CONESTOGA-ROVERS & ASSOCIATES

5900 Hollis Street, Suite A
Emeryville, California 94608
Telephone: (510) 420-0700 Fax: (510) 420-9170
www.CRAworld.com

TRANSMITTAL

DATE: April 23, 2013

REFERENCE NO.: 240524

PROJECT NAME: 4255 MacArthur Boulevard, Oakland

TO: Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RECEIVED
By Alameda County Environmental Health at 3:37 pm, Apr 24, 2013

Please find enclosed:
- ☐ Draft
- ☐ Originals
- ☐ Prints
- ☒ Final
- ☐ Other

Sent via:
- ☐ Mail
- ☐ Overnight Courier
- ☐ Same Day Courier
- ☒ Other GeoTracker and Alameda County FTP

QUANTITY	DESCRIPTION
1	Subsurface Investigation Work Plan

- ☐ As Requested
- ☐ For Your Use
- ☒ For Review and Comment
- ☐

COMMENTS:
If you have any questions regarding the contents of this document, please call Peter Schaefer at (510) 420-3319.

Copy to: Denis Brown, Shell Oil Products US (electronic copy)
Roland C. Malone Jr. Trust (property owner), Erik Parrish, Trustee (electronic copy)
Kenneth Williams, MacArthur/High Trailer Park, c/o Bookkeeping, 332 Peyton Drive, Hayward, CA 94544
Ed C. Ralston, ConocoPhillips Risk Management & Remediation (electronic copy)
Laura Wong, Phua Management (electronic copy)

Completed by: Peter Schaefer Signed: Peter Schaefer

Filing: **Correspondence File**

Denis L. Brown
Shell Oil Products US
HSE – Environmental Services
20945 S. Wilmington Ave.
Carson, CA 90810-1039
Tel (707) 865 0251
Fax (707) 865 2542
Email denis.l.brown@shell.com

Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Former Shell Service Station
4255 MacArthur Boulevard
Oakland, California
SAP Code 135701
Incident No. 98995758
ACEH Case No. RO0000486

Dear Mr. Wickham:

The attached document is provided for your review and comment. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

If you have any questions or concerns, please call me at (707) 865-0251.

Sincerely,

Denis L. Brown
Senior Program Manager

SUBSURFACE INVESIGATION WORK PLAN

FORMER SHELL SERVICE STATION
4255 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

SAP CODE	135701
INCIDENT NO.	98995758
AGENCY NO.	RO0000486

Prepared by:
Conestoga-Rovers & Associates

5900 Hollis Street, Suite A
Emeryville, California
U.S.A. 94608

Office: (510) 420-0700
Fax: (510) 420-9170

web: http://www.CRAworld.com

APRIL 23, 2013
REF. NO. 240524 (25)
This report is printed on recycled paper.

TABLE OF CONTENTS

LIST OF FIGURES
(Following Text)

LIST OF TABLES
(Following Text)

LIST OF APPENDICES

1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this work plan on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) to assess potential for soil vapor intrusion on and adjacent to the subject site as requested in Alameda County Environmental Health's (ACEH's) February 19, 2013 letter. ACEH's letter also requested updated cross sections.

The site is a former Shell Service Station located on the western corner of MacArthur Boulevard and High Street in Oakland, California (Figure 1). Currently the site is a vacant lot. The former site layout consisted of a kiosk, three underground storage tanks, and three dispenser islands (Figure 2). The area surrounding the site is of mixed commercial and residential use.

Updated cross sections are presented on Figures 3 and 4. A summary of previous work performed at the site and additional background information is contained in Appendix A. Historical boring logs are presented in Appendix B.

2.0 WORK TASKS

CRA proposes the following investigations to further evaluate the potential for soil vapor intrusion:

- Install three on-site (SVP-1A, SVP-6A, and SVP-19A) and four off-site (SVP-22 through SVP-25) nested soil vapor probes.
- Properly destroy soil vapor probes SVP-1 and SVP-6.
- Sample the seven new soil vapor probes and resample existing soil vapor probes SVP-4, SVP-5, SVP-7, SVP-13, SVP-14, SVP-15, SVP-18, and SVP-19 and sub-slab soil vapor probes SVP-16 and SVP-17.
- Install a minimum of two sets of temporary shallow soil vapor probes within the upper 3 feet of the vadose zone adjacent to existing soil vapor probes SVP-14 and SVP-15 to obtain shallow soil vapor profiles to further document attenuation of soil vapor concentrations.
- Conduct surface flux testing adjacent to existing soil vapor probes SVP-14 and SVP-15 and new soil vapor probes SVP-22 through SVP-25 to evaluate actual soil vapor discharge to ambient air. Because the mobile homes are not directly on the ground surface, comparisons with San Francisco Bay Regional Water Quality

Control Board's environmental screening levels[1] do not give an accurate estimation of the potential risk of vapor intrusion to the mobile homes.

Soil vapor probe locations are shown on Figure 2. CRA may select additional temporary shallow soil vapor probes and surface flux testing locations in the field based on the initial results to be provided by an on-site mobile laboratory. Specific tasks are described below.

2.1 PERMITS

CRA will obtain the appropriate permits to install and destroy the soil vapor probes from Alameda County Public Works Agency (ACPWA).

2.2 HEALTH AND SAFETY PLAN (HASP)

CRA will prepare a HASP to protect site workers. The plan will be kept on site during field activities and will be reviewed and signed by each site worker.

2.3 UTILITY CLEARANCE

CRA will mark the proposed drilling locations, and the locations will be cleared by Underground Service Alert and a private utility locator service prior to drilling.

2.4 SOIL VAPOR PROBE INSTALLATION

CRA proposes to install three on-site (SVP-1A, SVP-6A, and SVP-19A) and four off-site (SVP-22 through SVP-25) nested soil vapor probes at the locations shown on Figure 2.

Assuming the absence of subsurface obstructions, CRA will advance the soil borings to 5.5 feet below grade (fbg) using an air-knife. The nested soil vapor probes will be installed with two screen intervals (2.5 fbg and 5 fbg) at each location to assess the vertical attenuation of soil vapors.

---

1 *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater,* California Regional Water Quality Control Board, Interim Final – November 2007 [Revised May 2008] – Updated February 2013

A CRA geologist will supervise the drilling and describe the encountered soils using the Unified Soil Classification System and Munsell Soil Color Charts. CRA will prepare a boring log for each soil vapor probe boring, and photoionization detector measurements will be recorded on the boring logs.

After the borings are drilled, fixed vapor-sampling points will be installed in each boring using ¼-inch-diameter Teflon® tubing. Each point will use a 1-inch screen interval attached to the Teflon® tubing. To ensure the tubing does not curl or kink during installation, CRA will first straighten out each length of tubing prior to installation, and then use a small-diameter PVC guide pipe to hold the tubing in place within the boring while packing the annulus with sand. A clean, fine-grained silica sand filter pack will be installed approximately 6 inches below and above the deepest sampling point (5 fbg), and the guide pipe will be lifted as the sand pack is installed to ensure the pack stabilizes the tubing within each boring. The annulus will then be sealed to 6 inches below the 2.5-fbg sample point, using hydrated granular bentonite, set atop a 1-foot base of dry granular bentonite. A clean, fine-grained silica sand filter pack will be installed approximately 6 inches below and above the 2.5-fbg sample point, and the guide pipe will be lifted as the sand pack is installed in the same process as described for the deepest sample point. The annulus will then be sealed to the surface using hydrated granular bentonite, set atop a 1-foot base of dry granular bentonite. Each soil vapor probe will be completed at the surface using a traffic-rated well box at grade.

CRA will perform this work under the supervision of a professional geologist or engineer.

2.5 SOIL VAPOR PROBE DESTRUCTION

CRA proposes to properly destroy soil vapor probes SVP-1 and SVP-6 by drilling out to full depth using an air-knife drill rig and backfilling with neat cement. The soil vapor probe vaults will be removed, and the surface will be patched with concrete to the surrounding grade. CRA includes the probe logs in Appendix B. The proposed soil vapor probe destructions will be performed under the supervision of a professional geologist or engineer.

2.6 SOIL VAPOR PROBE SAMPLING

Following soil vapor probe installation, CRA proposes to sample the seven new soil probes and resample existing soil vapor probes SVP-4, SVP-5, SVP-7, SVP-13, SVP-14, SVP-15, SVP-18, and SVP-19 and sub-slab soil vapor probes SVP-16 and SVP-17.

CRA will sample the soil vapor probes using a vacuum pump and Tedlar® bags. Prior to sampling, CRA will purge at least three tubing volumes of air from the probes using a vacuum pump. Then CRA will attach a sealed "lung sampler" containing a 1-liter Tedlar® bag to the probe and attach the vacuum pump to the box. The vacuum pump will lower the pressure in the "lung sampler" and draw air from the probe into the Tedlar® bag. To avoid breakage, CRA will fill the bags no more than two-thirds full. Each sample will be labeled, entered onto a chain-of-custody, and either immediately transferred to the on-site mobile laboratory or placed into a protective box at room temperature for transport to a State of California-certified laboratory for analysis within 72 hours.

2.6.1 LEAK TESTING

To check the system for leaks, CRA will cover the soil vapor probe tool and sampling equipment with a containment unit (or shroud). Prior to soil vapor probe purging, CRA will introduce helium into the containment unit to obtain a minimum 50 percent (%) helium content level. CRA will confirm the helium content within the containment unit using a helium meter and will record the helium meter readings our field notes. Helium will continue to be introduced to the containment unit during soil vapor probe purging and sampling.

All samples will be analyzed in the field for helium using the helium meter. In the event that a soil vapor sample contains a helium content of greater than 10% of the source concentration (i.e., 10% of the helium content measured within the containment unit), the soil vapor sample will be considered invalid and recollected.

2.7 TEMPORARY SOIL VAPOR PROBE INSTALLATION

CRA proposes to install at least two sets of soil vapor probes into the subsurface adjacent to soil vapor probes SVP-14 and SVP-15 (Figure 2). The probes are proposed on the mobile home park property located southwest and down gradient of the subject site.

Assuming the absence of subsurface obstructions, CRA will advance the soil borings to 3 fbg using a direct-push rig. We will install three temporary soil vapor probes at each location with screen intervals at 0.5 fbg, 1.5 fbg, and 2.5 fbg to evaluate the vertical profile of shallow soil vapor concentrations. After the borings are advanced, fixed vapor-sampling points will be installed in each boring using 1/8-inch-diameter Teflon® tubing and #2/12 Monterey sand filter pack with a bentonite slurry seal. Following soil vapor sample collection described below, the soil vapor probe will be removed and the boreholes will be backfilled with neat cement grout.

CRA will perform this work under the supervision of a professional geologist or engineer.

2.8 TEMPORARY SOIL VAPOR PROBE SAMPLING

Following temporary probe installation, CRA will collect soil vapor samples from each sampling point for analysis by an on-site mobile laboratory.

CRA will sample all soil vapor probes using a vacuum pump and Tedlar® bags. Prior to sampling, CRA will purge at least three tubing volumes of air from the probes using a syringe. Immediately after purging, CRA will collect a soil vapor sample using a syringe. Each sample will be labeled, documented on a chain-of-custody, and submitted to an on-site laboratory for immediate analysis.

2.8.1 LEAK TESTING

During sampling, the sample location will be covered with an inverted bucket and 1,1-difluoroethane will be injected into the bucket to check for leaks. All samples will be analyzed by the on-site laboratory for 1,1-difluoroethane.

2.9 SURFACE FLUX TESTING

CRA will use surface flux chambers to isolate the asphalt ground surface from ambient air and collect soil vapor emanating from the subsurface at locations adjacent to the temporary soil vapor probes. Soil vapor and the constituents of concern build up over time in the static chamber headspace. CRA will then collect air samples from the chamber.

2.9.1 CHAMBER DEPLOYMENT

The flux chambers are constructed of stainless steel and are cylindrical, measuring approximately 12 inches in diameter and approximately 5 inches tall. Reflective shields constructed of aluminum foil will be secured to the chambers to minimize extreme variations in temperature. Nominal volume of the chambers is 7,500 cubic centimeters. CRA will place the chambers on the asphalt ground surface and cover the flanges with bentonite slurry to seal the chambers. After sealing the chambers, CRA will flush them with four volumes (30 liters) of petroleum hydrocarbon-free air. A sample will be collected from each chamber after flushing and analyzed to ensure the chamber is clean of contaminants at the start of the incubation. CRA will allow the chambers to incubate for a minimum of 4 hours prior to sampling to average out temporal effects on fluxes (wind, barometric pressure, etc.).

2.9.2 CHAMBER SAMPLING

Following the selected deployment duration, CRA will collect a vapor sample from the chamber through a sampling port using a gas-tight syringe connected via an on-off valve. The small-calibrated syringes will allow for careful monitoring of sample flow and volume. This procedure ensures that the chamber air is well mixed prior to collection without introducing excessive airflow, which could cause disturbance of the natural flux from the ground surface. The sample will be entered onto a chain-of-custody and immediately transferred to an on-site mobile laboratory for analysis.

2.10 CHEMICAL ANALYSES

The soil vapor samples collected from the permanent soil vapor probes will be analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, and methyl tertiary-butyl ether (MTBE) by EPA Method 8260B; for oxygen, carbon dioxide, and methane by ASTM D Method 1946; and for helium by ASTM D Method 1946 (M).

The soil vapor samples collected from the temporary soil vapor probes and vapor samples collected from the surface flux chambers will be analyzed for TPHg, BTEX, naphthalene, MTBE, and 1,1-difluoroethane by EPA Method 8260B (M); and for oxygen, carbon dioxide, and methane by GC/TCD. Quality control samples collected from the

flux chambers prior to the incubation period will be analyzed for TPHg, BTEX, naphthalene, and MTBE by EPA Method 8260B.

2.11 REPORT PREPARATION

Following receipt of analytical results from the laboratories, CRA will prepare a written report, which will include field procedures, boring logs, tabulated analytical data, and analytical laboratory reports.

3.0 SCHEDULE

CRA will implement the proposed activities upon receiving ACEH's written approval of this work plan and the appropriate permits from ACPWA.

All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

Peter Schaefer, CEG, CHG

Aubrey K. Cool, PG

FIGURES

12/16/08

I:\Shell\6-chars\2405--\240524-Oakland 4255 MacArthur\240524-FIGURES\240524 VICINITY.AI

FIGURE
1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Former Shell Service Station
4255 MacArthur Boulevard
Oakland, California

CONESTOGA-ROVERS
& ASSOCIATES

Vicinity Map

EXPLANATION

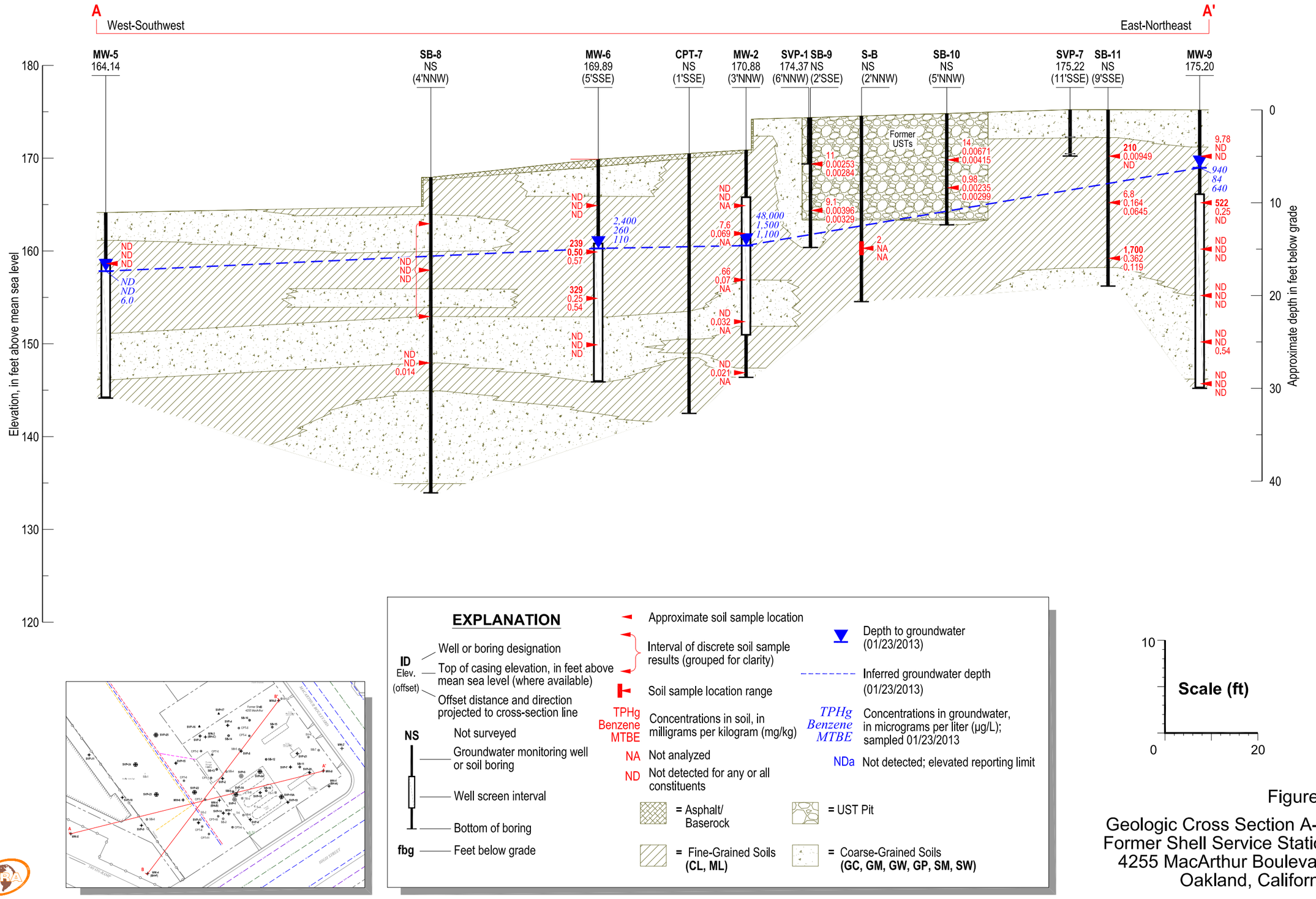
SVP-1	Soil vapor probe location, proposed for destruction
SVP-1A	Proposed soil vapor probe location
SVP-16	Sub-slab soil vapor probe location
SVP-9	Temporary soil vapor probe location
SB-9	Soil boring location (Shell)
SVP-1	Soil vapor probe location (Shell)
MW-1	Monitoring well location (Shell)
MW-1B	Monitoring well location (ConocoPhillips)
SVW-1	Soil vapor well location (ConocoPhillips)
SB-5	Soil boring location (Cambria, 2005)
CPT-1	CPT location (Cambria, 2005)
SB-3	Soil boring location (Cambria, 2005)
SB-1	Soil boring location (Cambria, 1998)
BH-D	Soil boring location (Weiss, 1993 & 1994)
S-A	Soil boring location (EMCON, 1985)
TB-1	Destroyed well location

STM	Storm drain line (STM)
SAN	Sanitary sewer line (SAN)
W	Water line (W)
E	Electrical line (E)
?	Unknown utility line (?)
G	Gas line (G)
A A'	Cross section line

Foot Clinic
Church Structures
MW-6 (20'NW)
MACARTHUR BOULEVARD
Dispenser
Driveway
MW-2
B'
MW-8
BH-D
Former Shell
4255 MacArthur
Former Dispenser Island (removed 1/03)
SVP-17
SB-16
SVP-4
SVP-16
CPT-5
SB-15
SVP-25
MW-3 (BH-C)
SVP-3
SB-14
CPT-4
BH-E
Former Dispenser Island (removed 11/95)
MW-7
SB-5
SVP-5
SB-7
CPT-2
CPT-3
SVP-21
SVP-11
SB-12
SVP-15
SVP-24
Former Storage Building
SB-11
SVP-7
SB-13
SB-4
SVP-6
SVP-20
A'
MW-9
SVP-6A
SB-1
Mobile Home Park
CPT-9
CPT-1
SVP-2
MW-1 (BH-A)
SVP-22
SB-9
SVP-1A
SB-10
S-B
SVP-23
SVP-18
TB-1
SVP-19A
SVP-10
MW-6
CPT-7
TB-2
SVP-19
MW-2 (BH-B)
SVP-1
S-A
Former USTs
SB-2
SVP-14
MW-7
S-I
SB-6
SB-8
SVP-13
CPT-10
SB-3
SVP-8
A
SVP-9
CPT-6
Storm Drain
Fenceline
CPT-8
MW-5
CPT-11
580 ON-RAMP
B
MW-4 (BH-F)
HIGH STREET
N
0 10 20ft

Figure 2
Site Plan
Former Shell Service Station
4255 MacArthur Boulevard
Oakland, California

I:\Shell\6-chars\2405--\240524-Oakland 4255 MacArthur\240524-FIGURES\240524 SITE PLAN.DWG (04/12/2013)



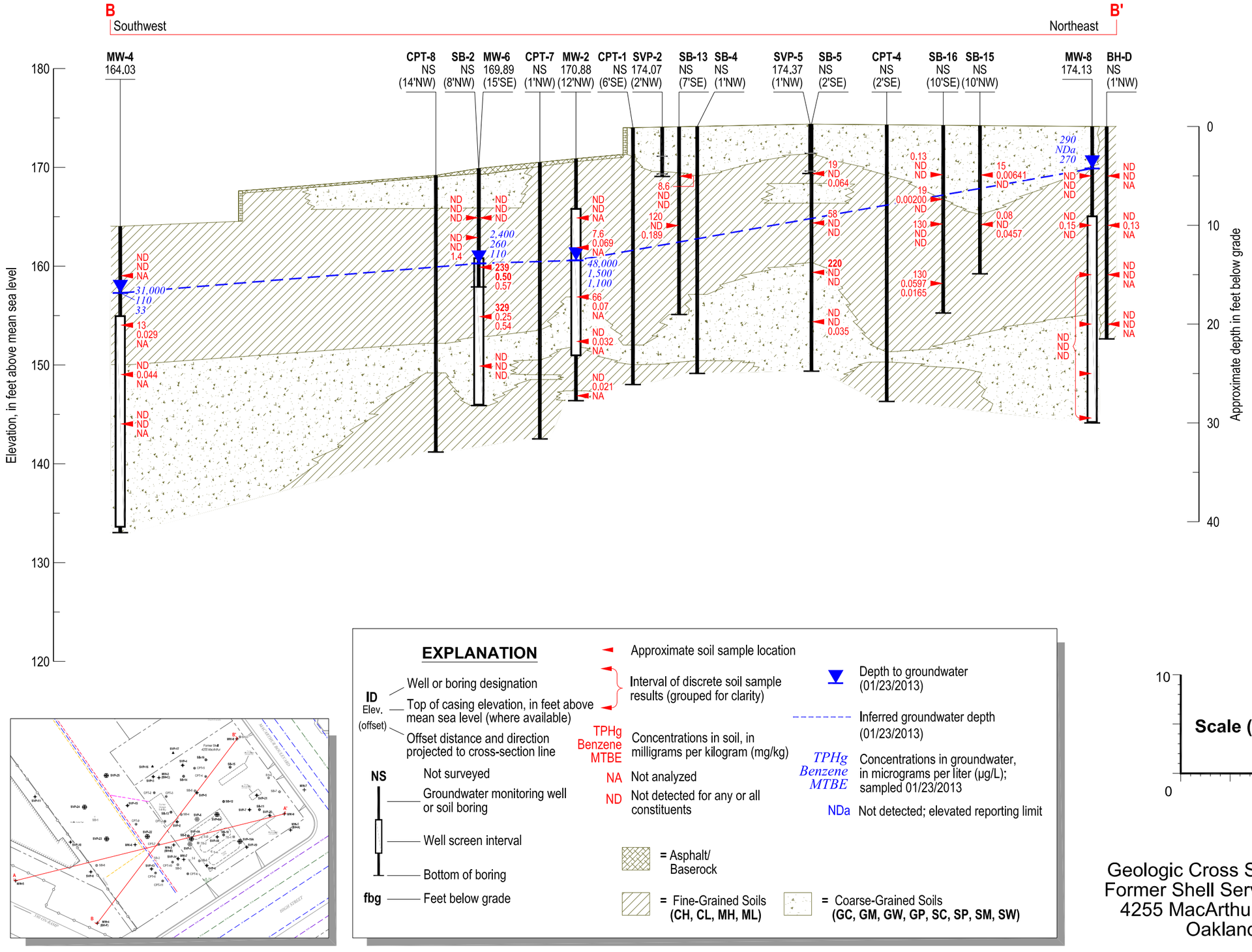
EXPLANATION

- ID / Elev. / (offset): Well or boring designation; Top of casing elevation, in feet above mean sea level (where available); Offset distance and direction projected to cross-section line
- NS: Not surveyed
- Groundwater monitoring well or soil boring
- Well screen interval
- Bottom of boring
- fbg: Feet below grade
- Approximate soil sample location
- Interval of discrete soil sample results (grouped for clarity)
- Soil sample location range
- TPHg / Benzene / MTBE: Concentrations in soil, in milligrams per kilogram (mg/kg)
- NA: Not analyzed
- ND: Not detected for any or all constituents
- Depth to groundwater (01/23/2013)
- Inferred groundwater depth (01/23/2013)
- *TPHg / Benzene / MTBE*: Concentrations in groundwater, in micrograms per liter (µg/L); sampled 01/23/2013
- NDa: Not detected; elevated reporting limit
- = Asphalt/ Baserock
- = UST Pit
- = Fine-Grained Soils (CL, ML)
- = Coarse-Grained Soils (GC, GM, GW, GP, SM, SW)

Figure 3

Geologic Cross Section A-A'
Former Shell Service Station
4255 MacArthur Boulevard
Oakland, California

I:\Shell\6-chars\2405--\240524-Oakland 4255 MacArthur\240524-FIGURES\240524 SITE PLAN (A-A').DWG (04/16/2013)



EXPLANATION

- ID / Elev. / (offset) — Well or boring designation; Top of casing elevation, in feet above mean sea level (where available); Offset distance and direction projected to cross-section line
- NS — Not surveyed
- Groundwater monitoring well or soil boring
- Well screen interval
- Bottom of boring
- fbg — Feet below grade
- Approximate soil sample location
- Interval of discrete soil sample results (grouped for clarity)
- TPHg / Benzene / MTBE — Concentrations in soil, in milligrams per kilogram (mg/kg)
- NA — Not analyzed
- ND — Not detected for any or all constituents
- Depth to groundwater (01/23/2013)
- Inferred groundwater depth (01/23/2013)
- *TPHg / Benzene / MTBE* — Concentrations in groundwater, in micrograms per liter (µg/L); sampled 01/23/2013
- NDa — Not detected; elevated reporting limit
- = Asphalt/ Baserock
- = Fine-Grained Soils (CH, CL, MH, ML)
- = Coarse-Grained Soils (GC, GM, GW, GP, SC, SP, SM, SW)

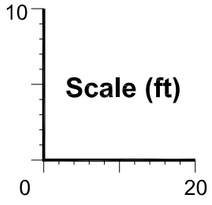


Figure 4

Geologic Cross Section B-B'
Former Shell Service Station
4255 MacArthur Boulevard
Oakland, California

I:\Shell\6-chars\2405--\240524-Oakland 4255 MacArthur\240524-FIGURES\240524 SITE PLAN (B-B').DWG (04/16/2013)

