

R0363

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Shell Oil Products US

March 28, 2003

Alameda County

APR 02 2003

Environmental Health

Mr. Scott Seery
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Shell-branded Service Station
3790 Hopyard Road
Pleasanton, California

Dear Mr. Seery:

Attached for your review and comment is a copy of the *Subsurface Investigation Report* for the above referenced site. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

As always, please feel free to contact me directly at (559) 645-9306 with any questions or concerns.

Sincerely,

Shell Oil Products US

Karen Petryna

Karen Petryna
Sr. Environmental Engineer

March 28, 2003

Scott Seery
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Subsurface Investigation Report**
Shell-branded Service Station
3790 Hopyard Road
Pleasanton, California
Incident #98995842
Cambria Project #245-0497



Dear Mr. Seery:

Cambria Environmental Technology, Inc. (Cambria) has prepared this *Subsurface Investigation Report* on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell). The scope of work for this investigation was described in Cambria's June 12, 2002 *Subsurface Investigation Work Plan* and in Cambria's July 22, 2002 addendum submitted via electronic mail to Mr. Scott Seery of the Alameda County Health Care Services Agency (ACHCSA). The scope of work was approved during an August 1, 2002 telephone conversation between Mr. Seery and Jacquelyn Jones of Cambria. **In addition, Cambria is presenting a correction to the utility survey presented in our April 9, 2002 *Sensitive Receptor Survey Report*, and cross-sectional diagrams as requested in a November 6, 2002 correspondence from Mr. Seery.** Presented below are summaries of the site background, the utility survey correction, our investigation procedures and results, the prepared cross-sectional diagrams and our conclusions.

SITE SUMMARY

Site Description: This active Shell-branded service station is located on the southwest corner of the intersection at Hopyard Road and Las Positas Boulevard in Pleasanton, California. The site is surrounded by primarily commercial and residential property (Figures 1 and 2). The service station layout includes a station building, two dispenser islands, a waste oil underground storage tank (UST), and a gasoline UST complex. The site is located in close proximity to several active municipal wells. The locations of these wells in relation to the site are shown on Figure 3.

**Cambria
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Groundwater Depth and Flow Direction: Depth to groundwater in site monitoring wells has ranged from 11.74 to 19.59 feet below grade (fbg) since groundwater monitoring was initiated in March of 1991. The groundwater flow direction, as calculated by the onsite and offsite groundwater monitoring wells, has ranged from south-southeast to southeast.

Site Lithology: The site is underlain by interbedded layers of sandy clay, clayey sand, silty clay and clay to approximately 43 to 53 fbg, underlain by more permeable silt and sand interbeds to approximately 75 fbg, underlain by silts and clays to approximately the total explored depth of 120 fbg. A sandy layer was encountered at approximately 117 fbg in one boring installed downgradient of the site.



1986 Subsurface Investigation: On January 22 and 23, 1986 Emcon Associates of San Jose, California advanced five soil borings (S-A through S-E) to document hydrocarbon levels for soil disposal related to future UST replacement activities. Soil samples from boring S-A, located adjacent to the former waste oil tank at the site, were analyzed for waste oil only, and no waste oil was detected. Borings S-B through S-E were advanced in the vicinity of the former USTs. Soil samples collected from each boring contained volatile fuel hydrocarbons (calculated as gasoline and including benzene, toluene, xylenes and ethyl benzene) and benzene with the highest detected concentrations of 5,100 parts per million (ppm) and 14 ppm, respectively, detected in boring S-C between 7 to 8.5 fbg. Table 1 summarizes historical soil samples collected at the site.

1987 Subsurface Investigation: On October 28, 1987, Pacific Environmental Group, Inc. (PEG) of Santa Clara, California installed two tank backfill wells (ST-1 and ST-2) and two groundwater monitoring wells (S-1 and S-2) at the site. Soil samples were collected between 13 and 14.5 fbg in borings ST-1 and ST-2, and between 14 to 15.5, 19 to 20.5 and 33.5 to 35 fbg in wells S-1 and S-2. The highest gasoline concentration of 57 ppm was detected in soil samples collected from monitoring well S-1 at 14 to 15.5 fbg (Table 1). The highest benzene concentration of 6.7 ppm was detected in soil samples collected from well S-2 at 14 to 15.5 fbg (Table 1).

1988 Subsurface Investigation: On January 26, 1998, PEG installed wells S-3 through S-5 at the site. Soil samples were collected between 19 to 20.5 fbg and analyzed for gasoline, benzene, toluene and xylenes. None of the analytes were detected in soil samples collected from monitoring well S-3. The highest concentrations of 4,700 ppm gasoline and 50 ppm benzene were detected in well S-5 (Table 1).

1988 Tank Removal: On August 3, 1988, three gasoline USTs were removed from the site. Kaprealian Engineering, Inc. of Benecia, California collected 10 soil samples beneath the tanks at various depths. All soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene and xylenes (BTEX). The highest TPHg and benzene concentrations detected were 2,100 ppm TPHg in sample A2 and 13 ppm benzene in

sample A1 (Table 1). None of the analytes were detected in sample A1X. Well S-1 was properly destroyed on August 6, 1988 due to the construction.

A new tank pit was excavated and three tanks were subsequently installed. Soil samples were collected at 5, 10 and 15 fbg (A5, A-10, A-15) in one location during the tank pit excavation. The highest detected TPHg and benzene in these soil samples was 4.4 ppm at 15 fbg and 1.3 ppm at 5 fbg, respectively (Table 1).

1988 Subsurface Investigation: Two groundwater monitoring wells (S-6 and S-7) were installed on October 4, 1988 by Woodward-Clyde Consultants (Woodward-Clyde) of Oakland, California. Soil samples collected from the borings were analyzed for gasoline and BTEX. None of the analytes were detected in boring S-7. Gasoline and benzene were detected in soil samples collected from well S-6 only with the highest respective concentrations of 9 ppm (14 to 15.5 fbg) and 0.05 ppm (9 to 10.5 fbg and 19 to 20.5 fbg) (Table 1).

1989 Subsurface Investigation: Two groundwater monitoring wells (S-8 and S-9) were installed on February 24, 1989 by Woodward-Clyde. Soil samples collected from the borings were analyzed for gasoline and BTEX. None of the analytes were detected in either of the soil borings (Table 1).

1989 Subsurface Investigation: In August and September 1990, Geostrategies Inc. (Geostrategies) of Hayward, California installed monitoring well S-10 and extraction wells SR-1 through SR-3 at the site. No TPHg or BTEX was detected in soil samples collected from well S-10. The highest detected TPHg and benzene concentrations in soil samples collected from the extraction wells SR-1 through SR-3 were 67 ppm (SR-2 at 15 fbg) and 5.4 ppm (SR-1 at 20 fbg), respectively (Table 1).

1990 Aquifer Test: In February 1990, Geostrategies conducted a constant-rate pump test on well SR-3 at the site, and slug tests on wells SR-3, S-2, S-3, S-5 and S-7 through S-10. Calculated hydraulic conductivity values ranged from 1.0 to 10.5 feet per day based on SR-3 pump test results, and from 3.2 to 58.2 feet per day based on slug test results.

1997 Risk Assessment: In January 1997, Cambria submitted a risk evaluation for the site noting that the site met criteria for a low-risk groundwater site.

Groundwater Extraction (GWE): Beginning the week of May 14, 2001, Advanced Cleanup Technologies Inc. of Benicia, California conducted three weekly 8-hour mobile GWE events using site monitoring wells S-2 and S-4 and tank backfill well T-2. Three additional GWE events were performed in August 2001. At Shell's direction, Onyx Industrial Service initiated twice-monthly events extracting from tank backfill well T-2 beginning in April 2002. Groundwater was

also extracted from well S-4 between June 2002 and September 2002. Extraction from well S-4 was discontinued due to low extraction volumes. Tank backfill well T-4 was added to the twice-monthly extraction events in October 2002. Mobile GWE vacuum operations consist of lowering dedicated stingers into monitoring wells and extracting fluids using a vacuum truck. Mass removal estimates are submitted with quarterly groundwater monitoring reports for the site. Through the end of February 2003, an estimated 0.96 pounds of TPHg and 9.31 pounds of MTBE have been removed through GWE at the site. Mobile GWE was discontinued in March 2003 due to the installation of a fixed GWE system at the site (see below).



2002 Sensitive Receptor Survey: In April 2002, Cambria submitted a sensitive receptor survey for the site. Based on a review of Department of Water Resources records, six wells were identified within a ½-mile radius of the site, including one active municipal well, one destroyed municipal well, one abandoned irrigation well, one destroyed irrigation well and two wells of unknown use. The nearest surface water body identified is the Arroyo Mocho Canal located approximately 400 feet south of the site. **A utility survey was also presented which was later determined to be inaccurate.** An updated utility survey is presented below. **Based on utility survey results, utilities in the site vicinity are not expected to affect groundwater flow or to provide preferential groundwater migration pathways.**

2002 Dispenser and Piping Upgrades: In July 2002, the fuel system equipment at the site was upgraded by Paradiso Mechanical, Inc. (Paradiso) of San Leandro, California. Paradiso replaced and upgraded the fuel dispensers and product, vapor and vent lines. Additionally, Paradiso added dispenser pans under the new dispensers and replaced the UST fuel fill port sumps and all associated piping in the tank pit area above the USTs. Cambria collected three piping samples (P-1 through P-3) and four dispenser samples (D-1 through D-4). Hydrocarbons were detected in four of the seven soil samples collected beneath the dispensers and piping. Maximum concentrations of 260 ppm TPHg and 0.079 ppm benzene were both detected in sample P-1 at 3.5 fbg (Table 1). MTBE was not detected in any of the soil samples collected. Soil sampling results were reported in Cambria's *Dispenser and Piping Upgrade Soil Sampling Report* dated January 21, 2003.

Interim Remediation Work Plan: On August 28, 2002, Cambria submitted an *Interim Remediation Work Plan* proposing the installation of a fixed GWE system at the site. This work plan was approved in a September 9, 2002 ACHCSA letter. The system is expected to start in April 2003.

Quarterly Monitoring: Groundwater monitoring has been conducted at the site since 1987. The highest TPHg, benzene and MTBE concentrations detected in groundwater monitoring samples collected at the site are 16,000 parts per billion (ppb), 1,600 ppb, and 100,000 ppb, respectively. Monitoring results for the fourth quarter 2002 indicate that the current highest TPHg, benzene

and MTBE concentrations in site monitoring and tank backfill wells are 2,100 ppb, 7.8 ppb and 5,100 ppb, respectively. The extent of benzene in groundwater is defined in the downgradient direction of the site by monitoring wells S-6, S-7, S-8, S-9, S-10, S-11 and S-12. The southeastern downgradient extent of MTBE in groundwater is defined by monitoring wells S-10, S-11 and S-12.

UTILITY SURVEY CORRECTION



During field activities conducted on July 29, 2002, Cambria determined that the utility survey previously presented in the April 9, 2002 *Sensitive Receptor Survey Report* was inaccurate. Cambria reviewed engineering maps of the region provided by the City of Pleasanton and maps provided by Pacific Gas and Electric Company, and amended the utility locations. The updated locations of sanitary sewer, storm drain, water, natural gas, electric and telephone lines, with depth and diameter information where determined, are shown on Figure 2 and summaries are presented below.

Sanitary Sewers: One 8-inch diameter sanitary sewer line is located beneath the center of West Las Positas Boulevard northwest of the site. A 6-inch diameter lateral connects to the site in the northwest corner of the property. The invert depths of the sewer lines in the vicinity of the site range from approximately 8 to 10 fbg.

Storm Drains: One 24-inch diameter storm drain is located beneath the center of Los Positas Boulevard east of Hopyard Road which connects to a 42-inch diameter storm drain located beneath the eastern side of Hopyard Road at the intersection of Las Positas Boulevard with Hopyard Road. The 42-inch storm drain connects to an outfall structure on the northern bank of the Arroyo Mocho Canal east of Hopyard Road. The invert depth of the storm drain south at the intersection of Hopyard Road and Las Positas Boulevard is 10.2 fbg, which corresponds to an invert elevation of 315.81 feet above mean sea level (msl). At the manhole near well S-10, the invert depth of the storm drain is 11.3 fbg, which corresponds to an invert elevation of 315.50 feet above msl. The invert elevation of the outfall structure, which is the deepest point of the storm drain, is noted as 315.29 feet above msl.

One storm drain inlet is located at the northern corner of the property, and it connects to a 12-inch diameter storm drain which crosses West Las Positas Boulevard and runs beneath the western side of Hopyard Road north of the site. North of the site, this storm drain crosses Hopyard Road to connect with the 42-inch diameter storm drain beneath the eastern side of Hopyard Road (outside of the extent shown on Figure 2). The invert depth to the storm drain is approximately 4 fbg adjacent to the site and approximately 5 fbg where it crosses Hopyard Road.

Water Lines: One 20-inch diameter water main is located beneath Hopyard Road, running down the center of the road north and east of the site, and then angling toward the western side of Hopyard Road west of the site. An additional 14-inch diameter water line is located beneath the western side of Hopyard Road, but the City of Pleasanton maps do not show this line continuing south of the site. Additionally, a 16-inch diameter water line is located beneath the northern side of Las Positas Boulevard west of Hopyard Road, and a 16-inch diameter water line is located beneath the eastern side of Hopyard Road north of Las Positas Boulevard which intersects a 16-inch water line crossing Hopyard Road on the north side of the intersection with Las Positas Boulevard. City of Pleasanton maps indicate the invert depth of water mains in the site vicinity range from approximately 6 to 9 fbg.



Gas and Electric Utilities: City of Pleasanton engineering maps noted a 6-inch diameter high-pressure gas main located beneath the western side of Hopyard Road. The maps noted a depth to this line near the intersection of Hopyard Road and Los Positas Boulevard of approximately 5 fbg. A 6-inch diameter lateral from this line branches toward the west and continues down the south side of West Las Positas Boulevard. An additional 6-inch diameter lateral line branches toward the east crossing Hopyard Road just south of the intersection with Las Positas Boulevard. Just north of the Arroyo Mocho Canal, the gas main turns 90 degrees toward the center of Hopyard Road and turns again to continue down the center of Hopyard Road.

City of Pleasanton engineering maps identified several electrical lines in the site vicinity including lines beneath the east and west sides of Hopyard Road, two beneath the north side of Las Positas Boulevard west of Hopyard Road, two crossing Hopyard Road on the north side of the intersection with Las Positas Boulevard, and two crossing Hopyard Road just north of the Arroyo Mocho Canal. Depth and diameter of the electrical lines in the vicinity were not noted. Typical burial depths of electrical lines range from 3 to 8 fbg.

Telephone Lines: City of Pleasanton engineering maps show two telephone conduits in the site vicinity. One conduit runs beneath the southern side of Las Positas Boulevard at the intersection of Hopyard Road and contains six 4-inch diameter ducts. The second conduit contains a 12-inch diameter line and is located beneath the west side of Hopyard Road north of the intersection with Las Positas Boulevard. City of Pleasanton maps did not indicate line depths.

Conduit Depths Relative to Groundwater. Groundwater elevations in the shallow water-bearing zone were calculated using surveyed top of well casing elevations and depths to groundwater measured since 1989. Measured depths-to-groundwater at the site have ranged from approximately 11.52 fbg to 19.59 fbg, which corresponds to a range of elevations of 318.14 to 308.65 feet above msl. As shown on the rose diagram presented on Figure 2, groundwater flow direction at the site consistently ranges from south-southeast to southeast. Based on this flow

direction, utilities located downgradient of the site include the storm drain and water, gas and electric lines located beneath Hopyard Road. The majority of the lines in the downgradient direction from the site run approximately north to south, which approximates the natural groundwater flow direction at the site.

The invert elevation of the storm drain line beneath the east side of Hopyard Road ranges from 315.81 to 315.29 feet above msl. Calculated groundwater elevations in wells S-10, S-11 and S-12, all located adjacent to the storm drain, have ranged historically between 314.14 and 304.81 feet above msl. **Based on these elevations, the storm drain and the outfall structure do not encounter groundwater.**



The deepest water main invert in the vicinity of the site is noted to be 9 fbg. Based on the measured depths-to-groundwater for the site, **the water mains are not expected to encounter groundwater.** The noted depth to the gas main near the intersection of Hopyard Road and Las Positas Boulevard is approximately 5 fbg; depth to the gas main was not noted anywhere else in the site vicinity. While exact depths to gas and electric lines in the site vicinity could not be determined, typical burial depths for these utilities range from 3 to 8 fbg. **Based on depths-to-groundwater for the site, these utilities are not likely to encounter groundwater.**

Based on the information that the utilities in the site vicinity parallel natural groundwater flow and are more shallow than historical groundwater table, the identified utilities are not expected to serve as preferential pathways for chemical migration in groundwater.

INVESTIGATION PROCEDURES

Cambria supervised the installation of two 2-inch diameter monitoring wells (MW-11 and MW-12) downgradient of the site across Hopyard Road from the site, and the installation of one onsite and one offsite cone penetrometer testing (CPT) borings (CPT-1 and CPT-2). Monitoring wells MW-11 and MW-12 were installed to serve as shallow groundwater sentry wells between the site and the active municipal well located approximately 1,500 feet southeast of the site. The CPT borings were installed to log lithology at depth and to aid in determining potential screen intervals for future deep-screened monitoring wells. The procedures for this investigation, described in Cambria's approved work plan and addendum, are summarized below. Cambria's standard field procedures for monitoring well installation and for CPT are presented as Attachments A and B, respectively.

Drilling Dates: July 26, 2002 (CPT-1); July 29, 2002 (S-11 attempted); August 26, 2002 (S-11); September 19, 2002 (S-12); and November 25, 2002 (CPT-2).

Drilling Company: Gregg Drilling Inc. (Gregg) of Martinez, California (C 57 License #485165).

Personnel Present: Jason Gerke, Senior Staff Scientist, Cambria (July 26 and September 19, 2002).
Stewart Dalie, Staff Geologist, Cambria (August 26 and November 25, 2002).



Permits: Cambria obtained Zone 7 Water Agency (Zone 7) drilling permit #22108 and encroachment permits #03-005FC and #03-025FC; and City of Pleasanton encroachment permit #200943, #200945 and #201003 (Attachment C). In addition, on September 13, 2002, Jason Gerke of Cambria and Mr. Joe Seto of Zone 7 met onsite, and Mr. Seto approved the exact location of well S-12. Mr. Seto stated that the determined location would not impede pedestrian traffic or compromise structural integrity of the northern bank of the Arroyo Mocho Canal.

Drilling Methods: Groundwater monitoring wells S-11 and S-12 were installed using a drill rig equipped with 8-inch diameter hollow-stem augers. CPT borings CPT-1 and CPT-2 were installed using direct-push technology.

Number of Borings: Two soil borings converted to monitoring wells (S-11 and S-12) and two CPT borings (Figure 2).

Boring Depths: The borings for monitoring wells S-11 and S-12 were advanced to approximately 25 fbg (Attachment D). CPT boring CPT-1 was advanced to approximately 119 fbg and boring CPT-2 was advanced to approximately 120 fbg (Attachment E). Copies of the submitted Department of Water Resources well completion reports are included as Attachment F.

Soil Sampling: Soil samples were collected from wells S-11 and S-12 every 5 feet using a split-spoon sampler with brass sampling tubes. No discreet soil samples were collected from the CPT borings. Lithology was logged continuously in the CPT borings.

Sediment Lithology: Soils encountered in groundwater monitoring wells S-11 and S-12 consisted of clay/silty clay to the total explored depth of 25 fbg. Soils encountered in borings CPT-1 and CPT-2 consisted primarily of clay with some silty clay to a depth of approximately 43 to 53 fbg, underlain by interbedded clayey silts, silts, silty sands and sand layers. This more permeable interval is approximately 7 to 10 feet thick and underlain by interbedded layers of silty clays, clayey silts and silt to the total explored depth of approximately 120 fbg. In boring CPT-2 a silty sand/sand layer was encountered at 117 fbg and extended to the total explored depth of 118.76 fbg (Attachments D and E).



Groundwater Depth: Groundwater was first encountered in monitoring wells S-11 and S-12 at 25 fbg and 23 fbg, respectively. Static depths-to-water measured in wells S-11 and S-12 on September 23, 2002 were 16.93 and 14.74 fbg, respectively. **Several groundwater-bearing zones were encountered in each of the CPT borings at various depths.**

Groundwater Sampling: Grab groundwater samples were not collected during the installation of monitoring wells S-11 and S-12. **Depth-discrete grab groundwater samples were collected from each CPT boring at several depths.** Sample depths were based on the lithology encountered in each boring and were obtained in more permeable silt and sand units. Two depth-discrete grab groundwater samples were obtained from CPT-1; a third attempt between 104 and 112 fbg within an interbedded layer of silt and sandy silt was unsuccessful. Five depth-discrete grab groundwater samples were obtained from CPT-2.

CPT Backfill Method: The CPT borings were backfilled with neat cement grout and capped to match the existing grade.

Well Materials: Wells S-11 and S-12 were constructed using 2-inch diameter Schedule 40 PVC casing with 15 feet of 0.010-inch slotted screen. They were completed using a filter pack of Monterey #2/12 sand from the bottom of the well casing to approximately 2 feet above the top of the screened casing, approximately 2 feet of bentonite above the filter pack, and Portland neat cement to 1 fbg. A flush-mounted, traffic-rated well box was installed to protect and complete each well to grade (Attachment D).

Screened Interval: Groundwater monitoring wells S-11 and S-12 were both screened from 10 to 25 fbg (Attachment D).

Well Elevation Survey: The top of casing elevation and latitude/longitude of the wells and the surface elevations and latitude/longitude of the CPT borings were surveyed on January 6, 2003 by Virgil Chavez Land Surveying of Vallejo, California. Results are included in Attachment G.

**Well Development
And Sampling:** Blaine Tech Services, Inc. (Blaine) of San Jose, California developed wells S-11 and S-12 on September 23, 2002 using surge-block agitation and pump evacuation. The wells were added to the site quarterly monitoring program and were sampled during the next regularly scheduled groundwater-monitoring event.



Chemical Analyses: Collected soil and grab groundwater samples were analyzed by Kiff Analytical LLC of Davis, California, a State-certified analytical laboratory. Soil samples for chemical analysis collected from wells S-11 and S-12 were analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B. Depth-discrete, grab groundwater samples collected from each CPT boring were analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B. (Note: Depth-discrete grab groundwater samples collected from boring CPT-2 were inadvertently labeled CPT-1 on the chain-of-custody forms and in analytical laboratory results. The sample date confirms that the samples were actually taken during the installation of Cambria's boring CPT-2.)

To characterize soil cuttings for disposal, two sets of four brass tubes (SP-A through SP-D and SP-1-A through SP-1-D) of soil were collected and analyzed for TPHg by EPA Method 8260B. The samples were then composited by the analytical laboratory and analyzed for BTEX and MTBE by EPA Method 8260B and for total threshold limit concentration lead.

Analytical results are summarized in Tables 1, 2 and 3, and analytical laboratory reports are included as Attachment H.

Soil Handling: Soil cuttings produced from the borings were stockpiled on the Shell-branded site. The cuttings were transported to Forward Landfill in Manteca, California for disposal on October, 21, 2002. Disposal confirmation is included in Attachment I.

INVESTIGATION RESULTS

Analyte Results in Soil: No TPHg, BTEX or MTBE was detected in any of the soil samples collected from borings S-11 and S-12. Soil analytical data is summarized in Table 2, and the certified laboratory analytical results are presented as Attachment H.

Analyte Results in Groundwater: Grab groundwater samples were collected from CPT boring CPT-1 using screens placed between 66 and 70 fbg and between 79 and 81 fbg, and from CPT boring CPT-2 using screens placed between 20 and 30 fbg, 47 and 51 fbg, 56 and 60 fbg, 68 and 72 fbg, and between 88 and 98 fbg. No TPHg, MTBE, benzene, ethylbenzene or xylenes were detected in the grab groundwater samples from the CPT borings. Toluene was detected in both samples collected from boring CPT-1 at a concentration of 1.6 ppb. Grab groundwater analytical data is summarized in Table 3, and the certified laboratory analytical results are presented as Attachment H.



CROSS-SECTIONAL DIAGRAMS

As requested in an November 11, 2002 electronic mail transmittal from Mr. Scott Seery of ACHCSA to Ms. Jacquelyn Jones of Cambria, Cambria prepared a cross-sectional diagram for the site including site monitoring wells and CPT borings and the City of Pleasanton municipal wells Hop-1 (destroyed) and Hop-6. Figure 3 shows the cross-section line, Figure 4 shows the completed cross-sectional diagram, and Figure 5 is an enlarged version of the site's subsurface geology. As shown on Figure 5, the site subsurface consists mainly of clay with some localized silt lenses up to approximately 50 fbg. As logged on CPT borings CPT-1 and CPT-2 and as shown on Figure 5, beginning at approximately 50 fbg to approximately 80 fbg, soils with increasing sand content were encountered, including sandy silt, silty sand, sand and gravelly sand. Below 80 fbg, soils encountered consisted mainly of silt to approximately 110 fbg where silty sand and sand was encountered in boring CPT-2.

INVESTIGATION CONCLUSIONS

The recently revised utility survey for the site indicates that it is unlikely that utility conduits in the site vicinity provide preferential flow pathways for chemical migration in groundwater. Soil samples collected from recently installed wells S-11 and S-12 did not contain any TPHg, BTEX or MTBE, providing additional definition of the downgradient lateral extent of these chemicals in

soil at the site. Grab groundwater samples collected from the CPT borings did not contain any TPHg, benzene or MTBE, providing lateral and vertical definition of the extent of these chemicals in groundwater upgradient and downgradient of the site. The prepared cross-sectional diagrams for the site indicate that the shallowest significantly more-coarse soil lenses are encountered at approximately 50 fbg.

Cambria has received an ACHCSA letter dated February 27, 2003 requesting several action items and technical reports, including a work plan for further soil and groundwater investigation at the site. Cambria will address this letter and make recommendations for future action at the site under separate cover.



CLOSING

Please call Jacquelyn Jones at (510) 420-3316 if you have any questions or comments regarding this report.

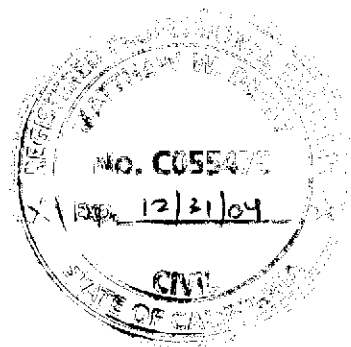
Sincerely,
Cambria Environmental Technology, Inc.



Matthew W. Derby for
Jacquelyn L. Jones
Project Geologist

Matthew W. Derby

Matthew W. Derby, P.E.
Senior Project Engineer

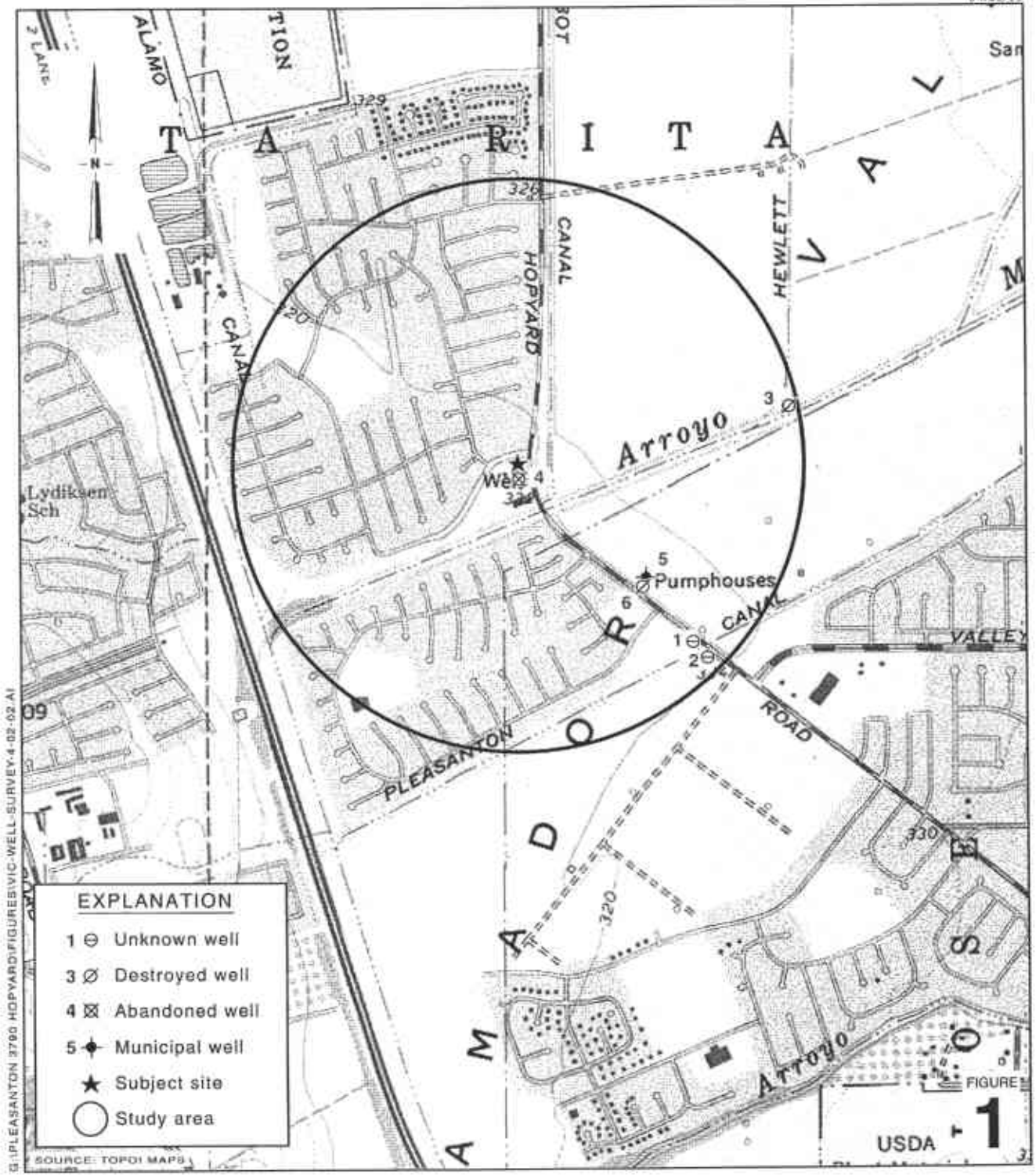


- Figures:
- 1 - Vicinity/Area Well Survey Map
 - 2 - Site Plan
 - 3 - Municipal Well Location Map
 - 4 - Geological Cross Section A-A'
 - 5 - Onsite Detail of Geological Cross Section A-A'

- Tables:
- 1 - Historical Soil Analytical Data
 - 2 - Soil Analytical Data
 - 3 - Grab Groundwater Analytical Data

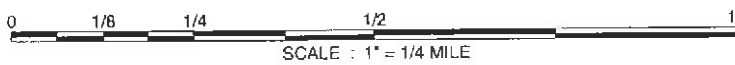
- Attachments:
- A - Standard Field Procedures for Monitoring Well Installation
 - B - Standard Field Procedures for Cone Penetrometer Testing
 - C - Permits
 - D - Boring Logs and Well Completion Details
 - E - Gregg Drilling Presentation of CPT Data
 - F - DWR Well Completion Reports
 - G - Wellhead Elevation Survey Report
 - H - Laboratory Analytical Reports
 - I - Soil Disposal Confirmation

- cc: Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank CA 91510-7869
 Chuck Headlee, RWQCB, 1515 Clay Street, Suite 1400, Oakland, CA 94612
 Danielle Stefani, Livermore-Pleasanton Fire Dept., 3560 Nevada St., Pleasanton, CA 94566
 Matthew Katen, Zone 7 Water Agency, 5997 Parkside Drive, Pleasanton, CA 94588-5127
 Victor Arcayena, Colliers International, 1850 Mt. Diablo Blvd., Suite 200, Walnut Creek, CA 94596
 Tri-Valley Management, 3730 Hopyard Road, Pleasanton CA 94588



EXPLANATION

- 1 ⊖ Unknown well
- 3 ⊘ Destroyed well
- 4 ⊗ Abandoned well
- 5 ⬤ Municipal well
- ★ Subject site
- Study area



Shell-branded Service Station
 3790 Hopyard Road
 Pleasanton, California
 Incident #98995842



C A M B R I A

**Vicinity/Area Well
 Survey Map**

1/2 Mile Radius

03/27/03

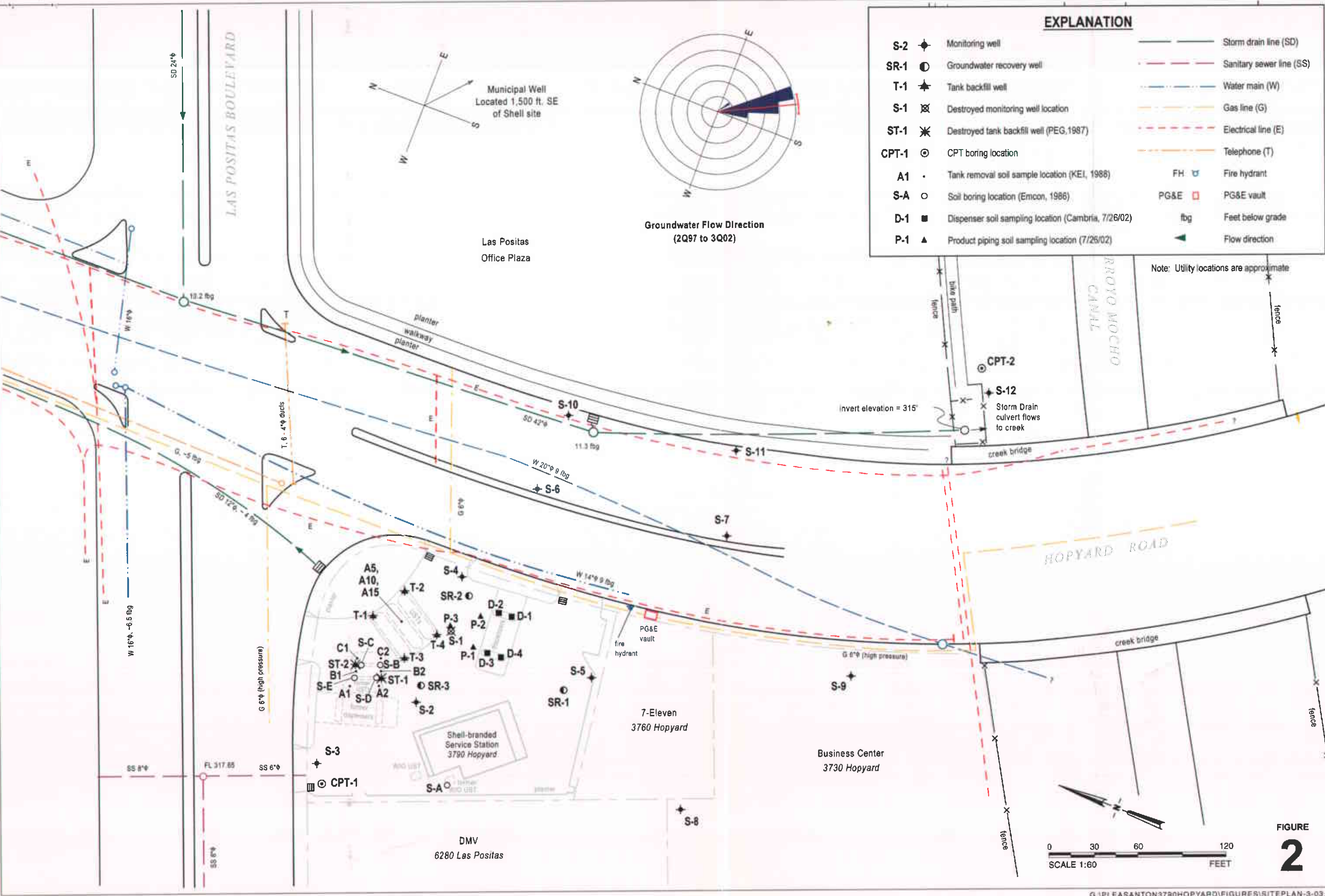
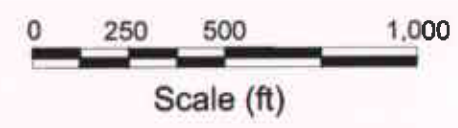
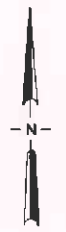


FIGURE 2

G:\PLEASANTON\3790HOPYARD\FIGURES\SITEPLAN-3-03-A1

EXPLANATION

- Active municipal well
- ⊗ Destroyed municipal well
- ∅ Inactive municipal well



D:\PLEASANTON\HOPYARD\FIGURE3.MXD, DWG



**Municipal Well
Location Map**

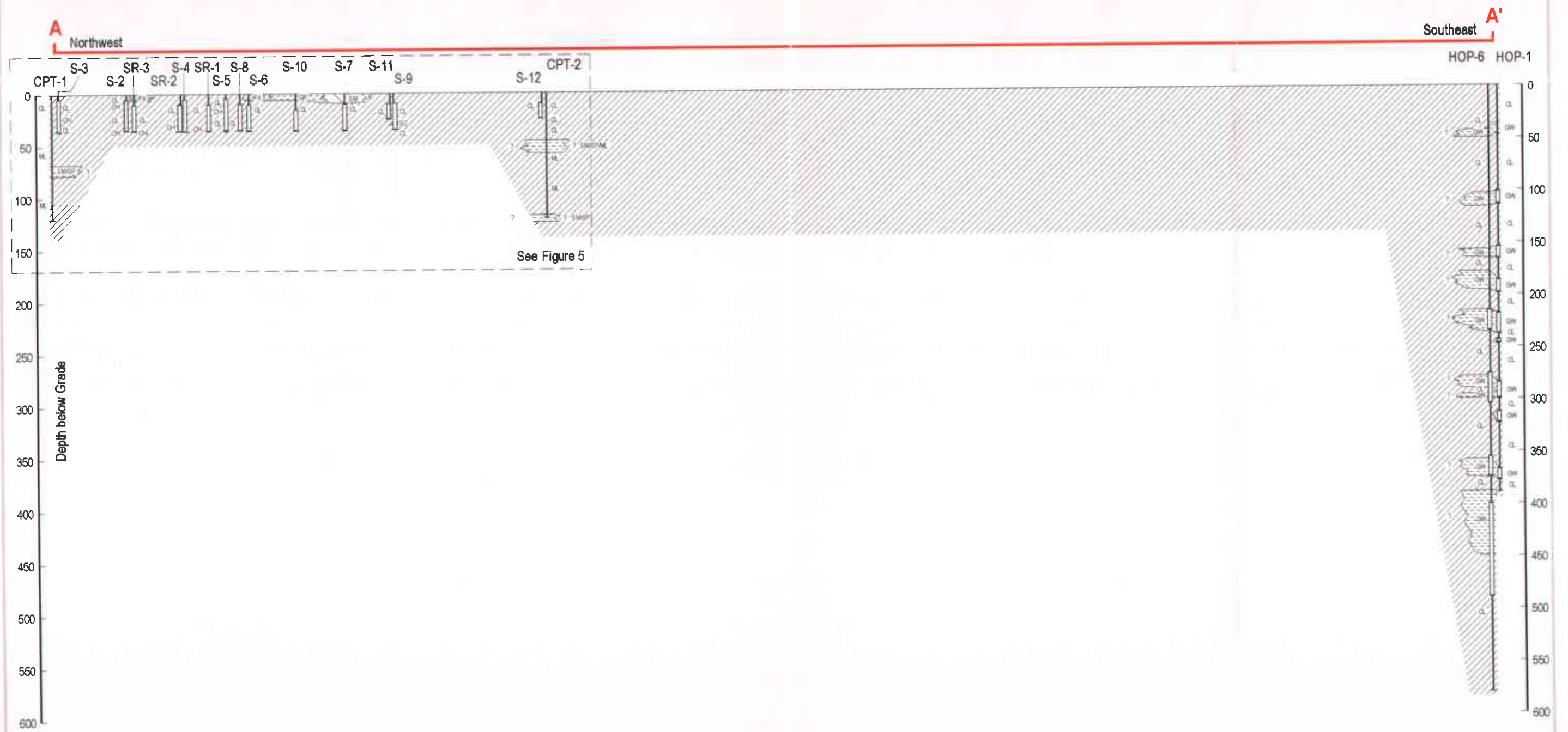
C A M B R I A

Shell-branded Service Station

3790 Hopyard Road
Pleasanton, California
Incident #98995842

FIGURE
3

G:\PLEASANTON\3790 HOPYARD\FIGURES\SECTION-A.DWG



EXPLANATION		
	= Low Permeability Soils CL, ML, CH	S-2 Well / Boring ID
	= Moderate Permeability Soils SM, SC	Groundwater Monitoring Well
	= High Permeability Soils GW, GP, SP	Well Screen interval
	= Fill (Tank Pit)	Bottom of boring
	CH = Inorganic Clay	
	CL = Clay	
	GP = Poorly Graded Gravel	
	GW = Well Graded Gravel	
	ML = Clayey Silt	
	SC = Clayey Sand	
	SM = Silty Sand	
	SP = Poorly Graded Sand	

