

C A M B R I A

Alameda County September 26, 2002

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

OCT 01 2002

Environmental Health

Re: **Tank Backfill Well Installation Report
and Investigation Work Plan Addendum**
Shell-branded Service Station
350 Grand Avenue
Oakland, California
Incident # 98995755
Cambria Project #244-0715



Dear Mr. Hwang:

Cambria Environmental Technology, Inc. (Cambria) is submitting this *Tank Backfill Well Installation Report and Investigation Work Plan Addendum* on behalf of Equilon Enterprises LLC dba Shell Oil Products US. Cambria installed two tank backfill wells at the site on July 10, 2002, in accordance with our December 20, 2001 *Subsurface Investigation Work Plan*. In a March 29, 2002 letter, the Alameda County Health Care Services Agency (ACHCSA) requested an addendum to our scope of work to include utility line sampling, and Cambria submitted a May 17, 2002 *Agency Response*. In a July 9, 2002 correspondence, the ACHCSA requested an addendum to the scope of work to include an additional boring downgradient of the underground storage tanks (USTs) and sampling along the water line by boring HP-1 to delineate the plume at the site. Presented below are summaries of the site background, tank backfill well installation procedures and our proposed scope of work.

SITE SUMMARY

Oakland, CA
San Ramon, CA
Sonoma, CA

**Cambria
Environmental
Technology, Inc.**

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

Site Description: The site is an active Shell-branded Service Station, located at the northeast corner of the intersection of Grand Avenue and Perkins Street in Oakland, California (Figure 1). Lakeside Park is located at the southwest corner of this intersection. The area surrounding the site consists of mixed commercial and residential properties.

Soil Lithology: The site is underlain by silty and sandy clays to an explored depth of 20 feet below grade (fbg).

Groundwater Flow Direction and Depth: Groundwater generally flows in a southerly direction, as illustrated by the rose diagram shown on Figure 2. Depth to water has ranged historically between 7 and 15 fbg.

1990 Soil Borings: On May 11, 1990, GeoStrategies Inc. of Hayward, California (GSI) drilled five exploratory soil borings with a hollow-stem auger drilling rig. The highest hydrocarbon concentration in soil was in boring S-A, located at the southwest corner of the property in the vicinity of the gasoline USTs. Levels detected at a depth of 9.5 fbg in this area were 2,900 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPHg), 2,400 ppm total petroleum hydrocarbons as diesel (TPHd), and 13 ppm benzene.

1991 Monitoring Well Installation: On January 7, 1991, GSI installed three monitoring wells (S-1, S-2, and S-3) at the site (Figure 2). The highest hydrocarbon concentrations in soil and groundwater were in well S-2, located at the southwest corner of the property in the vicinity of the gasoline USTs. Detected levels were 440 ppm TPHg, 360 ppm TPHd, and 4.5 ppm benzene in soil at 8.5 fbg; and 2,500 parts per billion (ppb) TPHg, 1,200 ppb TPHd, and 550 ppb benzene in groundwater. No TPHg, TPHd, or benzene was detected in the groundwater sample from well S-1.

1993 Hydropunch Borings: On January 27, 1993, GSI installed three hydropunch borings off site (Figure 2). The highest hydrocarbon concentrations were detected in boring HP-1, located crossgradient of the USTs. Maximum concentrations in that boring were 1,500 ppm TPHg, 18 ppm TPHd, and 0.11 ppm benzene in soil at 6.5 fbg and 22,000 ppb TPHg, 14,000 ppb TPHd, and 2,500 ppb benzene in groundwater. TPHg and benzene were not detected in soil and groundwater samples from borings HP-2 and HP-3, located downgradient of the USTs.

1996 Tank Removal: On April 22, 1996, Weiss Associates of Emeryville, California (WA) observed the removal of three 10,000-gallon gasoline USTs and one 10,000-gallon diesel UST and collected soil samples. Up to 4,800 ppm TPHg, 2,800 ppm TPHd, and 22 ppm benzene were detected in samples collected from the UST excavation, product piping trenches, and beneath the product dispensers.

1998 Potential Receptor Survey: In April 1998, Cambria identified wells and surface water bodies within a ½-mile radius of the site. Three water producing wells are located between 2,640 feet and 3,960 feet crossgradient of the site. Lake Merritt is located approximately 900 feet downgradient of the site. The potential receptor survey results were presented to the ACHCSA in Cambria's May 31, 1998 *MTBE Investigation Report*.

1998 Geoprobe Well Installation: On April 16, 1998, Cambria installed two ¾-inch diameter pre-packed wells (S-4 and S-5) within the Grand Avenue right-of-way, downgradient of the site. No TPHg, benzene, toluene, ethylbenzene, or xylenes (BTEX), or MTBE were detected in soil or groundwater in the borings.


1999 Geoprobe Boring Installation: In March 1999, Cambria installed three Geoprobe borings to evaluate whether utility conduit trenches serve as preferential pathways for the migration of impacted groundwater. Two borings (HP-4 and HP-5) were advanced within the sanitary sewer conduit trench along the north sidewalk on Grand Ave, and the third boring (HP-6) was advanced within Perkins Street. The maximum TPHg concentration detected in soil was 408 ppm in soil sample HP-4-10. The maximum MTBE concentration reported (by EPA Method 8020) in soil was 2.52 ppm in soil sample HP-4-10. Grab groundwater samples collected from HP-4 contained 100,000 ppb TPHg, 83,000 ppb TPHd, and 2,000 ppb MTBE (by EPA Method 8020). Grab groundwater samples from HP-5, near the diesel UST complex, contained 160 ppb TPHg. TPHg, BTEX, and MTBE were below detection limits in grab groundwater samples from HP-5 and HP-6.

