



ENVIRONMENTAL  
PROTECTION

98 FEB -4 PM 3: 58

January 28, 1998

Mr. Larry Seto  
Senior Hazardous Materials Specialist  
Alameda County Health Services Agency  
1131 Harbor Bay Parkway, Room #250  
Alameda, California 94502-6577

Re: **Investigation Report**  
Former Shell Service Station  
2160 Otis Drive  
Alameda, California  
WIC #204-0072-0502  
Cambria Project #24-627

Dear Mr. Seto:

On behalf of Shell Oil Products Company (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting the results of the subsurface investigation conducted on December 17, 1997 at the site referenced above. The investigation objective was to evaluate the soil and ground water in the areas noted in an Alameda County Department of Environmental Health (ACDEH) November 13, 1997 letter. The site is subject to a real estate transaction and expedited review of this report and our no further action recommendation is requested. The site background, investigation procedures, investigation results, and no further action request are presented below.

## BACKGROUND

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

This former Shell Service Station is located on Otis Drive, between Willow and Park Streets, in Alameda, California. The site is located approximately 3,000 feet east of San Francisco Bay. No further action status was granted by the ACDEH on November 14, 1995 based on the results of more than five years of ground water monitoring. Shell discontinued operation of this service station in September 1997 with the demolition of the station and removal of the underground storage tanks (USTs). Shell is leasing the property and no further action status from your office has been requested prior to returning the site to the property owners.

During the ground water monitoring between 1989 and 1995, the depth to ground water at this site varied between 3 and 5 ft with a flow direction of north-northeast. Ground water samples previously

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collected from former wells MW-1 and MW-2 contained over 6,500 milligrams per liter (mg/L) of total dissolved solids, which exceeds state guidelines for use as a drinking water source.

On August 1, 1997, nine Geoprobe® borings were sampled in order to pre-characterize the soil in the vicinity of the gasoline and waste oil tanks. Cambria's September 5, 1997 correspondence, which was submitted via facsimile to the ACDEH and as an attachment to our October 3, 1997 report, presented the analytic results of this preliminary investigation.

On September 4, 1997, Paradiso Mechanical of San Leandro, California (Paradiso) removed three 10,000-gallon fiberglass gasoline tanks and one 550-gallon fiberglass waste oil tank, as well as associated gasoline product piping, vent piping, and dispensers, using a backhoe. Before removal, the tanks and piping were triple rinsed by Crosby and Overton of Oakland, California, and the rinsate was hauled to the Shell refinery in Martinez, California for recovery. The site is underlain by sandy silt and silty sand of moderate to high estimated permeability to the total explored depth of 20 feet. A 6-inch thick clayey silt interval of low to moderate estimated permeability was typically encountered at approximately 11 feet below ground surface. Approximately 1 ft of ground water entered the gasoline tank excavation, which was approximately 13 ft deep, and the waste oil tank excavation, which was approximately 6 ft deep.

Following UST removal, Cambria collected six soil samples from near the ends of the former gasoline tanks by driving a brass tube into soil collected by the backhoe. One grab water sample was collected from the gasoline tank excavation using a disposable bailer. Cambria collected one soil sample from near the former waste oil tank. One grab water sample was collected from the waste oil tank excavation using a disposable bailer. Cambria collected six soil samples from beneath the former dispensers and product piping and one soil sample from beneath each of two former hoists and the former oil/water separator.

The tank removal and sampling activities were documented in Cambria's October 3, 1997 *Tank Removal and Sampling Report*. Sample locations are shown on Figure 1 and analytic results are summarized on the table below.

| Maximum Soil and Ground Water Analytical Results Summary<br>September 4, 1997 Tank and Dispenser Removal |                               |       |        |      |         |         |                   |         |       |       |                 |
|--|-------------------------------|-------|--------|------|---------|---------|-------------------|---------|-------|-------|-----------------|
| Location   | Matrix                        | TPPH  | TEPH   | TRPH | Benzene | Toluene | Ethyl-<br>benzene | Xylenes | MTBE  | Lead  | Other<br>Metals |
| Former Gasoline Tanks  | Ground Water, $\mu\text{g/L}$ | 8,300 | ---    | ---  | ND      | 45      | ND                | 1,300   | 8,300 | 0.018 | ---             |
|  | Soil, mg/kg                   | ND    | ---    | ---  | 0.11    | ND      | 0.0081            | 0.0089  | 0.49  | ND    | ---             |
| Former Dispensers  | Soil, mg/kg                   | 270   | ---    | ---  | 1.7     | 9.3     | 2.4               | 22      | 0.32  | ND    | ---             |
| Former Waste Oil Tank  | Ground Water, $\mu\text{g/L}$ | ND    | 12,000 | 150  | ND      | ND      | ND                | 0.81    | 8.5   | ND    | < MCLs          |
|  | Soil, mg/kg                   | ND    | ND     | ND   | ND      | ND      | ND                | ND      | ND    | ND    | Low             |

Notes:

Concentrations listed are the maximum concentrations detected in each location

--- = Not analyzed

ND = Not detected

<MCLs = Less than California primary maximum contaminant levels (22 CCR 64444)

mg/kg = Milligrams per kilogram

$\mu\text{g/L}$  = Micrograms per liter

TPPH = Total purgeable petroleum hydrocarbons by modified EPA Method 8015

TEPH = Total extractable petroleum hydrocarbons by modified EPA Method 8015

TRPH = Total recoverable petroleum hydrocarbons by Standard Method 5520 E & F

Benzene, toluene, ethylbenzene, xylenes by EPA Method 8020

MTBE = Methyl tert-butyl ether by EPA Method 8020

Lead by EPA Method 6010

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## INVESTIGATION PROCEDURES

Cambria based the soil boring locations on the comments presented in the November 13, 1997 ACDEH letter. The procedures used for Cambria's December 1997 subsurface investigation were described in the work plan dated November 25, 1997, which was approved in a letter from the ACDEH dated December 10, 1997. The procedures are summarized below. Analytic results for soil and ground water are summarized in Tables 1 and 2, and the analytic reports are presented in Attachment A. Boring logs and Cambria's standard field procedures for Geoprobe® sampling are presented in Attachments B and C, respectively.

### Field Activities

**Personnel Present:** Paul Waite, Project Manager, and Aubrey Cool, Staff Geologist, of Cambria.

**Permits:** Alameda County Public Works Agency Drilling Permit #97WR239, issued December 15, 1997.

**Drilling Company:** Vironex of Hayward, California (C-57 License #705927).

**Drilling Dates:** December 17, 1997.

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

**Number of Borings:** Seven (G-1 through G-7) (Figure 1).

**Boring Locations:** Boring G-1 was placed down gradient of the former gasoline tank pit. Boring G-2 was placed down gradient of the former dispenser islands, and boring G-3 was down gradient of the former waste oil tank. Borings G-4 and G-5 were placed in the furthest down gradient corner (the northern corner) of the property. Borings G-1, G-2, G-3, and G-5 were installed to 12 ft depth and soil and grab ground water samples were collected from each boring. Boring G-4 encountered a subsurface obstruction at 4.3 feet; a soil sample was collected but ground water was not encountered. Borings G-6 and G-7 were installed near the former dispenser island where sample

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D-4 was previously collected. These two borings were installed to 8 ft depth for soil sampling only.