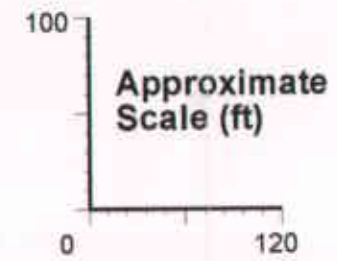
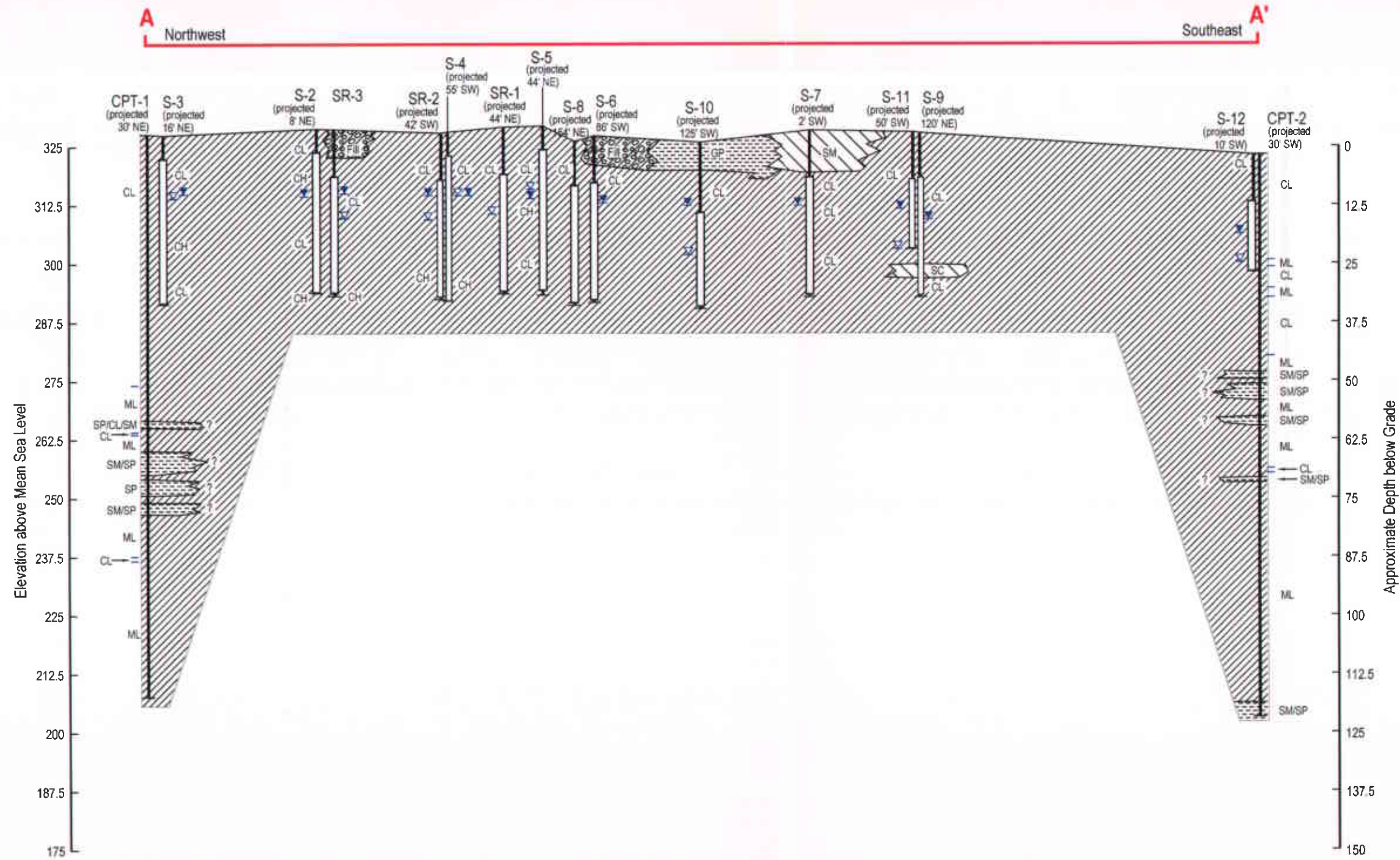


FIGURE 4

Geologic Cross Section A - A'



Shell-branded Service Station
 3790 Hopyard Road
 Pleasanton, California
 Incident #98995842



EXPLANATION

	= Low Permeability Soils CL, ML, CH		S-2 Well / Boring ID		CH = Inorganic Clay
	= Moderate Permeability Soils SM, SC		Groundwater Monitoring Well		CL = Clay
	= High Permeability Soils GW, GP, SP		Well Screen Interval		GP = Poorly Graded Gravel
	= Fill		Bottom of boring		GW = Well Graded Gravel
			Initial Groundwater depth		ML = Clayey Silt
			Depth of Groundwater on December 27, 2002		SC = Clayey Sand
					SM = Silty Sand
					SP = Poorly Graded Sand

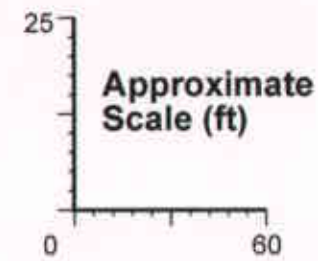


FIGURE
5

Onsite Detail of Geological Cross Section A - A'



Shell-branded Service Station
 3790 Hopyard Road
 Pleasanton, California
 Incident #98995842

Table 1. Historical Soil Analytical Data - Shell-branded Service Station - 3790 Hopyard Road, Pleasanton, California - Incident # 98995842

Sample ID	Date	Depth (fbg)	TPHg	MTBE	Benzene				Xylenes
					(ppm)				
S-B	01/22/86	4 - 5.5	30	---	---	---	---	---	---
S-B	01/22/86	8 - 9.5	74	---	---	---	---	---	---
S-B	01/22/86	11.5 - 13	79	---	---	---	---	---	---
S-C	01/22/86	4 - 5.5	2	---	---	---	---	---	---
S-C	01/22/86	7 - 8.5	5,100	---	---	---	---	---	---
S-C	01/22/86	11.5 - 13	420	---	---	---	---	---	---
S-D	01/22/86	4 - 5.5	2	---	---	---	---	---	---
S-D	01/22/86	7 - 8.5	10	---	---	---	---	---	---
S-D	01/22/86	11.5 - 13	110	---	---	---	---	---	---
S-E	01/22/86	4 - 5.5	ND	---	---	---	---	---	---
S-E	01/22/86	7 - 8.5	6	---	---	---	---	---	---
S-E	01/22/86	11.5 - 13	6	---	---	---	---	---	---
ST-1	10/28/87	13.0 - 14.5	13	---	2.7	0.3	---	---	1.4
ST-2	10/28/87	13.0 - 14.5	23	---	0.22	0.7	---	---	4.3
S-1	10/28/87	14.0 - 15.5	57	---	5.3	0.3	---	---	6.8
S-1	10/28/87	19.0 - 20.5	9	---	0.43	0.1	---	---	0.8
S-1	10/28/87	33.5 - 35.0	<5	---	<0.05	<0.1	---	---	<0.4
S-2	10/28/87	14.0 - 15.5	53	---	6.7	0.1	---	---	8
S-2	10/28/87	19.0 - 20.5	5	---	0.07	<0.1	---	---	0.4
S-2	10/28/87	33.5 - 35.0	<5	---	<0.05	<0.1	---	---	<0.4

Table 1. Historical Soil Analytical Data - Shell-branded Service Station - 3790 Hopyard Road, Pleasanton, California - Incident # 98995842

Sample ID	Date	Depth (fbg)	← (ppm) →					
			TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
S-3	01/26/88	19.0 - 20.5	<5	---	<0.05	<0.1	---	<0.4
S-4	01/26/88	19.0 - 20.5	41	---	6.2	<0.1	---	5.9
S-5	01/26/88	19.0 - 20.5	4,700	---	50	170	---	900
A1	08/03/88	14	1300	---	13	110	45	230
A1X	08/03/88	20	<1.0	---	<0.1	<0.1	<0.1	<0.1
A2	08/03/88	14	2100	---	11	32	72	350
A2X	08/03/88	20.5	80	---	1.3	2.6	3.4	16
B-1	08/03/88	14	11	---	0.2	<0.1	<0.1	<0.1
B-2	08/03/88	14	120	---	5.9	5.8	3.7	19
B2X	08/03/88	20.5	1.5	---	<0.1	<0.1	<0.1	<0.1
C-1	08/03/88	14	110	---	2.8	0.4	7.8	31
C-1X	08/03/88	16	9.1	---	0.8	<0.1	1.1	0.6
C-2	08/03/88	14	52	---	4.8	0.1	4.4	3.9
Comp A	08/03/88	---	<1	---	<0.1	<0.1	<0.1	<0.1
Comp B	08/03/88	---	8.7	---	<0.1	0.2	0.1	0.6
Comp C	08/03/88	---	35	---	0.5	2.1	1.9	11
Comp D	08/03/88	---	32	---	0.3	0.1	0.1	5.9

Table 1. Historical Soil Analytical Data - Shell-branded Service Station - 3790 Hopyard Road, Pleasanton, California - Incident # 98995842

Sample ID	Date	Depth (fbg)	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			(ppm)					
A5	08/05/88	5	3.0	---	1.3	<0.1	<0.1	<0.1
A10	08/05/88	10	3.5	---	0.5	<0.1	0.2	0.2
A15	08/05/88	15	4.4	---	0.7	<0.1	0.5	0.3
S-6-2A	10/04/88	9 - 10.5	<5	---	0.05	<0.1	<0.1	<0.3
S-6-3A	10/04/88	14 - 15.5	9	---	<0.05	<0.1	<0.1	<0.3
S-6-4A	10/04/88	19 - 20.5	6	---	0.05	<0.1	0.1	<0.3
S-6-5A	10/04/88	24 - 25.5	<5	---	<0.05	<0.1	<0.1	<0.3
S-7-2A	10/04/88	9 - 10.5	<5	---	<0.05	<0.1	<0.1	<0.3
S-7-3A	10/04/88	14 - 15.5	<5	---	<0.05	<0.1	<0.1	<0.3
S-7-4A	10/04/88	19 - 20.5	<5	---	<0.05	<0.1	<0.1	<0.3
S-8-3A	02/24/89	14 - 15.5	<5	---	<0.05	<0.1	<0.1	<0.3
S-8-4A	02/24/89	19 - 20.5	<5	---	<0.05	<0.1	<0.1	<0.3
S-9-3A	02/24/89	14 - 15.5	<5	---	<0.05	<0.1	<0.1	<0.3
S-9-4A	02/24/89	19 - 20.5	<5	---	<0.05	<0.1	<0.1	<0.3
SR-1-15	08/09/89	15	<5	---	<0.1	<0.1	<0.1	<0.3
SR-1-20	08/09/89	20	40	---	5.4	<0.1	2.5	2.7
S-10-15	08/09/89	15	<5	---	<0.05	<0.1	<0.1	<0.3
S-10-20	08/09/89	20	<5	---	<0.05	<0.1	<0.1	<0.3

Table 2. Soil Analytical Data - Shell-branded Service Station - 3790 Hopyard Road, Pleasanton, California
 Incident # 98995842

Sample ID	Date	Depth (fbg)	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			← (ppm) →					
S-11-5.5	08/26/02	5.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-11-10.5	08/26/02	10.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-11-15.5	08/26/02	15.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-11-20.5	08/26/02	20.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-11-24.5	08/26/02	24.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-12-5.5	09/19/02	5.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-12-10.5	09/19/02	10.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-12-15.5	09/19/02	15.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-12-20.5	09/19/02	20.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005
S-12-24.5	09/19/02	24.5	<1.0	<0.5	<0.005	<0.005	<0.005	<0.005

Notes and Abbreviations:

TPHg = Total petroleum hydrocarbons as gasoline, analyzed by EPA Method 8260B

MTBE = Methyl tert-butyl ether, analyzed by EPA Method 8260B

Benzene, ethylbenzene, toluene, xylenes, analyzed by EPA Method 8260B

fbg = feet below grade

ppm = parts per million

<X = Below laboratory detection limit of X

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Table 3. Grab Groundwater Analytical Data - Shell-branded Service Station -3790 Hopyard Road Pleasanton, California, Incident # 98995842

Sample ID	Depth (feet below grade)	Date	TPHg	MTBE	←----- (ppb) -----→			
					Benzene	Toluene	Ethylbenzene	Xylenes
CPT-1-66	66	07/26/02	<50	<5.0	<0.50	1.6	<0.50	<0.50
CPT-1-79	79	07/26/02	<50	<5.0	<0.50	1.6	<0.50	<0.50
CPT-2@26*	26	11/25/02	<50	<5.0	<0.50	<0.50	<0.50	<0.50
CPT-2@42*	42	11/25/02	<50	<5.0	<0.50	<0.50	<0.50	<0.50
CPT-2@50*	50	11/25/02	<50	<5.0	<0.50	<0.50	<0.50	<0.50
CPT-2@68*	68	11/25/02	<50	<5.0	<0.50	<0.50	<0.50	<0.50
CPT-2@88*	88	11/25/02	<50	<5.0	<0.50	<0.50	<0.50	<0.50

Notes and Abbreviations:

TPHg = Total petroleum hydrocarbons as gasoline, analyzed by EPA Method 8260B

MTBE = Methyl tert-butyl ether, analyzed by EPA Method 8260B

Benzene, ethylbenzene, toluene, xylenes, analyzed by EPA Method 8260B

ppb = parts per billion

<X = Below laboratory detection limit of X

* = Labelled as CPT-1 in laboratory reports

ATTACHMENT A

Standard Field Procedures for Monitoring Well Installation

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STANDARD FIELD PROCEDURES FOR SOIL BORING AND MONITORING WELL INSTALLATION

This document presents standard field methods for drilling and sampling soil borings and installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

SOIL BORINGS

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments at the bottom of the borehole.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Analysis

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4° C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable volatile vapor analyzer measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. Volatile vapor analyzer measurements are used along with the field observations, odors, stratigraphy and groundwater depth to select soil samples for analysis.

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Water Sampling

Water samples, if they are collected from the boring, are either collected using a driven Hydropunch® type sampler or are collected from the open borehole using bailers. The groundwater samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Groundwater monitoring wells are installed to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two feet above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

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Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite and covered by plastic sheeting. At least three individual soil samples are collected from the stockpiles and composited at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples in addition to any analytes required by the receiving disposal facility. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Groundwater removed during development and sampling is typically stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Upon receipt of analytic results, the water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

ATTACHMENT B

Standard Field Procedures for Cone Penetrometer Testing

STANDARD FIELD PROCEDURES FOR CONE PENETROMETER TESTING AND SAMPLING

This document describes Cambria Environmental Technology's standard field methods for Cone Penetrometer Testing (CPT) and direct-push soil and groundwater sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines.

Use of CPT for logging and soil and groundwater sampling requires separate borings. Typically an initial boring is advanced to estimate soil and groundwater characteristics as described below. To collect soil samples a separate boring must be advanced using a soil sampling device. If groundwater samples are collected, another separate boring must be advanced using a groundwater sampling device. Specific field procedures are summarized below.

Cone Penetrometer Testing (CPT)

Cone Penetrometer Testing is performed by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). Cone Penetrometer Tests (CPT) are carried out by pushing an integrated electronic piezocone into the subsurface. The piezocone is pushed using a specially designed CPT rig with a force capacity of 20 to 25 tons. The piezocones are capable of recording the following parameters:

- Tip Resistance (Q_c)
- Sleeve Friction (F_s)
- Pore Water Pressure (U)
- Bulk Soil Resistivity (ρ) - with an added module

A compression cone is used for each CPT sounding. Piezocones with rated load capacities of 5, 10 or 20 tons are used depending on soil conditions. The 5 and 10 ton cones have a tip area of 10 sq. cm. and a friction sleeve area of 150 sq. cm. The 20 ton cones have a tip area of 15 sq. cm. and a friction sleeve area of 250 sq. cm. A pore water pressure filter is located directly behind the cone tip. Each of the filters is saturated in glycerin under vacuum pressure prior to penetration. Pore Pressure Dissipation Tests (PPDT) are recorded at 5 second intervals during pauses in penetration. The equilibrium pore water pressure from the dissipation test can be used to identify the depth to groundwater.

The measured parameters are printed simultaneously on a printer and stored on a computer disk for future analysis. All CPTs are carried out in accordance with ASTM D-3441. A complete set of baseline readings is taken prior to each sounding to determine any zero load offsets.

The inferred stratigraphic profile at each CPT location is included on the plotted CPT logs. The stratigraphic interpretations are based on relationships between cone bearing (Q_c) and friction ratio (R_f). The friction ratio is a calculated parameter (F_s/Q_c) used in conjunction with the cone bearing to identify the soil type. Generally, soft cohesive soils have low cone bearing pressures and high friction ratios. Cohesionless soils (sands) have high cone bearing pressures and low friction ratios. The classification of soils is based on correlations developed by Robertson et al (1986). It is not always possible to clearly identify a soil type based on Q_c and R_f alone. Correlation with existing soils information and analysis of pore water pressure measurements should also be used in determining soil type.

CPT and sampling equipment are steam-cleaned or washed prior to work and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an

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equivalent EPA-approved detergent. Groundwater samples are decanted into appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

After the CPT probes are removed, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate groundwater depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e., sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or separate-phase hydrocarbon saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Sampling

Soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned or washed prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon® tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

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Field Screening

After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector measures volatile hydrocarbon vapor concentrations in the bag's headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy and groundwater depth to select soil samples for analysis.

Grab Groundwater Sampling

Groundwater samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting groundwater using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The groundwater samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory quality assurance/quality control (QA/QC) blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

ATTACHMENT C

Permits



ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588-5127 VOICE (925) 484-2600 X235 FAX (925) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT Approximately 150' and 200' south east of 3390 Hayward Road, Pleasanton

PERMIT NUMBER 22108
WELL NUMBER 3S/1E 7030 & 7031
APN _____

California Coordinates Source _____ Accuracy ± _____ ft.
CCN _____ ft. DCE _____ ft.
APN _____

PERMIT CONDITIONS

Circled Permit Requirements Apply

CLIENT Name Shell Oil Products US
Address P.O. Box 7269 Phone 557-645-9306
City Burbank, CA Zip 91510

(A)

- GENERAL**
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
 2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
 3. Permit is void if project not begun within 90 days of approval date.

APPLICANT Name Cambria Environmental Technology
Address 11445th Street Phone 510-420-3320
City Oakland, CA Zip 94608

(B)

- WATER SUPPLY WELLS**
1. Minimum surface seal diameter is four inches greater than the well casing diameter.
 2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.
 3. Grout placed by tremie.
 4. An access port at least 0.5 inches in diameter is required on the wellhead for water level measurements.
 5. A sample port is required on the discharge pipe near the wellhead.

TYPE OF PROJECT:
Well Construction Geotechnical Investigation
Well Destruction Contamination Investigation
Cathodic Protection Other _____

PROPOSED WELL USE:
Domestic Irrigation
Municipal Remediation
Industrial Groundwater Monitoring
Dewatering Other _____

(C)

- GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS**
1. Minimum surface seal diameter is four inches greater than the well or piezometer casing diameter.
 2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.
 3. Grout placed by tremie.

DRILLING METHOD:
Mud Rotary Air Rotary Hollow Stem Auger
Cable Tool Direct Push Other _____

DRILLING COMPANY Gregg Drilling and Testing
DRILLER'S LICENSE NO. CS7-0485165

(D)

GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

WELL SPECIFICATIONS:
Drill Hole Diameter 8 in. Maximum Depth 40 ft.
Casing Diameter 2 in. Number 2 (5-11 and 5-12).
Surface Seal Depth 3 ft.

(E)

CATHODIC. Fill hole above anode zone with concrete placed by tremie.

SOIL BORINGS:
Number of Borings 2 Maximum Hole Diameter 2 in. Depth 120 ft.

(F)

WELL DESTRUCTION. See attached.

ESTIMATED STARTING DATE 7/25/02
ESTIMATED COMPLETION DATE 8/1/02

(G)

SPECIAL CONDITIONS: Submit to Zone 7 within 60 days after completion of permitted work the well installation report including all soil and water laboratory analysis results.

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

Approved Wyman Hong Date 7/2/02
Wyman Hong

APPLICANT'S SIGNATURE Joseph Mate Date 6/26/02

ATTACH SITE PLAN OR SKETCH



ENCROACHMENT PERMIT

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588 • (925) 484-2600

PERMITTEE Equilon Enterprises LLC
dba Shell Oil Products U.S.
ADDRESS 1980 Post Oak Blvd. #110
Houston, TX 77056-3819 **PHONE** _____
CONTRACTOR Cambria Environmental Tech
ADDRESS 1144 65th Street, Suite C
Oakland, CA 94608 **PHONE** 510-420-3320

FACILITY G **PERMIT NO.** 03-005 FC

LOCATION
North bank of Arroyo Mocho
immediately upstream of Hopyard Road.

DATE ISSUED 9/1/02 **EXPIRATION DATE** 8/31/03

PURPOSE OF PERMIT:

To install and monitor a two-inch diameter monitoring well.

FEES: PERMIT \$ 10.00
INSPECTION (EST.) \$ 490.00
SURETY: CASH \$ _____
BOND \$ 5,000.00
TOTAL \$ 500.00

PLAN REFERENCE: Attached

ANY REFUNDS OR CHARGES DUE WILL BE MADE UPON COMPLETION.

THIS PERMIT IS ISSUED PURSUANT TO ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT ORDINANCE NO. 34 AND IS SUBJECT TO ALL THE GENERAL PROVISIONS SHOWN ON THE REVERSE SIDE HEREOF EXCEPT AS EXPRESSLY MODIFIED IN THE ADDITIONAL SPECIAL PROVISIONS LISTED BELOW. VIOLATION OF ANY PROVISION SHALL BE CAUSE FOR IMMEDIATE REVOCATION OF PERMIT.

SPECIAL PROVISIONS

See Attachment

NOTICE OF START OF WORK SHALL BE GIVEN TO THE ZONE 7 OFFICE, 5997 PARKSIDE DRIVE, PLEASANTON, CALIFORNIA 94588, PHONE (925) 484-2600, AT LEAST TWO WORKING DAYS BEFORE STARTING ANY WORK UNDER THIS PERMIT. FAILURE TO NOTIFY IS CAUSE FOR REVOCATION OF PERMIT AND REMOVAL OF WORK.

APPROVED: ^{For} GENERAL MANAGER, ZONE 7

By Karen Petryna, Applicant

By [Signature]



SPECIAL PROVISIONS PERMIT NO. 03-005FC

1. Permittee shall be responsible to repair all damages resulting from the permittee's use of flood control facilities. All damage shall be repaired to the satisfaction of Zone 7.
2. Permittee shall make such repairs within a reasonable time, as determined by Zone 7, after receipt of a written notice. In the event of permittee's failure to make such repairs within 14 calendar days, or otherwise specified, after receipt of written notice from Zone 7, it will be interpreted as the permittee authorizes Zone 7 to proceed to have said repairs made at permittee's expense and permittee shall pay the costs and charges, therefore, upon demand.
3. Permittee is permitted to only ingress and egress to the portion of channel which is under this permit. Under this permit, Permittee is also permitted to access to the well location in Arroyo Mocho thru Zone 7's 26' wide easement E7-307 located at 5994 W. Las Positas Blvd. (APN 941-2760-5). A map is enclosed for your information.
4. Permittee shall observe a maximum vehicular speed limit of 15 mph on all access roads within Zone 7 facilities. Dust control shall be provided. Working hours shall conform to City of Pleasanton ordinances. Zone 7 access entrance area must remain clear at all times for emergency vehicles' use. Permittee shall keep the access area in a neat, orderly and sanitary condition at all times. No disposal of any material in Zone 7 property is permitted.
5. In consideration of the granting of this permit, the permittee agrees to name, at permittee's expense, the Alameda County Flood Control and Water Conservation District, including Zone 7, the members of its Board of Supervisors and the directors of Zone 7, and all their officials, officers, employees and agents ("Flood Control"), as additional insureds on one or more policies of insurance providing general liability and automobile liability coverage, issued by an insurer licensed to do

business in the State of California, with minimum levels of coverage of \$500,000 individual/\$1,000,000 total, for liability for injury to persons, and \$100,000 for damage to property. Written proof of coverage must be provided before commencement of the permitted work. The proof must provide for 30 days written notice of cancellation to "Flood Control" before coverage is terminated.

6. Please notify Richard Daniel at (925) 484-2600 extension 403 at least 48 hours prior to your commencement of work in the channel. Return key to Zone 7.
7. Permittee shall comply with all terms and conditions of City of Pleasanton's encroachment permit # ENCR 200945 (copy enclosed).
8. Permittee shall enclose the top of well in a flush mount traffic (H20) rated box. Exact well location shall be field verified and approved by Zone 7 prior to commencement of drilling.
9. Permittee shall be responsible for all future maintenance of this well as long as permittee maintains its ownership.
10. If Permittee decides to abandon the well, Zone 7 reserves the right to assume ownership of the well at no costs. However, if Zone 7 declines to take over the ownership of the well, Permittee shall be solely responsible for proper destruction of the abandoned well within a reasonable time.



ENCROACHMENT PERMIT

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588 • (925) 484-2600

PERMITTEE Equilon Enterprises LLC
dba Shell Oil Products U.S.
ADDRESS 1980 Post Oak Blvd. #110
Houston, TX 77056-3819 PHONE _____
CONTRACTOR Cambria Environmental Tech
ADDRESS 1144-65th Street, Suite C
Oakland, CA 94608 PHONE 510-420-3320

FACILITY G PERMIT NO. 03-025FC

LOCATION
North bank of Arroyo Mocho immediate upstream of Hopyard Road.

DATE ISSUED 11/20/02 EXPIRATION DATE 01/15/03

PURPOSE OF PERMIT:

To install a cone penetrometer testing (CPT) boring to 120 feet below grade.

FEES:	PERMIT	\$ _____
	INSPECTION (EST).	\$ _____
SURETY:	CASH	\$ _____
	BOND \$ _____	
	TOTAL \$ _____	

PLAN REFERENCE: Attached

ANY REFUNDS OR CHARGES DUE WILL BE MADE UPON COMPLETION.

THIS PERMIT IS ISSUED PURSUANT TO ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT ORDINANCE NO. 34 AND IS SUBJECT TO ALL THE GENERAL PROVISIONS SHOWN ON THE REVERSE SIDE HEREOF EXCEPT AS EXPRESSLY MODIFIED IN THE ADDITIONAL SPECIAL PROVISIONS LISTED BELOW. VIOLATION OF ANY PROVISION SHALL BE CAUSE FOR IMMEDIATE REVOCATION OF PERMIT.

SPECIAL PROVISIONS

See Attached

Note: Liability insurance, bond and inspection fees for Permit #03-005FC is still applica and in effect for this permit.

NOTICE OF START OF WORK SHALL BE GIVEN TO THE ZONE 7 OFFICE, 5997 PARKSIDE DRIVE, PLEASANTON, CALIFORNIA 94588, PHONE (925) 484-2600, AT LEAST TWO WORKING DAYS BEFORE STARTING ANY WORK UNDER THIS PERMIT. FAILURE TO NOTIFY IS CAUSE FOR REVOCATION OF PERMIT AND REMOVAL OF WORK.

APPROVED: for GENERAL MANAGER, ZONE 7

By [Signature] Shell (USA), Applicant

By [Signature]



SPECIAL PROVISIONS PERMIT NO. 03-025FC

1. Permittee shall be responsible to repair all damages resulting from the permittee's use of flood control facilities. All damage shall be repaired to the satisfaction of Zone 7.
2. Permittee shall make such repairs within a reasonable time, as determined by Zone 7, after receipt of a written notice. In the event of permittee's failure to make such repairs within 14 calendar days, or otherwise specified, after receipt of written notice from Zone 7, it will be interpreted as the permittee authorizes Zone 7 to proceed to have said repairs made at permittee's expense and permittee shall pay the costs and charges, therefore, upon demand.
3. Permittee is permitted to only ingress and egress to the portion of channel, which is under this permit.
4. Permittee shall observe a maximum vehicular speed limit of 15 mph on all access roads within Zone 7 facilities. Dust control shall be provided. Working hours shall conform to City of Pleasanton ordinances. Zone 7 access entrance area must remain clear at all times for emergency vehicles' use. Permittee shall keep the access area in a neat, orderly and sanitary condition at all times. No disposal of any material in Zone 7 property is permitted.
5. In consideration of the granting of this permit, the permittee agrees to name, at permittee's expense, the Alameda County Flood Control and Water Conservation District, including Zone 7, the members of its Board of Supervisors and the directors of Zone 7, and all their officials, officers, employees and agents ("Flood Control"), as additional insureds on one or more policies of insurance providing general liability and automobile liability coverage, issued by an insurer licensed to do business in the State of California, with minimum levels of coverage of \$500,000 individual/\$1,000,000 total, for liability for injury to persons, and \$100,000 for damage to property. Written proof of coverage must be provided

before commencement of the permitted work. The proof must provide for 30 days written notice of cancellation to "Flood Control" before coverage is terminated.

6. Please notify Richard Daniel at (925) 484-2600 extension 403 at least 48 hours prior to your commencement of work in the channel. Return key to Zone 7.
7. Permittee shall comply with all terms and conditions of City of Pleasanton's encroachment permit # ENCR 201003 (copy enclosed).
8. Permittee shall fill boring to ground surface with cement grout poured or pumped at the end of the project. Exact boring location shall be field verified and approved by Zone 7 prior to commencement of drilling.



PUBLIC WORKS PERMIT

-Inspections must be requested 24 Hours prior to Starting Work-

Project Address 3790 HOPYARD RD	APN# 941 130903500	Permit #: ENCR 200943
Subdivision:	Tract #: 2953	Lot: 131
		Applicant GREGG DRILLING

Project: -

Owner EQUILON ENTERPRISES LLC 1980 POST OAK BLVD #110 HOUSTON, TX 77056-3819 Phone:	Contractor GREGG DRILLING MARTINEZ, CA 94553 WELL DRILLING 485165
---	---

Scope of Work

Comments
applicant shall install a monitoring well as described by Zone 7 Water agency, Traffic control shall be as according to cal-trans standards. working hours shall be from 8:00 to 4:00 pm City conditions shall apply no.1,2,3,4,11,13,14,15,16 and17

Quantity	Description	Amount
	THROUGH CURB DRAIN PERMIT	115.00

Entered: GJF

**CALL PUBLIC WORKS
INSPECTION 24 HRS
PRIOR TO START OF
WORK (925) 931-5680**

2/25/02 called

All work to be performed to City of Pleasanton Standard Details and Specifications. This permit is issued pursuant to all provisions of the City of Pleasanton Municipal Code, Chapter 13.04, Encroachment.

Total Fees: \$115.00	Payment:
-----------------------------	-----------------

City Approval By: <i>[Signature]</i>	Date of Issue: 18-JUL-2002
Applicant or Agent: <i>[Signature]</i>	Date: <i>7/18/02</i>



PUBLIC WORKS PERMIT

-Inspections must be requested 24 Hours prior to Starting Work-

Project Address 3790 HOPYARD RD	APN# 941 130903500	Permit #: ENCR 200945
Subdivision:	Tract #: 2953	Applicant ZONE 7 WATER AGENCY
		Lot: 131

Project: ASSIGN -

Owner EQUILON ENTERPRISES LLC 1980 POST OAK BLVD #110 HOUSTON, TX 77056-3819 Phone:	Contractor ZONE 7 WATER AGENCY LIVERMORE, CA 94550
---	---

Scope of Work ENCR WATER IMPROVEMENTS
Permit for Zone7 to install groundwater monitoring well (S-12)

Comments
Contractor is installing a monitoring well as per the request of Zone7, in Zone7 property.

Quantity	Description	Amount
Entered:	JAS	

All work to be performed to City of Pleasanton Standard Details and Specifications. This permit is issued pursuant to all provisions of the City of Pleasanton Municipal Code, Chapter 13.04, Encroachment.

Total Fees:	\$0.00	Payment:
--------------------	--------	-----------------

City Approval By: <i>Jayareep</i>	Date of Issue: 7-22-02
Applicant or Agent: <i>Jayareep for Shell</i>	Date: 9/16/02

7

Encroachment Permit Conditions

1. No work is to commence prior to August 23rd, 2002. The existing trail is to be open for public's use and unimpeded by the drilling operation activities. The pavement pathway/trail is to be open at all times and be free of all debris and construction equipment.
2. 48 hours prior to the start of work the contractor is to contact Public Work's Inspection and coordinate access with Redwick Construction Inc., so as to not disrupt or impede any work for the construction of the trail.
3. At the completion of work a final inspection will be required by Public Works Inspection prior to acceptance of work by the Zone 7, Water Agency. The site is to be left in a clean manner and all debris disposed of. Any damage to the existing improvements are to be repaired or replaced to the satisfaction of the City Engineer.
4. The encroachment permit is subject to the provisions of Chapter 13.04, "Encroachments" a copy of which is attached and made a part of the permit.
5. Construction activity is to be limited to the hours of 8:00 a.m. to 5 p.m. Monday thru Friday.
6. Staging or storage of equipment in street right-of-way is prohibited.
7. The preferred location for the observation well is behind and to the west of the proposed toe of slope as shown on the attached sketch. The top of well should be enclosed in a traffic rated box and include a marker post to delineate its location.



PUBLIC WORKS PERMIT

-Inspections must be requested 24 Hours prior to Starting Work-

Project Address 3790 HOPYARD RD	APN# 941 130903500	Permit #: ENCR 201003
Subdivision:	Tract #: 2953	Lot: 131
Project: -		
Owner		Contractor ZONE 7 WATER AGENCY LIVERMORE, CA 94550
Scope of Work MISC MISC ENCROACHMENT PERMIT Permit to Zone 7 to install cp2 boring.		
Comments		
Quantity	Description	Amount
	NO FEE ENROACHMENT PERMIT	0.00
Entered: PHH		
<p>CALL PUBLIC WORKS INSPECTION 24 HRS PRIOR TO START OF WORK (925) 931-5680</p>		

All work to be performed to City of Pleasanton Standard Details and Specifications. This permit is issued pursuant to all provisions of the City of Pleasanton Municipal Code, Chapter 13.04, Encroachment.

Total Fees:	\$0.00	Payment:
Issued By: <u>Peggy Hollic</u>	Date of Issue: 20-NOV-2002	
Applicant or Agent: <u>Steve Salas for: Skell (03)</u>	Date: <u>11/20/02</u>	

Encroachment Permit Conditions

1. No work is to commence prior to August 23rd, 2002. The existing trail is to be open for public's use and unimpeded by the drilling operation activities. The pavement pathway/trail is to be open at all times and be free of all debris and construction equipment.
2. 48 hours prior to the start of work the contractor is to contact Public Work's Inspection and coordinate access with Redwick Construction Inc., so as to not disrupt or impede any work for the construction of the trail.
3. At the completion of work a final inspection will be required by Public Works Inspection prior to acceptance of work by the Zone 7, Water Agency. The site is to be left in a clean manner and all debris disposed of. Any damage to the existing improvements are to be repaired or replaced to the satisfaction of the City Engineer.
4. The encroachment permit is subject to the provisions of Chapter 13.04, "Encroachments" a copy of which is attached and made a part of the permit.
5. Construction activity is to be limited to the hours of 8:00 a.m. to 5 p.m. Monday thru Friday.
6. Staging or storage of equipment in street right-of-way is prohibited.
7. The preferred location for the observation well is behind and to the west of the proposed toe of slope as shown on the attached sketch. The top of well should be enclosed in a traffic rated box and include a marker post to delineate its location.

ATTACHMENT D

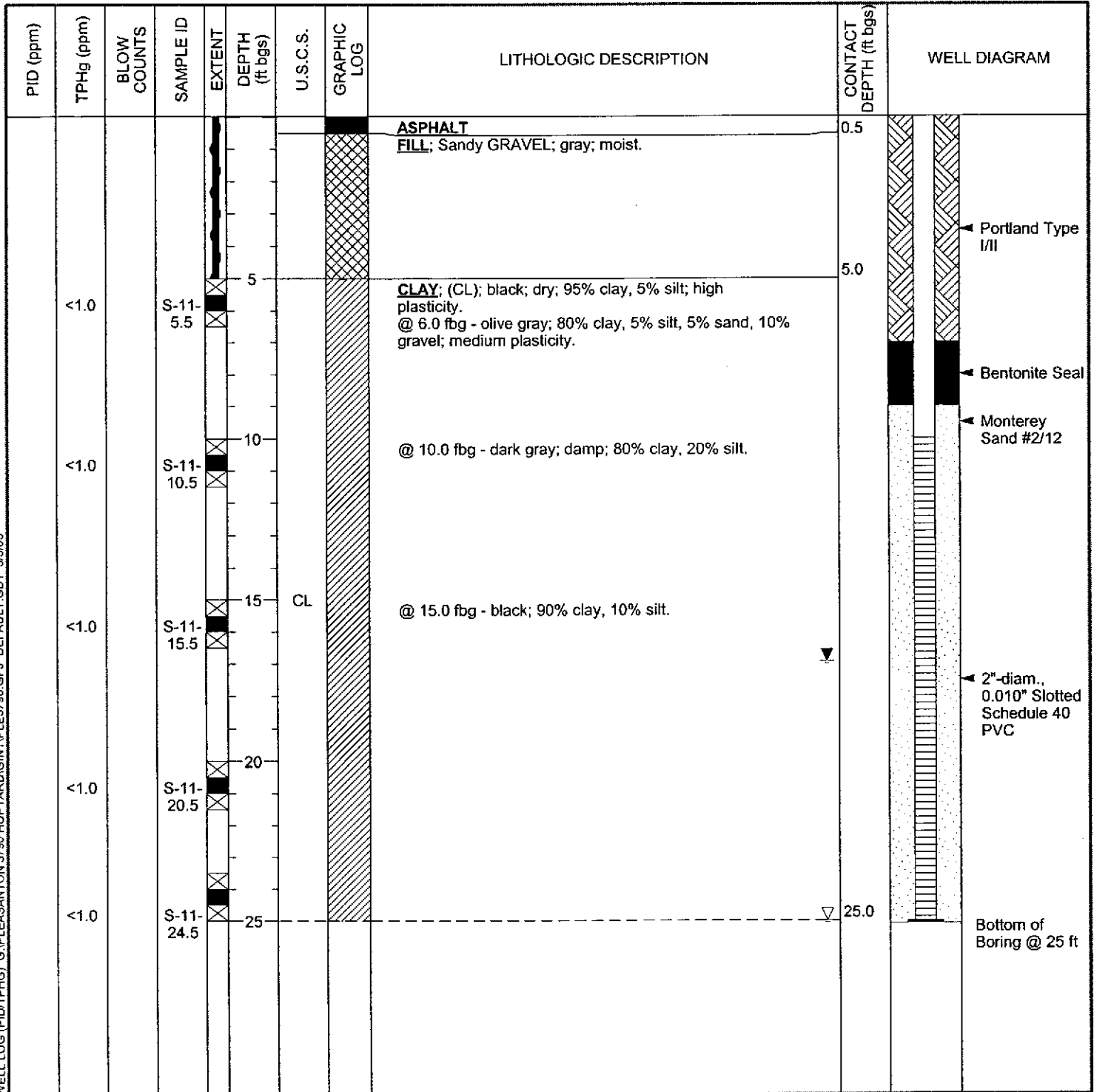
Boring Logs and Well Completion Details



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

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	S-11
JOB/SITE NAME	Shell-branded service station	DRILLING STARTED	26-Aug-02
LOCATION	3790 Hopyard Road, Pleasanton, California	DRILLING COMPLETED	26-Aug-02
PROJECT NUMBER	244-0497	WELL DEVELOPMENT DATE (YIELD)	23-Sep-02
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	328.04
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	327.48 ft
BORING DIAMETER	8"	SCREENED INTERVAL	10 to 25 ft bgs
LOGGED BY	S. Dalie	DEPTH TO WATER (First Encountered)	25.0 ft (26-Aug-02) ▼
REVIEWED BY	M. Derby, PE# 55475	DEPTH TO WATER (Static)	16.9 ft (23-Sep-02) ▼
REMARKS	Hand augered to 5' bgs. Located in East side of Hopyard Road, south of well S-10.		



