



ENVIRONMENTAL  
PROTECTION

July 1, 1998

98 JUL -6 AM 9:10

Don Hwang  
Alameda County Department  
of Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Re: **Subsurface Investigation**  
Shell Service Station  
610 Market Street  
Oakland, California  
WIC #204-5508-5702  
Cambria Project #240-594-9

STID 4017

Dear Mr. Hwang:

Cambria Environmental Technology, Inc. (Cambria) is pleased to present the results of the subsurface investigation conducted on March 31, 1998 at the Shell-branded (Shell) site referenced above. The investigation objective was to determine the extent of hydrocarbons in soil and ground water beneath the site. The site background, investigation procedures, and investigation results are presented below.

## SITE BACKGROUND

**Site Description:** The site is an active Shell-branded service station located on Market Street between 6<sup>th</sup> and 7<sup>th</sup> Streets in Oakland, California in a primarily commercial area. A site plan is attached as Figure 1.

**Site Renovation:** ~~In August 1995~~, Weiss Associates (WA) of Emeryville, California collected soil samples beneath the gasoline dispensers and product piping locations during station renovation activities. Renovation activities included replacing the gasoline dispensers and product piping. ~~Up to 2,700 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPHg) and 0.70 ppm benzene were detected in soil samples collected from beneath the center dispenser island.~~ A total of about 48 cubic yards of soil were excavated and disposed of during the renovation activities. Approximately 33 cubic yards of soil were removed in association with the dispenser and piping replacement, and the remaining 15 cubic yards of hydrocarbon-bearing soil were overexcavated as directed by the Alameda County Department of Environmental Health (ACDEH).

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ENVIRONMENTAL  
TECHNOLOGY, INC.  
1144 65TH STREET,  
SUITE B  
OAKLAND,  
CA 94608  
PH: (510) 420-0700  
FAX: (510) 420-9170

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**Site Upgrade:** In March 1998, the site was upgraded by Paradiso Mechanical of San Leandro, California (Paradiso). Paradiso added secondary containment to the turbine sumps. Cambria inspected the turbine sumps and tank pit areas. No field indications of hydrocarbons, such as staining or odor, were observed during the site visit. Therefore, no sampling was performed at this site.

## INVESTIGATION PROCEDURES

~~Cambria installed three soil borings on the Shell property as outlined in WPA's July 19, 1996 Preliminary Site Assessment Work Plan, which was approved by the ACDEH in a letter dated July 30, 1996. Boring locations are shown in Figure 1. Cambria's standard field procedures for Geoprobe® sampling are included as Attachment A.~~

### Soil Borings

**Personnel Present:** Geologist Aubrey Cool and Environmental Scientist Brian Busch directed the field sampling, working under the supervision of California Registered Geologist Khaled B. Rahman.

**Permit:** Drilling permit #98WR133 was obtained from the Alameda County Public Works Agency. A copy of the permit is included as Attachment B.

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

~~Drilling Date: March 21, 1998~~

**Drilling Methods:** Geoprobe® (hydraulic push with roto-hammer).

**Number of Borings:** Three; SB-A, SB-B and SB-C.

**Boring Depths:** 15 to 26 ft. Boring logs are included as Attachment C.

**Subsurface Conditions:** The site is underlain primarily by silty sands to the total explored depth of 26 ft. The first water-bearing zone was encountered beneath the site at approximately 7 ft depth. Ground water beneath the site is not a known drinking water source.

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**Chemical Analyses:** A minimum of one soil sample and one grab ground water sample from each boring was selected for chemical analysis. The selected samples were analyzed for TPHg using modified EPA Method 8015, and benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl tert-butyl ether (MTBE) using EPA Method 8020. As requested in a February 18, 1998 letter from the ACDEH, ground water samples were also analyzed for MTBE using EPA Method 8260. Laboratory analytical results are summarized in Tables 1 and 2 and presented in Attachment D.

**Soil Physical Analyses:** One soil sample from soil boring SB-C at 3.0 ft depth was analyzed for particle size distribution, bulk density, moisture content, pH, and organic carbon content. Physical analysis results are presented in Attachment D.

**Backfill Method:** Boring locations were backfilled with cement grout to match the existing grade.

## INVESTIGATION RESULTS

**Hydrocarbon Distribution in Soil:** Less than 2 ppm TPHg, BTEX, and MTBE were detected in analyzed soil samples collected from soil borings SB-A, SB-B, and SB-C.

5,200 ppb  
11,000 ppb  
MTBE in SB-B

**Hydrocarbon Distribution in Ground Water:** Concentrations of 2,100 ppb benzene, 400 ppb toluene, and 14,000 ppb MTBE were detected in grab ground water samples collected from soil borings SB-A and SB-B. Concentrations of TPHg, BTEX, and MTBE were not detected above laboratory detection limits in the grab ground water sample collected from soil boring SB-C.

SB-A

SB-A

**Soil Physical Analyses:** 0.068% fraction organic carbon was detected in the analyzed soil sample collected from soil boring SB-C at 3.0 ft depth. Sample density values for this soil sample are indicative of the low to moderate permeability of the shallow soils beneath the site.

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## CONCLUSIONS

Low levels of petroleum hydrocarbons were detected in analyzed soil samples collected from two borings in the vicinity of the fuel dispensers and product piping. The fuel dispensers and product piping have been replaced and turbine containment sumps have been installed. Approximately 48 cubic yards of hydrocarbon-impacted soil from beneath the gasoline dispensers and product piping was removed. With the upgrades completed at the site, the primary source of petroleum hydrocarbons has been removed. Ground water beneath the site is not a known drinking water source. There are no identified exposure pathways, and the site presents little apparent risk to human health or the environment. The petroleum hydrocarbons present in soil will biodegrade over time.

## CLOSING

We appreciate the opportunity to work with you on this project. If you have any questions or require additional information, please contact Brian Busch at (510) 420-3312.

Sincerely,  
**Cambria Environmental Technology, Inc.**



Brian Busch  
Environmental Scientist



Diane Lundquist, P.E.  
Principal Engineer



Attachments: A - Standard Field Procedures for Geoprobe® Sampling  
B - Drilling Permit  
C - Soil Boring Logs  
D - Laboratory Analytical Results

cc: A. E. (Alex) Perez, Equilon Enterprises, LLC, P.O. Box 8080, Martinez, California 94553