***Boring Depths:*** 8 to 12 ft (Attachment B).

***Ground Water Depths:*** Ground water was encountered in each of the borings, except boring G-4, at approximately 3.5 to 8 ft depth.

***Sediment Lithology:*** The site subsurface consists of silty sands of moderate to high estimated permeability to approximately 10 ft depth. The silty sands were underlain by an interval of black organic sandy silt with occasional small shell fragments. (Attachment B).

***Chemical Analyses:*** As proposed in the work plan dated November 25, 1997, soil and grab ground water samples were submitted for the following analyses:

Soil and water samples from borings G-1, G-2, G-4, G-5, G-6, and G-7 were analyzed for:

- TPPH by modified EPA Method 8015; and,
- MTBE, benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8020. MTBE concentrations in water samples were confirmed by EPA Method 8260.

The soil sample from boring SB-3, down gradient of the former waste oil tank location, was also analyzed for TEPH by modified EPA Method 8015 and TRPH by Standard Method 5520 E&F. The grab water sample from boring SB-3 was analyzed for TRPH by Standard Method 5520 E&F; the water sample analysis for TEPH was performed but not completed by the laboratory within the standard holding time.

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

## INVESTIGATION RESULTS

*Hydrocarbon Distribution in Soil:* No TPPH was detected in any of the soil samples analyzed. No BTEX compounds were detected in any of the samples except G-6, 3.5', which was collected near the former dispenser islands. In that sample, the benzene concentration was 0.0059 mg/kg, and other compound concentrations were similarly very low. MTBE was only detected in sample G-1, 3.5', down gradient of the former gasoline tank pit, at a concentration of 0.028 mg/kg.

Only sample G-3, 3.5', down gradient of the former waste oil tank, was analyzed for TRPH; the TRPH concentration in that sample was 110 mg/kg. No TEPH was detected in that sample.

*Hydrocarbon Distribution in Ground Water:* TPPH, BTEX, and MTBE were detected down gradient of the former UST pit and dispensers in the grab ground water samples from borings G-1 and G-3. However, no TPPH, BTEX, or MTBE were detected in the sample from boring G-5, which was at the furthest down gradient corner of the property.

No TPPH, TEPH, BTEX, or MTBE were detected in the sample from boring G-3, down gradient of the former waste oil tank, while TRPH was detected in the sample. Although the TEPH analysis for the water sample was not completed within the standard sample holding time, the absence of detectable TEPH in the water sample and the soil sample from boring G-3 (immediately above the ground water) indicates that TEPH range hydrocarbons are not present in significant concentrations in the ground water near the former waste oil tank.

## NO FURTHER ACTION REQUEST

Based on the sampling results summarized herein, the remaining hydrocarbons in soil and ground water appear to be limited to the area immediately adjacent to the former tanks and dispensers. Because the tanks and dispensers have been removed, there are no ongoing sources of hydrocarbons in soil at this site. Shallow ground water in the area has a TDS concentration above 3,000 mg/L, which exceeds the state guidelines for use as a drinking water source. The low residual hydrocarbons in soil and ground water will naturally attenuate and should not impede future development of the property or pose a significant risk to future property occupants or the environment. Based on these factors, Cambria, on behalf of Shell, requests issuance of no further action status for the site.

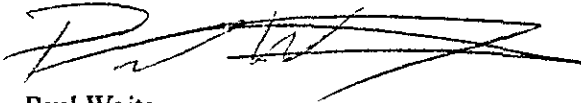
Mr. Larry Seto  
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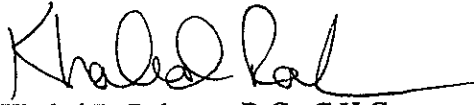
**CLOSING**

We appreciate your continued assistance with this project. Please call if you have any questions or comments.

Sincerely,  
Cambria Environmental Technology, Inc.



Paul Waite  
Project Engineer



Khaled B. Rahman, R.G., C.H.G.  
Senior Geologist



- Attachments: A - Analytic Results for Soil and Ground Water  
B - Soil Boring Logs  
C - Standard Field Procedures for Geoprobe Sampling

cc: A.E. (Alex) Perez, Shell Oil Products Company, P.O. Box 8080, Martinez, California 94553

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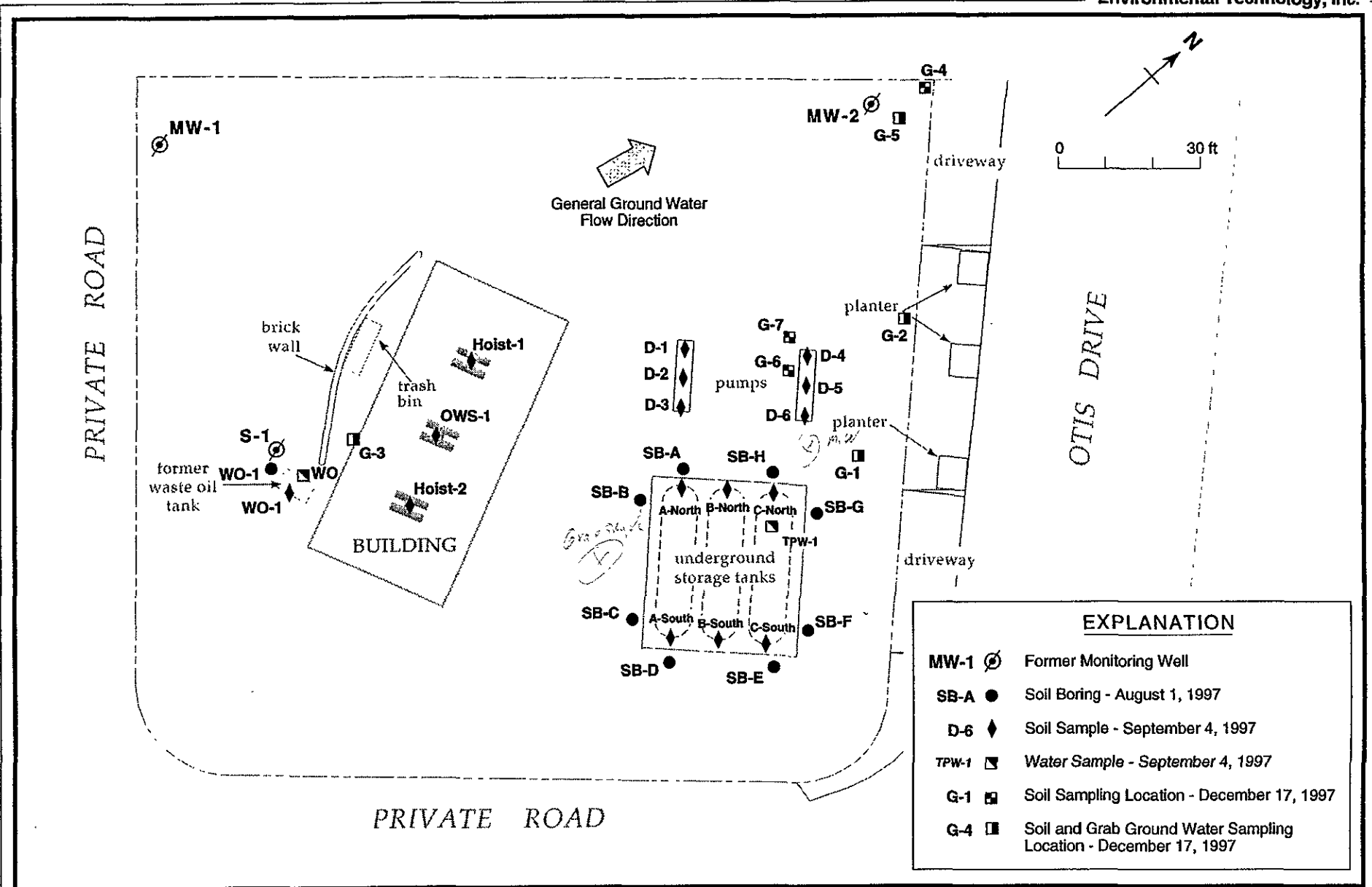


