the City of Los Angeles (Plate 1). This report provides maps, cross-sections, numeric and relative dating assessments, and interpretations consistent with current geologic standards of practice applicable to an Alquist-Priolo (AP) Earthquake Fault Investigation. The AP Act was initiated in early 1972. It requires geologic investigations for faults identified by the California Geologic Survey (CGS) as "***sufficiently active and well-defined.***"

Several major California faults have been placed in AP "Earthquake Fault Zones" that require site specific investigations (for example, the San Andreas and the Newport-Inglewood systems). Accordingly, based on ongoing compilation of documented or suspected fault activity, the California Geological Survey (CGS) then places additional faults, now including the Hollywood Fault Zone, in such zones. The inferred fault zones are then reviewed by local geological and other knowledgeable parties. When warranted, the zone is officially approved by the controlling agency, the State Mining and Geology Board.

From literature compilation and independent interpretation, the CGS placed the Hollywood Fault Zone within a Preliminary Earthquake Fault Zone (Figure 1). The map designates this as a "**fault that has had surface or near surface ground rupture within the last 11,700 years (Holocene Epoch)**". The CGS also postulated individual "active fault" strands within the Hollywood Fault Zone. Of particular interest is a strand, herein informally deemed the "Argyle Strand," inferred to be west and south of the Argyle site (Site 4, Figure 1). The CGS interpretation stems mainly from their observations of fault exploratory trenches info groundwater level differentials recorded in two nearby geotechnical borings (GDC, 2006) and on topographic expression, namely, a south-facing slope south of the study site (Plate 1; Figure 1).

The recent AP zonation requires site specific geologic investigations. The investigations must inherently confirm or deny the age and/or existence of any AP-defined faults on or within 50 feet of the property and should follow current geologic "standards-of-practice." Procedurally, the City of Los Angeles is the lead agency that will approve the Argyle site investigation. The California Geological Survey will review this report and give its opinion to the State Mining and Geology Board and to the City of Los Angeles Department of Building and Safety.

1.1 PROPERTY DESCRIPTION

The Argyle site is bound on the north by the southbound onramp to the Hollywood Freeway, on the west by Argyle Avenue, on the east by a parking lot and the Hollywood Freeway, and on the south by Yucca Street (Figure 1) in the Hollywood District of the City of Los Angeles. The site is currently improved by an unoccupied office building and parking structure (Photograph 1). In general, the site is near planar and ascends about ten feet to the east.

This document also refers to recent GDC investigations of the subject and adjacent sites. These are enumerated on Plate 1 as follows: Site 1 – Millennium, Site 2 – Yucca, Site 3 – Champion, and Site 4 – Argyle or Green.

1.2 PURPOSE

This study specifically evaluates whether CGS inferred strands of the Hollywood Fault Zone might constrain redevelopment of Site 4 (Argyle). Accordingly, this investigation follows current State, City, and professional geological standards required to assess the possible AP-defined active faults.

1.3 SCOPE

To initially evaluate the presence or absence of near-surface faults, GDC advanced continuous and undisturbed soil cores and Cone Penetrometer Tests (CPT) soundings (Plate 1; Appendix A). GDC also reviewed pertinent aerial photographs, geologic and topographic maps, peer-reviewed published articles, and proprietary geotechnical reports. Additionally, GDC reconnoitered the site and its environs for geomorphic evidence of possible surface fault ruptures.

GDC placed 20 CPT-soundings, 9 core borings, 2 bucket-auger borings, and 1 fault trench (Plate 1). The trench, approximately 90 feet long and up to about 16 feet deep, was used to calibrate the cores and CPT-soundings. The trench was also used to examine near-surface sediments, capping soil (pedogenic) profiles, and geologic structure.

The Argyle site (Plate 1; Figure 12) is capped by estimated ~300ka "older alluvium." These sediments are locally displaced by a few site-specific anticline-related bending-moment and shear faults. These were dated by conservative projection across Argyle Avenue into the 35 feet deep trenches at Sites 1 and 2 (Plates 1 through 6), west to CPT-borehole transects along Argyle Avenue, and south to a trench in Site 3 (Plate 1). The findings of those investigations directly bear on the subject investigation and are incorporated into the Site 4 study.

In summary, the GDC investigation included:

- Retention of Dr. Roy J. Shlemon to assist GDC with analysis of the local Quaternary geology, soil stratigraphy and paleoseismology, and to provide an independent QA

assessment of the investigation (Appendix B). In this report GDC uses the term "soil" as a pedogenic (weathering) feature and as a tool for dating sediments. It is not used in reference to engineering material.

- Review and analysis of relevant geotechnical and geologic investigations, published geologic and geotechnical maps and reports. Specific references are documented in Section 6. This includes careful review, interpretation, and extrapolation of geologic information from adjacent Sites 1, 2, and 3 (Plate 1).
- Interpretation of vertical stereo and oblique aerial photographs from the 1920's and 1930's archived with the Continental Aerial collection and the Spence collection at UCLA.
- Geomorphological and geologic reconnaissance.
- Coordination with the owner, with Underground Service Alert (USA), and with the City of Los Angeles Department of Building and Safety to locate utilities and to coordinate the logistics of the field investigation.
- Initial site observation to assess existing conditions relative to the planned development. Prior to drilling the cores or pushing the CPT's, initial advancement of a hand auger to 5 feet was performed to satisfy USA requirements.
- Advancing 20 in-line CPT-soundings up to 60 feet deep along a north-south transect along Argyle Avenue north of Yucca Street by Middle Earth, Inc. and Gregg In Situ, Inc. Logs and interpretations of the CPT data are given in Appendix A. Locations are given on Plate 1. Plates 12 and 13 are Cross-Sections (J-J' and K-K') interpreted from the CPT-soundings, core borings and bucket-auger borings.
- Drilling 9 in-line core holes to ~60 feet deep between the CPT soundings along the aforementioned north-south transect, and a short east-west transect (Borings B-8 and B-9) across Argyle Avenue (Plate 1). This was carried out by Gregg Drilling, Inc., using an 8.75 inch diameter hollow stem auger with a 3 inch diameter and 5 foot long split coring barrel down the auger annulus. The recovered cores were placed in 2.5 foot long cardboard core boxes and transported to the GDC laboratory for further examination. Core logs are provided in Appendix A. Locations are indicated on Plate 1.
- Advancing 2 bucket-auger borings near the intersection of Argyle Avenue and Yucca Street (Plate 1).
- Excavating one exploratory trench in the parking area below the existing structure (Photograph 1). The trench was about 90 feet long, and up to 16 feet deep. This trench

allowed pertinent extrapolation of soil core and CPT data for analysis of sediments and geologic structure. Location of the trench is indicated on Plate 1 and the log is Plate 11.

- Brushing and scraping of the trench walls, setting up of level string lines, and geologic logging and photographing of the trench.
- Illustration of the subsurface structure and stratigraphy with CPT and soil core logs on geologic Cross-Sections J-J', K-K', L-L' and M-M' (Plates 12, 13, 14 and 15) and the trench log (Cross-Section I-I') as shown on Plate 11.
- Preparation and summary of GDC findings and conclusions with attachments and appendices.

2.0 PREVIOUS AND CURRENT INVESTIGATIONS

2.1 PREVIOUS INVESTIGATIONS

Previous geologic mapping and investigations were based mainly on a few outcrops in the area, on geomorphic expression, and groundwater differentials among water wells. Based on the limited, site-specific data (Hoots, 1930; Hoots and Kew, 1931; Dolan, 1997, 2000; Dibblee, 1988), the California Geological Survey recently published (2014) and submitted a Draft Fault Evaluation Report (FER 253, 2014a) to complement the preliminary AP map for the Hollywood 7.5 Quadrangle. And then on November 7, the CGS (2014b) issued an 'official' A-P map showing a revised location of the Argyle Strand (Figure 1).

The Preliminary FER 253 depicts an inferred active (Holocene) trace of a Hollywood Fault ("Argyle Strand", Figure 1) as trending across the Yucca Street site, just southwest of the study site, whereas the official map depicts the strand as trending east about coincident with Yucca Street and terminating just east west of Vine Street (Figure 1).

As documented in the readily available literature, site-specific fault activity and geotechnical investigations in the area similarly addressed the potential impact of the Hollywood Fault (Law, 2000; GeoPentech, 2001, 2005; Leighton, 2011; City of Los Angeles, 2009; Langan, 2011, 2012).

2.2 PRESENT INVESTIGATION

Thus far few, if any, site specific investigations have relied on trench exposures to evaluate the presence and activity-level of a postulated Hollywood Fault. Most assessments were based solely on interpretation of CPT core transects, downhole logging of large diameter borings, and tectonic-geomorphic modeling. Therefore, this and nearby investigations by GDC (2014a, 2014b) are the first to use trenches to investigate the presence or absence of one or more inferred splays of the Hollywood Fault (CGS, 2014a, b). The investigation was based on the CGS preliminary fault locations. However, the breadth of the investigation permits GDC to assess the new strand (CGS,

2014b) in a manner appropriate for an AP investigation. The investigation included the following tasks.

2.2.1 CONE PENETRATION TESTS

The site exploration was initially conducted with CPT soundings and core borings. CPT's were centered every 10 feet and pushed up to a depth of 60 feet or to refusal. The tip and side resistance of the CPT cone was recorded and plotted on applicable cross-sections (see Plates 1, 2, 4, 9, 12, 13, and 14); the field data are contained in Appendix A.

2.2.2 CONTINUOUS CORE AND BUCKET AUGER BORINGS

Bucket auger borings (2) and most of the core borings (6) were placed between CPT's to calibrate the subsurface geology.

Borings B-8 and B-9 were later placed in an east-west manner across Argyle Avenue to confirm the GDC geologic model (Plate 1). Cores were drilled using an 8.75 inch hollow stem auger with a 3 inch diameter core barrel. The barrel was placed down the annulus of the auger and pushed about 3 to 4 inches in front of the bit as the auger was advanced. The barrel was connected and held stationary with respect to the rig rotary head system by a series of rods that pushed the barrel ahead of the bit to prevent the barrel from spinning. This resulted in collection of relatively undisturbed continuous core samples. The cores provide a physical view of the subsurface soil conditions used to calibrate the CPT data.

The cores in the upper sandy sediments were drilled in 2.5 foot runs to optimize recovery. Where the drilling recovery exceeded 90%, as in clayey sediments and bedrock, the runs were increased to 5 feet. The cores were placed in boxes, field logged, and returned to the GDC laboratory for detailed logging. After analysis, the core information was combined with the CPT data to calibrate the CPT's to the sediments recovered (Plate 1, Plates 12, and 13).

The bucket auger borings were placed to confirm the presence of Pleistocene mudflows and other stratigraphy useful for dating local sediments. Despite impediments such as utility lines and groundwater, GDC successfully demonstrated that the Pleistocene mudflow deposits exist north of Yucca Street. All boring logs are provided in Appendix A.

2.2.3 TRENCHING

2.2.3.1 1800 ARGYLE AVENUE TRENCH

This north-trending 90 foot long trench was placed directly below part of the existing structure (Plate 1) to identify the presence or absence of possibly active faults. The up to 16 foot deep trench was benched to enhance stability and to provide exposures useful for geological logging. The log is attached as Plate 11.

2.2.3.2 CHAMPION TRENCH

One fault trench was excavated at the Champion site south of the subject site (Site 3; Plates 1 and 8). It was oriented north-south to intersect possible projected splays of the inferred Argyle Strand of the Hollywood Fault Zone as mapped by CGS (2014; Figure 1). Prior to excavation, Underground Services Alert (USA) located all underground utilities. The 120 foot long, 7 to 8 foot deep trench (GDC, 2014b) was placed between an existing onsite apartment building and Argyle Avenue (Photograph 1). The trench was shored in accord with CAL-OSHA requirements.

2.2.3.3 YUCCA TRENCHES

GDC placed two trenches (west and east) at the Yucca site (Site 2) southwest of Site 4 (Figure 1; Plates 1, 3, 5 and 6) that proved vital to interpretations and conclusions regarding the presence or absence of active faults at Sites 3 and 4. These two trenches are explained in greater detail in the following sections.

2.2.3.4 WEST TRENCH

The west trench was the first of two trenches excavated on the Yucca site (Site 2). The top 13 feet along the west side of the trench were cut with a 1:1 slope to the first bench. Benches 2 through 4 were excavated with ~4 foot vertical walls to the bottom of the trench. This benching improved the stability of the trench and provided good exposures for logging (Plate 3, Cross-Section B-B'). The eastern side of the trench was sloped at 1:1 horizontal to vertical from top to bottom. The trench was up to 35 feet deep.

2.2.3.4 EAST TRENCH

A second trench was excavated to the east to further evaluate sediment properties and age. Because the pre-Holocene sediments were shallow, the trench was excavated to a depth of about 15 feet, at its deepest. The Pleistocene older alluvium encountered in the trench was very hard and dense, and it was benched with 4-5 foot vertical walls. The trench was oriented N-S, overlapped the west trench, and extended about 50 feet south of the property line of Site 2 onto Site 1 (Plate 1). This lower part of the trench exposed south-dipping beds of older alluvium (Plates 5 and 6). Near Station 00+84, a bedding plane slip fault attributed to flex during folding is capped by upper Pleistocene mudflow sediments. Assessment of the age of folding and slip on associated faults stems to a great degree from evaluation of this feature.

2.2.4 SOIL-STRATIGRAPHIC AGE ESTIMATES

As documented in Appendix B, the west trench at Site 2 exposed the thalweg of the Argyle Channel and an overlying 30 foot thick sequence of interbedded, grossly fining-upward fluvial sediments within the Argyle Channel. Soil-stratigraphic measurements and descriptions show that the Argyle Channel sediments are capped by a remnant, very slightly developed surface soil,

replete with four, intercalated interval buried paleosols, ranging in relative development from very slight to slight. Based on calibration with numerically dated soils elsewhere in Mediterranean climates, the cumulative time of soil weathering for formation of the channel sediments is an estimated ~8-10ka.

The Argyle Channel incises underlying, relatively impermeable mudflow deposits that bear a truncated, moderately developed buried paleosol (Appendix B). This soil, with its distinct translocated clay films, represents another ~8ka-15ka of weathering. Additionally, the abrupt unconformity between the base of the channel and the underlying clay suggests onset of Argyle Channel deposition during an epoch of regional pluviality, conservatively estimated as ~12ka-16ka (marine isotope stage 2). From a pedogenic standpoint, the cumulative age of the trench-exposed Argyle Channel and the underlying clay exceeds ~15ka.

2.2.5 RADIOCARBON DATING

Four conventional radiocarbon dates from the east and west trenches (Yucca-1, Yucca-2, Yucca-4 and Mill-1) in the Argyle Channel sediments were collected (Site 2, Plate 1) to evaluate the numeric age of the Argyle Channel sediments. The west trench samples, Yucca-1 (~4,310ybp) and Yucca-2 (~4,100ybp), are suspect, owing to the high potential for younger contamination by modern groundwater and to the likely re-deposition of older “organic sediment” resulting in an unreliable old age. In the east trench, sample Yucca-3 could not be dated; Yucca-4 yielded a ~4,170ybp age.

The east trench was extended south to evaluate active fault potential on the adjacent property and to establish a 50 foot buffer zone. Charcoal samples collected and identified as Yucca-4 and Mill-1 on the west wall of the east trench yielded radiocarbon dates of ~4,170ybp and ~4,280ybp, respectively (GDC, 2014a). Other samples (Mill-2 though Mill-7) were retained for age assessments of sediments on the adjacent property, Site 1 (Plate 1) to the south.

3.0 GEOLOGIC FRAMEWORK

3.1 REGIONAL GEOLOGIC SETTING

3.1.1 STRUCTURE

The Santa Monica Mountains began uplift in the Jurassic, and intermittent tectonic movement continues to the present (Hoots, 1930; Hoots and Kew, 1931; Dibblee, 1991). By the middle Miocene, deformation affected Topanga sediments, resulting in simple, west-plunging folds. Later, in response to continued movement of San Andreas plate boundary faults, high-angle normal offset gave rise to an incipient Hollywood Fault Zone.

Periodic faulting since the late Miocene produced more complex deformation replete with locally intense folding. In the study area, the southeastern limbs of local folds were displaced downward

along the Hollywood Fault Zone. By the onset of the Quaternary, many folds were buried by episodic, climatically controlled alluvial deposits that covered most of the study area. Starting at least by mid-Quaternary time, the surface expression of local left-lateral and thrust faults (left-oblique) were generally buried by continuing region-wide alluviation. Great relief was generally expressed along major south-trending canyons that incised the alluvial cap(s), only to be again partially filled in response to regional change in climate.

3.1.2 HOLLYWOOD FAULT

The Hollywood Fault Zone forms the general boundary separating the LA Basin (Hollywood Sub-basin) from the Transverse Ranges on the north and the Peninsular Ranges on the south (CGS, 2014). From west to east, the Hollywood Fault is generally divided into five segments all characterized by left-lateral oblique slip (Figure 9). The preliminary inferred eastern terminus of Segment 2 trends southeast across Site 2 and then east immediately south of Site 3 (Figure 1; CGS, 2014). This is the Argyle Strand of GDC (2014a). Now, the official strand parallels Yucca Street west of Site 4. The west end of Segment 3 is inferred to trend southwest to the southeast of Site 4 and then to "die out" southeast of the subject site (Site 4; Figure 1).

The locations and relative activity of the Hollywood Fault segments stem mostly from the investigations of Dolan and others (1997, 2000) who based their conclusions mainly on geomorphic expression, possible offset of alluvial fans flanking the southern Santa Monica Mountains, previous geotechnical studies by LA Metro, and differences in groundwater levels as depicted in geotechnical borings.

Based on the California Division of Mines and Geology (CDMG) Open-File Report in 2006, GDC (2006), during a geotechnical investigation of the Site 2 area, encountered groundwater in its borings B-1 and B-2 at depths of 24 and 44 feet, respectively. During its recent investigation, GDC (2014a) found that in the Yucca West Trench a mudflow stratum was wet near and below the contact with the Argyle Channel Deposits at ~27 feet below ground surface (bgs). Free water occurred at about ~35 feet bgs.

The east and west trench exposures demonstrate the presence of many confining beds intercalated into the host deposits. Perched water on beds of different elevations likely gives rise to the 20 foot vertical differences of piezometric surfaces recorded in adjacent, on-site geotechnical borings. This separation was the likely basis for the CGS postulated presence of a Hollywood Fault, "Argyle Strand" (CGS, 2014a). Again, from the site-specific trench exposures, GDC documents that the local perched water levels are not caused by any inferred fault.

3.2 TECTONIC-GEOMORPHIC SETTING

3.2.1 REGIONAL ANALYSIS

Hoots and Kew (1931; Figure 3) initially identified a "bedrock fault" about 2,000 feet north of Site 4 (Figure 3) inferred to be a strand of the Hollywood Fault Zone. The fault characteristically superposed Miocene Topanga Formation rocks over the younger upper Miocene Modelo Formation (Hoots and Kew, 1931).

Recently, fault locations have been based on tectonic geomorphic expression (for example, CGS, 2014 (summary); Crook and others, 1983; Dolan and others, 2000, 2000a; Dolan and Pratt, 1997; Dolan and others, 1997; Tsutsumi and others, 2001; United States Geological Survey, 2005). It is only trench exposures that provide locations as well as relative activity information useful for dating last time of surface rupture.

Nevertheless, GDC also analyzed the geomorphic and topographic expression of the northern Los Angeles Basin/Hollywood area that encompasses Site 4 and its environs. For example, the USGS Burbank 7.5' Quadrangle (1926 edition; reprinted in 1941) depicts west-to-east topographic breaks and truncated ridges that mark the traditional trend of the Hollywood Fault north of Site 4 (Figures 5, 7, and 8). Presumably, the topography stemmed from surface rupture. However, the on-going GDC investigations of Sites 1, 2, and 3 (GDC, in progress, 2014a, 2014b) show that the truncated ridge immediately south of Site 3 is likely erosional and not fault related.

From the geomorphic expression, as well as from trench exposures and core data, GDC reconstructed general landscape evolution in the area over the past ~300ka. In brief, throughout the Quaternary, regional changes in climate and vegetation resulted in deep channel cutting, partial alluvial filling, and locally later re-incision.

The most recent regional depositional event is expressed geomorphically by late Pleistocene and Holocene alluvial fans that emerge from the mouths of three canyons at Argyle Avenue, Vine Street, and Beachwood Drive. These are informally called the "Argyle," "Cahuenga" and "Beechwood" fans, respectively (Figure 6). As exposed in the Yucca (Site 2) trenches, the Argyle Fan includes a distinct basal channel (thalweg and basal gravel beds) and overlying mid-Holocene distributaries. The eastern distributaries lapped against a now-buried "channel wall" mantled with older mudflow and debris flow deposits (Plate 2).

A pre-Holocene channel similarly extended immediately southwest and west of Site 4 as indicated by sediments exposed in the Yucca East trench and in adjacent cores. The channel incised into the base of ~300ka "older alluvium" (Qoal) that once extended across the entire area but is now surficially preserved only at the Argyle and Champion sites (Plate 1). The eastern boundary of this channel was then filled with likely climatically controlled up-channel slope and

side slope mudflows (Qm). As shown in the Yucca trenches, the mudflows typically mantle the Miocene Formation and older alluvium and underlie the basal Argyle (Holocene) channel deposits (Plate 2, Cross-Section A-A).

3.2.2 AERIAL PHOTOGRAPH ASSESSMENT

GDC also interpreted aerial photographs to evaluate the possible presence of Hollywood Fault strands (Dolan and others, 1997, 2000) that potentially could affect the Argyle property (Site 4). Specifically reviewed were oblique aerial photos from the UCLA Benjamin and Gladys Thomas Air Photo archives and Continental Aerial Photo collections. The aerial photographs show that the area south of the truncated ridges, usually given as evidence of fault surface breaks, was graded and developed prior to the dates of the flights, thereby eliminating geomorphic expression of inferred faulting in the immediate area.

3.3 LOCAL GEOLOGIC SETTING

Site 4 (Argyle), except for western margin where younger alluvium is present, lies on pre-Holocene older alluvium (Qoal) that rests on bedrock of the Modelo Formation (Tm; Figures 9 and 10). The older alluvium, and to some degree the underlying Modelo Formation, form the west-facing slope of Argyle Canyon. After channel incision, younger deposits useful for determining fault ages were laid down in the Argyle Channel, including Pleistocene older alluvium (Qoal) and mudflows (Qm), and Holocene sand deposits (Qs).

None of the younger sediments useful for dating last fault slip were exposed at Site 4. However, their presence at the Yucca (Site 2) trenches permits conservative projection of the trends of the related Site 3 and 4 fold and faults into the Yucca site area used for soil-stratigraphic dating (GDC, 2014a). Thus by association of the geologic structure and stratigraphy, fold/fault projections can be made from Site 2 to Sites 3 and 4.

3.3.1 STRATIGRAPHY

GDC described and otherwise analyzed site-specific core and trench-exposed sediments according to their physical properties and relative soil profile development (Appendix B). GDC recognizes three useful mappable units deposited above bedrock (Figure 10): the upper sands of the “Argyle Channel” deposits (Qs), an immediately underlying mudflow (Qm), and a lower complex of interbedded older alluvium (Qoal). These, in turn, are underlain by Miocene Modelo Formation (Tm). GDC describes the sequences starting from the youngest (Artificial Fill) to the oldest (bedrock) as documented in the trench logs, cores, and CPT’s (Plates 1 through 7; Figure 10).

3.3.1.1 ARTIFICIAL FILL (Qaf)

Surficial artificial fill blankets the areas explored at Argyle. In general, where encountered, the fill was excavated with little difficulty and proved little hindrance to excavation.

3.3.1.2 HOLOCENE SAND (Qs) (ARGYLE CHANNEL DEPOSITS)

The sands and gravels of the Argyle Sand were and are derived from Santa Monica Mountains terrane and were transported south down canyons as broad alluvial deposits (Figure 6). The Argyle Sands, in general, are poorly to well sorted. The quartz sand grains are generally sub-rounded and frosted indicating impact with other Argyle Channel sediments during fluvial transportation. This sand occurs mostly in the western part of the site in the now-sediment-filled Argyle Channel (Figure 12; Plates 12 through 14). At the study site, the sand unconformably overlies Pleistocene mudflow deposits (Appendix B; Plates 11 through 14).

The Argyle Sand was dated using soil-stratigraphic and radiocarbon methods. These deposits consist of loose to moderately dense, gradationally bedded and sub-rounded to sub-angular sands with local, weakly cemented gravely sands. Slightly to moderately developed paleosols occur within the sands and gravels (Appendix B). The sands and gravels are mostly basaltic and meta-quartzite with some granitic clasts. The granitic gravels and cobbles are mostly decomposed in place forming angular gruss. The sand ranged from fine- to coarse-grained with occasional fine- to medium-grained gravel and cobbles and weathered silty soil horizons. Gravels and cobbles were concentrated along unconformities and bottoms of cut and fill channels, identifying grossly fining-upward sedimentation sequences. Both clastic sands and gravels units were occasionally capped with buried paleosols that reflect alternating epochs of deposition and relative landscape stability (Appendix B).

3.3.1.3 PLEISTOCENE MUDFLOW DEPOSITS (Qm); SITE 2 AND BORINGS NORTH OF YUCCA STREET

The Argyle Channel sands are immediately underlain by almost ubiquitous and clearly identifiable mudflows (Qm), as exposed in nearby Site 2 trenches (GDC, 2014a) and in core holes along Argyle Avenue immediately west of Site 4 (Figure 12). Mudflow deposits occur in the now-buried Argyle Channel, but are absent on the elevated interfluve on which most of the study site lies (Figure 12). The deposits are in angular unconformity with both the Modelo Formation and the older alluvium, and are unconformable with the overlying Argyle Sand.

Typically, the mudflows are stiff silts and clays with abundant sand and some fine-grained gravel. Locally, the lower part of the unit is richer in clay. Along the north part of Site 4 (Cross-Section K-K'), the upper part of the section seemingly has a larger sand fraction, perhaps because of locally derived side slope mudflow derived from the older alluvium or a change in upstream

source or flow velocity. The mudflow deposits are significantly enriched in clay compared to both the older alluvium and the well-stratified sands of the Argyle Sands.

General grain-size and stratigraphic position indicate the mudflows initially filled an incised canyon. That is, the fine-grained nature of the deposits has been interpreted to indicate that they emanated from the upper reaches of Argyle Canyon and filled the lower part of the canyon and were thence incised by modern Argyle Canyon Flow. They now appear to drape over a paleo-topography formed by modest erosion into the folded older alluvium deposits, but are themselves internally horizontal. The Argyle Sands that unconformably overlie the mudflow deposits have significant channel incisions into them.

The mudflow deposits have been pedologenically dated as minimally at least 30-35ka based on several soil development descriptions. The Site 2 trenches provide the best evidence of the age and characteristics of the unit. For example, a remnant buried paleosol in a Site 2 trench was measured and described (Appendix B). The paleosol is typified by few, thin, reddish brown clay films that line ped faces and bridge mineral grains, characteristics indicative of weathering for at least ~12-15ka. The soil itself may be much older, for the upper part with diagnostic horizons is eroded, incised by basal gravel and coarse-sand of the overlying Argyle Channel deposits. Accordingly, as documented in east trench exposures, typical mudflow deposits that were not reworked bear more strongly developed paleosols, typically ~30ka or more in age.

The mudflow clay (Qm), exposed in the Site 2 east trench, is at least ~30ka and unconformably caps the older alluvium deposits (Qoal). The mudflows on the bottom of the west trench are mainly derived from reworking of the ~30ka paleosol as discussed in Appendix B and from eroded sediments that flowed down Argyle Channel. To the south, along Cross-Section A-A', as observed in core boring B-2, the mudflow (Qm) which caps the older alluvium deposits (Qoal) within the east trench has been recognized as the ~30ka paleosol. Because the mudflow sediments (as described in the east and west trenches, CPT's, and soil cores) have different age intervals but similar origins, they have been mapped as one unit (Qm).

The section of the mudflow deposit in the west trench is uncomformable with the overlying Argyle Sand and was found to have a relative weathering date of ~12ka to 15ka along the unconformable contact with the Argyle Sand. The unconformity between the Sand "Argyle Channel" (Qs) and underlying mudflows was clearly observed in the trenches, and in most cores and CPT's where it is a distinct marker separating Holocene and Pleistocene sediments.

The distinct mudflow core samples and unique CPT signatures show that the unit is traceable from Site 2 up Argyle Channel north of Site 4, and are thus useful for determining the presence or absence of faults along Cross-Sections L-L' and K-K'.

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3.3.1.4 OLDER ALLUVIUM (Qoal); SITES 3 AND 4

The Site 4 (Argyle) trench exposed older alluvium composed of consolidated non-marine sand, silt, and gravel beds (Plate 10). Based on the CPT-soil core transects (Plates 12 and 13), the older alluvium lies in angular unconformity with the Miocene Modelo Formation bedrock. Bedding planes within the Modelo are almost vertical whereas the older alluvium, though involved with folding, dips less steeply. Distinctly bedded gravelly, sandy, and reddish silty beds typify the older alluvium. Generally, alternating sequences include coarse-grained, sometimes cobbly, sand overlain by finer grained silt beds (Photograph 2).

The unit is a vestige of a once extensive alluvial plain later incised by local south-trending canyons. The older alluvial deposits are judged to be ~300ka or older (Appendix B), and thus provide excellent key beds for determining the presence or absence of faults.

In sum, based to a great degree on extrapolation of stratigraphy exposed in the Yucca and Champion trenches, as well as abundant CPT-soundings and core holes, GDC (2014a, 2004b) reconstructed a regional model for landscape evolution and age for Site 3 and Site 4.

3.3.1.5 MIOCENE BEDROCK (Tm); SITES 2, 3, AND 4

The bedrock underlying this site is the Miocene Modelo Formation as mapped by Hoots and Kew (1931). The local Modelo Formation is generally soft, light-gray to brown, well bedded shale with isolated hard platy siliceous shale and massive to thin beds of sandstone, siltstone, and massive conglomeratic sandstones. Volcanic ash also occurs. Modelo Formation observed in soil cores are typically thin sequences of gray to greenish gray sandstone, siltstone, and claystone below a weathered zone of variable thickness.

At Site 4, the upper weathered bedrock near its contact with the older alluvium is plastic to stiff and lacks sedimentary and pedological structure. With depth, the Modelo Formation is gradually oxidized as typified by dark gray to black, thinly bedded sandstone, claystone, and fissile clayey shale.

Based on core samples taken north of Yucca Street, the formation is seemingly strongly deformed as evidenced by distorted beds that are nearly vertical. The bedrock is thus in angular unconformity with the more moderately dipping older alluvium that in turn is overlain by unconformable and undeformed upper Pleistocene mudflow deposits (Plates 11, 12 and 13).

3.4 LOCAL STRUCTURE

The Holocene Argyle Sand was inherently disturbed during the coring process. However, the underlying contact with the Pleistocene mudflow deposits and older alluvium proved to be an abrupt, continuous and unbroken erosional unconformity. In contrast to the Modelo and older

alluvium, the capping Holocene Argyle Sand and the Pleistocene mudflow deposits are relatively tabular and not faulted.

3.4.1 YUCCA STREET ANTICLINE

Investigations of Argyle (Site 4) and nearby properties to the west and south, respectively (Sites 2 and 3), show an anticline with an axis almost coincident with Yucca Street (Figure 12 and Plate 1). This structure is a low amplitude local fold; however, alternatively, it might be the "crest" of a larger regional anticline. A more complete characterization awaits more data from other investigations in the central Hollywood area. For description, GDC deems the fold as the "Yucca Street Anticline."

The Yucca Street Anticline was first recognized in Site 3 and 4 trenches (Plates 1, 8, and 11; GDC, herein). The Site 3 trench exposed near-horizontal older alluvium in the north (near Yucca Street) that increasingly dips 15 to 30+ degrees to the south in the southern part of the trench (Plates 1 and 8). Trenches on Site 2 (Plates 3, 5, and 6) revealed south-dipping Pleistocene debris flows younger than the Site 3 older alluvium. In contrast, exposures to the north at Site 4 exposed north-dipping older alluvium (Plate 11), thereby defining an anticline with an axis about coincident with Yucca Street. The general geologic relationships are schematically illustrated in Plate 10.

Based on the site-specific exposures and from models of such folds, GDC reasonably infers that the anticline owes its origin mainly to regional transpression, likely along the offsite Hollywood Fault. This reasoning is exemplified in Site 2 Cross-Sections A-A' and B-B'-B" that depict the folded sediments and their relation to overlying – and unbroken – upper Pleistocene and Holocene deposits (Photograph 4). A stereonet plot of the bedding attitudes at Sites 3 and 4 shows them consistent with a fold that trends west-northwest (Figure 11).

3.4.2 FAULTS

A set of small-displacement non-active faults associated with the Yucca Street Anticline bear on this assessment of fault activity levels. Additionally, the GDC investigations also found geologic structures that seemingly provide clues to local regional faults, possibly the Hollywood Fault Zone.

3.4.2.1 BENDING MOMENT/SHEAR FAULTS

Site 3 and 4 trenches exposed several low-displacement, south-dipping faults with stratigraphic separations of less than about two feet (Plates 8 through 10, and 13). Photograph 3 illustrates a typical Argyle fault. These likely stem from two separate but coeval stress fields. In cross-section the faults clearly are a product of dilation during folding and are thus "bending-moment" faults stemming solely from localized stress fields that are active only during the folding event(s) (Billings, 1956; Zolnai, 1986; Yeats 1986). For example, at Site 4, the faults dip characteristically south toward the fold axis near Yucca Street; at Site 3, south of the subject site, the faults dip north toward the axis.

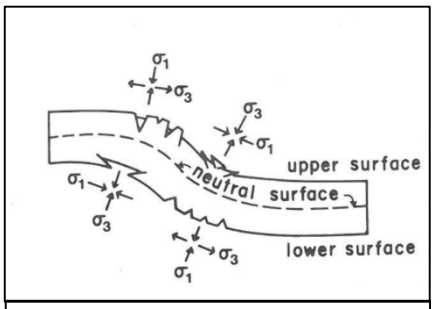

Figure A. Bending-moment faults showing local stress fields. Note: Upper surface faults cannot propagate below the neutral surface (Yeats, 1986).

These are shallow-rooted non-active faults that form on the upper surfaces of anticlines as portrayed in Figure A from Yeats (1986). For example, in the Argyle trench (Plate 11) GDC logged three faults that die out with depth within the trench, thereby suggesting that the bending-moment faults are shallow rooted.

Also present in the trench (Plate 11) are scattered well-developed joints that seemingly are complements to the faults. They plot on the stereograph (Figure 11) as possible complements.

Stratigraphic mismatches of beds across some faults strongly suggest a lateral component of slip (Plates 8 and 11). The Yucca Street Anticline is a generally left-oblique transpressional stress field as exemplified by the Hollywood Fault. And its trend is consistent with the much-cited classical strain ellipsoid of a left-lateral system (Figure B). GDC concludes that the anticline stems from left-lateral shear perhaps related to the Hollywood Fault that historically has been mapped north of the study site. In sum, the lateral component is consistent with its past tectonic environment. These are thus shear faults resultant to now-ceased stress that gave rise to the now-inactive Yucca Street Anticline.

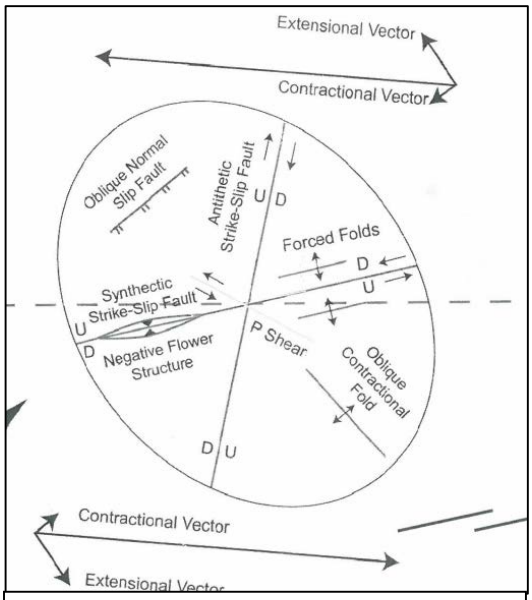

Figure B: Typical left-lateral strain ellipsoid (Zolnai, 1986.

The California Community Fault Model (Meigs and others, 2008) lists the Hollywood Fault to have a reverse slip rate of about 0.7mm/yr and a lateral slip rate of 0.6mm/yr and the preferred WGCEP model (2006; from Meigs and others) is 0.5mm/yr vertical slip and .0.4 lateral slip. The overall estimated slip is near 1:1. Although individual faults within the Hollywood Fault Zone might not possess the same ratio, judging from lack of distortion and mastication of the older alluvium along fault traces, GDC deduces that lateral slip was perhaps no more than a few feet.

Billings (1956; Figure C) depicted similar faults as "shear joints" or "fractures" along which relative small displacements occur. The dominant trends at Site 4 are northeast-southwest. Assuming the fault attitudes measured near the ground surface in the trenches represent the entire fault planes, the principal trends are not parallel to the anticline axis. One fault in the Argyle trench shows a reverse rather than normal component. This might result from stratigraphic mismatches. Or conversely, Sylvester (1988) noted that such reverse faults can occur in a generally dilatational environment.

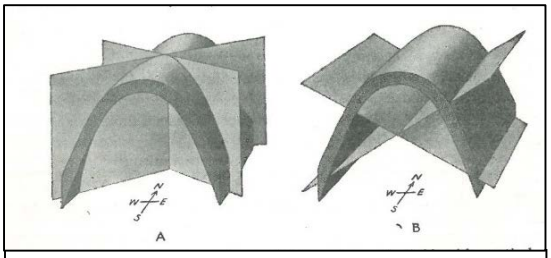

Figure C. Idealized representation of shear joints and faults associated with anticlines. From Billings (1956).

These Site 3 and 4 faults are seen neither in the Site 2 trenches (Figure 13) nor in associated CPT-soil core cross-sections. GDC thus concludes that the Site 3 and 4 trench faults either do not displace the Site 2 sediments that are, minimally, 30ka, or are kinematically and geographically limited to the anticline crest and die out laterally and vertically.

Figure 13 illustrates the current GDC interpretation of the local geologic structure based on review of earlier published and proprietary reports, aerial photograph review, and tectonic geomorphologic assessment. In particular, recent detailed GDC subsurface investigations of the subject site and nearby Sites 1, 2 (GDC, 2014) and 3 (in progress) brought forth abundant previously unknown subsurface information on which to base GDC interpretations.

3.4.2.2 ARGYLE STRAND

The Argyle Strand shown on the AP Official Map (Figure 1) now trends east nearly coincident with Yucca Street and then terminates west of Argyle Avenue. Investigation of Site 2 ("Yucca") revealed that the previously "preliminary" (CGS, 2014a,b) Argyle Strand of the Hollywood Fault Zone, if extant, does not displace Pleistocene sediments that are at least 300ka. Site 2 exploration trenches, CPT-soundings and core holes (GDC, 2014a) clearly demonstrate same. Logs of the trenches and CPT-borehole cross-sections (following text) demonstrate the absence of the inferred Argyle Strand to the depths explored.

Cross-sections J-J', K-K, L-L', M-M' and N-N'' (Plates 12 through 16) located along and across Argyle Avenue and north of Yucca Street in essence cover the Site 4 and at least 50 feet north and south of the study site. These show Modelo Formaton overlain by Pleistocene older alluvium, Pleistocene mudflows and the Argyle Channel sands. Along the northern run of K-K, older alluvium fingers in between the Modelo Formation and overlying mudflow deposits at about elevation 385 feet above sea level. See Cross-section L-L' for example. The location of the older alluvium is consistent with the stratigraphic elevation encountered in B-9.

It must be noted that the north end of J-J' and the south end OF k-k'(with an about 20 feet overlap) do not match, thus giving the appearance of discontinuity. However, the transects are not parallel to the wall of the Argyle Channel, rather the transect was slightly askew to the wall. This resulted in the plotting of the geologic contacts lower that if the transect had paalleled the wall. Cross-Section L-L, shows how the apparent elevations of the contacts are out of context at the ends of the two cross-sections. Hence GDC constructed Cross-Section N-N' nearer the thalweg of Argyle Channel (Plates 1 and 16). Here, the run parallel to the ends of J-J' and K-K'. This demonstrate that the discontinuity is artificial. And that the stratigraphy is continuous and not faulted near the discontinuity.

By inspection, the upper Pleistocene mudflow deposits are laying unconformably on Modelo Formation and older alluvium in a normal manner. The deposits are unbroken along the runs of L-L', K-K' and N-N'. Transects show demonstrate the absence of Holocene faults along their lengths.

North of Yucca Street, bedding within the Modelo Formation dips almost vertically as shown in core samples. The cores were not oriented with respect to north; therefore, the directions of dips are indeterminate. The Modelo Formation along Argyle Avenue is thus in distinct angular conformity with the overlying more gently dipping Pleistocene older alluvium and mudflow deposits. Much of the Modelo deformation obviously took place long before deposition of the Pleistocene units. The steepened limb of the Yucca Street Anticline could indicate long (>~300ka) ceased deformation along a Hollywood Fault strand north of Site 4 and Cross-Section K-K' (Plate 13). It is thus inferred that the traditionally mapped trace of the Hollywood Fault lies north of the study site, but its trace is not known well enough for GDC to put on a map. Its location awaits further regional exploration by others. In sum, Figure 13 shows the GDC geologic interpretations based on the literature, tectonic-geomorphic assessment and recent detailed subsurface investigations and Figure 5 shows the GDC regional fault map based on the literature, tectonic-geomorphic assessment and recent detailed subsurface investigations and Figure 5 shows the GDC regional fault map based on presently available information.

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3.4.3 DATE OF LAST FAULT SLIP/FOLDING

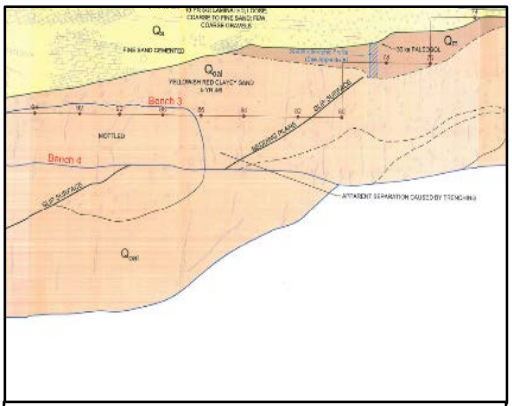

Figure D. Site 2. West wall of east trench (GDC, 2014a) showing bedding plane fault and south-dipping older alluvium (Qoal) truncated by Pleistocene mudflow deposits (Qm).

Growth of the fold and slip along the associated bending-moment faults ceased prior to at least ~35ka, based on trench documentation in the adjacent Yucca (Site 2) area. Geological information obtained from both the Site 2 and 3 studies southwest and south provides data for analysis of fault and fold geometry and age. The faults exposed at Site 3 (Plate 8 and 10) that are kinetically linked to those in the Argyle trench (Plate 11), if projected west to Site 2, would intercept deep trenches and CPT- core hole transects. As documented in Plates 3 through 6, no such faults were observed. Rather, one slip-surface (likely a non-active flexural slip fault) and a fold limb are now shown to be demonstrably overlain by an unbroken or folded mudflow (Qm) that bears a remnant buried paleosol at least 30-35ka (Appendix B). Likewise, Cross-Sections J-J' and K-K' along Argyle Avenue west of Site 4 show that the upper Pleistocene mudflows and overlying sands are unaffected by faulting.

In sum, the upper Pleistocene mudflows and overlying Argyle Channel deposits (Qs) sediments are not disrupted by either faults or folds. Even conservatively, the displacements of the Argyle older alluvium took place prior to 30-35ka; therefore, the faults are not active according to Alquist-Priolo definitions.

Further, the nature of the Yucca Street fold indicates that the older alluvium strata are progressively younger to the south. Based on the beds exposed in Site 3, the strike is east-west and should be similarly exposed at the east trench walls. They trend slightly more southerly than the bedding, and would intersect the east trench where strata of similar age to those faulted in Site 3 would be below the trench bottom. The Older Alluvial strata that are exposed are younger than the faults because they are farther out on the outer limb of the fold. No north dipping faults occur, but a south-dipping sheared bedding plane was mapped, which is unconformably overlain by the Mud Flow Deposit unit (Cross-Section C-C', D-D; Appendix B; Appendix D, Photo 12).

The presence of "younger" older alluvium strata in the east trench, occurring directly on strike from Site 3 and with similar dips, but unfaulted, leads to the conclusion that the faults in the Older Alluvium of Site 3 are older than the Older Alluvium in the east trench, and as such have been inactive since ~30ka.

3.4.4 CAUSATION OF FOLD/FAULTS

Owing to the paucity of regional deep subsurface information, the kinematics for the formation of the Yucca Street Anticline remain enigmatic. However, the GDC investigations now provide much new information regarding evolution of the Hollywood Fault system.

Several hypotheses might explain origin of the Yucca Street Anticline. One is that it is a local fold on the upper plate of a south-vergent thrust fault. Recent GDC investigations at Sites 1 and 2 (GDC, 2014a, 2014b) placed trenches, borings, and CPT-lines across reasonable northwest and west projections of a postulated fault near the base of an escarpment along Carlos Avenue, east of Argyle Avenue. The explorations exposed or encountered only unbroken upper Pleistocene (Appendix B) sediments; any faults therefore are demonstrably pre-Holocene. It follows then that the Carlos Avenue escarpment owes its presence to geologic processes other than fault surface rupture along a foot slope fault.

A second hypothesis is that the anticline originated from a short duration perturbation in the stress-strain pattern along the Hollywood Fault. Inferentially, a short term pulse of transpression might have led to shear folding or, rather, the fold is part of the strain along an oblique fault, such as the Hollywood Fault. Figure D in accordance with Zolnai (1988) is one of but many renditions of same.

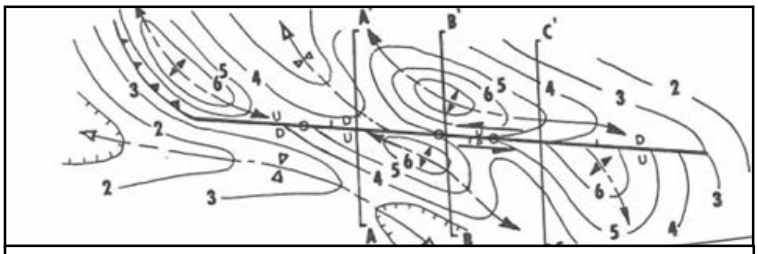

Figure E. Drag-effects along left oblique faults (Zolnai, 1988).

3.4.5 LOCAL FAULT MAP

Figure 13 is a local fault map based on both the literature and new information gained from subsurface investigations of Sites 1 through 4. It should be realized that subsurface information away from those sites is at best sparse. Thus, the map is open to ongoing interpretation as more information is gathered by others at other sites. A summary of the current GDC interpretation is as follows. If those two faults are discounted, or at least the Argyle Strand, the structural geometry near Segment 2 and 3 (Figure 13) is typified by either a small left step or no step. The left step that the presence of the Argyle Strand implies is not consistent with the local geometry. A left step in a fault with left lateral slip would be an area prone to dilation. However, the Yucca Street Anticline is interpreted to be a product of local left-lateral transpression. Folding is constrained between 300ka and 30ka.

The location and trend of the Yucca Street Anticline is consistent with through going, rather than left-stepped, Segments 2 and 3 of the Hollywood Fault Zone. Additionally, strongly tilted Modelo

beds north of Yucca Street also argue for a fault north of Site 4. The age of formation of the anticline is between ~300ka and 30ka.

In sum, GDC encountered neither the Argyle nor Yucca Strands of the Hollywood fault zone within the limits of its subsurface exploration; if extant at the study sites, they are pre-Holocene. A west-northwest anticline that involves all units older than about 30ka-35ka about parallels Yucca Street (Plate H-H' and Figure 12).

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on detailed investigation of Site 4 and three adjacent properties in the Yucca-Argyle area of Hollywood that included fault trenches, CPT-soundings, and soil cores, GDC concludes that:

1. The Argyle site (Site 4) is underlain by ~300ka "older" alluvial deposits that are tilted and locally separated up to ~2 feet vertically by small faults that stem from warping of a southeast-trending anticline ("Yucca Street Anticline"). Some of the faults have stratigraphic mismatches suggesting an apparent lateral component of slip common to areas of transpression. No younger "datable" sediments overlie the older alluvium at the Argyle and Site 3 trench sites.

2. The Argyle faults are, however, dated by reasonable projection into the trench exposures at the Champion site (Site 3; GDC, 2014a, 2014b) south of Yucca Street and the Yucca site (Site 2; 2014a), across Argyle Street to the southwest, and into the Site 3 trench to the south (GDC, 2014b).

3. The southern anticline fold limb and a slip surface exposed in the Yucca East trench (GDC, 2014a) is covered by a horizontal, unbroken mudflow that bears a moderately developed paleosol estimated to be at least ~30ka-35ka old. The mudflow, in turn, is overlain by another ~12ka sequence of "Argyle Channel" sand, thus indicating that last site-specific deformation occurred prior to at ~40ka ago.

4. Based on structural and sedimentary modeling, the Argyle faults most likely originated in a stress system of combined tension along the dilating Yucca Street Anticline axis and concurrent left-lateral stress that initiated and continued left-lateral slip until the lateral stress ceased at least 3 years before present. Typically, such faults are neither active nor of regional extent.

5. Last displacement of the Argyle site faults and the genetically associated Champion site faults therefore took place prior to the Holocene, and hence are "not active" according to present State of California definition.

6. CPT/core hole transects along Argyle Avenue west of Site 4 (Plates 12 and 13) illustrate a complex, active erosion and deposition (cut-fill) environment within and near Argyle channel. However adequate stratigraphic continuity along the transects demonstrates the absence of Holocene and upper Pleistocene faults.

7. No active faults exist within the subject site or within 50 feet of the site boundaries, based mainly on extensive exploration of Site 2. Therefore, the site is suitable for development according to the requirements of the State of California Alquist-Priolo Act and the City of Los Angeles.

5.0 LIMITATIONS

The overall assessment of the geologic and fault hazard conditions, in this report, reflects GDC's professional opinions and is intended for the use by The Robert Green Company, and its design consultants. This report has been prepared solely for assessing seismic impact on the proposed development and may not contain sufficient information for environmental (hazardous waste) and geotechnical (foundation) purposes. The recommendations shall not be extrapolated to areas not covered by this report, or used for other facilities, without the review and approval of GDC and from The Robert Green Company. This report or any portion of this report may be provided to state, county or city agents for informational purposes only.

The GDC investigation and evaluations were performed in accordance with generally accepted local standards using that degree of care and skill ordinarily exercised under similar circumstances by reputable engineering geology and geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report.

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FIGURES

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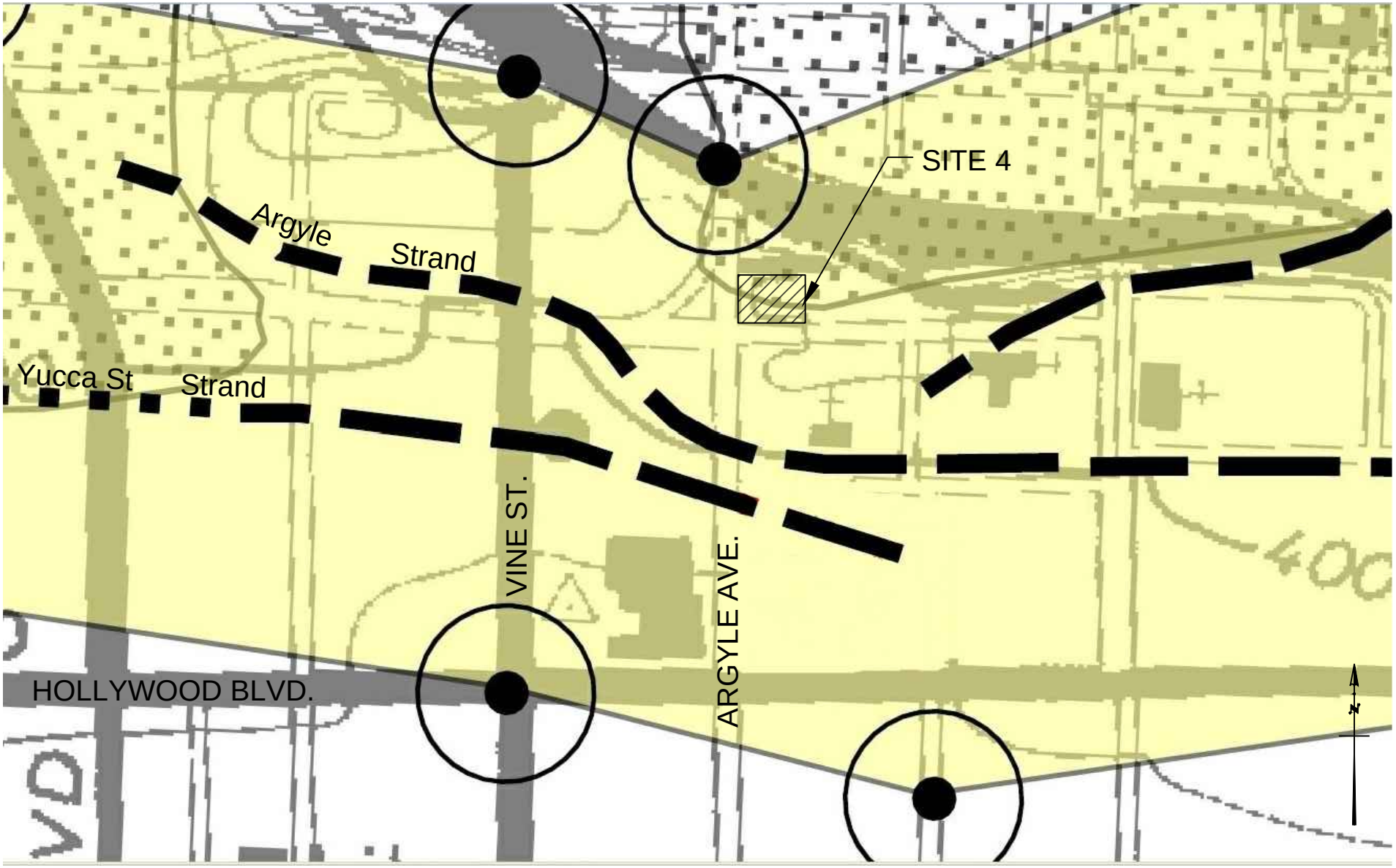
Figure 2	CGS Quaternary Geologic Map
Figure 3	Local Geology Map, Hoots and Kew (1931)
Figure 4	Major Faults and Historical Seismicity
Figure 5	Burbank 6' Quadrangle, Showing Geomorphic Features, 1926, Reprint, 1941
Figure 6	Hollywood Fault Geomorphic Features, FER 253
Figure 7	Spence 1930 Oblique Aerial Photo Showing Geomorphic Features
Figure 8	Continental 1954 Aerial Photo Showing Geomorphic Features
Figure 9	Hollywood Fault Segment Plan
Figure 10	Stratigraphic Section
Figure 11	Stereographic Plot of Structural Geologic Elements
Figure 12	Geologic Map *(in back pocket)*
Figure 13	Hypothesized Hollywood Fault Segment Plan



Reference: California Survey FER 253, Jan 8, 2014
LA Weekly 1-8-14

DATE: 5/2/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	SITE MAP WITH PROPOSED AP ZONE AND ARGYLE AND YUCCA STRANDS	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK			1800 ARGYLE AVE, HOLLYWOOD, CA	SCALE: NO SCALE
REVISION: --					FIGURE NUMBER: 1

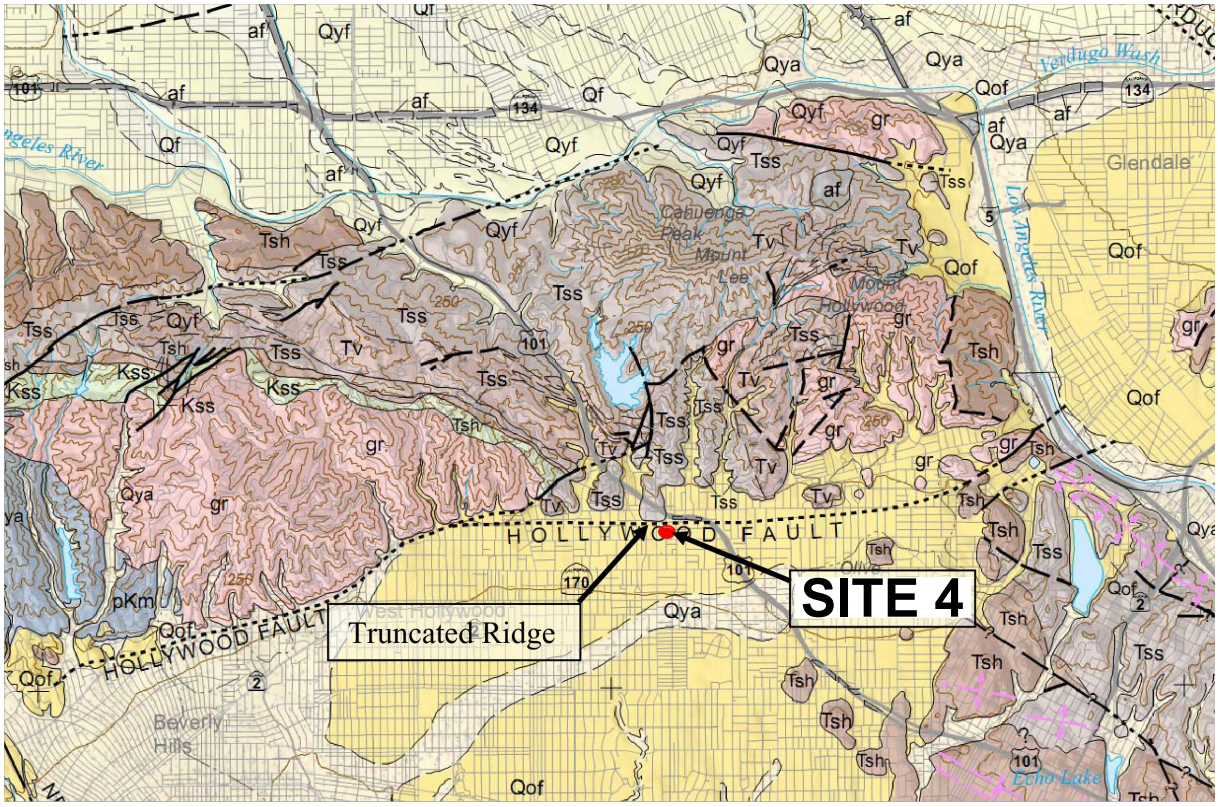


Figure 2: Regional geologic map of the area. Scale ~1:100,000. (California Geological Survey, Quaternary Geology Map of the Los Angeles 34x60 Quadrangle).

DATE: 4/21/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CGS QUATERNARY GEOLOGIC MAP	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK				SCALE: NO SCALE
REVISION: --				1800 ARGYLE AVE, HOLLYWOOD, CA	FIGURE NUMBER: 2

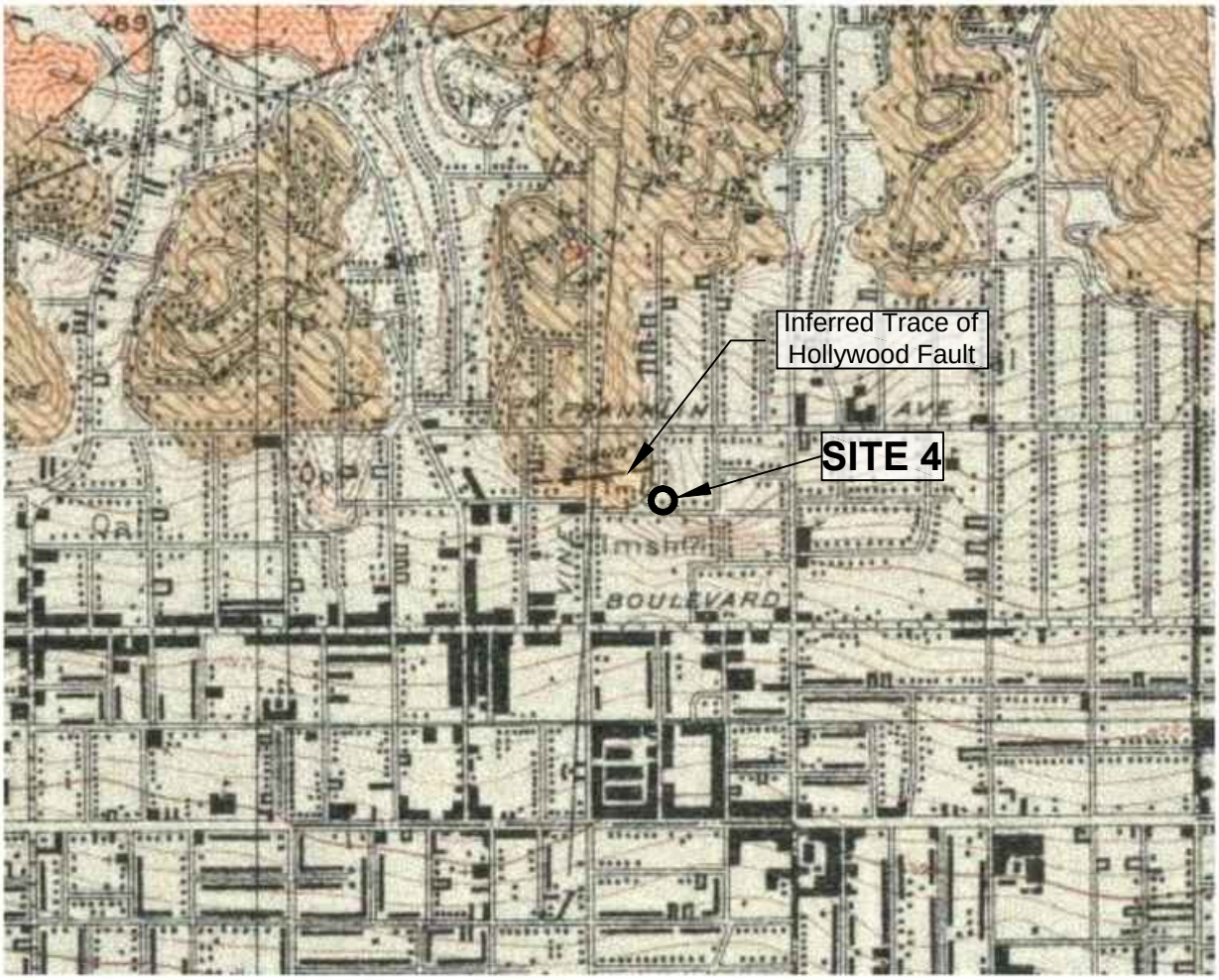
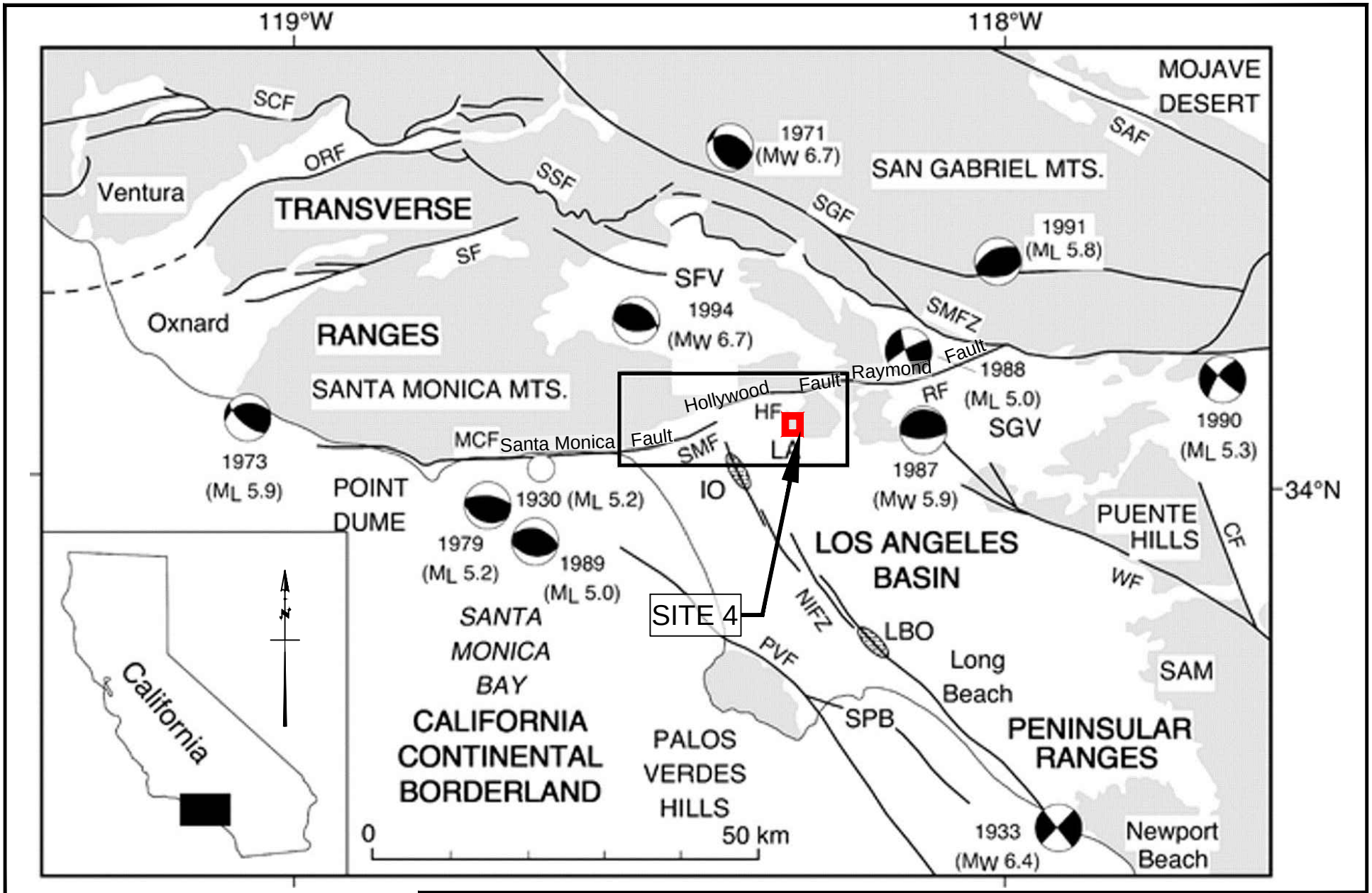


Figure 3: Geologic map of Yucca site and vicinity (after Hoots and Kew, 1931) showing inferred trace of a Hollywood Fault separating Modelo (T_m), and Topanga (T_p) Formations, granite rocks, and alluvium (Q_{al}).

DATE: 4/11/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	LOCAL GEOLOGIC MAP	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK				SCALE: NO SCALE
REVISION: --				1800 ARGYLE AVE, HOLLYWOOD, CA	FIGURE NUMBER: 3



Regional fault map of Los Angeles area (after Tsutsumi, Yeats, Huftile, 2001)

DATE: 5/2/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	MAJOR FAULTS AND HISTORIC SEISMICITY OF THE GREATER LOS ANGELES AREA	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK			1800 ARGYLE AVE, HOLLYWOOD, CA	SCALE: NO SCALE
REVISION: --					FIGURE NUMBER: 4

Legend

① Cahuenga Fan
② Holly Fan
③ Vine Fan
④ Argyle Fan
⑤ Beechwood Fan
⑥ Brush Fan

Geomorphic Breaks in Slope

DATE: 4/21/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	MAP ILLUSTRATING GEOMORPHIC FEATURES NEAR THE ARGYLE SITE	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK			1800 ARGYLE AVE, HOLLYWOOD, CA	SCALE: NO SCALE
REVISION: --					FIGURE NUMBER: 5

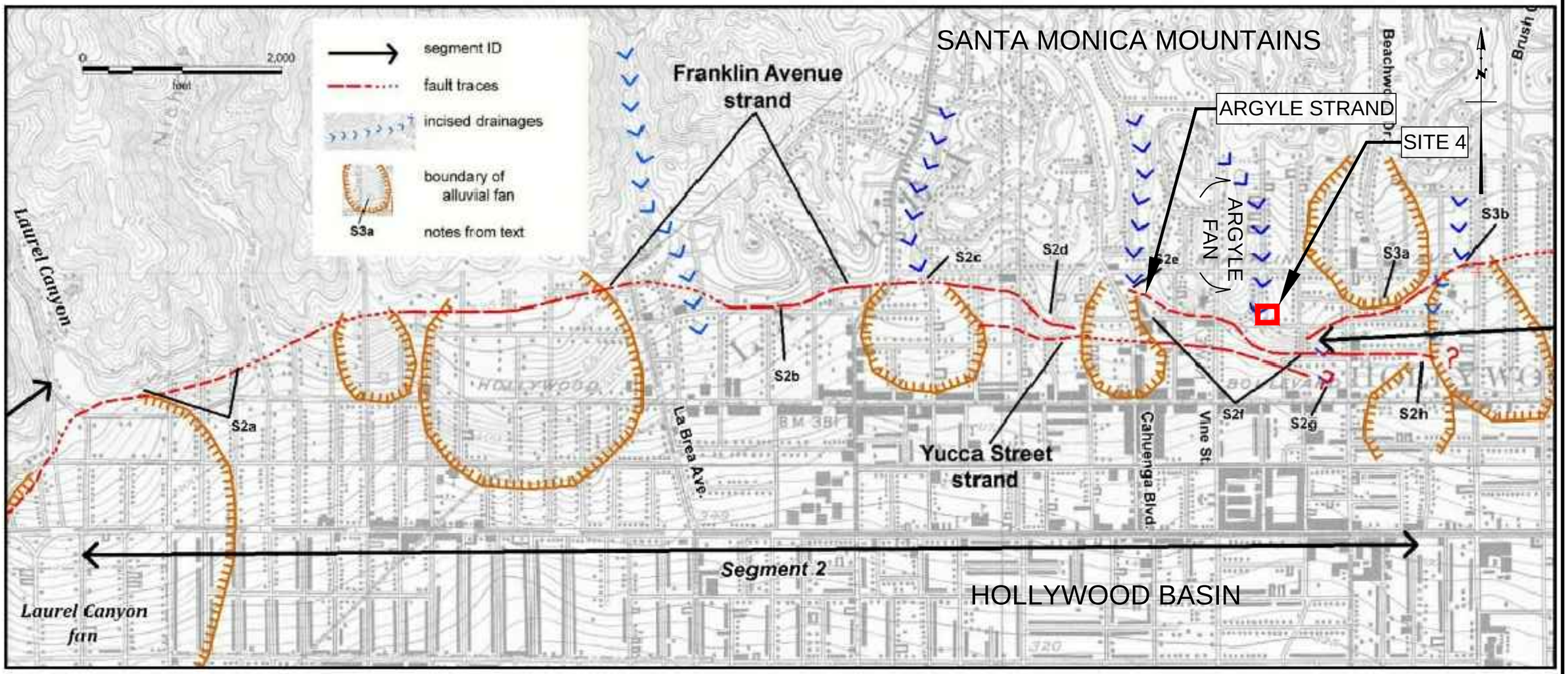


Figure 6: General distribution of Holocene fans and inferred traces of the Hollywood Fault (after CGS, FER 253 (2014)); base map (Hollywood & Burbank 6' Quad, 1926)

DATE: 4/9/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	HOLLYWOOD FAULT GEOMORPHIC FEATURES, FER 253	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK			1800 ARGYLE AVE, HOLLYWOOD, CA	SCALE: 1" = 1000'
REVISION: --					FIGURE NUMBER: 6

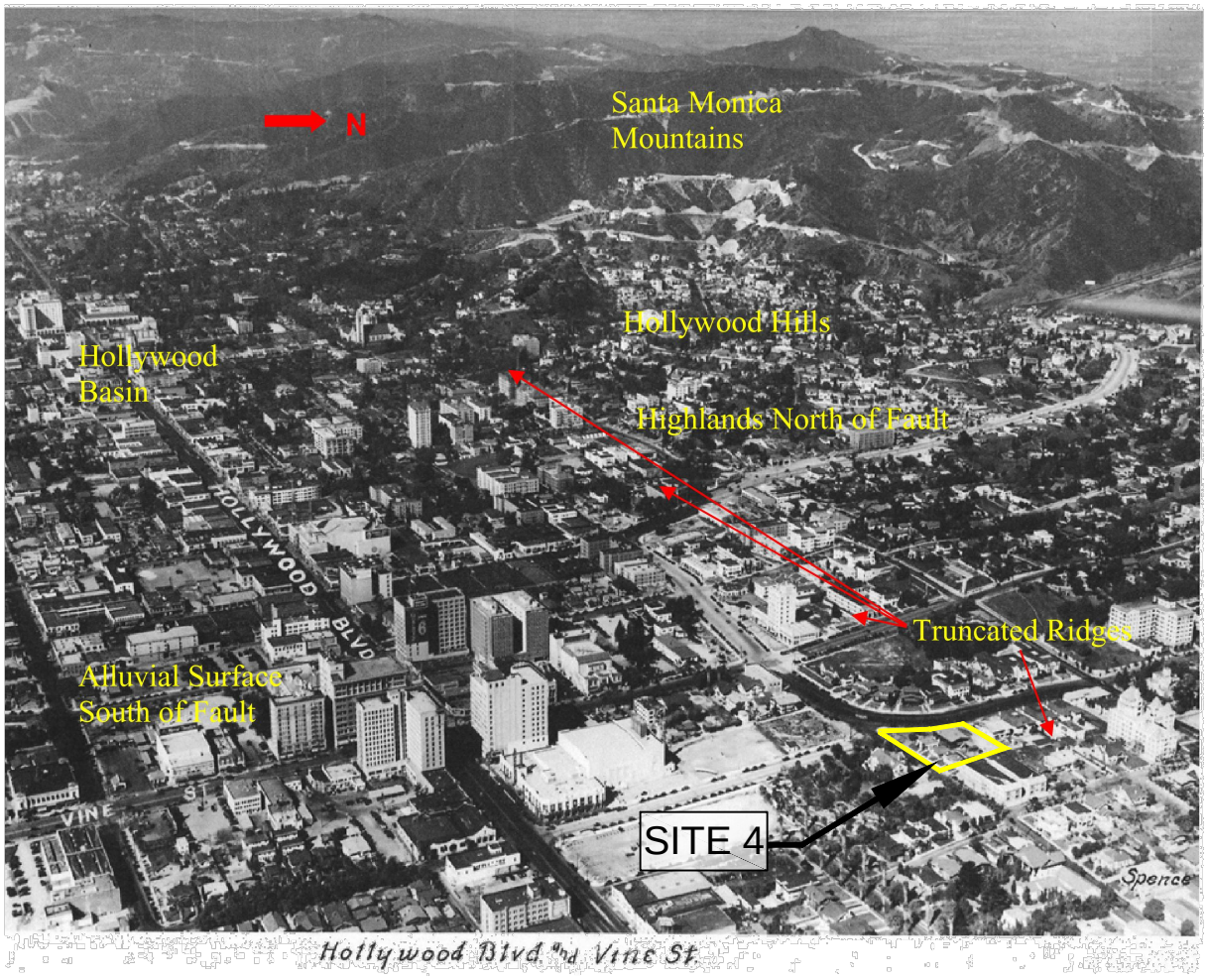


Figure 7: Approximate lineaments of the truncated ridges (red dashed line). (Spence Collections, 3-2-31, The Benjamin and Gladys Thomas Air Photo Archives, UCLA).

DATE: 4/21/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	SPENCE 1930 OBLIQUE AERIAL PHOTO SHOWING GEOMORPHIC FEATURES	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK				SCALE: NO SCALE
REVISION: --				1800 ARGYLE AVE, HOLLYWOOD, CA	FIGURE NUMBER: 7

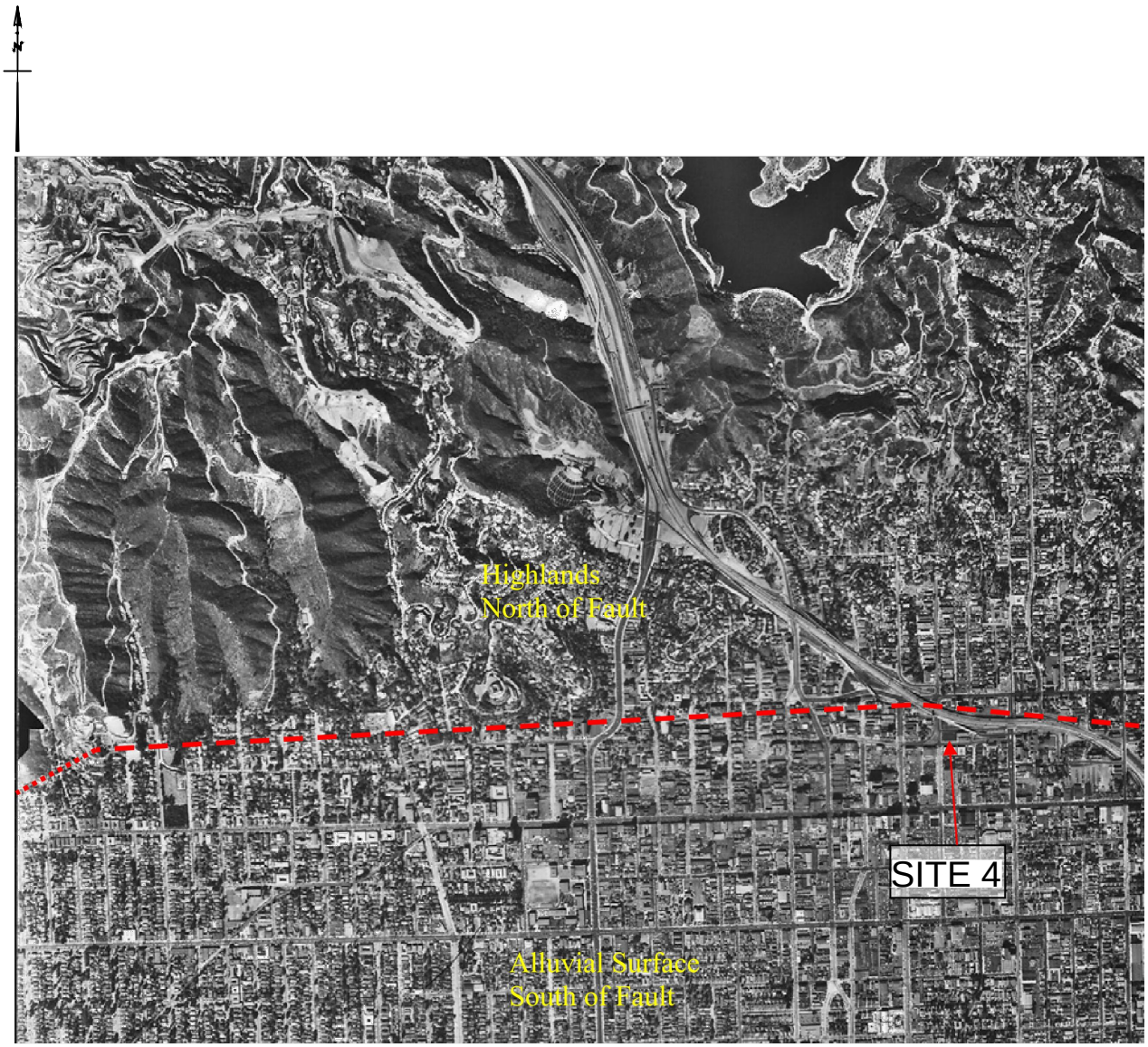


Figure 8: Approximate linear expression separating alluvial basin from Hollywood Highlands (red dashed line) based on aerial photo analysis. See Figure 6 for other geomorphic details. Scale unknown. (Continental Aerial Photo, 10-27-54).

DATE: 4/21/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CONTINENTAL 1954 AERIAL PHOTO SHOWING GEOMORPHIC FEATURES	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK				SCALE: NO SCALE
REVISION: --				1800 ARGYLE AVE, HOLLYWOOD, CA	FIGURE NUMBER: 8

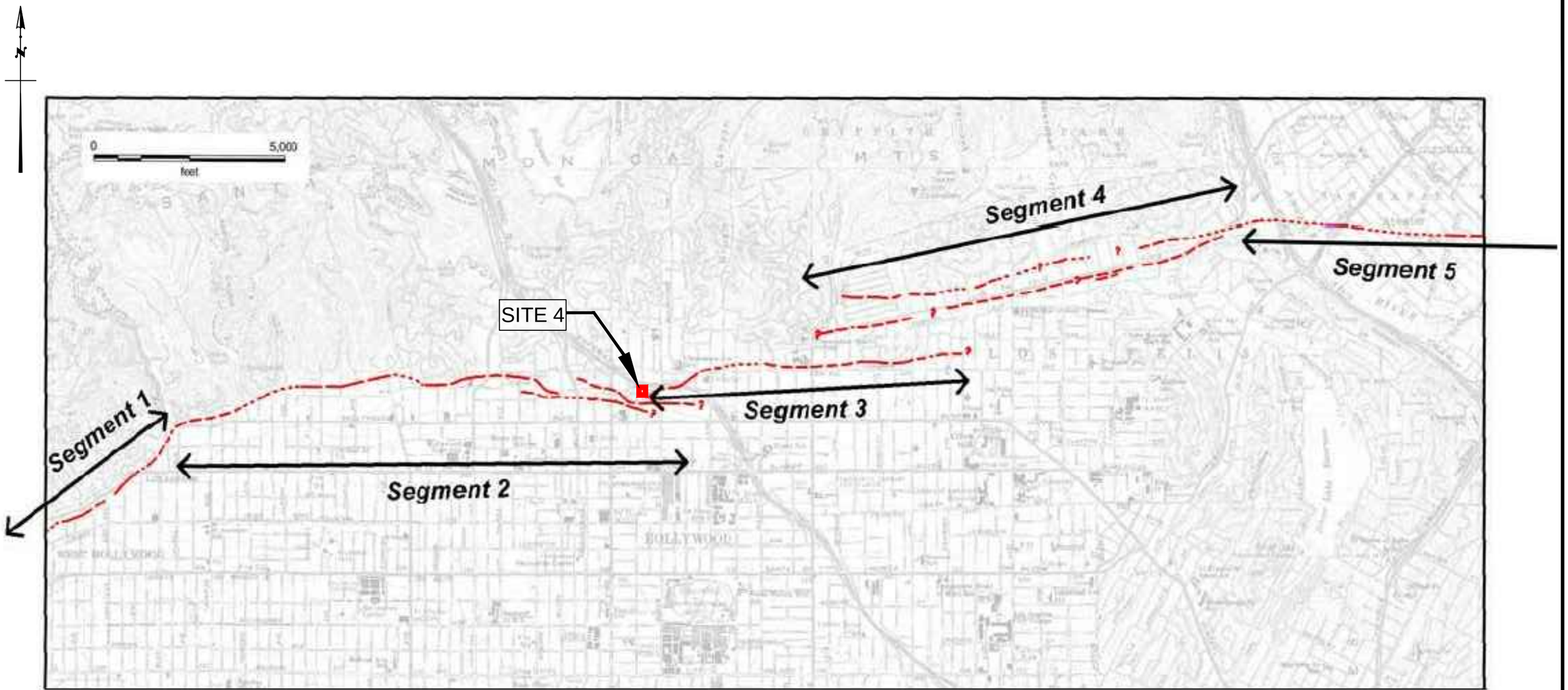


Figure 9: Relationship of Yucca Site to Hollywood Fault segment depicted in CGS FER 253 (2014).