G:\OAK610\REPORTS\InvRpt.wpd

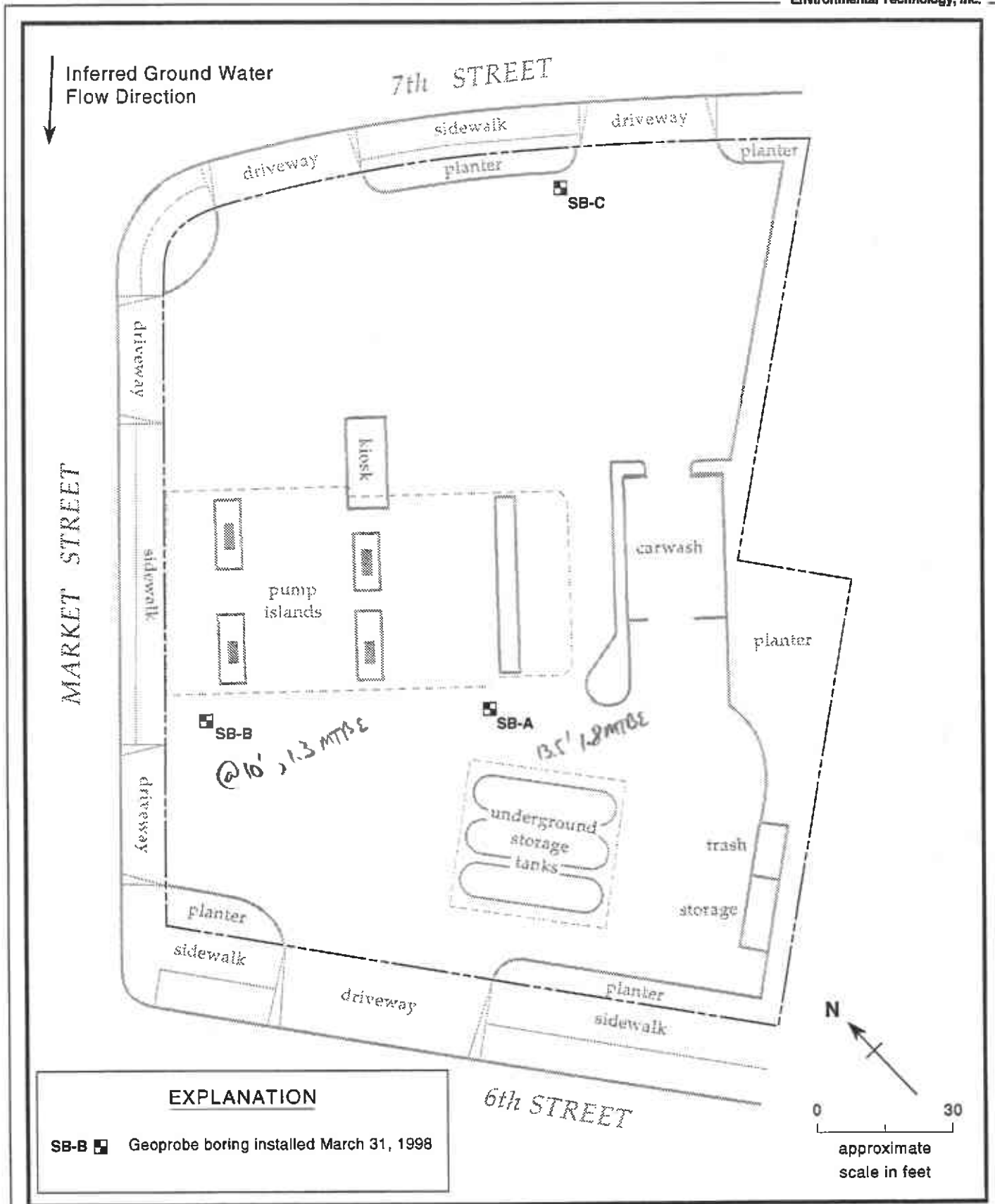


Figure 1. Geoprobe Boring Locations - March 31, 1998 - Shell Service Station WIC# 204-5508-5702, 610 Market Street, Oakland, California

**Table 1. Soil Analytical Data - Shell Service Station, WIC # 204-5508-5702, 610 Market Street, Oakland, California**

Sample ID	Date Sampled	TPHg	(concentrations in mg/Kg)				MTBE
			Benzene	Toluene	Ethylbenzene	Xylenes	
SB-A-13.5'	3/31/98	1.3	0.063	<0.0050	<0.0050	<0.0050	1.8
SB-B-10.0'	3/31/98	<1.0	<0.0050	0.0051	<0.0050	<0.0050	1.3
SB-C-6.5'	3/31/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SB-C-10.0'	3/31/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025

**Abbreviations and Notes:**

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015

Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020

MTBE = Methyl tert-butyl ether by EPA Method 8020

mg/Kg = Milligrams per kilogram

<n = Below detection limit of n mg/Kg

**Table 2. Analytic Data for Ground Water - Shell Service Station, WIC # 204-5508-5702, 610 Market Street, Oakland, California**

Sample ID	Date Sampled	TPHg	(concentrations in µg/L)				Xylenes	MTBE
			Benzene	Toluene	Ethylbenzene			
SB-A	3/31/98	2,100	490	<10	<10	19	11,000 (14,000)	
SB-B	3/31/98	120	5.8	<0.50	<0.50	<0.50	5,300 (6,200)	
SB-C	3/31/98	<50	<0.50	<0.50	<0.50	<0.50	<2.5	

**Abbreviations and Notes:**

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015

Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8020

MTBE = Methyl tert-butyl ether by EPA Method 8020. Result in parentheses indicates MTBE by EPA Method 8260

µg/L = Micrograms per liter

<n = Below detection limit of n µg/L

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**ATTACHMENT A**

Standard Field Procedures for Geoprobe® Sampling



## STANDARD FIELD PROCEDURES FOR GEOPROBE® SAMPLING

This document describes Cambria Environmental Technology's standard field methods for GeoProbe® soil and ground water sampling. 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:

- 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

GeoProbe® 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.

## **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 GasTech® or 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 ground water depth to select soil samples for analysis.

## **Grab Ground Water Sampling**

Ground water samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting ground water using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. 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 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.

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**ATTACHMENT B**

Drilling Permit



# ALAMEDA COUNTY PUBLIC WORKS AGENCY

**WATER RESOURCES SECTION**  
 951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2491  
 PHONE (510) 670-5575 ANDREAS COFFEY FAX (510) 670-5262  
 (510) 670-5248 ALVIN KAN

## DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 610 MARKET ST.  
OAKLAND, CA

PERMIT NUMBER 98WR133  
 WELL NUMBER \_\_\_\_\_  
 APN \_\_\_\_\_

California Coordinates Source \_\_\_\_\_ ft. Accuracy ± \_\_\_\_\_ ft.  
 CCM \_\_\_\_\_ ft. CCE \_\_\_\_\_ ft.  
 APN 1-223-1, 1-223-5

### PERMIT CONDITIONS

Circled Permit Requirements Apply

CLIENT Name Shell Oil Products Company  
 Address P.O. BOX 8080 Phone (510) 335-5007 (ALEX PEREZ)  
 City MARTINEZ, CA Zip 94553

**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 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 Fax (510) 420-9170  
 Address 1144 65th ST, SUITE C Phone (510) 420-0700  
 City OAKLAND, CA Zip 94608

**B. WATER SUPPLY WELLS**

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
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	<input type="checkbox"/>	General	<input type="checkbox"/>
Water Supply	<input type="checkbox"/>	Contamination	<input checked="" type="checkbox"/>
Monitoring	<input type="checkbox"/>	Well Destruction	<input type="checkbox"/>

**C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS**

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

**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	<u>n/a</u> <input checked="" type="checkbox"/>

**D. GEOTECHNICAL**

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

**DRILLING METHOD:**

Mud Rotary	<input type="checkbox"/>	Air Rotary	<input type="checkbox"/>	Auger	<input type="checkbox"/>
Cable	<input type="checkbox"/>	Other	<input checked="" type="checkbox"/>	<u>geoprobe</u>	

DRILLER'S LICENSE NO. C57-485165

**E. CATHODIC**

Fill hole above anode zone with concrete placed by tremie.

**WELL PROJECTS**

Drill Hole Diameter	_____ in.	Maximum	_____ ft.
Casing Diameter	_____ in.	Depth	_____ ft.
Surface Seal Depth	_____ ft.	Number	_____

**F. WELL DESTRUCTION**

See attached.

**G. SPECIAL CONDITIONS**

**GEOTECHNICAL PROJECTS**

Number of Borings	<u>3</u>	Maximum	_____ ft.
Hole Diameter	<u>2</u> in.	Depth	<u>25</u> ft.

