August 4, 2006

FINAL
OPERABLE UNIT 3
REMEDIAL INVESTIGATION REPORT

Sunnyside Yard
Queens, New York

Volume II — Appendix D (Insert)

Prepared for:

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APPENDIX D

Summary of Cone Penetrometer Testing/
Ultraviolet Induced Fluorescence Investigation

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SUMMARY OF CONE PENETROMETER TESTING/ULTRAVIOLET INDUCED FLUORESCENCE INVESTIGATION

Operable Unit 3
Sunnyside Yard, Queens, New York

Introduction

This document summarizes the Cone Penetrometer Testing/Ultraviolet Induced Fluorescence (CPT/UVIF) investigation performed in Operable Unit 3 (OU-3), Sunnyside Yard (Yard), Queens, New York in conjunction with the OU-3 Remedial Investigation (RI). The CPT/UVIF work was performed by Applied Research Associates, Inc., South Royalton, Vermont (ARA), with Roux Associates, Inc. (Roux Associates) providing oversight. CPT/UVIF was initially proposed as a component of the screening procedure (i.e., UVIF data, staining or hydrocarbon odor, elevated photoionization detector readings, and visible SPH from shake test) for determining which of the subsurface (i.e., below water table) soil intervals collected during the subsequent Geoprobe™ characterization sampling program would be submitted for laboratory analyses. However, based on demonstrated success for control group borings, the New York State Department of Environmental Conservation (NYSDEC) agreed that UVIF data could be used as the principal criterion.

CPT/UVIF Theory

Cone Penetrometer Testing has been widely used in geotechnical applications for determining soil strength and soil type since the 1930s. It involves pushing an instrumented probe into the subsurface to obtain soil properties. Major components of a typical CPT system include an instrumented probe, a data acquisition system and a push device. A typical probe consists of the cone, friction sleeve, other sensors and measuring systems to record soil properties including tip resistance, sleeve friction, and pore water pressure.

The CPT/UVIF technology is capable of providing real-time field screening of the physical characteristics of subsurface soil and for the presence of aromatic petroleum hydrocarbon compounds to quickly and cost-effectively distinguish subsurface hydrocarbon-contaminated areas from uncontaminated areas. Petroleum-based fuels, such as gasoline, diesel, and kerosene,

and other hydrocarbons, such as coal tar and creosote, contain compounds [polycyclic aromatic hydrocarbons (PAHs)] that fluoresce when excited by ultraviolet light. UVIF technology adds an ultraviolet energy source to the CPT probe to cause a fluorescence response in the PAH compounds that are components of the petroleum hydrocarbons in soil, in this case primarily degraded #2 fuel oil. The intensity of the induced fluorescence is measured, providing rapid *in situ* field screening to determine either hydrocarbon presence or absence, or relative concentration of specific petroleum hydrocarbon compounds present in the subsurface.

In laboratory studies, relative response tables for specific fresh petroleum hydrocarbon products such as gasoline, diesel fuel and jet fuel in homogenous sand have been produced. Therefore, an attempt was made to quantify *in situ* UVIF measured responses in OU-3. In theory, the measured fluorescence intensities can be converted to concentration units by comparison to relative responses of reference standards prepared using soil and SPH collected from OU-3. To evaluate this theory, reference standards were prepared by Environmental Resource Associates, Arvada, Colorado (ERA) using soil and recovered SPH from OU-3. The ERA report, documenting production of the whole volume performance evaluation standards, is provided in Attachment 1. These standards were then provided to ARA and ConeTec, Inc., a second CPT/UVIF contractor, for testing to evaluate the capability of their UVIF instruments to produce quantifiable responses to the prepared standards.

There are numerous variables that can influence fluorescence properties of a hydrocarbon mixture in soil and, therefore, make it difficult to quantify *in situ* UVIF measured responses. The variables that were considered for our evaluation including the following:

- naturally occurring organic material;
- heterogeneous soil matrix properties including grain size, mineralogy, moisture content, and surface area;
- oxygen level; and
- the age/degradation level of the hydrocarbon mixture.

In addition to the factors listed above, the probable presence in soil of non-hydrocarbon fluorescent materials that were used in OU-3 including de-icing agents, antifreeze additives, and

detergent products, also makes *in situ* quantification of hydrocarbon concentrations by UVIF measured response impractical.

Our evaluation concluded that the standards produced were useful for ARA's laboratory instrument response check to determine if their two-channel Fuel Fluorescence Detector (FFD), designated Light FFD (LFFD) for the lighter range hydrocarbons and Heavy FFD (HFFD) was capable of detecting the range of hydrocarbons present in OU-3 soil without modification, but were not appropriate for quantification of *in situ* hydrocarbon concentrations in OU-3.

Objective

As previously stated, the primary objective of the CPT/UVIF investigation was as a screening tool to be used for determining below water table soil sample intervals to be collected for laboratory analyses. The samples were collected during a subsequent Geoprobe™ sampling program to provide vertical delineation and intensity of subsurface hydrocarbon impacts in OU-3. The two target below water table soil intervals for laboratory analyses were:

- the 2-foot soil interval starting 1-foot below the oil/water interface most highly impacted by hydrocarbons; and
- the first non-impacted 2-foot interval.

The targeted sample intervals were analyzed for the contaminants of concern (COCs) at the Yard [i.e., polychlorinated biphenyls (PCBs), the seven specific PAHs that the NYSDEC considers carcinogenic (cPAHs), and Lead] at all locations; and volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals at select locations. Thus the first target interval provides the expected worst-case soil quality data, based on hydrocarbon impact, and the second target interval provides soil quality data below the base/bottom of hydrocarbon impacted soil, if any.

CPT/UVIF Investigation

The CPT/UVIF field investigation was completed between November 3, and November 5, 2003 at 20 pre-determined boring locations (HD-1 through HD-20). Pursuant to Amtrak policy regarding utility clearance, each location was hand cleared to 3-feet below land surface (bls). At some of the 20 boring locations more than one attempt was required to reach the target depth due

to subsurface obstructions. At refusal locations the boring was offset approximately 5 to 10 feet and another attempt was made to reach the target depth. Subsequent borings at the same location were designated sequentially with alphabetic modifiers, e.g., HD-3A. In total, 31 CPT/UVIF borings ranging in depth from approximately 1.25 to 42.33 feet were completed, as shown on Table 1.

ARA used a typical truck mounted CPT unit with an on-board processor. In addition to the FFD, the CPT probe recorded sleeve stress, tip stress and pore fluid pressure. On board displays and printouts provided plots of LFFD, HFFD, sleeve stress, tip stress, pore pressure, stress ratios and inferred geology versus depth. Data was collected continuously throughout the length of the borings.

As previously stated, UVIF was initially proposed as a component of the screening procedure (i.e., UVIF data, staining or hydrocarbon odor, elevated photoionization detector readings, and visible SPH from shake test) to determine which subsurface intervals from the subsequent Geoprobe™ characterization sampling program would be selected for laboratory analyses. However, the UVIF technology had proven so successful to delineate the depth of hydrocarbon impacts in saturated (i.e., below water table) soil underlying existing separate-phase hydrocarbon (SPH) plumes at similar sites, Roux Associates proposed to the NYSDEC that UVIF be the sole soil criterion used to identify sampling intervals during the soil characterization phase of the investigation. This proposed modification to the Work Plan would allow for more efficient characterization of saturated soil underlying and surrounding the SPH plume by predetermining sample intervals to be submitted for laboratory analyses and eliminating the time consuming collection of continuous core samples and the subjectivity associated with screening each interval collected from all the 20 soil borings to determine which intervals would be sent for laboratory analyses as originally proposed.

The NYSDEC conditional approval of this modification required that three control borings be completed initially through the thickest portion of the SPH plume (HD-7, HD-8D, and HD-10, shown on RI Plate 3-1) and sampled following the continuous core screening procedures as described in the Work Plan. If satisfactory correlation was attained between the UVIF data and the screening data in these three control borings, the UVIF data would then be deemed by the

NYSDEC an acceptable method for predetermining characterization sample intervals in the remaining borings.

Attachment 2 presents the CPT/UVIF data plots prepared by ARA for each boring and displays the LFFD and HFFD signals and inferred geology versus feet bls so that they may be read similar to a typical soil boring log. The LFFD and HFFD signals are shown as volts on the plots using a 0 to 2-volt range on all plots to allow direct comparison of results between borings. Table 2 presents screening results for the three continuous core control borings (as well as screening results for the other 17 borings completed to the desired depth). A review of the UVIF data and Geoprobe™ collected screening data indicated a very strong correlation for determination of the most impacted sample interval for the three control borings. Based on the satisfactory correlation of these data it was determined that UVIF was an acceptable method for predetermining characterization sample intervals in the remaining borings.

Subsurface Soil Quality Investigation

Geoprobe™ borings were completed immediately adjacent to the final locations of CPT/UVIF borings HD-1 through HD-20, shown on RI Plate 3-1. The borings were completed to the depths indicated on Table 1. As stated above, the control borings adjacent to the final locations of borings HD-7, HD-8, and HD-10 were completed initially to confirm the efficacy of the UVIF technology for determining intensity of hydrocarbon impact. Soil borings HD-4 and HD-5 from eight to 16 feet bls were also completed and sampled following the continuous core screening procedures when refusal of the UVIF probe resulted in incomplete data. Sample intervals collected for laboratory analyses are identified on Table 1 and their screening results are presented on Table 2.

Characterization soil sample selection protocol was as follows:

- at least one soil sample was collected for laboratory analysis from each boring;
- soil samples were collected from at least 1-foot below the oil/water interface;
- if a boring exhibited hydrocarbon impact, a soil sample was collected from the 2-foot interval most highly impacted by hydrocarbons, and the first non-impacted 2-foot interval;

- if a boring exhibited no hydrocarbon impact the two-foot interval beginning one foot below the water table was sampled; and
- in several borings an additional sample was collected from an interval exhibiting an "intermediate" petroleum impact or from a zone of particular interest.

A total of 41 subsurface soil samples were collected and analyzed for some or all of the following parameters: PCBs; cPAHs; Lead; VOCs; SVOCs; and metals (shown on Table 1 of the OU-3 RI report).

Results and Discussion

As previously noted, the ARA plot for each boring (Attachment 2) displays the LFFD and HFFD signal, and inferred geology versus feet bls so that they may be read similar to a typical boring log. Soil boring logs for the 20 Geoprobe™ borings completed adjacent to the CPT/UVIF borings were prepared by Roux Associates (Attachment 3). For ease of comparison, these boring logs include the plots of the LFFD and HFFD responses, field-screening data, and characterization sample intervals showing either the total SVOC and/or total PAH analytical results.

As previously noted, all 41 samples collected were analyzed for cPAHs, and 18 of these samples were additionally analyzed for the full SVOC list (note: cPAHs are a subset of the PAH fraction of SVOCs). While only the cPAH results are presented in the OU-3 RI report (i.e., the seven specific PAHs that the NYSDEC considers carcinogenic), the laboratory provided full PAH results for each of the 41 samples analyzed. The OU-3 RI report presents a discussion of the methodology for the Geoprobe™ phase of the investigation (RI report Section 4), and all analytical results (RI report Tables 3-3 through Table 3-6), excluding the more comprehensive list of PAHs. The full PAH analytical results are presented herein on Table 3. For completeness, the analytical results for soil quality samples collected during the Geoprobe™ investigation are summarized below. The PAH results are discussed with regard to their relevance to the UVIF investigation.

A total of 39 soil samples were analyzed for PCBs with concentrations ranging from non-detect in 22 of the samples to a high of 1.5 milligrams per kilogram or parts per million (ppm) in sample HD-15C (6 to 8 feet bls). Concentrations of cPAHs ranged from non detect in 31 of the

41 soil samples analyzed to a high of 2.84 ppm in sample HD-14 (4 to 6 feet bls). Lead concentrations in the 38 soil samples analyzed ranged from 1.5 ppm in sample HD-16 (13 to 15 feet bls) to a high of 182 ppm in sample HD-17 (4 to 6 feet bls). Of note from the above summary is that the analytical results indicate that no COC exceeded its respective NYSDEC-recommended soil cleanup level for the Yard.

Twenty-one soil samples from 10 boring locations were analyzed for VOCs. Twelve of these samples contained detectable concentrations, however most of the detections were below specified detection limits and were therefore estimated values. Only sample HD-8D (7 to 9 feet bls), the sample interval most highly impacted by hydrocarbons based on UVIF data, contained 2-butanone and methylene chloride, which are common laboratory contaminants, and total xylenes at concentrations that exceed their respective NYSDEC recommended soil cleanup objective (RSCO).

Fifteen soil samples from seven boring locations were analyzed for metals. Chromium, copper, iron, nickel, and zinc exceeded their respective NYSDEC RSCO at one or more locations.

Eighteen soil samples from eight boring locations were analyzed for full SVOCs. Sixteen of these samples contained detectable concentrations ranging from 0.048 ppm to a high of 195.5 ppm. Again, most of the detections were below specified detection limits and were therefore estimated values. With the exception of dibenzofuran detected in one sample (2.9 ppm and bis(2-ethlyhexyl)phthalate, a common laboratory contaminant, detected in seven samples (all detections were less than 1 ppm), all SVOC detections were from the PAH fraction. The petroleum hydrocarbon 2-Methylnaphthalene was the only SVOC to exceed its NYSDEC RSCO; it exceeded its RSCO in 11 of the 41 samples (27%) analyzed for this compound.

As mentioned previously, petroleum-based fuels contain PAHs that fluoresce when excited by ultraviolet energy source. The intensity of the induced fluorescence is measured, providing rapid *in situ* field screening to determine either hydrocarbon presence or absence, or relative concentration of hydrocarbon contaminants present in the subsurface. Good correlation between the UVIF responses and the results of the PAH analyses indicate that UVIF technology is an appropriate screening tool for determining residual hydrocarbon presence and relative

concentration. As noted above, for ease of comparison, Attachment 3 presents the boring log complete with the UVIF plot, interval(s) sampled, and analytical results for total SVOCs and/or total PAHs for each of the 20 boring completed during this investigation.

The first step for evaluating the UVIF response relative to the laboratory derived PAH concentration in the samples required that an average UVIF response be determined for each sample interval collected. As noted previously, due to refusal of the UVIF probe, no UVIF data was collected at location HD-4 or from the 15-16 foot bls interval at location HD-5B. Therefore, only 38 of the 41 sample intervals were evaluated. The average LFFD and HFFD voltage responses for each sample interval are presented on Table 4.

Next, by ordering the UVIF response data and comparing it with PAH analytical data (shown on Table 5), we can determine the likely relationship between the average UVIF responses and PAH concentration ranges over a sample interval. For example, as shown on Table 5, all 27 samples with HFFD UVIF responses below 0.1v had laboratory determined PAH concentrations of less than 50 ppm. Furthermore, 10 of the 11 samples with HFFD UVIF responses above 0.1v [sample HD-9 (8-10) was the one exception] had PAH concentrations greater than 50 ppm. Similarly, LFFD UVIF responses below 0.2v indicated PAH concentrations of less than 50 ppm in all 26 samples and responses greater than 0.2v indicated PAH concentrations greater than 50 ppm in 10 of 12 samples [again, sample HD-9 (8-10) was one exception, as was sample HD-2 (9-11)]. These false positives may due to one or more of the possible confounding factors discussed previously e.g., the presence of other non-petroleum related fluorescing compounds in the soil.

Conclusion

These findings substantiate that, not only is CPT/UVIF technology capable of providing real-time field screening of the physical characteristics of subsurface soil, but is able to quickly and cost effectively distinguish subsurface hydrocarbon contaminated areas from uncontaminated areas. Additionally, with few exceptions as corroborated by the laboratory data, the UVIF technology was able to provide a reasonable qualitative approximation of the relative intensity of petroleum hydrocarbons in soil, thus eliminating the subjectivity associated with other common

petroleum hydrocarbon soil screening procedures (i.e., visual staining or odor, photoionization detector readings, and shake test).

Table 1. Summary of CPR/UVIF and Geoprobe Borings Completed in OU-3, *CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York*

CPT/UVIF Boring Designation	Total CPT/UVIF Depth (ft bls)	Geoprobe Boring Designation	Total Geoprobe Depth (ft bls)	Sample Interval(s) Collected for Laboratory Analysis (ft bls)
HD-1	21.57	HD-1	8	(4 to 6)
HD-2	23.88	HD-2	15	(9 to 11), (13 to 15)
HD-3	2.9	NA	NA	NA
HD-3A	25.91	HD-3	22	(5 to 7), (8 to 10), (20 to 22)
HD-4	10.94	HD-4	24	(8 to 10), (14 to 16)
HD-5	12.58	NA	NA	NA
HD-5A	13.15	NA	NA	NA
HD-5B	12.84	HD-5B	16	(9 to 11), (15 to 16)
HD-6	4.45	NA	NA	NA
HD-6A	21.12	HD-6	20	(9 to 11), (18 to 20)
HD-7	34.48	HD-7	40	(8 to 10), (21 to 23)
HD-8	22.11	NA	NA	NA
HD-8A	24.14	NA	NA	NA
HD-8B	1.28	NA	NA	NA
HD-8C	4.35	NA	NA	NA
HD-8D	42.33	HD-8D	39	(7 to 9), (20-22), (36 to 38)
HD-9	19.77	HD-9	15	(8 to 10), (13 to 15)
HD-10	27.14	HD-10	24	(6 to 8), (8 to 10), (16 to 18)
HD-11	17.81	HD-11	15	(4 to 6), (8 to 10), (13 to 15)
HD-12	27.06	HD-12	16	(6 to 8), (14 to 16)
HD-13	23.81	HD-13	7	(3 to 5)
HD-14	19.21	HD-14	8	(4 to 6), (6 to 8)
HD-15	12.2	NA	NA	NA
HD-15A	10.98	NA	NA	NA
HD-15B	16.26	NA	NA	NA
HD-15C	37	HD-15C	30	(6 to 8), (20 to 22), (28 to 30)
HD-16	28.61	HD-16	16	(9 to 11), (13 to 15)
HD-17	24.46	HD-17	12	(4 to 6), (8 to 10)
HD-18	23.96	HD-18	8	(4 to 6)
HD-19	22.04	HD-19	4	(2 to 4)
HD-20	27.49	HD-20	14	(6 to 8), (10 to 12)

Notes:
CPT - Cone Penetrometer Test
UVIF - *Ultra-Violet Induced Fluorescence*
ft bls - Feet Below Land Surface
NA - Not Applicable (Geoprobe boring was not completed at this location)

Table 2. Summary of Soil Sample Field Screening Results in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York

Geoprobe Boring Designation	Sample Interval (ft bls)	PID Headspace Screening Results (ppm)	Soil Shake Test Screening Results[1]	Additional Comments
HD-1	4 to 6	0.5	No Evidence of Contamination	
HD-1	6 to 8	0.6	No Evidence of Contamination	
HD-2	9 to 11	117	Heavy Sheen with Some Spots of Floating SPH	Strong Petroleum Odor Detected
HD-2	13 to 15	0.4	No Evidence of Contamination	
HD-3	4 to 5	5	No Evidence of Contamination	
HD-3	5 to 7	79.4	Spots of Free Floating SPH	Free SPH Noted in Soil Sample
HD-3	7 to 8	3	No Evidence of Contamination	
HD-3	8 to 10	3.1	No Evidence of Contamination	
HD-3	10 to 11	3	No Evidence of Contamination	
HD-3	20 to 22	1.6	No Evidence of Contamination	
HD-4	0 to 2	1	--	
HD-4	2 to 4	2.6	--	
HD-4	4 to 6	1.4	Sheen Present	
HD-4	6 to 8	60.7	Sheen Present	Petroleum Odor Detected and Staining Observed
HD-4	8 to 10	192	Spots of Free Floating SPH	Free SPH Noted in Soil Sample, Petroleum Odor detected and Staining Observed
HD-4	10 to 12	56.7	Slight Sheen	Petroleum Odor Detected
HD-4	12 to 14	12.3	No Evidence of Contamination	
HD-4	14 to 16	2.3	No Evidence of Contamination	
HD-4	16 to 18	1.7	No Evidence of Contamination	
HD-4	18 to 20	1.4	No Evidence of Contamination	
HD-4	20 to 22	1	No Evidence of Contamination	
HD-4	22 to 24	1.5	No Evidence of Contamination	
HD-5B	8 to 11	90.4	No Evidence of Contamination	Petroleum Odor Detected and Staining Observed
HD-5B	11 to 12	87.6	No Evidence of Contamination	Petroleum Odor Detected and Staining Observed
HD-5B	12 to 14	76.1	No Evidence of Contamination	Petroleum Odor Detected and Staining Observed
HD-5B	15 to 16	245	No Evidence of Contamination	Strong Petroleum Odor Detected
HD-6	8 to 9	111	Trace Floating SPH Observed	Petroleum Odor Detected
HD-6	9 to 11	120	Spots of Free Floating SPH	Strong Petroleum Odor Detected
HD-6	11 to 12	65	Trace Floating SPH Observed	Petroleum Odor Detected
HD-6	12 to 13	105	Slight Sheen	Petroleum Odor Detected
HD-6	13 to 15	86.9	Slight Sheen	Petroleum Odor Detected
HD-6	15 to 16	59.2	--	Petroleum Odor Detected
HD-6	16 to 18	1.5	--	Trace Petroleum Odor Detected
HD-6	18 to 20	0.7	No Evidence of Contamination	Trace Petroleum Odor Detected

Table 2. Summary of Soil Sample Field Screening Results in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York

Geoprobe Boring Designation	Sample Interval (ft bls)	PID Headspace Screening Results (ppm)	Soil Shake Test Screening Results[1]	Additional Comments
HD-7	0 to 2	48	--	Trace Petroleum Odor Detected
HD-7	2 to 4	86.4	Spots of Free Floating SPH	Petroleum Odor Detected
HD-7	4 to 6	64.4	Spots of Free Floating SPH	Petroleum Odor Detected
HD-7	6 to 8	69.7	Spots of Free Floating SPH	Petroleum Odor Detected
HD-7	8 to 10	89.7	Spots of Free Floating SPH	Petroleum Odor Detected
HD-7	10 to 12	18.6	Sheen Present	Petroleum Odor Detected
HD-7	12 to 14	46	Slight Sheen	Petroleum Odor Detected
HD-7	14 to 16	2	Slight Sheen	Trace Petroleum Odor Detected
HD-7	16 to 18	4.6	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-7	18 to 20	1.5	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-7	20 to 21	11.7	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-7	21 to 23	7.4	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-7	23 to 24	2.9	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-7	24 to 26	3.7	No Evidence of Contamination	
HD-7	26 to 28	9.2	No Evidence of Contamination	
HD-7	28 to 30	6.5	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-7	30 to 32	3.5	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-7	32 to 34	7.7	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-7	34 to 36	2.3	No Evidence of Contamination	
HD-8D	0 to 2	90	--	Petroleum Odor Detected
HD-8D	2 to 4	300	--	Petroleum Odor Detected
HD-8D	4 to 6	320	--	Petroleum Odor Detected
HD-8D	6 to 8	250	Slight Sheen	Petroleum Odor Detected and Staining Observed
HD-8D	8 to 10	250	Slight Sheen	Petroleum Odor Detected and Staining Observed
HD-8D	10 to 12	350	Spots of Free Floating SPH	Petroleum Odor Detected
HD-8D	12 to 14	330	Sheen Present	Petroleum Odor Detected
HD-8D	14 to 15	225	Heavy Sheen with Spots of Floating SPH	Petroleum Odor Detected
HD-8D	19 to 20	45	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-8D	20 to 22	40	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-8D	22 to 23	60	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-8D	23 to 25	40	No Evidence of Contamination	
HD-8D	25 to 27	20	No Evidence of Contamination	
HD-8D	27 to 29	6	No Evidence of Contamination	
HD-8D	29 to 31	5	No Evidence of Contamination	
HD-8D	31 to 33	6.8	No Evidence of Contamination	
HD-8D	33 to 35	3.4	No Evidence of Contamination	
HD-8D	35 to 36	20	No Evidence of Contamination	
HD-8D	36 to 38	15	No Evidence of Contamination	
HD-8D	38 to 39	5	No Evidence of Contamination	

Table 2. Summary of Soil Sample Field Screening Results in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York

Geoprobe Boring Designation	Sample Interval (ft bls)	PID Headspace Screening Results (ppm)	Soil Shake Test Screening Results[1]	Additional Comments
HD-9	8 to 10	139	Spots of Free Floating SPH	Petroleum Odor Detected
HD-9	10 to 12	63.4	Slight Sheen	Petroleum Odor Detected
HD-9	12 to 13	10	No Evidence of Contamination	Petroleum Odor Detected
HD-9	13 to 15	7.3	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-10	0 to 2	46	--	
HD-10	2 to 4	97.9	--	
HD-10	5 to 6	106	--	Trace Petroleum Odor Detected
HD-10	6 to 8	87	Sheen Present	Trace Petroleum Odor Detected
HD-10	8 to 10	95.4	Sheen With Trace Floating SPH	Petroleum Odor Detected
HD-10	10 to 12	71.3	Spots of Free Floating SPH	Petroleum Odor Detected
HD-10	12 to 14	90.6	Sheen Present	Petroleum Odor Detected
HD-10	14 to 16	54.5	Trace Floating SPH Observed	Petroleum Odor Detected
HD-10	16 to 18	2.5	Slight Sheen	Trace Petroleum Odor Detected
HD-10	18 to 20	3.2	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-10	20 to 22	10.8	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-10	22 to 24	4.5	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-11	4 to 6	67.3	Spots of Free Floating SPH	Petroleum Odor Detected and Dark Staining Observed
HD-11	6 to 8	115	Spots of Free Floating SPH	Petroleum Odor Detected and Dark Staining Observed
HD-11	8 to 10	76.4	Small Spots of Free Floating SPH	Petroleum Odor Detected
HD-11	13 to 15	3.2	No Evidence of Contamination	
HD-12	6 to 8	66.9	Spots of Free Floating SPH	Petroleum Odor Detected
HD-12	14 to 16	18.6	Slight Sheen	Trace Petroleum Odor Detected
HD-13	3 to 5	0.8	No Evidence of Contamination	
HD-13	5 to 7	0.5	No Evidence of Contamination	
HD-14	3 to 4	0	No Evidence of Contamination	
HD-14	4 to 6	0.6	No Evidence of Contamination	
HD-14	6 to 8	0.3	No Evidence of Contamination	
HD-15C	6 to 8	142	Spots of Free Floating SPH	
HD-15C	8 to 10	112	Spots of Free Floating SPH	Petroleum Odor Detected and Staining Observed
HD-15C	18 to 20	43.9	Slight Sheen	Petroleum Odor Detected and Staining Observed
HD-15C	20 to 22	8.8	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-15C	22 to 24	24.2	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-15C	24 to 26	18.7	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-15C	26 to 28	15.3	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-15C	28 to 30	28.3	No Evidence of Contamination	Trace Petroleum Odor Detected

Table 2. Summary of Soil Sample Field Screening Results in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York

Geoprobe Boring Designation	Sample Interval (ft bls)	PID Headspace Screening Results (ppm)	Soil Shake Test Screening Results[1]	Additional Comments
HD-16	9 to 11	15.8	Slight Sheen	Petroleum Odor Detected
HD-16	11 to 12	1.5	Slight Sheen	Trace Petroleum Odor Detected
HD-16	13 to 15	1.4	No Evidence of Contamination	
HD-16	15 to 16	0.8	No Evidence of Contamination	
HD-17	3 to 4	1.3	No Evidence of Contamination	
HD-17	4 to 6	12	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-17	6 to 8	18.3	No Evidence of Contamination	Trace Petroleum Odor Detected
HD-17	8 to 10	5	No Evidence of Contamination	Very Slight Petroleum Odor Detected
HD-17	10 to 12	2.6	No Evidence of Contamination	
HD-18	4 to 6	0.8	No Evidence of Contamination	
HD-18	6 to 8	0.7	No Evidence of Contamination	
HD-19	2 to 4	0.1	No Evidence of Contamination	
HD-20	6 to 8	129	Sheen Present	Petroleum Odor Detected
HD-20	8 to 10	59.2	No Evidence of Contamination	Petroleum Odor Detected
HD-20	10 to 12	12.6	No Evidence of Contamination	
HD-20	12 to 14	18.9	No Evidence of Contamination	

Notes:
CPT - Cone Penetrometer Test
UVIF - Ultra-Violet Induced Fluorescence
ft bls - Feet Below Land Surface
SPH - Separate Phase Hydrocarbon
PID - Photoionization Detector
ppm - Parts Per Million
'-- - Soil Shake Test Not Conducted

[1] Soil Shake test was conducted by placing approximately 1 ounce of soil in a 2 ounce laboratory supplied sample jar. Deionized water was then placed in the sample jar. The sample jar was then capped and shaken for approximately 30 seconds.

Table 3. Summary of Polycyclic Aromatic Hydrocarbon (PAH) Concentrations Detected in Soil in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York.

Parameter (Concentrations in µg/kg)	Designation: / Sample Date: / Sample Depth (ft bls):	HD-1 12/18/03 4-6	HD-2 12/18/03 9-11	HD-2 12/18/03 13-15	HD-3 11/26/03 20-22	HD-3 11/26/03 5-7	HD-3 11/26/03 8-10	HD-4 11/26/03 8-10	HD-4 11/26/03 14-16	HD-5B 11/25/03 9-11
2-Methylnaphthalene		410 U	950 NJV	360 U	360 U	3700 U	380 U	410 U	360 U	86000
Acenaphthene		410 U	380	360 U	360 U	2400 J	380 U	330 J	360 U	4900 J
Acenaphthylene		410 U	370 U	360 U	360 U	3700 U	380 U	410 U	360 U	18000 U
Anthracene		410 U	97 J	360 U	360 U	920 JH	380 U	280 J	360 U	1500 J
Benzo(a)anthracene		410 U	370 U	360 U	360 U	490 JNV	380 U	410 U	360 U	18000 U
Benzo(a)pyrene		410 U	370 U	360 U	360 U	3700 U	380 U	410 U	360 U	18000 U
Benzo(b)fluoranthene		410 U	370 U	360 U	360 U	430 UH	380 U	410 U	360 U	18000 U
Benzo(g,h,i)perylene		410 U	370 U	360 U	360 U	3700 U	380 U	410 U	360 U	18000 U
Benzo(k)fluoranthene		410 U	370 U	360 U	360 U	3700 U	380 U	410 U	360 U	18000 U
Chrysene		410 U	370 U	360 U	360 U	1600 J	380 U	410 U	360 U	18000 U
Dibenzo(a,h)anthracene		410 U	370 U	360 U	360 U	3700 U	380 U	410 U	360 U	18000 U
Fluoranthene		410 U	370 U	360 U	360 U	450 J	380 U	410 U	360 U	18000 U
Fluorene		410 U	370 U	360 U	360 U	4300	380 U	600 NJV	360 U	7800 J
Indeno(1,2,3-cd)pyrene		410 U	370 U	360 U	360 U	3700 U	380 U	410 U	360 U	18000 U
Naphthalene		410 U	370 U	360 U	360 U	3700 U	380 U	410 U	360 U	18000 U
Phenanthrene		410 U	1000	360 U	360 U	5100	380 U	2100	360 U	17000 J
Pyrene		410 U	56 J	360 U	360 U	1700 J	380 U	73 J	360 U	18000 UJV
Total PAHs:		0	2483	0	0	16960	0	3383	0	117200

µg/kg - Micrograms per kilogram
Ft bls - Feet below land surface
* - Batch QC exceeds the upper or lower control limits
H - Alternate peak selection upon analytical review
J - Estimated value
N - Compound is tentative in identification
U - Indicates that the compound was analyzed for but not detected
V - Qualifier added and/or value altered during validation

Table 3. Summary of Polycyclic Aromatic Hydrocarbon (PAH) Concentrations Detected in Soil in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York.

Parameter (Concentrations in µg/kg)	Designation: / Sample Date: / Sample Depth (ft bls):	HD-5B 11/25/03 15-16	HD-6 11/26/03 9-11	HD-6 11/26/03 18-20	HD-7 11/25/03 8-10	HD-7 11/25/03 21-23	HD-8D 11/24/03 7-9	HD-8D 11/24/03 20-22	HD-8D 11/24/03 36-38	HD-9 11/26/03 8-10
2-Methylnaphthalene		66000	92000 JV	310 UJV	60000	350 U	150000	80 J	370 U	17000 JV
Acenaphthene		4400 J	4400 JHV	370 UJV	4300 J	350 U	5900 J	350 U	370 U	2500 J
Acenaphthylene		1500 JH	17000 UJV	370 UJV	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Anthracene		1500 J	1200 JV	370 UJV	1400 J	350 U	36000 U	350 U	370 U	530 J
Benzo(a)anthracene		19000 U	17000 UJV	370 UJV	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Benzo(a)pyrene		19000 U	17000 UJV	370 UJV	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Benzo(b)fluoranthene		19000 U	17000 UJV	370 UJV	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Benzo(g,h,i)perylene		19000 U	17000 UJV	370 UJV	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Benzo(k)fluoranthene		19000 U	17000 UJV	370 UJV	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Chrysene		19000 U	17000 UJV	370 UJV	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Dibenzo(a,h)anthracene		19000 U	17000 UJV	370 UJV	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Fluoranthene		19000 U	17000 U	370 U	8800 U	350 U	36000 U	350 U	370 U	300 J
Fluorene		6900 J	7000 J	370 U	6500 J	350 U	11000 J	23 J	370 U	3700 JV
Indeno(1,2,3-cd)pyrene		19000 U	17000 U	370 U	8800 U	350 U	36000 U	350 U	370 U	3600 UJV
Naphthalene		19000 U	17000 U	370 U	1200 J	350 U	36000 U	350 U	370 U	3600 UJV
Phenanthrene		10000 J	14000 J	370 U	14000	350 U	26000 J	53 J	370 U	5400 JV
Pyrene		19000 UJV	17000 U	370 U	840 J*	350 UJV	2600 J	350 U	370 U	440 J
Total PAHs:		90300	118600	0	88240	0	195500	156	0	29870

µg/kg - Micrograms per kilogram
Ft bls - Feet below land surface
* - Batch QC exceeds the upper or lower control limits
H - Alternate peak selection upon analytical reviev
J - Estimated value
N - Compound is tentative in identification
U - Indicates that the compound was analyzed for but not detected
V - Qualifier added and/or value altered during validation

Table 3. Summary of Polycyclic Aromatic Hydrocarbon (PAH) Concentrations Detected in Soil in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York.

Parameter (Concentrations in µg/kg)	Designation: / Sample Date: / Sample Depth (ft bls):	HD-9 11/26/03 13-15	HD-10 11/25/03 6-8	HD-10 11/25/03 8-10	HD-10 11/25/03 16-18	HD-11 12/18/03 4-6	HD-11 12/18/03 8-10	HD-11 12/18/03 13-15	HD-12 11/25/03 6-8	HD-12 11/25/03 14-16
2-Methylnaphthalene		47 J	56000	27000	360 U	69000	80000	350 U	77000 JV	370 U
Acenaphthene		370 UJV	3800 J	2000 J	360 U	9300 U	4500 J	16 J	4600 JH	370 U
Acenaphthylene		370 UJV	8700 U	3700 U	360 U	9300 U	19000 U	13 J	15000 UJV	370 U
Anthracene		370 UJV	960 J	740 J	360 U	1800 J	1400 J	26 J	1800 J	370 U
Benzo(a)anthracene		370 UJV	8700 U	3700 U	360 U	520 J	19000 U	100 J	15000 UJV	370 U
Benzo(a)pyrene		370 UJV	8700 U	3700 U	360 U	9300 U	19000 U	110 J	15000 UJV	370 U
Benzo(b)fluoranthene		370 UJV	8700 U	3700 U	360 U	9300 U	19000 U	95 J	15000 UJV	370 U
Benzo(g,h,i)perylene		370 UJV	8700 U	3700 U	360 U	480 UM	19000 U	97 J	15000 UJV	370 U
Benzo(k)fluoranthene		370 UJV	8700 U	3700 U	360 U	9300 U	19000 U	89 J	15000 UJV	370 U
Chrysene		370 UJV	8700 U	3700 U	360 U	630 J	19000 U	120 J	15000 UJV	370 UV
Dibenzo(a,h)anthracene		370 UJV	8700 U	3700 U	360 U	9300 U	19000 U	27 J	15000 UJV	370 U
Fluoranthene		370 UJV	8700 U	460 J	360 U	1800 J	19000 U	240 J	15000 UJV	36 J
Fluorene		370 UJV	6200 J	3800	360 U	6400 J	7200 JH	350 U	7600 J	370 U
Indeno(1,2,3-cd)pyrene		370 UJV	8700 U	3700 U	360 U	9300 U	19000 U	79 J	15000 UJV	370 U
Naphthalene		370 UJV	8700 U	990 J	360 U	9300 U	19000 U	350 U	15000 UJV	370 U
Phenanthrene		370 UJV	14000	6600	47 J	15000	12000 J	190 J	13000 J	50 J
Pyrene		370 UJV	8700 UJV	600 J*	360 UJV	1900 J	1400 J	260 J	15000 UJV	26 J
Total PAHs:		47	80960	42190	47	97050	106500	1462	104000	112

µg/kg - Micrograms per kilogram
Ft bls - Feet below land surface
* - Batch QC exceeds the upper or lower control limits
H - Alternate peak selection upon analytical reviev
J - Estimated value
N - Compound is tentative in identification
U - Indicates that the compound was analyzed for but not detected
V - Qualifier added and/or value altered during validation

Table 3. Summary of Polycyclic Aromatic Hydrocarbon (PAH) Concentrations Detected in Soil in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York.

Parameter (Concentrations in µg/kg)	Designation: / Sample Date: / Sample Depth (ft bls):	HD-13 12/19/03 3-5	HD-14 12/18/03 4-6	HD-14 12/18/03 6-8	HD-15C 11/25/03 6-8	HD-15C 11/25/03 20-22	HD-15C 11/25/03 28-30	HD-16 12/19/03 9-11	HD-16 12/19/03 13-15	HD-17 12/18/03 4-6
2-Methylnaphthalene		360 U	81 J	420 U	94000	39 J	2300	1100	380 U	420 U
Acenaphthene		360 U	260 J	420 U	6800 J	420 U	360 U	360 U	380 U	300 J
Acenaphthylene		360 U	17 J	420 U	18000 U	420 U	360 U	360 U	380 U	420 U
Anthracene		31 J	300 J	420 U	2300 J	420 U	72 J	31 J	380 U	110 J
Benzo(a)anthracene		360 U	570	420 U	18000 U	420 U	360 U	360 U	380 U	130 J
Benzo(a)pyrene		360 U	490	210 J	18000 U	420 U	360 U	360 U	380 U	120 J
Benzo(b)fluoranthene		360 U	290 JM	420 U	18000 U	420 U	360 U	360 U	380 U	110 J
Benzo(g,h,i)perylene		360 U	260 J	420 U	18000 U	420 U	360 U	360 U	380 U	95 JM
Benzo(k)fluoranthene		360 U	470 M	420 U	18000 U	420 U	360 U	360 U	380 U	100 J
Chrysene		360 U	650	420 U	18000 U	420 U	24 J	29 J	380 U	160 J
Dibenzo(a,h)anthracene		360 U	120 J	420 U	18000 U	420 U	360 U	360 U	380 U	29 JM
Fluoranthene		49 J	1500	420 U	1700 J	420 U	60 J	29 J	380 U	350 J
Fluorene		22 UM	230 J	420 U	12000 J	420 U	240 JH	150 J	380 U	420 U
Indeno(1,2,3-cd)pyrene		360 U	250 J	420 U	18000 U	420 U	360 U	360 U	380 U	81 JM
Naphthalene		360 U	160 J	420 U	18000 U	420 U	360 U	360 U	380 U	420 U
Phenanthrene		33 J	2200	420 U	22000	420 U	590	260 J	380 U	920
Pyrene		56 J	2300	420 U	1700 J*	420 UJV	79 J*	79 J	380 U	360 J
Total PAHs:		169	10148	210	140500	39	3365	1678	0	2865

µg/kg - Micrograms per kilogram
Ft bls - Feet below land surface
* - Batch QC exceeds the upper or lower control limits
H - Alternate peak selection upon analytical reviev
J - Estimated value
N - Compound is tentative in identification
U - Indicates that the compound was analyzed for but not detected
V - Qualifier added and/or value altered during validation

Table 3. Summary of Polycyclic Aromatic Hydrocarbon (PAH) Concentrations Detected in Soil in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York.

Parameter (Concentrations in µg/kg)	**Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	HD-17 12/18/03 8-10	HD-18 12/18/03 4-6	HD-19 12/19/03 2-4	HD-20 11/26/03 6-8	HD-20 11/26/03 10-12
2-Methylnaphthalene		380 U	360 U	370 U	130000 JV	95 J
Acenaphthene		380 U	360 U	370 U	5700 J	370 U
Acenaphthylene		380 U	360 U	370 U	19000 UJV	370 U
Anthracene		380 U	360 UV	370 U	2200 J	370 U
Benzo(a)anthracene		20 J	42 J	370 U	19000 UJV	370 U
Benzo(a)pyrene		380 U	39 J	370 U	19000 UJV	370 U
Benzo(b)fluoranthene		380 U	360 UV	370 U	19000 UJV	370 U
Benzo(g,h,i)perylene		380 U	27 J	370 U	19000 UJV	370 U
Benzo(k)fluoranthene		380 U	360 UV	370 U	19000 UJV	370 U
Chrysene		32 J	48 J	370 U	19000 UJV	370 U
Dibenzo(a,h)anthracene		380 U	360 U	370 U	19000 UJV	370 U
Fluoranthene		35 J	62 J	370 U	19000 UJV	370 U
Fluorene		380 U	360 U	370 U	9300 J	370 U
Indeno(1,2,3-cd)pyrene		380 U	21 J	370 U	19000 UJV	370 U
Naphthalene		380 U	360 U	370 U	19000 UJV	370 U
Phenanthrene		42 J	32 J	370 U	21000 JV	55 J
Pyrene		40 J	110 J	370 U	19000 UJV	370 U
Total PAHs:		169	381	0	168200	150

µg/kg - Micrograms per kilogram
Ft bls - Feet below land surface
* - Batch QC exceeds the upper or lower control limits
H - Alternate peak selection upon analytical reviev
J - Estimated value
N - Compound is tentative in identification
U - Indicates that the compound was analyzed for but not detected
V - Qualifier added and/or value altered during validation

Table 4. Summary of HFFD and LFFD Response for Soil Intervals Submitted for Laboratory Analysis in OU-3, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York

Sample Designation	Sample Depth Interval (ft bls)	Average HFFD Response Over Sample Interval (Volts)	Average LFFD Response Over Sample Interval (Volts)	Laboratory Analysis Performed for Sample Interval
HD-1	4 to 6	-0.013	-0.103	TCL VOCs, PCBs, PAHs, Lead
HD-2	9 to 11	0.057	0.366	PCBs, PAHs, Lead
HD-2	13 to 15	-0.012	-0.06	PCBs, PAHs, Lead
HD-3	5 to 7	0.035	0.015	PCBs, PAHs, Lead
HD-3	8 to 10	0.017	0.004	PCBs, PAHs, Lead
HD-3	20 to 22	0.021	0.017	SVOCs
HD-4	8 to 10	No Data	No Data	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-4	14 to 16	No Data	No Data	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-5B	9 to 11	0.139*	0.522*	PCBs, PAHs, Lead
HD-5B	15 to 16	No Data	No Data	PCBs, PAHs, Lead
HD-6	9 to 11	0.308	1.05	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-6	18 to 20	0.025	0.048	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-7	8 to 10	0.209	0.633	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-7	21 to 23	-0.013	-0.007	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-8D	7 to 9	0.189	0.737	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-8D	20 to 22	-0.019	-0.13	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-8D	36 to 38	-0.012	0.015	TCL VOCs, TCL SVOCs, PCBs
HD-9	8 to 10	0.118	0.36	PCBs, PAHs, Lead
HD-9	13 to 15	0.027	0.003	PCBs, PAHs, Lead
HD-10	6 to 8	0.384	1.11	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-10	8 to 10	0.076	0.17	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-10	16 to 18	0.004	0.017	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-11	4 to 6	0.143	0.24	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-11	8 to 10	0.125	0.299	TCL VOCs, TCL SVOCs
HD-11	13 to 15	0.048	0.059	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-12	6 to 8	0.252	0.856	PCBs, PAHs, Lead
HD-12	14 to 16	0.019	0.045	PCBs, PAHs, Lead
HD-13	3 to 5	0.002	0.013	PCBs, PAHs, Lead
HD-14	4 to 6	0.001	0.001	TCL VOCs, PCBs, PAHs, Lead
HD-14	6 to 8	0.006	0.016	TCL VOCs, PCBs, PAHs, Lead
HD-15C	6 to 8	0.143	0.257	PCBs, PAHs, Lead
HD-15C	20 to 22	0.061	0.104	PCBs, PAHs, Lead
HD-15C	28 to 30	0.027	0.065	PCBs, PAHs, Lead
HD-16	9 to 11	0.096	0.17	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-16	13 to 15	0.041	0.069	TCL VOCs, TCL SVOCs, PCBs, TAL Metals
HD-17	4 to 6	0.004	0.011	PCBs, PAHs, Lead
HD-17	8 to 10	0.004	0.009	PCBs, PAHs, Lead
HD-18	4 to 6	0.015	0.044	PCBs, PAHs, Lead
HD-19	2 to 4	0.043	0.089	TCL VOCs, PCBs, PAHs, Lead
HD-20	6 to 8	0.138	0.773	PCBs, PAHs, Lead
HD-20	10 to12	0.041	0.081	PCBs, PAHs, Lead

Notes:

CPT - Cone Penetrometer Test
UVIF - Ultra-Violet Induced Fluorescence
HFFD - Heavy Fuel Fluorescence Detector
LFFD - Light Fuel Fluorescence Detector
ft bls - Feet Below Land Surface
PCBs - Polychlorinated Biphenyls
TCL - Target Compound List
TAL - Target Analyte List
PAHs - Polycyclic Aromatic Hydrocarbons
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds

* - Due to subsurface refusal, CPT/UVIF data at HD-5B was collected to a final depth of 10.43 ft bls. Therefore, the average UVIF response presented in this table for HD-5B (9-11) is actually from the 9 to 10.43 ft bls interval.