TABLE

TABLE 1

HISTORICAL SOIL VAPOR ANALYTICAL DATA
FORMER SHELL SERVICE STATION
4255 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*TPHg ($\mu g/m^3$)*	*B ($\mu g/m^3$)*	*T ($\mu g/m^3$)*	*E ($\mu g/m^3$)*	*X ($\mu g/m^3$)*	*Naphthalene ($\mu g/m^3$)*	*MTBE ($\mu g/m^3$)*	*Methane (%v)*	*Carbon Dioxide (%v)*	*Carbon Monoxide (%v)*	*Oxygen + Argon (%v)*	*Nitrogen (%v)*	*Helium (%v)*
SVP-1	3/9/2011	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-1	8/27/2011	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-1	11/14/2012	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-1	12/20/2012	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-1	3/9/2011	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-1	8/27/2011	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-1	11/14/2012	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-1	12/20/2012	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-2	3/9/2011	3	9,900	30	<19	130	120	---	<36	<0.500	<0.500	---	20.7	---	<0.0100
SVP-2	8/27/2011	3	<3,800	<16	<19	<22	<43	---	55	<0.500	<0.500	<0.500	19.8	80.2	<0.0100
SVP-2	11/14/2012	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-2	12/20/2012	3	8,000	<16	<19	<22	<43	---	<52	<0.500	<0.500	---	21.8	---	<0.0250
SVP-2	3/9/2011	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-2	8/27/2011	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-2	11/14/2012	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-2	12/20/2012	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-3	3/9/2011	3	13,000	38	<19	140	120	---	<36	<0.500	<0.500	---	20.9	---	<0.0100
SVP-3	8/27/2011	3	<3,800	<16	<19	<22	<43	---	<36	<0.500	<0.500	<0.500	22.0	78.0	<0.0100
SVP-3	3/9/2011	5	25,000	28	<19	220	210	---	<36	<0.500	1.36	---	19.9	---	<0.0100
SVP-3	8/27/2011	5	<3,800	<16	<19	<22	<43	---	<36	<0.500	0.543	<0.500	21.5	78.0	<0.0100
SVP-4	3/9/2011	3	1,800,000	<320	<380	460	<870	---	<720	0.664	1.42	---	17.4	---	1.00
SVP-4	8/27/2011	3	**7,900,000**	<1,600	<1,900	<2,200	<4,300	---	<3,600	3.76	11.1	<0.500	3.97	81.2	<0.0100
SVP-4	3/9/2011	5	**8,600,000**	<640	<750	<870	<1,700	---	<1,400	3.10	7.02	---	2.28	---	<0.0100
SVP-4	8/27/2011	5	**8,600,000**	<800	<940	<1,100	<2,200	---	<1,800	4.18	12.4	<0.500	1.94	81.5	<0.0100
SVP-5	3/9/2011	3	920,000	<640	<750	<870	<1,700	---	4,600	<0.500	<0.500	---	19.8	---	<0.0100

TABLE 1

HISTORICAL SOIL VAPOR ANALYTICAL DATA
FORMER SHELL SERVICE STATION
4255 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*TPHg ($\mu g/m^3$)*	*B ($\mu g/m^3$)*	*T ($\mu g/m^3$)*	*E ($\mu g/m^3$)*	*X ($\mu g/m^3$)*	*Naphthalene ($\mu g/m^3$)*	*MTBE ($\mu g/m^3$)*	*Methane (%v)*	*Carbon Dioxide (%v)*	*Carbon Monoxide (%v)*	*Oxygen + Argon (%v)*	*Nitrogen (%v)*	*Helium (%v)*
SVP-5	8/27/2011	3	<3,800	<16	<19	<22	<43	---	<36	<0.500	<0.500	<0.500	21.5	78.5	<0.0100
SVP-5	3/9/2011	5	**76,000,000**	**49,000**	<30,000	<35,000	<69,000	---	<58,000	12.3	5.89	---	2.52	---	<0.0100
SVP-5	8/27/2011	5	**130,000,000**	**120,000**	<9,400	25,000	<22,000	---	<18,000	23.2	9.09	<0.500	1.56	56.5	<0.0100
SVP-6	3/9/2011	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-6	8/27/2011	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-6	11/14/2012	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-6	12/20/2012	3	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-6	3/9/2011	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-6	8/27/2011	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-6	11/14/2012	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-6	12/20/2012	5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-7	3/9/2011	3	130,000	**590**	<150	2,000	1,500	---	<290	<0.500	<0.500	---	17.3	---	<0.0100
SVP-7	8/27/2011	3	18,000	23	<19	34	<43	---	170	<0.500	<0.500	<0.500	17.4	82.6	<0.0100
SVP-7	3/9/2011	5	**270,000,000**	**650,000**	<300,000	**420,000**	<690,000	---	<580,000	12.6	4.02	---	3.34	---	<0.0100
SVP-7	8/27/2011	5	**230,000,000**	**310,000**	<19,000	**140,000**	**88,000**	---	**66,000**	15.2	10.5	<0.500	1.96	60.2	<0.0100
SVP-8	3/9/2011	3	29,000	<26	<30	70	70	---	<58	<0.500	<0.500	---	19.7	---	<0.0100
SVP-8	8/27/2011	3	6,200	<16	<19	<22	<43	---	<36	<0.500	<0.500	<0.500	20.3	79.7	<0.0100
SVP-8	3/9/2011	5	33,000	36	<38	170	160	---	<72	<0.500	<0.500	---	19.3	---	<0.0100
SVP-8	8/27/2011	5	<3,800	<16	<19	<22	<43	---	130	<0.500	<0.500	<0.500	19.5	80.5	<0.0100
SVP-9	4/17/2012	1	<3,800	2.0 a	35	3.0 a	15 a	<52	---	<0.500	1.87	---	19.9	---	<0.0100
SVP-10	4/17/2012	1	<3,800	1.7 a	46	2.7 a	12 a	<52	---	<0.500	<0.500	---	21.9	---	<0.0100
SVP-11	4/17/2012	1	<3,800	0.92 a	36	1.9 a	10 a	<52	---	<0.500	1.01	---	21.0	---	0.0132

TABLE 1

HISTORICAL SOIL VAPOR ANALYTICAL DATA
FORMER SHELL SERVICE STATION
4255 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*TPHg ($\mu g/m^3$)*	*B ($\mu g/m^3$)*	*T ($\mu g/m^3$)*	*E ($\mu g/m^3$)*	*X ($\mu g/m^3$)*	*Naphthalene ($\mu g/m^3$)*	*MTBE ($\mu g/m^3$)*	*Methane (%v)*	*Carbon Dioxide (%v)*	*Carbon Monoxide (%v)*	*Oxygen + Argon (%v)*	*Nitrogen (%v)*	*Helium (%v)*
SVP-12	4/17/2012	1	<3,800	1.9 a	38	3.0 a	15 a	<52	---	<0.500	<0.500	---	21.5	---	<0.0100
SVP-13	11/14/2012	2.5	7,400	<16	31	<22	<43	<52	---	<0.500	<0.500	---	21.5	---	<0.0100
SVP-13	11/14/2012	5	6,000	<16	30	<22	<43	<52	---	<0.500	5.32	---	16.1	---	<0.0100
SVP-14	11/14/2012	2.5	**1,200,000**	<1,600	<1,900	<2,200	<4,300	<5,200	---	0.764	8.54	---	10.9	---	<0.0100
SVP-14	11/14/2012	5	**36,000,000**	<32,000	<38,000	<43,000	<87,000	<100,000	---	6.86	11.7	---	5.17	---	<0.0100
SVP-15	11/14/2012	2.5	**1,500,000**	<320	<380	<430	<870	<1,000	---	<0.500	8.84	---	2.48	---	<0.0100
SVP-15	11/14/2012	5	**1,900,000**	<400	<470	<540	<1,100	<1,300	---	<0.500	9.31	---	2.04	---	<0.0100
SVP-16	11/14/2012	0.5	<3,800	<16	66	<22	<43	<52	---	<0.500	2.55	---	21.1	---	0.0135
SVP-17	11/14/2012	0.5	<3,800	<16	44	<22	<43	<52	---	<0.500	2.35	---	20.8	---	0.0889
SVP-18	11/14/2012	2	97,000	<32	<38	46	210	<100	---	<0.500	<0.500	---	20.0	---	<0.0100
SVP-18	11/14/2012	4	48,000	<32	90	92	760	<100	---	<0.500	<0.500	---	18.6	---	<0.0100
SVP-19	11/14/2012	2.5	Unable to sample, water in probe			---	---	---	---	---	---	---	---	---	---
SVP-19	11/14/2012	5	**230,000,000**	**1,500,000**	<94,000	**300,000**	<220,000	<260,000	---	4.80	12.5	---	2.62	---	<0.0100
SVP-20	11/14/2012	2.5	4,100	<16	48	<22	<43	<52	---	<0.500	0.908	---	17.7	---	<0.0100
SVP-20	11/14/2012	5	260,000	<40	<47	<54	<110	<130	---	<0.500	3.83	---	12.9	---	<0.0100
SVP-21	11/14/2012	2.5	29,000	<16	30	120	750	<52	---	<0.500	<0.500	---	16.1	---	<0.0100
SVP-21	11/14/2012	5	<3,800	<16	<19	<22	<43	<52	---	<0.500	<0.500	---	15.1	---	<0.0100

TABLE 1

HISTORICAL SOIL VAPOR ANALYTICAL DATA
FORMER SHELL SERVICE STATION
4255 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*TPHg ($\mu g/m^3$)*	*B ($\mu g/m^3$)*	*T ($\mu g/m^3$)*	*E ($\mu g/m^3$)*	*X ($\mu g/m^3$)*	*Naphthalene ($\mu g/m^3$)*	*MTBE ($\mu g/m^3$)*	*Methane (%v)*	*Carbon Dioxide (%v)*	*Carbon Monoxide (%v)*	*Oxygen + Argon (%v)*	*Nitrogen (%v)*	*Helium (%v)*
Residential land use ESLs [b]:			*370,000*	*42*	*160,000*	*490*	*21,000*	*36*	*4,700*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Commercial land use ESLs [c]:			*3,100,000*	*420*	*1,300,000*	*4,900*	*58,000*	*360*	*47,000*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*

Notes:
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method TO-3M
BTEX = Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8260B (M)
Naphthalene analyzed by EPA Method 8260B (M)
MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260B (M)
Methane, carbon dioxide, and oxygen + argon analyzed by ASTM D-1946
Helium analyzed by ASTM D-1946 (M)
fbg = Feet below grade
$\mu g/m^3$ = Micrograms per cubic meter
%v = Percent by volume
<x = Not detected at reporting limit x
--- = Not analyzed
ESL = Environmental screening level
NA = No applicable ESL
Results in **bold** exceed ESL

a = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

b = San Francisco Bay Regional Water Quality Control Board (RWQCB) shallow soil gas screening level for evaluation of potential vapor intrusion concerns - residential land use from RWQCB's *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater*, California Regional Water Quality Control Board, Interim Final - November 2007 (Revised May 2008) - Updated February 2013.

c = San Francisco Bay Regional Water Quality Control Board (RWQCB) shallow soil gas screening level for evaluation of potential vapor intrusion concerns - commercial/industrial land use from RWQCB's *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater*, California Regional Water Quality Control Board, Interim Final - November 2007 (Revised May 2008) - Updated February 2013.

APPENDIX A

SITE HISTORY

SITE HISTORY

1985 Subsurface Investigation: In June 1985, Emcon Associates (Emcon) drilled two soil borings (S-A and S-B) and installed one groundwater monitoring well (S-1) adjacent to the underground storage tanks (USTs). Up to 15,800 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg) were detected in the shallow soil samples from inside the UST area. In July 1992, GeoStrategies, Inc. performed a site reconnaissance and verified that the original monitoring well had been destroyed during the 1985 UST replacement. Investigation results are presented in Emcon's July 26, 1985 letter to Gettler-Ryan, Inc.

1985 UST Replacement: In December 1985, the USTs were replaced, and approximately 938 cubic yards of hydrocarbon-bearing soil were transported to a disposal facility. Up to 22,000 mg/kg total volatile hydrocarbons, 500 mg/kg benzene, 2,200 mg/kg toluene, and 4,500 mg/kg xylenes were detected in the soil samples from the excavation.

1993 Subsurface Investigation: In November 1993, Weiss Associates (WA) drilled three soil borings (BH-A, BH-B, and BH-C), which were converted into monitoring wells (MW-1, MW-2, and MW-3). Soil samples contained up to 1,700 mg/kg TPHg, 3.3 mg/kg benzene, 5.7 mg/kg toluene, 33 mg/kg ethylbenzene, and 44 mg/kg xylenes. WA's March 14, 1994 *Subsurface Investigation* report details the investigation results.

1994 Subsurface Investigation: In November 1994, WA drilled two on-site soil borings (BH-D and BH-E) and one off-site boring (BH-F) which was subsequently completed as a monitoring well (MW-4). Soil samples contained up to 5,900 mg/kg TPHg, 23 mg/kg benzene, 160 mg/kg toluene, 120 mg/kg ethylbenzene, and 430 mg/kg xylenes (BH-E at 5 feet below grade [fbg]). WA's January 26, 1995 *Subsurface Investigation* report presents details of the investigation.

1994-1997 Separate-Phase Hydrocarbon (SPH) Removal: SPHs were observed periodically in wells MW-2 and MW-3 between 1994 and 1997. During that time, an estimated total of 19.6 pounds of SPHs was removed from monitoring wells by bailing.

1995 Dispenser and Piping Removal and Sampling: In November 1995, WA collected 15 soil samples during dispenser and piping replacements. The soil samples contained up to 7,800 mg/kg TPHg, 0.85 mg/kg benzene, 51 mg/kg toluene, 71 mg/kg ethylbenzene, and 540 mg/kg xylenes. During the dispenser replacements, horizontal wells HW-1 through HW-4 were installed in the vadose zone at approximately 5 fbg and adjacent to the former piping and dispensers to facilitate future removal of petroleum hydrocarbons from the impacted soil. Approximately 68 cubic yards of soil were excavated for off-site disposal from the area of the

piping and dispensers. Dispenser and piping investigation results are discussed in WA's April 1, 1996 *Dispenser Replacement Sampling* report.

1997 Soil Vapor Extraction (SVE) Test: In August 1997, Cambria Environmental Technology, Inc. (Cambria) performed short-term SVE tests using an internal combustion engine on horizontal vapor extraction wells HW-1 through HW-4 and monitoring wells MW-2 and MW-3. Cambria measured vapor extraction flow rates, the vacuum applied to the wellheads, and the vacuum influence in nearby wells. Cambria calculated an effective radius of influence of 35 to 50 feet during testing of wells MW-2 and MW-3. Cambria concluded that the relatively high TPHg removal rates measured in horizontal wells HW-1 through HW-4 were most likely temporary and were not representative of site conditions due to extensive well screen in permeable fill material and that the low hydrocarbon removal rates in wells MW-2 and MW-3 were likely more representative of native soil conditions. Cambria's February 23, 1997 *Soil Vapor Extraction Test Report* presents SVE test results.

1998 Subsurface Investigation: In February 1998, Cambria drilled two off-site borings (SB-1 and SB-2) in the mobile home park adjacent to the Shell site. No TPHg or benzene was detected in the soil samples. Soil samples contained up to 1.4 mg/kg methyl tertiary-butyl ether (MTBE) and 7,210 mg/kg total organic carbon. Grab groundwater samples contained up to 7,700 micrograms per liter (µg/L) TPHg, 210 µg/L benzene, and 46,000 µg/L MTBE (SB-2). Two soil samples (SB-1 and SB-2 at 5.5 fbg) were analyzed for physical parameters: total porosity was 35.2 percent (%) and 37.4%, and specific permeability was 181 millidarcies (md) and 71 md, respectively. However, the laboratory noted that due to fine fractures that developed in the samples upon drying, the measured specific permeability values were an order of magnitude or more too high. The soil boring investigation results are presented in Cambria's March 19, 1998 *Subsurface Investigation* report.

1999-2003 Groundwater Extraction (GWE): From April 1999 until September 2003, Cambria conducted monthly GWE using a vacuum truck. Mobile GWE removed an estimated 15.1 pounds of liquid-phase hydrocarbons and 26.8 pounds of liquid-phase MTBE. GWE was discontinued at the site after September 2003 due to low pumping volumes. Quarterly groundwater monitoring reports during this period summarize GWE operations and mass removal.

2000-2003 Dual-Phase Vapor Extraction (DVE): From November 2000 to June 2001, from April 2002 to September 2003, and from July 2003 to September 2003, Cambria conducted mobile DVE using a vacuum truck. DVE was discontinued after September 2003 due to decreased mass removal. DVE removed an estimated 26.4 pounds of vapor-phase hydrocarbons. DVE dates and mass removal are provided in the quarterly groundwater monitoring reports during this period.

2001 Sensitive Receptor Survey (SRS), Conduit Study, and Site Conceptual Model (SCM): Cambria's SRS identified 25 monitoring wells, 4 cathodic protection wells, and 1 domestic well within one-half mile of the site. Cambria's conduit study concluded that nearby sewer, storm drain, and water lines located between 8 to 13 fbg could serve as preferential pathways for petroleum hydrocarbon and MTBE migration. However, Cambria did not identify any nearby conduits down gradient from the site. The SRS, conduit study, and SCM are included in Cambria's May 31, 2001 *First Quarter 2001 Monitoring Report, Sensitive Receptor Survey, and Site Conceptual Model.*

2001 Subsurface Investigation: In November 2001, Cambria installed one down-gradient monitoring well (MW-5) approximately 200 feet southwest of the site, on the Caltrans right-of-way adjacent to the I-580 on-ramp. No TPHg, benzene, toluene, ethylbenzene, and total xylenes (BTEX), or MTBE was detected in the soil sample collected during the investigation. Cambria's January 10, 2002 *Off-Site Monitoring Well Installation Report* presents the investigation results.

2003 Tank Removal and Soil Excavation: In January and February 2003, L.A. Perks Plumbing and Heating removed all surface features, USTs, fuel dispensers, associated product piping, two tank backfill wells (TB-1 and TB-2), and four horizontal wells (HW-1 through HW-4). Cambria collected 31 soil samples and 1 grab groundwater sample and supervised over-excavation of hydrocarbon-impacted soils. Approximately 875 cubic yards of soil were removed from the site during the tank pull and over-excavation activities. Approximately 4,600 gallons of groundwater were pumped to dewater the UST excavation prior to removing the tanks. Soil samples from the former UST area contained up to 380 mg/kg TPHg, 1.7 mg/kg benzene, and 1.2 mg/kg MTBE (TP-5). The grab groundwater sample (TP-1-Water) from the former tank excavation area contained 11,000 µg/L TPHg, 410 µg/L benzene, and 5,200 µg/L MTBE. Soil samples from soil remaining in soil in the former dispenser areas contained up to 980 mg/kg TPHg, 1.2 mg/kg benzene, and 0.9 mg/kg MTBE. Following over-excavation, approximately 720 pounds of oxygen-releasing compound were mixed in the excavation base before backfilling with 1.5-inch drain rock to 4 fbg. The remainder of the excavation was backfilled and compacted with Class II road base material. Cambria's April 28, 2003 *Tank Closure and Soil Excavation Report* provides details of these activities.

2003-2011 SPH Removal: SPHs were observed periodically in wells MW-2, MW-3, and MW-4 between 2003 and 2011. An estimated total of 28.53 pounds of SPHs have been removed from monitoring wells by manual bailing, with a skimmer bailer, and using SPH-absorbent canisters. In September 2009, Conestoga-Rovers & Associates (CRA) conducted mobile GWE on wells MW-2 and MW-3, which yielded approximately 44 gallons of water from each well with negligible SPHs.

April 2005 Subsurface Investigation: In April 2005, Cambria drilled 11 cone penetrometer test (CPT) borings (CPT-1 through CPT-11) and 2 direct-push borings (SB-3 and SB-4). At each CPT location, an ultraviolet-induced florescence module was used to identify hydrocarbons in the subsurface. No soil samples were submitted for laboratory analysis. Based on the data collected during this investigation, it appeared that no SPHs were present at these locations, but that dissolved-phase hydrocarbons are present at most locations at two distinct depths: a shallow zone in the silt and clay above 17 fbg and a deeper zone in the silt, clay, and sand from approximately 19 to 20 fbg to the bottom of the borings at 25 fbg. Cambria's June 6, 2005 *Subsurface Investigation Report* presents details of this investigation.

October 2005 Subsurface Investigation: In October 2005, Cambria drilled four soil borings (SB-5 through SB-8). Soil samples contained up to 2,600 mg/kg TPHg, 13 mg/kg benzene, 17 mg/kg toluene, 45 mg/kg ethylbenzene, 270 mg/kg xylenes, 1.2 mg/kg MTBE, and 1.6 mg/kg tertiary-butyl alcohol. Cambria's December 14, 2005 *Subsurface Investigation Report presents* details of the investigation.

2006 Subsurface Investigation: In June 2006, Cambria installed four groundwater monitoring wells (MW-6 through MW-9). Soil samples from the well borings contained up to 552 mg/kg TPHg, 1.4 mg/kg benzene, and 3.1 mg/kg MTBE. Cambria's September 6, 2006 *Well Installation Report* presents details of the investigation.

2011 Subsurface Investigations: In February 2011, CRA installed eight nested soil vapor probes (SVP-1 through SVP-8) with screens at approximately 3 and 5 fbg. Soil vapor samples from the probes contained up to 270,000,000 micrograms per cubic meter ($\mu g/m^3$) TPHg, 650,000 $\mu g/m^3$ benzene, 420,000 $\mu g/m^3$ ethylbenzene, 1,500 $\mu g/m^3$ total xylenes, and 4,600 $\mu g/m^3$ MTBE. No toluene was detected in the soil vapor samples. CRA's April 25, 2011 *Soil Vapor Probe Installation and Sampling Report* details this investigation.

In August 2011, CRA collected samples from six of the soil vapor probes, which contained up to 230,000,000 $\mu g/m^3$ TPHg, 310,000 $\mu g/m^3$ benzene, 140,000 $\mu g/m^3$ ethylbenzene, 88,000 $\mu g/m^3$ total xylenes, and 66,000 $\mu g/m^3$ MTBE. No toluene was detected in the soil vapor samples. CRA's January 9, 2012 *Soil Vapor Sampling Report* details these results.

In November 2011, CRA drilled eight soil borings (SB-9 through SB-16) to further evaluate on-site soil and groundwater conditions. Only the TPHg soil detections in boring SB-11 at 16 fbg and the TPHg, ethylbenzene, and total xylenes detections in SB-12 at 10 fbg exceed the San Francisco Bay Regional Water Quality Control Board environmental screening levels

(ESLs)[1] for soil where groundwater is not a drinking water source. No significant residual vadose zone BTEX source was identified during this investigation. Six grab groundwater samples were collected from borings SB-9 through SB-11 and SB-14 through SB-16. TPHg and/or BTEX concentrations exceeded ESLs in four of the six grab groundwater samples, with the maximum concentrations detected in the sample collected from boring SB-16. Fuel oxygenate concentrations in the grab groundwater samples did not exceed ESLs. One soil sample (SB-13) was collected for analysis of physical parameters. CRA's January 6, 2012 *Subsurface Investigation Report* provides investigation details.

2012 Subsurface Investigations: In April 2012, CRA installed and sampled four temporary soil vapor probes (SVP-9 through SVP-12) at the residential care facility located at 4240 Redding Street, Oakland. All constituent of concern detections were below ESLs for residential land use in all soil vapor samples. Investigation results are provided in CRA's May 4, 2012 *Subsurface Investigation Report.*

In October 2012, CRA installed three nested soil vapor probes (SVP-13 through SVP-15) in the mobile home park west of the site, two sub-slab soil vapor probes (SVP-16 and SVP-17) within the church building north of the site, and four nested soil vapor probes (SVP-18 through SVP-21) on site. Soil vapor samples from the probes installed within the mobile home park contained up to 36,000,000 µg/m^3 TPHg and exceeded the ESL in probes SVP-14 and SVP-15. No BTEX, naphthalene, or MTBE was detected in these samples; however, reporting limits were elevated due to TPHg concentrations. Concentrations in samples collected from 2.5 fbg in probes SVP-14 and SVP-15 were lower than concentrations in samples collected from 5 fbg, demonstrating vertical attenuation of TPHg. No constituents of concern exceeded ESLs in the sub-slab soil vapor samples. Soil vapor samples from the probes installed on site contained up to 230,000,000 µg/m^3 TPHg. No BTEX, naphthalene, or MTBE concentrations exceeded ESLs, with the exception of 1,500,000 µg/m^3 benzene and 300,000 µg/m^3 ethylbenzene detected in the soil vapor sample from probe SVP-19 at 5 fbg. CRA was unable to collect a sample from SVP-19 at 2.5 fbg due to water in the probe. CRA attempted to sample existing nested soil vapor probes SVP-1, SVP-2, and SVP-6 on November 14 and December 20, 2012. Due to water in the probes, we were unable to collect samples from the probes, with the exception of SVP-2 at 3 fbg on December 20, 2012. Investigation results are presented in CRA's January 10, 2013 *Subsurface Investigation Report.*

Groundwater Monitoring Program: Groundwater sampling began in November 1993. Historically, SPHs have been observed intermittently in wells MW-2 and MW-3. SPHs were also observed in MW-4 during a single sampling event in August 2010, and since the

---

1 *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater,* California Regional Water Quality Control Board, Interim Final - November 2007 [Revised May 2008] - Updated February 2013

December 2008 sampling event, no SPHs have been observed in MW-3. Groundwater is currently monitored and sampled semiannually during the first and third quarters.

APPENDIX B

BORING LOGS

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-02.01 BORING NO. S-1

PROJECT NAME Gettler-Ryan, Shell, High and MacArthur PAGE 1 OF 1

BY JB DATE 6/10/85 SURFACE ELEV.

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0			ASPHALT CLAY; Fill; slight product odor
				5		CL	CLAY; yellowish brown (10YR, 5/4); 10-20% fine to coarse gravel; trace fine sand strong product odor.
				10			
	5	34		15	1		@15': 20-25% fine to coarse sand; silty; 10-20% fine to medium gravel; hard; moist; slight product odor.
	5	38	▽	20	2		@18.5-20': greenish blue to light olive brown (2.5Y, 5/6); 10-20% fine to coarse gravel; trace fine sand; hard; moist moderate product odor.
	3.75	32		25	3		@24': grayish brown (2.5Y, 5/2); 5-10% coarse gravel; trace fine sand; very stiff; no product odor.
	4.5	30		30	4		@29': yellowish brown (10YR, 5/4) silty; 10-15% fine to medium sand; very stiff; moist; no product odor.
				35			HOLE TERMINATED at 30 feet: SUFFICIENT INFORMATION OBTAINED.
				40			

REMARKS Drilled by 8-inch continuous flight hollow stem auger
Converted to 3-inch monitoring well, detailed on Plate D.

EMCON ASSOCIATES

PLATE C

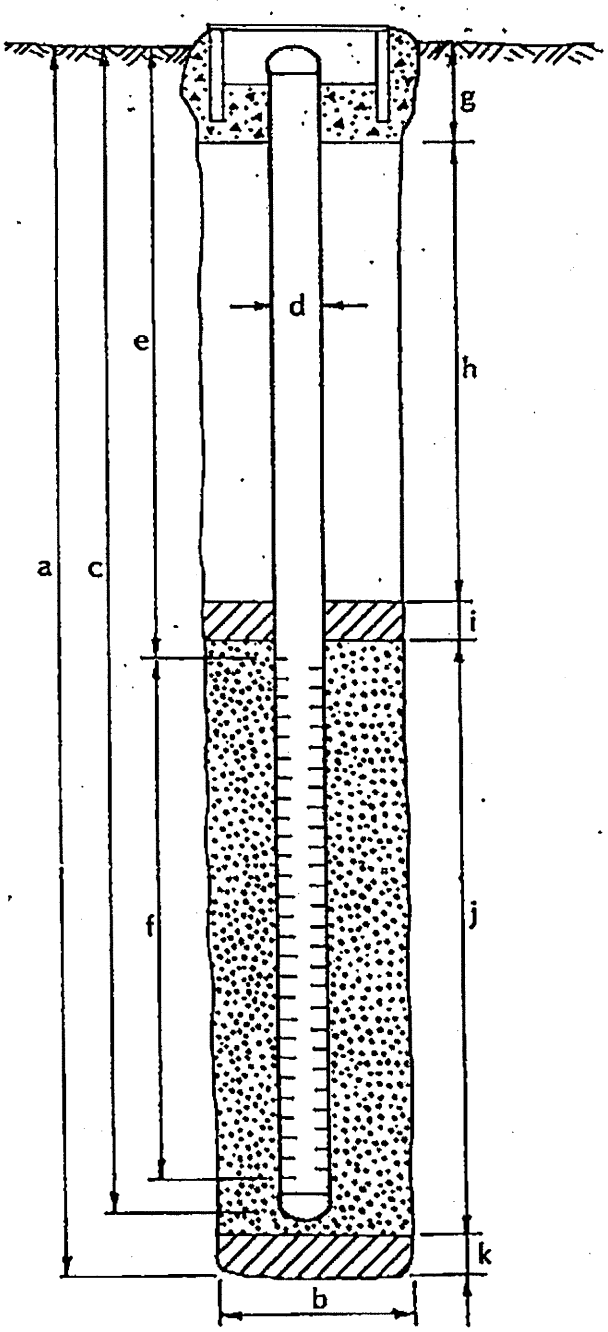
WELL DETAILS

EMCON ASSOCIATES

PROJECT NUMBER 738-02.01
PROJECT NAME Gettler-Ryan, Shell
COUNTY Alameda
WELL PERMIT NO.

BORING / WELL NO. S-1
TOP OF CASING ELEV.
GROUND SURFACE ELEV.
DATUM

G-5 vault box (Std.)