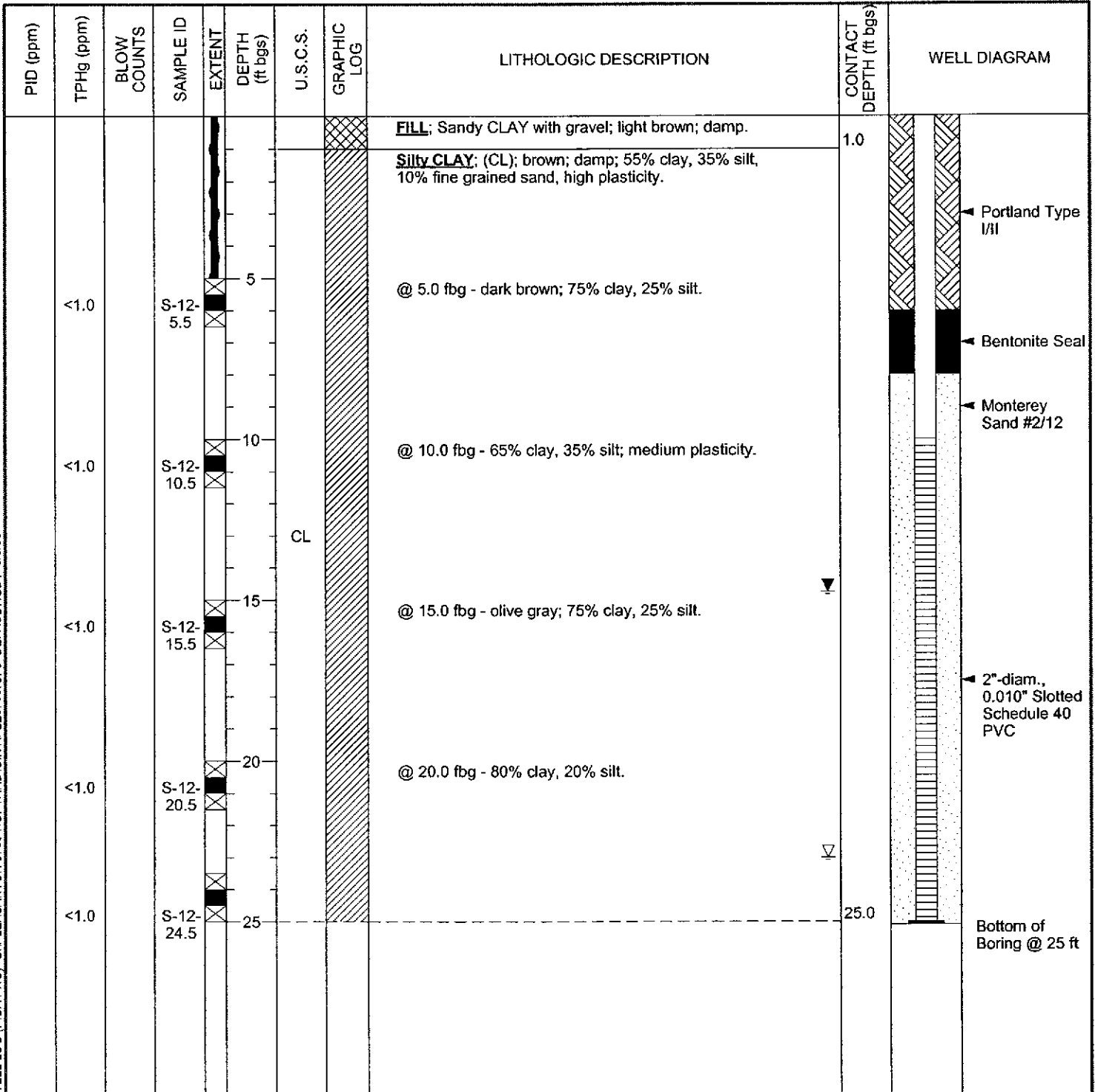
WELL LOG (PID/TPHG) G:\PLEASANTON\3790 HOPYARD\GINT\PLE3790.GPJ DEFAULT.GDT 3/5/03



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

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	S-12
JOB/SITE NAME	Shell-branded service station	DRILLING STARTED	19-Sep-02
LOCATION	3790 Hopyard Road, Pleasanton, California	DRILLING COMPLETED	19-Sep-02
PROJECT NUMBER	244-0497	WELL DEVELOPMENT DATE (YIELD)	23-Sep-02
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	323.20
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	322.76 ft
BORING DIAMETER	8"	SCREENED INTERVAL	10 to 25 ft bgs
LOGGED BY	J.Gerke	DEPTH TO WATER (First Encountered)	23.0 ft (19-Sep-02)
REVIEWED BY	M. Derby, PE# 55475	DEPTH TO WATER (Static)	14.7 ft (23-Sep-02)
REMARKS	Hand augered to 5' bgs. Located in north side of the Arroyo Mocho Canal Creek bank, east of Hopyard Road.		



WELL LOG (PID/TPHG) G:\PLEASANTON 3790 HOPYARD\GINT\PLE3790.GPJ DEFAULT.GDT 3/5/03

ATTACHMENT E

Gregg Drilling Presentation of CPT Data

PRESENTATION OF CONE PENETRATION TEST DATA

SHELL FACILITY

PLEASANTON, CALIFORNIA

Prepared for:

CAMBRIA

Prepared by:

**GREGG IN SITU, INC.
Martinez, California
02-565TX**

Prepared on:

August 1, 2002

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2.0 FIELD EQUIPMENT & PROCEDURES

3.0 CONE PENETRATION TEST DATA & INTERPRETATION

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3.2 INTERPRETED OUTPUT

3.3 PORE PRESSURE DISSIPATION PLOTS

APPENDIX

- Figure 1 Piezocone Figure
- Figure 2 Groundwater Sampler
- Figure 3 PPDT Correlation Figure
- Figure 4 Soil Classification Chart
- References

ATTACHMENTS

- Interpretation Method
- Computer Diskette with ASCII Files

PRESENTATION OF CONE PENETRATION TEST DATA

1.0 INTRODUCTION

This report presents the results of a Cone Penetration Testing (CPT) and in situ groundwater sampling program carried out at the Shell site located in Pleasanton, CA. The work was performed on July 26th, 2002. The scope of work was performed as directed by Cambria personnel.

2.0 FIELD EQUIPMENT & PROCEDURES

The Cone Penetration Tests (CPT) were carried out by GREGG IN SITU, INC. of Martinez, CA using an integrated electronic cone system. The CPT soundings were performed in accordance with ASTM standards (D 5778-95). A 20 ton capacity cone was used for all of the soundings (figure 1). This cone has a tip area of 15 cm² and friction sleeve area of 225 cm². The cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.85.

The cones used during the program recorded the following parameters at 5 cm depth intervals:

- Tip Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (U)

The above parameters were printed simultaneously on a printer and stored on a computer diskette for future analysis and reference.

The pore water pressure element was located directly behind the cone tip. The pore water pressure element was 5.0 mm thick and consisted of porous plastic. Each of the elements were saturated in silicon oil under vacuum pressure prior to penetration. Pore pressure dissipations were recorded at 5 second intervals when appropriate during pauses in the penetration.

A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

The cones were pushed using GREGG IN SITU's CPT rig, having a down pressure capacity of approximately 20 tons. One CPT sounding was performed. The penetration test was carried to a depth of approximately 120 feet below ground surface. Test locations and depths were determined in the field by Cambria personnel.

GREGG IN SITU, INC.
August 1, 2002
02-565tx

CAMBRIA
Shell Facility
Pleasanton, Ca.

In situ groundwater samples were taken at one location. Groundwater samples were collected using a Hydropunch® type groundwater sampling system (figure 2). The groundwater sampler operates by pushing 1.75 inch diameter hollow rods with a retrievable tip. A stainless steel filter screen is attached to the tip. At the desired sampling depth, the rods are retracted exposing the filter screen and allowing for groundwater infiltration. A small diameter bailer is then used to collect groundwater samples through the hollow rod.

3.0 CONE PENETRATION TEST DATA & INTERPRETATION

The cone penetration test data is presented in graphical form. Penetration depths are referenced to existing ground surface. This data includes CPT logs of measured soil parameters and a computer tabulation of interpreted soil types along with additional geotechnical parameters and pore pressure dissipation data.

The stratigraphic interpretation is based on relationships between cone bearing (q_c), sleeve friction (f_s), and penetration pore pressure (U). The friction ratio (R_f), which is sleeve friction divided by cone bearing, is a calculated parameter which is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone bearing and generate large excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little in the way of excess pore water pressures.

Pore Pressure Dissipation Tests (PPDT's) were taken at various intervals in order to measure hydrostatic water pressures and approximate depth to groundwater table. In addition, the PPDT data can be used to estimate the horizontal permeability (k_h) of the soil. The correlation to permeability is based on the time required for 50 percent of the measured dynamic pore pressure to dissipate (t_{50}). The PPDT correlation figure (figure 3) is provided in the Appendix.

The interpretation of soils encountered on this project was carried out using recent correlations developed by Robertson et al, 1988. It should be noted that it is not always possible to clearly identify a soil type based on q_c , f_s and U . In these situations, experience and judgement and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type. The soil classification chart (figure 4) used to interpret soil types based on q_c and R_f is provided in the Appendix.

GREGG IN SITU, INC.

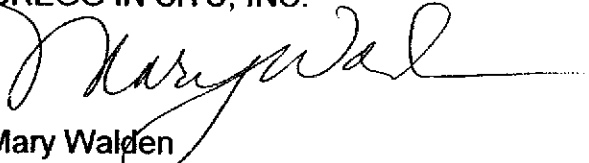
August 1, 2002
02-565tx

CAMBRIA
Shell Facility
Pleasanton, Ca.

Interpreted output requires that depth of water be entered for calculation purposes, where depth to water is unknown an arbitrary depth in excess of 10 feet of the deepest sounding is entered as the groundwater depth.

We hope the information presented is sufficient for your purposes. We recommend that all data be carefully reviewed by qualified personnel to verify the data and make appropriate recommendations. If you have any questions, please do not hesitate to contact our office at (925) 313-5800.

Sincerely,
GREGG IN SITU, INC.

A handwritten signature in cursive script, appearing to read "Mary Walden", written in black ink. The signature is fluid and extends to the right with a long horizontal stroke.

Mary Walden
Operations Manager

ELECTRICAL PIEZOCONE

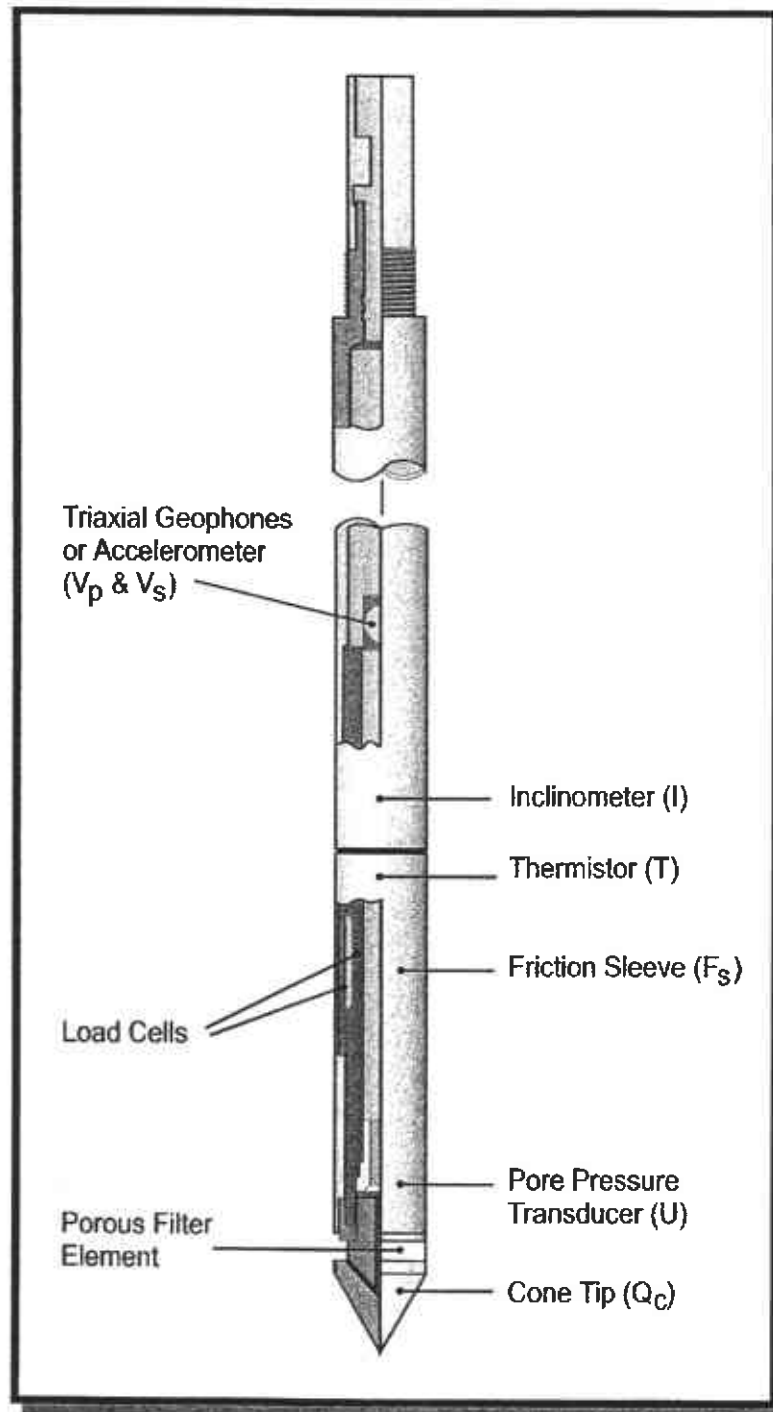


Figure 1

GROUNDWATER SAMPLER (HYDROPUNCH)

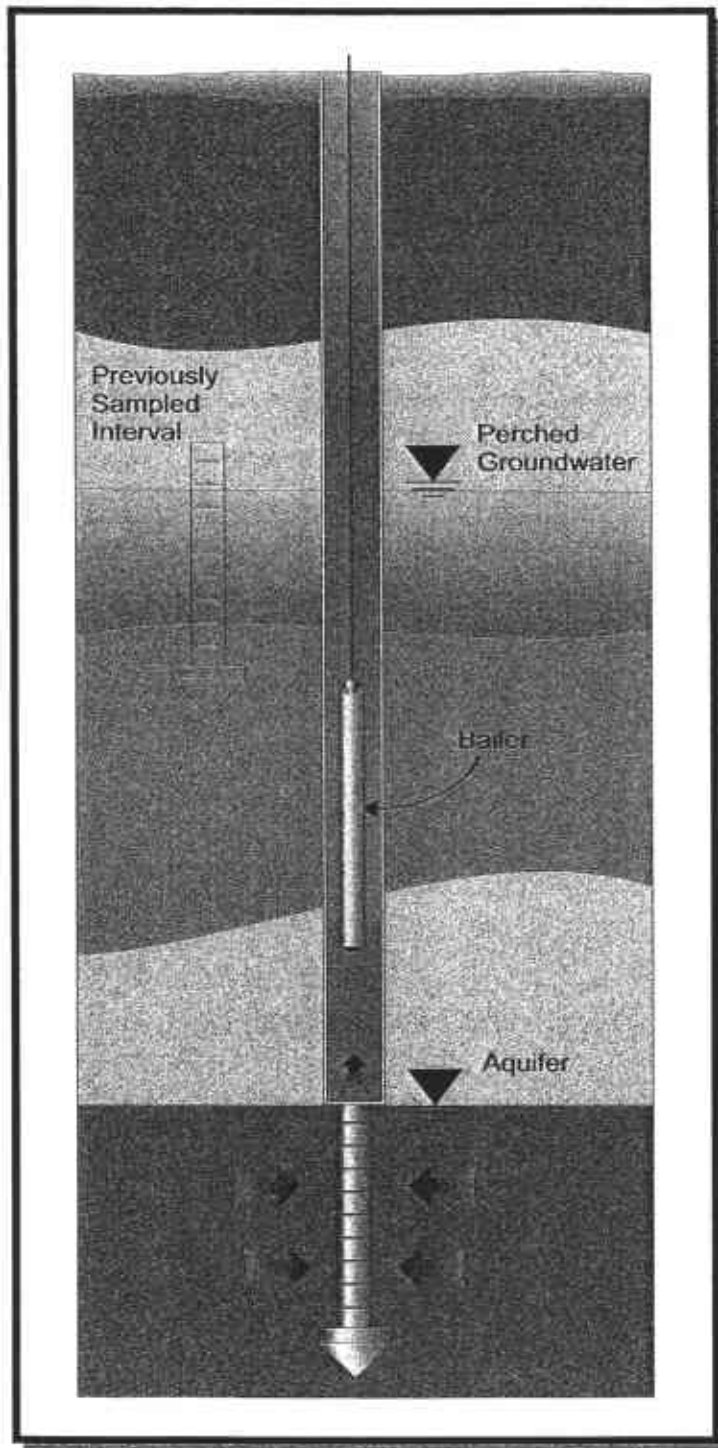


Figure 2

PPDT CORRELATION

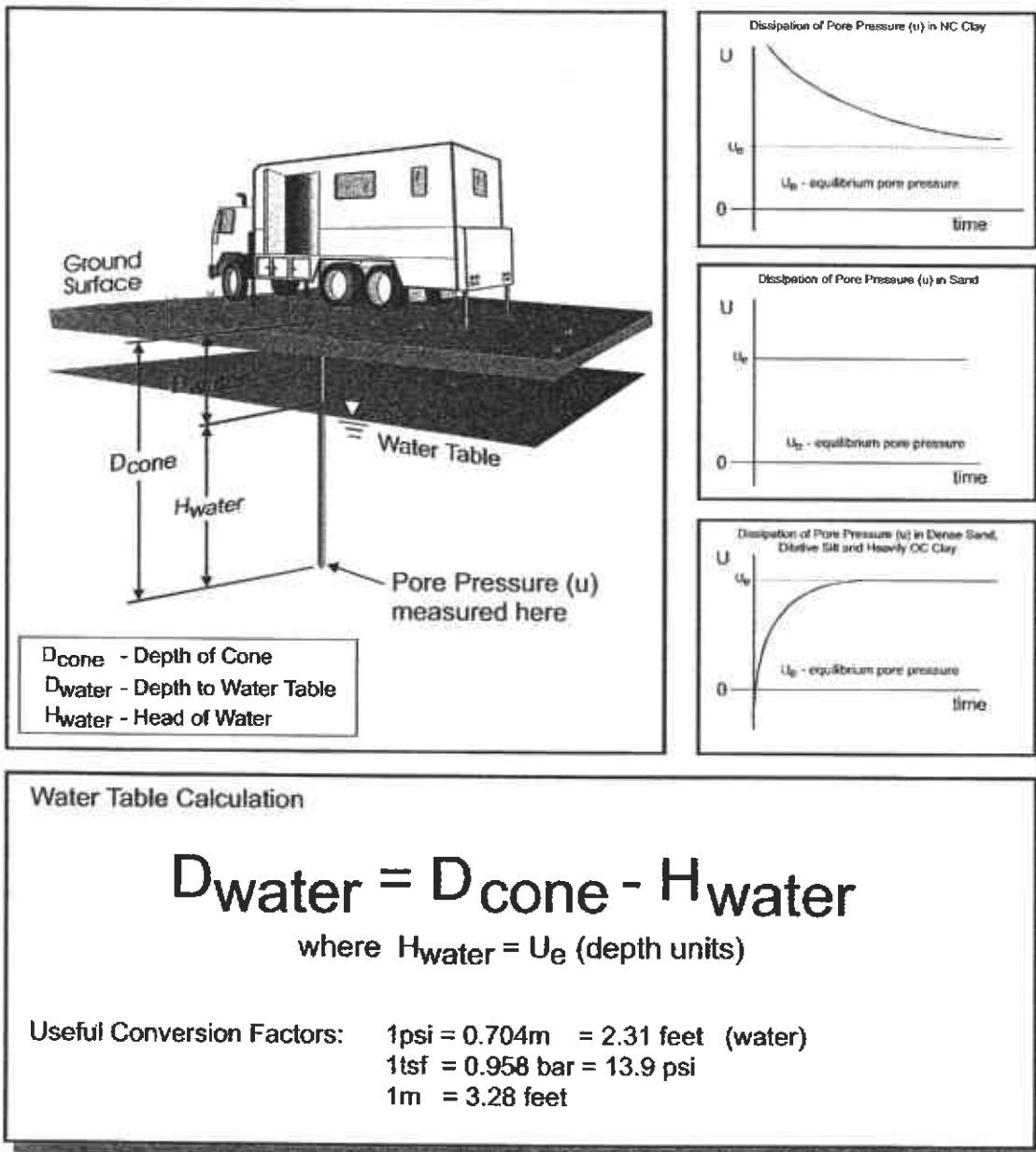
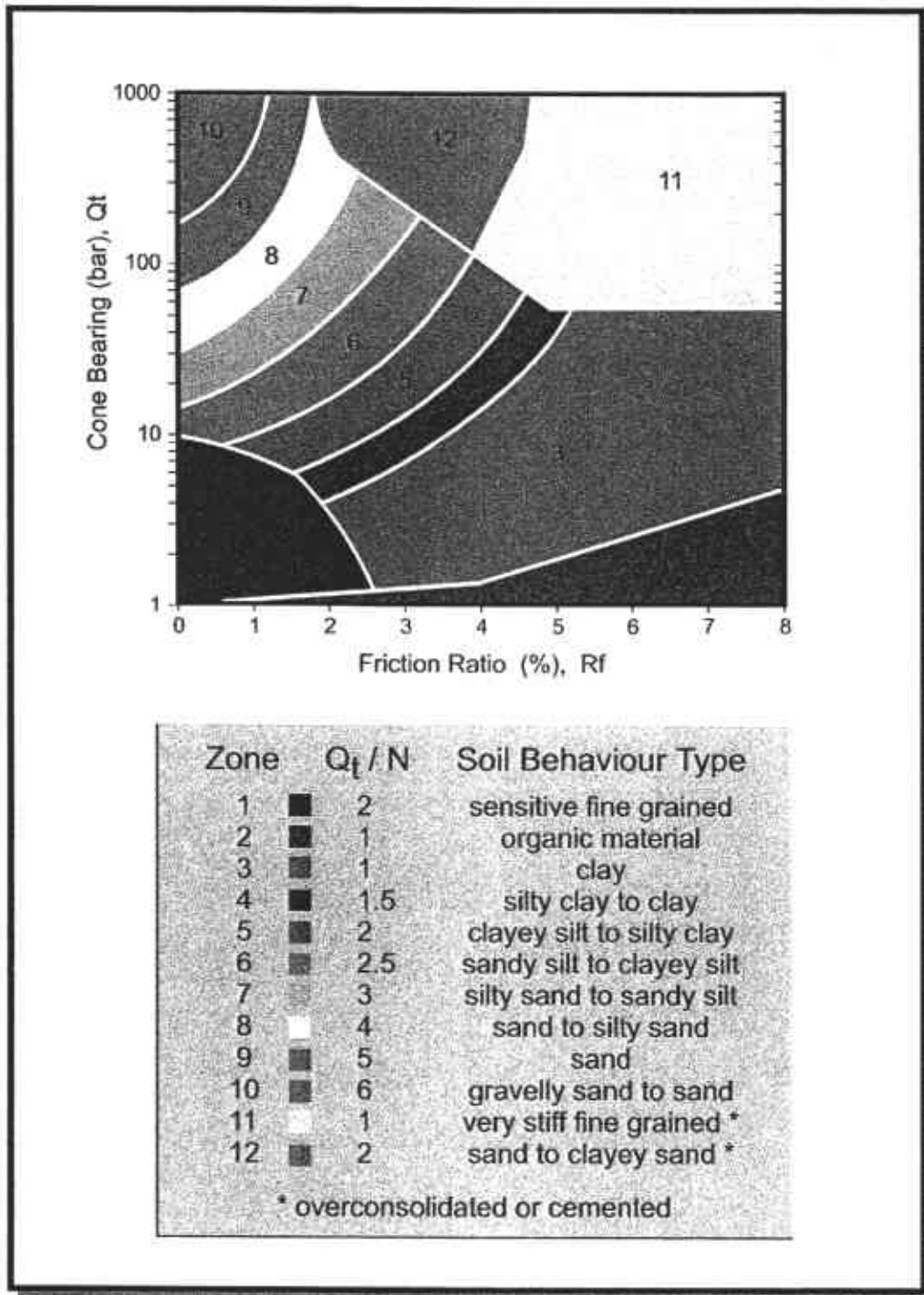


Figure 3

SOIL CLASSIFICATION CHART



After Robertson and Campanella

Figure 4

REFERENCES

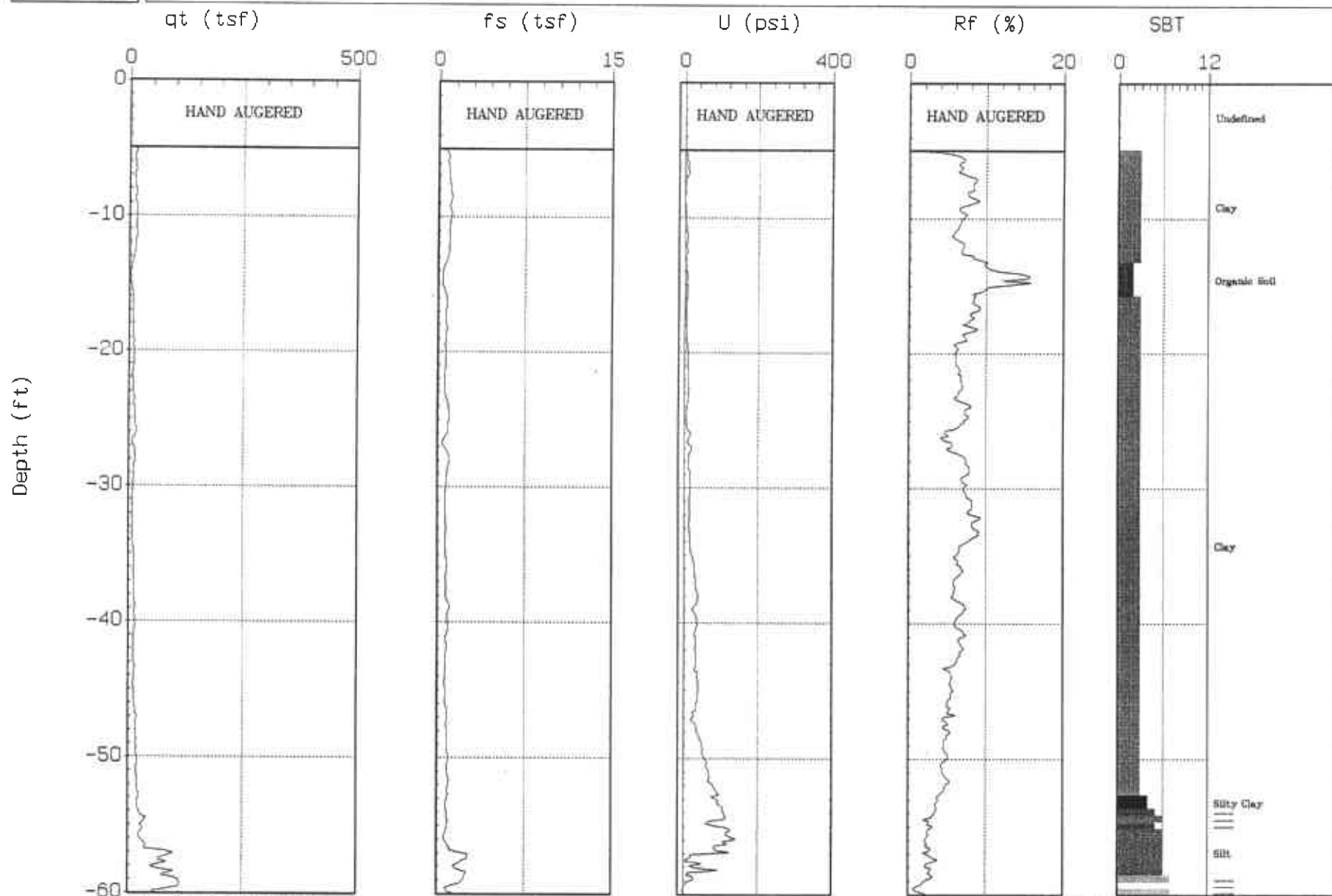
- Robertson, P.K. and Campanella, R.G. and Wightman, A., 1983 "SPT-CPT Correlations", *Journal of the Geotechnical Division, ASCE*, Vol. 109, No. GT11, Nov., pp. 1449-1460.
- Robertson, P.K. and Wride C.E., 1998 "Evaluating Cyclic Liquefaction Potential Using The Cone Penetration Test", *Journal of Geotechnical Division*, Mar. 1998, pp. 442-459.
- Robertson, P.K. and Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", *Proceedings of In Situ 86, ASCE Specialty Conference*, Blacksburg, Virginia.
- Robertson, P.K. and Campanella, R.G., 1988, "Guidelines for Use, Interpretation and Application of the CPT and CPTU", UBC, Soil Mechanics Series No. 105, Civil Eng. Dept., Vancouver, B.C., V6T 1W5, Canada.
- Robertson, P.K., Campanella, R.G., Gillespie, D. and Rice, A., 1986, "Seismic CPT to Measure In Situ Shear Wave Velocity", *Journal of Geotechnical Engineering, ASCE*, Vol. 112, No. 8, pp. 791-803.



CAMBRIA

Site : SHELL
Location : CPT-01

Geologist : J. GERKE
Date : 07:26:02 09:03



Max. Depth: 120.24 (ft)

Depth Inc.: 0.164 (ft)

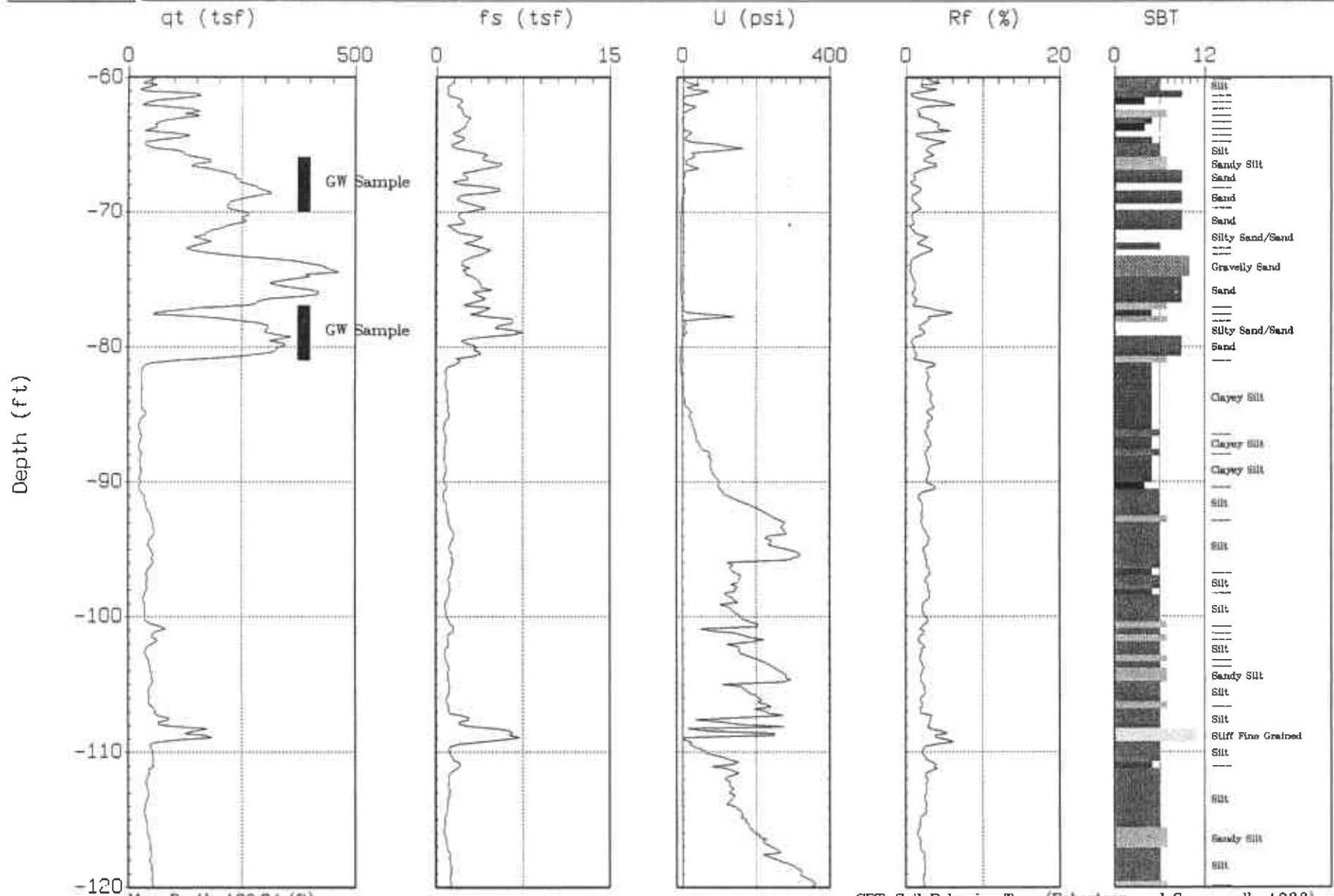
SBT: Soil Behavior Type (Robertson and Campanella 1988)



CAMBRIA

Site : SHELL
Location : CPT-01

Geologist : J. GERKE
Date : 07:26:02 09:03



Max. Depth: 120.24 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

3.2 INTERPRETED OUTPUT

Gregg In Situ, Inc.

Interpretation Output - Release 1.00.19e

Run No: 02-0731-2106-1546
 Job No: 02-565TX
 Client: CAMBRIA
 Project: CPT Site Investigation
 Site: SHELL
 Location: CPT-01
 Engineer: J. GERKE
 CPT Date: 02/26/07
 CPT Time: 09:03
 CPT File: 565C01.COR
 Northing (m): 0.000
 Easting (m): 0.000
 Elevation (m): 0.000

Water Table (m): 14.02 (ft): 46.0
 Su Nkt used: 12.50
 Averaging Increment (m): 0.30
 Phi Method : Robertson and Campanella, 1983
 Dr Method : Jamiolkowski - All Sands
 State Parameter M: 1.20
 Used Unit Weights Assigned to Soil Zones
 Values of 1.0E9 or UnDef are printed for parameters that are not valid for th

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27
5.41	13.0	0.78	5.99	12.2	3	111.4	0.33	0.33
6.40	12.4	0.85	6.88	20.5	3	111.4	0.39	0.39
7.30	11.2	0.95	8.46	4.7	3	111.4	0.44	0.44
8.20	13.3	1.08	8.13	0.9	3	111.4	0.49	0.49
9.19	14.2	1.01	7.08	4.0	3	111.4	0.54	0.54
10.17	15.0	1.01	6.73	8.8	3	111.4	0.60	0.60
11.15	15.2	0.90	5.96	14.3	3	111.4	0.65	0.65
12.14	12.7	0.88	6.93	13.2	3	111.4	0.71	0.71
13.21	7.1	0.66	9.25	10.0	2	111.4	0.77	0.77
14.27	2.5	0.35	13.83	14.1	2	111.4	0.83	0.83
15.26	4.9	0.47	9.46	15.3	2	111.4	0.88	0.88
16.24	8.1	0.70	8.62	12.3	3	111.4	0.94	0.94
17.22	7.6	0.61	8.10	9.9	3	111.4	0.99	0.99
18.21	9.1	0.69	7.60	13.5	3	111.4	1.05	1.05
19.19	9.2	0.61	6.60	17.0	3	111.4	1.10	1.10
20.18	10.3	0.62	6.03	20.5	3	111.4	1.16	1.16
21.16	9.0	0.58	6.40	23.0	3	111.4	1.21	1.21
22.15	8.0	0.55	6.80	23.9	3	111.4	1.26	1.26
23.13	10.0	0.64	6.37	24.5	3	111.4	1.32	1.32
24.11	11.6	0.88	7.56	13.8	3	111.4	1.37	1.37
25.10	12.7	0.86	6.77	13.1	3	111.4	1.43	1.43
26.08	13.5	0.63	4.69	30.4	3	111.4	1.48	1.48
27.07	10.5	0.61	5.86	36.8	3	111.4	1.54	1.54
28.05	12.2	0.92	7.52	27.8	3	111.4	1.59	1.59
29.04	10.5	0.76	7.26	36.4	3	111.4	1.65	1.65
30.02	9.1	0.67	7.32	38.2	3	111.4	1.70	1.70
31.00	7.6	0.61	8.07	33.5	3	111.4	1.76	1.76

31.99	7.7	0.64	8.34	33.2	3	111.4	1.81	1.81
32.97	7.8	0.67	8.62	32.7	3	111.4	1.87	1.87
33.96	8.3	0.61	7.27	37.3	3	111.4	1.92	1.92
34.94	10.9	0.68	6.26	49.2	3	111.4	1.98	1.98
35.92	11.2	0.75	6.69	63.9	3	111.4	2.03	2.03
36.91	11.5	0.68	5.94	71.3	3	111.4	2.09	2.09
37.89	11.9	0.70	5.89	82.6	3	111.4	2.14	2.14
38.88	13.0	0.92	7.09	65.0	3	111.4	2.20	2.20
39.86	13.5	0.83	6.12	79.9	3	111.4	2.25	2.25
40.85	10.9	0.76	6.92	70.4	3	111.4	2.31	2.31

Gregg In Situ, Inc.

Run No: 02-0731-2106-1546

RPT File: 565C01.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)
41.83	10.3	0.70	6.81	71.2	3	111.4	2.36	2.36
42.81	11.4	0.66	5.76	74.3	3	111.4	2.42	2.42
43.80	11.3	0.62	5.46	80.0	3	111.4	2.47	2.47
44.78	11.1	0.61	5.52	86.8	3	111.4	2.53	2.53
45.77	12.4	0.64	5.19	80.0	3	111.4	2.58	2.58
46.75	16.2	0.80	4.94	57.0	3	111.4	2.64	2.61
47.74	15.4	0.76	4.95	78.9	3	111.4	2.69	2.64
48.72	17.0	0.79	4.63	106.8	3	111.4	2.74	2.66
49.70	17.9	0.87	4.84	123.8	3	111.4	2.80	2.68
50.69	18.5	0.81	4.38	148.0	3	111.4	2.85	2.71
51.67	18.6	0.92	4.94	168.8	3	111.4	2.91	2.73
52.66	21.1	0.84	3.98	201.7	4	114.6	2.97	2.76
53.64	21.1	0.73	3.44	235.2	5	114.6	3.02	2.78
54.63	31.4	0.82	2.62	212.3	6	114.6	3.08	2.81
55.61	26.4	0.62	2.35	277.8	6	114.6	3.13	2.83
56.59	54.0	1.30	2.42	195.0	6	114.6	3.19	2.86
57.58	68.7	1.97	2.87	49.2	6	114.6	3.25	2.89
58.56	88.2	2.23	2.53	66.7	6	114.6	3.30	2.91
59.55	87.7	1.15	1.31	0.9	8	120.9	3.36	2.94
60.53	41.4	1.14	2.76	62.7	6	114.6	3.42	2.97
61.52	92.5	1.67	1.81	26.8	7	117.8	3.48	2.99
62.42	131.0	2.16	1.65	30.7	8	120.9	3.53	3.02
63.32	73.5	2.57	3.50	-0.8	5	114.6	3.58	3.04
64.30	81.4	1.95	2.40	33.1	7	117.8	3.64	3.07
65.29	82.8	2.55	3.08	202.0	6	114.6	3.70	3.10
66.27	162.3	4.69	2.89	46.7	7	117.8	3.75	3.12
67.26	229.5	2.49	1.08	9.7	9	124.1	3.81	3.15
68.24	290.7	3.89	1.34	4.6	8	120.9	3.87	3.18
69.22	232.3	2.77	1.19	-7.2	9	124.1	3.93	3.21
70.21	254.4	2.31	0.91	-10.6	9	124.1	4.00	3.24
71.19	197.8	1.84	0.93	-12.1	9	124.1	4.06	3.27
72.18	154.7	3.40	2.20	-14.0	7	117.8	4.12	3.30
73.16	243.8	3.47	1.42	-14.2	8	120.9	4.18	3.33
74.15	426.9	2.43	0.57	-12.3	10	127.3	4.24	3.36
75.13	350.3	3.61	1.03	-13.1	9	124.1	4.30	3.39
76.11	369.2	3.86	1.05	-8.3	9	124.1	4.36	3.42
77.10	155.5	3.46	2.23	31.8	7	117.8	4.42	3.45
78.08	253.0	5.72	2.26	79.9	7	117.8	4.48	3.48
79.07	322.6	4.97	1.54	8.1	8	120.9	4.54	3.50
80.05	325.5	3.33	1.02	-8.3	9	124.1	4.60	3.53
81.04	108.2	1.86	1.72	-13.5	7	117.8	4.66	3.56
82.02	29.3	0.82	2.79	-3.3	5	114.6	4.71	3.59
83.00	29.9	0.88	2.92	4.9	5	114.6	4.77	3.61
83.99	29.4	0.98	3.33	15.8	5	114.6	4.83	3.64
84.97	32.4	0.99	3.05	50.0	5	114.6	4.88	3.66
85.96	25.7	0.69	2.69	71.8	5	114.6	4.94	3.69
86.94	25.8	0.78	3.00	97.8	5	114.6	4.99	3.72
87.93	26.1	0.69	2.65	163.5	5	114.6	5.05	3.74
88.91	26.9	0.79	2.94	179.3	5	114.6	5.11	3.77
89.89	24.7	0.75	3.02	219.0	5	114.6	5.16	3.79
90.88	31.8	0.64	2.02	282.4	6	114.6	5.22	3.82
91.86	41.9	0.87	2.09	463.5	6	114.6	5.28	3.84

92.85	52.2	1.07	2.05	605.8	6	114.6	5.33	3.87
93.83	52.8	1.43	2.70	588.7	6	114.6	5.39	3.90
94.82	47.9	1.19	2.48	628.5	6	114.6	5.45	3.92
95.80	51.4	1.35	2.63	494.2	6	114.6	5.50	3.95
96.78	40.3	1.15	2.86	335.9	6	114.6	5.56	3.97
97.77	39.1	1.12	2.86	315.7	6	114.6	5.61	4.00
98.75	33.5	0.87	2.59	293.3	6	114.6	5.67	4.02
99.74	36.1	0.86	2.37	340.5	6	114.6	5.73	4.05
100.72	59.9	1.31	2.18	333.4	6	114.6	5.78	4.08
101.70	52.7	0.99	1.87	394.2	7	117.8	5.84	4.10
102.69	38.9	0.74	1.91	394.7	6	114.6	5.90	4.13
103.67	47.2	0.99	2.10	570.8	6	114.6	5.95	4.15

Gregg In Situ, Inc.