ESTIMATED STARTING DATE 3-31-98  
 ESTIMATED COMPLETION DATE 3-31-98

APPROVED Alvin Kan DATE 3/25/98

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

APPLICANT'S SIGNATURE Brian Busch DATE 3/20/98

Date:	# of Pages:	<b>QUICK FAX OfficeMax</b>	
To:	<u>ALVIN KAN</u>	From:	<u>BRIAN BUSCH</u>
Co./Dept.:	<u>ACPWA</u>	Co./Dept.:	<u>CAMBRIA ENV.</u>
Fax:	<u>510-670-5262</u>	Fax:	<u>(510) 420-9170</u>
Phone:		Phone:	<u>(510) 420-3312</u>
note:		note:	

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**ATTACHMENT C**

Soil Boring Logs

**BORING LOG**

Boring ID **SB-A**

Client: **Shell Oil Products Company**

Location **610 Market Street, Oakland**

Project No: **240-0594**

Phase

Task **2**

Surface Elev. **NA ft.**

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

Depth (feet)	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth (feet)	Additional Comments
0	Ground Surface		<u>Asphalt</u>				0	
5			<u>Silty SAND</u> ; (SM); brown; loose; dry; 15% silt, 85% fine to medium sand; moderate estimated permeability.				5	
10			grey; damp; 15% silt, 85% fine sand.				10	
15							15	Water encountered @ 14 ft.
20							20	Bottom of boring @ 16 ft.
25							25	
30							30	

Driller <b>Gregg Drilling</b>	Drilling Started <b>3/31/98</b>	Notes: <b>See site map.</b>
Logged By <b>Aubrey Cool</b>	Drilling Completed <b>3/31/98</b>	
Water-Bearing Zones <b>NA</b>	Grout Type <b>Portland Type I/II</b>	

BOR 24594 3/31/98

**BORING LOG**

Boring ID **SB-B**

Client: **Shell Oil Products Company**

Location **610 Market Street, Oakland**

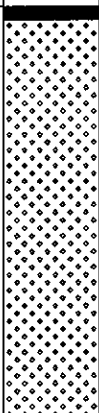
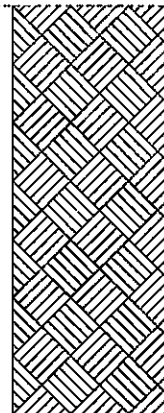
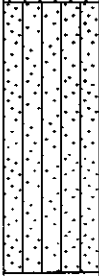
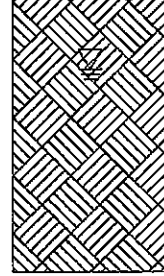
Project No: **240-0594**

Phase

Task **2**

Surface Elev. **NA ft.**

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

Depth (feet)	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth (feet)	Additional Comments
0	Ground Surface		<b>Asphalt</b>				0	
0-5			<b>SAND</b> ; (SW); brown to grey; loose; moist; 5% silt, 95% fine to medium sand; high estimated permeability.				0-5	
5-10			brown; damp; 10% silt, 90% fine to medium sand; moderate estimated permeability.				5-10	
10-15			grey. <b>Silty SAND</b> ; (SM); grey; loose; wet; 15% silt, 85% fine sand; moderate estimated permeability.				10-15	Water encountered @ 10.5 ft.
15-30			brown to grey; 15% silt, 85% fine to medium sand.				15-30	Bottom of boring @ 15 ft.

Driller <b>Gregg Drilling</b>	Drilling Started <b>3/31/98</b>	Notes: <b>See site map.</b>
Logged By <b>Aubrey Cool</b>	Drilling Completed <b>3/31/98</b>	
Water-Bearing Zones <b>NA</b>	Grout Type <b>Portland Type I/II</b>	

BOR 24594 3/31/98

**BORING LOG**

Boring ID **SB-C**

Client: **Shell Oil Products Company**

Location **610 Market Street, Oakland**

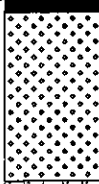
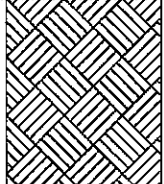
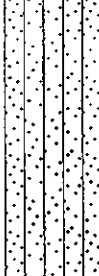
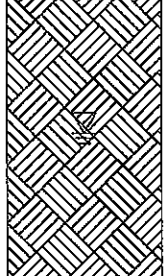
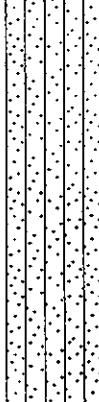
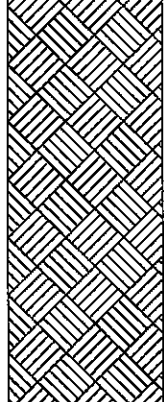
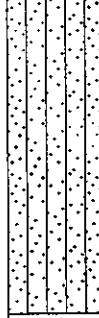
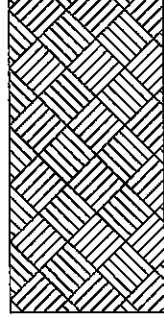


Project No: **240-0594**

Phase

Task **2**

Surface Elev. **NA ft.**

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

Depth (feet)	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth (feet)	Additional Comments
0	Ground Surface		<u>Asphalt</u>				0	
5			<b>SAND</b> ; (SW); brown; loose; damp; 10% silt, 90% fine to medium sand; moderate to high estimated permeability.				5	
10			<b>Silty SAND</b> ; (SM); brown; loose; moist; 15% silt, 85% fine to medium sand; moderate to high estimated permeability. wet.				10	Water encountered @ 7 ft.
15			moist; 20% silt, 80% fine sand; moderate estimated permeability.				15	
20			no recovery.				20	
25							25	
30							30	Bottom of boring @ 26 ft.

Driller **Gregg Drilling**

Drilling Started **3/31/98**

Notes: **See site map.**

Logged By **Aubrey Cool**

Drilling Completed **3/31/98**

Water-Bearing Zones **NA**

Grout Type **Portland Type I/II**

BOR 24594 3/31/98



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**ATTACHMENT D**

Laboratory Analytical Results



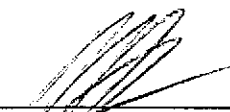
Cambria 1144 65th St. Suite C Oakland, CA 94608	Client Proj. ID: Shell 610 Market St., Oakland Lab Proj. ID: 9803K65	Sampled: 03/31/98 Received: 03/31/98 Analyzed: see below Reported: 05/12/98
Attention: Brian Busch		

**LABORATORY ANALYSIS**

Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9803K65-05 Sample Desc : SOLID,SB-C-3.0'				
Bulk Density			See	Attached
Fraction Organic Carbon	%	04/08/98	0.020	0.068
Moisture, Percent	%	04/06/98	1.0	14
pH	pH Units	04/02/98	N/A	8.0

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-A-13.5' Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-01	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/06/98 Analyzed: 04/08/98 Reported: 05/12/98
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QC Batch Number: GC040698BTEXEXA  
Instrument ID: GCHP07

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	1.3
Methyl t-Butyl Ether	0.025	1.8
Benzene	0.0050	0.063
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		C6-C12

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	122
4-Bromofluorobenzene	60	140	107

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210

  
Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-A Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-02	Sampled: 03/31/98 Received: 03/31/98 Analyzed: 04/06/98 Reported: 05/12/98
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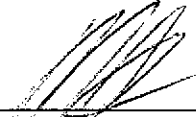
QC Batch Number: GC040698BTEX06A  
Instrument ID: GCHP6

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX**

Analyte	Detection Limit ug/L	Sample Results ug/L
<b>TPPH as Gas</b>	<b>1000</b>	<b>2100</b>
<b>Benzene</b>	<b>10</b>	<b>490</b>
Toluene	10	N.D.
Ethyl Benzene	10	N.D.
<b>Xylenes (Total)</b>	<b>10</b>	<b>19</b>
<b>Chromatogram Pattern:</b>		<b>C6-C12</b>
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70                      130	111

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-A Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-02	Sampled: 03/31/98 Received: 03/31/98 Analyzed: 04/06/98 Reported: 05/12/98
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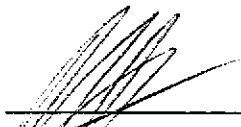
QC Batch Number: GC040698BTEX06A  
Instrument ID: GCHP6

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	10000	N.D.
Methyl t-Butyl Ether	500	11000
Benzene	100	410
Toluene	100	N.D.
Ethyl Benzene	100	N.D.
Xylenes (Total)	100	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70                      130	91