EXPLORATORY BORING

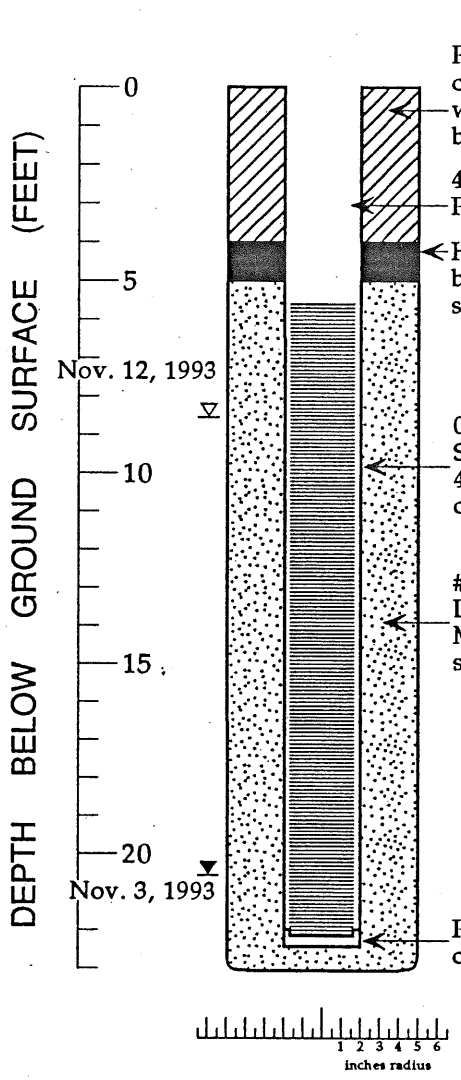
a. Total depth 30 ft.
b. Diameter 8 in.
Drilling method Hollow-Stem Auger

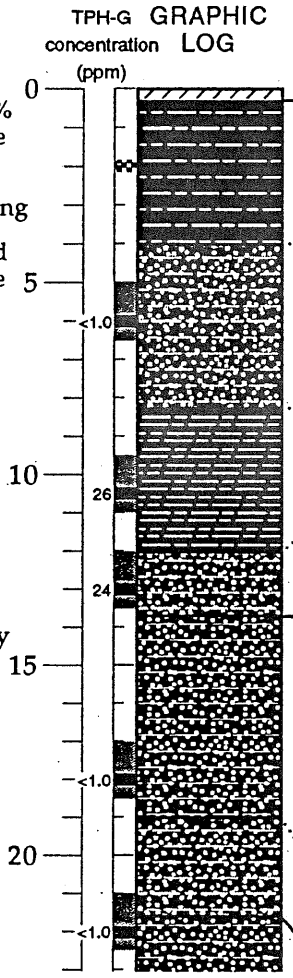
WELL CONSTRUCTION

c. Casing length 29 ft.
Material Schedule 40 PVC
d. Diameter 3 in.
e. Depth to top perforations 18 ft.
f. Perforated length 11 ft.
Perforated interval from 18 to 29 ft.
Perforation type Slotted Screen
Perforation size 0.020 inch
g. Surface seal 4.5 ft.
Seal material Cement
h. Backfill - ft.
Backfill material Included in g.
i. Seal 0.5 ft.
Seal material Bentonite
j. Gravel pack (5 to 29 ft.) 24 ft.
Pack material 6 x 12 Monterey Sand
k. Bottom seal 1 ft.
Seal material Compacted Clay

PLATE D

MONITORING WELL MW-1 (BH-A)





DESCRIPTION

Asphaltic concrete

Silty CLAY (CH); light brown; soft; damp; 60% clay; 40% silt; high plasticity; very low K

Silty SAND (SM); light brown; medium dense; damp; 5% clay; 25% silt; 70% sand; moderate K

Blue-gray silty clay layer at 5.5'

Clayey SILT (MH); light brown; firm; damp; 15% clay; 80% silt; 5% sand; medium plasticity; low K; MnO_2 staining

Silty SAND (SM); light brown; medium dense; moist; 20% silt; 80% sand; moderate ~~to high~~ K

Clayey SAND (SC); green-gray; dense; damp; 15% clay; 10% silt; 75% sand; moderate K

Yellow-brown; dense; moist; 30% clay; 20% silt; 50% sand; moderate K at 17.0'

Gravel to 0.25" diameter at 18.0'

Silty SAND (SM); light brown; loose; moist; 5% clay; 15% silt; 80% sand; moderate ~~to high~~ K

Clayey SAND (SC); yellow-brown; dense; moist; 30% clay; 20% silt; 50% sand; moderate K

low-to

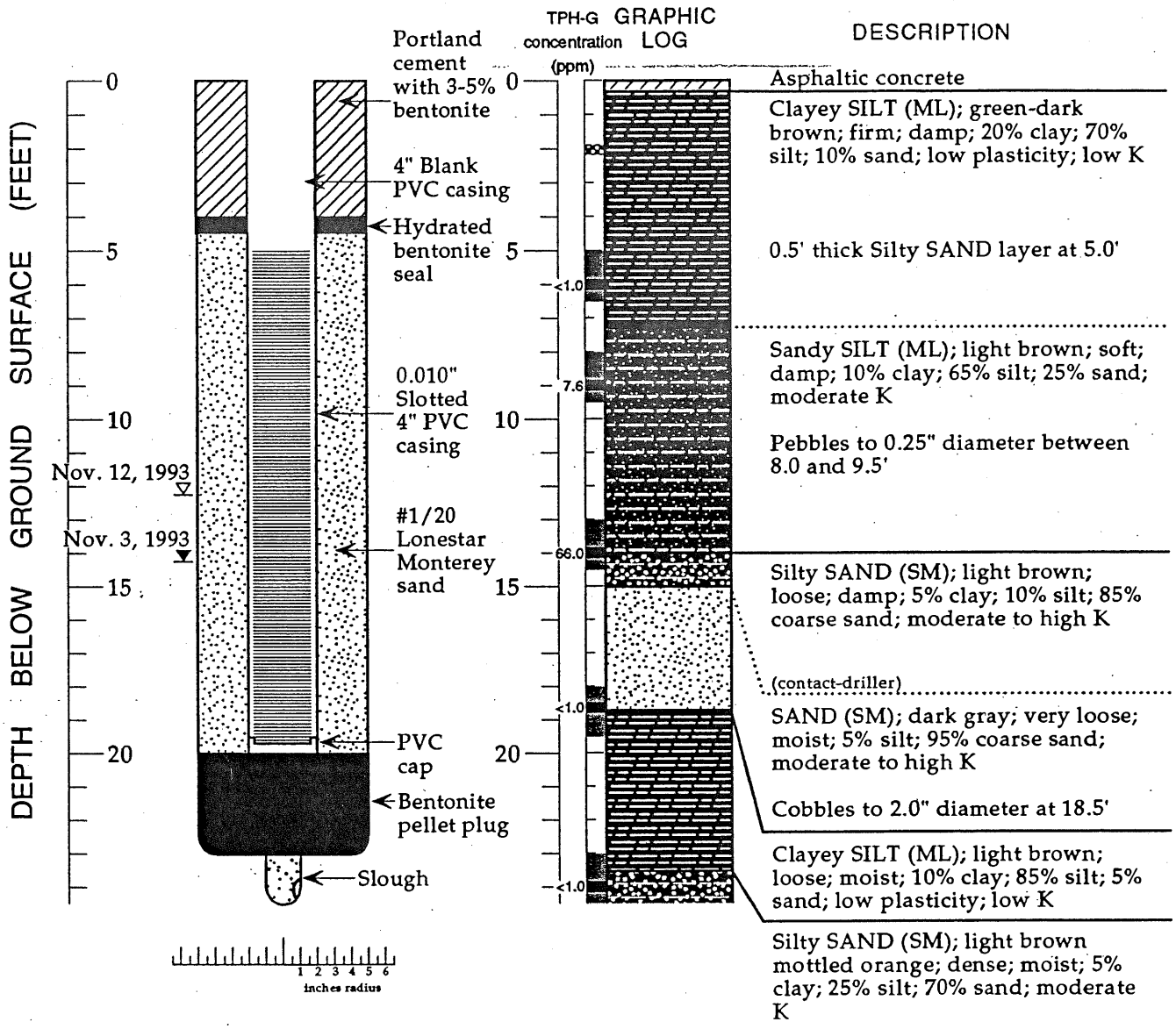
EXPLANATION

- ▼ Water level during drilling (date)
- ▽ Water level (date)
- ——····—— Contact (dotted where approximate)
- —?—?— Uncertain contact
- ////////// Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By:	Janet K. Macdonald
Supervisor:	N. Scott MacLeod; RG 5747
Drilling Company:	Soils Exploration Services, Vacaville, CA
License Number:	C57-582696
Driller:	Morris Petersen
Drilling Method:	Hollow-stem auger
Date Drilled:	November 3, 1993
Well Head Completion:	4" locking well-plug, traffic-rated vault
Type of Sampler:	Split barrel (2" ID)
Ground Surface Elevation:	175.79 feet above mean sea level
TPH-G:	Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-1 (BH-A) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

MONITORING WELL MW-2 (BH-B)



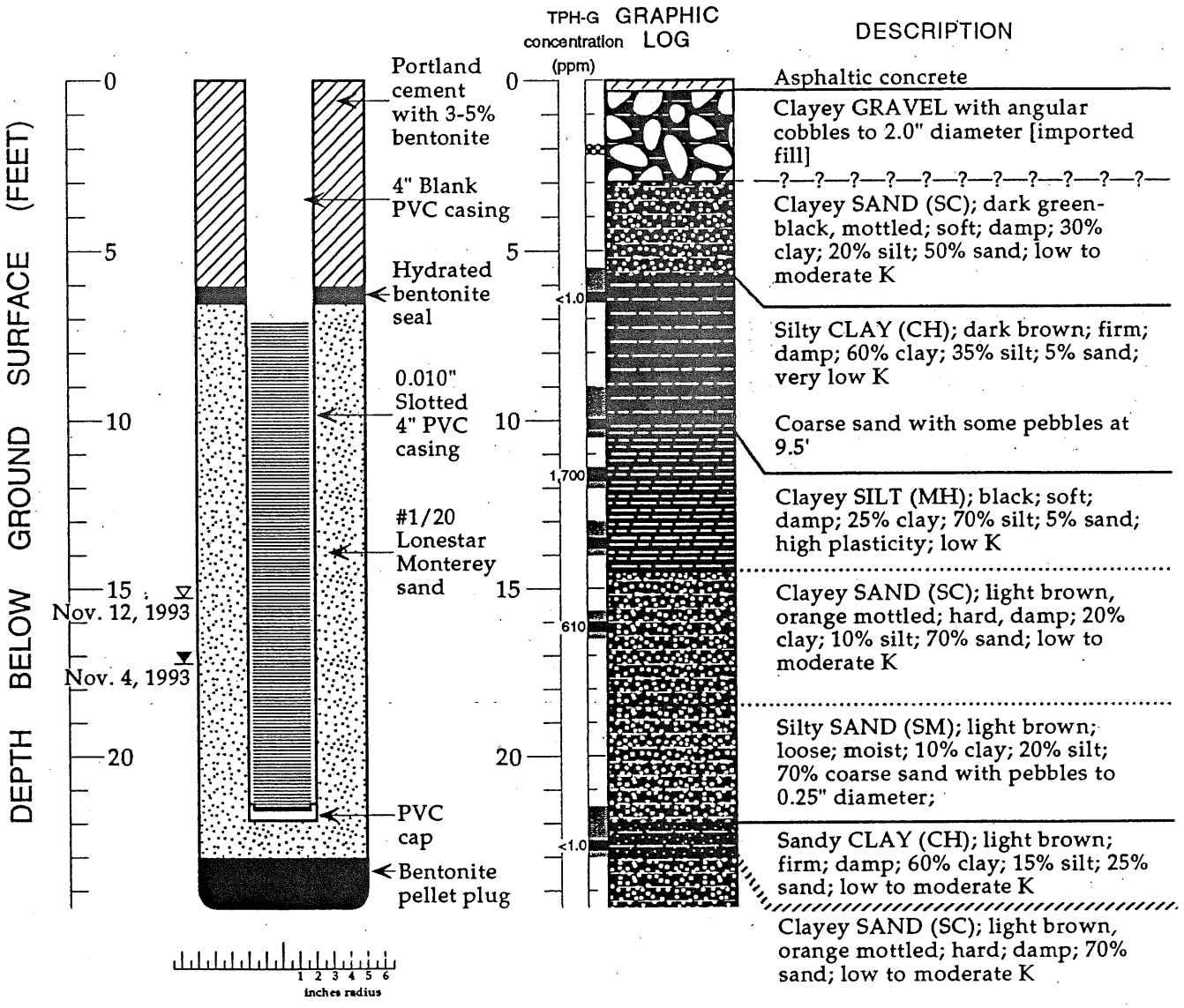
EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approximate)
- Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By: Janet K. Macdonald
Supervisor: N. Scott MacLeod; RG 5747
Drilling Company: Soils Exploration Services, Vacaville,CA
License Number: C57-582696
Driller: Morris Peterson
Drilling Method: Hollow-stem auger
Date Drilled: November 3, 1993
Well Head Completion: 4" locking well-plug, traffic-rated vault
Type of Sampler: Split barrel (2" ID)
Ground Surface Elevation: 170.91 feet above mean sea level
TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-2 (BH-B) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

MONITORING WELL MW-3 (BH-C)



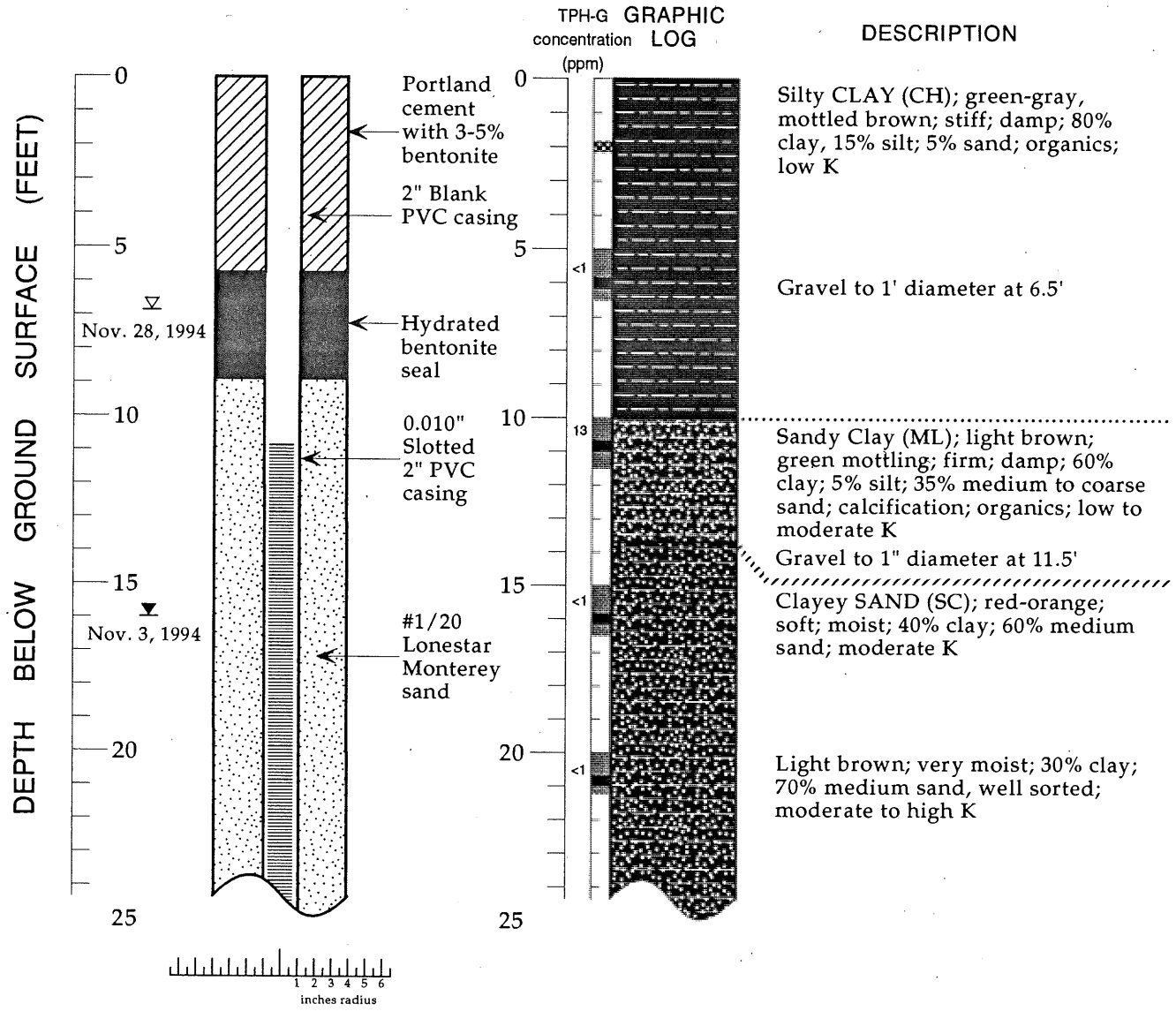
EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approximate)
- Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By: Janet K. Macdonald
Supervisor: N. Scott MacLeod; RG 5747
Drilling Company: Soils Exploration Services, Vacaville, CA
License Number: C57-582696
Driller: Morris Peterson
Drilling Method: Hollow-stem auger
Date Drilled: November 4, 1993
Well Head Completion: 4" locking well-plug, traffic-rated vault
Type of Sampler: Split barrel (2" ID)
Ground Surface Elevation: 174.61 feet above mean sea level
TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-3 (BH-C) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

MONITORING WELL MW-4 (BH-F)



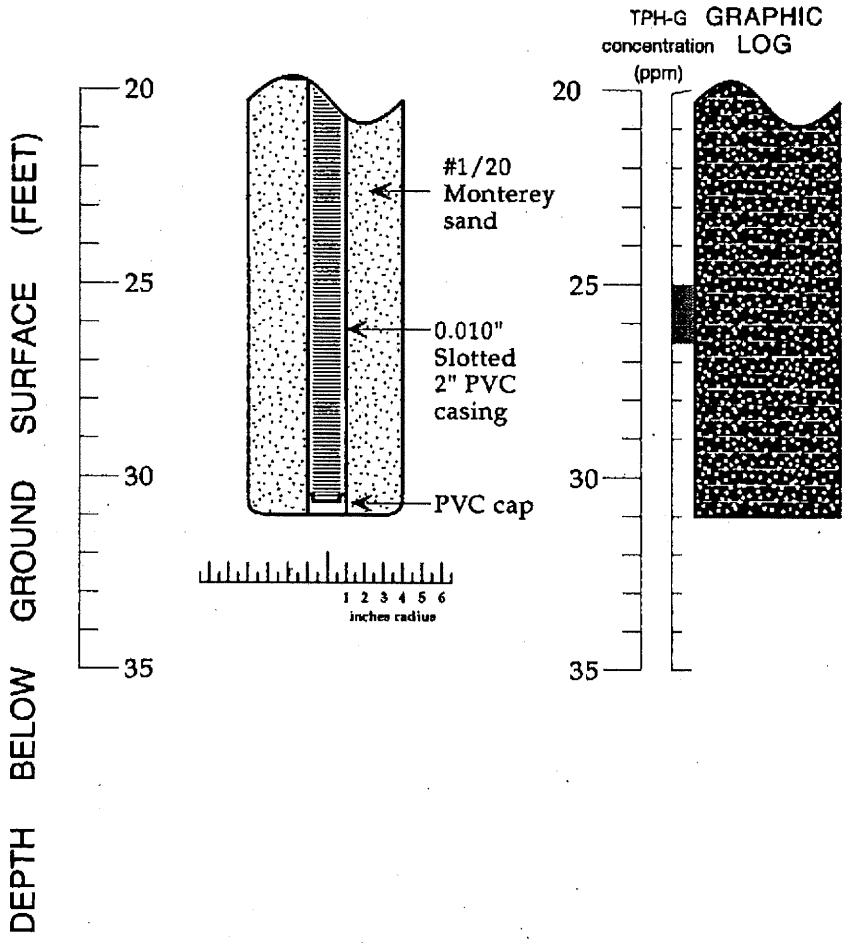
EXPLANATION

- ▼ Water level during drilling (date)
- ▽ Water level (date)
- ——····—— Contact (dotted where approximate)
- —?—?— Uncertain contact
- //////// Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By:	Faith Daverin
Supervisor:	Jim Carmody; CEG 1576
Drilling Company:	Gregg Drilling, Pacheco, CA
License Number:	C57-485165
Driller:	Chris St. Pierre
Drilling Method:	Hollow-stem auger - 8" diameter
Date Drilled:	November 3, 1994
Well Head Completion:	2" locking well-plug, traffic-rated vault
Type of Sampler:	Split spoon (2" ID)
Ground Surface Elevation:	feet above mean sea level
TPH-G:	Total petroleum hydrocarbons as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-4 (BH-F) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

WELL MW-4 (BH-F) (cont.)



DESCRIPTION

30% clay; 70% medium to very coarse sand, saturated

Boring Log and Well Construction Details - Well MW-4 (BH-F) - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-5
JOB/SITE NAME	Shell-branded service station	**DRILLING STARTED**	12-Nov-01
LOCATION	4255 MacArthur Boulevard	**DRILLING COMPLETED**	12-Nov-01
PROJECT NUMBER	243-0524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	8"	**SCREENED INTERVAL**	5 to 20 ft bgs
LOGGED BY	S. Landsittel	**DEPTH TO WATER (First Encountered)**	8.0 ft (12-Nov-01) ▽
REVIEWED BY	S. Bork, RG# 5620	**DEPTH TO WATER (Static)**	NA ▼

REMARKS Hand-augered to 5' bgs. Located on Caltrans right-of-way adjacent to I-580 onramp approx. 100' from High St.

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
				0			**FILL**; dark brown; damp; 25% clay, 30% silt, 5% sand, 50% gravel; low plasticity; contains organics.		Portland Type I/II Cement
								3.0	Bentonite Seal
		MW-5-5.5		5	ML		**Clayey Sandy SILT** (ML); dark brown; moist; 20% clay, 50% silt, 25% fine sand, 5% gravel; medium plasticity.		Monterey Sand #2/12
				10			@ 10' bgs - 15% clay, 55% silt, 20% fine sand, 10% fine gravel.		
								13.0	2"-diameter, 0.010" Slotted Schedule 40 PVC
				15	SM		**Clayey Silty SAND** (SM); brown; moist; 15% clay, 25% silt, 50% fine sand, 10% fine gravel; low plasticity.		
								18.0	
				20	CL		**CLAY** (CL); light brown; moist; 80% clay, 12% silt, 5% fine sand, 3% fine gravel; high plasticity.	20.0	Bottom of Boring @ 20 ft

WELL LOG (SHELL) G:\OA53EC-114255.GPJ DEFAULT.GDT 1/8/02

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	MW-6
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	16-Jun-06
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Jun-06
PROJECT NUMBER	248-0524-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Geoprobe & Hollow-stem auger	**TOP OF CASING ELEVATION**	169.89 ft above msl
BORING DIAMETER	2"	**SCREENED INTERVALS**	9 to 24 fbg
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	23.0 fbg (16-Jun-06)
REVIEWED BY	Aubrey Cool, PG 7659	**DEPTH TO WATER (Static)**	10.50 fbg (17-Jun-06)
REMARKS	Hand augered and air knifed to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							ASPHALT	0.8	Portland Type I/II
							Rock; Shale / Asphalt Mixture	2.0	
					GW		**Well Graded GRAVEL**; 7.5YR 2.5/1 Black; dry; 20% silt, 20% fine sand, 60% coarse gravel.	4.0	
1		MW-6- 5		5			**CLAY**; 7.5YR 5/1 Dark gray; dry; 60% clay, 40% silt.		2" diam., Schedule 40 PVC
									Bentonite Seal
							CLAY with Gravel 7.5YR 5/1 Dark gray; damp; 60% clay, 20% silt, 5% fine sand, 15% fine gravel; low plasticity.		
3.5		MW-6- 10		10	CL				
							CLAY with Gravel 2.5YR 3/3 Dark olive brown; damp; 60% clay, 25% silt, 15% fine gravel; medium plasticity.		
10		MW-6- 15		15					Monterey Sand #2/12
								17.3	2"-diam., 0.010" Slotted Schedule 40 PVC
							Clayey GRAVEL with Sand 2.5YR 5/1 Dark gray; damp; 25% clay, 15% fine sand, 60% coarse gravel.		
0.1		MW-6- 20		20	GC				
							Clayey GRAVEL with Sand 2.5YR 5/1 Dark gray; damp; 20% clay, 20% fine sand, 60% coarse gravel.	24.0	Bottom of Boring @ 24 fbg

WELL LOG (PID) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 8/10/06

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	MW-7
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	20-Jun-06
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	20-Jun-06
PROJECT NUMBER	248-0524-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	170.87 ft above msl
BORING DIAMETER	4"	**SCREENED INTERVALS**	9 to 29 fbg
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	29.0 fbg (20-Jun-06)
REVIEWED BY	Aubrey Cool, PG 7659	**DEPTH TO WATER (Static)**	27.00 fbg (20-Jun-06)
REMARKS	Hand augered and air knifed to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)
							Asphalt	0.8
					GM		**Silty GRAVEL**; 2.5Y 2.5/1 Black; damp; 20% clay, 25% silt, 55% coarse gravel.	2.0
							CLAY with Gravel 2.5Y 3/1 Very dark gray; dry; 60% clay, 25% silt, 15% fine gravel.	
38		MW-7- 5		5	CL			
325		MW-7- 10		10			**CLAY**; 2.5Y 3/1 Very dark gray; stiff; dry; 60% clay, 30% silt, 10% fine sand.	
								14.3
140		MW-7- 15		15	GC		**Clayey GRAVEL with Sand** 2.5Y 3/1 Very dark gray; medium dense; damp; 25% clay, 15% fine sand, 60% coarse gravel.	
								18.5
					CL		**2.5Y 4/3 Light olive brown; stiff; damp; 75% clay, 20% silt, 5% fine sand; high plasticity.**	
0		MW-7- 20		20	SC		**Clayey SAND** 2.5Y 4/3 Light olive brown; medium dense; damp; 20% clay, 5% silt, 70% fine sand, 5% fine gravel.	20.3 21.0
							Poorly Graded GRAVEL with Sand 2.5Y 4/3 Light olive brown; dense; damp to wet; 10% clay, 5% silt, 20% coarse sand, 65% fine gravel.	
0		MW-7- 25		25	GP			
								29.0
0		MW-7- 29.5		30	CL		**CLAY with Gravel** 2.5Y 4/3 Light olive brown; stiff; damp; 65% clay, 15% silt, 5% fine sand, 15% fine gravel.	30.0

WELL DIAGRAM

- Portland Type I/II
- 4" diam., Schedule 40 PVC
- Bentonite Seal
- Monterey Sand #2/12
- 4"-diam., 0.010" Slotted Schedule 40 PVC
- Bentonite Seal
- Bottom of Boring @ 30 fbg

WELL LOG (PID) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 8/10/06

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	MW-8
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	19-Jun-06
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	19-Jun-06
PROJECT NUMBER	248-0524-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	174.13 ft above msl
BORING DIAMETER	4"	**SCREENED INTERVALS**	9 to 30 fbg
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	28.0 fbg (19-Jun-06) ▽
REVIEWED BY	Aubrey Cool, PG 7659	**DEPTH TO WATER (Static)**	21.50 fbg (19-Jun-06) ▼
REMARKS	Hand augered and air knifed to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							GRAVEL / FILL; 10YR 4/3 Brown; dry; 100% coarse gravel.	2.0	
					GC		**Clayey GRAVEL**; 10YR 4/3 Brown; dry; 45% clay, 55%	4.0	Portland Type I/II
2		MW-8- 5		5			**CLAY**; 10YR 2/1 Black; very stiff; dry; 60% clay, 40% silt		4" diam., Schedule 40 PVC Bentonite Seal
12		MW-8- 10		10	CL		**CLAY with Gravel** 2.5Y 3/2 Dark olive brown; very stiff; damp; 55% clay, 30% silt, 15% fine gravel.		
10		MW-8- 15		15					
12		MW-8- 20		20	GC		**Clayey GRAVEL with Silt and Sand** 2.5Y 5/3 Light olive brown; very dense; damp; 20% clay, 15% silt, 15% fine sand, 50% fine gravel. ▼	19.0	Monterey Sand #2/12 4"-diam., 0.010" Slotted Schedule 40 PVC
0		MW-8- 25		25	GW		**Well Graded GRAVEL with Sand** 10YR 5/4 Dark yellowish brown with rust mottling; very dense; damp to wet; 30% fine sand, 70% coarse gravel. ▽	25.0	
0		MW-8- 29.5		30				30.0	Bottom of Boring @ 30 fbg

WELL LOG (PID) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 8/10/06

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	MW-9
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	19-Jun-06
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	19-Jun-06
PROJECT NUMBER	248-0524-006	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	175.20 ft above msl
BORING DIAMETER	4"	**SCREENED INTERVALS**	9 to 30 fbg
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	29.0 fbg (19-Jun-06)
REVIEWED BY	Aubrey Cool, PG 7659	**DEPTH TO WATER (Static)**	17.00 fbg (19-Jun-06)
REMARKS	Hand augered and air knifed to 5 fbg		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)
					GW		**Well Graded GRAVEL**; 7.5YR 5/1 Gray; dry; 100% coarse gravel.	1.0
					GC		**Clayey GRAVEL with Sand** 10YR 5/2 Gray; dry; 25% clay, 15% coarse sand, 75% coarse gravel.	4.0
37		MW-9- 5		5			**CLAY**; 2.5YR 3/3 Dark olive brown; very stiff; dry; 55% clay, 30% silt, 5% fine gravel. 10% fine gravel.	
295		MW-9- 10		10	CL		**Gravely CLAY** 2.5 YR 3/3 Dark olive brown; very stiff; damp; 60% clay, 15% silt, 25% fine gravel.	
86		MW-9- 15		15				
30		MW-9- 20		20	GC		**Clayey GRAVEL with Silt and Sand** 2.5Y 4/3 Olive brown; medium dense; damp; 20% clay, 15% silt, 15% fine sand, 50% coarse gravel.	20.0
16		MW-9- 25		25	SM		**Silty SAND with Gravel** 2.5Y 4/3 Olive brown with rust mottling; medium dense; damp; 10% clay, 20% silt, 55% fine sand, 15% fine gravel.	22.0
					SW		**Well Graded SAND** 2.5Y 4/3 Olive brown; loose; damp to wet; 95% coarse sand, 5% fine gravel.	27.5 / 28.0
					SM		**Silty SAND** 2.5Y 4/3 Olive brown; medium dense; wet; 10% clay, 20% silt, 60% coarse sand, 5% fine gravel.	29.0
5		MW-9- 29.5		30	CL		**CLAY**; 2.5Y 5/3 Dark olive brown; hard; damp; 75% clay, 25% silt; medium plasticity.	30.0

WELL DIAGRAM

- Portland Type I/II
- 4" diam., Schedule 40 PVC
- Bentonite Seal
- Monterey Sand #2/12
- 4"-diam., 0.010" Slotted Schedule 40 PVC
- Bottom of Boring @ 30 fbg

WELL LOG (PID) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 8/10/06

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-02.01 BORING NO. S-A

PROJECT NAME Gettler-Ryan, Shell, High and MacArthur PAGE 1 OF 1

BY JB DATE 6/10/85 SURFACE ELEV.