Figure 1. Sample Locations - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California



Table 1. Soil Analytic Data - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California

| Sample ID,<br>Depth in ft | Sample<br>Location                 | Date<br>Sampled | TPPH<br>(mg/kg) | TEPH<br>(mg/kg) | TRPH<br>(mg/kg) | Benzene<br>(mg/kg) | Toluene<br>(mg/kg) | Ethylbenzene<br>(mg/kg) | Xylenes<br>(mg/kg) | MTBE<br>(mg/kg) |
|---------------------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|--------------------|--------------------|-------------------------|--------------------|-----------------|
| G-1, 3.5                  | Down gradient of<br>UST pit        | 12/17/97        | <1.0            | —               | ---             | <0.0050            | <0.0050            | <0.0050                 | <0.0050            | 0.028           |
| G-2, 3.5                  | Down gradient of<br>dispensers     | 12/17/97        | <1.0            | —               | ---             | <0.0050            | <0.0050            | <0.0050                 | <0.0050            | <0.025          |
| G-3, 3.5                  | Down gradient of<br>waste oil tank | 12/17/97        | <1.0            | <1.0            | 110             | <0.0050            | <0.0050            | <0.0050                 | <0.0050            | <0.025          |
| G-4, 3.5                  | North corner                       | 12/17/97        | <1.0            | ---             | ---             | <0.0050            | <0.0050            | <0.0050                 | <0.0050            | <0.025          |
| G-5, 3.5                  | North corner                       | 12/17/97        | <1.0            | ---             | ---             | <0.0050            | <0.0050            | <0.0050                 | <0.0050            | <0.025          |
| G-6, 3.5                  | Dispensers                         | 12/17/97        | 5.2             | ---             | ---             | 0.0059             | 0.041              | 0.025                   | 0.70               | <0.025          |
| G-6, 7.5                  | Dispensers                         | 12/17/97        | <1.0            | ---             | ---             | <0.0050            | <0.0050            | <0.0050                 | <0.0050            | <0.025          |
| G-7, 3.5                  | Dispensers                         | 12/17/97        | <1.0            | ---             | ---             | <0.0050            | <0.0050            | <0.0050                 | <0.0050            | <0.025          |
| G-7, 7.5                  | Dispensers                         | 12/17/97        | <1.0            | ---             | ---             | <0.0050            | <0.0050            | <0.0050                 | <0.0050            | <0.025          |

mg/kg = Milligrams per kilogram  
 TPPH = Total purgable petroleum hydrocarbons (gasoline) by modified EPA Method 8015  
 TEPH = Total extractable petroleum hydrocarbons (diesel) by modified EPA Method 8015  
 TRPH = Total recoverable petroleum hydrocarbons (oil and grease) by Standard Method 5520 E&F  
 MTBE = Methyl tert-butyl ether by EPA Method 8020  
 Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020  
 UST = Underground storage tank  
 <n = Below detection limit of n mg/kg  
 --- = Not analyzed

**Table 2. Ground Water Analytic Data - Shell Service Station WIC# 204-0072-0502, 2160 Otis Street, Alameda, California**

| Sample ID | Sample Location                 | Date Sampled | <i>gas</i><br>TPPH<br>(µg/L) | <i>Diesel</i><br>TEPH<br>(µg/L) | <i>Oil &amp; Grease</i><br>TRPH<br>(µg/L) | Benzene<br>(µg/L) | Toluene<br>(µg/L) | Ethylbenzene<br>(µg/L) | Xylenes<br>(µg/L) | MTBE (8020)<br>(µg/L) | MTBE (8260)<br>(µg/L) |
|-----------|---------------------------------|--------------|------------------------------|---------------------------------|---|-------------------|-------------------|------------------------|-------------------|-----------------------|-----------------------|
| G-1       | Down gradient of UST pit        | 12/17/97     | 2,900                        | —                               | —   | 240               | <25               | 85                     | 240               | 890                   | 920                   |
| G-2       | Down gradient of dispensers     | 12/17/97     | 780                          | —                               | —   | 110               | 3.0               | 21                     | 5.5               | 46                    | 57                    |
| G-3       | Down gradient of waste oil tank | 12/17/97     | <50                          | <50 *                           | 5,600                                     | <0.50             | <0.50             | <0.50                  | <0.50             | <2.5                  | ---                   |
| G-5       | North corner                    | 12/17/97     | <50                          | —                               | —   | <0.50             | <0.50             | <0.50                  | <0.50             | <2.5                  | —                     |

µg/L = Micrograms per liter

TPPH = Total purgable petroleum hydrocarbons (gasoline) by modified EPA Method 8015

TEPH = Total extractable petroleum hydrocarbons (diesel) by modified EPA Method 8015

TRPH = Total recoverable petroleum hydrocarbons (oil and grease) by Standard Method 5520 E&F