DATE: 4/9/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	HOLLYWOOD FAULT SEGMENT PLAN	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK				SCALE: NO SCALE
REVISION: --				1800 ARGYLE AVE, HOLLYWOOD, CA	FIGURE NUMBER: 9

LOCAL STRATIGRAPHIC SECTION

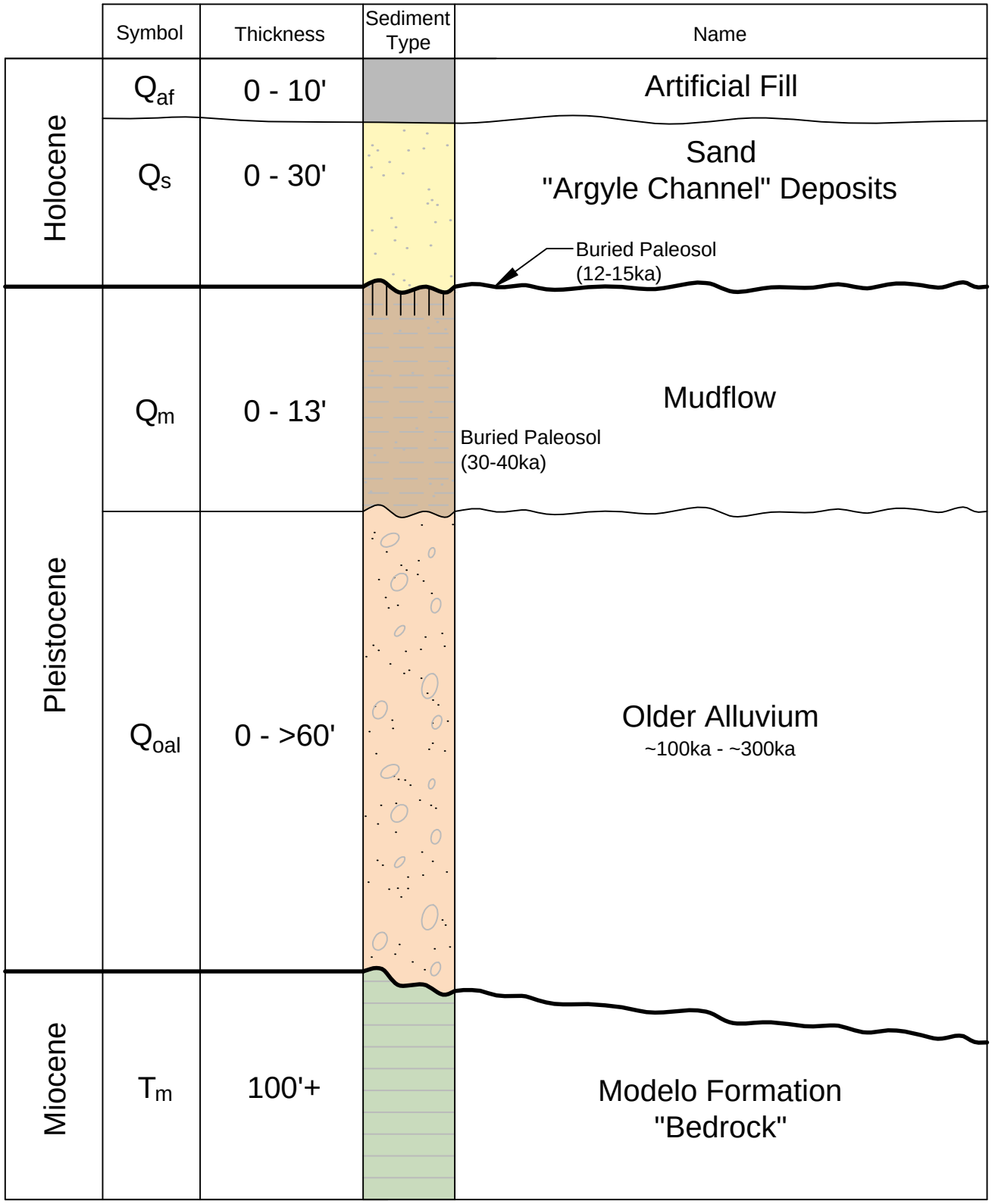
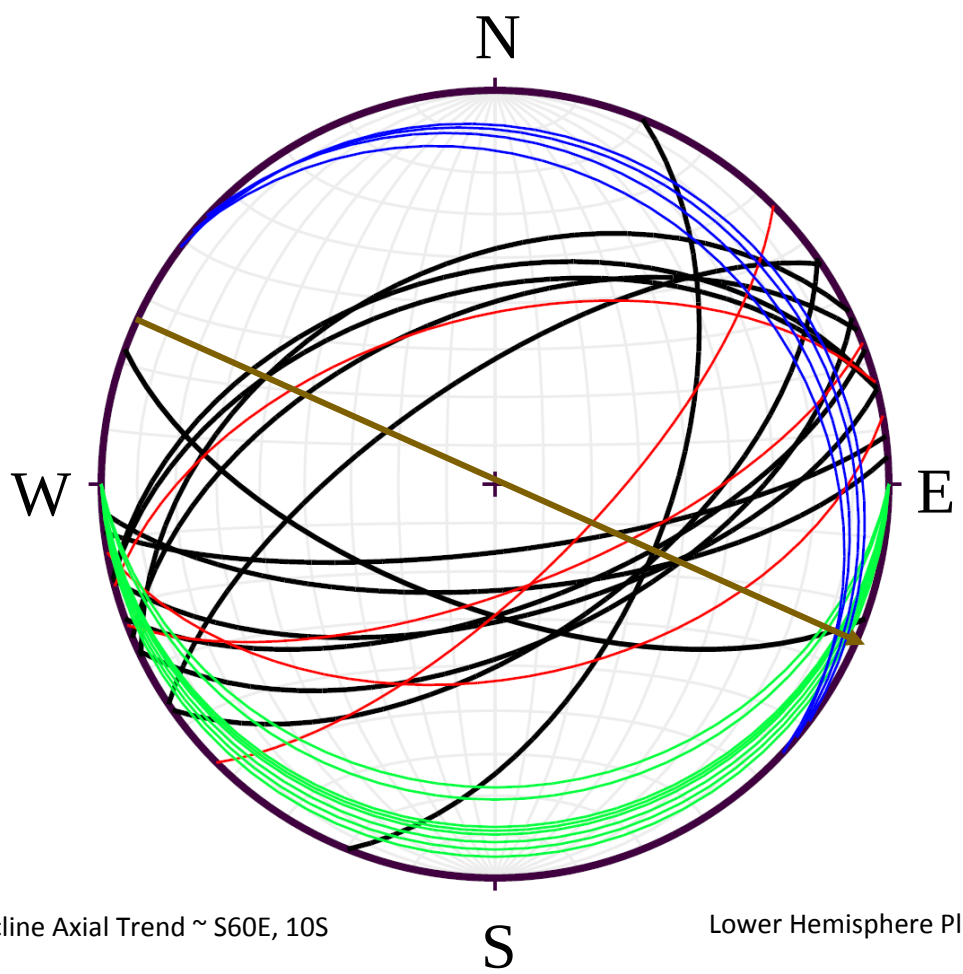


Figure 10

STEREOGRAPHIC PROJECTION



Anticline Axial Trend ~ S60E, 10S

Intersection of Faults ~ S66-70W

Lower Hemisphere Plot

Black= Faults

Red = Joints

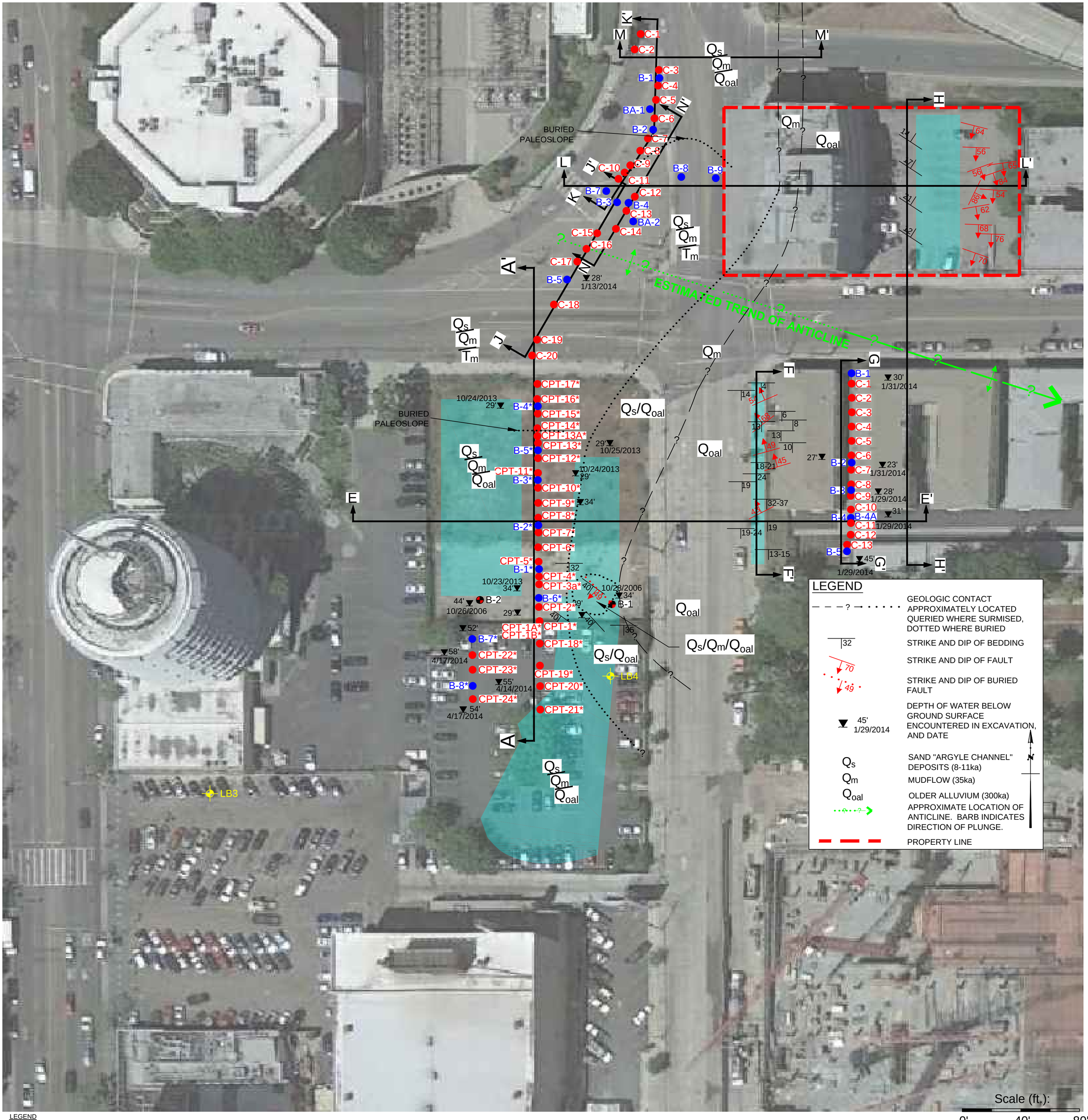
Green = Site 3 (Champion) Bedding Planes

Blue = Site 4 (Argyle) Bedding Planes

Brown = ~ Anticline Axial Trend

Figure 11. Stereo plot of faults, joints and bedding planes at 1800 Argyle Ave. (Site 4)

November 6, 2014 LA 1175A



LEGEND

- B-6 Boring Location and Number, GDC 2014
- BA-2 Bucket Auger Location and Number, GDC 2014
- C-20 CPT (Cone Penetration Test) Location and Number, GDC 2014
- B-2 Boring Location and Number, GDC 2006
- LB4 Boring Location and Number, Langan 2011
- Trench Location Outlines

DATE: 9/7/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	GEOLOGIC MAP
REVISION: 10/30/2014	APPROVED BY: MM		1800 ARGYLE AVE, HOLLYWOOD, CA
REVISION: --			

PROJECT NUMBER: LA1175A
SCALE: AS SHOWN
FIGURE NUMBER: 12

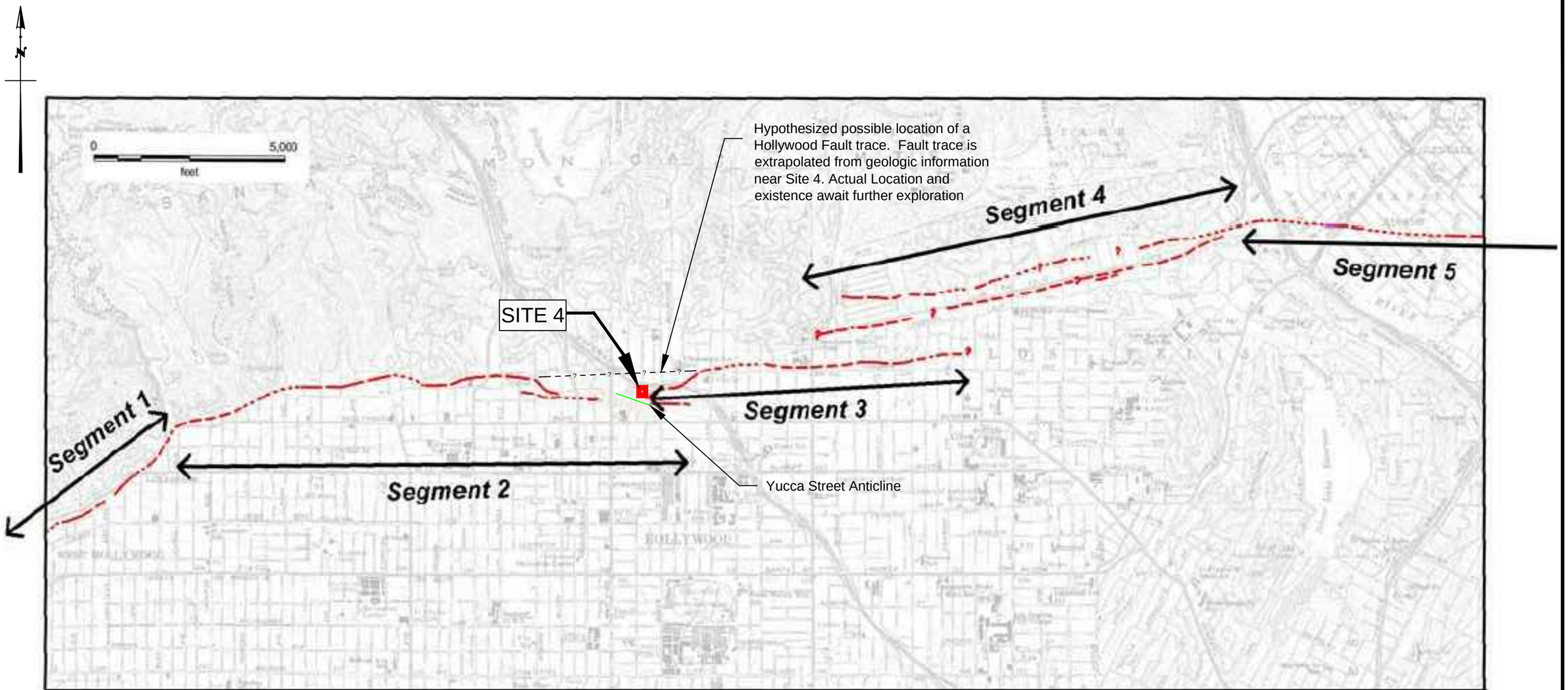


Figure 13: Local fault map based on GDC Geological Information near Site 4 depicted in CGS FER 253 (2014b).

DATE: 4/9/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	HYPOTHESIZED HOLLYWOOD FAULT SEGMENT PLAN	PROJECT NUMBER: LA1175A
REVISION: 10/31/2014	APPROVED BY: SK				SCALE: NO SCALE
REVISION: --				1800 ARGYLE AVE, HOLLYWOOD, CA	FIGURE NUMBER: 13

PLATES

Plate 1	Boring, CPT, and Trench Locations

SITE 2 (Yucca)

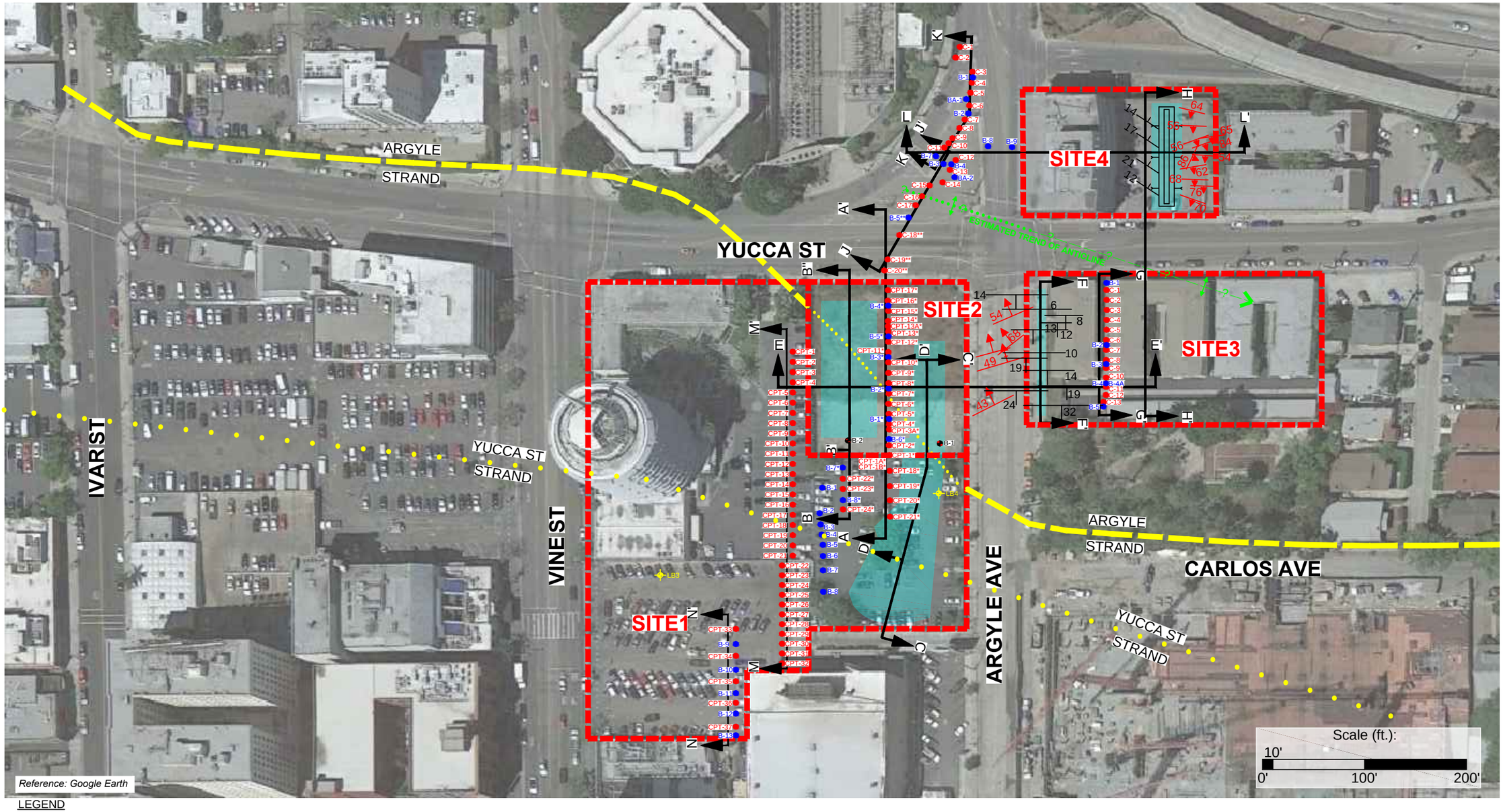
Plate 2	Cross Section A-A' (CPT/Soil Core) *(Back Pocket of Report)*
Plate 3	Cross-Section B-B' (West Trench) *(Back Pocket of Report)*
Plate 4	Cross Section B-B'-B" (West Trench and Logs) *(Back Pocket of Report)*
Plate 5	Cross-Section C-C' (East Trench – East Side) *(Back Pocket of Report)*
Plate 6	Cross-Section D-D' (East Trench – West Side) *(Back Pocket of Report)*
Plate 7	Cross-Section E-E' (East-West Schematic)

SITE 3 (Champion)

Plate 8	Cross-Section F-F' (Champion Trench) *(Back Pocket of Report)*
Plate 9	Cross Section G-G' (Champion CPT/Soil Core)

SITE 4 (Argyle or Green)

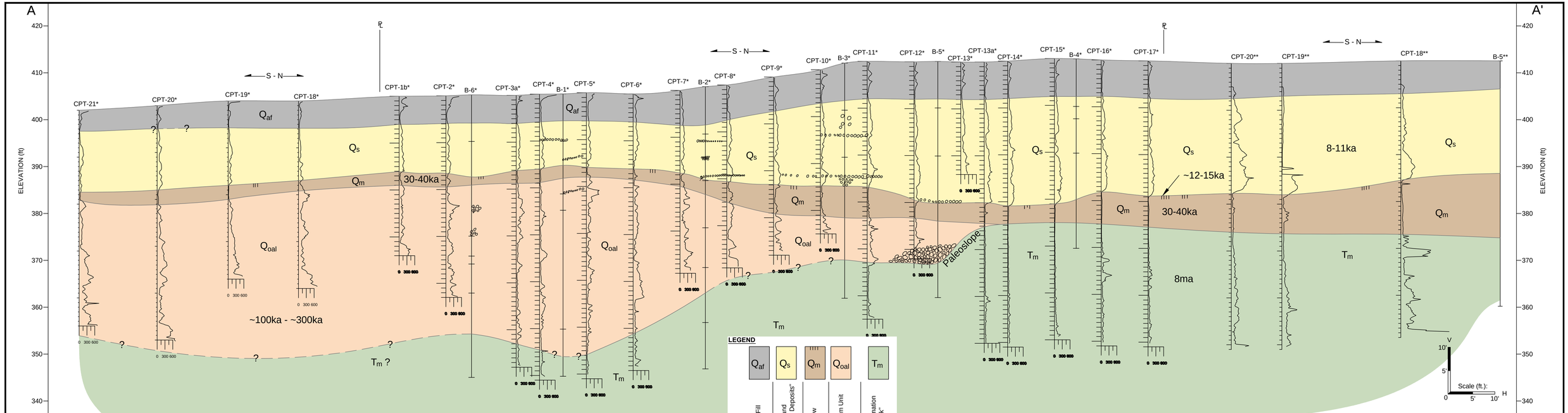
Plate 10	Cross-Section H-H' (Champion-Argyle or Green) Schematic
Plate 11	Cross-Section I-I' (Argyle Trench) (*Back Pocket of Report)*
Plate 12	Cross Section J-J' (Argyle CPT/Soil Core)
Plate 13	Cross-Section K-K' (Argyle CPT/Soil Core
Plate 14	Cross-Section L-L' (Argyle East-West)
Plate 15	Cross-Section M-M' (North Argyle East-West
Plate 16	Cross-Section N-N' (Argyle North-South)



LEGEND

- B-6 Boring Location and Number, GDC 2014
- BA-2 Bucket Auger Location and Number, GDC 2014
- C-20 CPT (Cone Penetration Test) Location and Number, GDC 2014
- B-2 Boring Location and Number, GDC 2006
- LB3 Boring Location and Number, Langan 2011
- Trench Location Outlines
- 64 43 Strike and Dip of Faults. Barbs shortened owing limited space.
- 24 Strike and Dip of Bedding
- ? Approximate location of anticline. Barb indicates direction of plunge.

DATE: 8/5/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	BORING, CPT AND TRENCH LOCATIONS	PROJECT NUMBER: LA1191A
REVISION: 9/4/2014	APPROVED BY: MR			1741 ARGYLE AVE, HOLLYWOOD, CA	SCALE: AS SHOWN
REVISION: 10/31/2014					PLATE NUMBER: 1



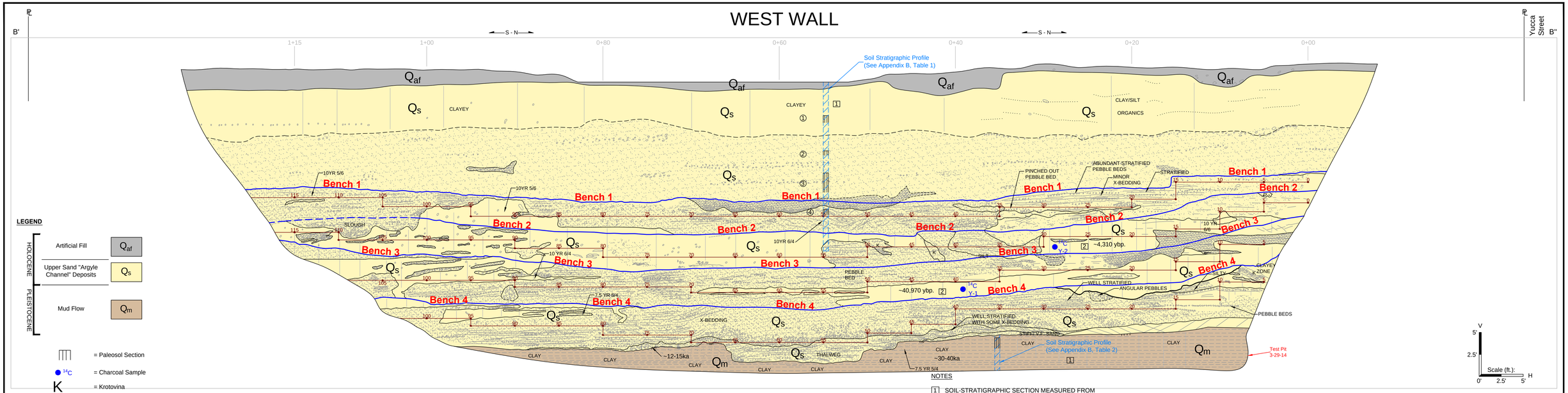
Legend

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

= Buried Paleosol

DATE: 10/23/2013	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION A-A' (CPT/SOIL CORE)	PROJECT NUMBER: LA1175A
REVISION: 4/18/2014	APPROVED BY: SK		1800 ARGYLE AVE, HOLLYWOOD, CA	SCALE: AS SHOWN
REVISION: 10/31/2014				PLATE NUMBER: 2

WEST WALL



LEGEND

HOLOCENE	Artificial Fill	Q_{af}
HOLOCENE	Upper Sand "Argyle Channel" Deposits	Q_s
PLEISTOCENE	Mud Flow	Q_m

= Paleosol Section

● ^{14}C = Charcoal Sample

K = Krotovina

115 110 = Trench Reference Stationing

= Laminated Bedding

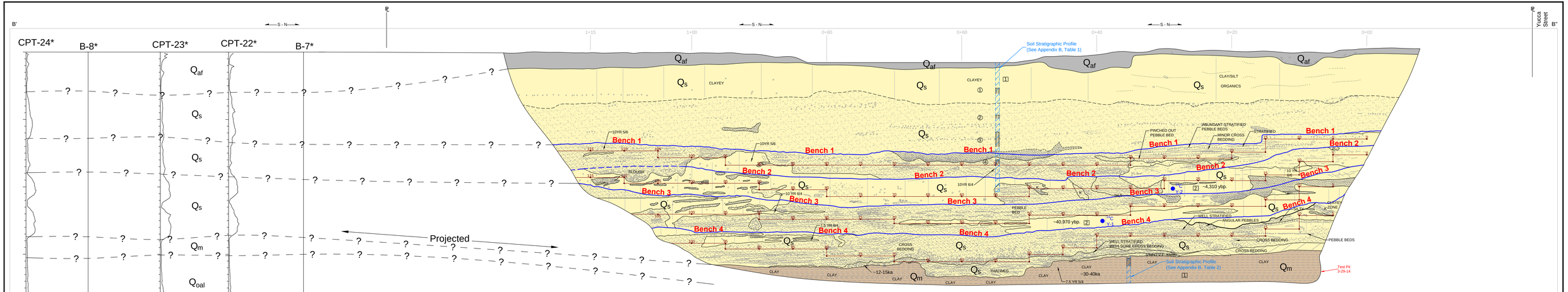
= Cross Bedding

NOTES

1. SOIL-STRATIGRAPHIC SECTION MEASURED FROM TOP OF "BOX TRENCH" (SEE APPENDIX B, TABLE 2). DEPTH BELOW SURFACE BASED ON ORIGINAL TRENCH EXPOSURES.
2. SEE DISCUSSION OF RADIO CARBON DATES, APPENDIX B.

① PALEOSOL.

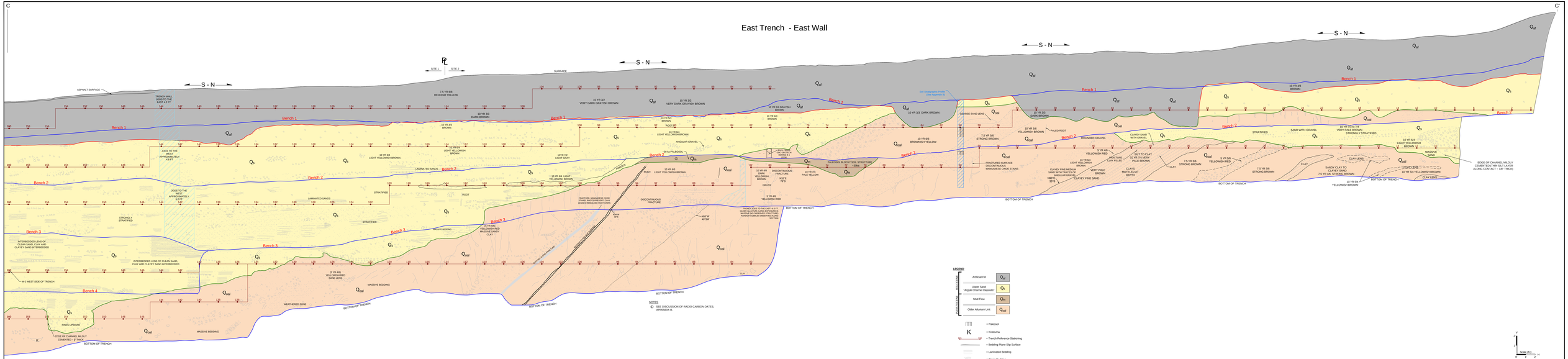
DATE: 5/2/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION B'-B" (West Trench)
REVISION: 10/31/2014	APPROVED BY: SK		1800 ARGYLE AVE, HOLLYWOOD, CA
REVISION: --			PROJECT NUMBER: LA1175A SCALE: AS SHOWN PLATE NUMBER: 3



DATE: 5/2/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION B-B'-B" (West Trench and Logs)
REVISION: 10/31 /2014	APPROVED BY: SK		1800 ARGYLE AVE, HOLLYWOOD, CA
REVISION: --			

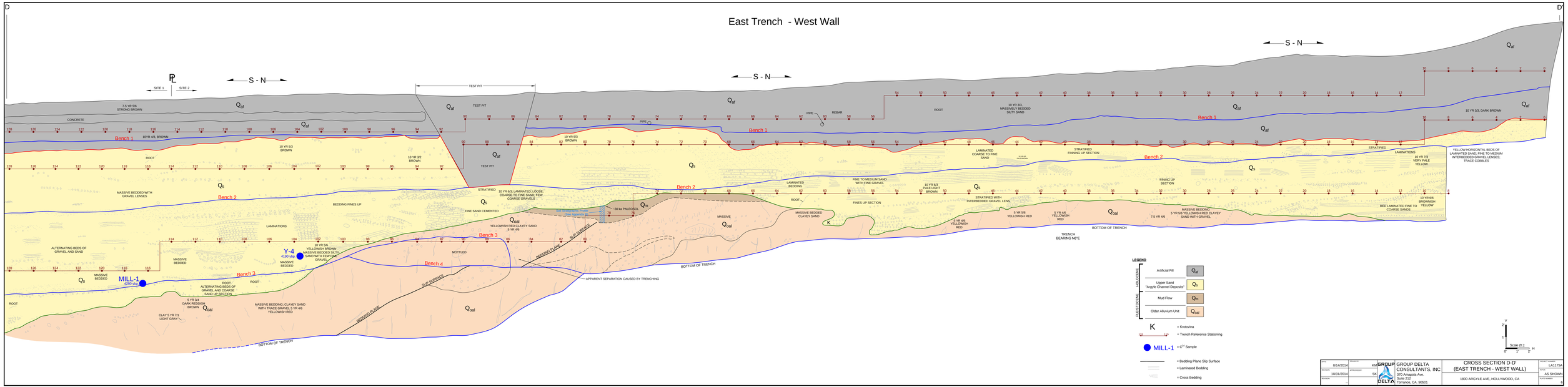
PROJECT NUMBER: LA11175A
SCALE: AS SHOWN
PLATE NUMBER: 4

East Trench - East Wall



8/14/2014	KM	GROUP DELTA CONSULTANTS, INC. 20916 Mayo Aviation Pkwy Torrance, CA. 90501	CROSS SECTION C-C' (EAST TRENCH - EAST WALL)	LA1178
8/30/2014	SK			AS SHOWN
9/9/2014			1935 ARGYLE AVE, HOLLYWOOD, CA	

East Trench - West Wall



LEGEND

HOLOCENE	Artificial Fill	Q_{af}
	Upper Sand "Argyle Channel Deposits"	Q_s
	Mud Flow	Q_m
PLEISTOCENE	Older Alluvium Unit	Q_{oal}

K = Kostovina

12 = Trench Reference Stationing

MILL-1 = C^{14} Sample

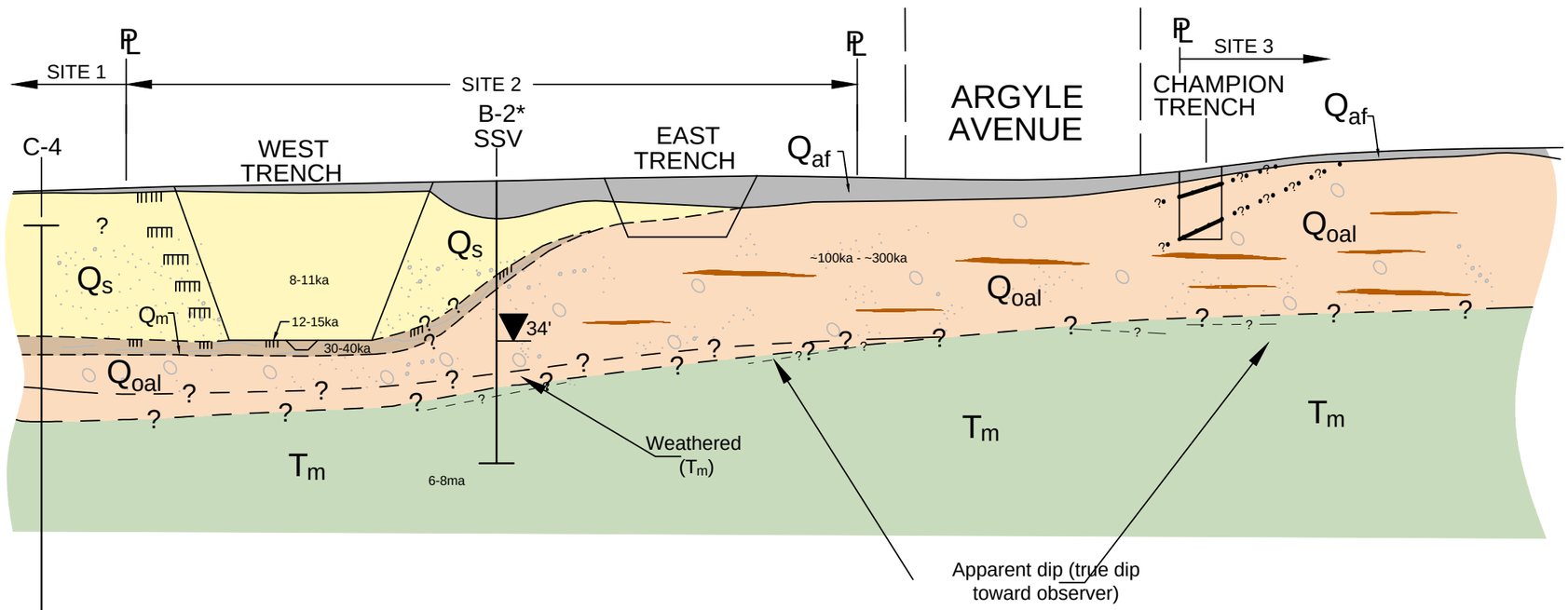
= Bedding Plane Slip Surface

= Laminated Bedding

= Cross Bedding

Scale (ft.)

DATE: 8/14/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC. 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION D-D' (EAST TRENCH - WEST WALL)	PROJECT NUMBER: LA1175A
REVISED: 10/31/2014	APPROVED BY: SK		1800 ARGYLE AVE, HOLLYWOOD, CA	SCALE: AS SHOWN
REVISED: -	-			PLATE NUMBER: 6



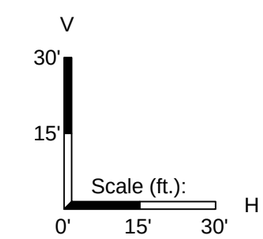
LEGEND

HOLOCENE	Artificial Fill	Q_{af}
HOLOCENE	Upper Sand "Argyle Channel Deposits"	Q_s
PLEISTOCENE	Mud Flow	Q_m
PLEISTOCENE	Older Alluvium	Q_{oal}
MIOCENE	Modelo Formation "Bedrock"	T_m

?• • • • •?• • •?• • Representative Faults "Pre-Holocene"

Buried Paleosol

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



DATE: 8/5/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION E-E' (EAST-WEST SCHEMATIC)
REVISION: 9/4/2014	APPROVED BY: SK		1800 ARGYLE AVE, HOLLYWOOD, CA
REVISION: 10/10/2014			

PROJECT NUMBER: LA1175A
SCALE: AS SHOWN
PLATE NUMBER: 7

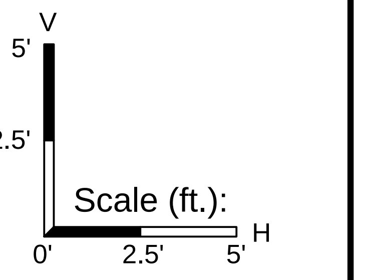
East Wall

LITHO-STRATIGRAPHIC UNITS

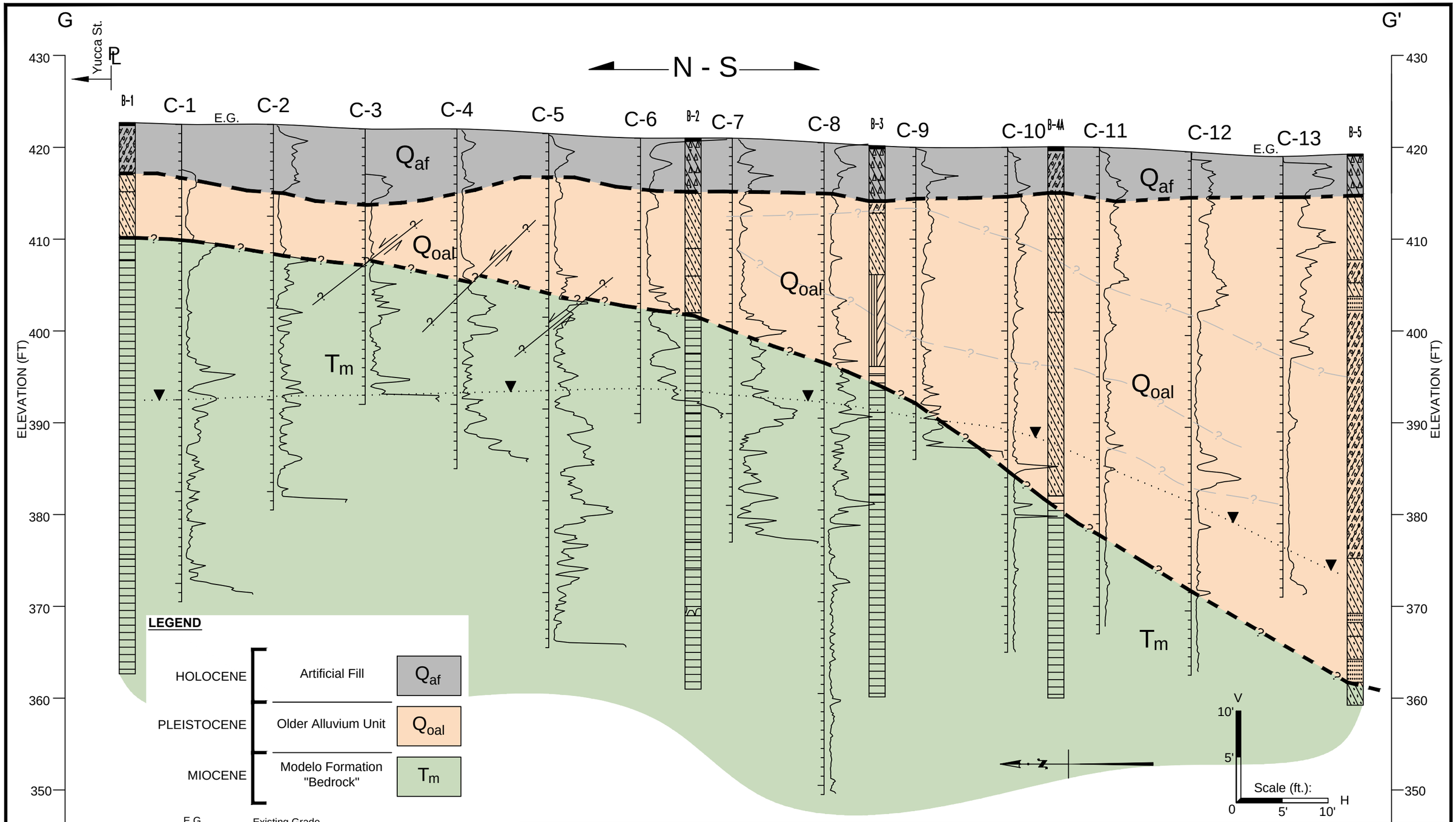
HOLOCENE		Q_{af}	10 YR 6/4 (light yellowish brown) Silty SAND (SM); (10% coarse, 40% medium, 50% fine SAND; 20% fines); few fine to medium GRAVEL; trace cobbles; trace mica; trace debris; trace organic matter; unconsolidated.
UPPER PLEISTOCENE	OLDER ALLUVIUM Q_{oal}	Unit 1	10 YR 6/3 (pale brown) Silty SAND (SM); (10% fine GRAVEL, 30% coarse, 50% medium; 20% fine SAND; 20% fines); weak to moderately cemented; moderately developed bedding.
		Unit 2	10 YR 6/6 (brownish yellow) SAND with SILT (SP-SM); (90% fine SAND, 10% SILT); massive; moderately to well cemented.
		Unit 3	10 YR 8/2 (very pale brown) Sandy CLAY (CL); (15% very fine SAND); moderately well to well indurated blocky.
		Unit 4	7.5 YR 6/8 (reddish yellow) Silty SAND (SM); (10% coarse, 15% medium, 50% fine SAND; 20% fines); fine GRAVEL; trace cobbles; poorly developed bedding.
		Unit 5	7.5 YR 5/6 (strong brown) Cobble Conglomerate; (10% coarse, 10% fine GRAVEL; trace cobbles; 10% coarse, 20% medium, 30% fine SAND; 20% fines); cobbles are subrounded and deposited in lenses, poorly cemented.
		Unit 6	7.5 YR 4/6 (strong brown) SAND with SILT (SM); (10% medium, 80% fine SAND; 10% fines); poorly cemented, massive, holds moisture.
		Unit 7	10 YR 6/4 (light yellowish brown) SAND (SP); (trace coarse GRAVEL, few fine GRAVEL, 15% coarse SAND, 30% medium SAND, 50% fine SAND); GRAVEL is subrounded, weakly cemented, friable, moderately well stratified, discontinuous lenses of fine to coarse GRAVEL. Sharp contacts above and below unit.
		Unit 8	7.5 YR 4/6 (strong brown) mottled with 10 YR 6/3 (pale brown) Sandy CLAY to CLAY (CL); (10% - 20% fine SAND, 80% - 90% CLAY);

Legend

- 13 — Bedding
- 70 — Fracture / Joint
- 54 — Fault and direction of movement
- K — Krotovina
- 115 — 110 — Trench Reference Stationing



DATE: 5/2/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION F-F' (CHAMPION TRENCH)	PROJECT NUMBER: LA-1175A
REVISION: 9/8/2014	APPROVED BY: SK		1800 ARGYLE AVE, HOLLYWOOD, CA	SCALE: AS SHOWN
REVISION: --				PLATE NUMBER: 8



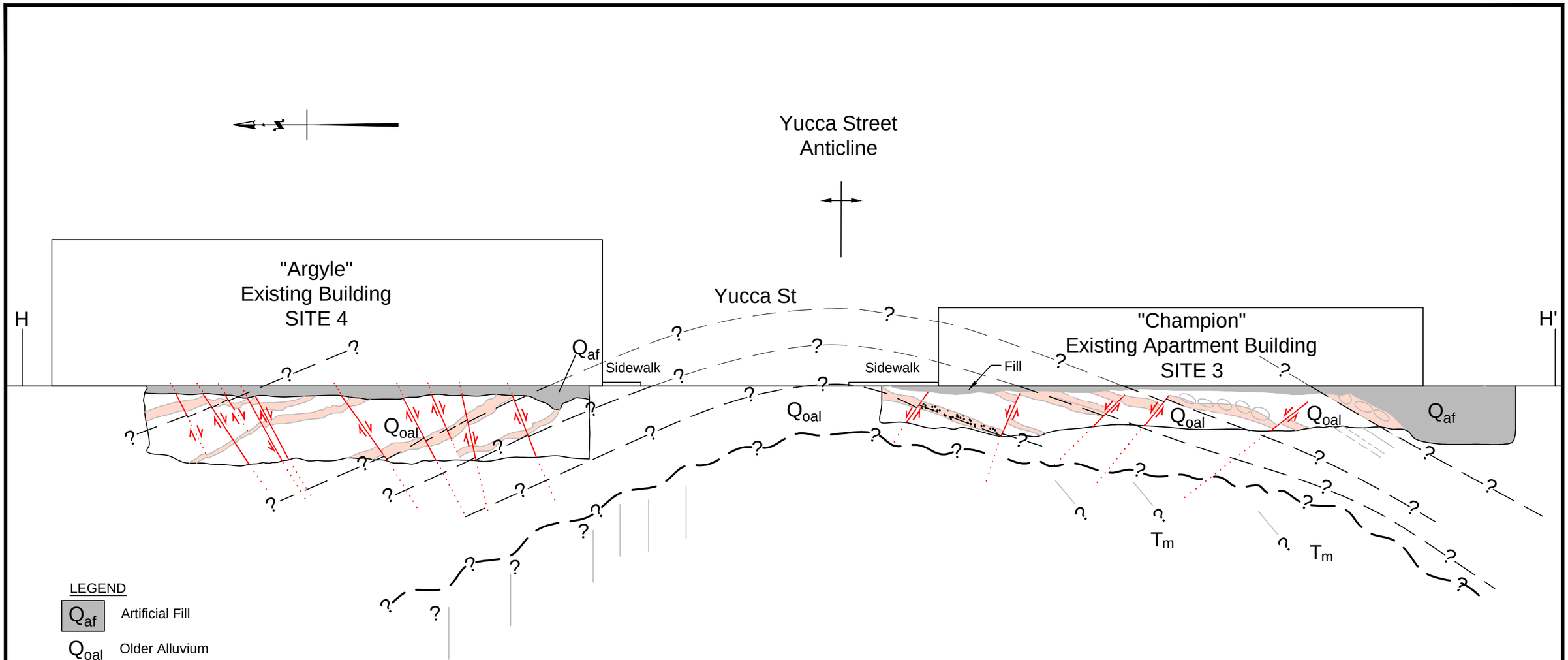
LEGEND

HOLOCENE	Artificial Fill	Q_{af}
PLEISTOCENE	Older Alluvium Unit	Q_{oal}
MIOCENE	Modelo Formation "Bedrock"	T_m

E.G.	Existing Grade
C-1	CPT Location and Number
	Estimated Projections of Fault from (Champion) Trench (Cross Section F-F')
	Inferred Stratigraphic Style Lines
	Water Level and Inferred Ground Water Level Across Site

DATE: 1/22/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION G-G'
REVISION: 9/5/2014	APPROVED BY: MM		1756 AND 1760 ARGYLE AVE, HOLLYWOOD, CA
REVISION: --			

PROJECT NUMBER: LA1183A
SCALE: AS SHOWN
PLATE NUMBER: 9



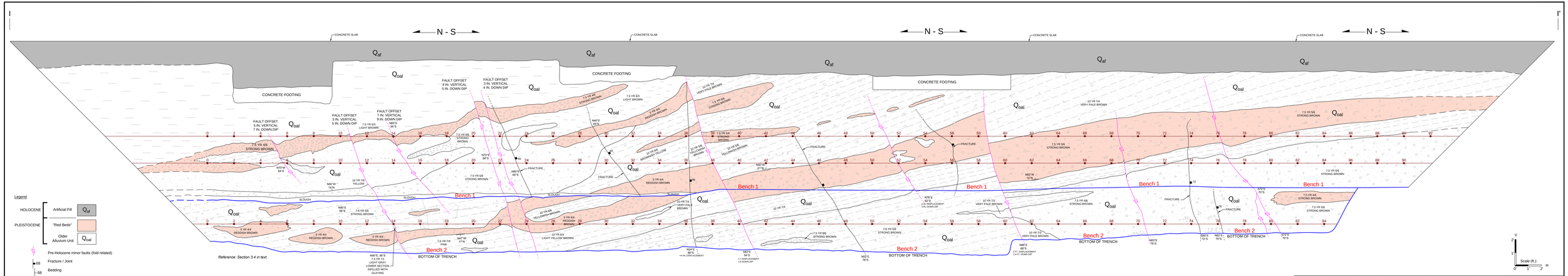
LEGEND

Q_{af}	Artificial Fill
Q_{oal}	Older Alluvium
T_m	Modelo Formation
	Inferred Stratigraphic Form Lines
	Representative Fault and Direction of Stratigraphic Separation
	Representative Key Beds ("Red Beds")
	Inferred Contacts

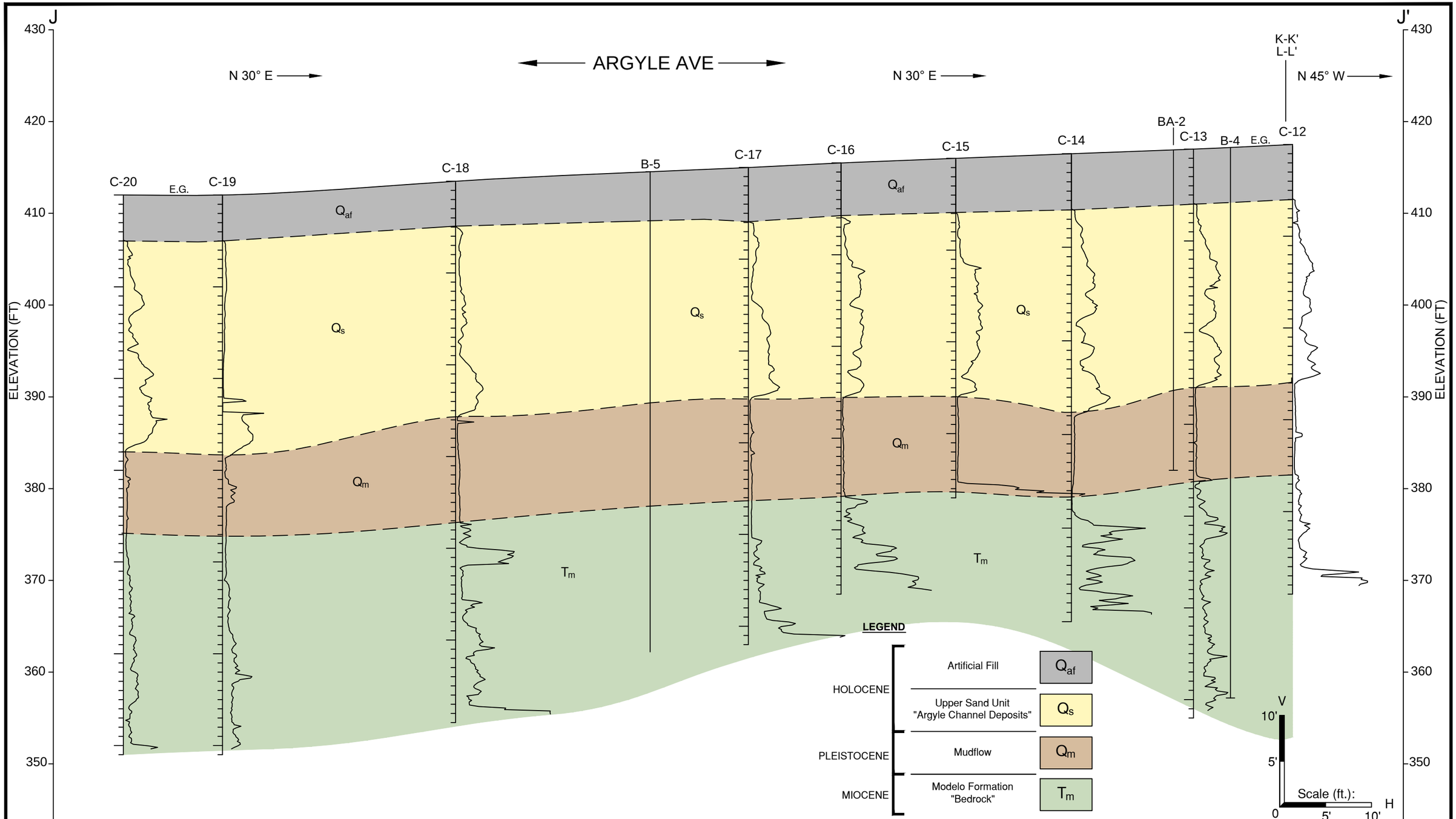
NOTE: Trenches and Faults Projected Into Line of Section Along Approximate Trends of Faults.

SCALE:
0' 20' 40'

DATE: 7/15/2014	DRAWN BY: KM	GROUP DELTA	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	SCHEMATIC CROSS SECTION H-H'	PROJECT NUMBER: LA1175A
REVISION: 9/8/2014	APPROVED BY: MM			1800 ARGYLE AVE, HOLLYWOOD, CA	SCALE: AS SHOWN
REVISION: --					PLATE NUMBER: 10



DATE 8/19/2014	DRAWN BY KJ	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION I-I' (GREEN TRENCH)	PROJECT NUMBER LA1175A
REVISION 8/23/2014	APPROVED BY SJ		1800 ARGYLE AVE	SCALE AS SHOWN
REVISION 9/12/2014				PLATE NUMBER 11



LEGEND

E.G. Existing Grade

C-1 CPT Location and Number

B-1 Soil Core Boring Location and Number

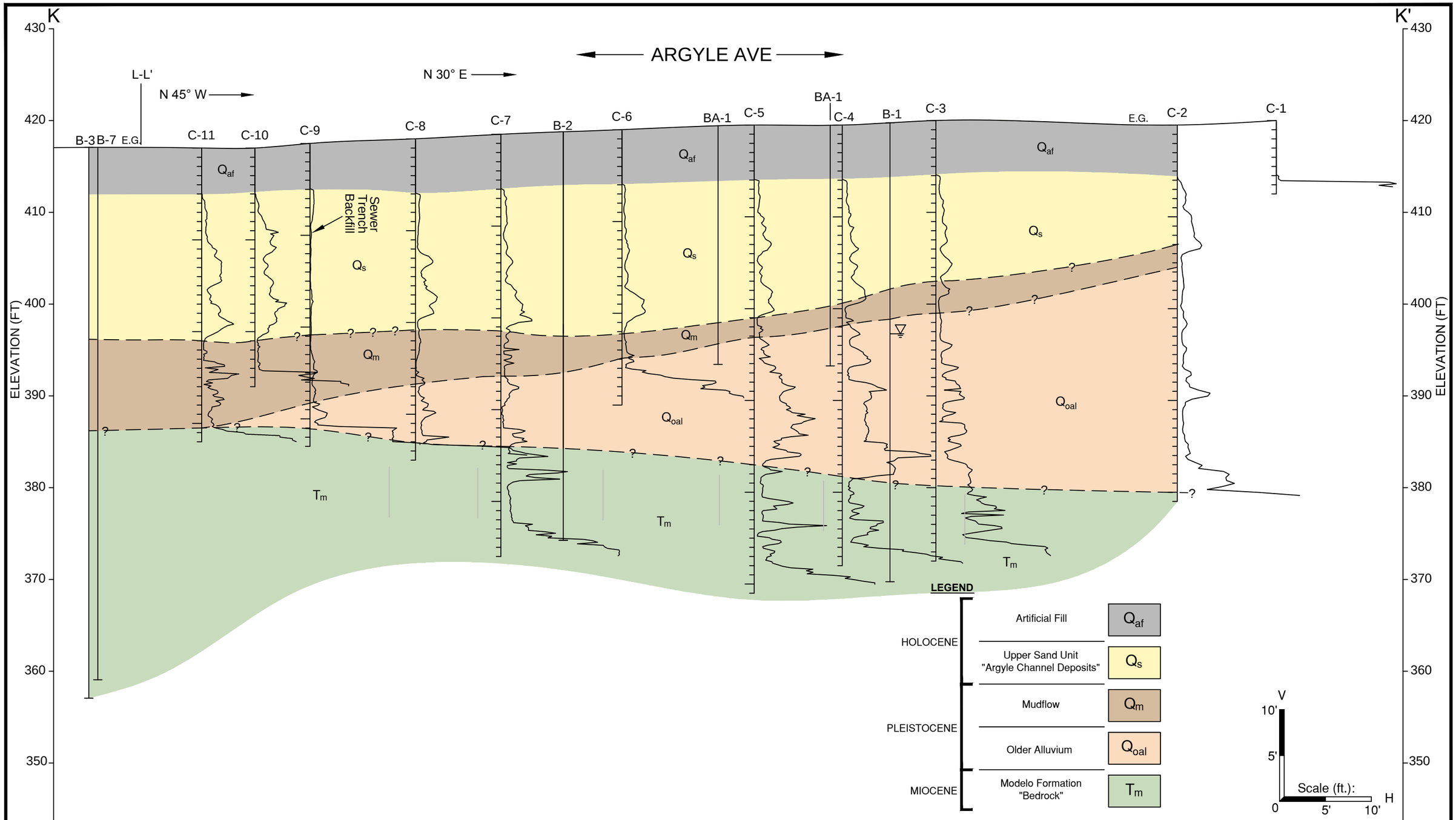
BA-1 Bucket Auger Location and Number

DATE: 9/7/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION J-J'
REVISION: --	APPROVED BY: SK		FAULT INVESTIGATION 1800 ARGYLE AVE
REVISION: --			

PROJECT NUMBER: LA1175A

SCALE: AS SHOWN

PLATE NUMBER: 12



LEGEND

E.G. Existing Grade

C-1 CPT Location and Number

B-1 Soil Core Boring Location and Number

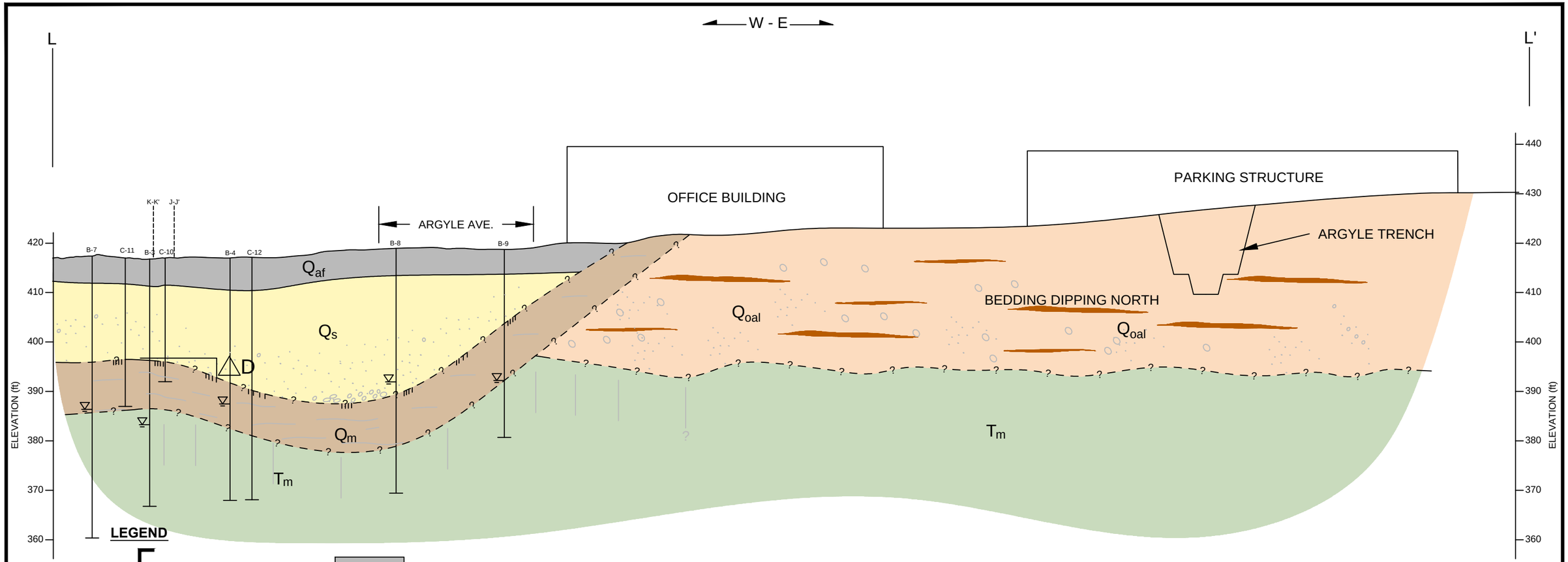
BA-1 Bucket Auger Location and Number

DATE: 9/7/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION K-K'
REVISION: --	APPROVED BY: SK		FAULT INVESTIGATION 1800 ARGYLE AVE
REVISION: --			

PROJECT NUMBER: LA1175A

SCALE: AS SHOWN

PLATE NUMBER: 13



LEGEND

HOLOCENE	Artificial Fill	Q_{af}
HOLOCENE	Upper Sand "Argyle Channel Deposits"	Q_s
PLEISTOCENE	Mudflow	Q_m
PLEISTOCENE	Older Alluvium	Q_{oal}
MIOCENE	Modelo Formation "Bedrock"	T_m

Buried Paleosol

D Depth change of units down channel slope

Horizontal/Verticle bedding

V 20' 10'

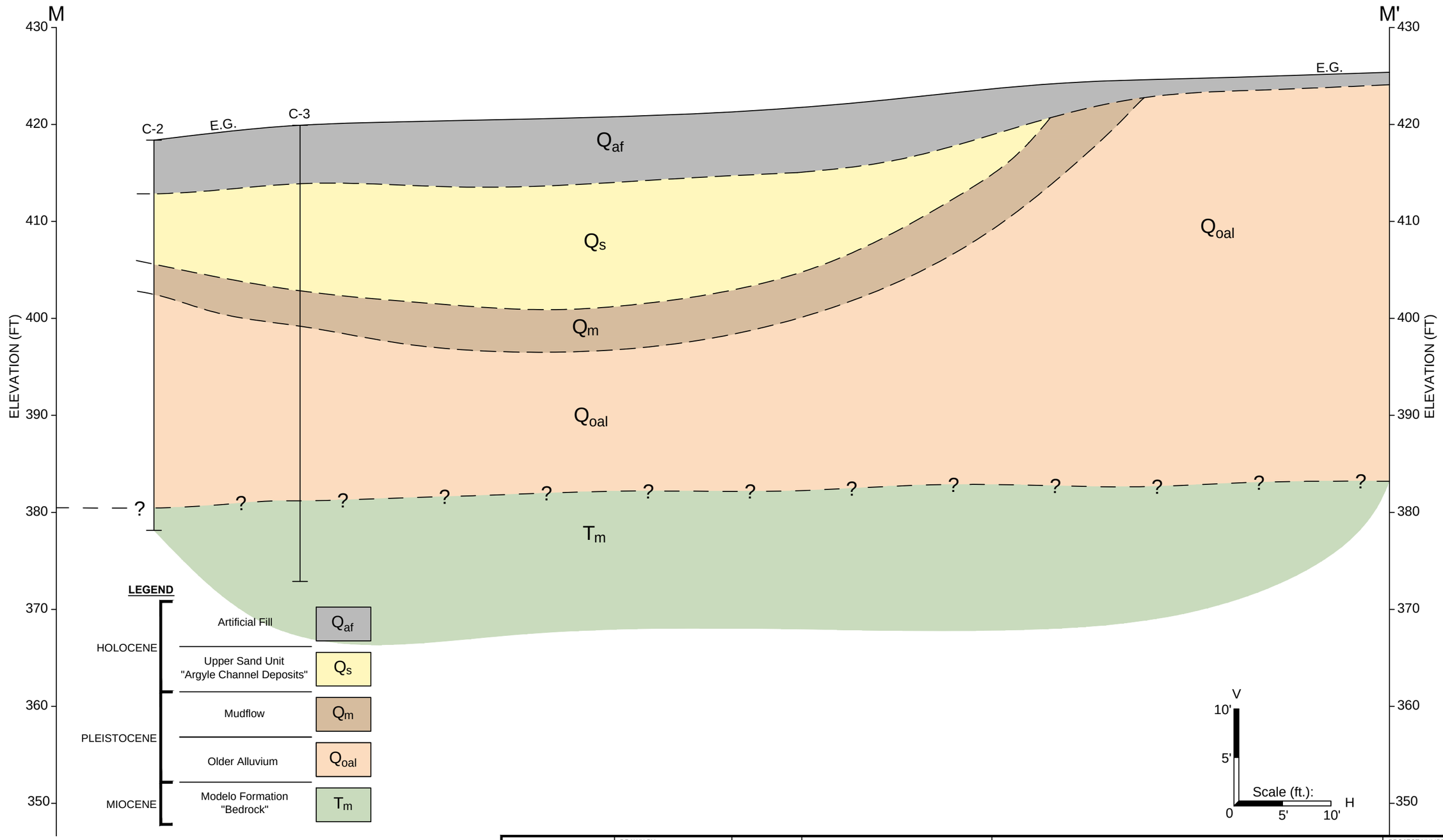
Scale (ft.): 0' 10' 20' H

DATE: 9/16/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	SCHEMATIC CROSS SECTION L-L' (W-E) ARGYLE AVENUE
REVISION: --	APPROVED BY: SK		1800 ARGYLE AVE, HOLLYWOOD, CA
REVISION: --			

PROJECT NUMBER: LA1175A

SCALE: AS SHOWN

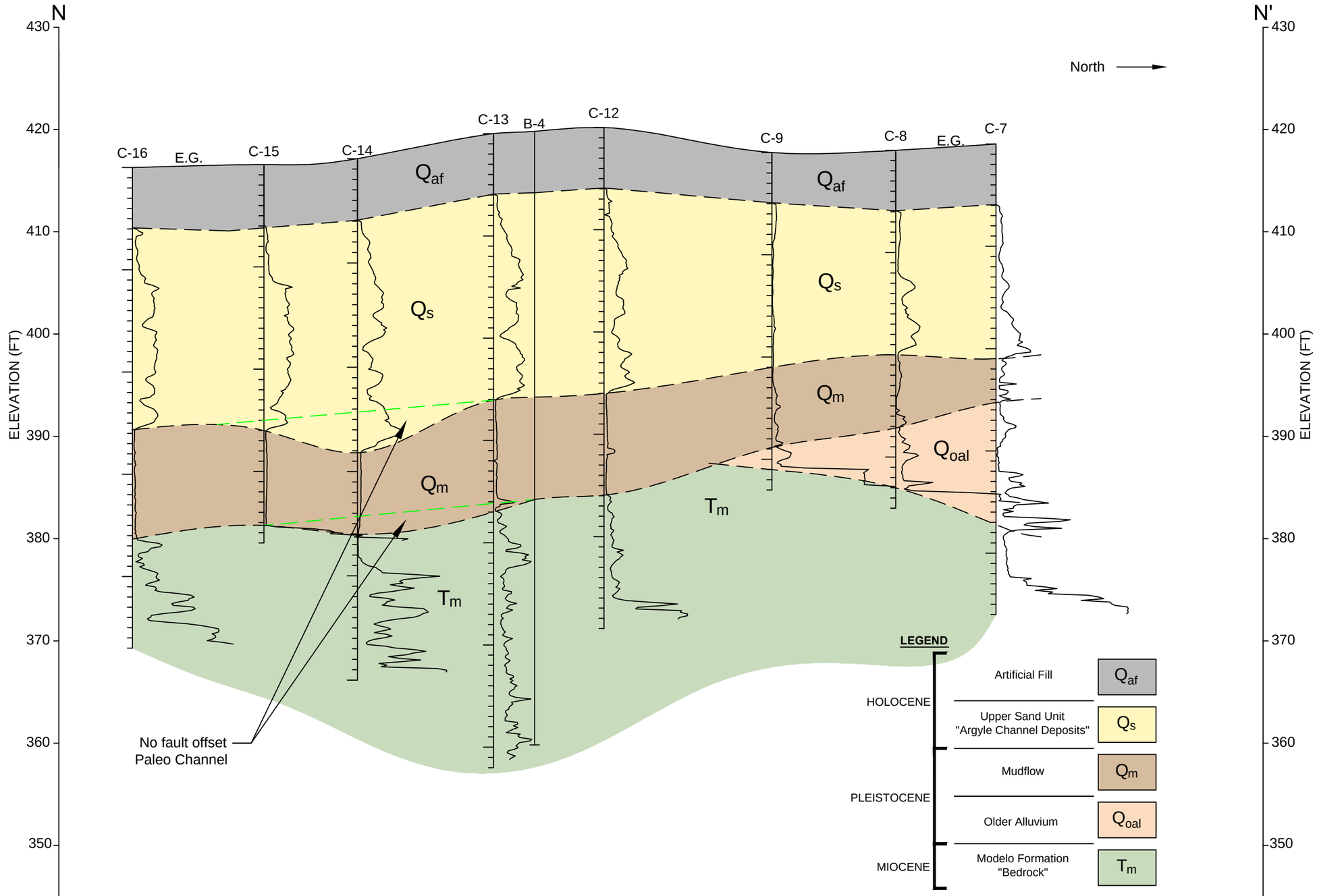
PLATE NUMBER: 14



LEGEND
E.G. Existing Grade
C-3 CPT Location and Number

DATE: 11/12/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION M-M'
REVISION: --	APPROVED BY: SK		FAULT INVESTIGATION 1800 ARGYLE AVE
REVISION: --			

PROJECT NUMBER: LA1175A
SCALE: AS SHOWN
FIGURE NUMBER: 15



LEGEND

E.G. Existing Grade

C-14 CPT Location and Number

B-4 Soil Core Boring Location and Number

DATE: 11/12/2014	DRAWN BY: KM	GROUP DELTA CONSULTANTS, INC 370 Amapola Ave. Suite 212 Torrance, CA. 90501	CROSS SECTION N-N'
REVISION: --	APPROVED BY: SK		FAULT INVESTIGATION 1800 ARGYLE AVE
REVISION: --			

PROJECT NUMBER: LA1175A

SCALE: AS SHOWN

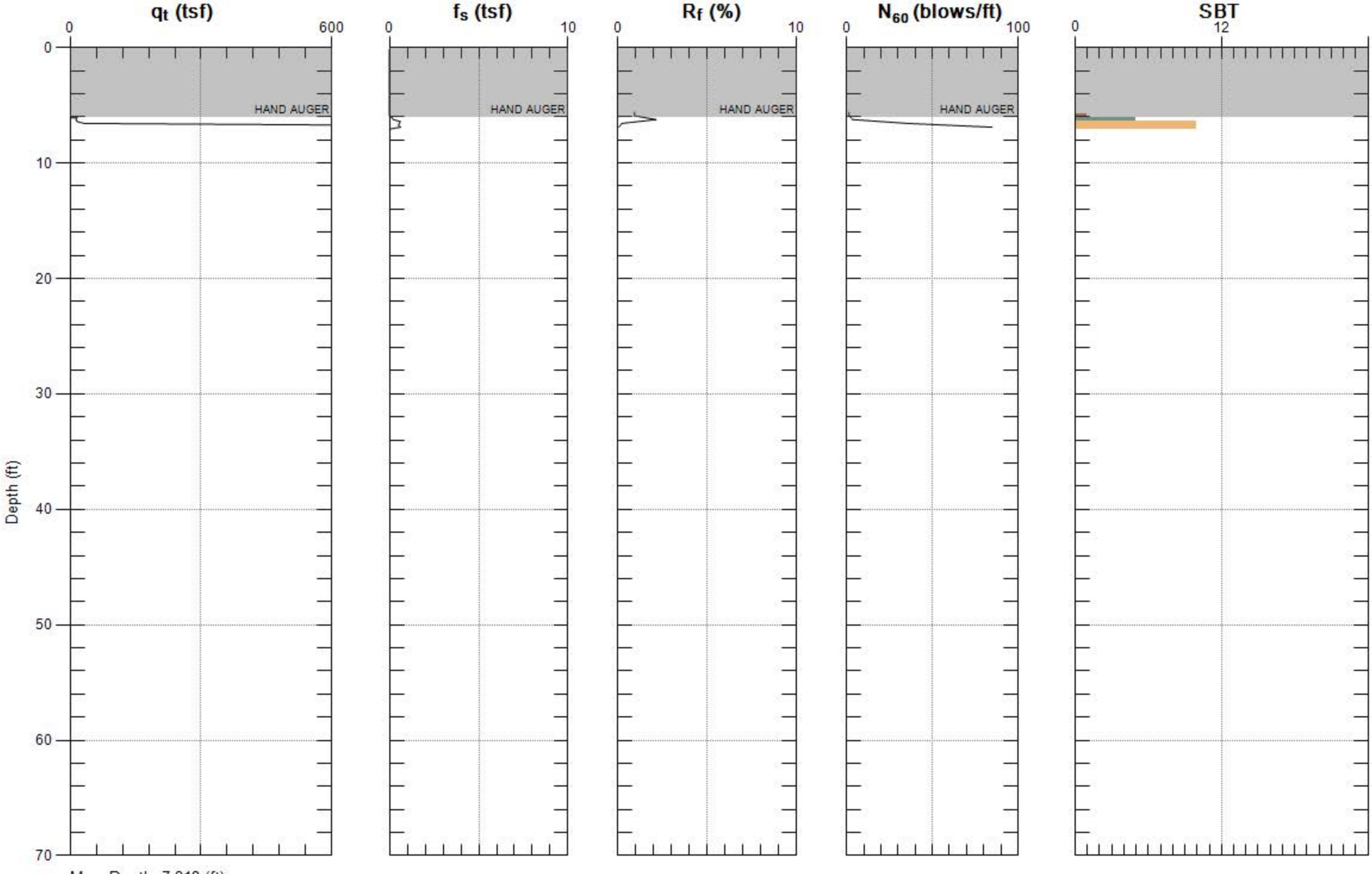
FIGURE NUMBER: 16

APPENDIX A: FIELD EXPLORATION – CPT DATA AND SOIL CORE LOGS SITE 4

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-1

Engineer: S.KOLTHOFF
Date: 12/30/2013 09:33



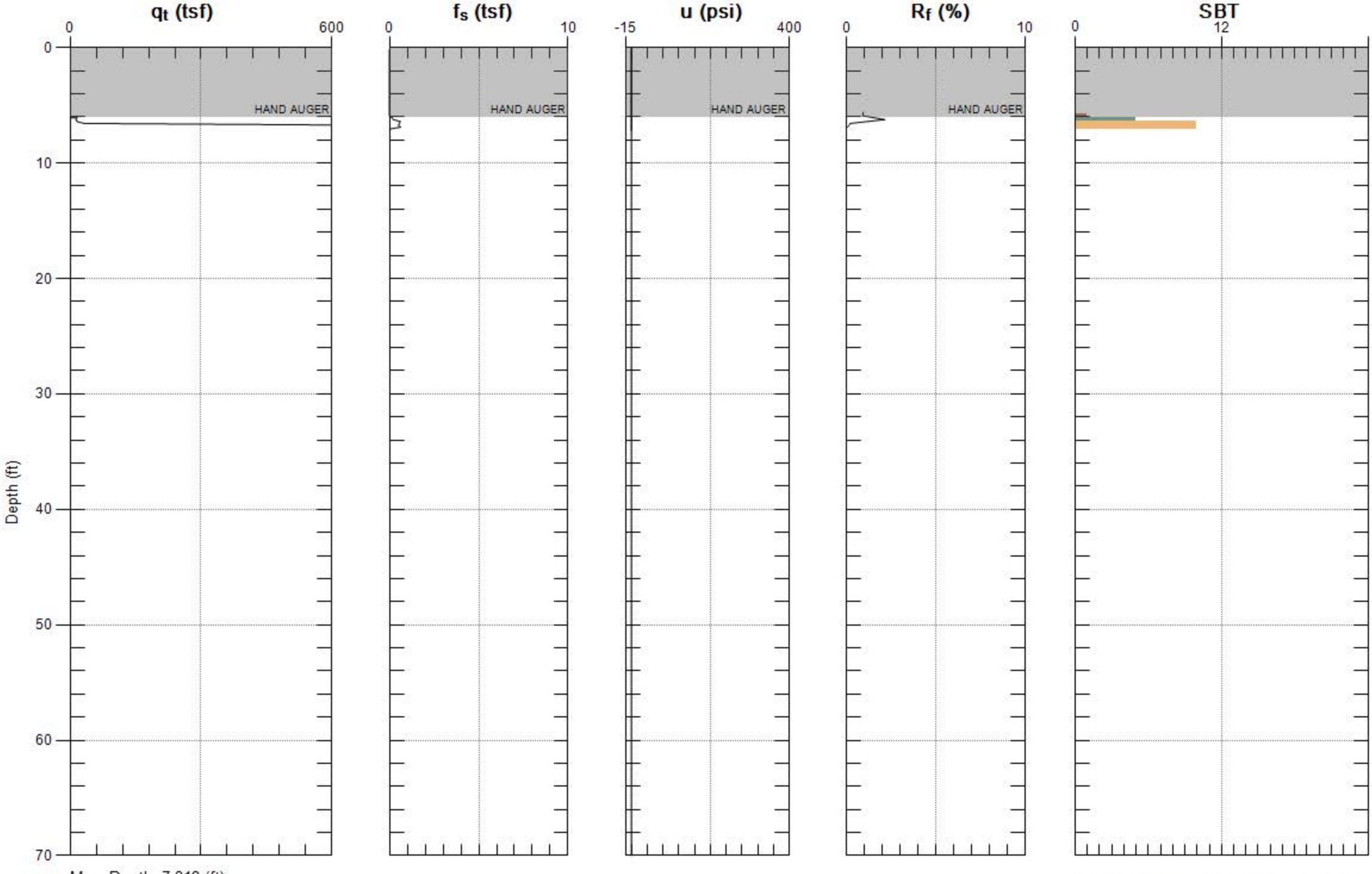
Max. Depth: 7.218 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-1

Engineer: S.KOLTHOFF
Date: 12/30/2013 09:33



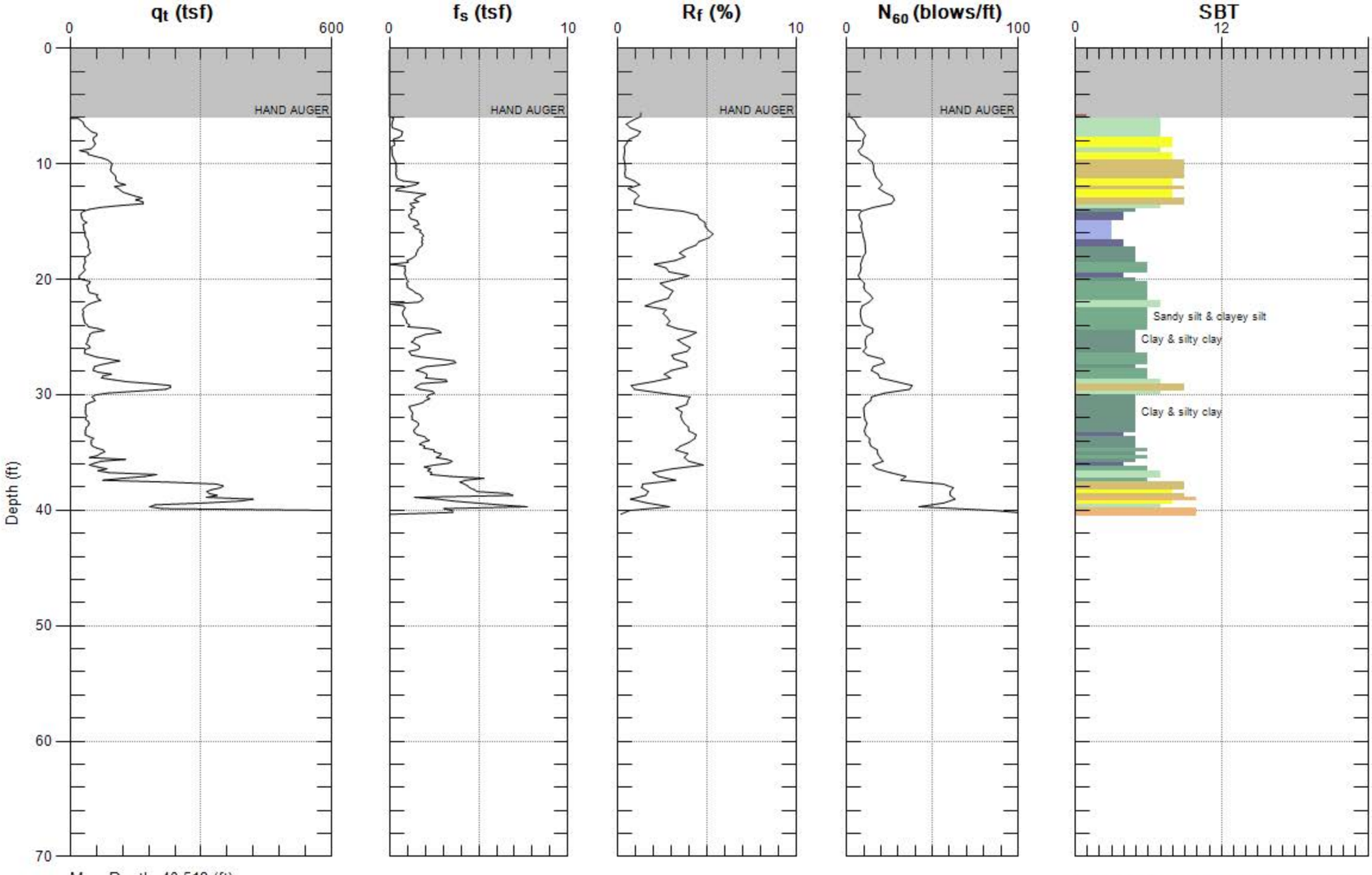
Max. Depth: 7.218 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-2

Engineer: S.KOLTHOFF
Date: 12/30/2013 09:58



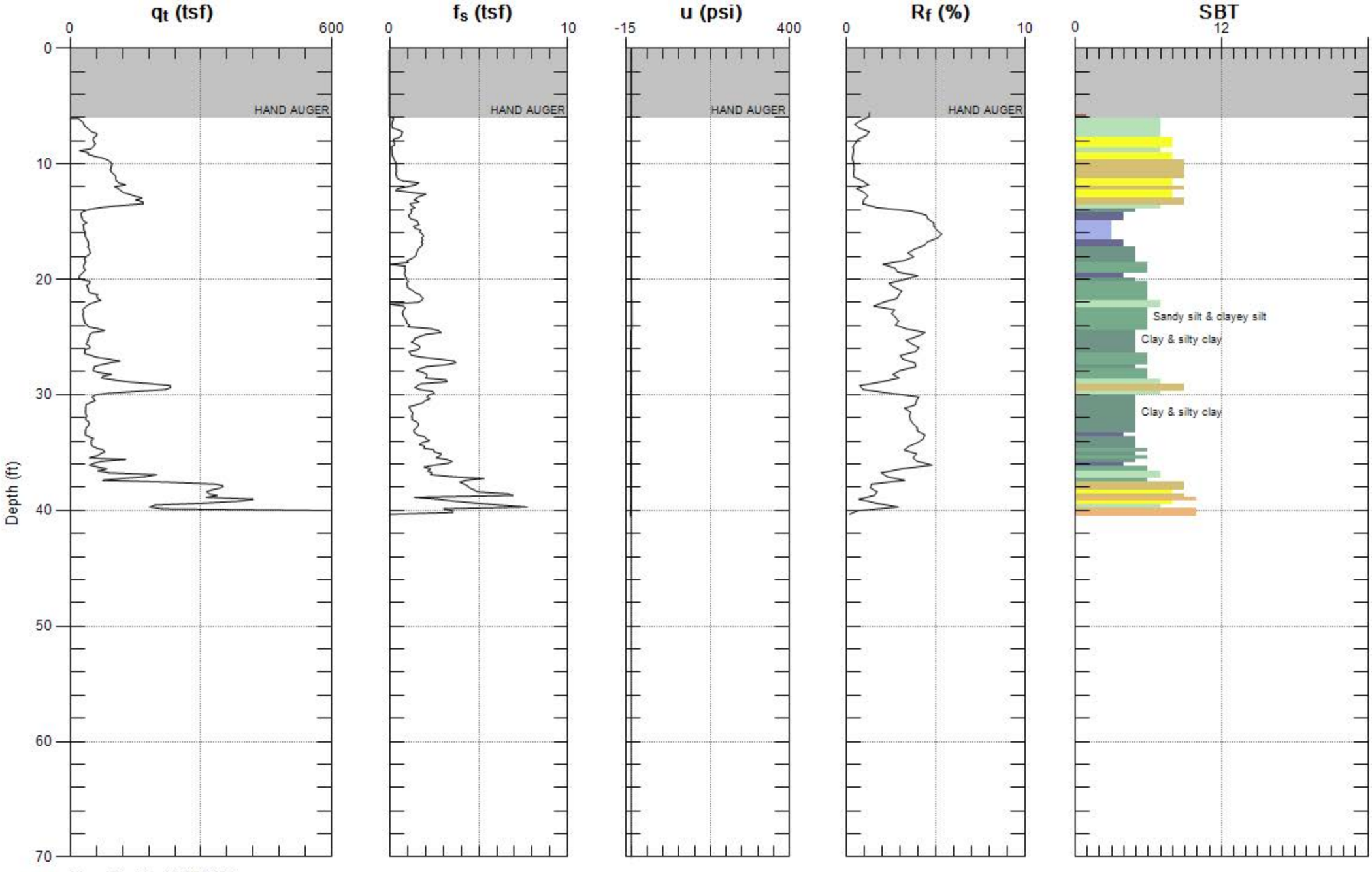
Max. Depth: 40.518 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-2