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





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FAX (707) 792-0342

Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-A Matrix: LIQUID Analysis Method: EPA 8260 Lab Number: 9803K65-02	Sampled: 03/31/98 Received: 03/31/98 Analyzed: 04/10/98 Reported: 05/12/98
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QC Batch Number: MS040998MTBEH6A  
Instrument ID: H6

**Methyl t-Butyl Ether (MTBE)**

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	200	14000
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
1,2-Dichloroethane-d4	76                      114	102

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210

 for  
Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608  Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-B-10.0' Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-03	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/06/98 Analyzed: 04/09/98 Reported: 05/12/98
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QC Batch Number: GC040698BTEXEXA  
Instrument ID: GCHP01

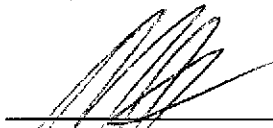
**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Methyl t-Butyl Ether	0.025	1.3
Benzene	0.0050	N.D.
Toluene	0.0050	0.0051
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	110
4-Bromofluorobenzene	60	140	100

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210

  
Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-B Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-04	Sampled: 03/31/98 Received: 03/31/98 Analyzed: 04/06/98 Reported: 05/12/98
Attention: Brian Busch		



QC Batch Number: GC040698BTEX06A  
Instrument ID: GCHP6

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	120
Benzene	0.50	5.8
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		C6-C12
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	111

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

  
  
 \_\_\_\_\_  
 Richard Herling  
 Project Manager







Cambria 1144 65th St. Suite C Oakland, CA 94608	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-B Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-04	Sampled: 03/31/98 Received: 03/31/98 Analyzed: 04/06/98 Reported: 05/12/98
Attention: Brian Busch		

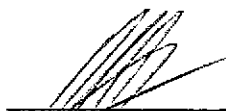
QC Batch Number: GC040698BTEX06A  
Instrument ID: GCHP6

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	5000	N.D.
Methyl t-Butyl Ether	250	5300
Benzene	50	N.D.
Toluene	50	N.D.
Ethyl Benzene	50	N.D.
Xylenes (Total)	50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	97

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





**Sequoia  
Analytical**

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FAX (510) 988-9673  
FAX (916) 921-0100  
FAX (707) 792-0342

Cambria 1144 65th St. Suite C Oakland, CA 94608	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-B Matrix: LIQUID Analysis Method: EPA 8260 Lab Number: 9803K65-04	Sampled: 03/31/98 Received: 03/31/98 Analyzed: 04/10/98 Reported: 05/12/98
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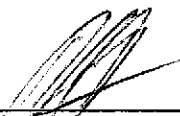
QC Batch Number: MS040998MTBEH6A  
Instrument ID: H6

**Methyl t-Butyl Ether (MTBE)**

Analyte	Detection Limit ug/L	Sample Results ug/L
Methyl t-Butyl Ether	100	6200
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
1,2-Dichloroethane-d4	76      114	103

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210

 *So*  
Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-C-3.0' Matrix: SOLID Analysis Method: D422 Lab Number: 9803K65-05	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/10/98 Analyzed: 04/13/98 Reported: 05/12/98
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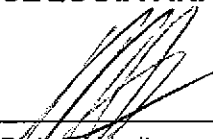

Instrument ID: MANUAL

Particle Size Distribution

Sieve Number	% Distribution	Weight Retained (g)
4	0.0	0.0
6	0.0	0.0
8	0.0	0.0
12	0.14	0.15
16	1.2	1.2
20	2.7	2.9
30	3.6	3.9
40	5.3	5.7
50	19	20
70	25	26
pan	44	47

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

---

Richard Herling  
Project Manager





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Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-C-6.5' Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-06	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/06/98 Analyzed: 04/07/98 Reported: 05/12/98
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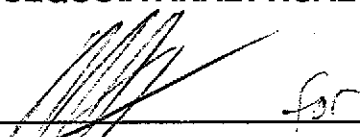
QC Batch Number: GC040698BTEXEXA  
Instrument ID: GCHP18

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Methyl t-Butyl Ether	0.025	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70	81
4-Bromofluorobenzene	60	106

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-C-10.0' Matrix: SOLID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-07	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/06/98 Analyzed: 04/07/98 Reported: 05/12/98
Attention: Brian Busch		

QC Batch Number: GC040698BTEXEXA  
Instrument ID: GCHP07

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas	1.0	N.D.
Methyl t-Butyl Ether	0.025	N.D.
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70	130
4-Bromofluorobenzene	60	140
		83
		96

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-C Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9803K65-08	Sampled: 03/31/98 Received: 03/31/98 Analyzed: 04/07/98 Reported: 05/12/98
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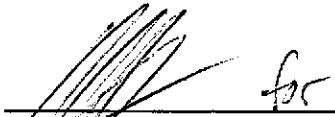
QC Batch Number: GC040798BTEX03A  
Instrument ID: GCHP3

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70                      130	81

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210

  
 Richard Herling  
 Project Manager





**CORE LABORATORIES**

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## **GEOTECHNICAL ANALYSIS RESULTS**

**SEQUOIA ANALYTICAL**

**SA # 9803K65**

**CL FILE 57111-980101**

**Performed by:  
Core Laboratories  
3430 Unicorn Road  
Bakersfield, CA 93308  
(805) 392-8600**

**Final Report Presented  
April 16, 1998**



**Sequoia Analytical**  
**(Redwood City)**

C.L. File: 57111-98101

9803K65

Sample Fraction	Sample Desc.	Sample Date	Dry Bulk g/cc	Sample Density Natural Bulk g/cc	Matrix g/cc	Total Porosity %	Description	Method
05	SB-C-3.0	31-Mar-98	1.77	2.10	2.67	33.7	Gry vf-fgr v slty sand	API RP-40





Cambria Environmental Tech.  
1144 65th St., Ste. C  
Oakland, CA 94608  
Attention: Brian Busch

Client Project ID: Shell 610 Market St., Oakland  
Matrix: Solid

Work Order #: 9803K65 01, 03, 06, 07

Reported: Apr 16, 1998

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC040698BTEXEXA	GC040698BTEXEXA	GC040698BTEXEXA	GC040698BTEXEXA	GC040698BTEXEXA
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD #:	9803J5709	9803J5709	9803J5709	9803J5709	9803J5709
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
Analyzed Date:	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
Instrument I.D.#:	GCHP7	GCHP7	GCHP7	GCHP7	GCHP7
Conc. Spiked:	0.20 mg/Kg	0.20 mg/Kg	0.20 mg/Kg	0.60 mg/Kg	1.2 mg/Kg
Result:	0.14	0.14	0.14	0.41	0.90
MS % Recovery:	70	70	70	68	75
Dup. Result:	0.18	0.19	0.19	0.55	1.2
MSD % Recov.:	90	95	95	92	100
RPD:	25	30	30	29	29
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK040698	BLK040698	BLK040698	BLK040698	BLK040698
Prepared Date:	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
Analyzed Date:	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
Instrument I.D.#:	GCHP7	GCHP7	GCHP7	GCHP7	GCHP7
Conc. Spiked:	0.20 mg/Kg	0.20 mg/Kg	0.20 mg/Kg	0.60 mg/Kg	1.2 mg/Kg
LCS Result:	0.19	0.20	0.19	0.56	1.2
LCS % Recov.:	95	100	95	93	100

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

**Please Note:**

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

**SEQUOIA ANALYTICAL**

*R. Herling*  
Richard Herling  
Project Manager

\*\* MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9803K65.CCC <1>





# Sequoia Analytical

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Cambria Environmental Tech.  
1144 65th St., Ste. C  
Oakland, CA 94608  
Attention: Brian Busch