MTBE = Methyl tert-butyl ether by EPA Method 8020 and EPA Method 8260

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

UST = Underground storage tank

<n = Below detection limit of n µg/L

\* = TEPH analysis not completed within standard holding time

--- = Not analyzed

Soil sample D-4 taken on 9-4-97 → 270 ppm TPPH  
 1.7 ppm Benzene  
 9.3 ppm Toluene  
 2.4 ppm Ethylbenzene  
 22.0 ppm Xylenes  
 < 1.2 ppm MTBE

# **Attachment A**

Analytic Results for Soil and Ground Water



# 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  
FAX (510) 988-9673  
FAX (916) 921-0100

Cambria  
1144 65th St. Suite C  
Oakland, CA 94608  
Attention: Paul Waite

Project: Shell 2160 Otis, Alameda

Enclosed are the results from samples received at Sequoia Analytical on December 18, 1997.  
The requested analyses are listed below:

| <u>SAMPLE #</u> | <u>SAMPLE DESCRIPTION</u> | <u>DATE COLLECTED</u> | <u>TEST METHOD</u>         |
|-----------------|---------------------------|-----------------------|----------------------------|
| 9712C83 -01     | SOLID, G-1, 3.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -02     | SOLID, G-2, 3.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -03     | SOLID, G-3, 3.5           | 12/17/97              | TRPH (SM 5520 E&F)         |
| 9712C83 -03     | SOLID, G-3, 3.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -03     | SOLID, G-3, 3.5           | 12/17/97              | TPHD_S Extractable TPH     |
| 9712C83 -04     | SOLID, G-4, 3.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -05     | SOLID, G-5, 3.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -06     | SOLID, G-6, 3.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -07     | SOLID, G-6, 7.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -08     | SOLID, G-7, 3.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -09     | SOLID, G-7, 7.5           | 12/17/97              | TPGBMS Purgeable TPH/BTEX  |
| 9712C83 -10     | LIQUID, G-1               | 12/17/97              | TPGBMW Purgeable TPH/BTEX  |
| 9712C83 -10     | LIQUID, G-1               | 12/17/97              | MTBEMW Methyl t-Butyl EtHe |

**SEQUOIA ANALYTICAL**





# 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

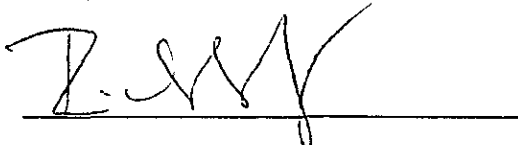
FAX (650) 364-9233  
FAX (510) 988-9673  
FAX (916) 921-0100

| <u>SAMPLE #</u> | <u>SAMPLE DESCRIPTION</u> | <u>DATE COLLECTED</u> | <u>TEST METHOD</u>         |
|-----------------|---------------------------|-----------------------|----------------------------|
| 9712C83 -11     | LIQUID, G-2               | 12/17/97              | TPGBMW Purgeable TPH/BTEX  |
| 9712C83 -11     | LIQUID, G-2               | 12/17/97              | MTBEMW Methyl t-Butyl Ethe |
| 9712C83 -12     | LIQUID, G-3               | 12/17/97              | TPGBMW Purgeable TPH/BTEX  |
| 9712C83 -12     | LIQUID, G-3               | 12/17/97              | TRPH (SM 5520 B&F)         |
| 9712C83 -13     | LIQUID, G-5               | 12/17/97              | TPGBMW Purgeable TPH/BTEX  |

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





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

Client Proj. ID: Shell 2160 Otis, Alameda  
 Lab Proj. ID: 9712C83

Sampled: 12/17/97  
 Received: 12/18/97  
 Analyzed: see below

Attention: Paul Waite

Reported: 01/06/98

**LABORATORY ANALYSIS**

| Analyte   | Units | Date Analyzed | Detection Limit | Sample Results |
|---|-------|---------------|-----------------|----------------|
| Lab No: 9712C83-03<br>Sample Desc: SOLID,G-3, 3.5 |       |               |                 |                |
| TRPH (SM 5520 E&F)                                | mg/Kg | 12/26/97      | 50              | 110            |
| Lab No: 9712C83-12<br>Sample Desc: LIQUID,G-3     |       |               |                 |                |
| TRPH (SM 5520 B&F)                                | mg/L  | 12/28/97      | 5.0             | 5.6            |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

Richard Herling  
 Project Manager





|   |  |  |
|---|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-1, 3.5<br>Matrix: SOLID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-01 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/26/97<br>Analyzed: 12/30/97<br>Reported: 01/06/98 |
|---|--|--|

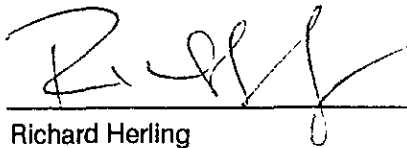
QC Batch Number: GC122697BTEXEXA  
Instrument ID: GCHP01

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

| Analyte                     | Detection Limit<br>mg/Kg | Sample Results<br>mg/Kg |
|-----------------------------|--------------------------|-------------------------|
| TPPH as Gas                 | 1.0                      | N.D.                    |
| <b>Methyl t-Butyl Ether</b> | <b>0.025</b>             | <b>0.028</b>            |
| 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                     |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





|  |  |  |
|--|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608<br>Attention: Paul Waite | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-2, 3.5<br>Matrix: SOLID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-02 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/26/97<br>Analyzed: 12/30/97<br>Reported: 01/06/98 |
|--|--|--|

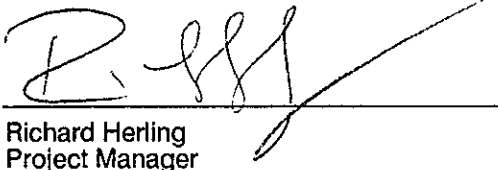
QC Batch Number: GC122697BTEXEXA  
Instrument ID: GCHP18

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

| Analyte               | Detection Limit<br>mg/Kg | Sample Results<br>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                       | 77                      |
| 4-Bromofluorobenzene  | 60                       | 87                      |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager







|   |  |  |
|---|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-3, 3.5<br>Matrix: SOLID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-03 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/26/97<br>Analyzed: 12/30/97<br>Reported: 01/06/98 |
| Attention: Paul Waite                                 |  |  |

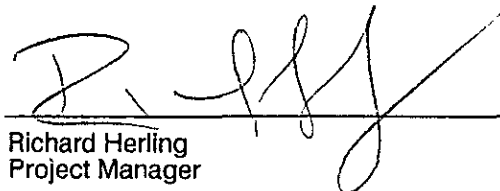
QC Batch Number: GC122697BTEXEXA  
Instrument ID: GCHP18

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

| Analyte               | Detection Limit<br>mg/Kg | Sample Results<br>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                     |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





|   |  |  |
|---|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-3, 3.5<br>Matrix: SOLID<br>Analysis Method: EPA 8015 Mod<br>Lab Number: 9712C83-03 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/23/97<br>Analyzed: 12/29/97<br>Reported: 01/06/98 |
|---|--|--|