Engineer: S.KOLTHOFF
Date: 12/30/2013 09:58



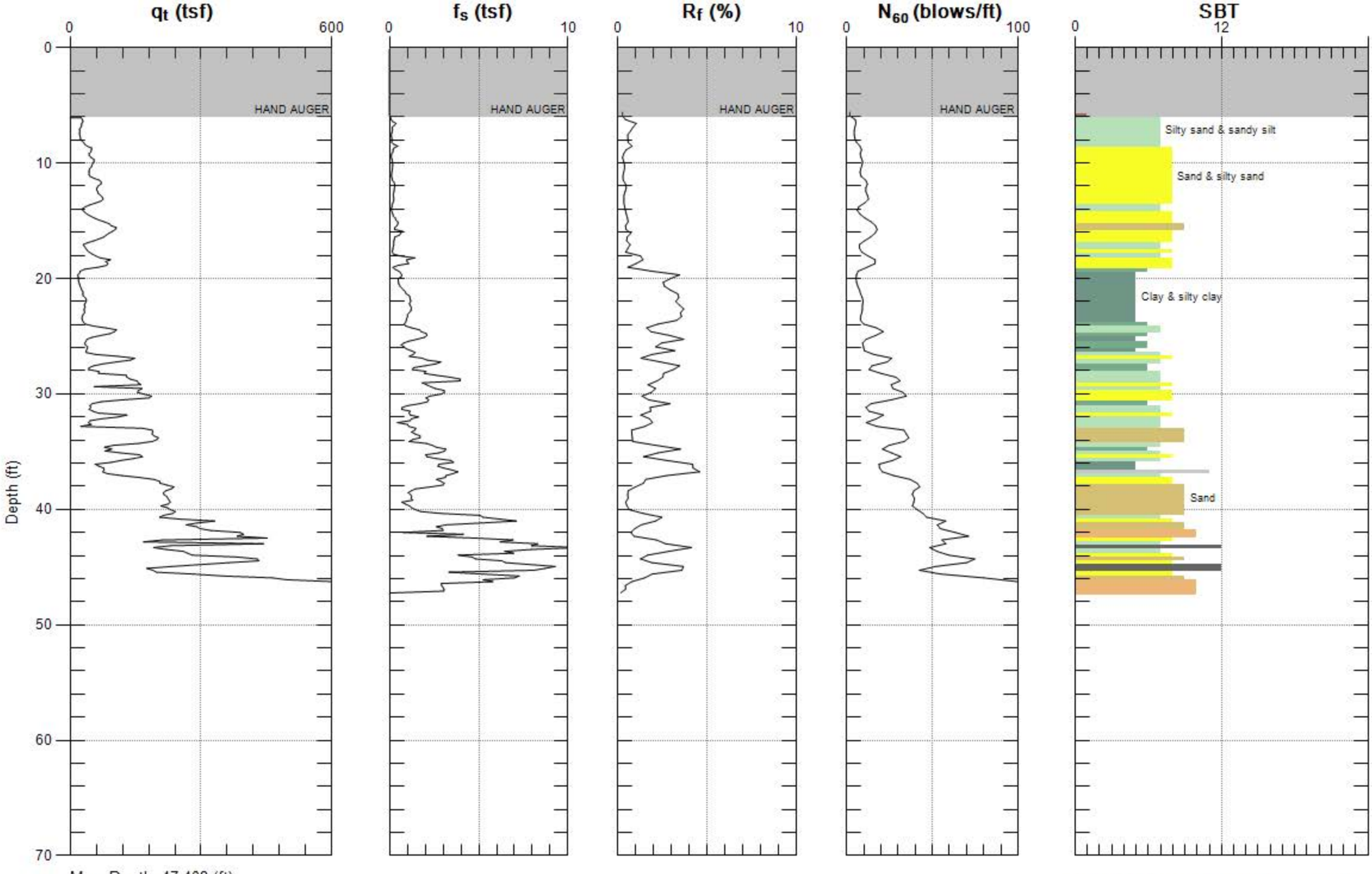
Max. Depth: 40.518 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-3

Engineer: S.KOLTHOFF
Date: 12/30/2013 11:40



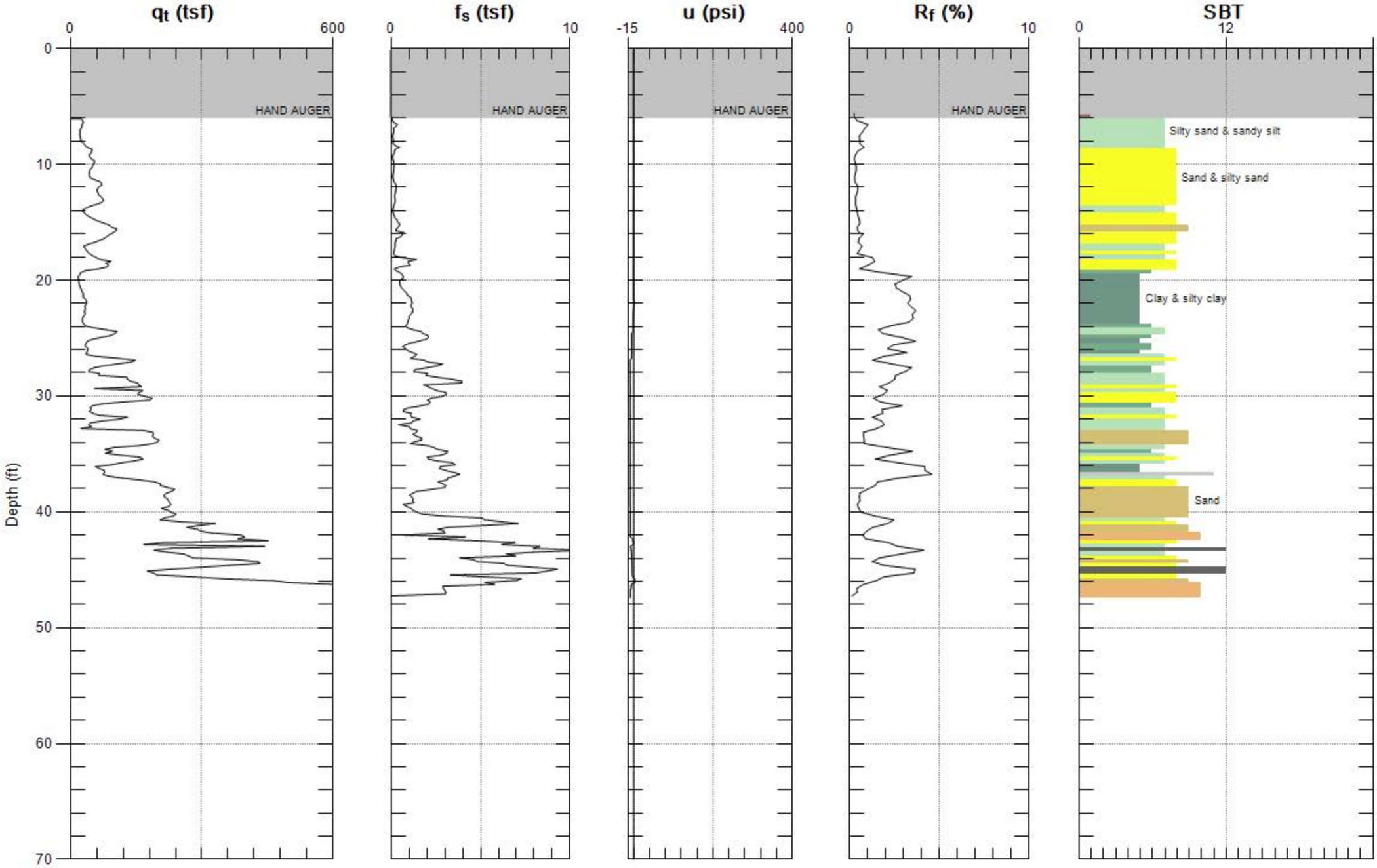
Max. Depth: 47.408 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-3

Engineer: S.KOLTHOFF
Date: 12/30/2013 11:40



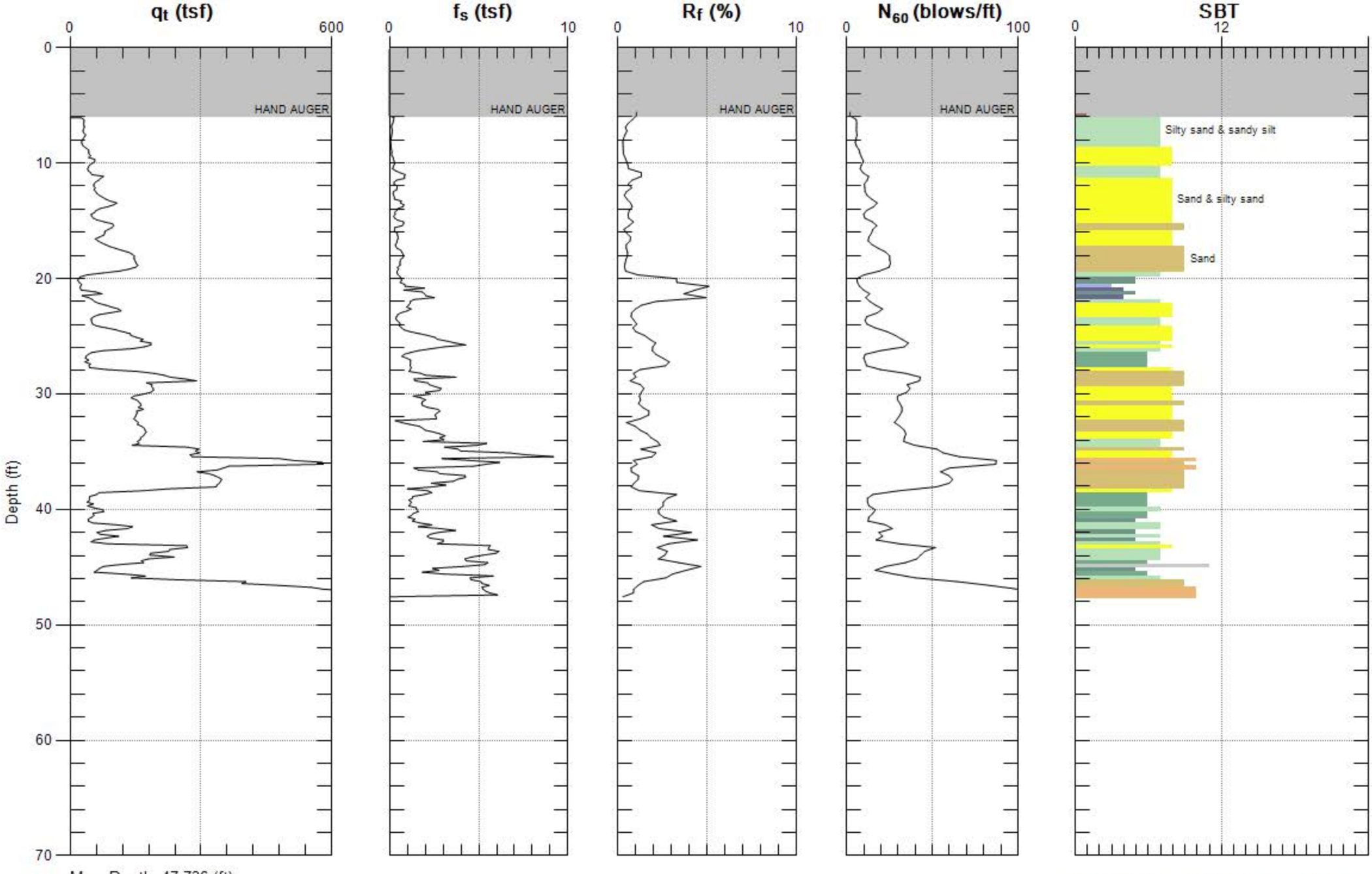
Max. Depth: 47.408 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-4

Engineer: S.KOLTHOFF
Date: 12/31/2013 08:40



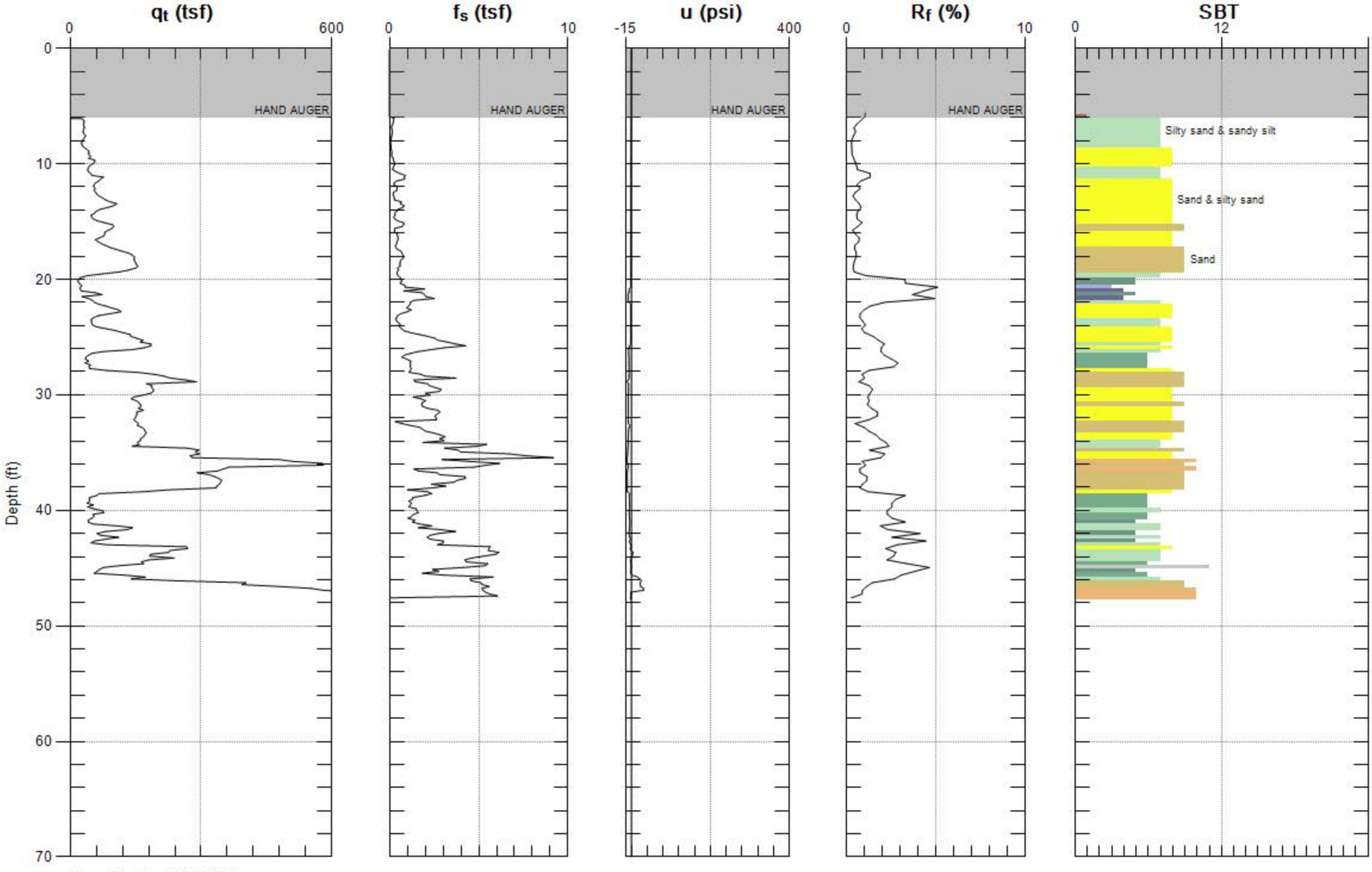
Max. Depth: 47.736 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-4

Engineer: S.KOLTHOFF
Date: 12/31/2013 08:40



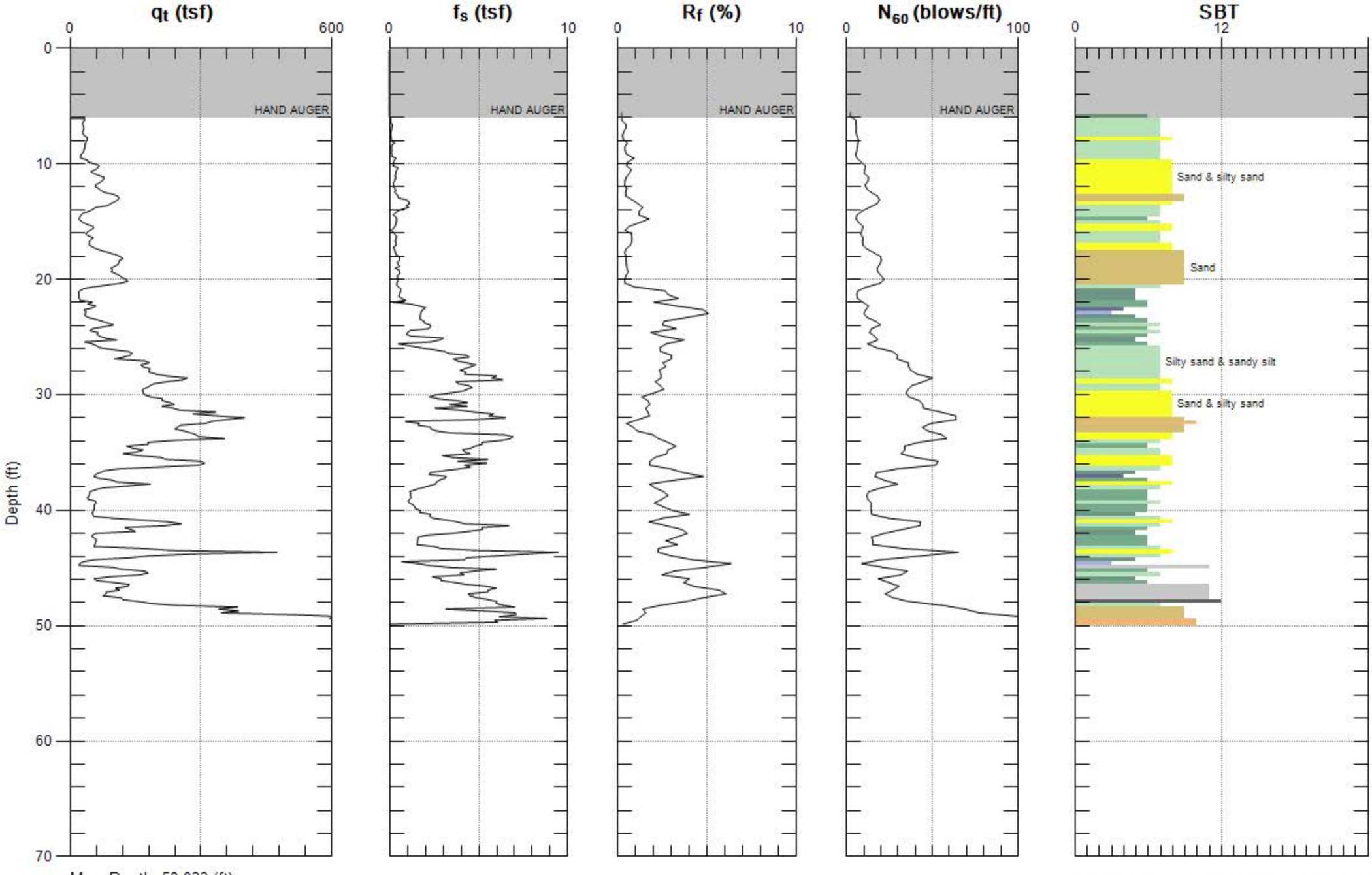
Max. Depth: 47.736 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-5

Engineer: S.KOLTHOFF
Date: 12/31/2013 09:59



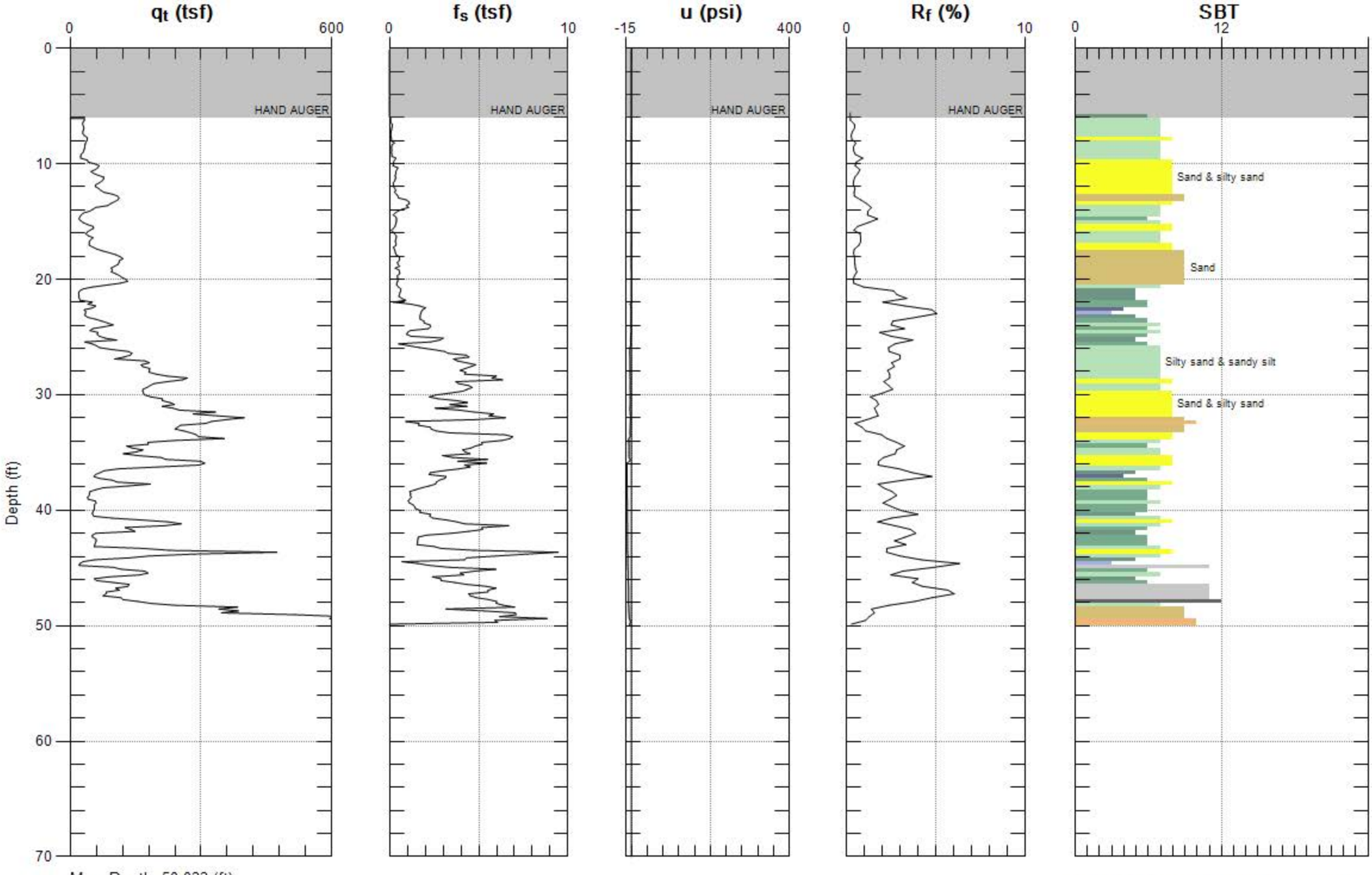
Max. Depth: 50.033 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-5

Engineer: S.KOLTHOFF
Date: 12/31/2013 09:59



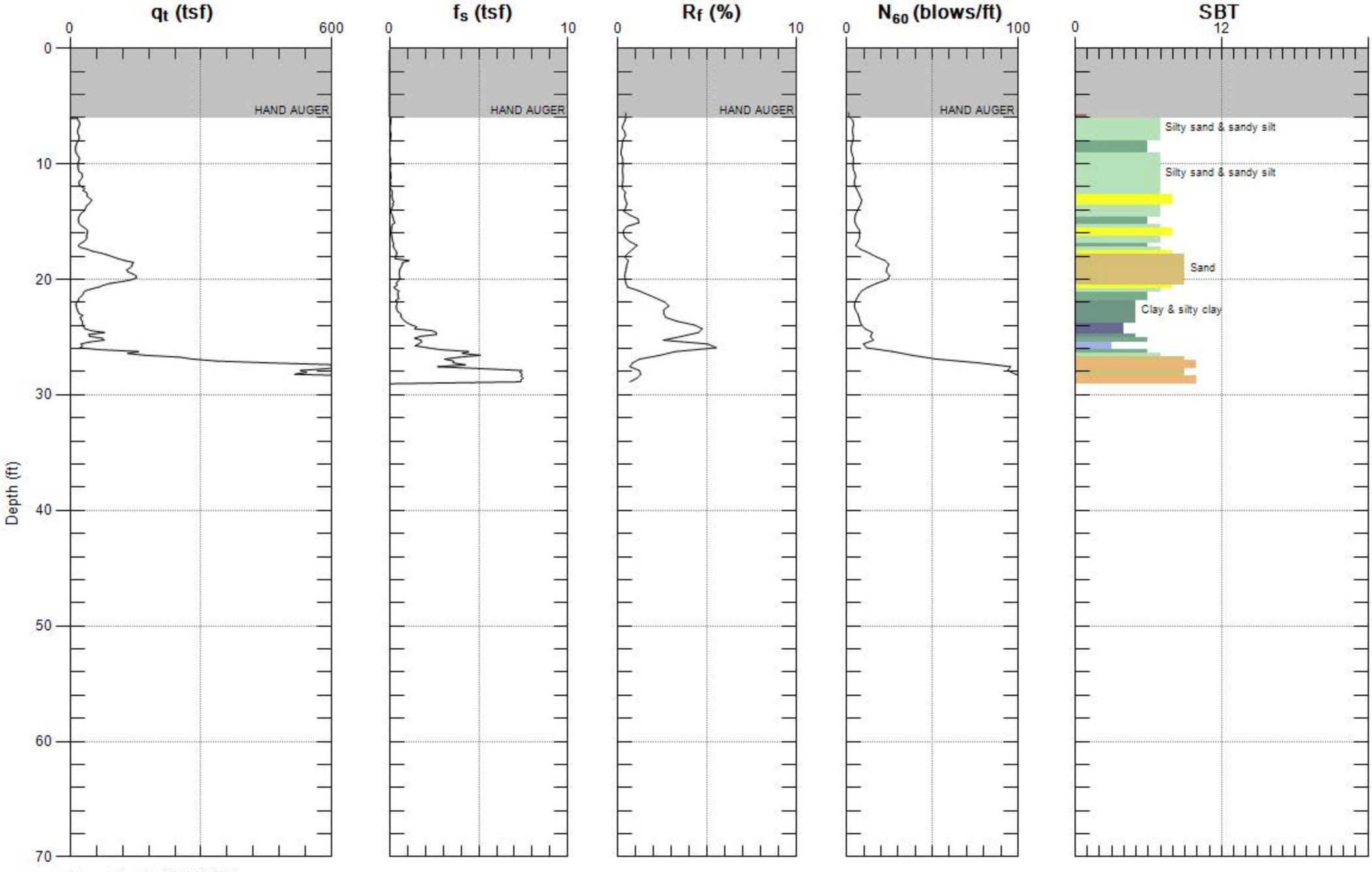
Max. Depth: 50.033 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-6

Engineer: S.KOLTHOFF
Date: 12/31/2013 10:46



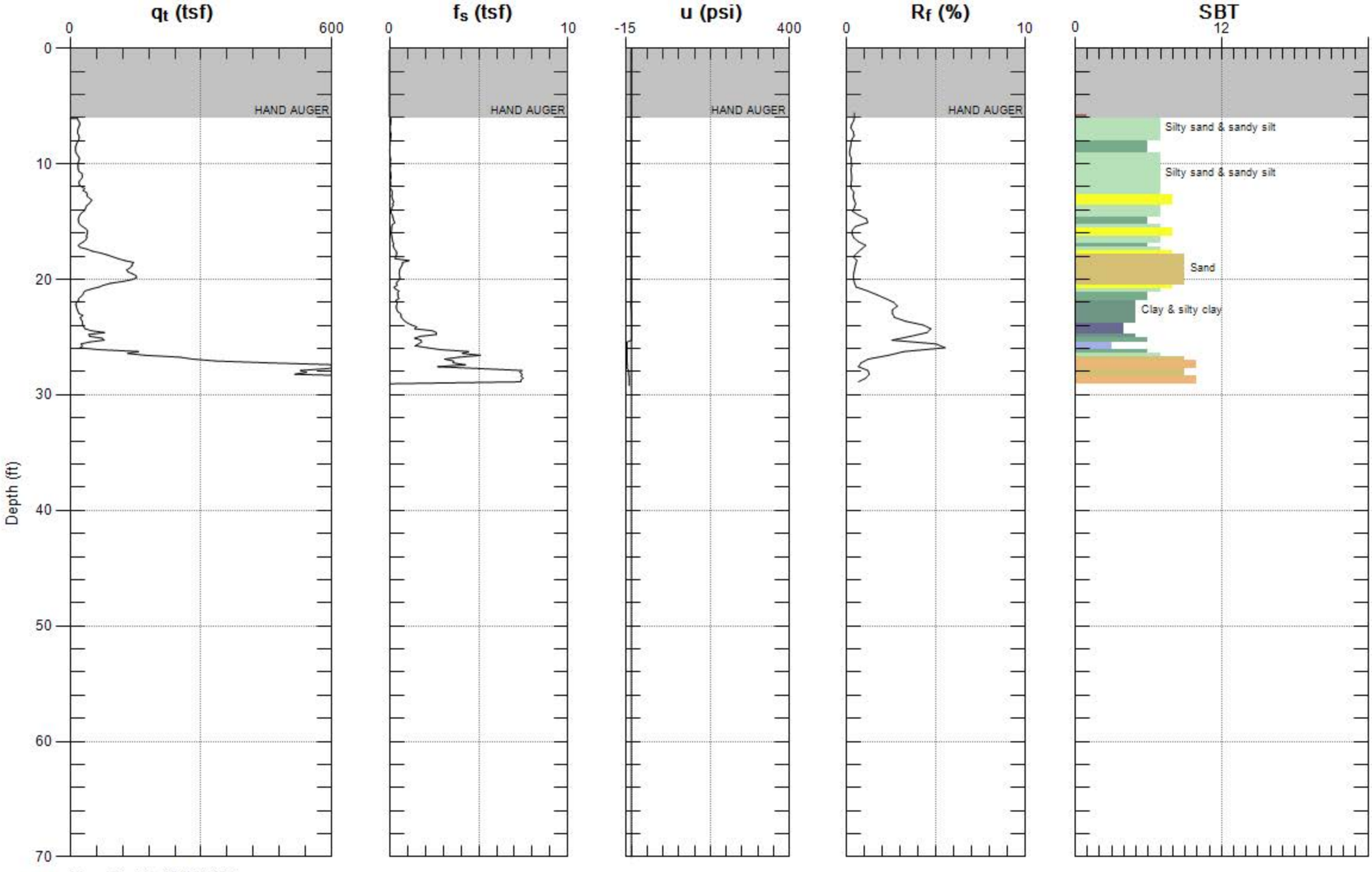
Max. Depth: 29.199 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-6

Engineer: S.KOLTHOFF
Date: 12/31/2013 10:46



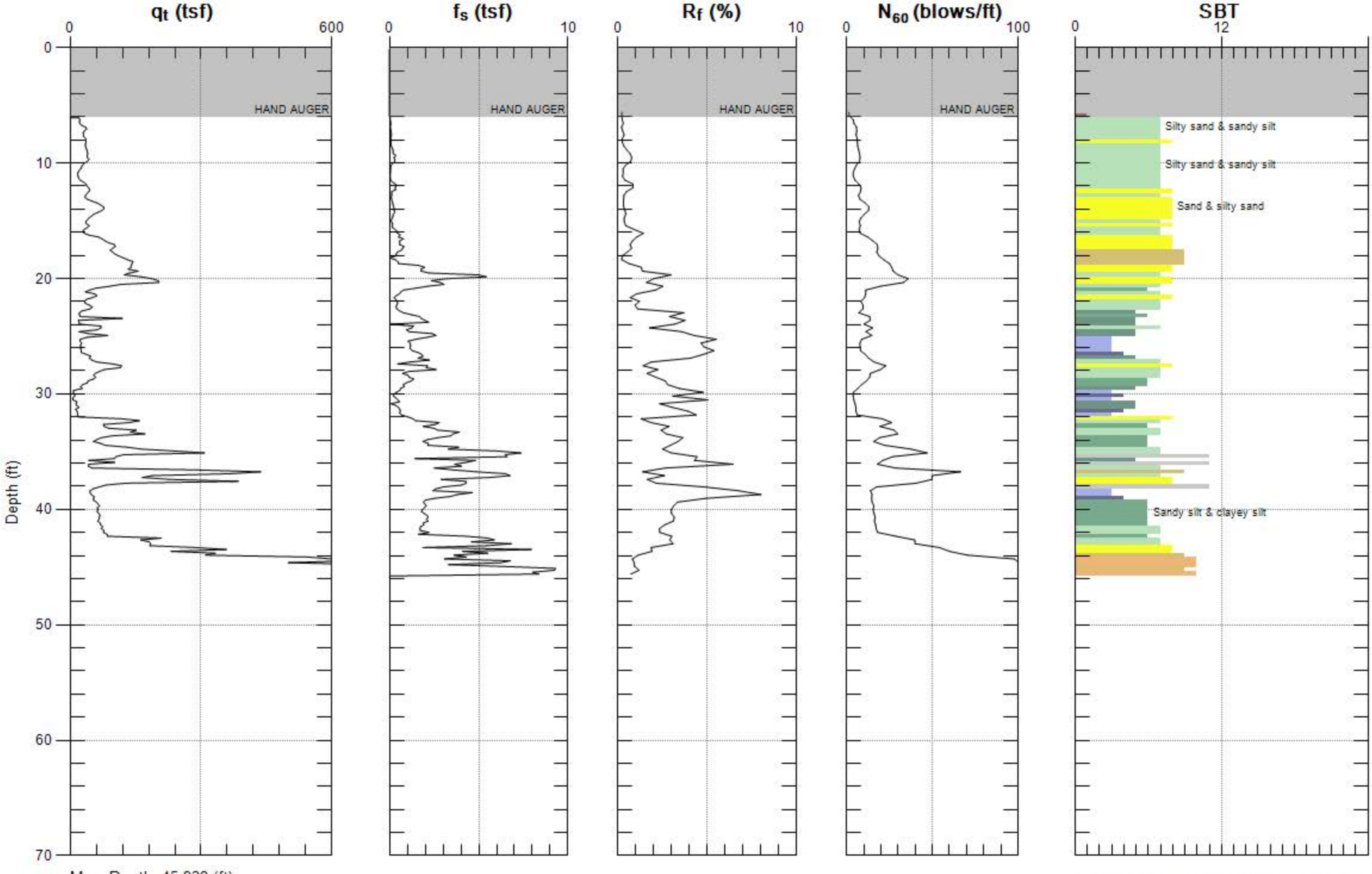
Max. Depth: 29.199 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-7

Engineer: S.KOLTHOFF
Date: 12/31/2013 12:07



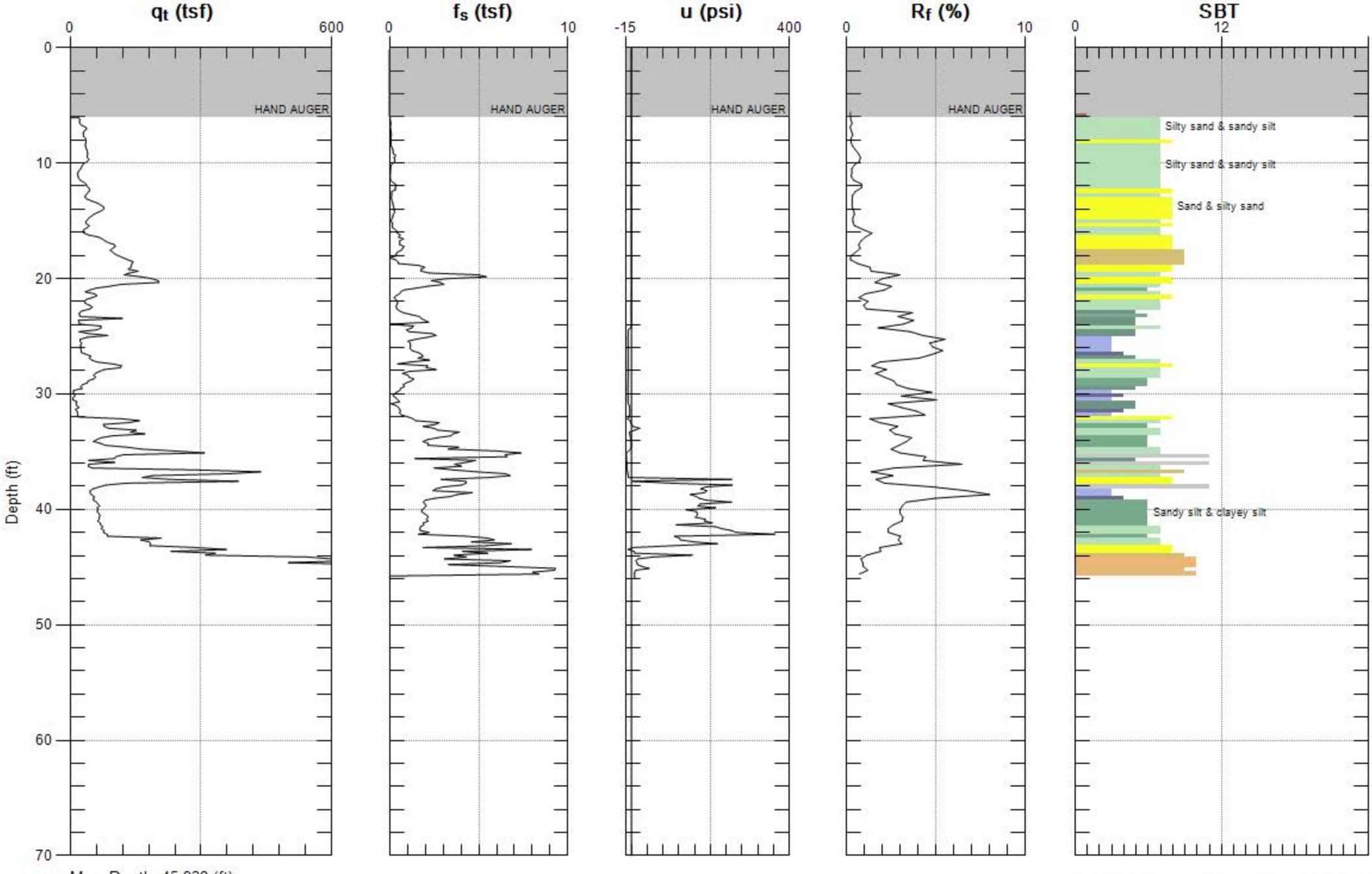
Max. Depth: 45.932 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-7

Engineer: S.KOLTHOFF
Date: 12/31/2013 12:07



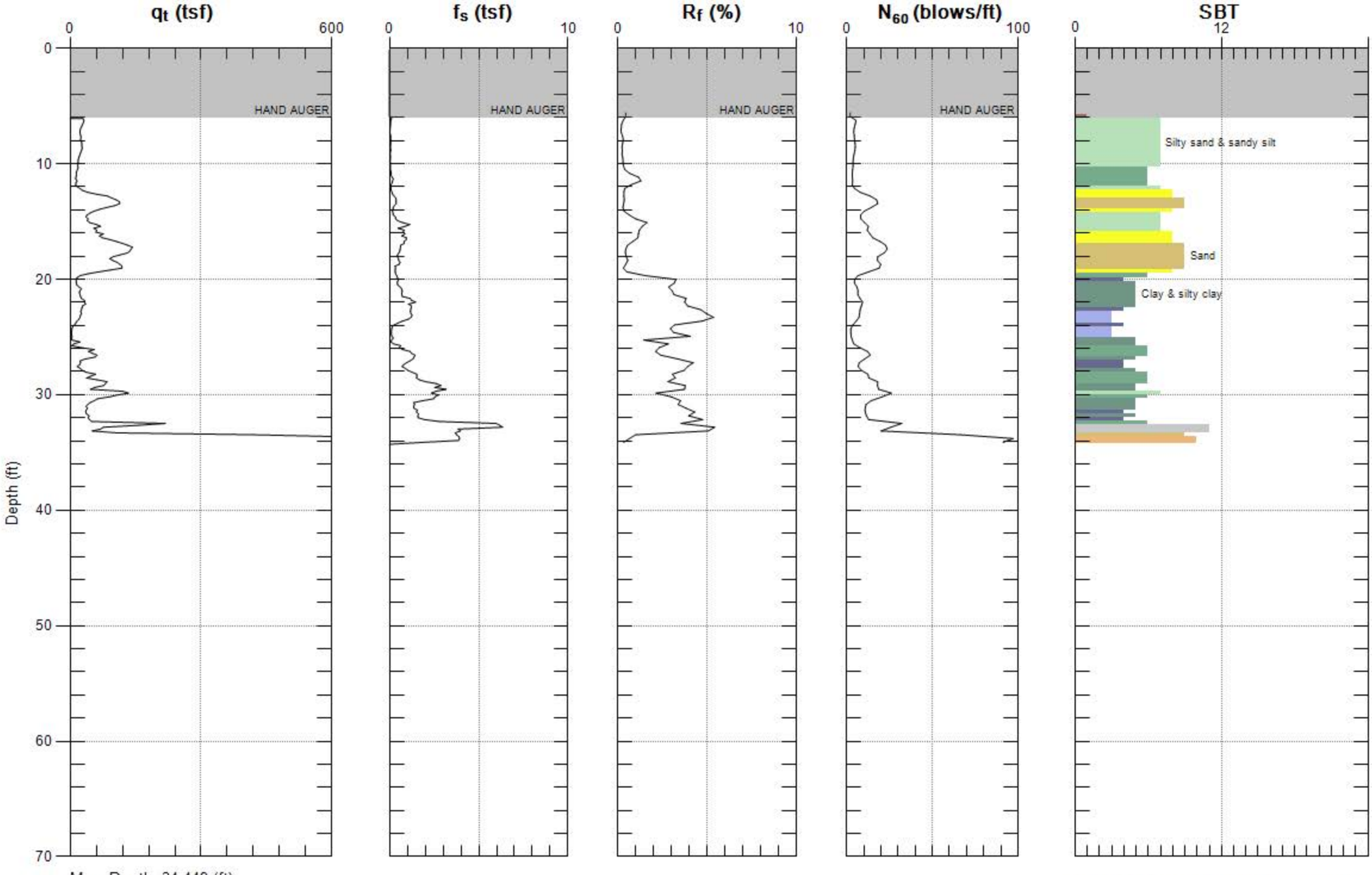
Max. Depth: 45.932 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-8

Engineer: S.KOLTHOFF
Date: 12/31/2013 01:06



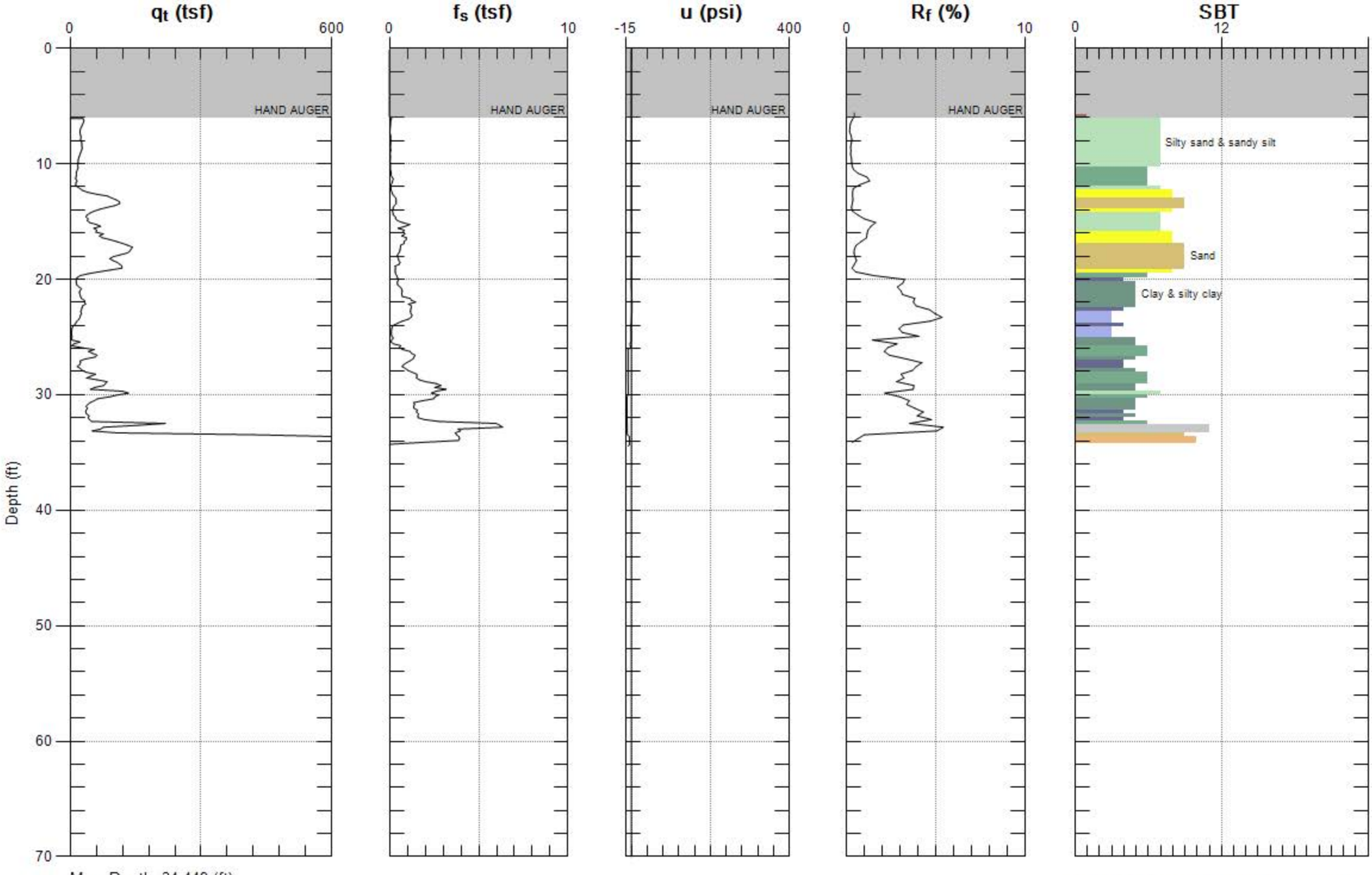
Max. Depth: 34.449 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-8

Engineer: S.KOLTHOFF
Date: 12/31/2013 01:06



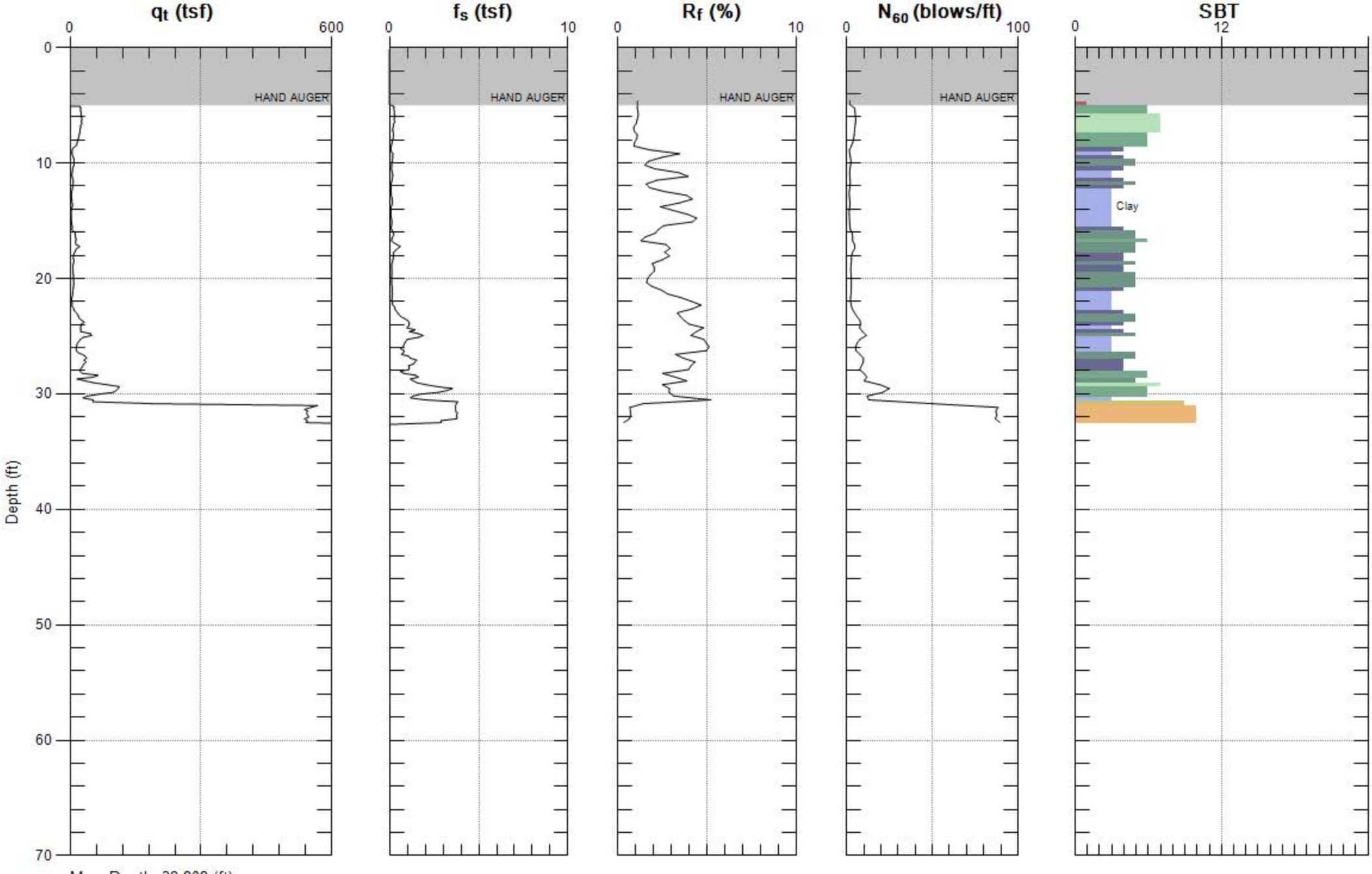
Max. Depth: 34.449 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-9

Engineer: S.KOLTHOFF
Date: 1/2/2014 09:19



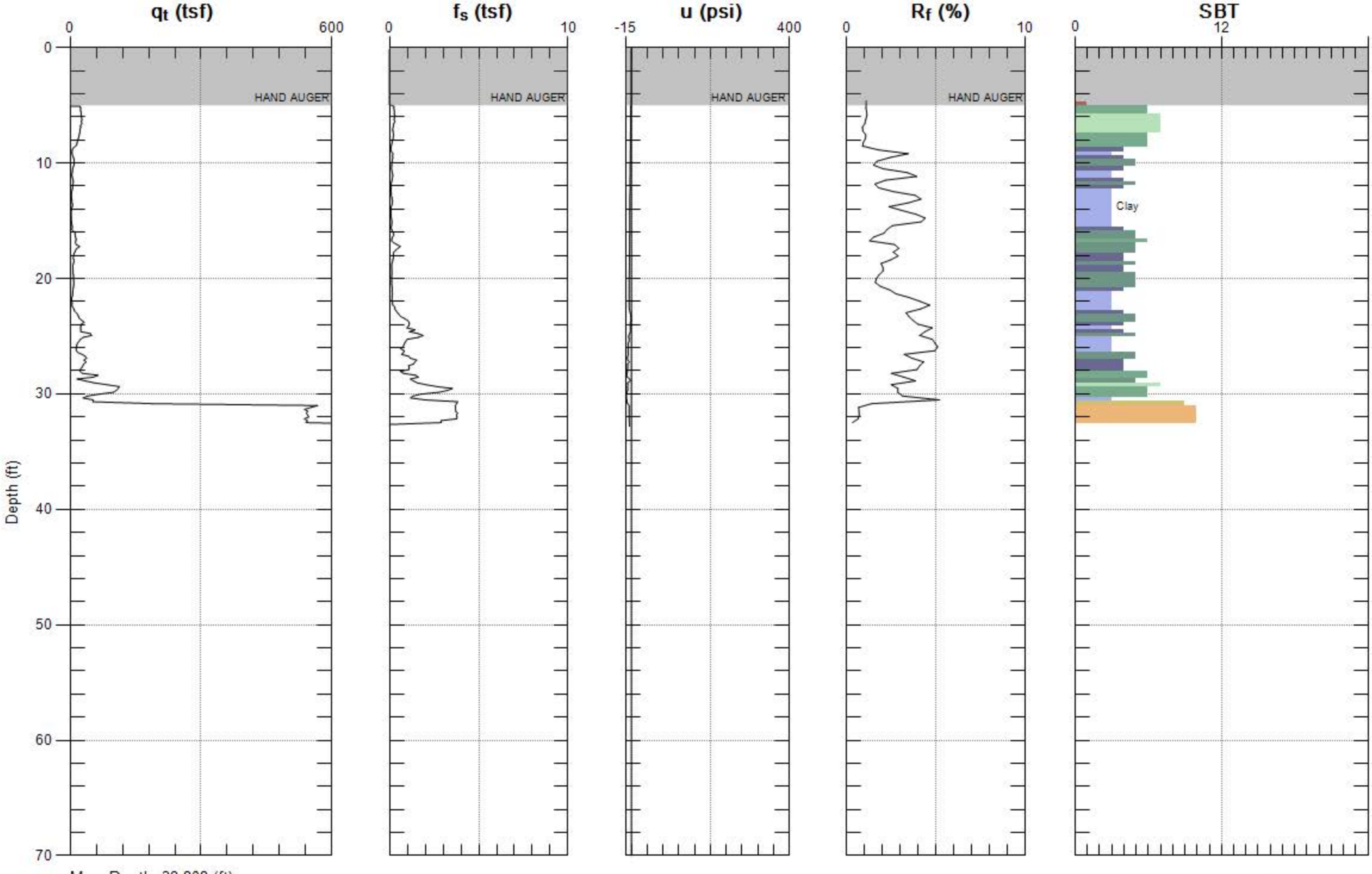
Max. Depth: 32.808 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-9

Engineer: S.KOLTHOFF
Date: 1/2/2014 09:19



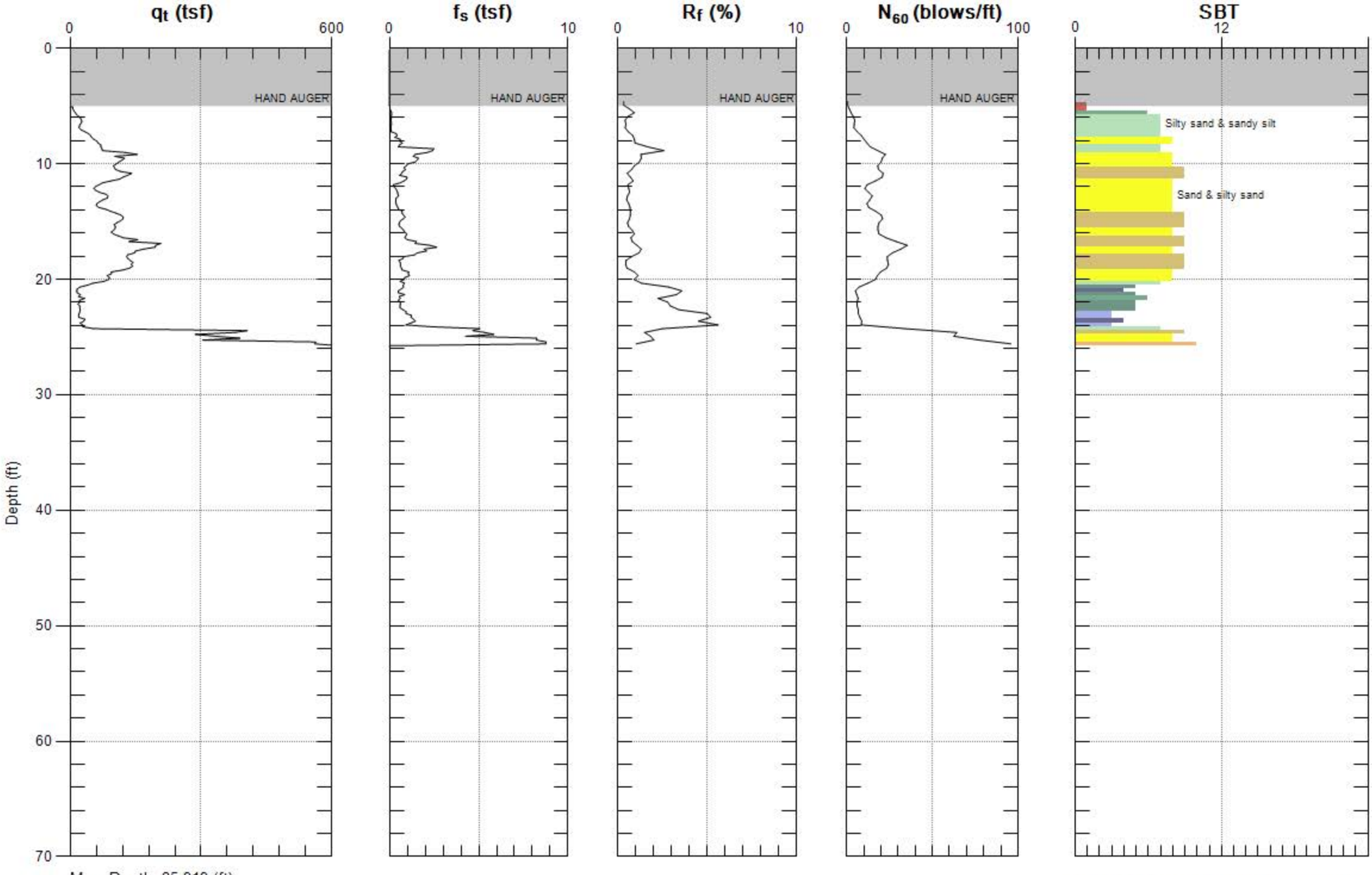
Max. Depth: 32.808 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-10

Engineer: S.KOLTHOFF
Date: 1/2/2014 10:35



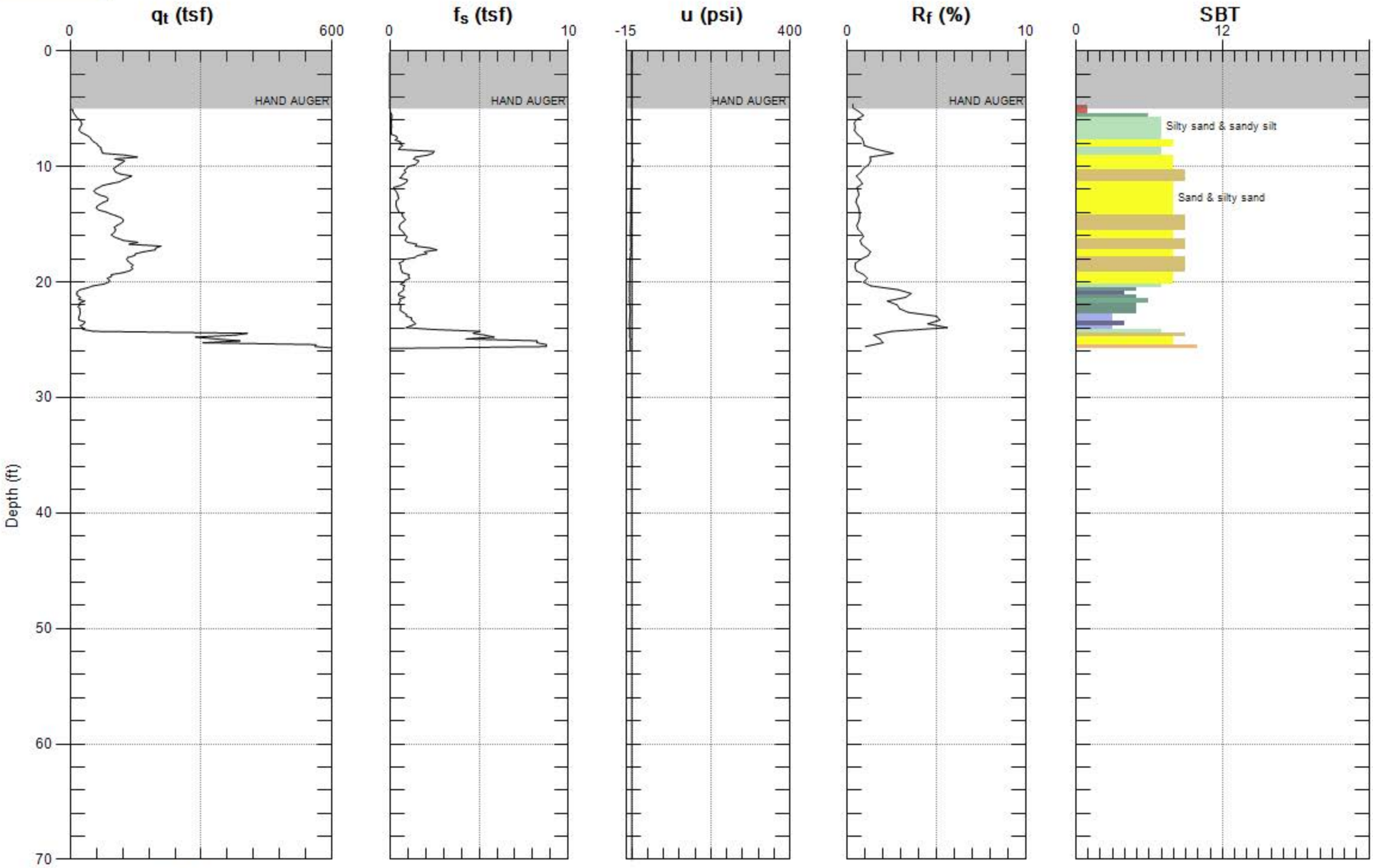
Max. Depth: 25.919 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-10

Engineer: S.KOLTHOFF
Date: 1/2/2014 10:35



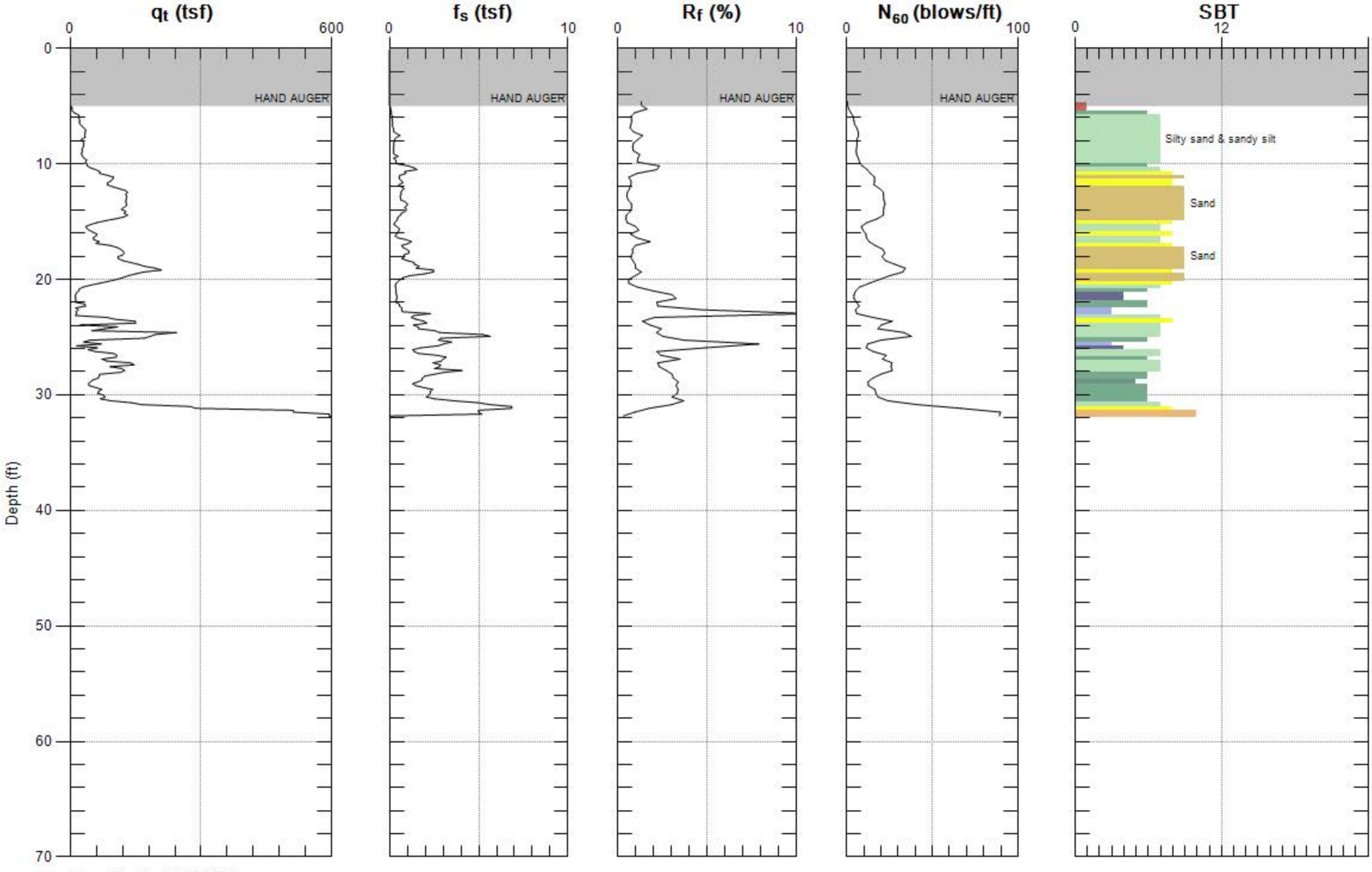
Max. Depth: 25.919 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-11

Engineer: S.KOLTHOFF
Date: 1/2/2014 11:17



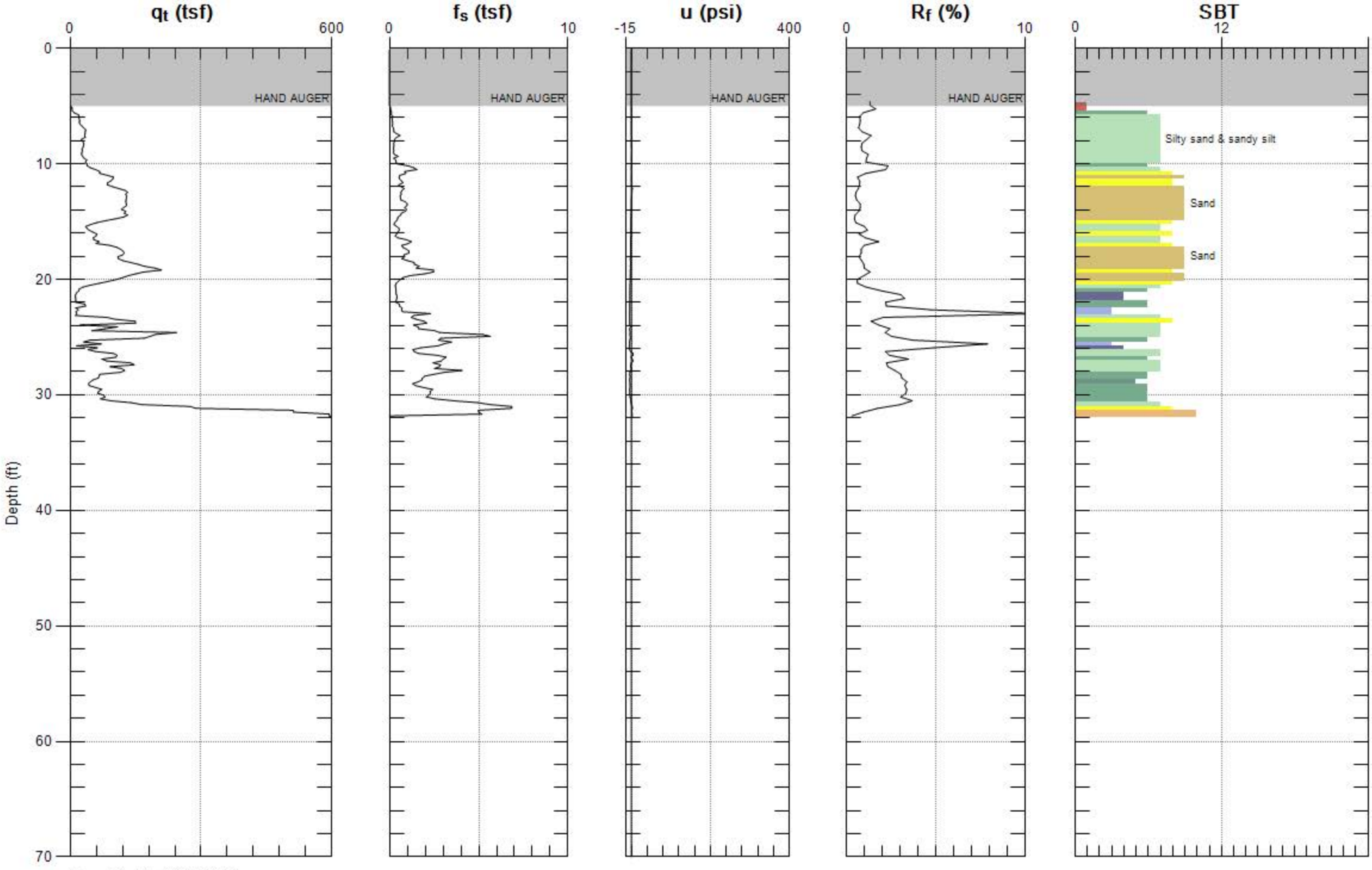
Max. Depth: 31.988 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-11

Engineer: S.KOLTHOFF
Date: 1/2/2014 11:17



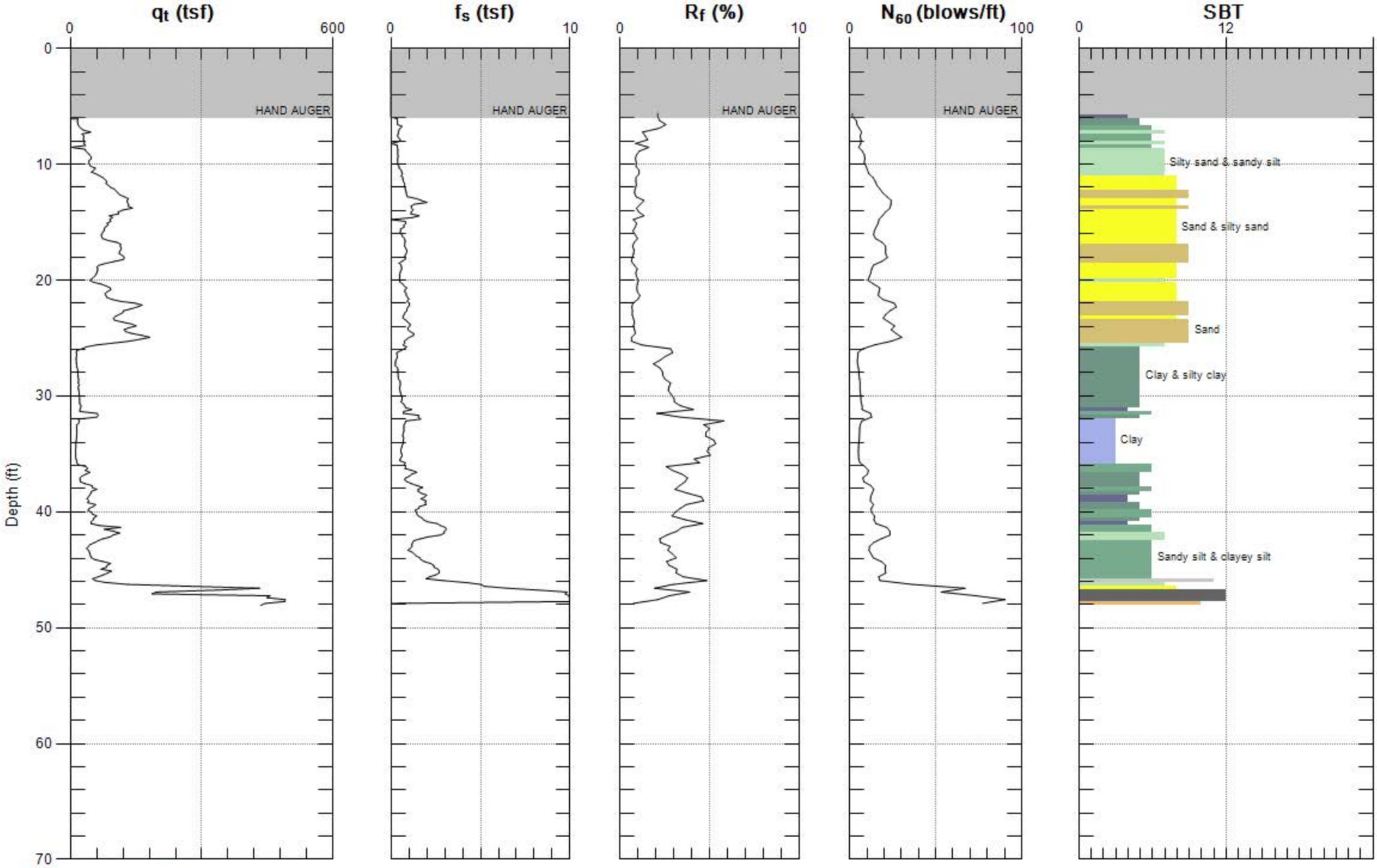
Max. Depth: 31.988 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-12

Engineer: S.KOLTHOFF
Date: 1/3/2014 10:40



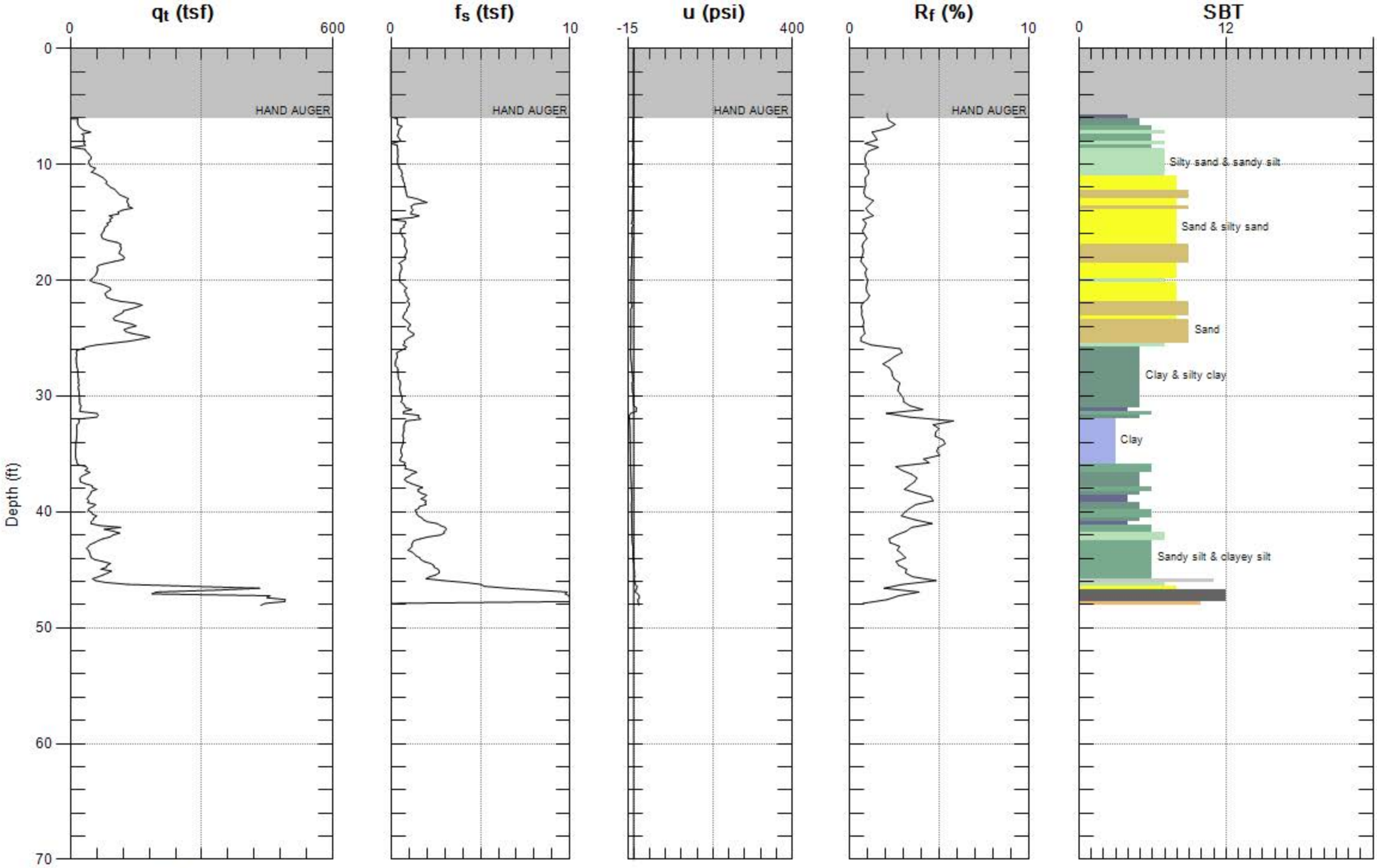
Max. Depth: 48.064 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-12

Engineer: S.KOLTHOFF
Date: 1/3/2014 10:40



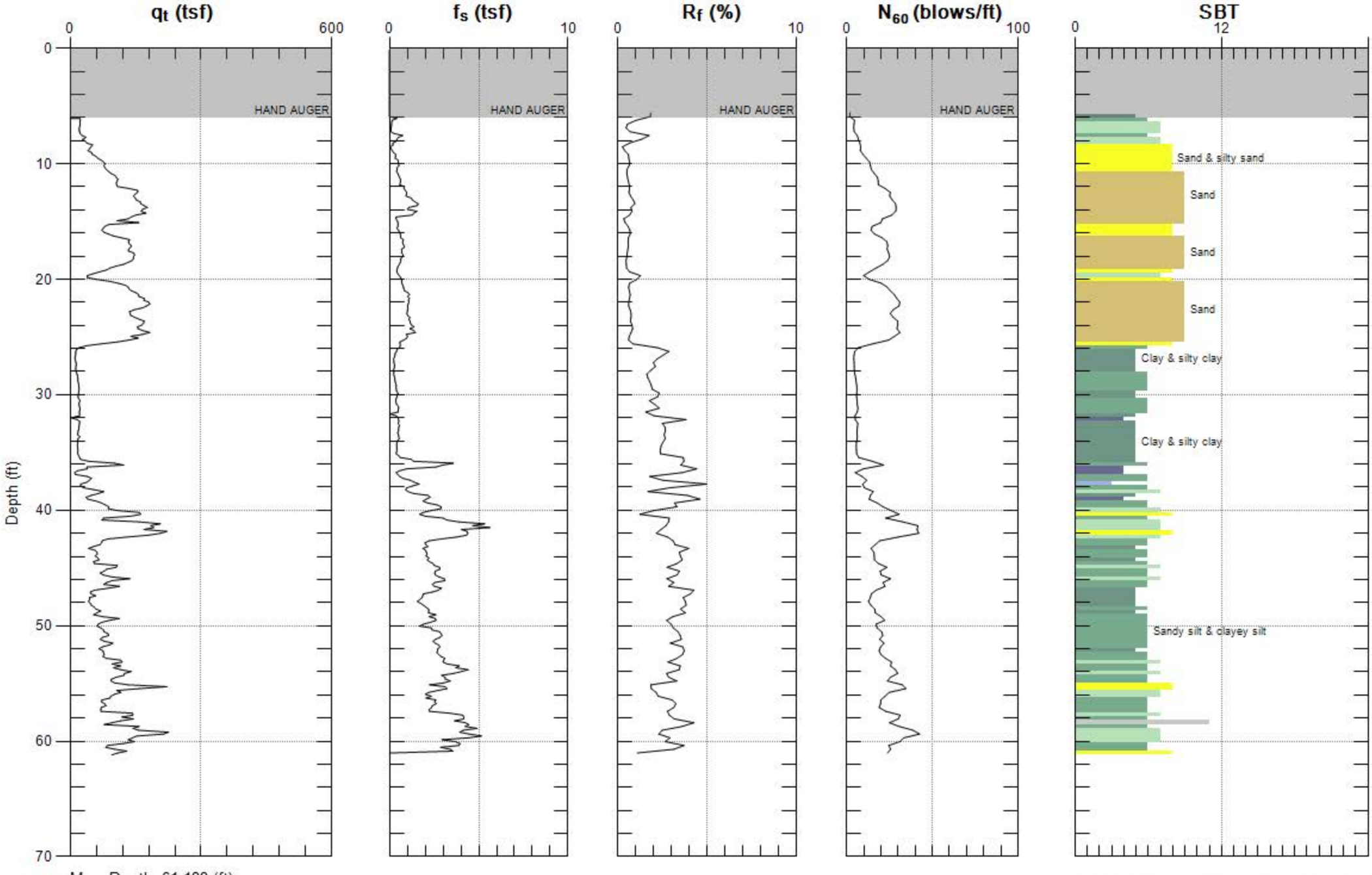
Max. Depth: 48.064 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-13

Engineer: S.KOLTHOFF
Date: 1/3/2014 12:00



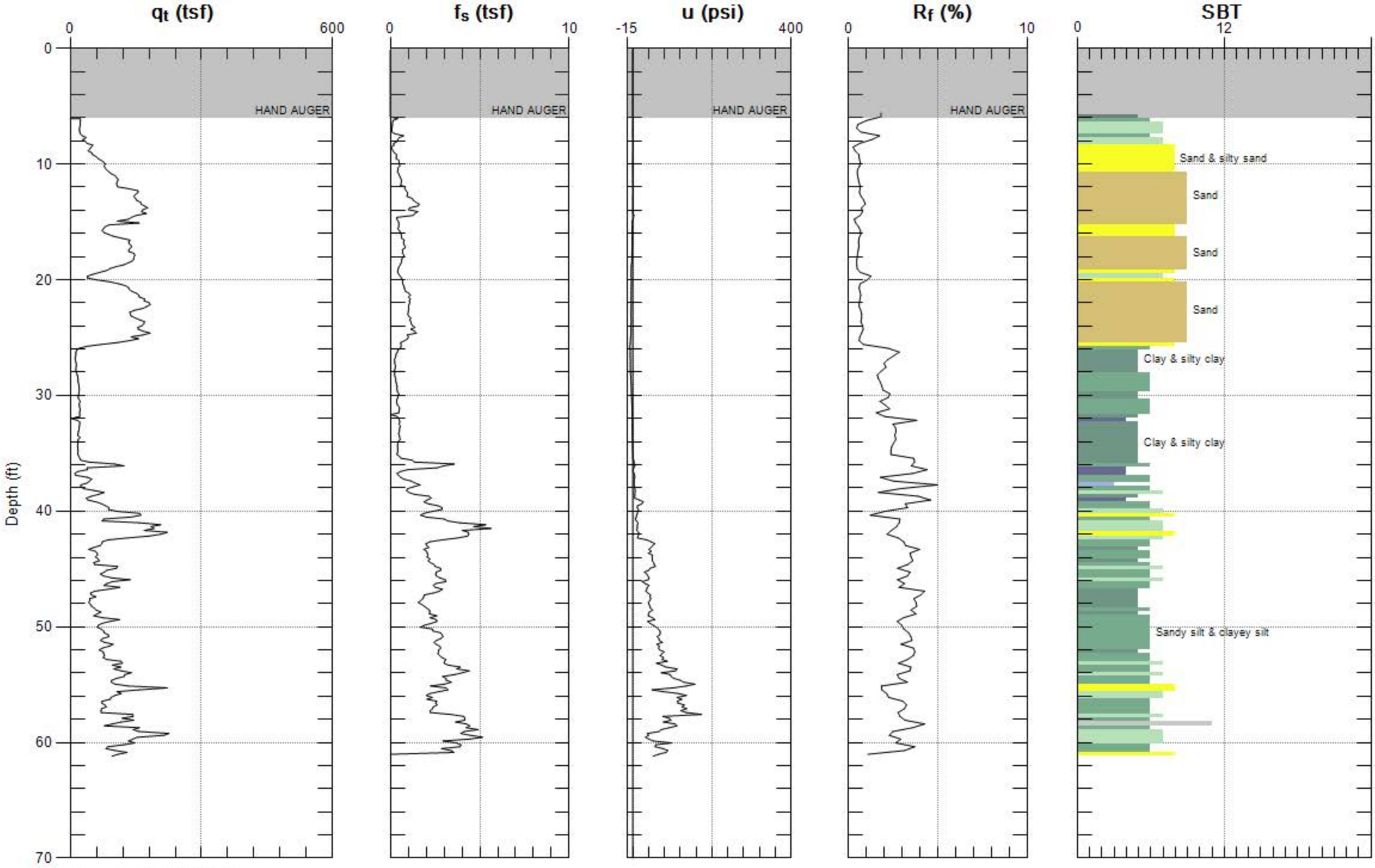
Max. Depth: 61.188 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-13