Table 5. Summary of HFFD and LFFD Responses (Ascending) Vs. Soil PAH Soil Concentrations, CPT/UVIF Summary Report, Sunnyside Yard, Queens, New York

Ascending Based on HFFD Response				Ascending Based on LFFD Response			
Sample Designation*	Sample Depth Interval (ft bls)	Average HFFD Response Over Sample Interval (Volts)	PAH Concentration (ug/kg)	Sample Designation*	Sample Depth Interval (ft bls)	Average LFFD Response Over Sample Interval (Volts)	PAH Concentration (ug/kg)
HD-8D	20-22	-0.019	156	HD-8D	20-22	-0.13	156
HD-1	4-6	-0.013	0	HD-1	4-6	-0.103	0
HD-7	21-23	-0.013	0	HD-2	13-15	-0.06	0
HD-2	13-15	-0.012	0	HD-7	21-23	-0.007	0
HD-8D	36-38	-0.012	0	HD-14	4-6	0.001	10148
HD-14	4-6	0.001	10148	HD-9	13-15	0.003	47
HD-13	3-5	0.002	169	HD-3	8-10	0.004	0
HD-10	16-18	0.004	47	HD-17	8-10	0.009	169
HD-17	8-10	0.004	169	HD-17	4-6	0.011	2865
HD-17	4-6	0.004	2865	HD-13	3-5	0.013	169
HD-14	6-8	0.006	210	HD-3	5-7	0.015	16960
HD-18	4-6	0.015	381	HD-8D	36-38	0.015	0
HD-3	8-10	0.017	0	HD-14	6-8	0.016	210
HD-12	14-16	0.019	112	HD-3	20-22	0.017	0
HD-3	20-22	0.021	0	HD-10	16-18	0.017	47
HD-6	18-20	0.025	0	HD-18	4-6	0.044	381
HD-9	13-15	0.027	47	HD-12	14-16	0.045	112
HD-15C	28-30	0.027	3365	HD-6	18-20	0.048	0
HD-3	5-7	0.035	16960	HD-11	13-15	0.059	1462
HD-16	13-15	0.041	0	HD-15C	28-30	0.065	3365
HD-20	10-12	0.041	150	HD-16	13-15	0.069	0
HD-19	2-4	0.043	0	HD-20	10-12	0.081	150
HD-11	13-15	0.048	1462	HD-19	2-4	0.089	0
HD-2	9-11	0.057	2483	HD-15C	20-22	0.104	39
HD-15C	20-22	0.061	39	HD-16	9-11	0.17	1678
HD-10	8-10	0.076	42190	HD-10	8-10	0.17	42190
HD-16	9-11	0.096	1678	HD-11	4-6	0.24	97050
HD-9	8-10	0.118	29870	HD-15C	6-8	0.257	140500
HD-11	8-10	0.125	106500	HD-11	8-10	0.299	106500
HD-20	6-8	0.138	168200	HD-9	8-10	0.36	29870
HD-5B	9-11	0.139**	117200	HD-2	9-11	0.366	2483
HD-11	4-6	0.143	97050	HD-5B	9-11	0.525**	117200
HD-15C	6-8	0.143	140500	HD-7	8-10	0.633	88240
HD-8D	7-9	0.189	195500	HD-8D	7-9	0.737	195500
HD-7	8-10	0.209	88240	HD-20	6-8	0.773	168200
HD-12	6-8	0.252	104000	HD-12	6-8	0.856	104000
HD-6	9-11	0.308	118600	HD-6	9-11	1.05	118600
HD-10	6-8	0.384	80960	HD-10	6-8	1.11	80960

Notes:

* - Samples are listed in ascending order based on their respective HFFD response or LFFD response.

** - Due to subsurface refusal, CPT/UVIF data at HD-5B was collected to a final depth of 10.43 ft bls. Therefore, the average UVIF response presented in this table for HD-5B (9-11) is actually from the 9 to 10.43 ft bls interval.

CPT - Cone Penetrometer Test
UVIF - Ultra-Violet Induced Fluorescence
HFFD - Heavy Fuel Fluorescence Detector
LFFD - Light Fuel Fluorescence Detector
ft bls - Feet Below Land Surface
PAHs - Polycyclic Aromatic Hydrocarbons
ug/kg - Microgram per kilogram

Attachment 1

of REMEDIAL INVESTIGATION

APPENDIX D

Report Prepared by
Environmental Resource Associates
Arvada, Colorado

ENVIRONMENTAL
RESOURCE ASSOCIATES®
The Industry Standard™

October 31, 2003

Harry Gregory
Roux Associates Inc.
209 Shafter Street
Islandia, NY 11749

Dear Harry:

Enclosed please find the supporting documentation for the set of whole volume performance evaluation samples that you recently ordered. The samples were shipped on October 22, 2003 via FedEx Standard Overnight Service to Applied Research Associates in South Royalton, VT (Attn: Ryan Langlois / Dr. John Haas) and Cone Tech Inc. in West Berlin, NJ (Attn: Bruce Miller). The ERA project number corresponding to these samples is 1022-03-01.

Thank you for choosing ERA for this project. If you have any questions or if we can be of any further assistance, please do not hesitate to call me.

Sincerely,

John M. Laferty
Manager, Custom & Whole Volume Products

enclosures
jml

Roux Associates Inc.

Catalog No. 093 Custom Standard **Lot No. 1022-03-01**

Cone Tech Inc. Sample ID	Parameter	Certified Value (mg/kg)	% moisture
Blank	Blank	--	17.1%
B	Blank	--	17.1%
D	#2 Fuel Oil	100,000	17.1%
C	#2 Fuel Oil	30,000	17.1%
A	#2 Fuel Oil	10,000	17.1%
F	#2 Fuel Oil	2,990	17.0%
E	#2 Fuel Oil	999	17.1%
G	#2 Fuel Oil	300	17.1%
H	#2 Fuel Oil	100	17.1%

Applied Research Associates Sample ID	Parameter	Certified Value (mg/kg)	% moisture
Blank	Blank	--	17.1%
D	Blank	--	17.1%
C	#2 Fuel Oil	100,000	17.1%
A	#2 Fuel Oil	30,000	17.1%
H	#2 Fuel Oil	10,000	17.1%
B	#2 Fuel Oil	2,990	17.0%
G	#2 Fuel Oil	999	17.1%
E	#2 Fuel Oil	300	17.1%
F	#2 Fuel Oil	100	17.1%

Standard Preparation Instructions: None required. These samples are ready for preparation and analysis as received.

Preservative: None

Storage: 4±2°C

Manufacturing Notes: These standards were prepared with #2 Fuel Oil and soil supplied by Roux Associates Inc.

The Certified Values are equal to 100% of the "made to" values as determined by volumetric and/or gravimetric measurements used during the manufacture of this product.

Prepared by: JML

Date: 10-31-03

Reviewed by: [illegible]

Date: 10/31/03

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Case Narrative

Client: Roux Associates Inc.
ERA Project #: 1022-03-01 (Roux project #05545Y08)
Site: Sunnyside Yard, Queens, NY

Summary – Project requirements outlined through discussions with Paul Yaniga at W.I.S.E. Ltd. (1115 E. Baltimore Pike, Kennett Square, PA 19348, 610-388-3824, fax –3825, cell - 760-522-5593) - serving as consultant for one of the parties at the site. Site is an Amtrak rail yard, with diesel #2 contamination in the soil. Diesel has low level (1-2 ppm) PCB contamination. Roux Associates Inc. (209 Shafter St., Islandia, NY 11749) is overall lead contractor at the site. Harry Gregory (631-232-2600, fax- 9898) is Project Manager at Roux. Roux will collect 'uncontaminated' soil and weathered diesel samples from the site and forward to ERA. ERA will homogenize soil (dry, sieve through #4 mesh sieve), aliquot into 16 oz WM glass jars. Jars will be spiked with diesel fuel (wt/wt basis) over a client defined concentration range - 3 x 1 kg samples at each level (100000, 30000, 10000, 3000, 1000, 300, 100, and blank mg/kg). Note; client is aware that the diesel fuel will eventually saturate the soil as the concentration increases. They estimated that around 10K mg/kg, there will be free liquid (diesel) in samples. ERA will certify standards based only on the weight of diesel added to each sample (no soil background determination will be made, no analytical verification of standards will be done). One set of samples will be shipped to each of 3 locations (to be specified). All remaining soil and oil to be returned to client at the end of the project.

10/15/03 – ERA received 4 coolers containing 4 plastic buckets of soil and 1 cooler containing 4x1 liter AG glass bottles of diesel fuel. A chain of custody was present and correctly filled out. Buckets were identified as 'Soil-1' through 'Soil-4', diesel was identified as 'Recovery Tank'. The total weight of soil was 312 lbs., total volume of diesel fuel was 4 liters. Materials appeared to have been packed on wet ice. All ice was melted, however materials were still cold. One soil bucket was opened, and soil was observed to have free liquid present.
Based on discussion with Paul Yaniga, the original preparation protocol was modified as follows; Bucket #2 was determined (by Roux during sampling) to be physically different in composition from the 3 other buckets. ERA will archive this bucket for possible later characterization (store at room temperature). ERA will weigh remaining buckets (1, 3, 4) and then decant/dispose of any free liquid present. Soil is to be air-dried and approximate percent moisture determined (gross weight of dried soil less weight of buckets). Soil is to be sieved and homogenized as previously described. Standards will be spiked as previously described, except approximately 25 mL of methylene chloride will be added to the diesel fuel spike for low range standards to facilitate dispersion of the oil in the soil. We estimated that this would be required for the 100 through ~10000 mg/kg standards (note: only add to standards that we feel require it). A minimum amount of methylene chloride will be used to rinse the diesel (spike) onto the soil for all standards. After standards are spiked, tap water will be used to rehydrate the samples to approximately original moisture level.
Lab notes – Soil was transferred into 3 larger poly tubs to begin air-drying.

10/16/03 – Paul Yaniga requested 2 x 1 kg additional unspiked standards and 2 x 40 mL vials of oil be prepared to send with the original set of standards. No additional charge will be assessed for these standards.
Lab notes – Soil air-dried all day with intermittent mixing. Roux set up as client in Siebel (ERA order processing system), quote generated and faxed. Based on Roux laboratory subcontract agreement, ERA will forward them insurance info.

- Bucket #1 weight = 72.35 lbs (empty bucket = 2.28 lbs), brown sandy clay w/ free liquid
- Bucket #2 weight = 74.31 lbs, brown coarse sand, no free liquid
- Bucket #3 weight = 86.84 lb (empty bucket = 2.30 lbs), sandy brown soil w/ free liquid
- Bucket #4 weight = 78.32 lbs (empty bucket = 2.31 lbs), reddish sandy clay w/ free liquid
  All soil buckets smelled slightly of diesel fuel.

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10/17/03 – Subcontract agreement (2 copies) signed and returned to Roux Associates via Federal Express (attn; Harry Gregory). Address and contact name[s] to be used in forwarding Amtrak Sunnyside Queens soil standards were provided by Paul Yaniga:

Attn: Bruce Miller Cone Tech Inc. 436 Commerce Lane, Unit C West Berlin NJ 08091 www.contech.com e-mail: bmiller@conetech.com Tel: 856 767-8600 Fax: 856 767 4008 Cell: 609 364 1217	Attn: Ryan Langlois / Dr. John Haas Applied Research Associates 415 Waterman Road S. Royalton, VT 05068 www.ara.com e-mail: rlanglois@ara.com Tel: 802 763 8348 Fax: 802 763 8283

Issues resolved with Paul Yaniga; Standards will be shipped to labs in original coolers (no ice) FedEx SOS. Standards will be labeled with ERA labels indicating standard composition. Certification sheets and a Case Narrative under separate cover (at a later date, TDB) will be sent to Roux (Harry Gregory). The third ship-to location will be specified early next week. Extra (2 x 1 kg) blank soil and (2 x 40 mL) diesel (see 10/16 notes) will ship with samples to Cone and ARA. Tentative ship date set for Wednesday, 10/22/03 – pending soil drying time.
Lab notes - Soil split into 3 additional poly tubs to facilitate drying. Soil was sieved through #4 mesh sieve while still damp. Artifacts (material > #4 mesh) were discarded per Paul Yaniga. Total weight of artifacts is 37.74 lbs.

10/20/03 – Paul Yaniga clarified ERA question on spiking vs. rehydration of soil. Spike the soil with fuel oil based on dry weight, then rehydrate standards.
Lab notes – Soil air-dried 10/18 and 10/19 (weekend) with one mixing on 10/19. On 10/20 approximately ½ the soil in each tub was transferred into larger poly tub and dried for 24 hrs in oven @ 50°C.

10/21/03 – Spoke with Paul Yaniga to confirm 10/22 standard shipment.
Lab notes – The remainder of soil was transferred into larger poly tub and dried for 24 hrs in oven @ 50°C. All soil then recombined into one large tub, randomly re-split into the 6 smaller tubs, and randomly recombined into the original 3 buckets. Buckets were then reweighed.

- Net weight of dried soil = 165.59 lbs
- Net weight of wet soil minus the artifacts = 192.88 lbs

The soil percent moisture of 14.1% was calculated after the removal of the artifacts.

10/22/03 – Harry Gregory (Roux) called to request a hardcopy (previous fax unacceptable) of ERA insurance documentation. Documents e-mailed from insurance company. Spoke with Paul Yaniga to re-confirm 10/22 standard shipment. Paul requested that true values not be put on standard bottle labels. Standards identified with ERA Project #, Lab Name, and alpha designation (single blind). A copy of the Chains of Custody and cross-reference containing true values was e-mailed to W.I.S.E. (c/o Kerry Hanlon).
Lab notes – Standards were prepared by first aliquoting an appropriate weight of the dry soil into each of 26 x 1 liter wide mouth glass jars. The #2 fuel oil spike was weighted into a glass beaker and quantitatively transferred onto the soil using a minimum amount of methylene chloride (~ 5 mL). For the 3,000 mg/kg and lower standards, 20-25 mL of additional methylene chloride was added to facilitate dispersing the fuel oil onto the soil. The methylene chloride was allowed to evaporate from the jar for 20-30 minutes, before the jar was capped and mixed in a rotary tumbler for 1 hour to homogenize the standard. Tap water was then added to return the standard to approximately its original moisture content. The jar was again mixed in a rotary tumbler to homogenize the standard. See attached Soil Spike / Rehydration Summary for individual standard details. 2 x 40 mL VOA vials were filled with 'Recovery Tank' diesel fuel and 2 x 1 kg additional blank soil standards were prepared to be included with above standards.

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Comments / Anomalies – The actual moisture content of the soil supplied by Roux Associates was determined to be 14.1%. Due to a lab error, all samples were rehydrated to approximately 17.1% moisture. As of 10/31/03, Roux / W.I.S.E. has not provided any information relative to shipment of the third set of standards ERA prepared. These samples have been archived @ 4°C, pending client instructions. The sample 'Soil-2', the remaining (dried composited) samples 'Soil-1, -3, -4', and the fuel oil sample 'Recovery Tank' have been archived at room temperature pending client instructions.

Prepared by: _____ Name: John M. Laferty

Date: 10-31-03 Title: Manager, Custom & Whole Volume Products

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% Moisture Summary

	Gross wet weight	Net wet weight	Empty bucket weight	Gross dry weight [1]
Bucket #1	72.35	70.07	2.28	59.15
Bucket #2 [2]	*74.31*		*NA*	*NA*
Bucket #3	86.84	84.54	2.30	58.83
Bucket #4	78.32	76.01	2.31	54.50
Artifacts				37.74

Soil net wet weight	**192.88**	= Σ (gross wet weights for buckets 1,3,4) - Σ (empty bucket weights) - artifacts
Soil net dry weight	**165.59**	= Σ (gross dry weights for buckets 1,3,4) - Σ (empty bucket weights)
% Moisture	**14.1%**	= (soil gross wet weight - soil gross dry weight) / soil gross wet weight

[1] *The dry soil was returned to buckets in random fashion, therefore wet and dry weights* ***per bucket*** *cannot be compared.*

[2] *Bucket #2 was not used, per client instructions*

All weights in pounds

Soil Spike / Rehydration Summary

Cone Sample ID	ARA Sample ID	Sample	Dry Soil (g)	#2 Fuel Oil spike (g)	Tap Water (g)	Actual spike value (mg/kg)	Actual % moisture
Blank		Blank	829.00	--	171.00	--	17.1%
	Blank	Blank	829.00	--	171.00	--	17.1%
B		Blank	829.00	--	171.00	--	17.1%
	D	Blank	829.00	--	171.00	--	17.1%
Archive		Blank	829.00	--	171.00	--	17.1%
D		100,000	729.00	100.00	171.00	100,000	17.1%
	C	100,000	729.00	100.00	171.00	100,000	17.1%
Archive		100,000	729.00	100.00	171.00	100,000	17.1%
C		30,000	799.00	30.00	171.00	30,000	17.1%
	A	30,000	799.00	30.00	171.00	30,000	17.1%
Archive		30,000	799.00	30.00	171.00	30,000	17.1%
A		10,000	819.00	10.00	171.00	10,000	17.1%
	H	10,000	819.00	10.00	171.00	10,000	17.1%
Archive		10,000	819.00	10.00	171.00	10,000	17.1%
F		3,000	829.00	3.00	171.00	2,990	17.0%
	B	3,000	829.00	3.00	171.00	2,990	17.0%
Archive		3,000	829.00	3.00	171.00	2,990	17.0%
E		1,000	829.00	1.00	171.00	999	17.1%
	G	1,000	829.00	1.00	171.00	999	17.1%
Archive		1,000	829.00	1.00	171.00	999	17.1%
G		300	829.00	0.3000	171.00	300	17.1%
	E	300	829.00	0.3000	171.00	300	17.1%
Archive		300	829.00	0.3000	171.00	300	17.1%
H		100	829.00	0.1000	171.00	100	17.1%
	F	100	829.00	0.1000	171.00	100	17.1%
Archive		100	829.00	0.1000	171.00	100	17.1%

Methylene chloride - JT Baker Lot # X46E67

ROUX CHAIN OF CUSTODY

№ 08086Y

ROUX ASSOCIATES, INC.
Environmental Consulting & Management
209 SHAFTER STREET
ISLANDIA, NEW YORK 11749-5074
(631) 232-2600 FAX: (631) 232-9898

ANALYSES

PROJECT NAME: Amtrak - Sunnyside Yard

PROJECT NUMBER: 05545Y08

PROJECT LOCATION: Sunnyside Yard, Queens, New York

PROJECT MANAGER: H. Gregory

SAMPLER(S): H.G., R.K., C.B.

SAMPLE DESIGNATION / LOCATION	DATE COLLECTED	TIME COLLECTED	SAMPLE MATRIX	TOTAL BOTTLES	NOTES
Soil-1	10/14/03	0900	Soil	1	Samples preserved with ice
Soil-2	10/14/03	0920	Soil	1	
Soil-3	10/14/03	0940	Soil	1	
Soil-4	10/14/03	1000	Soil	1	
Recovery Tank	10/14/03	1040	Oil	4	↓ Oil Sample Contains PCBs

RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N
[signature]	Roux	10/14/03	1700	(Y) OR N	[signature]	ERA	10/15/03	0900	(Y) OR N
RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N
RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N

DELIVERY METHOD: Fed Ex

ANALYTICAL LABORATORY: Environmental Resource Associates

COMMENTS: Please ~~Complete~~ analysis as instructed.

CHAINOF.CDR 12AUG98

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October 22, 2003

Bruce Miller
Cone Tech Inc.
436 Commerce Lane, Unit C
West Berlin, NJ 08091

Dear Bruce:

Enclosed please find the single blind performance evaluation samples that were recently ordered for you by Roux Associates Inc. The ERA project number corresponding to this sample is 1022-03-01.

Sincerely,

Anthony J. Ciacco
Chemist

enclosures
ajc

Environmental Resource Associates
Sample Identification and Chain of Custody Form

Ship to: Cone Tech Inc. 436 Commerce Lane, Unit C West Berlin, NJ 08091 www.conetech.com **Phone:** 856-767-8600 **Fax:** 856-767-4008 **Attention:** Bruce Miller	**Ship from:** Environmental Resource Associates 6000 W.54th Avenue Arvada, CO 80002 **Phone:** 800-372-0122 or 303-431-8454 **Fax:** 303-421-0159 **Contact:** Anthony Ciacco

Sample Description	Sample Identification	Sample Date	Sample Type	# of Containers	Preservative
Sample A	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample B	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample C	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample D	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample E	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample F	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample G	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample H	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Blank	1022-03-01	10/23/03	Soil	1 x 16 oz. Jar	None
Recovery Tank	1022-03-01	10/23/03	Oil	1 x 40 ml	None

		Condition of Contents
Relinquished by: [signature]	Date/Time: 10/22/03 15:00	
Received by:	Date/Time:	
Relinquished by:	Date/Time:	
Received by:	Date/Time:	
Relinquished by:	Date/Time:	
Received by:	Date/Time:	

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October 22, 2003

Ryan Langlois
Dr. John Haas
Applied Research Associates
415 Waterman Road
S. Royalton, VT 05068

Dear Ryan or Dr. Haas:

Enclosed please find the single blind performance evaluation samples that were recently ordered for you by Roux Associates Inc. The ERA project number corresponding to these samples is 1022-03-01.

Sincerely,

Anthony J. Ciacco
Chemist

enclosures
ajc

Environmental Resource Associates
Sample Identification and Chain of Custody Form

Ship to: Applied Research Associates 415 Waterman Road S. Royalton, VT 05068 www.ara.com	**Ship from:** Environmental Resource Associates 6000 W.54th Avenue Arvada, CO 80002
Phone: 802-763-8348 **Fax:** 802-763-8283 **Attention:** Ryan Langlois/Dr. John Haas	**Phone:** 800-372-0122 or 303-431-8454 **Fax:** 303-421-0159 **Contact:** Anthony Ciacco

Sample Description	Sample Identification	Sample Date	Sample Type	# of Containers	Preservative
Sample A	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample B	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample C	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample D	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample E	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample F	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample G	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Sample H	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Blank	1022-03-01	10/22/03	Soil	1 x 16 oz. Jar	None
Recovery Tank	1022-03-01	10/22/03	Oil	1 x 40 ml	None

		Condition of Contents
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Received by:	Date/Time:	
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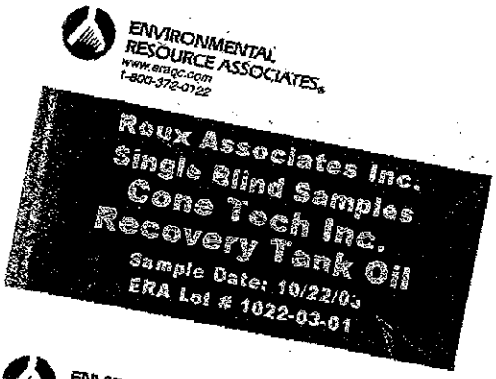
Received by:	Date/Time:	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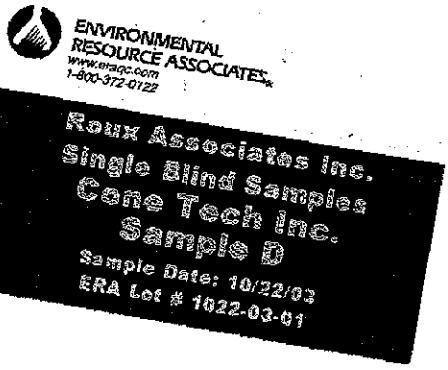
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Recovery Tank Oil
Sample Date: 10/22/03
ERA Lot # 1022-03-01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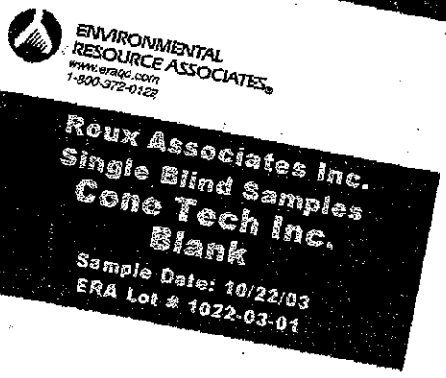
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Sample D
Sample Date: 10/22/03
ERA Lot # 1022-03-01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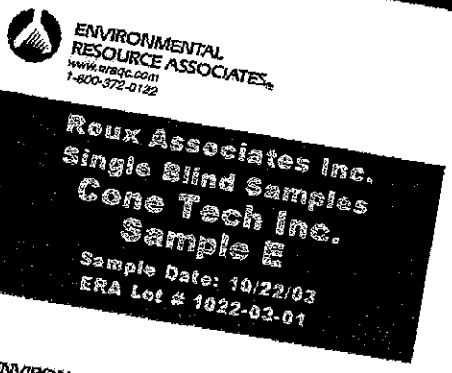
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Blank
Sample Date: 10/22/03
ERA Lot # 1022-03-01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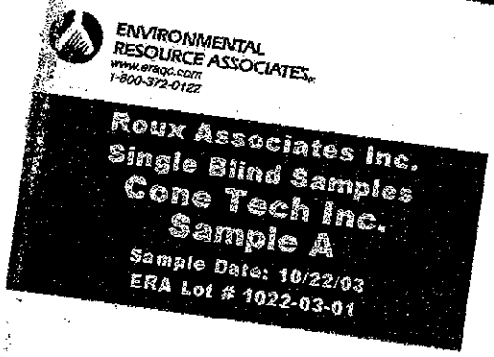
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Sample E
Sample Date: 10/22/03
ERA Lot # 1022-03-01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Single Blind Samples
Cone Tech Inc.
Sample A
Sample Date: 10/22/03
ERA Lot # 1022-03-01


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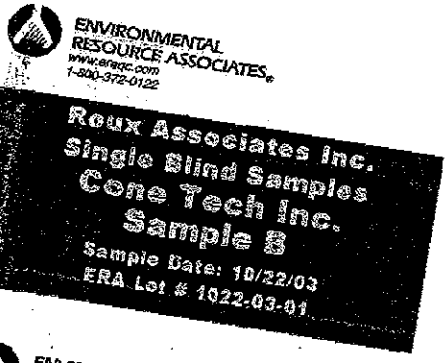
Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Sample F
Sample Date: 10/22/03
ERA Lot # 1022-03-01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Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Sample B
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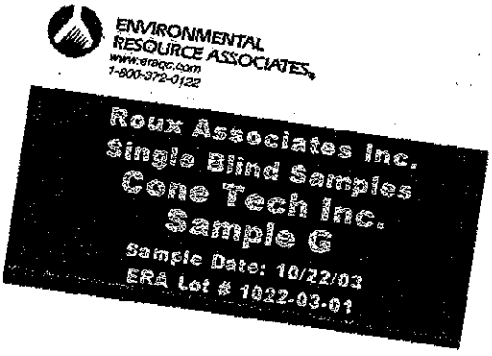
ERA Lot # 1022-03-01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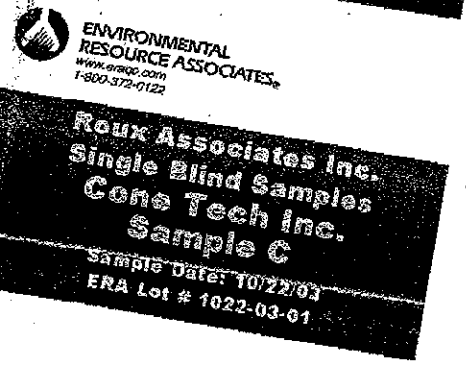
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Sample G
Sample Date: 10/22/03
ERA Lot # 1022-03-01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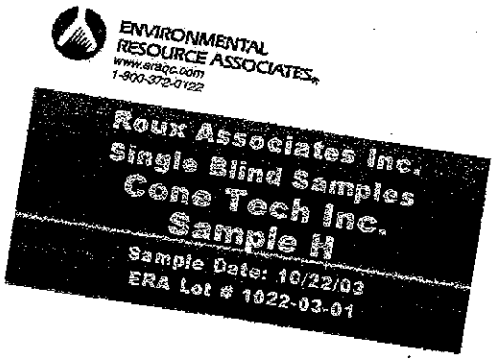
Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Sample C
Sample Date: 10/22/03
ERA Lot # 1022-03-01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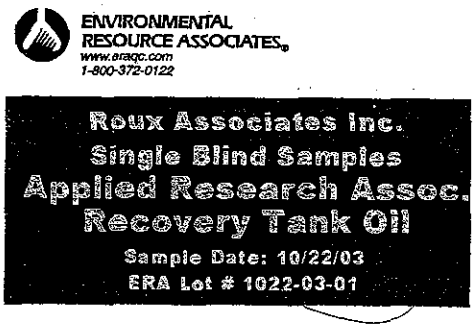
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Cone Tech Inc.
Sample H
Sample Date: 10/22/03
ERA Lot # 1022-03-01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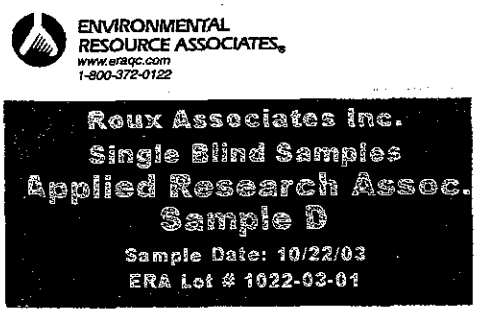
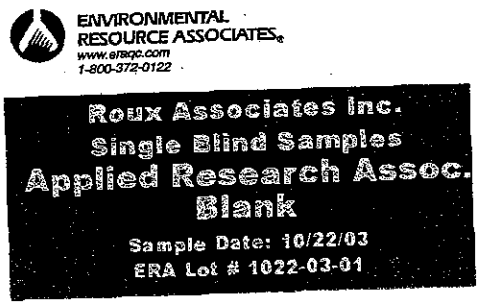
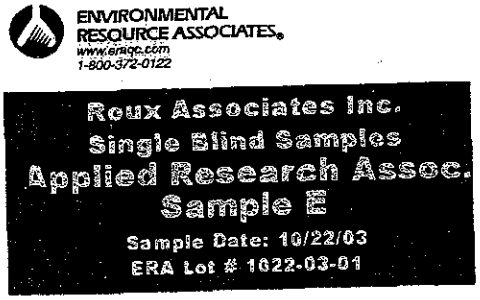
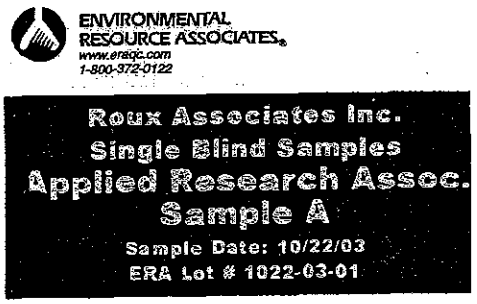
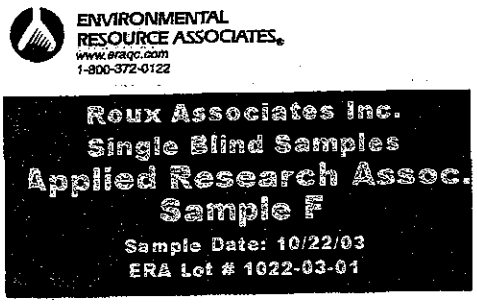
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Recovery Tank Oil
Sample Date: 10/22/03
ERA Lot # 1022-03-01

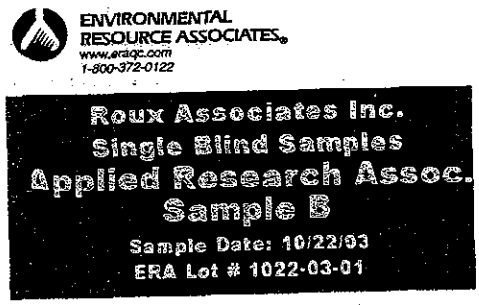

ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Sample D
Sample Date: 10/22/03
ERA Lot # 1022-03-01

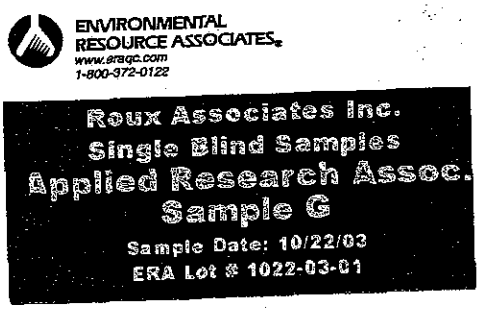

ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Blank
Sample Date: 10/22/03
ERA Lot # 1022-03-01

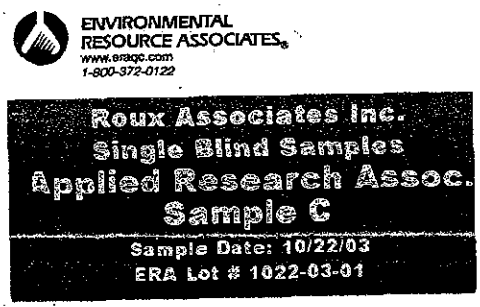

ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Sample E
Sample Date: 10/22/03
ERA Lot # 1022-03-01

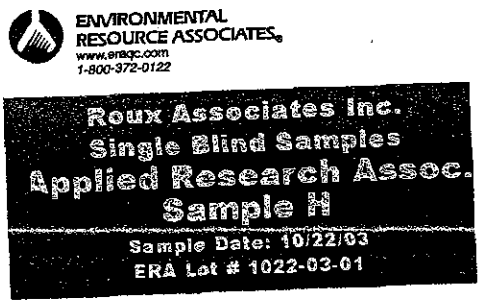

ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Sample A
Sample Date: 10/22/03
ERA Lot # 1022-03-01


ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Sample F
Sample Date: 10/22/03
ERA Lot # 1022-03-01


ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Sample B
Sample Date: 10/22/03
ERA Lot # 1022-03-01


ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Sample G
Sample Date: 10/22/03
ERA Lot # 1022-03-01


ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Sample C
Sample Date: 10/22/03
ERA Lot # 1022-03-01


ENVIRONMENTAL
RESOURCE ASSOCIATES
www.eraqc.com
1-800-372-0122
Roux Associates Inc.
Single Blind Samples
Applied Research Assoc.
Sample H
Sample Date: 10/22/03
ERA Lot # 1022-03-01

Attachment 2

of REMEDIAL INVESTIGATION

APPENDIX D

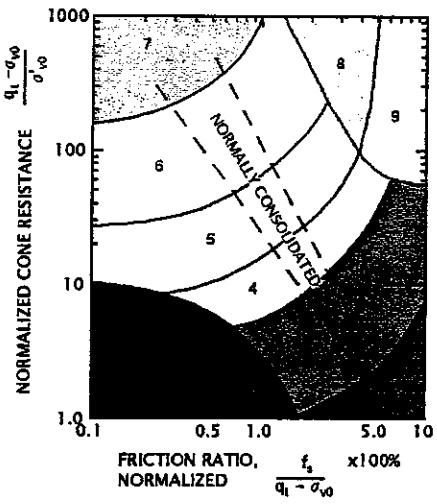
CPT / UVIF Data Plots
Prepared by Applied Research Associates, Inc.
South Royalton, Vermont

CPT Soil Classification Legend

Zone	Q_t/N	Description
1	2	Sensitive, Fine Grained
2	1	Organic Soils-Peats
3	1.5	Clays-Clay to Silty Clay
4	2	Silt Mixtures-Clayey Silt to Silty Clay
5	3	Sand Mixtures-Silty Sand to Sandy Silt
6	4.5	Sands-Clean Sand to Silty Sand
7	6	Gravelly Sand to Sand
8	1	Very Stiff Sand to Clayey Sand*
9	2	Very Stiff, Fine Grained*

(*) Heavily Overconsolidated or Cemented

Normalized Friction Ratio Classification Chart



(Ref. Robertson, 1990)

Coefficient of Permeability (cm/s)

Zone	Description	Permeability
1	Sensitive Fines	10^{-5}
2	Organic Soils-Peats	10^{-5}
3	Clays	10^{-7}
4	Silt Mixtures	10^{-6}
5	Sand Mixtures	10^{-4}
6	Sands	10^{-2}
7	Gravelly Sands	10^{-1}
8	Very Stiff Sands	10^{-5}
9	Very Stiff Fines	10^{-6}

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(802) 763-8348, cpt@ara.com, http://www.ara.com

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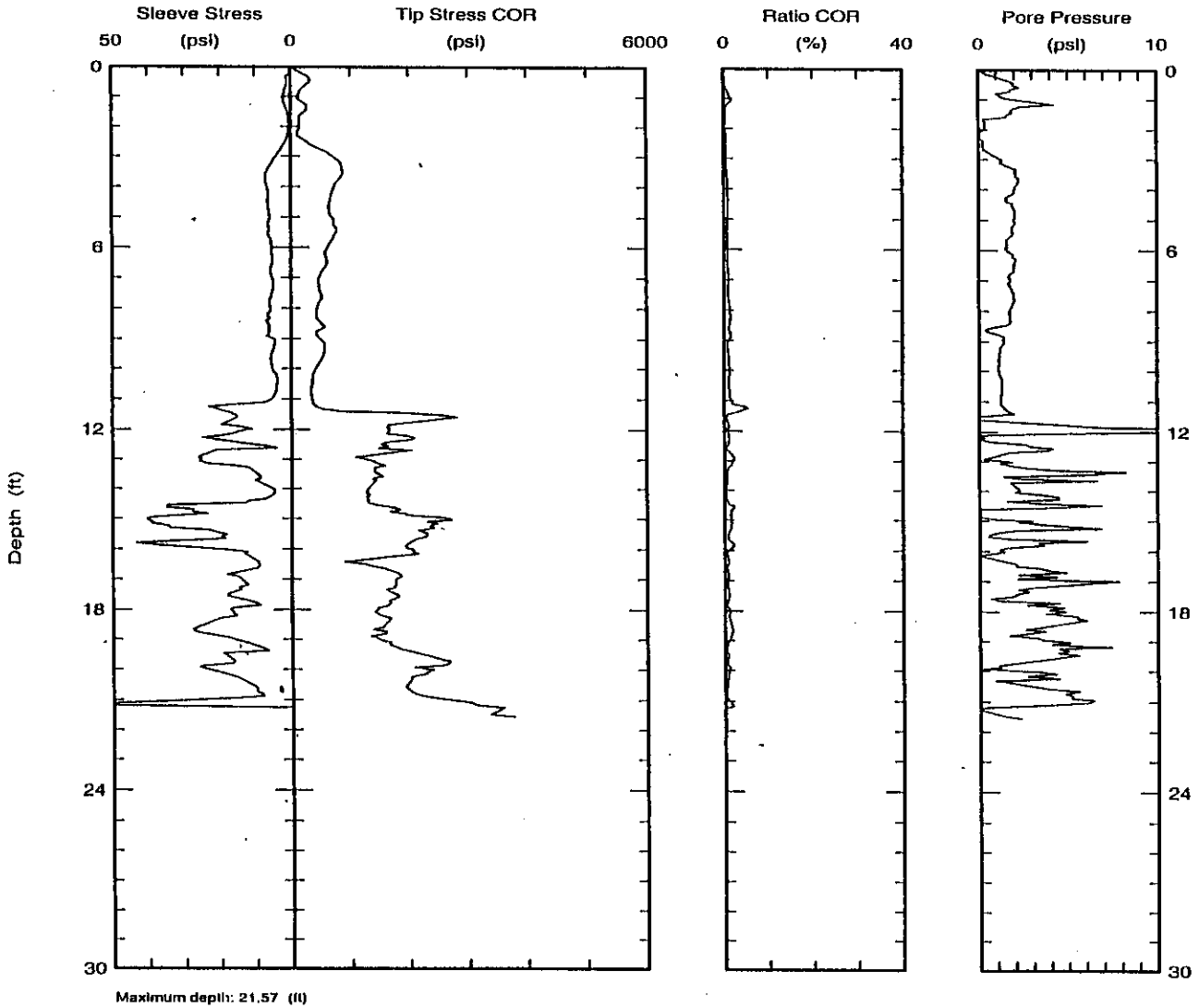
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-01
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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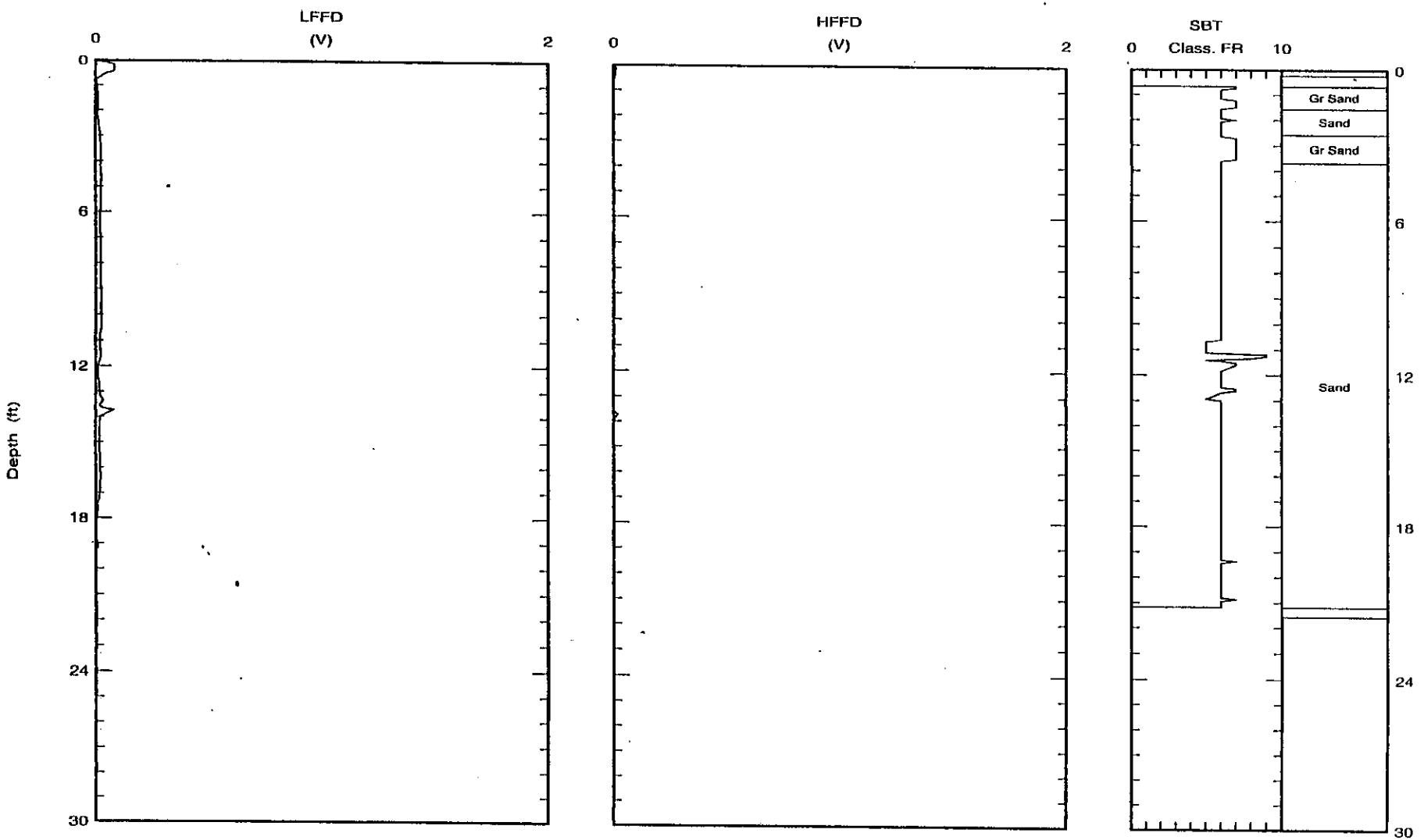
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-01
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 21.57 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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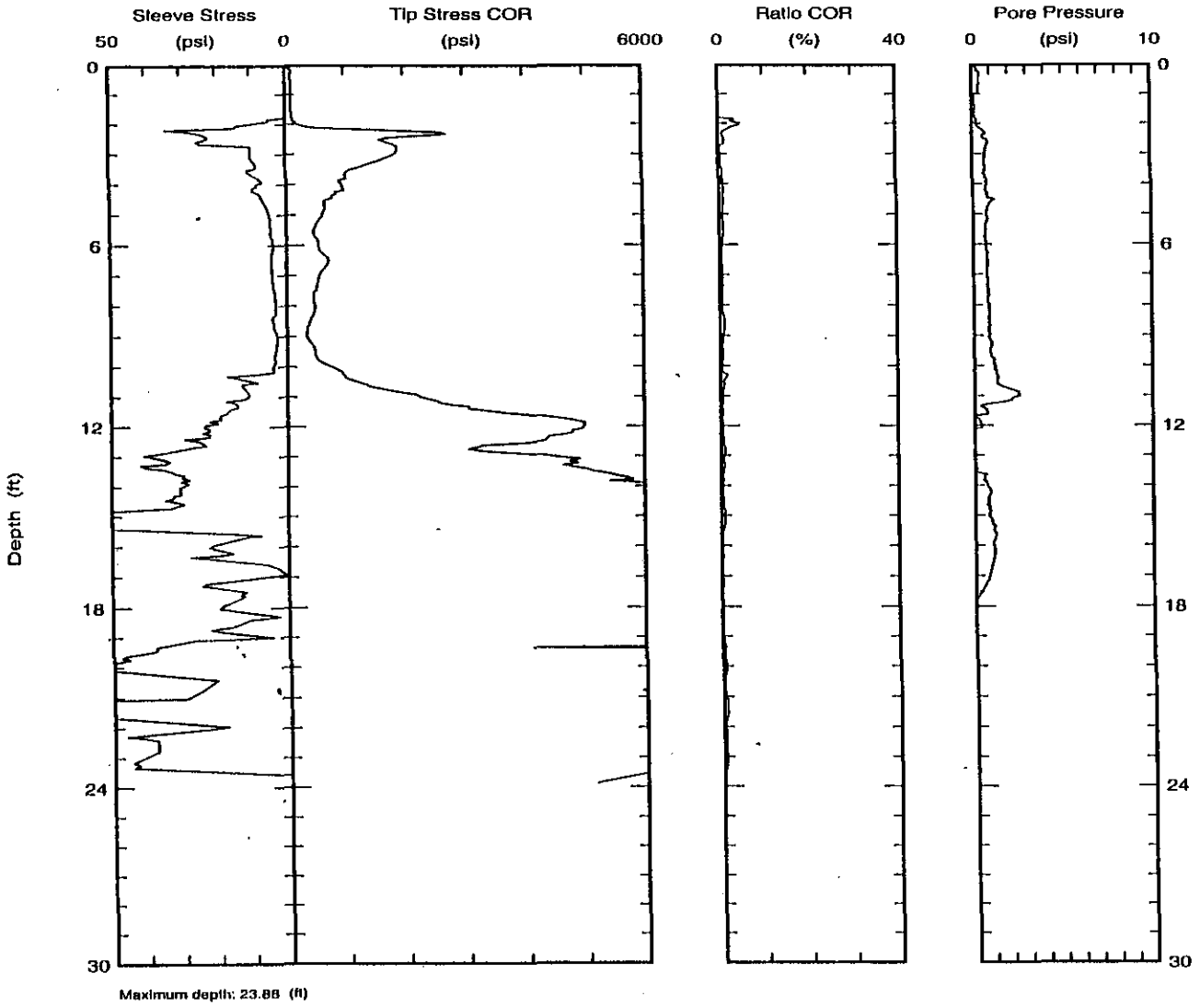
Northing:	Date: 04/Nov/2003
Easting:	Test ID: HD-02
Elevation:	Project: RROUX
Client: ROUX	
Site: SUNNYSIDE	