Client Project ID: Shell 610 Market St., Oakland  
Matrix: Liquid

Work Order #: 9803k65 02, 04

Reported: Apr 16, 1998

## QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
<b>QC Batch#:</b>	GC040698BTEX06A	GC040698BTEX06A	GC040698BTEX06A	GC040698BTEX06A	GC040698BTEX06A
<b>Analy. Method:</b>	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
<b>Prep. Method:</b>	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030
<b>Analyst:</b>	J. Minkel	J. Minkel	J. Minkel	J. Minkel	J. Minkel
<b>MS/MSD #:</b>	9803H1804	9803H1804	9803H1804	9803H1804	9803H1804
<b>Sample Conc.:</b>	N.D.	N.D.	N.D.	N.D.	N.D.
<b>Prepared Date:</b>	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
<b>Analyzed Date:</b>	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
<b>Instrument I.D.#:</b>	GCHP6	GCHP6	GCHP6	GCHP6	GCHP6
<b>Conc. Spiked:</b>	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
<b>Result:</b>	8.6	8.5	8.6	25	54
<b>MS % Recovery:</b>	86	85	86	100	90
<b>Dup. Result:</b>	7.9	7.9	7.9	24	50
<b>MSD % Recov.:</b>	79	79	79	80	83
<b>RPD:</b>	8.5	7.3	8.5	4.1	7.7
<b>RPD Limit:</b>	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK040698	BLK040698	BLK040698	BLK040698	BLK040698
<b>Prepared Date:</b>	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
<b>Analyzed Date:</b>	4/6/98	4/6/98	4/6/98	4/6/98	4/6/98
<b>Instrument I.D.#:</b>	GCHP6	GCHP6	GCHP6	GCHP6	GCHP6
<b>Conc. Spiked:</b>	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
<b>LCS Result:</b>	9.1	9.0	9.1	28	58
<b>LCS % Recov.:</b>	91	90	91	93	97

<b>MS/MSD</b>	60-140	60-140	60-140	60-140	60-140
<b>LCS</b>	70-130	70-130	70-130	70-130	70-130
<b>Control Limits</b>					

**Please Note:**

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL

*Richard Herling*  
Richard Herling  
Project Manager

\*\* MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9803K65.CCC <2>





Cambria Environmental Tech.  
1144 65th St., Ste. C  
Oakland, CA 94608  
Attention: Brian Busch

Client Project ID: Shell 610 Market St., Oakland  
Matrix: Liquid

Work Order #: 9803K65 08

Reported: Apr 16, 1998

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC040798BTEX03A	GC040798BTEX03A	GC040798BTEX03A	GC040798BTEX03A	GC040798BTEX03A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	C. DeMartini	C. DeMartini	C. DeMartini	C. DeMartini	C. DeMartini
MS/MSD #:	980409005	980409005	980409005	980409005	980409005
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Analyzed Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Instrument I.D.#:	GCHP3	GCHP3	GCHP3	GCHP3	GCHP3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	9.5	9.6	9.7	30	57
MS % Recovery:	95	96	97	100	95
Dup. Result:	9.5	9.7	9.7	30	57
MSD % Recov.:	95	97	97	100	95
RPD:	0.0	1.0	0.0	0.0	0.0
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK040798	BLK040798	BLK040798	BLK040798	BLK040798
Prepared Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Analyzed Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Instrument I.D.#:	GCHP3	GCHP3	GCHP3	GCHP3	GCHP3
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.6	9.7	9.9	30	57
LCS % Recov.:	96	97	99	100	95

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

**Please Note:**  
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

**SEQUOIA ANALYTICAL**

*R. Herling*  
Richard Herling  
Project Manager

\*\* MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9803K65.CCC <3>





**Sequoia  
Analytical**

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FAX (707) 792-0342

Cambria Environmental Tech.  
1144 65th St., Ste. C  
Oakland, CA 94608  
Attention: Brian Busch

Client Project ID: Shell 610 Market St., Oakland  
Matrix: Liquid

Work Order #: 9803K65 02, 04

Reported: Apr 16, 1998

**QUALITY CONTROL DATA REPORT**

**Analyte:** MTBE  
**QC Batch#:** MS040998MTBEH6A  
**Analy. Method:** EPA 8260  
**Prep. Method:**

**Analyst:** L. Zhu  
**MS/MSD #:** 980455301  
**Sample Conc.:** 47  
**Prepared Date:** 4/9/98  
**Analyzed Date:** 4/9/98  
**Instrument I.D.#:** H6  
**Conc. Spiked:** 50 µg/L

**Result:** 100  
**MS % Recovery:** 106

**Dup. Result:** 99  
**MSD % Recov.:** 104

**RPD:** 1.0  
**RPD Limit:** 0-25

**LCS #:** LCS040998  
**Prepared Date:** 4/9/98  
**Analyzed Date:** 4/9/98  
**Instrument I.D.#:** H6  
**Conc. Spiked:** 50 µg/L  
**LCS Result:** 55  
**LCS % Recov.:** 110

**MS/MSD** 60-140  
**LCS** 70-130  
**Control Limits**

**Please Note:**  
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

**SEQUOIA ANALYTICAL**

*Richard Herling*  
Richard Herling  
Project Manager

\*\* MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

9803K65.CCC <4>





**Sequoia  
Analytical**

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FAX (707) 792-0342

Cambria Environmental Tech.      Client Project ID: Shell 610 Market St., Oakland  
1144 65th St., Ste. C              Matrix: Solid  
Oakland, CA 94608  
Attention: Brian Busch              Work Order #: 9803K65 05              Reported: Apr 16, 1998

**QUALITY CONTROL DATA REPORT**

<b>Analyte:</b>	pH	Fraction Organic Carbon	% Moisture
<b>QC Batch:</b>	IN040298150100A	IN0408982B00A	IN040398160300A
<b>Analy. Method:</b>	EPA 150.1	Walkley-Black	EPA 160.3
<b>Prep Method:</b>			

**Analyst:** K. Cesar                      K. Cesar                      W. Loo

**Duplicate Sample #:** 980407201              9803J6102              9803H9803

**Prepared Date:** 4/2/98                      4/8/98                      4/3/98  
**Analyzed Date:** 4/2/98                      4/8/98                      4/6/98  
**Instrument I.D.#:** MANUAL                      MANUAL                      MANUAL

**Sample Concentration:** 9.5                      0.032                      13

**Dup. Sample Concentration:** 9.5                      0.036                      13

**RPD:** 0.0                      12                      0.0  
**RPD Limit:** 0-20                      0-20                      0-20

**SEQUOIA ANALYTICAL**

*Richard Herling*  
Richard Herling  
Project Manager

\*\* RPD = Relative % Difference

9803K65.CCC <5>





Sequoia  
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FAX (707) 792-0342

Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Lab Proj. ID: 9803K65	Received: 03/31/98 Reported: 04/14/98
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### LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 21 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

SEQUOIA ANALYTICAL

Richard Herling  
Project Manager





**SHELL OIL COMPANY**  
RETAIL ENVIRONMENTAL ENGINEERING - WEST

**CHAIN OF CUSTODY RECORD**

Serial No: \_\_\_\_\_

Date: 3-31-98

Page 1 of 2

Site Address: 610 Market St, Oakland

WICH: 204-5508-5702

Shell Engineer: Alex Perez

Phone No.: (510) 335-5027  
Fax #: (510) 335-5029

Consultant Name & Address: **CAMBRIA ENVIRONMENTAL**  
1114 65th St. Suite C, Oakland, CA 94608

Consultant Contact: Brian Busch

Phone No.: 510 420-0700  
Fax #: 420-9170

Comments: 9803K65

Sampled by: Aubrey Cool

Printed Name:

**Analysis Required**

TPH (EPA 8015 Mod. GCs)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal - SW846 - 14	Combination TPH 8015 & BTEX 8020 + MTBE	Asbestos	Container Size	Preparation Used	Composite Y/N

**LAB:**

CHECK ONE (1) BOX ONLY	C1/D1	TURB AROUND TIME
G.W. Monitoring	<input type="checkbox"/> 4441	24 hours <input type="checkbox"/>
Site Investigation	<input checked="" type="checkbox"/> 4441	48 hours <input type="checkbox"/>
Soil Classfy/Disposal	<input type="checkbox"/> 4442	16 days <input type="checkbox"/> (Normal)
Water Classfy/Disposal	<input type="checkbox"/> 4443	Other <input type="checkbox"/>
Soil/Air Resp. or Sys. O & M	<input type="checkbox"/> 4452	
Water Resp. or Sys. O & M	<input type="checkbox"/> 4453	
Other	<input type="checkbox"/>	

NOTE: Hasty Lab as soon as Possible of 24/48 hrs. 1A1.