Engineer: S.KOLTHOFF
Date: 1/3/2014 12:00



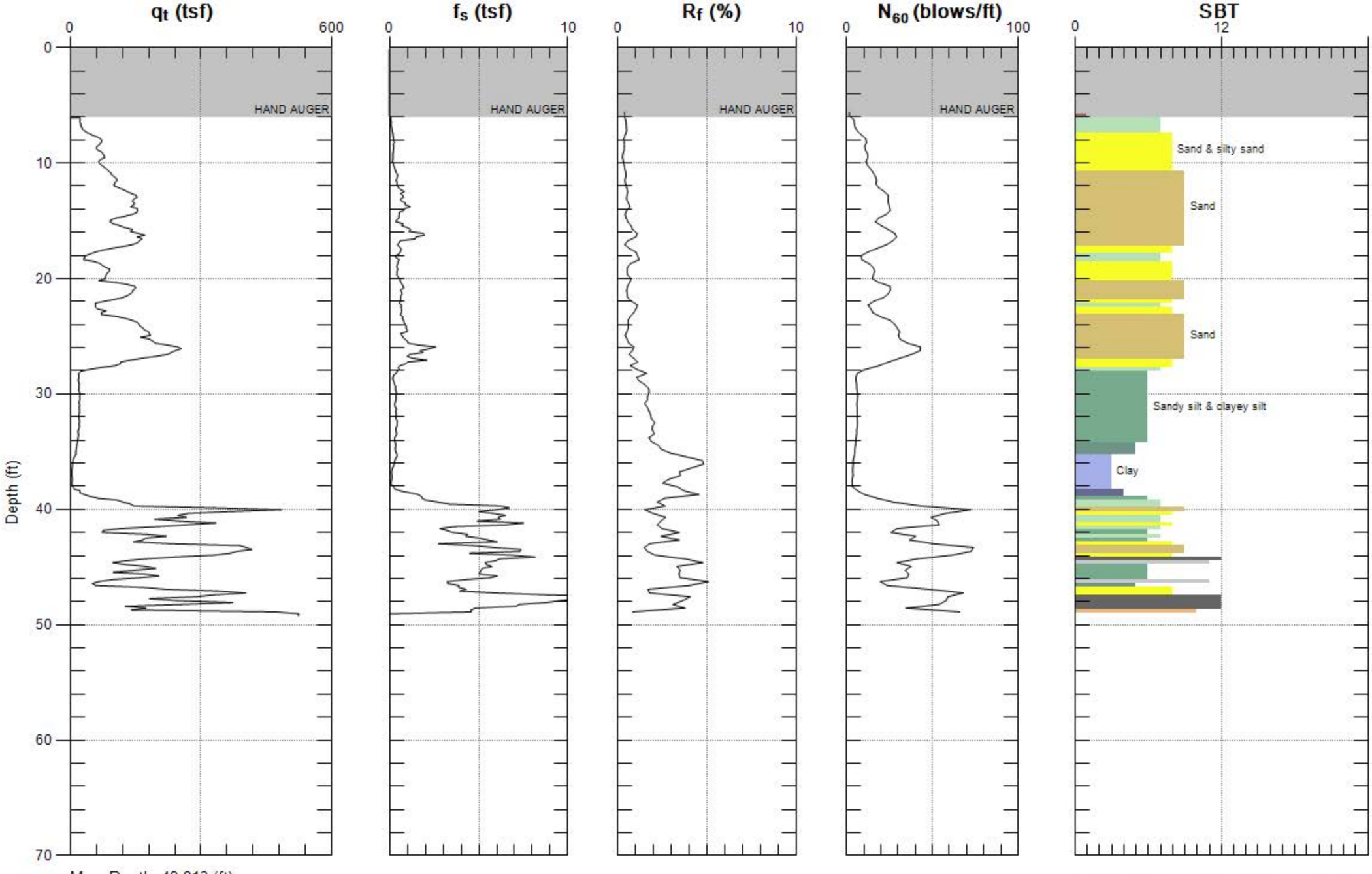
Max. Depth: 61.188 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-14

Engineer: S.KOLTHOFF
Date: 1/3/2014 12:50



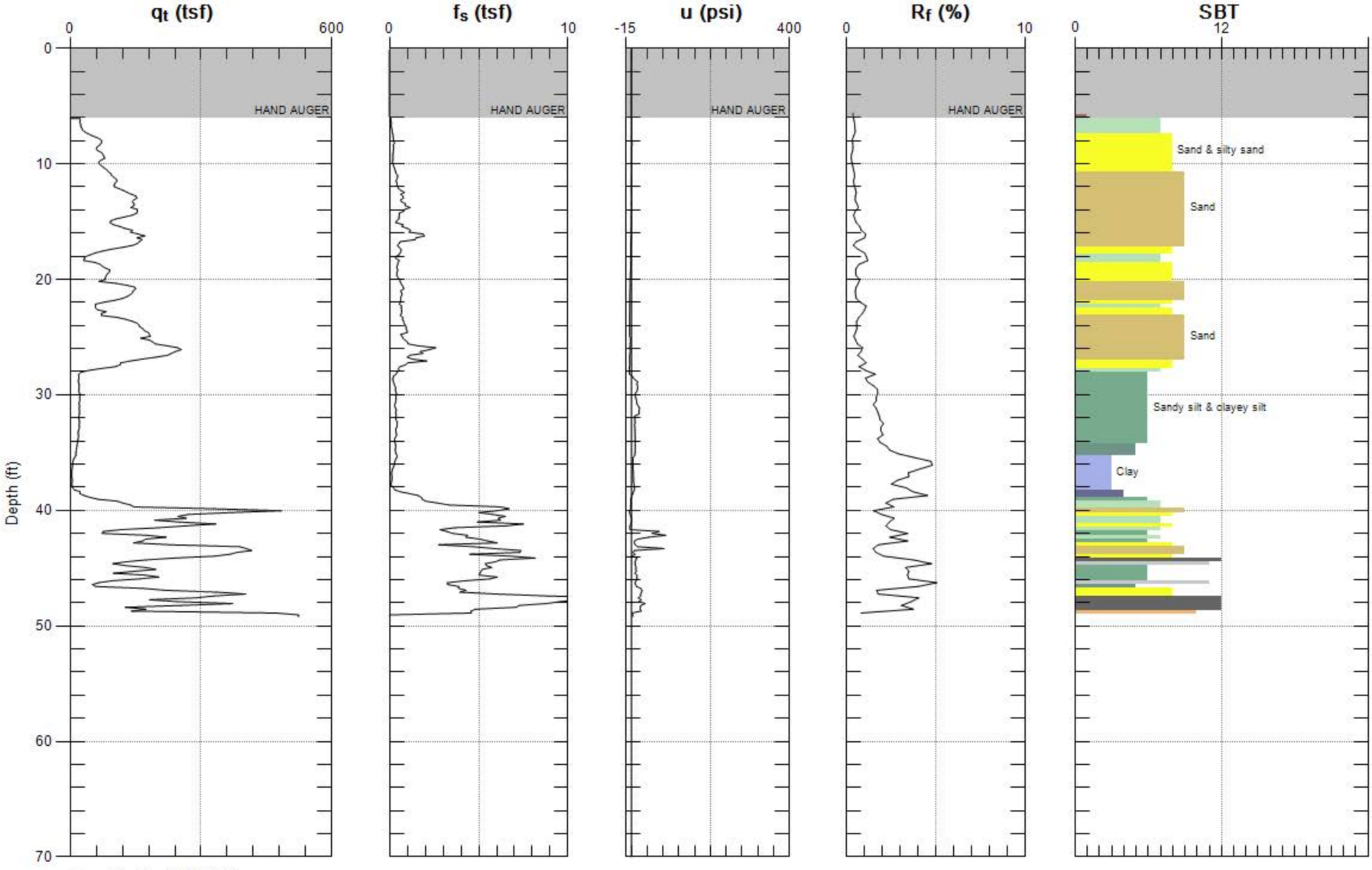
Max. Depth: 49.213 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-14

Engineer: S.KOLTHOFF
Date: 1/3/2014 12:50



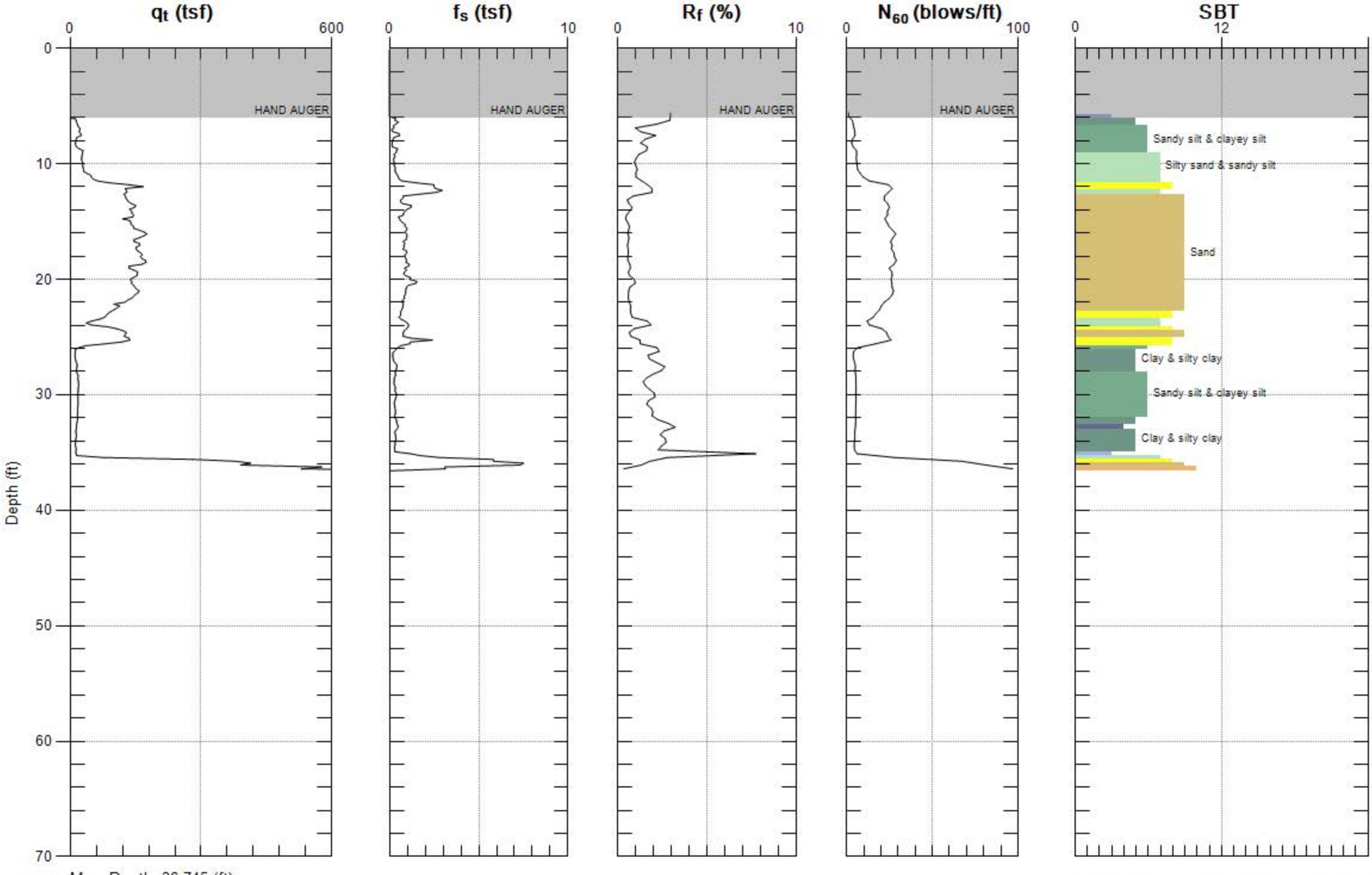
Max. Depth: 49.213 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-15

Engineer: S.KOLTHOFF
Date: 1/3/2014 01:31



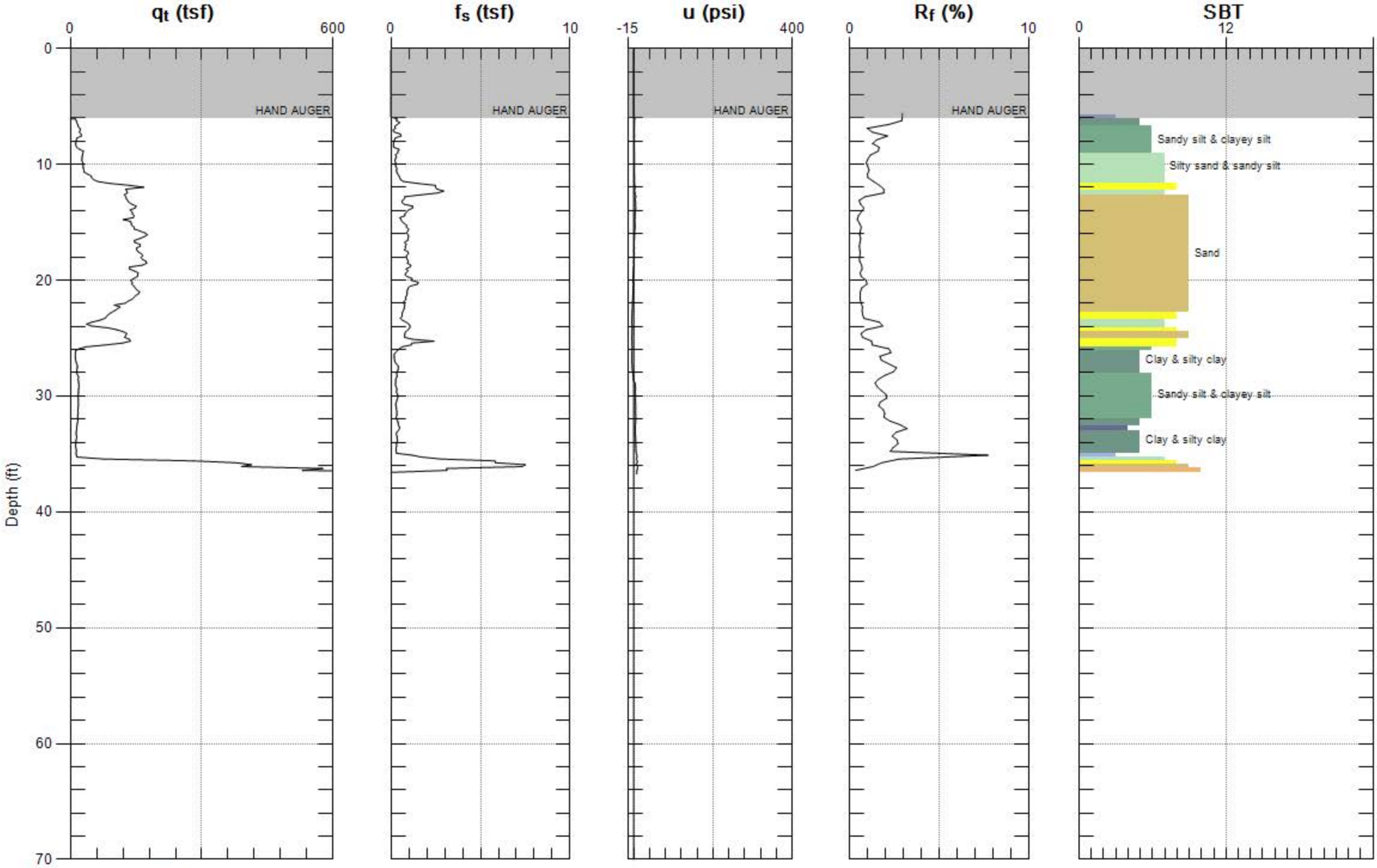
Max. Depth: 36.745 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-15

Engineer: S.KOLTHOFF
Date: 1/3/2014 01:31



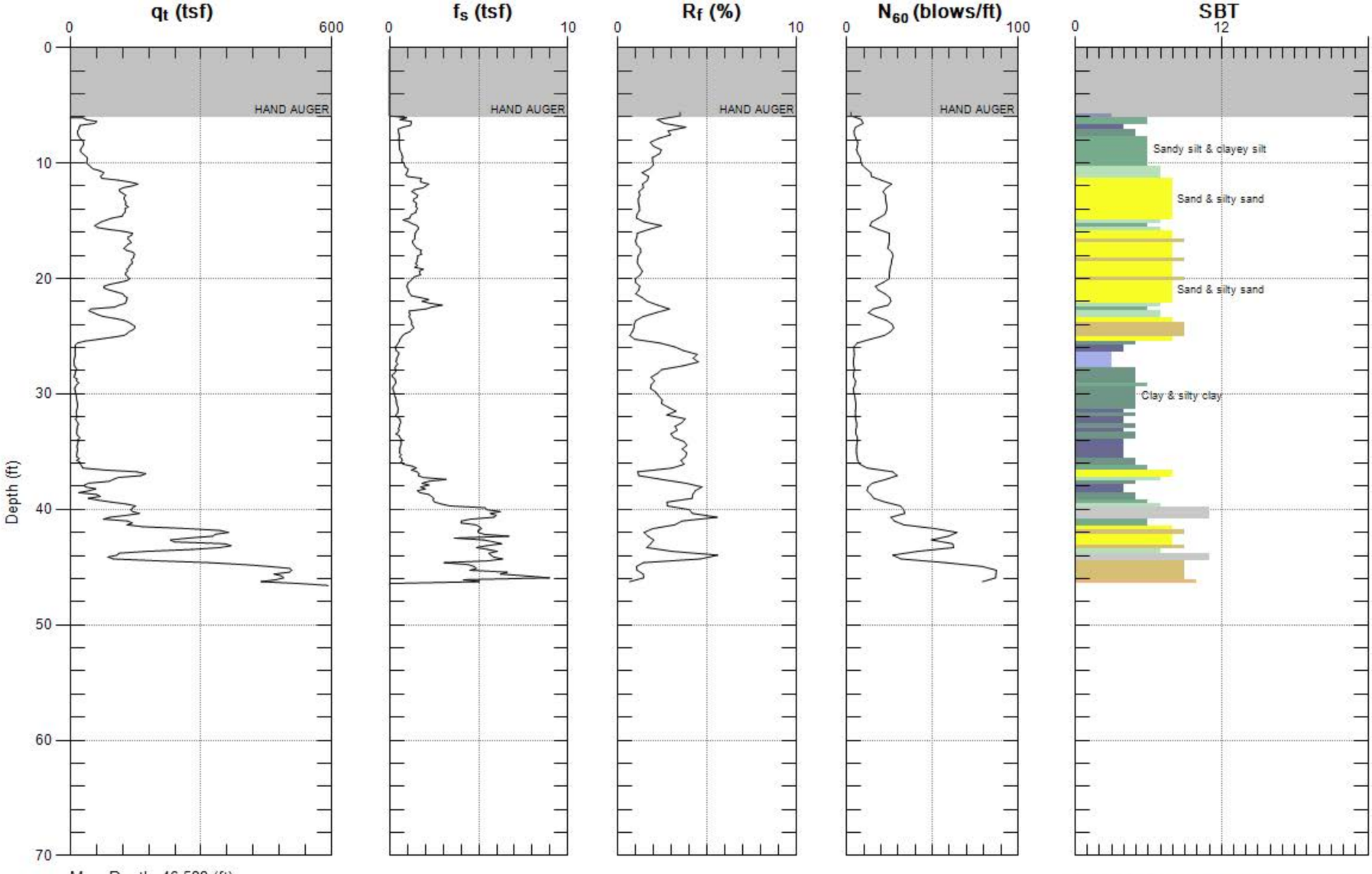
Max. Depth: 36.745 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-16

Engineer: S.KOLTHOFF
Date: 1/3/2014 02:15



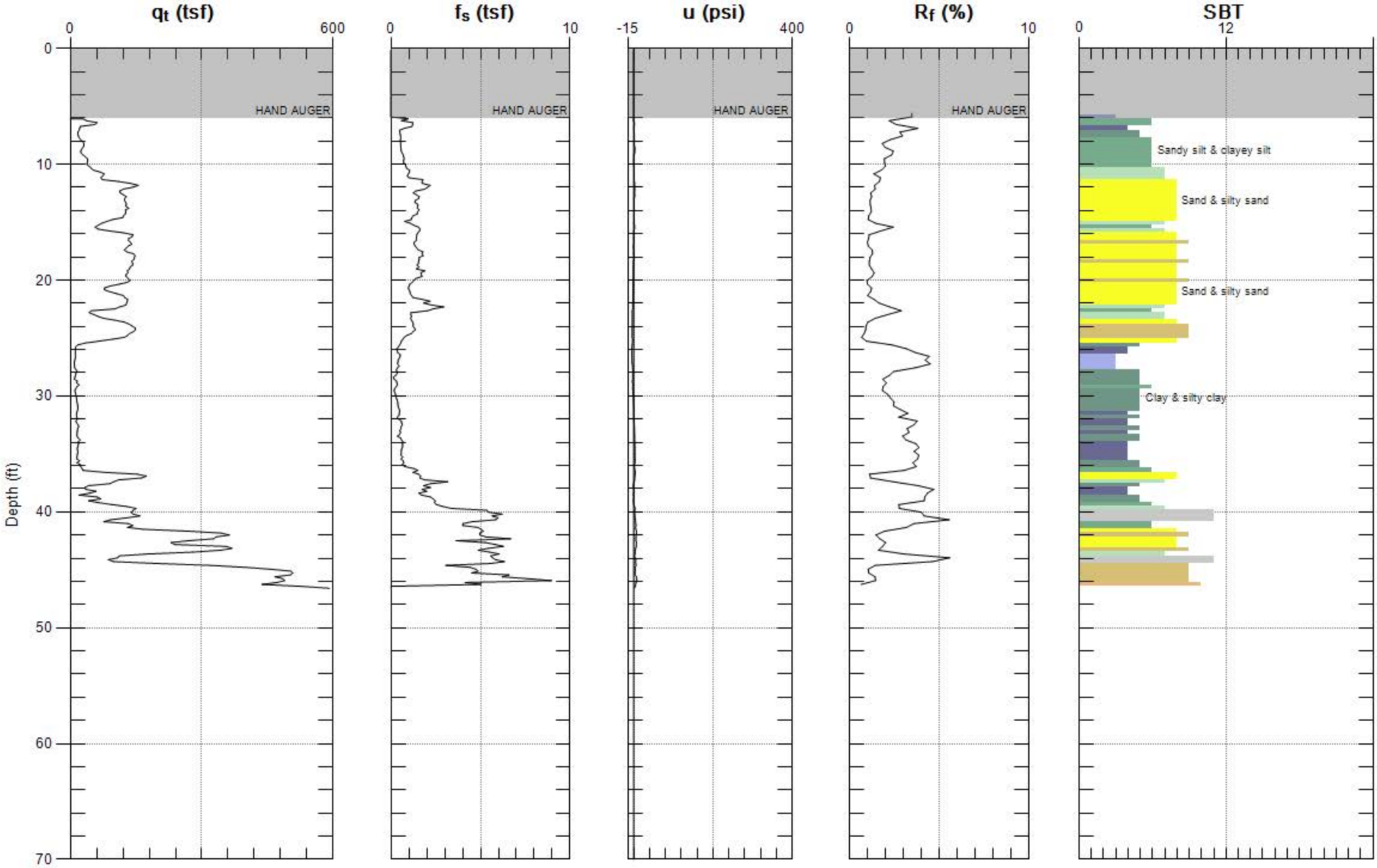
Max. Depth: 46.588 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-16

Engineer: S.KOLTHOFF
Date: 1/3/2014 02:15



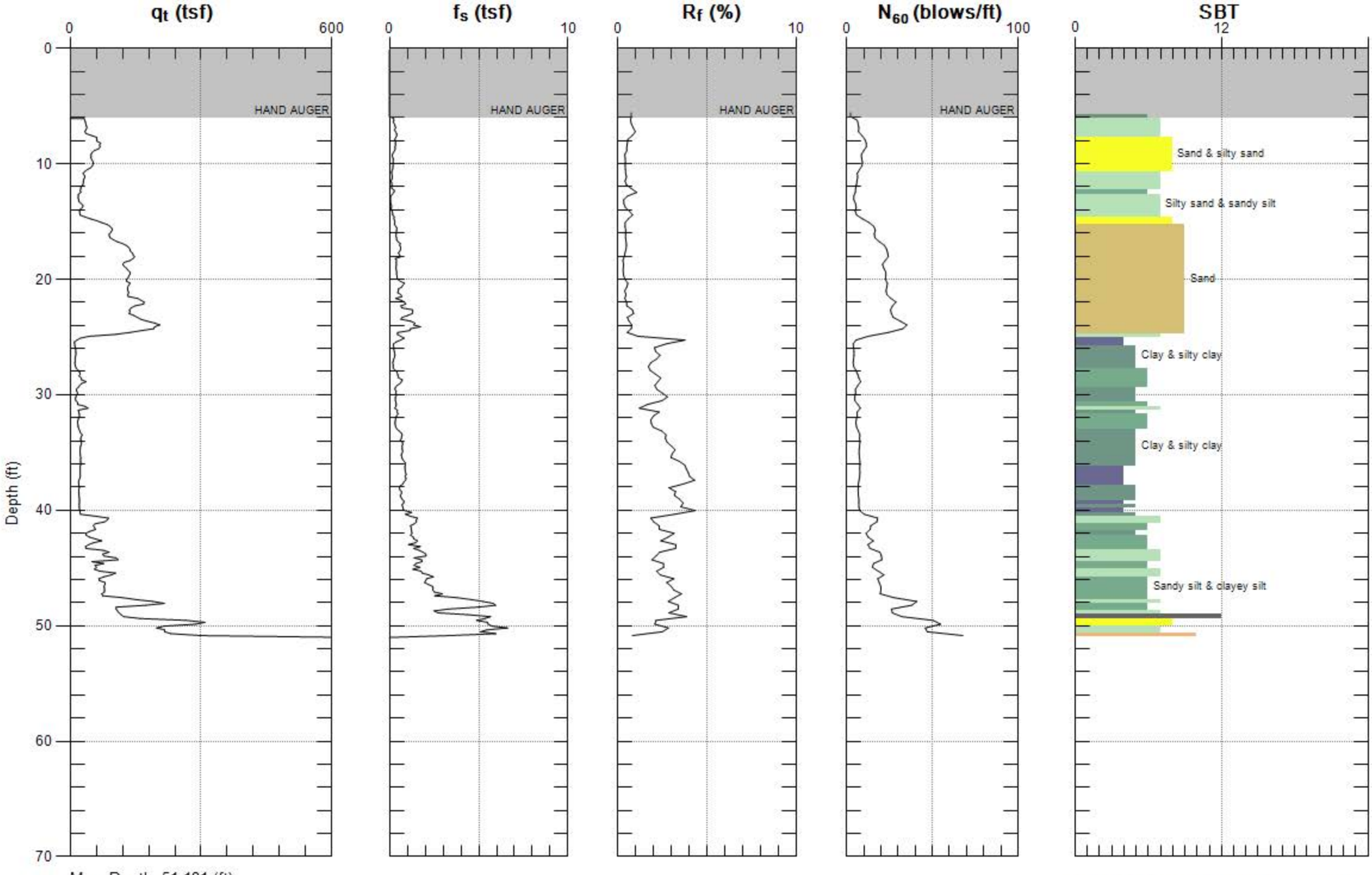
Max. Depth: 46.588 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-17

Engineer: S.KOLTHOFF
Date: 1/6/2014 09:42



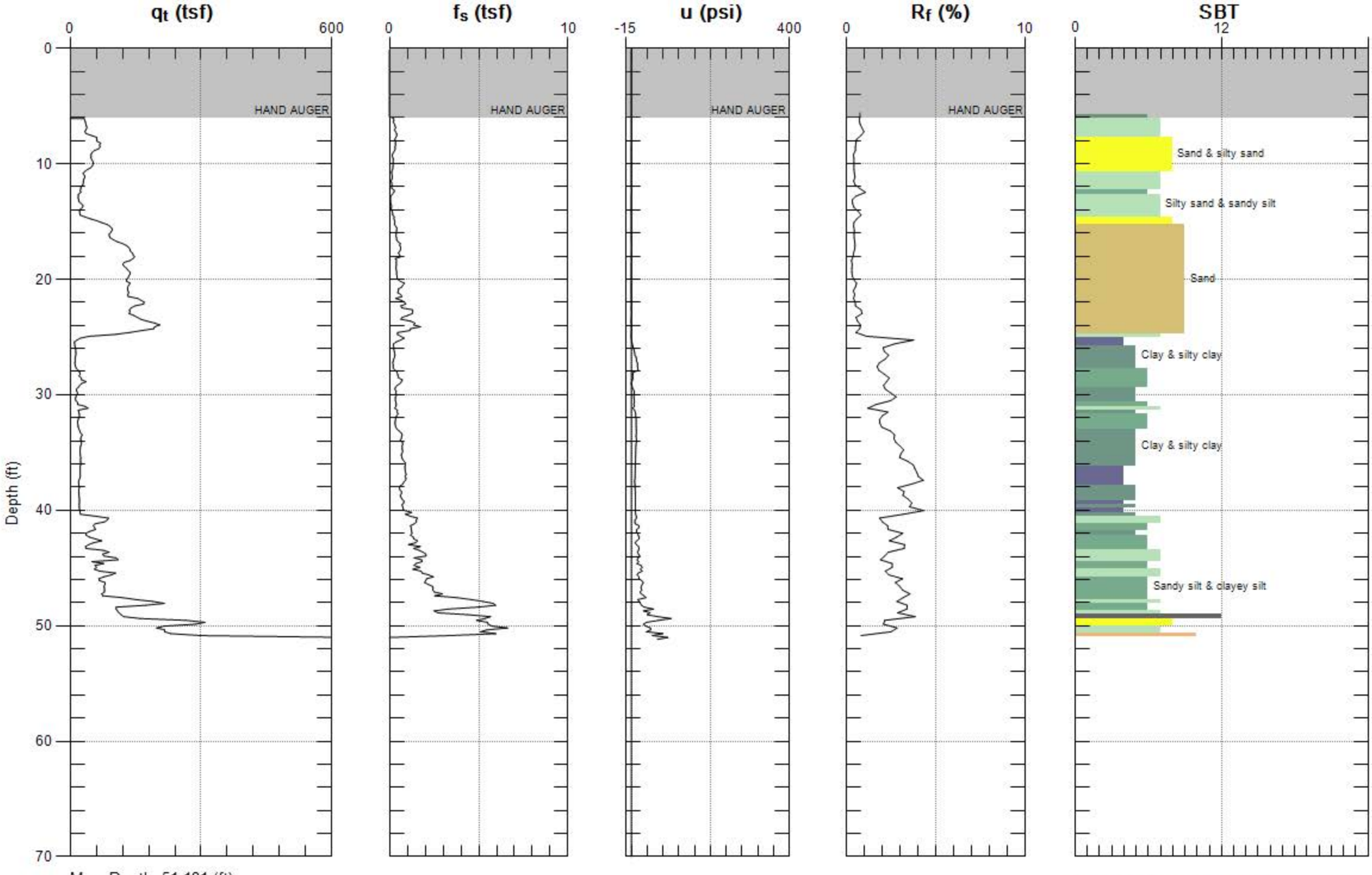
Max. Depth: 51.181 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-17

Engineer: S.KOLTHOFF
Date: 1/6/2014 09:42



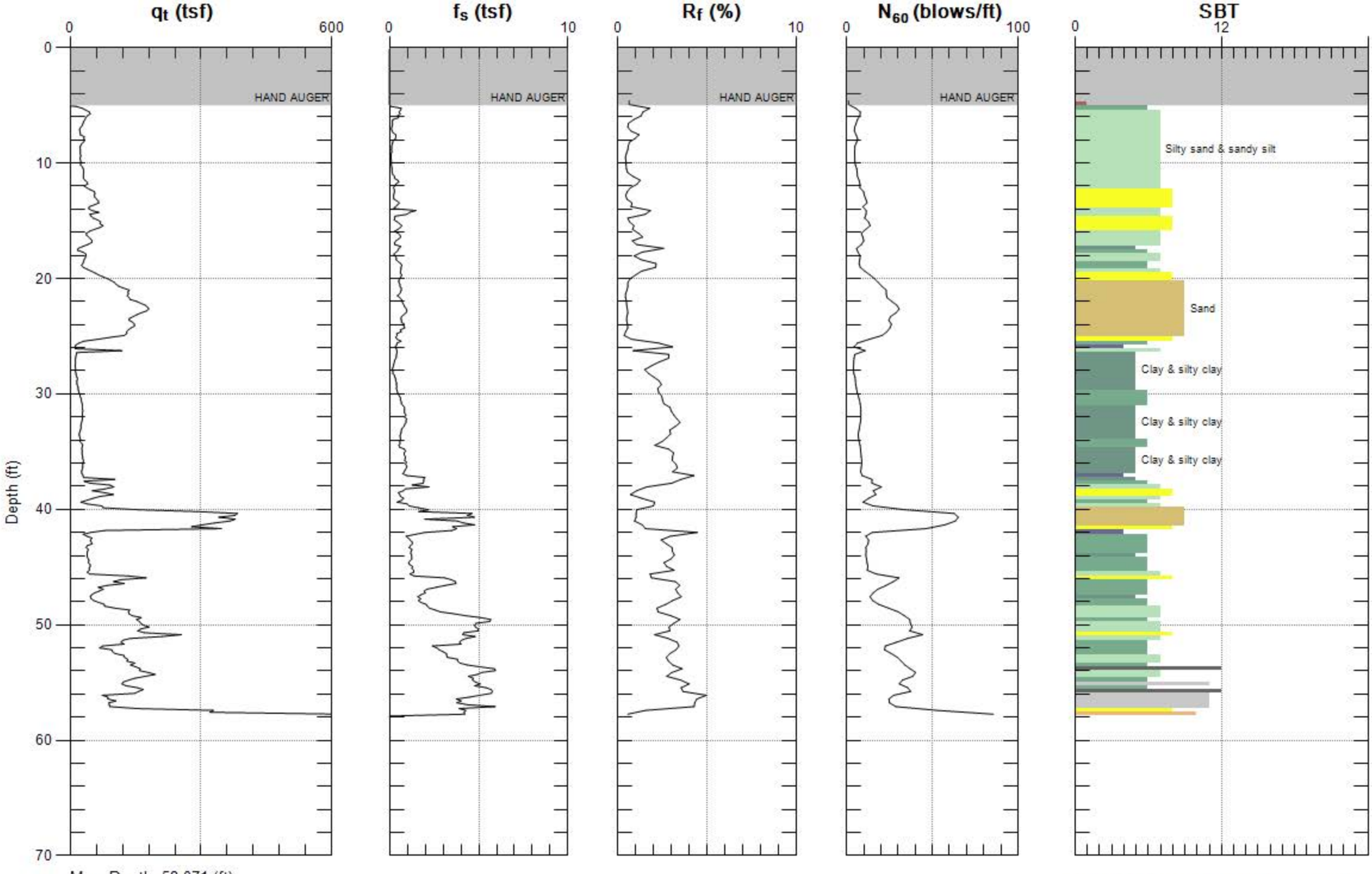
Max. Depth: 51.181 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-18

Engineer: S.KOLTHOFF
Date: 1/6/2014 10:55



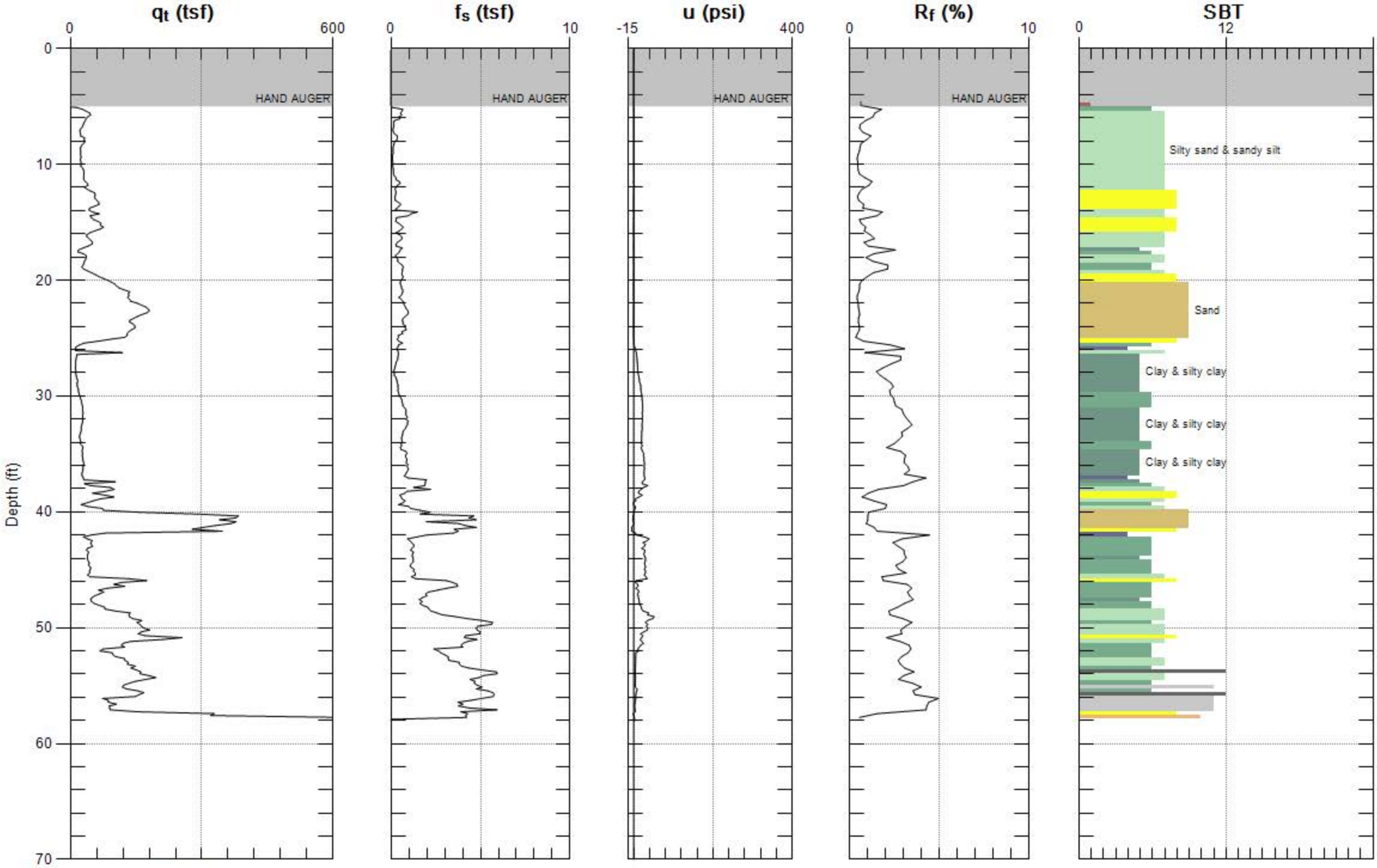
Max. Depth: 58.071 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-18

Engineer: S.KOLTHOFF
Date: 1/6/2014 10:55



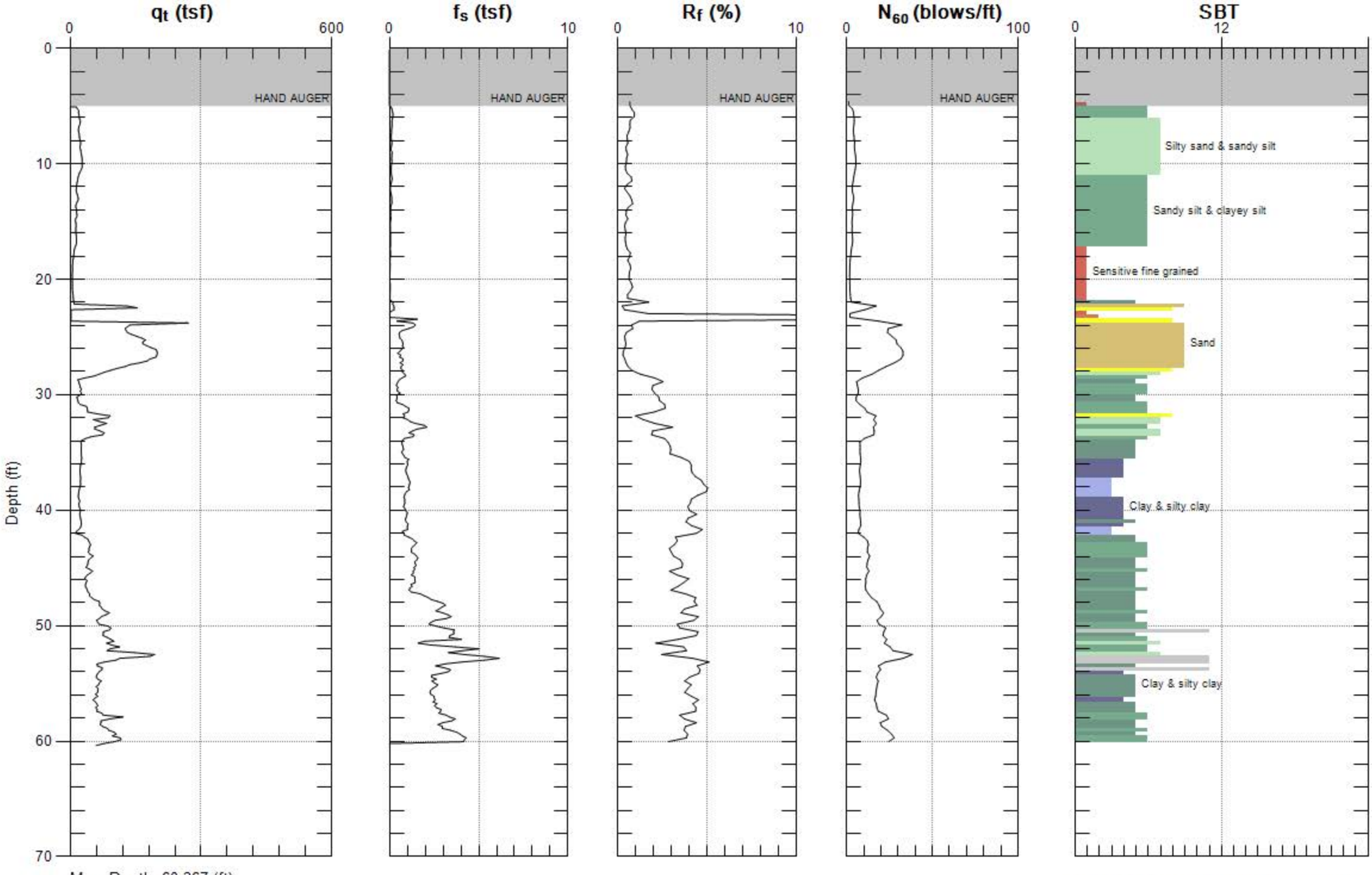
Max. Depth: 58.071 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GREGG GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-19

Engineer: S.KOLTHOFF
Date: 1/6/2014 12:24



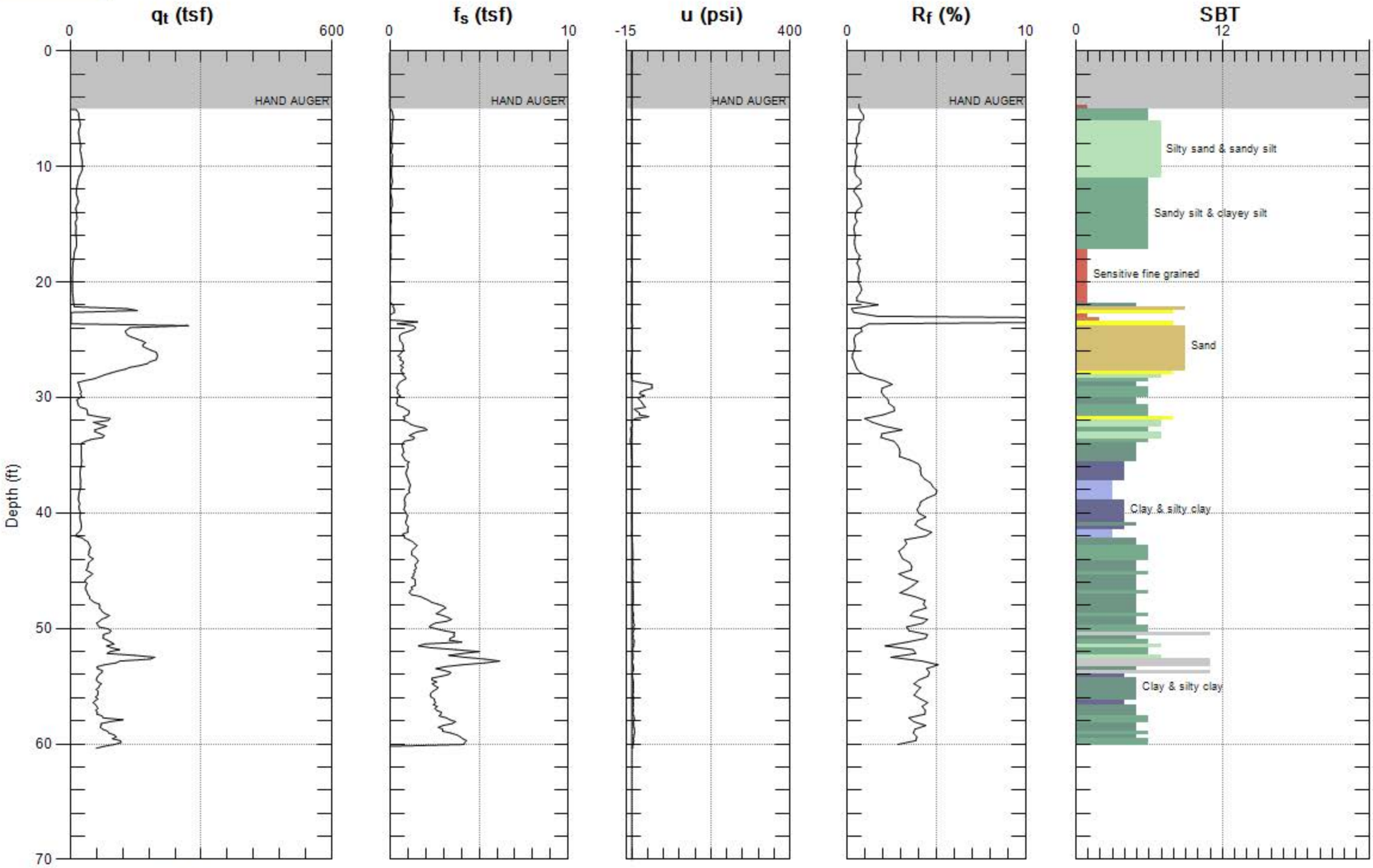
Max. Depth: 60.367 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-19

Engineer: S.KOLTHOFF
Date: 1/6/2014 12:24



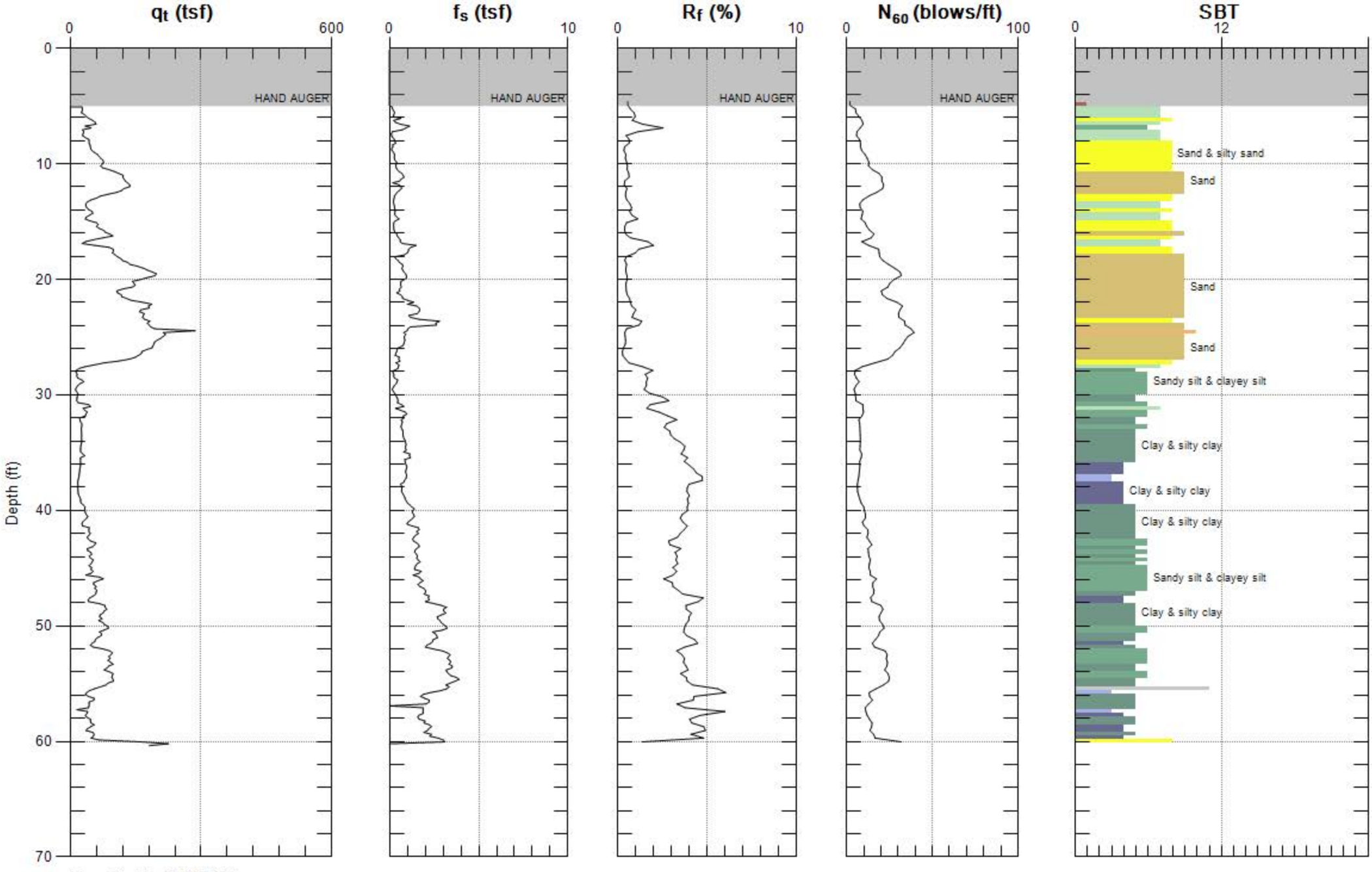
Max. Depth: 60.367 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-20

Engineer: S.KOLTHOFF
Date: 1/6/2014 01:11



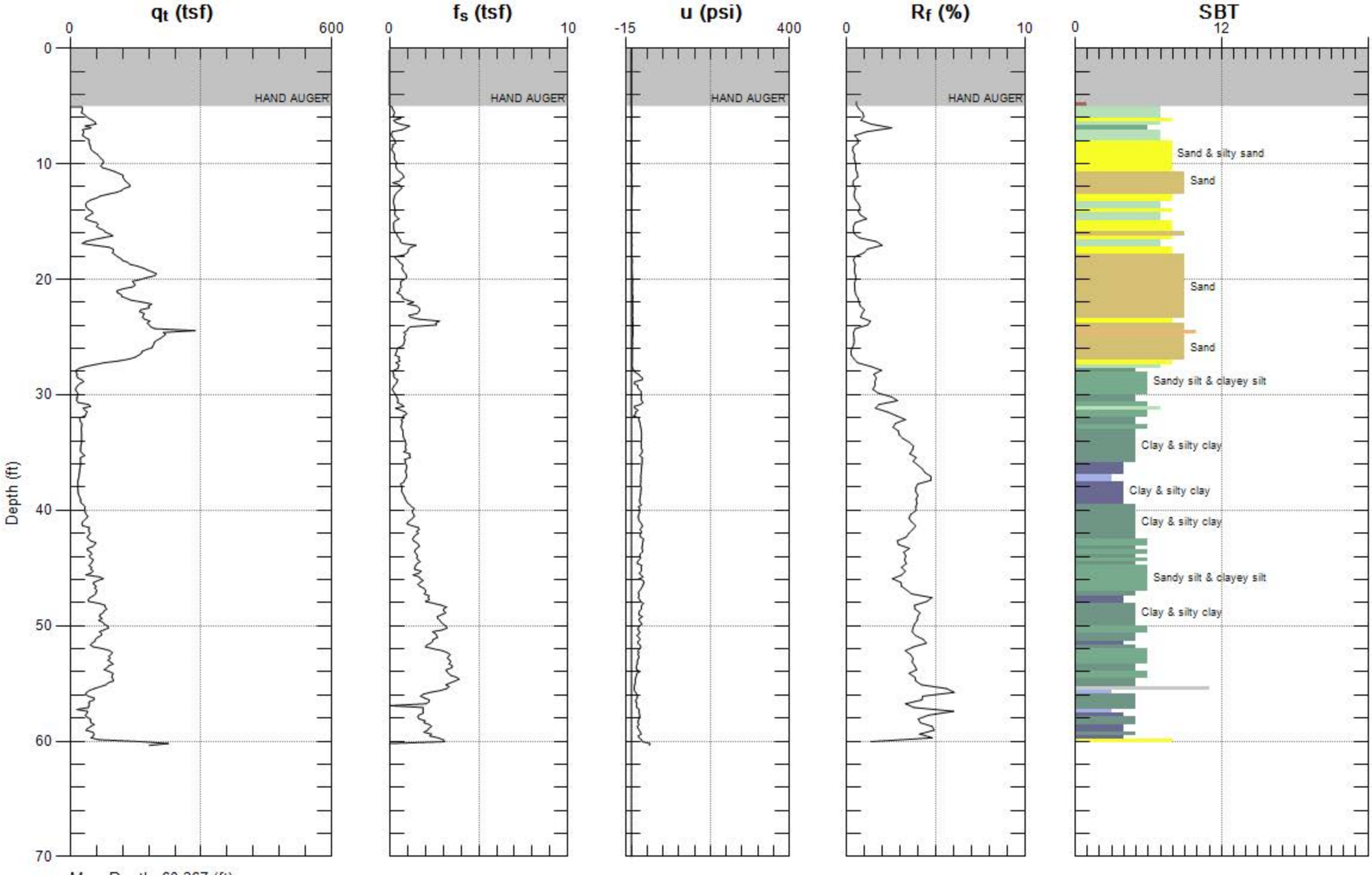
Max. Depth: 60.367 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: 1800 ARGYLE AVE.
Sounding: C-20

Engineer: S.KOLTHOFF
Date: 1/6/2014 01:11



Max. Depth: 60.367 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-1**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/09/14 to 01/09/14	**LOGGED BY** TPO	**SHEET NO.** 1 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 419.2	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Approximately 11 inches Asphalt.				
									ARTIFICIAL FILL (Qaf) **Sandy SILT**, dark brown, moist, fine to medium sand, with rootlets. Hand augered, not logged the first 5 feet. Railroad ties and ballast encountered.				
5	415								**Clayey to Silty SAND**, 10yr 5/4 yellowish brown.				
		1		24/30					**UPPER SAND UNIT (Qs)** **Clayey to Silty SAND**, 10yr 4/4 (dark yellowish brown), moist, fine to medium sand, trace coarse sand, few fine gravels, mild to moderately developed soil.				
	410	2		22/30									
10		3		24/30									
		4		26/30					**SAND**, 10yr 5/4 (yellowish brown), moist, fine to medium sand, some coarse sand, few fine gravel.				
	405								**Clayey SAND**, 7.5 yr 4/4 (brown to dark brown), moist, fine to medium grained sand, few coarse sand, few fine gravel, moderate soil development.				
15		5		24/30					**SAND**, 10 yr 5/4 (Yellowish brown), moist, fine to medium sand, some coarse sand, trace fine to coarse gravel.				
		6		30/30					**MUDFLOW (Qm)** **Sandy CLAY**, 7.5 yr 4/3 (Brown), moist, some fine sand, few coarse sand, few fine to coarse gravel, trace cobbles.				
	400												

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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-41 a

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-1**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/09/14 to 01/09/14	**LOGGED BY** TPO	**SHEET NO.** 2 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 419.2	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
		7		22/30									
		8		22/30					**OLDER ALLUVIUM (Qoal)** **Clayey SAND**, 7.5 yr 4/6 (Strong Brown), moist, fine to medium sand, little coarse sand, few fine gravels, trace coarse gravel, trace cobbles.				
25	395	9		19/30					**Silty SAND**, 7.5 yr 5/6 (Strong Brown), wet, medium to coarse sand, some fine sand, trace fine gravel.				
30	390	10		30/30									
		11		26/30					**SAND**, 7.5 yr 4/6 (Strong Brown), wet, medium to coarse sand.				
35	385	12		30/30					**Clayey SAND**, 7.5 yr 4/4 (Brown), mostly fine sand, some medium sand, few coarse sand, few fine gravel, trace coarse gravel and cobbles. **Gravelly SAND**, 7.5 yr 2.5/3 (Very dark brown), medium to coarse sand, some fine sand, some fine to coarse gravel, few cobbles.				
	380	13		30/30					**Silty SAND**, 7.5 yr 4/4 (Brown), wet, fine sand. **SAND**, 7.5 yr 4/4 (Brown), wet, mostly fine to medium sand, few coarse sand. **MODELO FORMATION (Tm)**				

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FIGURE A-41 b

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-1**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/09/14 to 01/09/14	**LOGGED BY** TPO	**SHEET NO.** 3 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 419.2	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									SILTSTONE, mottled 10 yr 6/1 (Gray) and 7.5 yr 5/6 (Strong Brown), moist, some fine sand.				
		14		60/60					**SANDSTONE**, 7.5 yr 5/6 (Strong Brown), wet, fine to medium grained sand.				
									SILTSTONE, mottled 10 yr 6/1 (Gray) and 7.5 yr 5/6 (Strong Brown), moist, some fine sand.				
	375												
45													
		15		60/60									
	370												
50									Total Depth: 50 ft bgs Groundwater: Encountered at 23.5 ft (Measured after drilling) Boring backfilled with tamped soil cuttings.				
	365												
55													
	360												

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FIGURE A-41 c

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-2
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/09/14 to 01/09/14	**LOGGED BY** TPO	**SHEET NO.** 1 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 44.5
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 417.4	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Approximately 8 inches Asphalt.				
	415								**ARTIFICIAL FILL (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand, with rootlets. Hand augered.				
5		1		20/30					**UPPER SAND UNIT (Qs)** **Clayey SAND**, 7.5 yr 4/3 (Brown), moist, fine to medium sand, few coarse sand, few fine gravel.				
	410	2		11/30					**Silty SAND**, 7.5 yr 5/6 (Strong Brown), moist, fine to medium sand, some coarse sand, few fine gravel, trace cobbles.				
10		3		24/30									
	405	4		20/30					**SAND**, 7.5 yr 5/6 (Strong Brown), moist, fine to medium sand, some coarse sand, mild soil development from 12 to 12.5 ft bgs.				
15		5		24/30					**Clayey SAND**, 7.5 yr 4/4 (Brown), moist, fine to medium sand with some coarse sand, trace fine gravel.				
	400	6		22/30					**SAND**, 7.5 yr 5/4 (Brown), moist, fine to medium sand with some coarse sand, trace fine gravel.				

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

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FIGURE A-42 a

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-2
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/09/14 to 01/09/14	**LOGGED BY** TPO	**SHEET NO.** 2 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 44.5
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 417.4	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
		7		21/30									
	395								**MUDFLOW (Qm)**				
		8		30/30					**Clayey SAND**, 7.5 yr 4/3 (Brown), moist, fine sand, trace medium and coarse grained sand, trace fine gravel. **Sandy CLAY**, 7.5 yr 4/2 (Brown), moist, fine sand, few medium sand, trace fine gravel, cobble at 25 feet.				
25									**Clayey SAND**, 7.5 yr 5/3 (Brown), moist, fine to medium sand, few coarse sand, few fine gravel.				
		9		30/30					**Sandy CLAY**, 7.5 yr 5/3 (Brown), moist, fine sand, few medium sand, trace coarse sand, few fine gravel.				
	390								**OLDER ALLUVIUM (Qoal)**				
		10		16/30					**Clayey SAND**, 7.5 yr 4/3 (Brown), moist-wet, fine to medium sand some coarse sand, some fine to coarse gravel, few cobbles. -Ground Water				
30													
		11		22/30									
	385												
		12		0/30					**MODELO FORMATION (Tm)**				
35									**SILTSTONE**, mottled 10 yr 6/1 (Gray) and 7.5 yr 5/6 (Strong Brown), moist-wet, with fine sand.				
		13		30/30									
	380												

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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-42 b

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-2
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/09/14 to 01/09/14	**LOGGED BY** TPO	**SHEET NO.** 3 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 44.5
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 417.4	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
	375	14		60/60									
45									Total Depth: 44.5 ft bgs (Refusal) Groundwater: Encountered at 29 ft (Measured after drilling) Boring backfilled with tamped soil cuttings.				
	370												
50													
	365												
55													
	360												

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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-42 c

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-3**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/10/14 to 1/10/14	**LOGGED BY** TPO	**SHEET NO.** 1 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 49
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 417.2	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Approximately 8 inches Asphalt.				
	415								**ARTIFICIAL FILL (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand, with rootlets. Hand augered.				
5		1		22/30					**UPPER SAND UNIT (Qs)** **Silty SAND**, 7.5 yr 4/4 (Dark Brown), moist, fine to medium sand, few coarse sand, few fine gravel.				
	410	2		17/30					**Clayey SAND**, 7.5 yr 3/2 (Dark Brown), moist, fine to medium sand, few coarse sand and fine gravel. **Silty SAND**, 7.5 yr 4/6 (Strong Brown), moist, medium to coarse sand, some fine sand, trace fine and coarse gravel, trace cobbles.				
10		3		22/30									
	405	4		20/30					**SAND**, 7.5 yr 5/8 (Strong Brown), moist, medium to coarse sand, few fine sand, few fine gravel, trace cobbles.				
15		5		24/30					**Silty SAND**, 7.5 yr 4/6 (Strong Brown), moist, fine to medium sand, few coarse sand, few fine gravel. **Clayey SAND**, 7.5 yr 4/3 (Brown), moist, fine to medium sand, trace coarse sand.				
	400	6		24/30					**Sand to Silty SAND**, 7.5 yr 4/6 (Strong Brown), moist, fine to medium sand, few coarse grained sand, few fine gravel				
									SAND, 7.5 yr 5/6 (Strong Brown), medium to coarse				

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FIGURE A-43 a

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-3
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/10/14 to 1/10/14	**LOGGED BY** TPO	**SHEET NO.** 2 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 49
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 417.2	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									sand, few fine sand, few fine gravel.				
	395	7		19/30					**MUDFLOW (Qm)** **Clayey SAND**, 7.5 yr 4/2 (Brown), moist, fine sand, few medium sand, few fine gravel.				
		8		30/30									
25									**Silty SAND**, 7.5 yr 6/8 (Reddish Brown), moist to wet, fine sand.				
		9		30/30									
	390												
		10		30/30									
30									**MODELO FORMATION (Tm)** **CLAYSTONE**, 7.5 yr 5/8 (Strong Brown), moist to wet, some fine sand. **Sandy SILTSTONE**, mottled 7.5 yr 5/8 (Strong Brown) and 7.5 yr 7/1 (Light Gray), moist, fine sand. **Sandy Siltstone/Claystone**, 7.5 yr 5/6 (Strong Brown), manganese oxide staining.				
		11		28/30									
	385												
		12		30/30									
35													
		13		18/30									
	380												
		14		24/30									

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FIGURE A-43 b

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-3
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/10/14 to 1/10/14	**LOGGED BY** TPO	**SHEET NO.** 3 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 49
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 417.2	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
	375	15		48/60									
45													
	370	16		42/42									
50									Total Depth: 50 ft bgs Groundwater: Encountered at 33 ft (Measured after drilling) Boring backfilled with tamped soil cuttings.				
	365												
55													
	360												

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FIGURE A-43 c

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-4**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/10/14 to 1/10/14	**LOGGED BY** TPO	**SHEET NO.** 1 of 4
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 416.5	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Approximately 8 inches Asphalt.				
	415								**ARTIFICIAL FILL (Qaf)** **Silty SAND to Sandy SILT**, 7.5 yr 4/4 (Brown), moist, mostly fine to medium sand, few coarse sand, few fine gravels with rootlets. Hand augered. -Chunks of asphalt				
5													
	410	1		22/30					**UPPER SAND UNIT (Qs)** **Silty SAND**, 7.5 yr 4/4 (Brown), moist, mostly medium to coarse grained sand, some fine sand. few fine gravel				
		2		18/30									
10													
	405	3		20/30									
		4		20/30									
15													
	400	5		20/30					-Mild soil development				
		6		20/30					**SAND with Silt**, 7.5 yr 5/8 (Strong Brown), wet, medium to coarse sand, some fine sand, few fine to coarse gravel.				
									Silty SAND, 7.5 yr 4/4 (Brown), wet, fine to medium				

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FIGURE A-44 a

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-4**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/10/14 to 1/10/14	**LOGGED BY** TPO	**SHEET NO.** 2 of 4
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 416.5	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									sand, few coarse sand, few fine gravel.				
	395	7		22/30					**SAND with Silt**, 7.5 yr 5/6 (Strong Brown), moist, medium to coarse sand, some fine sand, few fine gravel.				
		8		24/30					**Clayey SAND (SC)**, 7.5 yr 4/6 (Strong Brown), wet, medium to coarse sand, some fine sand, few fine gravel.				
25									**SAND** , 7.5 yr 5/6 (Strong Brown), wet, fine to medium sand, some coarse sand, trace fine gravel.				
	390	9		30/30					**MUDFLOW (Qm)** **Clayey SAND**, 7.5 yr 4/4 (Brown), moist to wet, mostly fine sand, few medium sand, few fine gravels.				
		10		28/30									
30													
	385	11		60/60					**Sandy CLAY**, 2.5 yr 8/1 (Pale Brown), wet, fine sand. **Clayey SAND**, 10 yr 5/8 (Yellowish Brown) , wet, fine to medium sand.				
35													
	380	12		56/60					**MODELO FORMATION (Tm)** **Sandy SILTSTONE**, mottled 10 yr 6/1 (Gray) and 7.5 yr 5/6 (Strong Brown), moist, with fine sand.				

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

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FIGURE A-44 b

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-4**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/10/14 to 1/10/14	**LOGGED BY** TPO	**SHEET NO.** 3 of 4
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 416.5	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									40 ft continuous Modelo Formation (Tm)				
	375	13		60/60									
45													
	370	14		60/60									
50													
	365	15		54/60									
55													
	360	16		60/60									

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FIGURE A-44 c

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-4**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/10/14 to 1/10/14	**LOGGED BY** TPO	**SHEET NO.** 4 of 4
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 416.5	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
	355								Total Depth: 60 ft bgs Groundwater: Encountered at 29 ft (Measured after drilling) Boring backfilled with tamped soil cuttings.				
65													
	350												
70													
	345												
75													
	340												

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FIGURE A-44 d

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** **B-5**
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/13/14 to 1/13/14	**LOGGED BY** TPO	**SHEET NO.** 1 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 52
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 415	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Approximately 8 inches Asphalt.				
									Artificial Fill (Qaf) **Sandy SILT**, dark brown, moist, fine to medium sand, with rootlets. Hand augered the first 5 feet.				
5	410												
		1		29/30					**UPPER SAND UNIT (Qs)** **Clayey SAND**, 7.5 yr 3/4 (Dark Brown) , moist, fine to medium sand, trace coarse sand, few fine gravel. **SAND with Silt**, 7.5 yr 5/6 (Strong Brown), moist, fine sand, trace medium and coarse sand, trace fine gravel.				
		2		17/30									
10	405								**Clayey SAND**, 7.5 yr 3/4 (Dark Brown), moist, fine to medium sand, trace coarse sand, few fine gravel.				
		3		25/30					**SAND with Silt**, 7.5 yr 5/4, moist, fine to medium sand, few fine gravel. **Clayey SAND**, 7.5 yr 3/4 (Dark Brown), moist, fine to medium sand, trace coarse sand, few fine gravel.				
		4		18/30					**Sand with Silt**, 7.5 yr 5/4 (Brown), moist, fine to medium sand, few coarse sand, few fine gravel, trace cobbles. -Layer of fine gravel				
15	400								**Clayey SAND**, 7.5 yr 3/4 (Dark Brown), moist, fine to medium sand, trace coarse sand, trace gravel, trace cobbles.				
		5		25/30					**SAND with Silt**, 7.5 4/6 (Strong Brown), moist, fine to medium sand, few coarse sand, few fine gravel, trace cobbles.				
		6		19/30									

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FIGURE A-45 a

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-5
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/13/14 to 1/13/14	**LOGGED BY** TPO	**SHEET NO.** 2 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 52
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 415	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
		7		23/30					**Clayey SAND/Silty SAND**, 7.5 yr 4/6 (Strong Brown), fine to medium sand, few coarse sand, trace cobbles. **Silty SAND**, 7.5 yr 4/6 (Strong Brown), moist, fine to medium sand, some coarse sand, few fine gravel.				
		8		18/30					**MUD FLOW (Qm)**				
25	390								**Clayey SAND**, 7.5 yr 4/6 (Strong Brown), moist to wet, fine to medium sand, trace coarse sand, trace fine gravel.				
		9		30/30					**Clayey SAND to Sandy CLAY**, 7.5 yr 4/4 (Brown), moist to wet, fine sand, some medium sand, trace coarse sand, traces of peat. -2.5 yr 3/1 (Black), slight hydrocarbon odor				
		10		28/30					-Ground Water -10 yr 3/4 (Dark Yellowish Brown)				
30	385												
		11		60/60									
35	380								**MODELO FORMATION (Tm)**				
		12		60/60					**Weatherd Sandy SILTSTONE**, mottled 7.5 yr 4/2 (Brown), 2.5 yr 3/6 (Dark Red), and 10 yr 6/8 (Brownish Yellow), moist.				

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FIGURE A-45 b

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-5
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 1/13/14 to 1/13/14	**LOGGED BY** TPO	**SHEET NO.** 3 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 52
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 415	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
		13		60/60					**Silty SANDSTONE**, 7.5 yr 5/8 (Strong Brown).				
45	370	14		60/60					**Weathered Sandy SILTSTONE**, mottled 7.5 yr 4/2 (Brown), 2.5 yr 3/6 (Dark Red), and 10 yr 6/8 (Brownish Yellow). -7.5 yr 2.5/1 (Black) -Sand Lens, 7.5 yr 7/1 (Light Gray), approximately 1" thick, fine sand				
50	365	15		14.5/20									
55	360								Total Depth: 52 ft bgs Groundwater: Encountered at 28 ft (Measured after drilling) Boring backfilled with tamped soil cuttings.				

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FIGURE A-45 c

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-7
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 8/5/2014 to 8/5/2014	**LOGGED BY** TO	**SHEET NO.** 1 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 58
DRILL RIG TYPE Marl M-12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 415.9	
COMMENTS Stopped Drilling Due to Refusal at 58'		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Asphalt at surface.				
	415								**ARTIFICIAL FILL (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand, with rootlets. Hand auger down to 5.5 feet.				
5													
	410	1		12/30					**UPPER SAND UNIT (Qs)** **Silty SAND**, 10 yr 4/4 (Dark Yellowish Brown), moist, mostly fine to medium SAND, some FINES, few coarse SAND, trace fine GRAVEL.				
		2		15/30					**SAND with SILT**, 10 yr 5/6 (yellowish brown), moist; mostly fine to medium SAND, few coarse SAND, few FINES, trace fine GRAVEL.				
10									-Cobble layer				
	405	3		12/30					-Trace fine to coarse gravel				
		4		16/30					**Poorly Graded SAND**, 10 yr 5/6 (Yellowish Brown), moist, mostly fine to coarse SAND, few fine GRAVEL, trace coarse GRAVEL, trace FINES.				
15									**Silty SAND**, 10 yr 5/6 (Yellowish Brown), moist, mostly fine to medium SAND, few coarse SAND, trace fine to coarse GRAVEL, trace FINES. 10 yr 4/6 (Dark Yellowish Brown)				
	400	5		12/30									
		6		18/30					**SAND with SILT**, 10 yr 6/6 (Yellowish Brown), moist, mostly fine to medium SAND, few coarse SAND, trace fine to coarse GRAVEL, trace FINES.				

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FIGURE A-46 a

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-7
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 8/5/2014 to 8/5/2014	**LOGGED BY** TO	**SHEET NO.** 2 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 58
DRILL RIG TYPE Marl M-12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 415.9	
COMMENTS Stopped Drilling Due to Refusal at 58'		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
	395	7		12/30					**MUD FLOW (Qm)** **Clayey SAND to Sandy CLAY**, 10 yr 4/4 (Dark Yellowish Brown), moist, mostly fine to medium SAND, some FINES, trace fine GRAVEL.				
		8		2/30									
25	390	9		26/30					No recovery due to cobble in shoe.				
		10		28/30					**Clayey SAND to Sandy CLAY**, 10 yr 5/6 (Yellowish Brown), moist, mostly fine SAND, some FINES, trace coarse GRAVEL.				
30	385								**Clayey SAND** , 10 yr 5/8 (Yellowish Brown), moist; mostly fine SAND, some FINES, trace fine GRAVEL. -Ground Water				
		11		43/60					**MODELO FORMATION (Tm)** **Sandy Clay** , 7.5 yr 6/8 (Redish Yellow) and Gley 7/1 (Light Greenish Gray), moist, mostly FINES, some fine SAND, trace fine GRAVEL, mottled.				
35	380								Iron oxid staining **Sandstone**, 10 yr 7/1 (Light Gray) and 10 yr 5/8 (Yellowish Brown), wet, fine grained with clay matrix, well bedded, abundant rounded to well rounded quartz and weathered feldspar grains.				
		12		60/60					10 yr 7/3 (Very Pale Brown) and 10 yr 4/3 (Brown) mottled.				

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FIGURE A-46 b

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-7
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 8/5/2014 to 8/5/2014	**LOGGED BY** TO	**SHEET NO.** 3 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 58
DRILL RIG TYPE Marl M-12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 415.9	
COMMENTS Stopped Drilling Due to Refusal at 58'		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
	375												
		13		38/60									
45													
	370												
		14		60/60									
50									Interbedded Gley 2.5 YR 2.5/N (Black)				
	365												
		15		60/60									
55													
	360												
									Total Depth: 58.0 ft bgs Groundwater: Encountered at 31 ft bgs Boring backfilled with tamped cuttings.				

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

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FIGURE A-46 c

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-8
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 8/4/2014 to 8/4/2014	**LOGGED BY** TO	**SHEET NO.** 1 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE Marl M-12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 418.3	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Asphalt at surface.				
	415								**ARTIFICIAL FILL (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand, with rootlets. Hand auger down to 5.5 feet.				
5		1		27/30					**UPPER SAND UNIT (Qs)** **Silty SAND**, 7.5 yr 4/6 (Strong Brown), moist, mostly fine to medium SAND, some FINES, few coarse SAND, trace fine GRAVEL, gradational to SP-SM.				
	410	2		22/30					**SAND with SILT**, 10 yr 5/4 (Yellowish Brown), moist, mostly fine to medium SAND, some coarse SAND, trace FINES, trace fine GRAVEL, micacous.				
10		3		18/30					-Increase in moisture, increase in coarser SAND and GRAVELS.				
	405	4		20/30					% SAND fines to 14 ft bgs. % SAND coarsens				
15		5		20/30					**SAND with SILT**, 10 yr 4/6 (Dark Yellowish Brown), moist, mostly fine to medium SAND, some coarse SAND, trace FINES, trace fine GRAVEL.				
	400	6		24/30					**Clayey SAND to Sandy CLAY**, 10 yr 4/4 (Dark Yellowish Brown), moist, mostly fine SAND, few medium SAND, few FINES, trace coarse SAND.				

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FIGURE A-47 a

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-8
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 8/4/2014 to 8/4/2014	**LOGGED BY** TO	**SHEET NO.** 2 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE Marl M-12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 418.3	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
		7		26/30					**Silty SAND**, 10 yr 5/6 (Yellowish Brown), moist, mostly fine to medium SAND, some FINES, trace coarse SAND. **SAND with SILT**, 10 yr 5/6 (Yellowish Brown), moist, mostly fine to medium SAND, some coarse SAND, trace FINES, trace fine GRAVEL.				
	395	8		22/30									
25		9		11/30					-Groundwater				
	390	10		27/30					**CLAY with SAND**, 5 yr 4/3 (Redish Brown), wet, few fine SAND, few medium SAND, few FINES, trace coarse SAND, few fine GRAVEL.				
30		11		28/30					**MUD FLOW (QM)** **Clayey SAND to Sandy CLAY**, 7.5 yr 4/3 (Brown), wet, mostly fine to medium SAND, few coarse SAND, few FINES, trace fine GRAVEL. 10 yr 3/2 (Very Dark Grayish Brown), trace cobbles.				
	385	12		16/30					**Clayey SAND**, 7.5 yr 4/6 (Strong Brown), moist to wet, fine to medium sand, trace coarse sand, trace fine gravel.				
35		13		19/30					**Sandy CLAY**, 10 yr 6/4 (Light Yellowish Brown) mottled with 10 yr 6/6 (Brownish Yellow), wet, mostly FINES, few fine SAND, trace coarse SAND.				
	380	14		40/30									

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FIGURE A-47 b

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-8
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 8/4/2014 to 8/4/2014	**LOGGED BY** TO	**SHEET NO.** 3 of 3
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE Marl M-12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 418.3	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									MODELO FORMATION (Tm)				
		15		60/60					**Clayey SAND to Sandy CLAY**, 10 yr 4/2 (Dark Grayish Brown) mottled with 10 yr 5/6 (Yellowish Brown), wet, mostly fine SAND, some FINES, trace coarse SAND.				
	375												
									10 yr 3/1 (Very Dark Gray)				
45													
		16		60/60					**Claystone to Siltstone**, 10 yr 2/1 (Black) interbedded with sandstone lenses 5 yr 4/1 (Dark Gray).				
	370												
50													
									Total Depth: 50.0 ft bgs Groundwater: Encountered at 27 ft bgs Boring backfilled with tamped cuttings.				
	365												
55													
	360												

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

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FIGURE A-47 c

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-9
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 8/4/2014 to 8/4/2014	**LOGGED BY** TO	**SHEET NO.** 1 of 2
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 37.5
DRILL RIG TYPE Marl M-12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 419	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Asphalt at surface.				
	415								**ARTIFICIAL FILL (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand, with rootlets. Hand auger down to 5.5 feet.				
5		1		26/30					**UPPER SAND UNIT (Qs)** **Silty SAND**, 10 yr 5/4 (Yellowish Brown), dry to moist, mostly fine to medium SAND, some FINES, trace coarse SAND, trace fine GRAVEL, trace rootlets.				
	410	2		19/30									
10		3		25/30					**SAND with SILT**, 10 yr 5/6 (Yellowish Brown), dry to moist, mostly fine to medium SAND, few coarse SAND, few fine GRAVEL, trace FINES.				
	405	4		21/30									
15		5		31/30					**MUD FLOW (Qm)** **Clayey SAND to Sandy CLAY**, 2.5 yr 4/4 (Brown), moist, mostly fine SAND, some FINES, few medium SAND, trace coarse SAND, trace fine GRAVEL. **Clayey SAND to Sandy CLAY**, 5 yr 4/4 (Reddish Brown), mostly medium SAND, few coarse SAND, few FINES, few coarse SAND.				
	400	6		27/30					**Clayey SAND to Sandy CLAY**, 7.5 yr 6/1 (Gray), moist, mostly fine SAND, some FINES, few medium SAND, trace coarse SAND, trace fine GRAVEL at 18'.				

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FIGURE A-48 a

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Green Trench		**PROJECT NUMBER**	**BORING** B-9
SITE LOCATION 1800 Argyle Avenue, Hollywood, Ca	**DATE(S) DRILLED** 8/4/2014 to 8/4/2014	**LOGGED BY** TO	**SHEET NO.** 2 of 2
DRILLING METHOD HSA	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 37.5
DRILL RIG TYPE Marl M-12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 419	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Grannitic Cobbles- highly weathered.				
		7		31/30					**Clayey SAND to Sandy CLAY**, 10 yr 5/6 (Yellowish Brown) and 10 yr 6/1 (Gray) mottled, dry to moist, mostly fine SAND, some medium SAND, few FINES, trace fine to coarse GRAVEL, trace COBBLES.				
	395	8		31/30					**MODELO FORMATION (Tm)**				
25									**Siltstone** , 10 yr 8/1 (White), moist, mostly very fine SAND, some FINES.				
		9		32/30					**Siltstone and Sandstone**, 10 yr 8/1 (White) mottled with 5 yr 7/8 (Yellow) and 7.5 yr 6/6 (Reddish yellow), very weathered, residual bedding, some carbonate veins and nodules, thin bedded.				
	390	10		31/30					**Siltstone**, 10 yr 6/1 (Gray) mottled with 10 yr 6/8 (Brownish Yellow), moist-wet, mostly very fine SAND, laminations.				
30									**Siltstone and Sandstone**, 10 yr 5/8 (Yellowish Brown) mottled with 5 yr 7/8 (Yellow) and 10 yr 8/1 (Gray), very weathered, residual bedding, some carbonate veins and nodules, thin bedded.				
		11		52/60									
	385												
35													
	380								Total Depth: 37.5 ft bgs Groundwater: Encountered at 27 ft bgs Boring backfilled with tamped cuttings.				

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FIGURE A-48 b

GDC_ROCK_CORE_ENG LA1175A-B-1-B-9.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Fault Investigation 1800 Argyle	**PROJECT NUMBER**		**BORING** **BA-1**
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 7/9/2014 to 7/9/2014	**LOGGED BY** SS	**SHEET NO.** 1 of 2
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE**	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 26
DRILL RIG TYPE EZ Bore	**DRILLED BY** Roy Brothers	**INCLINATION FROM VERTICAL/BEARING**	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)**	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									12" Asphalt Concrete Pavement.				
									8" Ballast. - Railwood ties, wood.				
									Artificial Fill (Qaf) **Sandy Fat CLAY (CH)**; dark brown; moist; few GRAVEL; medium to high plasticity.				
									Upper Sand Unit (Qs) **Clayey SAND (SC)**; dark brown; moist; mostly fine to coarse SAND.				
5									- Redder brown; increase in SAND. - Roots, massive; no bedding.				
									- Rounded and angular GRAVEL fragments; granite rock fragments. - Some chunks of Silty CLAY (CL-ML), possibly from uphole roots.				
									Silty SAND (SM); yellow brown; mostly fine to coarse SAND; few coare GRAVEL, subrounded to rounded .				
10									- Coarse SAND lense; discontinuous; gradational contact.				
									Poorly-Graded SAND with GRAVEL (SP) yellow brown; moist; some CLAY.				
15									**Sandy Lean CLAY (CL)**; medium brown; moist; fine to coarse SAND; few fine GRAVEL, rounded to subrounded; CLAY bed less than 12" thick.				
									Silty SAND (SM); medium dense; yellow brown; moist; mostly fine to coarse SAND; few GRAVEL, less than 1" diameter; moderately cemented. - Massive.				

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FIGURE A-49 a

GDC_ROCK_CORE_ENG LA-1175A BUCKET AUGER BORINGS.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Fault Investigation 1800 Argyle	**PROJECT NUMBER**		**BORING** **BA-1**
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 7/9/2014 to 7/9/2014	**LOGGED BY** SS	**SHEET NO.** 2 of 2
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE**	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 26
DRILL RIG TYPE EZ Bore	**DRILLED BY** Roy Brothers	**INCLINATION FROM VERTICAL/BEARING**	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)**	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Clayey SAND / Sandy CLAY (SC/CL)				
									Mud Flow (Qm)				
									Sandy CLAY with GRAVEL (CL) stiff; medium brown; moist; some fine to coarse SAND; few GRAVEL, rounded to subangular; cobbles up to 4" diameter; slow dip; undulatory contact. - Increase in SAND. **CLAY (CL)**; some GRAVEL; some SAND; angular to subangular.				
25									**Older Alluvium (Qoal)**				
									- Moderately cemented; fine to coarse SAND; fines increase down section, trace GRAVEL. - Becomes wet.				
									Total depth 26 ft.				
30													
35													

GDC_ROCK_CORE_ENG LA-1175A BUCKET AUGER BORINGS.GPJ ROCK2.GDT 11/6/14

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FIGURE A-49 b

LOG OF CORE BORING

PROJECT NAME Fault Investigation 1800 Argyle	**PROJECT NUMBER**		**BORING** **BA-2**
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 7/10/2014 to 7/10/2014	**LOGGED BY** SS	**SHEET NO.** 1 of 3
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE**	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 35
DRILL RIG TYPE EZ Bore	**DRILLED BY** Roy Brothers	**INCLINATION FROM VERTICAL/BEARING**	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)**	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									3.5" Asphalt.				
									Artificial Fill (Qf)				
									- 3.5" - 10" Clayey SILT (ML-CL) - Asphalt Dark brown Clayey Silt Asphalt				
									Upper Sand Unit (Qs)				
5									3.5' - 4' **Clayey SAND**; stiff; medium to dark brown; moist; gravelly. **Clayey SAND**; stiff; medium brown to red brown; moist. 5.5' Contact between fill and alluvium (native); undulatory contact				
									Clayey SAND (SC); loose to medium dense; gray brown; moist; mostly fine to medium SAND; some coarse SAND; trace fine to coarse GRAVEL, subrounded; micaceous.				
									Upper Sand Unit (Qs)				
10									**Clayey SAND**; red brown; mostly medium to coarse SAND; little CLAY content; some grass. **Soft SAND**; 5% fine to coarse GRAVEL, rounded to subangular.				
									Silty SAND (SM); olive brown; moist; mostly fine to medium SAND; some coarse SAND; few coarse GRAVEL; trace fine to coarse GRAVEL, subrounded; micaceous; gradational contact; roots to 7.7'.				
									Note: (other log reads) **Clayey SAND**; yell - Trace coarse GRAVEL, subrounded; micaceous; gradational contact; - 9'-10' trace cobbles.				
15									**SAND/Silty SAND**; yellow brown; moist; few fine GRAVEL, rounded to subrounded. 10'- 14' **SAND**; mostly medium to coarse SAND; little SILT (SP-SM); loose to medium dense. **SAND with SILT (SP-SM)**; light brown; moist; mostly fine to medium SAND; few coarse SAND; trace fine to coarse GRAVEL, subrounded.				
									-Cleaner SAND - Trace cobbles (west side); granite clast; subrounded to rounded; weathered; gradational contact; trace mica.				