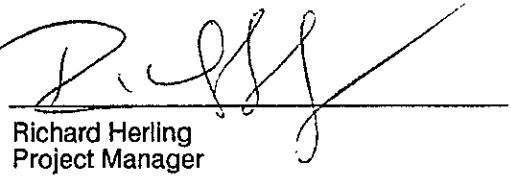
QC Batch Number: GC1223970HBPEXB  
Instrument ID: GCHP4A

**Total Extractable Petroleum Hydrocarbons (TEPH)**

| Analyte                                 | Detection Limit<br>mg/Kg    | Sample Results<br>mg/Kg |
|---|-----------------------------|-------------------------|
| TEPH as Diesel<br>Chromatogram Pattern: | 1.0                         | N.D.                    |
| <b>Surrogates</b>                       | <b>Control Limits %</b>     | <b>% Recovery</b>       |
| n-Pentacosane (C25)                     | 50                      150 | 99                      |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





|   |  |  |
|---|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-4, 3.5<br>Matrix: SOLID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-04 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/26/97<br>Analyzed: 12/30/97<br>Reported: 01/06/98 |
|---|--|--|

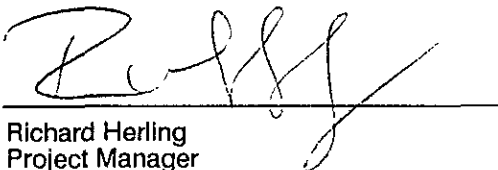
QC Batch Number: GC122697BTEXEXA  
Instrument ID: GCHP18

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

| Analyte               | Detection Limit<br>mg/Kg | Sample Results<br>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                     |

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

**SEQUOIA ANALYTICAL - ELAP #1210**



Richard Herling  
Project Manager





|                       |   |                     |
|-----------------------|---|---------------------|
| Cambria               | Client Proj. ID: Shell 2160 Otis, Alameda | Sampled: 12/17/97   |
| 1144 65th St. Suite C | Sample Descript: G-5, 3.5                 | Received: 12/18/97  |
| Oakland, CA 94608     | Matrix: SOLID                             | Extracted: 12/26/97 |
| Attention: Paul Waite | Analysis Method: 8015Mod/8020             | Analyzed: 12/30/97  |
|                       | Lab Number: 9712C83-05                    | Reported: 01/06/98  |

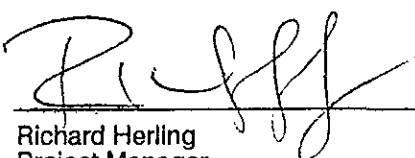
QC Batch Number: GC122697BTEXEXA  
Instrument ID: GCHP18

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

| Analyte               | Detection Limit<br>mg/Kg | Sample Results<br>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                   | 79                      |
| 4-Bromofluorobenzene  | 60 140                   | 83                      |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





|   |  |  |
|---|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-6, 3.5<br>Matrix: SOLID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-06 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/26/97<br>Analyzed: 12/30/97<br>Reported: 01/06/98 |
| Attention: Paul Waite                                 |  |  |

QC Batch Number: GC122697BTEXEXA  
Instrument ID: GCHP01

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

| Analyte                                | Detection Limit<br>mg/Kg | Sample Results<br>mg/Kg |
|--|--------------------------|-------------------------|
| TPPH as Gas                            | 1.0                      | 5.2                     |
| Methyl t-Butyl Ether                   | 0.025                    | N.D.                    |
| Benzene                                | 0.0050                   | 0.0059                  |
| Toluene                                | 0.0050                   | 0.041                   |
| Ethyl Benzene                          | 0.0050                   | 0.025                   |
| Xylenes (Total)                        | 0.0050                   | 0.70                    |
| Chromatogram Pattern:<br>Weathered Gas |                          | C6-C12                  |
| <b>Surrogates</b>                      | <b>Control Limits %</b>  | <b>% Recovery</b>       |
| Trifluorotoluene                       | 70 130                   | 81                      |
| 4-Bromofluorobenzene                   | 60 140                   | 104                     |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

  
Richard Herling  
Project Manager





|   |  |  |
|---|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-6, 7.5<br>Matrix: SOLID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-07 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/26/97<br>Analyzed: 12/30/97<br>Reported: 01/06/98 |
|---|--|--|


QC Batch Number: GC122697BTEXEXA  
Instrument ID: GCHP22

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

| Analyte               | Detection Limit<br>mg/Kg | Sample Results<br>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                   | 105                     |
| 4-Bromofluorobenzene  | 60 140                   | 90                      |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

  
Richard Herling  
Project Manager





|  |  |  |
|--|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608<br>Attention: Paul Waite | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-7, 3.5<br>Matrix: SOLID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-08 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/26/97<br>Analyzed: 12/30/97<br>Reported: 01/06/98 |
|--|--|--|

QC Batch Number: GC122697BTEXEXA  
 Instrument ID: GCHP22

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

| Analyte               | Detection Limit<br>mg/Kg    | Sample Results<br>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 | 104                     |
| 4-Bromofluorobenzene  | 60                      140 | 93                      |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
 Richard Herling  
 Project Manager





|   |  |  |
|---|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-7, 7.5<br>Matrix: SOLID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-09 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 12/26/97<br>Analyzed: 12/31/97<br>Reported: 01/06/98 |
|---|--|--|

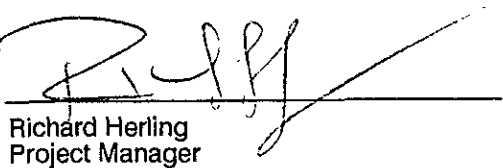
QC Batch Number: GC122697BTEXEXA  
Instrument ID: GCHP01

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

| Analyte               | Detection Limit<br>mg/Kg    | Sample Results<br>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 | 91                      |
| 4-Bromofluorobenzene  | 60                      140 | 98                      |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager







|  |  |   |
|--|--|---|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608<br>Attention: Paul Waite | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-1<br>Matrix: LIQUID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-10 | Sampled: 12/17/97<br>Received: 12/18/97<br>Analyzed: 12/31/97<br>Reported: 01/06/98 |
|--|--|---|

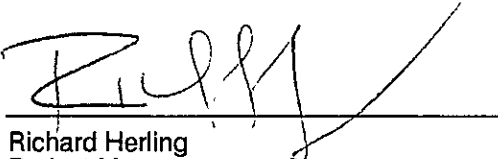
QC Batch Number: GC123197BTEX18A  
Instrument ID: GCHP18