Run No: 02-0731-2106-1546

PT File: 565C01.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)
104.66	50.9	1.05	2.06	535.9	6	114.6	6.01	4.18
105.64	44.8	0.99	2.21	436.3	6	114.6	6.07	4.21
106.63	52.2	1.02	1.95	507.0	7	117.8	6.12	4.23
107.61	81.1	2.47	3.04	379.5	6	114.6	6.18	4.26
108.59	150.1	6.24	4.16	223.1	11	130.5	6.24	4.29
109.58	52.7	1.73	3.28	91.1	5	114.6	6.30	4.32
110.56	54.3	1.66	3.06	265.0	6	114.6	6.36	4.34
111.55	43.6	1.30	2.97	298.1	6	114.6	6.42	4.37
112.53	41.3	1.09	2.65	300.8	6	114.6	6.47	4.39
113.52	40.3	1.02	2.54	307.8	6	114.6	6.53	4.42
114.50	36.8	0.84	2.29	368.2	6	114.6	6.58	4.45
115.48	40.5	0.70	1.72	420.6	7	117.8	6.64	4.47
116.47	46.2	0.82	1.78	509.7	7	117.8	6.70	4.50
117.45	48.9	1.08	2.22	570.1	6	114.6	6.76	4.53
118.44	50.6	1.24	2.44	696.4	6	114.6	6.81	4.55
119.42	52.5	1.23	2.34	789.9	6	114.6	6.87	4.58

Gregg In Situ, Inc.
 Interpretation Output - Release 1.00.19e
 Run No: 02-0731-2106-1546
 Job No: 02-565TX
 Client: CAMBRIA
 Project: CPT Site Investigation
 Site: SHELL
 Location: CPT-01
 Engineer: J. GERKE
 CPT Date: 02/26/07
 CPT Time: 09:03
 CPT File: 565C01.COR
 Northing (m): 0.000
 Easting (m): 0.000
 Elevation (m): 0.000

 Water Table (m): 14.02 (ft): 46.0
 Su Nkt used: 12.50
 Averaging Increment (m): 0.30
 Phi Method : Robertson and Campanella, 1983
 Dr Method : Jamiolkowski - All Sands
 State Parameter M: 1.20
 Used Unit Weights Assigned to Soil Zones
 Values of 1.0E9 or UnDef are printed for parameters that are not valid for th

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	1
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	1
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	1
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	1
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	1
5.41	5.0E-08	0.03	38.1	6.15	1	22.1	UnDef	UnDef	1
6.40	5.0E-08	0.05	30.9	7.10	1	19.5	UnDef	UnDef	1
7.30	5.0E-08	0.01	24.6	8.81	1	16.6	UnDef	UnDef	1
8.20	5.0E-08	0.00	26.3	8.44	1	18.7	UnDef	UnDef	1
9.19	5.0E-08	0.01	25.1	7.37	1	18.9	UnDef	UnDef	1
10.17	5.0E-08	0.02	24.0	7.01	1	18.9	UnDef	UnDef	1
11.15	5.0E-08	0.03	22.3	6.22	1	18.4	UnDef	UnDef	1
12.14	5.0E-08	0.03	17.0	7.34	1	14.8	UnDef	UnDef	1
13.21	1.0E-15	0.05	8.3	10.00	1	7.9	UnDef	UnDef	1
14.27	1.0E-15	0.26	2.1	10.00	1	2.7	UnDef	UnDef	1
15.26	1.0E-15	0.12	4.6	10.00	1	5.1	UnDef	UnDef	1
16.24	5.0E-08	0.05	7.7	9.74	1	8.2	UnDef	UnDef	1
17.22	5.0E-08	0.05	6.7	9.31	1	7.5	UnDef	UnDef	1
18.21	5.0E-08	0.05	7.7	8.59	1	8.7	UnDef	UnDef	1
19.19	5.0E-08	0.07	7.4	7.49	1	8.6	UnDef	UnDef	1
20.18	5.0E-08	0.07	7.9	6.79	1	9.4	UnDef	UnDef	1
21.16	5.0E-08	0.09	6.4	7.39	1	8.0	UnDef	UnDef	1
22.15	5.0E-08	0.11	5.4	8.07	1	7.0	UnDef	UnDef	1
23.13	5.0E-08	0.09	6.6	7.34	1	8.5	UnDef	UnDef	1
24.11	5.0E-08	0.04	7.4	8.57	1	9.7	UnDef	UnDef	1
25.10	5.0E-08	0.04	7.9	7.63	1	10.4	UnDef	UnDef	1
26.08	5.0E-08	0.08	8.1	5.26	1	10.9	UnDef	UnDef	1
27.07	5.0E-08	0.13	5.8	6.86	1	8.3	UnDef	UnDef	1
28.05	5.0E-08	0.08	6.6	8.65	1	9.4	UnDef	UnDef	1
29.04	5.0E-08	0.13	5.4	8.61	1	8.0	UnDef	UnDef	1
30.02	5.0E-08	0.16	4.3	9.01	1	6.8	UnDef	UnDef	1

31.00	5.0E-08	0.18	3.3	10.00	1	5.6	UnDef	UnDef	1
31.99	5.0E-08	0.18	3.3	10.00	1	5.6	UnDef	UnDef	1
32.97	5.0E-08	0.17	3.2	10.00	1	5.6	UnDef	UnDef	1
33.96	5.0E-08	0.18	3.3	9.45	1	5.9	UnDef	UnDef	1
34.94	5.0E-08	0.17	4.5	7.65	1	7.6	UnDef	UnDef	1
35.92	5.0E-08	0.22	4.5	8.18	1	7.7	UnDef	UnDef	1
36.91	5.0E-08	0.24	4.5	7.26	1	7.8	UnDef	UnDef	1
37.89	5.0E-08	0.27	4.5	7.18	1	7.9	UnDef	UnDef	1
38.88	5.0E-08	0.19	4.9	8.52	1	8.6	UnDef	UnDef	1
39.86	5.0E-08	0.22	5.0	7.34	1	8.8	UnDef	UnDef	1
40.85	5.0E-08	0.25	3.7	8.77	1	7.0	UnDef	UnDef	1

Gregg In Situ, Inc.
 Run No: 02-0731-2106-1546
 TPT File: 565C01.COR

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	
41.83	5.0E-08	0.28	3.4	8.82	1	6.6	UnDef	UnDef	1
42.81	5.0E-08	0.26	3.7	7.31	1	7.2	UnDef	UnDef	1
43.80	5.0E-08	0.28	3.6	6.99	1	7.1	UnDef	UnDef	1
44.78	5.0E-08	0.32	3.4	7.14	1	6.8	UnDef	UnDef	1
45.77	5.0E-08	0.25	3.8	6.55	1	7.6	UnDef	UnDef	1
46.75	5.0E-08	0.13	5.2	5.91	1	9.8	UnDef	UnDef	1
47.74	5.0E-08	0.19	4.8	6.00	1	9.3	UnDef	UnDef	1
48.72	5.0E-08	0.23	5.3	5.53	1	10.2	UnDef	UnDef	1
49.70	5.0E-08	0.25	5.6	5.74	1	10.7	UnDef	UnDef	1
50.69	5.0E-08	0.29	5.8	5.18	1	11.0	UnDef	UnDef	1
51.67	5.0E-08	0.32	5.7	5.86	1	11.0	UnDef	UnDef	1
52.66	5.0E-07	0.34	6.6	4.63	1	12.4	UnDef	UnDef	1
53.64	5.0E-06	0.39	6.5	4.01	1	12.4	UnDef	UnDef	1
54.63	5.0E-05	0.22	10.1	2.90	4	18.4	73.4	91.8	
55.61	5.0E-05	0.36	8.2	2.67	4	15.4	61.4	76.8	
56.59	5.0E-05	0.11	17.8	2.57	6	31.2	125.0	156.2	
57.58	5.0E-05	0.02	22.7	3.02	6	39.6	158.4	197.9	
58.56	5.0E-05	0.02	29.2	2.62	6	50.6	199.0	249.6	
59.55	5.0E-03	0.00	28.7	1.36	7	50.1	75.0	125.1	
60.53	5.0E-05	0.04	12.8	3.01	4	23.5	94.1	117.6	
61.52	5.0E-04	0.00	29.8	1.88	7	52.3	110.0	162.4	
2.42	5.0E-03	0.00	42.3	1.70	7	73.8	78.1	151.9	
63.32	5.0E-06	-0.01	23.0	3.68	6	41.3	165.0	206.3	
64.30	5.0E-04	0.01	25.3	2.51	6	45.4	181.8	227.2	
65.29	5.0E-05	0.07	25.6	3.22	6	46.1	184.3	230.4	
66.27	5.0E-04	0.01	50.8	2.96	6	89.9	146.8	236.7	
67.26	5.0E-02	0.00	71.6	1.10	9	126.5	42.0	168.5	
68.24	5.0E-03	0.00	90.2	1.35	9	159.6	48.9	208.4	
69.22	5.0E-02	0.00	71.1	1.21	7	126.9	47.1	174.0	
70.21	5.0E-02	0.00	77.3	0.92	9	138.3	33.7	172.0	
71.19	5.0E-02	-0.01	59.2	0.95	9	107.0	39.6	146.7	
72.18	5.0E-04	-0.01	45.6	2.26	7	83.3	110.8	194.2	
73.16	5.0E-03	-0.01	72.0	1.45	7	130.8	57.9	188.8	
74.15	5.0E+00	0.00	125.9	0.58	9	228.0	5.2	233.2	
75.13	5.0E-02	0.00	102.1	1.04	9	186.2	33.9	220.1	
76.11	5.0E-02	0.00	106.7	1.06	9	195.4	33.7	229.1	
77.10	5.0E-04	0.00	43.8	2.29	7	81.9	117.8	199.7	
78.08	5.0E-04	0.01	71.5	2.30	7	132.8	100.2	233.0	
79.07	5.0E-03	0.00	90.8	1.56	7	168.7	60.8	229.5	
80.05	5.0E-02	0.00	90.8	1.04	9	169.5	37.0	206.5	
81.04	5.0E-04	-0.01	29.1	1.80	7	56.1	116.3	172.3	
82.02	5.0E-06	-0.05	6.9	3.32	1	15.2	UnDef	UnDef	1
83.00	5.0E-06	-0.04	7.0	3.48	1	15.4	UnDef	UnDef	1
83.99	5.0E-06	-0.03	6.7	3.99	1	15.1	UnDef	UnDef	1
84.97	5.0E-06	0.01	7.5	3.59	1	16.5	UnDef	UnDef	1
85.96	5.0E-06	0.05	5.6	3.33	1	13.1	UnDef	UnDef	1
86.94	5.0E-06	0.09	5.6	3.72	1	13.1	UnDef	UnDef	1
87.93	5.0E-06	0.18	5.6	3.28	1	13.2	UnDef	UnDef	1
88.91	5.0E-06	0.20	5.8	3.63	1	13.6	UnDef	UnDef	1
89.89	5.0E-06	0.28	5.1	3.82	1	12.4	UnDef	UnDef	1
90.88	5.0E-05	0.28	7.0	2.41	4	15.9	63.7	79.6	
91.86	5.0E-05	0.36	9.5	2.39	4	20.9	83.7	104.6	

92.85	5.0E-05	0.37	12.1	2.28	6	26.0	104.0	130.0	
93.83	5.0E-05	0.36	12.2	3.00	4	26.2	104.8	131.0	
94.82	5.0E-05	0.43	10.8	2.80	4	23.7	94.7	118.3	
95.80	5.0E-05	0.30	11.6	2.95	4	25.3	101.2	126.5	
96.78	5.0E-05	0.26	8.8	3.31	1	19.8	UnDef	UnDef	1
97.77	5.0E-05	0.25	8.4	3.34	1	19.2	UnDef	UnDef	1
98.75	5.0E-05	0.27	6.9	3.12	1	16.3	UnDef	UnDef	1
99.74	5.0E-05	0.29	7.5	2.82	4	17.6	70.2	87.8	
100.72	5.0E-05	0.16	13.3	2.42	6	29.0	116.1	145.2	
101.70	5.0E-04	0.23	11.4	2.11	6	25.4	101.8	127.2	
102.69	5.0E-05	0.32	8.0	2.26	4	18.7	74.9	93.6	
103.67	5.0E-05	0.39	9.9	2.40	4	22.7	90.6	113.3	

Gregg In Situ, Inc.

Run No: 02-0731-2106-1546

APT File: 565C01.COR

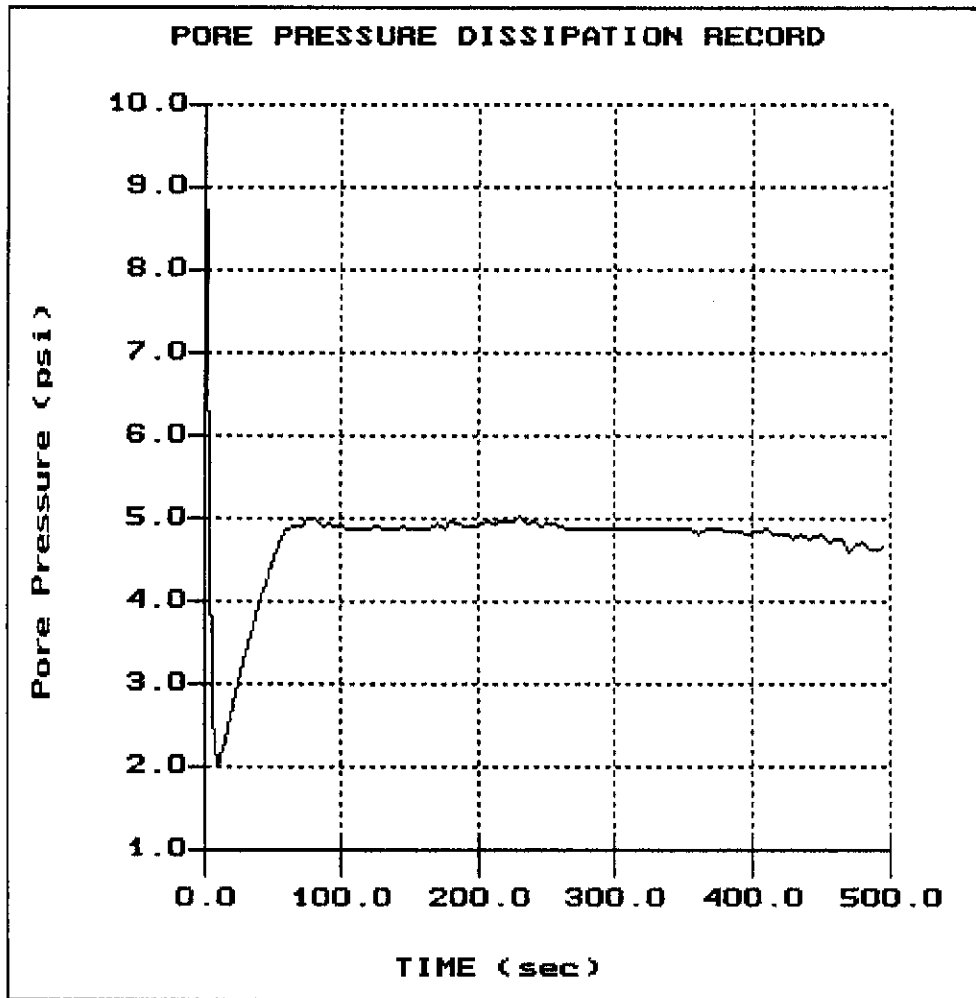
Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	
104.66	5.0E-05	0.33	10.7	2.33	6	24.4	97.4	121.8	
105.64	5.0E-05	0.30	9.2	2.55	4	21.4	85.5	106.9	
106.63	5.0E-04	0.30	10.9	2.21	6	24.8	99.4	124.2	
107.61	5.0E-05	0.13	17.6	3.30	6	38.4	153.8	192.2	
108.59	1.0E-15	0.03	33.6	4.34	6	70.9	283.8	354.7	
109.58	5.0E-06	0.02	10.7	3.73	1	24.8	UnDef	UnDef	1
110.56	5.0E-05	0.13	11.0	3.46	1	25.5	UnDef	UnDef	1
111.55	5.0E-05	0.20	8.5	3.48	1	20.4	UnDef	UnDef	1
112.53	5.0E-05	0.21	7.9	3.14	4	19.3	77.1	96.4	
113.52	5.0E-05	0.22	7.6	3.03	4	18.7	75.0	93.7	
114.50	5.0E-05	0.31	6.8	2.79	4	17.1	68.3	85.4	
115.48	5.0E-04	0.32	7.6	2.06	4	18.8	75.0	93.8	
116.47	5.0E-04	0.35	8.8	2.08	4	21.3	85.3	106.6	
117.45	5.0E-05	0.37	9.3	2.57	4	22.5	90.0	112.4	
118.44	5.0E-05	0.44	9.6	2.82	4	23.2	92.9	116.1	
119.42	5.0E-05	0.49	10.0	2.69	4	24.0	96.1	120.1	

3.3 PORE PRESSURE DISSIPATION PLOTS

CAMBRIA

Site: SHELL
Location: CPT-01

Geologist: J. GERKE
Date: 07:26:02 09:03



File: 565C01.PPC
Depth (m): 17.45
(ft): 57.25
Duration: 495.0s
U-min: 1.99 10.0s
U-max: 9.97 0.0s



Gregg In Situ

Environmental and Geotechnical Site Investigation Contractors

Gregg In Situ CPT Interpretations as of January 7, 1999 (Release 1.00.19)

Gregg In Situ's interpretation routine should be considered a calculator of current published CPT correlations and is subject to change to reflect the current state of practice. The interpreted values are not considered valid for all soil types. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design. Reference to current literature is strongly recommended.

The CPT interpretations are based on values of tip, sleeve friction and pore pressure averaged over a user specified interval (typically 0.25m). Note that Q_t is the recorded tip value, Q_c , corrected for pore pressure effects. Since all Gregg In Situ cones have equal end area friction sleeves, pore pressure corrections to sleeve friction, F_s , are not required.

The tip correction is: $Q_t = Q_c + (1-a) \cdot U_d$

where: Q_t is the corrected tip load

Q_c is the recorded tip load

U_d is the recorded dynamic pore pressure

a is the Net Area Ratio for the cone (typically 0.85 for Gregg In Situ cones)

Effective vertical overburden stresses are calculated based on a hydrostatic distribution of equilibrium pore pressures below the water table or from a user defined equilibrium pore pressure profile (this can be obtained from CPT dissipation tests). The stress calculations use unit weights assigned to the Soil Behavior Type zones or from a user defined unit weight profile.

Details regarding the interpretation methods for all of the interpreted parameters is given in table 1. The appropriate references referred to in table 1 are listed in table 2.

The estimated Soil Behavior Type is based on the charts developed by Robertson and Campanella shown in figure 1.

Table 1 CPT Interpretation Methods

Interpreted Parameter	Description	Equation	Ref
Depth	mid layer depth		
Avg Q_t	Averaged corrected tip (Q_t)	$AvgQ_t = \frac{1}{n} \sum_{i=1}^n Q_{t_i}$	
Avg F_s	Averaged sleeve friction (F_s)	$AvgF_s = \frac{1}{n} \sum_{i=1}^n F_{s_i}$	
Avg R_f	Averaged friction ratio (R_f)	$AvgR_f = 100\% \cdot \frac{AvgF_s}{AvgQ_t}$	
Avg U_d	Averaged dynamic pore pressure (U_d)	$AvgU_d = \frac{1}{n} \sum_{i=1}^n U_{d_i}$	
SBT	Soil Behavior Type as defined by Robertson and Campanella		1

CPT Interpretations

U.Wt.	Unit Weight of soil determined from: 1) uniform value or 2) value assigned to each SBT zone 3) user supplied unit weight profile		
TStress	Total vertical overburden stress at mid layer depth	$TStress = \sum_{i=1}^n \gamma_i h_i$ where γ_i is layer unit weight h_i is layer thickness	
EStress	Effective vertical overburden stress at mid layer depth	$EStress = TStress - U_{eq}$	
U _{eq}	Equilibrium pore pressure determined from: 1) hydrostatic from water table depth 2) user supplied profile		
C _n	SPT N ₆₀ overburden correction factor	$C_n = (\sigma_v')^{-0.5}$ where σ_v' is in tsf $0.5 < C_n < 2.0$	
N ₆₀	SPT N value at 60% energy calculated from Q _t /N ratios assigned to each SBT zone		3
(N1) ₆₀	SPT N ₆₀ value corrected for overburden pressure	$N1_{60} = C_n \cdot N_{60}$	3
Δ(N1) ₆₀	Equivalent Clean Sand Correction to (N1) ₆₀	$\Delta(N1)_{60} = \frac{K_{SPT}}{1 - K_{SPT}} \cdot (N1)_{60}$ Where: K _{SPT} is defined as: 0.0 for FC < 5% 0.0167 • (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	7
(N1) _{60cs}	Equivalent Clean Sand (N1) ₆₀	$(N1)_{60cs} = (N1)_{60} + \Delta(N1)_{60}$	7
S _u	Undrained shear strength - Nkt is use selectable	$S_u = \frac{Q_t - \sigma_v}{N_k}$	2
k	Coefficient of permeability (assigned to each SBT zone)		6
B _q	Pore pressure parameter	$B_q = \frac{\Delta u}{Q_t - \sigma_v}$	2
Q _{tn}	Normalized Q _t for Soil Behavior Type classification as defined by Robertson, 1990	$Q_{tn} = \frac{Q_t - \sigma_v}{\sigma_v}$	4
R _{fn}	Normalized R _f for Soil Behavior Type classification as defined by Robertson, 1990	$R_{fn} = 100\% \cdot \frac{f_s}{Q_t - \sigma_v}$	4
SBT _n	Normalized Soil Behavior Type (slightly modified from that published by Robertson, 1990. This version includes all the soil zones of the original non-normalized SBT chart - see figure 1)		4
Q _{c1}	Normalized Q _t for seismic analysis	$q_{c1} = q_c \cdot (Pa/\sigma_v')^{0.5}$ where: Pa = atm. pressure	5
Q _{c1N}	Dimensionless Normalized Q _{t1}	$q_{c1N} = q_{c1} / Pa$ where: Pa = atm. pressure	

CPT Interpretations

	an sand correction	$\Delta qc1N = \frac{K_{CPT}}{1 - K_{CPT}} \cdot qc1N$ <p>Where: K_{CPT} is defined as:</p> <p>0.0 for $FC < 5\%$ $0.0267 \cdot (FC - 5)$ for $5\% < FC < 35\%$ 0.5 for $FC > 35\%$</p> <p>FC - Fines Content in %</p>	5
Qc1Ncs	Clean Sand equivalent Qc1N	$qc1Ncs = qc1N + \Delta qc1N$	5
lc	Soil index for estimating grain characteristics	$lc = [(3.47 - \log Q)^2 + (\log F + 1.22)^2]^{0.5}$	5
FC	Fines content (%)	$FC = 1.75(lc^{2.25}) - 3.7$ $FC = 100$ for $lc > 3.5$ $FC = 0$ for $lc < 1.26$ $FC = 5\%$ if $1.64 < lc < 2.6$ AND $Rfn < 0.5$	8
PHI	Friction Angle	Campanella and Robertson Durunoglu and Mitchel Janbu	1
Dr	Relative Density	Ticino Sand Hokksund Sand Schmertmann 1976 Jamiolkowski - All Sands	1
OCR	Over Consolidation Ratio		1
State Parameter			9
CRR	Cyclic Resistance Ratio		7

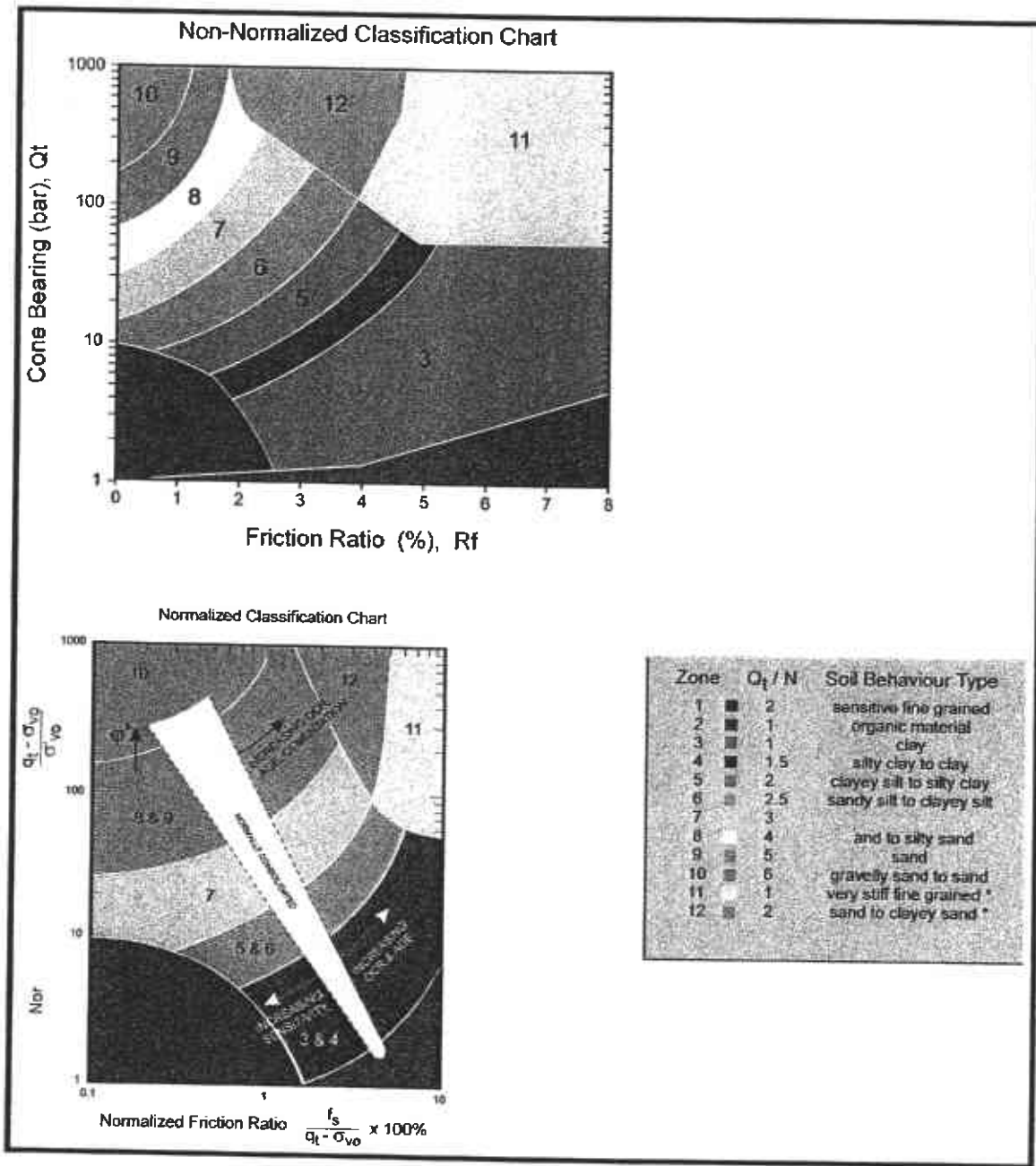


Figure 1 Non-Normalized and Normalized Soil Behavior Type Classification Charts

CPT Interpretations

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	Reference
	Robertson, P.K. and Campanella, R.G., 1986, "Guidelines for Use, Interpretation and Application of the CPT and CPTU", UBC, Soil Mechanics Series No. 105, Civil Eng. Dept., Vancouver, B.C., Canada
	Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
3	Robertson, P.K. and Campanella, R.G., 1989, "Guidelines for Geotechnical Design Using CPT and CPTU", UBC, Soil Mechanics Series No. 120, Civil Eng. Dept., Vancouver, B.C., Canada
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5	Robertson, P.K. and Fear, C.E., 1995, "Liquefaction of Sands and its Evaluation", Keynote Lecture, First International Conference on Earthquake Geotechnical Engineering, Tokyo, Japan.
6	Gregg In Situ Internal Report
7	Robertson, P.K. and Wride, C.E., 1997, "Cyclic Liquefaction and its Evaluation Based on SPT and CPT", NCEER Workshop Paper, January 22, 1997
8	Wride, C.E. and Robertson, P.K., 1997, "Phase II Data Review Report (Massey and Kidd Sites, Fraser River Delta)", Volume 1 - Data Report (June 1997), University of Alberta.
9	Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1992, "CPT Based Screening Procedure for Evaluating Liquefaction Susceptibility", 45th Canadian Geotechnical Conference, Toronto, Ontario, October 1992.

PRESENTATION OF CONE PENETRATION TEST DATA

SHELL

**3790 HOPYARD
PLEASANTON, CALIFORNIA**

Prepared for:

CAMBRIA

Prepared by:

**GREGG IN SITU, INC.
Martinez, California
02-181ma**

Prepared on:

March 25, 2003

Table 2 Referen
No. 1
2

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- Figure 3 PPDT Correlation Figure
- Figure 4 Soil Classification Chart
- References

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- Interpretation Method
- Computer Diskette with ASCII Files

PRESENTATION OF CONE PENETRATION TEST DATA

1.0 INTRODUCTION

This report presents the results of a Cone Penetration Testing (CPT) and in situ groundwater sampling program carried out at the Shell site located in Pleasanton, CA. The work was performed on November 25th, 2002. The scope of work was performed as directed by Cambria personnel.

2.0 FIELD EQUIPMENT & PROCEDURES

The Cone Penetration Tests (CPT) were carried out by GREGG IN SITU, INC. of Martinez, CA using an integrated electronic cone system. The CPT soundings were performed in accordance with ASTM standards (D 5778-95). A 20 ton capacity cone was used for all of the soundings (figure 1). This cone has a tip area of 15 cm² and friction sleeve area of 225 cm². The cone is designed with an equal end area friction sleeve and a tip end area ratio of 0.85.

The cones used during the program recorded the following parameters at 5 cm depth intervals:

- Tip Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (U)

The above parameters were printed simultaneously on a printer and stored on a computer diskette for future analysis and reference.

The pore water pressure element was located directly behind the cone tip. The pore water pressure element was 5.0 mm thick and consisted of porous plastic. Each of the elements were saturated in silicon oil under vacuum pressure prior to penetration. Pore pressure dissipations were recorded at 5 second intervals when appropriate during pauses in the penetration.

A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

The cones were pushed using GREGG IN SITU's CPT rig, having a down pressure capacity of approximately 20 tons. One CPT sounding was performed. The penetration test was carried to a depth of approximately 119 feet below ground surface. Test locations and depths were determined in the field by Cambria personnel.

GREGG IN SITU, INC.
March 25, 2003
02-181ma

CAMBRIA
Shell
Pleasanton, Ca.

In situ groundwater samples were taken at one location. Groundwater samples were collected using a Hydropunch® type groundwater sampling system (figure 2). The groundwater sampler operates by pushing 1.75 inch diameter hollow rods with a retrievable tip. A stainless steel filter screen is attached to the tip. At the desired sampling depth, the rods are retracted exposing the filter screen and allowing for groundwater infiltration. A small diameter bailer is then used to collect groundwater samples through the hollow rod.

3.0 CONE PENETRATION TEST DATA & INTERPRETATION

The cone penetration test data is presented in graphical form. Penetration depths are referenced to existing ground surface. This data includes CPT logs of measured soil parameters and a computer tabulation of interpreted soil types along with additional geotechnical parameters and pore pressure dissipation data.

The stratigraphic interpretation is based on relationships between cone bearing (q_c), sleeve friction (f_s), and penetration pore pressure (U). The friction ratio (R_f), which is sleeve friction divided by cone bearing, is a calculated parameter which is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone bearing and generate large excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little in the way of excess pore water pressures.

Pore Pressure Dissipation Tests (PPDT's) were taken at various intervals in order to measure hydrostatic water pressures and approximate depth to groundwater table. In addition, the PPDT data can be used to estimate the horizontal permeability (k_h) of the soil. The correlation to permeability is based on the time required for 50 percent of the measured dynamic pore pressure to dissipate (t_{50}). The PPDT correlation figure (figure 3) is provided in the Appendix.

The interpretation of soils encountered on this project was carried out using recent correlations developed by Robertson et al, 1990. It should be noted that it is not always possible to clearly identify a soil type based on q_c , f_s and U . In these situations, experience and judgement and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type. The soil classification chart (figure 4) used to interpret soil types based on q_c and R_f is provided in the Appendix.

Interpreted output requires that depth of water be entered for calculation purposes, where depth to water is unknown an arbitrary depth in excess of 10 feet of the deepest sounding is entered as the groundwater depth.

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March 25, 2003

02-181ma

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Shell

Pleasanton, Ca.

We hope the information presented is sufficient for your purposes. We recommend that all data be carefully reviewed by qualified personnel to verify the data and make appropriate recommendations. If you have any questions, please do not hesitate to contact our office at (925) 313-5800.

Sincerely,

GREGG IN SITU, INC.

Mary Walden

Operations Manager

ELECTRICAL PIEZOCONE

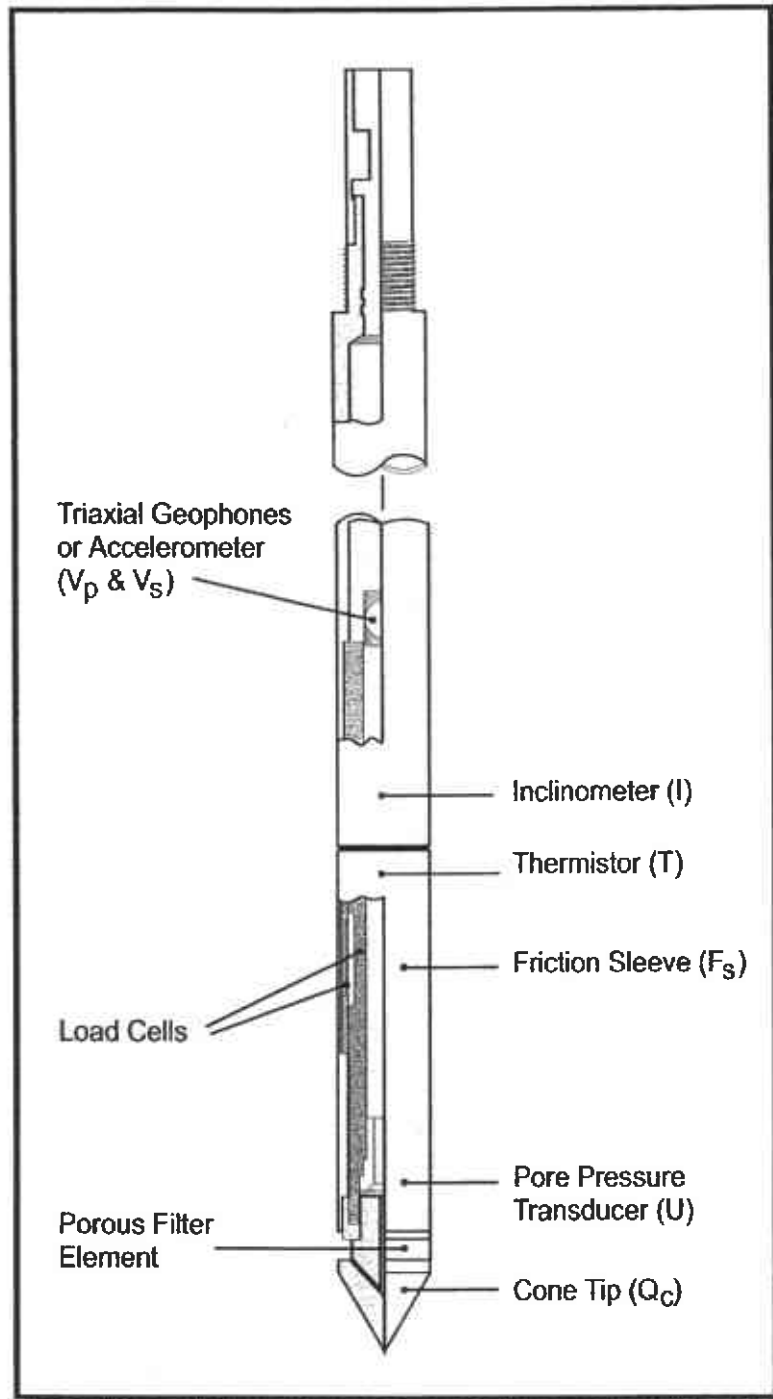


Figure 1

GROUNDWATER SAMPLER (HYDROPUNCH)