**UST AGENCY:**

**MATERIAL DESCRIPTION**

**SAMPLE CONDITION/ COMMENTS**

Sample ID	Date	Time Sludge	Soil	Water	Air	No. of conls.	TPH (EPA 8015 Mod. GCs)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal - SW846 - 14	Combination TPH 8015 & BTEX 8020 + MTBE	Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
SB-A-4.0'	3/31	9:45	X			1												HOLD
SB-A-5.0'		9:55	X			1					X					Y		
SB-A-10.0'		10:00	X			1					X					Y		
SB-A-13.5'		10:05	X			1					X							
SB-A		10:05		X		3					X			VOAs	HCL			
SB-B-3.0'		10:55	X			1												HOLD
SB-B-5.0'		11:00	X			1					X					Y		
SB-B-10.0'		11:10	X			1					X							

Relinquished By (signature): *Aubrey K Cool*  
Relinquished By (signature): *2/1*  
Relinquished By (signature): \_\_\_\_\_

Printed Name: *Aubrey Cool*  
Printed Name: \_\_\_\_\_  
Printed Name: \_\_\_\_\_

Date: 3/31  
Time: 3:50  
Date: 3/31  
Time: 1:17  
Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Received (signature): \_\_\_\_\_  
Received (signature): \_\_\_\_\_  
Received (signature): *Ray Scroggin*

Printed Name: *Nick Costello*  
Printed Name: \_\_\_\_\_  
Printed Name: *Ray Scroggin*

Date: 3/31  
Time: 3:51  
Date: \_\_\_\_\_  
Time: \_\_\_\_\_  
Date: 3/31/98  
Time: 1:17

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS



**SHELL OIL COMPANY**  
RETAIL ENVIRONMENTAL ENGINEERING - WEST

**CHAIN OF CUSTODY RECORD**

Serial No: \_\_\_\_\_

Date: 3-31-98  
Page 2 of 2

Site Address: 610 Market St, Oakland

WIC#: 204-5508-5702

Shell Engineer:  
Alex Perez

Phone No.:  
(510) 335 5027  
Fax #: (510) 335 5027

Consultant Name & Address: CAMBRIA ENVIRONMENTAL  
1144 65th St, Suite C, Oakland, CA 94608

Consultant Contact:  
Brian Busch

Phone No.: 510  
420-0700  
Fax #: 420-9170

Comments: 9803 K65

Sampled by: Aubrey Cool

Printed Name:

**Analysis Required**

TPH (EPA 8015 Mod. GCs)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal Shell AB-A	Combination TPH 8015 & BTEX 8020 + MTBE	bulk density, moisture content, grain size distribution, pH, fraction organic carbon	Asbestos	Container Size	Preparation Used	Composite Y/N
					X	X		Vials	HCL	
						X				
				X						Y
					X					
					X					
					X			Vials	HCL	

**LAB:** \_\_\_\_\_

CHECK ONE (1) BOX ONLY	C1/D1	TURN AROUND TIME
G.W. Monitoring <input type="checkbox"/>	4461	24 hours <input type="checkbox"/>
Site Investigation <input checked="" type="checkbox"/>	4441	48 hours <input type="checkbox"/>
Soil Classify/Disposal <input type="checkbox"/>	4442	16 days <input type="checkbox"/> (Planned)
Water Classify/Disposal <input type="checkbox"/>	4443	Other <input type="checkbox"/>
Soil/Air Rept. or Sys. O & M <input type="checkbox"/>	4452	
Water Rept. or Sys. O & M <input type="checkbox"/>	4453	
Other <input type="checkbox"/>		

NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.

**UST AGENCY:** \_\_\_\_\_

Sample ID	Date	Time Sludge	Soil	Water	Air	No. of confs.	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
4 SB-B	3/31	11:30		X		3		
5 SB-C-3.0'		12:20	X			1		
SB-C-5.0'		12:25	X			1		
6 SB-C-6.5'		12:30	X			1		
7 SB-C-10.0'		12:40	X			1		
8 SB-C		2:10		X		3		

Relinquished By (signature): Aubrey K Cool	Printed Name: Aubrey Cool	Date: 3-31 Time: 3:50	Received (signature): Nick Costanzo	Printed Name: Nick Costanzo	Date: 3/31 Time: 3:52
Relinquished By (signature): Nick	Printed Name:	Date: 3/31 Time: 1717	Received (signature):	Printed Name:	Date: Time:
Relinquished By (signature):	Printed Name:	Date: Time:	Received (signature): R. Scroggin	Printed Name: R. Scroggin	Date: 3/31/98 Time: 1717

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS





# Sequoia Analytical

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Cambria  
1144 65th St. Suite C  
Oakland, CA 94608  
Attention: Brian Busch

Project: Shell 610 Market St., Oakland

Enclosed are the results from samples received at Sequoia Analytical on March 31, 1998.  
The requested analyses are listed below:

<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DATE COLLECTED</u>	<u>TEST METHOD</u>
9803K29 -01	SOLID, SB-A-5.0'	03/31/98	TPHG_S Purgeable TPH
9803K29 -02	SOLID, SB-A-10.0'	03/31/98	TPHG_S Purgeable TPH
9803K29 -03	SOLID, SB-B-5.0'	03/31/98	TPHG_S Purgeable TPH
9803K29 -04	SOLID, SB-C-5.0'	03/31/98	TPHG_S Purgeable TPH
9803K29 -05	SOLID, SB-(A-5.0'-C-5.0)comp	03/31/98	BTEX_S Distinction
9803K29 -05	SOLID, SB-(A-5.0'-C-5.0)comp	03/31/98	ITTLCs Title 22: Metals, T

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

**SEQUOIA ANALYTICAL**

---

Project Manager





**Sequoia  
Analytical**

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Cambria 1144 65th St. Suite C Oakland, CA 94608	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-A-5.0' Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9803K29-01	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/07/98 Analyzed: 04/09/98 Reported: 04/14/98
Attention: Brian Busch		

QC Batch Number: GC040798BTEXEXB  
Instrument ID: GCHP18

**Total Purgeable Petroleum Hydrocarbons (TPPH)**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas Chromatogram Pattern:	1.0	N.D.
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	87
4-Bromofluorobenzene	60 140	102

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

Richard Herling  
Project Manager





**Sequoia  
Analytical**

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Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-A-10.0' Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9803K29-02	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/07/98 Analyzed: 04/09/98 Reported: 04/14/98
---	---	--

QC Batch Number: GC040798BTEXEXB  
Instrument ID: GCHP18

**Total Purgeable Petroleum Hydrocarbons (TPPH)**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas Chromatogram Pattern:	1.0	N.D.
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70	130
4-Bromofluorobenzene	60	140

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210

Richard Herling  
Project Manager





Cambria  
1144 65th St. Suite C  
Oakland, CA 94608

Client Proj. ID: Shell 610 Market St., Oakland  
Sample Descript: SB-B-5.0'  
Matrix: SOLID  
Analysis Method: EPA 8015 Mod  
Lab Number: 9803K29-03