2001 Dual-Phase Vapor Extraction (DVE) Pilot Test: In June 2001, Cambria conducted an 8-hour DVE pilot test on groundwater monitoring well S-2. DVE is the process of applying high vacuum through an airtight well seal to simultaneously extract soil vapors from the vadose zone and enhance groundwater extraction from the saturated zone. Approximately 50 gallons of groundwater were extracted during the 8-hour test. This data is consistent with the low permeability soil (sandy silt and silt) encountered at this site. Estimated mass removal through groundwater extraction of TPHg, benzene and MTBE was 0.008 pounds, 0.0004 pounds and 0.009 pounds, respectively. Estimated mass removal through vapor extraction of TPHg, benzene and MTBE was 2.44 pounds, 0.002 pounds and 0.005 pounds, respectively. Based on this data, DVE from monitoring well S-2 does not appear to effectively recover hydrocarbons and MTBE from the subsurface.

Groundwater Monitoring: Groundwater monitoring has been conducted at the site since well installation in 1991. Maximum TPHg, TPHd, benzene and MTBE concentrations of 230 ppb, 2,000 ppb, 81.1 ppb and 140 ppb, respectively, have been reported in well S-1. Groundwater samples collected from well S-2 have contained up to 120,000 ppb TPHg, 31,000 ppb TPHd, 10,000 ppb benzene, and 30,200 ppb MTBE. Maximum TPHg, TPHd, benzene and MTBE concentrations reported in groundwater samples collected from upgradient well S-3 are 656 ppb, 290 ppb, 59 ppb and 120 ppb, respectively. No TPHg, benzene or MTBE has been detected in downgradient well S-4, except 0.882 ppb benzene in January 1999 and 8.27 ppb MTBE by EPA Method 8020 in July 1999. Up to 356 ppb TPHd has been reported in well S-4. No TPHg,

benzene or MTBE has been detected in well S-5, except for 5.95 ppb MTBE in July 1999. Up to 1,200 ppb TPHd has been reported in well S-5.

TANK BACKFILL WELL INSTALLATION PROCEDURES



Since previous groundwater monitoring results at the site indicate that the highest hydrocarbon and MTBE concentrations are located in the vicinity of the USTs, Cambria installed two tank backfill wells at the site to better define the UST area and to provide a possible remediation tool for both groundwater and vapor extraction. The wells were installed in the pea gravel of the tank pit, and therefore soil samples were not collected. The proposed location of well T-1 was in the southeast corner of the tank pit. Because the southeast corner of the tank pit extends less than two feet east and south of the eastern most UST, well T-1 was installed in the northwest corner of the tank pit instead. Well T-2 was installed in the southwest corner of the tank pit.

Cambria also proposed to install one soil boring downgradient of the fuel dispensers. Three attempts were made to hand clear the boring; however, backfill sand was encountered in two of the boring attempts at 1.5 fbg, likely related to UST piping, and in a third boring, pea gravel was encountered at 3.5 fbg., likely related to the former diesel UST. Due to time constraints in the field, completion of this boring was postponed.


Tank backfill well locations are shown on Figure 2. Specific procedures for this investigation are summarized below. The certified laboratory report for the pea gravel stockpile and disposal confirmation are presented as Attachments A and B, respectively. Well construction details are presented as Attachment C and copies of well permits are included as Attachment D. Survey results are included as Attachment E.

Drilling Date: July 10 , 2002.

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

Personnel Present: Jason Gerke, Staff Geologist, Cambria.
Bobby Deason, Gregg.
Vincent Patry, Gregg.
Ed Daniels, Phillip Services.

Permits: Alameda County Public Works Agency Drilling Permits
W02-0661 and W02-0662 (Attachment D).

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- Number of Wells:*** Two: T-1 and T-2 (Figure 2).
- Drilling Method:*** The tank backfill wells were installed using a vacuum truck to advance a temporary 12-inch diameter guide casing. Tank backfill material consisting of pea gravel was vacuumed from the bottom of the guide casing as it was pushed downward. Once the casing reached the bottom of the tank pit, a 4-inch diameter PVC well casing was lowered into the guide casing. The guide casing was then removed, and the pea gravel of the tank pit collapsed around the casing to provide a filter pack.
- Well Depths:*** T-1 was installed to 10 fbg, and T-2 was installed to 9.0 fbg (Attachment C).
- Sediment Lithology:*** Both wells were installed in the pea gravel of the UST pit (Attachment C).
- Groundwater Depths:*** Groundwater was first encountered at approximately 7.8 fbg in both borings during well installation.
- Well Materials:*** Both groundwater monitoring wells were constructed of 4-inch diameter PVC. Both wells were screened with 8 feet of 0.020-inch machined slots. The pea gravel was used as a filter pack. A flush-mounted, traffic-rated well box was installed to protect and complete each well to grade (Attachment C).
- Screened Interval:*** T-1: 2.0 fbg to 10.0 fbg; T-2 to 1.0 fbg to 9.0 fbg (Attachment C).
- Well Elevation Survey:*** The top of casing elevations and latitude/longitude of the wells were surveyed by Virgil Chavez Land Surveying of Vallejo, California on August 1, 2002 (Attachment E).
- Well Sampling:*** Blaine Tech Services, Inc. of San Jose, California (Blaine) sampled both new wells on July 16, 2002 during the third quarter 2002 sampling event. Results will be presented the forthcoming third quarter 2002 monitoring report.
- Chemical Analyses:*** To characterize removed pea gravel from the tank pit for disposal, four brass tubes of pea gravel were collected, then composited and analyzed by a State-approved analytical

laboratory for TPHg, BTEX and MTBE by Method 8260B and for total threshold limit concentration lead (Attachment A).