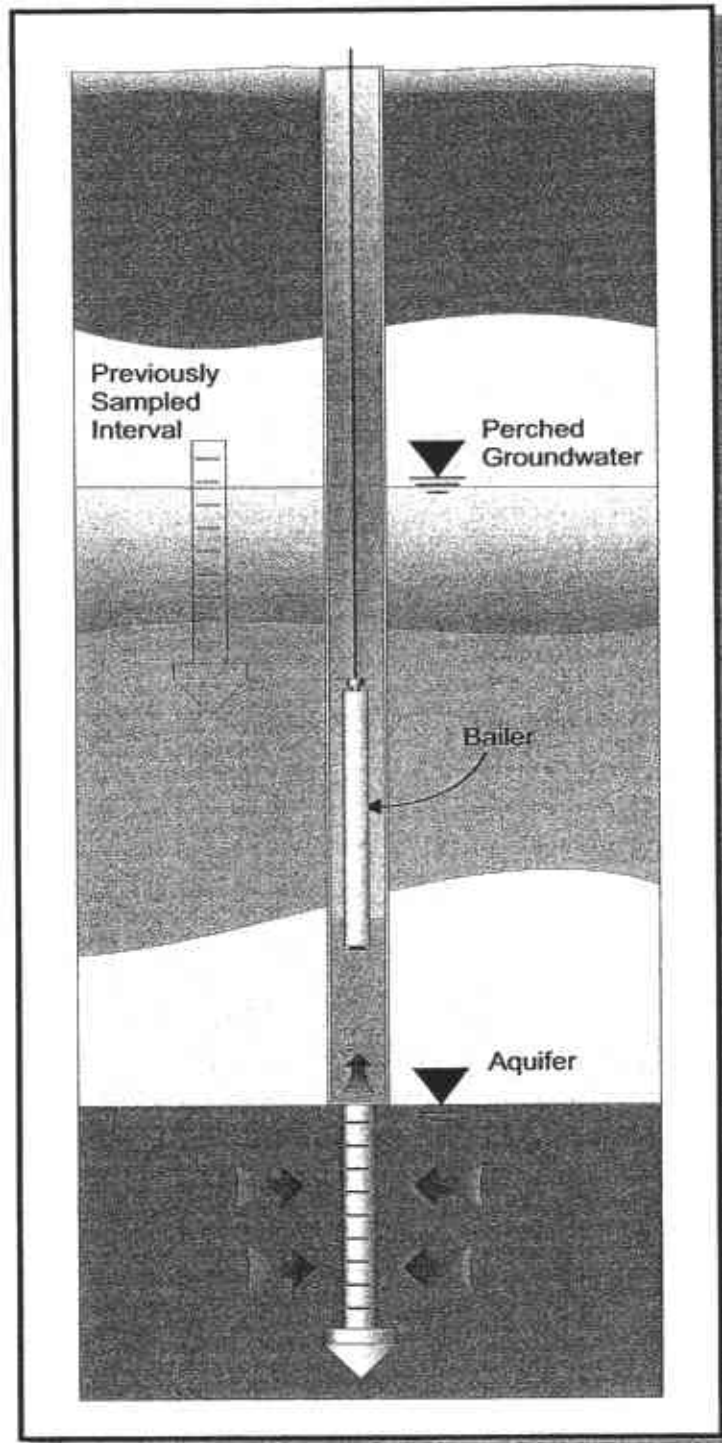


Figure 2

INTERPRETATION PORE PRESSURE DATA AND DISSIPATIONS

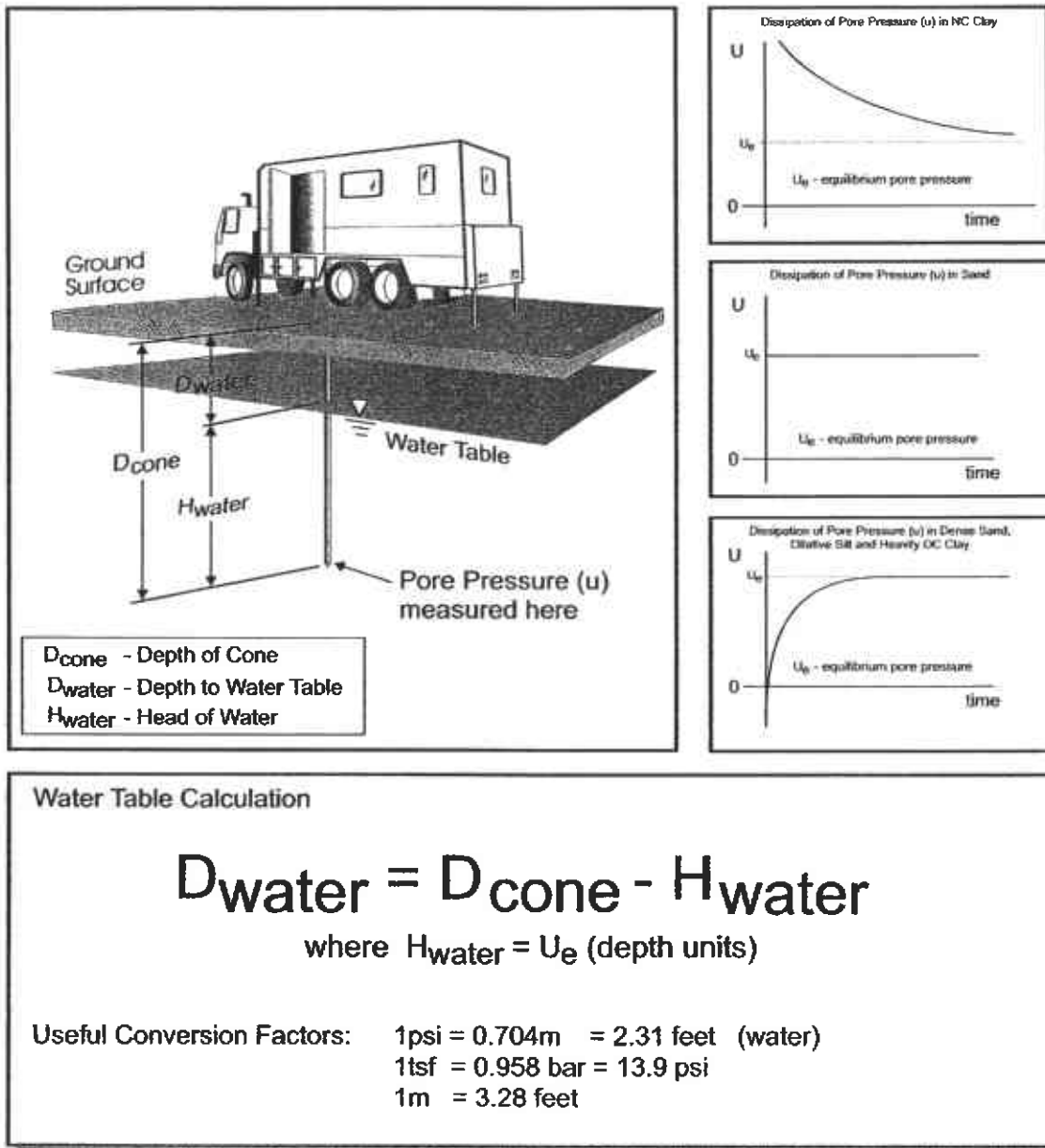
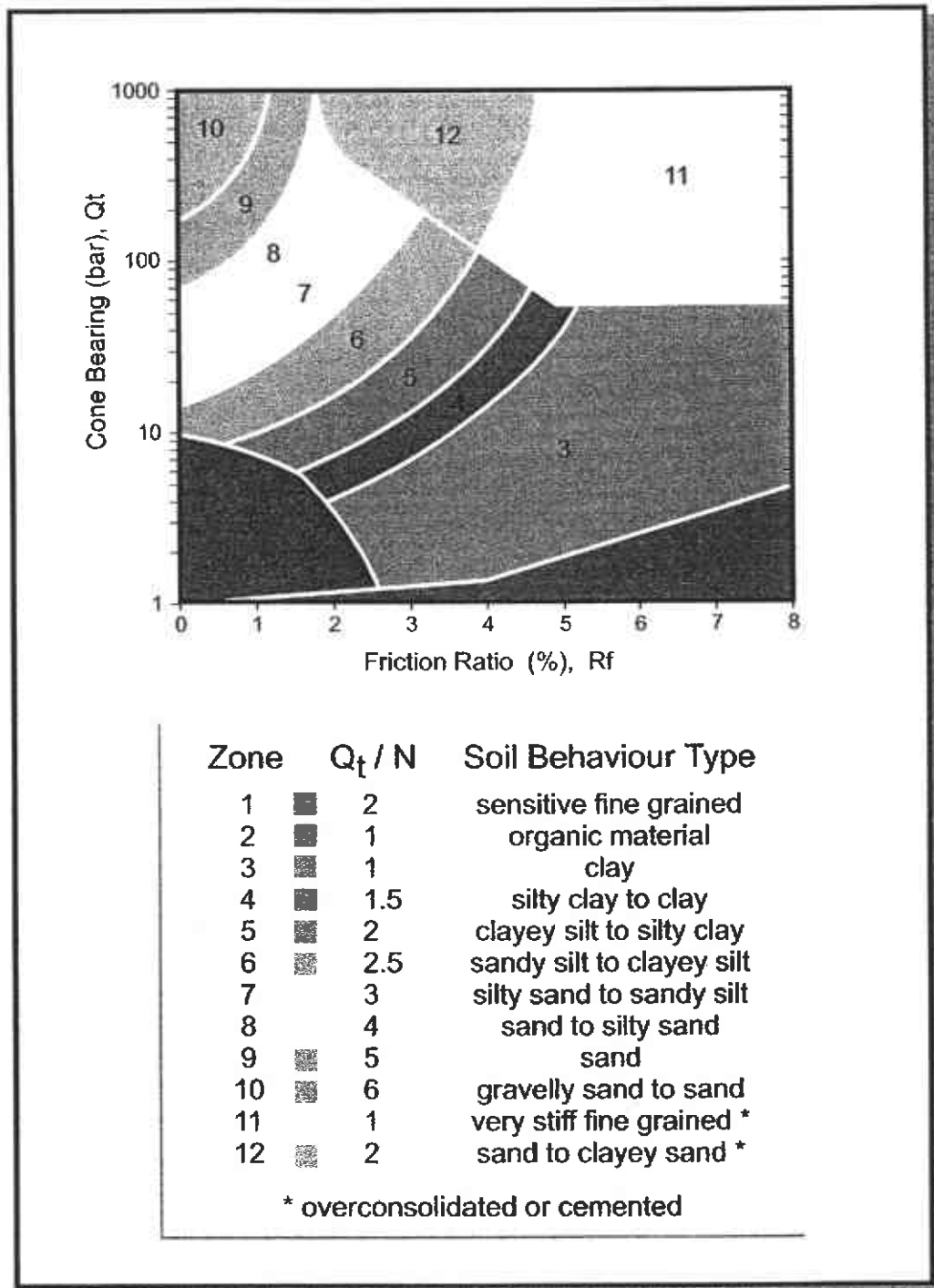


Figure 3

SOIL BEHAVIOR TYPE



Robertson (1990)

Figure 4

REFERENCES

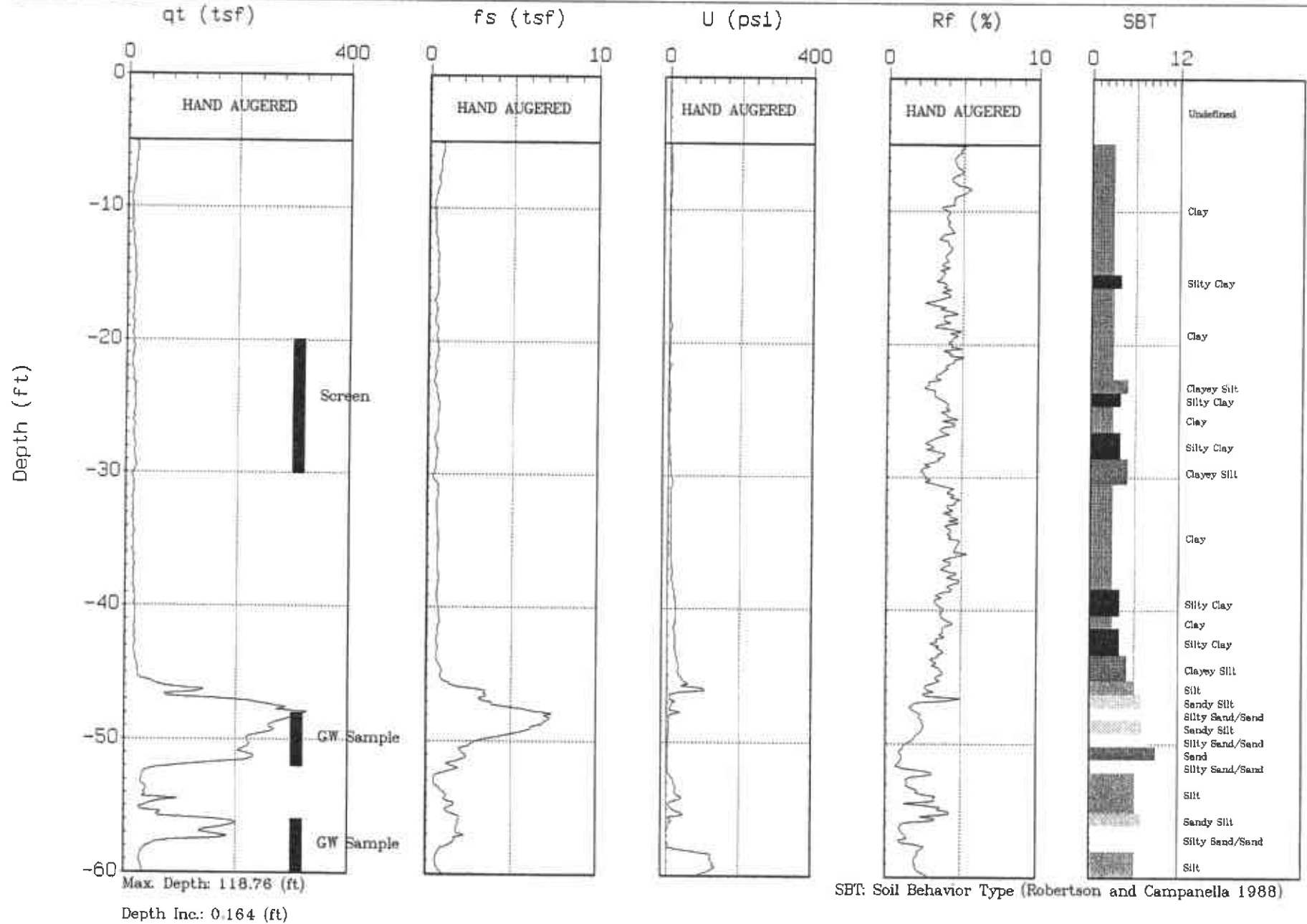
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- Robertson, P.K. and Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of In Situ 86, ASCE Specialty Conference, Blacksburg, Virginia.
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- Robertson, P.K., Campanella, R.G., Gillespie, D. and Rice, A., 1986, "Seismic CPT to Measure In Situ Shear Wave Velocity", Journal of Geotechnical Engineering, ASCE, Vol. 112, No. 8, pp. 791-803.



CAMBRIA

Site : 3790 HOPYARD
Location : CPT-02

Geologist : S. DALIE
Date : 11:25:02 09:47

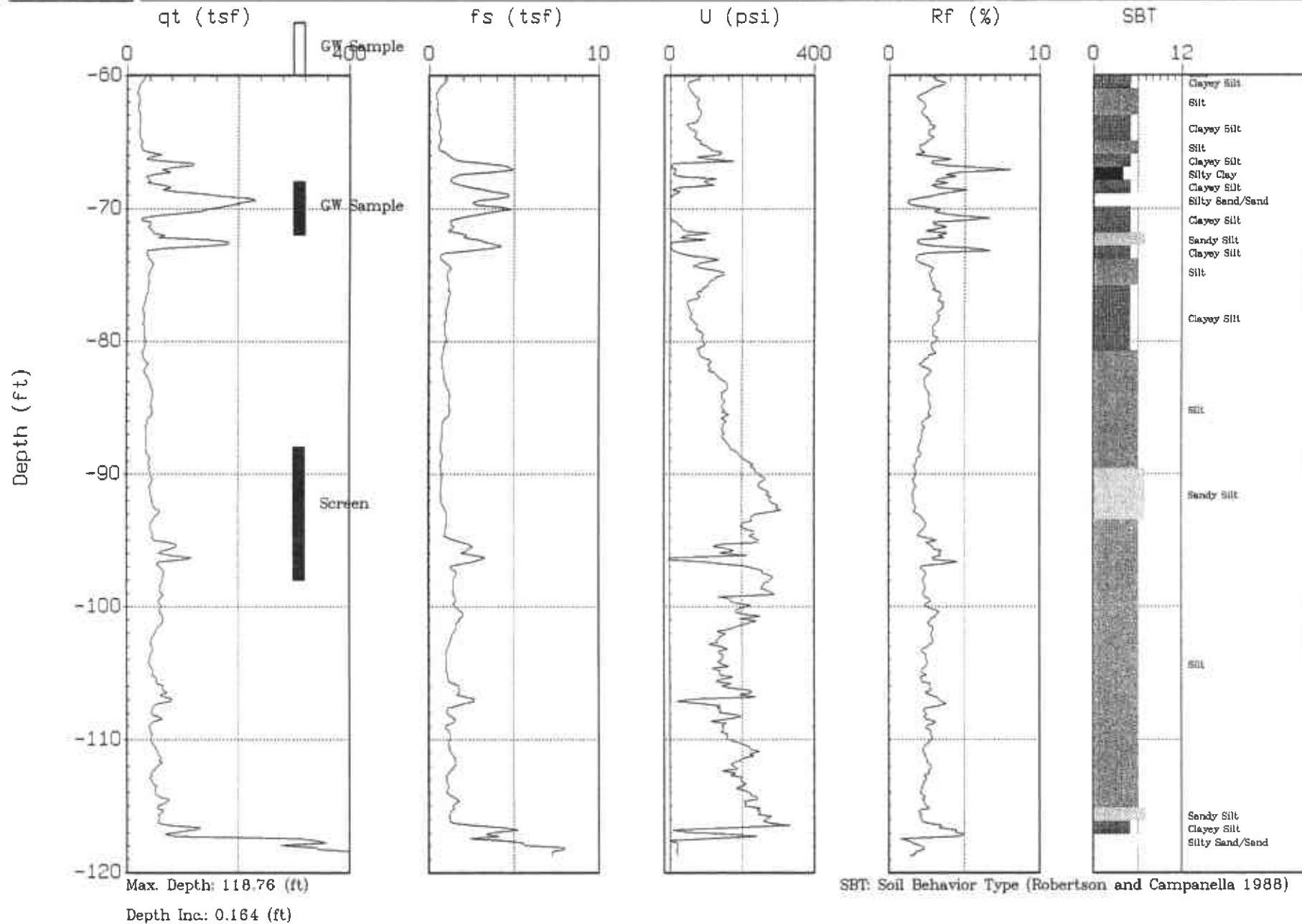




CAMBRIA

Site : 3790 HOPYARD
Location : CPT-02

Geologist : S. DALIE
Date : 11:25:02 09:47



3.2 INTERPRETED OUTPUT

Gregg In Situ, Inc.
 Interpretation Output - Release 1.00.19e
 Run No: 03-0325-1007-2152
 Job No: 97-100
 Client: CAMBRIA
 Project: CPT SITE INVESTIGATION
 Site: 3790 HOPYARD
 Location: CPT-02
 Engineer: S. DALIE
 CPT Date: 02/25/11
 CPT Time: 09:47
 CPT File: 181C02.COR
 Northing (m): 0.000
 Easting (m): 0.000
 Elevation (m): 0.000

 Water Table (m): 5.18 (ft): 17.0
 Su Nkt used: 12.50
 Averaging Increment (m): 0.30
 Phi Method : Robertson and Campanella, 1983
 Dr Method : Jamiolkowski - All Sands
 State Parameter M: 1.20

Used Unit Weights Assigned to Soil Zones
 Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
0.49	0.0	0.00	0.00	0.0	UnDef	124.1	0.03	0.03	0.00	2.00	UnDef	UnDef	UnDef	0.00
1.48	0.0	0.00	0.00	0.0	UnDef	124.1	0.09	0.09	0.00	2.00	UnDef	UnDef	UnDef	0.00
2.46	0.0	0.00	0.00	0.0	UnDef	124.1	0.15	0.15	0.00	2.00	UnDef	UnDef	UnDef	0.00
3.44	0.0	0.00	0.00	0.0	UnDef	124.1	0.21	0.21	0.00	2.00	UnDef	UnDef	UnDef	0.00
4.43	0.0	0.00	0.00	0.0	UnDef	124.1	0.27	0.27	0.00	1.91	UnDef	UnDef	UnDef	0.00
5.41	16.8	0.81	4.80	9.4	3	111.4	0.33	0.33	0.00	1.73	16.1	27.9	1.32	0.35
6.40	15.0	0.68	4.54	11.4	3	111.4	0.39	0.39	0.00	1.61	14.3	23.0	1.17	0.23
7.30	13.1	0.59	4.50	12.1	3	111.4	0.44	0.44	0.00	1.51	12.5	19.0	1.01	0.00
8.20	10.5	0.52	4.98	11.9	3	111.4	0.49	0.49	0.00	1.43	10.0	14.3	0.80	0.00
9.19	7.8	0.33	4.27	4.9	3	111.4	0.54	0.54	0.00	1.36	7.5	10.2	0.58	0.00
10.17	8.2	0.32	3.92	5.1	3	111.4	0.60	0.60	0.00	1.29	7.9	10.2	0.61	0.00
11.15	8.3	0.35	4.16	2.2	3	111.4	0.65	0.65	0.00	1.24	8.0	9.8	0.61	0.00
12.14	10.4	0.39	3.76	2.0	3	111.4	0.71	0.71	0.00	1.19	10.0	11.9	0.78	0.00
13.21	12.2	0.49	4.00	2.7	3	111.4	0.77	0.77	0.00	1.14	11.6	13.3	0.91	0.00

14.27	13.7	0.51	3.70	3.7	3	111.4	0.83	0.83	0.00	1.10	13.2	14.5	1.03	0.00
15.26	14.2	0.51	3.60	5.6	4	114.6	0.88	0.88	0.00	1.07	9.1	9.7	1.07	0.00
16.24	12.3	0.47	3.79	5.5	3	111.4	0.94	0.94	0.00	1.03	11.8	12.2	0.91	0.00
17.22	11.2	0.40	3.58	7.3	3	111.4	0.99	0.99	0.01	1.01	10.7	10.8	0.82	0.00
18.21	10.8	0.39	3.59	10.5	3	111.4	1.05	1.01	0.04	1.00	10.4	10.3	0.78	0.00
19.19	10.8	0.48	4.43	11.0	3	111.4	1.10	1.03	0.07	0.98	10.3	10.1	0.77	0.00
20.18	12.4	0.52	4.20	7.9	3	111.4	1.16	1.06	0.10	0.97	11.9	11.6	0.90	0.00
21.16	10.9	0.47	4.34	7.0	3	111.4	1.21	1.08	0.13	0.96	10.4	10.0	0.78	0.00
22.15	11.2	0.39	3.50	6.3	3	111.4	1.27	1.11	0.16	0.95	10.7	10.2	0.79	0.00
23.13	13.9	0.39	2.79	7.1	5	114.6	1.32	1.13	0.19	0.94	6.7	6.3	1.01	0.10
24.11	15.1	0.55	3.64	10.5	4	114.6	1.38	1.16	0.22	0.93	9.6	9.0	1.10	0.00
25.10	15.1	0.61	4.04	8.5	3	111.4	1.43	1.18	0.25	0.92	14.4	13.3	1.09	0.00
26.08	14.5	0.56	3.89	6.3	3	111.4	1.49	1.21	0.28	0.91	13.9	12.7	1.04	0.00
27.07	13.5	0.43	3.16	7.5	4	114.6	1.54	1.23	0.31	0.90	8.6	7.8	0.96	0.00
28.05	15.6	0.52	3.33	13.2	4	114.6	1.60	1.26	0.35	0.89	10.0	8.9	1.12	0.00
29.04	16.7	0.45	2.69	16.4	5	114.6	1.66	1.28	0.38	0.88	8.0	7.1	1.20	0.11
30.02	13.1	0.35	2.68	26.3	5	114.6	1.71	1.31	0.41	0.87	6.3	5.5	0.91	0.10
31.00	14.0	0.59	4.21	22.1	3	111.4	1.77	1.33	0.44	0.87	13.4	11.6	0.98	0.00
31.99	12.2	0.54	4.40	20.6	3	111.4	1.82	1.36	0.47	0.86	11.7	10.0	0.83	0.00
32.97	12.2	0.52	4.31	22.3	3	111.4	1.88	1.38	0.50	0.85	11.7	9.9	0.82	0.00
33.96	13.9	0.57	4.14	23.3	3	111.4	1.93	1.40	0.53	0.84	13.3	11.2	0.96	0.00
34.94	13.1	0.60	4.60	20.7	3	111.4	1.99	1.43	0.56	0.84	12.6	10.5	0.89	0.00
35.92	13.4	0.59	4.39	22.6	3	111.4	2.04	1.45	0.59	0.83	12.8	10.6	0.91	0.00
36.91	14.4	0.59	4.09	28.1	3	111.4	2.10	1.48	0.62	0.82	13.8	11.4	0.99	0.00
37.89	14.1	0.62	4.40	30.8	3	111.4	2.15	1.50	0.65	0.82	13.5	11.1	0.96	0.00
38.88	15.5	0.54	3.50	46.1	4	114.6	2.21	1.53	0.68	0.81	9.9	8.0	1.06	0.00
39.86	17.1	0.62	3.60	54.0	4	114.6	2.26	1.55	0.71	0.80	10.9	8.8	1.19	0.00
40.85	17.2	0.69	3.99	49.5	3	111.4	2.32	1.58	0.74	0.80	16.5	13.1	1.19	0.00

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
41.83	16.4	0.59	3.60	47.6	4	114.6	2.38	1.60	0.78	0.79	10.5	8.3	1.12	0.00
42.81	16.6	0.57	3.44	51.0	4	114.6	2.43	1.63	0.81	0.78	10.6	8.3	1.13	0.00
43.80	18.2	0.59	3.25	65.5	5	114.6	2.49	1.65	0.84	0.78	8.7	6.8	1.26	0.00
44.78	22.7	0.80	3.54	79.1	5	114.6	2.55	1.68	0.87	0.77	10.9	8.4	1.61	0.00
45.77	70.9	1.95	2.75	147.2	6	114.6	2.60	1.70	0.90	0.77	27.1	20.8	5.46	0.00
46.75	148.5	3.46	2.33	27.7	7	117.8	2.66	1.73	0.93	0.76	47.4	36.1	UnDef	0.00
47.74	296.2	6.38	2.15	29.2	8	120.9	2.72	1.76	0.96	0.75	70.9	53.5	UnDef	0.00
48.72	270.8	6.49	2.40	12.9	7	117.8	2.78	1.79	0.99	0.75	86.5	64.7	UnDef	0.00
49.70	231.3	3.72	1.61	9.1	8	120.9	2.84	1.81	1.02	0.74	55.4	41.1	UnDef	0.00
50.69	217.7	2.17	1.00	7.6	9	124.1	2.90	1.84	1.05	0.74	41.7	30.7	UnDef	0.00
51.67	145.9	1.61	1.10	4.4	8	120.9	2.96	1.87	1.08	0.73	34.9	25.5	UnDef	0.32
52.66	32.1	0.57	1.76	32.9	6	114.6	3.01	1.90	1.11	0.73	12.3	8.9	2.33	0.22
53.64	35.6	0.88	2.49	63.4	6	114.6	3.07	1.93	1.14	0.72	13.6	9.8	2.60	0.26
54.63	49.7	1.29	2.59	34.5	6	114.6	3.13	1.95	1.17	0.72	19.0	13.6	3.72	0.00
55.61	91.5	1.70	1.85	44.2	7	117.8	3.18	1.98	1.21	0.71	29.2	20.8	UnDef	0.31
56.59	164.9	1.84	1.12	3.7	8	120.9	3.24	2.01	1.24	0.71	39.5	27.9	UnDef	0.38
57.58	94.8	1.36	1.43	16.0	8	120.9	3.30	2.03	1.27	0.70	22.7	15.9	UnDef	0.24
58.56	29.5	0.59	2.00	265.4	6	114.6	3.36	2.06	1.30	0.70	11.3	7.9	2.09	0.17
59.55	30.6	0.72	2.36	260.6	6	114.6	3.42	2.09	1.33	0.69	11.7	8.1	2.17	0.18
60.53	24.1	0.78	3.22	133.7	5	114.6	3.47	2.11	1.36	0.69	11.6	8.0	1.65	0.00
61.52	20.1	0.43	2.12	161.2	6	114.6	3.53	2.14	1.39	0.68	7.7	5.3	1.33	0.11
62.42	20.5	0.46	2.25	185.2	6	114.6	3.58	2.16	1.42	0.68	7.8	5.3	1.35	0.11
63.32	22.7	0.59	2.61	157.3	5	114.6	3.63	2.19	1.45	0.68	10.8	7.3	1.52	0.12
64.30	22.3	0.61	2.74	155.2	5	114.6	3.69	2.21	1.48	0.67	10.7	7.2	1.49	0.00
65.29	28.2	0.63	2.22	243.7	6	114.6	3.75	2.24	1.51	0.67	10.8	7.2	1.96	0.15
66.27	73.0	2.21	3.03	194.7	6	114.6	3.80	2.26	1.54	0.66	28.0	18.6	5.54	0.00
67.26	56.2	2.96	5.27	74.7	11	130.5	3.86	2.29	1.57	0.66	53.8	35.6	UnDef	0.00
68.24	61.2	2.30	3.76	142.3	5	114.6	3.92	2.32	1.60	0.66	29.3	19.2	4.58	0.00
69.22	192.3	3.60	1.87	6.4	8	120.9	3.98	2.35	1.63	0.65	46.0	30.0	UnDef	0.00
70.21	101.4	3.37	3.32	0.0	6	114.6	4.04	2.38	1.66	0.65	38.9	25.2	7.79	0.00
71.19	39.1	1.25	3.19	57.3	5	114.6	4.09	2.40	1.69	0.65	18.7	12.1	2.80	0.26
72.18	112.7	2.64	2.34	107.8	7	117.8	4.15	2.43	1.72	0.64	36.0	23.1	UnDef	0.00
73.16	57.8	2.08	3.59	65.2	5	114.6	4.21	2.46	1.75	0.64	27.7	17.7	4.29	0.00
74.15	43.3	1.02	2.36	227.8	6	114.6	4.27	2.48	1.78	0.63	16.6	10.5	3.12	0.31
75.13	38.9	1.07	2.75	293.3	6	114.6	4.32	2.51	1.81	0.63	14.9	9.4	2.77	0.24
76.11	36.9	1.16	3.16	199.7	5	114.6	4.38	2.53	1.85	0.63	17.7	11.1	2.60	0.22
77.10	30.9	1.06	3.43	125.3	5	114.6	4.43	2.56	1.88	0.63	14.8	9.3	2.12	0.00

78.08	29.8	0.96	3.22	137.5	5	114.6	4.49	2.58	1.91	0.62	14.3	8.9	2.03	0.00
79.07	30.8	0.90	2.92	187.4	5	114.6	4.55	2.61	1.94	0.62	14.7	9.1	2.10	0.00
80.05	31.6	0.94	2.98	202.7	5	114.6	4.60	2.63	1.97	0.62	15.1	9.3	2.16	0.00
81.04	29.7	0.77	2.61	213.8	6	114.6	4.66	2.66	2.00	0.61	11.4	7.0	2.00	0.15
82.02	33.1	0.81	2.43	262.9	6	114.6	4.72	2.69	2.03	0.61	12.7	7.7	2.27	0.17
83.00	40.4	0.96	2.37	348.7	6	114.6	4.77	2.71	2.06	0.61	15.5	9.4	2.85	0.24
83.99	45.2	1.18	2.61	340.6	6	114.6	4.83	2.74	2.09	0.60	17.3	10.5	3.23	0.30
84.97	44.2	1.18	2.67	345.6	6	114.6	4.89	2.76	2.12	0.60	16.9	10.2	3.15	0.28
85.96	36.4	0.87	2.39	345.0	6	114.6	4.94	2.79	2.15	0.60	14.0	8.4	2.52	0.19
86.94	34.5	0.75	2.16	342.7	6	114.6	5.00	2.81	2.18	0.60	13.2	7.9	2.36	0.18
87.93	34.4	0.69	2.00	395.6	6	114.6	5.05	2.84	2.21	0.59	13.2	7.8	2.35	0.17
88.91	39.5	0.72	1.82	492.2	6	114.6	5.11	2.87	2.25	0.59	15.1	8.9	2.75	0.22
89.89	42.2	0.72	1.71	572.2	7	117.8	5.17	2.89	2.28	0.59	13.5	7.9	UnDef	0.25
90.88	41.8	0.70	1.66	591.8	7	117.8	5.23	2.92	2.31	0.59	13.3	7.8	UnDef	0.24
91.86	44.5	0.72	1.61	650.6	7	117.8	5.28	2.95	2.34	0.58	14.2	8.3	UnDef	0.27
92.85	52.5	0.98	1.87	603.2	7	117.8	5.34	2.97	2.37	0.58	16.8	9.7	UnDef	0.39
93.83	43.0	0.99	2.30	490.1	6	114.6	5.40	3.00	2.40	0.58	16.5	9.5	3.01	0.25
94.82	58.8	1.45	2.47	506.5	6	114.6	5.46	3.03	2.43	0.57	22.5	12.9	4.27	0.00
95.80	80.0	2.49	3.11	314.5	6	114.6	5.51	3.05	2.46	0.57	30.7	17.6	5.96	0.00
96.78	66.3	1.91	2.89	362.3	6	114.6	5.57	3.08	2.49	0.57	25.4	14.5	4.86	0.00
97.77	64.0	1.49	2.33	626.6	6	114.6	5.62	3.10	2.52	0.57	24.5	13.9	4.67	0.00
98.75	61.0	1.43	2.34	570.6	6	114.6	5.68	3.13	2.55	0.57	23.4	13.2	4.43	0.00
99.74	58.6	1.55	2.65	434.6	6	114.6	5.74	3.15	2.58	0.56	22.4	12.6	4.23	0.00
100.72	62.6	1.83	2.92	494.2	6	114.6	5.79	3.18	2.61	0.56	24.0	13.4	4.54	0.00
101.70	51.9	1.47	2.83	371.0	6	114.6	5.85	3.21	2.64	0.56	19.9	11.1	3.69	0.35
102.69	43.7	1.17	2.68	310.1	6	114.6	5.91	3.23	2.68	0.56	16.7	9.3	3.02	0.24
103.67	41.4	0.99	2.38	323.1	6	114.6	5.96	3.26	2.71	0.55	15.9	8.8	2.84	0.21

Gregg In Situ, Inc.
 Run No: 03-0325-1007-2152
 CPT File: 181C02.COR

Depth (ft)	AvgQt (tsf)	AvgFs (tsf)	AvgRf (%)	AvgUd (ft)	SBT	U.Wt. pcf	TStress (tsf)	EStress (tsf)	Ueq (tsf)	Cn	N60 (blows/ft)	(N1)60	Su (tsf)	CRR
104.66	44.1	1.02	2.32	322.7	6	114.6	6.02	3.28	2.74	0.55	16.9	9.3	3.04	0.24
105.64	56.2	1.37	2.44	355.2	6	114.6	6.08	3.31	2.77	0.55	21.5	11.8	4.01	0.40
106.63	70.5	2.09	2.96	370.6	6	114.6	6.13	3.33	2.80	0.55	27.0	14.8	5.15	0.00
107.61	46.6	1.31	2.81	315.8	6	114.6	6.19	3.36	2.83	0.55	17.9	9.7	3.24	0.26
108.59	48.3	1.26	2.60	352.4	6	114.6	6.24	3.38	2.86	0.54	18.5	10.1	3.36	0.28
109.58	42.9	1.19	2.77	358.7	6	114.6	6.30	3.41	2.89	0.54	16.4	8.9	2.93	0.22
110.56	51.1	1.20	2.35	505.9	6	114.6	6.36	3.44	2.92	0.54	19.6	10.6	3.58	0.31
111.55	58.3	1.50	2.57	445.6	6	114.6	6.41	3.46	2.95	0.54	22.3	12.0	4.15	0.41
112.53	44.4	1.13	2.54	414.8	6	114.6	6.47	3.49	2.98	0.54	17.0	9.1	3.04	0.23
113.52	49.2	1.08	2.18	471.8	6	114.6	6.53	3.51	3.01	0.53	18.9	10.1	3.42	0.28
114.50	63.7	1.48	2.32	511.5	6	114.6	6.58	3.54	3.04	0.53	24.4	13.0	4.57	0.00
115.48	58.9	1.28	2.17	592.0	6	114.6	6.64	3.56	3.07	0.53	22.5	11.9	4.18	0.41
116.47	87.7	3.13	3.56	423.7	6	114.6	6.70	3.59	3.11	0.53	33.6	17.7	6.48	0.00
117.45	239.8	4.20	1.75	210.0	8	120.9	6.75	3.62	3.14	0.53	57.4	30.2	UnDef	0.00

Gregg In Situ, Inc.

Interpretation Output - Release 1.00.19e

Run No: 03-0325-1007-2152

Job No: 97-100

Client: CAMBRIA

Project: CPT SITE INVESTIGATION

Site: 3790 HOPYARD

Location: CPT-02

Engineer: S. DALIE

CPT Date: 02/25/11

CPT Time: 09:47

CPT File: 181C02.COR

Northing (m): 0.000

Easting (m): 0.000

Elevation (m): 0.000

Water Table (m): 5.18 (ft): 17.0

Su Nkt used: 12.50

Averaging Increment (m): 0.30

Phi Method : Robertson and Campanella, 1983

Dr Method : Jamiolkowski - All Sands

State Parameter M: 1.20

Used Unit Weights Assigned to Soil Zones

Values of 1.0E9 or UnDef are printed for parameters that are not valid for the material type (SBT)

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Del	(n1)60	(N1)60cs
0.49	1.0E-15	0.00	2.4	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
1.48	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
2.46	1.0E-15	0.00	0.1	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
3.44	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
4.43	1.0E-15	0.00	0.0	0.10	1	0.2	UnDef	UnDef	100.0	UnDef	UnDef	1.0	UnDef	UnDef	UnDef
5.41	5.0E-08	0.02	49.5	4.90	6	28.5	114.0	142.5	35.7	UnDef	UnDef	6.0	UnDef	27.9	55.8
6.40	5.0E-08	0.02	37.6	4.67	6	23.5	94.2	117.7	39.1	UnDef	UnDef	6.0	UnDef	23.0	46.1
7.30	5.0E-08	0.03	28.9	4.66	1	19.4	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
8.20	5.0E-08	0.04	20.4	5.22	1	14.7	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
9.19	5.0E-08	0.02	13.4	4.59	1	10.4	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
10.17	5.0E-08	0.02	12.8	4.23	1	10.4	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
11.15	5.0E-08	0.01	11.7	4.51	1	10.1	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
12.14	5.0E-08	0.01	13.7	4.04	1	12.1	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
13.21	5.0E-08	0.01	14.9	4.27	1	13.6	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
14.27	5.0E-08	0.01	15.6	3.94	1	14.8	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef
15.26	5.0E-07	0.01	15.1	3.84	1	14.8	UnDef	UnDef	100.0	UnDef	UnDef	6.0	UnDef	UnDef	UnDef

16.24	5.0E-08	0.02	12.1	4.10	1	12.5	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
17.22	5.0E-08	0.02	10.3	3.93	1	11.0	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
18.21	5.0E-08	0.03	9.7	3.97	1	10.5	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
19.19	5.0E-08	0.03	9.3	4.93	1	10.4	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
20.18	5.0E-08	0.01	10.7	4.63	1	11.8	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
21.16	5.0E-08	0.01	9.0	4.88	1	10.3	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
22.15	5.0E-08	0.00	8.9	3.95	1	10.4	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
23.13	5.0E-06	0.00	11.1	3.09	4	12.8	51.2	64.0	56.2	UnDef	UnDef	3.0	UnDef	6.3	12.5
24.11	5.0E-07	0.01	11.8	4.01	1	13.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
25.10	5.0E-08	0.00	11.5	4.46	1	13.6	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
26.08	5.0E-08	-0.01	10.8	4.33	1	12.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
27.07	5.0E-07	-0.01	9.7	3.57	1	11.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
28.05	5.0E-07	0.00	11.2	3.71	1	13.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
29.04	5.0E-06	0.01	11.7	2.98	4	14.4	57.7	72.1	54.4	UnDef	UnDef	3.0	UnDef	7.1	14.1
30.02	5.0E-06	0.04	8.7	3.08	4	11.2	45.0	56.2	62.0	UnDef	UnDef	3.0	UnDef	5.5	11.0
31.00	5.0E-08	0.02	9.2	4.81	1	11.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
31.99	5.0E-08	0.02	7.7	5.18	1	10.3	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
32.97	5.0E-08	0.02	7.5	5.09	1	10.1	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
33.96	5.0E-08	0.02	8.5	4.81	1	11.5	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
34.94	5.0E-08	0.01	7.8	5.41	1	10.8	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
35.92	5.0E-08	0.01	7.8	5.18	1	10.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
36.91	5.0E-08	0.02	8.3	4.78	1	11.6	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
37.89	5.0E-08	0.03	8.0	5.19	1	11.3	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
38.88	5.0E-07	0.06	8.7	4.08	1	12.3	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
39.86	5.0E-07	0.07	9.6	4.15	1	13.5	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
40.85	5.0E-08	0.05	9.5	4.61	1	13.4	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State Del(n1)60 Param	(N1)60	cs
41.83	5.0E-07	0.05	8.7	4.22	1	12.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
42.81	5.0E-07	0.06	8.7	4.04	1	12.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
43.80	5.0E-06	0.08	9.5	3.76	1	13.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
44.78	5.0E-06	0.08	12.0	3.99	1	17.1	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
45.77	5.0E-05	0.05	40.1	2.85	6	53.1	121.5	174.6	31.1	38	49.2	6.0	-0.21	16.0	36.8
46.75	5.0E-04	0.00	84.3	2.37	7	110.5	71.1	181.6	19.7	42	70.1	1.0	-0.27	11.7	47.7
47.74	5.0E-03	0.00	167.0	2.17	9	218.6	57.7	276.3	12.8	44	89.7	1.0	-0.33	8.0	61.5
48.72	5.0E-04	0.00	150.1	2.42	7	198.3	68.8	267.1	14.6	44	86.9	1.0	-0.34	12.4	77.1
49.70	5.0E-03	0.00	126.0	1.63	9	168.1	41.7	209.8	12.4	44	82.2	1.0	-0.26	5.8	47.0
50.69	5.0E-02	0.00	116.5	1.01	9	156.9	21.4	178.3	9.5	42	80.2	1.0	-0.20	2.5	33.2
51.67	5.0E-03	-0.01	76.3	1.13	9	104.3	32.5	136.8	13.9	40	68.5	1.0	-0.17	4.5	30.0
52.66	5.0E-05	0.00	15.3	1.94	6	22.8	91.1	113.9	42.5	32	30.0	6.0	-0.06	8.9	17.8
53.64	5.0E-05	0.03	16.9	2.72	6	25.1	100.3	125.4	45.3	32	30.0	6.0	-0.10	9.8	19.6
54.63	5.0E-05	0.00	23.9	2.76	6	34.8	139.2	174.0	39.0	34	37.0	6.0	-0.14	13.6	27.3
55.61	5.0E-04	0.00	44.7	1.92	7	63.7	71.7	135.4	24.8	38	54.3	1.0	-0.17	10.3	31.1
56.59	5.0E-03	-0.01	80.6	1.14	9	113.9	33.2	147.2	13.5	42	71.0	1.0	-0.18	4.6	32.5
57.58	5.0E-03	-0.01	45.0	1.48	7	65.1	54.6	119.7	22.1	38	55.0	1.0	-0.15	6.4	22.3
58.56	5.0E-05	0.27	12.7	2.25	6	20.1	80.5	100.6	48.4	32	30.0	6.0	-0.02	7.9	15.8
59.55	5.0E-05	0.25	13.0	2.65	6	20.7	82.8	103.5	50.3	32	30.0	6.0	-0.03	8.1	16.2
60.53	5.0E-06	0.14	9.8	3.76	1	16.3	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
61.52	5.0E-05	0.22	7.8	2.57	4	13.5	53.8	67.3	62.0	30	30.0	3.0	0.03	5.3	10.5
62.42	5.0E-05	0.26	7.8	2.73	4	13.6	54.5	68.2	62.8	30	30.0	3.0	0.03	5.3	10.7
63.32	5.0E-06	0.18	8.7	3.11	4	15.0	60.0	75.0	62.3	UnDef	UnDef	3.0	UnDef	7.3	14.7
64.30	5.0E-06	0.18	8.4	3.28	1	14.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
65.29	5.0E-05	0.25	10.9	2.56	4	18.5	73.9	92.4	53.6	30	30.0	3.0	-0.01	7.2	14.5
66.27	5.0E-05	0.07	30.6	3.19	6	47.5	190.0	237.5	36.8	36	45.9	6.0	-0.19	18.6	37.2
67.26	1.0E-15	0.01	22.8	5.65	1	36.3	UnDef	UnDef	100.0	34	38.3	1.0	-0.33	UnDef	UnDef
68.24	5.0E-06	0.05	24.7	4.02	6	39.3	157.2	196.5	44.0	UnDef	UnDef	6.0	UnDef	19.2	38.5
69.22	5.0E-03	-0.01	80.1	1.91	7	122.8	65.1	187.9	18.0	42	73.2	1.0	-0.24	8.3	38.3
70.21	5.0E-05	-0.02	41.0	3.46	6	64.4	200.5	264.9	33.3	38	54.7	6.0	-0.25	22.7	47.9
71.19	5.0E-06	0.00	14.6	3.56	4	24.7	98.8	123.5	52.5	UnDef	UnDef	6.0	UnDef	12.1	24.2
72.18	5.0E-04	0.02	44.7	2.43	7	70.8	106.7	177.5	27.5	38	57.4	1.0	-0.20	13.9	37.0
73.16	5.0E-06	0.01	21.8	3.87	6	36.1	144.4	180.5	45.7	UnDef	UnDef	6.0	UnDef	17.7	35.3
74.15	5.0E-05	0.14	15.7	2.62	6	26.9	107.7	134.6	46.1	32	30.0	6.0	-0.07	10.5	21.1
75.13	5.0E-05	0.21	13.8	3.10	4	24.0	96.1	120.2	51.5	32	30.0	6.0	-0.06	9.4	18.8
76.11	5.0E-06	0.14	12.8	3.58	4	22.7	90.7	113.4	55.4	UnDef	UnDef	6.0	UnDef	11.1	22.2
77.10	5.0E-06	0.08	10.3	4.01	1	18.9	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef

78.08	5.0E-06	0.09	9.8	3.79	1	18.2	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
79.07	5.0E-06	0.15	10.1	3.42	1	18.7	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
80.05	5.0E-06	0.16	10.3	3.49	1	19.1	UnDef	UnDef	100.0	UnDef	UnDef	3.0	UnDef	UnDef	UnDef
81.04	5.0E-05	0.19	9.4	3.10	4	17.8	71.2	89.0	60.3	30	30.0	3.0	-0.01	7.0	13.9
82.02	5.0E-05	0.22	10.6	2.84	4	19.8	79.1	98.9	56.0	30	30.0	3.0	-0.02	7.7	15.5
83.00	5.0E-05	0.25	13.1	2.69	6	24.0	96.0	120.0	50.3	32	30.0	6.0	-0.03	9.4	18.8
83.99	5.0E-05	0.21	14.7	2.92	6	26.7	106.8	133.6	49.1	32	30.0	6.0	-0.06	10.5	20.9
84.97	5.0E-05	0.22	14.2	3.01	4	26.0	104.1	130.1	50.3	32	30.0	6.0	-0.06	10.2	20.4
85.96	5.0E-05	0.27	11.3	2.76	4	21.3	85.4	106.7	54.1	30	30.0	3.0	-0.01	8.4	16.7
86.94	5.0E-05	0.29	10.5	2.53	4	20.2	80.6	100.8	54.4	30	30.0	3.0	0.00	7.9	15.8
87.93	5.0E-05	0.34	10.3	2.35	4	20.0	80.0	100.0	53.6	30	30.0	3.0	0.02	7.8	15.7
88.91	5.0E-05	0.38	12.0	2.10	6	22.8	91.3	114.2	48.6	30	30.0	3.0	0.01	8.9	17.9
89.89	5.0E-04	0.42	12.8	1.94	6	24.3	97.1	121.4	46.2	32	30.0	1.0	0.02	7.9	15.8
90.88	5.0E-04	0.44	12.5	1.90	6	23.9	95.7	119.6	46.4	32	30.0	1.0	0.03	7.8	15.6
91.86	5.0E-04	0.46	13.3	1.83	6	25.4	101.5	126.9	44.6	32	30.0	1.0	0.03	8.3	16.6
92.85	5.0E-04	0.35	15.8	2.08	6	29.8	119.1	148.9	42.7	32	32.6	1.0	-0.02	9.7	19.4
93.83	5.0E-05	0.34	12.5	2.63	6	24.3	97.1	121.4	51.0	32	30.0	6.0	-0.01	9.5	19.0
94.82	5.0E-05	0.25	17.6	2.72	6	33.1	132.3	165.3	44.4	32	35.6	6.0	-0.07	12.9	25.9
95.80	5.0E-05	0.10	24.4	3.34	6	44.8	179.3	224.2	41.3	34	44.3	6.0	-0.16	17.6	35.1
96.78	5.0E-05	0.15	19.7	3.15	6	37.0	147.9	184.8	44.4	34	38.7	6.0	-0.12	14.5	28.9
97.77	5.0E-05	0.29	18.8	2.56	6	35.5	142.1	177.7	42.2	32	37.6	6.0	-0.07	13.9	27.8
98.75	5.0E-05	0.28	17.7	2.58	6	33.8	135.0	168.8	43.5	32	36.2	6.0	-0.06	13.2	26.4
99.74	5.0E-05	0.21	16.8	2.94	6	32.3	129.1	161.4	46.5	32	34.9	6.0	-0.08	12.6	25.3
100.72	5.0E-05	0.23	17.9	3.22	6	34.3	137.3	171.7	46.7	32	36.6	6.0	-0.09	13.4	26.9
101.70	5.0E-05	0.19	14.4	3.19	4	28.4	113.6	142.0	51.0	32	31.2	6.0	-0.07	11.1	22.2
102.69	5.0E-05	0.19	11.7	3.10	4	23.8	95.1	118.8	55.2	30	30.0	3.0	-0.04	9.3	18.6
103.67	5.0E-05	0.21	10.9	2.78	4	22.5	89.9	112.4	55.0	30	30.0	3.0	-0.02	8.8	17.6

Depth (ft)	k (cm/s)	Bq	Qtn	Rfn	SBTn	Qc1N	DeltaQc1N	Qc1Ncs	Fc (%)	Phi (Deg)	Dr (%)	OCR	State DeT(n1)60 Param	(N1)60	(N1)60cs
104.66	5.0E-05	0.19	11.6	2.69	4	23.8	95.2	119.0	53.1	30	30.0	3.0	-0.03	9.3	18.6
105.64	5.0E-05	0.17	15.2	2.74	6	30.3	121.0	151.3	47.5	32	33.0	6.0	-0.07	11.8	23.7
106.63	5.0E-05	0.14	19.3	3.25	6	37.8	151.2	189.0	45.3	34	39.4	6.0	-0.12	14.8	29.6
107.61	5.0E-05	0.17	12.0	3.24	4	24.9	99.6	124.5	55.2	30	30.0	3.0	-0.05	9.7	19.5
108.59	5.0E-05	0.19	12.4	2.99	4	25.7	102.7	128.4	53.2	30	30.0	3.0	-0.04	10.1	20.1
109.58	5.0E-05	0.23	10.7	3.25	4	22.7	90.9	113.7	57.9	30	30.0	3.0	-0.03	8.9	17.8
110.56	5.0E-05	0.29	13.0	2.68	6	27.0	107.9	134.9	50.4	32	30.0	6.0	-0.03	10.6	21.1
111.55	5.0E-05	0.21	15.0	2.88	6	30.6	122.6	153.2	48.6	32	33.4	6.0	-0.06	12.0	24.0
112.53	5.0E-05	0.26	10.9	2.98	4	23.3	93.1	116.4	56.1	30	30.0	3.0	-0.02	9.1	18.2
113.52	5.0E-05	0.27	12.2	2.52	6	25.7	102.8	128.5	51.0	30	30.0	3.0	-0.02	10.1	20.1
114.50	5.0E-05	0.23	16.2	2.59	6	33.2	132.6	165.8	45.4	32	35.6	6.0	-0.06	13.0	26.0
115.48	5.0E-05	0.29	14.7	2.44	6	30.5	122.0	152.5	46.6	32	33.2	6.0	-0.03	11.9	23.9
116.47	5.0E-05	0.12	22.6	3.86	6	45.3	181.2	226.5	45.0	34	44.6	6.0	-0.17	17.7	35.5
117.45	5.0E-03	0.01	64.4	1.80	7	123.4	80.1	203.5	19.7	40	73.3	1.0	-0.20	9.9	40.0

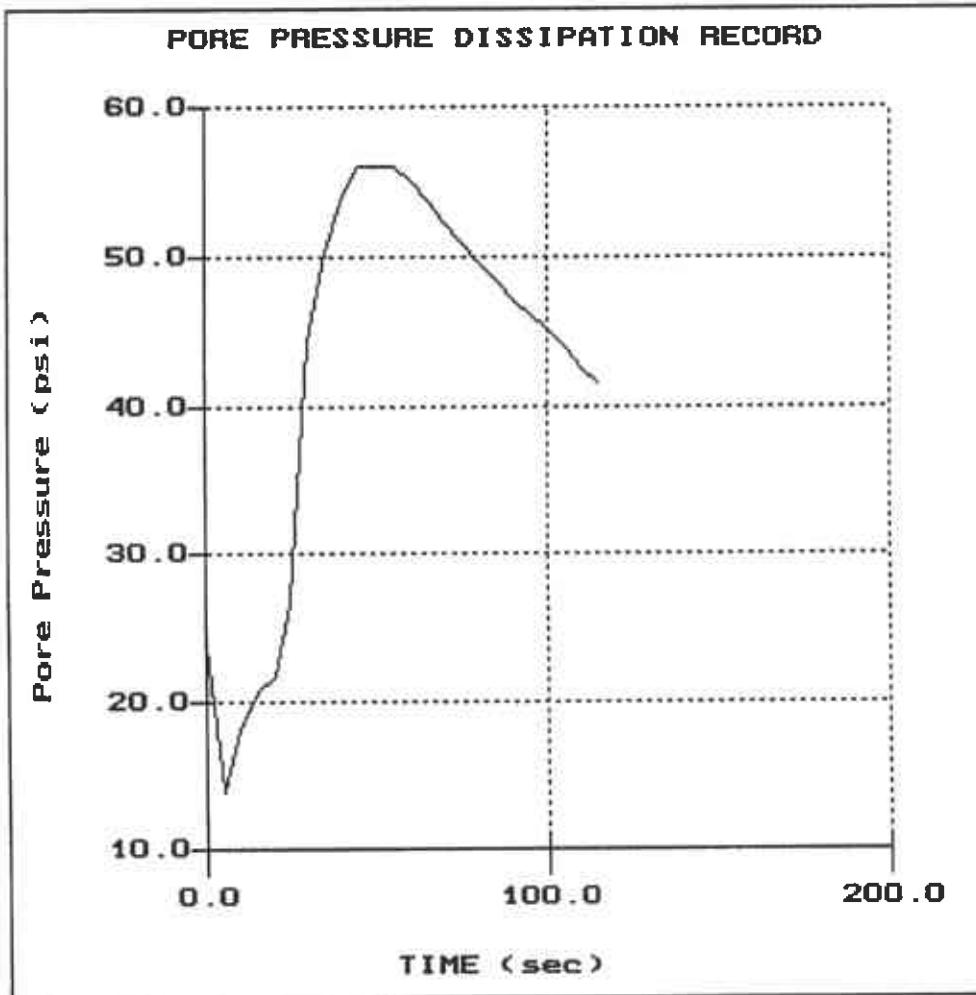
3.3 PORE PRESSURE DISSIPATION PLOTS

CAMBRIA

Site: 3790 HOPYARD
Location: CPT-02

Geologist: S. DALIE
Date: 11:25:02 09:47

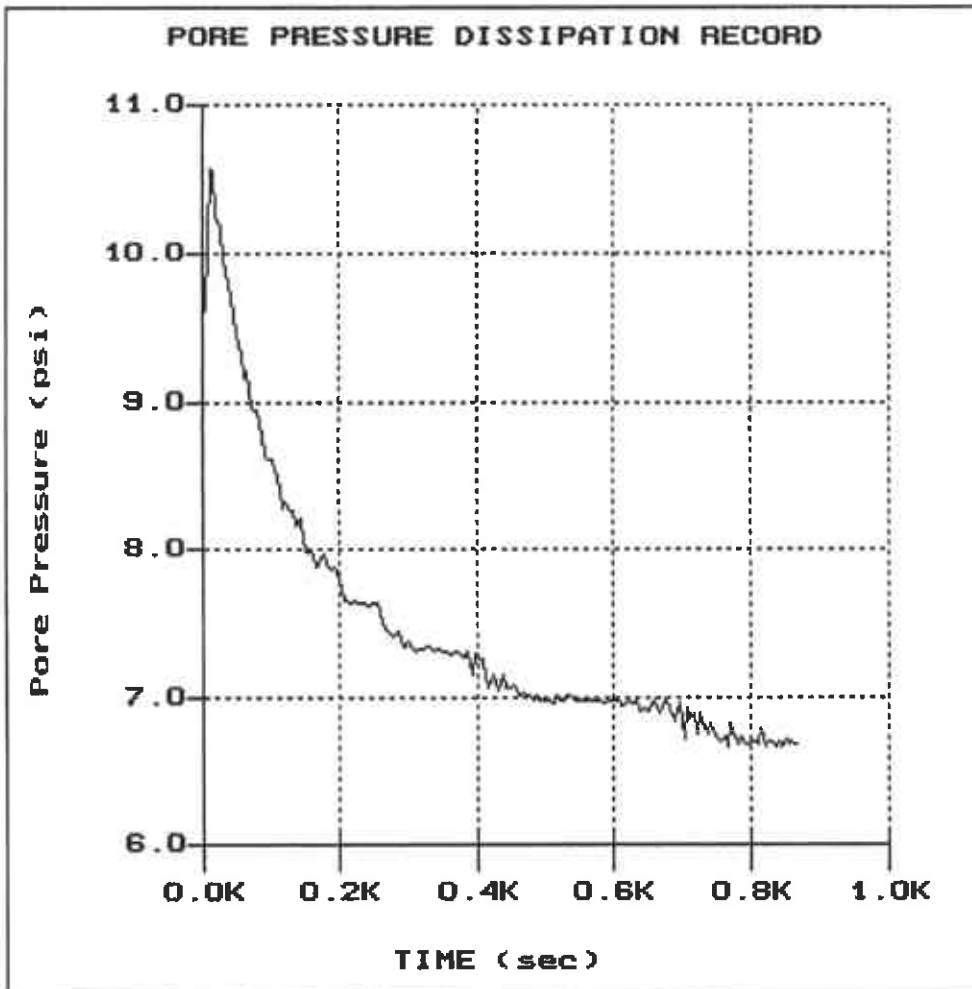
File: 181C01.PPC
Depth (m): 35.80
(ft): 117.45
Duration: 115.0s
U-min: 13.85 5.0s
U-max: 56.08 55.0s



CAMBRIA

Site: 3790 HOPYARD
Location: CPT-02

Geologist: S. DALIE
Date: 11:25:02 09:47



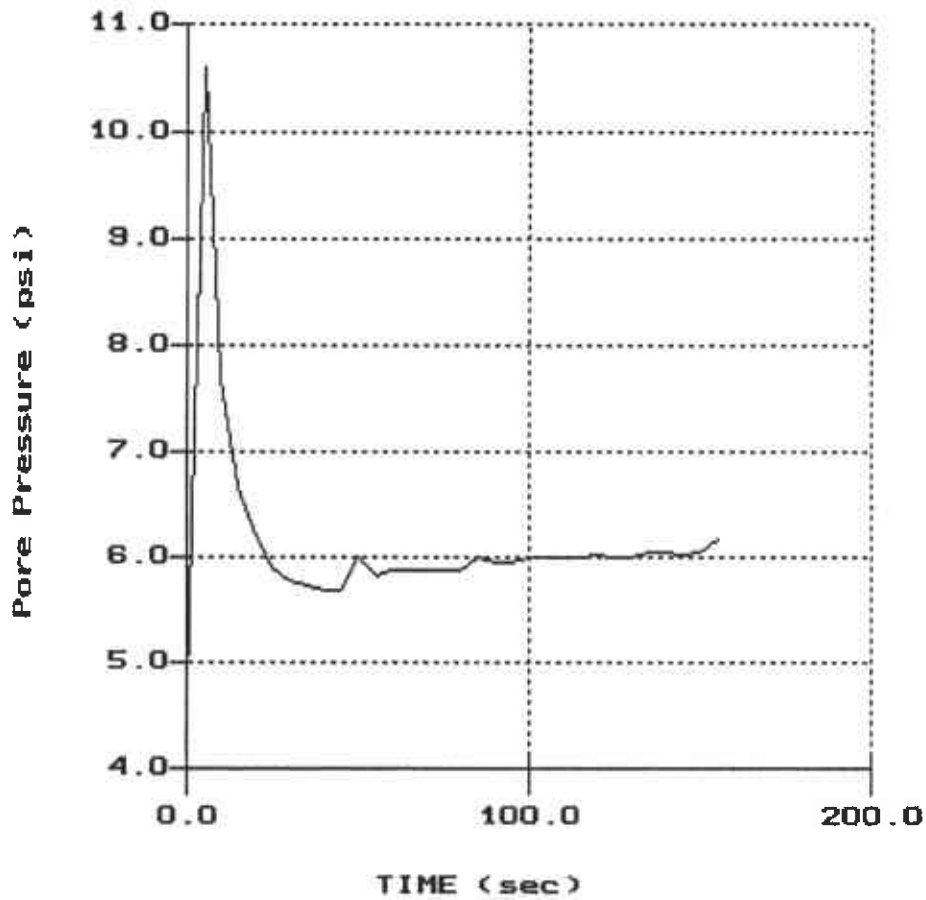
File: 181C01.PPC
Depth (m): 14.10
 (ft): 46.26
Duration : 865.0s
U-min: 6.65 845.0s
U-max: 10.56 10.0s

CAMBRIA

Site: 3790 HOPYARD
Location: CPT-02

Geologist: S. DALIE
Date: 11:25:02 09:47

PORE PRESSURE DISSIPATION RECORD



File: 181C01.PPC
Depth (m): 7.60
(ft): 24.93
Duration: 155.0s
U-min: 4.64 0.0s
U-max: 10.58 5.0s



GREGG IN SITU

Environmental and Geotechnical Site Investigation Contractors

GREGG IN SITU CPT Interpretations as of July 31, 2002 (Release 1.20c)

GREGG IN SITU's interpretation routine provides a tabular output of geotechnical parameters based on current published CPT correlations and is subject to change to reflect the current state of practice. The interpreted values are not considered valid for all soil types. The interpretations are presented only as a guide for geotechnical use and should be carefully scrutinized for consideration in any geotechnical design. Reference to current literature is strongly recommended. GREGG IN SITU, Inc. and GREGG DRILLING & TESTING Inc. do not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the program and can not assume liability for any use of the results in any design or review. Representative hand calculations should be made for any parameter that is critical for design purposes. The end user of the interpreted output should also be fully aware of the techniques and the limitations of any method used in this program. The purpose of this document is to inform the user as to which methods were used and what the appropriate papers and/or publications are for further reference.

The CPT interpretations are based on values of tip, sleeve friction and pore pressure averaged over a user specified interval (e.g. 0.20m). Note that q_t is the recorded tip value, q_c , corrected for pore pressure effects. Since all GREGG IN SITU cones have equal end area friction sleeves, pore pressure corrections to sleeve friction, F_s , are not required.

The tip correction is: $q_t = q_c + (1-a) \cdot u_2$

where: q_t is the corrected tip resistance

q_c is the recorded tip resistance

u_2 is the recorded dynamic pore pressure behind the tip (u_2 position)

a is the Net Area Ratio for the cone (typically 0.85 for GREGG IN SITU cones)

The total stress calculations are based on soil unit weights that have been assigned to the Soil Behavior Type zones, from a user defined unit weight profile or by using a single value throughout the profile. Effective vertical overburden stresses are calculated based on a hydrostatic distribution of equilibrium pore pressures below the water table or from a user defined equilibrium pore pressure profile (this can be obtained from CPT dissipation tests). For over water projects the effects of the column of water have been taken in to account as has the appropriate unit weight of water. How this is done depends on where the instruments were zeroed (i.e. on deck or at mud line).

Details regarding the interpretation methods for all of the interpreted parameters are provided in Table 1. The appropriate references cited in Table 1 are listed in Table 2. Where methods are based on charts or techniques that are too complex to describe in this summary the user should reference to the cited references.

The estimated Soil Behavior Types (normalized and non-normalized) are based on the charts developed by Robertson and Campanella shown in Figures 1 and 2.

Where the results of a calculation/interpretation are declared 'invalid' the value will be represented by the text strings "-9999" or "-9999.0". Invalid results will occur because of (and not limited to) one or a combination of:

1. Invalid or undefined CPT data (e.g. drilled out section or data gap).
2. Where the interpretation method is inappropriate, for example, drained parameters in an undrained material (and vice versa).
3. Where interpretation input values are beyond the range of the referenced charts or specified limitations of the interpretation method.
4. Where pre-requisite or intermediate interpretation calculations are invalid.

CPT Interpretations

The parameters selected for output from the program are often specific to a particular project. As such, not all of the interpreted parameters listed in Table 1 may be included in the output files delivered with this report.

Table 1
CPT Interpretation Methods

Interpreted Parameter	Description	Equation	Ref
Depth	Mid Layer Depth <i>(where interpretations are done at each point then Mid Layer Depth = Recorded Depth)</i>	$Depth (Layer Top) + Depth (Layer Bottom) / 2.0$	
Elevation	Elevation of Mid Layer based on sounding collar elevation supplied by client	Elevation = Collar Elevation - Depth	
Avgqc	Averaged recorded tip value (q_c)	$Avgq_c = \frac{1}{n} \sum_{i=1}^n q_c$ <i>n=1 when interpretations are done at each point</i>	
Avgqt	Averaged corrected tip (q_t) where: $q_t = q_c + (1 - a) \cdot u$	$Avgq_t = \frac{1}{n} \sum_{i=1}^n q_t$ <i>n=1 when interpretations are done at each point</i>	
Avgfs	Averaged sleeve friction (f_s)	$Avgf_s = \frac{1}{n} \sum_{i=1}^n f_s$ <i>n=1 when interpretations are done at each point</i>	
AvgRf	Averaged friction ratio (Rf) where friction ratio is defined as: $Rf = 100\% \cdot \frac{f_s}{q_t}$	$AvgRf = 100\% \cdot \frac{Avgf_s}{Avgq_t}$ <i>n=1 when interpretations are done at each point</i>	
Avgu	Averaged dynamic pore pressure (u)	$Avgu = \frac{1}{n} \sum_{i=1}^n u_i$ <i>n=1 when interpretations are done at each point</i>	
AvgRes	Averaged Resistivity (this data is not always available since it is a specialized test requiring an additional module)	$Avgu = \frac{1}{n} \sum_{i=1}^n RESISTIVITY$ <i>n=1 when interpretations are done at each point</i>	
AvgUVIF	Averaged UVIF ultra-violet induced fluorescence (this data is not always available since it is a specialized test requiring an additional module)	$Avgu = \frac{1}{n} \sum_{i=1}^n UVIF$ <i>n=1 when interpretations are done at each point</i>	
AvgTemp	Averaged Temperature (this data is not always available since it is a specialized test)	$Avgu = \frac{1}{n} \sum_{i=1}^n TEMPERATURE$ <i>n=1 when interpretations are done at each point</i>	
AvgGamma	Averaged Gamma Counts (this data is not always available since it is a specialized test requiring an additional module)	$Avgu = \frac{1}{n} \sum_{i=1}^n GAMMA$ <i>n=1 when interpretations are done at each point</i>	
SBT	Soil Behavior Type as defined by Robertson and Campanella	See Figure 1	2, 5
U.Wt.	Unit Weight of soil determined from one of the following user selectable options: 1) uniform value 2) value assigned to each SBT zone 3) user supplied unit weight profile	See references	5
T. Stress	Total vertical overburden stress at Mid Layer Depth.	$TStress = \sum_{i=1}^n \gamma_i h_i$	
σ_v	<i>A layer is defined as the averaging interval specified by the user. For data interpreted at each point the Mid Layer Depth is the same as the recorded depth.</i>	where γ is layer unit weight h_i is layer thickness	

CPT Interpretations

Interpreted Parameter	Description	Equation	Ref
E. Stress			
σ_v	Effective vertical overburden stress at Mid Layer Depth	$E_{stress} = T_{stress} - u_{eq}$	
u_{eq}	Equilibrium pore pressure determined from one of the following user selectable options: 1) hydrostatic from water table depth 2) user supplied profile	For hydrostatic option: $u_{eq} = \gamma_w \cdot (D - D_{wt})$ where u_{eq} is equilibrium pore pressure γ_w is unit weight of water D is the current depth D_{wt} is the depth to the water table	
C_n	SPT N_{60} overburden correction factor	$C_n = (\alpha_v)^{0.5}$ where α_v is in tsf $0.5 < C_n < 2.0$	
N_{60}	SPT N value at 60% energy calculated from qt/N ratios assigned to each SBT zone. This method has abrupt N value changes at zone boundaries.	See Figure 1	4, 5
$N_{60}(Ic)$	SPTN Value at 60% energy. This method is a slight modification of the Jefferies and Davies technique whereby the qt/N ratio varies across soil classification zones based on the Ic parameter. This techniques is limited to zones 2 through 7 on the normalized Soil Behavior Type Chart	See Figure 1	5, 8
$(N_1)_{60}$	SPT N_{60} value corrected for overburden pressure	$(N_1)_{60} = C_n \cdot N_{60}$	4
$\Delta(N_1)_{60}$	Equivalent Clean Sand Correction to $(N_1)_{60}$	$\Delta(N_1)_{60} = \frac{K_{SPT}}{1 - K_{SPT}} \cdot (N_1)_{60}$ Where: K_{SPT} is defined as: 0.0 for FC < 5% 0.0167 * (FC - 5) for 5% < FC < 35% 0.5 for FC > 35% FC - Fines Content in %	4
$(N_1)_{60cs}$	Equivalent Clean Sand $(N_1)_{60}$	$(N_1)_{60cs} = (N_1)_{60} + \Delta(N_1)_{60}$	4
S_u	Undrained shear strength - N_{kt} is user selectable	$S_u = \frac{q_t - \sigma_v}{N_u}$	1, 5
k	Coefficient of permeability (assigned to each SBT zone)	$Bq = \frac{\Delta u}{q_t - \sigma_v}$	5
B_q	Pore pressure parameter	where: $\Delta u = u - u_{eq}$ and u = dynamic pore pressure u_{eq} = equilibrium pore pressure	1, 5
Q_t	Normalized q_t for Soil Behavior Type classification as defined by Robertson, 1990	$Q_t = \frac{q_t - \sigma_v}{\sigma_v}$	2, 5
F_r	Normalized Friction Ratio for Soil Behavior Type classification as defined by Robertson, 1990	$F_r = 100\% \cdot \frac{f_s}{q_t - \sigma_v}$	2, 5
SBTn	Normalized Soil Behavior Type as defined by Robertson and Campanella	See Figure 2	2, 5

CPT Interpretations

Interpreted Parameter	Description	Equation	Ref
q _{c1}	q _t normalized for overburden stress used for seismic analysis	$q_{c1} = q_t \cdot (Pa/\sigma_v')^{0.5}$ where: Pa = atm. Pressure q _t is in MPa	3
q _{c1N}	q _{c1} in dimensionless form used for seismic analysis	$q_{c1N} = q_{c1} / Pa$ where: Pa = atm. pressure	3
K _c	Equivalent clean sand correction for q _{c1N}	$K_c = 1.0$ for $I_c \leq 1.64$ $K_c = f(I_c)$ for $I_c > 1.64$ (see reference) $K_c = 1.0$ for $1.64 < I_c < 2.36$ and $F_c < 0.5\%$	3
q _{c1Ncs}	Clean Sand equivalent q _{c1N}	$q_{c1Ncs} = q_{c1N} \cdot K_c$ $I_c = [(3.47 - \log_{10} Q)^2 + (\log_{10} Fr + 1.22)^2]^{0.5}$ Where: $Q = \left(\frac{q_t - \sigma_v'}{P_{a1}} \right) \left(\frac{P_a}{\sigma_v'} \right)^n$	3
I _c	Soil index for estimating grain characteristics	And Fr is in percent P _a = atmospheric pressure P _{a2} = atmospheric pressure n varies from 0.5 to 1.0 and is selected in an iterative manner based on the resulting I _c	3, 8
FC	Apparent fines content (%)	$FC = 1.75(I_c^{3.25}) - 3.7$ $FC = 100$ for $I_c > 3.5$ $FC = 0$ for $I_c < 1.26$ $FC = 5\%$ if $1.64 < I_c < 2.6$ AND $F_c < 0.5$	3
I _c Zone	This parameter is the Soil Behavior Type zone based on the I _c parameter (valid for zones 2 through 7 on SBTn chart)	$I_c < 1.31$ Zone = 7 $1.31 < I_c < 2.05$ Zone = 6 $2.05 < I_c < 2.60$ Zone = 5 $2.60 < I_c < 2.95$ Zone = 4 $2.95 < I_c < 3.60$ Zone = 3 $I_c > 3.60$ Zone = 2	3
PHI φ	Friction Angle determined from one of the following user selectable options: a) Campanella and Robertson b) Durgunoglu and Mitchel c) Janbu	See reference	5
Dr	Relative Density determined from one of the following user selectable options: a) Ticino Sand b) Hokksund Sand c) Schmertmann 1976 d) Jamiolkowski - All Sands	See reference	5
OCR	Over Consolidation Ratio – 2 methods available	a) Based on Schmertmann's method involving a plot of S_u/σ_v' / $(S_u/\sigma_v')_{NC}$ and OCR b) Based on $OCR = K \cdot \left(\frac{q_t - \sigma_v'}{\sigma_v'} \right)$ where an average value of k=0.3 is used	5
State Parameter	The state parameter is used to describe whether a soil is contractive (SP is positive) or dilative (SP is negative) at large strains based on the work by Been and Jefferies	See reference	9, 7, 5

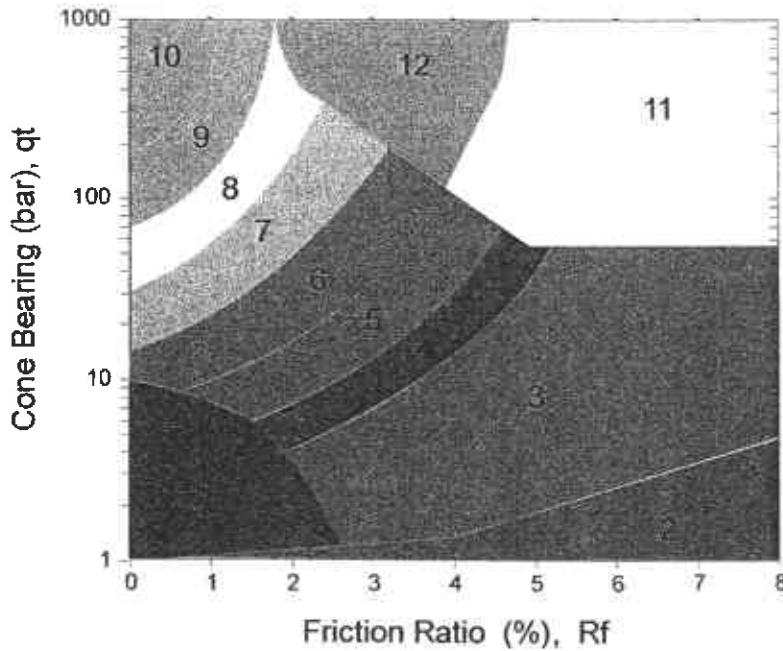
CPT Interpretations

Interpreted Parameter	Description	Equation	Ref
CRR	Cyclic Resistance Ratio (for M=7.5)	<p>For $(q_{c1N})_{cs} < 160$:</p> $CRR = 93 \cdot \left(\frac{(q_{c1N})_{cs}}{1000} \right)^3 + 0.08$ <p>For $(q_{c1N})_{cs} < 50$:</p> $CRR = 0.833 \cdot \left(\frac{(q_{c1N})_{cs}}{1000} \right)^3 + 0.05$	5
Youngs Modulus E	<p>Youngs Modulus based on the work by Baldi. There are three types of sands considered in this technique. The user selects the appropriate type for the site from:</p> <p>a) OC Sands b) Aged NC Sands c) Recent NC Sands</p> <p>Each sand type has a family of curves that depend on mean normal stress. The program calculates mean normal stress and linearly interpolates between the two extremes provided in Baldi's chart.</p>	<p>Mean normal stress is evaluated from:</p> $\sigma'_m = \frac{1}{3} \cdot (\sigma'_v + \sigma'_h + \sigma'_h)$ <p>where σ'_v = vertical effective stress σ'_h = horizontal effective stress</p> <p>and $\sigma'_h = K_o \cdot \sigma'_v$ with K_o assumed to be 0.5</p>	5
K_o	Coefficient of lateral earth pressure at rest.	$K_o = 0.1 \cdot \left(\frac{q_t - \sigma_{v0}}{\sigma'_v} \right)$	5

Savannah River Site Specific Parameters

Interpreted Parameter	Description	Equation	Ref
Ic	Ic based on normalized data at the Savannah River Site; developed by Frank Syms and SGS	$Ic = [(1.95 - \log_{10} Q)^2 + (\log_{10} Fr + 1.78)^2]^{0.5}$ <p>Where: Q is the normalized tip resistance And Fr is the normalized friction ratio</p>	10
FC	Fines content based on the normalized Savannah River Site Ic parameter; developed by Frank Syms and SGS	$FC = (5.31 \cdot (Ic)^{2.31}) + 9.61$ <p>For $FC > 100$ and $q_t < 15$ tsf the material is flagged as a soft zone</p>	10
FC	Fines Content directly from non-normalized data at the Savannah River Site; developed by Frank Syms and SGS	$FC = [(3.58 - \log_{10}(qtsf))^{1.8} + (1.43 + \log_{10}(Rf))]^{1.8}$ <p>For $FC > 100$ and $q_t < 15$ tsf the material is flagged as a soft zone</p> <p>Where: $qtsf$ is the non-normalized tip resistance in tsf Rf is the non-normalized friction ratio</p>	11

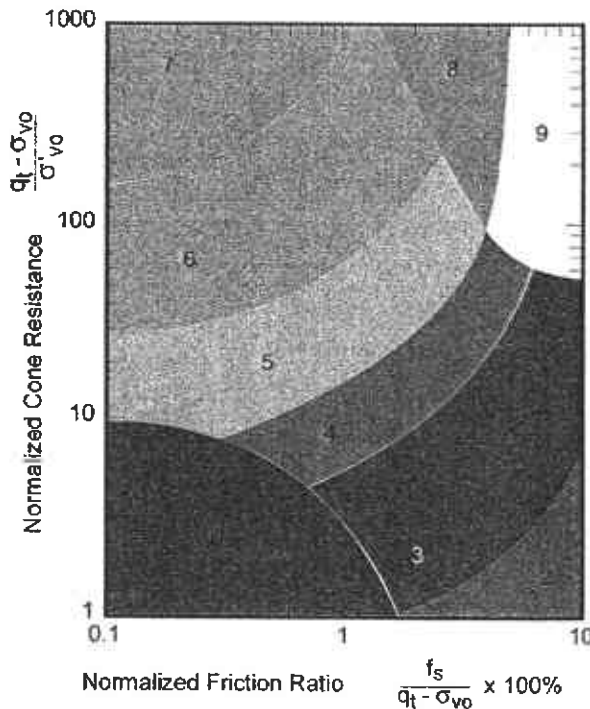
Figure 1
Non-Normalized Behavior Type Classification Chart



Zone	qt / N	Soil Behavior Type
1	2	sensitive fine grained
2	1	organic material
3	1	clay
4	1.5	silty clay to clay
5	2	clayey silt to silty clay
6	2.5	sandy silt to clayey silt
7	3	silty sand to sandy silt
8	4	sand to silty sand
9	5	sand
10	6	gravelly sand to sand
11	1	very stiff fine grained *
12	2	sand to clayey sand *

* overconsolidated or cemented

Figure 2
Normalized Behavior Type Classification Chart



Zone	Normalized Soil Behavior Type
1	sensitive fine grained
2	organic material
3	clay to silty clay
4	clayey silt to silty clay
5	silty sand to sandy silt
6	clean sands to silty sands
7	gravelly sand to sand
8	very stiff sand to clayey sand
9	very stiff fine grained

CPT Interpretations

Table 2 References

No.	References
1	Robertson, P.K., Campanella, R.G., Gillespie, D. and Greig, J., 1986, "Use of Piezometer Cone Data", Proceedings of InSitu 86, ASCE Specialty Conference, Blacksburg, Virginia.
2	Robertson, P.K., 1990, "Soil Classification Using the Cone Penetration Test", Canadian Geotechnical Journal, Volume 27.
3	Robertson, P.K. and Fear, C.E., 1998, "Evaluating cyclic liquefaction potential using the cone penetration test", Canadian Geotechnical Journal, 35: 442-459.
4	Robertson, P.K. and Wride, C.E., 1998, "Cyclic Liquefaction and its Evaluation Based on SPT and CPT", NCEER Workshop Paper, January 22, 1997
5	Lunne, T., Robertson, P.K. and Powell, J. J. M., 1997, "Cone Penetration Testing in Geotechnical Practice," Blackie Academic and Professional.
6	GREGG IN SITU Internal Report
7	Plewes, H.D., Davies, M.P. and Jefferies, M.G., 1992, "CPT Based Screening Procedure for Evaluating Liquefaction Susceptibility", 45th Canadian Geotechnical Conference, Toronto, Ontario, October 1992.
8	Jefferies, M.G. and Davies, M.P., 1993. "Use of CPTu to Estimate equivalent N_{60} ", Geotechnical Testing Journal, 16(4): 458-467.
9	Been, K. and Jefferies, M.P., 1985, "A state parameter for sands", Geotechnique, 35(2), 99-112.
10	Frank Syms, Bechtel Corp (Savannah River Site), 2001, "CPTU Fines Content Determination", Calculation No. K-CIC-G-00065 Revision 0.
11	Frank Syms, Bechtel Corp (Savannah River Site) – personal communication

ATTACHMENT F

DWR Well Completion Reports

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

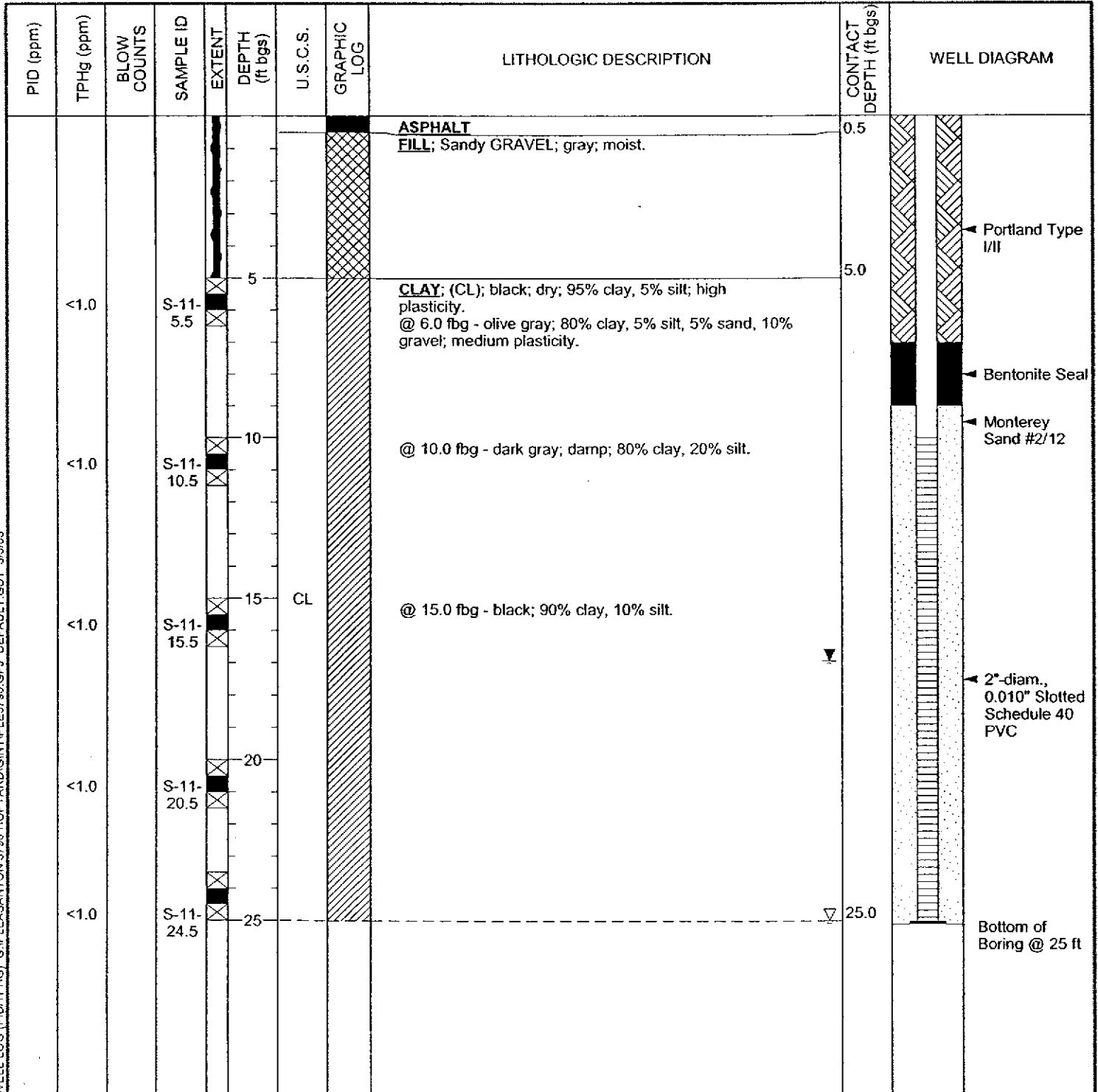
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Cambria Environmental Technology, Inc.
 5900 Hollis Street, Suite A
 Emeryville, CA 94608
 Telephone: (510) 420-0700
 Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	S-11
JOB/SITE NAME	Shell-branded service station	DRILLING STARTED	26-Aug-02
LOCATION	3790 Hopyard Road, Pleasanton, California	DRILLING COMPLETED	26-Aug-02
PROJECT NUMBER	244-0497	WELL DEVELOPMENT DATE (YIELD)	23-Sep-02
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	328.04
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	327.48 ft
BORING DIAMETER	8"	SCREENED INTERVAL	10 to 25 ft bgs
LOGGED BY	S. Dalie	DEPTH TO WATER (First Encountered)	25.0 ft (26-Aug-02) ▽
REVIEWED BY	M. Derby, PE# 55475	DEPTH TO WATER (Static)	16.9 ft (23-Sep-02) ▽
REMARKS	Hand augered to 5' bgs. Located in East side of Hopyard Road, south of well S-10.		