Sampled: 03/31/98  
Received: 03/31/98  
Extracted: 04/07/98  
Analyzed: 04/08/98  
Reported: 04/14/98

Attention: Brian Busch

QC Batch Number: GC040798BTEXEXB  
Instrument ID: GCHP18

**Total Purgeable Petroleum Hydrocarbons (TPPH)**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas Chromatogram Pattern:	1.0	N.D.
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70	130
4-Bromofluorobenzene	60	140

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210

Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-C-5.0' Matrix: SOLID Analysis Method: EPA 8015 Mod Lab Number: 9803K29-04	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/07/98 Analyzed: 04/08/98 Reported: 04/14/98
---	--	--

QC Batch Number: GC040798BTEXEXB  
Instrument ID: GCHP22

**Total Purgeable Petroleum Hydrocarbons (TPPH)**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
TPPH as Gas Chromatogram Pattern:	1.0	N.D.
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70                      130	98
4-Bromofluorobenzene	60                      140	105

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210

Richard Herling  
Project Manager





**Sequoia  
Analytical**

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FAX (707) 792-0342

Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-(A-5.0'-C-5.0)comp Matrix: SOLID Analysis Method: EPA 8020 Lab Number: 9803K29-05	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/07/98 Analyzed: 04/09/98 Reported: 04/14/98
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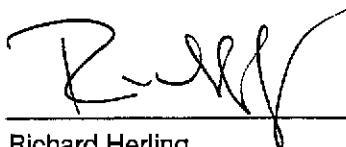
QC Batch Number: GC040798BTEXEXB  
Instrument ID: GCHP01

**BTEX Distinction**

Analyte	Detection Limit mg/Kg	Sample Results mg/Kg
Benzene	0.0050	N.D.
Toluene	0.0050	N.D.
Ethyl benzene	0.0050	N.D.
Xylenes (Total)	0.0050	N.D.
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70	130
4-Bromofluorobenzene	60	140

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL** - ELAP #1210



Richard Herling  
Project Manager





Cambria 1144 65th St. Suite C Oakland, CA 94608  Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Sample Descript: SB-(A-5.0'-C-5.0)comp Matrix: SOLID Analysis Method: Title 22 Lab Number: 9803K29-05	Sampled: 03/31/98 Received: 03/31/98 Extracted: 04/02/98 Analyzed: 04/03/98 Reported: 04/14/98
---	--	--

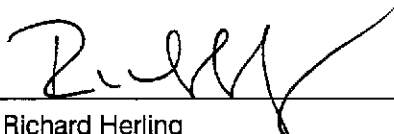
Instrument ID: MTJA-5

**Inorganic Persistent and Bioaccumulative Toxic Substances : TTLC**

Analyte	Max. Limit mg/kg	Detection Limit mg/kg	Sample Results mg/kg
Antimony, Sb	500	5.0	N.D.
<b>Arsenic, As</b>	<b>500</b>	<b>5.0</b>	<b>9.5</b>
<b>Barium, Ba</b>	<b>10000</b>	<b>5.0</b>	<b>53</b>
Beryllium, Be	75	0.50	N.D.
Cadmium, Cd	100	0.50	N.D.
<b>Chromium, Cr</b>	<b>2500</b>	<b>0.50</b>	<b>43</b>
<b>Cobalt, Co</b>	<b>8000</b>	<b>2.5</b>	<b>6.9</b>
<b>Copper, Cu</b>	<b>2500</b>	<b>0.50</b>	<b>11</b>
Lead, Pb	1000	5.0	N.D.
<b>Mercury, Hg</b>	<b>20</b>	<b>0.020</b>	<b>0.022</b>
Molybdenum, Mo	3500	2.5	N.D.
<b>Nickel, Ni</b>	<b>2000</b>	<b>2.5</b>	<b>35</b>
Selenium, Se	100	5.0	N.D.
Silver, Ag	500	0.50	N.D.
Thallium, Tl	700	5.0	N.D.
<b>Vanadium, V</b>	<b>2400</b>	<b>2.5</b>	<b>29</b>
<b>Zinc, Zn</b>	<b>5000</b>	<b>0.50</b>	<b>26</b>

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**



Richard Herling  
Project Manager





# Sequoia Analytical

680 Chesapeake Drive  
404 N. Wiget Lane  
819 Striker Avenue, Suite 8

Redwood City, CA 94063  
Walnut Creek, CA 94598  
Sacramento, CA 95834

(650) 364-9600  
(510) 988-9600  
(916) 921-9600

FAX (650) 364-9233  
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FAX (916) 921-0100

Cambria Environmental Tech.  
1144 65th St., Ste. C  
Oakland, CA 94608  
Attention: Brian Busch

Client Project ID: Shell 610 Market St., Oakland  
Matrix: Solid

Work Order #: 9803K29 01-05

Reported: Apr 16, 1998

## QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC040798BTEXEXB	GC040798BTEXEXB	GC040798BTEXEXB	GC040798BTEXEXB	GC040798BTEXEXB
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD #:	980418101	980418101	980418101	980418101	980418101
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Analyzed Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Instrument I.D.#:	GCHP22	GCHP22	GCHP22	GCHP22	GCHP22
Conc. Spiked:	0.20 mg/Kg	0.20 mg/Kg	0.20 mg/Kg	0.60 mg/Kg	1.2 mg/Kg
Result:	0.19	0.18	0.19	0.57	1.6
MS % Recovery:	95	90	95	95	133
Dup. Result:	0.20	0.19	0.20	0.61	1.7
MSD % Recov.:	100	95	100	102	142
RPD:	5.1	5.4	5.1	6.8	6.1
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK040798	BLK040798	BLK040798	BLK040798	BLK040798
Prepared Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Analyzed Date:	4/7/98	4/7/98	4/7/98	4/7/98	4/7/98
Instrument I.D.#:	GCHP22	GCHP22	GCHP22	GCHP22	GCHP22
Conc. Spiked:	0.20 mg/Kg	0.20 mg/Kg	0.20 mg/Kg	0.60 mg/Kg	1.2 mg/Kg
LCS Result:	0.21	0.19	0.20	0.60	1.2
LCS % Recov.:	105	95	100	100	100

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

**Please Note:**

The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL

  
Richard Herling  
Project Manager

\*\* MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

9803K29.CCC <1>







# Sequoia Analytical

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Cambria Environmental Tech.  
1144 65th St., Ste. C  
Oakland, CA 94608  
Attention: Brian Busch

Client Project ID: Shell 610 Market St., Oakland  
Matrix: Solid

Work Order #: 9803K29 05

Reported: Apr 16, 1998

## QUALITY CONTROL DATA REPORT

Analyte:	Beryllium	Cadmium	Chromium	Nickel	Mercury
QC Batch#:	ME0402986010MDF	ME0402986010MDF	ME0402986010MDF	ME0402986010MDF	ME0402987471M4A
Analy. Method:	EPA 6010	EPA 6010	EPA 6010	EPA 6010	EPA 7471
Prep. Method:	EPA 3050	EPA 3050	EPA 3050	EPA 3050	EPA 7471

Analyst:	C. Medefesser	C. Medefesser	C. Medefesser	C. Medefesser	B. Taylor
MS/MSD #:	9803K4201	9803K4201	9803K4201	9803K4201	980401201
Sample Conc.:	N.D.	N.D.	25	18	0.21
Prepared Date:	4/2/98	4/2/98	4/2/98	4/2/98	4/2/98
Analyzed Date:	4/3/98	4/3/98	4/3/98	4/3/98	4/2/98
Instrument I.D.#:	MTJA5	MTJA5	MTJA5	MTJA5	MPE4
Conc. Spiked:	50 mg/Kg	50 mg/Kg	50 mg/Kg	50 mg/Kg	0.40 mg/Kg
Result:	43	44	66	62	0.55
MS % Recovery:	86	88	82	88	84
Dup. Result:	42	43	67	62	0.41
MSD % Recov.:	84	86	84	88	50
RPD:	2.4	2.3	1.5	0.0	29
RPD Limit:	0-20	0-20	0-20	0-20	0-20