Soil Handling:

Soil cuttings produced from the borings were stockpiled on the site. The cuttings were transported to Forward Landfill in Manteca, California for disposal on August 9, 2002. Disposal confirmation is included in Attachment B.

PROPOSED SCOPE OF WORK



As requested by the ACHCSA, in addition to the scope of work proposed in our December 20, 2001 *Subsurface Investigation Work Plan*, Cambria recommends the installation of three additional soil borings in the approximate locations shown on Figure 2. One soil boring will be installed within the northern sidewalk of Grand Avenue downgradient of the USTs at the site. Two soil borings will be installed adjacent to the water line beneath the east side of Perkins Street, one upgradient and one downgradient of previous boring HP-1. Cambria's scope of work for this investigation will include the following tasks:

Utility Location: Cambria will notify Underground Services Alert (USA) of our drilling activities, and USA will identify utilities in the site vicinity. In addition, Cambria will contract a private utility location contractor to identify utilities in the vicinity of the borings.

Site Health and Safety Plan: Cambria will prepare a comprehensive site safety plan to protect site workers. The plan will be reviewed and signed by each site worker and kept onsite during field activities.

Permits: Cambria will obtain the required boring installation and encroachment permits from the Alameda County Department of Public Works and the City of Oakland.

Soil Boring: Assuming the absence of subsurface and overhead obstructions, Cambria will use a direct-push drill rig to advance four soil borings in the approximate locations shown on Figure 2. The borings will be advanced to approximately 15 fbg. Each boring will be continuously cored for lithology. Soil samples will be collected at a minimum of 5-foot intervals and in the capillary fringe zone, and a grab groundwater sample will be collected at first encountered groundwater. All collected soil and grab groundwater samples will be transported to a State-approved analytical laboratory for chemical analysis. Upon completion of sampling, the borings will be backfilled with cement-grout to the surface and capped to match the existing grade. Cambria's standard field procedures are included as Attachment F.

Chemical Analysis: Collected soil and grab groundwater samples will be analyzed by a State-certified analytical laboratory for TPHg, BTEX, and MTBE.

Reporting: Upon receipt of analytical results, Cambria will prepare a report that, at a minimum, will contain:

- A summary of the site background and history;
- Descriptions of the drilling and sampling methods;
- Soil boring logs;
- Tabulated soil and grab groundwater analytical results;
- Analytical reports and chain-of-custody forms; and
- Cambria's conclusions and recommendations.



Schedule: Upon receiving written work plan approval, permits will be acquired and the field activities will be scheduled. An investigation report will be submitted approximately 60 days after completing the field activities.

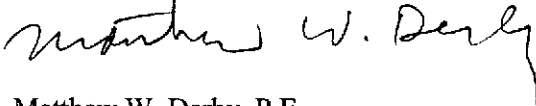
CLOSING

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

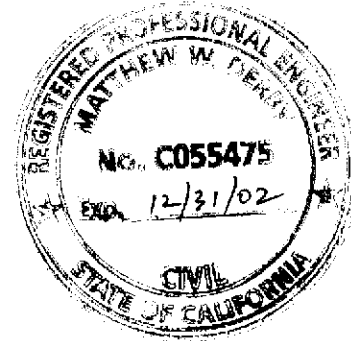
Sincerely,
Cambria Environmental Technology, Inc.



Jacquelyn L. Jones
Project Geologist



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



Figures: 1 - Vicinity/Area Well Survey Map
 2 - Proposed Soil Boring Location Map

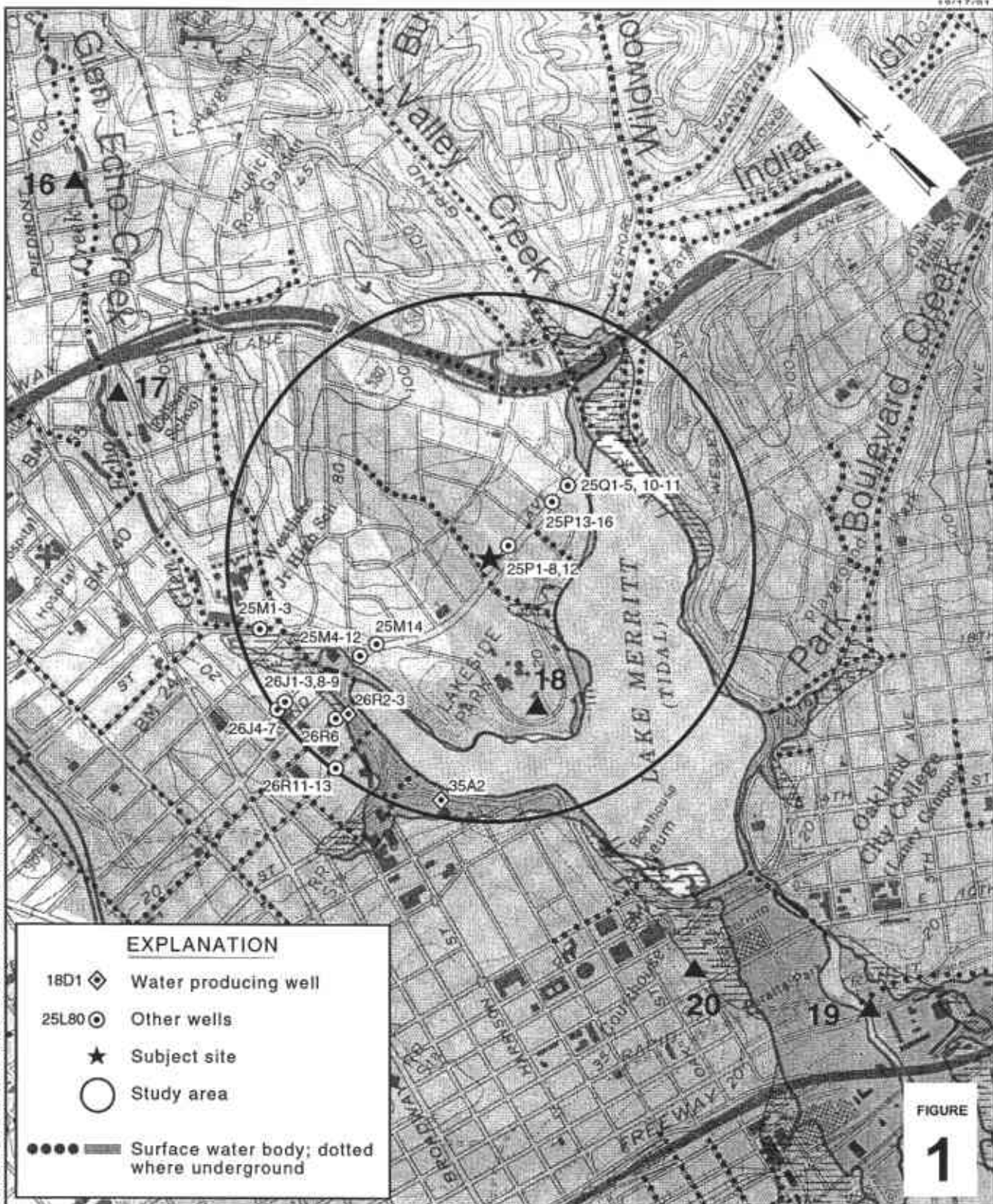
Attachments: A - Laboratory Analytical Report for Pea Gravel Stockpile
 B - Soil Disposal Confirmation
 C - Boring Logs and Well Completion Details
 D - Permits
 E - Wellhead Elevation Survey Results
 F - Standard Field Procedures for Soil Boring Installation