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0		GW FILL	CONCRETE GRAVEL; Fill; brown (10YR, 5/3); coarse gravel, 10-20% sand; strong product odor
				5	1	SW FILL	SAND; Fill; brown (10YR, 5/3); fine to coarse sand; loose; moist; strong product odor.
						CL FILL	CLAY; Fill; yellowish brown (10YR, 5/4); 30-40% fine to medium sand; moist; strong product odor.
	2.25	29		10	2		
	3.25	35			3	CL	CLAY; yellowish brown (10YR, 5/4); trace sand; very stiff; no product odor.
	2.5	63		15	4		@14': yellowish brown (10YR, 5/6); interbedded clay and sandy clay
	2.5	60	▽	20			@19': blue-green; 5-10% fine to coarse gravel; trace fine sand; hard; moist; no product odor HOLE TERMINATED at 20 feet SUFFICIENT INFORMATION OBTAINED.

REMARKS Drilled by 8-inch continuous flight hollow stem auger

Backfilled with soil cuttings to 0.5 feet, cement to 0 feet.

EMCON ASSOCIATES

PLATE A

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-02.01 BORING NO. S-B

PROJECT NAME Gettler-Ryan, Shell, High and MacArthur PAGE 1 OF 1

BY JB DATE 6/10/85 SURFACE ELEV.

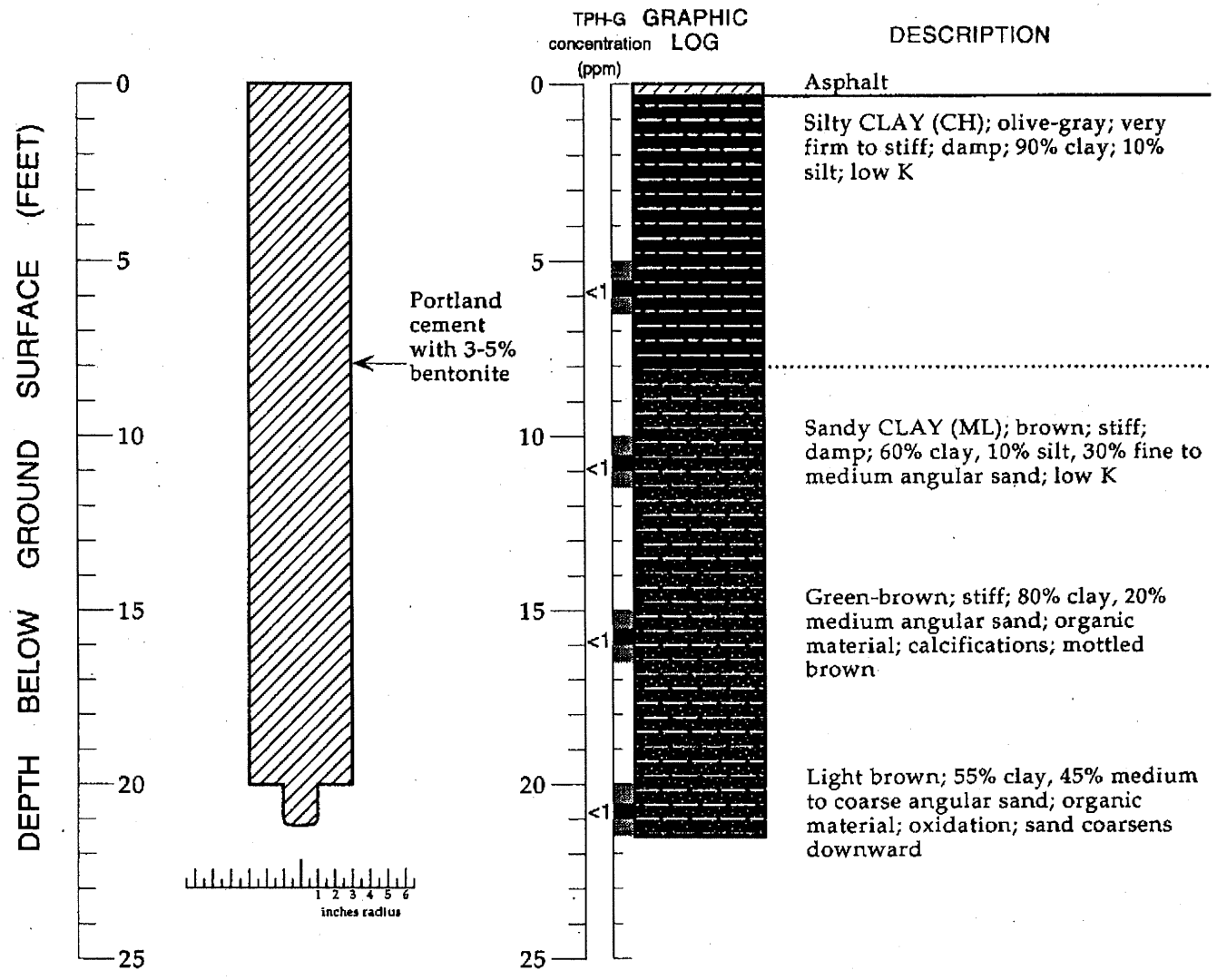
TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0			CONCRETE
						CL FILL	CLAY; Fill; dark grayish brown (2.5Y, 4/2); 10-20% fine to coarse gravel; trace fine sand; strong product odor.
				5			
				10			@10': olive (5Y, 5/3); trace fine to medium sand; firm; moist; slight product odor.
						CL	CLAY; light olive brown (2.5Y, 5/4); 10-15% fine to medium sand; 15% fine gravel; silty; hard; moist; no product odor.
	5	43			1		
				15			
							@18.5': blue-green; very silty; 5-10% fine gravel; trace fine sand; hard; moist no product odor.
	2.5	56	▽		2		
				20			HOLE TERMINATED at 30 feet; SUFFICIENT INFORMATION OBTAINED

REMARKS

Drilled by 8-inch continuous flight hollow-stem auger.
Backfilled with soil cuttings to 0.5 feet, cement to 0 feet.

EMCON ASSOCIATES

BORING BH-D



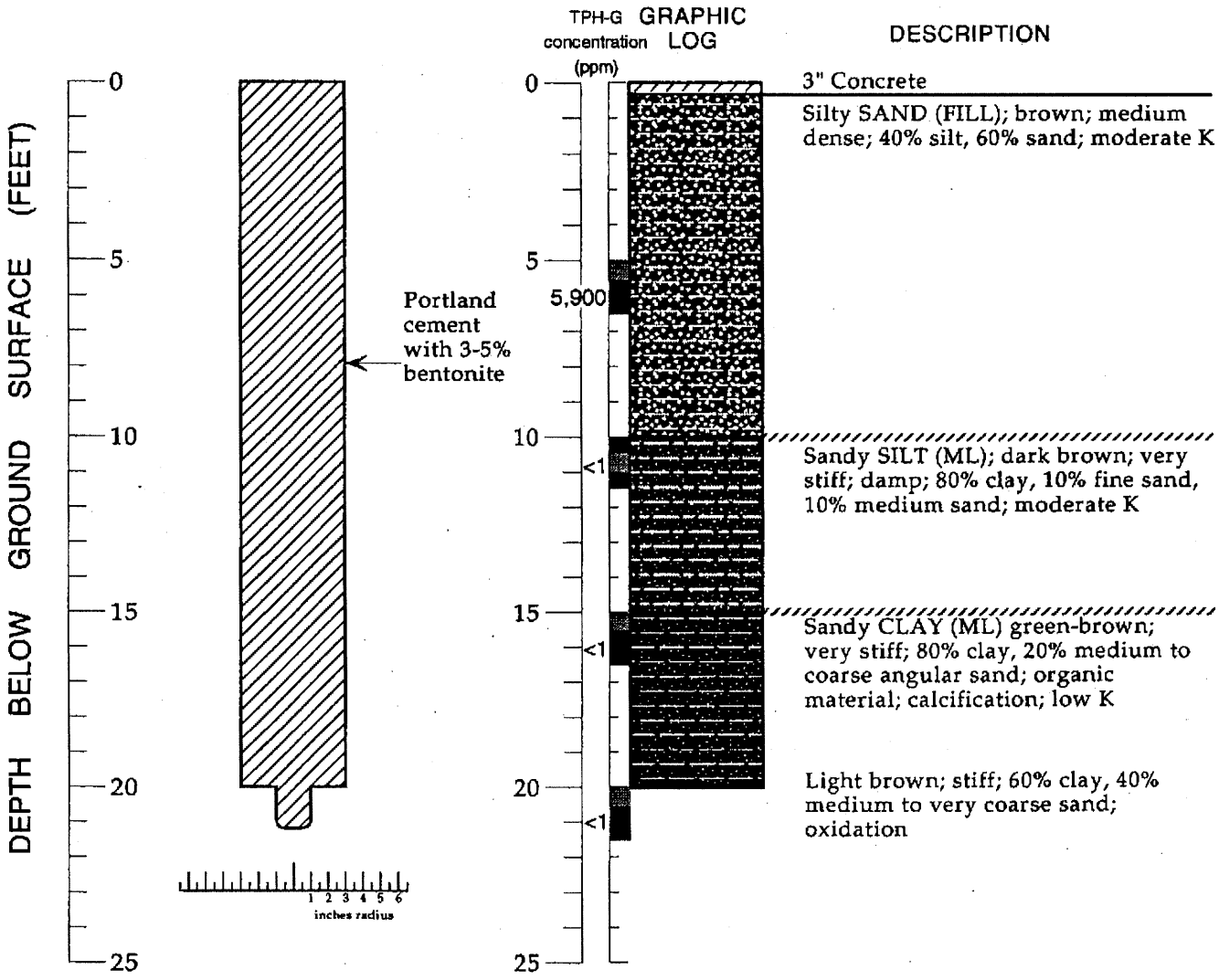
EXPLANATION

- Contact (dotted where approximate)
- Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By: Faith Daverin
Supervisor: Jim Carmody; CEG 1576
Drilling Company: Gregg Drilling, San Rafael,CA
License Number: C57-485165
Driller: Chris St. Pierre
Drilling Method: Hollow-stem auger
Date Drilled: November 3, 1994
Type of Sampler: Split spoon (2" ID)
TPH-G: Total petroleum hydrocarbons as gasoline in soil by modified EPA Method 8015

Boring Log - Boring BH-D - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

BORING BH-E



EXPLANATION

- Contact (dotted where approximate)
- Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By: Faith Daverin
Supervisor: Jim Carmody; CEG 1576
Drilling Company: Gregg Drilling, Pacheco, CA
License Number: C57-485165
Driller: Chris St. Pierre
Drilling Method: Hollow-stem auger
Date Drilled: November 3, 1994
Type of Sampler: Split spoon (2" ID)
TPH-G: Total petroleum hydrocarbons as gasoline in soil by modified EPA Method 8015

Boring Log - Boring BH-E - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

BORING LOG

Client: **Shell Oil Products Company**

Project No: **240-0524** Phase Task

Boring ID **SB-1**

Location **4255 MacArthur Blvd., Oakland**

Surface Elev. **NA ft,**

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description
0	Ground Surface			
				Asphalt
				SILT; (ML); brown; soft; damp; 10% clay, 80% silt, 10% gravel to 0.25 inch diameter; low plasticity; low estimated permeability.
5				
				Clayey SILT; (ML); brown; soft; damp; 15% clay, 80% silt, 5% gravel to 0.5 inch diameter; low plasticity; low estimated permeability.
				wet.
				SILT; (ML); dark brown; medium stiff; damp; 5% clay, 80% silt, 10% fine sand, 5% gravel to 0.5 inch diameter; low plasticity; low estimated permeability.
10				
				black; 10% clay, 85% silt, 5% gravel to 0.5 inch diameter.

TPHg (ppm) | Graphic Log | Boring Completion Graphics

Depth (feet)	Additional Comments
0	
5	
	Water encountered @ 7 ft.
10	
	Bottom of boring @ 12 ft.

Driller **Gregg**

Logged By **Brian Busch**

Water-Bearing Zones **NA**

Drilling Started **2/13/98**

Drilling Completed **2/13/98**

Grout Type **Portland Type I/II**

Notes: **See site map.**

BOR 24524 2/13/98

Cambria Environmental Technology, Inc.

BORING LOG

Client: **Shell Oil Products Company**

Project No: **240-0524** Phase Task

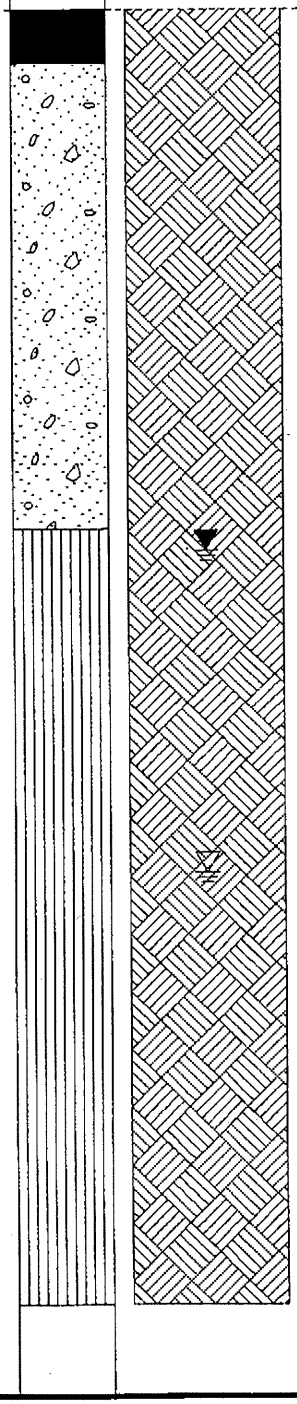
Boring ID **SB-2**

Location **4255 MacArthur Blvd., Oakland**

Surface Elev. **NA ft.**

Page **1** of **1**

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description
0	Ground Surface			**Asphalt**
				Gravelly SAND; (SPG); brown; soft; damp; 10% silt, 70% sand, 20% gravel to 1 inch diameter with concrete and wood; no plasticity; moderate estimated permeability.
5				**SILT**; (ML); brown; medium stiff; damp; 10% clay, 85% silt, 5% gravel to 0.25 inch diameter with wood; low plasticity; low estimated permeability.
				dark brown; soft; 5% clay, 95% silt; no plasticity.
				moist; low plasticity.
				wet; 10% clay, 80% silt, 10% gravel to 0.125 inch diameter.
10				



Additional Comments

- Static water level @ 5 ft.
- Water encountered @ 8 ft.
- Bottom of boring @ 12 ft.

Driller **Gregg**

Logged By **Brian Busch**

Water-Bearing Zones **NA**

Drilling Started **2/13/98**

Drilling Completed **2/13/98**

Grout Type **Portland Type I/II**

Notes: **See site map.**

BOR 24524 2/13/98

Cambria Environmental Technology, Inc.

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-3
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	06-Apr-05
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	06-Apr-05
PROJECT NUMBER	247-0524-007	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	3"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	16.0 ft (06-Apr-05)
REVIEWED BY	M. Derby, PE# 55475	**DEPTH TO WATER (Static)**	9.5 ft (06-Apr-05)
REMARKS	Hand augered to 5 fbg.		

PID (ppm)	TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
						GM		Asphalt Silty GRAVEL with Clay (GM); Gray; loose; dry; 15% clay, 25% silt; 60% gravel.	0.4 2.0	
					5	CL		Silty CLAY (CL); Brown to olive brown; medium to very stiff; dry; 75% clay, 25% silt.		
18								Little to no fines, 90% clay, 10% silt.	8.0	
						ML		Clayey SILT (ML); Olive brown; dense; dry; 45% clay, 55% silt.	9.0	
					10	CL		Silty CLAY (CL); Olive brown; hard; dry; 65% clay, 35% silt.		
1.1						ML		Clayey SILT (ML); Dark brown; very stiff to hard; dry; 30% clay, 70% silt.	12.4	Portland Type I/II Cement
					15	CL		Sandy CLAY (CL); Dark brown; hard; damp; 75% clay, 25% fine sand.	14.8	
195						SM		Silty SAND (SM); Olive gray; medium dense; wet; 55% silt, 65% coarse sand.	16.8	
444					20	CL		Sandy CLAY (CL); Gray; medium stiff; wet; 85% clay, 15% fine sand.	21.0	
						SC		Clayey SAND (SC); Gray; medium dense; wet; 25% clay, 75% coarse sand.	22.9 24.5	
285					25	SW		Well Graded SAND (SW); Gray; loose; wet; 100% coarse sand.	25.0	Bottom of Boring @ 25 ft

WELL LOG (PID/TPHG) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 5/23/05

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-4
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	06-Apr-05
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	06-Apr-05
PROJECT NUMBER	247-0524-007	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	3"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	15.3 ft (06-Apr-05)
REVIEWED BY	M. Derby, PE# 55475	**DEPTH TO WATER (Static)**	10.5 ft (06-Apr-05)
REMARKS	Hand augered to 5 fbg.		

PID (ppm)	TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
						GW		Well Graded GRAVEL (GW); Gray; loose; dry; 100% gravel.	1.8	
						GC		Clayey GRAVEL (GC); Brownish gray; medium dense; dry; 25% clay, 10% silt, 5% sand, 60% gravel.	5.2	
					5	ML		Clayey SILT with Gravel (ML); Olive gray; dense; dry; 25% clay, 60% silt, 15% gravel.	7.0	
6						CL		Silty CLAY (CL); Olive gray; very stiff; dry; 90% clay, 10% silt.	9.5	
					10	ML		Clayey SILT (ML); Olive gray; dense; moist; 35% clay, 65% silt. ▼		
199									13.0	Portland Type I/II Cement
					15	CL		Silty CLAY (CL); Olive gray; medium stiff; wet; 55% clay, 45% silt. ▽		
749									17.0	
					20	SC		Clayey SAND (SC); Olive gray; dense; wet; 25% clay, 75% coarse sand; low plasticity.		
801								Clayey SAND with Gravel; gray; loose; wet; 25% clay, 60% coarse sand; 15% small angular gravel.	22.0	
						GC		Clayey GRAVEL (GC); Olive gray; very dense; wet; 45% clay, 55% gravel.	23.8	
304					25	CL		CLAY (CL); Olive gray; very stiff to hard; wet; 90% clay, 10% fine sand.	25.0	Bottom of Boring @ 25 ft
210										

WELL LOG (PID/TPHG) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 5/25/05

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SB-5
JOB/SITE NAME	Former Shell-branded service station	DRILLING STARTED	27-Oct-05
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	27-Oct-05
PROJECT NUMBER	247-0524-007	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vironex	GROUND SURFACE ELEVATION	
DRILLING METHOD	Dual-Tube	TOP OF CASING ELEVATION	NA
BORING DIAMETER	3"	SCREENED INTERVAL	NA
LOGGED BY	B. DeBoer	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	Aubrey Cool, PG 7659	DEPTH TO WATER (Static)	NA
REMARKS	Hand augered to 5 fbg.		

PID (ppm)	TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
						GW		**Well Graded GRAVEL** (CL); gray; loose; dry; 10% sand, 90% gravel.	1.5	
						SM		**Silty SAND** (SM); light brown; moderate density; dry; 20% silt, 70% sand, 10% gravel.	3.0	
84	9		SB-5-5'		5	MH		**SILT** (MH); blue green; dense; dry; 20% clay, 70% silt, 10% sand.	6.0	
						SM		**Silty SAND** (SM); blue green; dense; dry; 10% clay, 30% silt, 60% sand.	8.0	
12	58		SB-5-10'		10	MH		**SILT with Sand** (MH); gray; dense; dry; 25% clay, 55% silt, 20% sand.	11.0	
						CL		**CLAY with Sand** (CL); light brown; dense; dry; 55% clay, 30% silt, 15% sand.	14.0	Portland Type I/II
290	220		SB-5-15'		15	SM		**Silty SAND** (SM); light green/gray; dense; dry; 10% clay, 40% silt, 50% sand.	17.0	
0	ND		SB-5-20'		20	SM		**Silty SAND** (SM); brown; moderate density; moist; 10% clay, 35% silt, 45% sand, 10% gravel.	22.0	
						GP GM		**Poorly Graded GRAVELwith Silt and Sand** (GP-GM); brown; low density; dry; 10% silt, 30% sand; 60% gravel.	24.0	Bottom of Boring @ 24 ft
								Note: No groundwater recovery from hydropunch interval.		

WELL LOG (PID/TPHG) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 12/14/05

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SB-6
JOB/SITE NAME	Former Shell-branded service station	DRILLING STARTED	26-Oct-05
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	26-Oct-05
PROJECT NUMBER	247-0524-007	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vironex	GROUND SURFACE ELEVATION	
DRILLING METHOD	Dual-Tube	TOP OF CASING ELEVATION	NA
BORING DIAMETER	3"	SCREENED INTERVAL	NA
LOGGED BY	B. DeBoer	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	Aubrey Cool, PG 7659	DEPTH TO WATER (Static)	NA
REMARKS	Hand augered to 5 fbg.		

PID (ppm)	TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
								FILL: gray; loose; dry; 100% gravel.	2.0	
						SM		**Silty SAND** (SM); brown; moderate density; dry; 30% silt, 70% sand.	3.0	
3	ND		SB-6-5'		5	MH		**SILT** (MH); brownish gray; moderate density; moist; 15% clay, 85% silt. @ 6 feet: 15% clay, 75% silt, 10% sand.	8.0	
						SM		**Silty SAND with Gravel** (SM); light brown; moderate density; dry; 35% silt, 45% sand, 20% gravel.	9.0	
540	160		SB-6-10.5'		10	MH		**SILT** (MH); brown; dense; dry; 15% clay, 85% silt.	13.0	
						SM		**SAND with Silt and Gravel** (SM); light brown; moderate density; dry; 10% silt, 70% sand, 20% gravel.	14.0	Portland Type I/II
6	ND		SB-6-15'		15	SM		**Silty SAND** (SM) ; light brown; moderate density; dry; 30% silt, 70% sand.	16.0	
						SM		**Silty SAND with Gravel** (SM); gray; moderate density; dry; 15% silt, 45% sand, 40% gravel.	19.0	
6	ND		SB-6-20'		20	GP GM		**Poorly Graded GRAVEL with Silt and Sand** (GP-GM); gray; moderate density; moist; 10% silt, 30% sand, 60% gravel.	20.0	
						SM		**Silty SAND with Gravel** (SM); gray; moderate density; moist; 15% silt, 45% sand, 40% gravel.	23.0	
3.7	ND		SB-6-25'		25	SM		**Silty SAND** (SM); light brown; moderate density; moist; 30% silt, 70% sand.	27.0	Bottom of Boring @ 27 ft
								Note: No groundwater recovery from hydropunch interval.		

WELL LOG (PID/TPHG) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 12/14/05

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-7
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	26-Oct-05
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	26-Oct-05
PROJECT NUMBER	247-0524-007	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vironex	**GROUND SURFACE ELEVATION**	
DRILLING METHOD	Dual-Tube	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	3"	**SCREENED INTERVAL**	NA
LOGGED BY	B. DeBoer	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	Aubrey Cool, PG 7859	**DEPTH TO WATER (Static)**	NA
REMARKS	Hand augered to 5 fbg.		

PID (ppm)	TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
						GW		Well Graded GRAVEL (FILL); gray; loose; dry; 10% sand, 90% gravel.	1.5	
						SM		Silty SAND (SM); brown; moderate density; dry; 20% silt, 70% sand, 10% gravel.	2.5	
						SM		Silty SAND (SM); light brown; dense; dry; 35% clay, 50% silt, 15% sand.		
650	220		SB-7-5'		5				5.5	
						ML		SANDY Silt (ML); blue green; moderate density; dry; 15% clay, 50% silt, 35% sand.		
120	2,600		SB-7-10'		10	GC		CLAY with Gravel (GC); light brown; density; moist; 45% clay, 35% silt, 20% gravel.	10.0	
20	260		SB-7-15'		15				16.0	
						SM		Silty SAND (SM); brown; moderate density; moist; 10% clay, 35% silt, 45% sand, 10% gravel.		
8	ND		SB-7-21'		20	CH		Sandy CLAY (CH); light brown; dense; moist; 50% clay, 30% silt, 20% sand.	20.0	Portland Type I/II
52	9.0		SB-7-25'		25				27.0	
						MH		SILT with Sand (MH); light brown; dense; moist; 30% clay, 50% silt, 20% sand.		
25	1.2		SB-7-30'		30				33.0	
					35			CLAY with Sand (CL); Light Brown; dense; moist; 60% clay, 15% silt, 25% sand.		

WELL LOG (PID/TPHG) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 12/14/05

Continued Next Page

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-7
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	26-Oct-05
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	26-Oct-05

Continued from Previous Page

PID (ppm)	TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
12	ND		SB-7-35'			CL				
						MH		**SILT with Sand** (MH); light brown; dense; moist; 30% clay, 55% silt, 15% sand.	37.0	
ND	ND		SB-7-40'		40				40.0	Bottom of Boring @ 40 ft

Note: No groundwater recovery from hydropunch intervals.

WELL LOG (PID/TPHG) G:\OAKLAND 4255 MACARTHUR\4255.GPJ DEFAULT.GDT 12/14/05

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-8
JOB/SITE NAME	Former Shell-branded service station	**DRILLING STARTED**	27-Oct-05
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	27-Oct-05
PROJECT NUMBER	247-0524-007	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vironex	**GROUND SURFACE ELEVATION**	
DRILLING METHOD	Dual-Tube	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	3"	**SCREENED INTERVAL**	NA
LOGGED BY	B. DeBoer	**DEPTH TO WATER (First Encountered)**	10.0 ft (27-Oct-05)
REVIEWED BY	Aubrey Cool, PG 7659	**DEPTH TO WATER (Static)**	NA
REMARKS	Hand augered to 5 fbg.		