LCS #:	BLK040298	BLK040298	BLK040298	BLK040298	BLK040298
Prepared Date:	4/2/98	4/2/98	4/2/98	4/2/98	4/2/98
Analyzed Date:	4/3/98	4/3/98	4/3/98	4/3/98	4/2/98
Instrument I.D.#:	MTJA5	MTJA5	MTJA5	MTJA5	MPE4
Conc. Spiked:	50 mg/Kg	50 mg/Kg	50 mg/Kg	50 mg/Kg	0.40 mg/Kg
LCS Result:	48	46	47	47	0.43
LCS % Recov.:	96	92	94	94	108

MS/MSD	80-120	80-120	80-120	80-120	
LCS	80-120	80-120	80-120	80-120	
Control Limits					75-125

**Please Note:**  
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

**SEQUOIA ANALYTICAL**  
  
Richard Herling  
Project Manager

\*\* MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9803K29.CCC <2>





Sequoia  
Analytical

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404 N. Wiget Lane  
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(707) 792-1865

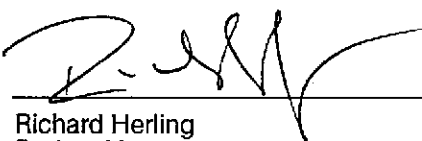
FAX (650) 364-9233  
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FAX (707) 792-0342

Cambria 1144 65th St. Suite C Oakland, CA 94608 Attention: Brian Busch	Client Proj. ID: Shell 610 Market St., Oakland Lab Proj. ID: 9803K29	Received: 03/31/98 Reported: 04/14/98
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### LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 12 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

**SEQUOIA ANALYTICAL**



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Richard Herling  
Project Manager





**SHELL OIL COMPANY**  
RETAIL ENVIRONMENTAL ENGINEERING - WEST

**CHAIN OF CUSTODY RECORD**

Date: 3-31-98

Serial No: \_\_\_\_\_

Page 1 of 2

Site Address: 610 Market St, Oakland

WIC#: 204-5508-5702

Shell Engineer: Alex Perez  
Phone No.: (510) 335-5027  
Fax #: (510) 335-5020

Consultant Name & Address: CAMBRIA ENVIRONMENTAL  
1114 65th St. Suite C, Oakland, CA 94608

Consultant Contact: Brian Busch  
Phone No.: 510-420-0700  
Fax #: 420-9170

Comments:

Sampled by: Aubrey Cool

Printed Name:

Analysis Required 9803121

LAB: \_\_\_\_\_

Sample ID	Date	Time Sludge	Soil	Water	Air	No. of confs.
SB-A-4.0'	3/31	9:45	X			1
SB-A-5.0'	1	9:55	X			1
SB-A-10.0'	2	10:00	X			1
SB-A-13.5'		10:05	X			1
SB-A		10:05		X		3
SB-B-3.0'		10:55	X			1
SB-B-5.0'	6	11:00	X			1
SB-B-10.0'	7	11:10	X			1

TPH (EPA 8015 Mod. GCS)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal - SW846 - 14	Combination TPH 8015 & BTEX 8020 + NTBE BY LABORATORY	Asbestos	Container Size	Preparation Used	Composite Y/N
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CHECK ONE (1) BOX ONLY	CI/DI	TURN AROUND TIME
G.W. Monitoring <input type="checkbox"/>	4441	24 hours <input type="checkbox"/>
Site Investigation <input checked="" type="checkbox"/>	4441	48 hours <input type="checkbox"/>
Soil Classify/Disposal <input type="checkbox"/>	4442	16 days <input type="checkbox"/> (Normal)
Water Classify/Disposal <input type="checkbox"/>	4443	Other <input type="checkbox"/>
Soil/Air Rem. or Sys. O & M <input type="checkbox"/>	4452	NOTE: Notify Lab as soon as possible of 24/48 hr. TAT.
Water Rem. or Sys. O & M <input type="checkbox"/>	4453	
Other <input type="checkbox"/>		

UST AGENCY: \_\_\_\_\_

MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
	HOLD
	HOLD

Requested By (signature):  
Aubrey K Cool  
Printed Name: Aubrey Cool  
Date: 3/31  
Time: 3:50

Requested By (signature):  
2/1  
Printed Name:  
Date:  
Time:

Requested By (signature):  
Printed Name:  
Date:  
Time:

Received (signature):  
Received (signature):  
Received (signature):  
Received (signature):

Printed Name: Nick Castro  
Printed Name:  
Printed Name: Ray Scroggin

Date: 3/31  
Time: 3:50  
Date:  
Time:  
Date: 3/31/98  
Time: 19:17



**SHELL OIL COMPANY**  
RETAIL ENVIRONMENTAL ENGINEERING - WEST

**CHAIN OF CUSTODY RECORD**

Serial No: \_\_\_\_\_

Date: 3-31-98

Page 2 of 2

Site Address: 610 Market St, Oakland

WIC#: 20A-5508-5702

Shell Engineer: Alex Perez  
Phone No.: (510) 335-5027  
Fax #: (510) 335-5220

Consultant Name & Address: CAMBRIA ENVIRONMENTAL  
1144 65th St. Suite C, Oakland, CA 94608

Consultant Contact: Brian Busch  
Phone No.: 510-420-0700  
Fax #: 420-9170

Comments:

Sampled by: Aubrey Cool

Printed Name:

Analysis Required 9803 227

LAB: \_\_\_\_\_

CHECK ONE (1) BOX ONLY	CI/DI	TURN AROUND TIME
G.W. Monitoring <input type="checkbox"/>	4441	24 hours <input type="checkbox"/>
Site Investigation <input checked="" type="checkbox"/>	4441	48 hours <input type="checkbox"/>
Soil Classify/Disposal <input type="checkbox"/>	4442	16 days <input type="checkbox"/> (Normal)
Water Classify/Disposal <input type="checkbox"/>	4443	Other <input type="checkbox"/>
Soil/Air Rem. or Sys. O & M <input type="checkbox"/>	4452	NOTE: Notify Lab as soon as possible of 24/48 hr. TAT.
Water Rem. or Sys. O & M <input type="checkbox"/>	4453	
Other <input type="checkbox"/>		

UST AGENCY: \_\_\_\_\_

Sample ID	Date	Time - Sludge	Soil	Water	Air	No. of conls.	TPH (EPA 8015 Mod. GCs)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal Shell 4B-V	Combination TPH 8015 & BTEX 8020 + MTBE	bulk density, moisture content, grain size distribution, PH, fraction organic carbon	Asbestos	Container Size	Preparation Used	Composite Y/N
SB-B	3/31	11:30		X		3						X			VAS	HCL	
SB-C-3.0'		12:20	X			1					X	X					
SB-C-5.0'		12:25	X			1				X							Y
SB-C-6.5'		12:30	X			1						X					
SB-C-10.0'		12:40	X			1						X					
SB-C	↓	2:10		X		3						X			VAS	HCL	

Relinquished By (signature): <i>Aubrey K Cool</i>	Printed Name: Aubrey Cool	Date: 3-31	Received (signature): <i>J.C.</i>	Printed Name: Nick Costanzo	Date: 3/31
Relinquished By (signature): <i>[Signature]</i>	Printed Name:	Time: 3:50	Received (signature): _____	Printed Name:	Time: 3:50
Relinquished By (signature): _____	Printed Name:	Date: 3/31	Received (signature): _____	Printed Name:	Date: _____
Relinquished By (signature): _____	Printed Name:	Time: 12:17	Received (signature): <i>R. Scragin</i>	Printed Name: R. Scragin	Time: 12:17

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN OF CUSTODY WITH INVOICE AND RESULTS