cc: Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, CA 91510-7869
 Gursharnjeet Cheema, 1060 St. Raphael Drive, Bay Point, CA 94565

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8/17/01



Shell-branded Service Station

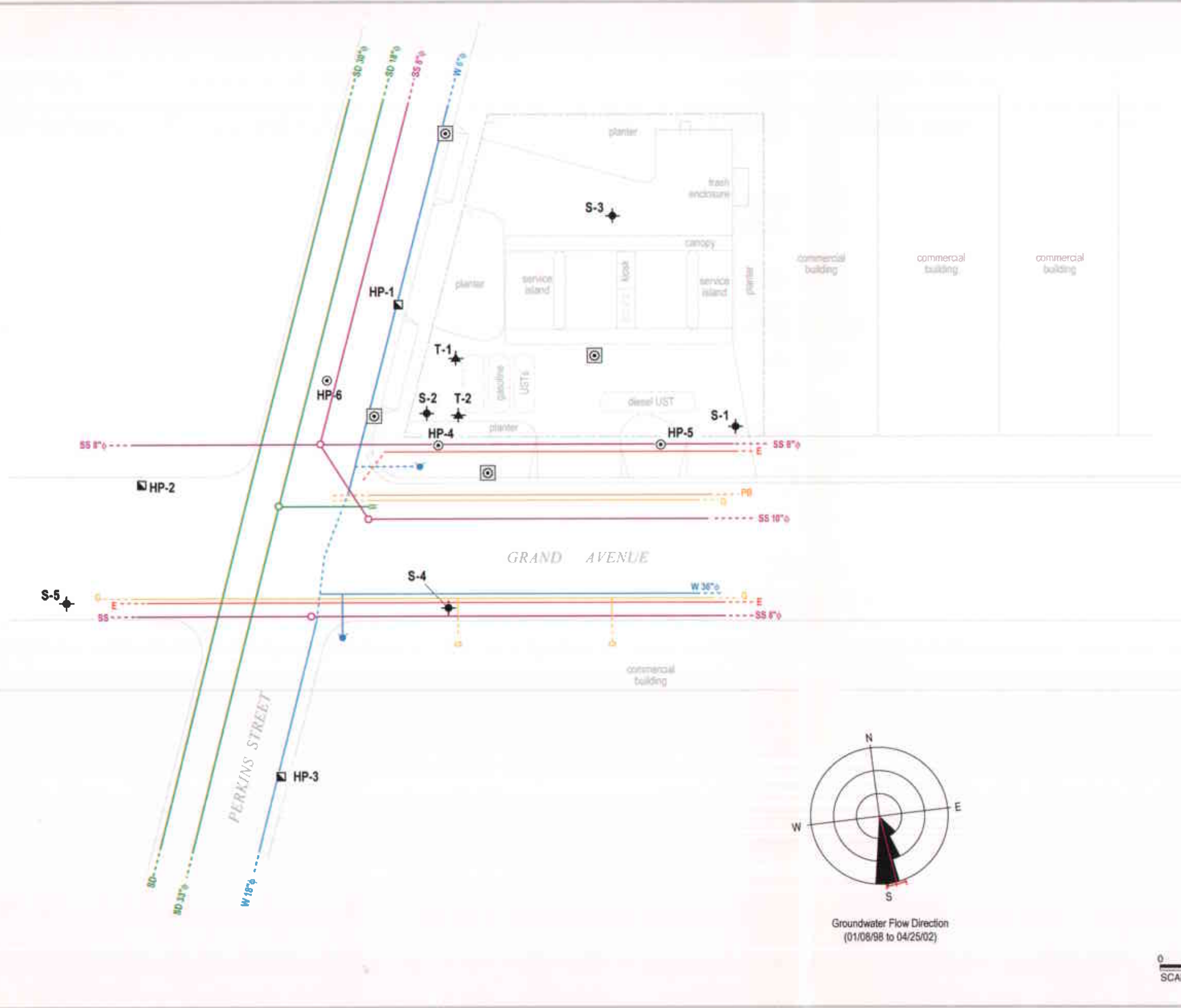
350 Grand Avenue
Oakland, California
Incident #98995755