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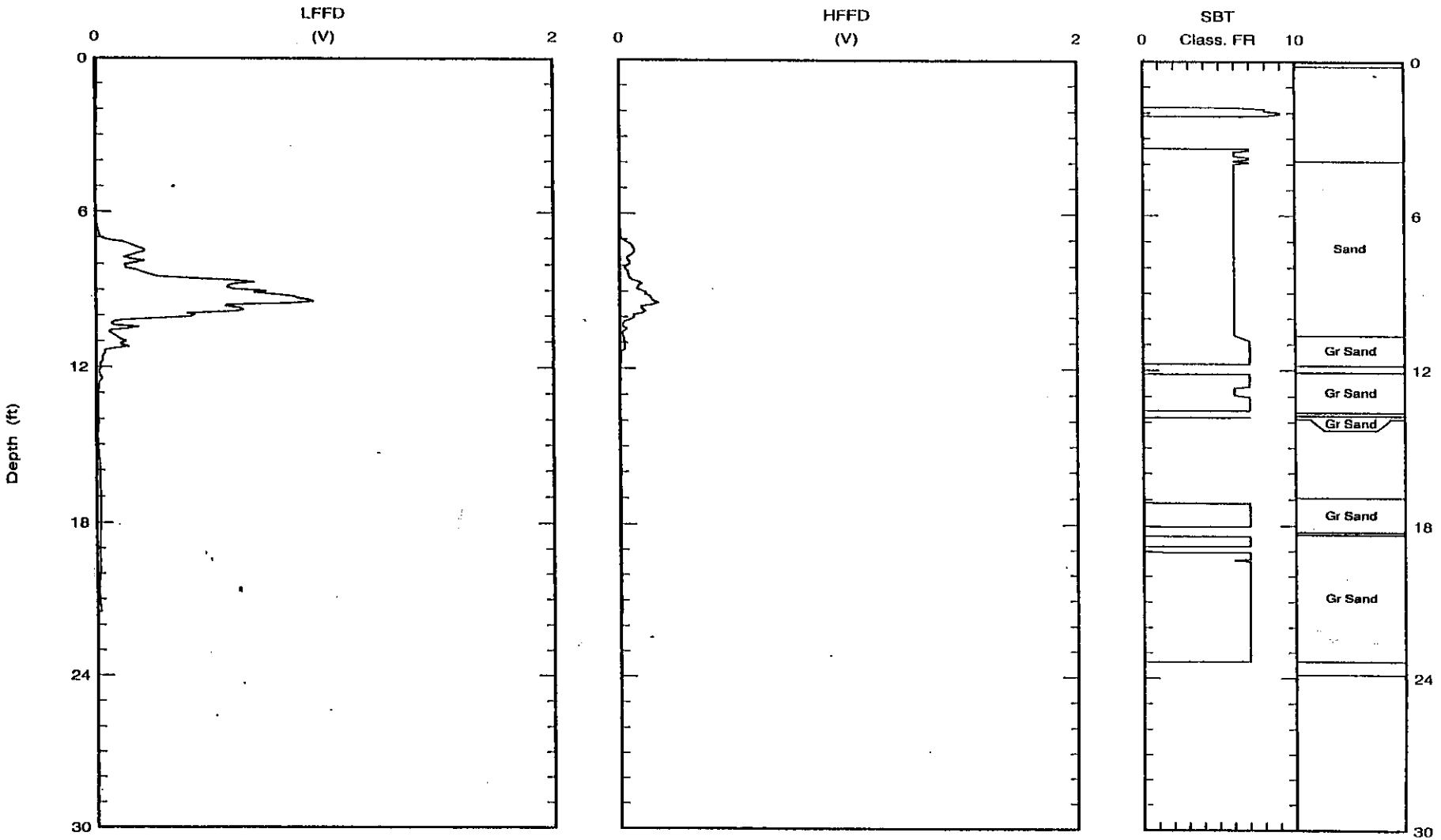
Email: cpt@ned.ara.com
http://www.ara.com

Northing:	Date: 04/Nov/2003
Easting:	Test ID: HD-02
Elevation:	Project: RROUX
Client: ROUX	
Site: SUNNYSIDE	



Maximum depth: 23.88 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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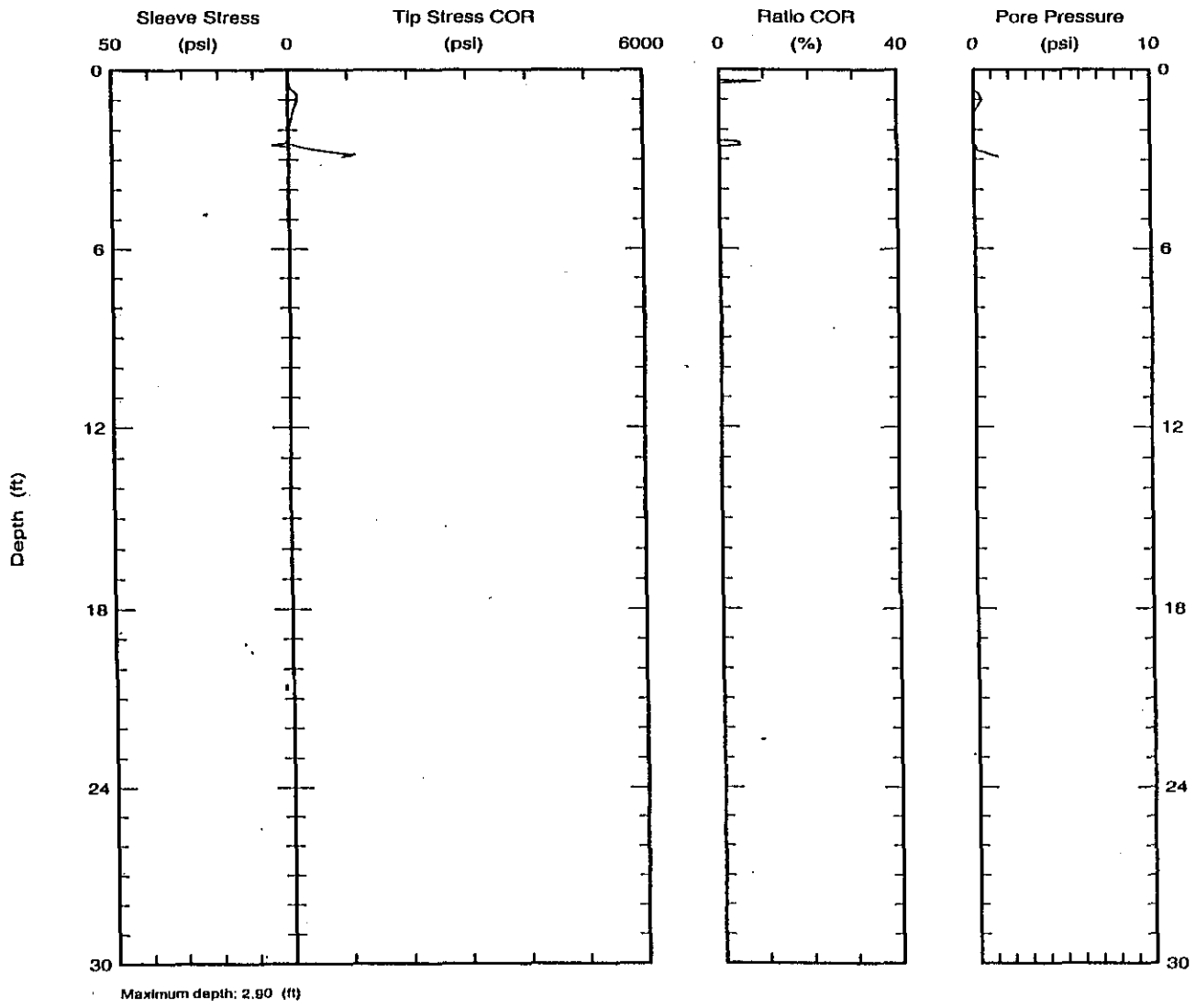
Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-03
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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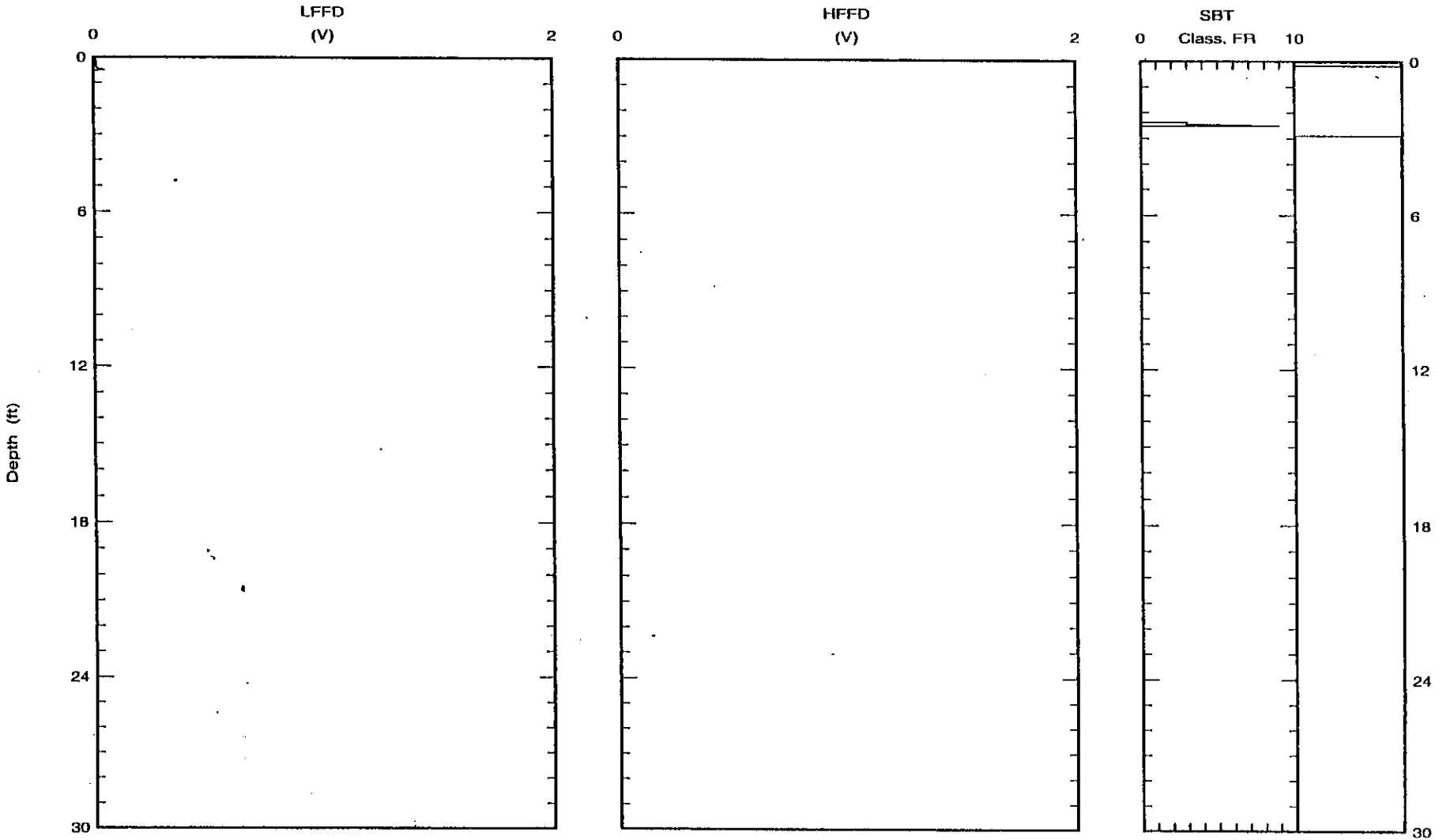
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-03
Project: RROUX

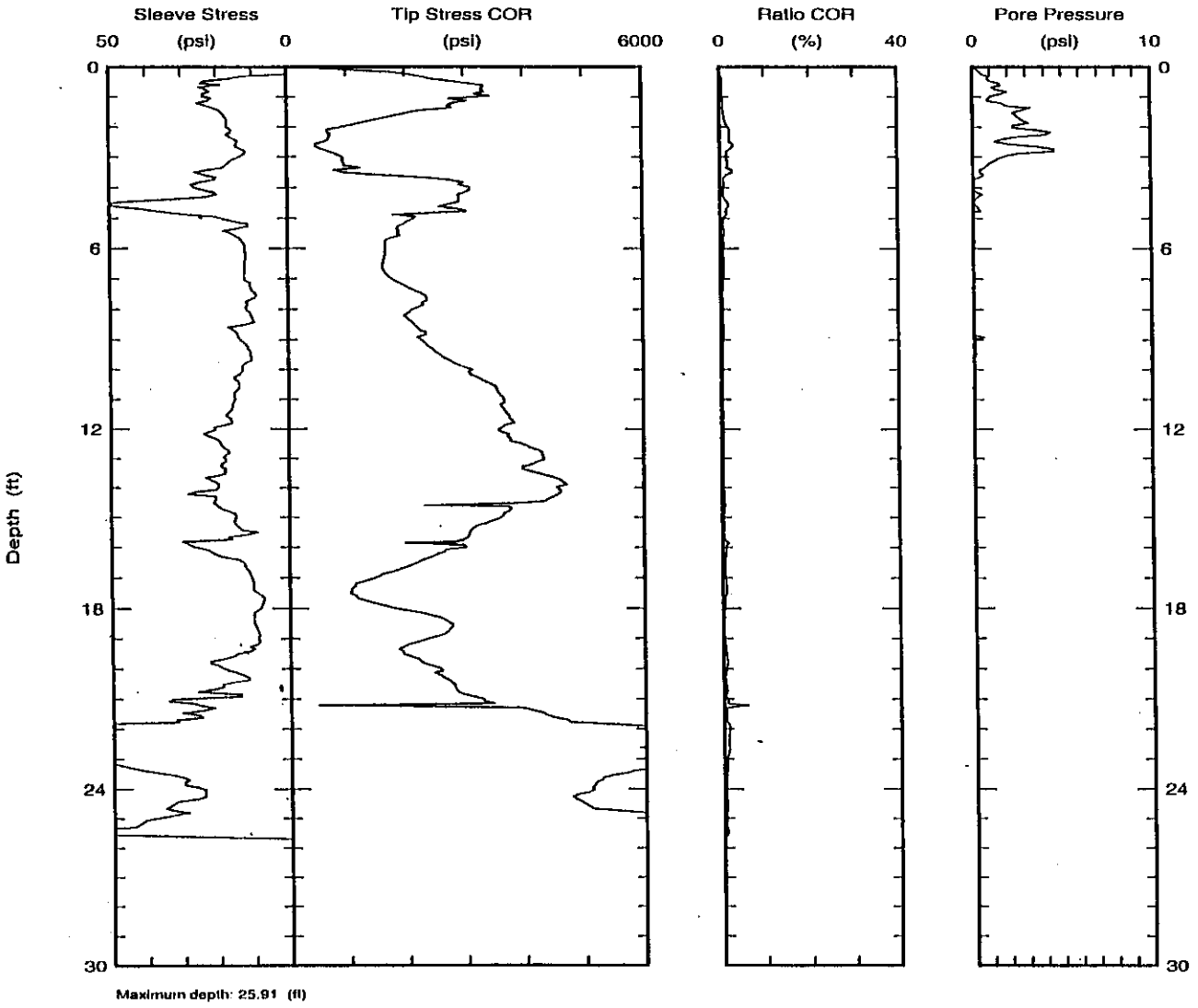
Client: ROUX
Site: SUNNYSIDE



Maximum depth: 2.90 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Applied Research Associates South Royalton, VT 05068 802-763-8348 Email: cpt@ned.ara.com http://www.ara.com	Northing: Easting: Elevation:	Date: 04/Nov/2003 Test ID: HD-03A Project: RROUX
	Client: ROUX Site: SUNNYSIDE	



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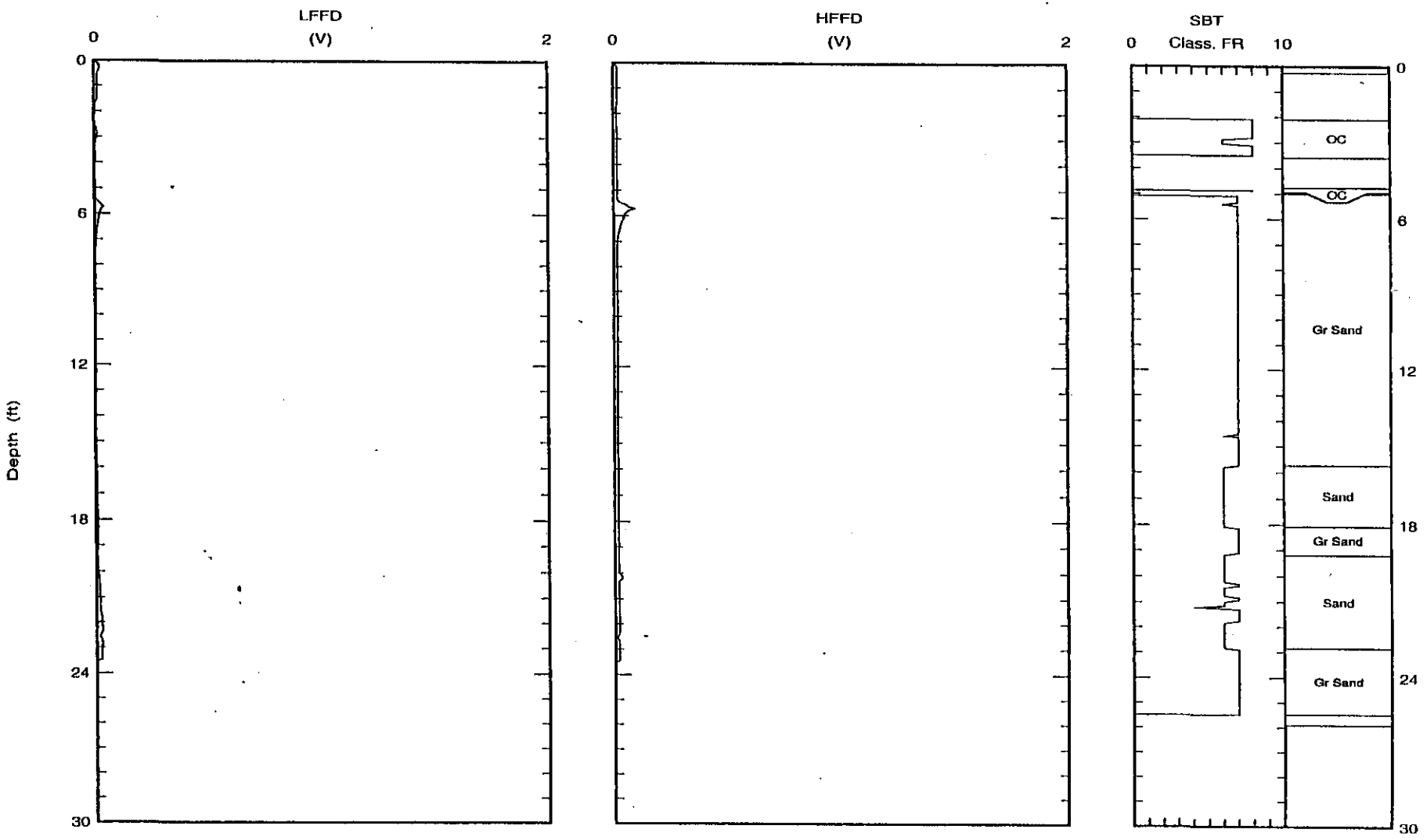
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:	Date: 04/Nov/2003
Easting:	Test ID: HD-03A
Elevation:	Project: RROUX
Client: ROUX	
Site: SUNNYSIDE	



Maximum depth: 25.91 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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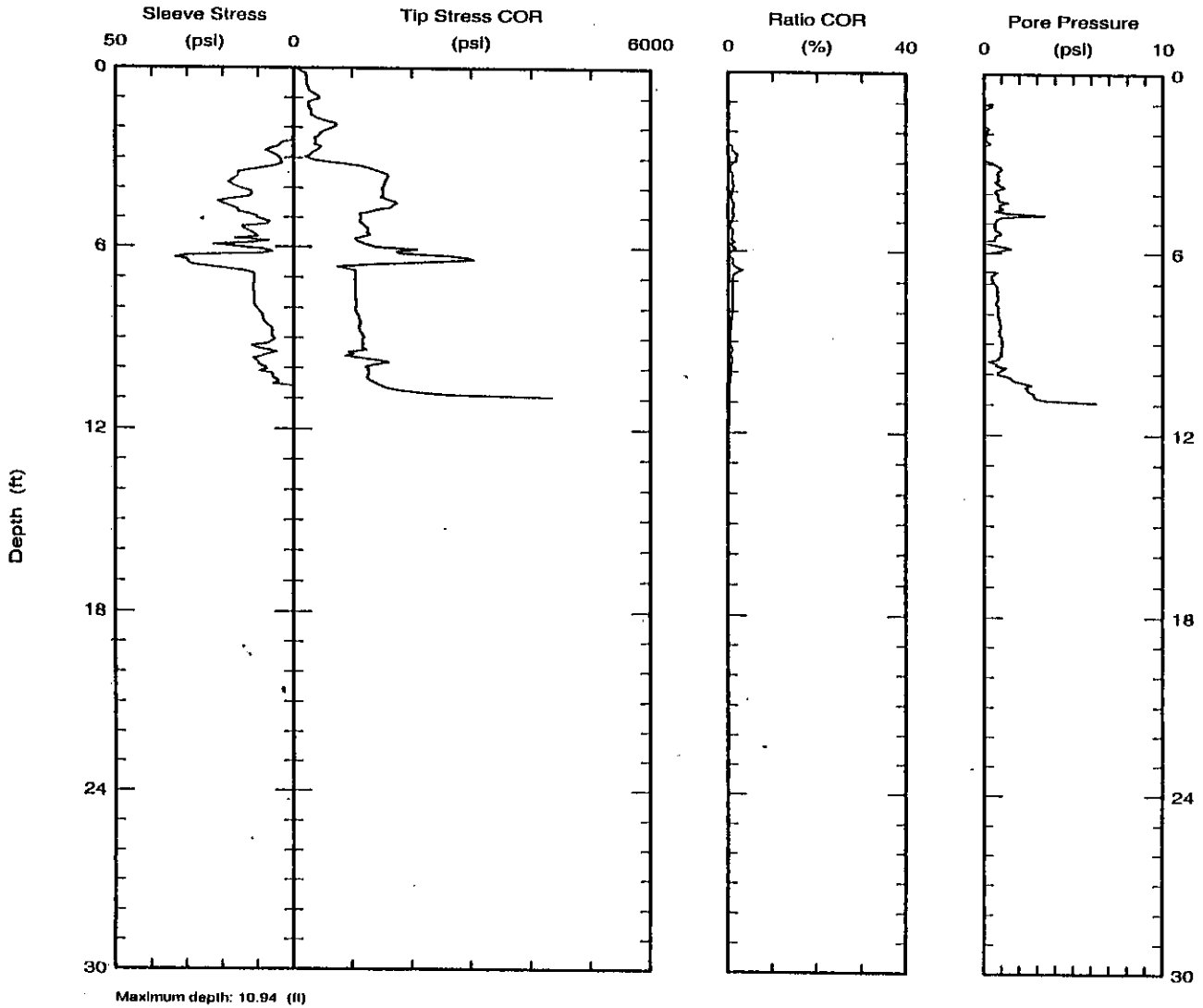
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-04
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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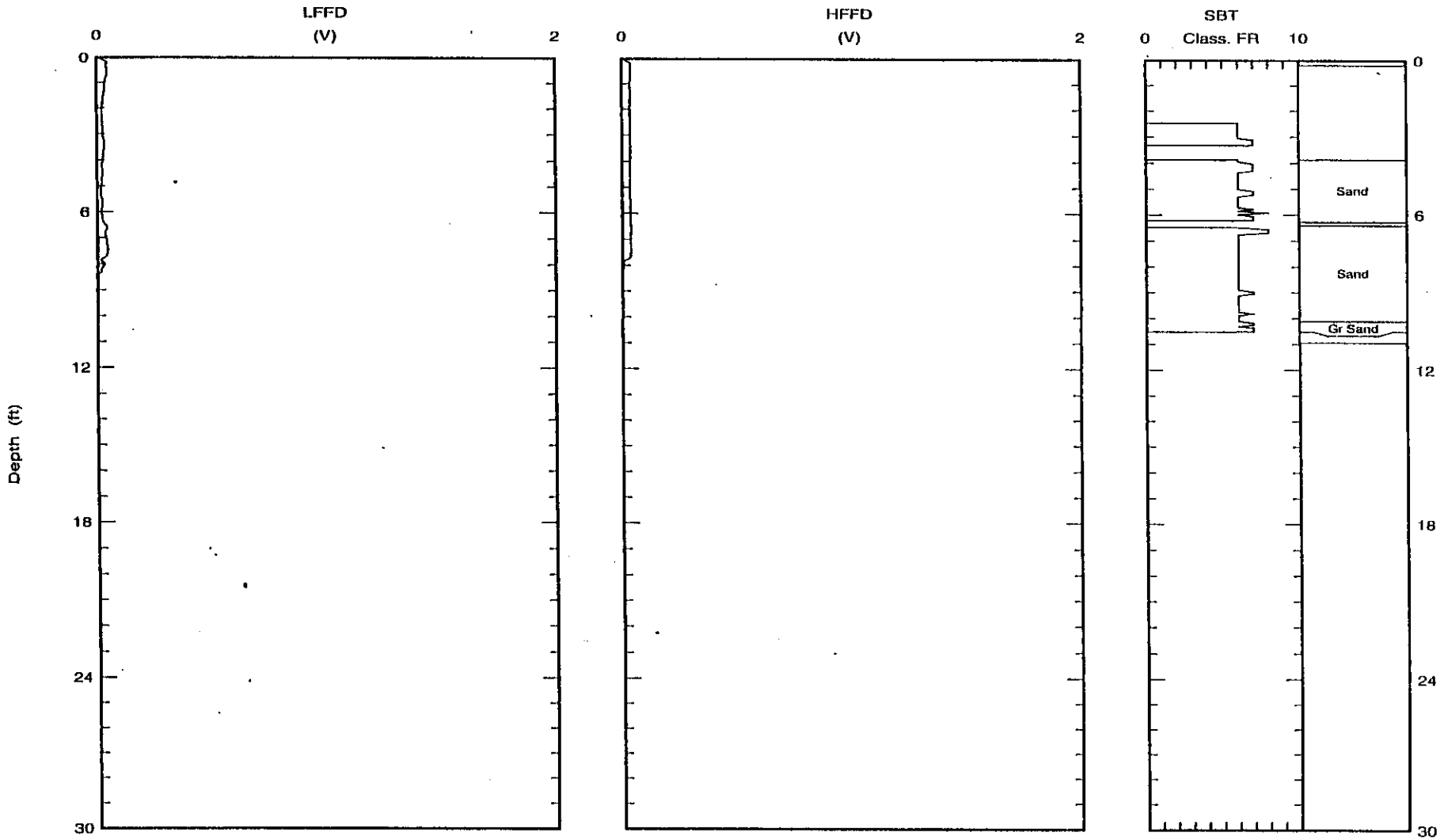
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-04
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 10.94 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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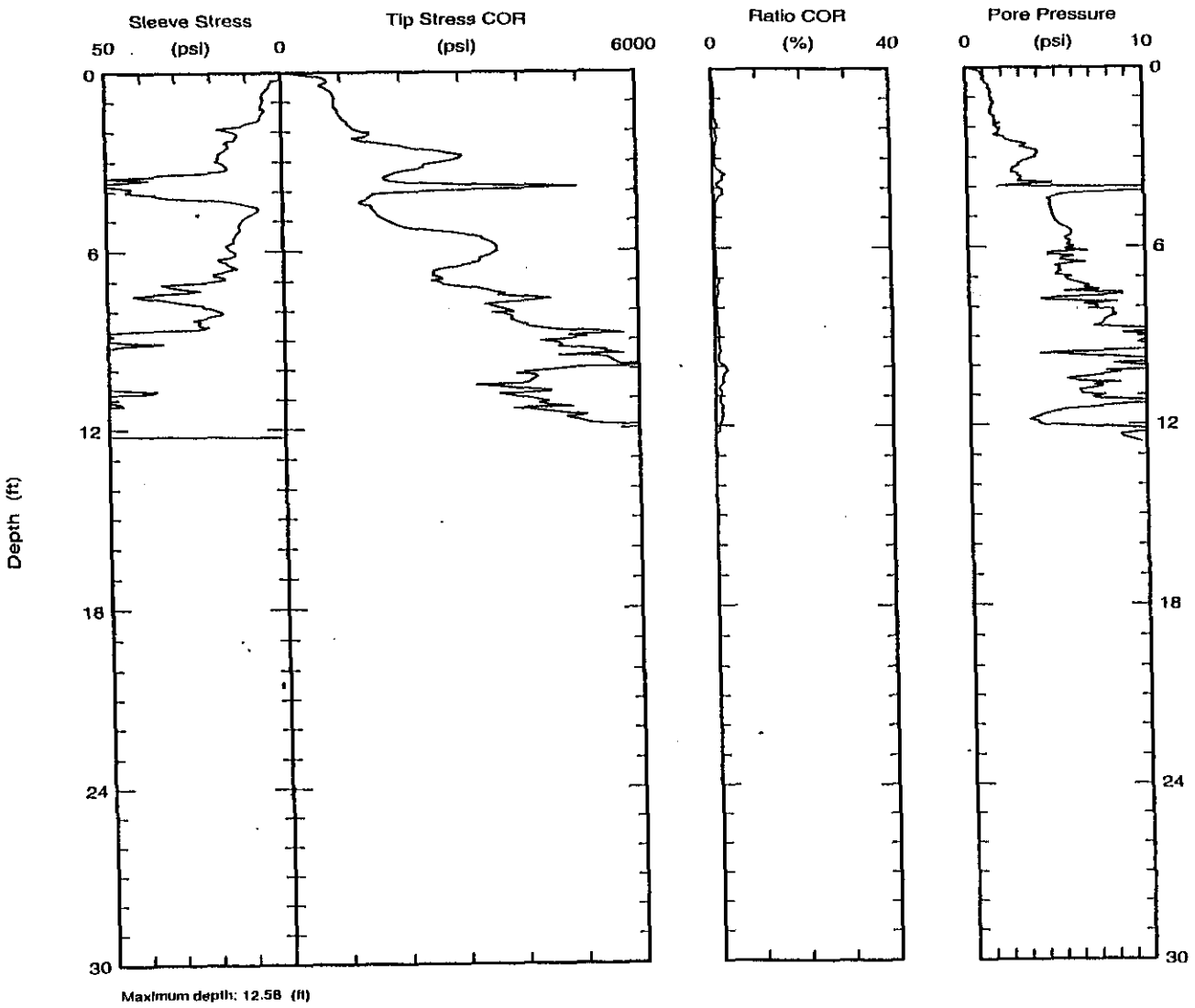
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-05
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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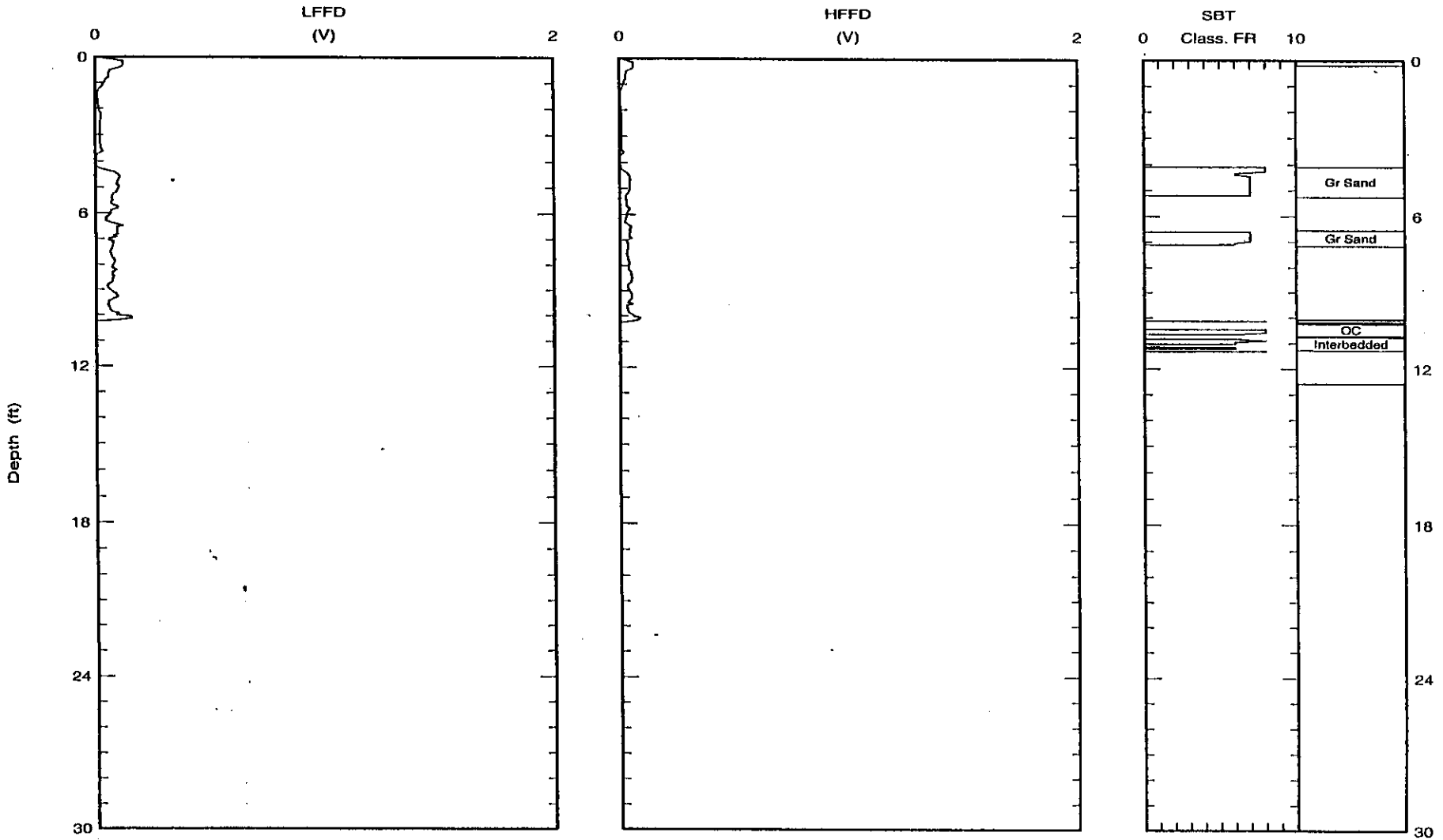
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-05
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 12.58 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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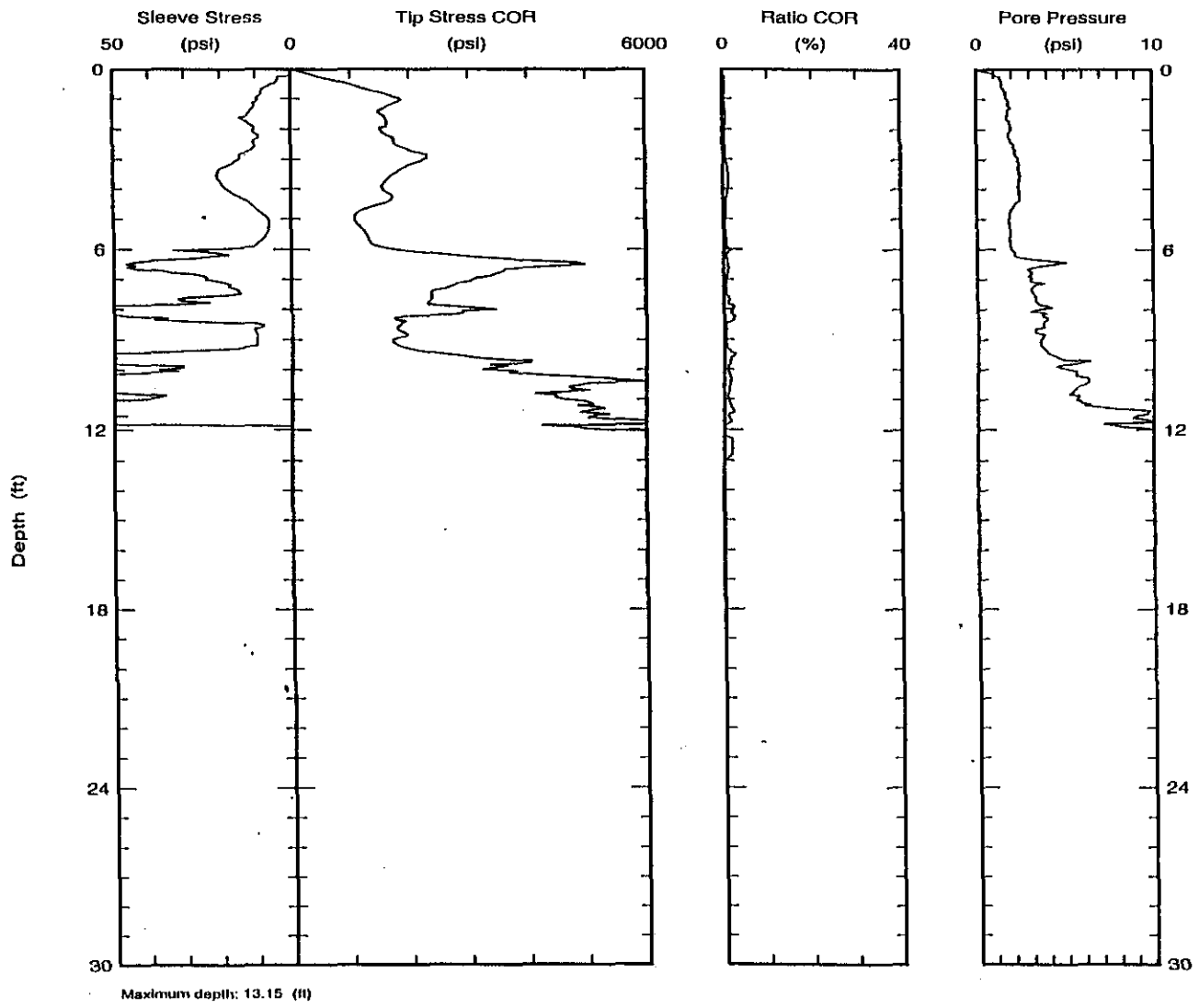
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: FFD-05A
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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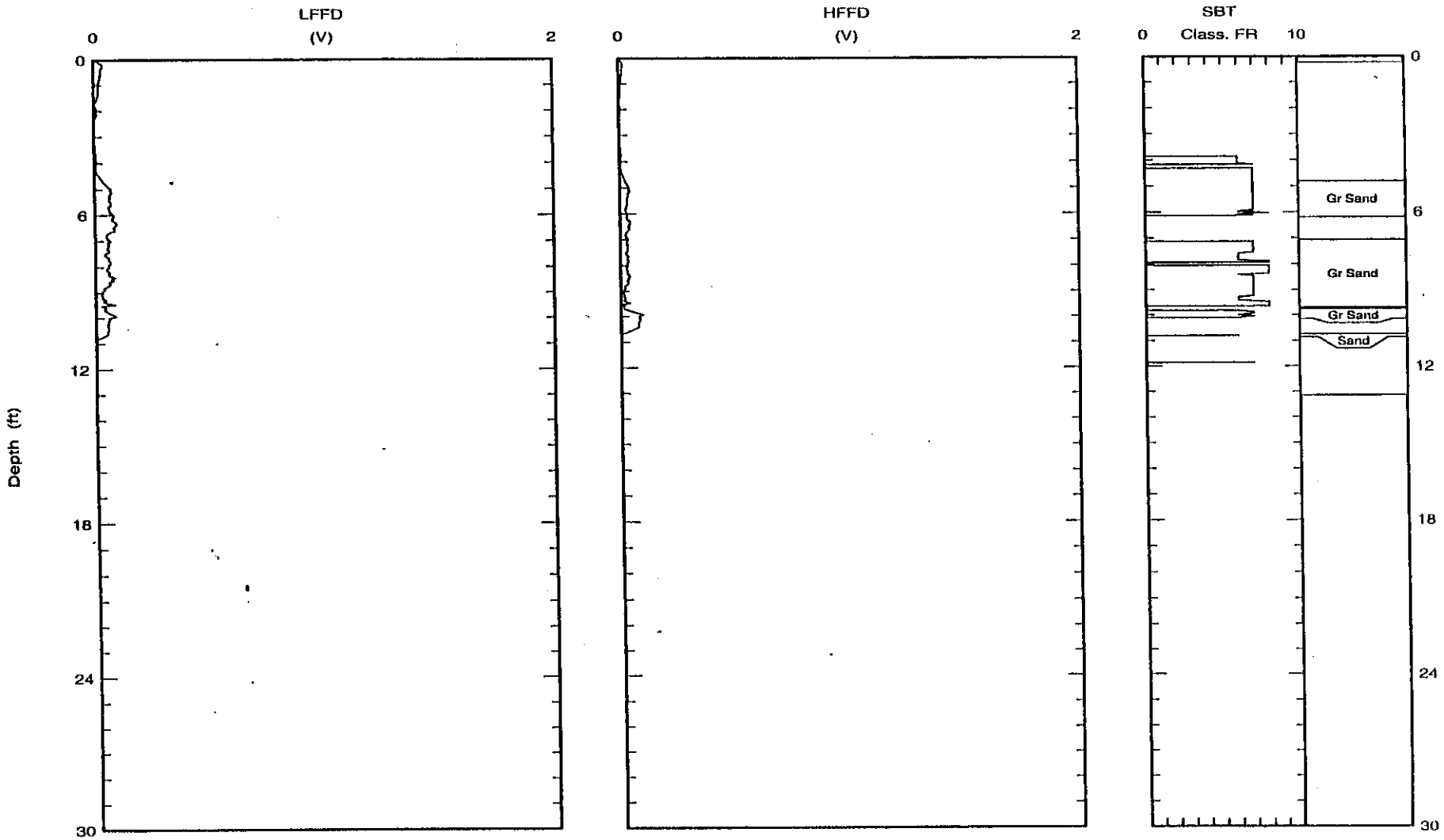
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: FFD-05A
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 13.15 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Applied Research Associates
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
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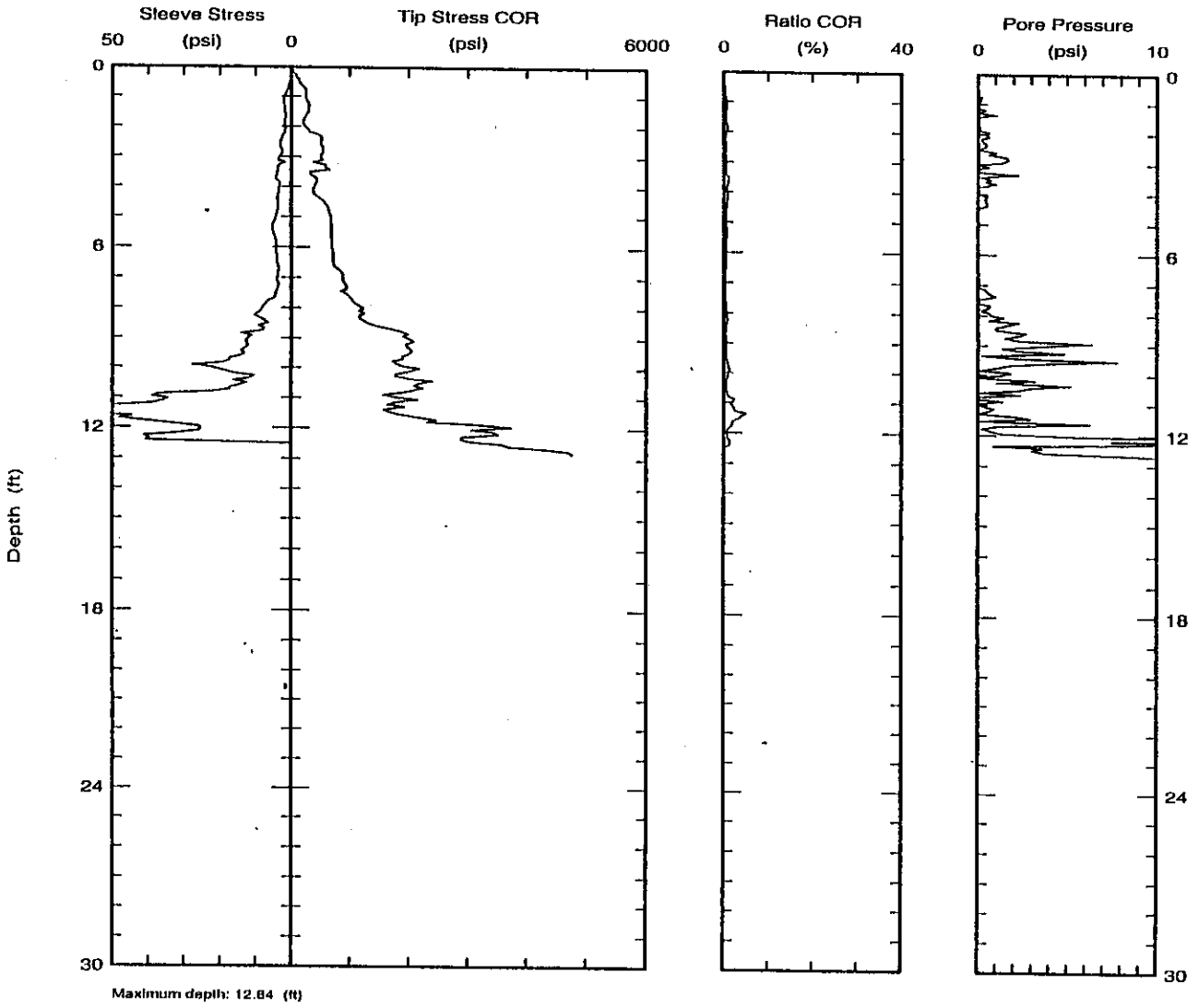
Northing:
Easting:
Elevation:

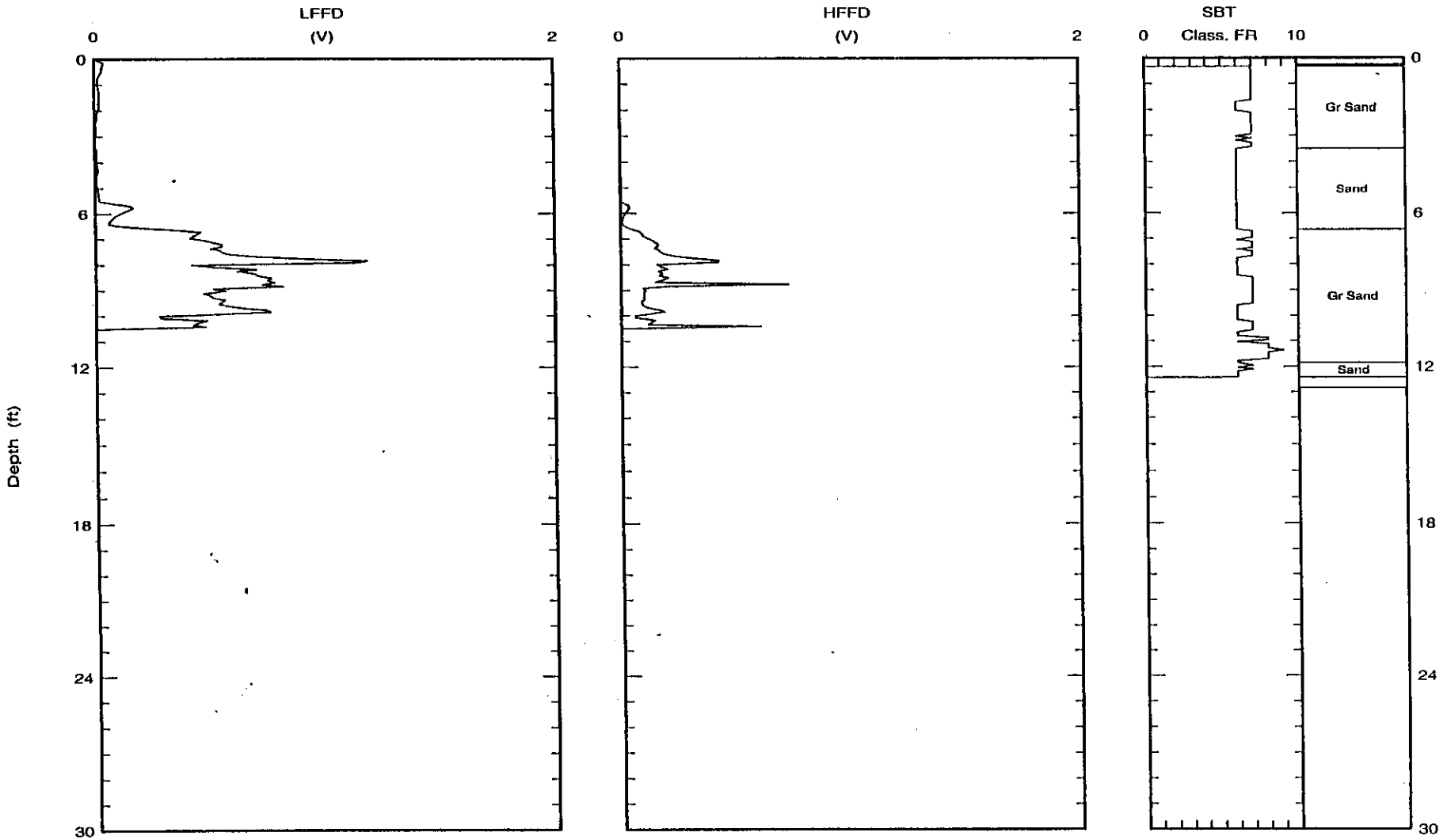
Date: 05/Nov/2003
Test ID: HD-05B
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Applied Research Associates
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:	Date: 05/Nov/2003
Easting:	Test ID: HD-05B
Elevation:	Project: RROUX
Client: ROUX	
Site: SUNNYSIDE	



Maximum depth: 12.84 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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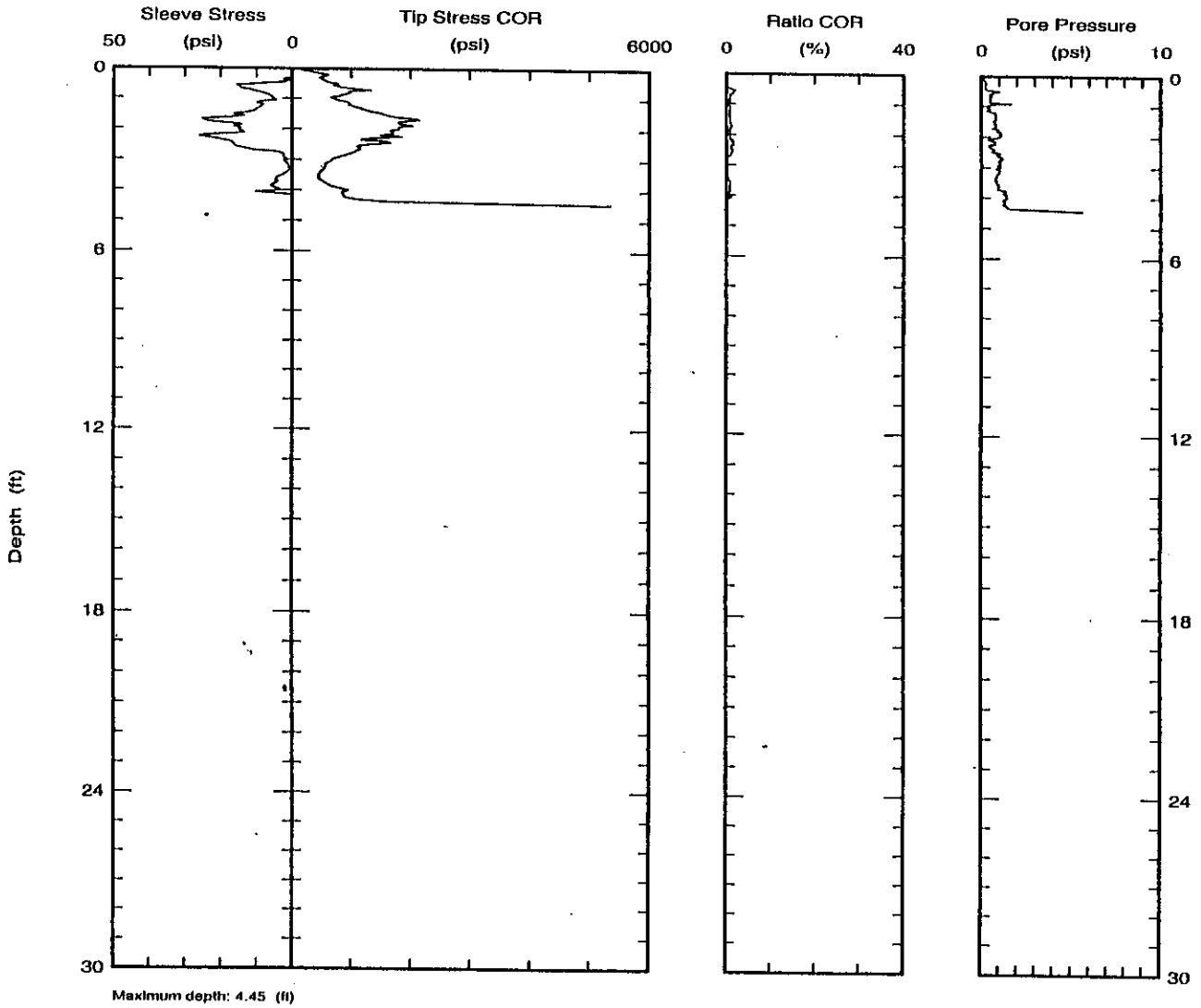
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: FFD-06
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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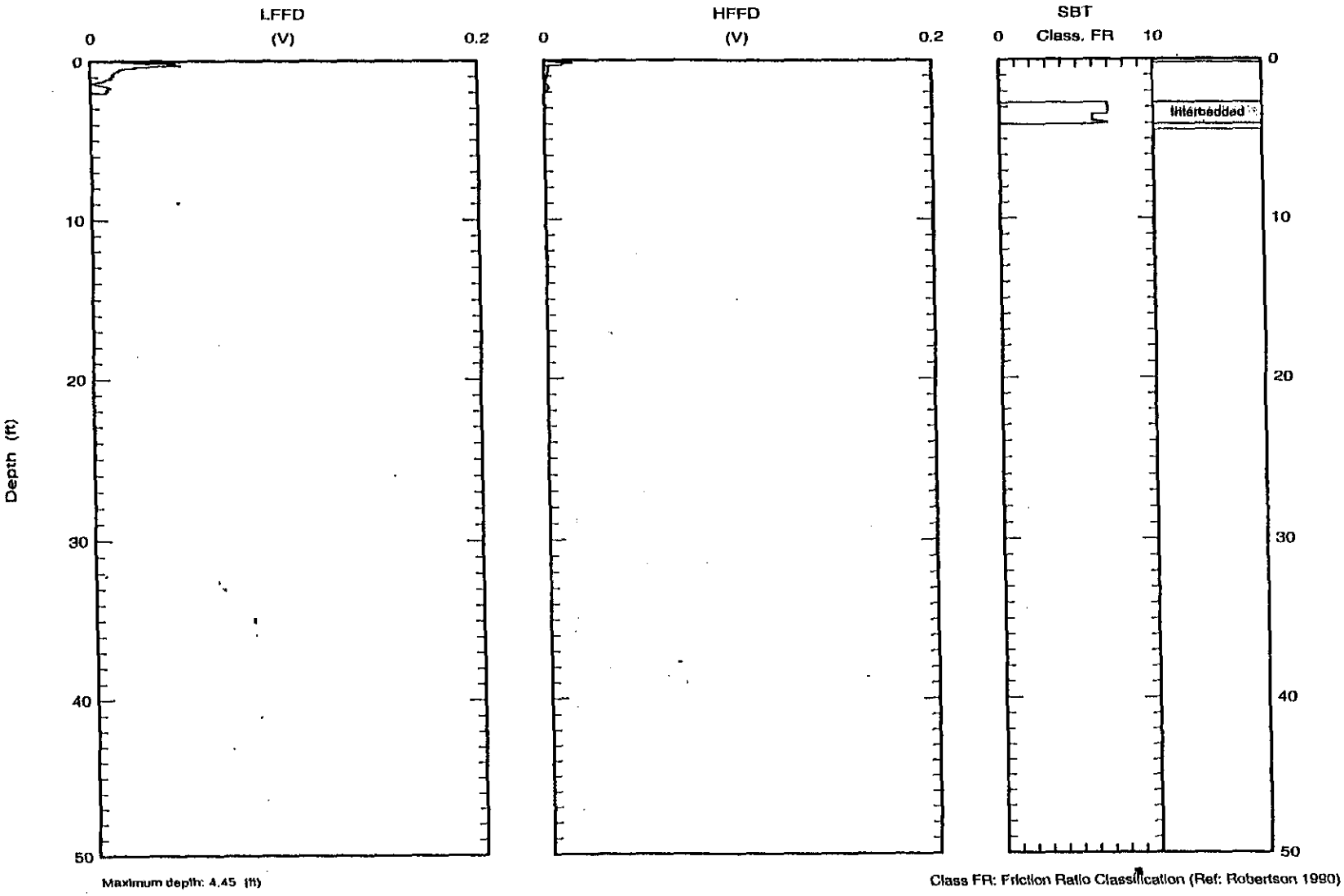
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-06
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 4.45 (ft)

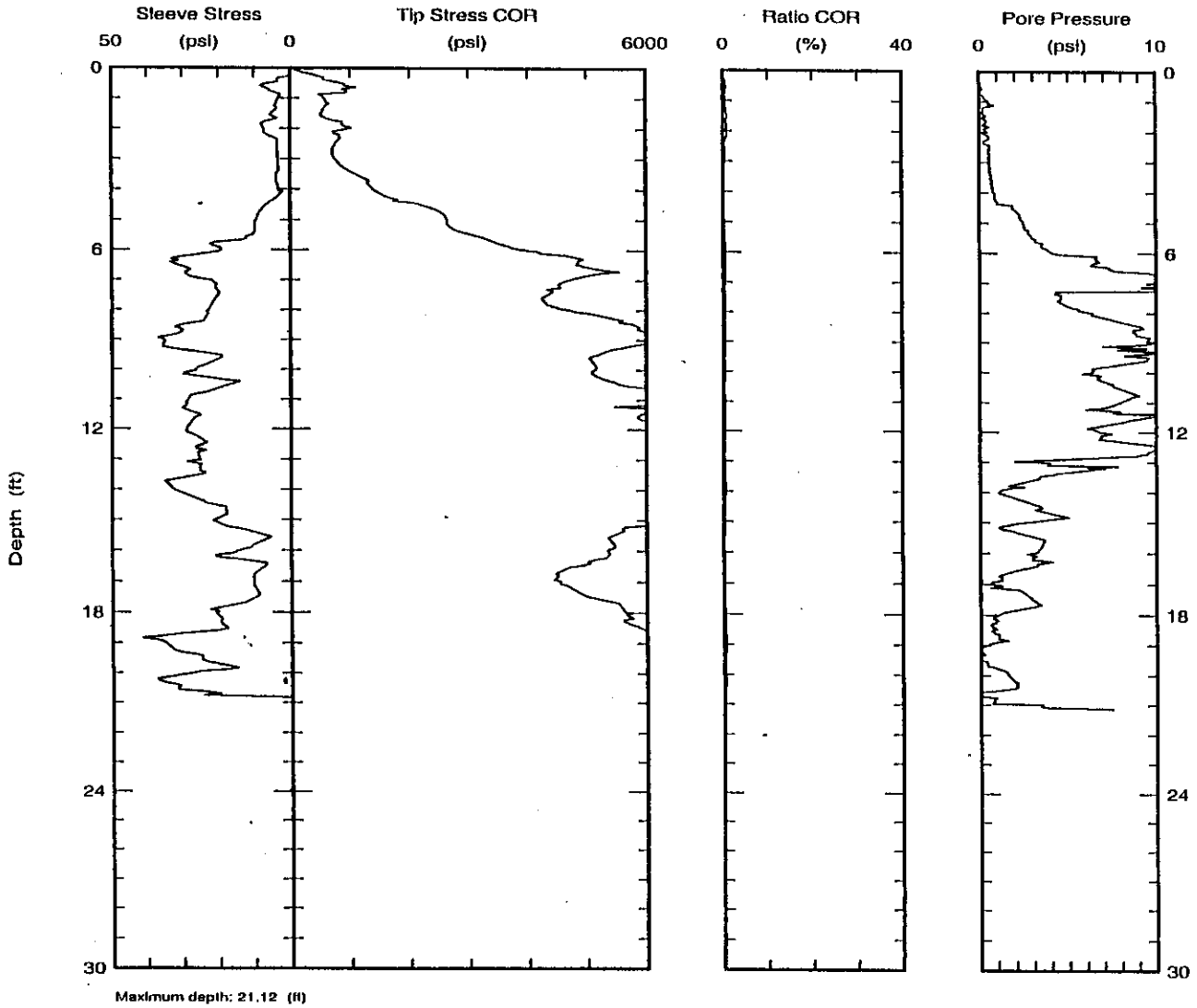
Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Applied Research Associates
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

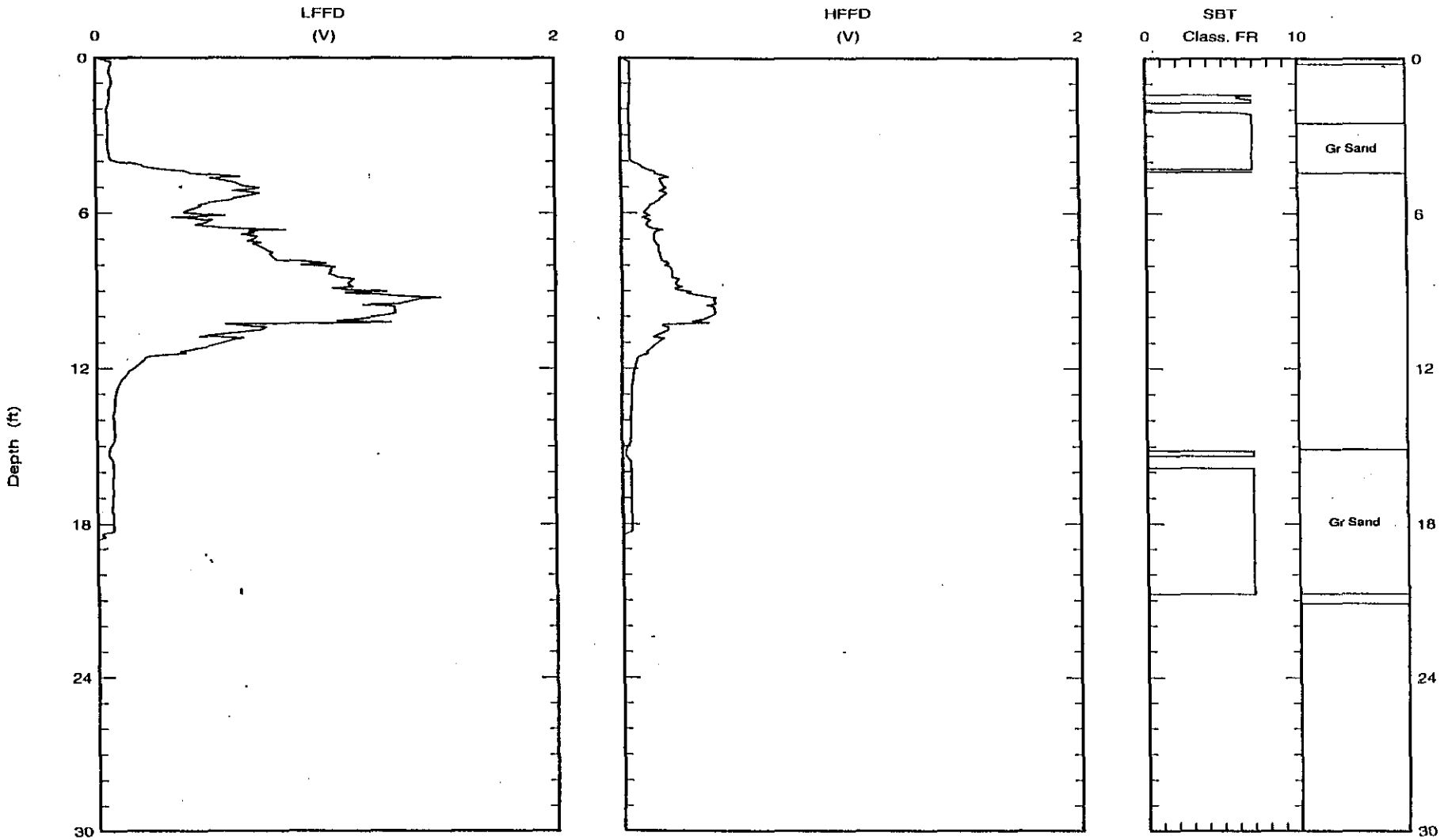
Date: 04/Nov/2003
Test ID: FFD-06A
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Applied Research Associates
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:	Date: 04/Nov/2003
Easting:	Test ID: FFD-06A
Elevation:	Project: RROUX
Client: ROUX	
Site: SUNNYSIDE	



Maximum depth: 21.12 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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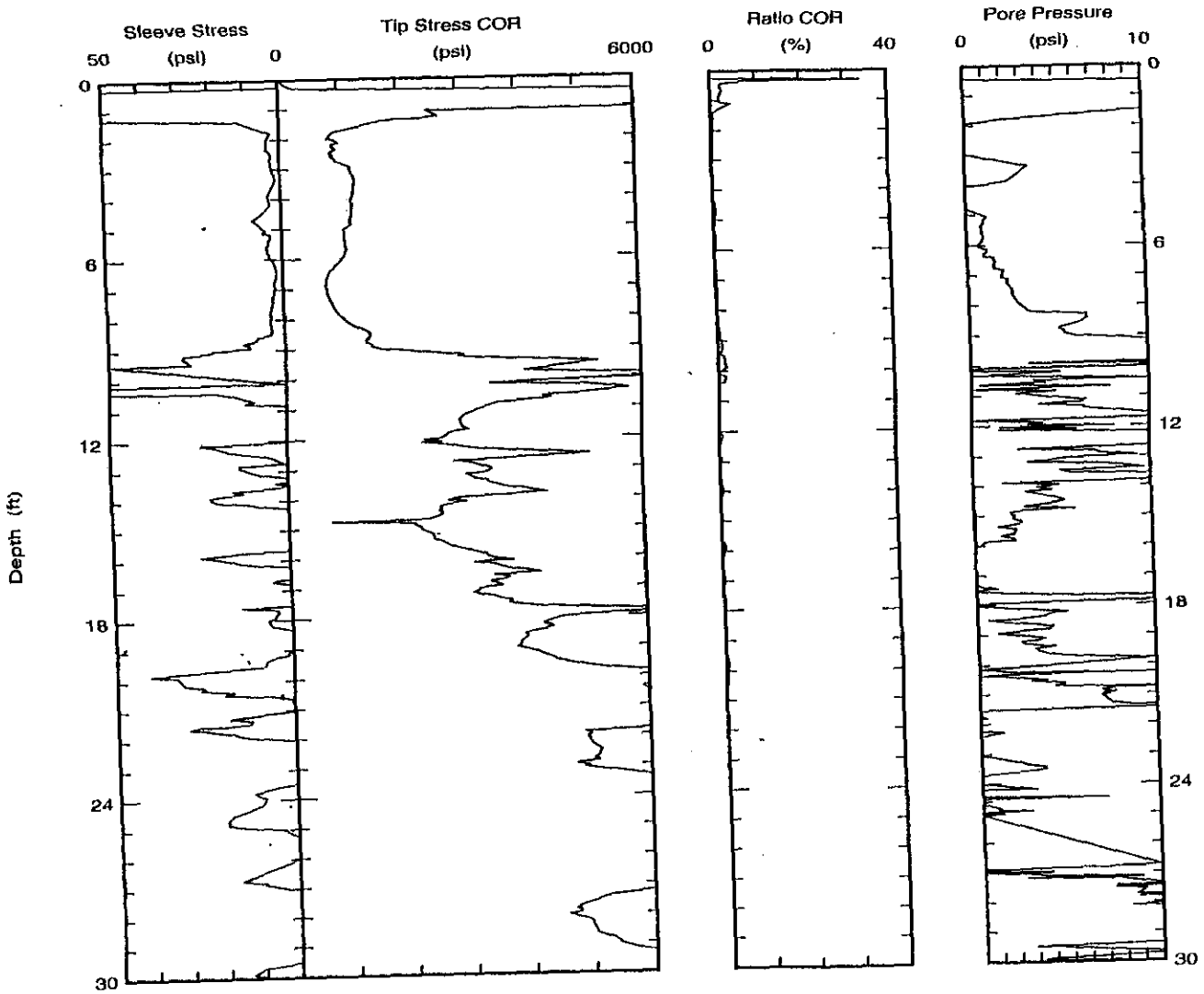
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-07
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



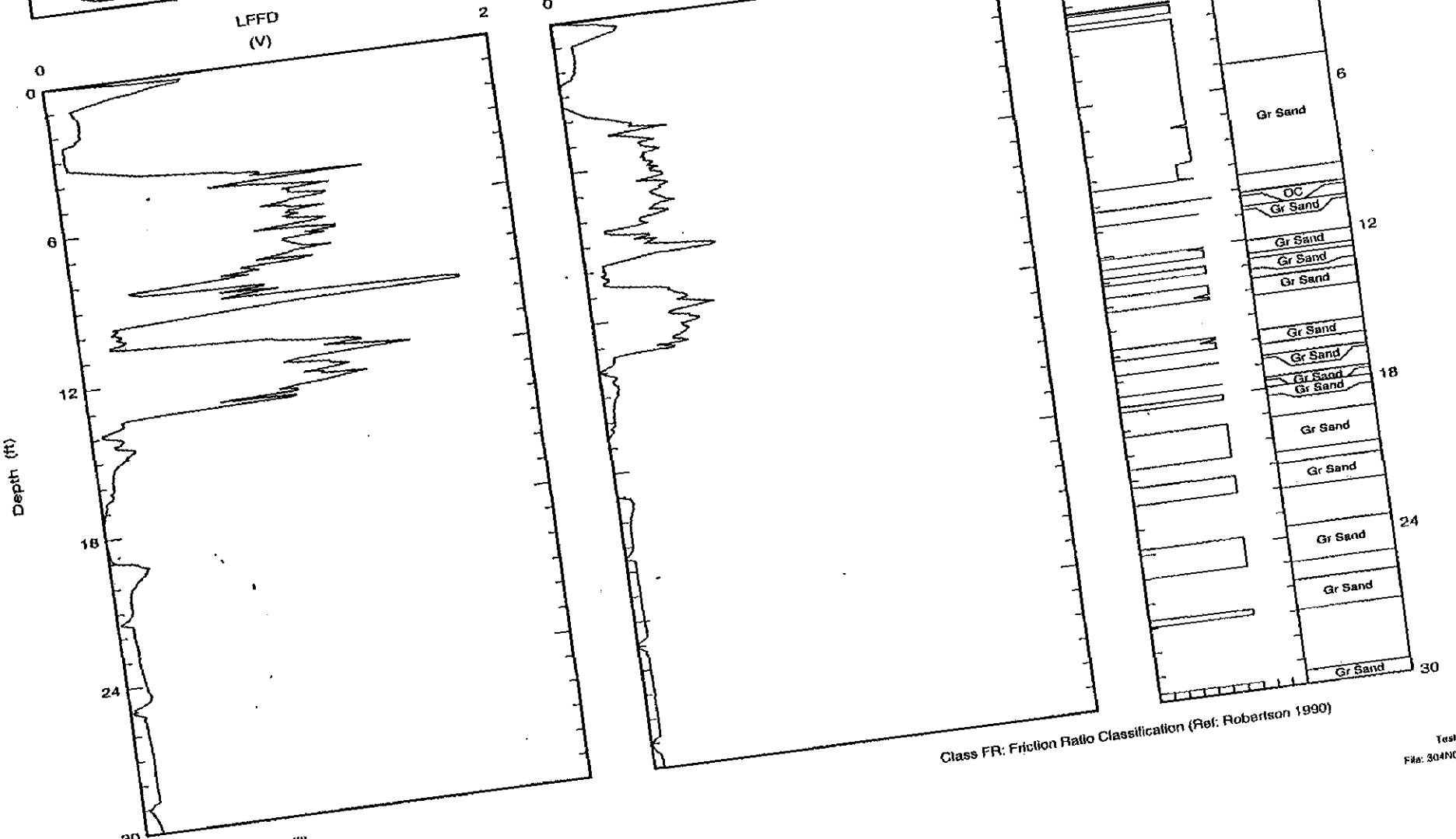
Maximum depth: 34.48 (ft)

Test ID: HD 07
File: 304N0302C.ECP

Applied Research Associates
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:
Client: ROUX
Site: SUNNYSIDE

Date: 04/Nov/2003
Test ID: HD-07
Project: RROUX

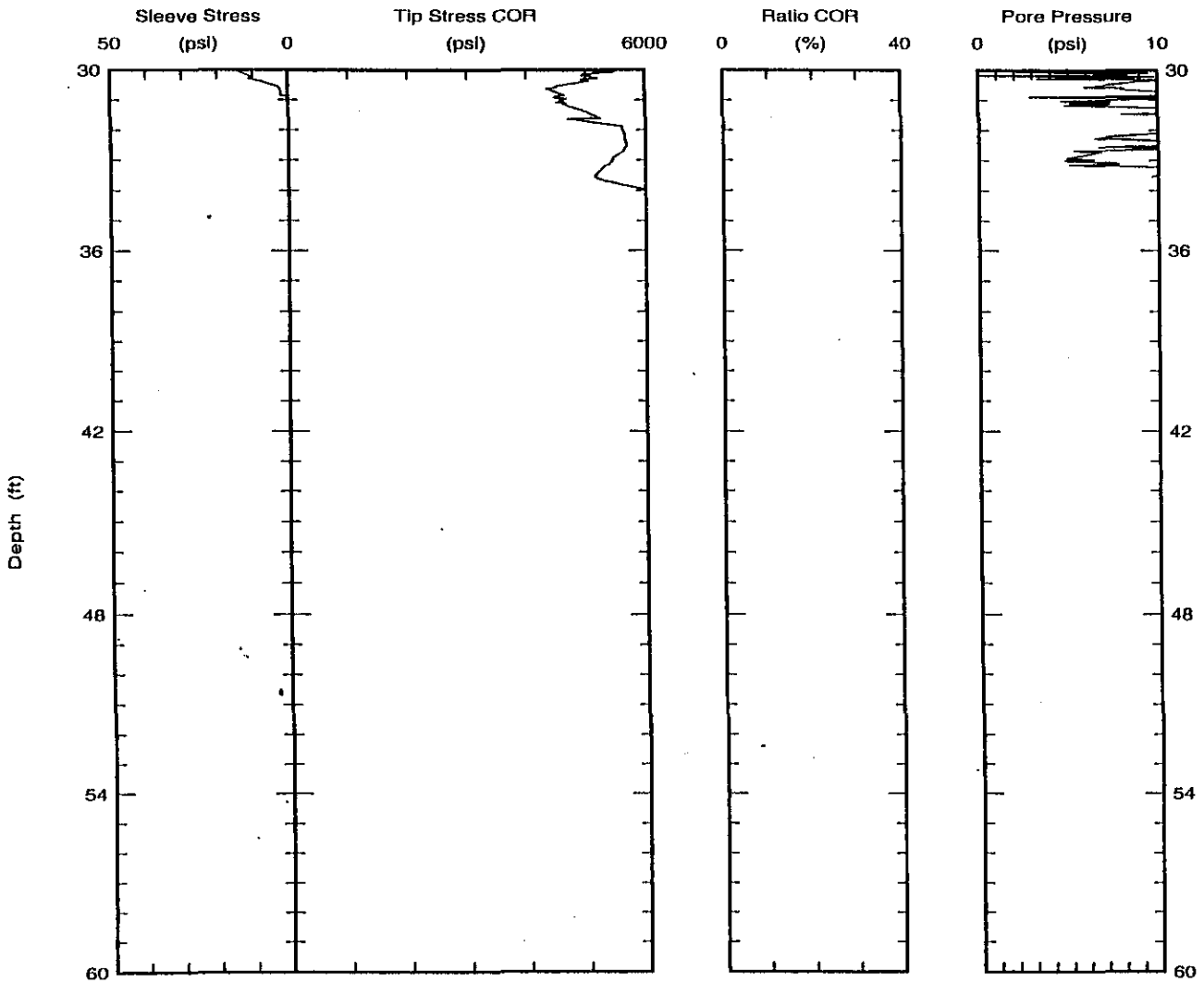


Maximum depth: 34.48 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: HD
File: 304N0302C

Applied Research Associates South Royalton, VT 05068 802-763-8348 Email: cpt@ned.ara.com http://www.ara.com	Northing: Easting: Elevation:	Date: 04/Nov/2003 Test ID: HD-07 Project: RROUX
	Client: ROUX Site: SUNNYSIDE	

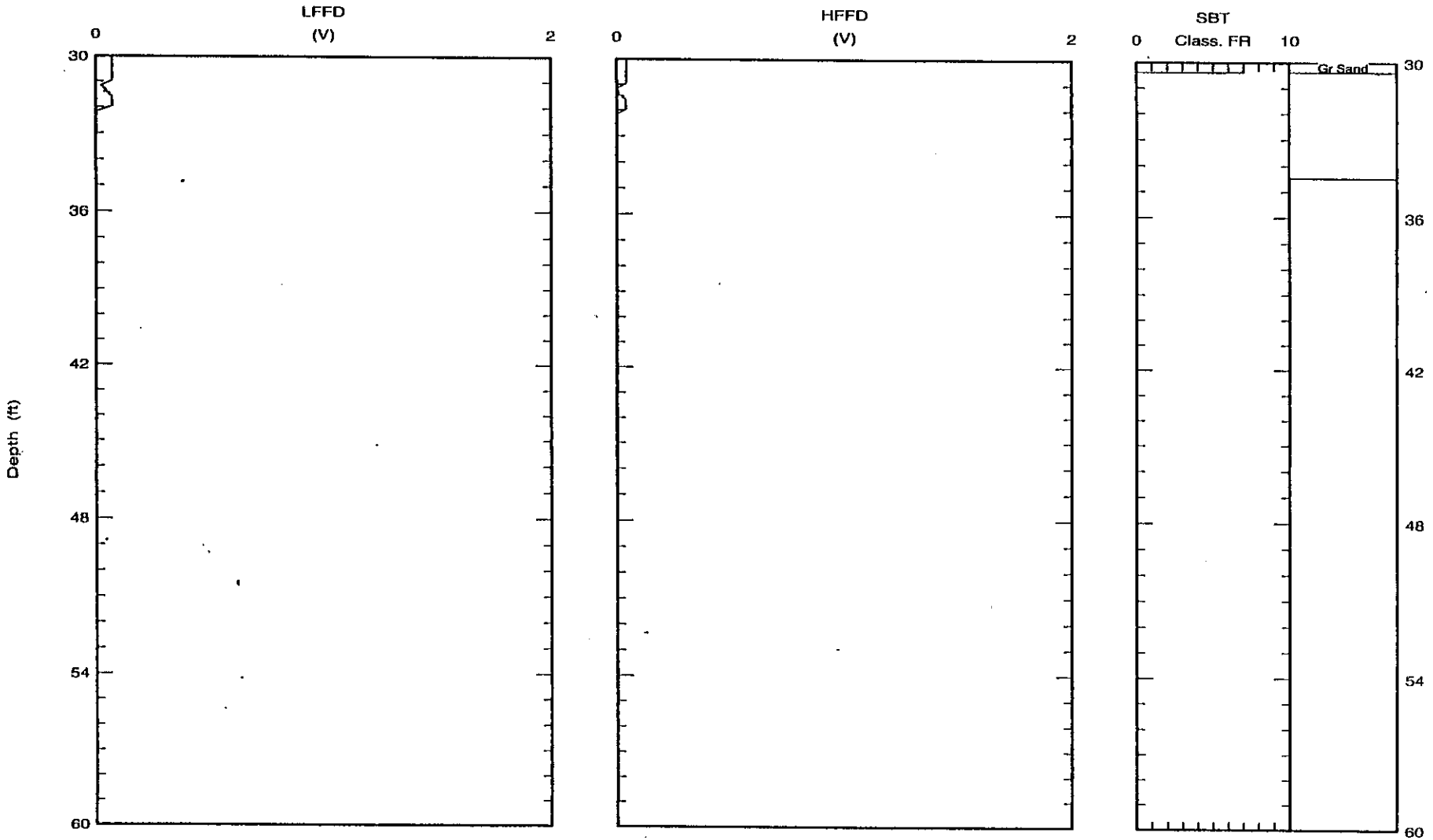


Maximum depth: 34.48 (ft)

Test ID: HD-07
File: 304N0302C.ECP

Applied Research Associates
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:	Date: 04/Nov/2003
Easting:	Test ID: HD-07
Elevation:	Project: RROUX
Client: ROUX	
Site: SUNNYSIDE	



Maximum depth: 34.48 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: HD-07
File: 304N0302C.ECP

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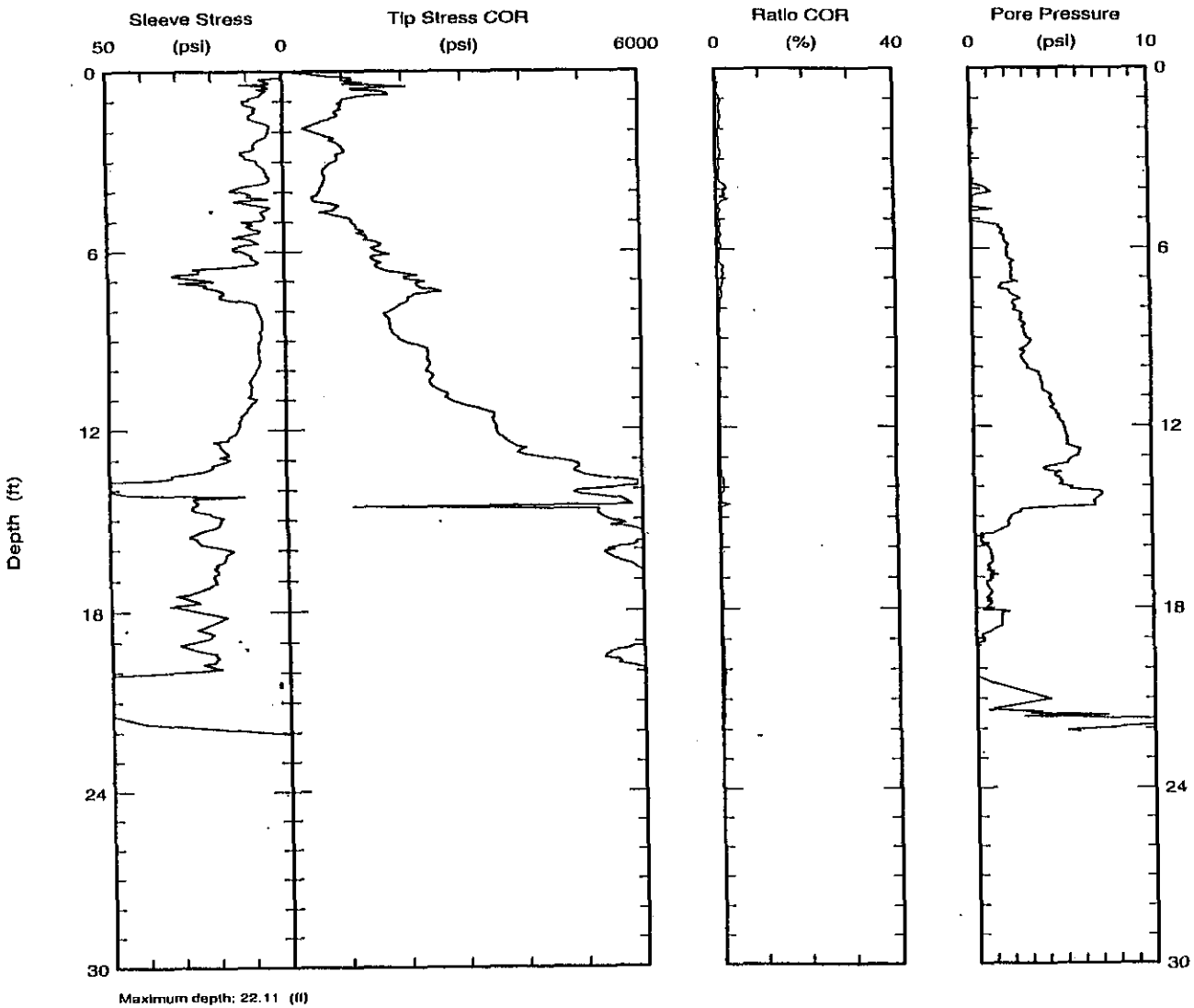
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 03/Nov/2003
Test ID: HD-08
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Applied Research Associates
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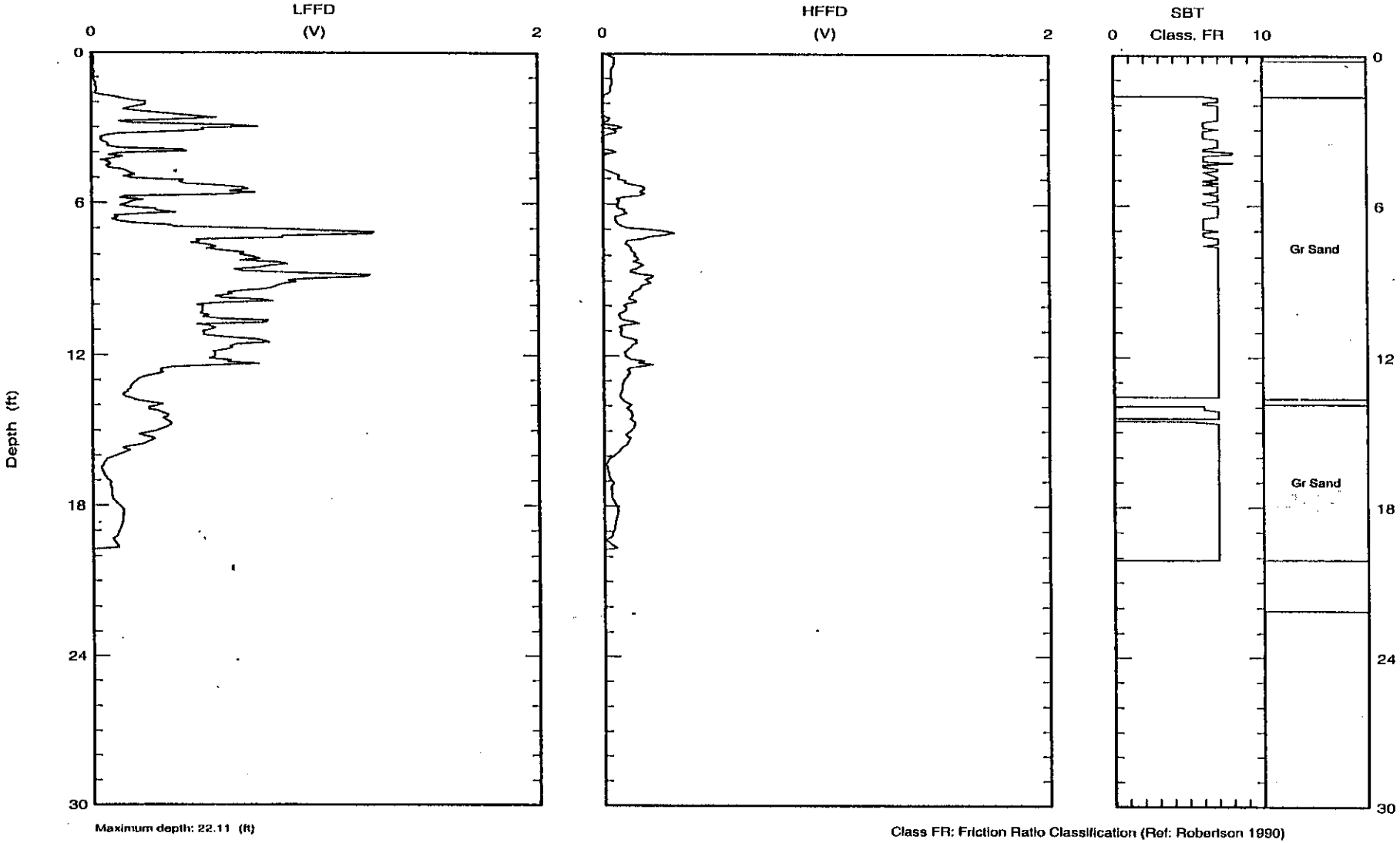
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 03/Nov/2003
Test ID: HD-08
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 22.11 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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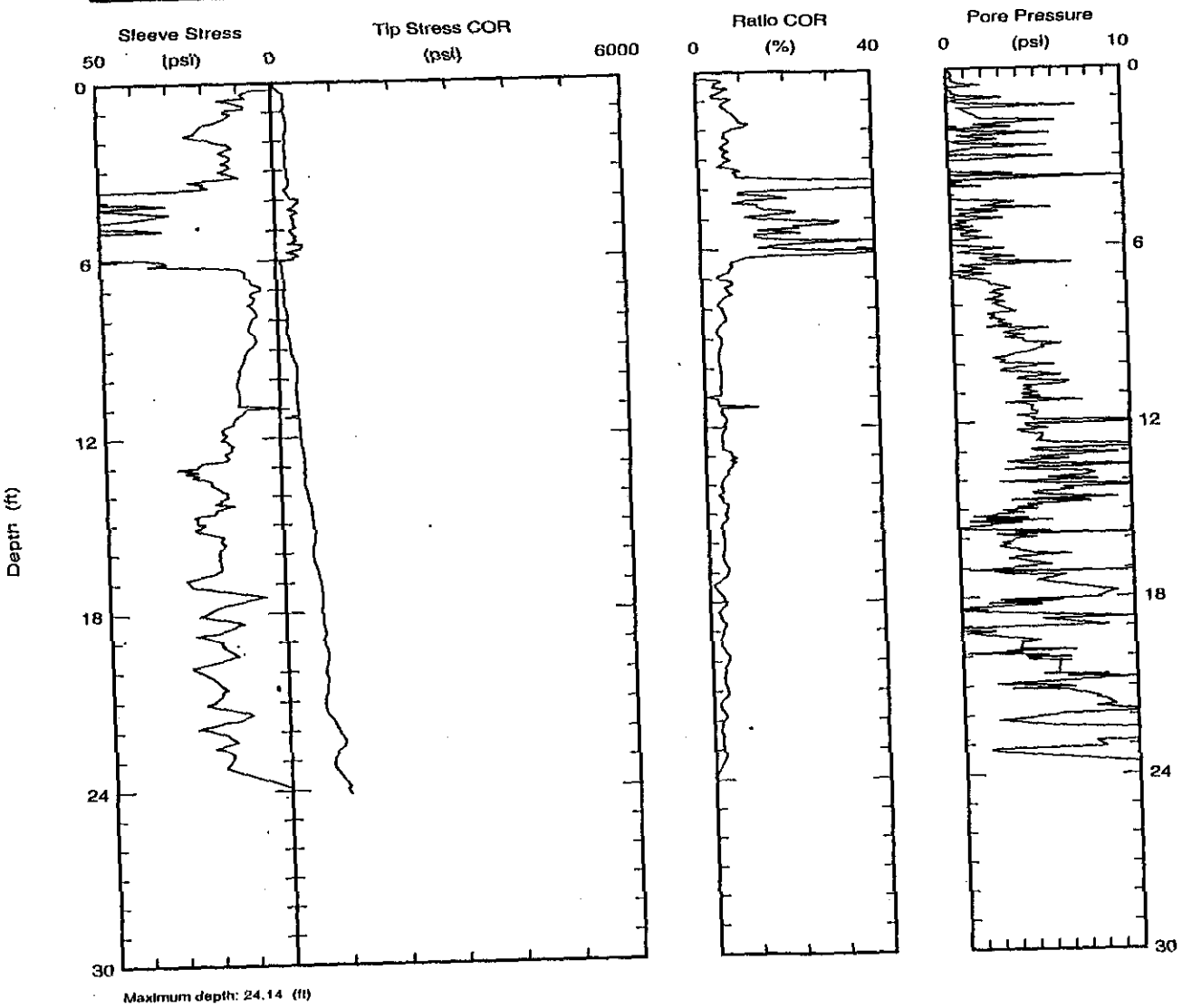
Northing:
Easting:
Elevation:

Date: 03/Nov/2003
Test ID: HD-08A
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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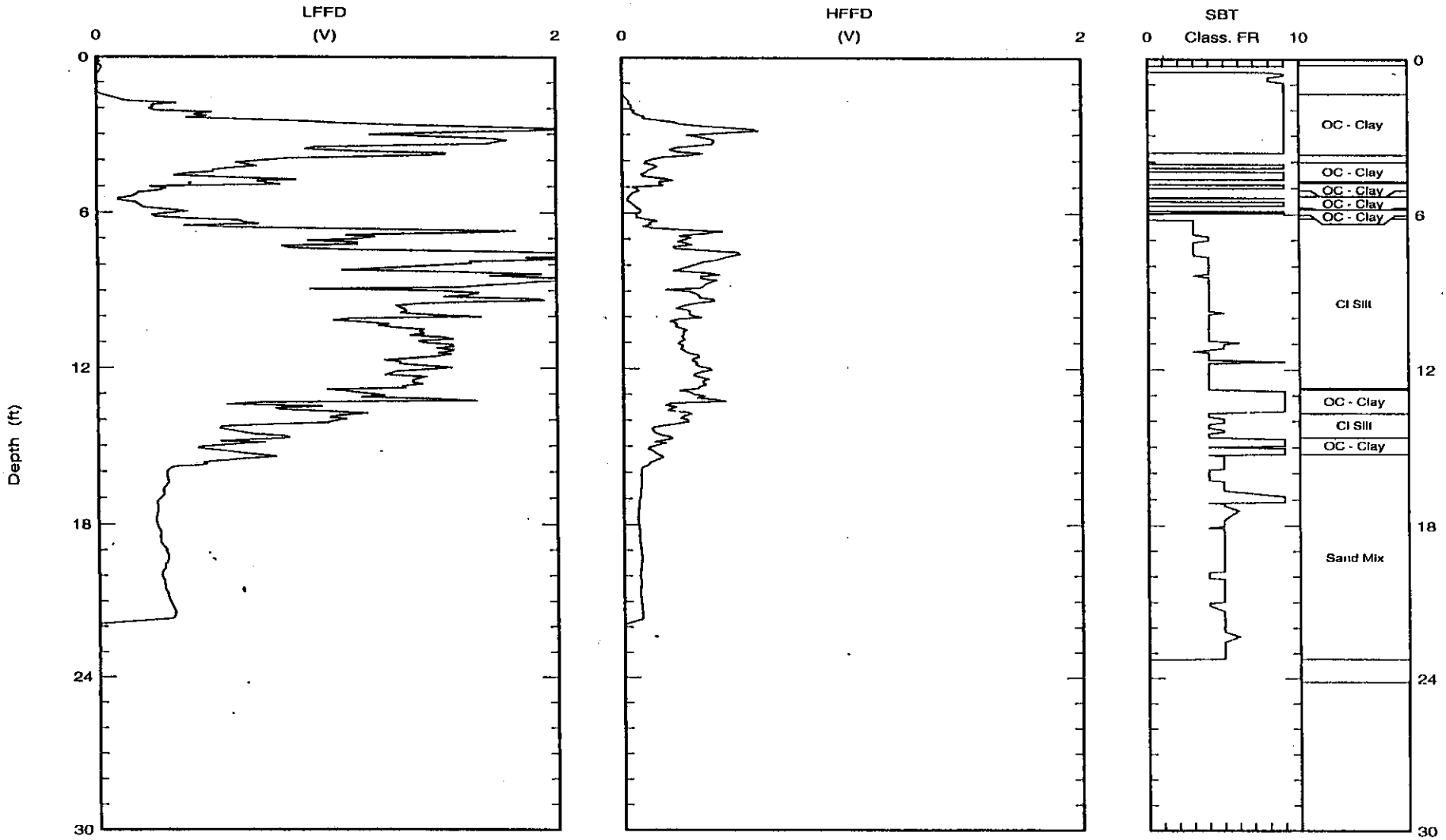
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 03/Nov/2003
Test ID: HD-08A
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 24.14 (ft)

Class FR: Friction Ratio Classification (Rel: Robertson 1990)

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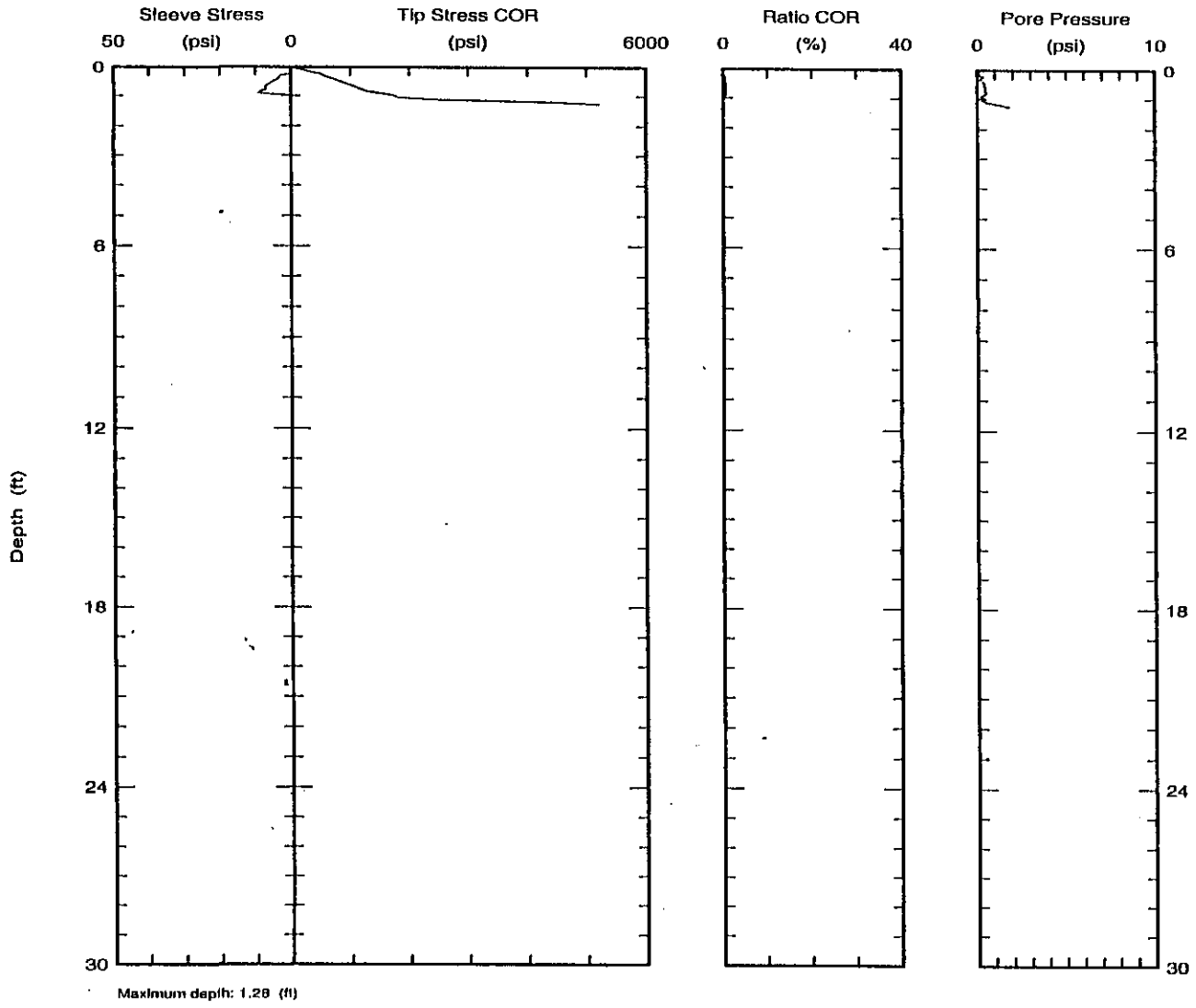
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-08B
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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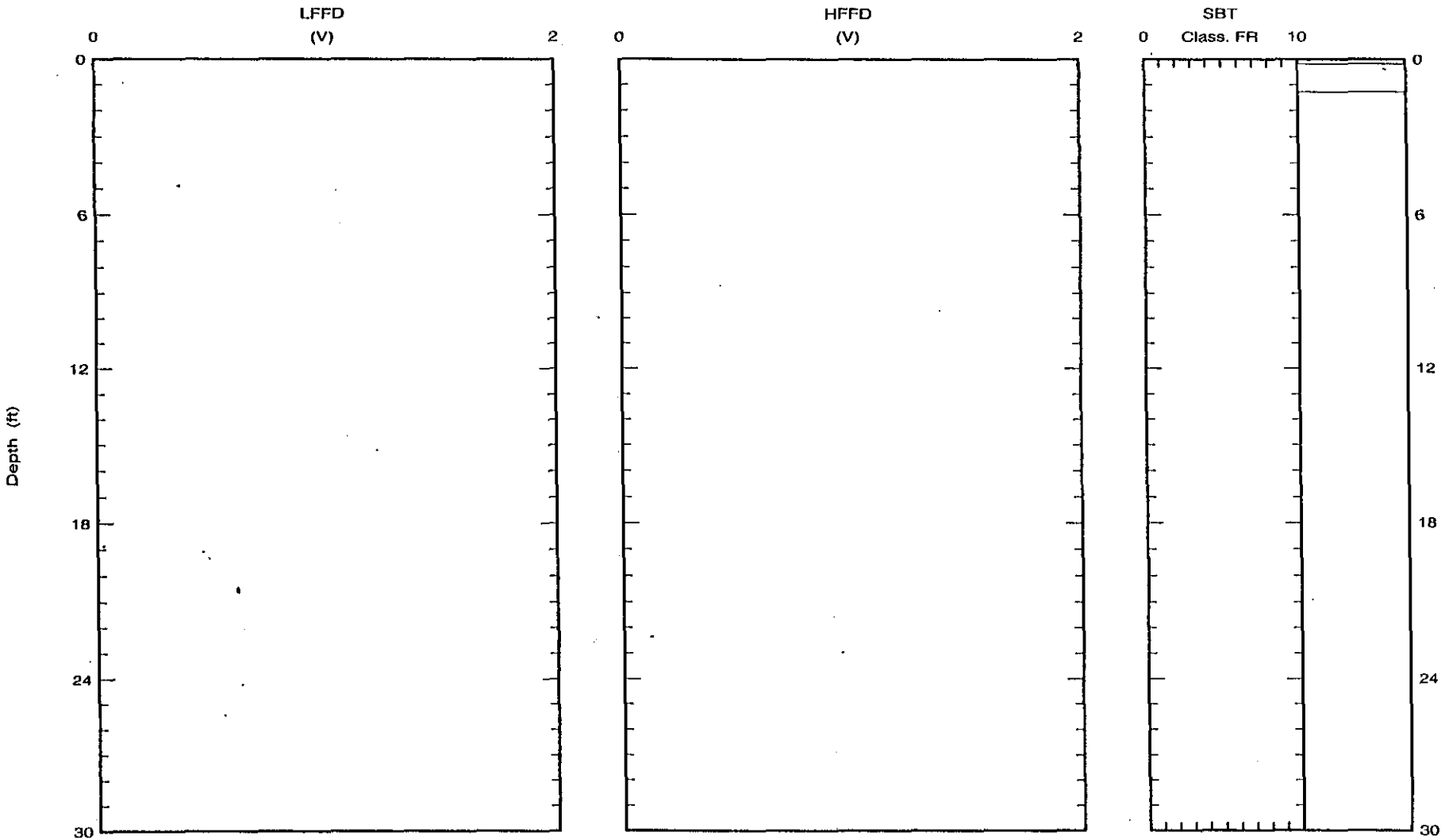
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-08B
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 1.28 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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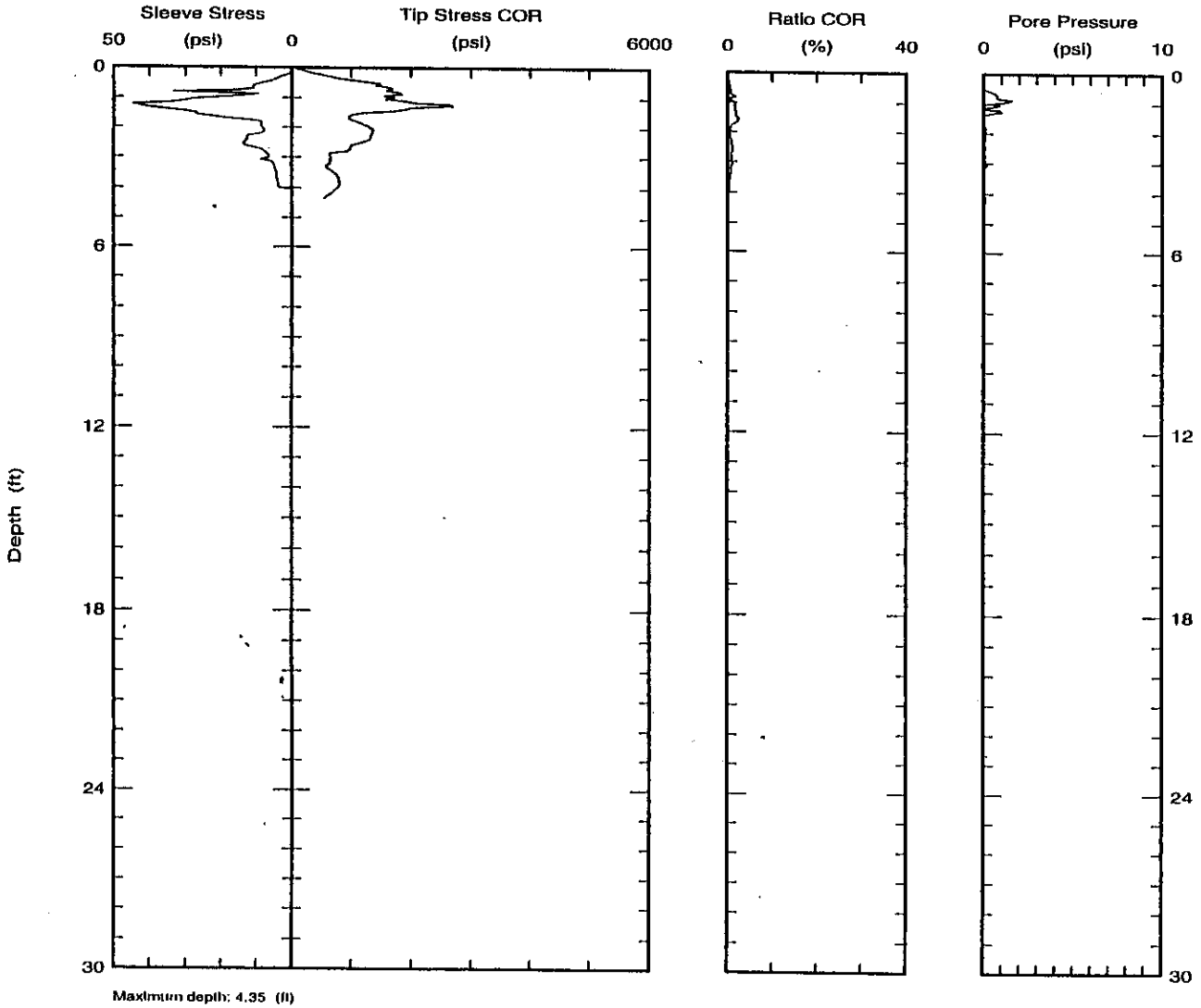
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-08C
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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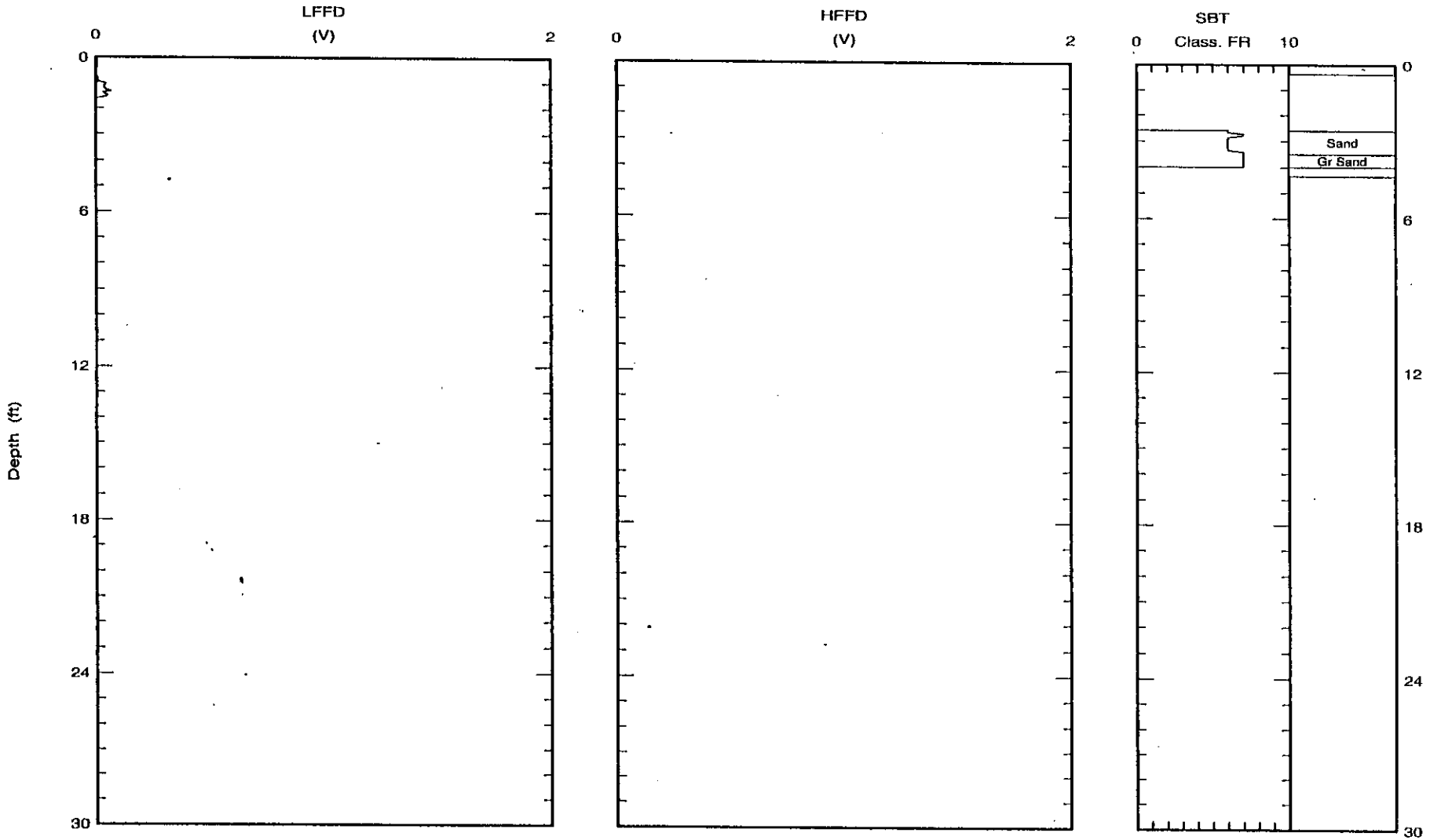
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-08C
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 4.35 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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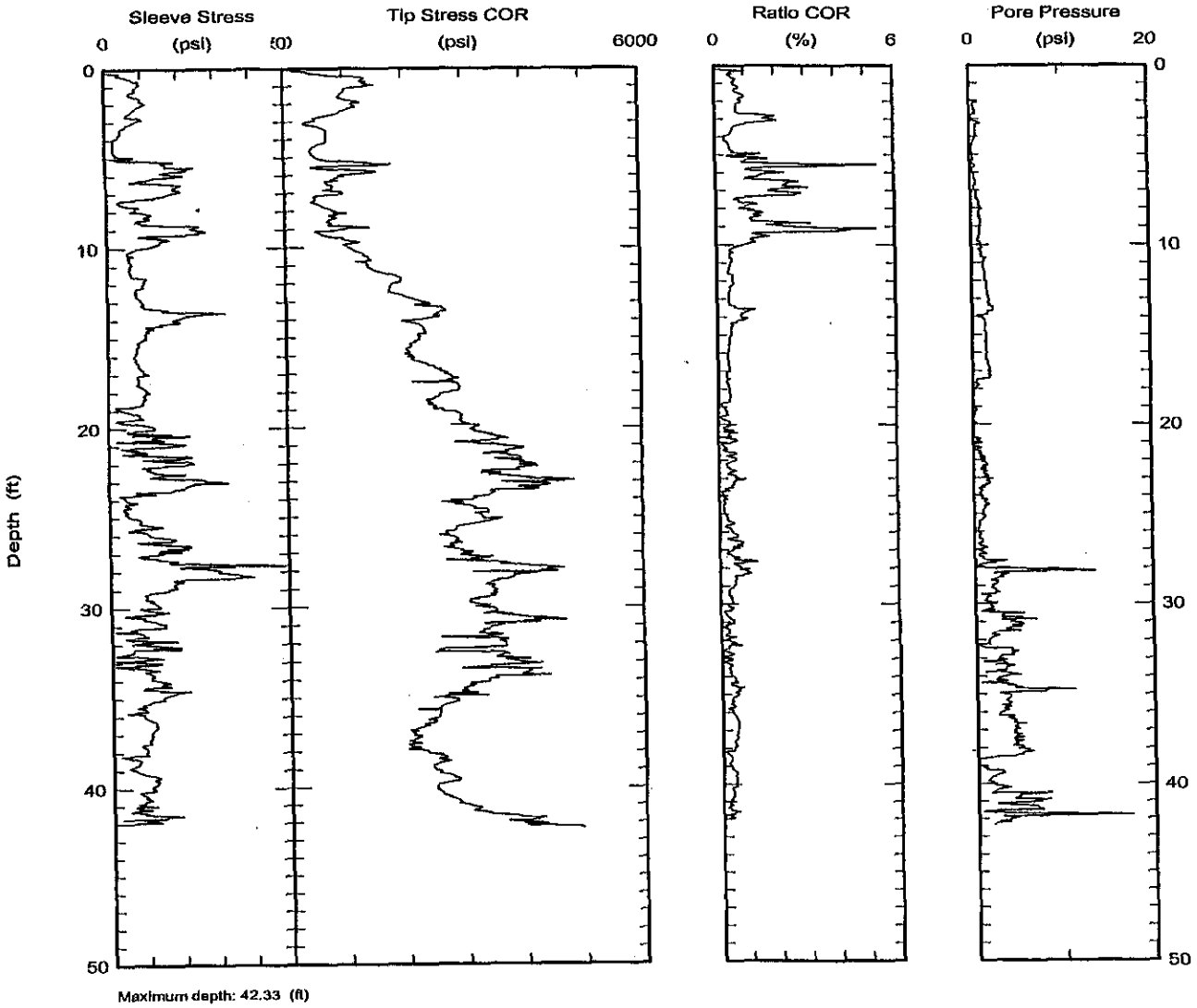
Email: cpt@ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-08D
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Applied Research Associates
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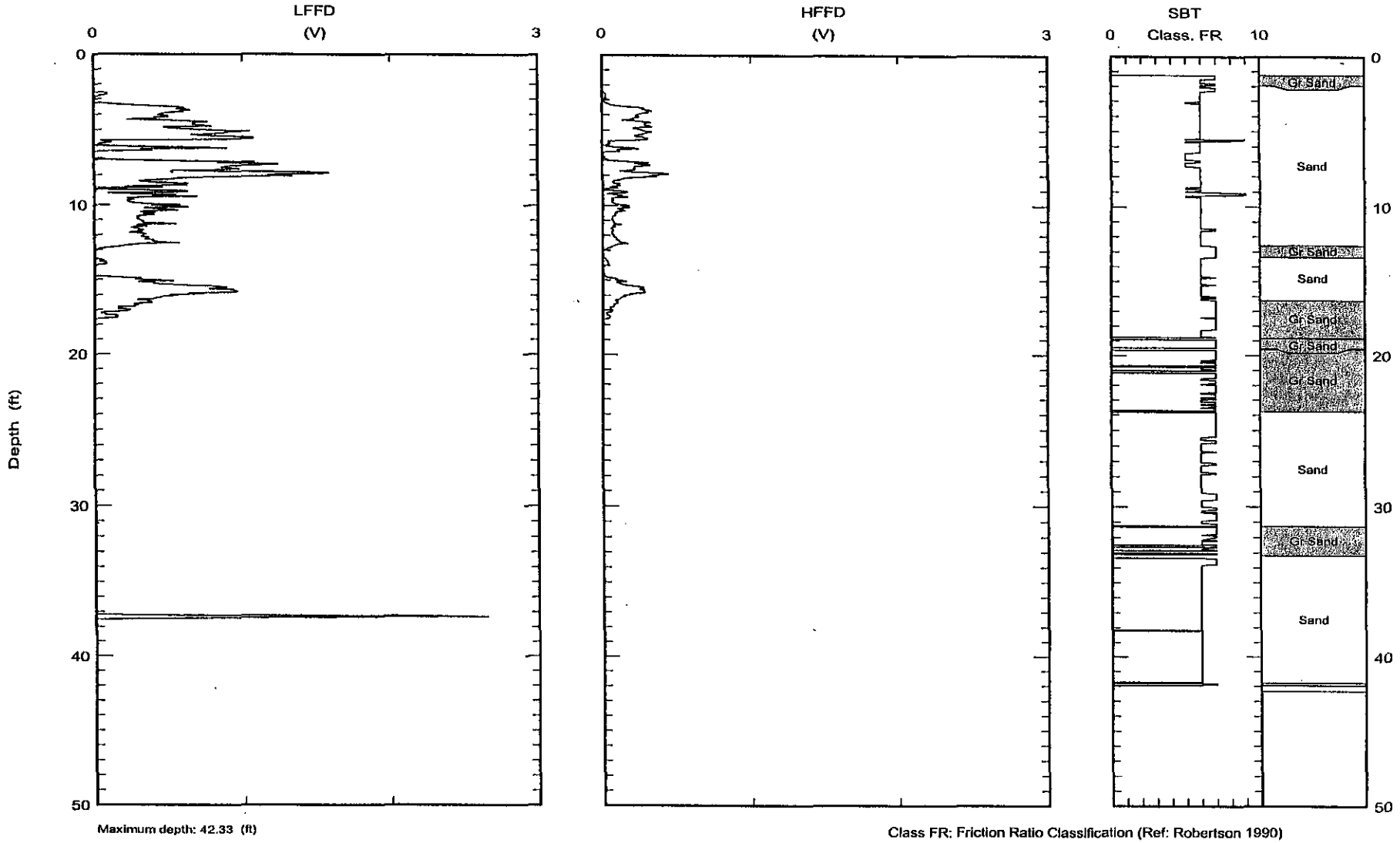
Email: cpt@ara.com
http://www.ara.com

Northing:	Date: 05/Nov/2003
Easting:	Test ID: HD-08D
Elevation:	Project: RROUX
Client: ROUX	
Site: SUNNYSIDE	



Maximum depth: 42.33 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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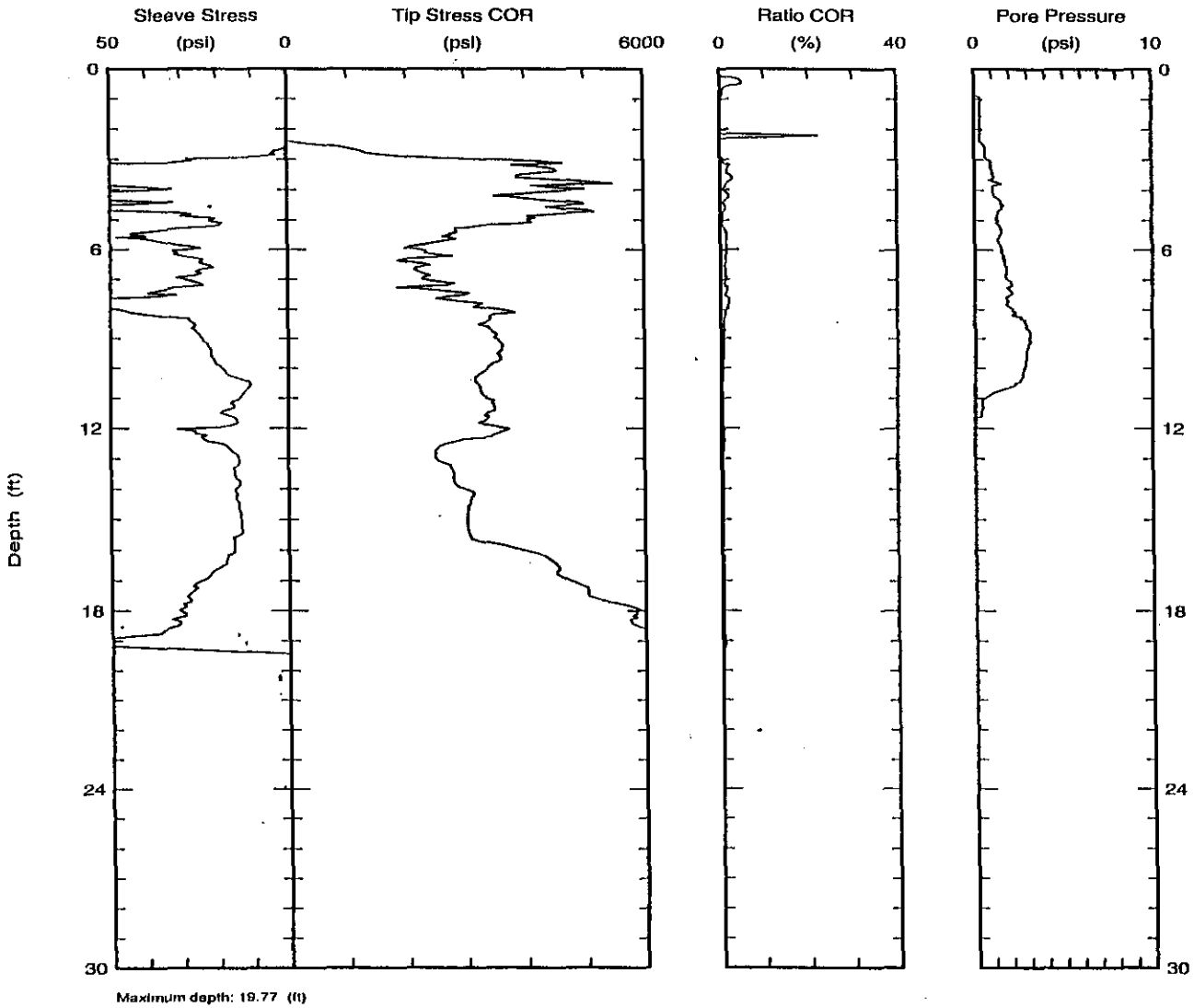
Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: FFD-09
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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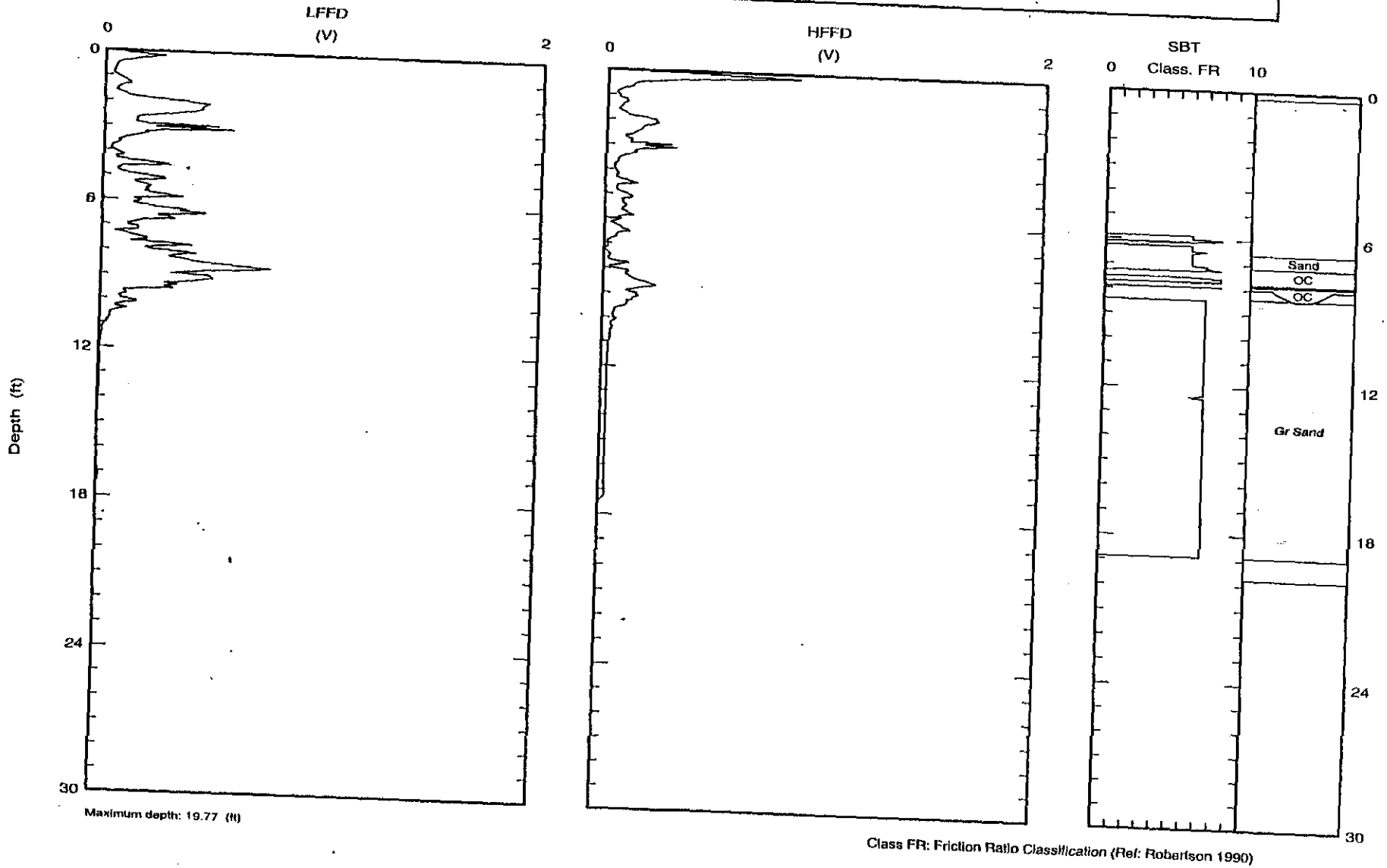
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

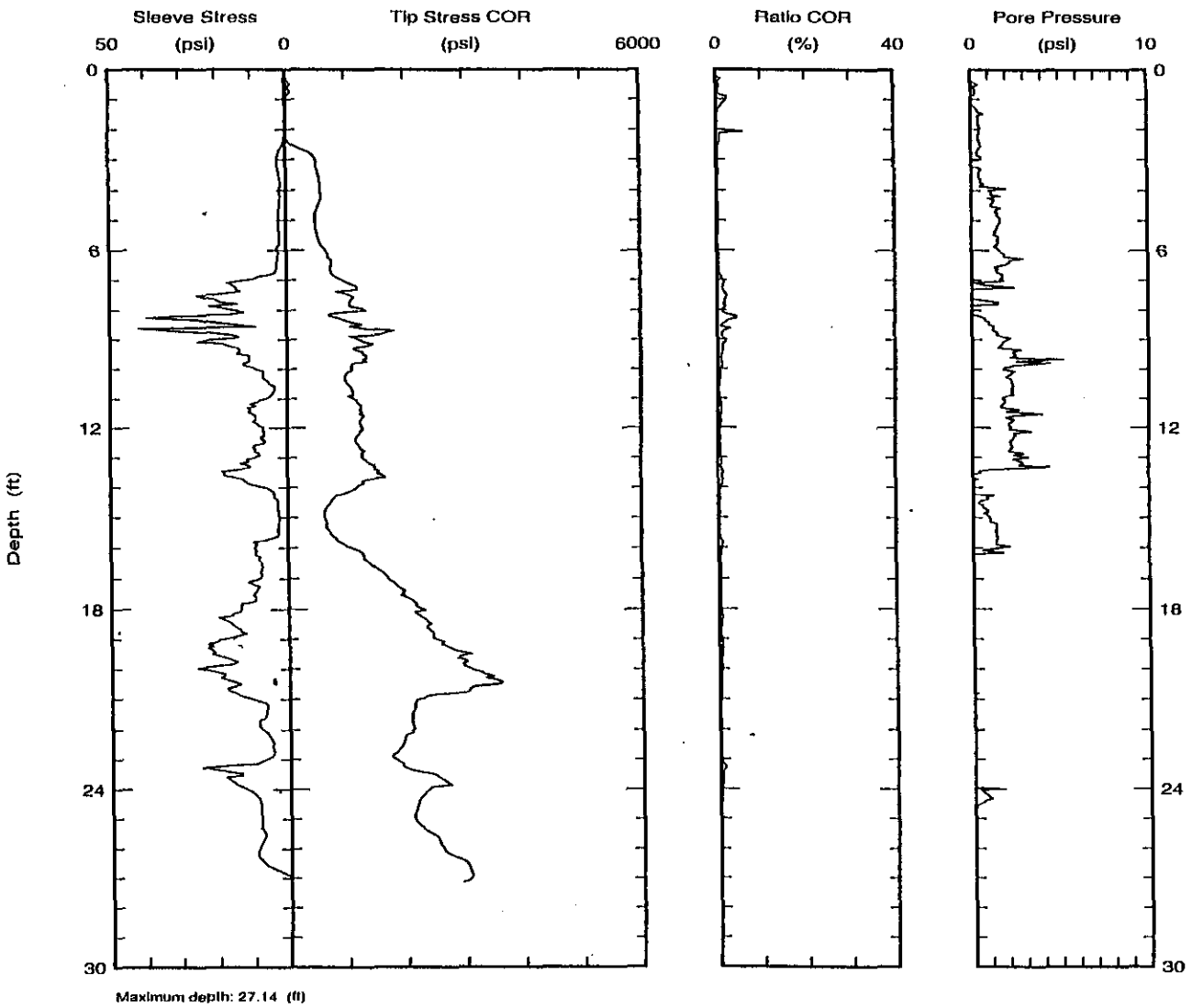
Date: 04/Nov/2003
Test ID: FFD-09
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Applied Research Associates South Royalton, VT 05068 802-763-8348 Email: cpt@ned.ara.com http://www.ara.com	Northing: Easting: Elevation:	Date: 05/Nov/2003 Test ID: HD-10 Project: RROUX
	Client: ROUX Site: SUNNYSIDE	



Maximum depth: 27.14 (ft)

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Email: cpt@ned.ara.com
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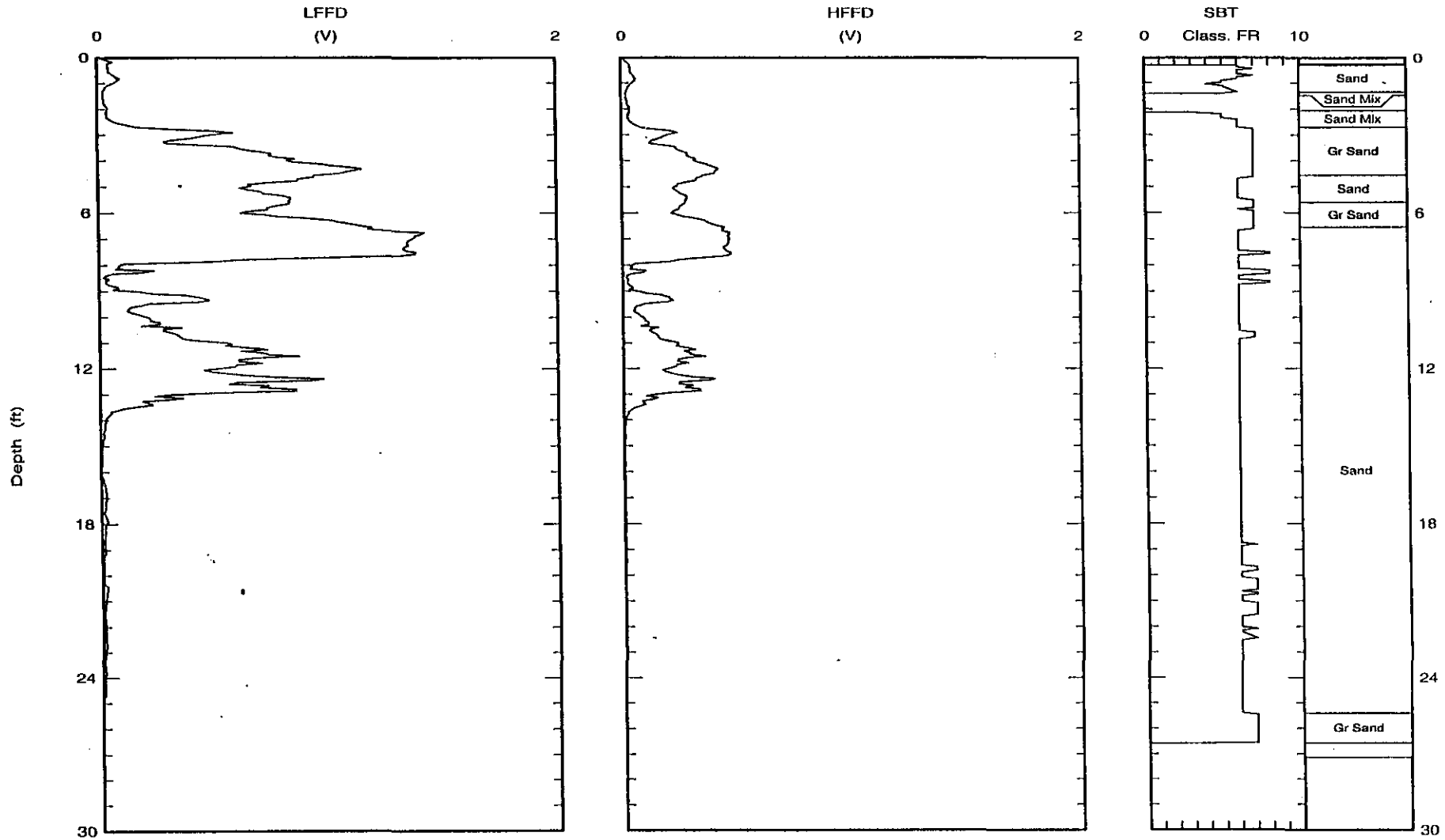
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-10
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 27.14 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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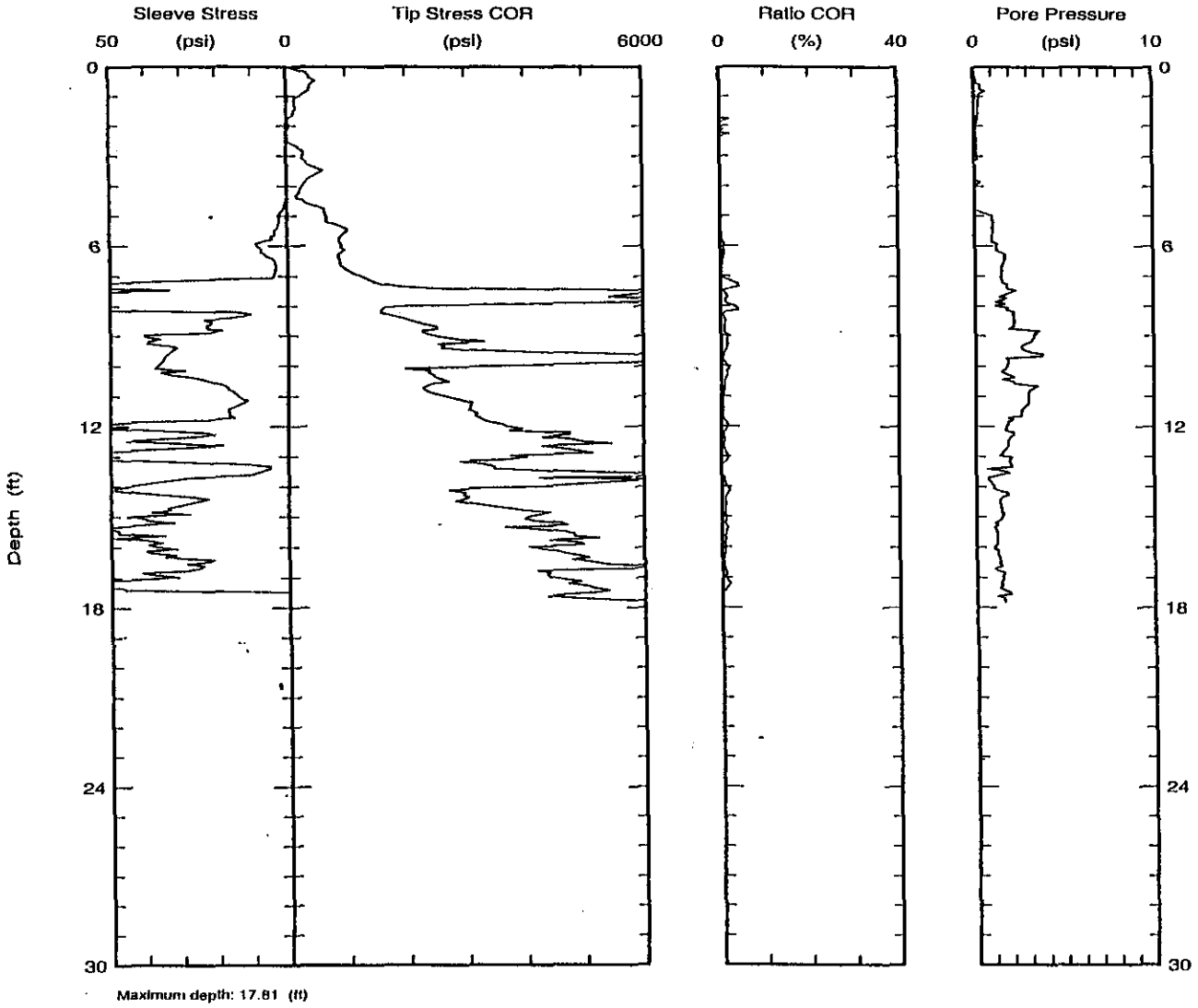
Northing:	Date: 04/Nov/2003
Easting:	Test ID: HD-11
Elevation:	Project: RROUX
Client: ROUX	
Site: SUNNYSIDE	