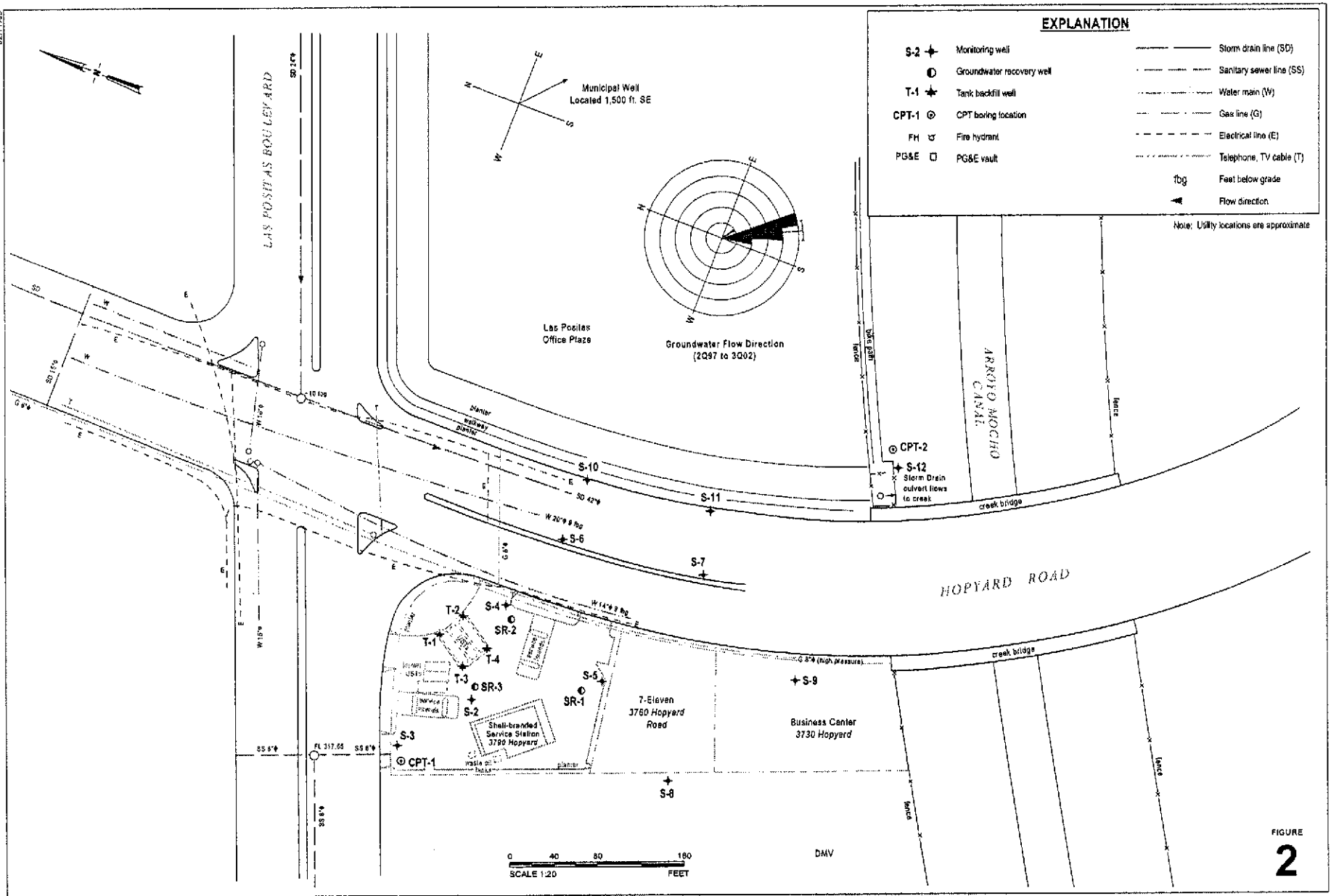


CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

02/11/05



EXPLANATION

- S-2 + Monitoring well
- Groundwater recovery well
- T-1 + Tank backfill well
- CPT-1 ⊙ CPT boring location
- FH ⊕ Fire hydrant
- PG&E □ PG&E vault
- Storm drain line (SD)
- - - Sanitary sewer line (SS)
- Water main (W)
- Gas line (G)
- - - Electrical line (E)
- - - Telephone, TV cable (T)
- ftg Feet below grade
- ▲ Flow direction

Note: Utility locations are approximate

Site Plan



C A M B R I A

Shell-branded Service Station

3790 Hopyard Road
Pleasanton, California
Incident #9895842

FIGURE
2

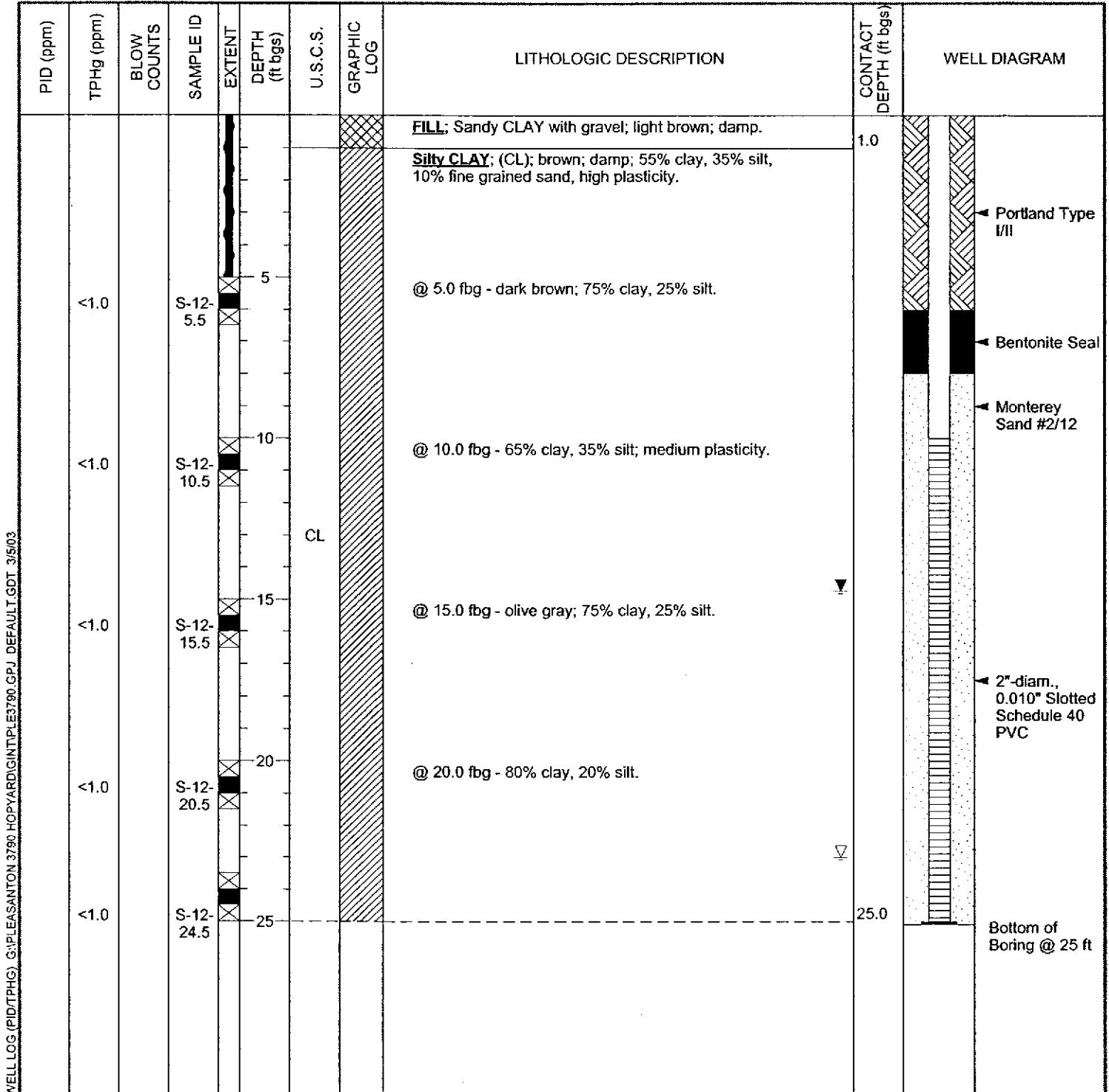
G:\PLEASANTON\3790HOPYARD\FIGURE\8\SITEPLAN-ADDENDUM-2-02.A1



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

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	S-12
JOB/SITE NAME	Shell-branded service station	DRILLING STARTED	19-Sep-02
LOCATION	3790 Hopyard Road, Pleasanton, California	DRILLING COMPLETED	19-Sep-02
PROJECT NUMBER	244-0497	WELL DEVELOPMENT DATE (YIELD)	23-Sep-02
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	323.20
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	322.76 ft
BORING DIAMETER	8"	SCREENED INTERVAL	10 to 25 ft bgs
LOGGED BY	J.Gerke	DEPTH TO WATER (First Encountered)	23.0 ft (19-Sep-02) ∇
REVIEWED BY	M. Derby, PE# 55475	DEPTH TO WATER (Static)	14.7 ft (23-Sep-02) ▼
REMARKS	Hand augered to 5' bgs. Located in north side of the Arroyo Mocho Canal Creek bank, east of Hopyard Road.		



WELL LOG (PID/TPHG): G:\PLEASANTON\3790 HOPYARD\GINT\PLE3790.GPJ_DEFAULT.GDT 3/5/03

ATTACHMENT G

Wellhead Elevation Survey Report

Virgil Chavez Land Surveying

312 Georgia Street, Suite 225
Vallejo, California 94590-5907
(707) 553-2476 • Fax (707) 553-8698

January 13, 2003
Project No.: 2110-53

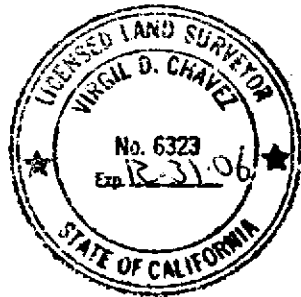
Jason Gerke
Cambria Environmental
1144-65th Street, Suite C
Oakland, CA 94608

Subject: Monitoring Well Survey
3790 Hopyard Road
Pleasanton, CA

Dear Jason:

This is to confirm that we have proceeded at your request to survey the ground water monitoring wells located at the above referenced location. The survey was completed on January 6, 2003. The benchmark for this survey was a C&GS benchmark disk stamped "C 972 RESET 1967" at south side of bridge over Arroyo Mocho Canal on Hopyard Road. The latitude, longitude and coordinates are for top of casings and are based on the California State Coordinate System, Zone III (NAD83).
Benchmark Elevation = 330.545 feet (NGVD 29).

<u>Latitude</u>	<u>Longitude</u>	<u>Northing</u>	<u>Easting</u>	<u>Elev.</u>	<u>Desc.</u>
37.6814916	-121.9047740	2073659.83	6155161.06	327.62	CPT1
37.6806671	-121.9031823	2073352.74	6155617.13	323.24	CPT2
				328.04	RIM S-11
37.6809068	-121.9036625	2073442.08	6155479.48	327.48	TOC S-11
				323.20	RIM S-12
37.6806119	-121.9032751	2073333.04	6155589.97	322.76	TOC S-12



Sincerely,

Virgil D. Chavez
Virgil D. Chavez, PLS 6323

ATTACHMENT H

Laboratory Analytical Reports



Report Number : 27733

Date : 8/6/02

Jacquelyn Jones
Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, CA 94608

Subject : 2 Water Samples and 7 Soil Samples
Project Name : 3790 Hopyard Road, Pleasanton
Project Number : 244-0497
P.O. Number : 98995842

Dear Ms. Jones,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,


Joel Kiff



Report Number : 27733

Date : 8/6/02

Subject : 2 Water Samples and 7 Soil Samples
Project Name : 3790 Hopyard Road, Pleasanton
Project Number : 244-0497
P.O. Number : 98995842

Case Narrative

Matrix Spike/Matrix Spike Duplicate Results associated with samples P-2, D-4, P-3, D-3, D-1, P-1 for the analyte Methyl-t-butyl ether were affected by the analyte concentrations already present in the un-spiked sample.

Approved By:  Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 916-297-4800



Report Number : 27733

Date : 8/6/02

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : CPT-1-66

Matrix : Water

Lab Number : 27733-01

Sample Date :7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Toluene	1.6	0.50	ug/L	EPA 8260B	8/1/02
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	8/1/02
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	8/1/02
Toluene - d8 (Surr)	92.5		% Recovery	EPA 8260B	8/1/02
4-Bromofluorobenzene (Surr)	99.4		% Recovery	EPA 8260B	8/1/02

Sample : CPT-1-79

Matrix : Water

Lab Number : 27733-02

Sample Date :7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Toluene	1.6	0.50	ug/L	EPA 8260B	8/1/02
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	8/1/02
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	8/1/02
Toluene - d8 (Surr)	98.2		% Recovery	EPA 8260B	8/1/02
4-Bromofluorobenzene (Surr)	99.9		% Recovery	EPA 8260B	8/1/02

Approved By:  Joel Kiff



Report Number : 27733

Date : 8/6/02

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : D-1

Matrix : Soil

Lab Number : 27733-03

Sample Date :7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/5/02
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/5/02
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/5/02
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	8/5/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/5/02
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/5/02
Toluene - d8 (Surr)	99.4		% Recovery	EPA 8260B	8/5/02
4-Bromofluorobenzene (Surr)	97.4		% Recovery	EPA 8260B	8/5/02

Sample : D-2

Matrix : Soil

Lab Number : 27733-04

Sample Date :7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	7/31/02
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	7/31/02
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	7/31/02
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	7/31/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	7/31/02
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	7/31/02
Toluene - d8 (Surr)	108		% Recovery	EPA 8260B	7/31/02
4-Bromofluorobenzene (Surr)	85.1		% Recovery	EPA 8260B	7/31/02

Approved By:  Joel Kiff



Report Number : 27733

Date : 8/6/02

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : D-3

Matrix : Soil

Lab Number : 27733-05

Sample Date :7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/5/02
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/5/02
Ethylbenzene	0.012	0.005	mg/Kg	EPA 8260B	8/5/02
Total Xylenes	0.011	0.005	mg/Kg	EPA 8260B	8/5/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/5/02
TPH as Gasoline	4.0	1.0	mg/Kg	EPA 8260B	8/6/02
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	8/5/02
4-Bromofluorobenzene (Surr)	89.3		% Recovery	EPA 8260B	8/5/02

Sample : D-4

Matrix : Soil

Lab Number : 27733-06

Sample Date :7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Ethylbenzene	0.053	0.005	mg/Kg	EPA 8260B	8/3/02
Total Xylenes	0.018	0.010	mg/Kg	EPA 8260B	8/3/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/3/02
TPH as Gasoline	1.8	1.0	mg/Kg	EPA 8260B	8/3/02
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	8/3/02
4-Bromofluorobenzene (Surr)	103		% Recovery	EPA 8260B	8/3/02

Approved By:  Joel Kiff



Report Number : 27733

Date : 8/6/02

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : P-1

Matrix : Soil

Lab Number : 27733-07

Sample Date :7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	0.079	0.050	mg/Kg	EPA 8260B	8/6/02
Toluene	0.072	0.050	mg/Kg	EPA 8260B	8/6/02
Ethylbenzene	0.48	0.050	mg/Kg	EPA 8260B	8/6/02
Total Xylenes	1.1	0.10	mg/Kg	EPA 8260B	8/6/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/6/02
TPH as Gasoline	260	5.0	mg/Kg	EPA 8260B	8/6/02
Toluene - d8 (Surr)	97.6		% Recovery	EPA 8260B	8/6/02
4-Bromofluorobenzene (Surr)	92.7		% Recovery	EPA 8260B	8/6/02

Sample : P-2

Matrix : Soil

Lab Number : 27733-08

Sample Date :7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/3/02
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/3/02
Toluene - d8 (Surr)	98.5		% Recovery	EPA 8260B	8/3/02
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	8/3/02

Approved By:  Joel Kiff



Report Number : 27733

Date : 8/6/02

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : P-3

Matrix : Soil

Lab Number : 27733-09

Sample Date : 7/26/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	0.0083	0.005	mg/Kg	EPA 8260B	8/5/02
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/5/02
Ethylbenzene	0.26	0.005	mg/Kg	EPA 8260B	8/5/02
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	8/5/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/5/02
TPH as Gasoline	10	1.0	mg/Kg	EPA 8260B	8/6/02
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	8/5/02
4-Bromofluorobenzene (Surr)	91.9		% Recovery	EPA 8260B	8/5/02

Approved By:  Joel Kiff

Report Number : 27733

Date : 8/6/02

QC Report : Method Blank Data

Project Name : **3790 Hopyard Road, Pleasanton**

Project Number : **244-0497**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/1/02
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/1/02
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/1/02
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	8/1/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/1/02
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/1/02
Toluene - d8 (Surr)	107		%	EPA 8260B	8/1/02
4-Bromofluorobenzene (Surr)	81.4		%	EPA 8260B	8/1/02

Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	8/3/02
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/3/02
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/3/02
Toluene - d8 (Surr)	105		%	EPA 8260B	8/3/02
4-Bromofluorobenzene (Surr)	85.8		%	EPA 8260B	8/3/02

Benzene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Toluene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	8/1/02
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	8/1/02
Toluene - d8 (Surr)	91.3		%	EPA 8260B	8/1/02
4-Bromofluorobenzene (Surr)	98.7		%	EPA 8260B	8/1/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Toluene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	8/1/02
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	8/1/02
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	8/1/02
Toluene - d8 (Surr)	97.5		%	EPA 8260B	8/1/02
4-Bromofluorobenzene (Surr)	99.9		%	EPA 8260B	8/1/02

Approved By:  Joel Kiff

Report Number : 27733

Date : 8/6/02

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : 3790 Hopyard Road,

Project Number : 244-0497

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	27742-03	<0.0050	0.0385	0.0386	0.0392	0.0382	mg/Kg	EPA 8260B	8/1/02	102	98.8	2.89	70-130	25
Toluene	27742-03	<0.0050	0.0385	0.0386	0.0418	0.0406	mg/Kg	EPA 8260B	8/1/02	108	105	2.86	70-130	25
Tert-Butanol	27742-03	<0.0050	0.193	0.193	0.169	0.173	mg/Kg	EPA 8260B	8/1/02	87.9	89.6	1.88	70-130	25
Methyl-t-Butyl Ether	27742-03	<0.0050	0.0385	0.0386	0.0346	0.0349	mg/Kg	EPA 8260B	8/1/02	89.8	90.5	0.777	70-130	25
Benzene	27733-03	<0.0050	0.0392	0.0400	0.0346	0.0373	mg/Kg	EPA 8260B	8/3/02	88.2	93.3	5.54	70-130	25
Toluene	27733-03	<0.0050	0.0392	0.0400	0.0365	0.0397	mg/Kg	EPA 8260B	8/3/02	93.1	99.2	6.39	70-130	25
Tert-Butanol	27733-03	0.038	0.196	0.200	0.189	0.205	mg/Kg	EPA 8260B	8/3/02	76.8	83.3	8.13	70-130	25
Methyl-t-Butyl Ether	27733-03	0.027	0.0392	0.0400	0.0526	0.0416	mg/Kg	EPA 8260B	8/3/02	64.5	35.7	57.5	70-130	25
Benzene	27733-01	<0.50	40.0	40.0	43.9	42.7	ug/L	EPA 8260B	8/1/02	110	107	2.86	70-130	25
Toluene	27733-01	1.6	40.0	40.0	42.8	42.8	ug/L	EPA 8260B	8/1/02	103	103	0.0243	70-130	25
Tert-Butanol	27733-01	<5.0	200	200	203	204	ug/L	EPA 8260B	8/1/02	102	102	0.403	70-130	25
Methyl-t-Butyl Ether	27733-01	<0.50	40.0	40.0	47.6	47.4	ug/L	EPA 8260B	8/1/02	119	119	0.295	70-130	25
Benzene	27733-02	<0.50	40.0	40.0	40.5	40.0	ug/L	EPA 8260B	8/1/02	101	100	1.07	70-130	25
Toluene	27733-02	1.6	40.0	40.0	41.3	41.2	ug/L	EPA 8260B	8/1/02	99.2	99.1	0.126	70-130	25
Tert-Butanol	27733-02	<5.0	200	200	196	202	ug/L	EPA 8260B	8/1/02	98.2	101	3.03	70-130	25
Methyl-t-Butyl Ether	27733-02	<0.50	40.0	40.0	40.5	41.3	ug/L	EPA 8260B	8/1/02	101	103	1.91	70-130	25

Approved By:  Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 27733

Date : 8/6/02

QC Report : Laboratory Control Sample (LCS)

Project Name : **3790 Hopyard Road,**

Project Number : **244-0497**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0368	mg/Kg	EPA 8260B	8/1/02	97.0	70-130
Toluene	0.0368	mg/Kg	EPA 8260B	8/1/02	104	70-130
Tert-Butanol	0.184	mg/Kg	EPA 8260B	8/1/02	89.0	70-130
Methyl-t-Butyl Ether	0.0368	mg/Kg	EPA 8260B	8/1/02	83.9	70-130
Benzene	0.0391	mg/Kg	EPA 8260B	8/3/02	98.2	70-130
Toluene	0.0391	mg/Kg	EPA 8260B	8/3/02	105	70-130
Tert-Butanol	0.195	mg/Kg	EPA 8260B	8/3/02	90.0	70-130
Methyl-t-Butyl Ether	0.0391	mg/Kg	EPA 8260B	8/3/02	88.9	70-130
Benzene	40.0	ug/L	EPA 8260B	8/1/02	109	70-130
Toluene	40.0	ug/L	EPA 8260B	8/1/02	101	70-130
Tert-Butanol	200	ug/L	EPA 8260B	8/1/02	103	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	8/1/02	116	70-130
Benzene	40.0	ug/L	EPA 8260B	8/1/02	99.5	70-130
Toluene	40.0	ug/L	EPA 8260B	8/1/02	98.6	70-130
Tert-Butanol	200	ug/L	EPA 8260B	8/1/02	96.4	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	8/1/02	99.0	70-130

KIFF ANALYTICAL, LLC

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

SHELL Chain Of Custody Record

720 Olive Drive, Suite D
Davis, CA 95616

(530) 297-4800 (530) 297-4803 fax

Shell Project Manager to be Invoiced:

SCIENCE & ENGINEERING
 TECHNICAL SERVICES
 O&G HOUSTON

Karen Petryna

27733

INCIDENT NUMBER (SEQUENTIAL)							
9	8	9	9	5	8	4	2
SAMPLE COLLECTION NUMBER (SEQUENTIAL)							

DATE: 7/26/02

PAGE: 1 of 1

SAMPLING COMPANY: Cambria Environmental Technology
LOG CODE: CETO
SITE ADDRESS (Street and City): 3790 Hopyard Road, Pleasanton
GLOBAL ID NO.: T0600101257

ADDRESS: 1144-65TH Street, Oakland, CA 94608
EDF DELIVERABLE TO (Responsible Party or Designee):
PHONE NO.:
E-MAIL:
CONSULTANT PROJECT NO.: 244-0497

PROJECT CONTACT (Hardcopy or PDF Report to): Jacquelyn Jones
SAMPLER NAME(S) (Print): Jason K. Gerke - 510-420-3320

TELEPHONE: 510-420-3316
FAX: 510-420-9170
E-MAIL: jjones@cambria-env.com

TURNAROUND TIME (BUSINESS DAYS):
 10 DAYS 5 DAYS 72 HOURS 48 HOURS 24 HOURS LESS THAN 24 HOURS
REQUESTED ANALYSIS

LA - RWQCB REPORT FORMAT UST AGENCY:

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED

cc lab report to: jgerke@cambria-env.com

TPH - Gas, Purgeable	BTEX	MTBE (9021B - 6ppb RL)	MTBE (9260B - 0.5ppb RL)	Oxygenates (5) by (9260B)	Ethanol (9260B)	Methanol	EDB & 1,2-DCA (9260B)	EPA 5035 Extraction for Volatiles	VOCs Halogenated/Aromatic (9021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (48-)	TPH - Diesel, Extractable (9016m)	MTBE (9260B) Confirmation, See Note	FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes
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LAST USE DATE	Field Sample Identification		SAMPLING		MATRIX	NO. OF CONT.	TPH	BTEX	MTBE (9021B - 6ppb RL)	MTBE (9260B - 0.5ppb RL)	Oxygenates (5) by (9260B)	Ethanol (9260B)	Methanol	EDB & 1,2-DCA (9260B)	EPA 5035 Extraction for Volatiles	VOCs Halogenated/Aromatic (9021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (48-)	TPH - Diesel, Extractable (9016m)	MTBE (9260B) Confirmation, See Note	TEMPERATURE ON RECEIPT °C	
	DATE	TIME	DATE	TIME																						
	CPT-1-66	7/26/02	1050	Water	4	X	X	X																		01
	CPT-1-79	"	1120	"	"	X	X	X																		02
	D-1		1405	Soil	1	X	X	X																		03
	D-2		1410			X	X	X																		04
	D-3		1416			X	X	X																		05
	D-4		1420			X	X	X																		06
	P-1		1429			X	X	X																		07
	P-2		1431			X	X	X																		08
	P-3		1436			X	X	X																		09

Reinquished by (Signature): <i>Jason K. Gerke</i>	Received by (Signature): "Secure Location"	Date: 7/26/02	Time: 1530
Reinquished by (Signature):	Received by (Signature):	Date:	Time:
Reinquished by (Signature):	Received by (Signature): <i>Howard Brewer KIFF</i>	Date: 0730 02	Time: 1040

DISTRIBUTION: White with final report, Green to File, Yellow and Pink to Client.

O&G Graphic: (714) 858-9702



Report Number : 28290

Date : 9/10/2002

Jacquelyn Jones
Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, CA 94608

Subject : 5 Soil Samples
Project Name : 3790 Hopyard Road, Pleasanton
Project Number : 244-0497
P.O. Number : 98995842

Dear Ms. Jones,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Joel Kiff". The signature is written in a cursive style with a large initial "J".

Joel Kiff



Report Number : 28290

Date : 9/10/2002

Subject : 5 Soil Samples
Project Name : 3790 Hopyard Road, Pleasanton
Project Number : 244-0497
P.O. Number : 98995842

Case Narrative

Matrix Spike/Matrix Spike Duplicate Results associated with samples S-11-5.5, S-11-10.5, S-11-15.5 for the analyte Methyl-t-butyl ether were affected by the analyte concentrations already present in the un-spiked sample.

Approved By:  _____
Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 916-297-4800



Report Number : 28290

Date : 9/10/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : S-11-5.5

Matrix : Soil

Lab Number : 28290-01

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/5/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/5/2002
Toluene - d8 (Surr)	98.7		% Recovery	EPA 8260B	9/5/2002
4-Bromofluorobenzene (Surr)	99.5		% Recovery	EPA 8260B	9/5/2002

Sample : S-11-10.5

Matrix : Soil

Lab Number : 28290-02

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/5/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/5/2002
Toluene - d8 (Surr)	98.3		% Recovery	EPA 8260B	9/5/2002
4-Bromofluorobenzene (Surr)	100		% Recovery	EPA 8260B	9/5/2002

Approved By:  Joel Kiff



Report Number : 28290

Date : 9/10/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : S-11-15.5

Matrix : Soil

Lab Number : 28290-03

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/5/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/5/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/5/2002
Toluene - d8 (Surr)	98.5		% Recovery	EPA 8260B	9/5/2002
4-Bromofluorobenzene (Surr)	99.8		% Recovery	EPA 8260B	9/5/2002

Sample : S-11-20.5

Matrix : Soil

Lab Number : 28290-04

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/7/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/7/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/7/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/7/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/7/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/7/2002
Toluene - d8 (Surr)	98.1		% Recovery	EPA 8260B	9/7/2002
4-Bromofluorobenzene (Surr)	92.0		% Recovery	EPA 8260B	9/7/2002

Approved By:  Joel Kiff



Report Number : 28290

Date : 9/10/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : S-11-24.5

Matrix : Soil

Lab Number : 28290-05

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/6/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/6/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/6/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/6/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/6/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/6/2002
Toluene - d8 (Surr)	98.9		% Recovery	EPA 8260B	9/6/2002
4-Bromofluorobenzene (Surr)	91.3		% Recovery	EPA 8260B	9/6/2002

Approved By:  Joel Kiff

Report Number : 28290

Date : 9/10/2002

QC Report : Method Blank Data

Project Name : **3790 Hopyard Road, Pleasanton**


Project Number : **244-0497**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/6/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/6/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/6/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/6/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/6/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/6/2002
Toluene - d8 (Surr)	99.7		%	EPA 8260B	9/6/2002
4-Bromofluorobenzene (Surr)	91.4		%	EPA 8260B	9/6/2002
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/4/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/4/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/4/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/4/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/4/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/4/2002
Toluene - d8 (Surr)	98.2		%	EPA 8260B	9/4/2002
4-Bromofluorobenzene (Surr)	98.1		%	EPA 8260B	9/4/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
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KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  Joel Kiff

Report Number : 28290

Date : 9/10/2002

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : 3790 Hopyard Road,

Project Number : 244-0497

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	28290-05	<0.0050	0.0380	0.0383	0.0342	0.0340	mg/Kg	EPA 8260B	9/6/02	90.1	88.7	1.56	70-130	25
Toluene	28290-05	<0.0050	0.0380	0.0383	0.0323	0.0318	mg/Kg	EPA 8260B	9/6/02	84.9	83.0	2.20	70-130	25
Tert-Butanol	28290-05	<0.0050	0.190	0.192	0.161	0.155	mg/Kg	EPA 8260B	9/6/02	84.6	81.0	4.40	70-130	25
Methyl-t-Butyl Ether	28290-05	<0.0050	0.0380	0.0383	0.0325	0.0322	mg/Kg	EPA 8260B	9/6/02	85.4	84.1	1.59	70-130	25
Benzene	28233-01	<0.0050	0.0398	0.0394	0.0377	0.0365	mg/Kg	EPA 8260B	9/4/02	94.7	92.7	2.16	70-130	25
Toluene	28233-01	<0.0050	0.0398	0.0394	0.0362	0.0348	mg/Kg	EPA 8260B	9/4/02	90.8	88.4	2.62	70-130	25
Tert-Butanol	28233-01	0.021	0.199	0.197	0.171	0.166	mg/Kg	EPA 8260B	9/4/02	75.2	73.5	2.17	70-130	25
Methyl-t-Butyl Ether	28233-01	0.92	0.0398	0.0394	0.724	0.524	mg/Kg	EPA 8260B	9/4/02	0.00	0.00	0.00	70-130	25

Approved By:  Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 28290

Date : 9/10/2002

QC Report: Laboratory Control Sample (LCS)

Project Name : 3790 Hopyard Road,

Project Number : 244-0497

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0396	mg/Kg	EPA 8260B	9/6/02	98.9	70-130
Toluene	0.0396	mg/Kg	EPA 8260B	9/6/02	94.9	70-130
Tert-Butanol	0.198	mg/Kg	EPA 8260B	9/6/02	92.1	70-130
Methyl-t-Butyl Ether	0.0396	mg/Kg	EPA 8260B	9/6/02	95.0	70-130
Benzene	0.0388	mg/Kg	EPA 8260B	9/4/02	99.8	70-130
Toluene	0.0388	mg/Kg	EPA 8260B	9/4/02	96.9	70-130
Tert-Butanol	0.194	mg/Kg	EPA 8260B	9/4/02	93.0	70-130
Methyl-t-Butyl Ether	0.0388	mg/Kg	EPA 8260B	9/4/02	96.8	70-130

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:


Joel Kiff

SHELL Chain Of Custody Record

720 Olive Drive, Suite D
Davis, CA 95616

(530) 297-4800 (530) 297-4803 fax

Shell Project Manager to be invoiced:

SCIENCE & ENGINEERING
 TECHNICAL SERVICES
 OIL & GAS INDUSTRY

Karen Petryna

28290

INCIDENT NUMBER (S&E ONLY)
9 8 9 9 5 8 4 2
SAMPLE ID NUMBER (S&E ONLY)

DATE: 8/26/02

PAGE: 1 of 1

SAMPLING COMPANY: Cambria Environmental Technology
LOG CODE: CETO
SITE ADDRESS (Street and City): 3790 Hopyard Road, Pleasanton
GLOBAL ID NO.: T0600101257
ADDRESS: 1144-65TH Street, Oakland, CA 94608
EOP DELIVERABLE TO (Responsible Party or Designee): shelloaklandedf@cambria-env.com
PHONE NO.: scialie cambria env (510) 426-3339
PROJECT CONTACT (Hardcopy or PDF Report to): Jacquelyn Jones
SAMPLER NAME(S) (Print): Jason K. Gerke Stu D'Arice
TELEPHONE: 510-420-3316 FAX: 510-420-8170 EMAIL: jones@cambria-env.com
CONSULTANT PROJECT NO.: 244-0497

TURNAROUND TIME (BUSINESS DAYS):
 10 DAYS 5 DAYS 72 HOURS 48 HOURS 24 HOURS LESS THAN 24 HOURS

REQUESTED ANALYSIS

LA - RWQCB REPORT FORMAT UST AGENCY: _____

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED

cc lab report to: *scialie* gerke@cambria-env.com

Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B) - 5ppb RL	MTBE (8260B) - 0.5ppb RL	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8260B)	EPA 5035 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)	TRPH (416.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (4B-)	TPH - Diesel, Extractable (8015m)	MTBE (8260B) Confirmation, See Note	TEMPERATURE ON RECEIPT (C)	
	DATE	TIME																					(Value)	
S-11-5.5	8/26	12 ⁰⁰	Soil	1	XXX																		101	
S-11-10.5		12 ¹⁰		1																				-02
S-11-15.5		12 ²⁰		1																				-03
S-11-20.5		12 ³⁰		1																				-04
S-11-24.5		12 ⁴⁰		1																				-05

Relinquished by: (Signature) *[Signature]* Received by: (Signature) *SAFE LOCAL 600 Hallis* Date: 8/26/02 Time: 5:00

Relinquished by: (Signature) _____ Received by: (Signature) _____ Date: _____ Time: _____

Relinquished by: (Signature) _____ Received by: (Signature) *John Little / Kiff Analytical* Date: 082802 Time: 1155



Report Number : 28755

Date : 9/27/2002

Jacquelyn Jones
Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, CA 94608

Subject : 5 Soil Samples
Project Name : 3790 Hopyard Road, Pleasanton
Project Number : 244-0497
P.O. Number : 98995842

Dear Ms. Jones,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,


Joel Kiff



Report Number : 28755

Date : 9/27/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : S-12-5.5

Matrix : Soil

Lab Number : 28755-01

Sample Date :9/19/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/21/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/21/2002
Toluene - d8 (Surr)	97.6		% Recovery	EPA 8260B	9/21/2002
4-Bromofluorobenzene (Surr)	90.9		% Recovery	EPA 8260B	9/21/2002

Sample : S-12-10.5

Matrix : Soil

Lab Number : 28755-02

Sample Date :9/19/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/21/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/21/2002
Toluene - d8 (Surr)	97.2		% Recovery	EPA 8260B	9/21/2002
4-Bromofluorobenzene (Surr)	90.7		% Recovery	EPA 8260B	9/21/2002

Approved By:  Joel Kiff



Report Number : 28755

Date : 9/27/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : S-12-15.5

Matrix : Soil

Lab Number : 28755-03

Sample Date :9/19/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/21/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/21/2002
Toluene - d8 (Surr)	97.8		% Recovery	EPA 8260B	9/21/2002
4-Bromofluorobenzene (Surr)	89.8		% Recovery	EPA 8260B	9/21/2002

Sample : S-12-20.5

Matrix : Soil

Lab Number : 28755-04

Sample Date :9/19/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/21/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/21/2002
Toluene - d8 (Surr)	97.1		% Recovery	EPA 8260B	9/21/2002
4-Bromofluorobenzene (Surr)	90.9		% Recovery	EPA 8260B	9/21/2002

Approved By:  Joel Kiff



Report Number : 28755

Date : 9/27/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : S-12-24.5

Matrix : Soil

Lab Number : 28755-05

Sample Date :9/19/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/21/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/21/2002
Toluene - d8 (Surr)	98.0		% Recovery	EPA 8260B	9/21/2002
4-Bromofluorobenzene (Surr)	90.3		% Recovery	EPA 8260B	9/21/2002

Approved By:  Joel Kiff

Report Number : 28755

Date : 9/27/2002

QC Report : Method Blank Data

Project Name : **3790 Hopyard Road, Pleasanton**


Project Number : **244-0497**

<u>Parameter</u>	<u>Measured Value</u>	<u>Method Reporting Limit</u>	<u>Units</u>	<u>Analysis Method</u>	<u>Date Analyzed</u>
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	9/21/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	9/21/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	9/21/2002
Toluene - d8 (Surr)	97.4		%	EPA 8260B	9/21/2002
4-Bromofluorobenzene (Surr)	91.3		%	EPA 8260B	9/21/2002

<u>Parameter</u>	<u>Measured Value</u>	<u>Method Reporting Limit</u>	<u>Units</u>	<u>Analysis Method</u>	<u>Date Analyzed</u>
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KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  Joel Kiff

Report Number : 28755

Date : 9/27/2002

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : 3790 Hopyard Road,

Project Number : 244-0497

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	28729-01	<0.0050	0.0395	0.0394	0.0363	0.0366	mg/Kg	EPA 8260B	9/21/02	91.9	92.9	1.08	70-130	25
Toluene	28729-01	<0.0050	0.0395	0.0394	0.0340	0.0342	mg/Kg	EPA 8260B	9/21/02	86.0	86.8	0.925	70-130	25
Tert-Butanol	28729-01	<0.0050	0.198	0.197	0.192	0.189	mg/Kg	EPA 8260B	9/21/02	97.2	96.0	1.23	70-130	25
Methyl-t-Butyl Ether	28729-01	<0.0050	0.0395	0.0394	0.0348	0.0345	mg/Kg	EPA 8260B	9/21/02	88.0	87.6	0.484	70-130	25

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  Joel Kiff

QC Report : Laboratory Control Sample (LCS)

Report Number : 28755

Date : 9/27/2002

Project Name : 3790 Hopyard Road,

Project Number : 244-0497

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0399	mg/Kg	EPA 8260B	9/21/02	96.4	70-130
Toluene	0.0399	mg/Kg	EPA 8260B	9/21/02	90.3	70-130
Tert-Butanol	0.200	mg/Kg	EPA 8260B	9/21/02	98.3	70-130
Methyl-t-Butyl Ether	0.0399	mg/Kg	EPA 8260B	9/21/02	90.6	70-130

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  _____
Joel Kiff

SHELL Chain Of Custody Record

720 Olive Drive, Suite D
Davis, CA 95616

(530) 297-4800 (530) 297-4803 fax

Shell Project Manager to be Invoiced:

SCIENCE & ENGINEERING
 TECHNICAL SERVICES
 CRMT-HOUSTON

Karen Petryna

28755

INCIDENT NUMBER (SEE ONLY)

9 8 9 9 5 8 4 2

SAMPLER NUMBER (SEE ONLY)

DATE: 9/19/02

PAGE: 1 of 1

SAMPLING COMPANY: Cambria Environmental Technology		LOG CODE: CETO	SITE ADDRESS (Street and City): 3790 Hopyard Road, Pleasanton		GLOBAL ID NO.: T0600101257
ADDRESS: 1144-85TH Street, Oakland, CA 94608		EOD DELIVERABLE TO (Responsible Party or Designee): shelloakdandef@cambria-env.com		PHONE NO.:	E-MAIL:
PROJECT CONTACT (Hardcopy or PDF Report to): Jacquelyn Jones		SAMPLER NAME(S) (PIN): Jason K. Gerke		CONSULTANT PROJECT NO.: 244-0497	
TELEPHONE: 510-420-3316	FAX: 510-420-9170	E-MAIL: jones@cambria-env.com			

TURNAROUND TIME (BUSINESS DAYS):
 10 DAYS 5 DAYS 72 HOURS 48 HOURS 24 HOURS LESS THAN 24 HOURS

LA - RWQCB REPORT FORMAT UST AGENCY:

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED

cc lab report to: jgerke@cambria-env.com

REQUESTED ANALYSIS										FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes							
TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8260B)	EPA 5035 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)		TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (4B-)	TPH - Diesel, Extractable (8015m)

FIELD NO.	Field Sample Identification		SAMPLING		MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8260B)	EPA 5035 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (4B-)	TPH - Diesel, Extractable (8015m)	MTBE (8260B) Confirmation, See Note	TEMPERATURE ON RECEIPT C°	
	DATE	TIME	TPH - Gas, Purgeable	BTEX																					MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)
	S-12-5.5		9/19/02	1045	Soil	1	X	X	X																-01	
	S-12-10.5			1055			X	X	X																	-02
	S-12-15.5			1100			X	X	X																	-03
	S-12-20.5			1110			X	X	X																	-04
	S-12-24.5			1130			X	X	X																	-05

Relinquished by: (Signature) <i>John Gerke</i>	Received by: (Signature) "Secure Location"	Date: 9/19/02	Time: 1500
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) <i>John Gerke / Kiff Analytical</i>	Date: 092002	Time: 1215



Report Number : 30020

Date : 12/7/2002

Jason Gerke
Cambria Environmental Technology, Inc.
6262 Hollis Street
Emeryville, CA 94608

Subject : 5 Water Samples
Project Name : 3790 Hopyard, Pleasanton Ca
Project Number : 244-0497
P.O. Number : 98995842

Dear Mr. Gerke,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Joel Kiff". The signature is written in a cursive style with a large, looping initial "J".