C A M B R I A

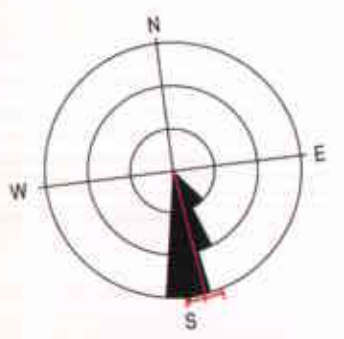
Vicinity / Area Well Survey Map

G:\OAKLANDS\GRAND\FIGURES\SITEPLAN-7-02.A1



EXPLANATION	
	Proposed soil boring location
	Monitoring well location
	Tank backfill well location
	Hydropunch boring location (1993)
	Soil boring location (1999)
	Electric utility line
	Water main utility line
	Gas utility line
	Sanitary sewer utility line
	Storm drain utility line
	Pacific Bell utility line
	Storm drain inlet
	Manhole
	Fire hydrant

NOTE: Utilities lines are dashed where inferred.



Groundwater Flow Direction
(01/08/98 to 04/25/02)



SCALE: 1:50

Proposed Soil Boring Location Map



Shell-branded Service Station
 350 Grand Avenue
 Oakland, California
 Incident #98995755

FIGURE 2

ATTACHMENT A

Laboratory Analytical Reports for Pea Gravel Stockpile



Report Number : 27440

Date : 7/15/2002

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

Subject : 5 Soil Samples
Project Name : 350 GRAND AVENUE - OAKLAND
Project Number : 244-0715
P.O. Number : SAP# 135698

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 : 27440

Date : 7/15/2002

Project Name : 350 GRAND AVENUE - OAKLAND

Project Number : 244-0715

Sample : SP-1-A Matrix : Soil Lab Number : 27440-01
Sample Date :7/10/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	7/13/2002
4-Bromofluorobenzene (Surr)	104		% Recovery	EPA 8260B	7/13/2002

Sample : SP-1-B Matrix : Soil Lab Number : 27440-02
Sample Date :7/10/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	7/13/2002
4-Bromofluorobenzene (Surr)	107		% Recovery	EPA 8260B	7/13/2002

Sample : SP-1-C Matrix : Soil Lab Number : 27440-03
Sample Date :7/10/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	7/13/2002
4-Bromofluorobenzene (Surr)	105		% Recovery	EPA 8260B	7/13/2002

Approved By:  Joel Kiff



Report Number : 27440

Date : 7/15/2002

Project Name : 350 GRAND AVENUE - OAKLAND

Project Number : 244-0715

Sample : SP-1-D

Matrix : Soil

Lab Number : 27440-04

Sample Date :7/10/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	7/12/2002
4-Bromofluorobenzene (Surr)	96.5		% Recovery	EPA 8260B	7/12/2002

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

Matrix : Soil

Lab Number : 27440-05

Sample Date :7/10/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.005	0.005	mg/Kg	EPA 8260B	7/12/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	7/12/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	7/12/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	7/12/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	7/12/2002
Toluene - d8 (Surr)	99.7		% Recovery	EPA 8260B	7/12/2002
4-Bromofluorobenzene (Surr)	99.8		% Recovery	EPA 8260B	7/12/2002

Approved By:  Joel Kiff

Report Number : 27440

Date : 7/15/2002

QC Report : Method Blank Data

Project Name : **350 GRAND AVENUE - OAKLAND**

Project Number : **244-0715**

<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	7/11/2002
Toluene	< 0.005	0.005	mg/Kg	EPA 8260B	7/11/2002
Ethylbenzene	< 0.005	0.005	mg/Kg	EPA 8260B	7/11/2002
Total Xylenes	< 0.005	0.005	mg/Kg	EPA 8260B	7/11/2002
Methyl-t-butyl ether (MTBE)	< 0.5	0.5	mg/Kg	EPA 8260B	7/11/2002
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	7/11/2002
Toluene - dB (Surr)	103		%	EPA 8260B	7/11/2002
4-Bromofluorobenzene (Surr)	95.9		%	EPA 8260B	7/11/2002

<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 : 27440

Date : 7/15/2002

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : 350 GRAND AVENUE -

Project Number : 244-0715

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	27386-12	<0.0050	0.0383	0.0369	0.0358	0.0280	mg/Kg	EPA 8260B	7/10/02	93.5	75.8	21.0	70-130	25
Toluene	27386-12	<0.0050	0.0383	0.0369	0.0367	0.0285	mg/Kg	EPA 8260B	7/10/02	95.7	77.2	21.4	70-130	25
Tert-Butanol	27386-12	<0.0050	0.192	0.184	0.161	0.154	mg/Kg	EPA 8260B	7/10/02	84.1	83.5	0.794	70-130	25
Methyl-t-Butyl Ether	27386-12	<0.0050	0.0383	0.0369	0.0363	0.0337	mg/Kg	EPA 8260B	7/10/02	94.7	91.4	3.54	70-130	25

Approved By:  Joel Kiff

Report Number : 27440

Date : 7/15/2002

QC Report : Laboratory Control Sample (LCS)

Project Name : **350 GRAND AVENUE -**

Project Number : **244-0715**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0400	mg/Kg	EPA 8260B	7/10/02	96.4	70-130
Toluene	0.0400	mg/Kg	EPA 8260B	7/10/02	99.9	70-130
Tert-Butanol	0.200	mg/Kg	EPA 8260B	7/10/02	101	70-130
Methyl-t-Butyl Ether	0.0400	mg/Kg	EPA 8260B	7/10/02	98.5	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:
02070446

Report To: KIFF Analytical Joel Kiff 720 Olive Drive Suite D Davis CA 95616- ph: (530) 297-4800 fax:	Project Name: SAP#135698 Site: 350 Grand Ave. Site Address: 350 Grand Avenue Oakland CA PO Number: State: California State Cert. No.: 1903 Date Reported: 7/22/02
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This Report Contains A Total Of 7 Pages

Excluding This Page

And

Chain Of Custody

7/22/02

Date



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

Case Narrative for:
Shell Oil Products US

Certificate of Analysis Number:
02070446

Report To: KIFF Analytical Joel Kiff 720 Olive Drive Suite D Davis CA 95616- ph: (530) 297-4800 fax:	Project Name: SAP#135698 Site: 350 Grand Ave. Site Address: 350 Grand Avenue Oakland CA PO Number: State: California State Cert. No.: 1903 Date Reported: 7/22/02
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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.