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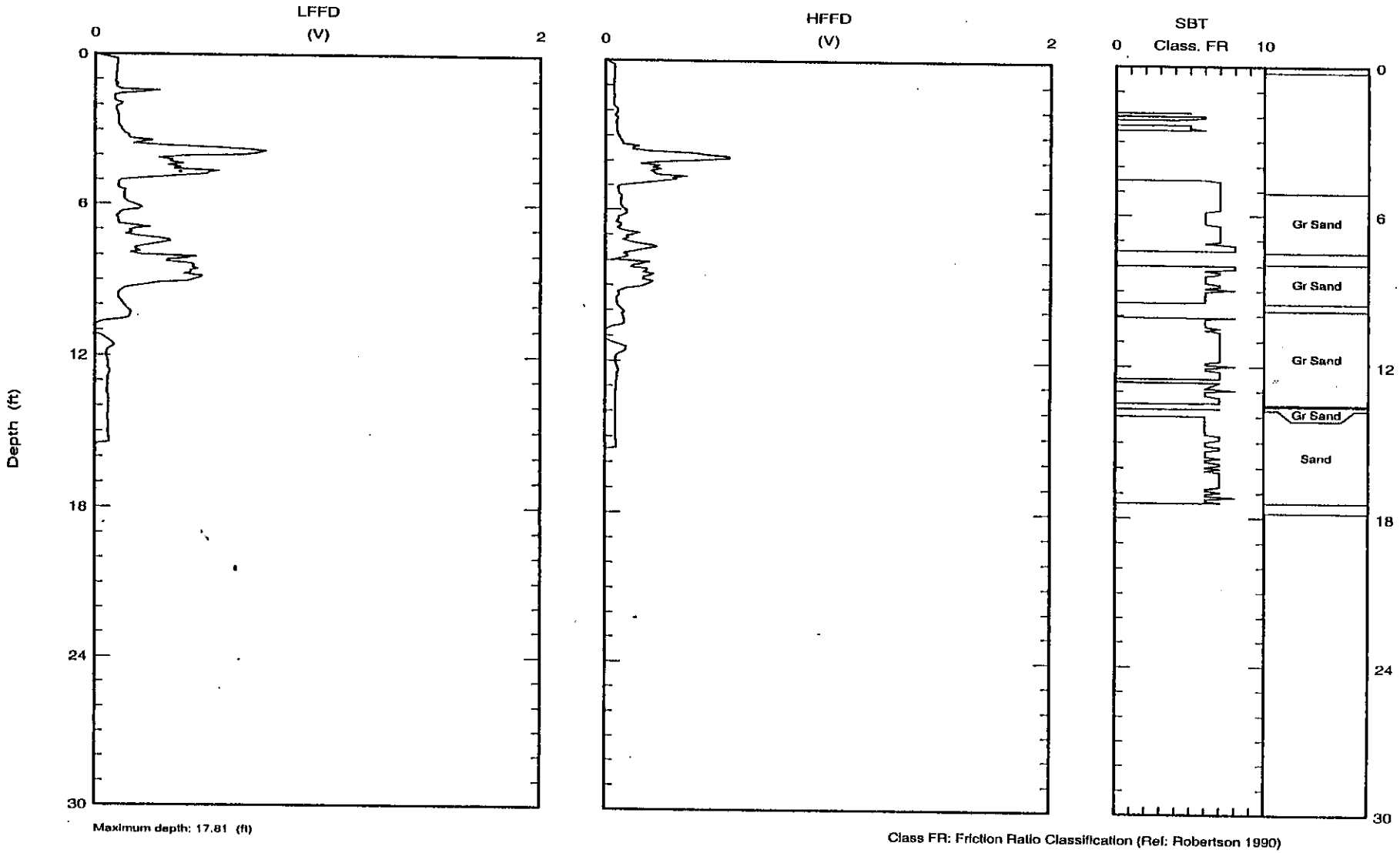
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-11
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 17.81 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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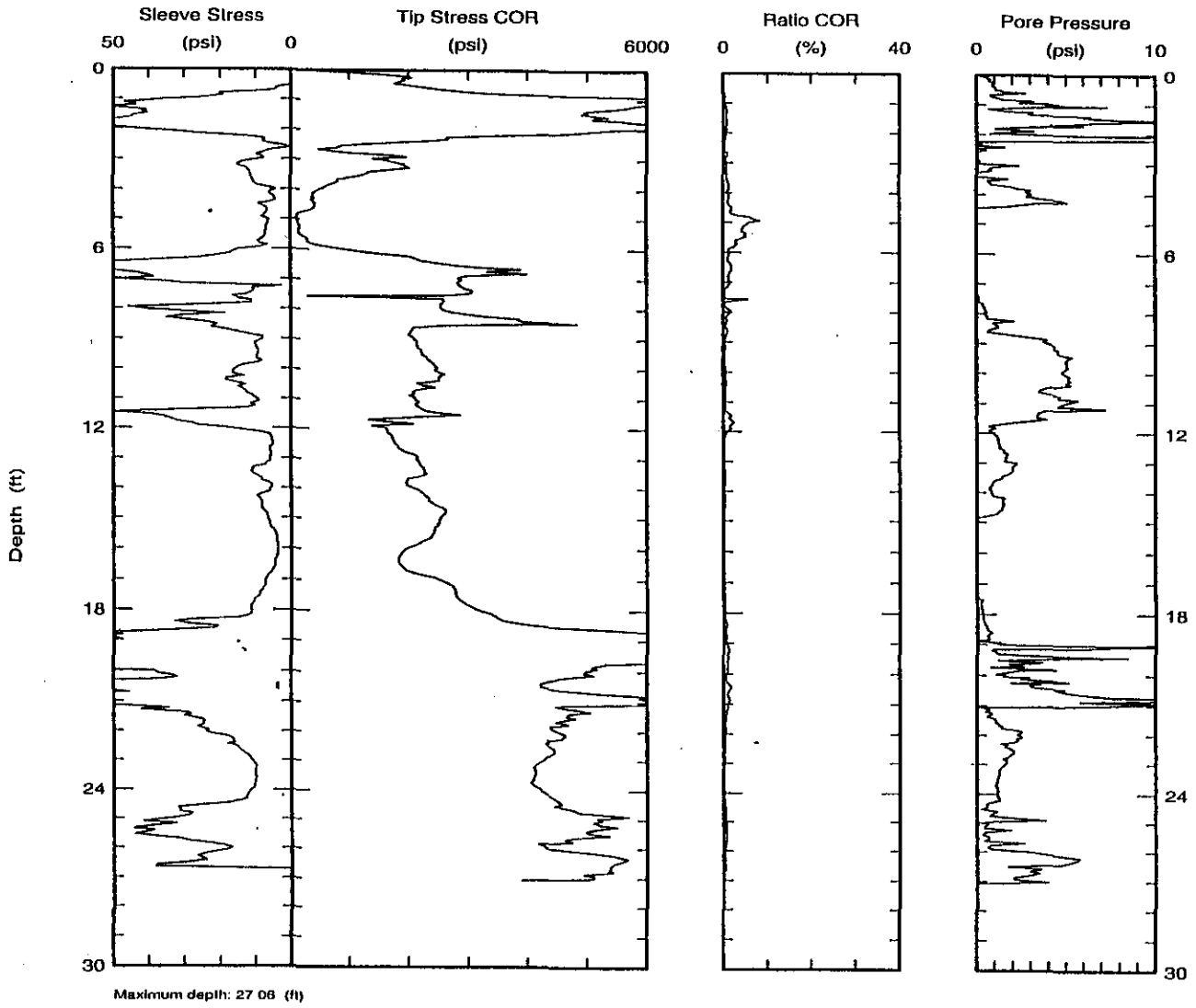
Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: FFD-12
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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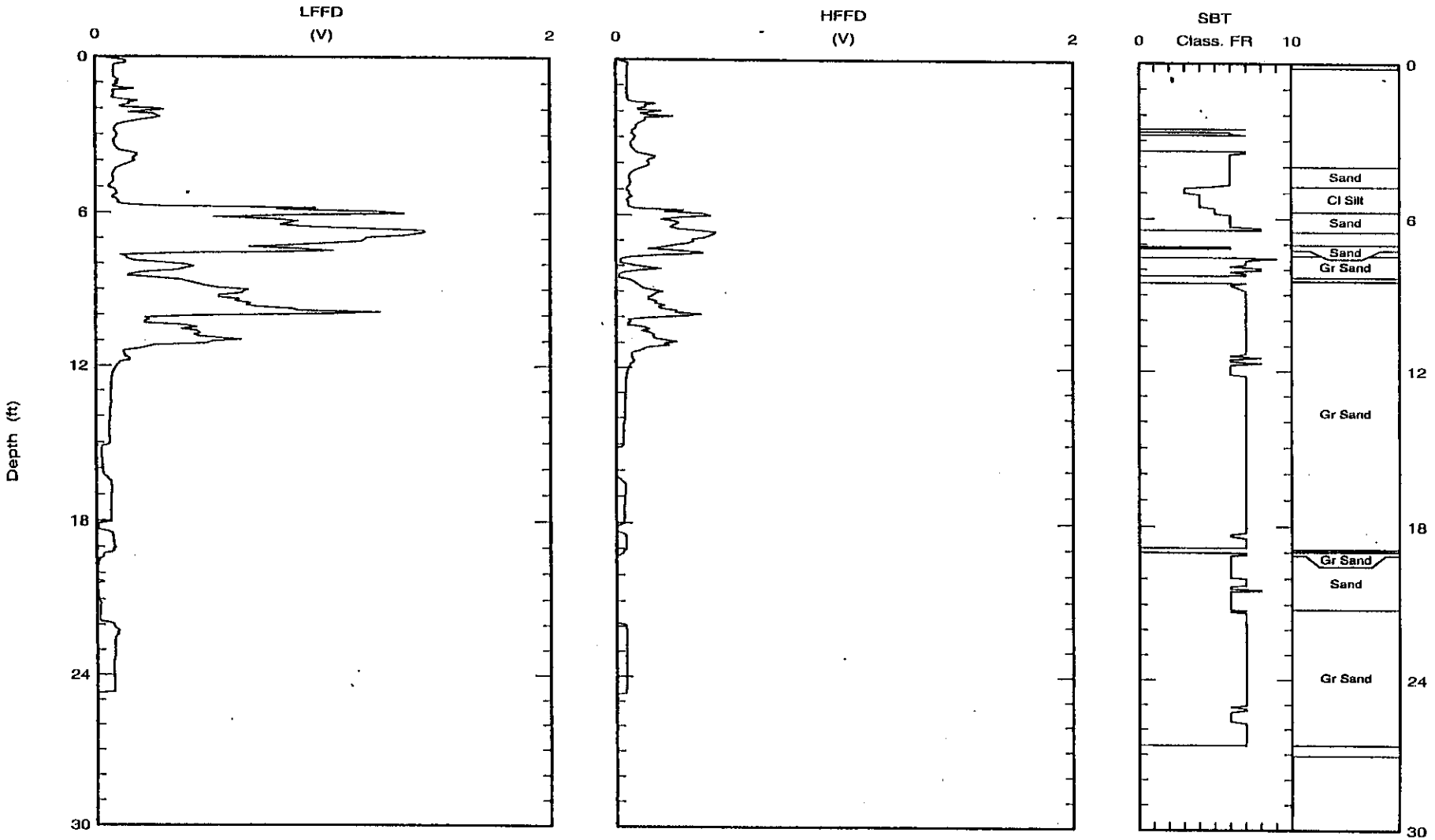
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: FFD-12
Project: RROUX

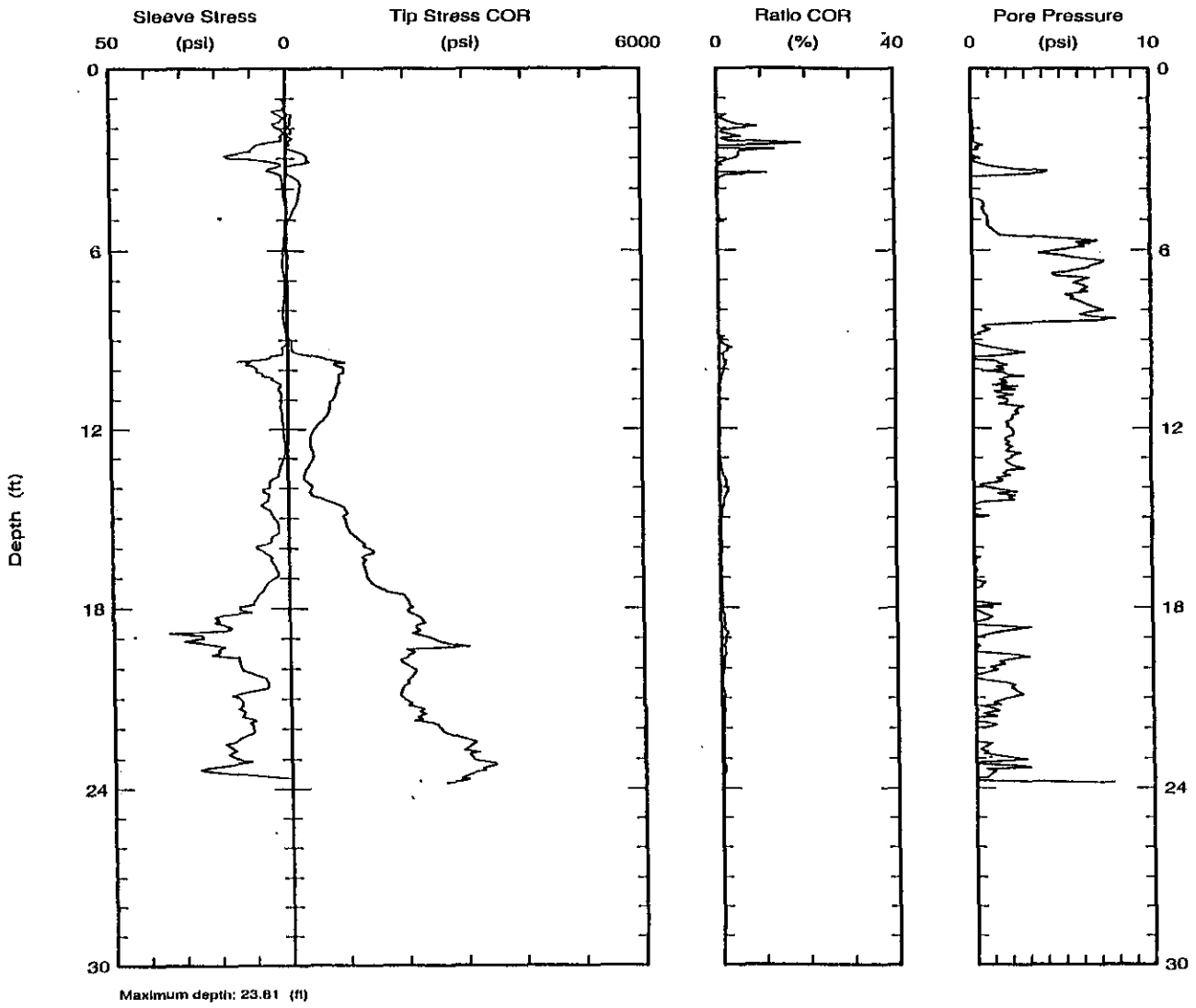
Client: ROUX
Site: SUNNYSIDE



Maximum depth: 27.06 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Applied Research Associates South Royalton, VT 05068 802-763-8348 Email: cpt@ned.ara.com http://www.ara.com	Northing: Easting: Elevation:	Date: 03/Nov/2003 Test ID: HD-13 Project: RROUX
	Client: ROUX Site: SUNNYSIDE	



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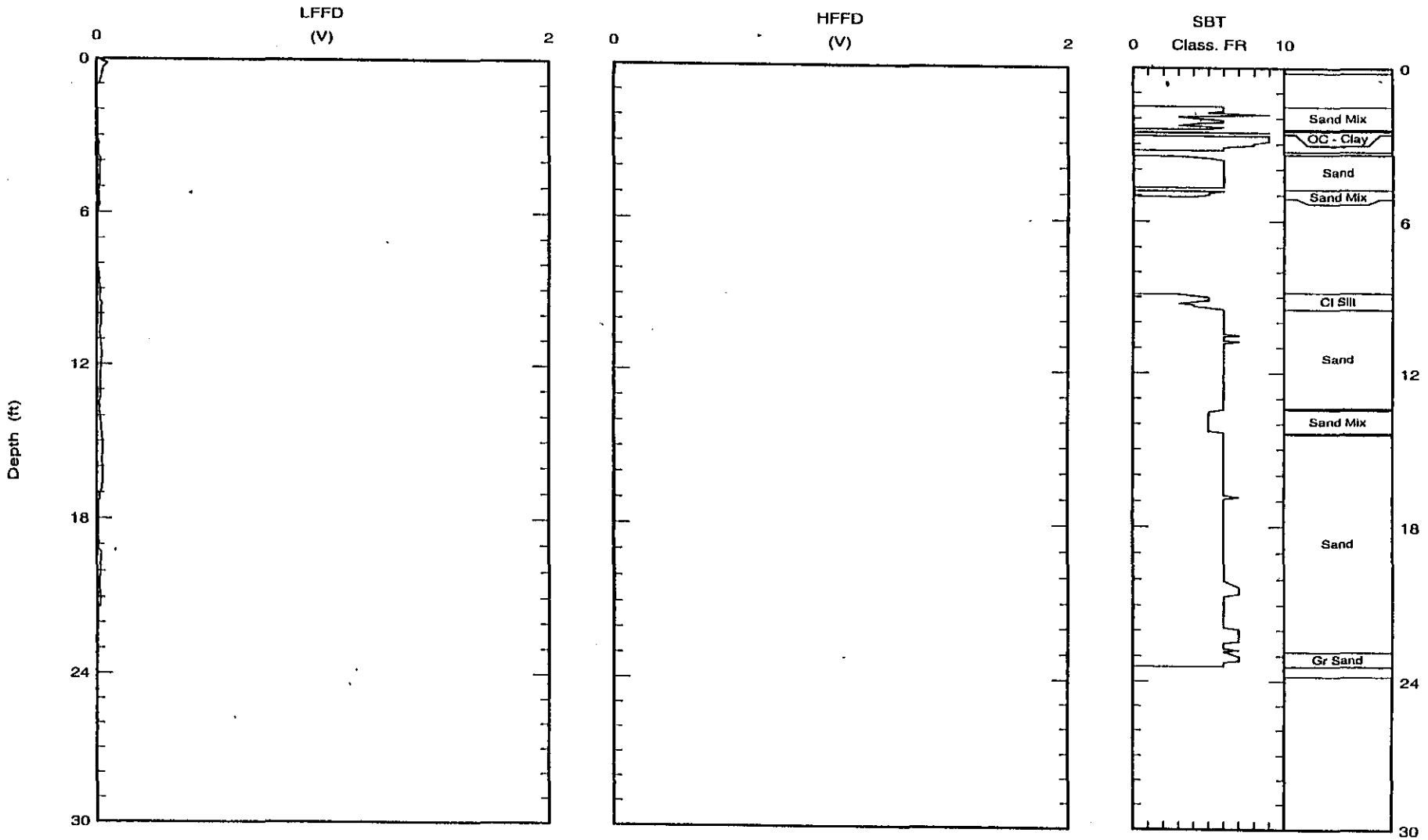
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 03/Nov/2003
Test ID: HD-13
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 23.81 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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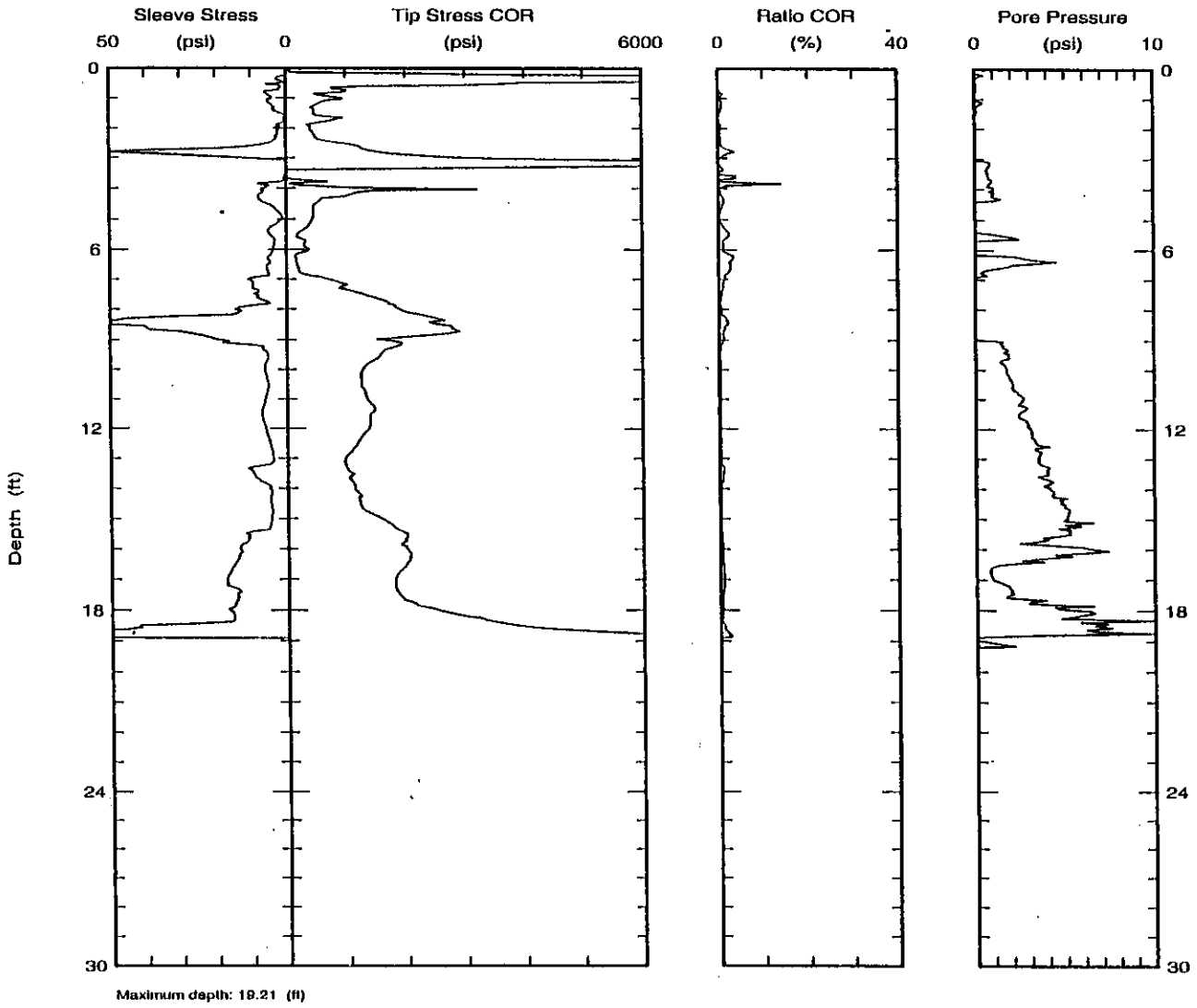
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: FFD-14
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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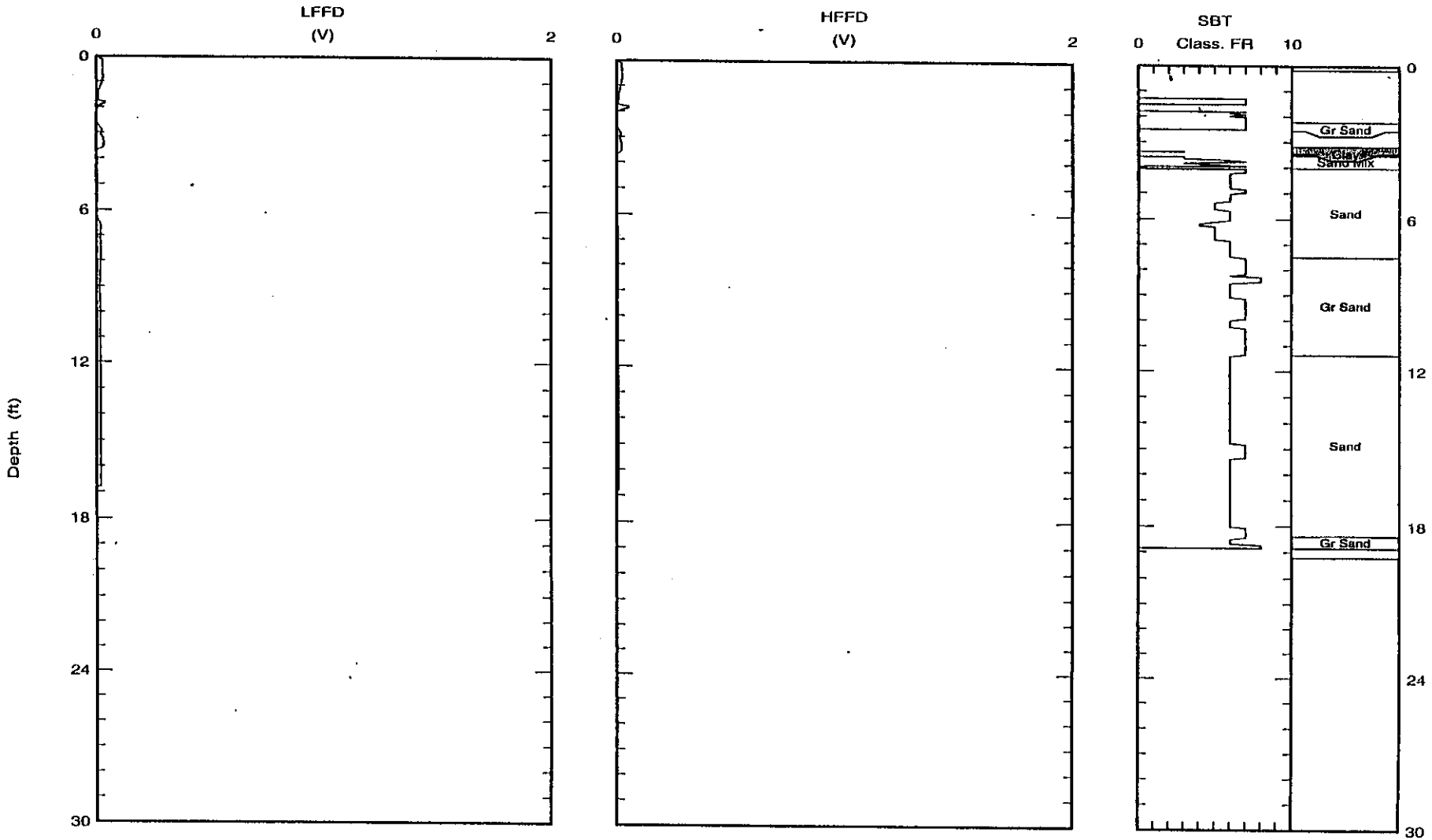
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: FFD-14
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 19.21 (ft)

Class FR: Friction Ratio Classification (Rel: Robertson 1990)

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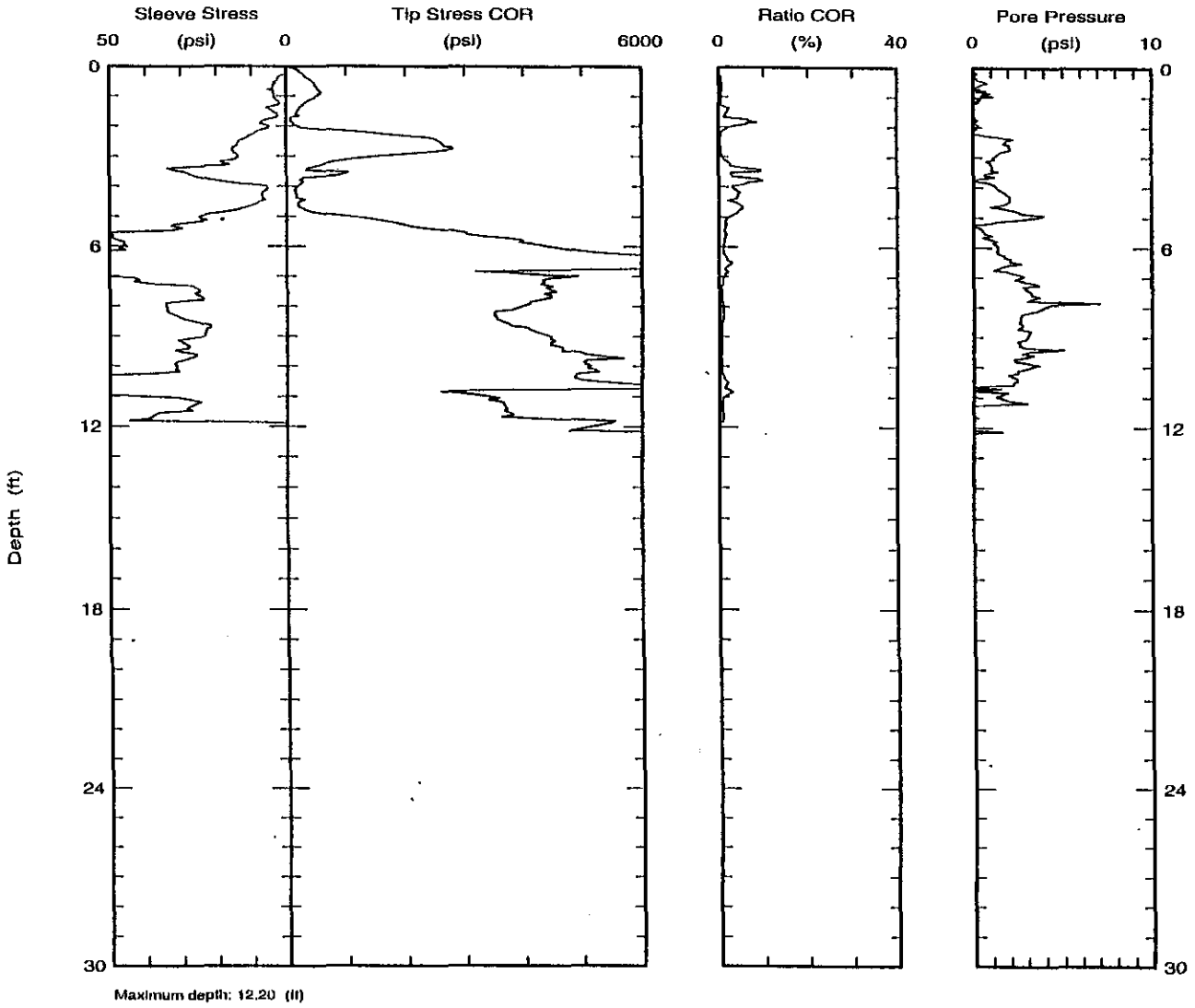
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-15
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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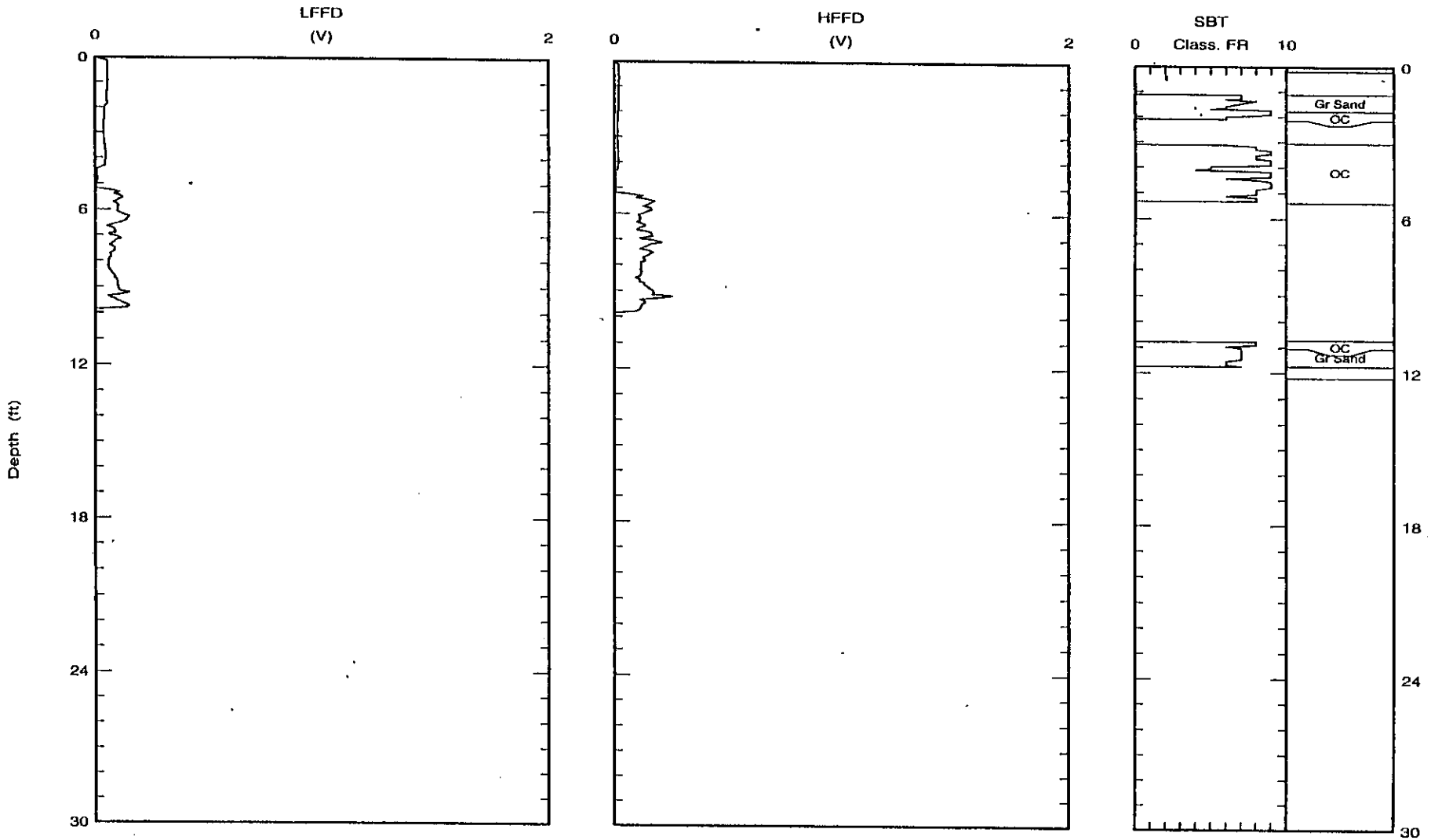
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-15
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 12.20 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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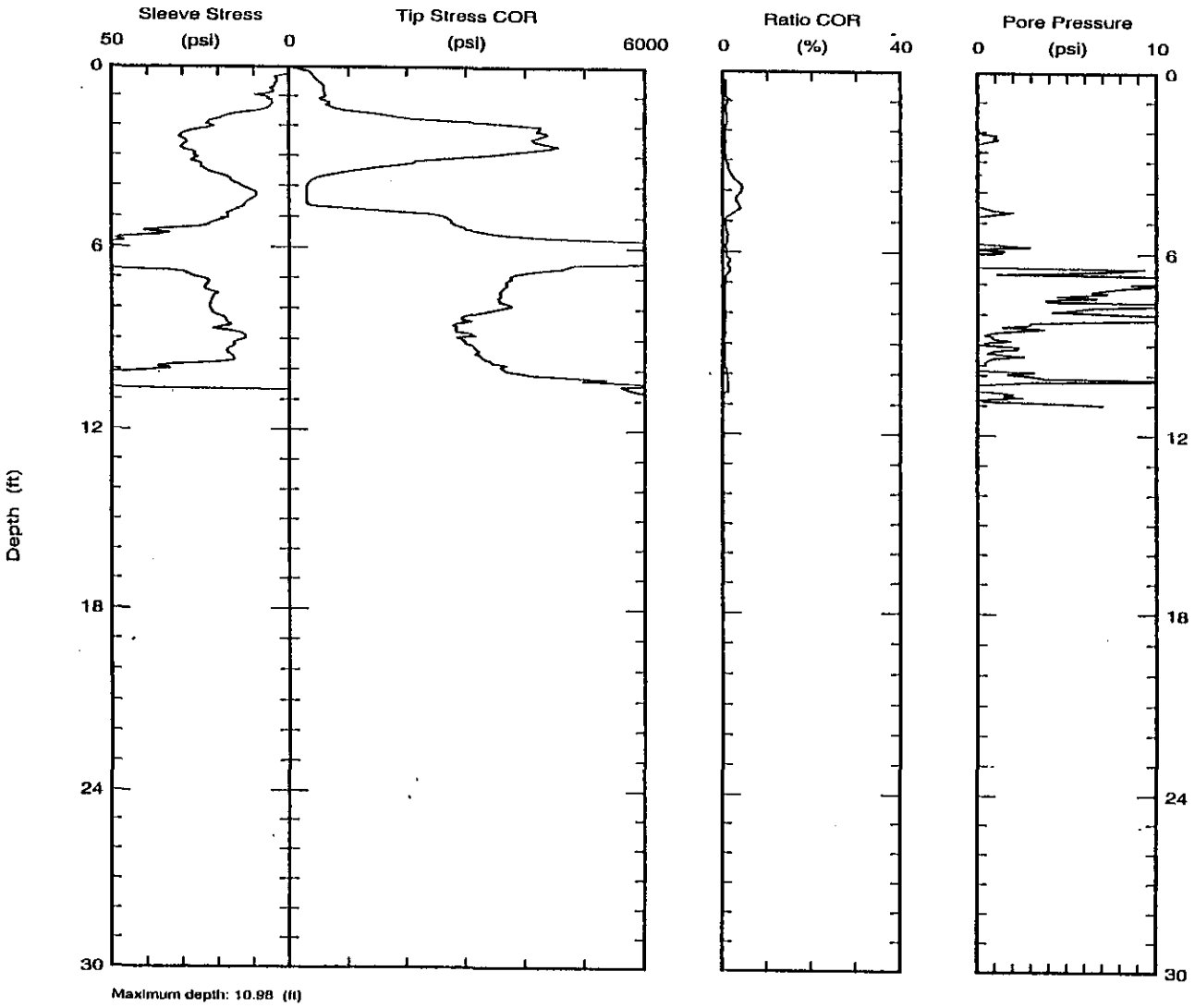
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: FFD-15A
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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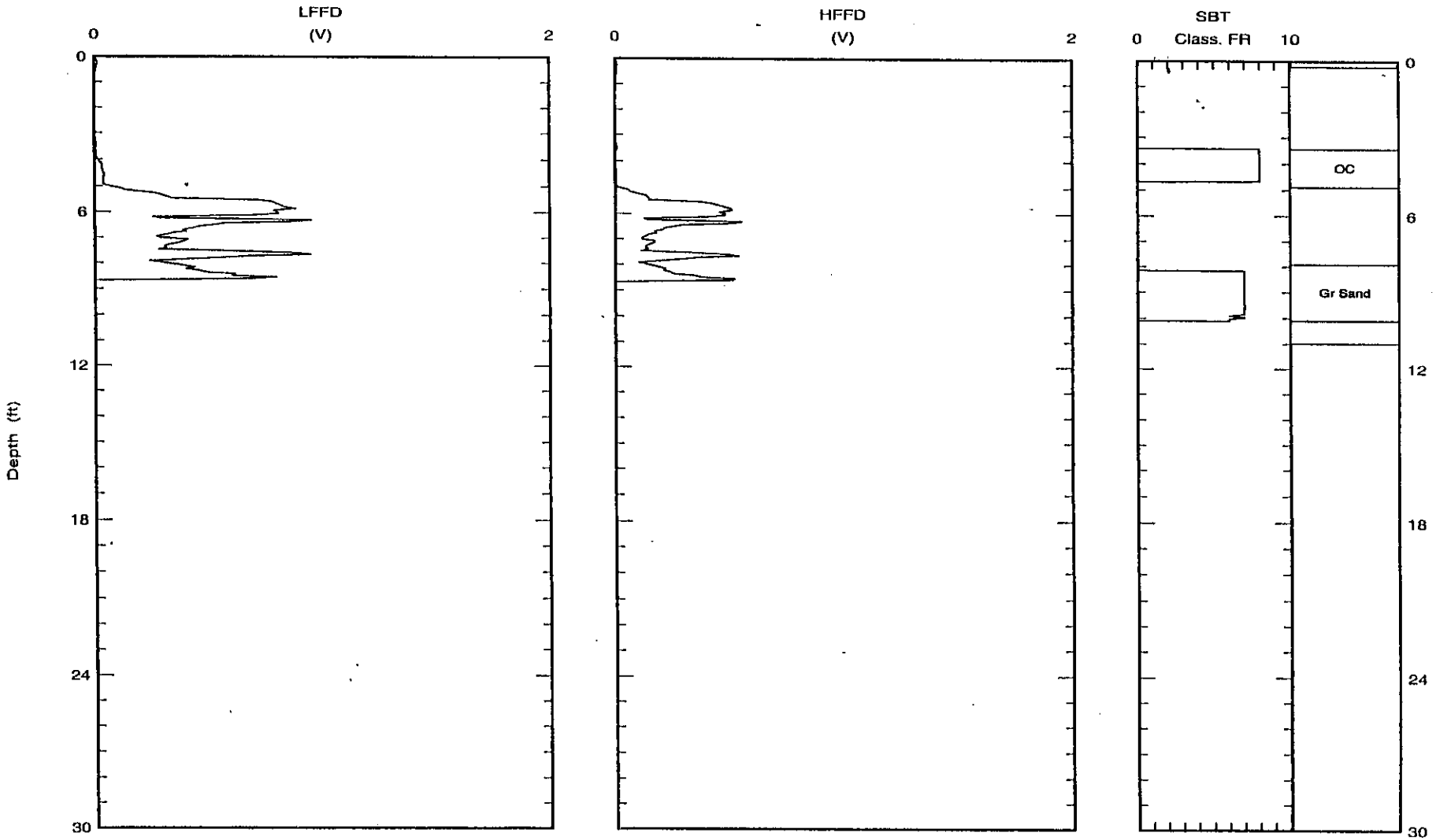
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: FFD-15A
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 10.98 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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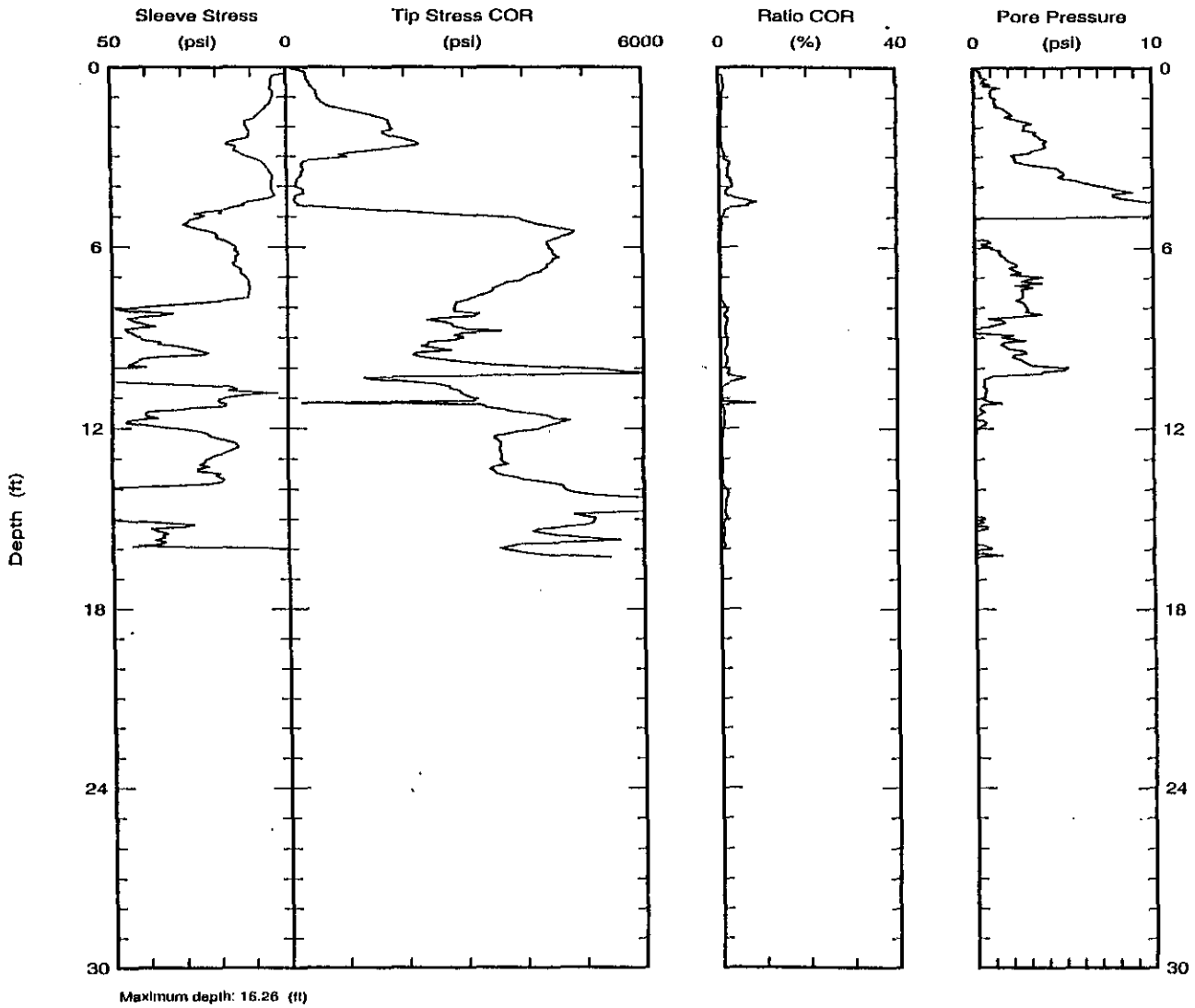
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-15B
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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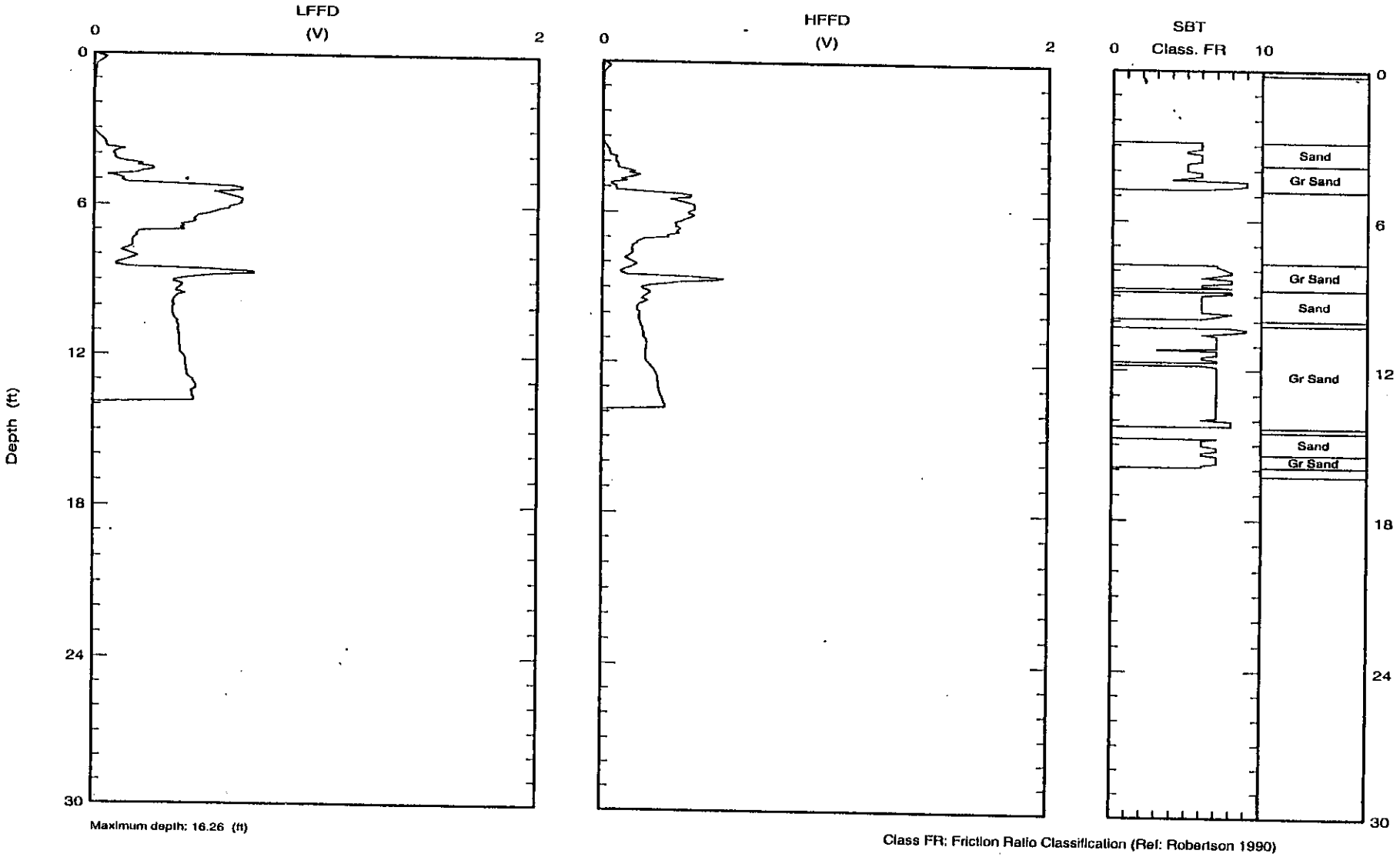
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-15B
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 16.26 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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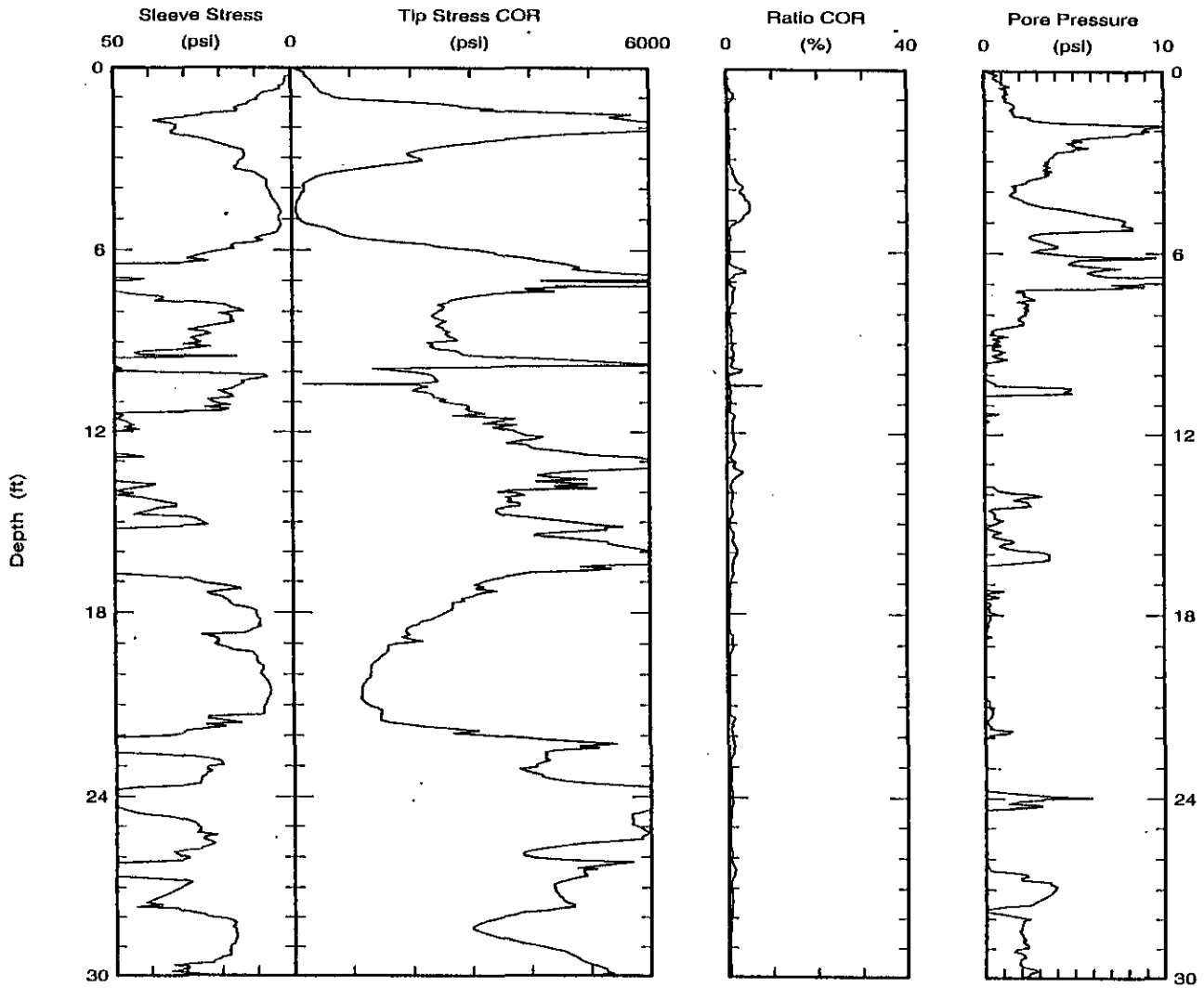
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-15C
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 37.00 (ft)