PID (ppm)	TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
						ML		**Asphalt** **SILT** (ML); gray; dense; moist; 90% silt, 10% sand.	0.3 4.0	
8.7	ND		SB-8-5'		5	SM		**Silty SAND with Gravel** (SM); dark brown; dense; moist; 15% silt, 70% sand, 15% gravel.	5.5	
						GP		**Poorly Graded GRAVEL** (GP); dark brown; loose to medium stiffness; dry; 10% sand, 90% gravel.	6.0	
						SM		**Silty SAND** (SM); dark brown; dense; moist; 15% silt, 80% sand, 5% gravel.	8.0	
6.0	ND		SB-8-10'		10	ML		**Sandy SILT** (ML); dark brown; medium density; moist; 70% silt, 20% sand, 10% gravel. @10 feet; 85% silt, 15% sand	12.0	
						SP		**Poorly Graded Sand** (SP); dark brown; medium density; wet; 90% sand, 10% gravel.	14.0	
						ML		**Sandy SILT** (ML); dark brown; dense; moist; 70% silt, 20% sand, 10% gravel.	15.0	
4.3	ND		SB-8-15'		15	SM		**Silty SAND with Gravel** (SM); brown; medium density; moist; 15% silt, 60% sand, 25% gravel.	18.0	Portland Type I/II
						GP		**Poorly Graded GRAVEL with Sand** (GP); brown; medium density; moist; 35% sand, 65% gravel.	20.0	
6.0	ND		SB-8-20'		20	ML		**SILT with Sand** (ML); brown; medium density; moist; 75% silt, 25% sand.	23.0	
					25	SM		**Silty SAND with Gravel** (SM); brown; medium density; moist; 15% silt, 80% sand, 5% gravel.	33.0	
					30	ML		**SILT with Sand** (ML); light brown; dense; moist; 80% silt, 20% sand. Note: No groundwater recovery from hydropunch interval.	34.0	Bottom of

Continued Next Page

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-9
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	14-Nov-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Nov-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Geoprobe	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	4.30 fbg (14-Nov-11) ▽
REVIEWED BY	P. Schaefer PG 5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Air-knife to 5'		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Silty GRAVEL (GM); grayish brown (10YR 5/2); dry; 40% silt, 10% fine sand, 50% fine to coarse gravel.		
1.1		SB-9- 5'		5	GM		@ 5.0 fbg - very dark gray (10YR 3/1).		Portland Type II/V
1.1		SB-9- 10'		10				14.0	
				15					Bottom of Boring @ 15 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524--1\244DE7~1\4255.GPJ DEFAULT.GDT 1/4/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-10
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	14-Nov-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Nov-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Geoprobe	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	4.80 fbg (15-Nov-11) ▽
REVIEWED BY	P. Schaefer PG 5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Air-knife to 5'		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					GM		**Silty GRAVEL with Sand (GM)** ; gray (10YR 6/1); moist; 25% silt, 25% fine to coarse sand, 50% fine gravel.	1.5	
					ML		**SILT with Sand (ML)**; brown (10YR 5/3); 10% clay, 65% silt, 15% fine to coarse sand, 10% gravel; low plasticity. ▽	5.0	
1.3		SB-10 -5'		5	GM		**Silty GRAVEL with Sand (GM)** ; gray (10YR 6/1); wet; 25% silt, 20% fine to coarse sand, 55% fine to coarse gravel.		Portland Type II/V
0.7		SB-10 -8'		10				12.0	
				15					Bottom of Boring @ 15 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524--\1244DE7~1\14255.GPJ DEFAULT.GDT 1/4/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-11
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	14-Nov-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Nov-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Geoprobe	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	4.70 fbg (16-Nov-11)
REVIEWED BY	P. Schaefer PG 5612	**DEPTH TO WATER (Static)**	NA
REMARKS	Air-knife to 5'		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					GM		**Silty GRAVEL with Sand (GM)** ; gray (10YR 6/1); dry, 25% silt, 25% fine to coarse sand, 50% fine gravel.	3.0	
							Sandy SILT with Gravel (ML) ; brown (10YR 5/3); moist; 60% silt, 20% fine to coarse sand, 20% fine gravel.		
688		SB-11 -5'		5			@5' - **Sandy SILT (ML)** ; olive brown (2.5Y 4/3); 55% silt, 40% fine to coarse sand, 5% fine gravel.		
							@6' - **SILT (ML)** ; brown (7.5YR 4/2) with gray (7.5YR 5/1) mottling ; 15% clay, 85% silt; low plasticity.		
49.2		SB-11 -10'		10	ML				Portland Type II/V
				15			@13.5' - **SILT with Sand (ML)**; 10% clay, 70% silt, 15% fine to medium sand, 5% fine gravel.		
					SM		**Silty SAND (SM)** ; light yellowish brown (2.5Y 6/4); moist; 40% silt, 60% fine to medium sand.	17.0	
								19.0	Bottom of Boring @ 19 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--1240524--11244DE7-1\4255.GPJ DEFAULT.GDT 1/4/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-12
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	14-Nov-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Nov-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Geoprobe	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	P. Schaefer PG 5612	**DEPTH TO WATER (Static)**	NA
REMARKS	Air-knife to 5'		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					GM		**Silty GRAVEL with Sand (GM)** ; gray (10YR 6/1); dry; 25% silt, 25% fine to coarse sand, 50% fine gravel.		
								4.0	
					SM		**Silty SAND with Gravel (SM)** ; gray (10YR 6/1); dry; 20% silt, 60% fine to coarse sand, 20% fine gravel.		
6.3		SB-12 -5'		5			**Sandy SILT (ML)** ; greenish black (10Y 2.5/1); moist; 50% silt, 40% fine to medium sand, 10% fine gravel.	5.0	
							@8' - **SILT (ML)** ; brown (7.5YR 4/3) with greenish gray (5G 5/1) mottling ; 5% clay, 85% silt, 10% fine sand; low plasticity.		Portland Type II/V
304		SB-12 -10'		10	ML				
		SB-12 -14'					@14' -**Sandy SILT (ML)** ; 5% clay, 60% silt, 30% fine sand, 5% fine gravel.		
				15					
143		SB-12 -16'							
							@17' - **SILT (ML)** ; olive brown (2.5Y 4/3); 10% clay, 85% silt, 5% fine gravel.	17.5	Bottom of Boring @ 19 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405-1240524-11244DE7-1\4255.GPJ DEFAULT.GDT 1/4/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-13
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	14-Nov-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Nov-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Geoprobe	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	P. Schaefer PG 5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Air-knife to 5'		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							Gravelly SILT (ML); dark grayish brown (10YR 4/2); dry; 50% silt, 10% fine sand, 40% coarse gravel.		
0.0		SB-13 -5'		5			@ 5 fbg - **SILT (ML)** ; dark greenish gray (10Y 3/1); moist; 20% clay, 80% silt; low plasticity.		
							@ 8 fbg - 20% clay, 75% silt, 5% medium to coarse sand.		
					ML		@ 9 fbg - very dark grayish brown (2.5Y 3/2); 25% clay, 70% silt, 5% medium to coarse sand; medium plasticity.		Portland Type II/V
12.1		SB-13 -10'		10			@ 10 fbg - yellowish brown (10YR 5/6) with gray (10YR 5/1) mottling; 5% clay, 95% silt; low plasticity.		
							@ 14 fbg - **SILT with Sand (ML)** ; 5% clay, 75% silt, 15% medium to coarse sand, 5% fine gravel.		
				15				19.0	Bottom of Boring @ 19 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524--1\244DE7~1\4255.GPJ DEFAULT.GDT 1/4/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-14
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	14-Nov-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Nov-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Geoprobe	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	12.48 fbg (16-Nov-11)
REVIEWED BY	P. Schaefer PG 5612	**DEPTH TO WATER (Static)**	NA
REMARKS	Air-knife to 5'		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					GM		**Silty GRAVEL with Sand (GM)**; dark grayish brown (10YR 4/2); moist; 5% clay, 30% silt, 15% fine sand, 50% fine gravel.	5.0	
24.7		SB-1 4-5'		5	ML		**SILT (ML)**; dark greenish gray (5GY 4/1); moist; 5% clay, 95% silt; low plasticity.		
							@ 9 fbg - 20% clay, 80% silt.		Portland Type II/V
41.2		SB-14 -10'		10			@ 11 fbg - weak red (2.5YR 4/2); 15% clay, 75% silt, 10% fine gravel.		
							@ 13 fbg - greenish black (10Y 2.5/1); 20% clay, 80% silt.		
				15			@ 14 fbg - dusky red (2.5YR 3/2); moist; 15% clay, 75% silt, 10% fine gravel.	19.0	Bottom of Boring @ 19 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405-240524-1244\DE7-14255.GPJ DEFAULT.GDT 1/4/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-15
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	14-Nov-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Nov-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Geoprobe	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	13.50 fbg (15-Nov-11)
REVIEWED BY	P. Schaefer PG 5612	**DEPTH TO WATER (Static)**	NA
REMARKS	Air-knife to 5'		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
1.1		SB-15 -5'		5	GM		**Silty GRAVEL with Sand (GM)** ; dark grayish brown (10YR 4/2); dry; 5% clay, 25% silt, 30% fine sand, 40% fine to coarse gravel.		
								7.0	Portland Type II/V
118.1		SB-15 -10'		10	ML		**SILT (ML)** ; dark yellowish brown (10YR 4/4); moist; 15% clay, 80% silt, 5% fine sand; low plasticity.		
							@ 13 fbg - **Gravelly SILT with Sand (ML)** ; wet; 60% silt, 15% fine to medium sand, 25% fine to coarse gravel.	13.5	
				15					Bottom of Boring @ 15 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524--1\244DE7~1\14255.GPJ DEFAULT.GDT 1/4/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SB-16
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	14-Nov-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Nov-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Geoprobe	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVALS**	NA
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	8.50 fbg (16-Nov-11)
REVIEWED BY	P. Schaefer PG 5612	**DEPTH TO WATER (Static)**	NA
REMARKS	Air-knife to 5'		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0.6		SB-16 -5'		5	GM		**Silty GRAVEL with Sand (GM)** ; dark grayish brown (10YR 4/2); dry; 5% clay, 30 % silt, 15% fine sand, 50% fine to coarse gravel.	7.5	Portland Type II/V
1.4		SB-16 -10'		10	ML		**SILT (ML)** ; very dark gray (10YR 3/1); moist; 20% clay, 80% silt; low plasticity. ▽ @ 10 fbg - very dark grayish brown (2.5Y 3/2); 15% clay, 75% silt, 10% fine gravel. @ 12 fbg - **SILT with Sand (ML)** ; dark yellowish brown (10YR 4/4); 80% silt, 15% medium sand, 5% fine gravel. @ 14 fbg - **SILT (ML)** ; very dark grayish brown (2.5Y 3/2) with gray (2.5Y 6/1) mottling; 10% clay, 80% silt, 10% sand.		
20.8		SB-16 -16'		15			@ 16 fbg - very dark grayish brown (2.5Y 3/2); dry; 20% clay, 75% silt, 5% fine gravel.	19.0	Bottom of Boring @ 19 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524--1\244DE7~1\4255.GPJ DEFAULT.GDT 1/4/12

Conestoga Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-1
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	16-Feb-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Feb-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Airknife	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	4"	**SCREENED INTERVALS**	2.91-3' & 4.66-4.75'
LOGGED BY	E. Swan	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							**FILL**; grayish brown (10YR 5/2); dry; 100% crushed concrete fill; non-plastic.	2.0	Portland Type I/II
0				5	CL		**Sandy CLAY**; brown (10YR 4/3); moist; 55% clay, 10% silt, 35% fine-medium sand; low plasticity.	5.0	Bentonite Seal Monterey Sand 1" Stainless Steel Mesh Vapor Probe 1/4" OD Teflon Tubing Monterey Sand 1" Stainless Steel Mesh Vapor Probe Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405-1240524-11244DE7-114255.GPJ DEFAULT.GDT 4/18/11

Conestoga Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-2
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	16-Feb-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Feb-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Airknife	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	4"	**SCREENED INTERVALS**	2.91-3' & 4.66-4.75'
LOGGED BY	E. Swan	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							**FILL**; grayish brown (10YR 5/2); dry; 100% crushed concrete fill; non-plastic.		Portland Type I/II
							@ 2.5' bgs - solidified concrete pieces	2.5	Bentonite Seal Monterey Sand 1" Stainless Steel Mesh Vapor Probe
							Sandy CLAY; brown (10YR 4/3); moist; 55% clay, 10% silt, 35% fine-medium sand; low plasticity.	3.0	1/4" OD Teflon Tubing
0					CL				Monterey Sand 1" Stainless Steel Mesh Vapor Probe
				5				5.0	Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524--1\244DE7~1\4255.GPJ DEFAULT.GDT 4/19/11

Conestoga Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-3
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	15-Feb-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	15-Feb-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Airknife	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	4"	**SCREENED INTERVALS**	2.91-3' & 4.66-4.75'
LOGGED BY	E. Swan	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0					CL		**Sandy CLAY with FILL**; grayish brown (10YR 5/2); moist; 55% clay, 10% silt, 35% fine-medium sand; low plasticity.		Portland Type I/II
									Bentonite Seal
									Monterey Sand
									1" Stainless Steel Mesh Vapor Probe
									1/4" OD Teflon Tubing
0									Monterey Sand
									1" Stainless Steel Mesh Vapor Probe
				5				5.0	Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524--\1244DE7~114255.GPJ DEFAULT.GDT 4/18/11

Conestoga Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-4
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	15-Feb-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	15-Feb-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Airknife	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	4"	**SCREENED INTERVALS**	2.91-3' & 4.66-4.75'
LOGGED BY	E. Swan	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							**Sandy CLAY with FILL**; grayish brown (10YR 5/2); moist; 55% clay, 10% silt, 35% fine-medium sand; low plasticity.		Portland Type I/II
									Bentonite Seal
									Monterey Sand
									1" Stainless Steel Mesh Vapor Probe
									1/4" OD Teflon Tubing
0				5				5.0	Monterey Sand
									1" Stainless Steel Mesh Vapor Probe
									Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--1240524--1\1244DE7--1\4255.GPJ DEFAULT.GDT 4/18/11

Conestoga Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-5
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	15-Feb-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	15-Feb-11
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	NA
DRILLING METHOD	Airknife	TOP OF CASING ELEVATION	NA
BORING DIAMETER	4"	SCREENED INTERVALS	2.91-3' & 4.66-4.75'
LOGGED BY	E. Swan	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							**FILL**; grayish brown (10YR 5/2); dry; 100% crushed concrete fill; non-plastic.	3.0	Portland Type I/II; Bentonite Seal; Monterey Sand; 1" Stainless Steel Mesh Vapor Probe
0				5	CL		**Sandy CLAY**; brown (10YR 4/3); moist; 55% clay, 10% silt, 35% fine-medium sand; low plasticity.	5.0	1/4" OD Teflon Tubing; Monterey Sand; 1" Stainless Steel Mesh Vapor Probe; Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--1240524-1244DE7-1\4255.GPJ DEFAULT.GDT 4/18/11

Conestoga Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-6
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	16-Feb-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Feb-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Airknife	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	4"	**SCREENED INTERVALS**	2.91-3' & 4.66-4.75'
LOGGED BY	E. Swan	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							FILL; grayish brown (10YR 5/2); dry; 100% crushed concrete fill; non-plastic.		Portland Type I/II; Bentonite Seal; Monterey Sand; 1" Stainless Steel Mesh Vapor Probe; 1/4" OD Teflon Tubing; Monterey Sand; 1" Stainless Steel Mesh Vapor Probe
0				5				5.0	Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524-1\244DE7~1\4255.GPJ DEFAULT.GDT 4/21/11

Conestoga Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-7
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	16-Feb-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	16-Feb-11
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Airknife	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	4"	**SCREENED INTERVALS**	2.91-3' & 4.66-4.75'
LOGGED BY	E. Swan	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							FILL; grayish brown (10YR 5/2); dry; 100% crushed concrete fill; non-plastic.		Portland Type I/II; Bentonite Seal; Monterey Sand; 1" Stainless Steel Mesh Vapor Probe; 1/4" OD Teflon Tubing
0				5	CL		Sandy CLAY; brown (10YR 4/3); moist; 55% clay, 10% silt, 35% fine-medium sand; low plasticity.	4.5 5.0	Monterey Sand; 1" Stainless Steel Mesh Vapor Probe Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524-1\244DE7~1\4255.GPJ DEFAULT.GDT 4/18/11

Conestoga Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-8
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	16-Feb-11
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	16-Feb-11
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	NA
DRILLING METHOD	Airknife	TOP OF CASING ELEVATION	NA
BORING DIAMETER	4"	SCREENED INTERVALS	2.91-3' & 4.66-4.75'
LOGGED BY	E. Swan	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							FILL; grayish brown (10YR 5/2); dry; 100% crushed concrete fill; non-plastic.		Portland Type I/II
									Bentonite Seal
									Monterey Sand
									1" Stainless Steel Mesh Vapor Probe
									1/4" OD Teflon Tubing
0					CL		Sandy CLAY; brown (10YR 4/3); moist; 55% clay, 10% silt, 35% fine-medium sand; low plasticity, with concrete pieces.	4.0	
				5				5.0	Monterey Sand
									1" Stainless Steel Mesh Vapor Probe
									Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524-11244DE7-114255.GPJ DEFAULT.GDT 4/18/11

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-9
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	17-Apr-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	17-Apr-12
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Hand Auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2.5"	**SCREENED INTERVALS**	NA
LOGGED BY	Belew Yifru	**DEPTH TO WATER (First Encountered)**	4.50 fbg (17-Apr-12)
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	2.50 fbg
REMARKS	Temporary soil vapor probe SVP-9 installed to 1 foot below grade adjacent to this hole.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							CONCRETE	0.3	
0							CLAY; Dark gray (2.5YR 4/1); moist; 55% clay, 40% silt, 5% fine-medium sand; medium plasticity; with brick pieces.		
					CL				Portland Type I/II Cement
0									
0							@ 4.5 fbg color changes to light gray (5YR 7/1).		
				5				5.0	Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--\240524-11\244DE7~1\4255.GPJ DEFAULT.GDT 4/25/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-10
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	17-Apr-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	17-Apr-12
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Hand Auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2.5"	**SCREENED INTERVALS**	NA
LOGGED BY	Belew Yifru	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Temporary soil vapor probe SVP-10 installed to 1 foot below grade.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							CONCRETE	0.3	Portland Type I/II Cement
0					CL		**CLAY**; Dark gray (2.5YR 4/1); moist; 55% clay, 40% silt, 5% fine-medium sand; medium plasticity; with brick pieces.	1.0	
				5					Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405--1\240524--1\244DE7--114255.GPJ DEFAULT.GDT 4/25/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-11
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	17-Apr-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	17-Apr-12
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Hand Auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2.5"	**SCREENED INTERVALS**	NA
LOGGED BY	Belew Yifru	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA
REMARKS	Temporary soil vapor probe SVP-11 installed to 1 foot below grade.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							**CONCRETE**	0.3	Portland Type I/II Cement
					CL		**CLAY**; Dark gray (2.5YR 4/1); moist; 55% clay, 40% silt, 5% fine-medium sand; medium plasticity; with brick pieces.	1.0	
				5					Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARS\2405-\240524-11\244DE7-114255.GPJ DEFAULT.GDT 4/25/12

Conestoga - Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING / WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	SVP-12
JOB/SITE NAME	Former Shell service station	**DRILLING STARTED**	17-Apr-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	**DRILLING COMPLETED**	17-Apr-12
PROJECT NUMBER	240524	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Vapor Tech Services	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Hand Auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2.5"	**SCREENED INTERVALS**	NA
LOGGED BY	Belew Yifru	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	P. Schaefer PG#5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Temporary soil vapor probe SVP-12 installed to 1 foot below grade.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
0							CONCRETE	0.3	Portland Type I/II Cement
					CL		CLAY; Dark gray (2.5YR 4/1); moist; 55% clay, 40% silt, 5% fine-medium sand; medium plasticity; with brick pieces.	1.0	
				5					Bottom of Boring @ 5 fbg

WELL LOG (PID) I:\SHELL\6-CHARTS\2405--\240524--1\244DE7--114255.GPJ DEFAULT.GDT 4/25/12

Conestoga-Rovers & Associates
5900 Hollis Avenue, Suite A
Emeryville, California 94608-2008
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-13
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	29-Oct-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	29-Oct-12
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	169.89 ft above msl
DRILLING METHOD	Airknife and Waterknife	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	4"	SCREENED INTERVAL	2.5 to 2.6 fbg ; 5 to 5.1 fbg
LOGGED BY	S. Lewis	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							ASPHALT	0.3	Bentonite Seal
					SM		**Silty SAND with Gravel (SM)** ; brown (7.5YR 4/3); moist; 20% silt, 50% fine to coarse sand, 30% fine to coarse gravel.	1.0	Monterey Sand #2/16 1" - Polyethylene Vapor Implant
				5	GM		**Silty GRAVEL (GM)** ; brown (7.5YR 4/3); moist; 20% silt, 10% fine to coarse sand, 70% fine to coarse gravel.	5.5	1/4" OD Teflon Tubing Monterey Sand #2/16 1" - Polyethylene Vapor Implant Bottom of Boring @ 5.5 ft
				10					

WELL LOG NESTED (PID) I:\SONOMA.PUBLIC\O-USERS\SLEWIS\240524\240524-GINT.GPJ DEFAULT.GDT 11/28/12

Conestoga-Rovers & Associates
5900 Hollis Avenue, Suite A
Emeryville, California 94608-2008
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-14
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	29-Oct-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	29-Oct-12
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	170.97 ft above msl
DRILLING METHOD	Airknife and Waterknife	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	4"	SCREENED INTERVAL	2.5 to 2.6 fbg ; 5 to 5.1 fbg
LOGGED BY	S. Lewis	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)
							ASPHALT	0.3
					GM		**Silty GRAVEL with Sand (GM)** ; brown (7.5YR 4/3); moist; 5% clay, 20% silt, 20% fine to coarse sand, 55% fine to coarse gravel.	1.0
				5	ML		**SILT (ML)** ; greenish gray (10Y 5/1); moist; 10% clay, 80% silt, 5% fine to coarse sand, 5% fine to coarse gravel; low plasticity.	5.5
				10				

WELL DIAGRAM

- Bentonite Seal
- Monterey Sand #2/16
- 1" - Polyethylene Vapor Implant
- 1/4" OD Teflon Tubing
- Monterey Sand #2/16
- 1" - Polyethylene Vapor Implant

Bottom of Boring @ 5.5 ft

WELL LOG NESTED (PID) I:\SONOMA.PUBLIC\0-USERS\SLEWIS\240524\240524-GINT.GPJ DEFAULT.GDT 11/28/12

Conestoga-Rovers & Associates
5900 Hollis Avenue, Suite A
Emeryville, California 94608-2008
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-15
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	29-Oct-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	29-Oct-12
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	171.00 ft above msl
DRILLING METHOD	Airknife and Waterknife	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	4"	SCREENED INTERVAL	2.5 to 2.6 fbg ; 5 to 5.1 fbg
LOGGED BY	S. Lewis	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)
							ASPHALT	0.3
					GM		**Silty GRAVEL with Sand (GM)** ; brown (7.5YR 4/3); moist; 5% clay, 20% silt, 20% fine to coarse sand, 55% fine to coarse gravel.	1.0
				5	ML		**SILT (ML)** ; greenish gray (10Y 5/1); moist; 10% clay, 80% silt, 5% fine to coarse sand, 5% fine to coarse gravel; low plasticity.	5.5
				10				

WELL DIAGRAM

- Bentonite Seal
- Monterey Sand #2/16
- 1" - Polyethylene Vapor Implant
- 1/4" OD Teflon Tubing
- Monterey Sand #2/16
- 1" - Polyethylene Vapor Implant

Bottom of Boring @ 5.5 ft

WELL LOG NESTED (PID) I:\SONOMA.PUBLIC\0-USERS\SLEWIS\2405241240524-GINT.GPJ DEFAULT.GDT 11/28/12

Conestoga-Rovers & Associates
5900 Hollis Avenue, Suite A
Emeryville, California 94608-2008
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-18
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	31-Oct-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	31-Oct-12
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	173.84 ft above msl
DRILLING METHOD	Jackhammer	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	6"	SCREENED INTERVAL	2 to 2.1 fbg ; 3.8 to 3.9 fbg
LOGGED BY	S. Lewis	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					GM		**Silty GRAVEL with Sand (GM)** ; brown (7.5YR 4/3); dry to moist; 5% clay, 20% silt, 25% fine to coarse sand, 50% fine to coarse gravel.	4.0	Bentonite Seal Monterey Sand #2/16 1" - Polyethylene Vapor Implant 1/4" OD Teflon Tubing Monterey Sand #2/16 1" - Polyethylene Vapor Implant Bottom of Boring @ 4 ft

WELL LOG NESTED (PID): I:\SONOMA.PUBLIC\0-USERS\SLEWIS\240524\240524-GINT.GPJ DEFAULT.GDT 11/28/12

Conestoga-Rovers & Associates
5900 Hollis Avenue, Suite A
Emeryville, California 94608-2008
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-19
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	31-Oct-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	31-Oct-12
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	174.72 ft above msl
DRILLING METHOD	Airknife and Waterknife	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	4"	SCREENED INTERVAL	2.5 to 2.6 fbg ; 5 to 5.1 fbg
LOGGED BY	S. Lewis	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					GM		**Silty GRAVEL with Sand (GM)** ; brown (7.5YR 4/3); dry to moist; 15% silt, 15% fine to coarse sand, 70% fine to coarse gravel.		Bentonite Seal
					ML		**SILT with Sand (ML)** ; brown (7.5YR 4/3); moist; 5% clay, 75% silt, 20% fine to coarse sand; low plasticity.	2.0	Monterey Sand #2/16 1" - Polyethylene Vapor Implant 1/4" OD Teflon Tubing Monterey Sand #2/16 1" - Polyethylene Vapor Implant Bentonite Seal
				5				6.0	Bottom of Boring @ 6 ft
				10					

WELL LOG NESTED (PID) I:\SONOMA.PUBLIC\C-USERS\SLEWIS\240524\240524-GINT.GPJ DEFAULT.GDT 11/28/12

Conestoga-Rovers & Associates
5900 Hollis Avenue, Suite A
Emeryville, California 94608-2008
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-20
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	30-Oct-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	30-Oct-12
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	175.54 ft above msl
DRILLING METHOD	Airknife and Waterknife	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	4"	SCREENED INTERVAL	2.5 to 2.6 fbg ; 5 to 5.1 fbg
LOGGED BY	S. Lewis	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					GM		**Silty GRAVEL with Sand (GM)** ; brown (10YR 4/3); moist; 5% clay, 15% silt, 20% fine to coarse sand, 60% fine to coarse gravel.	1.0	Bentonite Seal
				5	ML		**SILT (ML)** ; brown (10YR 5/3); moist; 20% clay, 70% silt, 5% fine to coarse sand, 5% fine to coarse gravel; low plasticity.	6.0	Monterey Sand #2/16 1" - Polyethylene Vapor Implant 1/4" OD Teflon Tubing Monterey Sand #2/16 1" - Polyethylene Vapor Implant Bentonite Seal Bottom of Boring @ 6 ft
				10					

WELL LOG NESTED (PID) I:\SONOMA_PUBLIC\0-USERS\SLEWIS\240524\240524-GINT.GPJ DEFAULT.GDT 11/28/12

Conestoga-Rovers & Associates
5900 Hollis Avenue, Suite A
Emeryville, California 94608-2008
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	SVP-21
JOB/SITE NAME	Former Shell service station	DRILLING STARTED	30-Oct-12
LOCATION	4255 MacArthur Boulevard, Oakland, California	DRILLING COMPLETED	30-Oct-12
PROJECT NUMBER	240524	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Vapor Tech Services	GROUND SURFACE ELEVATION	175.22 ft above msl
DRILLING METHOD	Jackhammer and Waterknife	TOP OF CASING ELEVATION	Not Surveyed
BORING DIAMETER	6"	SCREENED INTERVAL	2.5 to 2.6 fbg ; 5 to 5.1 fbg
LOGGED BY	S. Lewis	DEPTH TO WATER (First Encountered)	NA
REVIEWED BY	P. Schaefer PG#5612	DEPTH TO WATER (Static)	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					GM		**Silty GRAVEL with Sand (GM)**; brown (10YR 5/3); dry to moist; 5% clay, 20% silt, 15% fine to coarse sand, 60% fine to coarse gravel.		Bentonite Seal
					ML		**SILT (ML)**; brown (10YR 5/3); moist; 10% clay, 80% silt, 5% fine to coarse sand, 5% fine to coarse gravel; low plasticity.	3.5	Monterey Sand #2/16 1" - Polyethylene Vapor Implant 1/4" OD Teflon Tubing Monterey Sand #2/16 1" - Polyethylene Vapor Implant
				5				5.5	Bottom of Boring @ 5.5 ft
				10					