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

| Analyte               | Detection Limit<br>ug/L | Sample Results<br>ug/L |
|-----------------------|-------------------------|------------------------|
| TPPH as Gas           | 2500                    | 2900                   |
| Methyl t-Butyl Ether  | 125                     | 890                    |
| Benzene               | 25                      | 240                    |
| Toluene               | 25                      | N.D.                   |
| Ethyl Benzene         | 25                      | 85                     |
| Xylenes (Total)       | 25                      | 240                    |
| Chromatogram Pattern: |                         | C6-C8                  |
| <b>Surrogates</b>     | <b>Control Limits %</b> | <b>% Recovery</b>      |
| Trifluorotoluene      | 70 130                  | 92                     |

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

SEQUOIA ANALYTICAL - ELAP #1210

  
 Richard Herling  
 Project Manager





|   |  |   |
|---|--|---|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-1<br>Matrix: LIQUID<br>Analysis Method: EPA 8260<br>Lab Number: 9712C83-10 | Sampled: 12/17/97<br>Received: 12/18/97<br>Analyzed: 01/06/98<br>Reported: 01/06/98 |
|---|--|---|


QC Batch Number: MS010698MTBEF3A  
Instrument ID: F3

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

| Analyte               | Detection Limit<br>ug/L | Sample Results<br>ug/L |
|-----------------------|-------------------------|------------------------|
| Methyl t-Butyl Ether  | 10                      | 920                    |
| <b>Surrogates</b>     | <b>Control Limits %</b> | <b>% Recovery</b>      |
| 1,2-Dichloroethane-d4 | 76      114             | 93                     |

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

**SEQUOIA ANALYTICAL - ELAP #1210**



Richard Herling  
Project Manager





|   |  |   |
|---|--|---|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-2<br>Matrix: LIQUID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-11 | Sampled: 12/17/97<br>Received: 12/18/97<br>Analyzed: 12/31/97<br>Reported: 01/06/98 |
| Attention: Paul Waite                                 |  |   |

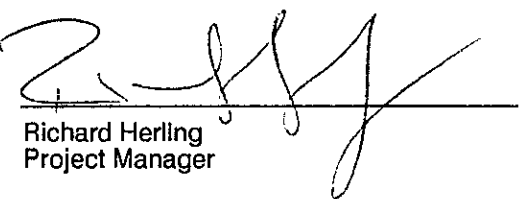
QC Batch Number: GC123197BTEX18A  
Instrument ID: GCHP18

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

| Analyte               | Detection Limit<br>ug/L     | Sample Results<br>ug/L |
|-----------------------|-----------------------------|------------------------|
| TPPH as Gas           | 250                         | 780                    |
| Methyl t-Butyl Ether  | 12                          | 46                     |
| Benzene               | 2.5                         | 110                    |
| Toluene               | 2.5                         | 3.0                    |
| Ethyl Benzene         | 2.5                         | 21                     |
| Xylenes (Total)       | 2.5                         | 5.5                    |
| Chromatogram Pattern: |                             | C6-C8                  |
| <b>Surrogates</b>     | <b>Control Limits %</b>     | <b>% Recovery</b>      |
| Trifluorotoluene      | 70                      130 | 103                    |

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Richard Herling  
Project Manager





|  |  |   |
|--|--|---|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608<br>Attention: Paul Waite | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-2<br>Matrix: LIQUID<br>Analysis Method: EPA 8260<br>Lab Number: 9712C83-11 | Sampled: 12/17/97<br>Received: 12/18/97<br>Analyzed: 01/06/98<br>Reported: 01/06/98 |
|--|--|---|

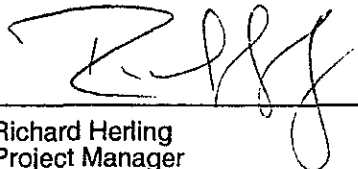
QC Batch Number: MS010698MTBEF3A  
Instrument ID: F3

### Methyl t-Butyl Ether (MTBE)

| Analyte               | Detection Limit<br>ug/L     | Sample Results<br>ug/L |
|-----------------------|-----------------------------|------------------------|
| Methyl t-Butyl Ether  | 2.0                         | 57                     |
| <b>Surrogates</b>     | <b>Control Limits %</b>     | <b>% Recovery</b>      |
| 1,2-Dichloroethane-d4 | 76                      114 | 92                     |

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

**SEQUOIA ANALYTICAL** - ELAP #1210



Richard Herling  
Project Manager





|   |  |   |
|---|--|---|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-3<br>Matrix: LIQUID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-12 | Sampled: 12/17/97<br>Received: 12/18/97<br>Analyzed: 12/31/97<br>Reported: 01/06/98 |
|---|--|---|

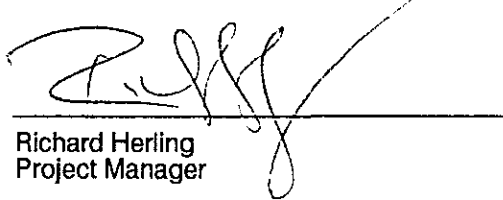
QC Batch Number: GC123197BTEX18A  
Instrument ID: GCHP18

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

| Analyte               | Detection Limit<br>ug/L     | Sample Results<br>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 | 89                     |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

  
Richard Herling  
Project Manager





|   |  |   |
|---|--|---|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-5<br>Matrix: LIQUID<br>Analysis Method: 8015Mod/8020<br>Lab Number: 9712C83-13 | Sampled: 12/17/97<br>Received: 12/18/97<br>Analyzed: 12/31/97<br>Reported: 01/06/98 |
| Attention: Paul Waite                                 |  |   |

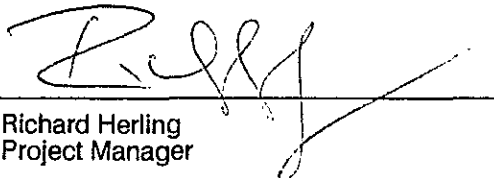
QC Batch Number: GC123197BTEX03A  
Instrument ID: GCHP3

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

| Analyte               | Detection Limit<br>ug/L | Sample Results<br>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                  | 88                     |

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  
FAX (510) 988-9673  
FAX (916) 921-0100