Joel Kiff



Report Number : 30020

Date : 12/7/2002

Project Name : 3790 Hopyard, Pleasanton Ca

Project Number : 244-0497

Sample : CPT-1@26'

Matrix : Water

Lab Number : 30020-01

Sample Date :11/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	12/4/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/4/2002
Toluene - d8 (Surr)	104		% Recovery	EPA 8260B	12/4/2002
4-Bromofluorobenzene (Surr)	98.1		% Recovery	EPA 8260B	12/4/2002

Sample : CPT-1@42'

Matrix : Water

Lab Number : 30020-02

Sample Date :11/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	12/4/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/4/2002
Toluene - d8 (Surr)	97.1		% Recovery	EPA 8260B	12/4/2002
4-Bromofluorobenzene (Surr)	93.4		% Recovery	EPA 8260B	12/4/2002

Approved By:  Joel Kiff



Report Number : 30020

Date : 12/7/2002

Project Name : 3790 Hopyard, Pleasanton Ca

Project Number : 244-0497

Sample : CPT-1@50'

Matrix : Water

Lab Number : 30020-03

Sample Date :11/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	12/4/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/4/2002
Toluene - d8 (Surr)	96.6		% Recovery	EPA 8260B	12/4/2002
4-Bromofluorobenzene (Surr)	95.0		% Recovery	EPA 8260B	12/4/2002

Sample : CPT-1@68'

Matrix : Water

Lab Number : 30020-04

Sample Date :11/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/2/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/2/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/2/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/2/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	12/2/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/2/2002
Toluene - d8 (Surr)	97.9		% Recovery	EPA 8260B	12/2/2002
4-Bromofluorobenzene (Surr)	98.0		% Recovery	EPA 8260B	12/2/2002

Approved By:  Joel Kiff



Report Number : 30020

Date : 12/7/2002

Project Name : 3790 Hopyard, Pleasanton Ca

Project Number : 244-0497

Sample : CPT-1@88'

Matrix : Water

Lab Number : 30020-05

Sample Date : 11/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/2/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/2/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/2/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/2/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	12/2/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/2/2002
Toluene - d8 (Surr)	97.9		% Recovery	EPA 8260B	12/2/2002
4-Bromofluorobenzene (Surr)	99.3		% Recovery	EPA 8260B	12/2/2002

Approved By:  Joel Kiff

Report Number : 30020

Date : 12/7/2002

QC Report : Method Blank Data

Project Name : **3790 Hopyard, Pleasanton Ca**

Project Number : **244-0497**

<u>Parameter</u>	<u>Measured Value</u>	<u>Method Reporting Limit</u>	<u>Units</u>	<u>Analysis Method</u>	<u>Date Analyzed</u>
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/4/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	12/4/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/4/2002
Toluene - d8 (Surr)	97.2		%	EPA 8260B	12/4/2002
4-Bromofluorobenzene (Surr)	101		%	EPA 8260B	12/4/2002
Benzene	< 0.50	0.50	ug/L	EPA 8260B	12/1/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	12/1/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	12/1/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	12/1/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	12/1/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	12/1/2002
Toluene - d8 (Surr)	97.9		%	EPA 8260B	12/1/2002
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	12/1/2002

<u>Parameter</u>	<u>Measured Value</u>	<u>Method Reporting Limit</u>	<u>Units</u>	<u>Analysis Method</u>	<u>Date Analyzed</u>
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KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By: Joel Kiff



Report Number : 30020

Date : 12/7/2002

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **3790 Hopyard, Pleasanton**

Project Number : **244-0497**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	30037-10	<0.50	39.8	38.9	42.6	41.4	ug/L	EPA 8260B	12/4/02	107	106	0.609	70-130	25
Toluene	30037-10	<0.50	39.8	38.9	40.1	39.0	ug/L	EPA 8260B	12/4/02	101	100	0.448	70-130	25
Tert-Butanol	30037-10	<5.0	199	194	197	188	ug/L	EPA 8260B	12/4/02	99.0	96.8	2.26	70-130	25
Methyl-t-Butyl Ether	30037-10	<0.50	39.8	38.9	39.4	37.4	ug/L	EPA 8260B	12/4/02	99.1	96.2	3.02	70-130	25
Benzene	29998-01	<0.50	40.0	40.0	40.6	40.6	ug/L	EPA 8260B	12/1/02	102	102	0.0246	70-130	25
Toluene	29998-01	<0.50	40.0	40.0	39.8	39.4	ug/L	EPA 8260B	12/1/02	99.4	98.5	0.960	70-130	25
Tert-Butanol	29998-01	<5.0	200	200	194	194	ug/L	EPA 8260B	12/1/02	96.8	96.9	0.0671	70-130	25
Methyl-t-Butyl Ether	29998-01	<0.50	40.0	40.0	43.6	44.0	ug/L	EPA 8260B	12/1/02	109	110	0.868	70-130	25

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By:  Joel Kiff

Report Number: 30020

Date: 12/7/2002

QC Report: Laboratory Control Sample (LCS)

Project Name: **3790 Hopyard, Pleasanton**

Project Number: **244-0497**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	20.0	ug/L	EPA 8260B	12/4/02	106	70-130
Toluene	20.0	ug/L	EPA 8260B	12/4/02	99.6	70-130
Tert-Butanol	100	ug/L	EPA 8260B	12/4/02	97.5	70-130
Methyl-t-Butyl Ether	20.0	ug/L	EPA 8260B	12/4/02	98.2	70-130
Benzene	40.0	ug/L	EPA 8260B	12/1/02	100	70-130
Toluene	40.0	ug/L	EPA 8260B	12/1/02	98.2	70-130
Tert-Butanol	200	ug/L	EPA 8260B	12/1/02	95.9	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	12/1/02	114	70-130

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By: _____


Joel Kiff

SHELL Chain Of Custody Record

720 Olive Drive, Suite D
Davis, CA 95616

(530) 297-4800 (530) 297-4803 fax

Shell Project Manager to be Invoiced:

SCIENCE & ENGINEERING Karen Petryna
 TECHNICAL SERVICES
 CRMT: HOUSTON

30020

INCIDENT NUMBER (SEE ONLY)

9 8 9 9 5 8 4 2

DATE: 11/25/02

SAP or CRMT NUMBER (TS/CRMT)

1 3 5 7 8 4

PAGE: 1 of 1

SAMPLING COMPANY: Cambria Environmental Technologies		LOG CODE: CETO	SITE ADDRESS (Street and City): 3790 Hopyard, Pleasanton Ca		GLOBAL ID NO.: T0600101257
ADDRESS: 1144 65th Street, Oakland, CA		EDF DELIVERABLE TO (Responsible Party or Designee): shelloaklandef@cambria-env.com		PHONE NO.: (510) 420-3339	E-MAIL: sdalie@cambria-env.com
PROJECT CONTACT (Hardcopy or PDF Report to): Jason Gerke		CONSULTANT PROJECT NO.: 244-0497		LAB USE ONLY	
TELEPHONE: (510) 420-3339	FAX: (510) 420-8170	E-MAIL: sdalie@cambria-env.com		Sample's Name: Stu Dalie	

TURNAROUND TIME (BUSINESS DAYS):
 30 DAYS 5 DAYS 72 HOURS 48 HOURS 24 HOURS LESS THAN 24 HOURS

LA - RWQCB REPORT FORMAT UST AGENCY: _____

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED

Please cc lab results to jgerke@cambria-env.com & sdalie@cambria-env.com

REQUESTED ANALYSIS													FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes				
TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8280B)	EPA 8035 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)		Vapor TPH (ASTM 3416m)	Vapor Fused Gases (ASTM D1946)	Test for Disposal (48-_____)	TPH - Diesel, Extractable (8015m)

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8280B)	EPA 8035 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fused Gases (ASTM D1946)	Test for Disposal (48-_____)	TPH - Diesel, Extractable (8015m)	MTBE (8260B) Confirmation, See Note	TEMPERATURE ON RECEIPT °C	
		DATE	TIME																					On ICE	
	16' CPT-1E 16'	25-Nov	230	H2O	4	X	X	X																On ICE	01
	CPT-1E 42'	11/25	345	H2O	4	X	X	X																	02
	CPT-1E 50'	11/25	400	H2O	4	X	X	X																	03
	CPT-1E 68'	11/25	430	H2O	4	X	X	X																	04
	CPT-1E 88'	11/25	500	H2O	4	X	X	X																	05

Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Date: 11/25/02 11/25/02	Time: 6:00
Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Date: _____	Time: _____
Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Date: 11/26/02	Time: 11:50



Report Number : 27732

Date : 08/11/2002

Jacquelyn Jones
Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, CA 94608

Subject : 5 Soil Samples
Project Name : 3790 Hopyard Road, Pleasanton
Project Number : 244-04947
P.O. Number : SAP# 135784

Dear Ms. Jones,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Joel Kiff". The signature is written in a cursive style with a large, looped initial "J".

Joel Kiff



Report Number : 27732

Date : 08/11/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-04947

Sample : SP-1-A

Matrix : Soil

Lab Number : 27732-01

Sample Date :07/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	07/31/2002
4-Bromofluorobenzene (Surr)	99.6		% Recovery	EPA 8260B	07/31/2002

Sample : SP-1-B

Matrix : Soil

Lab Number : 27732-02

Sample Date :07/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	07/31/2002
4-Bromofluorobenzene (Surr)	84.7		% Recovery	EPA 8260B	07/31/2002

Sample : SP-1-C

Matrix : Soil

Lab Number : 27732-03

Sample Date :07/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	07/31/2002
4-Bromofluorobenzene (Surr)	83.3		% Recovery	EPA 8260B	07/31/2002

Approved By:  Joel Kiff



Report Number : 27732

Date : 08/11/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-04947

Sample : SP-1-D

Matrix : Soil

Lab Number : 27732-04

Sample Date :07/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	07/31/2002
4-Bromofluorobenzene (Surr)	87.3		% Recovery	EPA 8260B	07/31/2002

Sample : SP-1-A,B,C,D

Matrix : Soil

Lab Number : 27732-05

Sample Date :07/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	07/31/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	07/31/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	07/31/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	07/31/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	07/31/2002
Toluene - d8 (Surr)	109		% Recovery	EPA 8260B	07/31/2002
4-Bromofluorobenzene (Surr)	87.0		% Recovery	EPA 8260B	07/31/2002

Approved By:  Joel Kiff

Report Number : 27732

Date : 08/11/2002

QC Report : Method Blank Data

Project Name : **3790 Hopyard Road, Pleasanton**

Project Number : **244-04947**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	08/01/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	08/01/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	08/01/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	08/01/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	08/01/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	08/01/2002
Toluene - d8 (Surr)	107		%	EPA 8260B	08/01/2002
4-Bromofluorobenzene (Surr)	81.4		%	EPA 8260B	08/01/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
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KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  _____
Joel Kiff

Report Number : 27732

Date : 08/11/2002

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : 3790 Hopyard Road,

Project Number : 244-04947

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Recov. Limit	Relative Percent Diff. Limit
Benzene	27742-03	<0.0050	0.0385	0.0386	0.0392	0.0382	mg/Kg	EPA 8260B	8/1/02	102	98.8	2.89	70-130	25
Toluene	27742-03	<0.0050	0.0385	0.0386	0.0418	0.0406	mg/Kg	EPA 8260B	8/1/02	108	105	2.86	70-130	25
Tert-Butanol	27742-03	<0.0050	0.193	0.193	0.169	0.173	mg/Kg	EPA 8260B	8/1/02	87.9	89.6	1.88	70-130	25
Methyl-t-Butyl Ether	27742-03	<0.0050	0.0385	0.0386	0.0346	0.0349	mg/Kg	EPA 8260B	8/1/02	89.8	90.5	0.777	70-130	25

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:  Joel Kiff

Report Number: 27732

Date: 08/11/2002

QC Report: Laboratory Control Sample (LCS)

Project Name: **3790 Hopyard Road,**

Project Number: **244-04947**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0368	mg/Kg	EPA 8260B	8/1/02	97.0	70-130
Toluene	0.0368	mg/Kg	EPA 8260B	8/1/02	104	70-130
Tert-Butanol	0.184	mg/Kg	EPA 8260B	8/1/02	89.0	70-130
Methyl-t-Butyl Ether	0.0368	mg/Kg	EPA 8260B	8/1/02	83.9	70-130

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By: 
Joel Kiff



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Shell Oil Products US

Certificate of Analysis Number:

02080023

Report To: KIFF Analytical Joel Kiff 720 Olive Drive Suite D Davis CA 95616- ph (530) 297-4800 fax:	Project Name: SAP#135784 Site: 3790 Hopyard Rd. Site Address: 3790 Hopyard Road Pleasanton CA PO Number: SAP# 135784 State: California State Cert. No.: 01142CA Date Reported: 8/13/2002
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This Report Contains A Total Of 8 Pages

Excluding This Page

8/13/2002

Date



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Case Narrative for:
Shell Oil Products US

Certificate of Analysis Number:
02080023

Report To: KIFF Analytical Joel Kiff 720 Olive Drive Suite D Davis CA 95616- ph (530) 297-4800 fax:	Project Name: SAP#135784 Site: 3790 Hopyard Rd. Site Address: 3790 Hopyard Road Pleasanton CA PO Number: SAP# 135784 State: California State Cert. No.: 01142CA Date Reported: 8/13/2002
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Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the samples submitted for testing.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

8/13/2002

Bernadette Fini
Customer Service Manager

Date



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Shell Oil Products US

Certificate of Analysis Number:
02080023

Report To: KIFF Analytical
 Joel Kiff
 720 Olive Drive
 Suite D
 Davis
 CA
 95616-
 ph (530) 297-4800 fax: (530) 297-4803

Project Name: SAP#135784
Site: 3790 Hopyard Rd.
Site Address: 3790 Hopyard Road
 Pleasanton CA
PO Number: SAP# 135784
State: California
State Cert. No.: 01142CA
Date Reported: 8/13/2002

Fax To:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
SP-1-A,B,C,D	02080023-01	Soil	7/26/2002 1:00:00 PM	8/1/2002 10:00:00 AM		<input type="checkbox"/>

Bernadette Fini
 Customer Service Manager

8/13/2002

Date

Joel Grice
 Laboratory Director
 Ted Yen
 Quality Assurance Officer



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TX 77054
 (713) 660-0901

Client Sample ID: SP-1-A,B,C,D Collected: 07/26/2002 13:00 SPL Sample ID: 02080023-01

Site: 3790 Hopyard Rd.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/Kg		
Lead	5	0.5	1		08/13/02 9:48	NS	1272763

Prep Method	Prep Date	Prep Initials
SW3050B	08/01/2002 15:00	MME

Bernadette Fini
 Project Manager

Qualifiers: ND/U - Not Detected at the Reporting Limit >MCL - Result Over Maximum Contamination Limit(MCL)
 B - Analyte detected in the associated Method Blank D - Surrogate Recovery Unreportable due to Dilution
 * - Surrogate Recovery Outside Advisable QC Limits MI - Matrix Interference
 J - Estimated Value between MDL and PQL

Quality Control Documentation



Quality Control Report

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Shell Oil Products US

SAP#135784

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 02080023
Lab Batch ID: 21703-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_020812D-1272755 Units: mg/Kg
Analysis Date: 08/13/2002 8:56 Analyst: NS
Preparation Date: 08/01/2002 15:00 Prep By: MME Method SW3050B

Lab Sample ID: 02080023-01A
Client Sample ID: SP-1-A,B,C,D

Table with 3 columns: Analyte, Result, Rep Limit. Row 1: Lead, ND, 0.5

Laboratory Control Sample (LCS)

RunID: TJAT_020812D-1272756 Units: mg/L
Analysis Date: 08/13/2002 9:02 Analyst: NS
Preparation Date: 08/01/2002 15:00 Prep By: MME Method SW3050B

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row 1: Lead, 1, 0.9692, 97, 80, 120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 02071090-01
RunID: TJAT_020812D-1272758 Units: mg/Kg
Analysis Date: 08/13/2002 9:16 Analyst: NS
Preparation Date: 08/01/2002 15:00 Prep By: MME Method SW3050B

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row 1: Lead, 90.54, 100, 171.7, 81.15, 100, 175.5, 84.92, 4.541, 20, 75, 125

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte detected in the associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL * - Recovery Outside Advisable QC Limits

The percent recoveries for QC samples are correct as reported. Due to significant figures and rounding, the reported RPD may differ from the displayed RPD values but is correct as reported.

*Sample Receipt Checklist
And
Chain of Custody*



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	02080023	Received By:	NB
Date and Time Received:	8/1/2002 10:00:00 AM	Carrier name:	FedEx
Temperature:	4	Chilled by:	Water Ice

- 1. Shipping container/cooler in good condition? Ye No Not Present
- 2. Custody seals intact on shipping container/cooler? Ye No Not Present
- 3. Custody seals intact on sample bottles? Ye No Not Present
- 4. Chain of custody present? Ye No
- 5. Chain of custody signed when relinquished and received? Ye No
- 6. Chain of custody agrees with sample labels? Ye No
- 7. Samples in proper container/bottle? Ye No
- 8. Sample containers intact? Ye No
- 9. Sufficient sample volume for indicated test? Ye No
- 10. All samples received within holding time? Ye No
- 11. Container/Temp Blank temperature in compliance? Ye No
- 12. Water - VOA vials have zero headspace Ye No Not Applicable
- 13. Water - pH acceptable upon receipt? Ye No Not Applicable

SPL Representative:	<input type="text"/>	Contact Date & Time:	<input type="text"/>
Client Name Contacted:	<input type="text"/>		
Non Conformance Issues:	<input type="text"/>		
Client Instructions:	<input type="text"/>		



720 Olive Drive, Suite D
 Davis, CA 95616
 Lab: 530.297.4800
 Fax: 530.297.4803

02080023 BAF

Lab No. _____ Page 1 of 1

Project Contact (Hardcopy or PDF to): **Joe Kiff** EDF Report? Yes No Chain-of-Custody Record and Analysis Request

Company/Address: **Kiff Analytical, LLC** Recommended but not mandatory to complete this section:
 Sampling Company Log Code:

Phone No.: _____ FAX No.: _____ Global ID: _____

Project Number: **244-04947** P.O. No.: **27732** EDF Deliverable to (Email Address): _____

Project Name: **3790 Hopyard Road, Pleasanton** E-mail address: **inbox@kiffanalytical.com**

Project Address: _____

Sample Designation	Sampling		Container				Preservative				Matrix		TTLc Lead	STLc Lead if TTLc > 50 mg/Kg	TCLP Lead if STLc > 5.0 mg/L	Date due:	For Lab Use Only
	Date	Time	Glass Jar	Poly	Author	HO	HNO3	ICE	NONE	WATER	SOIL						
SP-1 A B C D	7/20/02	1300	1					X				X	X	X		August 13, 2002	

Relinquished by: *Krista Fung* / KIFF ANALYTICAL Date: **07/31/02** Time: **1405** Received by: _____ Remarks: Please return shipped coolers with temperature blank.

Relinquished by: _____ Date: _____ Time: _____ Received by: _____ SAP# 135784

Relinquished by: _____ Date: **8/1/02** Time: **0724** Received by: *Alan Baran* Laboratory: _____ Bill to: **Tim Dazey**

42 rec \$35626537769 B1b (CS) DO:

SHELL Chain Of Custody Record

720 Olive Drive, Suite D
Davis, CA 95616

(530) 297-4800 (530) 297-4803 fax

Shell Project Manager to be invoiced:

SCIENCE & ENGINEERING
 TECHNICAL SERVICES
 CMPT, HOUSTON

21732

INCIDENT NUMBER (SEE ONLY)

VAPOR CHAIN NUMBER (SEE ONLY)

1 3 5 7 8 4

DATE: 7/26/02

PAGE: 1 of 1

Tim Dazey

SAMPLING COMPANY: Cambria Environmental Technology
LOG CODE: CETO
SITE ADDRESS (Street and City): 3790 Hopyard Road, Pleasanton
GLOBAL ID NO.: T0600101257

ADDRESS: 1144-65TH Street, Oakland, CA 94608
EDF DELIVERABLE TO (Responsible Party or Designee):
PHONE NO.:
E-MAIL:
CONSULTANT PROJECT NO.: 244-04947

PROJECT CONTACT (Hardcopy or PDF Report to):
SAMPLER NAME(S) (Print): Jason K. Gerke 510-420-3320

TELEPHONE: 510-420-3316
FAX: 510-420-9170
E-MAIL: jones@cambria-env.com

TURNAROUND TIME (BUSINESS DAYS):
 10 DAYS 5 DAYS 72 HOURS 48 HOURS 24 HOURS LESS THAN 24 HOURS

LA - RWQCB REPORT FORMAT UST AGENCY:
GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED

Copy analytical reports to TDAZEY@EQUILON.COM and jgerke@cambria-env.com

REQUESTED ANALYSIS

FIELD NOTES:

Container/Preservative or PID Readings or Laboratory Notes

Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8260B)	EPA 8025 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (48-28)	TPH - Diesel, Extractable (8015m)	MTBE (8260B) Confirmation, See Note	TEMPERATURE ON RECEIPT °C	FIELD NOTES
	DATE	TIME																						
SP-1-A,B,C,D	7/26/02	1300	Soil	4																				(01020204) 05

Relinquished by: (Signature) [Signature] Received by: (Signature) "Secure Location" Date: 7/26/02 Time: 1530

Relinquished by: (Signature) Received by: (Signature) Date: Date: Time: Time:

Relinquished by: (Signature) Received by: (Signature) [Signature] KIFF Date: 0730 02 Time: 1039

ISSUED DATE: 05/23/97
CANCELS ISSUE: 03/05/97
ISSUED BY: RLG

**MATERIAL: MINIMUM SOIL ANALYSIS FOR UST SOIL WITH
GASOLINE OR DIESEL CONTAMINATION**

USE FOR ARIZONA , CALIFORNIA AND NEVADA WASTE ONLY!!!

NOTE: ANALYSES ARE BASED ON CHARACTERIZATION MINIMUM. YOU MUST BE SURE THAT THE FACILITY WILL TAKE THE FOLLOWING AS ACCEPTANCE. FURTHER ANALYSIS MAY BE REQUIRED FOR CHARACTERIZATION UPON REVIEW BY THE WASTE TEAM MEMBER OR TO MEET DISPOSAL SITE REQUIREMENTS. IF THE MATERIAL IS RETURNED TO CONSULTANT, COPIES OF ALL TRANSPORTATION DOCUMENTS MUST BE SENT TO THE WASTE DISPOSAL COORDINATOR FOR RECORDING WHEN PROJECT IS COMPLETE.

MINIMUM REQUIRED TESTING:

Note: If material is to be sent to a BFI facility EPA METHOD 8010 must be run IN ADDITION to the following analysis prior to requesting profile approval:

**TPH = TOTAL PETROLEUM HYDROCARBONS, DHS GC-FID MOD 8015
GASOLINE OR DIESEL AS REQUIRED.**

BTXE = EPA 8020 + MTBE

**CAM METALS = TTLC LEAD, STLC LEAD IF TTLC => 50 MG/KG AND/OR
ORGANIC LEAD IF TTLC => 13 MG/KG**

**AQUATIC BIOASSAY (FISH TOX) IS ONLY TO BE RUN ON SAMPLES WITH
GREATER THAN 5000 PPM TPH. COMPOSITE A MAXIMUM OF 4 SAMPLES.**

**AQUATIC BIOASSAY (FISH TOX) = PART 800 OF "STANDARD METHODS FOR
THE EXAMINATION OF WATER AND WASTEWATER (15TH EDITION)"**

LABORATORY INSTRUCTIONS (MINIMUM GUIDELINES ONLY)

- 8015/8020 TO BE BILLED AS "COMBO" WITHOUT EXCEPTION
- TPH REQUIRED FOR ALL SAMPLES.
- ALL OTHER TESTS REQUIRED TO BE RUN ON COMPOSITE(S). MAXIMUM 4 SAMPLES PER COMPOSITE.
- STLC REQUIRED FOR METALS WITH TTLC VALUE 10 X STLC MAXIMUM.
- ORGANIC ANALYSIS REQUIRED FOR TTLC LEAD OF 13 MG/KG OR GREATER.
- LABORATORY IS TO SUPPLY QA/QC INFORMATION WITH ALL ANALYTICAL REPORTS.
- MAIL OR FAX ALL ANALYSIS TO PERSON REQUESTING ANALYSIS.

PROCEDURE ORIGINAL DATE: 07/10/90
PROCEDURE REVISED DATE: 03/05/97



Report Number : 28291

Date : 9/4/2002

Jacquelyn Jones
Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, CA 94608

Subject : 5 Soil Samples
Project Name : 3790 Hopyard Road, Pleasanton
Project Number : 244-0497
P.O. Number : SAP# 135784

Dear Ms. Jones,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Joel Kiff". The signature is written in a cursive style with a large initial "J".

Joel Kiff



Report Number : 28291

Date : 9/4/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : SP-A

Matrix : Soil

Lab Number : 28291-01

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/31/2002
4-Bromofluorobenzene (Surr)	98.1		% Recovery	EPA 8260B	8/31/2002

Sample : SP-B

Matrix : Soil

Lab Number : 28291-02

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/31/2002
4-Bromofluorobenzene (Surr)	98.7		% Recovery	EPA 8260B	8/31/2002

Sample : SP-C

Matrix : Soil

Lab Number : 28291-03

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/31/2002
4-Bromofluorobenzene (Surr)	99.8		% Recovery	EPA 8260B	8/31/2002

Approved By:  Joel Kiff



Report Number : 28291

Date : 9/4/2002

Project Name : 3790 Hopyard Road, Pleasanton

Project Number : 244-0497

Sample : SP-D

Matrix : Soil

Lab Number : 28291-04

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/31/2002
4-Bromofluorobenzene (Surr)	99.0		% Recovery	EPA 8260B	8/31/2002

Sample : SP-(A,B,C,D)

Matrix : Soil

Lab Number : 28291-05

Sample Date :8/26/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/31/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/31/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/31/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	8/31/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/31/2002
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	8/31/2002
4-Bromofluorobenzene (Surr)	98.9		% Recovery	EPA 8260B	8/31/2002

Approved By:  Joel Kiff

Report Number : 28291

Date : 9/4/2002

QC Report : Method Blank Data

Project Name : **3790 Hopyard Road, Pleasanton**

Project Number : **244-0497**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/30/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	8/30/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	8/30/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	8/30/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	8/30/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	8/30/2002
Toluene - d8 (Surr)	98.4		%	EPA 8260B	8/30/2002
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	8/30/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
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KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By: Joel Kiff



Report Number : 28291

Date : 9/4/2002

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **3790 Hopyard Road,**

Project Number : **244-0497**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	28291-01	<0.0050	0.0397	0.0398	0.0357	0.0355	mg/Kg	EPA 8260B	8/30/02	90.0	89.2	0.837	70-130	25
Toluene	28291-01	<0.0050	0.0397	0.0398	0.0323	0.0319	mg/Kg	EPA 8260B	8/30/02	81.5	80.2	1.58	70-130	25
Tert-Butanol	28291-01	<0.0050	0.198	0.199	0.175	0.172	mg/Kg	EPA 8260B	8/30/02	88.3	86.6	1.89	70-130	25
Methyl-t-Butyl Ether	28291-01	<0.0050	0.0397	0.0398	0.0368	0.0368	mg/Kg	EPA 8260B	8/30/02	92.8	92.5	0.378	70-130	25

Approved By:  Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

QC Report: Laboratory Control Sample (LCS)

Report Number : 28291

Date : 9/4/2002

Project Name : 3790 Hopyard Road,

Project Number : 244-0497

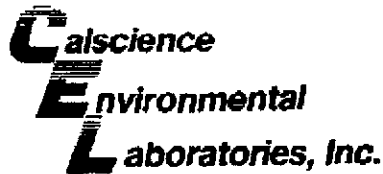
Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0396	mg/Kg	EPA 8260B	8/30/02	95.6	70-130
Toluene	0.0396	mg/Kg	EPA 8260B	8/30/02	91.3	70-130
Tert-Butanol	0.198	mg/Kg	EPA 8260B	8/30/02	90.1	70-130
Methyl-t-Butyl Ether	0.0396	mg/Kg	EPA 8260B	8/30/02	95.1	70-130

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Approved By:


Joel Kiff



September 05, 2002

Joel Kiff
Kiff Analytical
720 Olive Drive, Suite D1
Davis, CA 95616-4740

Subject: **Calscience Work Order No.: 02-08-1480**
Client Reference: **3790 Hopyard Road, Pleasanton**

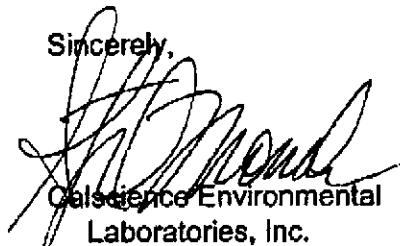
Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 8/30/2002 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,



Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager



Michael J. Orsostomo
Quality Assurance Manager



ANALYTICAL REPORT

Kiff Analytical
720 Olive Drive, Suite D1
Davis, CA 95616-4740

Date Received: 08/30/02
Work Order No: 02-08-1480
Preparation: Total Digestion
Method: EPA 6010B

Project: 3790 Hopyard Road, Pleasanton

Page 1 of 1

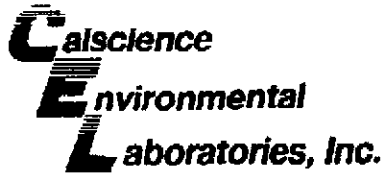
Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
SP-(A,B,C,D)	02-08-1480-1	08/28/02	Solid	08/30/02	08/30/02	020830L08

Parameter	Result	RL	DF	Qual	Units	
Lead	8.56	0.50	1		mg/kg	
Method Blank		0.07-01-002-3,584		N/A	Solid	
					08/30/02	08/30/02
						020830L08

Parameter	Result	RL	DF	Qual	Units
Lead	ND	0.500	1		mg/kg

RL - Reporting Limit DF - Dilution Factor Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501



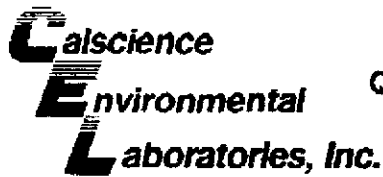
Quality Control - Spike/Spike Duplicate

Kiff Analytical	Date Received:	08/30/02
720 Olive Drive, Suite D1	Work Order No:	02-08-1480
Davis, CA 95616-4740	Preparation:	Total Digestion
	Method:	EPA 6010B

Project: 3790 Hopyard Road, Pleasanton

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
02-08-1478-1	Solid	ICP-3300	08/30/02	08/03/02	020830506

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Lead	91	85	75-125	6	0-20	



Quality Control - Laboratory Control Sample

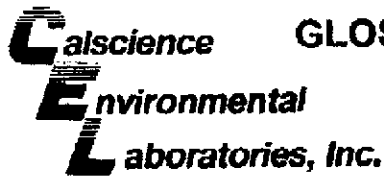
Kiff Analytical
720 Olive Drive, Suite D1
Davis, CA 95616-4740

Date Received: 08/30/02
Work Order No: 02-08-1480
Preparation: Total Digestion
Method: EPA 6010B

Project: 3790 Hopyard Road, Pleasanton

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
097-01-002-3.594	Solid	ICP 3300	09/03/02	0208304-06	020830E06

Parameter	Conc Added	Conc Recovered	%Rec	%Rec Cl	Qualifiers
Lead	50.0	51.9	104	80-120	



GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 02-08-1480

<u>Qualifier</u>	<u>Definition</u>
ND	Not detected at indicated reporting limit.

A handwritten signature in black ink, appearing to be "M. Williams", is located at the bottom left of the page.



720 Olive Drive, Suite D
 Davis, CA 95616
 Lab: 530.297.4800
 Fax: 530.297.4803

Cal Science Environmental
 7440 Lincoln Way
 Garden Grove, CA 92841
 714-895-5494

Lab No. **1480** Page 1 of 1

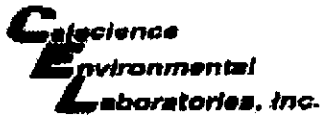
Project Contact (Hardcopy or PDF to): **Joel Kiff** EDF Report? Yes No Chain-of-Custody Record and Analysis Request

Company/Address: **Kiff Analytical, LLC** Recommended but not mandatory to complete this section:
 Phone No.: FAX No.: Global ID:
 Project Number: **244-0497** P.O. No.: **28291** EDF Deliverable to (Email Address):
 Project Name: **3790 Hopyard Road, Pleasanton** E-mail address: **inbox@kiffanalytical.com**

Sample Designation	Sampling		Container				Preservative				Matrix		TTL Lead	STLC Lead if TTL <=> 50 MG/KG	ORGANIC Lead if TTL <=> 13 MG/KG	TCLP Lead if STLC <=> 5.0 MG/L	Date due:	For Lab Use Only
	Date	Time	Glass Jar	Poly	Amber	HCl	HNO3	ICE	NONE	WATER	SOIL							
SP-(A,B,C,D)	8/26/02	1:00	1					X				X	X	X	X		September 12, 2002	

Relinquished by: *[Signature]* KIFF ANALYTICAL Date: **08/24/02** Time: **15:15** Received by: _____ Remarks: **Return Shipped Coolers**
 Relinquished by: _____ Date: **08/30/02** Time: **1300** Received by: *[Signature]* SAP#: **135784**

SEP-05-2002 12:14 CALSCIENCE 714 894 7501 P.06/07



WORK ORDER #: 02-08-1480

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: KIFF

DATE: 08/30/02

TEMPERATURE - SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- Chilled, cooler with temperature blank provided.
- Chilled, cooler without temperature blank.
- Chilled and placed in cooler with wet ice.
- Ambient and placed in cooler with wet ice.
- Ambient temperature.
- °C Temperature blank.

LABORATORY (Other than CalScience Courier):

- 3 °C Temperature blank.
- °C IR thermometer.
- Ambient temperature.

Initial: NC

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: No (Not Intact): _____ Not Applicable (N/A): _____
 Initial: NC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with custody papers.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct containers for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper preservation noted on sample label(s).....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VOA vial(s) free of headspace.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initial: NC

COMMENTS:

SHELL Chain Of Custody Record

720 Olive Drive, Suite D
Davis, CA 95616

(530) 297-4800 (530) 297-4803 fax

Shell Project Manager to be Invoiced:

~~SCIENTIFIC ANALYSIS~~ ~~TECHNICAL SERVICES~~ ~~ENVIRONMENTAL~~
Karek Petryna
Tim Dary

28291

INCIDENT NUMBER (SEE ONLY)

9 8 9 9 5 8 4 2

LABORATORY NUMBER (SEE ONLY)

1 3 5 7 8 4

DATE: 8/26

PAGE: 1 of 1

SAMPLING COMPANY: Cambria Environmental Technology		LOG CODE: CETO	SITE ADDRESS (Street and City): 3790 Hopyard Road, Pleasanton		GLOBAL ID NO.: T0600101257
ADDRESS: 1144-65TH Street, Oakland, CA 94608		EDF DELIVERABLE TO (Responsible Party or Designee): shelloaklandedf@cambria-env.com		PHONE NO.: 570 420 3334	E-MAIL: sd@cia-cambria.com
PROJECT CONTACT (Hardcopy or PDF Report to): Jacquelyn Jones		SAMPLER NAME(S) (Print): Jason K. Gerke Stu Dehne		CONSULTANT PROJECT NO.: 244-0497	
TELEPHONE: 510-420-3316	FAX: 510-420-8170	E-MAIL: jones@cambria-env.com			

TURNAROUND TIME (BUSINESS DAYS):
 10 DAYS 5 DAYS 72 HOURS 48 HOURS 24 HOURS LESS THAN 24 HOURS

LA - RWQCB REPORT FORMAT UST AGENCY: _____

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED

Forward to Tim Dary @ Shell

cc lab report to: jgerke@cambria-env.com

REQUESTED ANALYSIS												FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes						
TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8260B)	EPA 5035 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)		Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (48-Z8)	TPH - Diesel, Extractable (8015m)	MTBE (8260B) Confirmation, See Note
																		TEMPERATURE ON RECEIPT °F <i>OK 10/20/05</i>

Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	EDB & 1,2-DCA (8260B)	EPA 5035 Extraction for Volatiles	VOCs Halogenated/Aromatic (8021B)	TRPH (418.1)	Vapor VOCs BTEX / MTBE (TO-15)	Vapor VOCs Full List (TO-15)	Vapor TPH (ASTM 3416m)	Vapor Fixed Gases (ASTM D1946)	Test for Disposal (48-Z8)	TPH - Diesel, Extractable (8015m)	MTBE (8260B) Confirmation, See Note	TEMPERATURE ON RECEIPT °F	
	DATE	TIME																						
<i>SP-(A, B, C, D)</i>	<i>8/26</i>	<i>1:00</i>	<i>Soil</i>	<i>4</i>																				<i>OK 10/20/05</i>
<i>1</i>																								
<i>please composite</i>																								

Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>STEP LOCATION 6266 Halls St</i>	Date: <i>8/26/02</i>	Time: <i>6:00</i>
Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Date:	Time:
Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>John Cutler Kiff Analytical</i>	Date: <i>082802</i>	Time: <i>1:55</i>

DISTRIBUTION: White with final report, Green to File, Yellow and Pink to Client.

28291

ISSUED DATE: 05/23/97
CANCELS ISSUE: 03/05/97
ISSUED BY: RLG

**MATERIAL: MINIMUM SOIL ANALYSIS FOR UST SOIL WITH
GASOLINE OR DIESEL CONTAMINATION**

USE FOR ARIZONA , CALIFORNIA AND NEVADA WASTE ONLY!!!

NOTE: ANALYSES ARE BASED ON CHARACTERIZATION MINIMUM. YOU MUST BE SURE THAT THE FACILITY WILL TAKE THE FOLLOWING AS ACCEPTANCE. FURTHER ANALYSIS MAY BE REQUIRED FOR CHARACTERIZATION UPON REVIEW BY THE WASTE TEAM MEMBER OR TO MEET DISPOSAL SITE REQUIREMENTS. IF THE MATERIAL IS RETURNED TO CONSULTANT, COPIES OF ALL TRANSPORTATION DOCUMENTS MUST BE SENT TO THE WASTE DISPOSAL COORDINATOR FOR RECORDING WHEN PROJECT IS COMPLETE.

MINIMUM REQUIRED TESTING

Note: If material is to be sent to a BFI facility EPA METHOD 8010 must be run IN ADDITION to the following analysis prior to requesting profile approval:

**TPH = TOTAL PETROLEUM HYDROCARBONS, DHS GC-FID MOD 8015
GASOLINE OR DIESEL AS REQUIRED.**

BTXE = EPA 8020 + MTBE

**CAM METALS = TTLC LEAD, STLC LEAD IF TTLC => 50 MG/KG AND/OR
ORGANIC LEAD IF TTLC => 13 MG/KG**

**AQUATIC BIOASSAY (FISH TOX) IS ONLY TO BE RUN ON SAMPLES WITH
GREATER THAN 5000 PPM TPH. COMPOSITE A MAXIMUM OF 4 SAMPLES.**

**AQUATIC BIOASSAY (FISH TOX) = PART 800 OF "STANDARD METHODS FOR
THE EXAMINATION OF WATER AND WASTEWATER (15TH EDITION)"**

LABORATORY INSTRUCTIONS (MINIMUM GUIDELINES ONLY)

- 8015/8020 TO BE BILLED AS "COMBO" WITHOUT EXCEPTION
- TPH REQUIRED FOR ALL SAMPLES.
- ALL OTHER TESTS REQUIRED TO BE RUN ON COMPOSITE(S). MAXIMUM 4 SAMPLES PER COMPOSITE.
- STLC REQUIRED FOR METALS WITH TTLC VALUE 10 X STLC MAXIMUM.
- ORGANIC ANALYSIS REQUIRED FOR TTLC LEAD OF 13 MG/KG OR GREATER.
- LABORATORY IS TO SUPPLY QA/QC INFORMATION WITH ALL ANALYTICAL REPORTS.
- MAIL OR FAX ALL ANALYSIS TO PERSON REQUESTING ANALYSIS.

PROCEDURE ORIGINAL DATE: 07/10/90
PROCEDURE REVISED DATE: 03/05/97

ATTACHMENT I

Soil Disposal Confirmation

Disposal Confirmation

Request for Transportation Received: 09/18/2002

Consultant Information

Company: Cambria Environmental
Contact: Dalie, Stewart
Phone: 510-420-3320
Fax: 510-420-6649

Site Information

Station #: N/A
Street Address: 3790 Hopyard Rd.
City, State, ZIP: Pleasanton, CA 94566

Customer: Shell Oil Company RESA-0023-LDC
RIPR #: 15452
SAP # / Location: 135784
Incident #: 98995842
Location / WIC #: 2046138-0501
Environmental Engineer: Petryna, Karen E.

Material Description: Soil Cuttings
Estimated Quantity: 3 Yards
Service Requested Date: 09/30/2002

Disposal Facility: Allied-BFI
Contact: Griffith, Joe
Phone: 800-204-4242
Approval #: 2407
Date of Disposal: 10/01/2002
Actual Tonnage: 5 Yards

Transporter: Manley & Sons Trucking, Inc.
Contact: Glenell Forbes
Phone: 916 381-6864
Fax: 916 381-1573
Invoice: 50304A
Date of Invoice: 10/09/2002