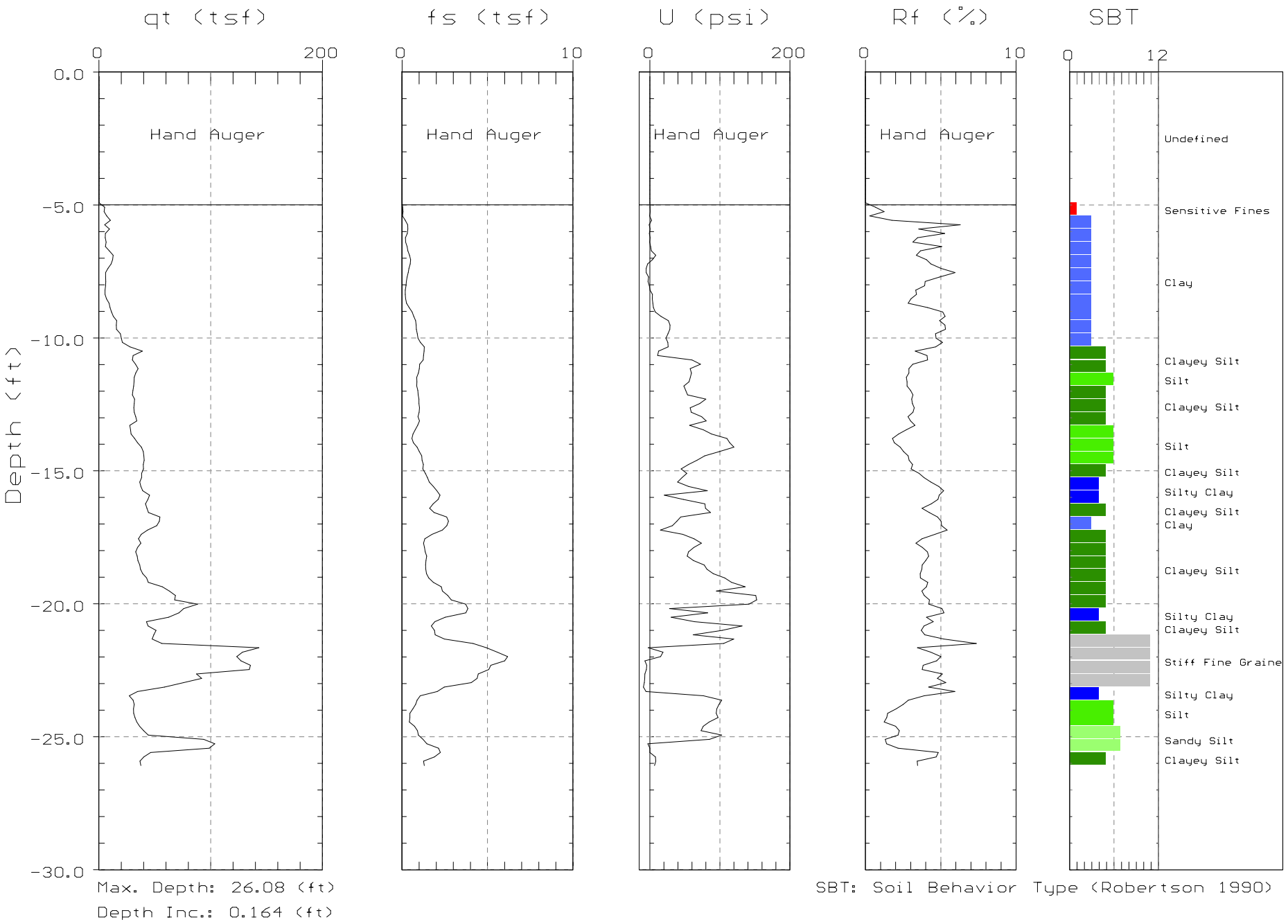
WELL LOG NESTED (PID) I:\SONOMA.PUBLIC\0-USERS\SLEWIS\240524\240524-GINT.GPJ DEFAULT.GDT 11/28/12

GREGG

CAMBRIA

Site: SHELL
Location: CPT-01

Engineer: S.DALIE
Date: 04:05:05 08:39



Max. Depth: 26.08 (ft)
Depth Inc.: 0.164 (ft)

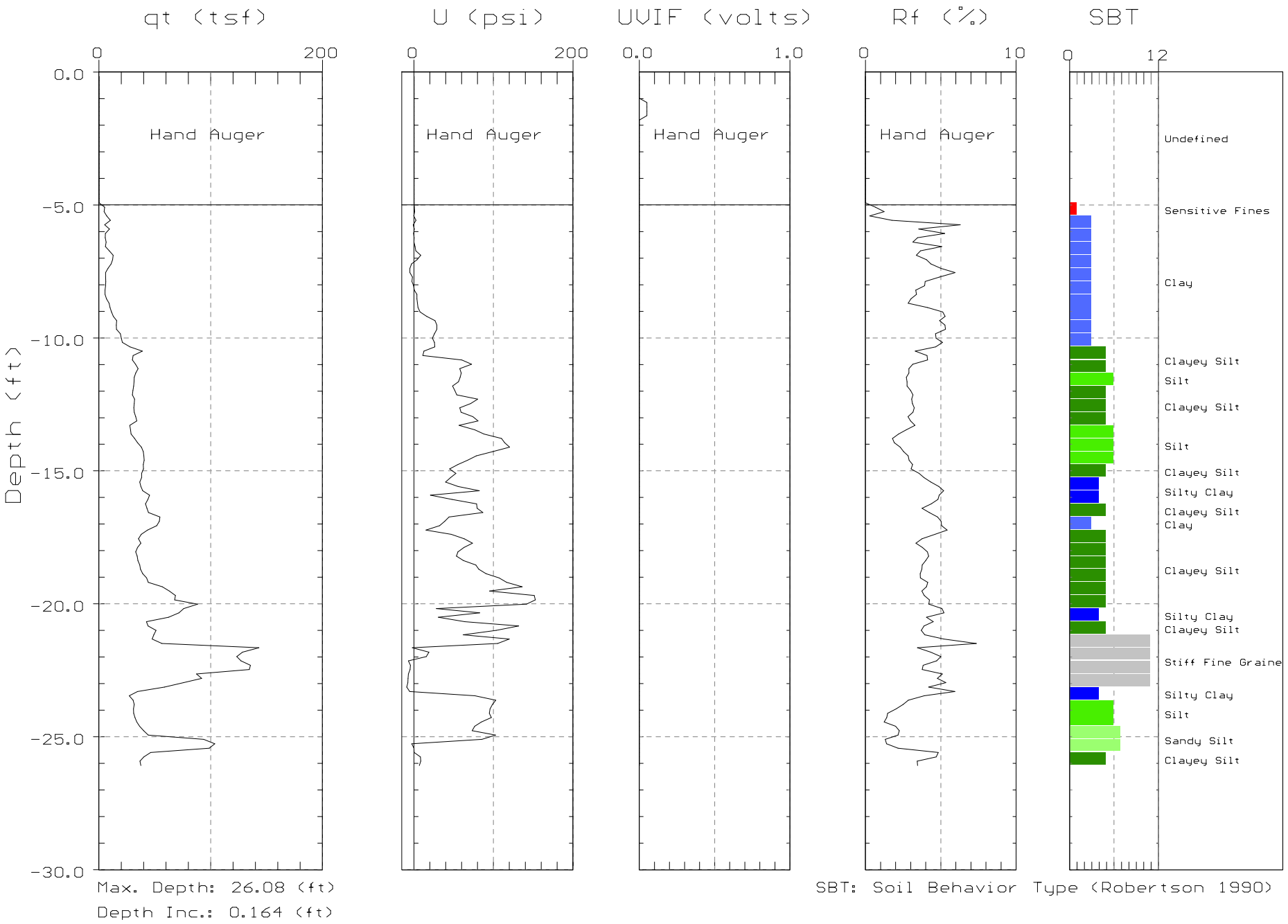
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-01

Engineer: S.DALIE
Date: 04:05:05 08:39



Max. Depth: 26.08 (ft)
Depth Inc.: 0.164 (ft)

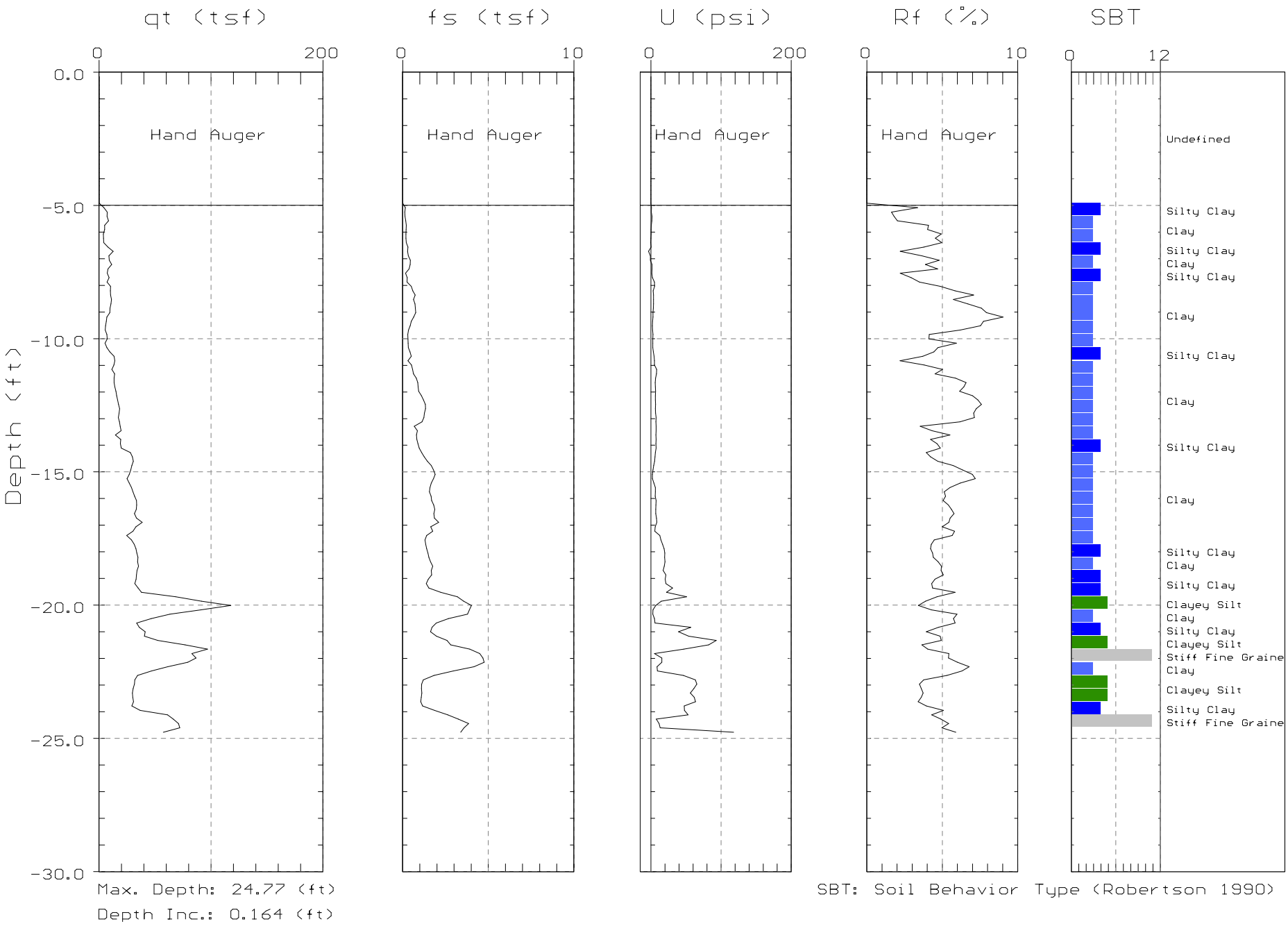
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-02

Engineer: S.DALIE
Date: 04:05:05 10:18



Max. Depth: 24.77 (ft)
Depth Inc.: 0.164 (ft)

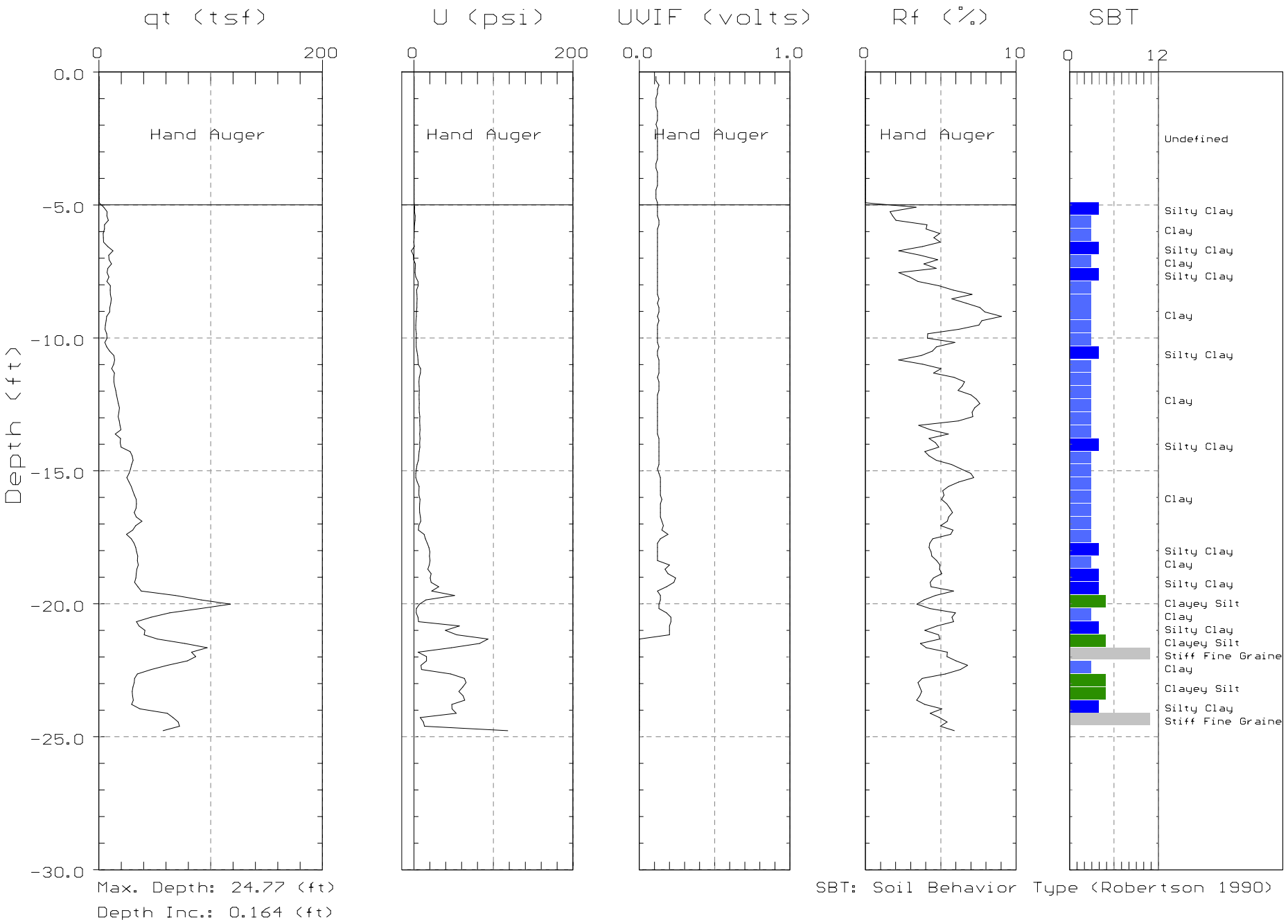
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-02

Engineer: S.DALIE
Date: 04:05:05 10:18



Max. Depth: 24.77 (ft)
Depth Inc.: 0.164 (ft)

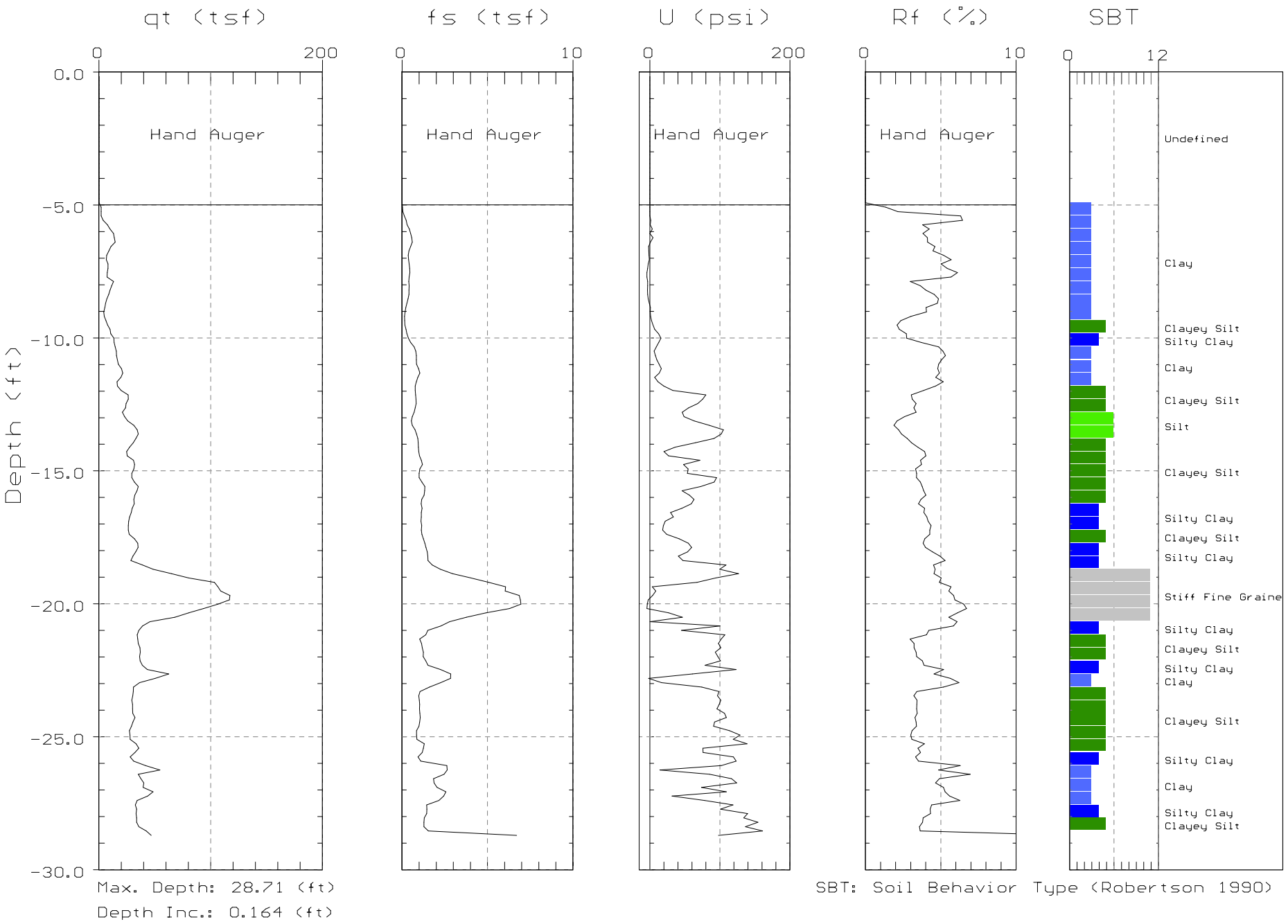
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-03

Engineer: S.DALIE
Date: 04:05:05 11:45



Max. Depth: 28.71 (ft)
Depth Inc.: 0.164 (ft)

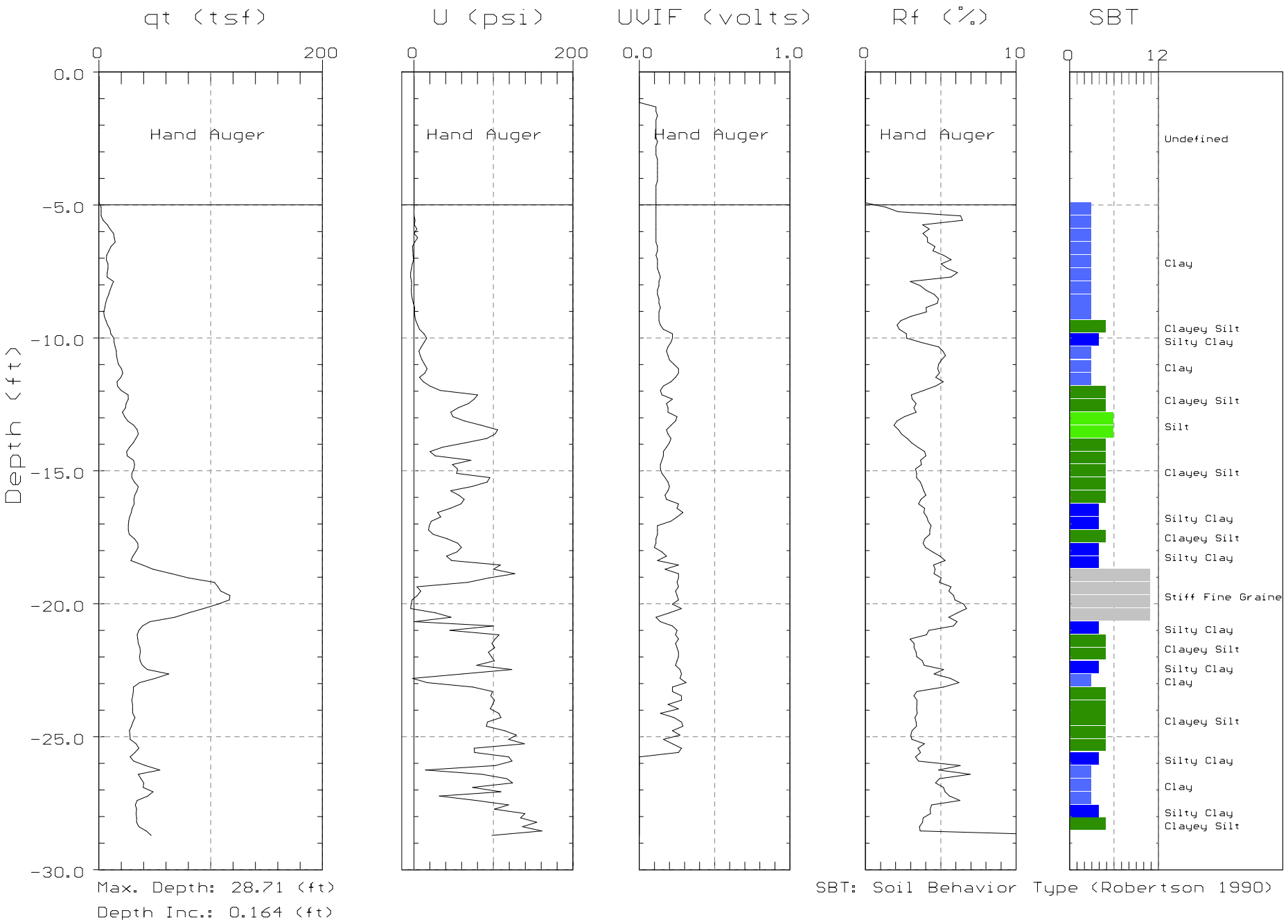
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-03

Engineer: S.DALIE
Date: 04:05:05 11:45



Max. Depth: 28.71 (ft)
Depth Inc.: 0.164 (ft)

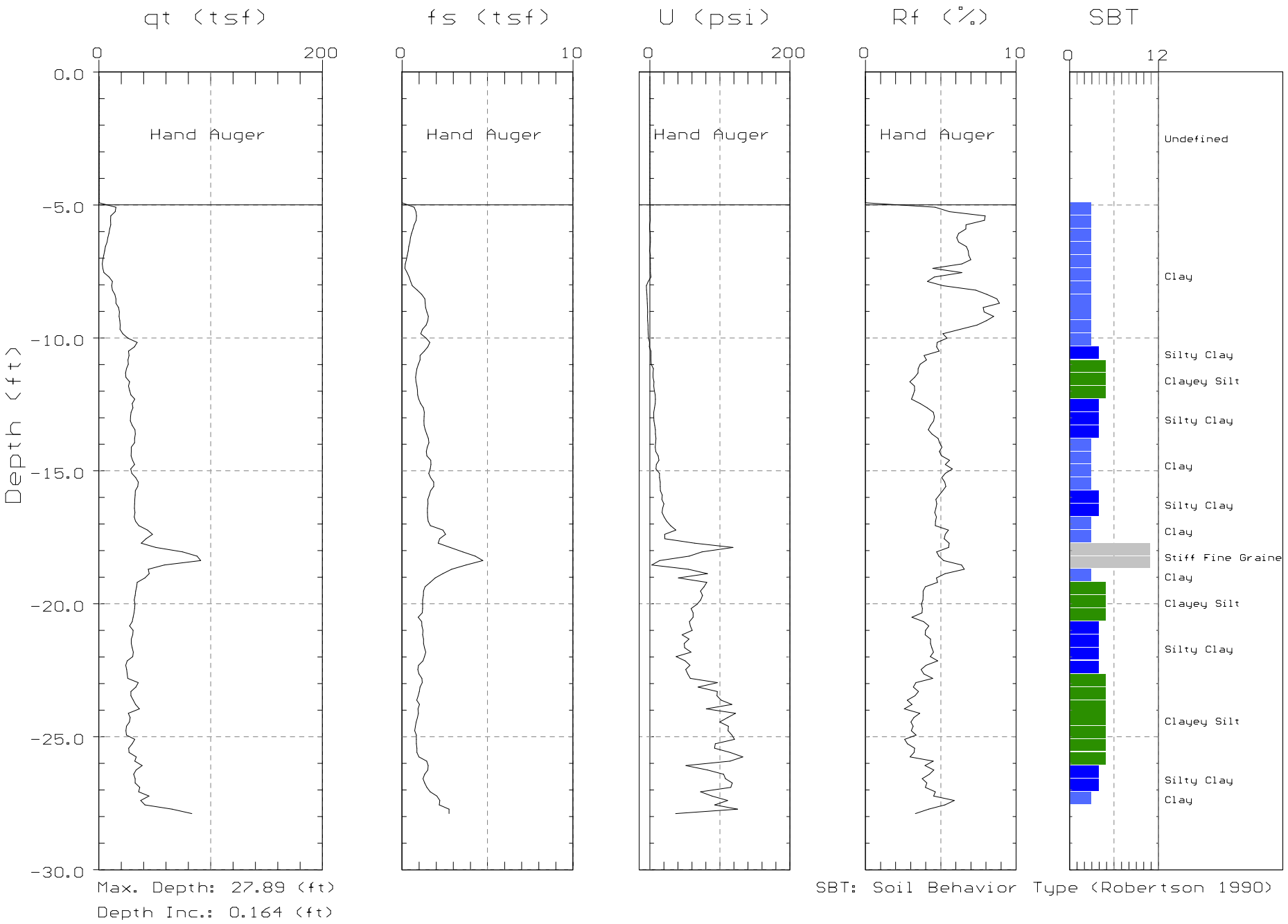
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-04