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FIGURE A-50 a

GDC_ROCK_CORE_ENG LA-1175A BUCKET AUGER BORINGS.GPJ ROCK2.GDT 11/6/14

LOG OF CORE BORING

PROJECT NAME Fault Investigation 1800 Argyle	**PROJECT NUMBER**		**BORING** **BA-2**
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 7/10/2014 to 7/10/2014	**LOGGED BY** SS	**SHEET NO.** 2 of 3
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE**	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 35
DRILL RIG TYPE EZ Bore	**DRILLED BY** Roy Brothers	**INCLINATION FROM VERTICAL/BEARING**	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)**	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
25									- Coarser SAND; slight harder drilling. 13' - 14' Minor caving Sandy Gravel layer; **SAND with GRAVEL (SP)**; loose; moist; mostly medium to coarse SAND; fine to coarse GRAVEL, subrounded to angular; sharp horizontal contact at 13.4 ft. bgs.; slightly micaceous. -Slight caving; medium to coarse SAND with GRAVEL (1" to 1.5" thick section) 14.3' **Sand with SILT (SP-SM)** 14.5' **Clayey SAND/ Silty SAND**; medium dense; thin bed; trace GRAVEL, angular to subangular. **Clayey Silty SAND (SM-SC)**; medium dense; brown to light grayish brown; moist to wet; trace coarse SAND; trace fine GRAVEL, angular to subangular; slight mica. Grades to Silty SAND.				
30									**Poorly-Graded SAND with SILT (SP-SM)**; loose to medium dense; light grayish brown; moist to wet; mostly fine to coarse SAND; trace fine to coarse GRAVEL, subrounded, sharp contact, horizontal to minor undulatory. **Sand with GRAVEL** ; CLAY seam. 17' to 19.5' **Medium to coarse SAND** ; few fine GRAVEL. **SAND** ; very moist; mostly medium to coarse SAND; few GRAVEL, subrounded to rounded. -Subrounded cobble.				
35									**Clayey SAND (SC)**; moist to wet; mostly fine SAND; gradational contact; micaceous. -Channel deposit. Contact varies around hole. **Clayey SAND (SC)**; stiff; moist to wet; mostly fine grained; gradational contact N65°W85°, varies around borehole. - SILT layer; stiff; N65°W85°. **Poorly-Graded SAND (SP)**; light brownish gray; mostly fine to medium SAND; few coarse SAND. **Silty SAND (SM)**; light brown to brownish gray; moist to wet; mostly fine to medium SAND; few coarse SAND; trace fine GRAVEL; micaceous; subrounded cobble; gradational contact. - Interbedded CLAY and SAND. **Silty SAND with GRAVEL (SM)** few coarse GRAVEL, well rounded. **Sandy CLAY**; fine grained SAND. **SAND** ; red brown to yellow brown; moist; mostly medium to coarse SAND; GRAVEL, rounded to subangular. **Mud Flow (Qm)**				

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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-50 b

LOG OF CORE BORING

PROJECT NAME Fault Investigation 1800 Argyle		**PROJECT NUMBER**	**BORING** **BA-2**
SITE LOCATION Hollywood, CA	**DATE(S) DRILLED** 7/10/2014 to 7/10/2014	**LOGGED BY** SS	**SHEET NO.** 3 of 3
DRILLING METHOD Bucket Auger	**DRILL BIT SIZE/TYPE**	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 35
DRILL RIG TYPE EZ Bore	**DRILLED BY** Roy Brothers	**INCLINATION FROM VERTICAL/BEARING**	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)**	
COMMENTS		**BOREHOLE BACKFILL**	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									-Bottom of SAND unit, top of CLAY N40°E 1°-2°S CLAY; sandy CLAY; stiff; brown to dark brown; wet; sharp horizontal contact; trace fine GRAVEL. sharp horizontal contact; wet; Sandy CLAY; stiff; trace fine GRAVEL; brown to dark brown. - Water. - Free water seeping Saturated CLAY Total depth 35'.				
45													
50													
55													

GDC_ROCK_CORE_ENG LA-1175A BUCKET AUGER BORINGS.GPJ ROCK2.GDT 11/6/14

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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-50 c

YUCCA-ARGYLE APARTMENTS - CHAMPION SITE SE CORNER OF YUCCA STREET AND ARGYLE AVENUE 1756 AND 1760 ARGYLE AVENUE, HOLLYWOOD DISTRICT, CITY OF LOS ANGELES, CALIFORNIA, CPT AND BORING LOGS, 2014.

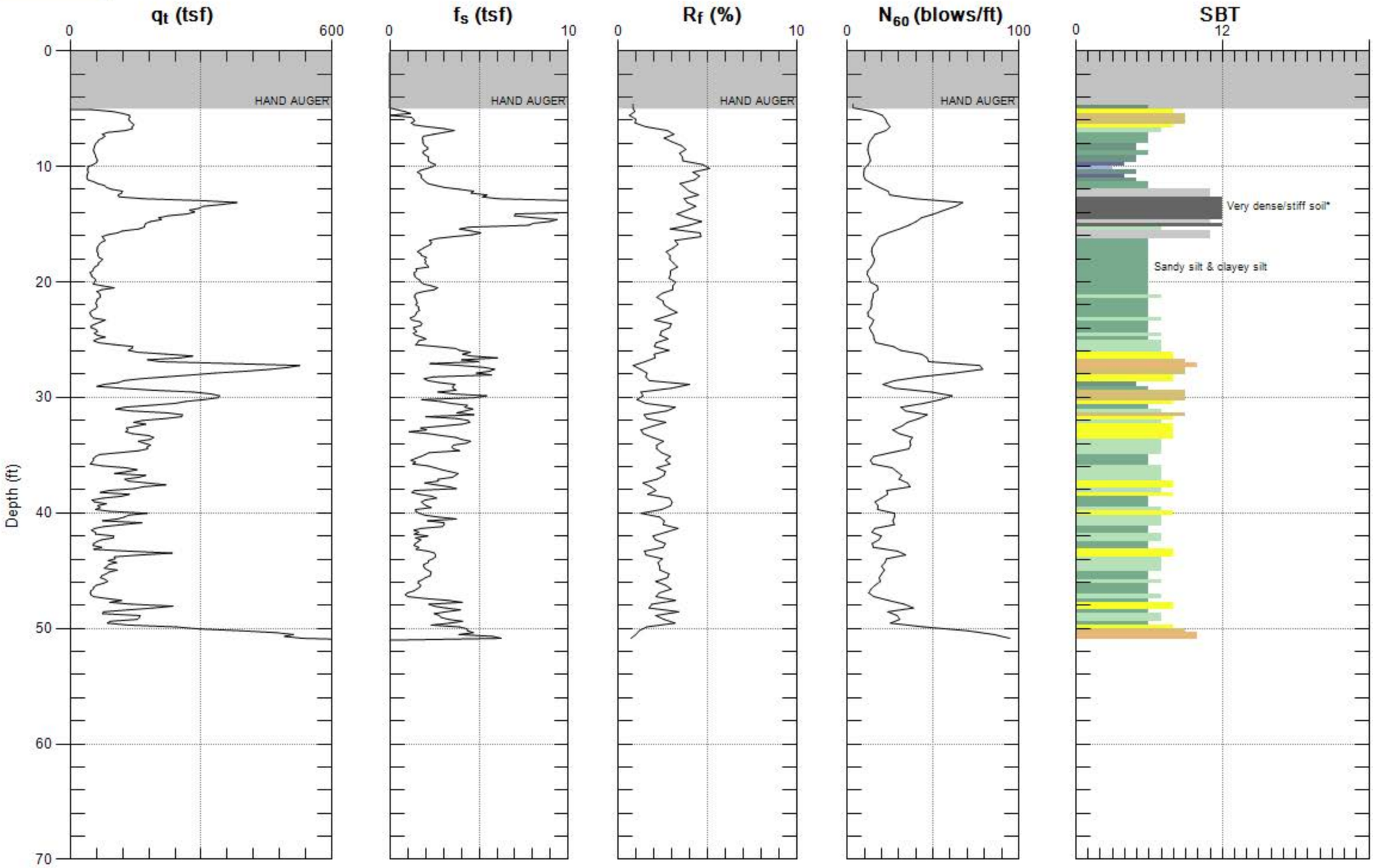
Figure A - 1

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)

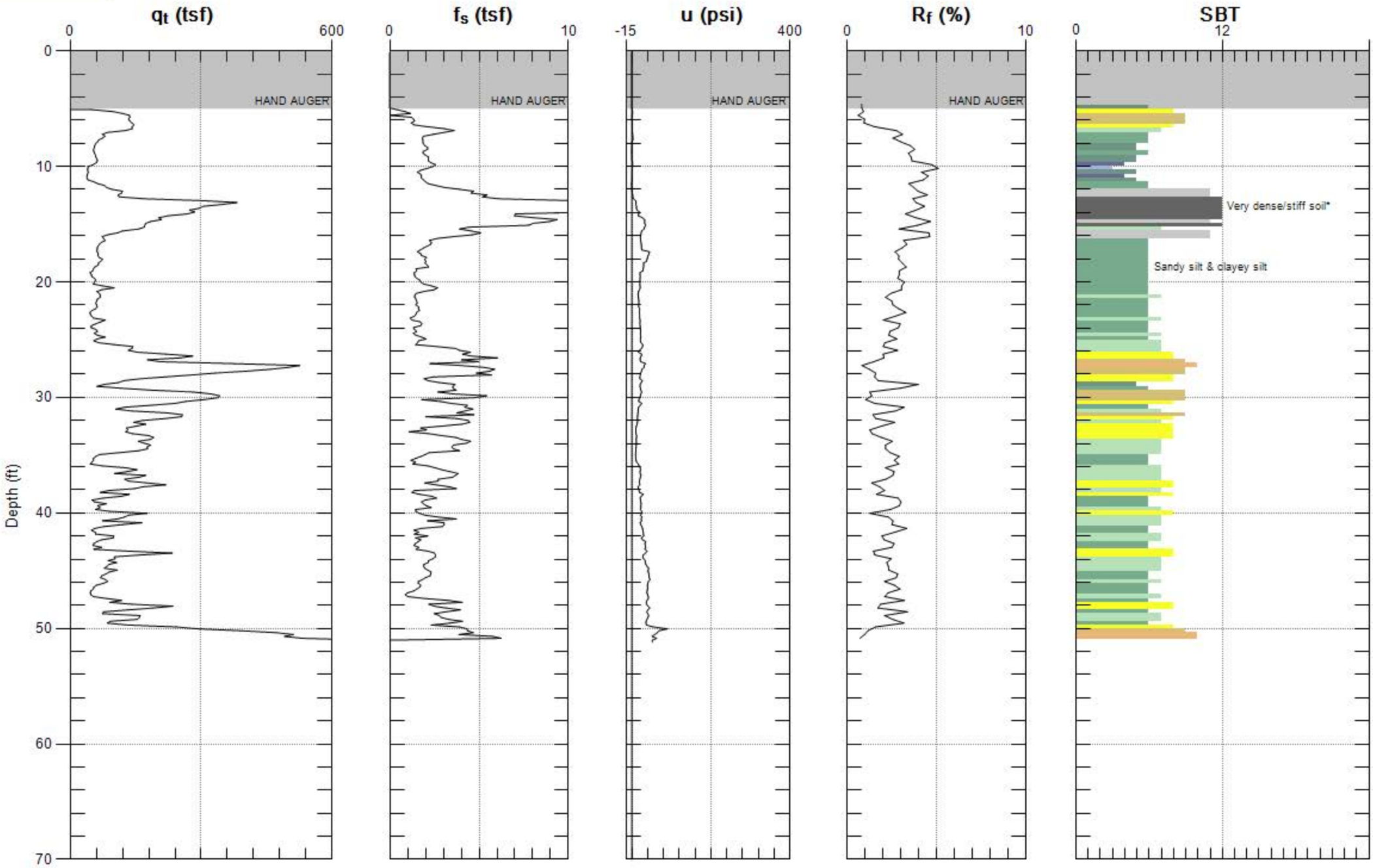
Figure A - 2

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)

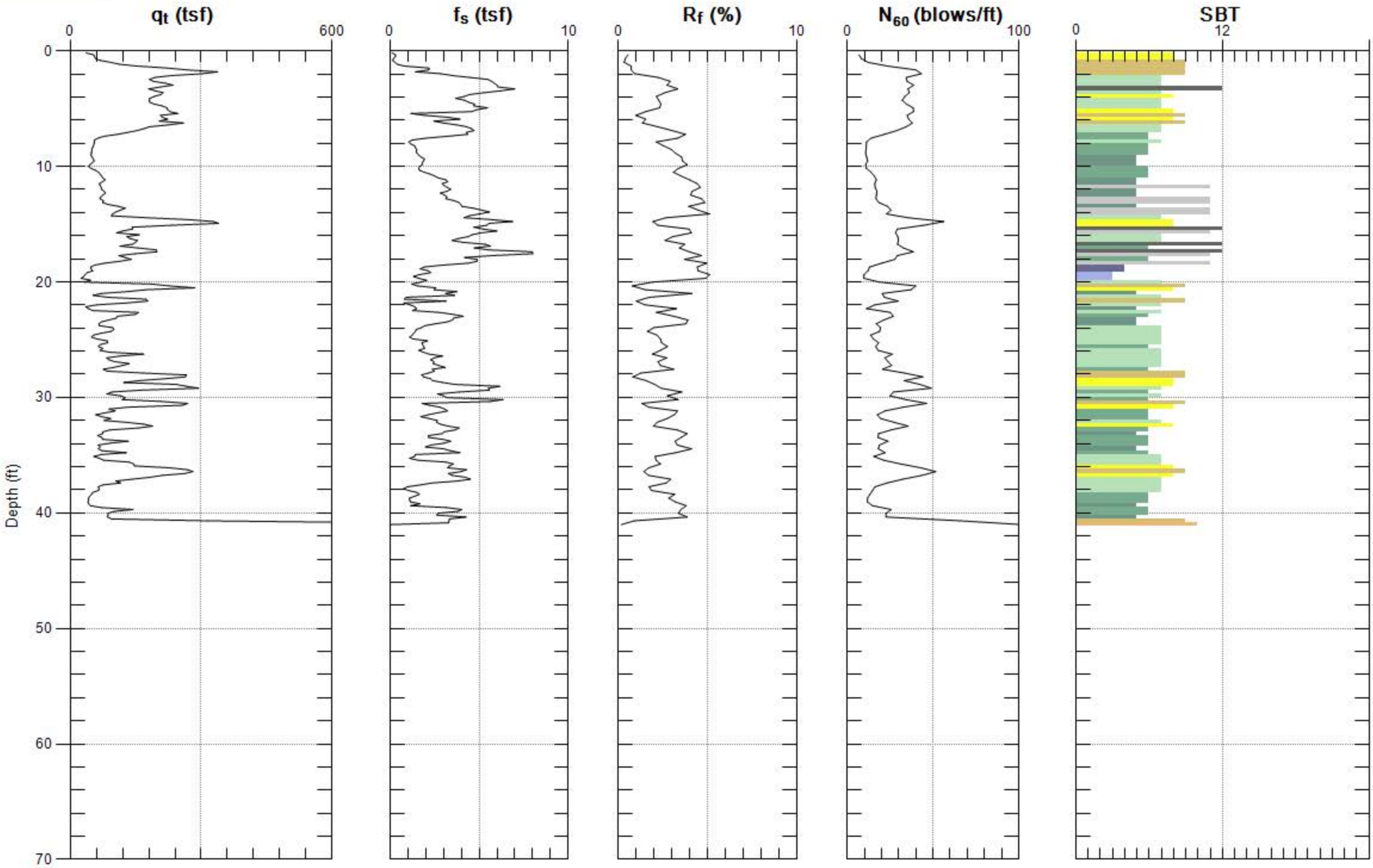
Figure A - 3

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)

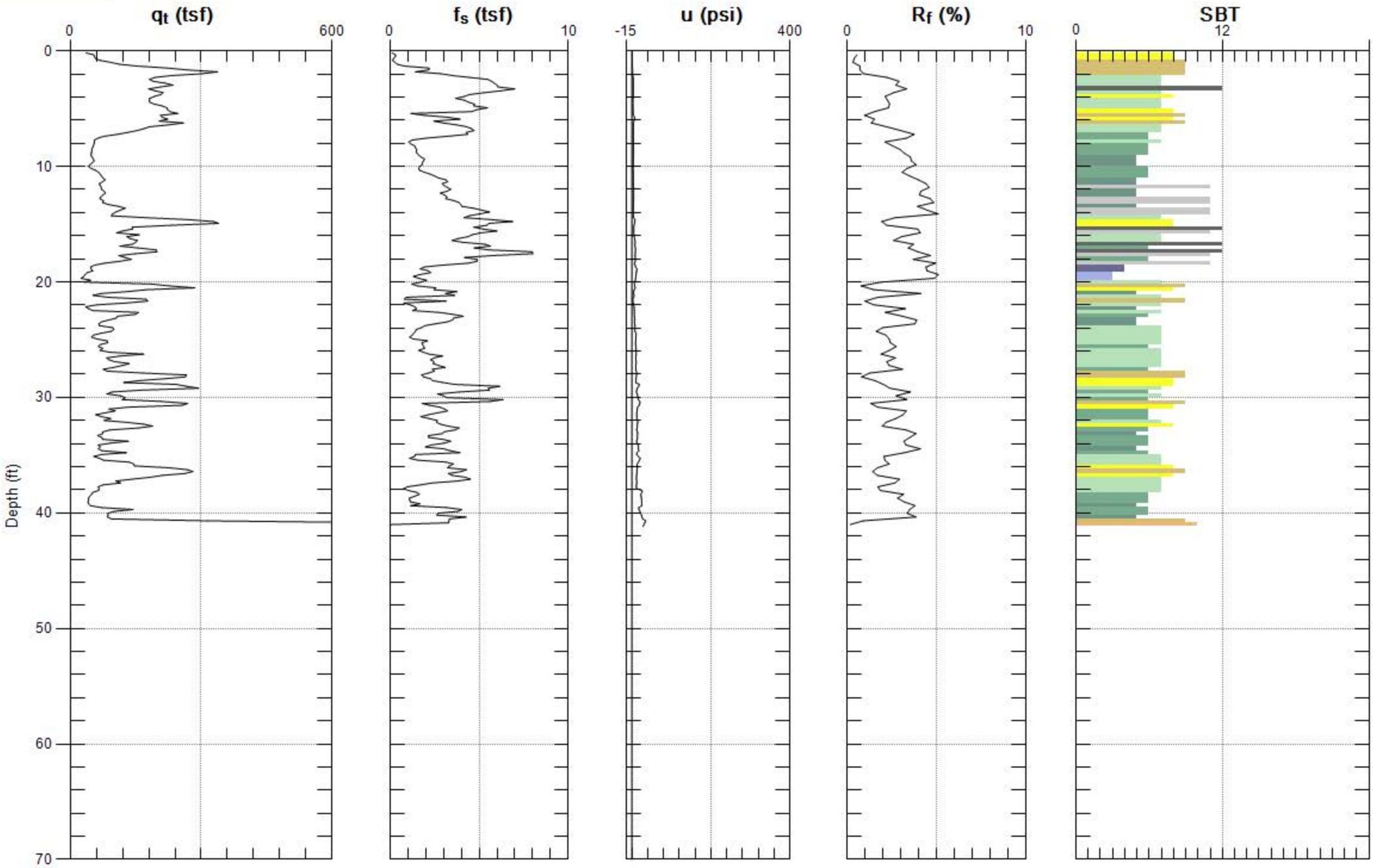
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 4

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)

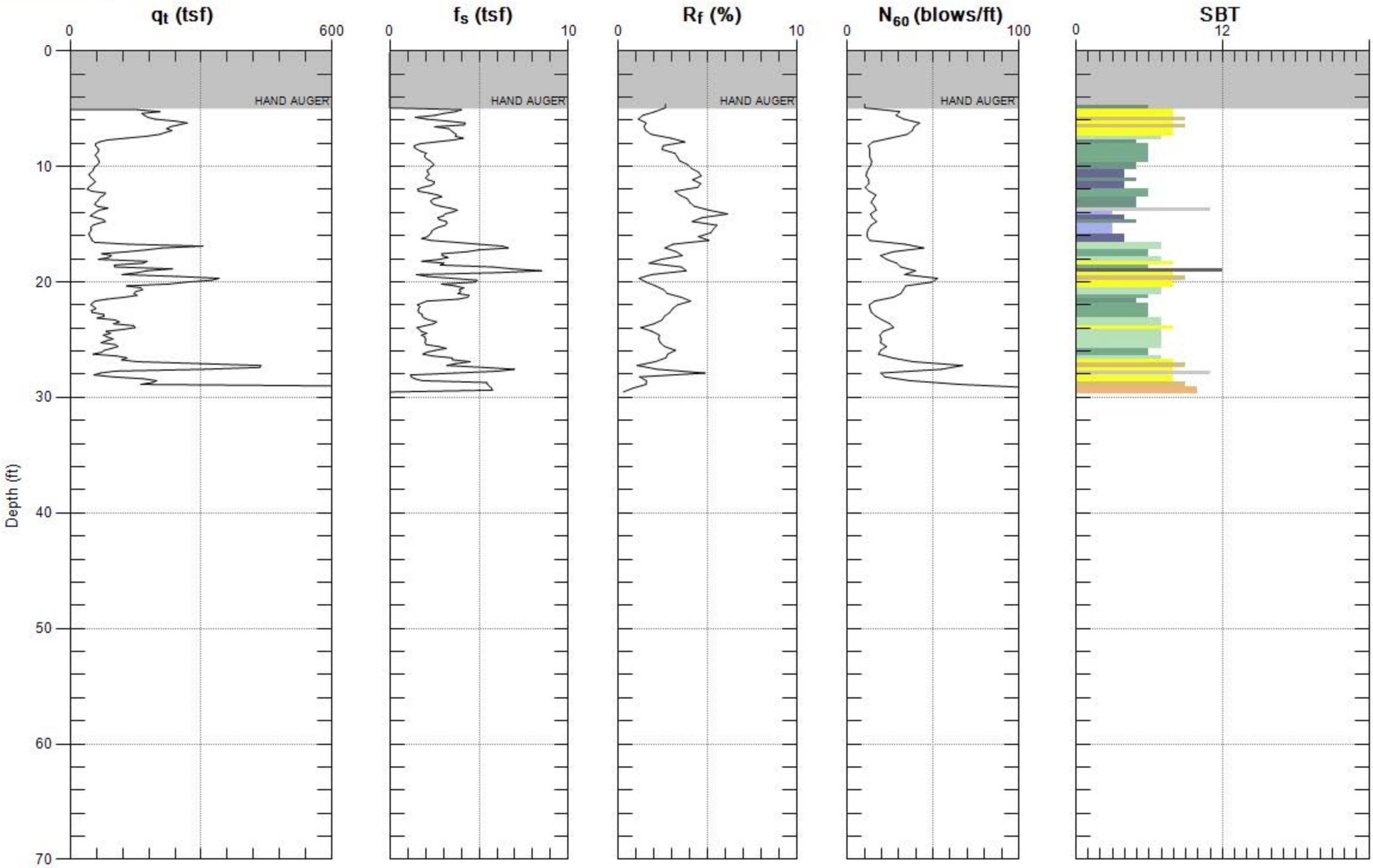
Figure A - 5

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)

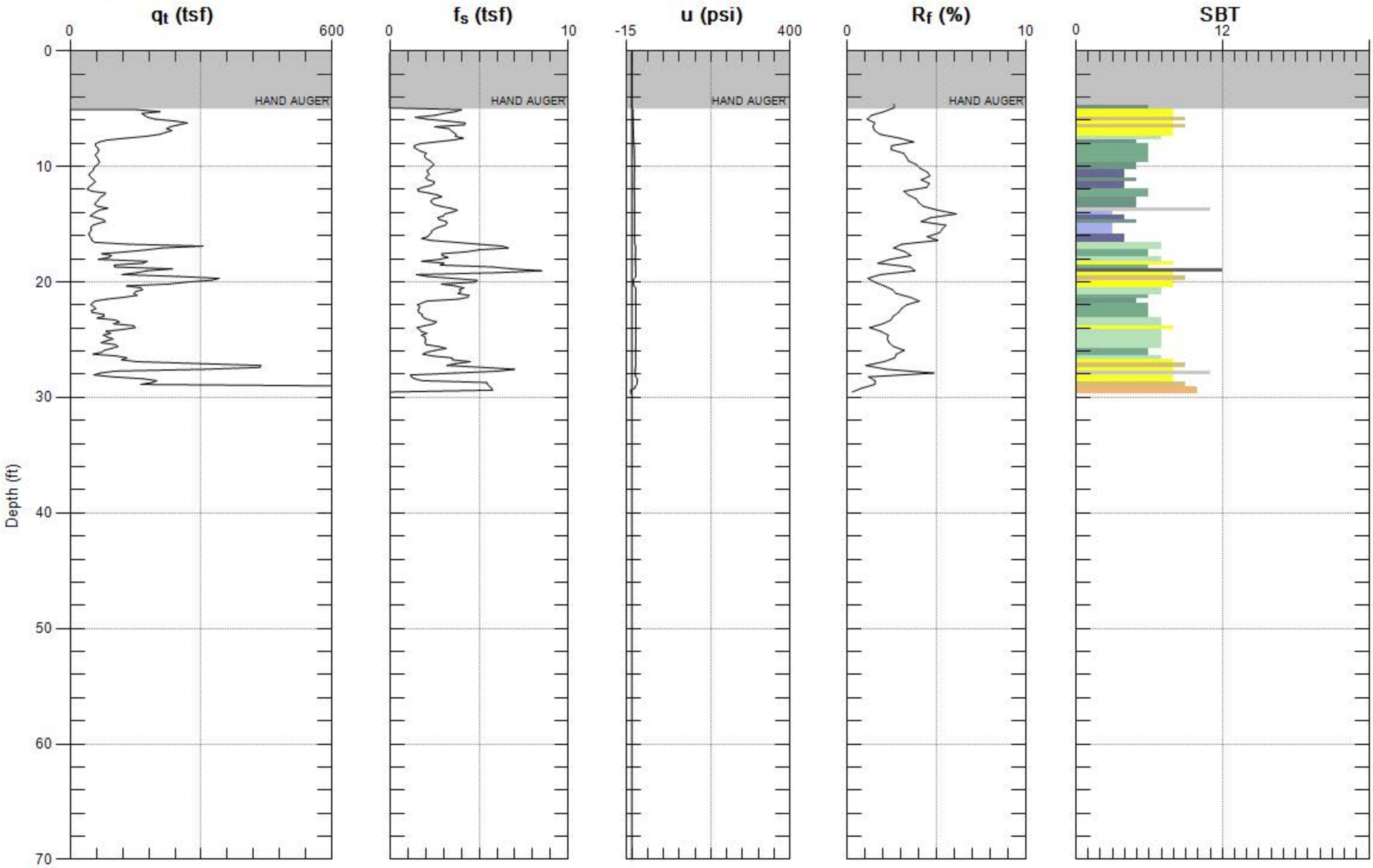
Figure A - 6

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)

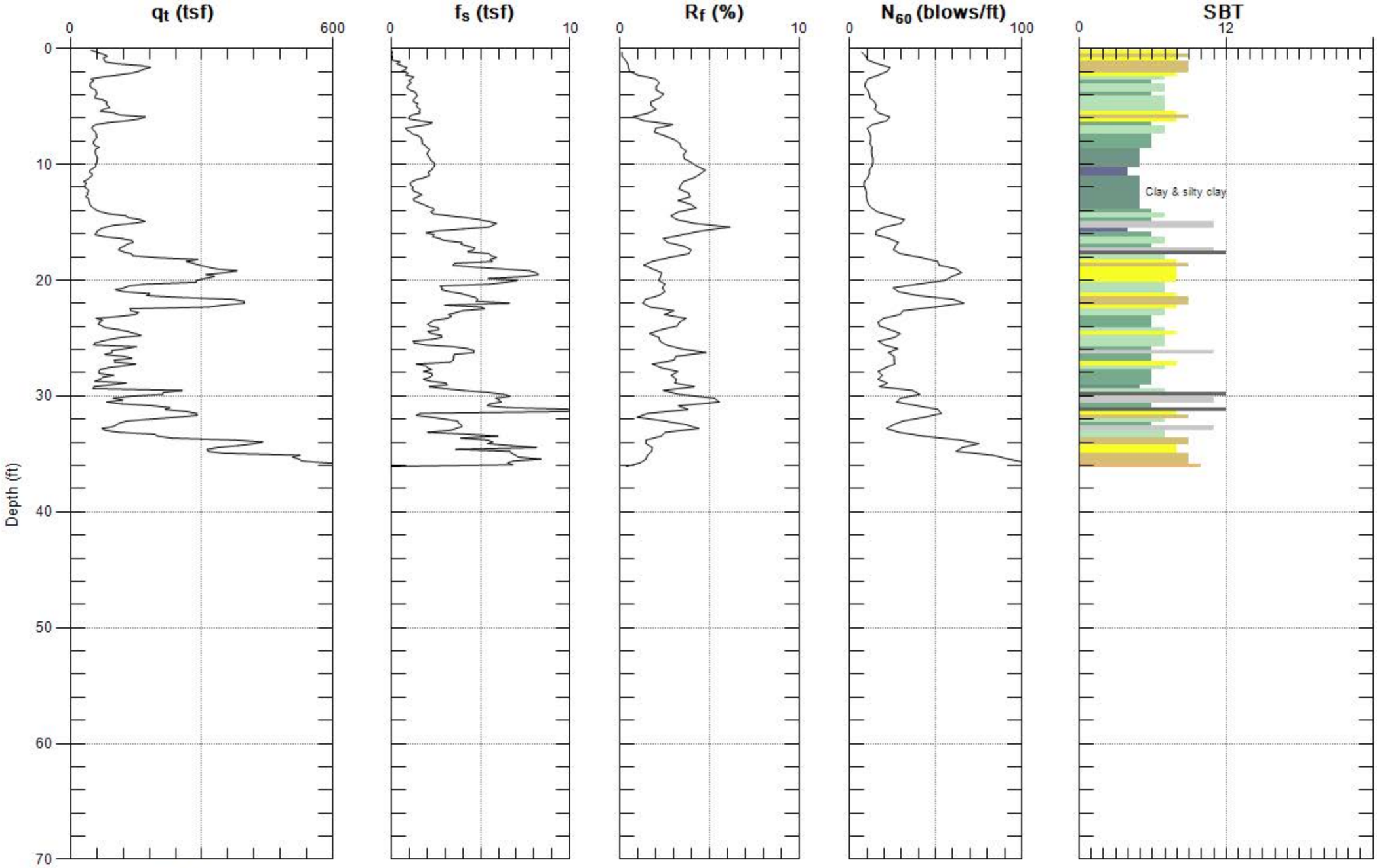
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 7

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)

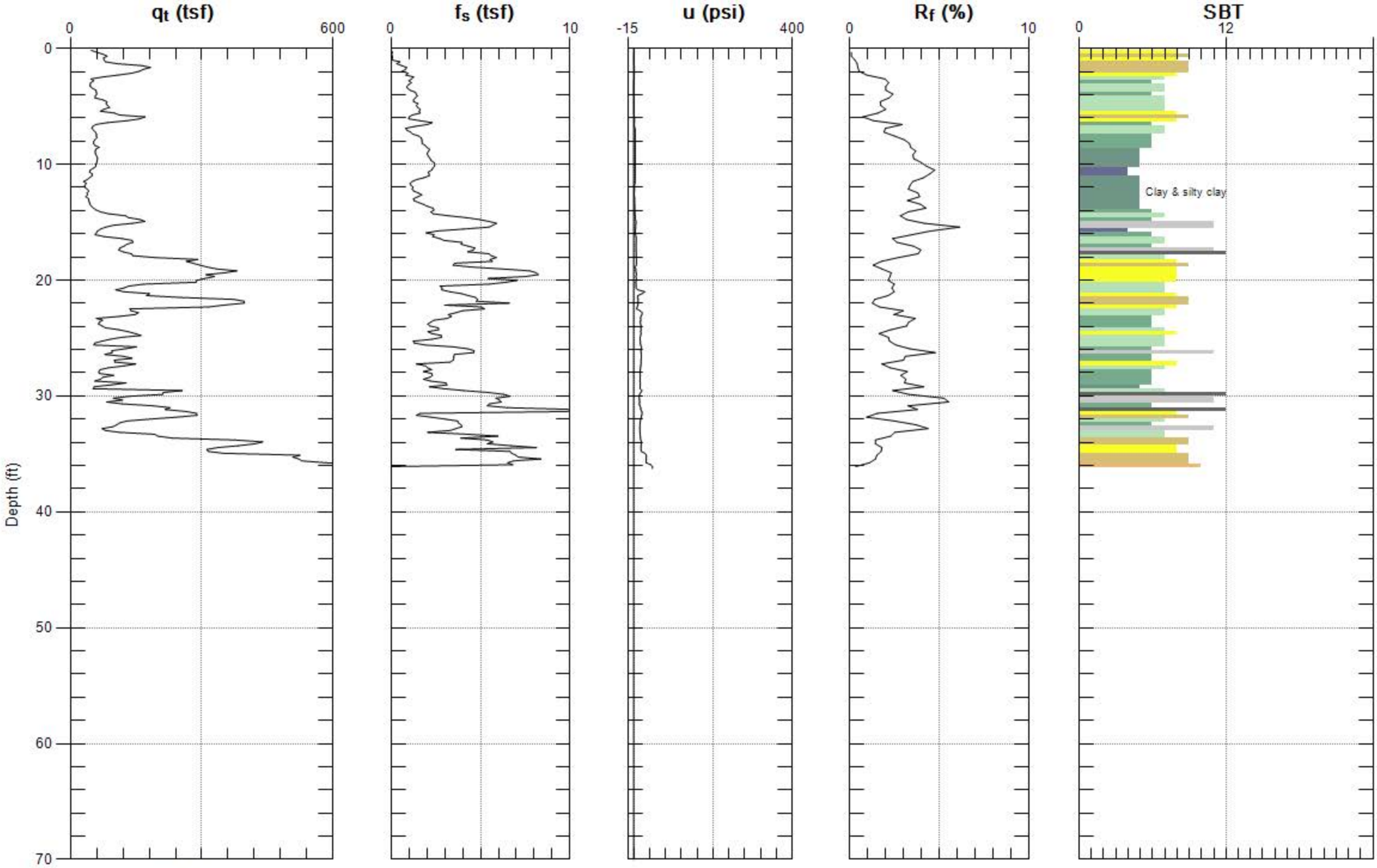
Figure A - 8

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)

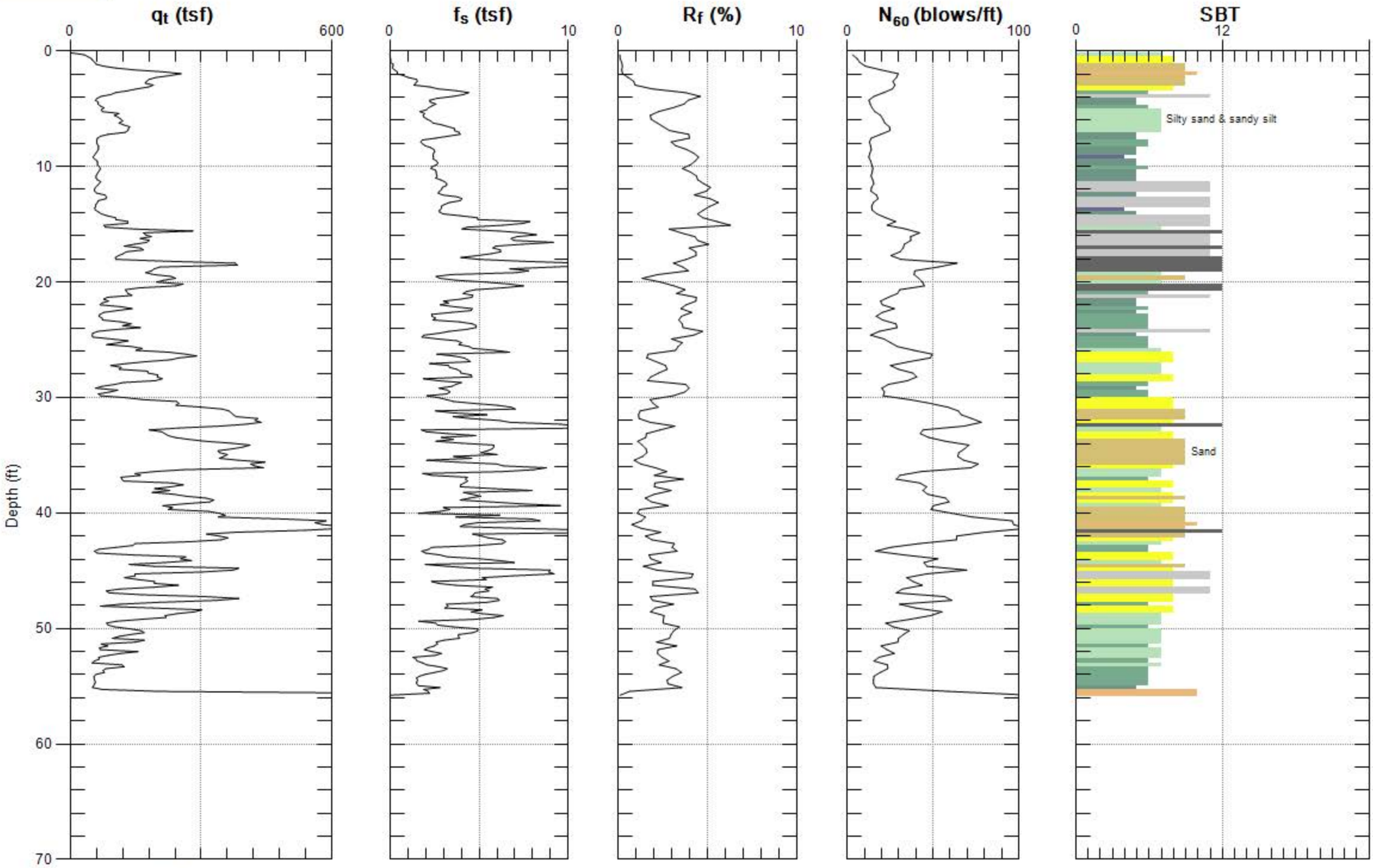
Figure A - 9

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)

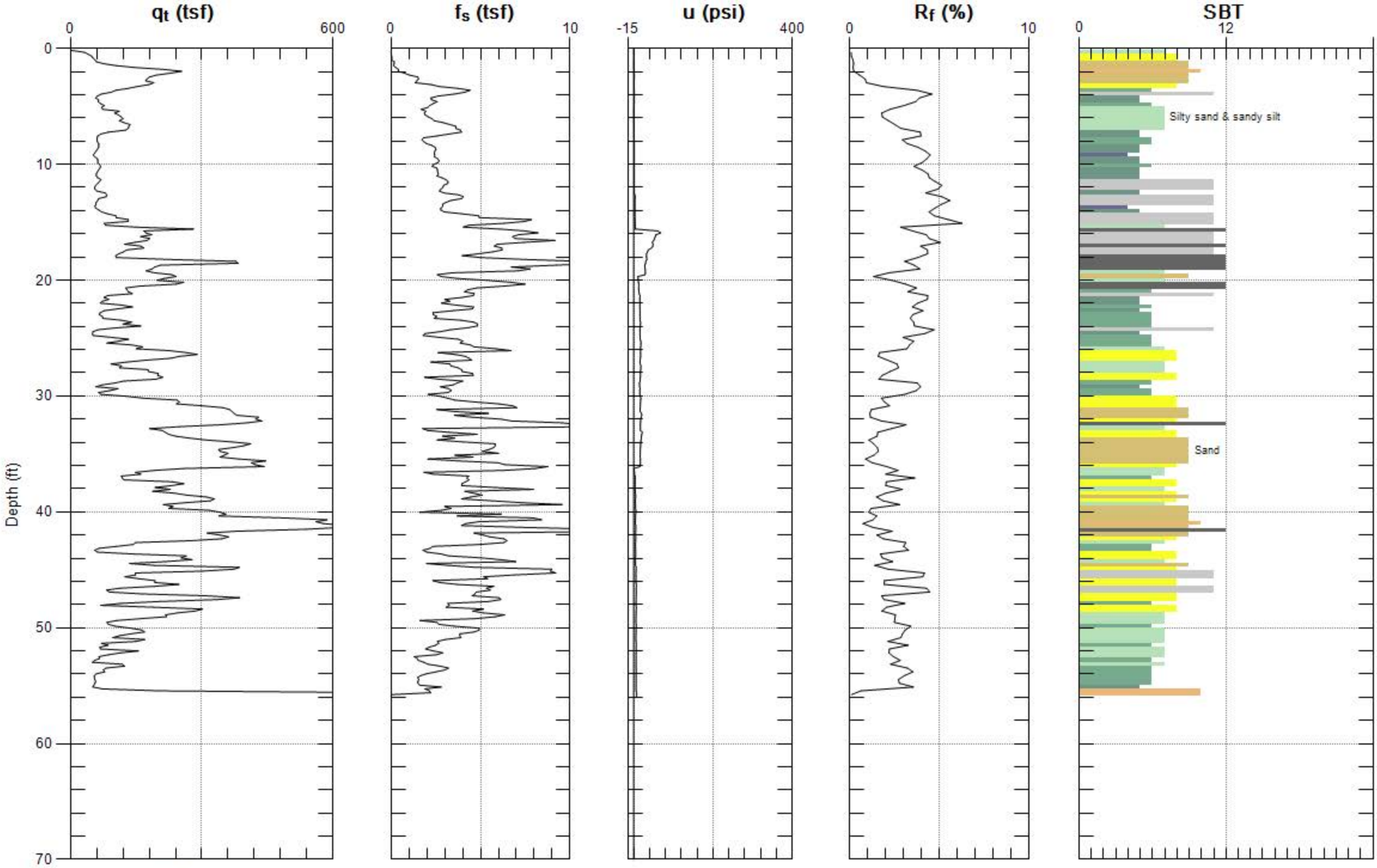
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 10

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)

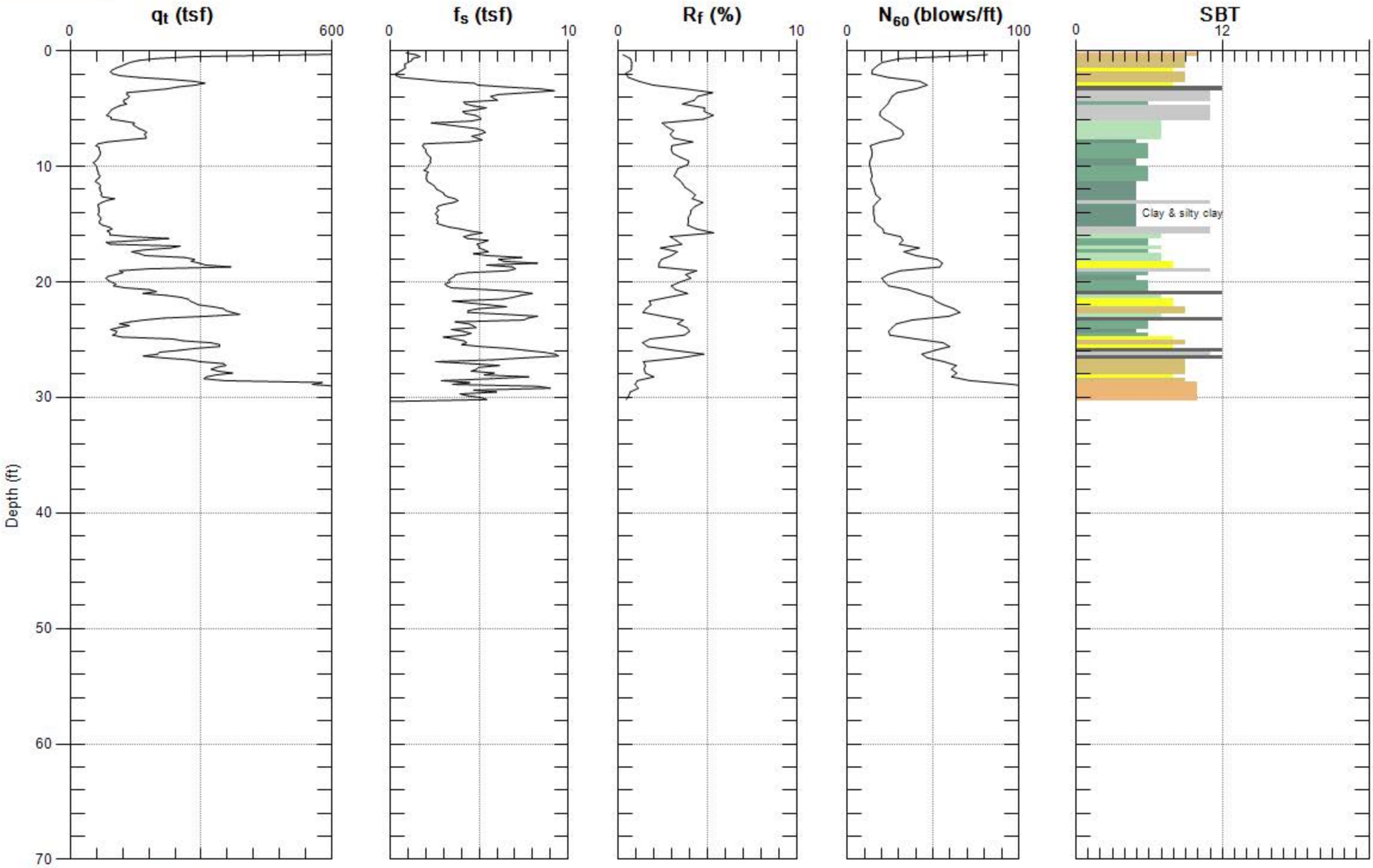
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 11

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)

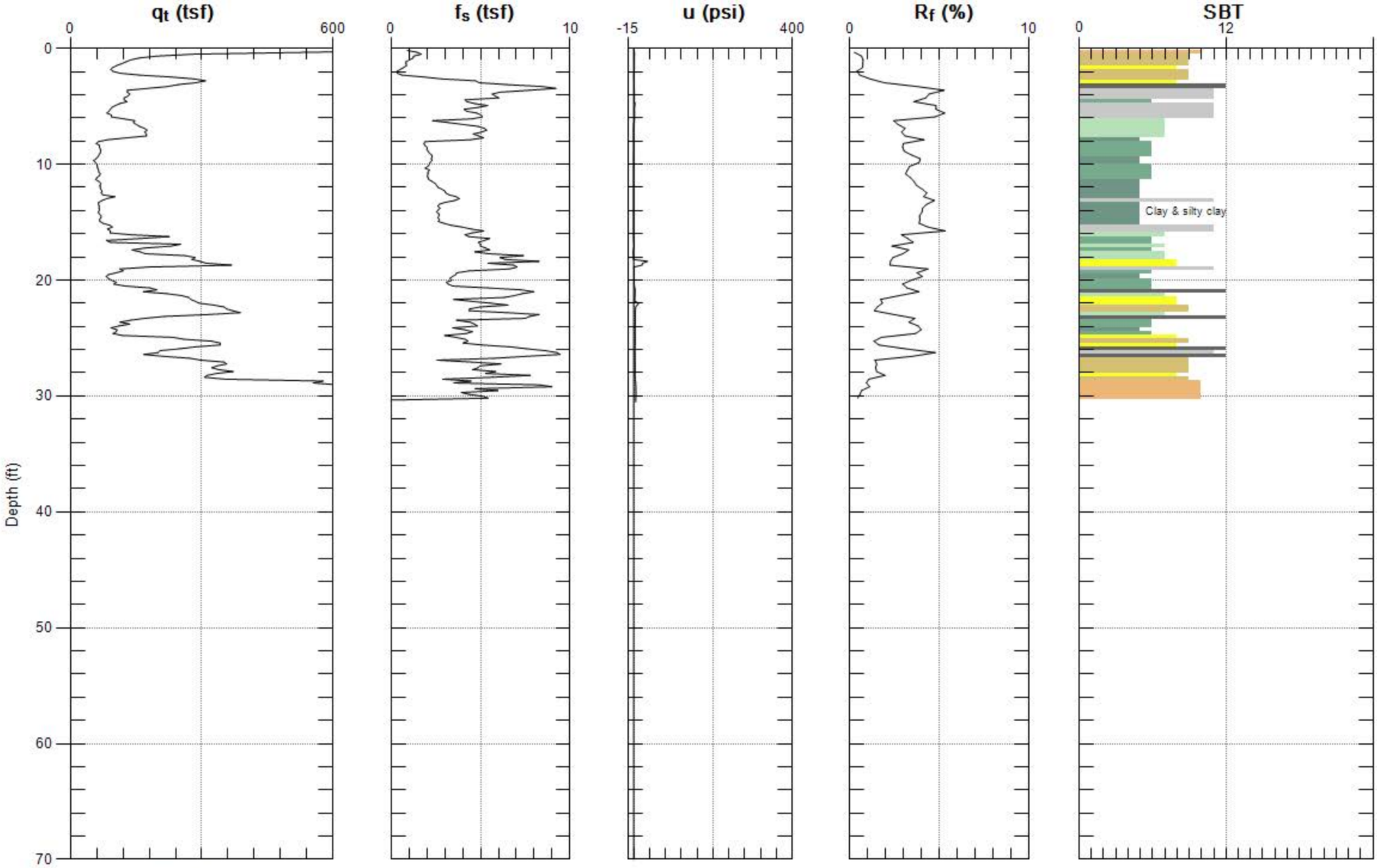
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 12

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)

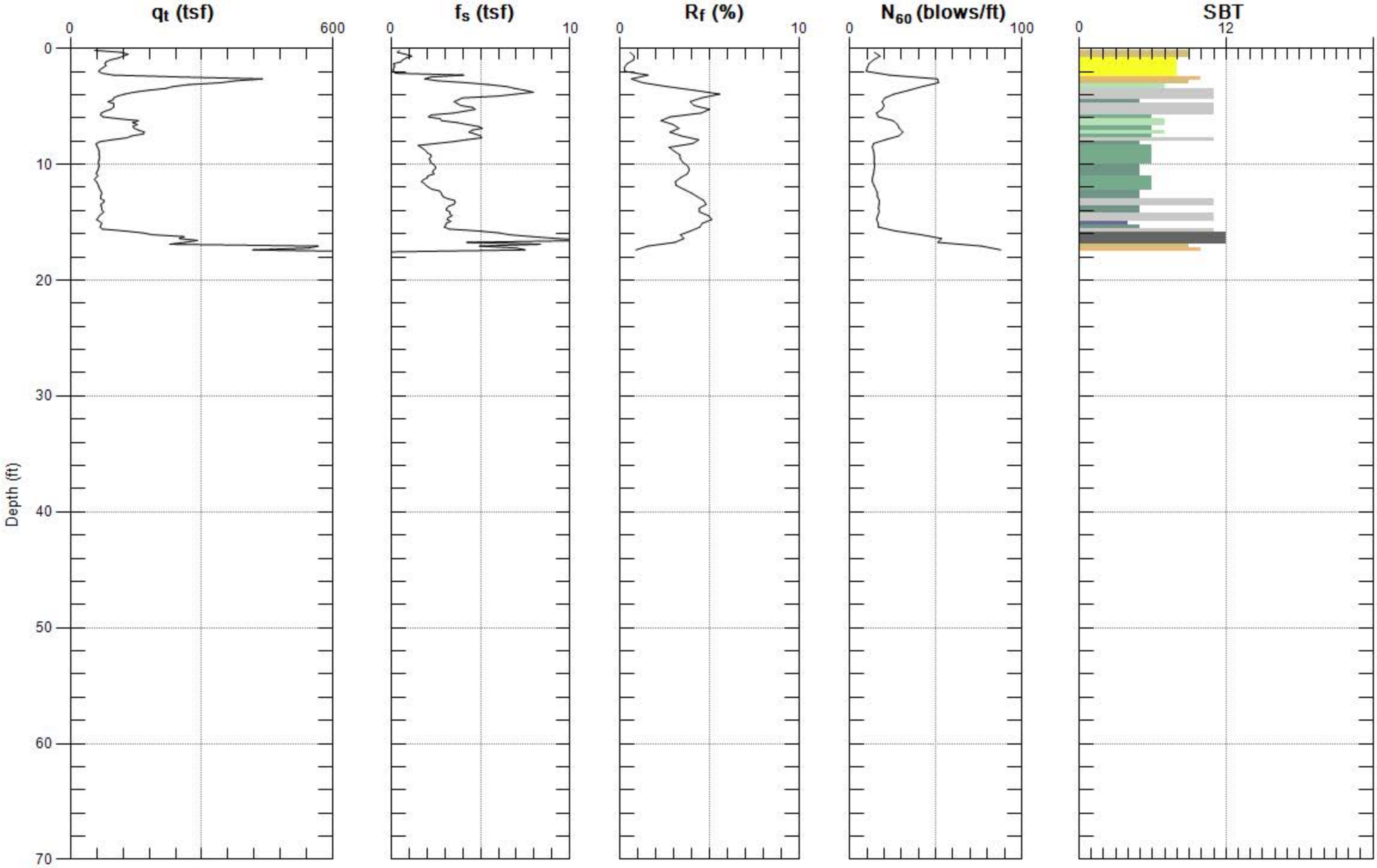
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 13

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)

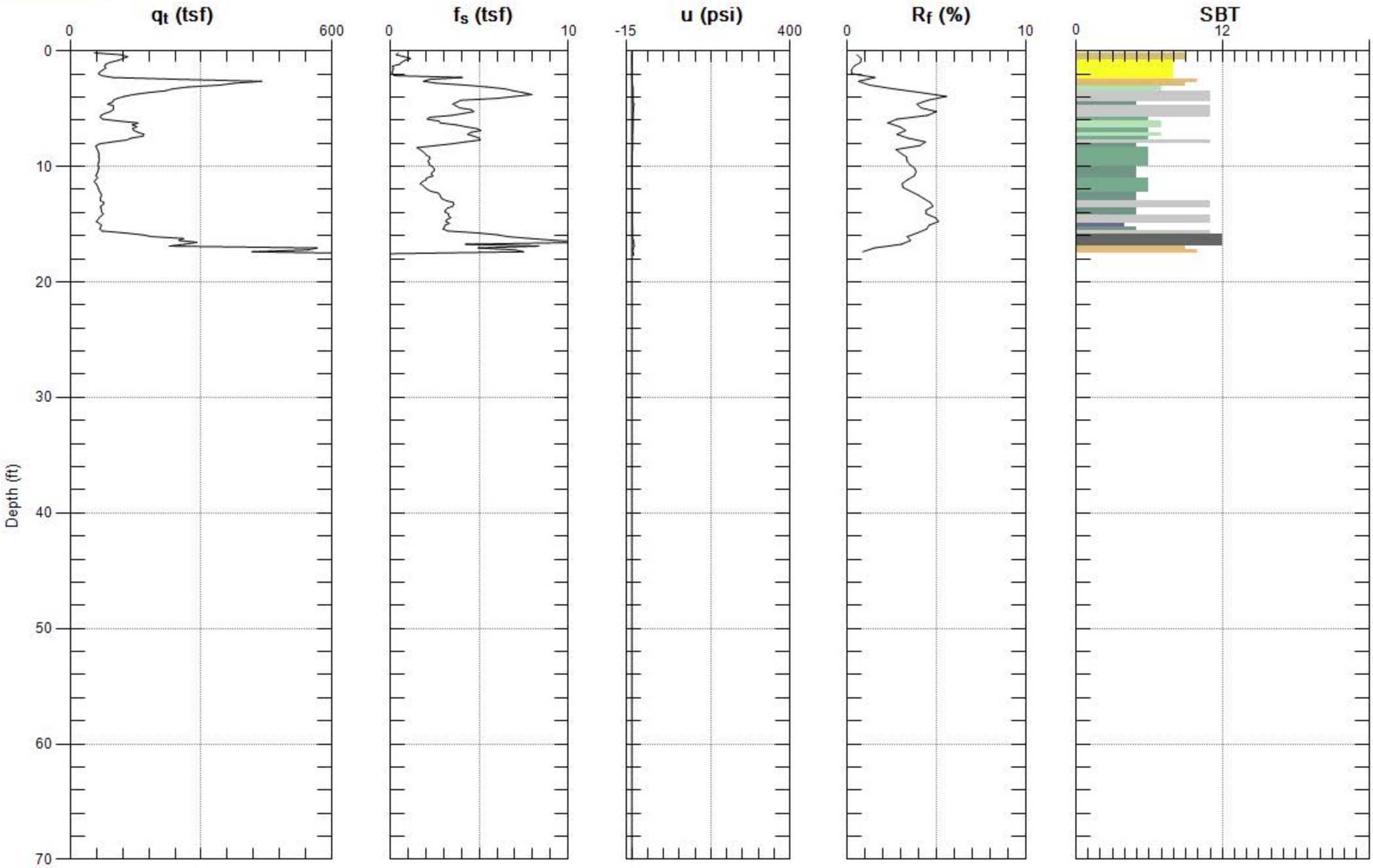
Figure A - 14

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)

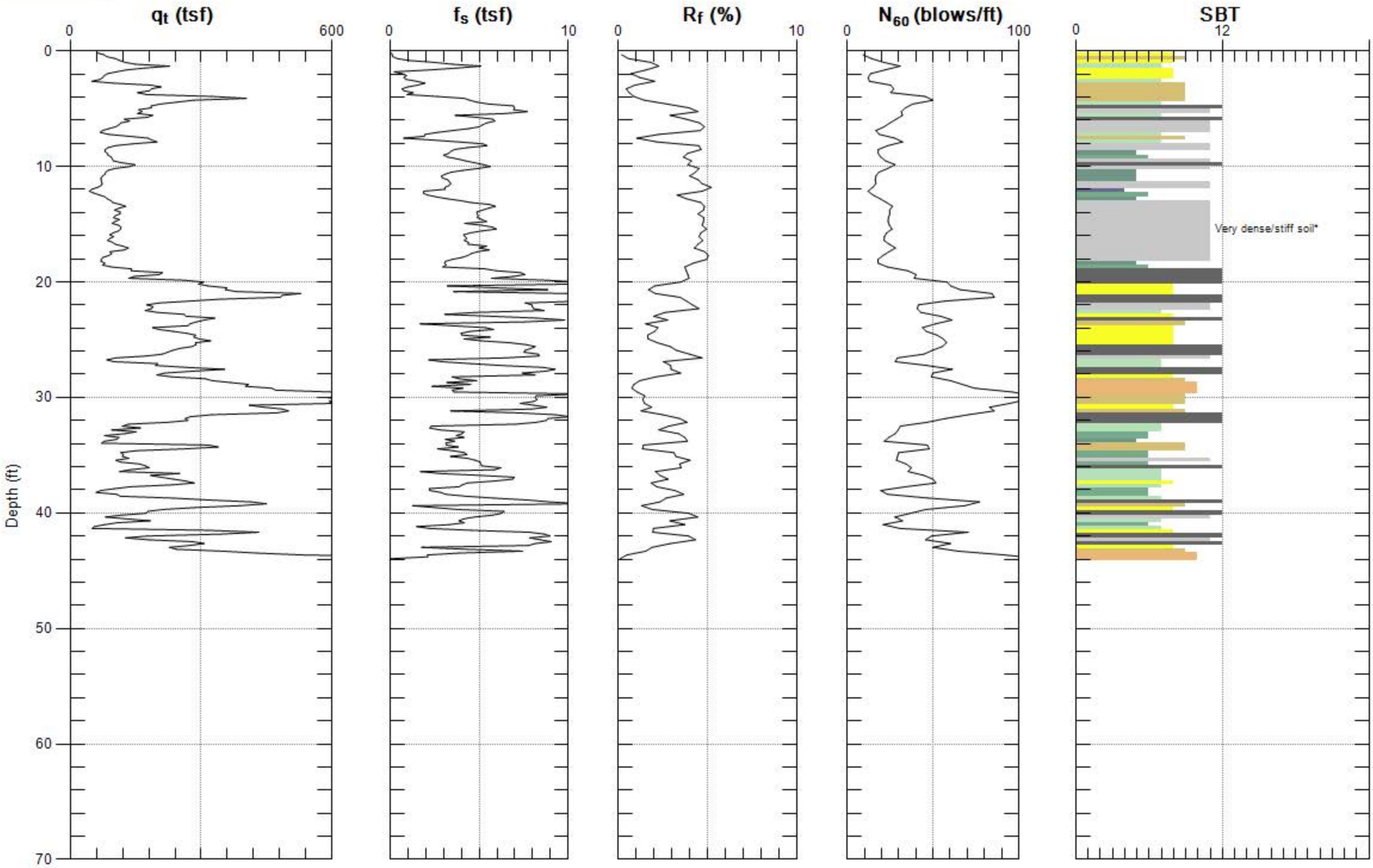
Figure A - 15

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)

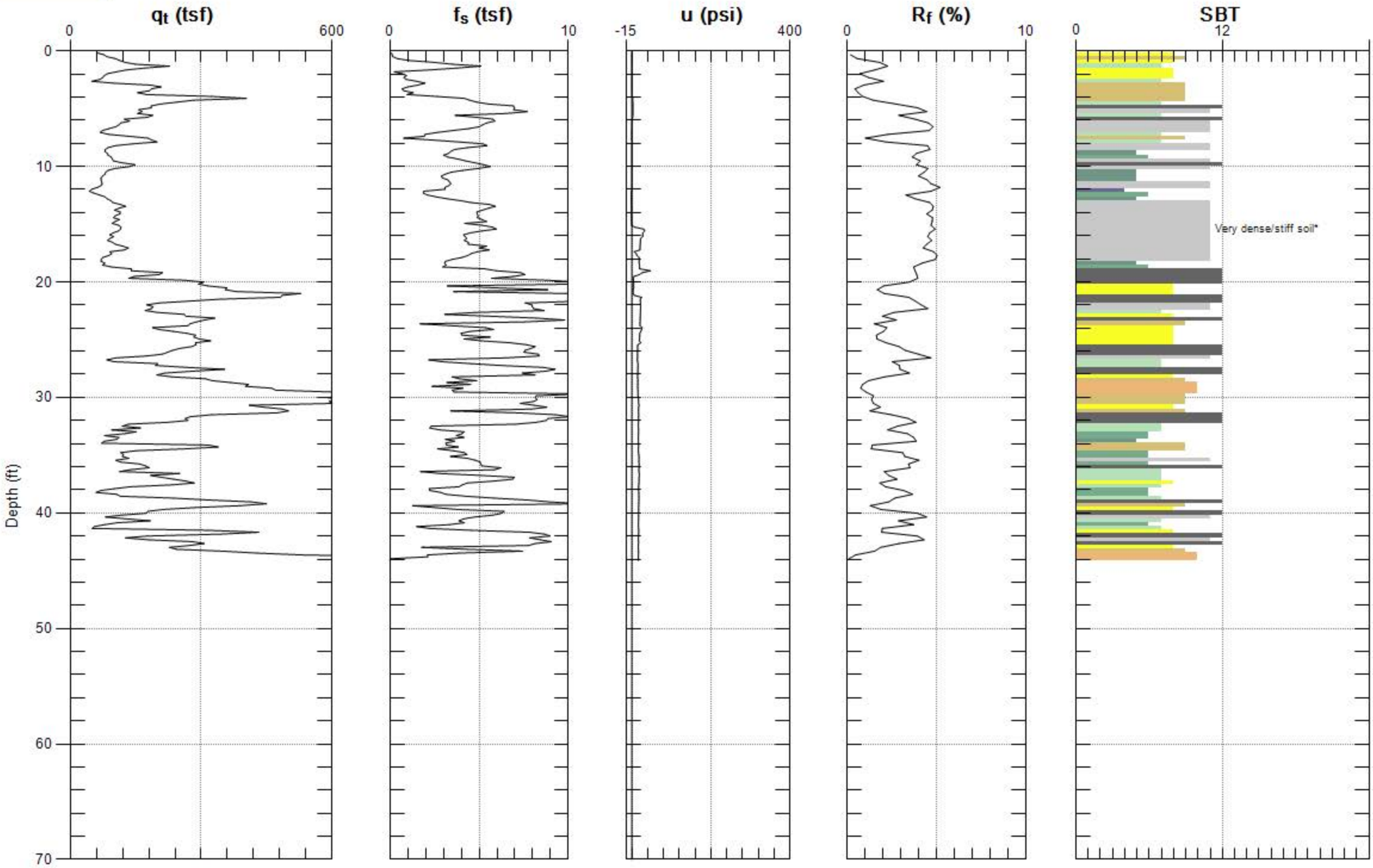
Figure A - 16

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)

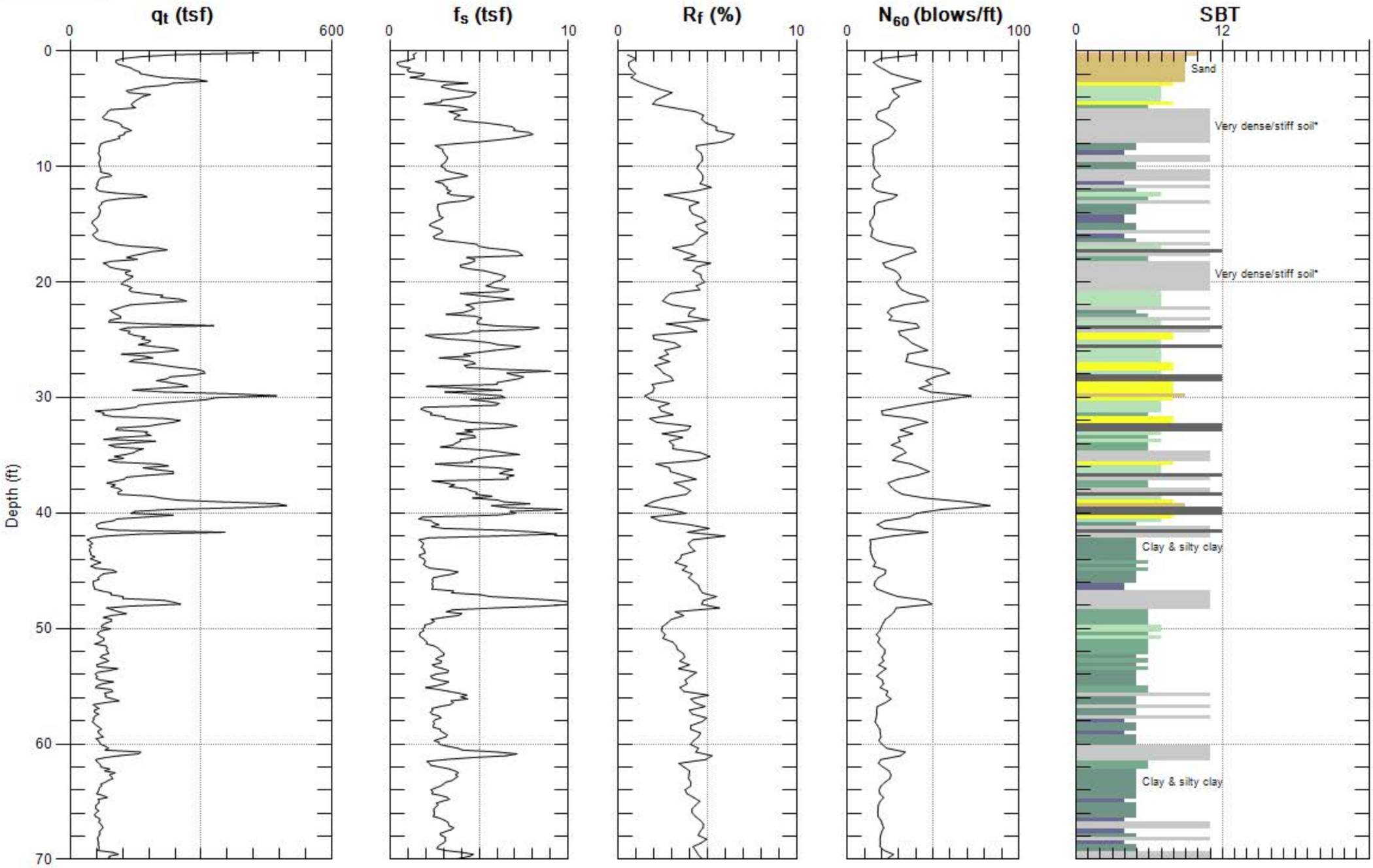
Figure A - 17

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)

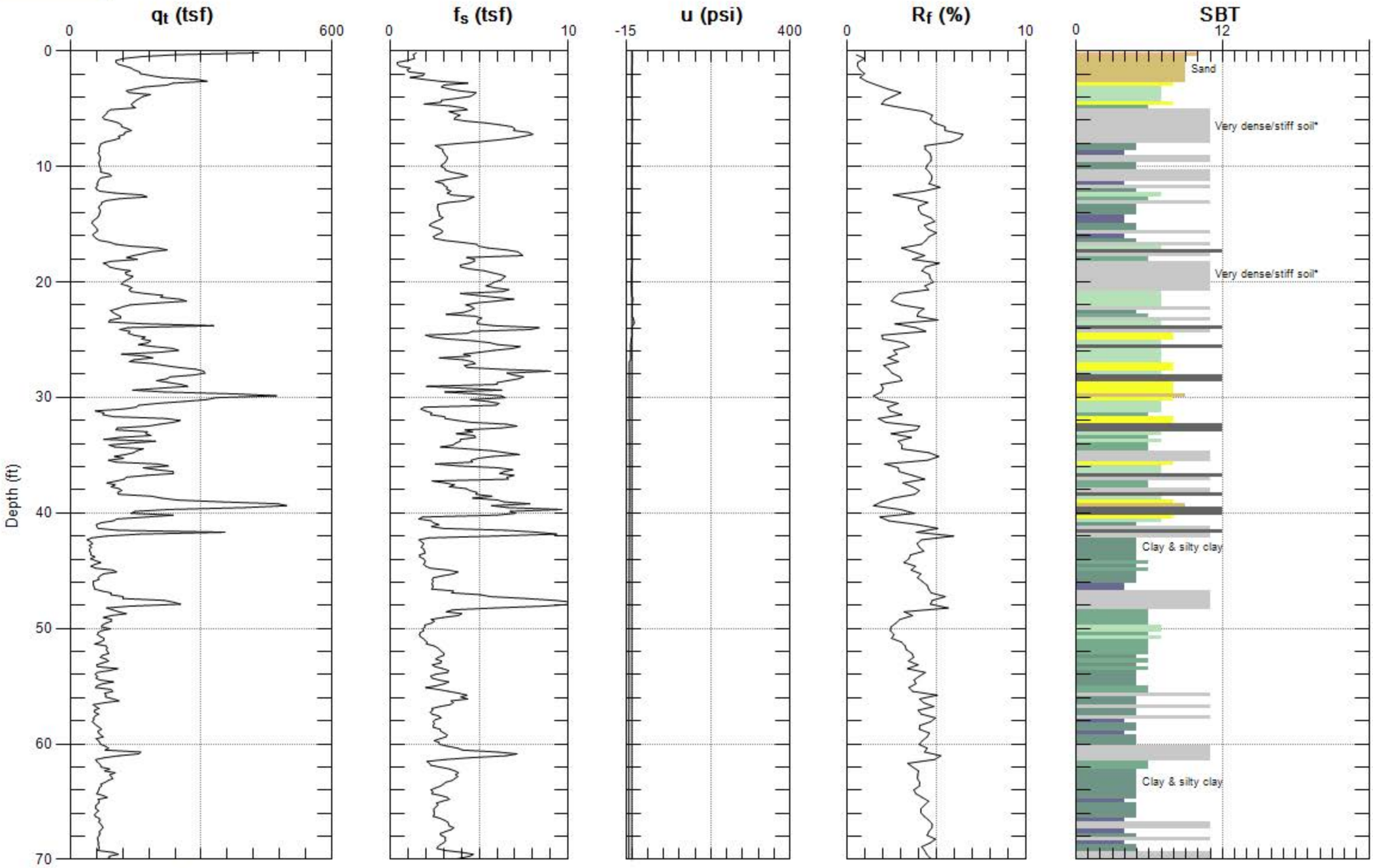
Figure A - 18

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)

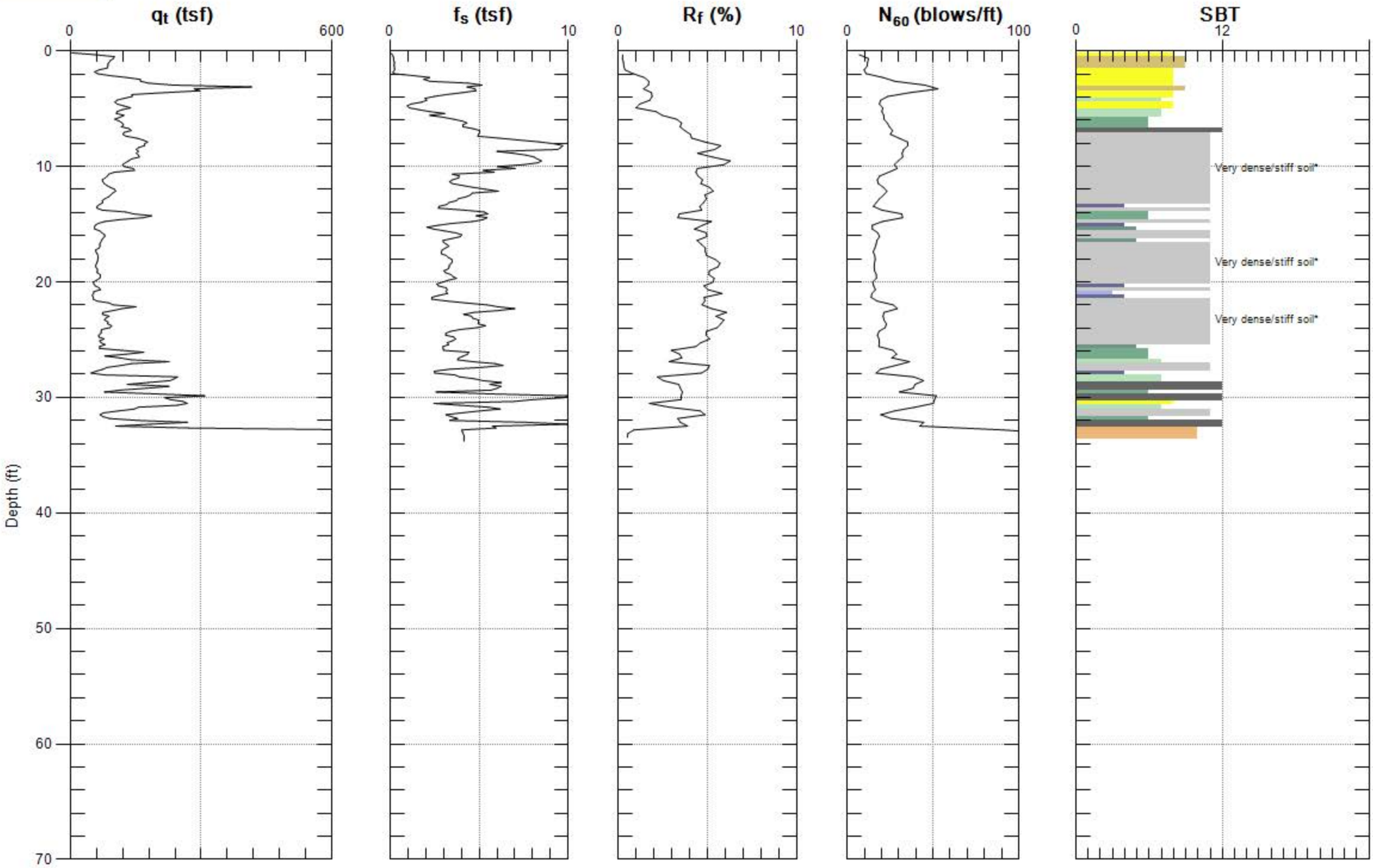
Figure A - 19

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)

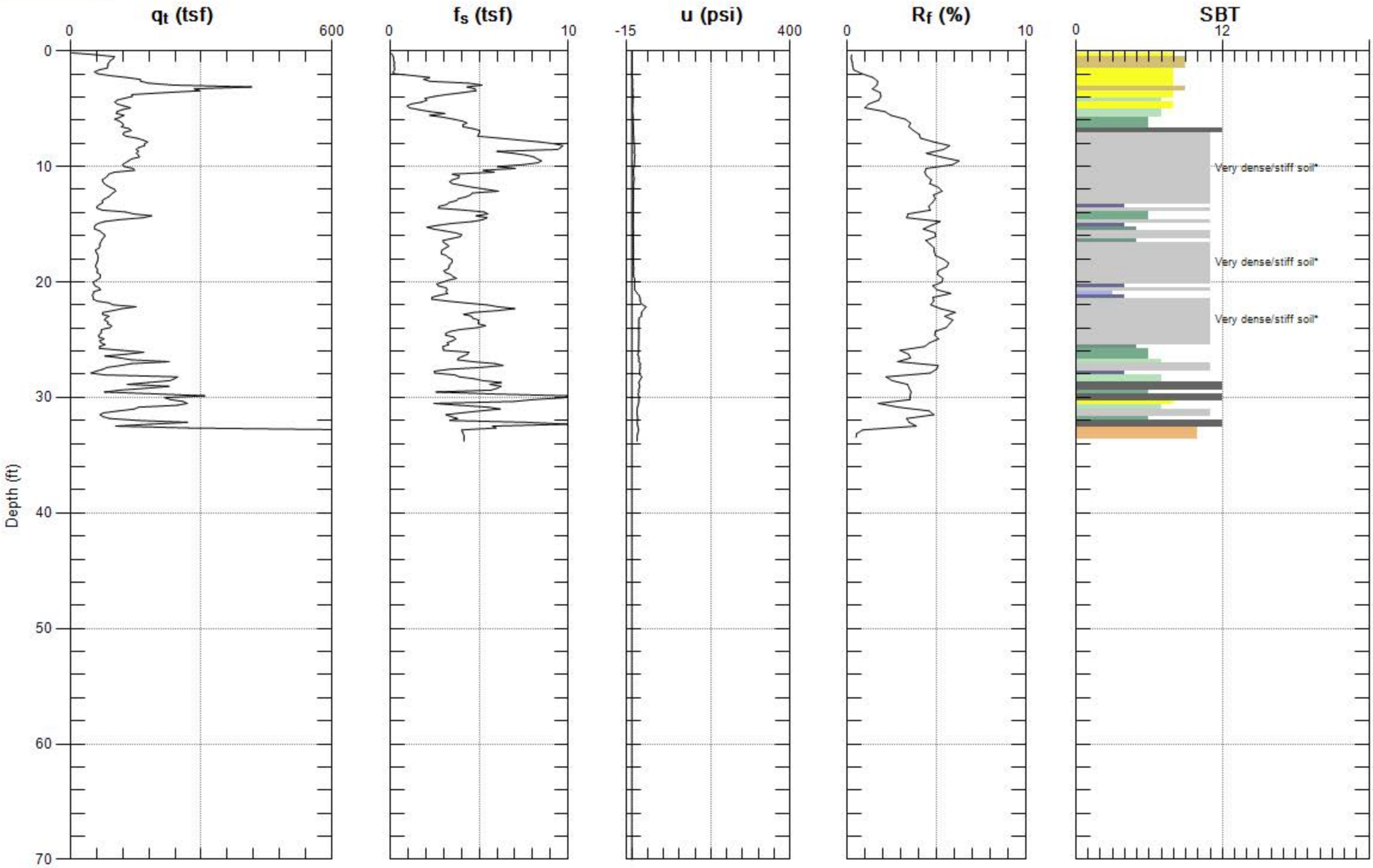
Figure A - 20

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)

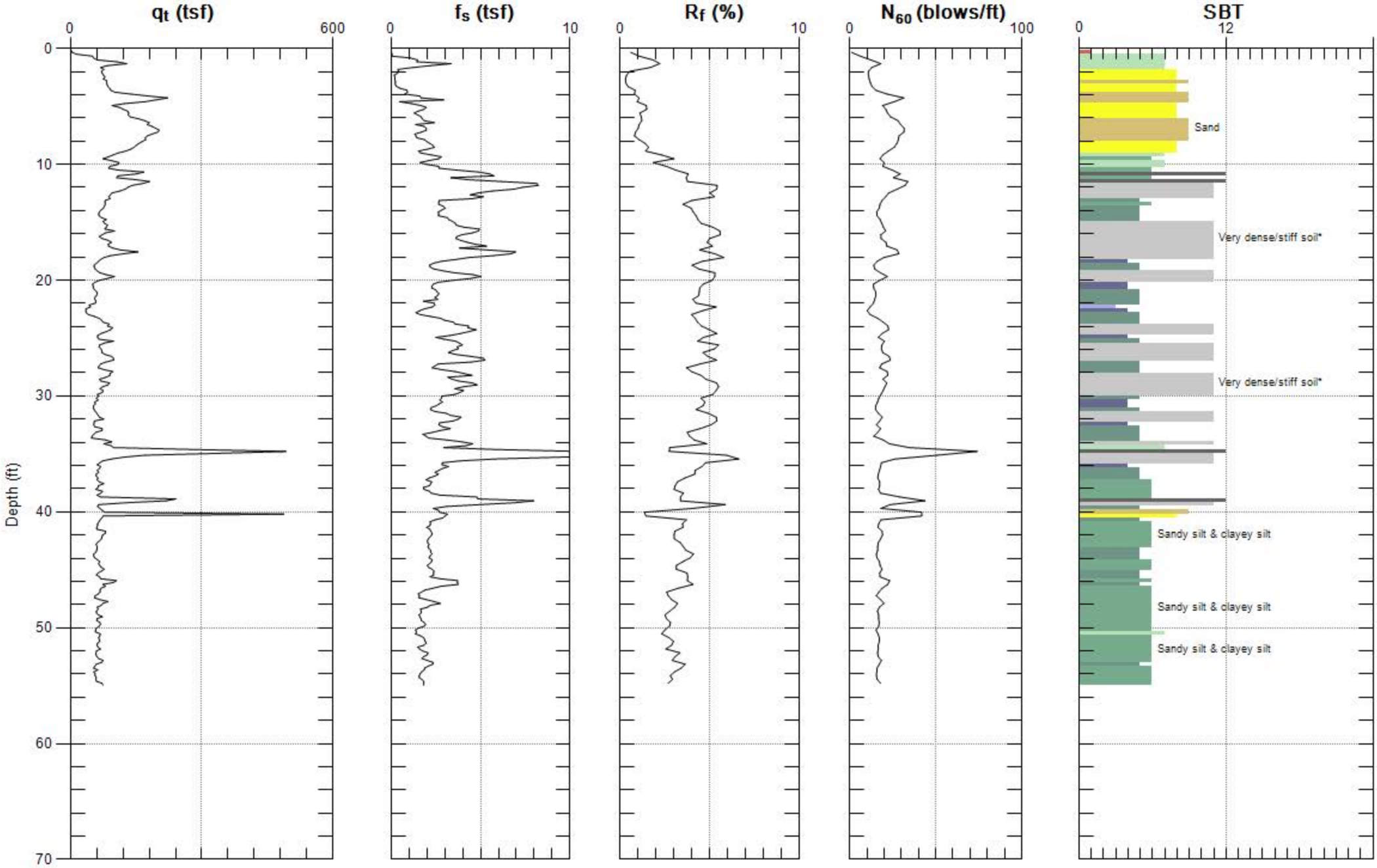
Figure A - 21

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)