Applied Research Associates
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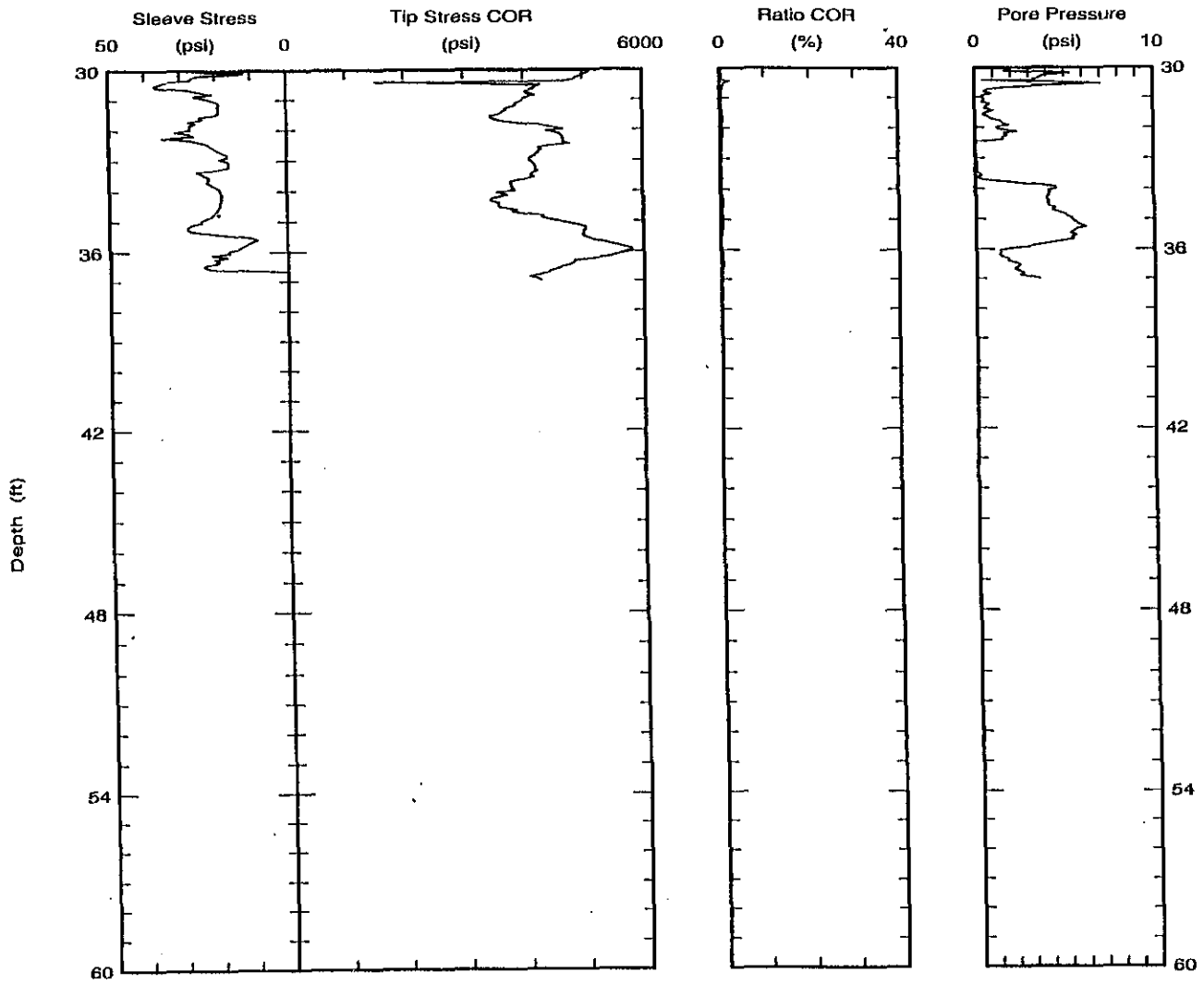
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-15C
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 37.00 (ft)

Test ID: HD-15C
File: 305N0306C.ECP

Applied Research Associates
South Royalton, VT 05068
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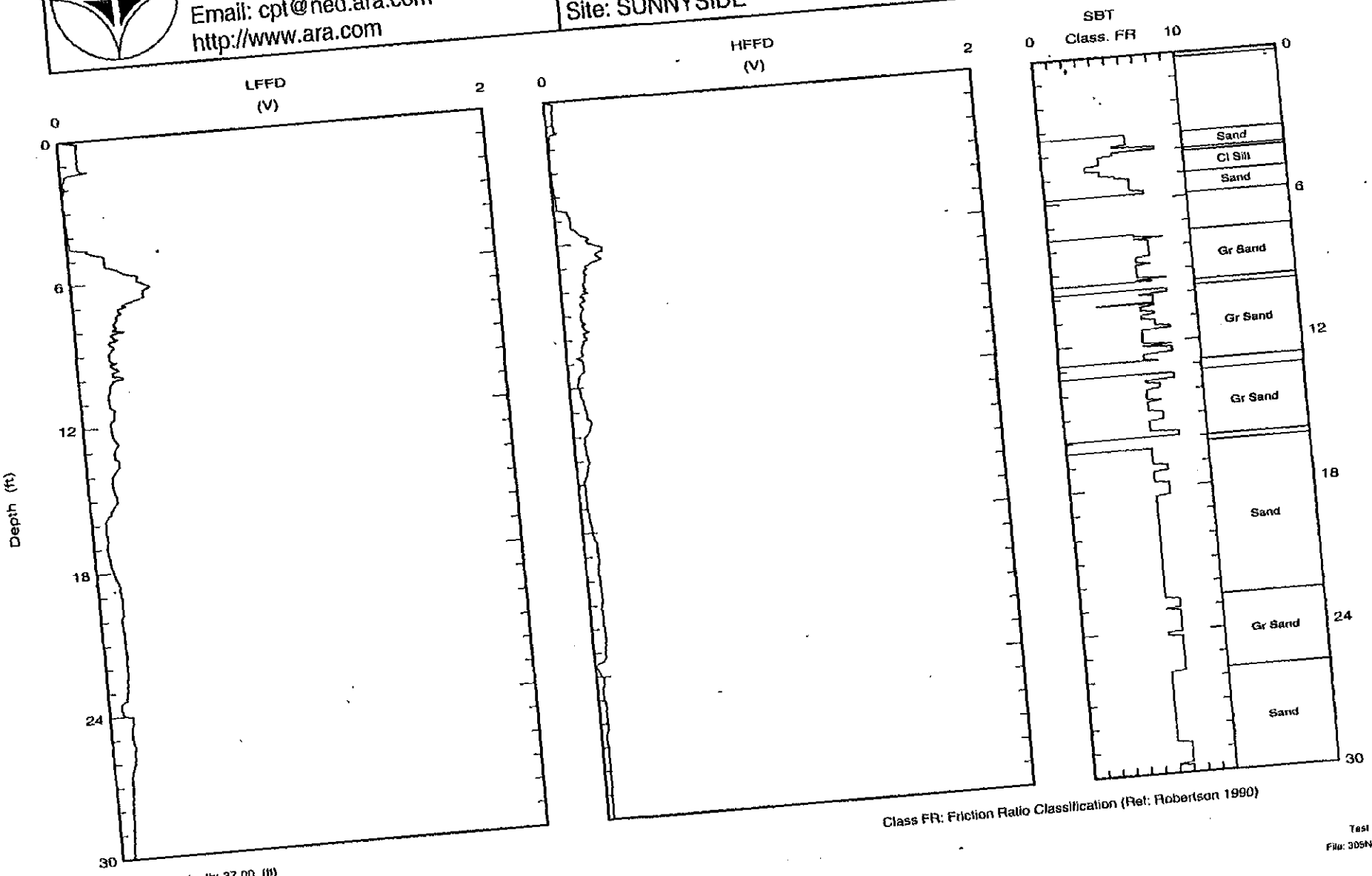
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-15C
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Maximum depth: 37.00 (ft)

Test ID: HD-15C
File: 309N0306C.ECP

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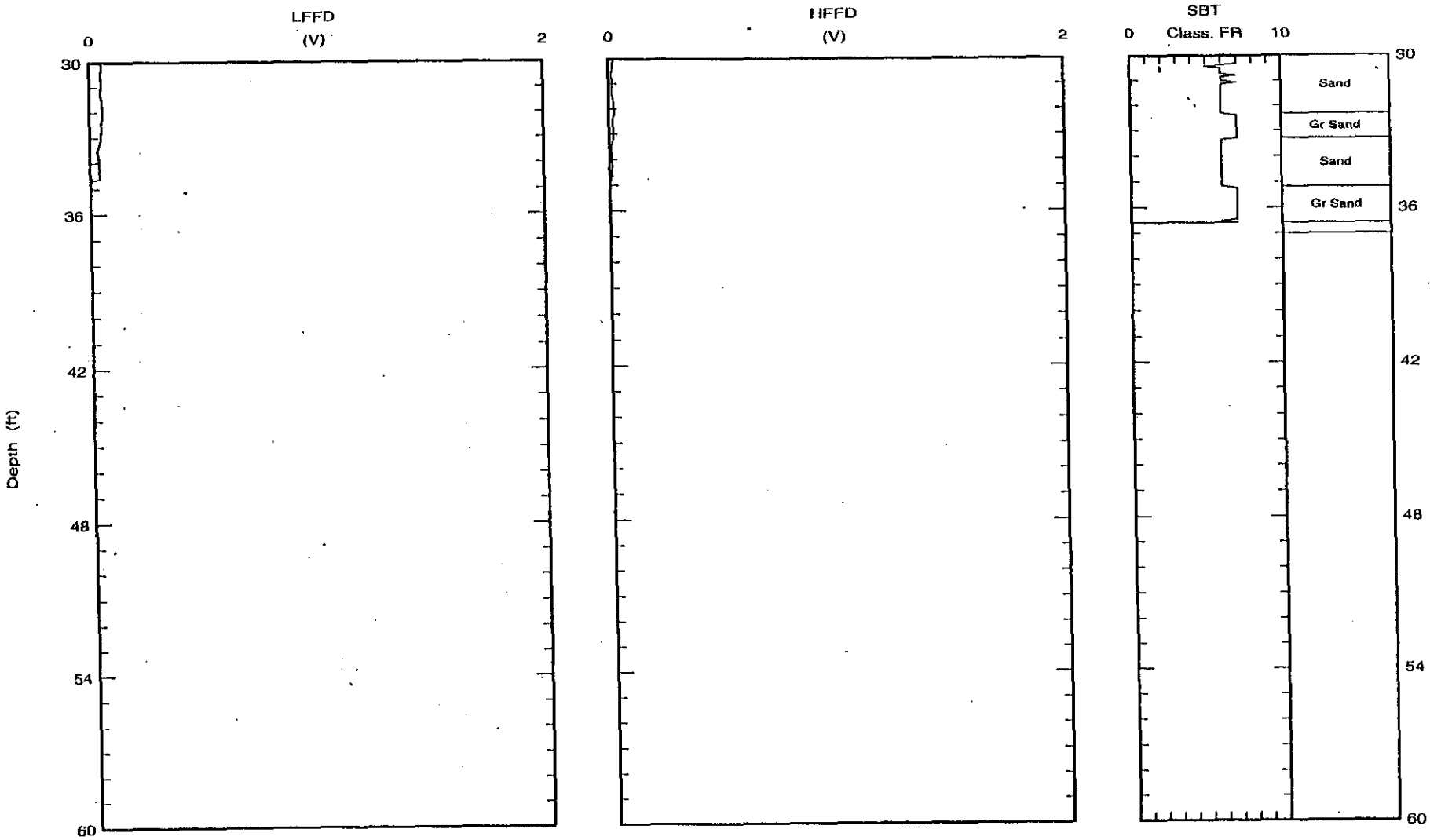
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: HD-15C
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 37.00 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: HD-15C
File: 305N0306C.ECP

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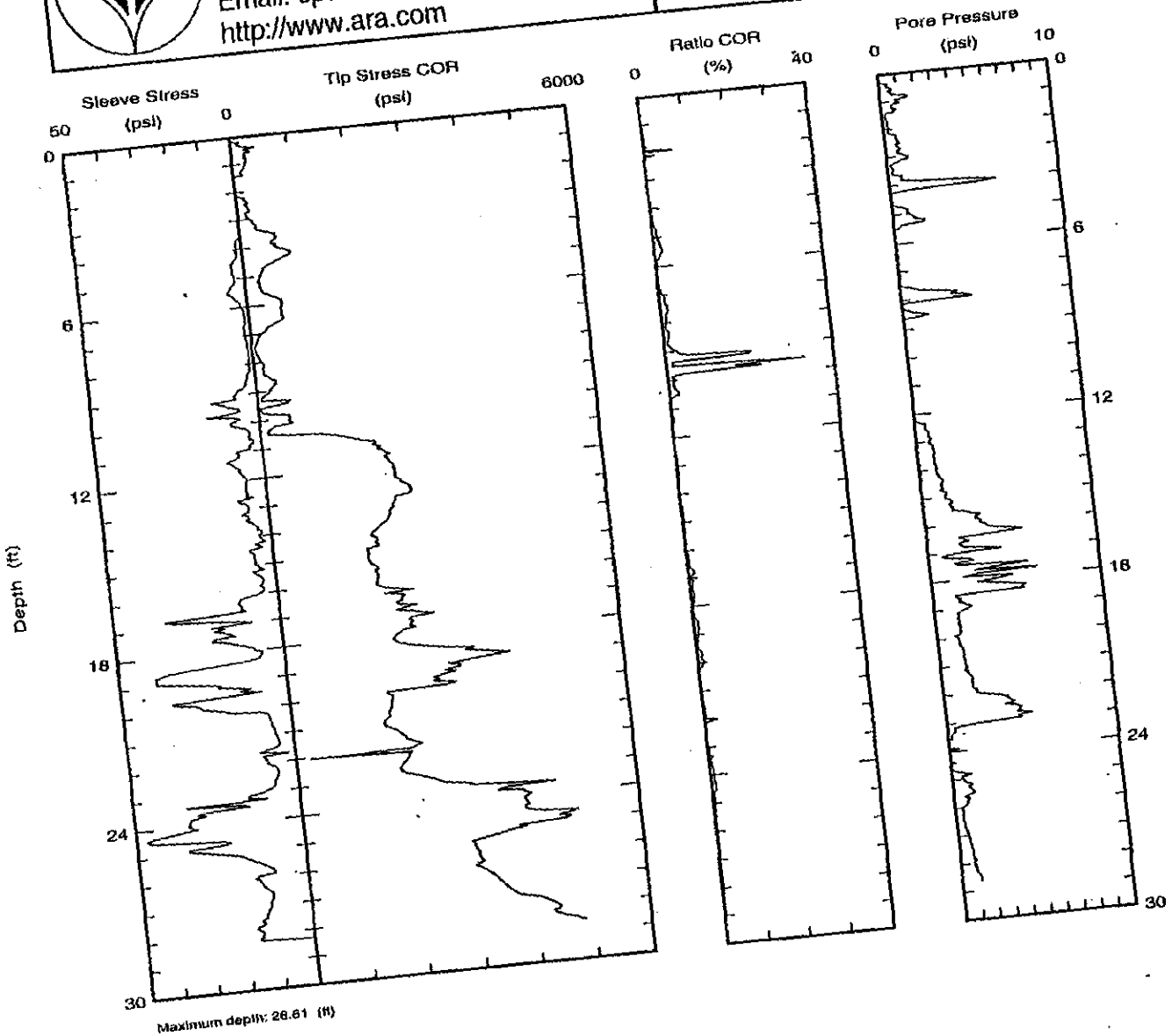
Northing:
Easting:
Elevation:
Client: ROUX
Site: SUNNYSIDE

Date: 04/Nov/2003
Test ID: HD-16
Project: RROUX



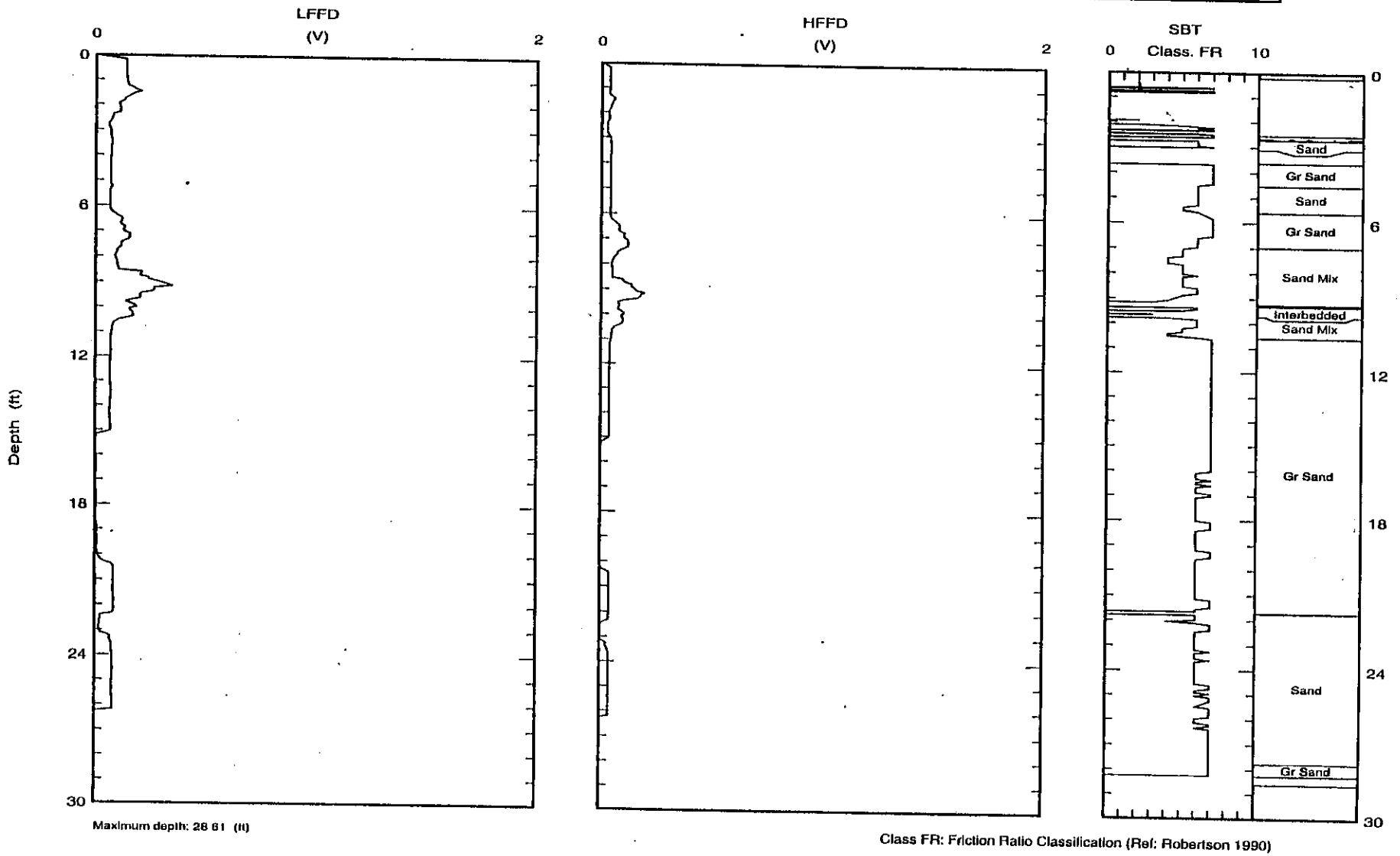
Test ID: HD-16
File: 304N0303C.ECP

Applied Research Associates
South Royalton, VT 05068
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-16
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 28.61 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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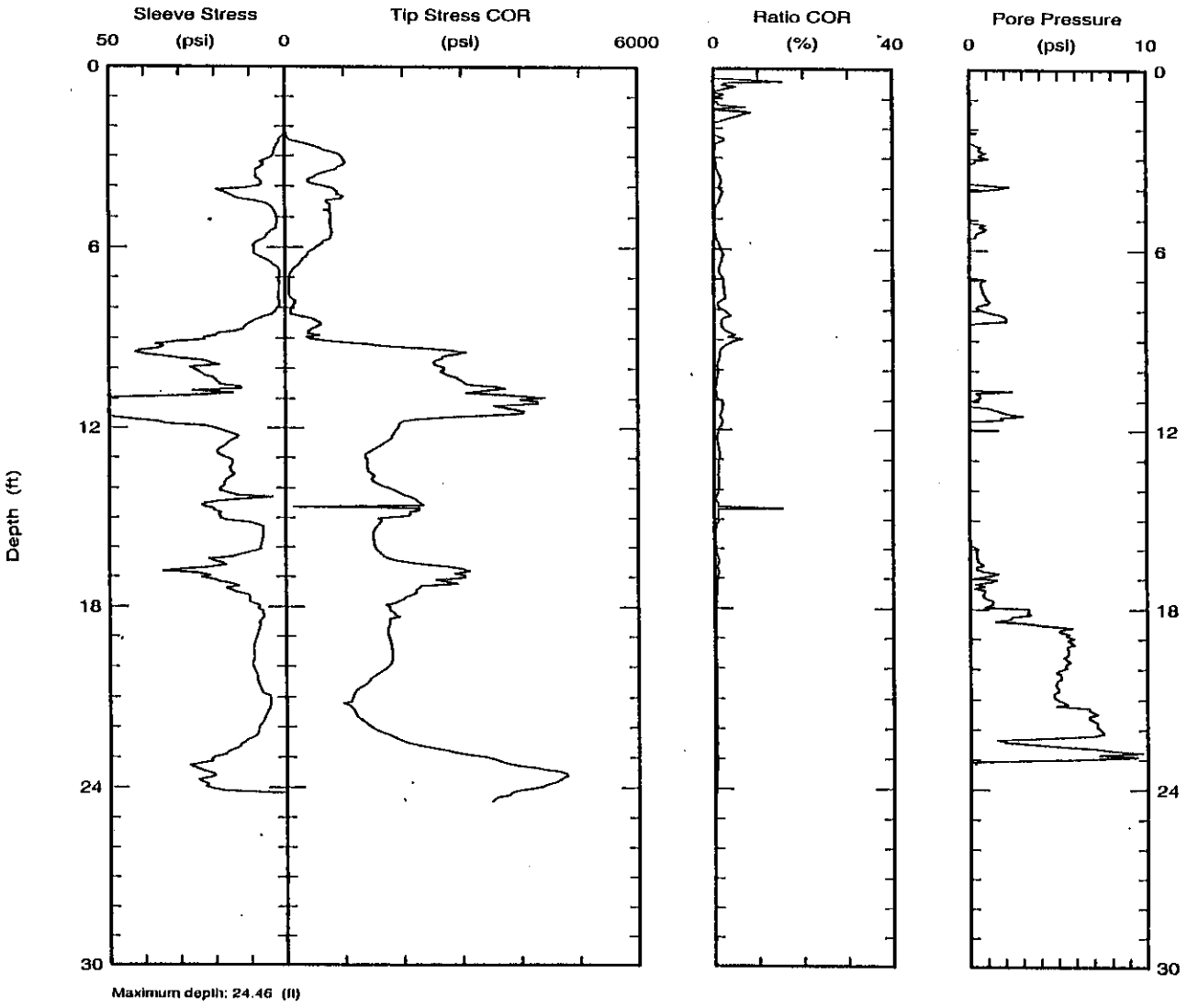
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: FFD-17
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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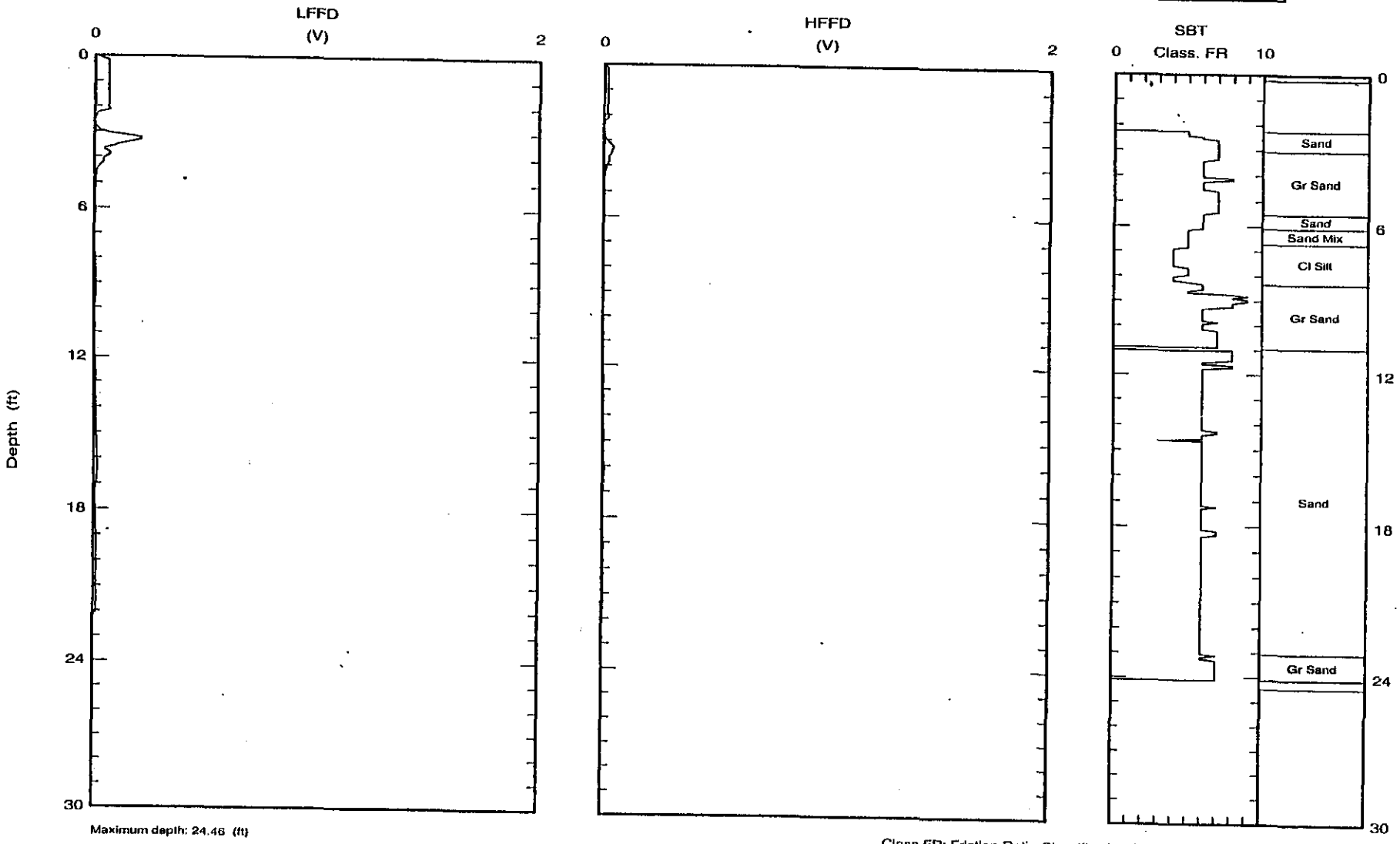
Northing:
Easting:
Elevation:

Date: 05/Nov/2003
Test ID: FFD-17
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 24.46 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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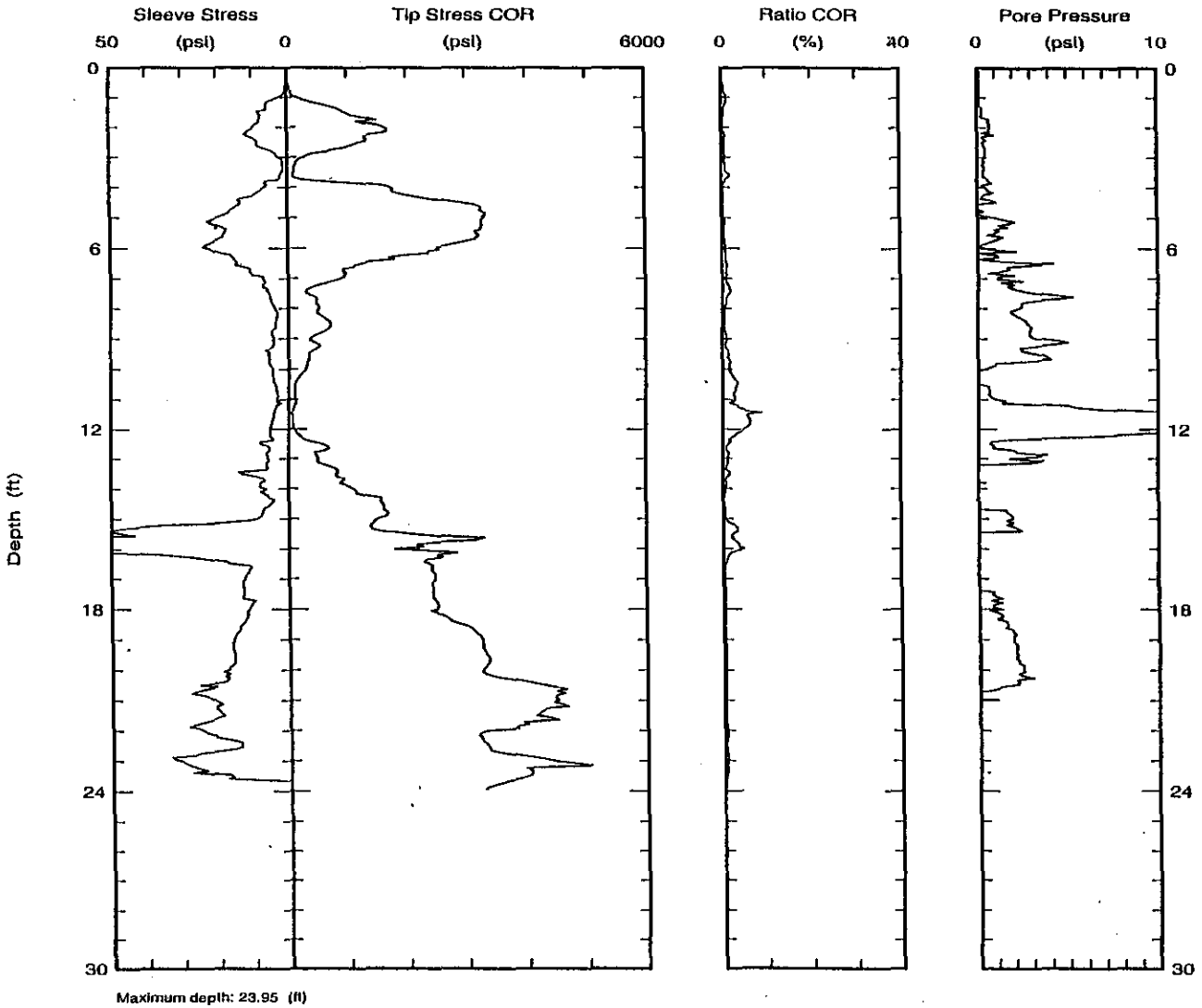
Northing:
Easting:
Elevation:

Date: 03/Nov/2003
Test ID: HD-18
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Applied Research Associates
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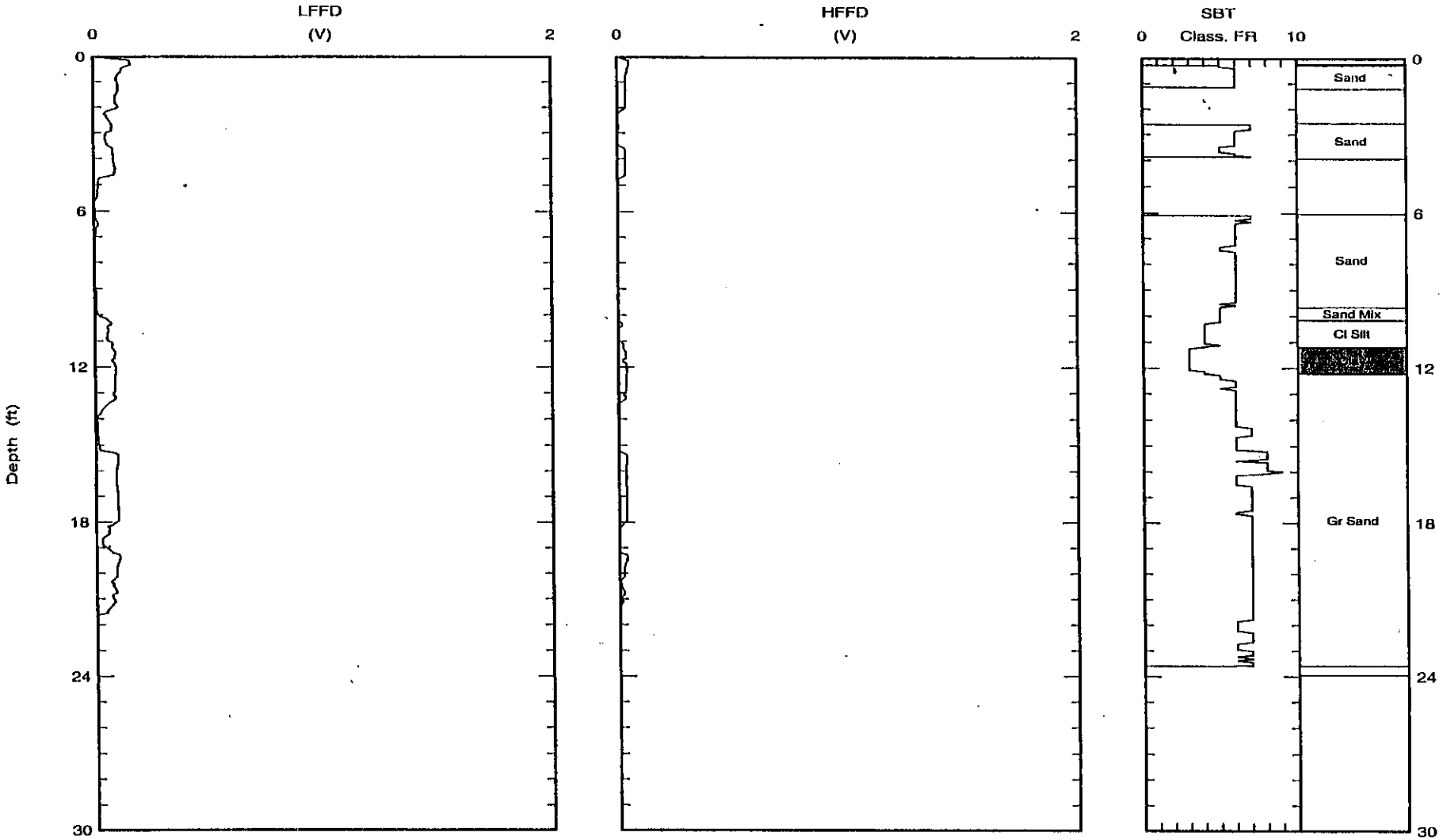
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 03/Nov/2003
Test ID: HD-18
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 23.95 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