Engineer: S.DALIE
Date: 04:05:05 13:36

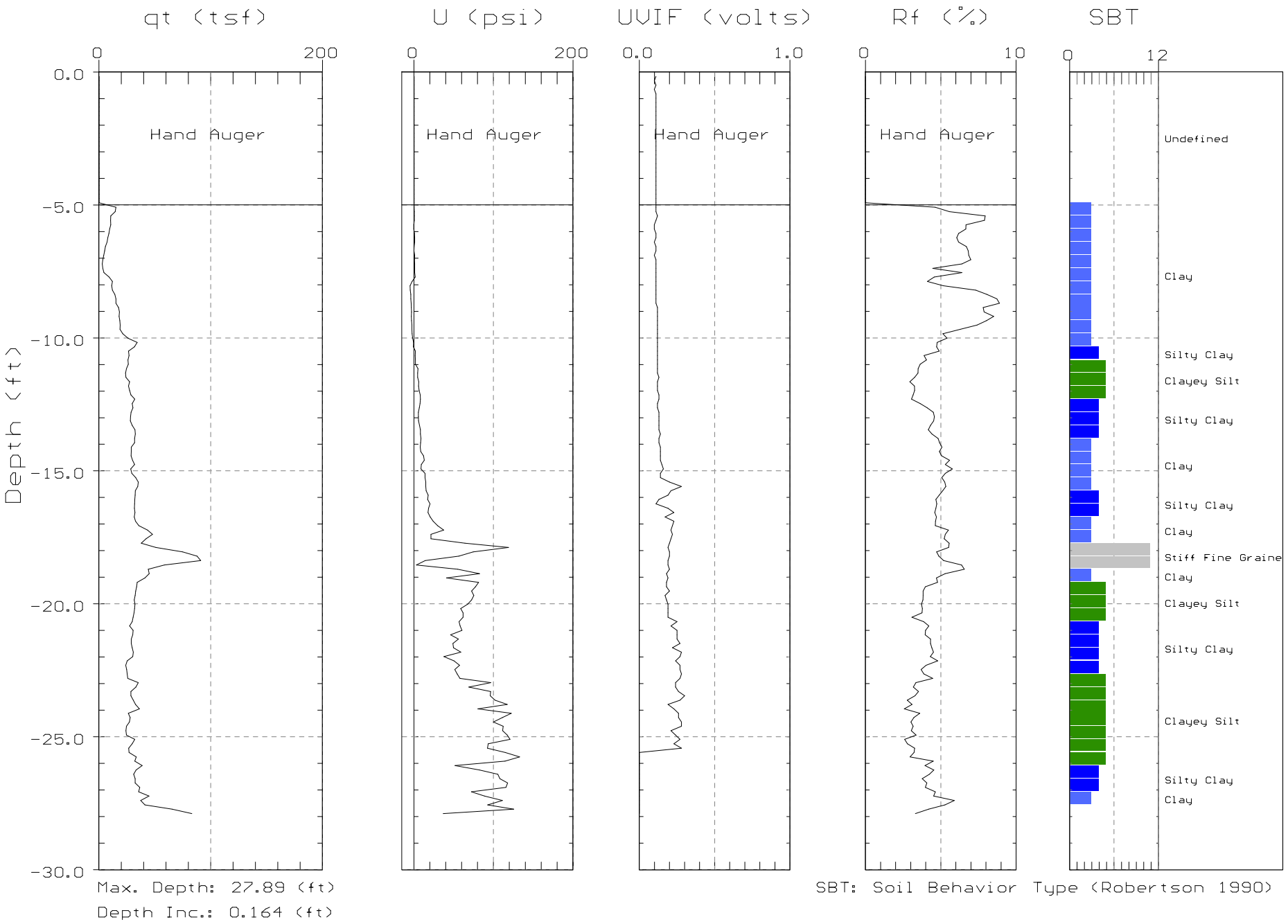


GREGG

CAMBRIA

Site: SHELL
Location: CPT-04

Engineer: S.DALIE
Date: 04:05:05 13:36



Max. Depth: 27.89 (ft)
Depth Inc.: 0.164 (ft)

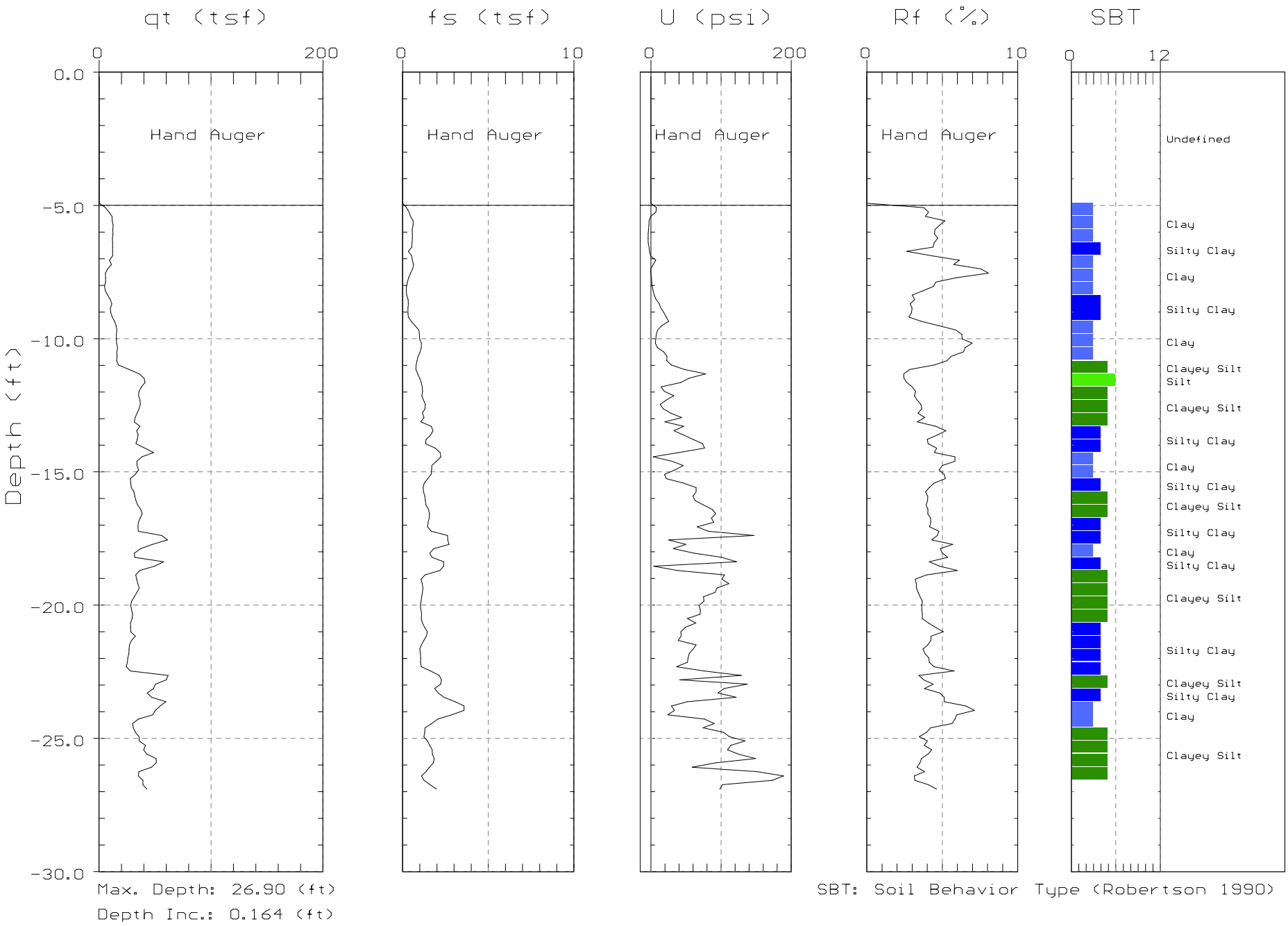
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-05

Engineer: S.DALIE
Date: 04:05:05 15:01



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

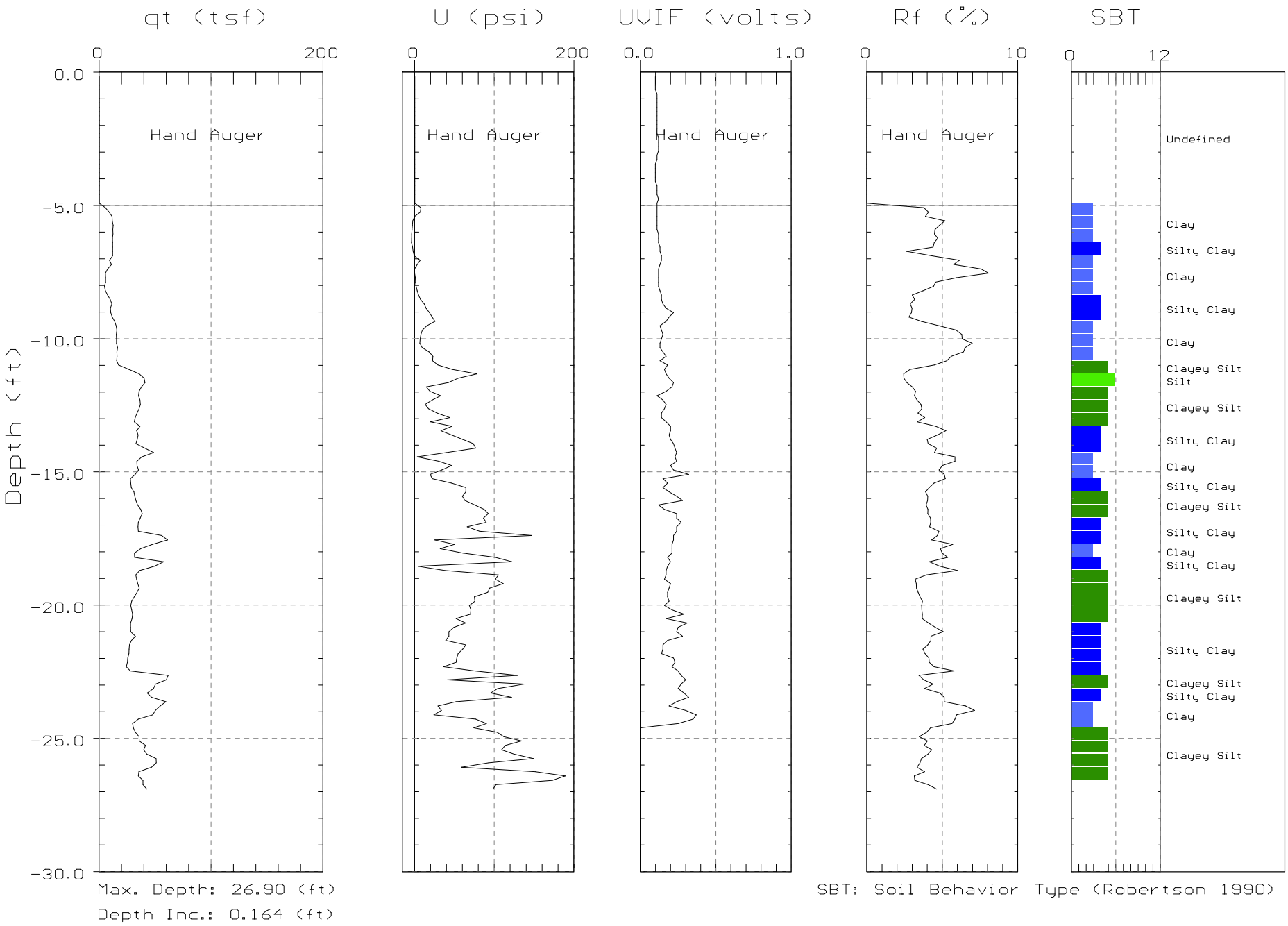
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-05

Engineer: S.DALIE
Date: 04:05:05 15:01



Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)

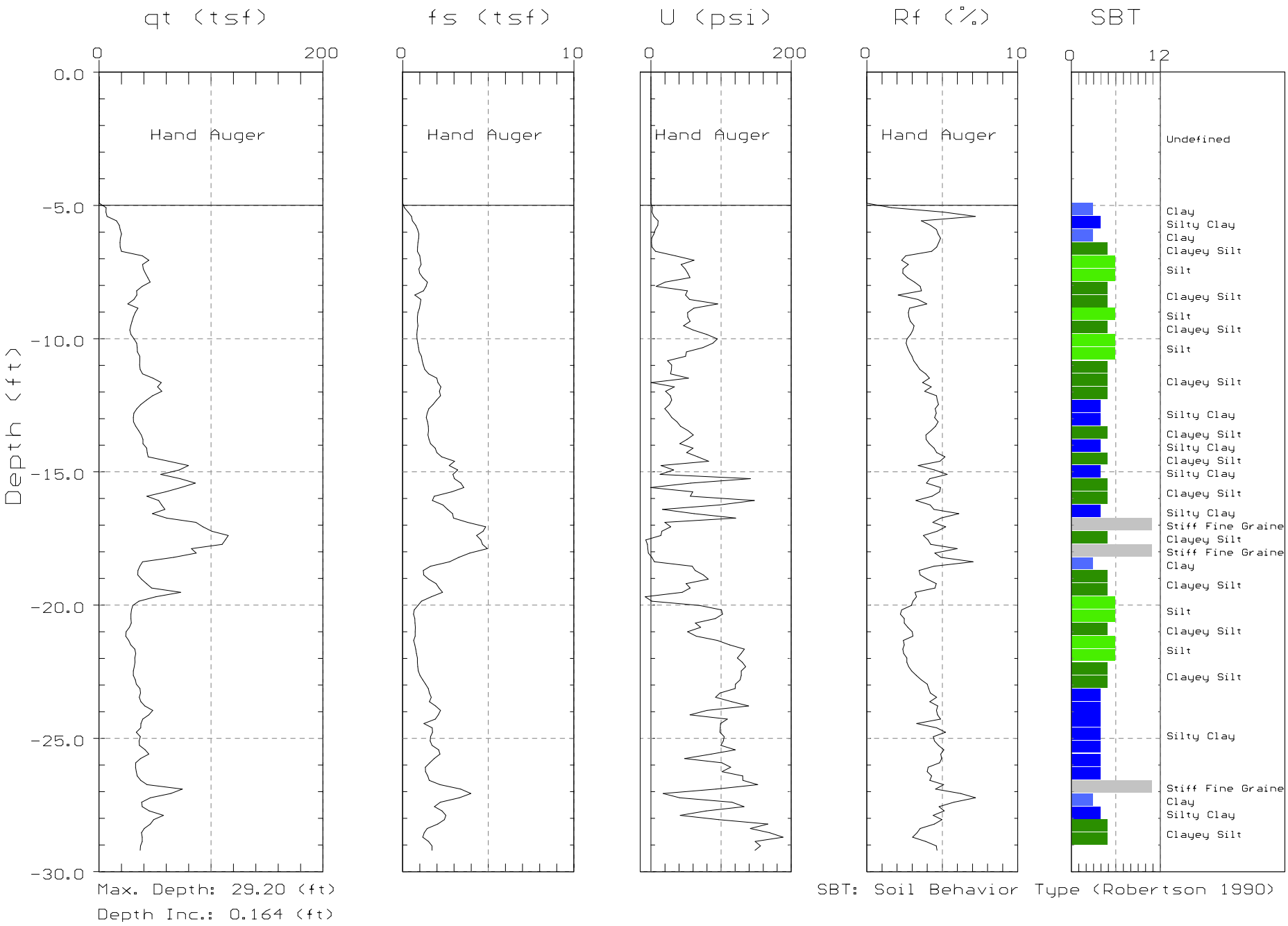
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-06

Engineer: S.DALIE
Date: 04:05:05 16:36

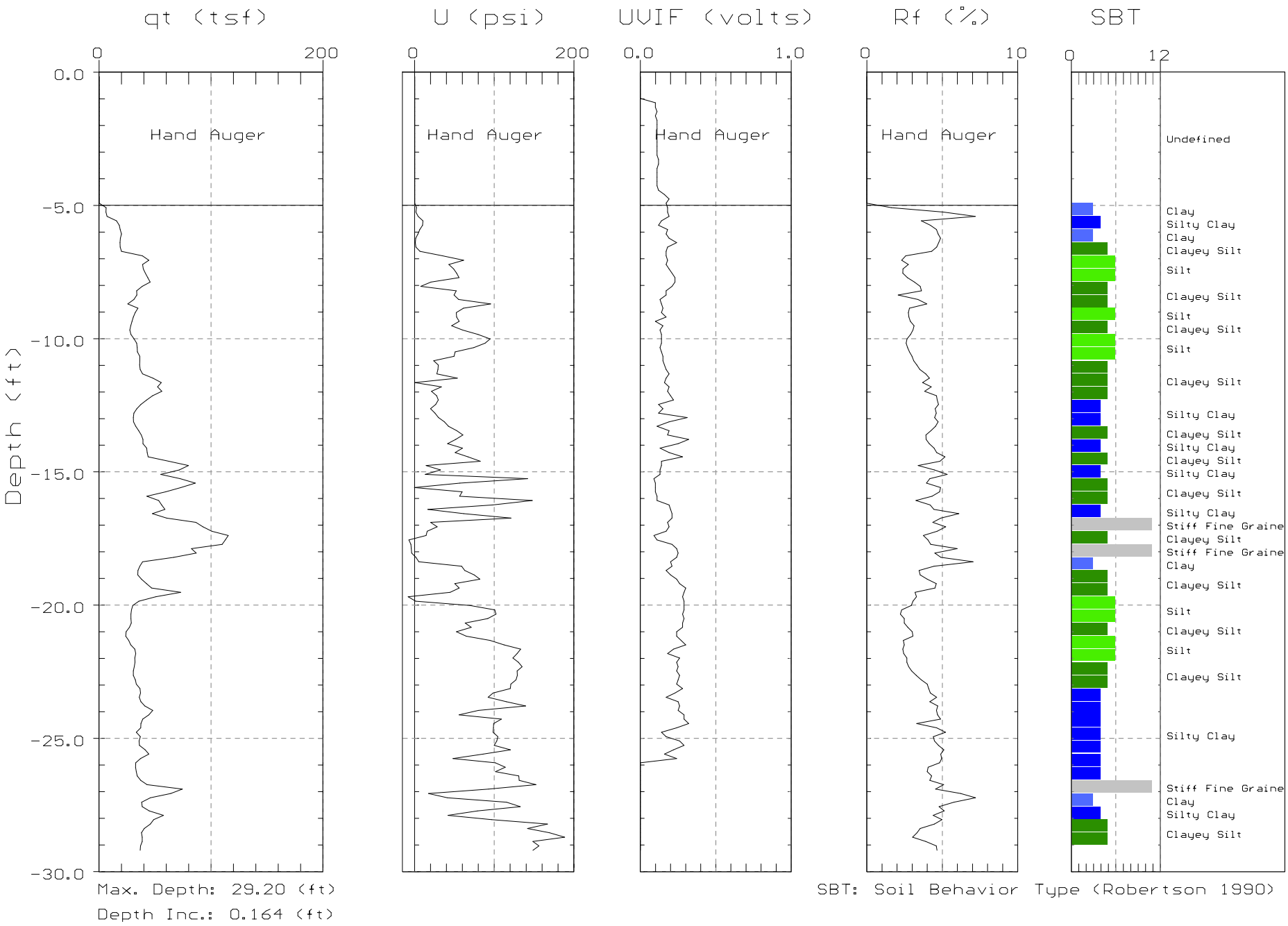


GREGG

CAMBRIA

Site: SHELL
Location: CPT-06

Engineer: S.DALIE
Date: 04:05:05 16:36

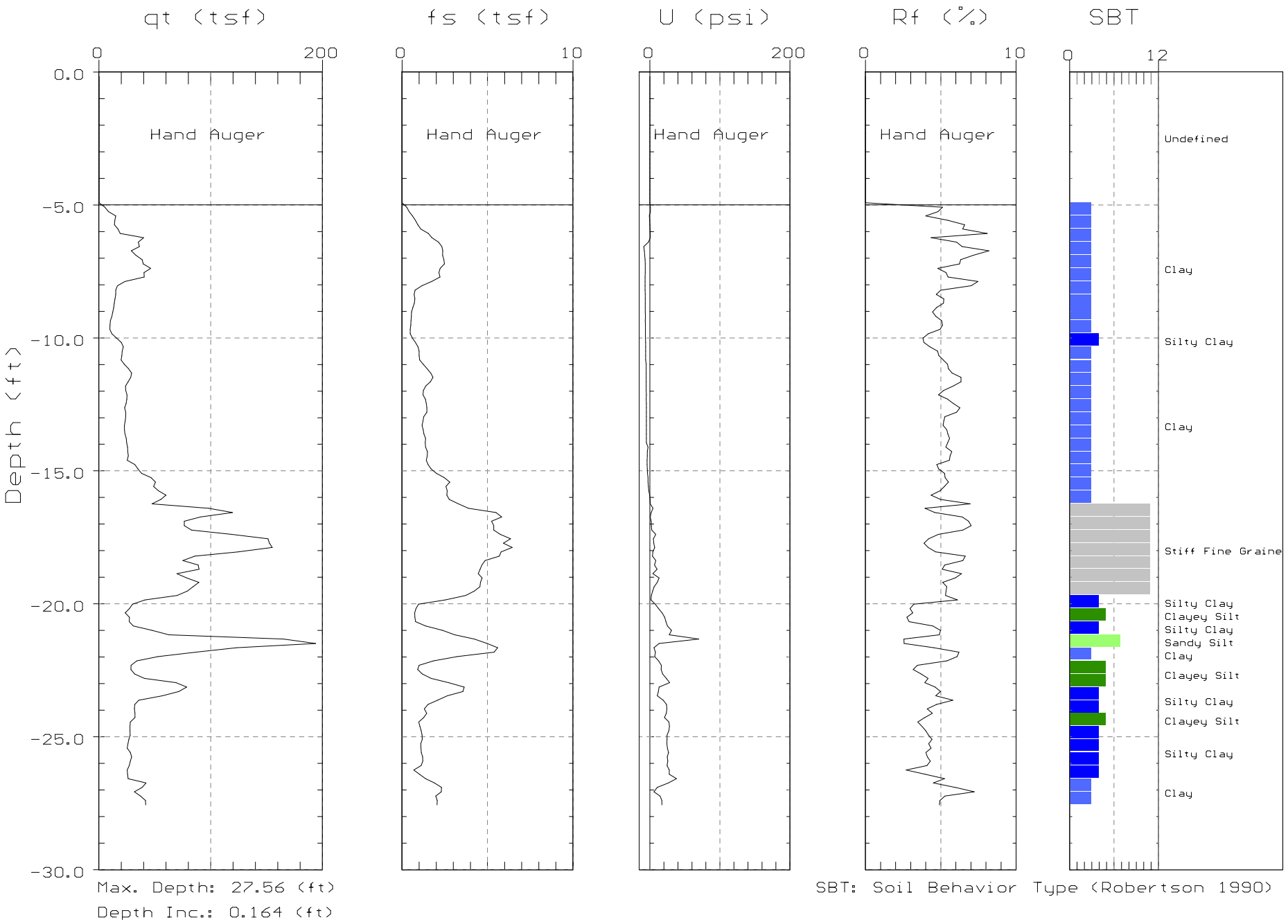


GREGG

CAMBRIA

Site: SHELL
Location: CPT-07

Engineer: S.DALIE
Date: 04:05:05 17:31



Max. Depth: 27.56 (ft)
Depth Inc.: 0.164 (ft)

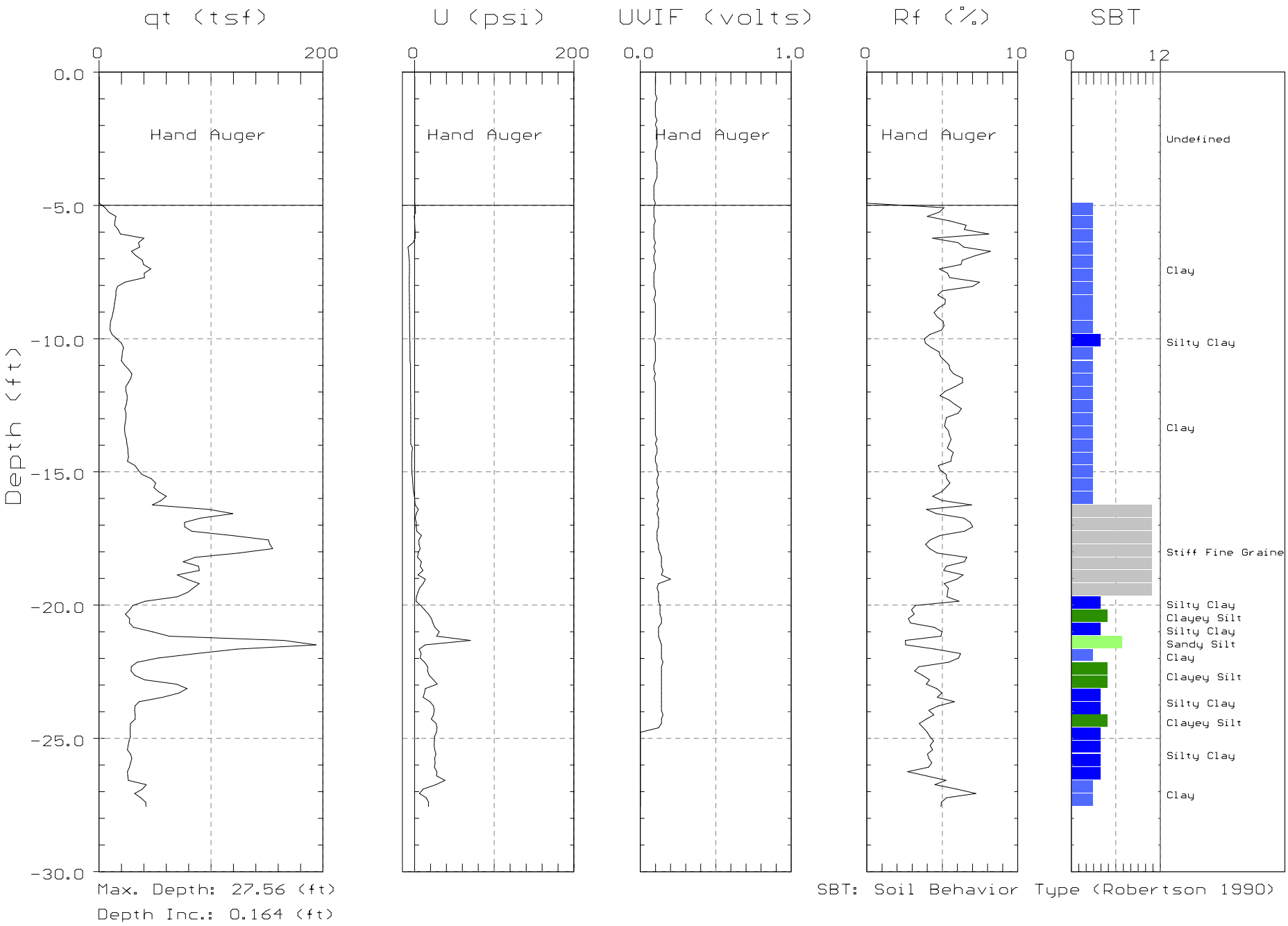
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-07

Engineer: S.DALIE
Date: 04:05:05 17:31



Max. Depth: 27.56 (ft)
Depth Inc.: 0.164 (ft)

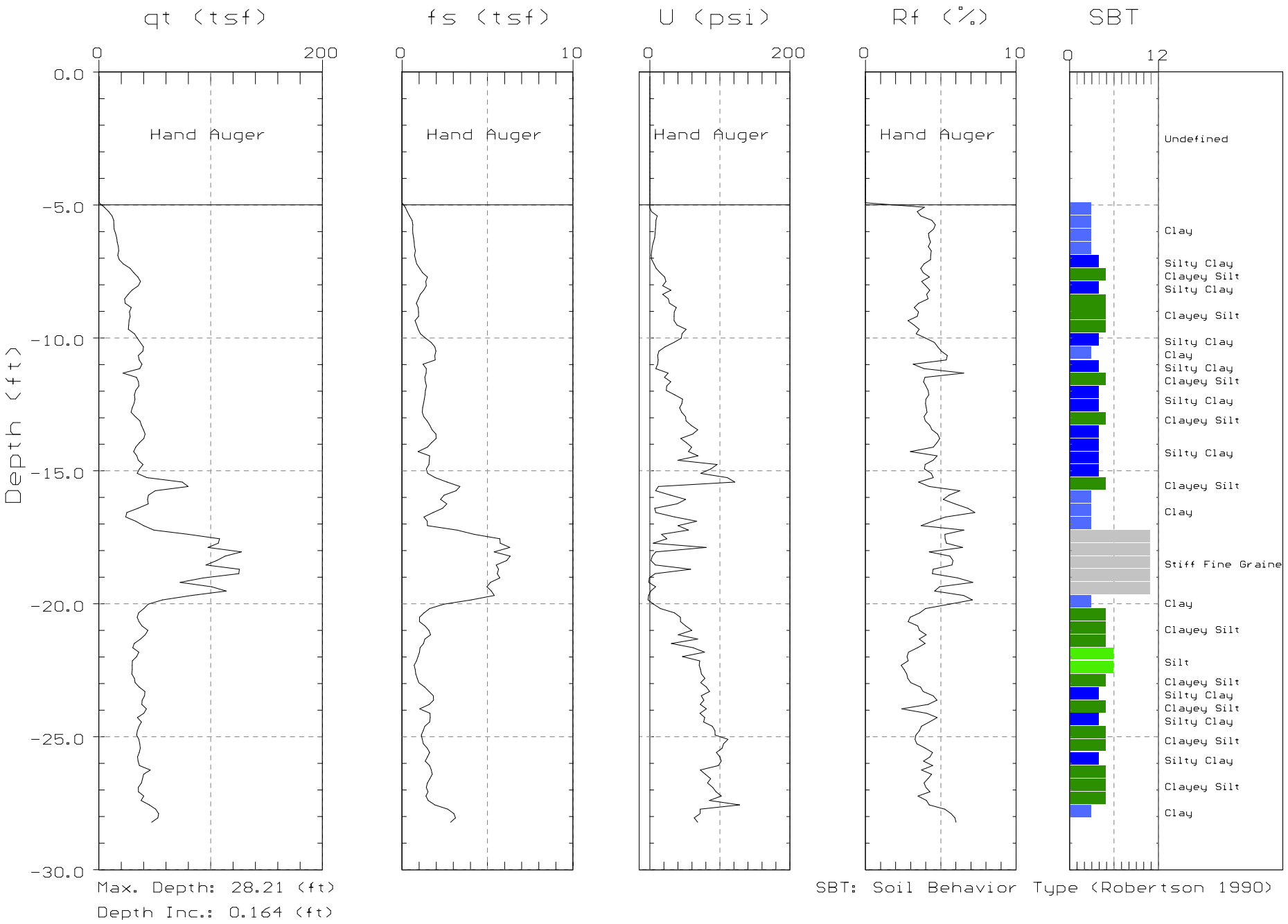
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-08