Bernadette Fini
Customer Service Manager

7/22/02

Date



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

Shell Oil Products US

Certificate of Analysis Number:
02070446

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#135698
Site: 350 Grand Ave.
Site Address: 350 Grand Avenue
 Oakland CA
PQ Number:
State: California
State Cert. No.: 1903
Date Reported: 7/22/02

Fax To:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
SP-1-A,B,C,D	02070446-01	Soil	7/10/02 3:00:00 PM	7/15/02 10:00:00 AM		<input type="checkbox"/>

Bernadette C. Fini

Bernadette Fini
 Customer Service Manager

7/22/02
 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: 07/10/2002 15:00 SPL Sample ID: 02070446-01

Site: 350 Grand Ave.

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
METALS BY METHOD 6010B, TOTAL			MCL	SW6010B	Units: mg/Kg		
Lead	1.84	0.5	1		07/21/02 6:17	NS	1226821

Prep Method	Prep Date	Prep Initials
SW3050B	07/17/2002 17:00	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

7/22/02 9:20:52 AM

Quality Control Documentation



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

Quality Control Report

Shell Oil Products US

SAP#135698

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

WorkOrder: 02070446
 Lab Batch ID: 21301-T

Method Blank

Samples in Analytical Batch:

RunID: TJAT_020720C-1226808 Units: mg/Kg
 Analysis Date: 07/21/2002 4:46 Analyst: NS
 Preparation Date: 07/17/2002 17:00 Prep By: MME Method SW3050B

Lab Sample ID 02070446-01A
Client Sample ID SP-1-A,B,C,D

Analyte	Result	Rep Limit
Lead	ND	0.5

Laboratory Control Sample (LCS)

RunID: TJAT_020720C-1226809 Units: mg/L
 Analysis Date: 07/21/2002 4:52 Analyst: NS
 Preparation Date: 07/17/2002 17:00 Prep By: MME Method SW3050B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Lead	1	0.982	98	80	120

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

Sample Spiked: 02070538-01
 RunID: TJAT_020720C-1226811 Units: mg/Kg
 Analysis Date: 07/21/2002 5:06 Analyst: NS
 Preparation Date: 07/17/2002 17:00 Prep By: MME Method SW3050B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Lead	5.2	100	101	95.8	100	101	96.0	0.213	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:	02070446	Received By:	DS
Date and Time Received:	7/15/02 10:00:00 AM	Carrier name:	FedEx
Temperature:	4	Chilled by:	Water Ice

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

SPL Representative:

Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:

02070446



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

Southern Petroleum
 Laboratory
 Houston, Texas

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:
 Sampling Company Log Code:

Phone No.: FAX No.: Global ID:
 Project Number: **244-0715** P.O. No.: **27440** EDF Deliverable to (Email Address):

Project Name: **350 GRAND AVENUE - OAKLAND** 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	Aquatic Bioassay (fish toxicity) if TPH > 5000 ppm (Kiff Analytical will notify. Fish Tox part 800 of Standard Methods, 15th Edition)	Date due:	For Lab Use Only
	Date	Time	Glass Jar	Poly	Amber	HCl	HNO3	ICE	NONE	WATER	SOIL								
SP-1-A,B,C,D	7/10/02	1500	1					X			X	X	X	X			X	DUE July 25, 2002	

Relinquished by: <i>Kiff Analytical</i>	Date: <i>07/12/02</i>	Time: <i>1445</i>	Received by:	Remarks: Please return shipped coolers with temperature blanks. SAP# 135698 Bill to: Tim Dazey
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date: <i>7/13/02</i>	Time: <i>1000</i>	Received by Laboratory: <i>Darlene Stealy</i>	

829325563711
 3216 (CS) PO 40 BAF

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

27440

Tim Dazey

INCIDENT NUMBER (S&E ONLY)							
SAP or CRMT NUMBER (T'S CRMT)							
1	3	5	6	9	8		

DATE: July 10, 2002

PAGE: 1 of 1

SAMPLING COMPANY: Cambria Environmental Technology		LOG CODE: CETO	SITE ADDRESS (Street and City): 350 Grand Avenue - OAKLAND		GLOBAL ID NO.: T0600101255
ADDRESS: 1144-65TH Street, Oakland, CA 94608		EDF DELIVERABLE TO (Responsible Party or Designer):		PHONE NO.:	EMAIL:
PROJECT CONTACT (Hardcopy or PDF Report to): Jacquelyn Jones		SAMPLER NAME(S) (Print): Jason K. Gerke		CONSULTANT PROJECT NO.: 244-0715	
TELEPHONE: 510-420-3316	FAX: 510-420-9170	EMAIL: j.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

Composite SP-1-A through D

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

REQUESTED ANALYSIS

TPH - Gas, Purgeable	MTBE (8021B - 6ppb RL)	MTBE (8260B - 0.6ppb RL)	Oxygenates (S) by (8260B)	Ethanol (8280B)	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- 25)	TPH - Diesel, Extractable (8015m)	MTBE (8260B) Confirmation, See Note