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

Client Project ID: Shell 2160 Otis, Alameda  
Matrix: Solid

Work Order #: 9712C83 01-09

Reported: Jan 9, 1998

## QUALITY CONTROL DATA REPORT

| Analyte:       | Benzene         | Toluene         | Ethyl Benzene   | Xylenes         | Gas             |
|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| QC Batch#:     | GC122697BTEXEXA | GC122697BTEXEXA | GC122697BTEXEXA | GC122697BTEXEXA | GC122697BTEXEXA |
| 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 #:         | 9712C8301  | 9712C8301  | 9712C8301  | 9712C8301  | 9712C8301 |
| Sample Conc.:     | N.D.       | N.D.       | N.D.       | N.D.       | N.D.      |
| Prepared Date:    | 12/26/97   | 12/26/97   | 12/26/97   | 12/26/97   | 12/26/97  |
| Analyzed Date:    | 12/26/97   | 12/26/97   | 12/26/97   | 12/26/97   | 12/26/97  |
| 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:           | 0.18       | 0.17       | 0.17       | 0.49       | 1.0       |
| MS % Recovery:    | 90         | 85         | 85         | 82         | 83        |
| Dup. Result:      | 0.17       | 0.17       | 0.17       | 0.46       | 1.0       |
| MSD % Recov.:     | 85         | 85         | 85         | 77         | 83        |
| RPD:              | 5.7        | 0.0        | 0.0        | 6.3        | 0.0       |
| RPD Limit:        | 0-25       | 0-25       | 0-25       | 0-25       | 0-25      |

|                   |            |            |            |            |           |
|-------------------|------------|------------|------------|------------|-----------|
| LCS #:            | BLK122697  | BLK122697  | BLK122697  | BLK122697  | BLK122697 |
| Prepared Date:    | 12/26/97   | 12/26/97   | 12/26/97   | 12/26/97   | 12/26/97  |
| Analyzed Date:    | 12/26/97   | 12/26/97   | 12/26/97   | 12/26/97   | 12/26/97  |
| 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:       | 0.20       | 0.20       | 0.19       | 0.56       | 1.2       |
| LCS % Recov.:     | 100        | 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

Richard Herling  
Project Manager

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

9712C83.CCC <1>





Cambria Environmental Tech. Client Project ID: Shell 2160 Otis, Alameda  
 1144 65th St., Ste. C Matrix: Solid  
 Oakland, CA 94608  
 Attention: Paul Waite Work Order #: 9712C83 10-12 Reported: Jan 9, 1998

**QUALITY CONTROL DATA REPORT**

| Analyte:       | Benzene         | Toluene         | Ethyl Benzene   | Xylenes         | Gas             |
|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| QC Batch#:     | GC123197BTEX18A | GC123197BTEX18A | GC123197BTEX18A | GC123197BTEX18A | GC123197BTEX18A |
| 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:          | R. Geckler | R. Geckler | R. Geckler | R. Geckler | R. Geckler |
| MS/MSD #:         | 9712D1506  | 9712D1506  | 9712D1506  | 9712D1506  | 9712D1506  |
| Sample Conc.:     | N.D.       | N.D.       | N.D.       | N.D.       | N.D.       |
| Prepared Date:    | 12/31/97   | 12/31/97   | 12/31/97   | 12/31/97   | 12/31/97   |
| Analyzed Date:    | 12/31/97   | 12/31/97   | 12/31/97   | 12/31/97   | 12/31/97   |
| Instrument I.D.#: | GCHP18     | GCHP18     | GCHP18     | GCHP18     | GCHP18     |
| Conc. Spiked:     | 10 µg/L    | 10 µg/L    | 10 µg/L    | 30 µg/L    | 60 µg/L    |
| Result:           | 8.6        | 8.7        | 8.6        | 27         | 67         |
| MS % Recovery:    | 86         | 87         | 86         | 90         | 112        |
| Dup. Result:      | 9.0        | 9.2        | 9.0        | 28         | 69         |
| MSD % Recov.:     | 90         | 92         | 90         | 93         | 115        |
| RPD:              | 4.5        | 5.6        | 4.5        | 3.6        | 2.9        |
| RPD Limit:        | 0-25       | 0-25       | 0-25       | 0-25       | 0-25       |

| LCS #:            | BLK123197 | BLK123197 | BLK123197 | BLK123197 | BLK123197 |
|-------------------|-----------|-----------|-----------|-----------|-----------|
| Prepared Date:    | 12/31/97  | 12/31/97  | 12/31/97  | 12/31/97  | 12/31/97  |
| Analyzed Date:    | 12/31/97  | 12/31/97  | 12/31/97  | 12/31/97  | 12/31/97  |
| Instrument I.D.#: | GCHP18    | GCHP18    | GCHP18    | GCHP18    | GCHP18    |
| Conc. Spiked:     | 10 µg/L   | 10 µg/L   | 10 µg/L   | 30 µg/L   | 60 µg/L   |
| LCS Result:       | 10        | 10        | 10        | 30        | 77        |
| LCS % Recov.:     | 100       | 100       | 100       | 100       | 128       |

|                |        |        |        |        |        |
|----------------|--------|--------|--------|--------|--------|
| 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







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

Client Project ID: Shell 2160 Otis, Alameda  
Matrix: Solid  
Work Order #: 9712C83 13

Reported: Jan 9, 1998

**QUALITY CONTROL DATA REPORT**

| Analyte:       | Benzene         | Toluene         | Ethyl Benzene   | Xylenes         | Gas             |
|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| QC Batch#:     | GC123197BTEX03A | GC123197BTEX03A | GC123197BTEX03A | GC123197BTEX03A | GC123197BTEX03A |
| 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:          | A. Miraftab | A. Miraftab | A. Miraftab | A. Miraftab | A. Miraftab |
| MS/MSD #:         | 9712D1506   | 9712D1506   | 9712D1506   | 9712D1506   | 9712D1506   |
| Sample Conc.:     | N.D.        | N.D.        | N.D.        | N.D.        | N.D.        |
| Prepared Date:    | 12/31/97    | 12/31/97    | 12/31/97    | 12/31/97    | 12/31/97    |
| Analyzed Date:    | 12/31/97    | 12/31/97    | 12/31/97    | 12/31/97    | 12/31/97    |
| 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:           | 10          | 11          | 11          | 34          | 69          |
| MS % Recovery:    | 100         | 110         | 110         | 113         | 115         |
| Dup. Result:      | 9.8         | 10          | 10          | 31          | 64          |
| MSD % Recov.:     | 98          | 100         | 100         | 103         | 107         |
| RPD:              | 2.0         | 9.5         | 9.5         | 9.2         | 7.5         |
| RPD Limit:        | 0-25        | 0-25        | 0-25        | 0-25        | 0-25        |

| LCS #:            | BLK123197 | BLK123197 | BLK123197 | BLK123197 | BLK123197 |
|-------------------|-----------|-----------|-----------|-----------|-----------|
| Prepared Date:    | 12/31/97  | 12/31/97  | 12/31/97  | 12/31/97  | 12/31/97  |
| Analyzed Date:    | 12/31/97  | 12/31/97  | 12/31/97  | 12/31/97  | 12/31/97  |
| 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:       | 9.7       | 10        | 10        | 31        | 64        |
| LCS % Recov.:     | 97        | 100       | 100       | 103       | 107       |

|                |        |        |        |        |        |
|----------------|--------|--------|--------|--------|--------|
| 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





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

Client Project ID: Shell 2160 Otis, Alameda  
Matrix: Solid

Work Order #: 9712C83 03

Reported: Jan 9, 1998

**QUALITY CONTROL DATA REPORT**

**Analyte:** Total Recoverable  
Petroleum Hydrocarbons  
**QC Batch#:** IN122397552000A  
**Analy. Method:** SM 5520EF  
**Prep. Method:**