Engineer: S.DALIE
Date: 04:06:05 09:12



Max. Depth: 28.21 (ft)
Depth Inc.: 0.164 (ft)

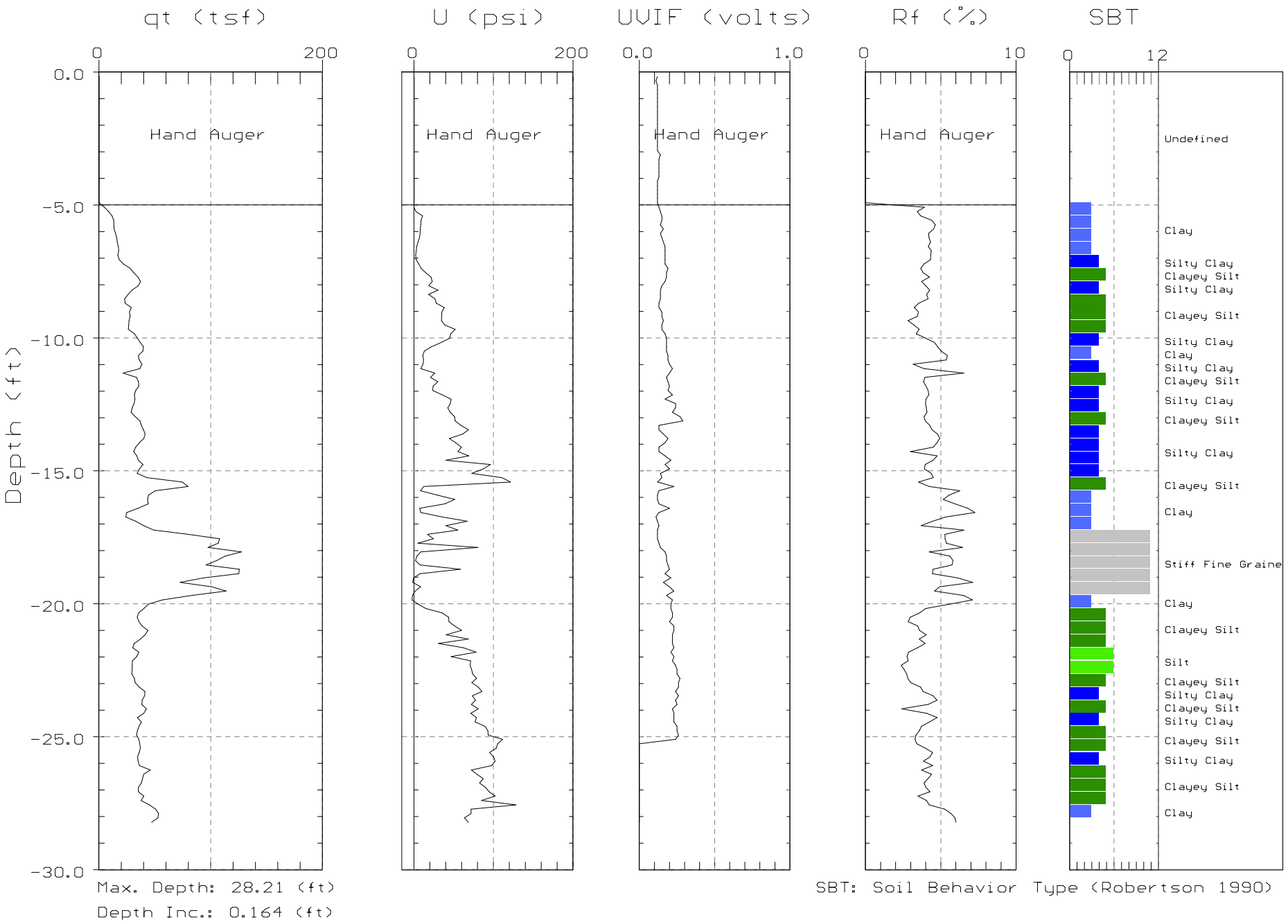
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-08

Engineer: S.DALIE
Date: 04:06:05 09:12



Max. Depth: 28.21 (ft)
Depth Inc.: 0.164 (ft)

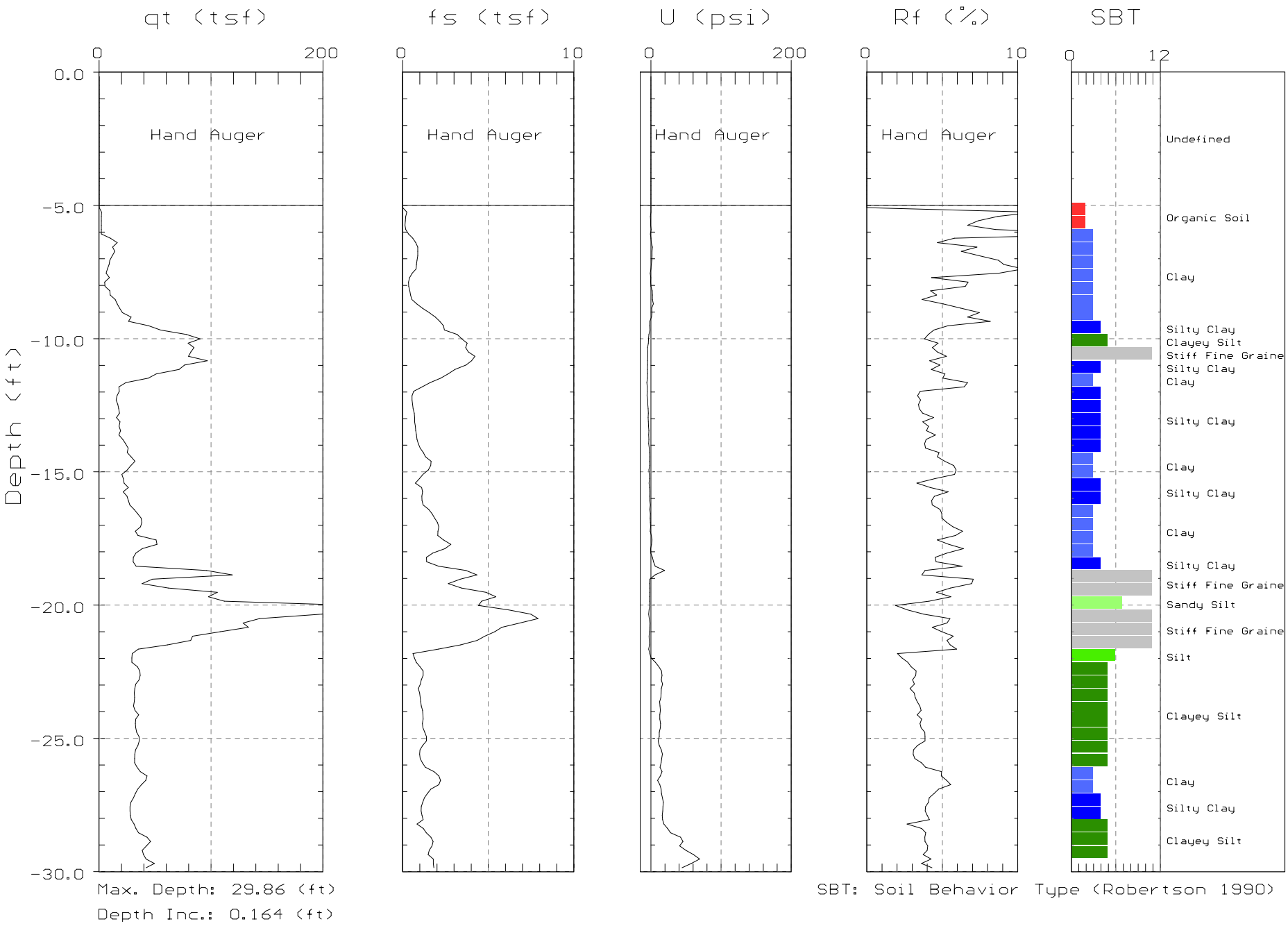
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-09

Engineer: S.DALIE
Date: 04:06:05 11:49



Max. Depth: 29.86 (ft)
Depth Inc.: 0.164 (ft)

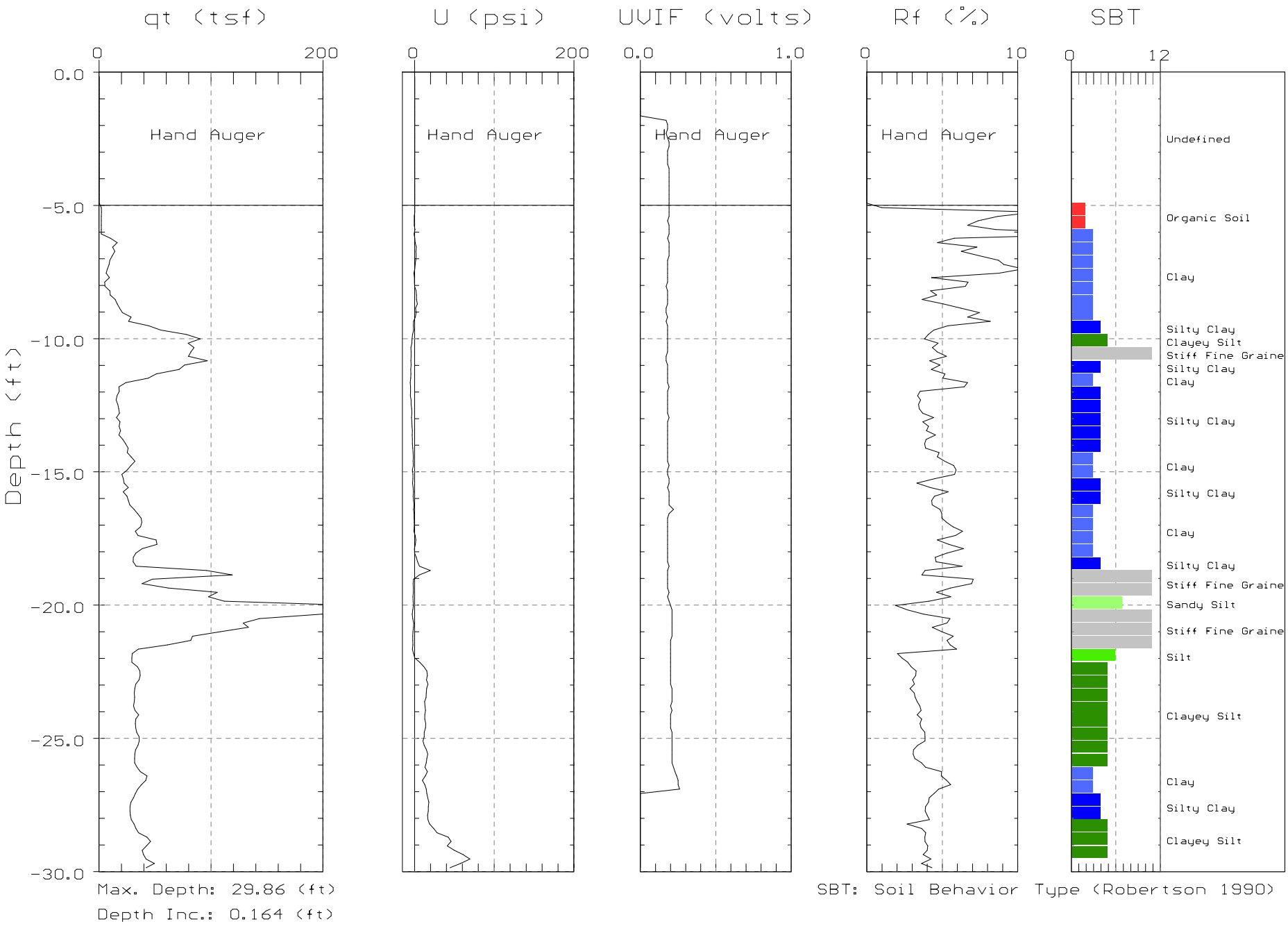
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-09

Engineer: S.DALIE
Date: 04:06:05 11:49



Max. Depth: 29.86 (ft)
Depth Inc.: 0.164 (ft)

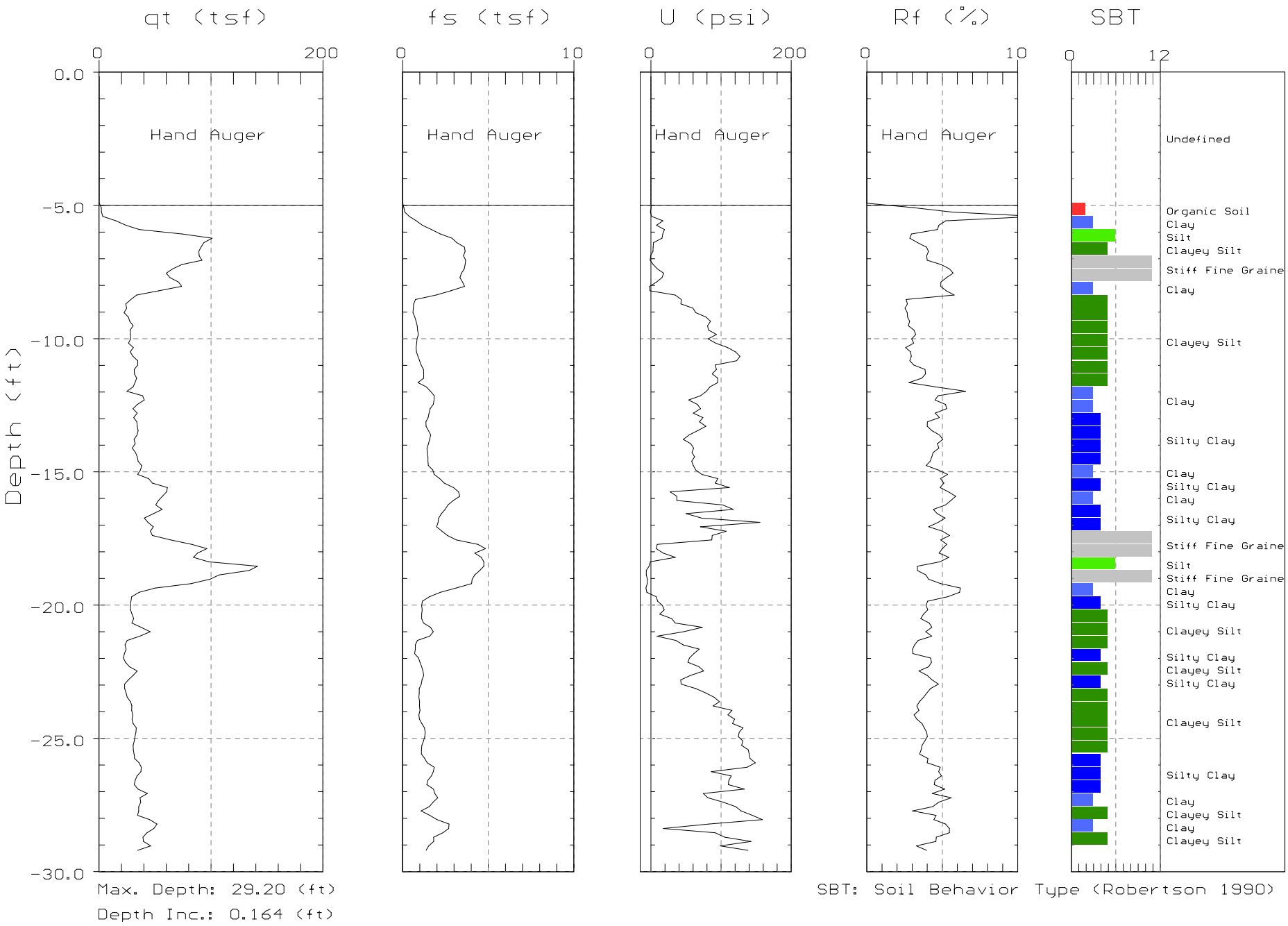
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-10

Engineer: S.DALIE
Date: 04:06:05 12:44



Max. Depth: 29.20 (ft)
Depth Inc.: 0.164 (ft)

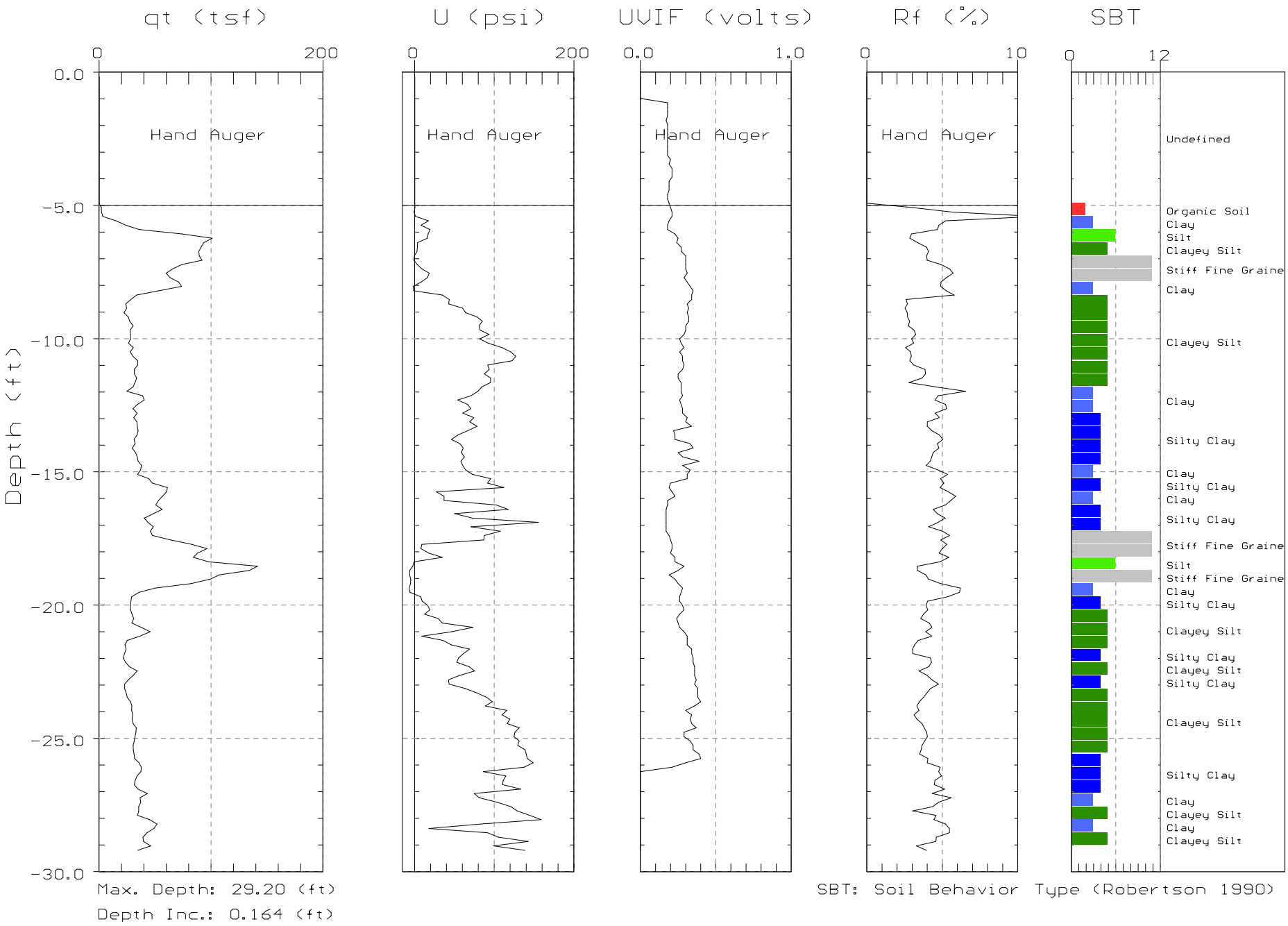
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-10

Engineer: S.DALIE
Date: 04:06:05 12:44



Max. Depth: 29.20 (ft)
Depth Inc.: 0.164 (ft)

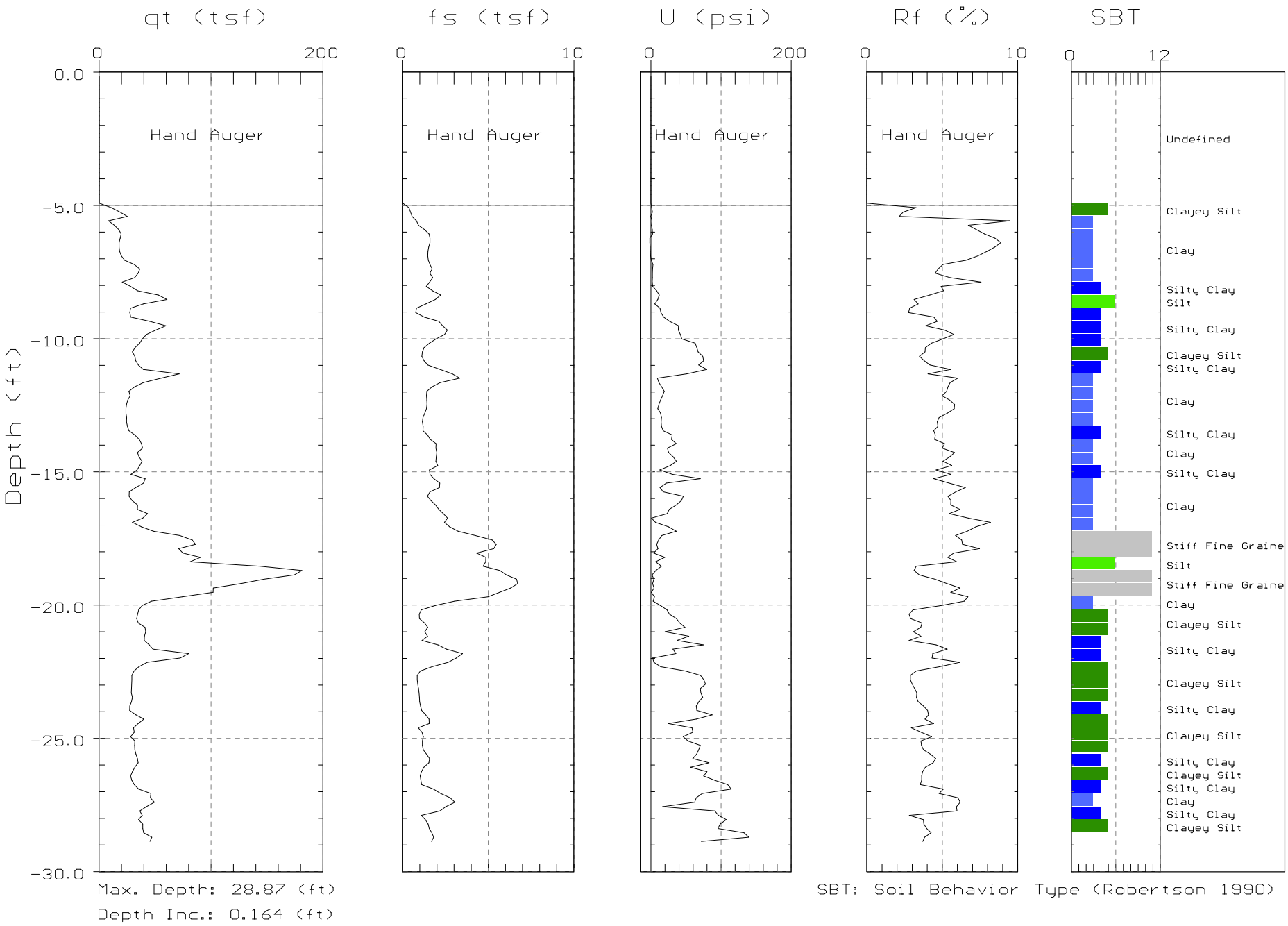
SBT: Soil Behavior Type (Robertson 1990)

GREGG

CAMBRIA

Site: SHELL
Location: CPT-11

Engineer: S.DALIE
Date: 04:06:05 13:56

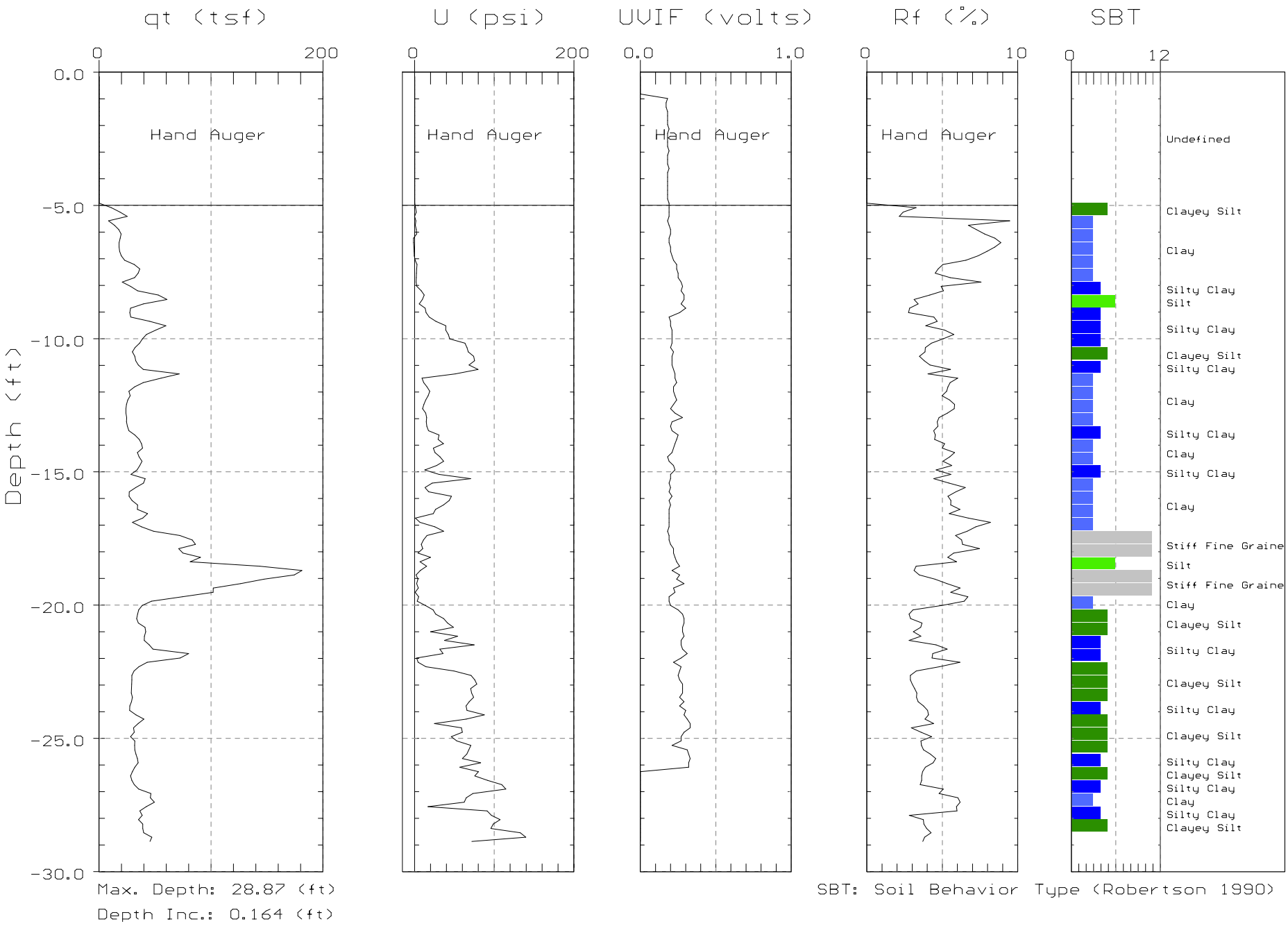


GREGG

CAMBRIA

Site: SHELL
Location: CPT-11

Engineer: S.DALIE
Date: 04:06:05 13:56



Max. Depth: 28.87 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)