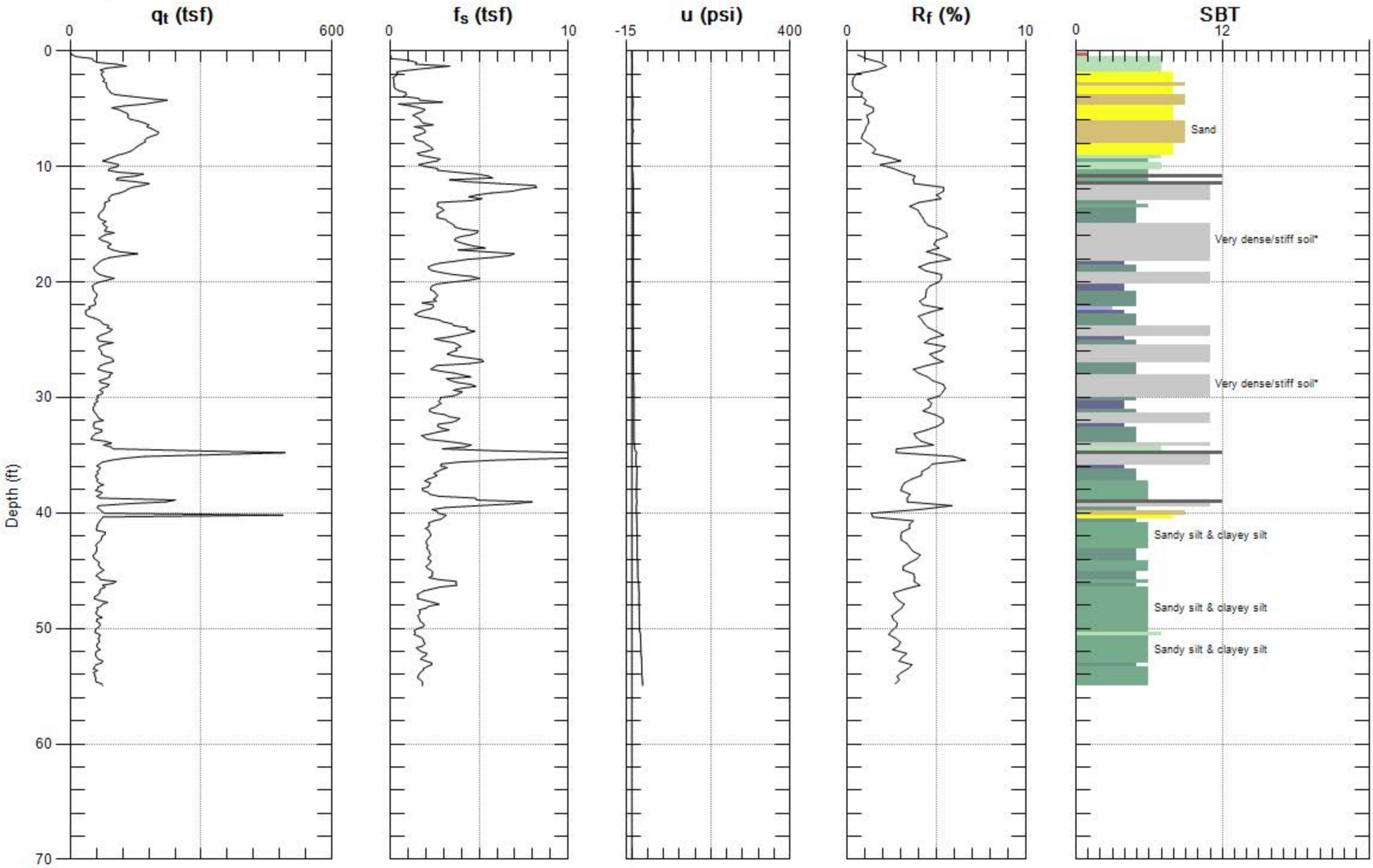
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 22

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)

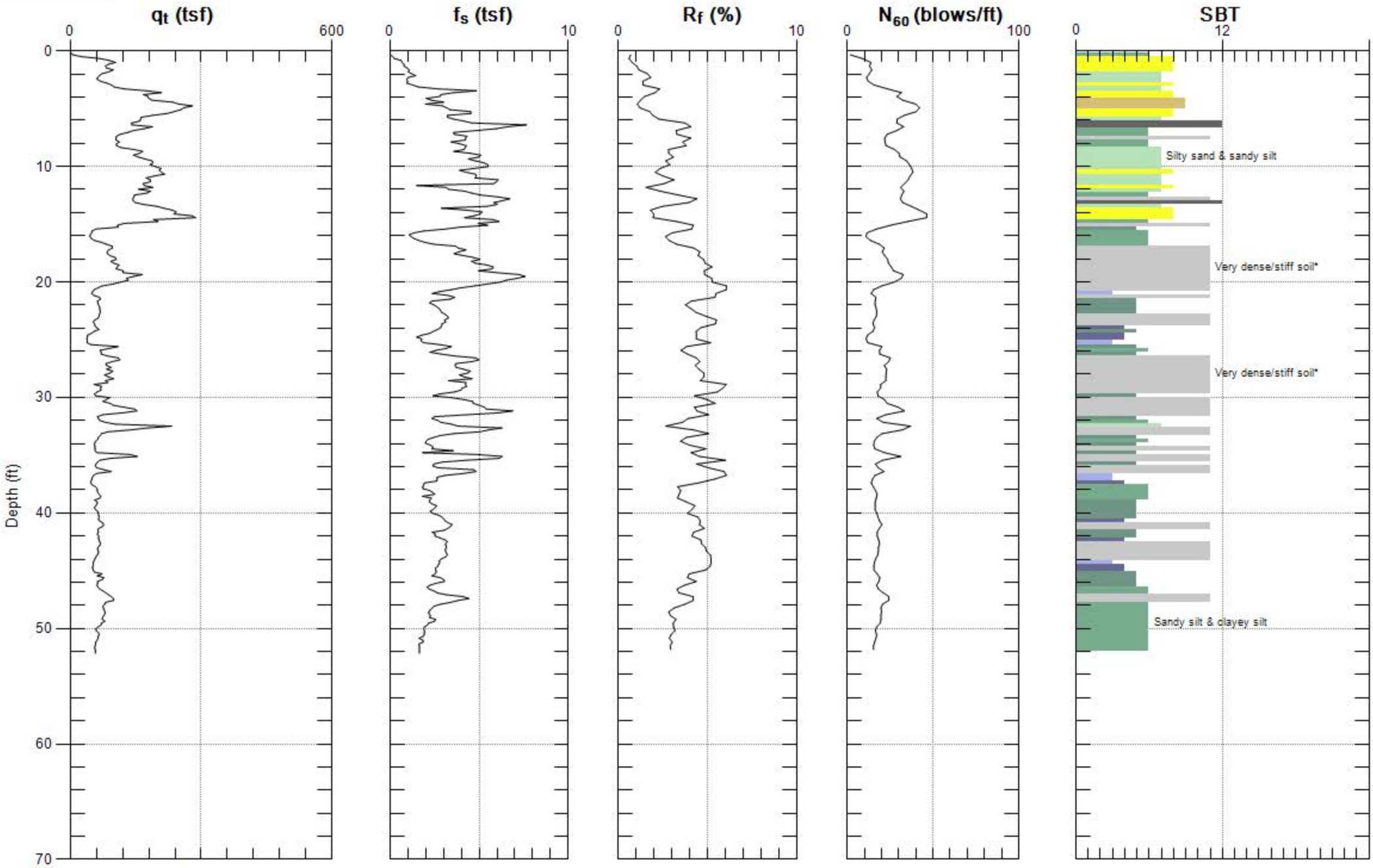
Figure A - 23

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)

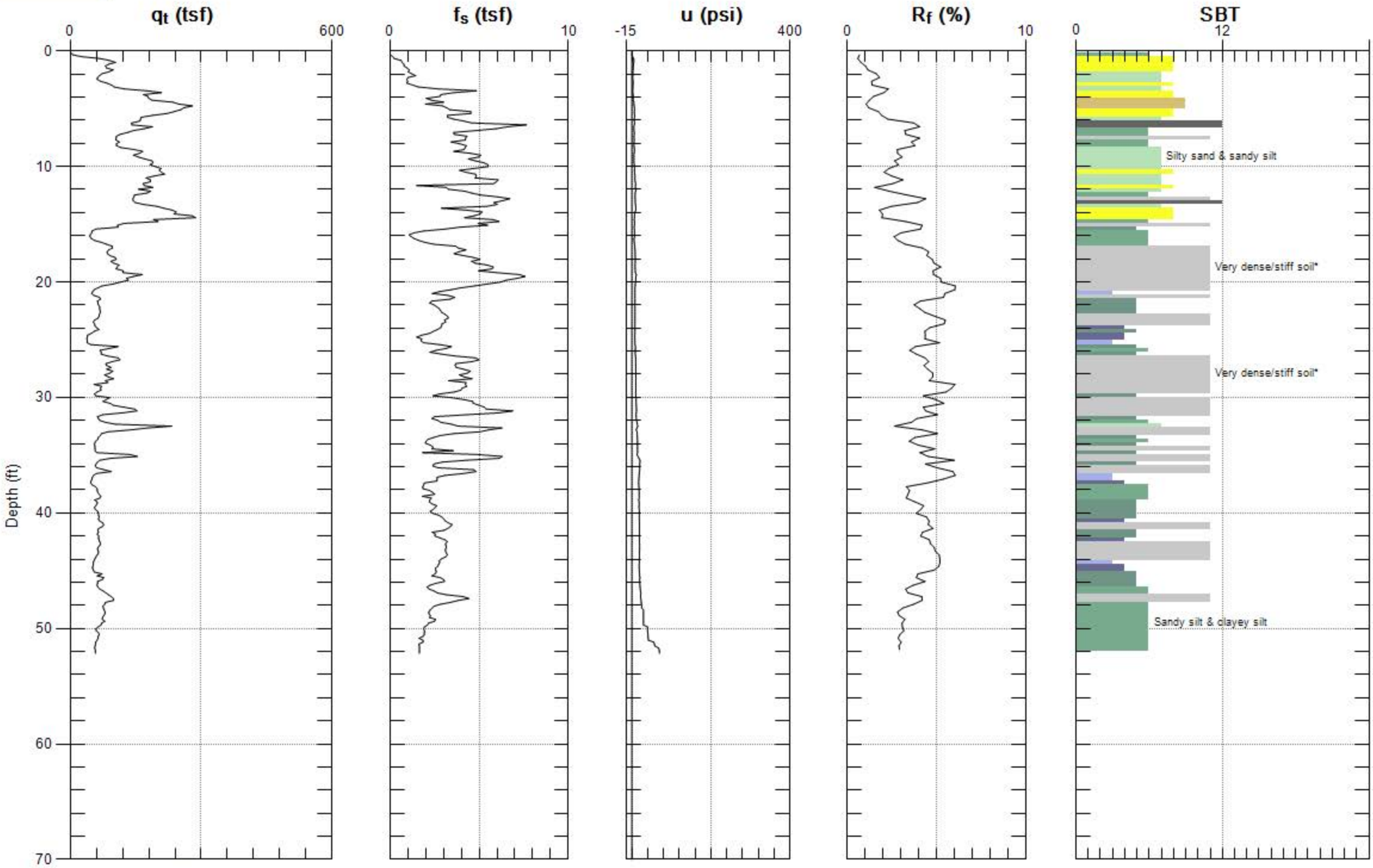
Figure A - 24

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)

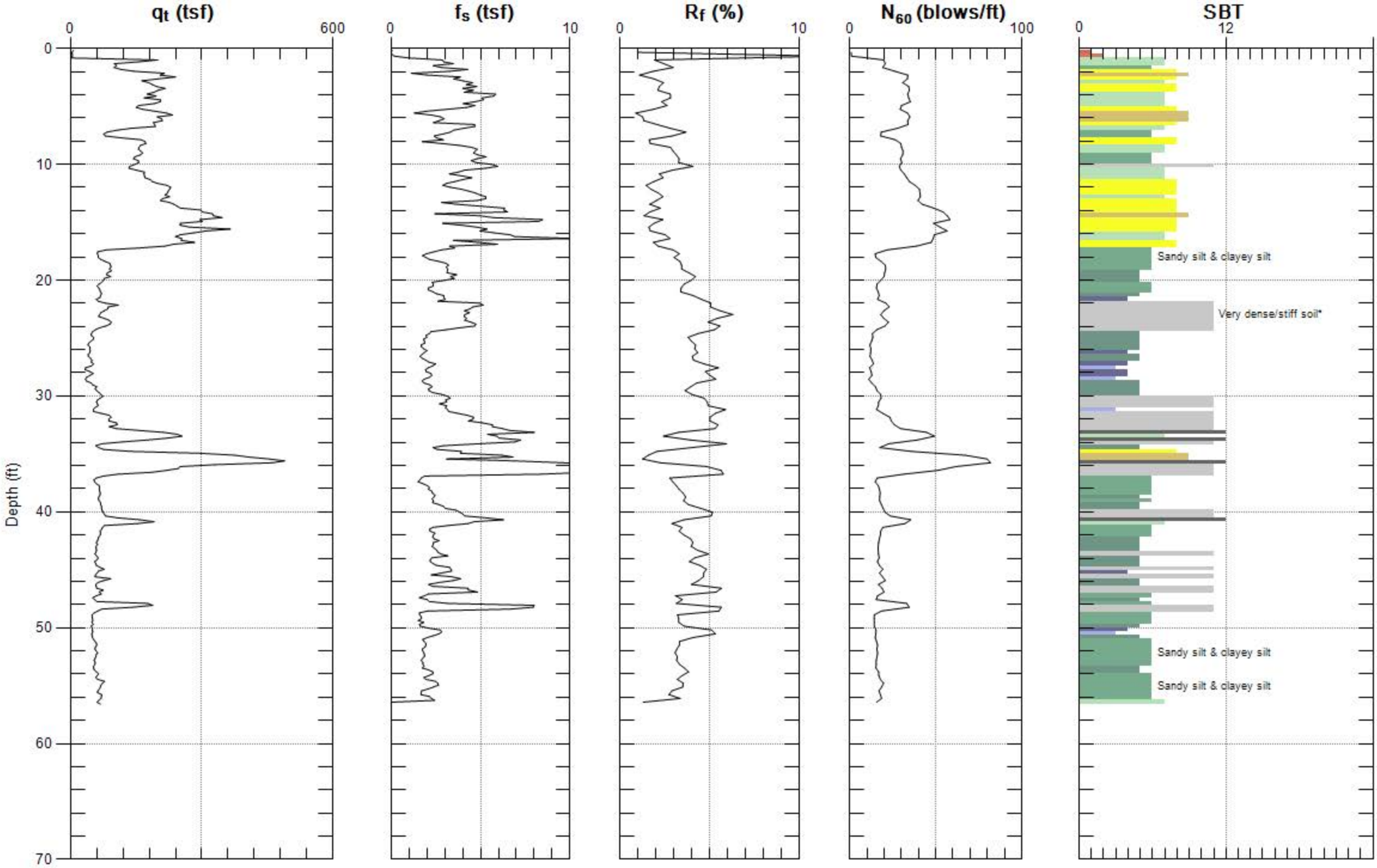
SBT: Soil Behavior Type (Robertson 1990)

Figure A - 25

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)

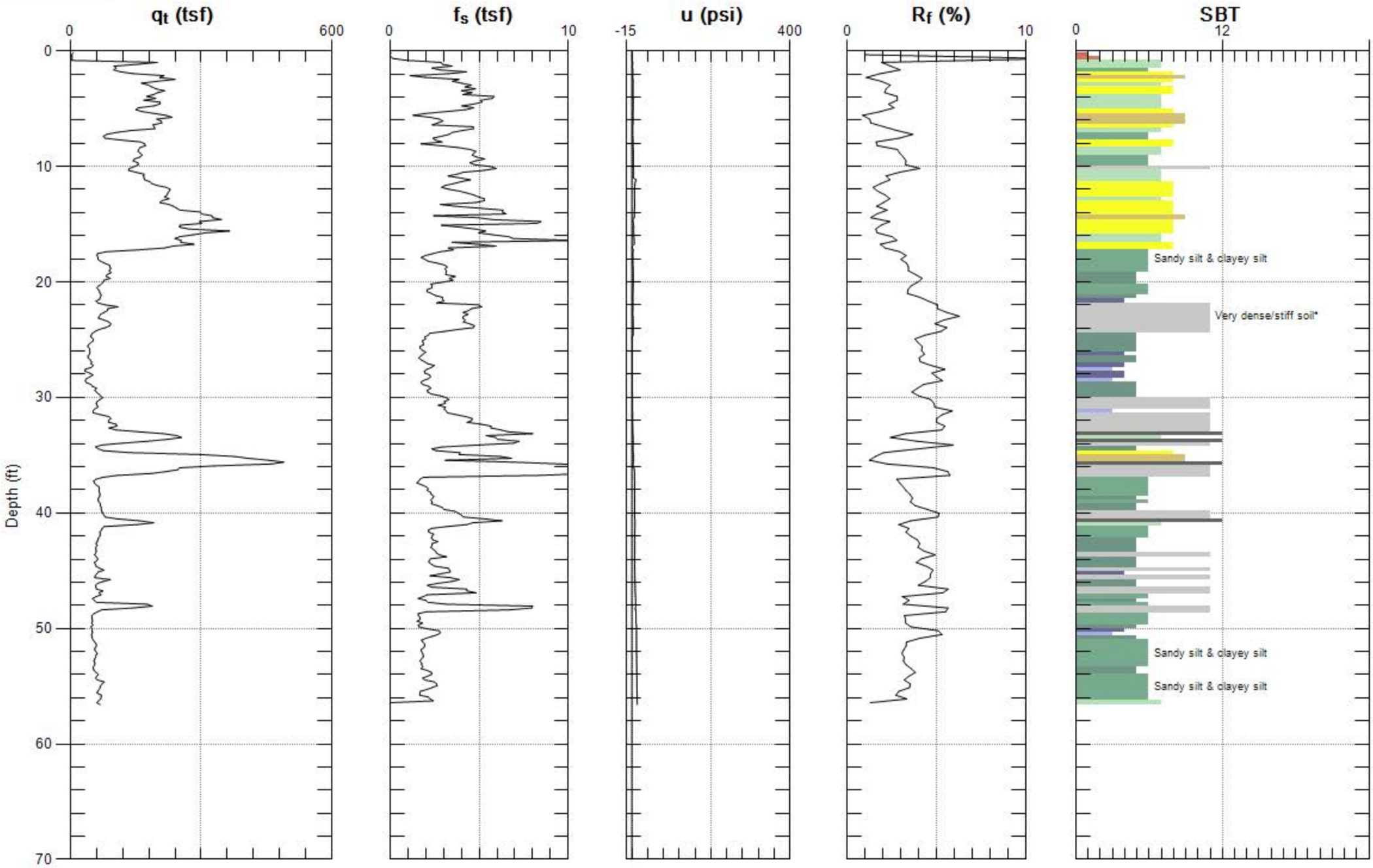
Figure A - 26

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)

Figure A - 27

GREGG

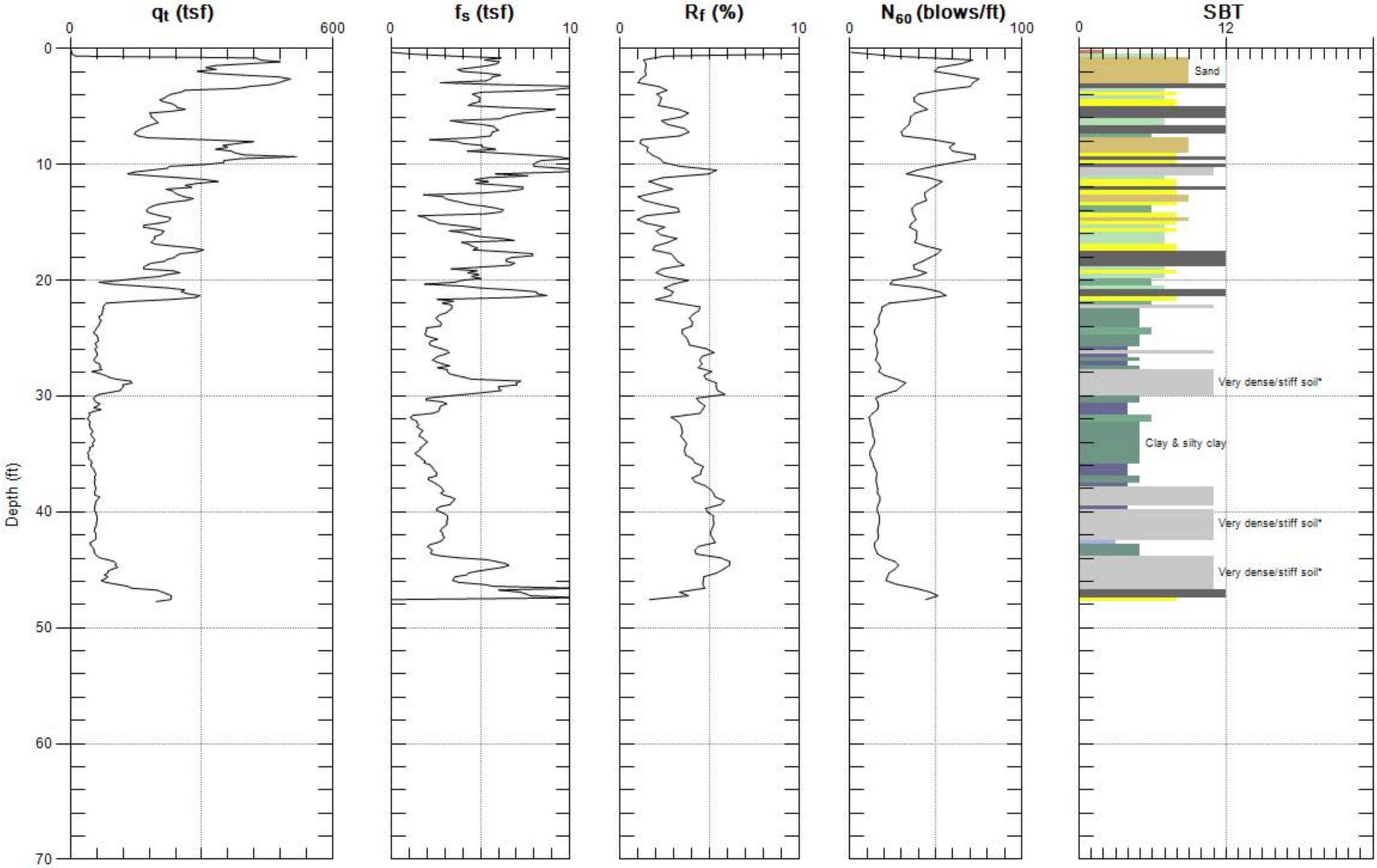
GROUP DELTA

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)

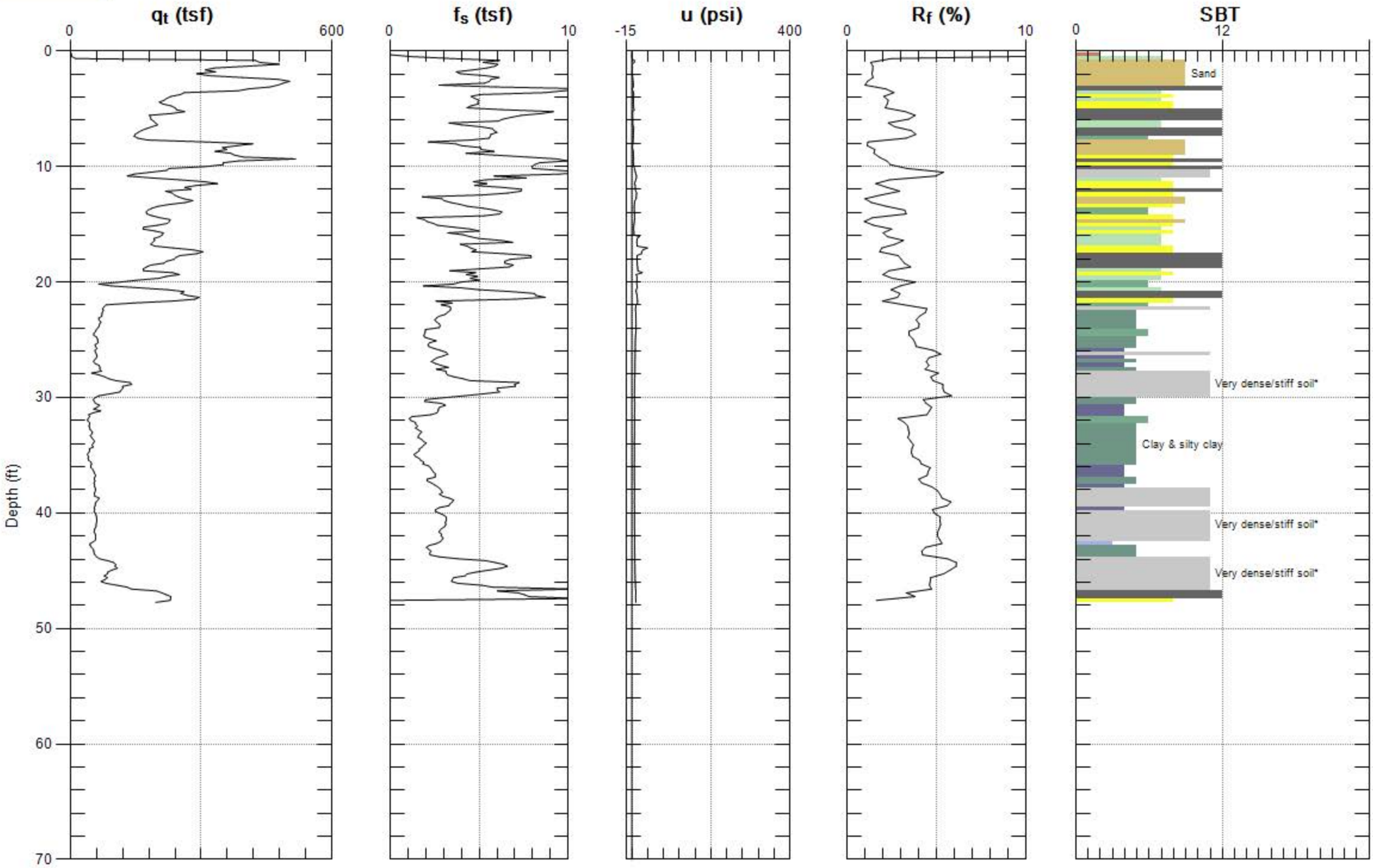
Figure A - 28

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)

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** **B-1**
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/31/14 to 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 SURFACE ELEVATION (feet)** 418	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/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.				
	415												
5													
			1						**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.				
	410												
10													
			2						**Modelo Formation (TM)** **Sandstone, Siltstone, Claystone**, 10YR 6/1 (Strong brown) to 7.5YR 7/1 (light gray), thinly bedded, some oxidation, some caliche.				
	405												
15									**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.				
			3										
	400												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

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FIGURE A-29 a

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** **B-1**
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/31/14 to 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 SURFACE ELEVATION (feet)** 418	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Modelo Formation (Tm)				
	395		4										
25													
	390		5										
30									**Sandstone, Siltstone, Claystone** 7.5YR 7/1 (light gray), wet, thinly bedded, some oxidation.				
	385		6										
35													
	380		7										

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FIGURE A-29 b

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** **B-1**
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/31/14 to 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 SURFACE ELEVATION (feet)** 418	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

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

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FIGURE A-29 c

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-1
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/31/14 to 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 SURFACE ELEVATION (feet)** 418	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Total Depth: 60 Ft Groundwater: Encountered at 30 Ft Boring backfilled with tamped soil cuttings and asphalt patched.				
	355												
65													
	350												
70													
	345												
75													
	340												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

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FIGURE A-29 d

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-2
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/30/14 to 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 SURFACE ELEVATION (feet)** 415	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									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	410												
			1						**Older Alluvium (Qoal)** **Clayey SAND**, 7.5 YR 5/6 (Strong Brown) with grayish mottling, moist, fine sand.				
									-Trace fine gravel				
10	405												
			2						-Polished surfaces **Sandy CLAY**, 5 YR 4/6 (Yellowish Red), dry to moist, fine sand.				
15	400								**Caliche** ,10 YR 7/6 (Yellow), layers of well deveoped carbonate.				
			3										
									Modelo Formation (Tm)				

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FIGURE A-30 a

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** **B-2**
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/30/14 to 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 SURFACE ELEVATION (feet)** 415	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
			4						**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. **Sandstone**, 7.5 YR 6/8 (Reddish Yellow), moist to wet, mostly fine to medium sand, with some carbonate infilling in joints.				
25	390		5						-Layer of Clayey Sandstone, 7.5 YR 5/8 with carbonate infilling -Wet, 7.5 YR 5/6 (Strong Brown) -Mottled 10 YR 6/8 (Brownish Yellow) and 10 YR 8/1 (White)				
30	385		6						**Clayey Sandstone**, 7.5 YR 5/8 (Strong Brown), wet, fine to medium sand, minor white mottling. **Sandstone**, mottled 7.5 YR 8/1 (White) and 7.5 YR 5/8 (Strong Brown), wet, fine to medium sand.				
35	380		7						-Becomes 10 YR 6/6 (Brownish Yellow) -Layer of Clayey Sandstone, 7.5 YR 6/8 (Reddish Yellow), carbonate infilling of fractures.				

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FIGURE A-30 b

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-2
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/30/14 to 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 SURFACE ELEVATION (feet)** 415	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
			8						**Sandy Claystone**, mottled 7.5 YR 8/1 (White) and 7.5 YR 5/8 (Strong Brown), wet, fine sand.				
45	370												
			9						**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	365												
									Conglomerate Bed				
			10						**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	360												
			11						-Sand lense with carbonate infilled fracture				

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

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FIGURE A-30 c

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-2
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/30/14 to 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 SURFACE ELEVATION (feet)** 415	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Total Depth: 60 Ft Groundwater: Encountered at 27 Ft Boring backfilled with tamped cuttigns and asphalt patched.				
65	350												
70	345												
75	340												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

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FIGURE A-30 d

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-3
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/30/14 to 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 SURFACE ELEVATION (feet)** 414	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									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.				
	410												
5													
									Older Alluvium (Qoal) **Silty SAND**, 7.5 YR 5/8 (Strong Brown), moist, mostly fine sand. **Clayey SAND**, 7.5 YR 5/8 (Strong Brown), moist, mostly fine sand, trace fine gravel.				
			1										
	405												
10													
			2						-Few medium sand and trace coarse sand				
	400								**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													
			3						-Carbonate infilled fractures				
	395												

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FIGURE A-31 a

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-3
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/30/14 to 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 SURFACE ELEVATION (feet)** 414	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
			4						-Coarsening sand, carbonate infilling fractures				
	390								**Modelo Formation (Tm)**				
25			5						**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. **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.				
	385								**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.				
30			6						**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. **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.				
	380												
35			7						-Sandstone Layer				
	375								**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 A-31 b

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-3
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/30/14 to 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 SURFACE ELEVATION (feet)** 414	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
			8						-Well cemented zone				
	370												
45													
			9										
	365												
50													
			10										
	360												
55													
			11						-Gravel and Cobble Layer				
	355												

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FIGURE A-31 c

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-3
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/30/14 to 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 SURFACE ELEVATION (feet)** 414	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Total Depth: 60 Ft Groundwater: Encountered at 28 Ft Boring backfilled with tamped cuttings and asphalt patched.				
	350												
65													
	345												
70													
	340												
75													
	335												

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FIGURE A-31 d

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-4
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/29/14 to 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 Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 413	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/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.				
	410												
5									**Clayey SAND** 7.5 YR 4/6 (Strong Brown), moist, medium to coarse sand, some fine sand, few fine to coarse gravel, trace cobbles.				
			1										
	405												
									Older Alluvium (Qoal)				
10									**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.				
			2						**Clayey SAND**, 7.5 YR 5/8 (Strong Brown), moist, medium to coarse sand, some fine sand, trace fine gravel.				
	400												
15									-No recovery				
			3										
	395												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

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FIGURE A-32 a

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-4
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/29/14 to 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 SURFACE ELEVATION (feet)** 413	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Modelo Formation (Tm)				
									Sandy Claystone to Clayey Sandstone 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.				
	390		4										
25													
	385		5										
30													
									-Thin layer of Sandstone, wet, medium to coarse sand				
	380		6										
35													
									-Very hard drilling Total Depth: Refusal at 36 ft Groundwater: Encountered at 31 Ft Boring backfilled with tamped cuttings and concrete patched.				
	375		7										

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FIGURE A-32 b

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-4A
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/31/14 to 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 SURFACE ELEVATION (feet)** 413	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/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.				
	410												
5									**Older Alluvium (Qoal)**				
			1						**Clayey SAND**7.5 YR 4/6 (Strong Brown), moist, mostly medium to coarse sand, some fine sand, few fine to coarse gravel, trace cobbles.				
	405												
10									**Clayey SAND**, 7.5 YR 5/8 (Strong Brown), moist, mostly fine to medium sand, few coarse sand, trace fine gravel, trace cobbles.				
			2										
	400												
15									-Becomes 7.5 YR 4/4 (Reddish Brown)				
			3										
	395								**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.				

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FIGURE A-33 a

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** **B-4A**
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/31/14 to 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 SURFACE ELEVATION (feet)** 413	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
	390		4						-5 YR 4/4 (Reddish Brown) and 5 YR 6/1 (Gray), with white carbonate infilling.				
25													
	385		5										
30									Ground Water @ 31 ft.				
	380		6										
35									-Mottled 10 YR 6/6 (Brownish Yellow) and 10 YR 7/1 (Light Gray), abundant carbonate infilling				
	375		7						**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 11/3/14

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FIGURE A-33 b

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-4A
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/31/14 to 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 SURFACE ELEVATION (feet)** 413	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Modelo Formation (TM) cont..				
	370		8										
45													
	365		9										
50													
	360		10										
55													
	355		11										

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FIGURE A-33 c

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-4A
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/31/14 to 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 SURFACE ELEVATION (feet)** 413	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Total Depth: 60 Ft Groundwater: Encountered at 31 Ft Boring backfilled with tamped cuttings and asphalt patched.				
	350												
65													
	345												
70													
	340												
75													
	335												

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FIGURE A-33 d

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-5
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/29/14 to 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 SURFACE ELEVATION (feet)** 410	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									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	405								**Older Alluvium (Qoal)** **Clayey SAND**, 7.5 YR 4/6 (Strong Brown), moist, mostly fine to medium sand, some coarse sand, some fine gravel.				
			1										
10	400												
			2						**Sandy SILT**, mottled 10 YR 7/3 (Pale Brown), and 7.5 YR 5/8 (Strong Brown), moist, mostly fine sand, trace fine gravel.				
									Clayey SAND, 7.5 YR 4/6 (Strong Brown), moist, mostly fine to medium sand, some cobbles and gravel.				
15	395								**SAND**, 7.5 YR 5/8 (Strong Brown), moist, mostly medium to coarse sand, few fine gravel, trace cobbles.				
			3						**Silty SAND**, 7.5 YR 4/6 (Yellowish Brown), moist, mostly fine sand, trace fine gravel.				

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FIGURE A-34 a

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** **B-5**
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/29/14 to 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 SURFACE ELEVATION (feet)** 410	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
			4										
25	385												
			5										
30	380												
			6										
35	375								**Buried Paleosol**, Mottled 5YR 3/3 (Dark Reddish Brown) to 5YR 6/1 (Gray).				
			7										

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FIGURE A-34 b

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-5
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/29/14 to 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 SURFACE ELEVATION (feet)** 410	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
			8										
45	365								**Clayey Sand**, 5 YR 5/6 (Yellowish Brown), moist, mostly fine to medium sand, few coarse sand, trace fine gravel. Ground water @ 45 ft.				
			9						-Mottled 5YR 5/6 (Yellowish Brown) to 5YR 6/1 (Gray)				
50	360								**Sand**, 7.5 YR 6/2 (Strong Brown), wet, mostly medium to coarse sand, some fine sand, few fine gravel.				
			10						**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	355								**Sand** 5YR 5/6 (Yellowish Brown), wet, mostly medium to coarse sand, some fine sand, few fine gravel.				
			11						**Modelo Formation (Tm)** **Sandy Claystone** 5YR 4/4 (Reddish Brown), wet, mostly fine sand, some fines.				

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

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FIGURE A-34 c

LOG OF CORE BORING

PROJECT NAME Yucca & Agryle Fault Investigation		**PROJECT NUMBER**	**BORING** B-5
SITE LOCATION Yucca and Argyle, Hollywood, Ca	**DATE(S) DRILLED** 1/29/14 to 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 Marl M12	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0	
APPARENT GROUNDWATER DEPTH None encountered		**APPROXIMATE SURFACE ELEVATION (feet)** 410	
COMMENTS		**BOREHOLE BACKFILL** Soil Cuttings	

DEPTH (ft)	ELEVATION (ft)	SOIL CORE: RUN NO.	BOX NO.	RECOVERY, %	FRAC. FREQ.	R.Q.D., %	FRACTURE DRAWING/ NUMBER	LITHOLOGY	MATERIAL DESCRIPTION	PACKER TESTS	LABORATORY TESTS	DRILL RATE, METERS/HOUR	FIELD NOTES
									Total Depth: 60 Ft Groundwater: Encountered at 45 Ft Boring backfilled with tamped cuttings and asphalt patched.				
65	345												
70	340												
75	335												

GDC_ROCK_CORE_ENG LA-1183 CORE LOGS.GPJ ROCK2.GDT 11/3/14

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FIGURE A-34 d

FAULT ACTIVITY INVESTIGATION 6230 YUCCA STREET, SW CORNER OF YUCCA STREET AND ARGYLE AVENUE HOLLYWOOD AREA, CITY OF LOS ANGELES, CALIFORNIA, CPT and BORING LOGS.

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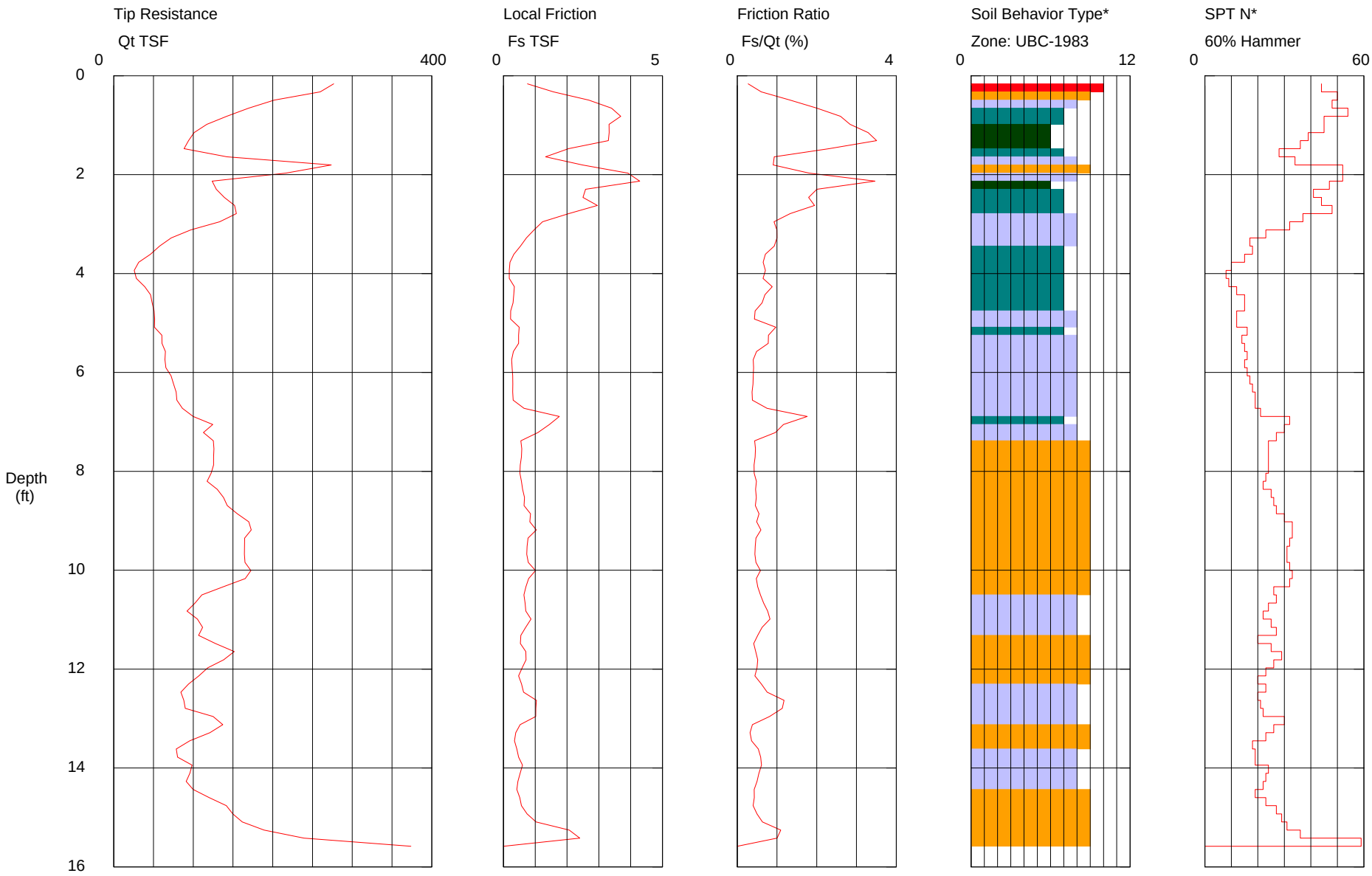
Appendix A-1 *

Operator: SA-RA
Sounding: CPT-01 *
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 8:11:11 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 15.58 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

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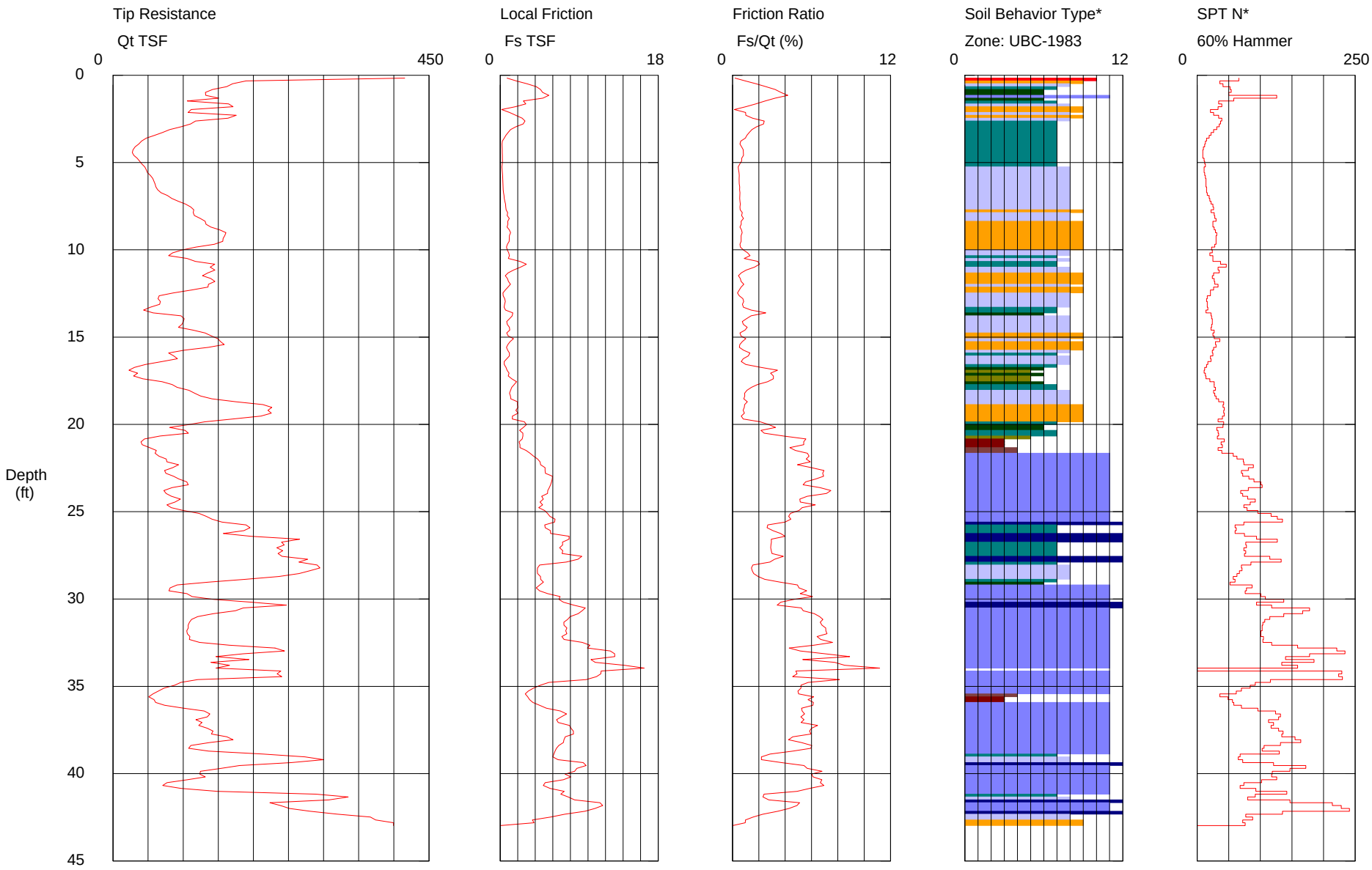
Appendix A-2 *

Operator: SA-RA
Sounding: CPT-01A *
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 9:27:58 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 42.98 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

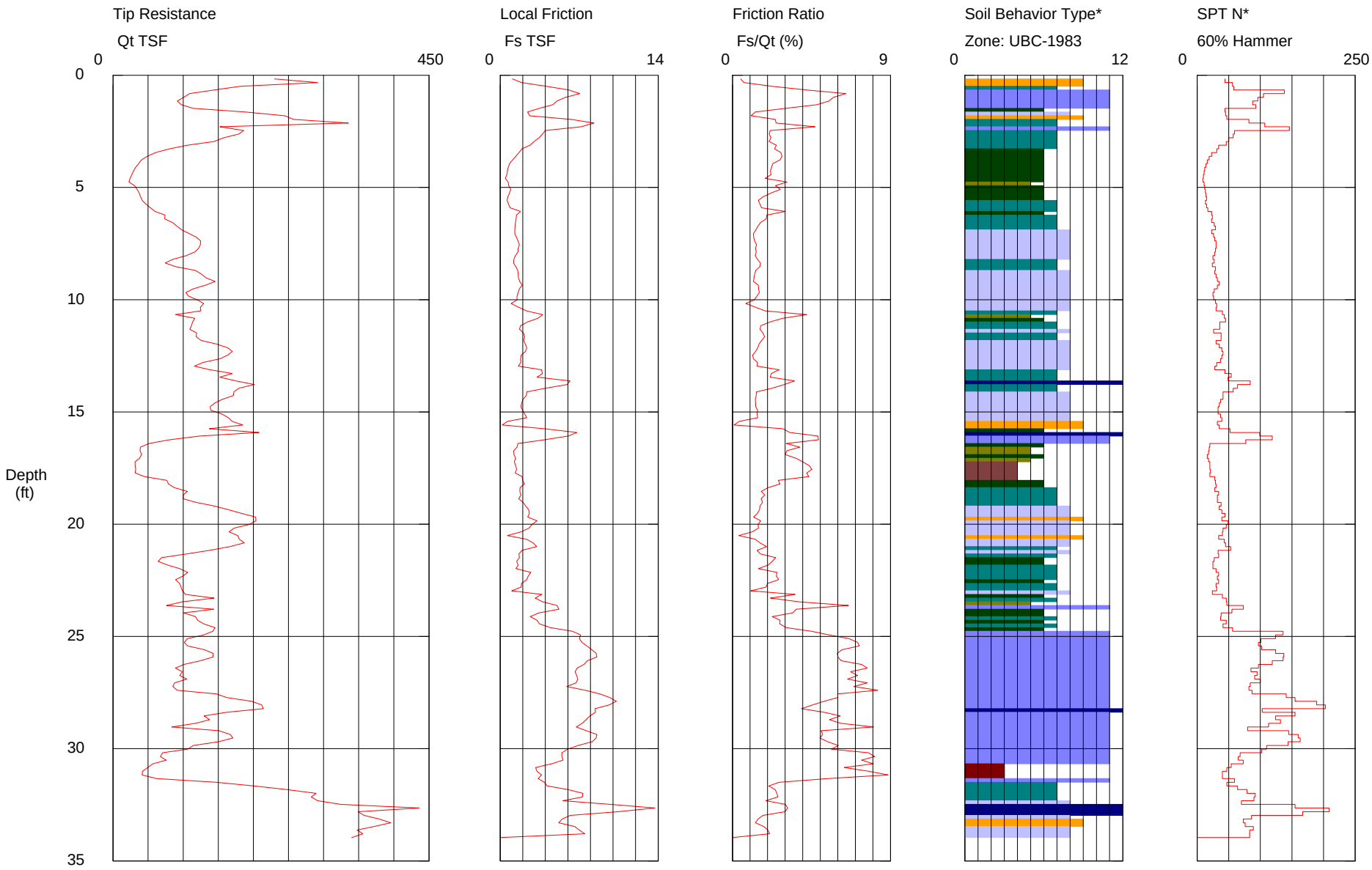
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-3 *

Operator: SA-RA
Sounding: CPT-01b*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 3:53:44 PM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 33.96 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

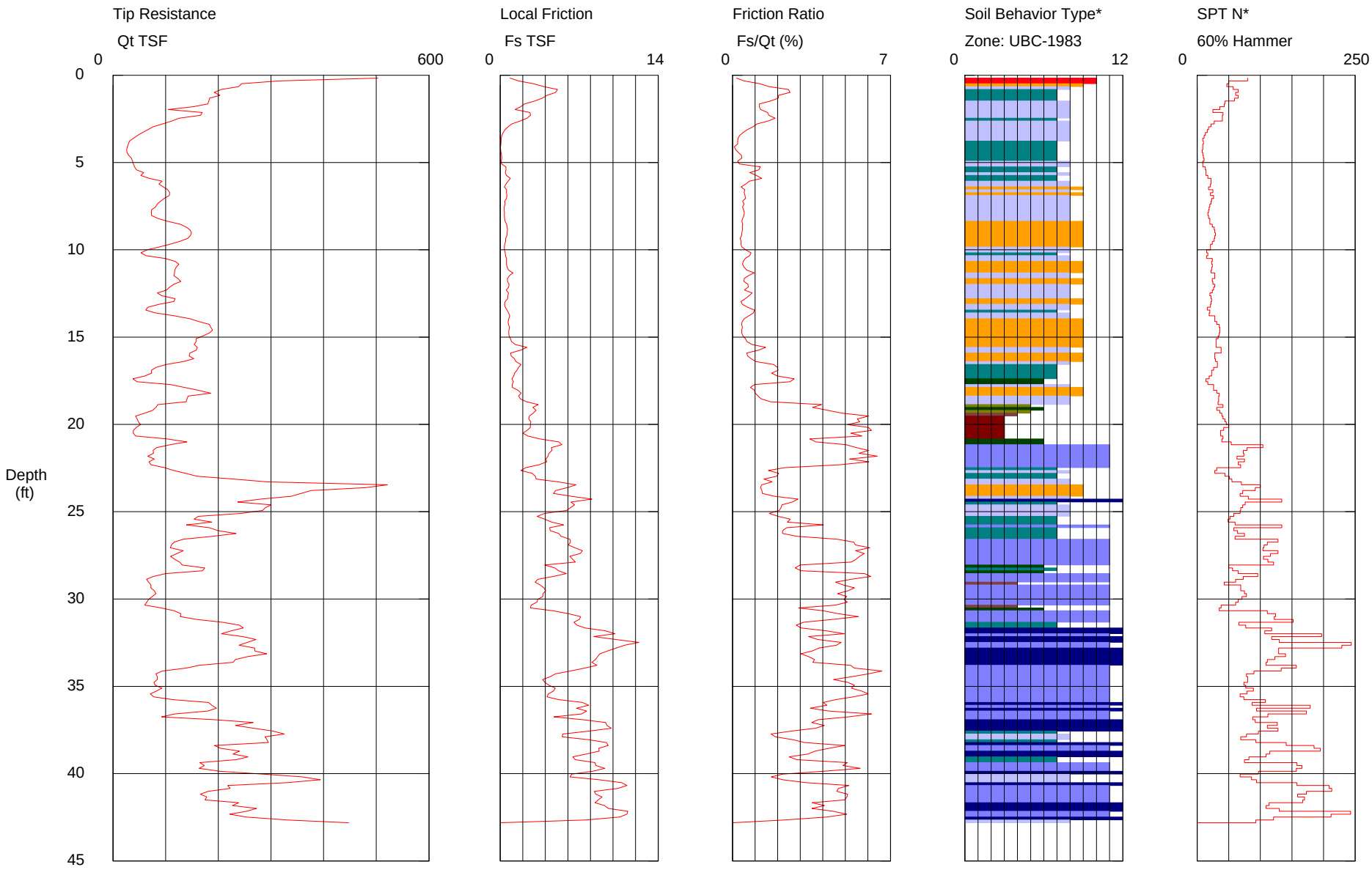
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-4 *

Operator: SA-RA
Sounding: CPT-02*
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 8:34:23 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 42.81 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

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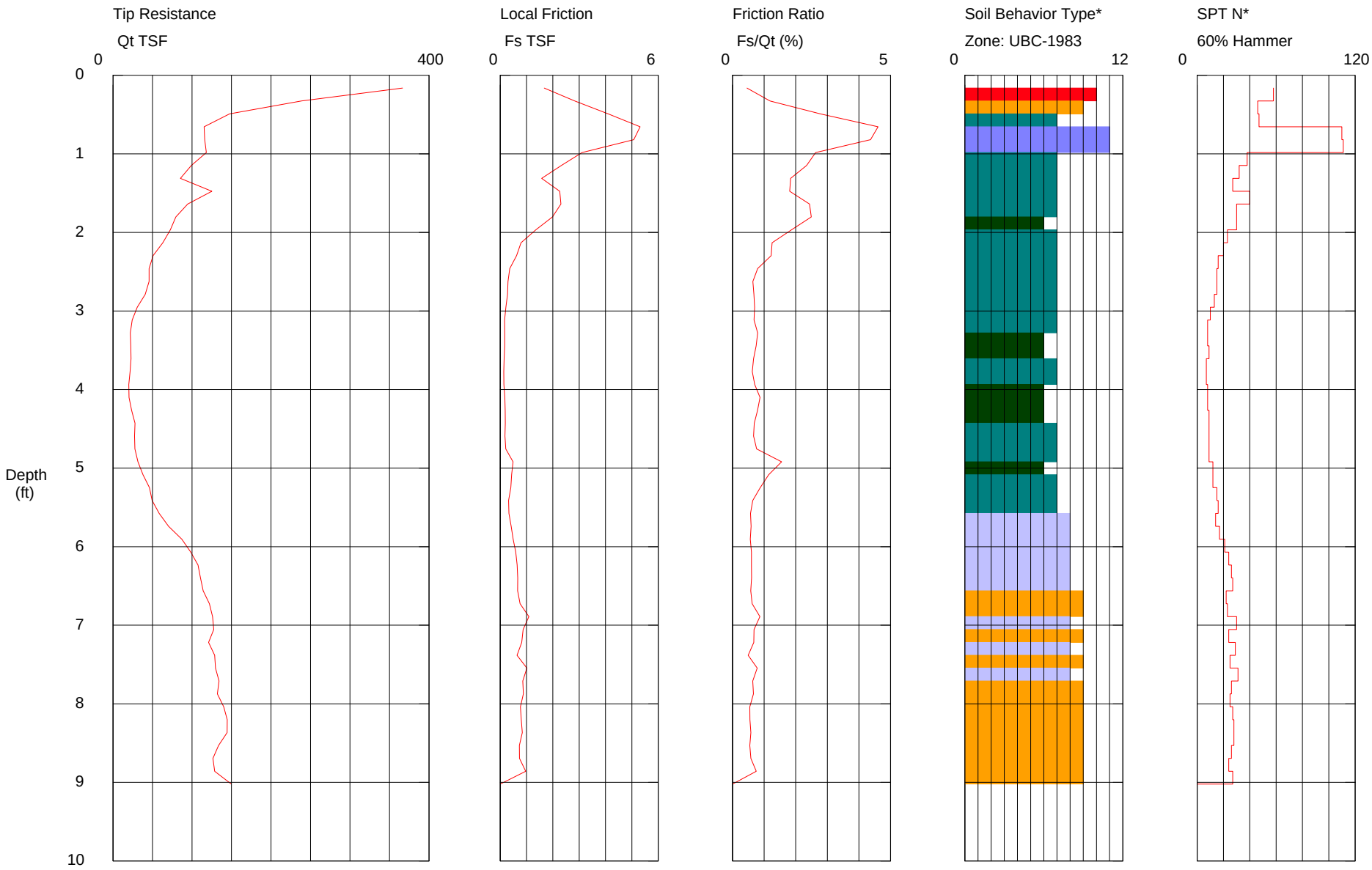
Appendix A-5 *

Operator: SA-RA
Sounding: CPT-03*
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 9:12:06 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 9.02 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

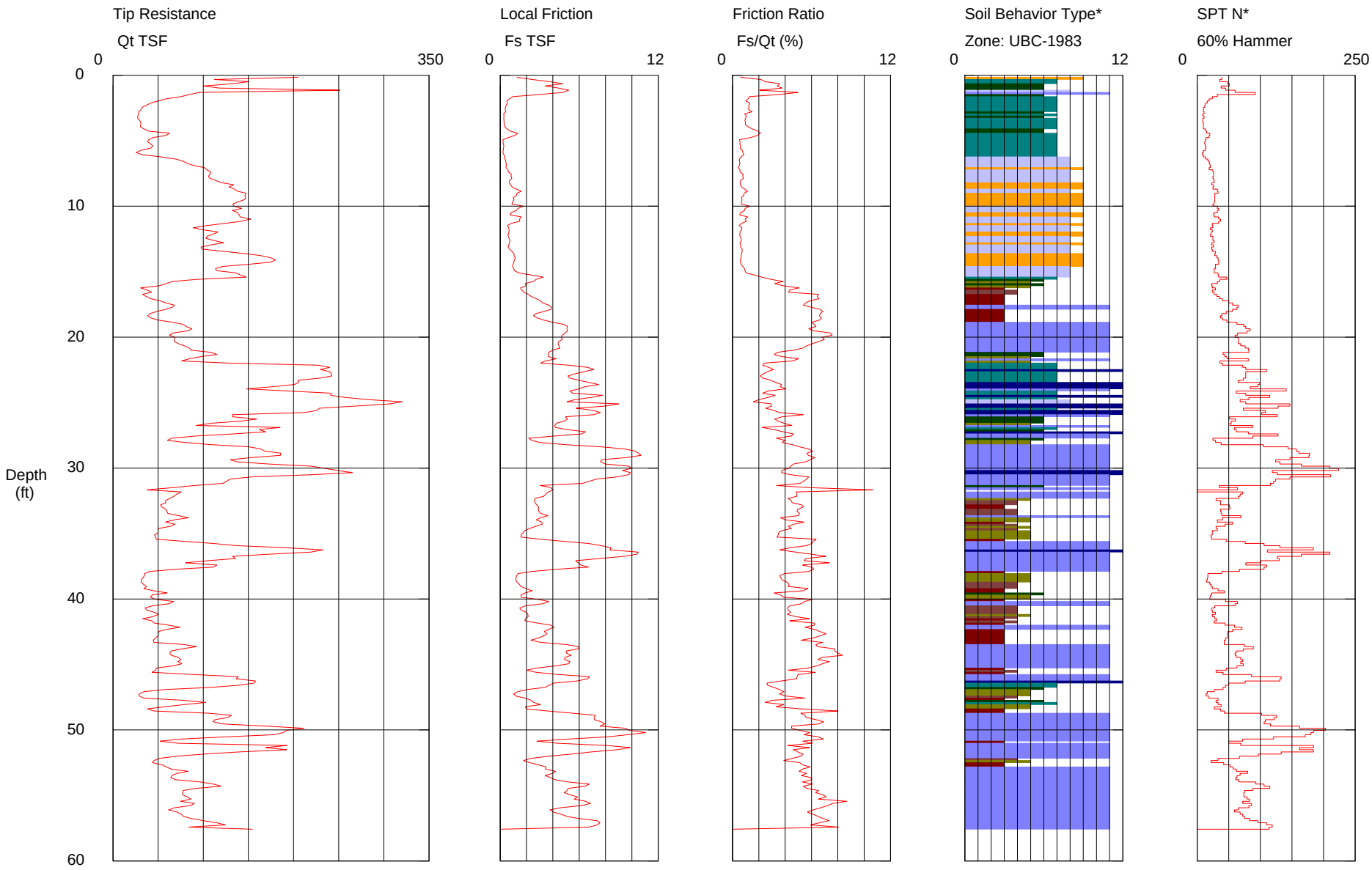
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-6 *

Operator: SA-RA
Sounding: CPT-03a*
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 10:23:37 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 57.58 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

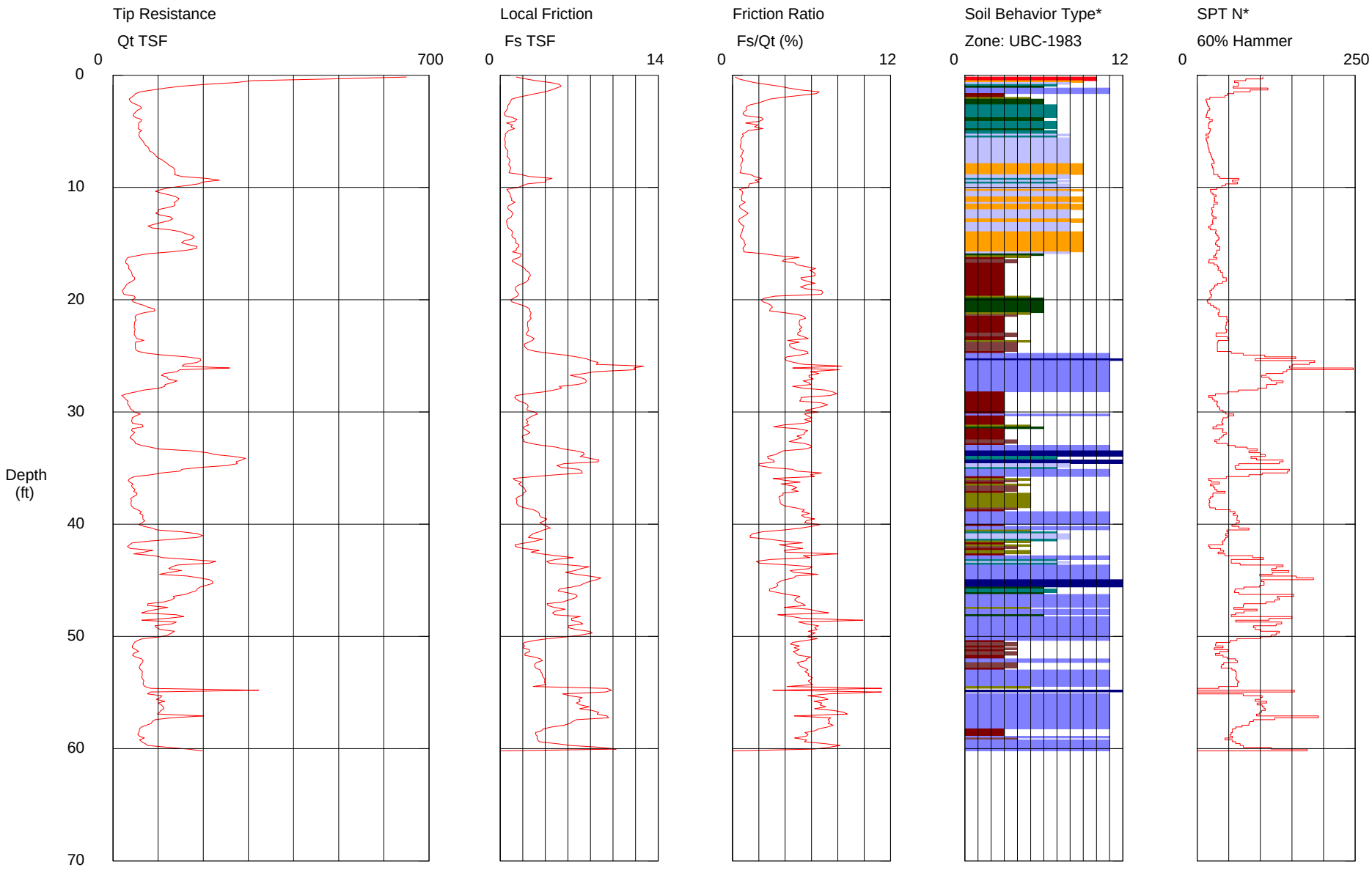
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-7 *

Operator: SA-RA
Sounding: CPT-04*
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 11:12:33 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 60.20 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

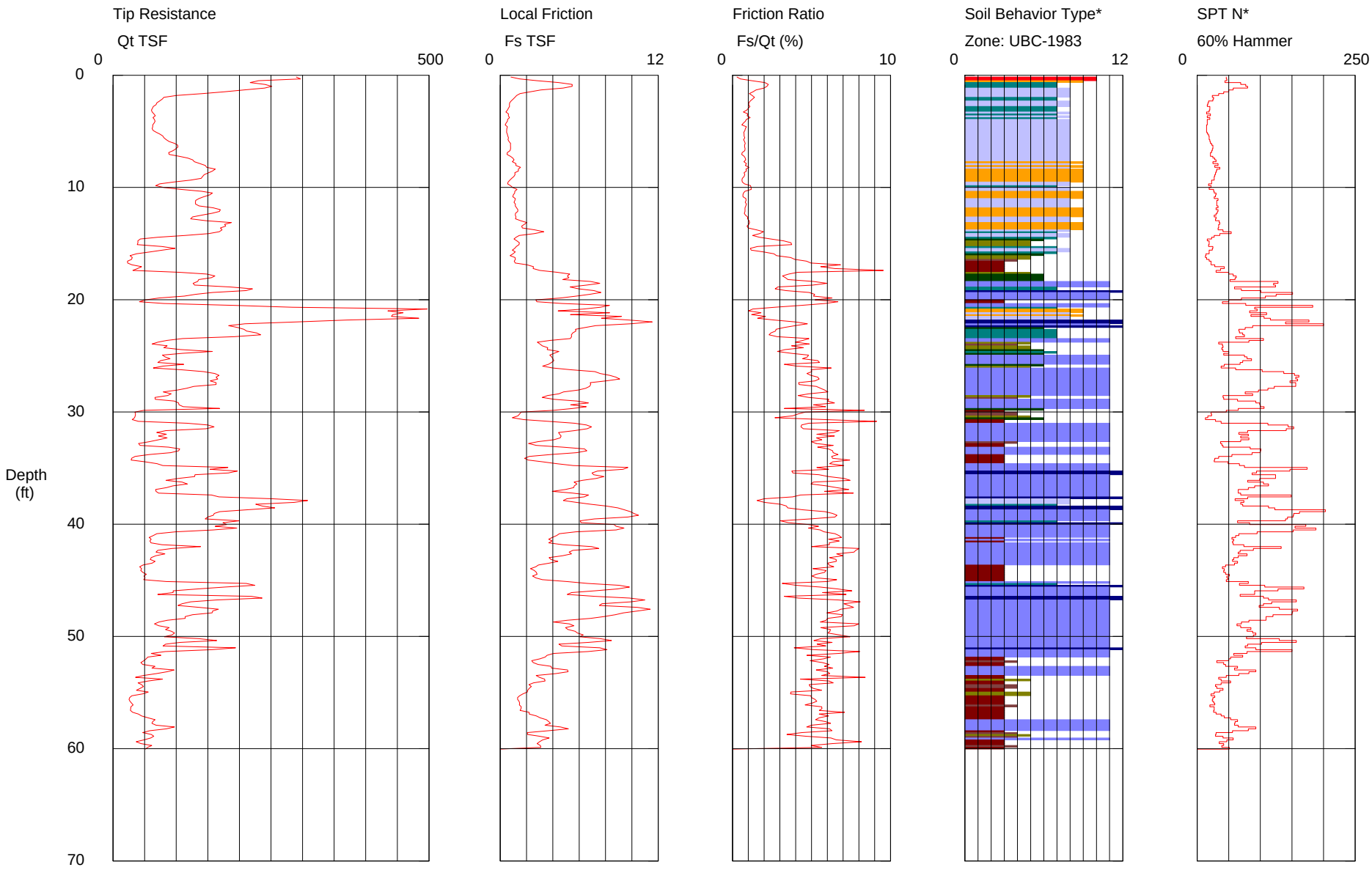
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-8 *

Operator: SA-RA
Sounding: CPT-05*
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 12:11:51 PM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 60.04 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

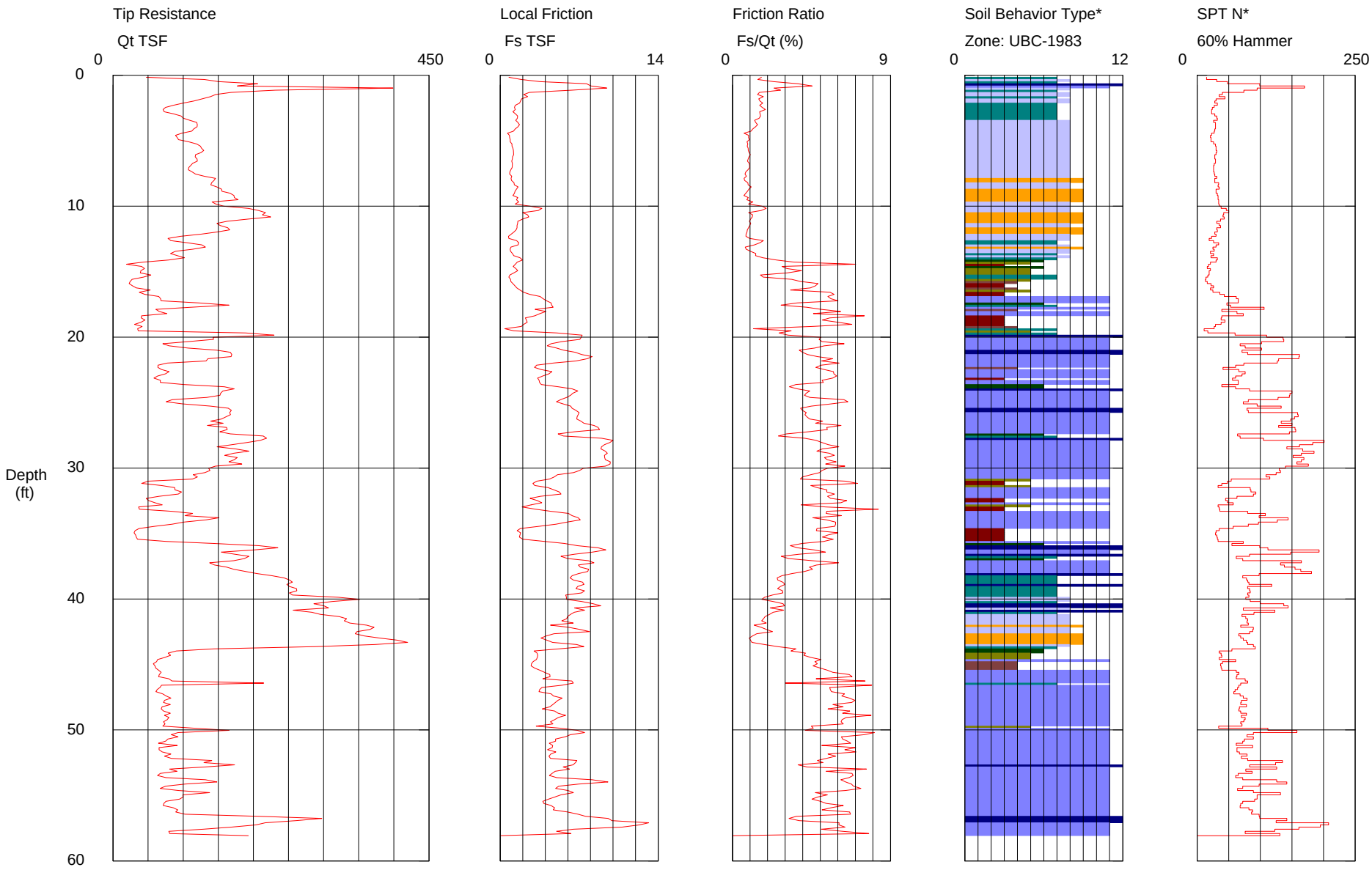
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-9 *

Operator: SA-RA
Sounding: CPT-06*
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 1:31:39 PM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 58.07 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

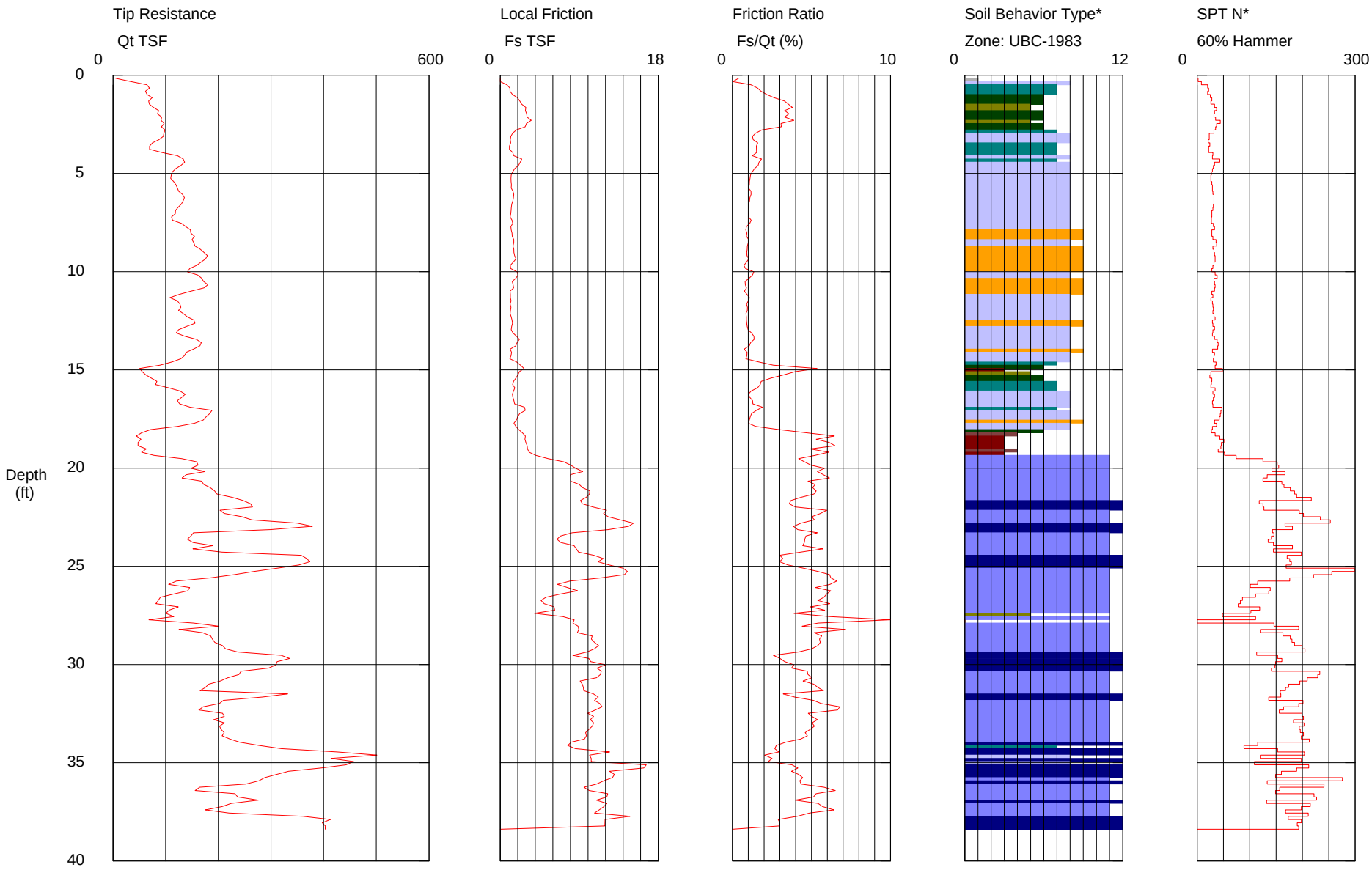
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-10 *

Operator: SA-RA
Sounding: CPT-07*
Cone Used: DSG1104

CPT Date/Time: 10/21/2013 2:32:23 PM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 38.39 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

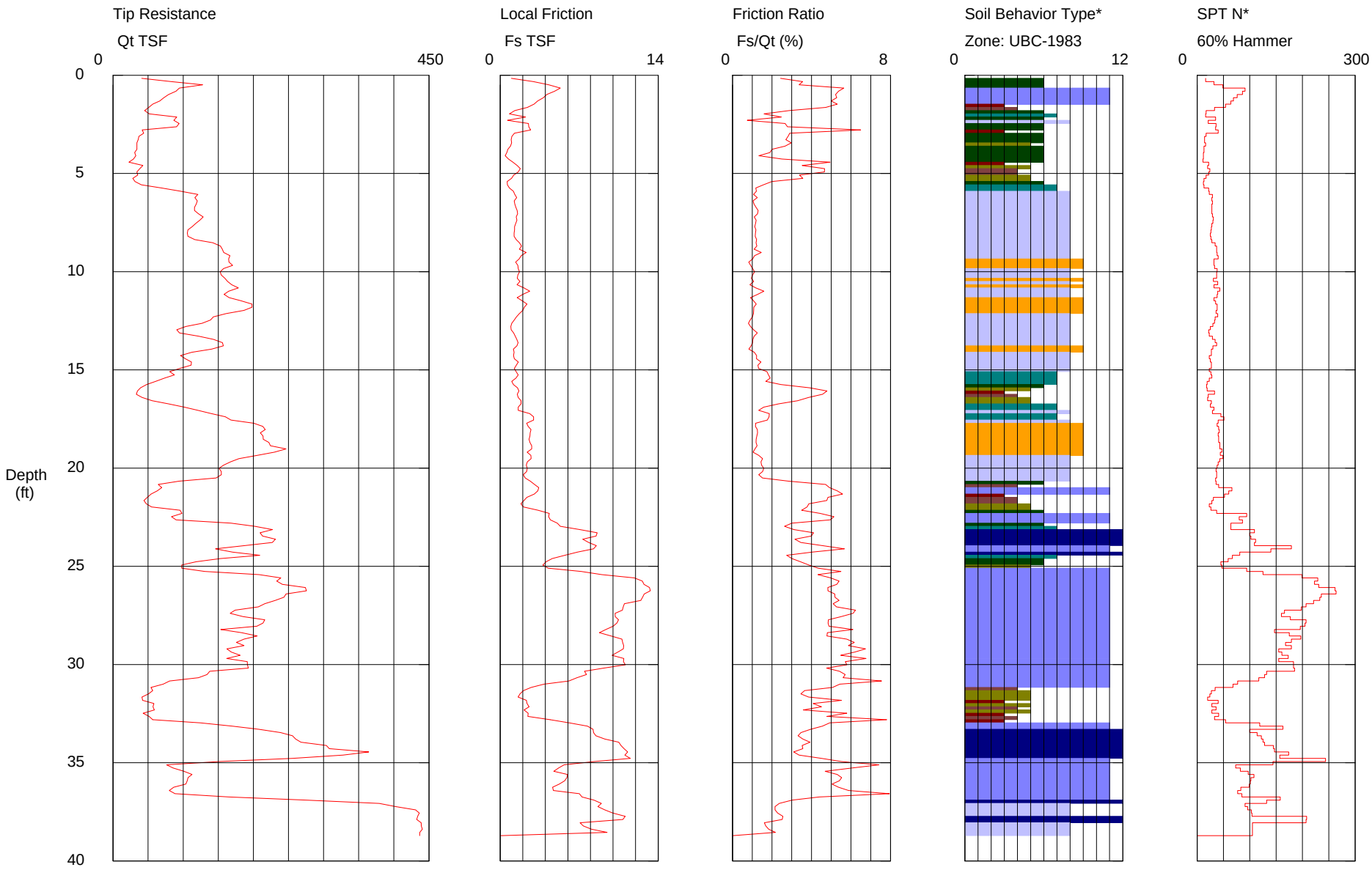
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-11 *

Operator: SA-RA
Sounding: CPT-08*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 7:23:38 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 38.71 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

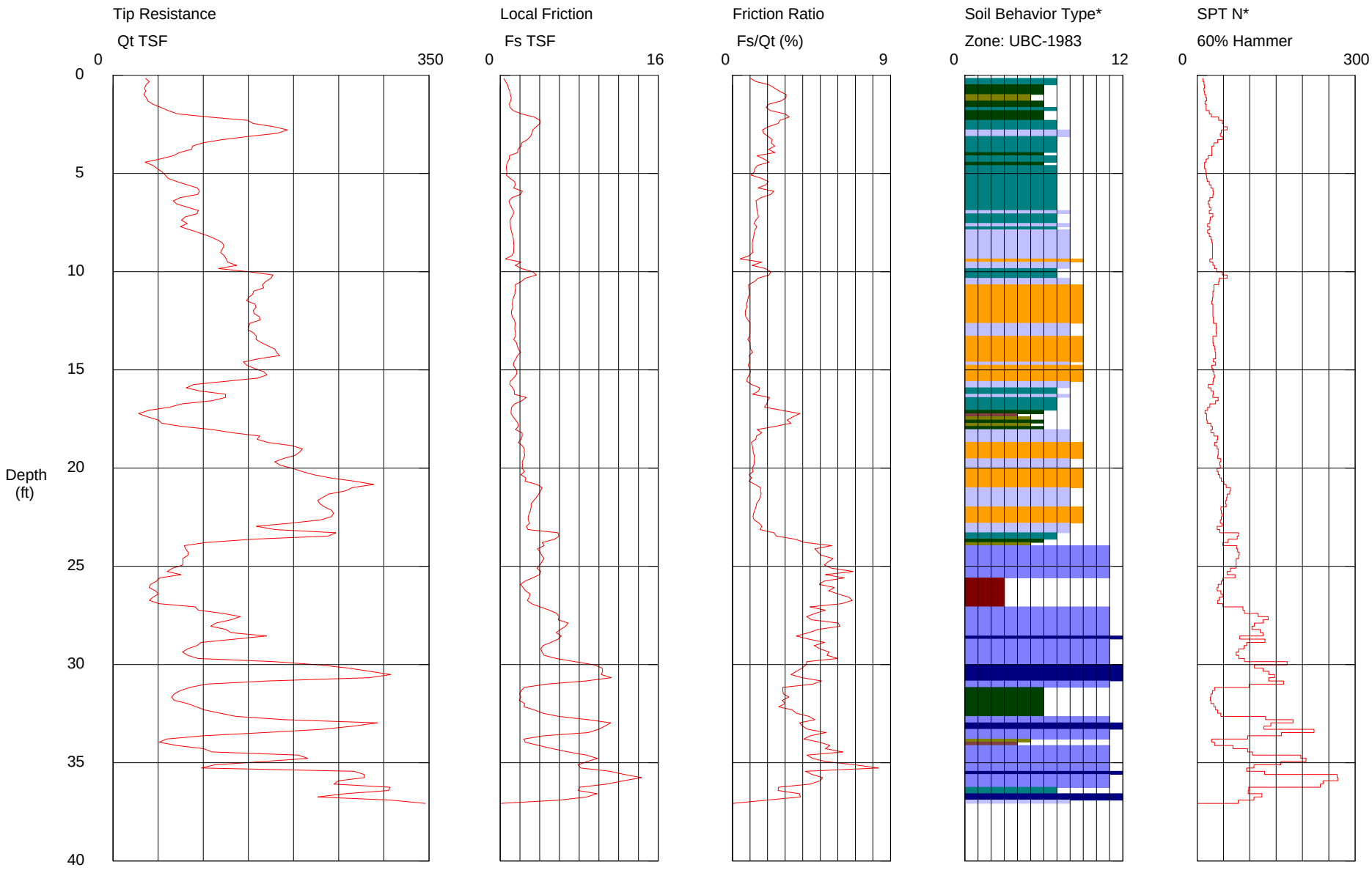
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-12 *

Operator: SA-RA
Sounding: CPT-09*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 8:25:25 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 37.07 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

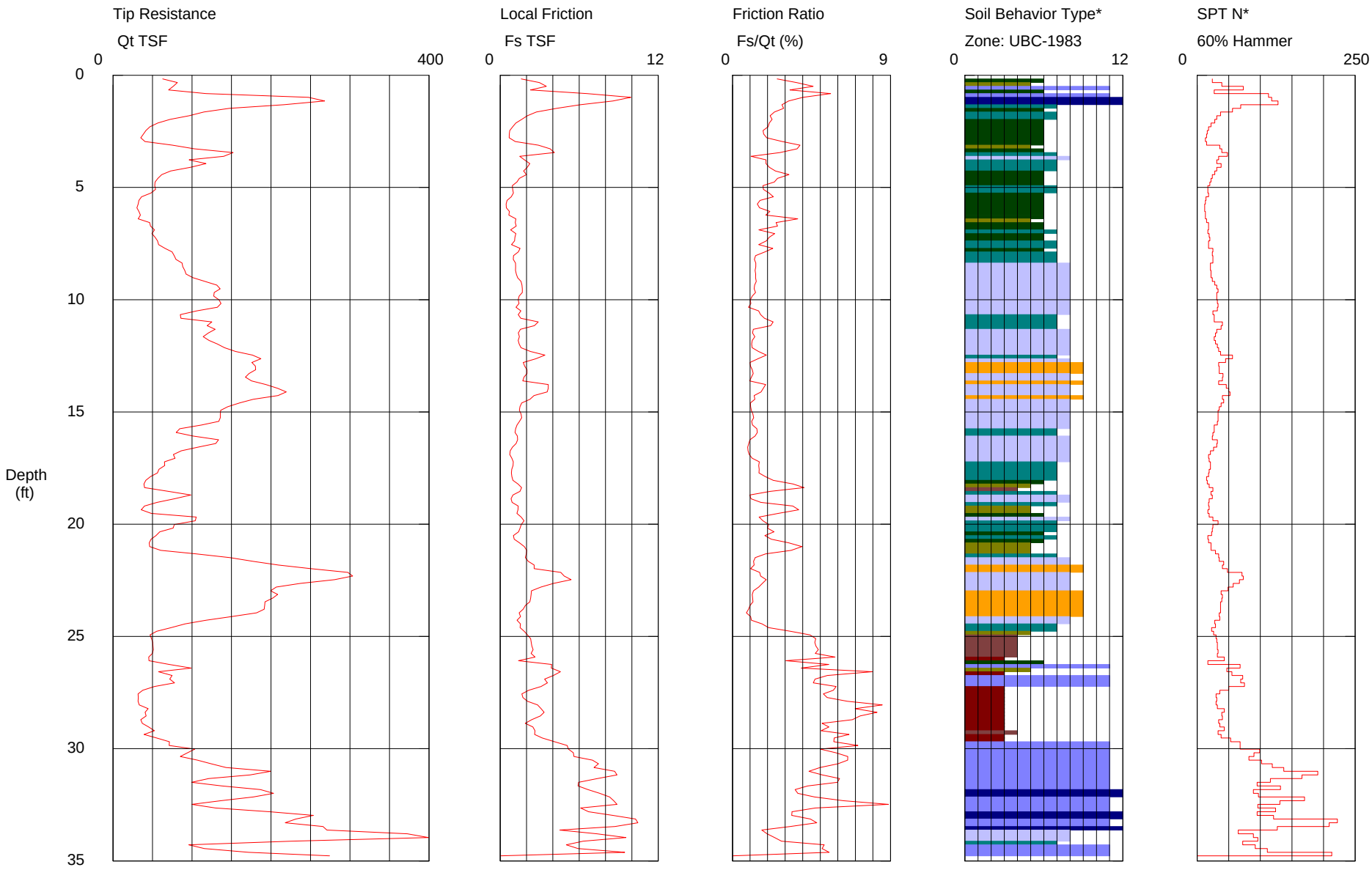
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-13 *