FIELD NOTES:
Container/Preservative or PID Readings or Laboratory Notes

TEMPERATURE ON RECEIPT °C

Field Sample Identification	SAMPLING		MATRIX	NO. OF CONT.
	DATE	TIME		
SP-1-A, B, C, D	7/10/02	1500	Soil	4

-01-02-03-04-01

Relinquished by: (Signature) <i>Jason Dazey</i>	Received by: (Signature) <i>[Signature]</i> Sewer Location	Date: 7/10/02	Time: 1530
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) <i>[Signature]</i> Kiff Analytical	Date: 071102	Time: 1130

27440

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 \Rightarrow 50 MG/KG AND/OR
 ORGANIC LEAD IF TTLC \Rightarrow 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 B

Soil Disposal Confirmation



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

BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	T-1
JOB/SITE NAME	Oakland 350	DRILLING STARTED	10-Jul-02
LOCATION	350 Grand Avenue, Oakland, California	DRILLING COMPLETED	10-Jul-02
PROJECT NUMBER	244-0715	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	24.50 ft above msl
DRILLING METHOD	Vacuum	TOP OF CASING ELEVATION	24.14 ft above msl
BORING DIAMETER	12"	SCREENED INTERVAL	2 to 10 ft bgs
LOGGED BY	J. Gerke	DEPTH TO WATER (First Encountered)	7.8 ft (10-Jul-02)
REVIEWED BY	M. Derby, PE# 55475	DEPTH TO WATER (Static)	7.71 ft (16-Jul-02)
REMARKS	Located in northwest corner of tank pit.		

TPHg (mg/kg)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
				0			Concrete	1.0	<p>4" diam., Schedule 40 PVC</p> <p>4"-diam., 0.020" Slotted Schedule 40 PVC</p> <p>Bottom of Boring @ 10 ft</p>
				5			FILL: Pea Gravel.	10.5	
				10					

WELL LOG (BACKFILL WELL) S:\04794F-1\GINT\CAK350.GPJ_DEFAULT.GDT 8/21/02



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

BORING/WELL LOG

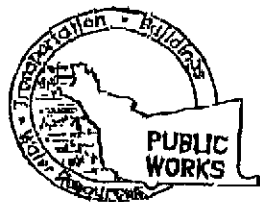
CLIENT NAME	Shell Oil Products US	BORING/WELL NAME	T-2
JOB/SITE NAME	Oakland 350	DRILLING STARTED	10-Jul-02
LOCATION	350 Grand Avenue, Oakland, California	DRILLING COMPLETED	10-Jul-02
PROJECT NUMBER	244-0715	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	24.02 ft above msl
DRILLING METHOD	Vacuum	TOP OF CASING ELEVATION	23.55 ft above msl
BORING DIAMETER	12"	SCREENED INTERVAL	1 to 9 ft bgs
LOGGED BY	J. Gerke	DEPTH TO WATER (First Encountered)	7.8 ft (10-Jul-02)
REVIEWED BY	M. Derby, PE# 55475	DEPTH TO WATER (Static)	7.15 ft (16-Jul-02)
REMARKS	Located in southwest corner of tank pit.		

TPHg (mg/kg)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
				5			Concrete FILL; Pea Gravel.	1.0	
								9.5	Bottom of Boring @ 9 ft

WELL LOG (BACKFILL WELL) G:\A794F-1\GINT\OAK350.GPJ DEFAULT.GDT 8/21/02

ATTACHMENT D

Permits



ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
394 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-6693 James Yee
FAX (510) 782-1939

APPLICANTS PLEASE ATTACH A SITE MAP FOR ALL DRILLING PERMIT APPLICATIONS
DESTRUCTION OF WELLS OVER 48 FEET REQUIRES A SEPARATE PERMIT APPLICATION

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 350 Grand Ave
Oakland

PERMIT NUMBER W02-0661
WELL NUMBER _____
APN _____

CLIENT Name Shell Oil Products US
Address P.O. Box 7867 Phone 559-643-9306
City Burbank, CA Zip 91505

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL

1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

APPLICANT Name Cambria Environmental
Address 1144-65th St. Phone 510-420-9170
City Oakland Zip 94608

B. WATER SUPPLY WELLS

1. Minimum surface seal thickness is two inches of cement grout placed by trowel.
2. Minimum seal depth is 30 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection		General	
Water Supply		Contamination	
Monitoring		Well Destruction	

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by trowel.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

PROPOSED WATER SUPPLY WELL USE

New Domestic		Replacement Domestic	
Municipal		Irrigation	
Industrial		Other	

D. GEOTECHNICAL

Backfill base hole by trowel with cement grout or cement grout/sand mixture. Upper two-thirds seal replaced in kind or with compacted cuttings.

DRILLING METHOD:

Mud Rotary		Air Rotary		Air Jet	
Cable		Other		or Direct Push	

E. CATHODIC

Fill hole anodic zone with concrete placed by trowel.

DRILLER'S NAME Gregg Drilling & Testing

DRILLER'S LICENSE NO. C57-485165

F. WELL DESTRUCTION

Send a map of work site. A separate permit is required for wells deeper than 45 feet.

WELL PROJECTS

Well Hole Diameter	<u>10</u> in.	Maximum Depth	<u>12</u> ft.
Casing Diameter	<u>7 1/2</u> in.	Owner's Well Number	<u>T-1</u>
Surface Seal Depth	<u>3</u> ft.		

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

GEOTECHNICAL PROJECTS

Number of Borings	_____	Maximum Depth	_____ ft.
Hole Diameter	_____ in.		