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Email: cpt@ned.ara.com
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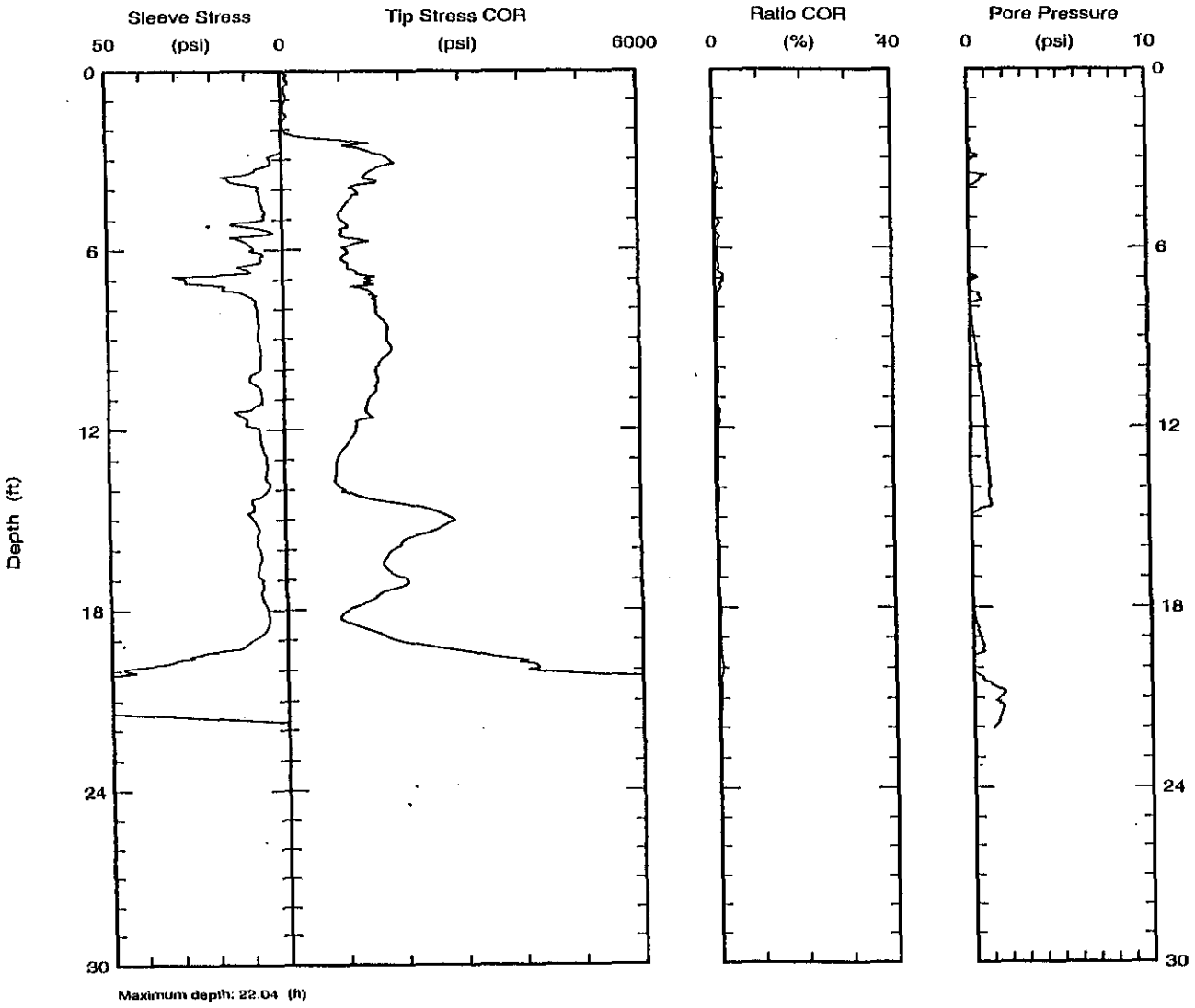
Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: FFD-19
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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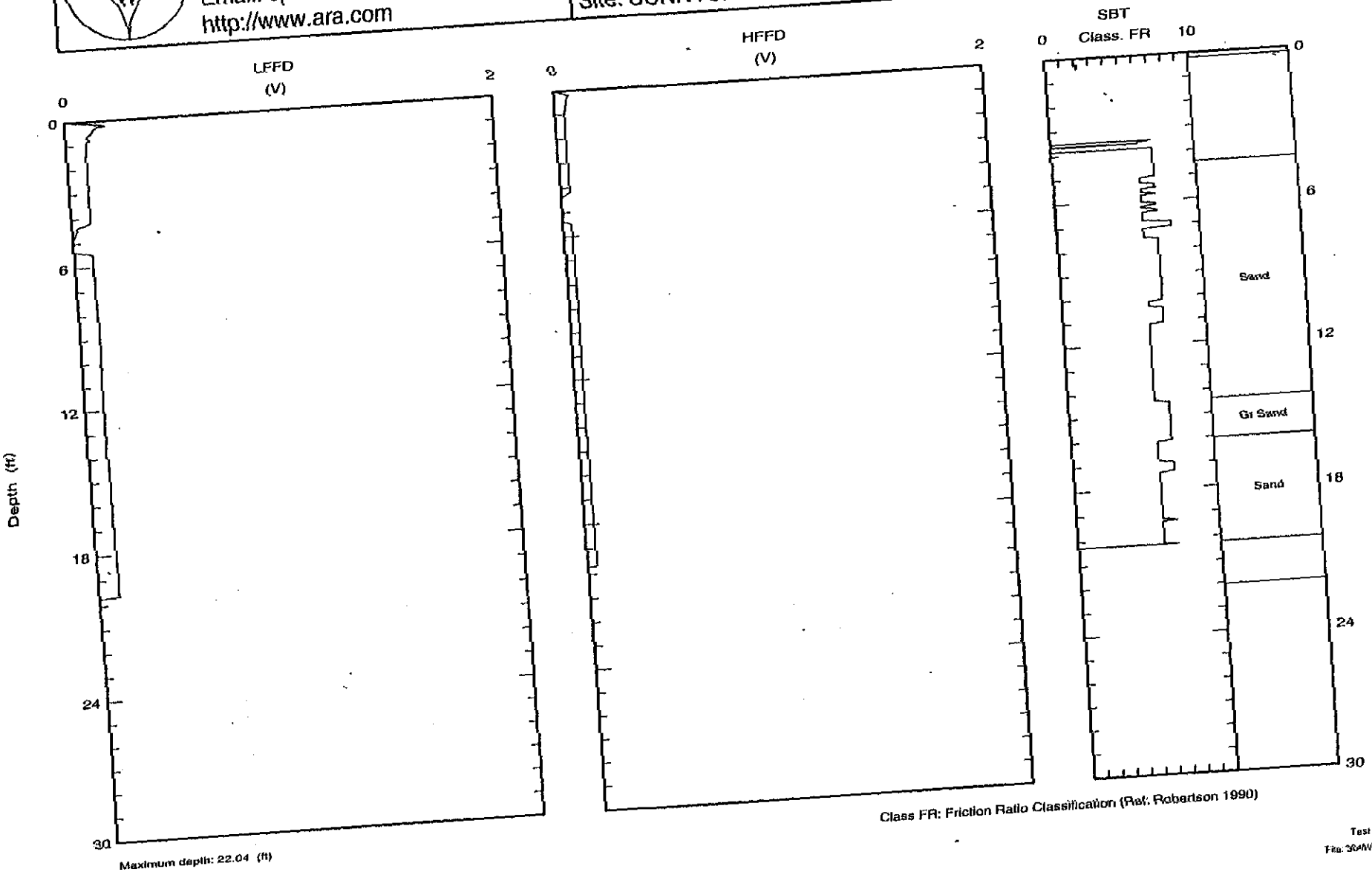
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: FFD-19
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Test ID: FFD-19
File: 364M83V3C.EGP

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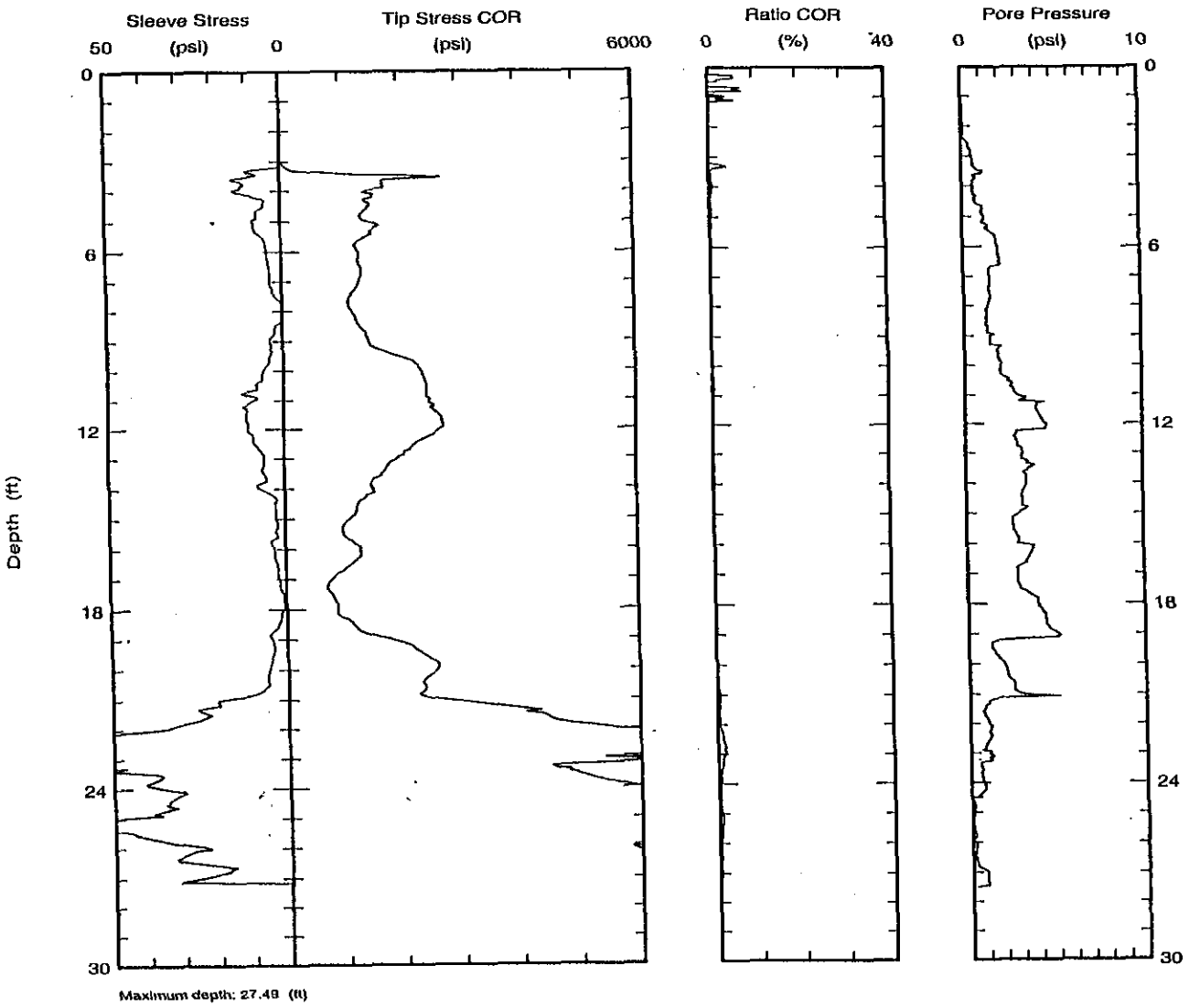
802-763-8348
Email: cpt@ned.ara.com
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-20
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



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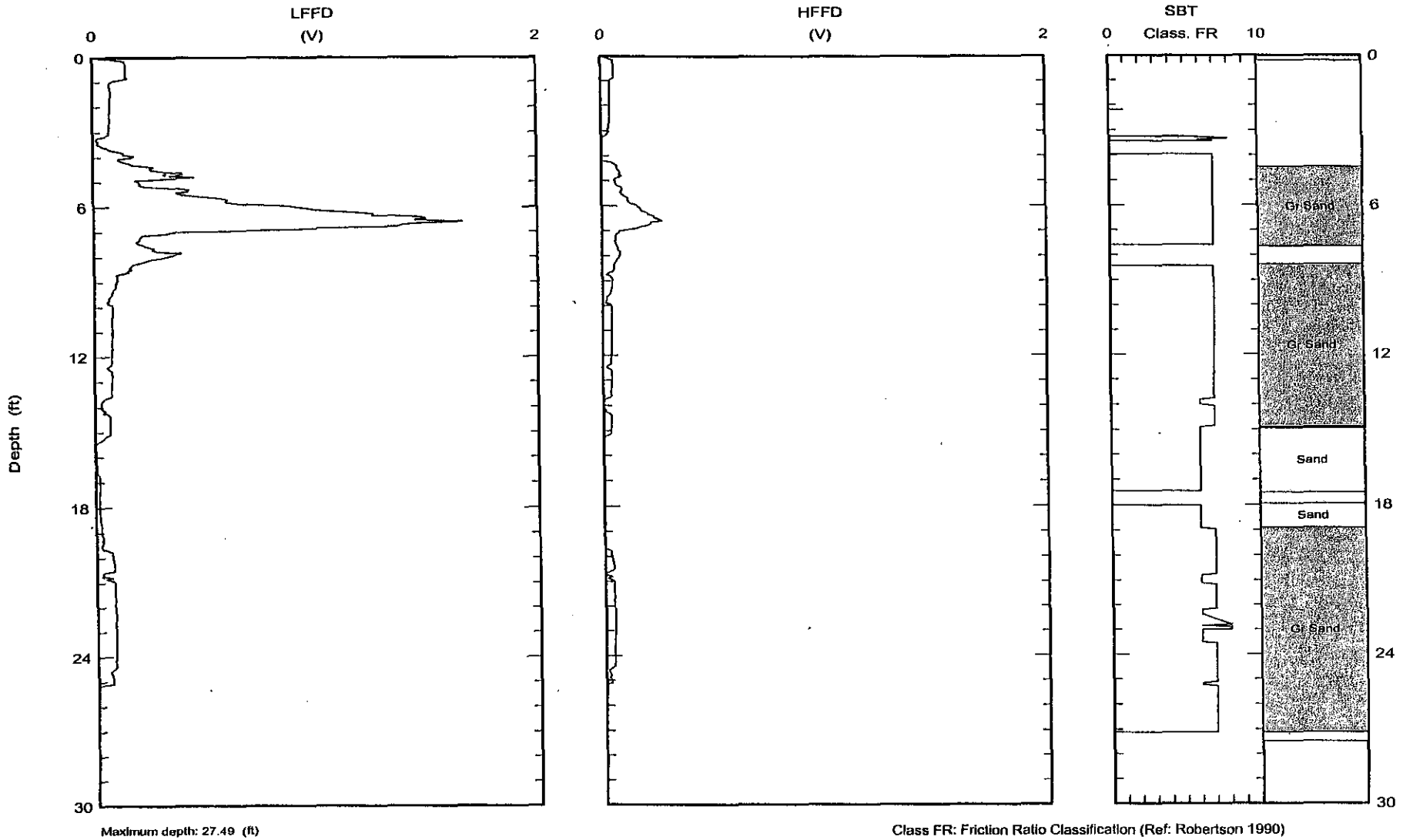
http://www.ara.com

Northing:
Easting:
Elevation:

Date: 04/Nov/2003
Test ID: HD-20
Project: RROUX

Client: ROUX
Site: SUNNYSIDE



Maximum depth: 27.49 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Attachment 3

of REMEDIAL INVESTIGATION

APPENDIX D

Soil Boring Logs Prepared by Roux Associates, Inc.
for 20 Geoprobe™ Borings
Adjacent to CPT / UVIF Borings

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

209 Shafter Street
Islandia, NY 11749
Telephone: (631) 232-2600
Fax: (631) 232-9898

SOIL BORING LOG

WELL NO.	NORTHING	EASTING		
HD-1	213082.6	1004228.7		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
Roux Associates / Steve Spates		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 5400 / Geoprobe	2" Macro-Core	12/18/03-12/18/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
18.70(FT.)	Not Measured	Clean Sand		

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5			Brown fine SAND, some Silt, trace Mica; wet	PAHs= 0.0	0.5	Sample HD-1/4-6 collected
			Brown fine SAND, some Silt, trace Mica; wet		0.6	
10						Bottom of Geoprobe boring at 8 ft bgs. Bottom of CPT/UVIF boring at 21.57 ft bgs.
15						
20						

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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Islandia, NY 11749
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Fax: (631) 232-9898

SOIL BORING LOG

WELL NO	NORTHING	EASTING
HD-2	212956.3	1004200.3

PROJECT NO /NAME	LOCATION
05545Y08 / Amtrak	Sunnyside Yard

APPROVED BY	LOGGED BY	
H. Gregory	R. Kovacs	Queens, NY

DRILLING CONTRACTOR/DRILLER	GEOGRAPHIC AREA
Roux Associates / Steve Spates	OU-3

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 5400 / Geoprobe	2" Macro-Core	12/18/03-12/18/03

LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL
19.05(FT.)	Not Measured	Clean Sand

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5						5
10			Light gray to gray medium to fine SAND, trace Silt; wet	PAHs= 2.483	117	Strong hydrocarbon odor, sample HD-2/9-11 collected 10
			NOT SAMPLED			
			Gray to brown medium to fine SAND, trace Silt; wet	PAHs= 0.0	0.4	Sample HD-2/13-15 collected
15						Bottom of Geoprobe boring at 15 ft bgs. Bottom of CPT/UVIF boring at 23.88 ft bgs. 15
20						20

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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Fax: (631) 232-9898

SOIL BORING LOG

WELL NO.	NORTHING	EASTING
HD-3	212767.9	1003767.1

PROJECT NO./NAME	LOCATION
05545Y08 / Amtrak	Sunnyside Yard

APPROVED BY	LOGGED BY	
H. Gregory	R. Kovacs	Queens, NY

DRILLING CONTRACTOR/DRILLER	GEOGRAPHIC AREA
UniTech Drilling / Steve Bartos	OU-3

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/26/03-11/26/03

LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL
17.25(FT.)	Not Measured	Clean Sand

Depth feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5			Dark brown Silt and fine to coarse Sand, some Gravel; wet		5.0	
			Brown to reddish brown to gray medium SAND, trace coarse Sand and Gravel; wet	PAHs= 16.960	79.8	Sample HD-3/5-7 collected
			Reddish brown medium to coarse SAND, some Gravel; wet		3.0	
				PAHs= 0.0	3.1	Sample HD-3/8-10 collected
10			Reddish brown medium to coarse SAND; wet		3.0	
			NOT SAMPLED			
15						
20			Brown medium to coarse SAND, some Gravel; wet	SVOCs= 0.048 PAHs= 0.0	1.6	Sample HD-3/20-22 collected
						Bottom of Geoprobe boring at 22 ft bgs. Bottom of CPT/UVIF boring at 25.91 ft bgs.
25						

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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Fax: (631) 232-9898

SOIL BORING LOG

WELL NO.: HD-4	NORTHING: 212753.5	EASTING: 1003630.3			
PROJECT NO./NAME: 05545Y08 / Amtrak		LOCATION: Sunnyside Yard			
APPROVED BY: H. Gregory	LOGGED BY: R. Kovacs	Queens, NY			
DRILLING CONTRACTOR/DRILLER: UniTech Drilling / Steve Bartos		GEOGRAPHIC AREA: OU-3			
DRILL BIT DIAMETER/TYPE: 2-Inch / Drive Sampler	BOREHOLE DIAMETER: 2-inches	DRILLING EQUIPMENT/METHOD: Geoprobe 6610 / Geoprobe	SAMPLING METHOD: 2" Macro-Core	START-FINISH DATE: 11/26/03-11/26/03	
LAND SURFACE ELEVATION: 17.14(FT.)	DEPTH TO WATER: Not Measured	BACKFILL: Clean Sand			

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			Dark brown fine to medium SAND, some Silt, trace coarse Sand; moist		1.9	
			Dark brown fine to coarse SAND, some Gravel; moist		2.6	
			Light brown Silt and fine to coarse Sand; wet			
			Brown fine to coarse SAND, some Gravel; wet		1.4	
5			Gray to brown medium to coarse SAND, some Gravel, trace fine Sand; wet		60.7	Hydrocarbon odor and staining
			Gray medium SAND, trace coarse Sand and Gravel; wet	SVOCs= 3.753 PAHs= 3.383	192	Hydrocarbon odor and sheen, sample HD-4/8-10 collected
10			Gray medium to coarse SAND; wet		56.7	Hydrocarbon odor
			Brown to reddish brown medium to coarse SAND, some Gravel, trace Silt; wet		12.3	
15			Brown to reddish brown to gray medium to coarse SAND, trace Gravel; wet	SVOCs= 0.059 PAHs= 0.0	2.3	Sample HD-4/14-16 collected
			Brown fine to coarse SAND, trace Gravel; wet		1.7	
			Brown to reddish brown medium to coarse SAND, trace fine Sand and Gravel; wet		1.4	
20			Dark brown medium to coarse SAND, trace Gravel and fine Sand; wet		1.0	
			Brown medium to coarse SAND, trace Gravel and fine Sand; wet		1.5	
						Bottom of Geoprobe boring at 24 ft bgs. Bottom of CPT/UVIF boring at 10.94 ft bgs

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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Environmental Consulting & Management

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Islandia, NY 11749
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Fax: (631) 232-9898

SOIL BORING LOG

WELL NO.	NORTHING	EASTING		
HD-5B	213064.4	1003986		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
UniTech Drilling / Steve Bartos		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/25/03-11/25/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
18.87(FT.)	Not Measured	Clean Sand		

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5						5
			Dark brown fine to coarse SAND, some Silt, little Ballast; wet	PAHs= 117.2	90.4	Hydrocarbon odor and staining Sample HD-5B/9-11 collected
10			Dark brown to black medium to coarse SAND, some gray to light gray Silt; wet		87.6	10 Hydrocarbon odor and staining
			Gray medium to coarse SAND, some Silt, trace Gravel and Ballast, wet		76.1	Hydrocarbon odor and staining
			NOT SAMPLED			
15			Gray to grayish brown medium to coarse SAND, some Gravel, trace fine Sand and Silt; wet	PAHs= 90.3	245	15 Hydrocarbon odor, sample ~~HD-5B/15-16 collected~~ Bottom of Geobrobe boring at 16 ft bgs. Bottom of CPT/UVIF boring at 12.84 ft bgs

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/30/06

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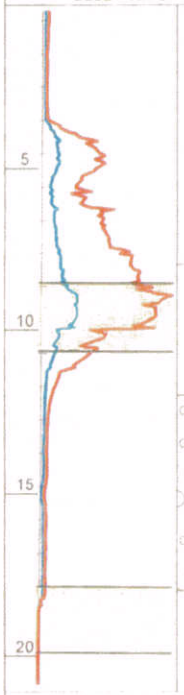
SOIL BORING LOG

WELL NO	NORTHING	EASTING		
HD-6	212955.7	1004049.8		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
UniTech Drilling / Steve Bartos		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/26/03-11/26/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
18.29(FT.)	Not Measured	Clean Sand		



Depth feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5						5
			Gray to dark gray fine to coarse SAND, wet		111	Hydrocarbon odor
10				SVOCs= 118.6 PAHs= 118.6	120	Strong hydrocarbon odor, sample HD-6/9-11 collected 10
			Gray to dark gray medium to coarse SAND, wet		65	Hydrocarbon odor
			Gray medium to coarse SAND, trace Gravel, wet		105	Hydrocarbon odor
			Gray medium to coarse SAND, some Gravel, wet		86.9	Hydrocarbon odor
15						15
					59.2	Hydrocarbon odor
			Gray medium to coarse SAND, trace Gravel, wet		1.5	Trace hydrocarbon odor
			Gray fine to coarse SAND, wet	SVOCs= 0.048 PAHs= 0.0	0.7	Trace hydrocarbon odor, sample HD-6/18-20 collected Bottom of Geoprobe boring at 20 ft bgs. Bottom of CPT/UVIF boring at 21.12 ft bgs. 20
20						

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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Fax: (631) 232-9898

SOIL BORING LOG

WELL NO	NORTHING	EASTING		
HD-7	212973.3	1003908.3		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
UniTech Drilling / Steve Bartos		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/25/03-11/25/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
17.13(FT.)	Not Measured	Clean Sand		

Depth feet	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
		Brown fine Sand and Silt, some Gravel; moist		48	Trace hydrocarbon odor
		Black fine to coarse Sand and Gravel, trace Silt; moist to wet			
		Gray to grayish brown medium to coarse SAND, trace Gravel; wet		86.4	Hydrocarbon odor
		Gray medium to coarse SAND, trace Gravel; wet		64.4	Hydrocarbon odor
5				69.7	Hydrocarbon odor
		Gray fine to coarse SAND, some Gravel, trace Silt; wet	SVOCs= 88.24 PAHs= 88.24	89.7	Hydrocarbon odor, sample HD-7/8-10 collected
10		Gray to brown fine to coarse SAND, some Gravel and Silt; wet		18.6	Hydrocarbon odor
		Gray to grayish brown medium to coarse SAND, trace Gravel and fine Sand; wet		46	Hydrocarbon odor
		White to greenish white brittle Rock			
15		Greenish gray fine to coarse Sand and Gravel, trace Silt; wet		2	Trace hydrocarbon odor
		Gray medium to coarse SAND, some gravel; wet		4.6	Trace hydrocarbon odor
		Gray medium to coarse SAND; wet		1.5	Trace hydrocarbon odor
20		Gray medium to coarse SAND; trace fine Sand and Gravel; wet		11.7	Trace hydrocarbon odor
		Gray medium to coarse SAND, trace Gravel; wet	SVOCs= 0.3 PAHs= 0.0	7.4	Trace hydrocarbon odor, sample HD-7/21-23 collected
				2.9	Trace hydrocarbon odor
25				3.7	
				9.2	
		Gray medium SAND, trace coarse Sand, wet		6.5	Trace hydrocarbon odor
30		Gray medium SAND, trace coarse Sand and Gravel; wet		3.5	Trace hydrocarbon odor
		Gray medium to fine SAND, trace Gravel; wet		7.7	Trace hydrocarbon odor
		Gray medium to coarse SAND, some Gravel; wet		2.3	
35		Brown Silt and fine Sand; moist			
		Grayish brown Silt and fine Sand; moist			Bottom of Geoprobe boring at 40 ft bgs. Bottom of CPT/UVIF boring at 34.48 ft bgs.

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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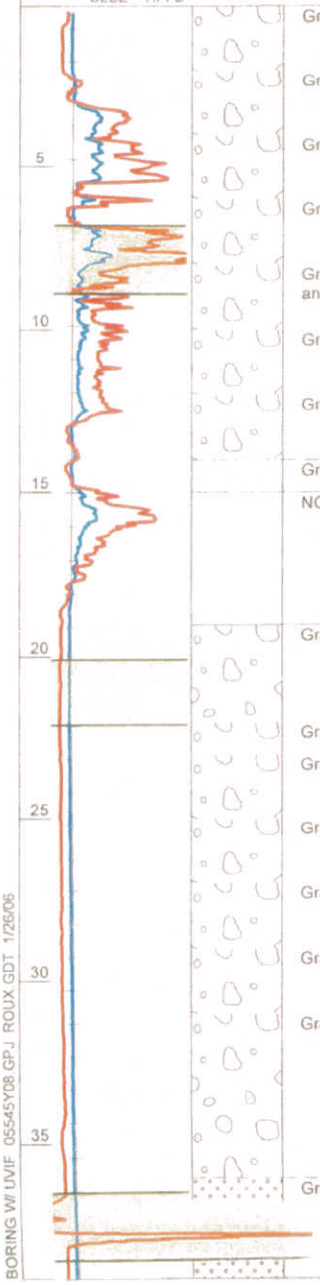
Fax: (631) 232-9898

SOIL BORING LOG

WELL NO.	NORTHING	EASTING		
HD-8D	212907	1003979		
PROJECT NO /NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY			
H. Gregory	R. Kovacs	Queens, NY		
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
UniTech Drilling / Steve Bartos		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/24/03-11/24/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
18.83(FT.)	Not Measured	Clean Sand		



Depth, feet	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
	Gray to dark brown fine to coarse Sand and Gravel, trace Silt; moist		90	Hydrocarbon odor
	Gray to dark brown fine to coarse SAND, some gravel, trace Silt; moist		300	Hydrocarbon odor
5	Gray to dark brown medium to coarse SAND, trace Gravel, moist to wet		320	Hydrocarbon odor
	Gray medium to coarse SAND, trace Gravel and Silt; wet		250	Hydrocarbon odor and staining Sample HD-8D/7-9 collected
	Gray to dark brown medium to coarse SAND, some Gravel, trace fine Sand and Silt; wet	SVOCs= 195.5 PAHs= 195.5	250	Hydrocarbon odor and staining
10	Gray medium to coarse SAND, trace fine Sand and Gravel; wet		350	Hydrocarbon odor
	Gray medium to coarse SAND, trace Gravel; wet		330	Hydrocarbon odor
15	Gray medium to coarse SAND; wet		225	Hydrocarbon odor
	NO RECOVERY			
20	Gray medium to coarse SAND, some Gravel; wet		45	Trace hydrocarbon odor
		SVOCs= 0.156 PAHs= 0.156	40	Trace hydrocarbon odor, sample HD-8D/20-22 collected
	Gray medium SAND, some coarse Sand, trace Gravel; wet		60	Trace hydrocarbon odor
	Gray to grayish brown medium to coarse SAND, trace Gravel; wet		40	
25	Gray to grayish brown medium to coarse SAND, trace Gravel; wet		20	
	Gray medium to coarse Sand and Gravel; wet		6	
30	Gray medium to coarse SAND, some Gravel; wet		5	
	Gray medium to coarse SAND, trace Gravel; wet		6.8	
			3.4	
35			20	
	Gray medium SAND; wet	SVOCs= 0.0 PAHs= 0.0	15	Sample HD-8D/36-38 collected Bottom of Geoprobe boring at 39 ft bgs. Bottom of CPT/UVIF boring at 42.33 ft bgs.
			5	

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

209 Shafter Street
Islandia, NY 11749
Telephone: (631) 232-2600
Fax: (631) 232-9898

SOIL BORING LOG

WELL NO.	NORTHING	EASTING
HD-9	212833.6	1003966.2

PROJECT NO./NAME	LOCATION
05545Y08 / Amtrak	Sunnyside Yard

APPROVED BY	LOGGED BY	
H. Gregory	R. Kovacs	Queens, NY

DRILLING CONTRACTOR/DRILLER	GEOGRAPHIC AREA
UniTech Drilling / Steve Bartos	OU-3

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/26/03-11/26/03

LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL
17.76(FT.)	Not Measured	Clean Sand

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5						5
			Dark gray fine to coarse SAND, trace Gravel; wet	PAHs= 29.87	139	Hydrocarbon odor, sample HD-9/8-10 collected
10			Gray to grayish brown medium to coarse SAND, trace Gravel; wet		63.4	Hydrocarbon odor 10
			Grayish brown medium to coarse SAND, some Gravel; wet		10	Hydrocarbon odor
			Grayish brown medium SAND, trace fine Sand and Gravel; wet	PAHs= 0.047	7.3	Trace hydrocarbon odor, sample HD-9/13-15 collected
15						Bottom of Geoprobe boring at 15 ft bgs. Bottom of CPT/UVIF boring at 19.77 ft bgs. 15

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO	NORTHING	EASTING		
HD-10	213007.5	1003881.1		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
UniTech Drilling / Steve Bartos		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/25/03-11/25/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
16.37(FT.)	Not Measured	Clean Sand		

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			Dark gray to brown fine to coarse SAND, some Gravel, trace Silt and Wood; moist		46	
			Dark gray to gray fine to medium SAND, trace coarse Sand and Gravel; moist		97.9	
5			NOT SAMPLED			5
			Gray medium to coarse SAND; wet		106	Trace hydrocarbon odor
			Gray medium to coarse SAND, trace Gravel; wet	SVOCs= 83.86 PAHs= 80.96	87	Sample HD-10/6-8 collected
			Gray to grayish brown fine to medium SAND, trace coarse Sand and Gravel; wet	SVOCs= 43.13 PAHs= 42.19	95.4	Hydrocarbon odor, sample HD-10/8-10 collected
10			Gray to grayish brown medium SAND, trace coarse Sand and Gravel; wet		71.3	Hydrocarbon odor 10
			Gray medium to coarse SAND, trace Gravel; wet		90.6	Hydrocarbon odor
			Gray medium to coarse SAND, some Gravel, trace fine Sand; wet		54.5	Hydrocarbon odor, sheen
15			Gray medium to coarse SAND, some Gravel, trace fine Sand; wet	SVOCs= 0.197 PAHs= 0.047	2.5	Trace hydrocarbon odor, sample HD-10/16-18 collected 15
			Gray medium to coarse SAND, trace Gravel; wet		3.2	Trace hydrocarbon odor
20			Gray medium SAND, trace Gravel; wet		10.8	Trace hydrocarbon odor 20
			Gray medium SAND, trace Gravel; wet		4.5	Trace hydrocarbon odor
25						Bottom of Geoprobe boring at 24 ft bgs. Bottom of CPT/UVIF boring at 27.14 ft bgs 25

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO.	NORTHING	EASTING
HD-11	213079.4	1003846.6

PROJECT NO./NAME	LOCATION
05545Y08 / Amtrak	Sunnyside Yard

APPROVED BY	LOGGED BY	
H. Gregory	R. Kovacs	Queens, NY

DRILLING CONTRACTOR/DRILLER	GEOGRAPHIC AREA
Roux Associates / Steve Spates	OU-3

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 5400 / Geoprobe	2" Macro-Core	12/18/03-12/18/03

LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL
17.23(FT.)	Not Measured	Clean Sand

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5			Light brown to gray medium to fine SAND, trace Silt and coarse Sand; wet	SVOCs= 97.05 PAHs= 97.05	67.3	Hydrocarbon odor and staining, sample HD-11/4-6 collected
			Light gray medium to fine SAND, some Silt; wet		115	Hydrocarbon odor and staining
10			Light gray fine SAND, some Silt; wet	SVOCs= 106.5 PAHs= 106.5	76.4	Hydrocarbon odor, sample HD-11/8-10 collected
			NOT SAMPLED			
15			Light gray fine SAND, some Silt, little medium Sand; wet	SVOCs= 1.462 PAHs= 1.462	3.2	Sample HD-11/13-15 collected
						Bottom of Geoprobe boring at 15 ft bgs. Bottom of CPT/UVIF boring at 17.81 ft bgs

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO.	NORTHING	EASTING		
HD-12	212913.3	1003835.7		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
UniTech Drilling / Steve Bartos		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/25/03-11/25/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
17.60(FT.)	Not Measured	Clean Sand		

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5			Gray fine to medium SAND, some Silt, trace Gravel; moist	PAHs= 104.0	66.9	Hydrocarbon odor, sample HD-12/6-8 collected
			NOT SAMPLED			
10						
15			Gray medium to coarse SAND; wet	PAHs= 0.112	18.6	Trace hydrocarbon odor, sample HD-12/14-16 collected
						Bottom of Geoprobe boring at 16 ft bgs. Bottom of CPT/UVIF boring at 27.06 feet bgs.
20						
25						

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO. HD-13	NORTHING 212851.2	EASTING 1003820.7		
PROJECT NO./NAME 05545Y08 / Amtrak		LOCATION Sunnyside Yard		
APPROVED BY H. Gregory	LOGGED BY R. Kovacs	Queens, NY		
DRILLING CONTRACTOR/DRILLER Roux Associates / Steve Spates		GEOGRAPHIC AREA OU-3		
DRILL BIT DIAMETER/TYPE 2-Inch / Drive Sampler	BOREHOLE DIAMETER 2-inches	DRILLING EQUIPMENT/METHOD Geoprobe 5400 / Geoprobe	SAMPLING METHOD 2" Macro-Core	START-FINISH DATE 12/19/03-12/19/03
LAND SURFACE ELEVATION 16.38(FT.)	DEPTH TO WATER Not Measured	BACKFILL Clean Sand		

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
			Brown to dark brown medium to fine SAND, trace Silt and Gravel; wet	PAHs= 0.169	0.8	Sample HD-13/3-5 collected
5			Brown medium to fine SAND, trace coarse Sand and Silt		0.5	Bottom of Geoprobe boring at 7 ft bgs. Bottom of CPT/UVIF boring at 23.81 ft bgs.
10						
15						
20						

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO	NORTHING	EASTING		
HD-14	213090.2	1003697.1		
PROJECT NO /NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY			
H. Gregory	R. Kovacs	Queens, NY		
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
Roux Associates / Steve Spates		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 5400 / Geoprobe	2" Macro-Core	12/18/03-12/18/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
15.60(FT.)	Not Measured	Clean Sand		

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
			Brown to light brown medium to fine SAND, some Ballast, some Coarse Sand; wet		0.0	
5			Brown medium to fine SAND, some Silt; wet	PAHs= 10.148	0.6	Sample HD-14/4-6 collected
			Brown to light gray medium to fine SAND, some Silt; wet	PAHs= 0.210	0.3	Sample HD-14/6-8 collected
						Bottom of Geoprobe boring at 8 ft bgs. Bottom of CPT/UVIF boring at 19.21 feet bgs.
10						
15						

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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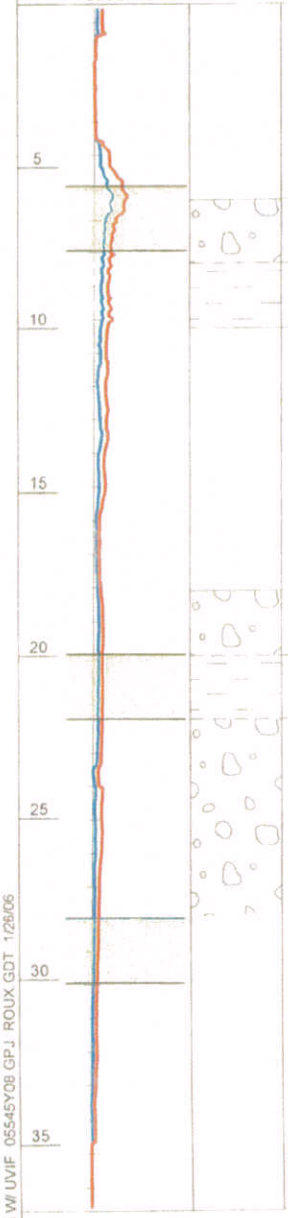
SOIL BORING LOG

WELL NO.	NORTHING	EASTING		
HD-15C	213022.8	1003760.9		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
UniTech Drilling / Steve Bartos		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/25/03-11/25/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
16.89(FT.)	Not Measured	Clean Sand		



Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
Not Sampled			
Gray to grayish brown fine to coarse SAND, some Gravel, trace Silt; wet	PAHs= 140.5	142	Sample HD-15C/6-8 collected
Brown to grayish brown fine to medium SAND, some Silt, trace coarse Sand and Gravel; wet		112	Hydrocarbon odor and staining
Not Sampled			
Gray medium to coarse SAND, trace Gravel; wet		43.9	Hydrocarbon odor and sheen
Gray fine to medium SAND, trace coarse Sand and Silt; wet	PAHs= 0.039	8.8	Trace hydrocarbon odor and sheen, sample HD-15C/20-22 collected
Gray medium to coarse SAND, trace Gravel; wet		24.2	Trace hydrocarbon odor
		18.7	Trace hydrocarbon odor
		15.3	Trace hydrocarbon odor
Gray medium SAND, trace coarse Sand; wet	PAHs= 3.365	28.3	Trace hydrocarbon odor, sample HD-15C/28-30 collected Bottom of Geoprobe boring at 30 ft bgs. Bottom of CPT/UVIF boring at 37 ft bgs.

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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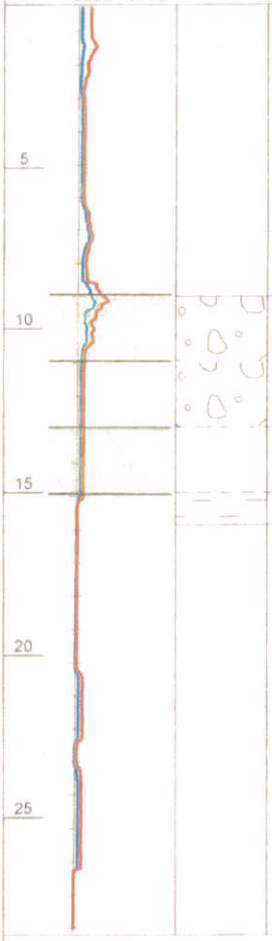
SOIL BORING LOG

WELL NO.	NORTHING	EASTING		
HD-16	212943.7	1003774.7		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
Roux Associates / Steve Spates		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 5400 / Geoprobe	2" Macro-Core	12/19/03-12/19/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
16.53(FT.)	Not Measured	Clean Sand		



Depth feet	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
		NOT SAMPLED			
10		Brown to dark brown fine to coarse SAND, trace Gravel; wet	SVOCs= 1.678 PAHs= 1.678	15.8	Hydrocarbon odor, sample HD-16/9-11 collected
		Brown to dark brown medium to coarse SAND, trace Gravel; wet		1.5	Slight hydrocarbon odor
		Brown to dark brown fine to coarse SAND; wet	SVOCs= 0.0 PAHs= 0.0	1.4	Sample HD-16/13-15 collected
15		Brown fine to coarse SAND, little Silt; wet		0.8	Bottom of Geoprobe boring at 16 ft bgs. Bottom of CPT/UVIF boring at 28.61 ft bgs.

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO.	NORTHING	EASTING
HD-17	213053.7	1003655.2
PROJECT NO./NAME		LOCATION
05545Y08 / Amtrak		Sunnyside Yard
APPROVED BY	LOGGED BY	Queens, NY
H. Gregory	R. Kovacs	
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA
Roux Associates / Steve Spates		OU-3

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 5400 / Geoprobe	2" Macro-Core	12/18/03-12/18/03

LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL
16.64(FT.)	Not Measured	Clean Sand

Depth feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
			Brown to dark brown medium to coarse SAND, some Gravel, trace fine Sand; wet		1.3	
			Brown medium to fine Sand; wet	PAHs= 2.865	12	Slight hydrocarbon odor, sample HD-17/4-6 collected
5						5
			Brown to light brown fine SAND, some Clay, trace medium Sand; wet		18.3	Slight hydrocarbon odor
			Brown to gray medium to fine SAND, some Silt, trace coarse Sand; wet	PAHs= 0.169	5	Slight hydrocarbon odor, sample HD-17/8-10 collected
10						10
			Gray fine SAND, some Silt, little medium Sand; wet		2.6	
						Bottom of Geoprobe boring at 12 ft bgs. Bottom of CPT/UVIF boring at 24.46 ft bgs.
15						15
20						20

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO	NORTHING	EASTING
HD-18	212977	1003617.1

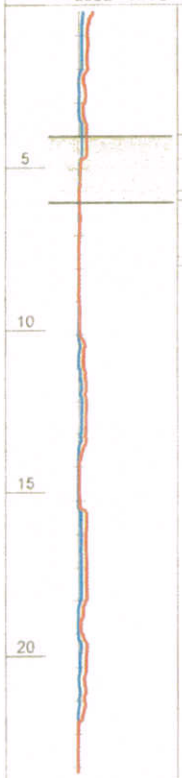
PROJECT NO./NAME	LOCATION
05545Y08 / Amtrak	Sunnyside Yard

APPROVED BY	LOGGED BY	
H. Gregory	R. Kovacs	Queens, NY

DRILLING CONTRACTOR/DRILLER	GEOGRAPHIC AREA
Roux Associates / Steve Spates	OU-3

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 5400 / Geoprobe	2" Macro-Core	12/18/03-12/18/03

LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL
17.31(FT.)	Not Measured	Clean Sand



Depth, feet	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
	NOT SAMPLED			
5	Brown medium to fine SAND, some Silt; wet	PAHs= 0.381	0.8	Sample HD-18/4-6 collected
	Brown medium to fine SAND, trace Silt; wet		0.7	
10				Bottom of Geoprobe boring at 8 ft bgs. Bottom of CPT/UVIF boring at 23.95 ft bgs.
15				
20				

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO.	NORTHING	EASTING		
HD-19	212860.2	1003592.1		
PROJECT NO./NAME		LOCATION		
05545Y08 / Amtrak		Sunnyside Yard		
APPROVED BY	LOGGED BY	Queens, NY		
H. Gregory	R. Kovacs			
DRILLING CONTRACTOR/DRILLER		GEOGRAPHIC AREA		
Roux Associates / Steve Spates		OU-3		
DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 5400 / Geoprobe	2" Macro-Core	12/19/03-12/19/03
LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL		
14.94(FT.)	Not Measured	Clean Sand		

Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
			Brown medium to fine SAND, trace coarse Sand and Gravel; wet	PAHs= 0.0	0.1	Sampled HD-19/2-4 collected
5						Bottom of Geoprobe boring at 4 ft bgs. Bottom of CPT/UVIF boring at 22.04 ft bgs.
10						
15						
20						

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06

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SOIL BORING LOG

WELL NO	NORTHING	EASTING
HD-20	212795.6	1003643.2

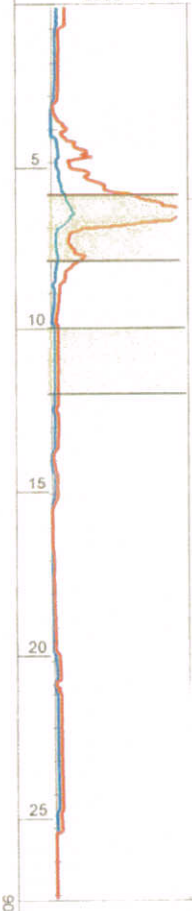
PROJECT NO./NAME	LOCATION
05545Y08 / Amtrak	Sunnyside Yard

APPROVED BY	LOGGED BY	
H. Gregory	R. Kovacs	Queens, NY

DRILLING CONTRACTOR/DRILLER	GEOGRAPHIC AREA
UniTech Drilling / Steve Bartos	OU-3

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
2-Inch / Drive Sampler	2-inches	Geoprobe 6610 / Geoprobe	2" Macro-Core	11/26/03-11/26/03

LAND SURFACE ELEVATION	DEPTH TO WATER	BACKFILL
16.51(FT.)	Not Measured	Clean Sand



Depth, feet	UVIF LOG (1" = 2 Volts) RED = LFFD BLUE = HFFD	Graphic Log	Visual Description	Total SVOC and/or PAH Concentrations (ppm)	PID Values (ppm)	REMARKS
			NOT SAMPLED			
5			Gray fine to coarse SAND; wet	PAHs= 168.2	129	Hydrocarbon odor, sample HD-20/6-8 collected
			Gray medium to coarse SAND; wet		59.2	Hydrocarbon odor
10			Brown to grayish brown medium to coarse SAND, trace fine Sand; wet	PAHs= 0.15	12.6	Sample HD-20/10-12 collected
			Brown to grayish brown medium to coarse SAND, trace fine Sand; wet Brown medium SAND, trace fine and coarse Sand; wet		18.9	
15						Bottom of Geoprobe boring at 14 ft bgs. Bottom of CPT/UVIF boring at 27.49 ft bgs
20						
25						

BORING W/ UVIF 05545Y08.GPJ ROUX.GDT 1/26/06