Operator: SA-RA
Sounding: CPT-10*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 9:00:01 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 34.78 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

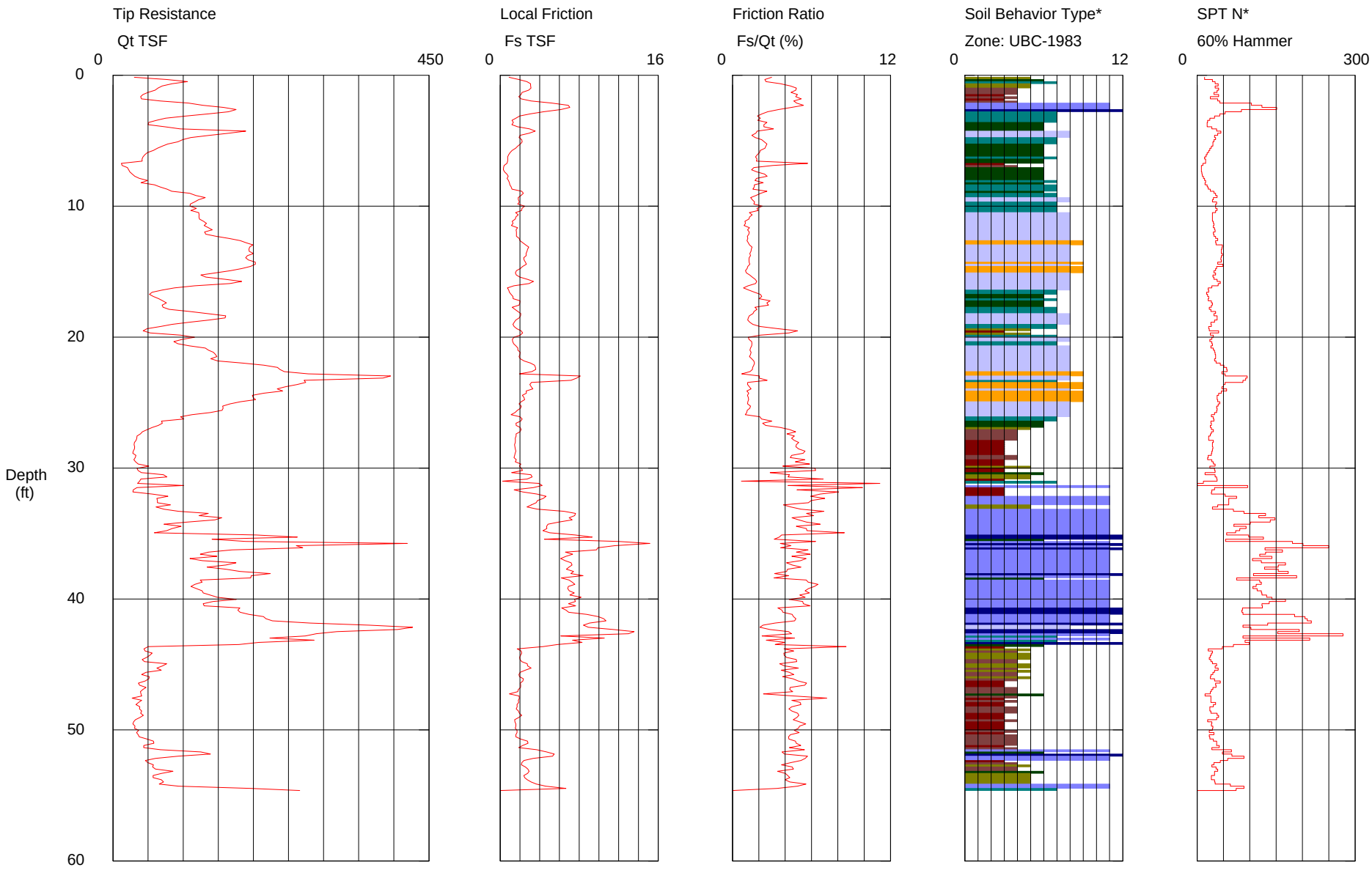
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-14 *

Operator: SA-RA
Sounding: CPT-11*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 9:34:03 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 54.63 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

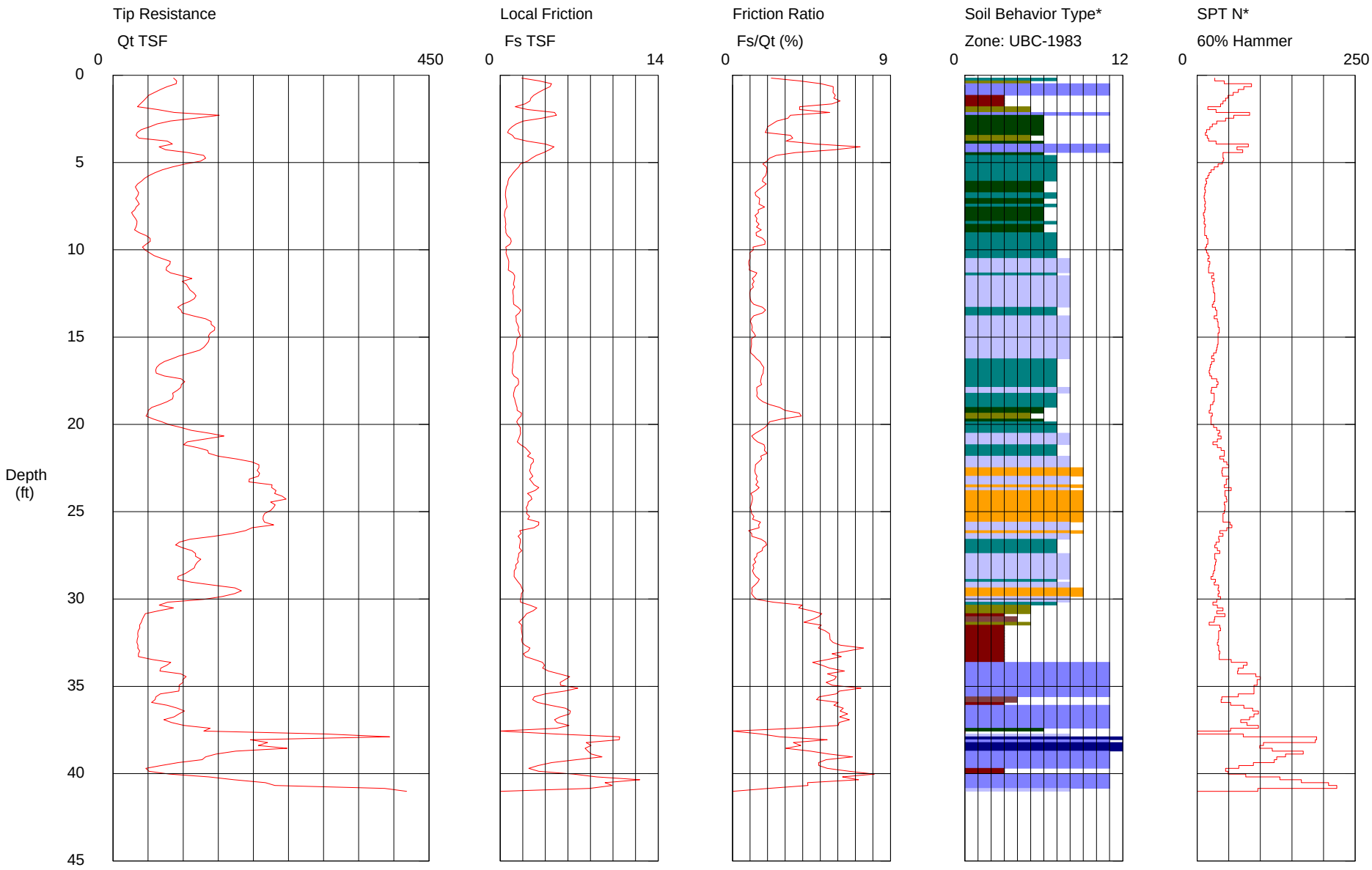
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-15 *

Operator: SA-RA
Sounding: CPT-12*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 10:16:04 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 41.01 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

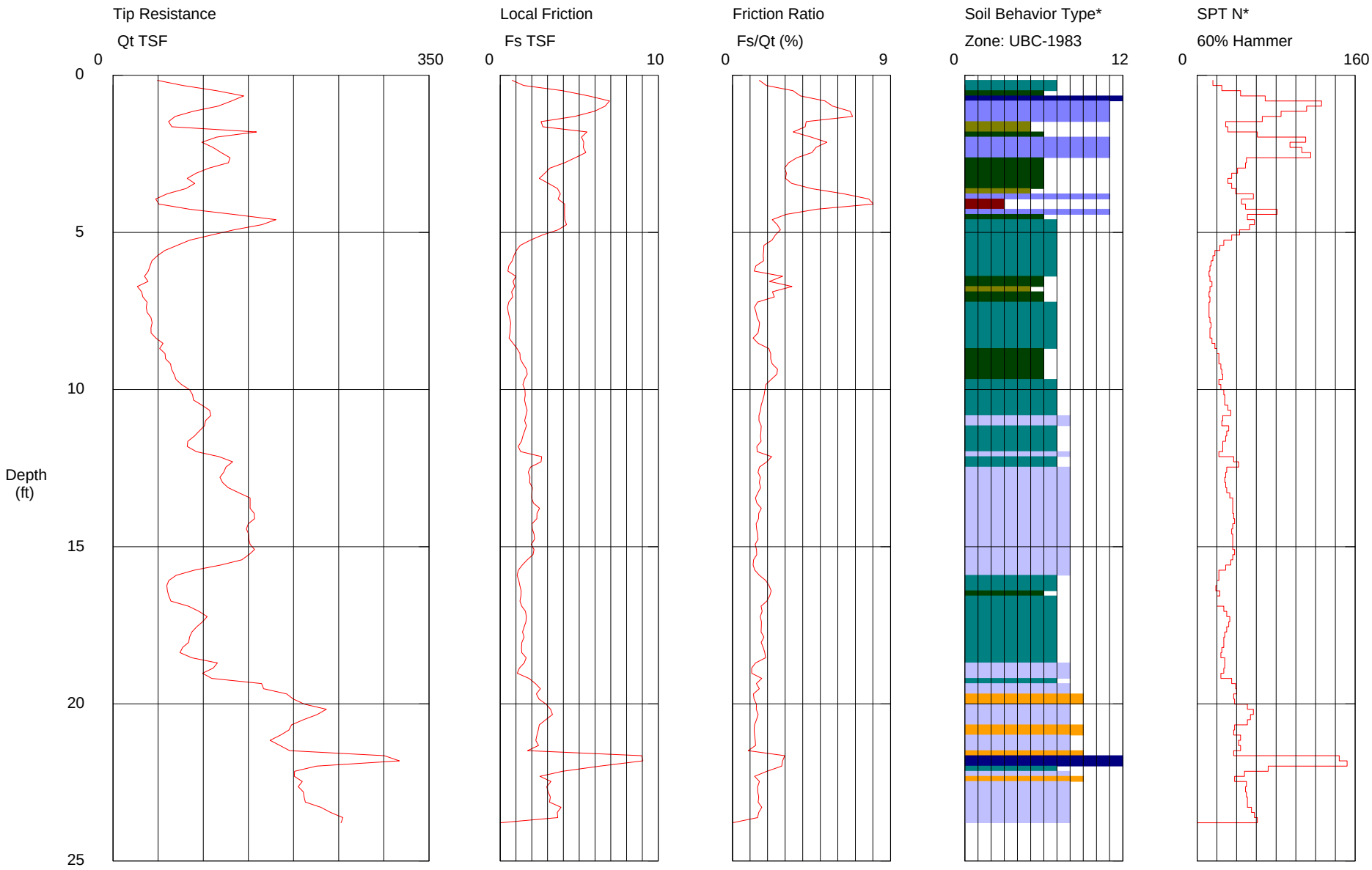
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-16 *

Operator: SA-RA
Sounding: CPT-13*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 10:50:40 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 23.79 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

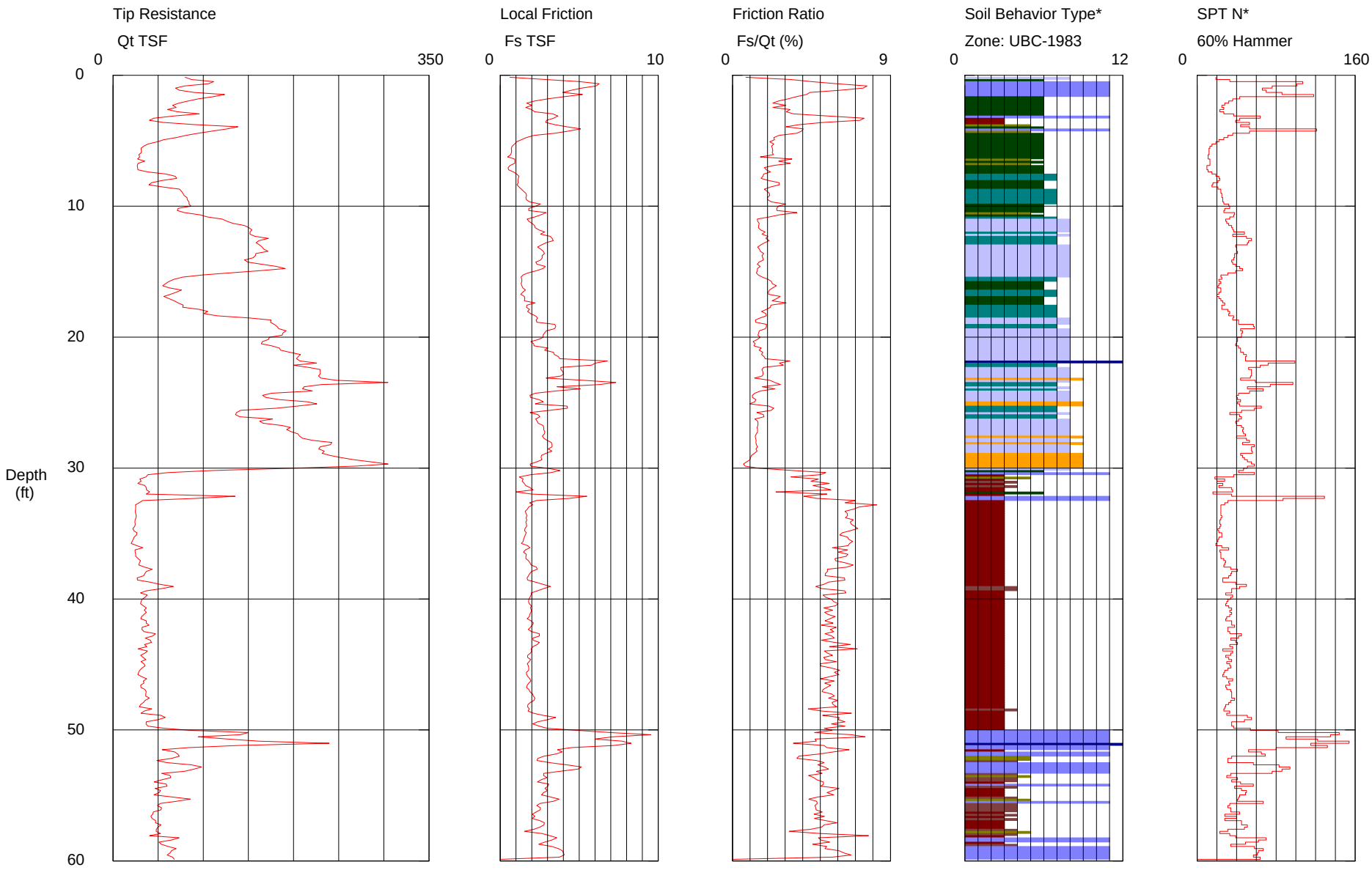
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-17 *

Operator: SA-RA
Sounding: CPT-13a*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 3:00:14 PM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 59.88 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

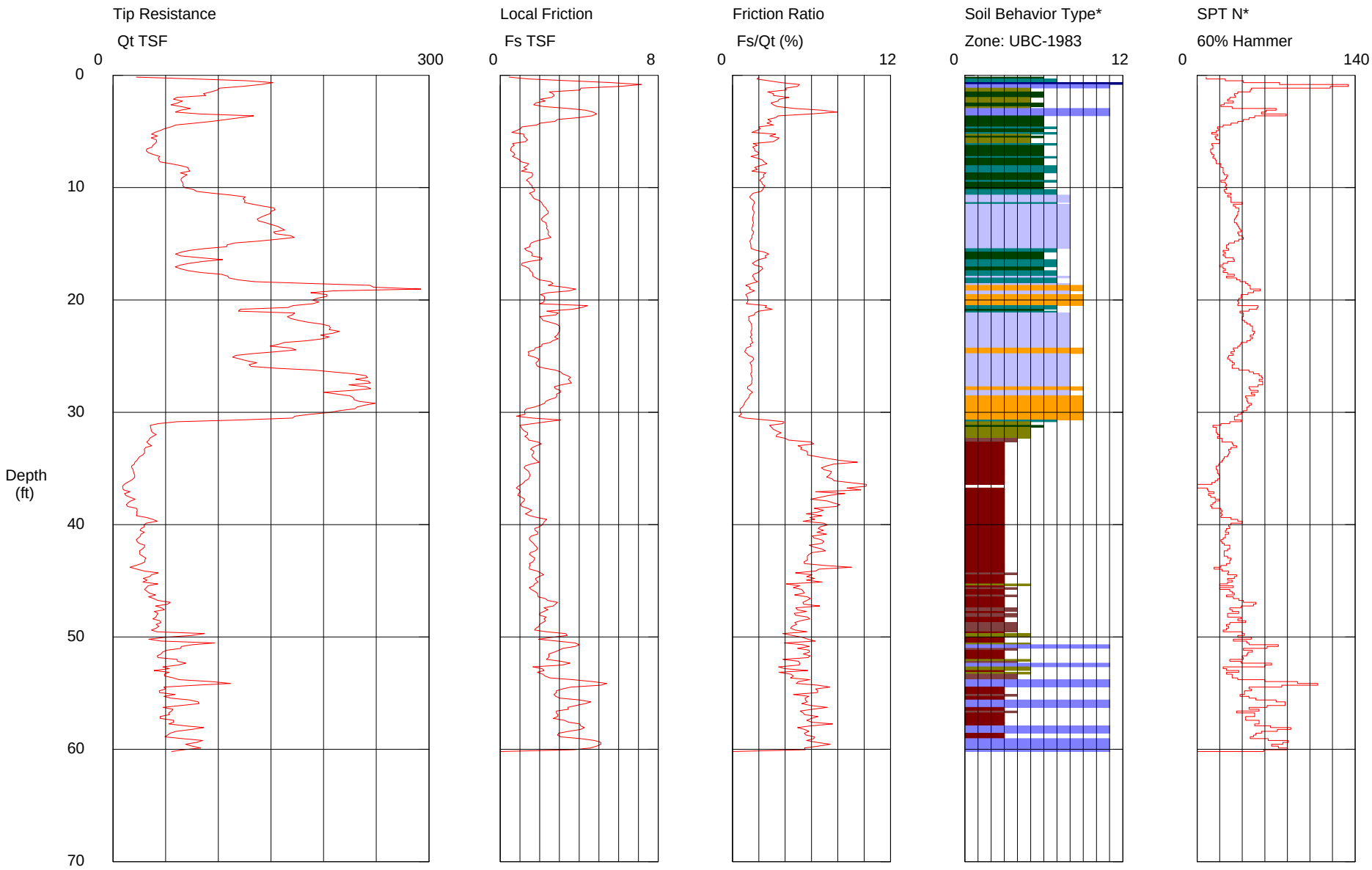
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-18 *

Operator: SA-RA
Sounding: CPT-14*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 11:18:28 AM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 60.20 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

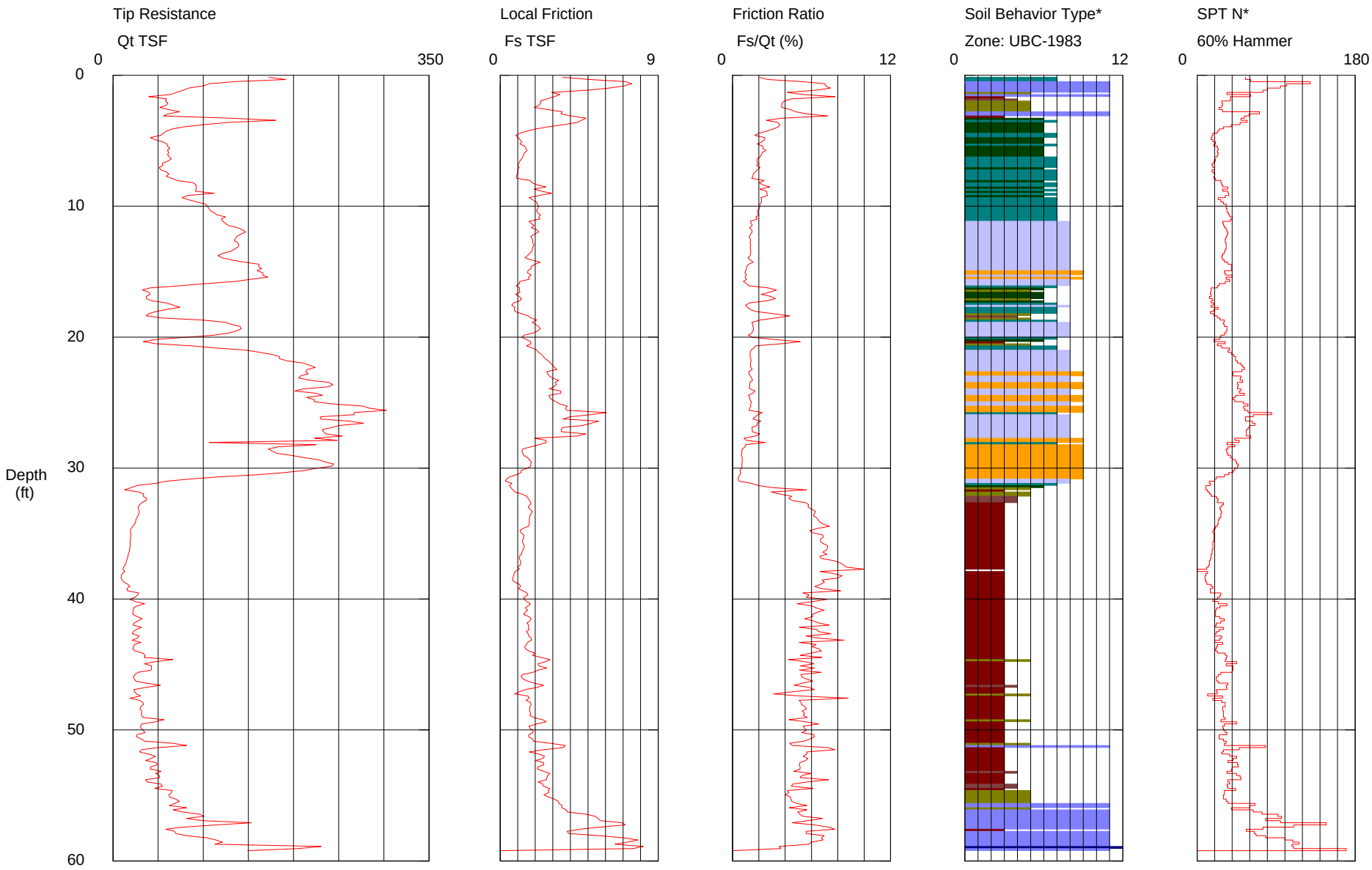
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-19 *

Operator: SA-RA
Sounding: CPT-15*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 12:36:31 PM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 59.22 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

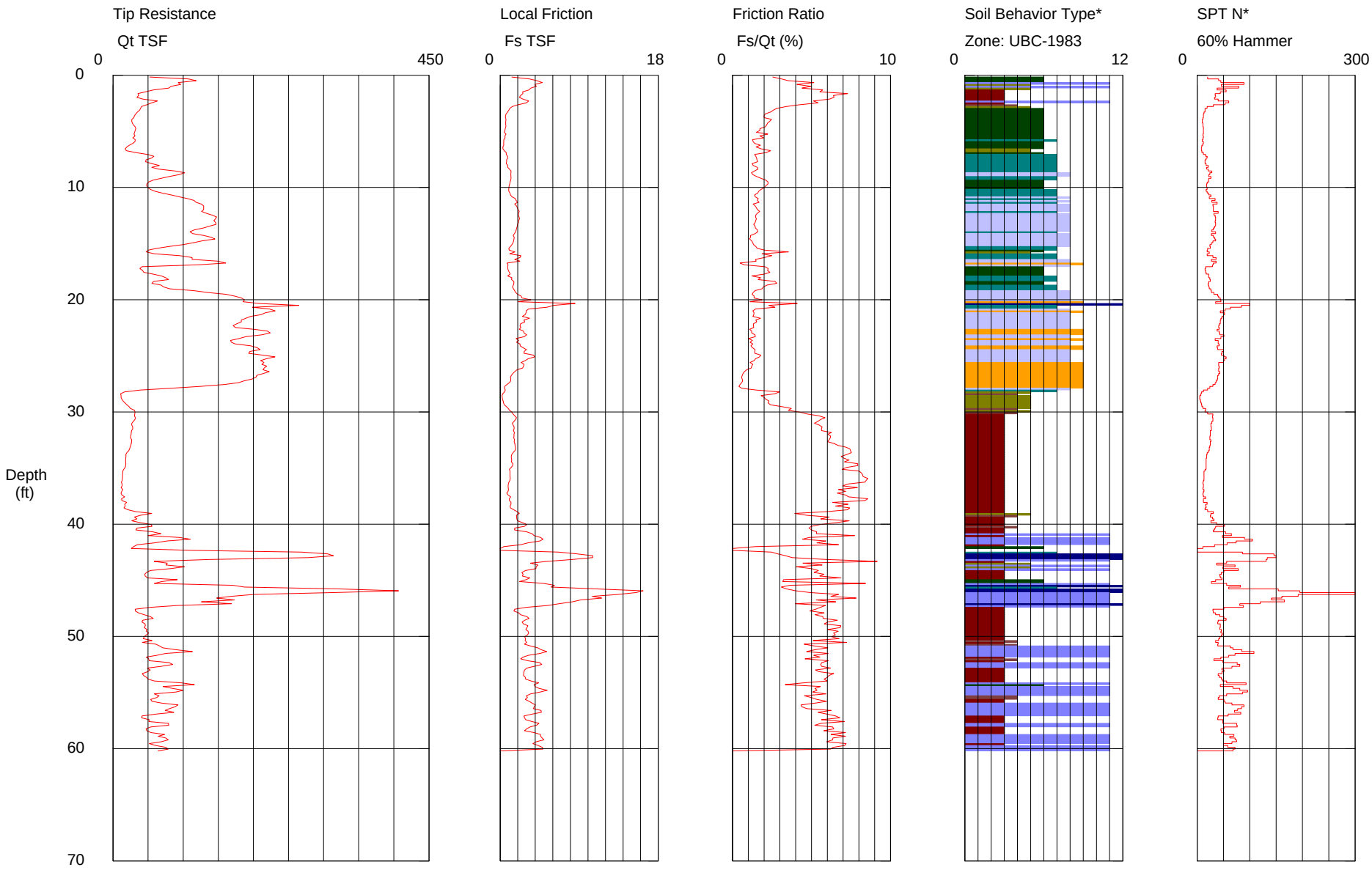
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-20 *

Operator: SA-RA
Sounding: CPT-16*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 1:23:21 PM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 60.20 feet

Depth Increment = 0.164 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

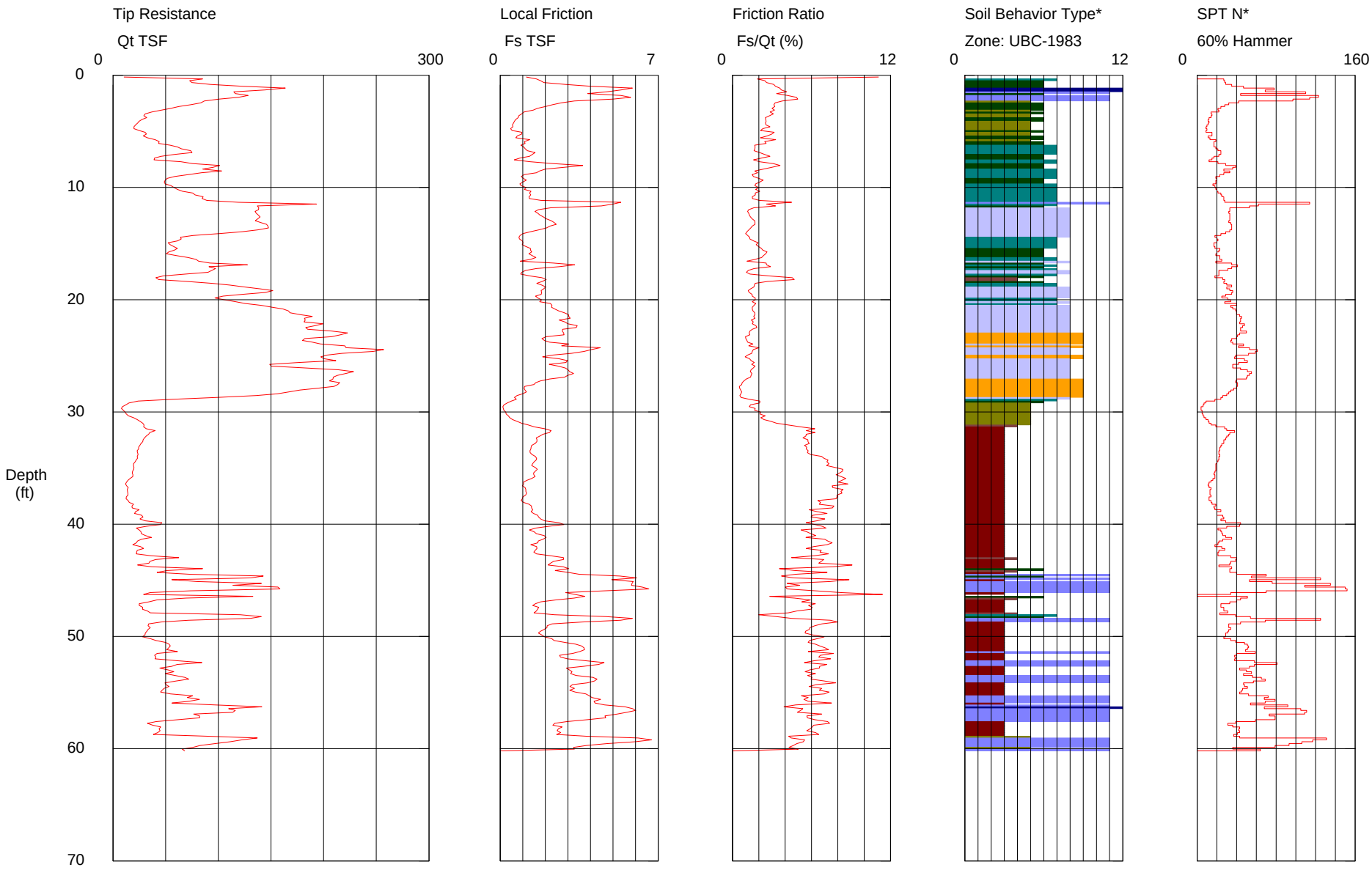
*Soil behavior type and SPT based on data from UBC-1983

Group Delta Consultants

Appendix A-21 *

Operator: SA-RA
Sounding: CPT-17*
Cone Used: DSG1104

CPT Date/Time: 10/22/2013 2:11:19 PM
Location: Yucca
Job Number: LA-1161



Maximum Depth = 60.20 feet

Depth Increment = 0.164 feet

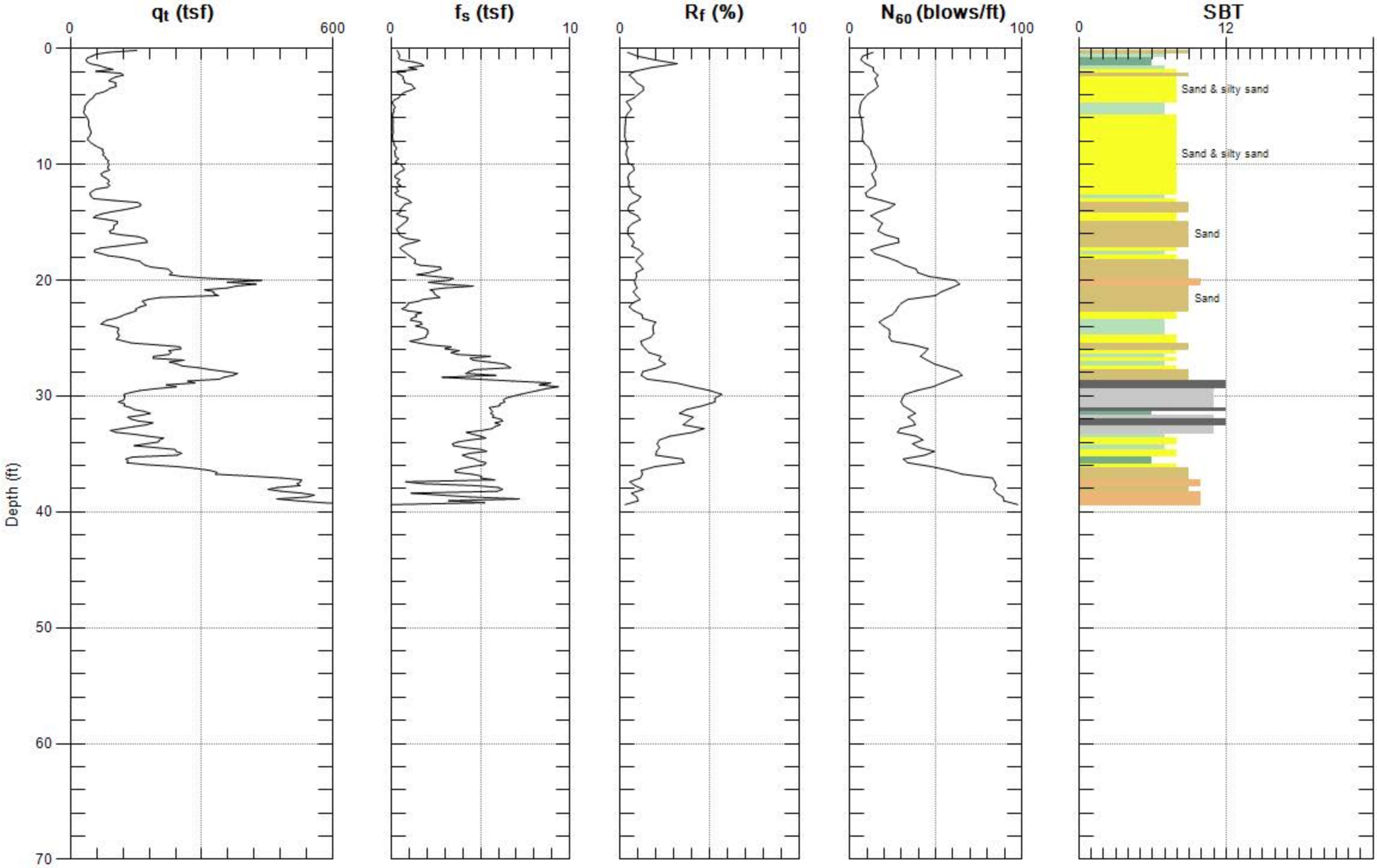
1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-18 *

Engineer: S.KOLTHOFF
Date: 4/15/2014 07:17



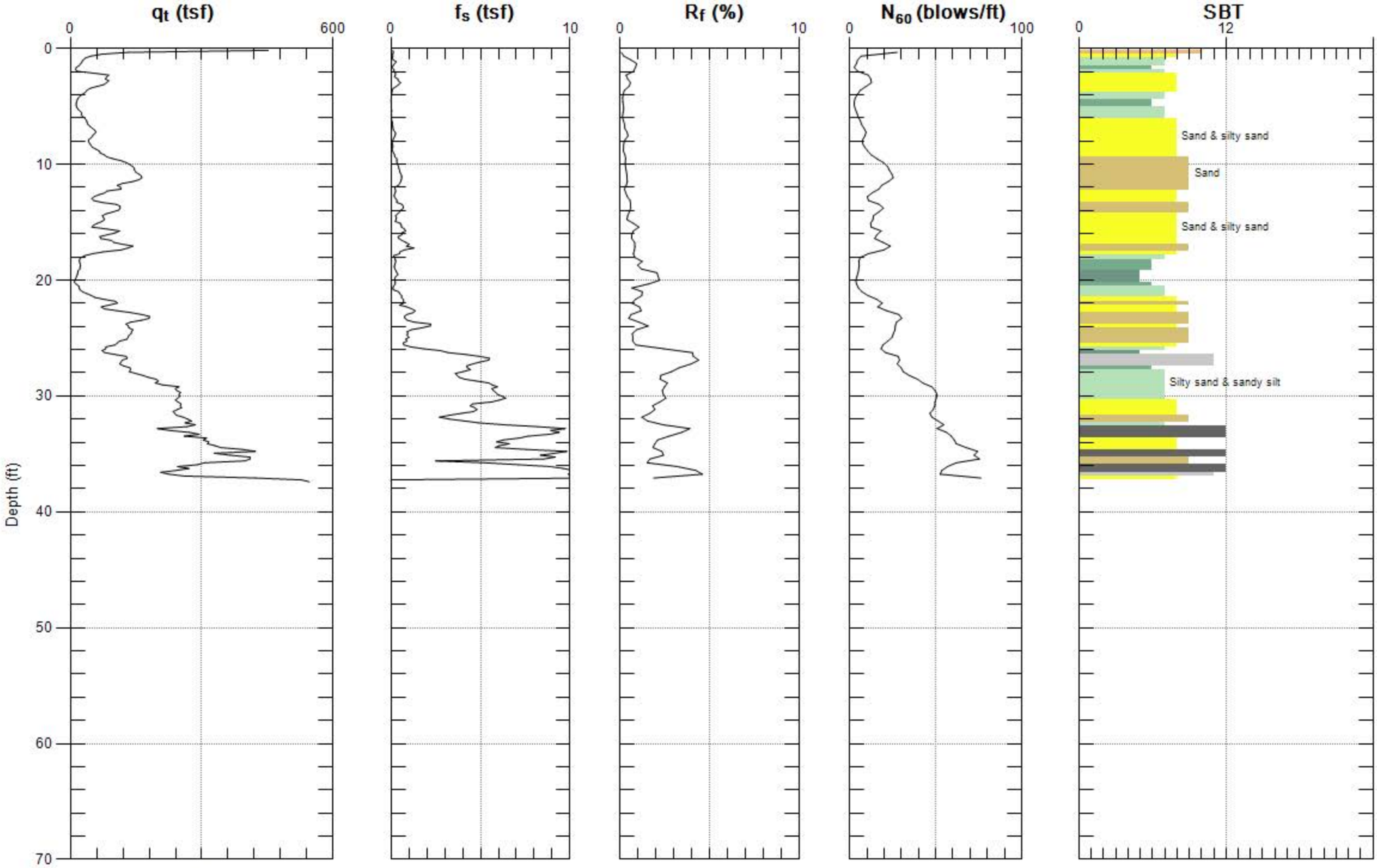
Max. Depth: 39.534 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-19 *

Engineer: S.KOLTHOFF
Date: 4/15/2014 07:51



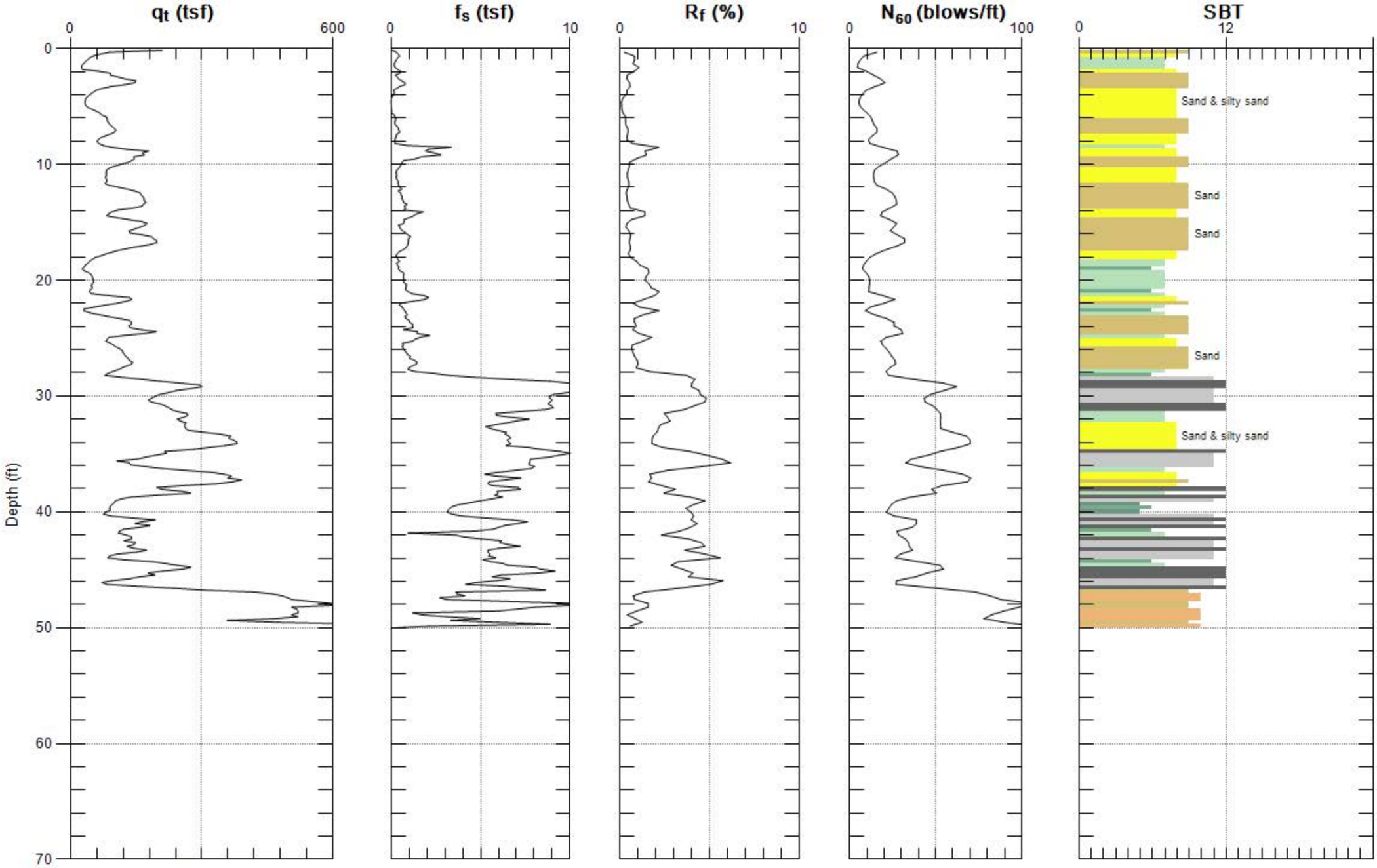
Max. Depth: 37.402 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-20 *

Engineer: S.KOLTHOFF
Date: 4/15/2014 08:24



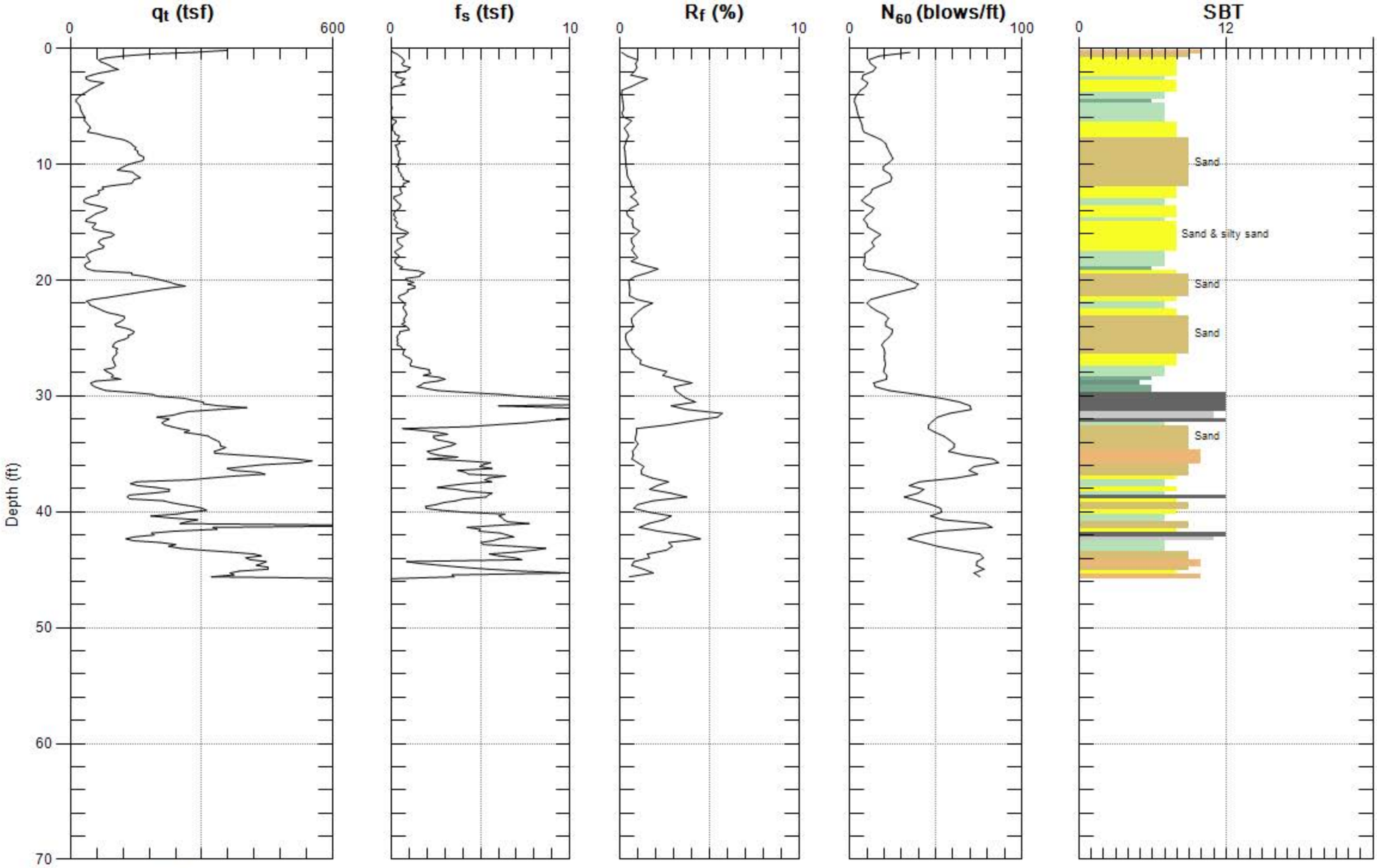
Max. Depth: 50.197 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-21 *

Engineer: S.KOLTHOFF
Date: 4/15/2014 09:09



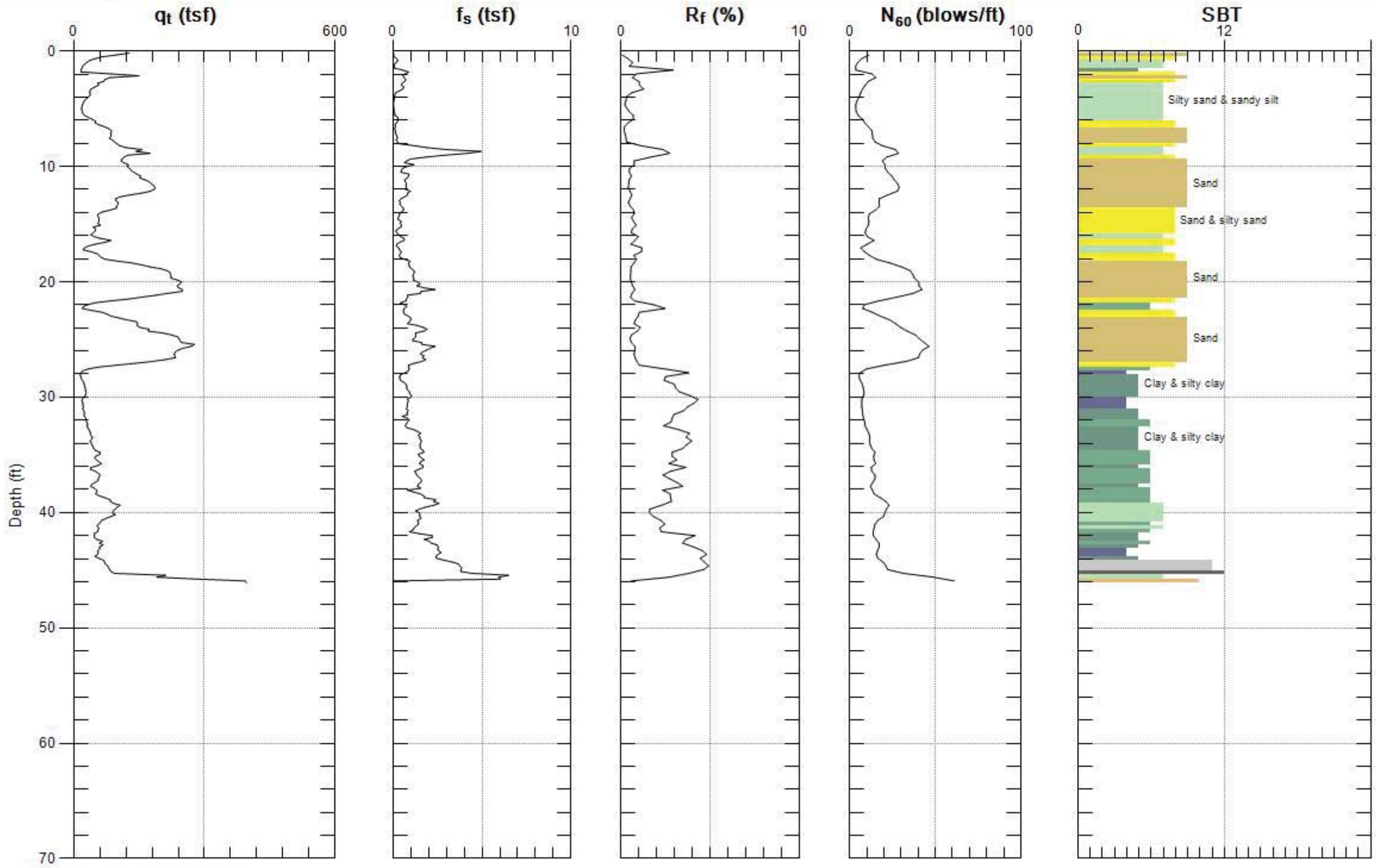
Max. Depth: 45.932 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-22 *

Engineer: S.KOLTHOFF
Date: 4/15/2014 12:02



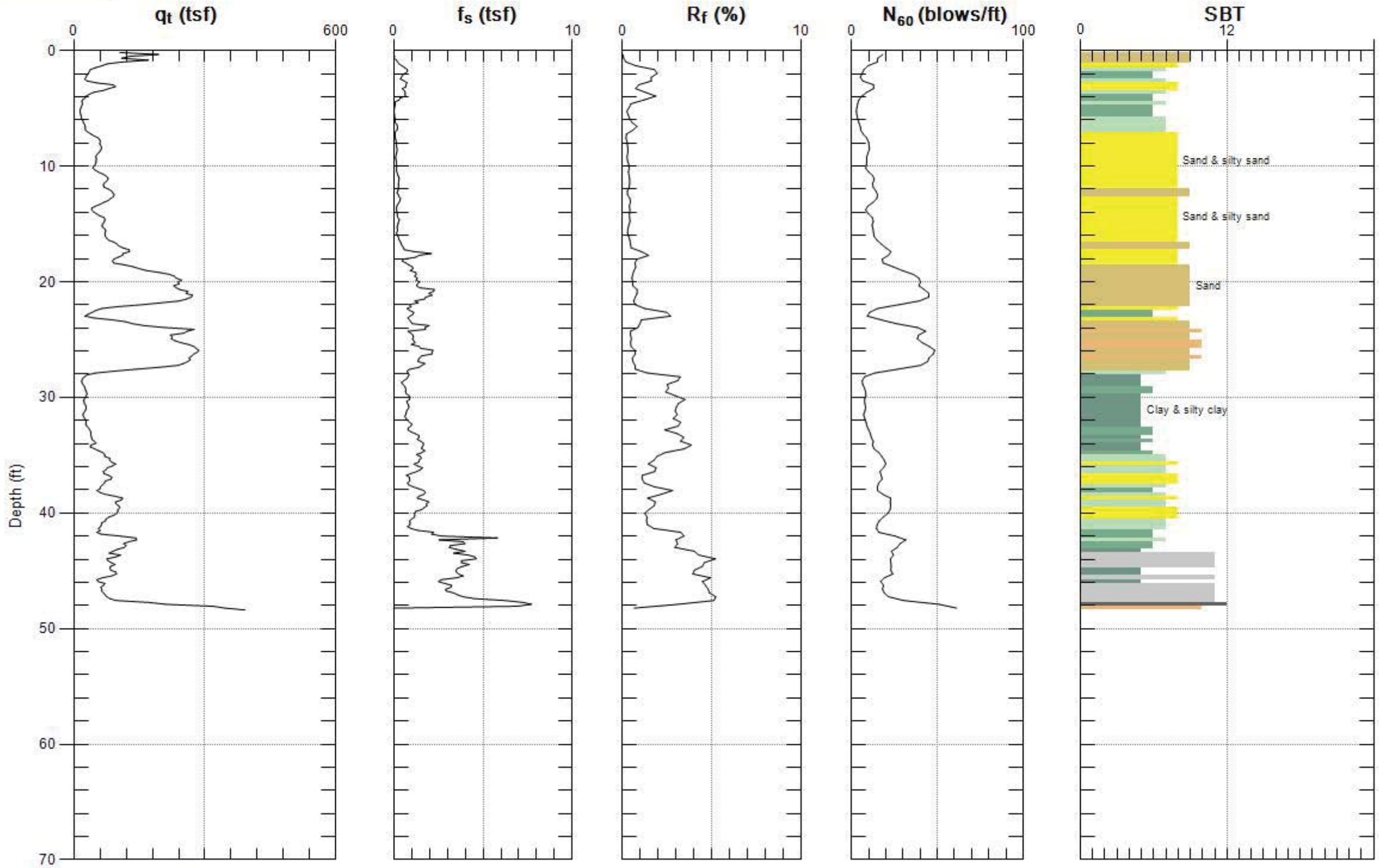
Max. Depth: 46.096 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-23*

Engineer: S.KOLTHOFF
Date: 4/15/2014 11:25



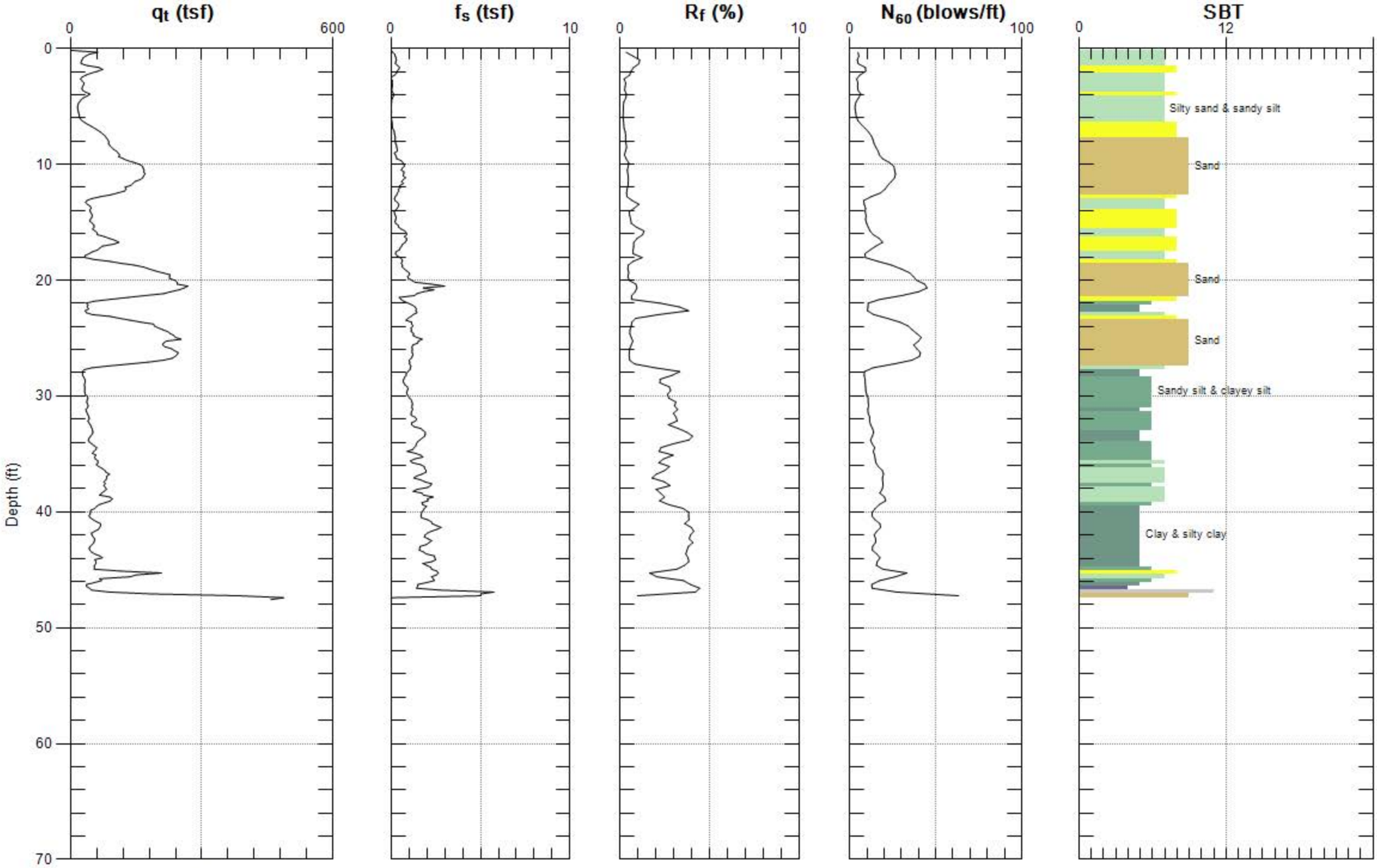
Max. Depth: 48.392 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

GROUP DELTA

Site: YUCCA CHAMPION
Sounding: CPT-24 *

Engineer: S.KOLTHOFF
Date: 4/15/2014 10:09



Max. Depth: 47.572 (ft)
Avg. Interval: 0.328 (ft)

SBT: Soil Behavior Type (Robertson 1990)

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-1***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/23/13 to 10/23/13	**LOGGED BY** SS	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 33		**APPROXIMATE SURFACE ELEVATION (feet)** 406	
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 at surface. Hand augered to 5 feet bgs.				
	405								**Artificial Fill (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand.				
5													
	400	1							**UPPER SAND UNIT (Qs)** **SAND**, Coarse to fine grained, some silt and fine gravel, humid to dry, granitic gravels were found in samples to be highly weathered with phenocrysts weathering to angular sand grains. Volcanic (basalt?) and meta-quartzite gravels found in the deposit were rounded to sub-rounded with slight to no weathering on the surface. Abundant sub-rounded quartz sand grains with frosted outer surface suggesting fluval in origin, 10YR 5/3 (brown).				
				2.1/5									
		2											
10													
	395	3											
				2.5/5									
		4							**Clayey SAND**, some fine gravels, humid, hard to break with fingers or cut with knife.				
15													
	390	5							**MUD FLOW (Qm)** **Clayey SAND**, grading down to silty sand, moist to humid, 5YR 4/4 reddish brown.				
				3.5/5									
		6							**OLDER ALLUVIUM (Qoal)** **Clayey SAND**, some fine gravels, hard to break with fingers and knife.				

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FIGURE A-31 a*

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-1***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/23/13 to 10/23/13	**LOGGED BY** SS	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 33		**APPROXIMATE SURFACE ELEVATION (feet)** 406	
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
	385	7		2.6/5					**Clayey SAND**, some fine gravel with majority volcanic with some meta quartzite, humid to moist, crumbles into chunks between fingers, 3-inch gravel zone at the base (23 feet).				
		8											
25	380	9		4/5					**Sandy to Silty CLAY**, moist, plastic, 10YR 4/4 (dark yellowish brown), mottled to 10YR 6/1 (light gray to gray).				
		10											
30	375	11		3.5/5					**Clayey SAND**, fine grained sand.				
		12							**SAND to Clayey SAND**, wet, 10YR 4/6 (strong brown), in contact with silty clay at 34 feet, 7.5 YR 4/6 (strong brown). -Ground water				
35	370	13		2.8/5					**Clayey SAND**, mottled 7.5 YR 4/6 (strong brown) to 2.5 Y 5/4 (light olive brown), sand mostly fine to silt throughout.				
		14											

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FIGURE A-31 b*

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-1***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/23/13 to 10/23/13	**LOGGED BY** SS	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 33		**APPROXIMATE SURFACE ELEVATION (feet)** 406	
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
	365	15		5/5					**CLAY to Silty CLAY**, moist, hard, fractures into angular blocks, squeezes when pinched between fingers, 5Y 5/2 (olive gray), coarse sand at 43.5 feet for 2-inches and at tip.				
		16											
45	360	17		2.8/5					**SAND to Clayey SAND**, wet to saturated, some silt, sand sub-rounded to sub-angular, abundant quartz with trace of mica and heavy minerals, 7.5 YR 5/4 (brown).				
		18											
50	355	19		2.6/5					**Silty to Sandy CLAY to Clayey SILT**, 7.5 YR 4/4 (brown).				
		20											
55	350	21		5/5					**Gravel and Sand Conglomerate**, poorly cemented, angular to subangular clast.				
									MODELO FORMATION (Tm)				
									SILTSTONE, wet, thinly bedded with sandstone.				

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FIGURE A-31 c*

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-1***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/23/13 to 10/23/13	**LOGGED BY** SS	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 33		**APPROXIMATE SURFACE ELEVATION (feet)** 406	
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
	345								Total Depth: 60 Feet bgs Groundwater: Encountered at 33 Feet Boring backfilled with tamped cuttings				
65	340												
70	335												
75	330												

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FIGURE A-31 d*

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-2***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/23/13 to 10/23/13	**LOGGED BY** SS	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 34		**APPROXIMATE SURFACE ELEVATION (feet)** 407	
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 at surface. Hand augered to 5 feet bgs.				
	405								**Artificial Fill (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand				
5		1		1.5/5									
	400	2							**UPPER SAND UNIT (Qs)**				
10		3		1.25/5					**SAND**, coarse to fine grained, some silt and fine gravel, humid to dry, granitic gravels were found in samples to be highly weathered with phenocrysts weathering to angular sand grains. Volcanic (basalt?) and meta-quartzite gravels found in the deposit were rounded to sub-rounded with slight to no weathering on the surface. Abundant sub-rounded quartz sand grains with frosted outer surface suggesting fluval in origin. Clayey zones throughout 10YR 4/6 (brown).				
	395	4		2/2.5					**Clayey SAND**, humid, mild soil development, crumbles with fingers, abundant rootlet casts and wormholes, holes coated with clay.				
15		5		2.2/2.5					**Gravel CONGLOMERATE**, with clayey sand matrix 5YR 4/4 (reddish brown) grading down to a clayey sand minus gravel 7.5 YR 5/4 (brown). Abundant rootlets and wormholes, platy fracture in sand perpendicular to core barrel.				
	390	6		2.2/2.5					**SAND**, coarse to fine grained, some silt and fine gravel, humid to dry, granitic gravels were found in samples to be highly weathered with phenocrysts weathering to angular sand grains. Volcanic (basalt?) and meta-quartzite gravels found in the deposit were rounded to sub-rounded with slight to no weathering on the surface. Abundant sub-rounded quartz sand grains				

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FIGURE A-32 a*

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-2***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/23/13 to 10/23/13	**LOGGED BY** SS	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 34		**APPROXIMATE SURFACE ELEVATION (feet)** 407	
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
	385	7		2.8/3					mixed in the alluvium with frosted outer surface suggesting fluval in origin. -Mild soil development, 10 YR 4/4 (Dark Yellowish Brown), crumbles between fingers, angular contact with sand below. **MUD FLOW (Qm)**				
		8		2.8/3					**Clayey SAND to Silty Clay** slight to moderate soil developmemnt, crumbles in to blocky pieces between fingers 7.5 YR 4/6 (Strong Brown), with claystone and siltstone wtih layers of gravel conglomerate and reddish clay infilling the gravel, mottled 5YR 4/4 (Reddish Brown) and 10YR 6/1 (Gray). **OLDER ALLUVIUM (Qoal)**				
25		9		2.2/2.5					**Clayey SAND and Gravel** mix of sands and gravel with clods of weathered bedrock, clay, and siltstone.				
	380	10		2.5/2.5									
30		11		2.4/2.5									
	375	12		2.4/2.5					-Ground water				
35		13		2.25/2.5									
	370	14		2.15/2.5					Increase in clay, and weathered bedrock.				

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

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FIGURE A-32 b*

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-2***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/23/13 to 10/23/13	**LOGGED BY** SS	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 34		**APPROXIMATE SURFACE ELEVATION (feet)** 407	
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
		15		2.5/2.5					Weathered Zone				
	365												
		16		2.3/2.5									
45									**MODELO FORMATION (Tm)**				
		17		2.5/2.5					**Siltstone and Sandstone**, wet, thinly interbedded mudstone.				
	360												
		18		2.5/2.5									
50													
		19		2.5/2.5									
	355												
		20		2.35/2.5									
55													
	350												
		21		5/5									

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FIGURE A-32 c*

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-2***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/23/13 to 10/23/13	**LOGGED BY** SS	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 34		**APPROXIMATE SURFACE ELEVATION (feet)** 407	
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 Feet bgs Groundwater: Encountered at 34 Feet Boring backfilled with tamped cuttings				
	345												
65													
	340												
70													
	335												
75													
	330												

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FIGURE A-32 d*

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-3***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/24/13 to 10/24/13	**LOGGED BY** SS	**SHEET NO.** 1 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 409	
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 at surface. Hand augered to 5 feet bgs.				
									Artificial Fill (Qaf) **Sandy SILT**, dark brown, moist, fine to medium sand.				
	405												
5		1		1.5/2.5									
		2		2/2.5					**UPPER SAND UNIT (Qs)** **SAND**, coarse to fine grained, some silt and fine gravel to cobbles thoughout, humid to dry, granitic gravels in samples were highly weathered with phenocrysts weathering to angular sand to fine gravel. Zones of fine clayey sands 10YR 4/6 dark yellowish brown, abundant quartz and mica. Volcanic (basalt?) and meta-quartzite gravels deposits were rounded to sub-rounded with slight to no weathering on the surface. Abundant sub-rounded quartz sand grains with frosted outer surface suggesting fluval in origin. Clayey zones throughout 10YR 4/4 dark yellowish brown.				
	400												
10		3		1.5/2.5									
	395	4		1.5/2.5									
15		5		1.1/2.5									
	390	6		2.2/2.5					-Layer of Clayey SAND, humid, mild soil development, crumbles with fingers, abundant rootlet casts and wormholes, holes coated with clay, approximately 1.5				

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FIGURE A-33 a

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-3***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/24/13 to 10/24/13	**LOGGED BY** SS	**SHEET NO.** 2 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 409	
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		2.4/2.5					feet in thickness				
	385	8		1.5/2.5									
25		9		1.1/2.5					**Clayey SAND to Silty CLAY** matrix mostly gravel conglomerate with reddish clay infilling gravel, 5YR 4/6 (strong brown), mottled to 10YR 6/1 (light gray to gray). **MUD FLOW (Qm)** **CLAY with Silt** mottled 5.5 YR 5/3 to 10 YR 5/4 (Yellowish Brown). -Ground water				
	380	10		2.5/2.5									
30		11		3.0/3.0					**Sandy CLAY**, mild soil development, with trace of fine gravel, 7.5 YR 3/2 (dark brown) crumbles between fingers, moist to wet.				
	375	12		2.0/2.0					**OLDER ALLUVIUM (Qoal)** **Conglomerate**, clayey sand matrix, mostly gravel and cobbles size clasts, abundant meta-quartzite, 7.5 YR 4/4 (Brown to Dark Brown)				
35		13		2.0/2.5									
	370	14		1.75/2.5									

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FIGURE A-33 b

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-3***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/24/13 to 10/24/13	**LOGGED BY** SS	**SHEET NO.** 3 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 409	
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
		15		2.0/2.5					**Clayey SAND to Silty SAND with fine gravel** streaks of clay 7.5 R 3/6 (dark red).				
	365	16		2.5/2.5					**MODELO FORMATION (Tm)** **Siltstone and Claystone**, thinly bedded, wet. Siltstone 10YR 6/4 (light yellowish brown) and claystone 5Y6/1 (gray),				
45		17		3.75/5.0									
	360												
50									Total Depth: 50 Feet bgs Groundwater: Encountered at 29 Feet Boring backfilled with tamped cuttings				
	355												
55													
	350												

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FIGURE A-33 c

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-4***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/24/13 to 10/24/13	**LOGGED BY** SS	**SHEET NO.** 1 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 40
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 412	
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 at surface. Hand augered to 5 feet bgs.				
	410								**Artificial Fill (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand.				
5		1		1.67/2.5									
	405												
		2		1.83/2.5					**UPPER SAND UNIT (Qs)** **Silty SAND**, dry, brown, some roots and rootlets.				
10		3		1.17/2.5					**Silty to Clayey SAND**, some gravel to 1 inch, Clayey zones throughout, fine sand with trace of 1/4 inch gravel in last two feet, 10 YR 4/4 (dark yellowish brown). -Mild soil development, sand with clayey matrix, 10 YR 4/6 (Dark Yellowish Brown), friable between fingers.				
	400												
		4		1.17/2.5					**Sandy CLAY**, coarse to fine grained, some silt and fine gravel to cobbles throughout, humid to dry, granitic gravels, highly weathered to gruss angular sand to fine gravel grains. Zones of fine clayey sands 10 YR 4/6 (dark yellowish brown), abundant quartz and mica. Volcanic (basalt?) and meta-quartzite gravels deposits were rounded to sub-rounded with slight to no weathering on the surface. Abundant sub-rounded quartz sand grains with frosted outer surface suggesting fluvial in origin.				
15		5		1.33/2.5					-Mild soil development, 10 YR 4/6 (Dark Yellowish Brown), approximately 6" thick.				
	395												
		6		1.67/2.5					-Mild soil development, 10 YR 4/6 (Dark Yellowish				

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FIGURE A-34 a

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-4***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/24/13 to 10/24/13	**LOGGED BY** SS	**SHEET NO.** 2 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 40
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 412	
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
									Brown), approximately 6" thick.				
		7		1.33/2.5									
	390								-Mild soil development, 10 YR 4/6 (Dark Yellowish Brown), approximately 6" thick.				
		8		1.58/2.5									
									-Mild soil development, 10 YR 4/6 (Dark Yellowish Brown), approximately 6" thick.				
25													
		9		1.5/2.5									
	385												
		10		1.08/2.5					**SAND** , moderatly well developed soil, when sandy, color ranges from 10 YR 3/3 (dark brown) to 10 YR 3/6 (dark yellow brown), breaks into angular blocks, clay coatings on sand grains. -Ground water				
30									**MUD FLOW (Qm)**				
		11		1.42/2.5					**Sandy CLAY**, fine to medium grained with some clayey sand, 7.5 YR 4/4 (brown).				
	380												
		12		1.5/2.5									
35									**MODELO FORMATION (Tm)**				
		13		2.5/2.5					**Siltstone and Claystone**, very weathered, residual bedding, some carbonate veins and nodules, mottled 2.5 Y 5/6 (light olive brown) to 5 Y 5/0 (gray), thin bedded, wet.				
	375												
		14		2.5/2.5									

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FIGURE A-34 b

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-4***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/24/13 to 10/24/13	**LOGGED BY** SS	**SHEET NO.** 3 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 40
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 412	
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: 40 Feet bgs Groundwater: Encountered at 29 Feet Boring backfilled with tamped cuttings				
	370												
45													
	365												
50													
	360												
55													
	355												

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FIGURE A-34 c

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-5***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/25/13 to 10/25/13	**LOGGED BY** SS	**SHEET NO.** 1 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 411	
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 at surface. Hand augered to 5 feet bgs.				
	410								**Artificial Fill (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand.				
5	405	1		1.67/2.5									
		2		2/2.5					**UPPER SAND UNIT (Qs)** **Silty SAND**, dry, brown, with roots and rootlets.				
10	400	3		1.75/2.5					**SAND**, Coarse to fine grained, some gravel, humid to dry, gravels scattered throughout from fine grained to 1 1/2 inch consisting mostly of volcanic (basalt?) to decomposing clasts of granite. The granitic clasts were found in samples to be highly weathered with phenocrysts weathering to angular sand grains. Volcanic (basalt?) gravels found in the deposit were rounded to sub-rounded with slight to mild weathering on the surface. Abundant sub-rounded quartz sand grains with frosted outer surface suggesting fluvial in origin.				
		4		1.67/2.5									
15	395	5		1.5/2.5					-Mild soil development, friable between fingers, angular contact with sand below, approximately 6" thick. 10 YR 4/4 (Dark Yellowish Brown).				
		6		1.75/2.5									

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

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FIGURE A-35 a

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-5***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/25/13 to 10/25/13	**LOGGED BY** SS	**SHEET NO.** 2 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 411	
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
	390	7		1.75/2.5									
		8		1.83/2.5									
25	385	9		1.92/2.5									
		10		1.75/2.5					-Mild soil development, approximately 6" thick.				
30	380	11		2.08/2.5					**SAND** , wet, fine to coarse grained with some coarse to fine grained gravel with majority being coarse grained, gravel well to sub-rounded, sand mostly quartz, some gravel mostly consisting of volcanic and feldspar, zone well washed, 10YR 4/4 (dark yellowish brown). -Ground Water				
		12		2.5/2.5					**MUD FLOW (Qm)** **CLAY with Silt** mottled 5.5 YR 5/3 to 10 YR 5/4 (Yellowish Brown).				
35	375	13		3/3					**Silty SAND to Sandy Silty CLAY**, moderately developed soil, wet, yelds into blocks when pulled apart by hand, base of soil on gravel conglomerate. **OLDER ALLUVIUM (Qoal)** **Gravel and Cobble Conglomerate**, granitic and volcanic composition, top of conglomerate has a clayey matrix similar to the soil above.				
		14		1.33/2					**Clayey SAND**, wet, trace to some gravel, 10 YR 4/4, (Dark Yellowish Brown).				

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

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FIGURE A-35 b

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-5***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/25/13 to 10/25/13	**LOGGED BY** SS	**SHEET NO.** 3 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 50
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 411	
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
	370	15		1.33/5					**Clayey SAND with GRAVEL**, wet, poor core recovery from large cobbles.				
45	365	16		5/5					**MODELO FORMATION (Tm)** **Claystone** , well bedded with some siltstone and fine sandstone, trace large granitic cobbles.				
50	360								Total Depth: 50 Feet bgs Groundwater: Encountered at 29 Feet Boring backfilled with tamped cuttings				
55	355												

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

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FIGURE A-35 c

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-6***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/25/13 to 10/25/13	**LOGGED BY** SS	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 405	
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 at surface. Hand augered to 5 feet bgs.				
									Artificial Fill (Qaf)				
									Sandy SILT, dark brown, moist, fine to medium sand.				
5	400												
		1		2/2.5					**UPPER SAND UNIT (Qs)**				
									Silty SAND, dry, brown, with roots and rootlets.				
		2		1.58/2.5					**SAND**, sand grains mostly rounded to well rounded quartz and feldspar, quartz grains frosted indicating fluvial in origin, increase in angular decomposing granitic gravels downward to 20 feet. Abundant silt near top. Volcanic gravel sub rounded, fresh when fractured. 10YR 5/3 (Brown). -Mild soil development, sand with clayey matrix.				
10	395												
		3		1.5/2.5									
		4		1.83/2.5									
15	390												
		5		1.42/2.5					-Well soil development, gravel-sand layer, platy fracture. Approx. 40K ybp				
									MUD FLOW (Qm) -Mild soil development, sand with clayey matrix, platy fracture, 10 YR 4/3 (Brown to Dark Brown).				
		6		1.92/2.5									
									OLDER ALLUVIUM (Qoal)				

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FIGURE A-36 a

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-6***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/25/13 to 10/25/13	**LOGGED BY** SS	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 405	
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		2.5/2.5					**Clayey SAND**-Mild soil development, matrix clay with some silt, 7.5 YR 4/4, brown to dark brown, blocky to platy fracture, sand sub rounded to sub anglular mix of quartz, dark minerals and mica.				
		8		2.5/2.5					**Gravel Conglomerate**, clay matrix, gravel +/- 3 inches, rounded to sub rounded, volcanic origin, sands rounded quartz frosted grains with some volcanic sand mixed within.				
25	380								**Cobble Conglomerate**, cobbles mostly volcanic in origin.				
		9		2.25/2.5					**Clayey SAND**, friable with fingers in thin beds, majority well inundated with a blocky fracture, 7.5 YR 4/4 (brown). Mild soil development, sand with silt and clay matrix, blocky fracture, sands rounded, some angular grains, 5 YR 4/3 (reddish brown).				
		10		2.5/2.5					**Gravel to Cobble Conglomerate**, clayey to sandy matrix, conglomerate granitic to volcanic. - Ground Water				
30	375	11		2.5/2.5					**Sandy Clay to Clayey Sand**, moist, platy fracture, sub angular meta quartzite gravels though out, mottled 2.5YR 5/4 (light olive brown) to 5YR 4/4 (reddish brown).				
		12		2.5/2.5									
35	370								**Gravel to Cobble Conglomerate**, gravels sub angular to sub rounded volcanic to granitic in origin, granitic gravel decomposing and friable between fingers with little pressure.				
		13		2.25/2.5					**Gravelly SAND with interbedded Clay** sands coarse to fine grained with fine grained gravel, both sand and gravel rounded to sub rounded. Sand 7.5YR 4/4 (brown), clay beds mottled 5Y 5/4 (light olive green) to 7.5YR4/4 (brown). -Gravel Bed				
		14		2/2.5									

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FIGURE A-36 b

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-6***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/25/13 to 10/25/13	**LOGGED BY** SS	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 405	
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
		15		2.33/2.5					-Clay Bed -Sand Bed				
		16		2.33/2.5					-Gravel Bed -Clay Bed -Sand Bed				
45	360												
		17		2.42/2.5									
		18		2.5/2.5					**Gravel Conglomerate**, decomposing granitic gravels overlying bedrock.				
50	355								**MODELO FORMATION (Tm)** **Sandstone**, fine grained with clay matrix, well bedded, abundant rounded to well rounded quartz and weathered feldspar grains.				
		19		2.5/2.5									
		20		2.5/2.5									
55	350												
		21		5/5									

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FIGURE A-36 c

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-6***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 10/25/13 to 10/25/13	**LOGGED BY** SS	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** Gregg In-Situ Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 29		**APPROXIMATE SURFACE ELEVATION (feet)** 405	
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 Feet bsg Groundwater: Encountered at 29 Feet Boring backfilled with tamped cuttings				
65	340												
70	335												
75	330												

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

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FIGURE A-36 d

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-7***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 4/14/14 to 4/14/14	**LOGGED BY** TO	**SHEET NO.** 1 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 57.5
DRILL RIG TYPE CME 95	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 52.3		**APPROXIMATE SURFACE ELEVATION (feet)** 403	
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 at surface. Hand augered to 5 feet bgs.				
									Artificial Fill (Qaf)				
									Sandy SILT, dark brown, moist, fine to medium sand.				
	400												
5													
		1		2.5/2.5					**UPPER SAND UNIT (Qs)**				
									Silty SAND; 7.5YR 4/6 (strong brown); moist; mostly fine to medium SAND; few coarse SAND; few fine GRAVEL.				
	395								**Sandy Silt**; 7.5YR 5/8 (strong brown); dry to moist (humid); mostly fine to medium SAND; few coarse SAND; trace fine GRAVEL.				
		2		2.08/2.5									
10													
		3		2/2.5									
	390												
		4		1.67/2.5									
									Clayey SAND; 7.5YR 5/8 (stron brown); dry to moist (humid); mostly fine to medium SAND; few coarse SAND; trace fine GRAVEL.				
15													
		5		2.17/2.5					**Silty SAND**; 7.5YR 5/6 (strong brown); moist; mostly fine SAND; trace medium SAND; trace coarse SAND.				
	385								Few medium to coarse SAND; trace fine GRAVEL.				
		6		1.67/2.5									
									Sandy Silt; 10YR 6/6 (brownish yellow); dry to moist (hummid); mostly fine to medium SAND; few coarse				

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FIGURE A-37 a

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-7***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 4/14/14 to 4/14/14	**LOGGED BY** TO	**SHEET NO.** 2 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 57.5
DRILL RIG TYPE CME 95	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 52.3		**APPROXIMATE SURFACE ELEVATION (feet)** 403	
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		2.17/2.5					SAND; trace fine GRAVEL. **SAND with Silt**; 10YR 6/6 (brownish yellow); dry to moist (hummid); mostly fine to medium SAND; some coarse SAND; trace fine GRAVEL and cobbles.				
	380	8		1.5/2.5					**Clayey SAND**; 10YR 4/4 (dark yellowish brown); moist; mostly fine to medium SAND; trace coarse SAND; trace fine GRAVEL. **SAND with SILT**; 10YR 5/6 (yellowish brown); moist; mostly fine to medium SAND; few coarse SAND; few fine GRAVEL; trace cobbles. 10YR 7/4 (very pale brown); mostly fine SAND; few medium SAND; trace coarse SAND. 10YR 6/4 (light yellowish brown); mostly fine to medium SAND; trace coarse SAND; trace fine GRAVEL.				
25		9		1.75/2.5									
	375	10		2.5/2.5					**MUD FLOW (Qm)** **Sandy CLAY**; 2.5YR 3/4 (dark brown); moist; mostly fines; trace coarse SAND; some fine SAND.				
30		11		1.42/2.5					**OLDER ALLUVIUM (Qoal)** **Clayey SAND**, 7.5 YR 4/4, brown to dark brown, blocky to platy fracture, sand sub rounded to sub anglular mix of quartz, dark minerals and mica.				
	370	12		2.5/2.5									
35		13		1.07/2.5					Gravel cobble layer. Rig chatter. 7.5YR 3/4 (dark brown); some fine to medium SAND ; trace coarse SAND.				
	365	14		0.5/2.5									

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FIGURE A-37 b

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-7***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 4/14/14 to 4/14/14	**LOGGED BY** TO	**SHEET NO.** 3 of 3
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 57.5
DRILL RIG TYPE CME 95	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 52.3		**APPROXIMATE SURFACE ELEVATION (feet)** 403	
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
		15		0/2.5					Conglomerate. No recovery due to cobbles.				
	360	16		1.83/2.5					**Silty SAND**; 7.5YR 4/6 (strong brown); moist; mostly fine to medium SAND; trace coarse SAND; trace fine GRAVEL.				
45		17		2.25/2.5									
	355	18		2.33/2.5									
50		19		2.5/2.5					**Clayey SAND**; 7.5YR 4/6 (strong brown); moist; mostly fine to medium SAND; trace coarse SAND; trace fine GRAVEL.				
	350	20		2.08/2.5					-Ground Water				
55		21		2.5/2.5									
	345								Total Depth: 57.5 Feet bsg Groundwater: Encountered at 52.3 Feet Boring backfilled with tamped cuttings				

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FIGURE A-37 c

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-8***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 4/14/14 to 4/14/14	**LOGGED BY** TO	**SHEET NO.** 1 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 55		**APPROXIMATE SURFACE ELEVATION (feet)** 402	
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 at surface. Hand augered to 5 feet bgs.				
	400								**Artificial Fill (Qaf)** **Sandy SILT**, dark brown, moist, fine to medium sand.				
5		1		1.92/2.5					**UPPER SAND UNIT (Qs)** **Silty SAND**; 7.5YR 3/4 (dark brown); dry to moist (humid); mostly fine SAND; few medium SAND; trace coarse SAND; trace fine GRAVEL.				
	395	2		1.08/2.5					**SAND with SILT**; 10YR 5/6 (yellowish brown); dry; mostly fine to medium SAND; little coarse SAND; trace fine GRAVEL.				
10		3		1.92/2.5					**Poorly-Graded SAND**; 10YR 5/6 (yellowish brown); dry; mostly fine to medium SAND; some coarse SAND; few fine GRAVEL.				
	390	4		1.67/2.5					**SAND with SILT; 10YR 6/6 (brownish yellow)** dry; mostly fine to medium SAND; little coarse SAND; trace fine GRAVEL.				
15		5		2.17/2.5					**Clayey SAND**; 7.5YR 5/6 (strong brown); dry to moist (humid); mostly fine SAND; few medium SAND; trace coarse SAND.				
	385	6		2/2.5					**Silty SAND**; 7.5YR 5/6 (strong brown); dry to moist (humid); mostly fine SAND; few medium SAND; trace coarse SAND; trace fine GRAVEL.				
									SAND with SILT; 10YR 5/6 (yellowish brown); dry to moist; mostly fine to medium SAND; little coarse SAND; trace fine to coarse GRAVEL.				