ESTIMATED STARTING DATE July 8 /02

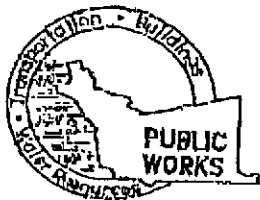
ESTIMATED COMPLETION DATE July 13 /02

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 72-68.

APPROVED _____ DATE 6-17-02

APPLICANT'S SIGNATURE Jason Gerke DATE 6/16/02

PLEASE PRINT NAME Jason Gerke Rev.3-04-02



ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 KILMURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-6683 James Yoo
FAX (510) 782-1939

APPLICANTS PLEASE ATTACH A SITE MAP FOR ALL DRILLING PERMIT APPLICATIONS
DESTRUCTION OF WELLS OVER 48 FEET REQUIRES A SEPARATE PERMIT APPLICATION

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT: 350 Grand Ave
Oakland

FOR OFFICE USE

PERMIT NUMBER W02-0662
WELL NUMBER _____
APN _____

CLIENT Name Shell Oil Products US
Address P.O. Box 7869 Phone 510-645-9306
City Burbank, CA Zip 91505

PERMIT CONDITIONS

Circled Permit Requirements Apply

APPLICANT Name Cambria Environmental
Address 1144-65th St. Phone 510-429-9470
City Oakland Zip 94608

A. GENERAL

1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

TYPE OF PROJECT

- | | | | |
|---------------------|-------------------------------------|----------------------------|--------------------------|
| Well Construction | | Geotechnical Investigation | |
| Hydrolic Production | <input type="checkbox"/> | General | <input type="checkbox"/> |
| Water Supply | <input type="checkbox"/> | Contamination | <input type="checkbox"/> |
| Monitoring | <input checked="" type="checkbox"/> | Well Degradation | <input type="checkbox"/> |

B. WATER SUPPLY WELLS

1. Minimum surface seal thickness is two inches of cement grout placed by trowel.
2. Minimum seal depth is 30 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

PROPOSED WATER SUPPLY WELL USE

- | | | | |
|--------------|--------------------------|----------------------|--------------------------|
| New Domestic | <input type="checkbox"/> | Replacement Domestic | <input type="checkbox"/> |
| Municipal | <input type="checkbox"/> | Irrigation | <input type="checkbox"/> |
| Industrial | <input type="checkbox"/> | Other | <input type="checkbox"/> |

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by trowel.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

DRILLING METHOD:

- | | | | | | |
|------------|--------------------------|------------|--------------------------|----------------|--------------------------|
| Mud Rotary | <input type="checkbox"/> | Air Rotary | <input type="checkbox"/> | Auger | <input type="checkbox"/> |
| Cable | <input type="checkbox"/> | Other | <input type="checkbox"/> | or Direct Push | <input type="checkbox"/> |

D. GEOTECHNICAL

Drill all bore holes by trowel with cement grout or cement grout/sand mixture. Upper two-thirds feet replead in kind or with compacted cuttings.

DRILLER'S NAME Gregg Drilling & Testing

E. CATHODIC

Fill hole anodic zone with concrete placed by trowel.

DRILLER'S LICENSE NO. C57-485165

F. WELL DESTRUCTION

Send a map of work site. A separate permit is required for wells deeper than 45 feet.

WELL PROJECTS

Drill Hole Diameter 10 in. Maximum Depth 12 ft.
Casing Diameter 4 in. Driller's Well Number F2
Surface Seal Depth 3 ft.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

GEOTECHNICAL PROJECTS

Number of Borings _____ Maximum Depth _____ ft.
Hole Diameter _____ in.

ESTIMATED STARTING DATE July 8/02
ESTIMATED COMPLETION DATE July 15/02

APPROVED: [Signature] DATE 6/27/02

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

APPLICANT'S SIGNATURE Jason Gerke DATE 6/6/02

PLEASE PRINT NAME Jason Gerke Rev.3-04-02

ATTACHMENT E

Well Elevation Survey Results

Virgil Chavez Land Surveying

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

August 1, 2002
Project No.: 1603-08

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

Subject: Monitoring Well Survey
Shell-Branded Service Station
350 Grand Avenue
Oakland, CA

Dear Jason:

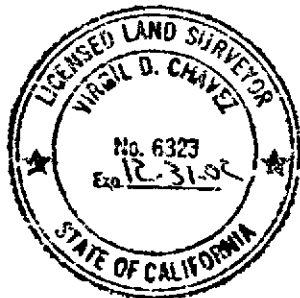
This is to confirm that we have proceeded at your request to survey the new UST pit monitoring wells located at the above referenced location. The survey was completed on July 29, 2002. The benchmark for this survey was a CALTRANS control station AJ-415 located at southwesterly corner of intersection of 5th and Oak Streets. The latitude, longitude and coordinates are for top of casings and are based on the California State Coordinate System, Zone III (NAD83).

Benchmark Elevation = 13.49 feet (NAVD 88).

<u>Latitude</u>	<u>Longitude</u>	<u>Northing</u>	<u>Easting</u>	<u>Elev.</u>	<u>Desc.</u>
37.8091931	-122.2558532	2121865.77	6054450.83	24.50	RIM T-1
				24.14	TOC T-1
				24.02	RIM T-2
37.8091229	-122.2558647	2121840.25	6054447.03	23.55	TOC T-2

Sincerely,

Virgil D. Chavez
Virgil D. Chavez, PLS 6323



ATTACHMENT F

Standard Field Procedures for Soil Boring Installation

CAMBRIA

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Cambria Environmental Technology's standard field methods for drilling and sampling soil borings. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water 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:

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

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. 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 beyond the bottom of the borehole. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

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 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.

CAMBRIA

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 photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

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 ground water 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 collected 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 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.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are 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. Disposal of the water is based on the analytic results for the well samples. 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.