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FIGURE A-38 a

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-8***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 4/14/14 to 4/14/14	**LOGGED BY** TO	**SHEET NO.** 2 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 55		**APPROXIMATE SURFACE ELEVATION (feet)** 402	
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	1	58/2.5					**Poorly-Graded SAND**; 10YR 5/8 (yellowish brown); dry to moist (humid); mostly fine to coarse SAND; few fine GRAVEL; trace coarse GRAVEL.				
	380												
		8	1	92/2.5					**SAND with SILT**; 10YR 5/6 (yellowish brown); moist; mostly fine to medium SAND; little coarse SAND; trace coarse SAND; trace fine GRAVEL. Some coarse SAND.				
25													
		9	1	42/2.5									
	375												
		10	2	33/2.5					**MUD FLOW (Qm)** **CLAY to SANDY CLAY**; 7.5YR 4/4 (brown); moist; mostly fine SAND; trace medium SAND; trace GRAVEL.				
30													
		11	2	58/2.5					**OLDER ALLUVIUM (Qoal)** **Clayey SAND**; 7.5YR 4/6 (strong brown); moist; mostly fine to medium SAND; trace coarse SAND; trace fine GRAVEL.				
	370												
		12	2	58/2.5									
35													
		13	2	42/2.5									
	365												
		14	2	42/2.5					**Sandy CLAY**; 7.5YR 4/6 (strong brown); moist; mostly fine SAND; trace medium to coarse SAND;				

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FIGURE A-38 b

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-8***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 4/14/14 to 4/14/14	**LOGGED BY** TO	**SHEET NO.** 3 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 55		**APPROXIMATE SURFACE ELEVATION (feet)** 402	
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
									trace fine GRAVEL.				
	360	15		2.42/2.5					**Clayey SAND**; 7.5YR 4/6 (strong brown); moist; mostly fine SAND; few medium to coarse SAND; trace fine GRAVEL and cobbles. Hard drilling; trace cobbles.				
		16		1.5/2.5									
45	355	17		4/5					Lost sample shoe down borehole while retrieving sampler at 2:00pm. At 3:15 augers were pulled out of the borehole. Sampler shoe was uncovered. Sent augers back down the hole to 45 feet and resumed sampling. Color changes to 7.5YR 5/8 (strong brown).				
50	350	18		3.42/5					7.5YR 5/6 (strong brown); fine to medium SAND; some coarse SAND; few fine GRAVEL; trace cobbles. Less coarse SAND; more fine SAND.				
55	345	19		2/5					7.5YR 4/6 (strong brown); wet; more coarse SAND; less fines; -Ground Water				

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FIGURE A-38 c

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

LOG OF CORE BORING

PROJECT NAME SSV	**PROJECT NUMBER** LA-1161A		**BORING** **B-8***
SITE LOCATION 6230 Yucca Street, Hollywood, Ca	**DATE(S) DRILLED** 4/14/14 to 4/14/14	**LOGGED BY** TO	**SHEET NO.** 4 of 4
DRILLING METHOD Hollow Stem Auger	**DRILL BIT SIZE/TYPE** 8"	**CHECKED BY** SK	**TOTAL DEPTH DRILLED (feet)** 60
DRILL RIG TYPE CME 95	**DRILLED BY** ABC Drilling	**INCLINATION FROM VERTICAL/BEARING** 0 degrees	
APPARENT GROUNDWATER DEPTH (feet) 55		**APPROXIMATE SURFACE ELEVATION (feet)** 402	
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
	340								Total Depth: 60.0 Feet bsg Groundwater: Encountered at 55 Feet Boring backfilled with tamped cuttings				
65	335												
70	330												
75	325												

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FIGURE A-38 d

GDC_ROCK_CORE_ENG_REV LA-1161 BORING LOGS WITH ROCK CORES.GPJ ROCK2.GDT 10/23/14

PRELIMINARY GEOTECHNICAL REPORT PROPOSED HIGH RISE RESIDENTIAL DEVELOPMENT 6230 YUCCA STREET, HOLLYWOOD, CALIFORNIA. BORING LOGS (GDC 2006).

LOG OF TEST BORING

PROJECT NAME: Proposed Residential Development	PROJECT NUMBER: L-718	BORING: B-1	
SITE LOCATION: 6320 Yucca St. Hollywood, CA	START: 10/25/2006	FINISH: 10/25/2006	SHEET NO.: 1 of 3
DRILLING COMPANY: Jet Drilling	DRILLING METHOD: Hollow Stem Auger	LOGGED BY: S. Nava	CHECKED BY: T. Swantko
DRILLING EQUIPMENT: CME 75	BORING DIA. (in): 6	TOTAL DEPTH (ft): 61	GROUND ELEV (ft):
DEPTH/*ELEV.* GROUND WATER (ft): ▼ 24.3 / *na*			
SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in.	NOTES:		

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												2" of Asphalt 2" of Base
			B-1									**Possible Fill:** **Silty Sand (SM)** dark brown, with some clay, scattered gravel (hand augered to 6')
5												
			S-2	7 10 11								**Sandy Silt to Silty fine Sand (ML/SM)** medium dense to dense, light brown, some roots
10			R-4	~~14~~/~~20~~ 40/12"								**Silty Sand (SM)** with clay, dense, reddish brown
15			S-5	6 35/6"				4.3				**Silty Clay (CL)** hard, reddish brown, shale fragments
20			R-6	~~10~~/~~18~~ 36/12"								Reddish brown interbedded **Sandy Silt** and **Clayey Sand** medium dense to dense, trace of gravel

GDC_LOG_BORING_1A L-718 YUCCA.GPJ GDC_WLOG.GDT 10/31/06

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FIGURE A-2 a

LOG OF TEST BORING

PROJECT NAME: Proposed Residential Development	PROJECT NUMBER: L-718	BORING: B-1	
SITE LOCATION: 6320 Yucca St. Hollywood, CA	START: 10/25/2006	FINISH: 10/25/2006	SHEET NO.: 2 of 3
DRILLING COMPANY: Jet Drilling	DRILLING METHOD: Hollow Stem Auger	LOGGED BY: S. Nava	CHECKED BY: T. Swantko
DRILLING EQUIPMENT: CME 75	BORING DIA. (in): 6	TOTAL DEPTH (ft): 61	GROUND ELEV (ft):
DEPTH/*ELEV.* GROUND WATER (ft): ▼ 24.3 / *na*			
SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in.	NOTES:		

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		X	S-7	12 14 18				3.0				**Clayey Sand to Sandy Clay** dense, reddish brown, trace of black organics
30		X	R-8	~~8/18~~ 20/12"								**Silty to Silty fine to medium Sand (SM/SP)** wet, medium dense, light reddish brown slightly
35		X	S-9	7 8 14								**Silty Clay (CL)** stiff, light reddish brown, with some sand
40		X	R-10	~~12/18~~ 36/12"								**Slight Silty to Silty fine to coarse Sand (SM)** medium dense, reddish brown
45		X	S-11	33 28 50/3"								**Sandy Clay to Clayey Sand (SC/CL)** very dense, reddish brown, trace of gravel

GDC_LOG_BORING_1A L-718 YUCCA.GPJ GDC_WLOG.GDT 10/31/06

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FIGURE A-2 b

LOG OF TEST BORING

PROJECT NAME: Proposed Residential Development	PROJECT NUMBER: L-718	BORING: B-1	
SITE LOCATION: 6320 Yucca St. Hollywood, CA	START: 10/25/2006	FINISH: 10/25/2006	SHEET NO.: 3 of 3
DRILLING COMPANY: Jet Drilling	DRILLING METHOD: Hollow Stem Auger	LOGGED BY: S. Nava	CHECKED BY: T. Swantko
DRILLING EQUIPMENT: CME 75	BORING DIA. (in): 6	TOTAL DEPTH (ft): 61	GROUND ELEV (ft):
DEPTH/*ELEV.* GROUND WATER (ft): ▼ 24.3 / *na*			
SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in.	NOTES:		

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-12	~~10~~ ~~22~~	64/12"							**Sand to Silty fine to coarse Sand** dense, reddish brown
55			S-13	~~21~~ ~~50/6"~~	50/6"							Fine to medium **Sand (SP)** very dense, light brown, some silt
60			R-14	~~16~~ 50/6"								**Clayey Sand (SC)** dense, light brown, with cobbles
												Bottom of boring B-1 at 61 feet. *Groundwater encountered at 24.3 feet.* *Boring backfilled with soil cuttings and capped with concrete.*
65												
70												

GDC_LOG_BORING_1A L-718 YUCCA.GPJ GDC_WLOG.GDT 10/31/06

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FIGURE A-2 c

LOG OF TEST BORING

PROJECT NAME: Proposed Residential Development	PROJECT NUMBER: L-718	BORING: B-2	
SITE LOCATION: 6320 Yucca St. Hollywood, CA	START: 10/26/2006	FINISH: 10/26/2006	SHEET NO.: 1 of 3
DRILLING COMPANY: Jet Drilling	DRILLING METHOD: Hollow Stem Auger	LOGGED BY: S. Nava	CHECKED BY: T. Swantko
DRILLING EQUIPMENT: CME 75	BORING DIA. (in): 6	TOTAL DEPTH (ft): 61.5	GROUND ELEV (ft):
DEPTH/ELEV. GROUND WATER (ft): ▼ 44.2 / na			
SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in.	NOTES:		

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
												2" of Asphalt 2" of Base
			B-1									**Silty Sand (SM)** brown, some gravel
5			R-2	5 ~~5~~ 10/12"								**Sandy Silt to Silty Sand (SM/ML)** dark brown, scattered gravel, loose
10			S-4	4 10 7								**Slightly Silty to Silty Sand (SM)** medium dense, light brown, trace of gravel
15			R-5	10 ~~12~~ 24/12"								**Silty fine Sand (SM)** medium dense, slightly reddish brown, some clay
20			S-6	8 12 14								Slightly **Silty fine to medium Sand (SP/SM)** medium dense, some coarse sand and gravel Grades with some thin layers of coarse Sand

GDC_LOG_BORING_1A L-718 YUCCA.GPJ GDC_WLOG.GDT 10/31/06

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FIGURE A-3 a

LOG OF TEST BORING

PROJECT NAME: Proposed Residential Development	PROJECT NUMBER: L-718	BORING: B-2	
SITE LOCATION: 6320 Yucca St. Hollywood, CA	START: 10/26/2006	FINISH: 10/26/2006	SHEET NO.: 2 of 3
DRILLING COMPANY: Jet Drilling	DRILLING METHOD: Hollow Stem Auger	LOGGED BY: S. Nava	CHECKED BY: T. Swantko
DRILLING EQUIPMENT: CME 75	BORING DIA. (in): 6	TOTAL DEPTH (ft): 61.5	GROUND ELEV (ft):
DEPTH/*ELEV.* GROUND WATER (ft): ▼ 44.2 / *na*			
SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in.	NOTES:		

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			R-7	8/18 36/12"								
30			S-8	5 7 9						3.5		**Clay (CL)** very stiff, with some sand
35			R-9	7/10 20/12"								**Silty fine to medium Sand (SM)** medium dense, dark brown, some clay
40			S-10	7 12 12								**Silty fine to medium Sand (SM)** medium dense, some gravel
45			R-11	7/20 58/12"								

GDC_LOG_BORING_1A L-718 YUCCA.GPJ GDC_WLOG.GDT 10/31/06

GROUP DELTA CONSULTANTS, INC.
2291 W. 205th St., Suite 105
Torrance, CA 90501

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-3 b

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
Proposed Residential Development	L-718	B-2

SITE LOCATION	START	FINISH	SHEET NO.
6320 Yucca St. Hollywood, CA	10/26/2006	10/26/2006	3 of 3

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Jet Drilling	Hollow Stem Auger	S. Nava	T. Swantko

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
CME 75	6	61.5		▼ 44.2 / *na*

SAMPLING METHOD: Hammer: 140 lbs., Drop: 30 in.

NOTES:

DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	% PASSING #200	ATTERBERG LIMITS LL:PL:PI	POCKET PEN (tsf)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			S-12	12 14 17								**Silty to Clayey Sand (SM/SC)** dense, slightly reddish brown
55			R-13	~~12~~ 50	100/12"							Grades with gravel and cobbles
60			S-14	12 21 25								
												Bottom of boring B-2 at 61.5 feet.. *Groundwater encountered at 44.2 feet.* *Boring backfilled with soil cuttings and capped with concrete.*
65												
70												

GDC_LOG_BORING_1A L-718 YUCCA.GPJ GDC_WLOG.GDT 10/31/06

GROUP DELTA CONSULTANTS, INC.
2291 W. 205th St., Suite 105
Torrance, CA 90501

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-3 c

LANGAN ENGINEERING & ENVIRONMENTAL SERVICES FAULT INVESTIGATION REPORT FOR THE HOLLYWOOD DEVELOPMENT, VESTING TENTATIVE TRACT 71837, HOLLYWOOD, CALIFORNIA. BORING LOGS, 2011.

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ENGINEERING & ENVIRONMENTAL SERVICES

Log of Boring **B3** Sheet 1 of 5

Project: Millennium Hollywood	Plunge (deg): -60	Project No.: 700019502	
Location: Hollywood, CA	Bearing (deg): 179	Elevation and Datum: Approximately 389	
Drilling Company: Cascade Drilling, LP		Date Started: 7/19/12	Date Finished: 7/20/12
Drilling Equipment: Sonic Drill Rig		Completion Length: 100 ft	Rock Depth: -
Size and Type of Bit: -		Number of Samples	Disturbed: - / Undisturbed: - / Core: -
Casing Diameter (in): -	Casing Depth (ft): -	Water Level (ft.)	First: 56 / Completion: 55 / 24 HR.: 55
Casing Hammer: -	Weight (lbs): - / Drop (in): -	Drilling Foreman: Jason Klipfel	
Sampler: Continuous Core		Inspecting Engineer: D.Eberhart, S. Montgomery, & J.Goff	
Sampler Hammer: -	Weight (lbs): - / Drop (in): -		

Elev. (ft)	Sample Description	Sample Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
389.0							
388.7	Asphalt Pavement						
	Loose, 5YR 3/2, silty fine to medium grained SAND, damp to slightly moist [FILL]	1a	CORE	12			##YR ## Soil Color based on Munsell Soil Color Chart
	Loose, 5YR 7/1, silty fine to medium grained SAND, damp [FILL]	1b	CORE	12			
	No Recovery (5 to 7.5 feet)		NR	0			
382.5	**YOUNG ALLUVIUM** Loose, 10YR 5/8, silty fine grained SAND, trace medium grained sand, trace fine subrounded gravel, slightly moist (SM)	2	CORE	18			
377.7	Loose, 10YR 4/4, very fine to fine grained poorly graded SAND, trace fine subangular gravel, damp (SP)	3	CORE	15			
	No Recovery (15 to 18 feet)		NR	0			
373.4	Loose, 10YR 3/4, silty very fine to fine grained SAND, scattered clayey lenses, slightly moist (SM)						

Length Scale: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

N-Value (Blows/ft): 10 20 30 40

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Log of Boring **B3** Sheet 2 of 5

Project	Plunge (deg)	Project No.
Millennium Hollywood	-60	700019502
Location	**Bearing (deg)**	**Elevation and Datum**
Hollywood, CA	179	Approximately 389

Elev. (ft)	Sample Description	Length Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Loose, 7.5YR 3/4, silty very fine to fine grained SAND, trace fine subrounded gravel, trace coarse grained sand, some clay, slightly moist (SM)	20–24	4	CORE	14			
368.2	**OLD ALLUVIUM** Medium dense, 7.5YR 4/4, silty clayey very fine to fine grained SAND, slightly moist to moist (SC) Loose to medium dense, 7.5YR 4/6, silty clayey very fine grained SAND, moist (SC)	24–28	5	CORE	38			
364.6	Medium dense, 7.5YR 4/4, very fine to fine grained poorly graded SAND, trace fine subrounded gravel, trace silt, slightly moist (SP)	28–30	6	CORE	28			
363.0	Soft, 7.5YR 4/6, very fine grained sandy SILT, moist (ML)	30–32						
360.9	Medium dense, 7.5YR 4/6, silty very fine to fine grained SAND, moist (SM)	32–35	7	CORE	18			
	Medium dense, 7.5YR 3.5/4, silty very fine to fine grained SAND, trace fine subangular gravel, trace medium and coarse sand, trace clay, slightly moist (SM)	35–38	8	CORE	24			
	Loose, 10YR 3/4, silty very fine grained SAND, slightly moist (SM)	38–40	9	CORE	12			
	Loose to medium dense, 10YR 3/4, silty very fine to fine grained SAND, moist (SM)	40–43	10	CORE	17			
351.8	Medium dense, 7.5YR 3/4, clayey very fine to fine grained SAND, trace silt, slightly moist to moist (SC)	43–45	11	CORE	16			
350.0								

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Log of Boring **B3** Sheet 3 of 6

Project	Plunge (deg)	Project No.
Millennium Hollywood	-60	700019502
Location	**Bearing (deg)**	**Elevation and Datum**
Hollywood, CA	179	Approximately 389

Elev. (ft)	Sample Description	Length Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Loose, 7.5YR 3/4, silty very fine grained SAND, gradational contact, slightly moist (SM)	45, 46, 47	12	CORE	14			
347.4	Loose, 7.5YR 4/6, very fine grained poorly graded SAND, trace fine to coarse subrounded gravel, gradational contact, damp (SP)	48, 49						
345.7	Medium dense, 7.5YR 4/6, silty very fine to medium grained SAND, slightly moist (SM)	50, 51	13	CORE	34			
344.4	Medium dense, 7.5YR 4.5/4, very fine to coarse grained well graded SAND, scattered fine subrounded gravel, damp (SW)	52						
343.1	Loose to medium dense, 7.5YR 3/4, silty very fine grained SAND, slightly moist (SM)	53	14	CORE	21			
342.7	Medium dense, 10YR 4/6, very fine to medium grained poorly graded SAND, trace fine to coarse subangular gravel, slightly moist (SP)	54, 55						
	Medium dense, 10YR 4/4, very fine to medium grained poorly graded SAND, trace fine subangular gravel, wet (SP)	56	15	CORE	20			
339.6	Medium dense, 10YR 3/6, silty very fine to fine grained SAND, trace fine subangular gravel, trace coarse grained sand, moist to wet (SM)	57						
338.8	Loose, 10YR 5/4, very fine to fine grained poorly graded SAND, trace fine to coarse subangular gravel, damp to slightly moist (SP)	58	16	CORE	37			
338.3	Loose, 10YR 4/6, fine to coarse grained well graded SAND, wet (SW)	59						
337.5	Medium dense, 10YR 4/4, silty very fine grained SAND, trace fine subangular gravel, wet (SM)	60						
336.2	Loose, 10YR 4/6, very fine to medium grained SAND, some coarse grained sand, wet (SP)	61	17	CORE	30			
	Loose, 10YR 3/4, very fine to medium grained poorly graded SAND, trace fine subangular gravel, wet (SP)	62						
334.9	Medium dense, 10YR 3/6, silty very fine to fine grained SAND, trace coarse grained sand, wet (SM)	63						
333.6	Soft, 10YR 3/6, very fine to fine grained sandy CLAY, trace coarse grained sand, wet (CL)	64, 65	18	CORE	36			
331.8	Medium stiff, 10YR 3.5/5, CLAY, trace coarse grained sand, moist (CL)	66						
331.0	Loose, 7.5YR 3/4, clayey very fine to fine grained SAND, trace coarse grained sand, wet (SC)	67						
330.1	Loose, 7.5YR 4/6, fine to coarse grained well graded SAND, wet (SW)	68	19	CORE	36			
329.9	Stiff, 10YR 4/6, silty CLAY, trace coarse grained sand, slightly moist to moist (CL)	69, 70						
328.4								

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Log of Boring **B3** Sheet 4 of 5

Project	Plunge (deg)	Project No.
Millennium Hollywood	-60	700019502
Location	**Bearing (deg)**	**Elevation and Datum**
Hollywood, CA	179	Approximately 389

Elev. (ft)	Sample Description	Length Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Loose, 10YR 3/6, clayey fine to coarse grained SAND, scattered silty lenses, wet (SC)	70						
326.6	Loose to medium dense, 10YR 3/4, clayey silty very fine grained SAND, trace coarse grained sand, trace fine angular gravel, moist (SM)	71, 72, 73, 74	20	CORE	36			
324.0	Loose, 10YR 3/6, clayey very fine to coarse well graded SAND, slightly silty, wet (SW)	75						
323.2	Medium stiff, 10YR 4/3, silty CLAY, trace fine and medium grained sand, moist (CL)	76	21	CORE	36			
322.3	Medium stiff to stiff, 10YR 3/4, CLAY, trace medium and coarse grained sand, moist (CL)	77						
321.5	Medium dense, 10YR 3/4, silty fine to coarse grained SAND, scattered fine subangular to rounded gravel, trace clay, wet (SM)	78	22	CORE	6			
	Loose to medium dense, 10YR 5/8, silty very fine to coarse grained SAND, moist to wet (SM)	79, 80, 81	23	CORE	14			
318.4	Loose, 10YR 4/6, very fine to coarse well graded SAND, scattered fine subrounded gravel, scattered silty lenses, wet (SW)	82, 83, 84	24	CORE	26			
	Loose, 10YR 4/6, very fine to coarse well graded SAND, scattered fine subrounded gravel, scattered silty lenses, wet (SW)	85						
314.5	Loose to medium dense, 10YR 5/6, silty very fine to coarse grained SAND, scattered fine subangular gravel, dry to damp (SM)	86	25	CORE	36			
313.7	Loose, 10YR 4/6, fine to coarse grained well graded SAND, moist to wet (SW)	87						
312.8	Stiff, 10YR 3/4, silty medium and coarse grained CLAY, slightly moist (CL)	88, 89	26	CORE	36			
311.1	Loose, 7.5YR 3/3, fine to coarse grained well graded SAND, trace clay, slightly moist (SW)	90						
310.6	Stiff to very stiff, 7.5YR 3/4, CLAY, trace coarse grained sand, moist (CL)	91, 92	27	CORE	48			
308.5	Medium dense, 10YR 3/4, clayey fine and coarse grained SAND, wet (SC)	93, 94	28	CORE	18			
306.7		95						

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Log of Boring **B3** Sheet 5 of 5

Project	Plunge (deg)	Project No.
Millennium Hollywood	-60	700019502
Location	**Bearing (deg)**	**Elevation and Datum**
Hollywood, CA	179	Approximately 389

Elev. (ft)	Sample Description	Length Scale	Sample Data: Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Stiff, 10YR 3/6, CLAY, trace very fine grained sand, moist (CL)	95						
305.9	Loose, 10YR 4/6, fine to coarse grained well graded SAND, wet (SW)	96	28	CORE	18			
		97						
304.1	Medium dense, 10YR 3/6, silty very fine to fine grained SAND, moist to wet (SM)	98	29	CORE	28			
		99						
302.4		100						
	Boring terminated at 100 feet length Boring backfilled with cement grout Surface patched with black-dyed rapid set concrete	101						
		102						
		103						
		104						
		105						
		106						
		107						
		108						
		109						
		110						
		111						
		112						
		113						
		114						
		115						
		116						
		117						
		118						
		119						
		120						

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Log of Boring B4 Sheet 1 of 5

Project: Millennium Hollywood	Plunge (deg): -60	Project No.: 700019502	
Location: Hollywood, CA	Bearing (deg): 178	Elevation and Datum: Approximately 393.5	
Drilling Company: Cascade Drilling, LP		Date Started: 7/20/12	Date Finished: 7/21/12
Drilling Equipment: Sonic Drill Rig		Completion Length: 111 ft	Rock Depth: -
Size and Type of Bit: -		Number of Samples	Disturbed: - / Undisturbed: - / Core: -
Casing Diameter (in): -	Casing Depth (ft): -	Water Level (ft.)	First: 62.5 / Completion: 62.5 / 24 HR.: -
Casing Hammer: - / Weight (lbs): -	Drop (in): -	Drilling Foreman: Jason Klipfel	
Sampler: Continuous Core		Inspecting Engineer: D.Eberhart, S. Montgomery, & J.Goff	
Sampler Hammer: - / Weight (lbs): -	Drop (in): -		

Elev. (ft)	Sample Description	Length Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
393.5		0						
393.2	Asphalt Pavement							
	Loose, 10YR 3/2, silty very fine grained SAND, asphalt and concrete fragments, damp [FILL]	1	1	CORE	4			##YR #/# Soil Color based on Munsell Soil Color Chart
	Loose, 10YR 3/2, silty fine grained SAND, scattered fine angular gravel, asphalt and concrete fragments, damp to slightly moist [FILL]	2–3	2	CORE	5			
	Loose, 10YR 3/2, silty fine grained SAND, trace fine subangular gravel, damp [FILL]	4						
389.2	YOUNG ALLUVIUM Loose, 10YR 3/3, silty very fine to fine grained SAND, trace fine subangular gravel, slightly moist (SM)	5–6	3	CORE	12			
	Medium dense, 10YR 3/4, silty very fine to fine grained SAND, trace coarse grained sand, moist (SM)	7–8	4	CORE	6			
	Medium dense, 10YR 3/4, silty very fine to fine grained SAND, trace coarse grained sand, moist (SM)	9–10	5	CORE	8			
383.1	Medium dense, 10YR 4/4, clayey fine to coarse grained SAND, trace fine subangular to subrounded gravel, some silt, dry to damp (SC)	11–12	6	CORE	12			
		13–15	7	CORE	11			
379.6	Loose, 10YR 4/6, silty fine to coarse grained SAND, trace clay, slightly moist (SM)	16–18	8	CORE	12			
	Medium dense, 10YR 4/4, silty very fine grained SAND, slightly moist (SM)	19	9	CORE	10			
376.2		20						

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Log of Boring B4 Sheet 2 of 5

Project	Plunge (deg)	Project No.
Millennium Hollywood	-60	700019502
Location	**Bearing (deg)**	**Elevation and Datum**
Hollywood, CA	178	Approximately 393.5

Elev. (ft)	Sample Description	Length Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Loose to medium dense, 10YR 4/6, fine to coarse grained poorly graded SAND, slightly moist (SP)	20–21	9	CORE	10			
374.4	Medium dense, 10YR 4/6, silty fine to medium grained SAND, scattered fine subangular gravel, damp to slightly moist (SM)	21–24	10	CORE	10			
	Loose to medium dense, 7.5YR 4/4, silty fine to coarse grained SAND, trace fine angular gravel, moist (SM)	24–25						
	Medium dense to dense, 7.5YR 4/4, silty fine to coarse grained SAND, trace clay, slightly moist (SM)	25–27	11	CORE	28			
370.1	OLD ALLUVIUM							
	Medium dense, 7.5YR 3/3, silty fine to coarse grained SAND, slightly moist (SM)	27–28						
	Medium dense, 7.5YR 4/3, silty fine to medium grained SAND, trace coarse grained sand, slightly moist (SM)	28–30	12	CORE	24			
	Medium dense, 7.5YR 4/4, clayey silty fine to coarse grained SAND, slightly moist (SM)	30–31						
	Medium dense, 7.5YR 4/4, silty fine to coarse grained SAND, trace clay, slightly moist (SM)	31–33	13	CORE	26			
363.6	Medium dense, 7.5YR 3/4, silty very fine to fine grained SAND, slightly moist (SM)	33–34						
	Loose, 7.5YR 5/6, very fine to coarse grained poorly graded SAND, slightly moist (SP)	34–36	14	CORE	18			
361.6	Loose, 7.5YR 4/6, silty fine to medium grained SAND, trace coarse grained sand, slightly moist (SM)	36–39	15	CORE	20			
358.4	Loose, 7.5YR 4/6, silty fine to medium grained SAND, slightly moist (SM)	39–40						
	Loose, 7.5YR 4/4, fine to medium grained poorly graded SAND, trace fine subrounded gravel, slightly moist (SP)	40–42	16	CORE	18			
357.1	Medium dense, 7.5YR 4/6, silty very fine to fine grained SAND, slightly moist (SM)	42–43						
356.3	Medium dense, 10YR 3/6, clayey fine to medium grained SAND, slightly moist (SC)	43–44	17	CORE	21			
	Medium dense to dense, 10YR 3/4, clayey very fine to fine grained SAND, trace fine subrounded gravel, slightly moist	44–45						

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ENGINEERING & ENVIRONMENTAL SERVICES

Log of Boring **B4** Sheet 3 of 5

Project	Plunge (deg)	Project No.
Millennium Hollywood	-60	700019502
Location	**Bearing (deg)**	**Elevation and Datum**
Hollywood, CA	178	Approximately 393.5

Elev. (ft)	Sample Description	Length Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
354.1	(SC) Medium dense, 10YR 3/6, clayey fine to medium grained SAND, trace silt, slightly moist (SC)	45	17	CORE	21			
353.2	Medium stiff, 5YR 4/4, silty CLAY, slightly moist (CL)	46						
	Loose, 7.5YR 4/6, clayey fine to medium grained SAND, trace coarse grained sand, slightly moist (SC)	47	18	CORE	24			
	Medium dense, 7.5YR 3/4, clayey very fine grained SAND, trace coarse grained sand, slightly moist to moist (SC)	48						
	Medium dense, 7.5YR 4.5/4, clayey fine grained SAND, slightly moist (SC)	49						
		50	19	CORE	36			
349.3	Loose, 7.5YR 4/6, silty fine to medium grained SAND, trace fine subangular gravel, trace coarse grained sand, slightly moist (SM)	51						
348.9								
348.5	Loose, 10YR 4/6, fine to medium grained poorly graded SAND, scattered fine to coarse subangular gravel, slightly moist (SP)	52						
347.6	Loose, 10YR 4/6, fine to coarse grained well graded SAND, wet (SW)	53	20	CORE	36			
	Dense, 10YR 3/6, clayey very fine grained SAND, moist (SC)	54						
345.9	Loose, 10YR 4/6, fine to coarse grained well graded SAND, trace fine subangular gravel, wet (SW)	55						
345.0	Stiff, 10YR 3/4, CLAY, slightly moist to moist (CL)	56	21	CORE	46			
		57						
343.3	Medium dense, 10YR 4/6, fine to coarse grained well graded SAND, wet (SW)	58						
342.0	Stiff, 10YR 4/4, silty CLAY, moist (CL)	59						
		60	22	CORE	60			
340.7	Medium dense to dense, 10YR 4/4, clayey fine and coarse grained SAND, wet (SC)	61						
		62						
338.9	Medium dense, 7.5YR 4/6, gravelly fine to coarse grained well graded SAND, fine subrounded gravel, wet (SW)	63						
		64						
		65	23	CORE	52			
		66						
335.5	Medium dense to dense, 7.5YR 4/4, very fine to fine grained poorly graded SAND, trace fine to coarse subrounded gravel, moist (SP)	67						
334.6	Loose, 7.5YR 5/8, fine to coarse grained well graded gravel, trace fine subangular to subrounded gravel, wet (SW)	68						
		69	24	CORE	58			
332.0		70						

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Log of Boring **B4** Sheet 4 of 5

Project	Plunge (deg)	Project No.
Millennium Hollywood	-60	700019502
Location	**Bearing (deg)**	**Elevation and Datum**
Hollywood, CA	178	Approximately 393.5

Elev. (ft)	Sample Description	Length Scale	Sample Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	Dense, 7.5YR 4/6, clayey coarse grained SAND, slightly moist (SC)	70						
331.1	Medium dense, 7.5YR 5/4, silty fine to coarse grained SAND, scattered fine to coarse subangular gravel, slightly moist (SM)	71	24	CORE	58			
330.3	Loose, 7.5YR 5/8, gravelly fine to coarse grained well graded SAND, fine subrounded gravel, wet (SW)	72						
328.1	Dense, 7.5YR 5/4, silty fine to coarse grained SAND, scattered fine subangular gravel, slightly moist (SM)	73	25	CORE	60			
326.0	Loose, 7.5YR 5/6, fine to coarse grained well graded SAND, scattered fine subrounded gravel, wet (SW)	74						
324.2	Dense, 5YR 3/4, silty fine to coarse grained SAND, scattered fine subangular gravel, wet (SM)	75						
322.5	Dense, 7.5YR 3/4, clayey coarse grained SAND, trace fine angular gravel, wet (SC)	76	26	CORE	60			
321.6	Loose, 7.5YR 4/6, fine to coarse grained well graded SAND, wet (SW)	77						
320.8	Hard, 7.5YR 3/3, CLAY, trace coarse grained sand, trace fine subangular gravel, slightly moist (CL)	78						
		79						
		80						
		81	27	CORE	60			
		82						
		83						
317.3	Loose, 10YR 4/6, fine to medium grained poorly graded SAND, trace fine to coarse subangular gravel, wet (SP)	84						
315.6	Stiff, 10YR 3/4, CLAY, trace fine to coarse subangular gravel, trace coarse grained sand, slightly moist (CL)	85						
313.8	Dense, 10YR 3/3, silty fine to medium grained SAND, slightly moist (SM)	86						
	Dense, 10YR 3/3, silty fine to coarse grained SAND, slightly moist (SM)	87						
312.1	Medium dense, 10YR 3/4, clayey sandy well graded GRAVEL, medium and coarse grained sand, fine to coarse	88	28	CORE	34			
		89						
		90						
		91						
		92						
		93						
		94	29	CORE	58			
		95						

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ENGINEERING & ENVIRONMENTAL SERVICES

Log of Boring **B4** Sheet 5 of 5

Project	Plunge (deg)	Project No.
Millennium Hollywood	-60	700019502
Location	**Bearing (deg)**	**Elevation and Datum**
Hollywood, CA	178	Approximately 393.5

Elev. (ft)	Sample Description	Length Scale	Number	Type	Recov. (in)	Penetr. resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
	subangular gravel, slightly moist (GW) Loose to medium dense, 5YR 6/2, sandy well graded GRAVEL, fine to coarse angular to subangular gravel, medium to coarse grained sand, slightly moist (GW)	95, 96, 97	29	CORE	58			
308.6	Loose to medium dense, 7.5YR 4/4, gravelly silty SAND, fine to coarse angular to subrounded gravel, fine to medium grained sand, slightly moist (SM)	98, 99, 100	30	CORE	58			
306.0	Loose, 7.5YR 4/3, sandy well graded GRAVEL, fine to coarse angular to subangular gravel, very fine to fine and coarse grained sand, slightly moist (GW)	101, 102						
304.3	Loose, 7.5YR 3/6, fine to medium grained poorly graded SAND, trace coarse grained sand, wet (SP)	103, 104, 105, 106	31	CORE	32			
300.8	7.5YR 3/3, sandy well graded GRAVEL, fine and coarse grained sand, fine to coarse subangular gravel, trace clay, slightly moist to moist (GW)	107						
300.0	Loose, 7.5YR 5/6, silty fine to coarse grained SAND, trace fine subangular gravel, wet (SM)	108						
299.1	Loose, 7.5YR 4/4, clayey sandy well graded GRAVEL, medium to coarse grained sand, fine to coarse subrounded gravel, slightly moist to moist (GW)	109, 110	32	CORE	22			
297.4	Boring terminated at 111 feet length Boring backfilled with cement grout Surface patched with black-dyed rapid set concrete	111, 112, 113, 114, 115, 116, 117, 118, 119, 120						

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APPENDIX B: SOIL STRATIGRAPHIC AGE ASSESSMENTS

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Quaternary Geology
Economic Geomorphology
Soil Stratigraphy
Geoarchaeology
PG 2867; CPG 1766; CPESC 2167

APPENDIX B

SOIL-STRATIGRAPHIC AGE ASSESSMENTS AND PALEO-ENVIRONMENTAL RECONSTRUCTION, GROUP DELTA CONSULTANTS EAST AND WEST TRENCHES, 6230 YUCCA STREET, HOLLYWOOD AREA, CITY OF LOS ANGELES, CALIFORNIA

INTRODUCTION

This Appendix summarizes soil-stratigraphic field measurements and descriptions for dating relative fault activity (time of last displacement) and for reconstructing local geomorphic evolution over the last ~200-300 ka at and near the proposed "Yucca Street" development (Group Delta Consultants, Inc. [GDC], Plate 1, Site 2). The main purpose of the GDC investigation was to determine whether or not the inferred "Argyle Strand" of the Hollywood fault zone affects the proposed site (GDC Plate 1; Hernandez and Treiman, 2014). Accordingly, in addition to onsite and adjacent-site cone penetrometer tests (CPT) and continuous cores, GDC excavated and logged two onsite trenches, informally deemed the "west" and the "east" trenches, respectively (GDC, Plate 1). The two Yucca (Site 2) trenches, excavated and logged under the direction of GDC, complement other site-specific geological and geotechnical analyses (GDC narrative and appendices) to assess possible fault presence and relative activity.

The main purposes of this investigation (Appendix B) were several-fold:

1. To measure and describe a representative soil-stratigraphic section from initial exposures in the west trench;

2. To determine the approximate age of the west-trench sediments based mainly on relative soil-profile development of the several paleosols encountered in the trench;

3. To reconstruct the latest Pleistocene-Holocene fluvial environment of deposition as recorded in the west trench exposures; and, from the east trench exposures, to explain the geomorphic evolution of the site and adjacent properties to the east (GDC Plate 1; Site 3) and the northeast (Site 4);

4. To assess the validity of two radiocarbon dates for the west trench sediments, particularly focusing on potential sample contamination; and to evaluate the stratigraphic validity of east-trench dates for age of “middle” Argyle Channel deposits;

5. To assist GDC with correlation of trench exposures and adjacent cone penetrometer test (CPT) transects and continuous cores; specifically, those data obtained onsite as well as from on-going investigations at Site 1 on the south and at Site 3 to the east (GDC, Plate 1).

6. To deduce the likely characteristics and relative activity of various Hollywood fault segments inferred to potentially impact the site based on review of the published literature and on exposures in the two, on-site trenches; and

7. To provide an independent “Quality Assurance” critique of the GDC draft report in compliance with current geologic standards-of-practice applicable to fault-activity investigations.

The field work was commissioned by GDC and included various field, office and laboratory meetings with GDC personnel and with reviewers from the California Geological Survey and the City of Los Angeles. These took place from February through July 2014. The west trench field measurements were carried out on 13 February and 29 March; and the east trench documentation took place on 11 June and 7 July, respectively.

GDC personnel and Engineering Geologist Steven Kolthoff logged the trenches and kindly provided field logistical support. I particularly thank Steven Kolthoff and GDC engineers Michael Reader and Thomas Swantko for their much-appreciated courtesy and assistance.

Two formal soil-stratigraphic sections were measured at the Yucca west trench; on the west wall at station 0+55 (Table 1), and in a basal "trench box" at station 0+35 (Table 2). Representative east-trench sections were documented on the east wall at station 0+60 (Table 3) and on the west wall at station 0+78 (Table 4). Pertinent location and geologic maps, trench logs, and CPT and continuous core data are given in the GDC narrative and hence are referred to, but not replicated in this document.

This Appendix uses traditional pedological (soil science) terminology and field methodology described in Soil Survey Division Staff (1993), in Soil Survey Staff (1999) and in Schaetzl and Anderson (2005). The applicability of soil-stratigraphy to fault-activity assessments for construction of residential and commercial properties, dams, landfills and other large engineered structures is summarized in Shlemon (1985). Numeric dating and "calibration" with relative soil profile development is reviewed in Birkeland (1999), McFadden (1989), and Eppes and others (2002).

Quantifying several key soil (pedogenic) properties by use of the "soil development index" (SDI) may provide an "age of weathering" (Harden, 1982). The index generally works well to determine the age of surface profiles, particularly chronosequences on flights of fluvial terraces. For buried soils, however, such as those at the Yucca site, the "Harden index" may yield incorrect results. Specifically, physical truncation or chemical alteration usually leaves only two or three soil characteristics amenable for quantification; for example, color change (rubification) with depth, expressed by Munsell notation; frequency and relative development of secondary clay films; and decrease in clay content from an argillic (Bt) horizon compared with primary (depositional) clay in the parent material (C horizon). Typically, however, as exposed in the Yucca west trench fluvial deposits, the laterally discontinuous, grossly fining-upward deposits make it almost impossible to confidently calculate the amount of translocated (pedogenic) clay compared with that inherent in the parent material. Moreover, local rubification may be derived from erosion of nearby, previously weathered sediments, a problem particularly affecting age assessments of paleosols identified in subsurface cores. In brief, age quantification of truncated buried soils, based only on a few preserved physical and chemical "signatures," too often results in dates with high uncertainty, even though some practitioners provide numbers to two or more significant figures. The age estimates for the Yucca trench soil-stratigraphy are therefore given in realistic ranges (Tables 1 through 4) to encompass uncertainty inherent in dating partially preserved paleosols.

WEST TRENCH STRATIGRAPHY

The Argyle Channel

The Yucca west trench, locally up to ~35-ft deep, exposed several interbedded and laterally discontinuous, grossly fining-upward sedimentary "packets" laid down in a former stream channel (fan distributary ?) informally named the "Argyle Channel" after its southwest trend down the street of that name and through the site (GDC Fig. 6). The channel thalweg is exposed near the bottom of the west trench (GDC Plate 2 and Appendix D; photographs 1 and 3). The Argyle sediments are mainly bar and channel, capped by a remnant, slightly developed surface soil and replete with four intercalated buried paleosols. Each soil represents an epoch of relative landscape stability and hence a time of weathering (soil formation).

The basal trench unit, incised into and unconformably overlain by the Argyle Channel, is a truncated mudflow (Qm) bearing a remnant soil (dark yellowish brown [10YR 3/6] to dark brown [7.5YR 3/3] silty clay loam [Table 2]). This, in turn, is underlain by matrix-supported angular clasts (debris flows; Qdf) clearly exposed in the east trench (GDC Plate 5) and recognized in CPT transects and in continuous cores (GDC Plates 1 and 4). Topographically, the Argyle Channel no longer exists, its "upstream" source apparently "cut off" by early development in this area. Significantly, however, its sedimentary characteristics and incision into underlying, older clayey deposits indicates relatively abrupt, regional environmental change from deposition of mud- and debris-flows to relatively clean, high-energy fluvial gravels and silts. This major unconformity most likely stems from regional climate and vegetation change, and therefore ostensibly identifies onset of "pluvial" conditions in this area. For conservatism, this is judged to have taken place as recently as ~12-16 ka ago, temporally associated with marine oxygen-isotope stage 2. Accordingly, based on the abrupt change in fluvial environments, the base of the Argyle Channel is at least ~10-12 ka old; an age corroborated by the cumulative age of its several, intercalated buried soils.

Soil-Stratigraphic Measurements and Descriptions

The ~35-ft thick Argyle Channel sediments and paleosols were described from west-trench exposures on the west wall at Station 0+55 (Table 1); and the lower several ft were described from a "box trench" exposure at the base of the trench at Station 0+35 (Table 2).

Station 0+55

The Station 0+55 soil-stratigraphic section was measured to a depth of 18.5 ft, essentially the top of Bench 4 (GDC Plate 2). As documented in Table 1, artificial fill is underlain by about 3-ft of gravelly coarse sand grading upward to a loamy medium sand. The section is sufficiently weathered to have developed ~0.8-ft thick cambic (color) horizons (Bw1 and Bw2). No translocated clay is apparent. Nevertheless, weathering in Mediterranean climate, coarse-grained sediments requires at least an estimated 1 ka of weathering (McFadden, 1989). This surface soil is therefore deemed to be "very slightly developed."

Another grossly fining-upward packet of sediments occurs between ~3.8 to 7.8 ft (Table 1). A similar, "very slightly developed" buried soil caps this packet. The upper cambic horizon (2Bw1b) is truncated but, combined with the lower horizon (2Bw2b), similarly represents about ~1-2 ka of weathering.

A second, truncated buried paleosol occurs at a depth of 7.8 ft (Table 1). This soil, however, bears a weak argillic horizon (3Btb) typified by strong brown (7.5YR 4/6) thin clay films that bridge mineral grains and line ped faces. Based on relative development, this "slightly developed" paleosol is judged to represent ~2-3 ka of weathering.

The top of a third, similarly truncated buried paleosol is identified at 10.4 ft (Table 1). Two weak argillic horizons (4Bt1b and 4Bt2b) are characterized by fine, dark yellowish brown (10YR 4/4) fine clay films that line ped faces and locally bridge root pores. A "slightly developed" profile suggests that ~2-3 ka of weathering took place before burial by overlying sediments.

A fourth paleosol caps another fining-upward sequence at a depth of 14.5 ft (Table 1). The identified argillic horizon (5tb) is only 0.5-ft thick, probably truncated by deposition of the overlying coarse gravelly sand. Here, too, the horizon probably formed in ~2 ka. These particular deposits locally incise 2-3 ft into the underlying sediments, typical "cut-and-fill" deposition within the Argyle Channel.

In brief, relative development of the surface and the four buried paleosols suggests a cumulative age of at least ~10-12 ka of weathering, a minimum age for the Argyle Channel deposits. More likely, however, based on thalweg incision into the underlying clay and the dramatic change in the fluvial environment, the

basal deposits are older, ostensibly initially laid down at least ~12-15 ka ago during onset of marine isotope stage 2.

Station 0+35

In order to assess relative profile development below the base of the Argyle Channel, GDC locally deepened the Yucca trench several ft, providing safe access by means of a "Trench Box" (GDC Appendix D, Photograph 7). As measured and described from Station 0+35, the trench box exposed ~7 to 8-ft of silty clay loam coarsening downward to sandy clay loam, and ultimately to interbedded, mixed coarse sand and granitic gravel lenses at the base (Table 2). The clayey parent material (Qm) is a regional stratigraphic marker, exposed continuously at the base of the Yucca west trench, discontinuously throughout the east trench, and identified in adjacent continuous cores and on CPT transects.

A distinct, though truncated, buried paleosol was identified at the box trench exposure. This soil has two discrete, buried argillic horizons (6Bt1b and 6B2tb; Table 2). The argillic horizons are mainly silty to sandy clay loam, dark brown (7.5YR 3/3) to dark brown (7.5YR 4/4) in color, and replete with few to common fine, dark brown (7.5YR 3/4) clay films that line ped faces, bridge mineral grains and fill old root pores. The trench box exposures show that basal Argyle channel gravels are incised and truncate the underlying paleosol at least about one ft. Nevertheless, sufficient argillic horizon characteristics remain to deem the soil as "moderately developed," thereby representing an additional ~8-15 ka of weathering.

West Trench Radiocarbon Dates

Two "charcoal" samples were collected for potential radiocarbon assay (GDC Appendix C): "Charred material" at ~14-ft (Yucca # 2); and "organic sediments" at ~18-ft (Yucca # 1; GDC Appendix C). The Yucca samples were dated by "standard radiocarbon assay." Such dates may be questionable when sample size is small, where there is potential for modern groundwater contamination, and where samples are taken from high-energy environments and thus potentially reworked from older, "upstream" sediments.

As shown on the trench log (GDC Plate 2), the Yucca sediments are generally very coarse grained and devoid of laterally continuous, relatively impermeable clay beds to "perch" or otherwise prevent modern surface water from penetrating the entire section. Accordingly, the Yucca # 2 sample, dated as ~4300 BP (conventional) has been likely subject to contamination by younger gravitational

water. It is therefore likely at least 10 or 15 percent too young (Pigati and others, 2007). Similarly, and very highly suspect is the 41,000 BP age for Yucca # 1, obtained from sediments realistically not more than ~12 ka old. Most likely, therefore, this "disseminated organic sediment" was derived from "upstream" weathering of older sediments and transported in the high-energy, coarse fluvial sediment at the base of the Argyle Channel. This "too old" sample age is therefore rejected in favor of more reasonable, and conservative, soil-stratigraphic and paleo-environmental reconstruction.

EAST TRENCH STRATIGRAPHY

GDC excavated the ~160-ft long and ~30-35-ft deep east that overlapped the west trench and continued south across the Yucca property (Site 2) onto the adjacent Site 1 (GDC Plate 1). The east trench generally encountered four discrete Quaternary stratigraphic units, some bearing buried paleosols amenable to measurement, description and relative age assessments. As described by GDC (stratigraphic section, Fig. 10), the uppermost unit (youngest) pertains to the Argyle Channel, mainly fluvial and locally cross-bedded, medium- to coarse-sand and lenticular gravel beds (Qs). These are underlain by discontinuous mudflows locally capped by slightly to moderately developed buried paleosols (Qm). Underlying the mudflows are extensive debris flows, locally bearing discrete paleosols indicative of periodic (climatically controlled ?) landscape stability and soil formation (Qdf). The debris flows are mainly derived from adjacent upstream and sideslope "older alluvium" (Qoal) that once extended across the entire area. As encountered in onsite and adjacent cores, the Yucca area is underlain by Modelo formation "bedrock" (Tm).

Paleo-Environmental Reconstruction - East Trench Exposures

The east trench exposures supported initial interpretations of core and CPT data about the likely origin and relative age of the mud- and debris flows that underlie the Yucca (Site 2) area. Specifically, as shown on GDC Fig. 7, a veneer of old (likely ~300 ka), "high-level" channel and fan deposits still mantle the eroded surface at Site 3, east of Argyle Street (GDC Plate 1). Based mainly on paleo-environmental interpretation of regional cores and on the east trench exposures, an ancestral drainage apparently incised the area ostensibly ~300 ka ago, giving rise to a steep channel wall underlying the present Argyle Street (GDC Plate 1). This channel was then filled by multiple debris flows emanating from upstream as well as from adjacent sideslopes. Debris-flow deposition was apparently episodic, or possibly even periodic, as deduced from preservation of slightly to

moderately developed buried paleosols observed in the east trench. Many debris flows retain their original "brown to reddish brown" color, a result of previous, deep weathering of the their source sediments, the "high level" fan deposits (GDC Fig. 7).

The debris flows (Qdf) were, in turn, eroded and reworked, giving rise to relatively thin but readily discernible mudflows (Qm) that locally cover the debris flows and underlie the Argyle channel sands (Qs).

Additionally, as shown on the GDC trench log (Plate 5), the east trench exposed a south-verging anticline replete with an apparent slip surface (GDC Plate 5). Last apparent "movement" of this structure involved the debris flows (Qdf), but not the overlying mudflows (Qd) and the Argyle (Qs) deposits, as documented on the GDC logs (Plates 4 and 5).

Soil-Stratigraphic Measurements and Descriptions

Two representative soil sections were measured from the east trench exposures: on the east wall at station 0+60 (Table 3); and on the west wall at station 0+78 (Table 4). The station 0+60 descriptions particularly document the relative profile development of a buried paleosol that caps mudflows (Qm) deposits, which, in turn, unconformably overlie a buried paleosol formed on a local mud- debris flow transitional unit (Qm-Qdf). The station 0+78 soil section provides a detailed measurement and description of a buried paleosol that caps a horizontal, unbroken mudflow (Qm) directly overlying a slip surface (inferred fault) along a south-tilted, debris-flow bedding plane illustrated in GDC Fig. .

East Wall, Station 0+60

As documented in Table 3, the upper ~2.9-ft of section represent the base of the Argyle channel sands (Qs). These deposits are typically dark brown (10YR 4/3) to dark yellowish brown (10YR 4/4) sandy clay loam to fine sand with local, lenticular gravel lenses. Structure is typically massive to weak, fine angular, and thus indicative of the non-consolidation and relatively "youth" of Argyle channel sediments. At the measured section, the Argyle sediments are ~40-50 ft east of, and about halfway above the elevation of the main thalweg (see west trench log). Accordingly, based on stratigraphic position, their age is estimated to be ~4 - 5 k.

Horizons 2b1-2b2 (Table 3) mark a ~2.5-ft thick, remnant buried paleosol that caps underlying mudflow (Qm) deposits. The paleosol is a brown to dark brown (7.5YR 4/4 - 7.5YR 4/6) silt to loamy clay with moderate to strong, fine angular blocky structure. The paleosol is also very hard and sticky and plastic; and

typified by few fine, yellowish brown (10YR 5/4) clay films that line ped faces and fill root pores. Based on its "moderate" relative development, this remnant soil represents an estimated ~20-30 ka of weathering before truncation and burial by Argyle channel (Qs) deposits.

A second, deeper paleosol (horizons 3B1b–3B3b) was also measured and described at station 0+60 (Table 3). This particular paleosol formed across a thin mudflow and is superimposed onto an underlying debris flow. Specifically, the truncated 3B1b horizon is a yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) sandy clay loam with moderate medium blocky structure. Characteristic are few to common, strong brown (7.5YR 5/6) clay films that line ped faces, bridge mineral grains and line root pores. The underlying parent material (horizons 3C1b through 3c3b) generally grade into debris flows with matrix supported, ~0.7-in angular clasts at the base (Table 3). Based on relative profile development, this buried paleosol represents another ~25-30 ka of local landscape stability and related weathering.

West Wall, Station 0+78

A very detailed, approximately 2.7-ft thick profile was measured at Station 0+78 on the west wall of the Yucca east trench (Table 4). This section specifically addressed the relative age of a mudflow and capping paleosol that lie horizontal and unbroken over tilted debris flows (Qdf) containing an interbedded slip surface conservatively assumed to be a fault (GDC Plate 6). The upper ~0.7 inches of the mudflow bear four discrete, now-buried argillic horizons (2B1b through 2b4b; Table 4) truncated by basal coarse sand and gravel associated with Argyle channel sediments (Qs). The paleosol horizons range in color from dark brown (7.5YR 5/4) to dark reddish brown (5YR 3/4) and formed on fine to coarse medium sandy loam parent material. The diagnostic argillic is the 2b3b (Table 4) with fine subangular blocky structure and few fine brown (7.5YR 5/4) clay films that line ped faces and bridge grains. Any reasonable "upward" projection of the GDC-logged slip surface does not offset the mudflow and its capping buried paleosol (GDC Appendix D [photograph]). Based on relative profile development, the buried paleosol represents at least ~30 k of weathering. Its parent material, the horizontal, unbroken mudflow (Qm) is inherently older. Last movement along the underlying slip surface therefore took place prior to at least ~30 k ago, and probably well before that time.

East Trench Radiocarbon Dates

GDC collected eight, west-trench charcoal samples for potential radiocarbon assay, all obtained from Argyle Channel sediments. As documented in Appendix C, the samples are identified as Mill-1 through Mill-7 and Yucca 4; and cumulatively provide standard radiocarbon ages ranging from about 4.1 to 4.4 ka. These values were anticipated based on stratigraphic position and are therefore accepted as reasonable; and they support the estimated age for west-trench exposures at this same stratigraphic level.

CORRELATION OF YUCCA TRENCH SEDIMENTS AND SOILS WITH ADJACENT CONTINUOUS CORES AND CPT SOUNDINGS

The Yucca (Site 2) east and west trenches provided an additional three major benefits to assess potential presence and activity of the inferred Argyle Strand of the Hollywood fault. First, the west trench exposed not only Argyle Channel sediments (Qs), but also underlying, relatively impervious clay (Qm). When initially opened, this clay perched water, essentially at the base of the thalweg. Perched water also was present on clayey channel-bordering mudflows and debris flows into which the Argyle Channel was incised. The several different clay beds are vertically separated ~20 ft, as deduced from on-site geotechnical borings (GDC, 2006). The elevation difference was apparently interpreted (Hernandez and Treiman, 2014) as evidence for a possible “Argyle Strand” of the Hollywood fault system (GDC Plate 1; Fig. 4). Now, however, the trench exposures show that the difference in water-level elevation stems from local Argyle Channel incision into several different, relatively impermeable clayey mud- and debris flows (stratigraphic units Qm and Qdf).

Second, until excavation of the Yucca trenches, several other nearby, Hollywood fault investigations (GDC Fig. 1) did not employ site-specific trenching. Rather, fault-activity assessments were based mainly on correlation of CPT data and locally on extrapolation of often widely spaced cores. In contrast, the 6230 Yucca Street (Site 2) trenches provide geologic “calibration” for correlation with adjacent CPT soundings and continuous cores. This allows for high-confidence “extrapolation” of site stratigraphy north and south of the Yucca trenches (GDC Plates 1, and 2), and thus better assesses whether or not the adjacent sediments are fault displaced.

Third, the Yucca trenches provide the first complete exposure of post-bedrock (Tm) Quaternary sediments in the Hollywood area. Accordingly, based on geomorphic reconstruction and on numeric (radiocarbon) and relative dating (soil stratigraphy), the Yucca trenches expose an excellent stratigraphy from which to reconstruct local late Quaternary geomorphologic evolution, to determine the characteristics and age of local faults, and to reasonably date the last displacement of those observed at nearby Site 3 immediately east of Argyle Street (GDC Plate 1).

And finally, as particularly observed in the west trench, the Argyle Channel deposits are internally incised, often up to several ft (GDC Fig. 2). This local fluvial incision may well explain "inverted," core-collected radiocarbon dates previously reported at the then, non-trenched Site 1, adjacent to the south (Langan, 2012; GDC Plate 1).

SUMMARY AND CONCLUSIONS

As part of standard-of-practice fault assessments, GDC emplaced and logged two trenches across a proposed development at 6230 Yucca Street (Site 2) in the Hollywood area of Los Angeles. The west trench, about 100-ft long and up to ~35 ft deep, and the east trench, over ~160 ft long and of similar depth, were purposely sited to determine the possible presence and relative activity (time of last surface or near-surface displacement) of the "Argyle Strand" of the Hollywood fault, recently included within a "Fault Hazard Zone" by the California Geological Survey (Hernandez and Treiman, 2014).

The west trench exposed the thalweg and an overlying 30-ft thick sequence of interbedded, grossly fining-upward fluvial sediments within the "Argyle Channel." Soil-stratigraphic measurements and descriptions show that the Argyle Channel sediments are capped by a remnant, very slightly developed surface soil, and by four, underlying buried paleosols, ranging in relative development from very slight to slight. Based on "calibration" with numerically dated soils elsewhere in Mediterranean climates, the cumulative time of weathering for formation of the channel sediments is an estimated ~10-12 ka.

The Argyle Channel incises underlying, relatively impermeable clay that bears a truncated, slightly to moderately developed buried paleosol. This soil, with its distinct translocated clay films, represents another ~8-15 ka of weathering. Additionally, the abrupt unconformity between the base of the channel and the underlying clay, suggest onset of Argyle channel deposition during an epoch of

regional pluviality, conservatively estimated as ~12-16 ka ago (marine isotope stage 2). From a pedogenic standpoint, the cumulative age of the trench-exposed Argyle channel and the underlying clay exceeds ~15 ka.

The lower of the two conventional radiocarbon dates from the west trench, Argyle Channel deposits is particularly suspect, owing to likely re-deposition of "organic sediment" (~41,000 bp) resulting in older contamination. Accordingly, more realistic estimates are derived from the cumulative age of the surface and four trench-exposed buried soils and from likely fluvial deposition onset during isotope stage 2.

The east Yucca trench overlapped the west trench to the north and extended onto Site 1 to the south. It exposed multiple debris flows that emanated both from upstream and from sideslope sources. The debris flows are overlain by locally discontinuous mudflows, similar to that observed at the base of the Argyle Channel deposits in the west trench.

A representative soil-stratigraphic section shows that the mudflows bear truncated paleosols with moderate relative profiles development, similar, if not exceeding the soil described in the west trench "box cut." The better preserved east-trench buried soils reflect ~ 25-30 ka of weathering.

Another east-trench soil profile was specifically described from an unbroken, horizontal mudflow that overlies an apparent slip surface within the south-dipping limb of a subsurface anticline. The buried soil is similarly moderately developed, again reflecting – in this case - at least ~30 k of weathering. The soil and its underlying mudflow parent material are undisplaced; therefore, last slip of the presumed fault at this location occurred well before ~30 ka ago.

The Yucca trench exposures also explain the origin for an apparent 20-ft vertical "offset" of piezometric surfaces recorded in adjacent, on-site geotechnical borings. This separation was a main line of evidence for CGS postulation of a possible "Argyle Strand fault." However, rather than fault caused, the "offset" water stems from perching on separate clayey mud- and debris-flows.

The trenches also show that the Argyle Channel sediments typically incise older deposits a few to locally several ft. Thus, without the benefit of trench exposures, charcoal obtained from continuous cores on the adjacent (Site 1) property, the consultants-of-record found that several radiocarbon ages were stratigraphic inverted, thus lowering their confidence to date on-site sediments.

The Yucca trenches also provide "calibration" to more confidently identify the lithology and grain size and to correlate sediments in adjacent continuous cores and CPT transects. The GDC trench logs and extrapolation to adjacent and logs show that the Argyle Channel overlapping sediments and the underlying clay marker-bed are continuous and unbroken by any fault. Accordingly, if an Argyle Strand of the Hollywood fault truly exists, last surface displacement occurred prior to at least ~30 ka ago.

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TABLE 1

Soil-Stratigraphic Measurements and Descriptions

GDC "Yucca Street" Trench, West Wall, Station 0+55; and Basal "Trench Box;" Station 0+35

Depth (ft)	Horizon	Description
0.0 – 0.8	"Af"	**Artificial Fill**: Un-engineered fill; asphalt and bottle fragments; organic material.
0.8 – 1.5	A-B	Brown to dark brown (10YR 4/3) to very dark grayish brown (10YR 3/2) when moist loamy medium sand; moderate medium angular blocky structure; slightly hard, slightly firm, non-sticky and non-plastic; few to common fine vertical roots; few to common granitic clasts to 1.5-in dia., gradual wavy boundary.
1.5 – 1.9	Bw1	Yellowish brown (10YR 54) to brown to dark brown (10YR 4/3) when moist silty medium sand; weak fine subangular blocky structure to massive; very hard, very firm, non-sticky and non-plastic; few very fine vertical roots; locally few to common subrounded to angular clasts to 0.5-1.0 in long dia; gradual wavy boundary.
1.9 – 2.3	Bw2	Yellowish brown (10YR 5/4) to yellowish brown (10YR 5/6) when moist silty fine sand; weak to fine subangular blocky structure; extremely hard to locally very firm; few very fine vertical roots; gradual wavy to abrupt wavy boundary (base of cambic horizon).
2.3 – 3.8	C1	Brownish yellow (10YR 6/6) to yellowish brown (10YR 5/4 when moist gravelly coarse sand; massive loose, non-sticky and non-plastic; many angular clasts to ~3-in long diameter; many subrounded pebbles to ~0.8-in dia; abrupt wavy boundary (base of grossly fining-upward channel deposits; laterally discontinuous; unconformity).
3.8 – 4.6	2Bw1b	**Buried Paleosol** (very slightly developed): Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 5/4) when moist fine to medium sand; weak subangular blocky structure; hard, friable, non-sticky and non-plastic; few subrounded pebbles to ~0.5-in dia., abrupt smooth to abrupt wavy boundary.
4.6 – 5.2	2Bw2b	Dark yellowish brown (10YR 4/6) dark yellowish brown (10YR 3/6) when moist loamy fine sand; weak to moderate subangular blocky structure; slightly hard, firm, slightly sticky and non-plastic; gradual wavy boundary.

Table 1 (continued)

Depth (ft)	Horizon	Description
5.2 – 6.0	2C1b	Pale Brown (10YR 6/3) to dark yellowish brown (10YR ¾) when moist medium to coarse sand; moderate to fine coarse blocky structure; extremely hard, firm to friable; non-sticky and non-plastic; subrounded clasts to 1-in dia.; gradual wavy boundary.
6.0 – 6.3	2C2b	Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/4) when moist coarse loamy sand; massive; loose, friable, non-sticky and non-plastic; few subrounded clasts to 1-in. dia., gradual wavy boundary.
6.3 – 7.0	2C3b	Brownish yellow (10YR6/6) to dark yellowish brown (10YR 4/4) when moist gravelly coarse sand; structureless (loose), very friable; non-sticky and non-plastic; common to many subangular and angular clasts to 2-in dia., base of grossly fining-upward sequence; abrupt wavy boundary.
7.0 – 7.8	2C4b	Dark yellowish brown (10YR 4/6) to strong brown (7.5YR 4/6) when moist coarse sand; massive to weak, fine angular blocky structure; soft, friable, non-sticky and non-plastic; very few angular clasts 0.5 to 1.0-in dia., few to common subrounded clasts to 1-in. dia. near base; abrupt wavy boundary (unconformity).
7.8 – 8.2	3Btb	**Buried Paleosol** (slightly developed): Yellowish brown (10YR 5/6) to strong brown (7.5YR 4/6) when moist loamy fine sand; moderate medium angular blocky structure; slightly hard to hard, firm non-sticky and slightly plastic; few very fine clay films bridging mineral grains and lining ped faces; abrupt smooth boundary.
8.2 – 10.4	3Cb	Light yellowish brown (10YR 6/4) to dark yellowish brown (10YR 4/4) when moist coarse sand,; massive structure; loose, very friable, non-sticky and non-plastic; local gravel lenses to 1.5-in thickness; gravel lenses and horizontal stringers of interbedded sand and gravel; laterally discontinuous; poorly sorted; medium energy environment of deposition; abrupt wavy to abrupt irregular boundary (unconformity).
10.4 – 12.6	4Bt1b	**Buried Paleosol** (slightly developed): Brownish yellow (10YR 6/6) to dark yellowish brown (10YR 4/6) when moist moderate very fine subangular blocky structure in clayey lenses; friable,

Table 1 (continued)

Depth (ft)	Horizon	Description
		slightly sticky; non-plastic; few very fine dark yellowish brown (10YR 4/4) clay films lining ped faces and bridging mineral grains; locally few to common pebble lenses 0.5 to 1.0 in thick laterally increasing in width; locally discontinuous; local isolated, very angular clasts to 2-in. dia., abrupt wavy boundary
12.6 – 13.4	4Bt2b	Dark yellowish brown (10YR 4/4) to dark yellowish brown (10YR ¾) when moist pebbly clay loam; moderate to strong very angular blocky structure; very hard, very firm, slightly sticky and slightly plastic; few very fine dark brown (10YR 3/3) clay films lining ped faces and bridging mineral grains; few to common fine roots and vertical pores; local sand and pebble lenses near base to 2-in. thick; laterally discontinuous; top of grossly fining-upward sequence; gradual to locally abrupt smooth lower boundary.
13.4 – 14.5	4Bt3b	Dark yellowish brown (10YR 4/4) to dark yellowish brown (10YR 3/4) when moist pebbly loamy sand; weak to moderate angular blocky structure; slightly hard to hard, firm, slightly sticky and plastic; few very fine vertical roots; few very fine clay films lining ped faces and bridging mineral grains; few disseminated detrital charcoal fragments to 0.2-in dia., throughout horizon (see notes), collected near base; few to common pebbly gravel lenses increasing near base; few lenticular subrounded to rounded clasts to 2-in. dia. throughout horizon; abrupt wavy boundary (unconformity).
14.5 – 15.0	5tb	**Buried Paleosol** (slightly developed): Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 3/6) when moist pebbly loamy clay; moderate medium angular blocky structure; hard, firm to friable, non-sticky and slightly plastic; few thin lenticular clay lenses; locally few very fine dark yellowish brown (10YR 4/4) clay films lining ped faces and bridging mineral grains; united truncated gradual wavy to abrupt wavy boundary.
15.0 – 18.4	5C1b	Yellowish brown (10YR 5/8) to dark yellowish brown (10YR 4/6) when moist medium coarse sand; massive structure; very friable, loose; non-sticky and non-plastic; coarsening near base; gradual smooth to locally abrupt boundary.
18.4 – 18.8	5C2b	Dark yellowish brown (10YR 4/6) to dark yellowish brown (10YR ¾) silty clay; weak to moderate angular blocky structure; hard very firm, slightly sticky and slightly plastic; laterally extensive marker horizon; thickness variable 2-3 in., continuous unbroken unit below base of locally incised channel

Table 1 (continued)

Depth (ft)	Horizon	Description
		gravels and laminated sand); gradual wavy boundary; base of trench wall measured section approximately 6-ft above trench base at Sta. 0+55.

Notes *(Trench Wall exposures, Sta. 0+55)*:

1. Soil profile measurement by RJS and SK, 13 February 2014; GDC "Yucca Trench, west wall; Station 0+55.

2. The surface and four very slightly to slightly developed buried paleosols cap grossly fining-upward sequences; typified by cambic (Bwb) or by cumulic, "weak" argillic (Btb) horizons. Buried paleosols, in generally coarse-grained parent material, each represent ~1-2 k of relative landscape stability soil weathering.

3. Trench exposes thalweg of SW-trending fluvial channel deposits and interbedded paleosols at ~25 ft. Main paleo-channel contains multiple, laterally discontinuous bar and channel sediments; grossly fining upward, and each capped by a truncated buried paleosol.

4. Present geomorphic setting, stratigraphic position and onset of basal channel-gravel deposition implies formation under a more "pluvial" climate; conservatively estimated to be during oxygen-isotope stage 2, ~12-16 ka ago.

5. Cumulatively, the surface and the four buried paleosols represent ~8-10 ka of weathering.

TABLE 2
GDC Yucca Soil Profile Measurement and Description in "Box Trench" (~6-ft below base of "18.4-18.8-ft depth horizon;" Sta. 0+35)

Depth (ft)	Horizon	Description
25.0 – 25.5	6Bt1b	**Buried Paleosol** (truncated; slightly to moderately developed): Dark yellowish brown (10YR 3/6) to dark brown (7.5YR 3/3) when moist silty clay loam; moderate medium angular blocky structure; hard, firm, slightly sticky and slightly plastic; few to common fine dark brown (7.5YR ¾) clay films lining ped faces; common fine root pores ; gradual diffuse boundary.
25.5 – 27.0	6Bt2b	Brown to dark brown (7.5YR 4/4) sandy clay loam; weak to moderate subangular blocky structure; soft, friable, non- sticky and slightly plastic; few very fine clay films decreasing with depth; gradual wavy boundary.
27.0 – 33.0	6Cb	Sandy loam grading downward to interbedded granitic clast lenses to 0.5-in. dia., increasing at base; base of Trench Box exposure.

Notes *(Box cut at base of trench; sta. 0+35)*:

1. Soil measured and described by RJS, 29 March 2014.

2. Basal clay is truncated by overlying, high-energy channel deposits; only remnant buried paleosol is preserved (slightly to moderately developed with argillic [6Bt1b/6Bt2b] horizons).

3. Buried paleosol is estimated to conservatively represent ~8-10 ka of weathering. The clay parent material is a regional stratigraphic marker, exposed continuously at the base of GDC "Yucca Box Trench" and identified in adjacent continuous cores.

4. Cumulatively, the "Box Trench" soil and the overlying paleosols within the overlying channel gravels represent – at a minimum ~16-20 ka of weathering.

Table 3

Soil-Stratigraphic Measurement and Description, GDC East Trench, East Wall, Station 0+60

Depth (ft)	Horizon	Description
0.0 - 0.7	C1	Brown to dark brown (10YR 4/3) to dark yellowish brown (10YR 3/4) when moist gravely sandy clay loam; weak medium subangular blocky structure; extremely hard, extremely firm, locally friable, slightly sticky and slightly plastic; common angular clasts to 2-in dia. near base; abrupt wavy boundary.
0.7 – 2.0	C2	Dark yellowish brown (10YR 4/4) to dark yellowish brown (10YR 3/4) when moist sandy clay loam; massive structure; very hard and very firm; slightly sticky and slightly plastic; common angular clasts to 2.0 in dia. near base; few detrital charcoal fragments near base; abrupt wavy boundary.
2.0 – 2.9	C3	Yellowish brown (10YR 5/4) to dark yellowish brown (10YR 3/6) when moist fine gravelly silt loam; massive to weak fine angular blocky structure; extremely hard, extremely firm; slightly sticky and slightly plastic; few to common angular clasts to 0.2 in dia. near base; abrupt smooth boundary (unconformity).
2.9 – 3.9	2B1b	**Buried Paleosol:** Brown to dark brown (7.5YR 4/4) to strong brown (7.5YR 4/6) when moist loamy clay; massive to weak fine subangular blocky structure; very hard, very firm, sticky and plastic; few very fine dark brown (7.5YR 3/4) clay films lining ped faces and bridging mineral grains; parent material = mudflow; upper horizon truncated; abrupt wavy boundary.
3.9 – 4.8	2B2b	Yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/6) when moist silty clay; moderate to strong fine angular blocky structure; extremely hard, extremely firm; sticky and very plastic; few very fine rootlets along ped faces; few, very fine yellowish brown (10YR 5/4) clay films along ped faces decreasing near base; parent material = local mud and debris flow; abrupt wavy boundary.
4.8 – 5.4	2Cb	Pale brown (10YR 6/3) to brown (10YR 5/3) when moist sandy loamy clay; massive structure; very hard, very firm; slightly sticky and slightly plastic; abrupt wavy boundary (unconformity).
5.4 – 5.8	3B1b	**Buried Paleosol**: Yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) when moist fine sandy clay loam; moderate medium blocky structure; extremely hard, extremely firm, slightly sticky and slightly plastic; very few strong brown (7.5YR 5/8) clay films

Table 3 (continued)

Depth (ft)	Horizon	Description
		lining ped faces and bridging mineral grains; parent material = mudflow bearing a moderately developed buried paleosol; gradual wavy boundary.
5.8 – 6.3	3B2b	Yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) medium to coarse angular sand; massive structure; extremely hard; extremely firm; non-sticky and non-plastic; gradual wavy boundary.
6.3 – 7.1	3B3b	Yellowish brown (10YR 5/6) to strong brown (7.5YR 5/6) when moist medium sandy loam; massive structure; extremely hard; extremely firm; non-sticky and non-plastic; gradual smooth boundary.
7.1 – 7.6	3C1b	Yellow (10YR 7/6) to brownish yellow (10YR 6/6) when moist fine sandy loamy clay; massive structure; extremely hard; extremely firm; non-sticky and non-plastic; gradual smooth boundary.
7.6 – 8.2	3C2b	Brownish yellow (10YR 6/8) to brownish yellow (10YR 6/6) when moist medium sandy clay loam; massive structure; extremely hard, extremely firm; non-sticky and non-plastic; abrupt smooth boundary.
8.2 – 9.2	3C3b	Very pale brown (10YR 7/4) to yellowish brown (10YR 5/6) when moist stratified loamy lay to silt loam; massive structure to fine medium subangular blocky ear base; common mn staining on ped faces increasing near base; extremely hard, extremely firm; slightly sticky and slightly plastic; common matrix supported angular clasts to 0.7-in dia. (debris flow) near base of measured section; based of third wall (GDC trench log).

Table 4

Soil-Stratigraphic Measurement and Description, GDC East Trench, Bench 2, West Wall, Sta. 0+78

Depth (ft)	Horizon	Description
0.00 – 0.15	2B1b	Brown to dark brown (7.5YR 4/3) to dark brown (7.5YR 3/3) when moist coarse sandy loam; moderate medium subangular blocky structure; hard to very hard, very firm, plastic and slightly sticky; few very fine dark brown (7.5YR 3/3) clay films ling ped faces and bridging mineral grains; gradual wavy boundary.
0.15 – 0.20	2B2b	Dark brown (7.5YR 3/3) to brown (7.5YR 5/4) when moist medium sandy loam; moderate medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine dark brown (7.5YR 3/3) clay films bridging mineral grains; gradual wavy to gradual smooth boundary.
0.20 – 0.40	2B3b	Dark reddish brown (5YR 3/4) to brown (7.5YR 5/4) when moist fine sandy clay loam; massive to weak fine subangular blocky structure; very hard, very firm, slightly sticky and plastic; few very fine brown (7.5YR 5/4) clay films lining ped faces and bridging mineral grains; few very angular clasts to 0.2-in dia., lenticular unit to 3-in thick; gradual wavy boundary.
0.40 – 0.60	2B4b	Dark brown (7.5YR 3/3) to brown (7.YR 5/4) when moist coarse sandy clay loam; massive structure; hard, firm, sticky and plastic; few brown to dark brown (7.5YR 4/4) clay films lining ped faces and bridging mineral grains; few very angular pebbles increasing in frequency near base; gradual wavy boundary.
0.60 – 0.75	2C1b	Dark brown (10YR 3/3) to brown to dark brown (10YR) 4/3) when moist sandy clay loam; massive structure; hard, firm to very firm, slightly sticky and plastic; few very angular to common subrounded clasts near base; gradual wavy to abrupt wavy boundary.
0.75 – 1.00	2C2b	Dark brown (10YR 3/3) to brown to dark brown (7.5YR 4/3) when moist pebbly clay loam; massive structure; hard, very fir, slightly sticky and plastic; few very angular pebbles to 0.1 in dia., increasing near base; gradual wavy boundary.
1.00 – 1.10	2C3b	Dark yellowish brown (10YR 3/4) to dark brown (7.5YR 3/4) when moist sandy loamy clay; massive structure; hard to very hard, very firm, slightly sticky and slightly sticky; lenticular angular pebbles to 0.1-in dia. near base; gradual wavy to angular wavy boundary.

APPENDIX C: PHOTOS OF ARGYLE TRENCH

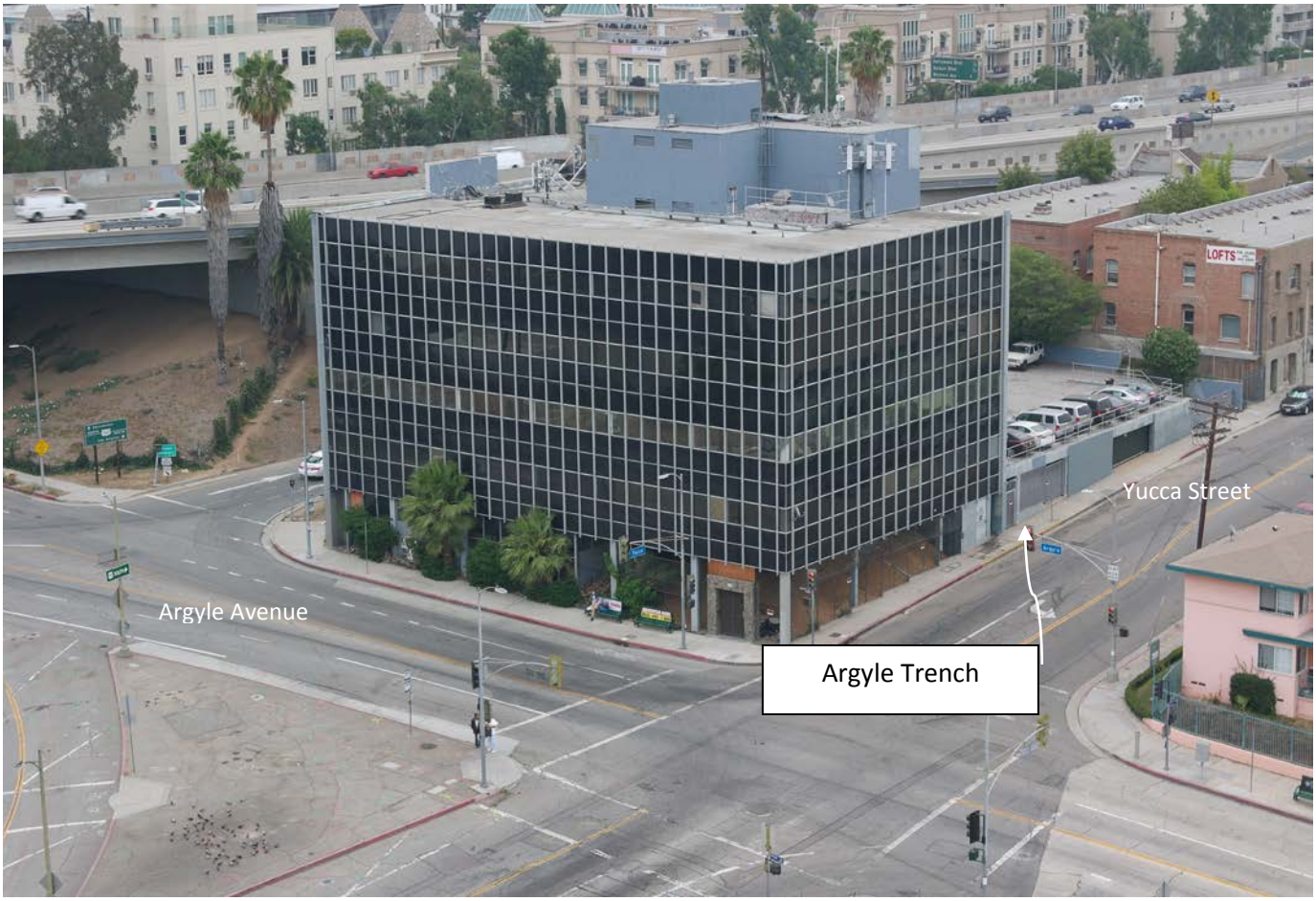

Photo 1:

Site 4. Looking northeast. Note that the Argyle trench (Plates 1 and 11) is located under the existing eastern parking structure.

Photo 2:

Site 4 Trench. Typical older alluvium (Qoal). Note the distinctive north-dipping stratification used to judge possible fault presence. Trench station numbers in red. For scale, the white string lines are two feet apart.

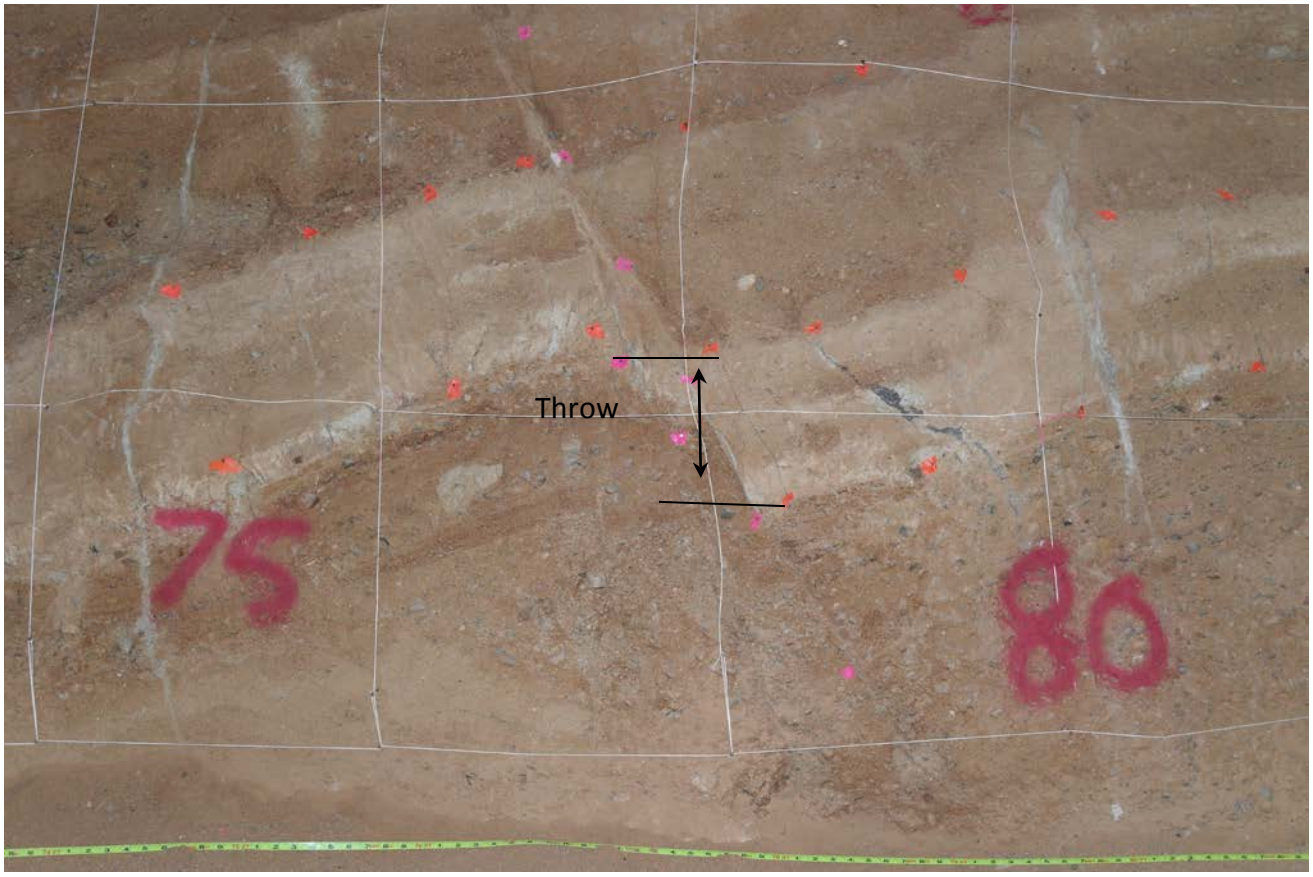

Photo 3:

Site 4 Trench. Typical small displacement fault in older alluvium (Qoal). Note throw. For scale, the horizontal white string lines are two feet apart. Strata dip north and the fault dips south toward the axis of the Yucca Street Anticline.

Photo 4:

Site 2 (Eastern Trench). Bedding plane slip surface within tilted (folded) older debris flow beds that are unconformably overlain by four unbroken colluvial wedges that are part of the upper Pleistocene mudflow deposit capped by a ~30ka buried paleosol.