**Analyst:** P. Cheung  
**MS/MSD #:** 9712C8303  
**Sample Conc.:** N.D.  
**Prepared Date:** 12/23/97  
**Analyzed Date:** 12/23/97  
**Instrument I.D.#:** MANUAL  
**Conc. Spiked:** 150 mg/Kg

**Result:** 160  
**MS % Recovery:** 106

**Dup. Result:** 141  
**MSD % Recov.:** 96

**RPD:** 13  
**RPD Limit:** 0-30

**LCS #:** LCS122397

**Prepared Date:** 12/23/97  
**Analyzed Date:** 12/23/97  
**Instrument I.D.#:** MANUAL  
**Conc. Spiked:** 150 mg/Kg

**LCS Result:** 142  
**LCS % Recov.:** 98

**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  
Project Manager





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

Client Project ID: Shell 2160 Otis, Alameda  
Matrix: Solid

Work Order #: 9712C83 03

Reported: Jan 9, 1998

**QUALITY CONTROL DATA REPORT**

|                       |                 |
|-----------------------|-----------------|
| <b>Analyte:</b>       | Diesel          |
| <b>QC Batch#:</b>     | GC1223970HBPEXB |
| <b>Analy. Method:</b> | EPA 8015M       |
| <b>Prep. Method:</b>  | EPA 3550/DHS    |

**Analyst:** G. Fish  
**MS/MSD #:** 9712C8301  
**Sample Conc.:** N.D.  
**Prepared Date:** 12/23/97  
**Analyzed Date:** 12.29/97  
**Instrument I.D.#:** GCHP4A  
**Conc. Spiked:** 25 mg/Kg

**Result:** 25  
**MS % Recovery:** 100

**Dup. Result:** 36  
**MSD % Recov.:** 144

**RPD:** 36  
**RPD Limit:** 0-50

**LCS #:** BLK122397

**Prepared Date:** 12/23/97  
**Analyzed Date:** 12.29/97  
**Instrument I.D.#:** GCHP4A  
**Conc. Spiked:** 25 mg/Kg

**LCS Result:** 22  
**LCS % Recov.:** 98

|                       |        |
|-----------------------|--------|
| <b>MS/MSD</b>         | 50-150 |
| <b>LCS</b>            | 60-140 |
| <b>Control Limits</b> |        |

**Please Note:**  
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**SEQUOIA ANALYTICAL**  
  
Richard Herling  
Project Manager





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

Client Project ID: Shell 2160 Otis, Alameda  
Matrix: Liquid

Work Order #: 9712C83 10, 11

Reported: Jan 9, 1998

**QUALITY CONTROL DATA REPORT**

|                       |                 |
|-----------------------|-----------------|
| <b>Analyte:</b>       | MTBE            |
| <b>QC Batch#:</b>     | MS010698MTBEF3A |
| <b>Analy. Method:</b> | EPA 8260        |
| <b>Prep. Method:</b>  |                 |

**Analyst:** L.Duong  
**MS/MSD #:** 980101802  
**Sample Conc.:** N.D.  
**Prepared Date:** 1/6/98  
**Analyzed Date:** 1/6/98  
**Instrument I.D.#:** F3  
**Conc. Spiked:** 50 µg/L

**Result:** 49  
**MS % Recovery:** 98

**Dup. Result:** 47  
**MSD % Recov.:** 94

**RPD:** 4.2  
**RPD Limit:** 0-25

**LCS #:** LCS010698

**Prepared Date:** 1/6/98  
**Analyzed Date:** 1/6/98  
**Instrument I.D.#:** F3  
**Conc. Spiked:** 50 µg/L

**LCS Result:** 48  
**LCS % Recov.:** 96

|                       |        |
|-----------------------|--------|
| <b>MS/MSD</b>         | 60-140 |
| <b>LCS</b>            | 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  
Project Manager





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

Client Project ID: Shell 2160 Otis, Alameda  
Matrix: Liquid

Work Order #: 9712C83 12

Reported: Jan 9, 1998

**QUALITY CONTROL DATA REPORT**

**Analyte:** Total Recoverable  
Petroleum Hydrocarbons  
**QC Batch#:** IN121997552000A  
**Analy. Method:** SM 5520BF  
**Prep. Method:**

**Analyst:** P. Cheung

**Prepared Date:** 12/19/97  
**Analyzed Date:** 12/21/97  
**Instrument I.D.#:** MANUAL  
**Conc. Spiked:** 10 mg/L

**Result:** 9.4  
**BS % Recovery:** 94

**Dup. Result:** 8.8  
**BSD % Recov.:** 88

**RPD:** 6.6  
**RPD Limit:** 0-30

**LCS #:** LCS122697

**Prepared Date:** 12/26/97  
**Analyzed Date:** 12/28/97  
**Instrument I.D.#:** MANUAL  
**Conc. Spiked:** 10 mg/L

**LCS Result:** 10  
**LCS % Recov.:** 100

**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  
Project Manager

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

9712C83.CCC <7>





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

**CHAIN OF CUSTODY RECORD**

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

Date: 12/17/97  
 Page 1 of 4

Site Address: 2160 Diva Alameda

WIC#: 204-0072-0502

Shell Engineer: Alex Perez  
 Phone No.: 510-335-5027  
 Fax #: 335-5029

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

Consultant Contact: Paul Waite  
 Phone No.: 510-420-0700  
 Fax #: 420-9770

Comments:

Sampled by: Paul Waite

Printed Name: *[Signature]*

| Sample ID   | Date  | Sludge | Soil | Water | Air | No. of conds. |
|-------------|-------|--------|------|-------|-----|---------------|
| 1-6-1, 3.5  | 12/17 |        |      |       |     | 1             |
| 1-6-1, 7.5  |       |        |      |       |     | 1             |
| 1-6-1, 11.5 |       |        |      |       |     | 1             |
| 2-6-2, 3.5  |       |        |      |       |     | 1             |
| 2-6-2, 7.5  |       |        |      |       |     | 1             |
| 2-6-2, 11.5 |       |        |      |       |     | 1             |

**Analysis Required**

|                         |                            |                     |                              |                   |  |          |                |                  |               |
|-------------------------|----------------------------|---------------------|------------------------------|-------------------|--|----------|----------------|------------------|---------------|
| TPH (EPA 8015 Mod. Gas) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/602) | Volatile Organics (EPA 8240) | Test for Disposal | Combination TPH 8015 & BTEX 8020 <i>MTBE</i> | Asbestos | Container Size | Preparation Used | Composite Y/N |
|                         |                            |                     |                              |                   |  |          |                |                  |               |

9712083

LAB: Septon

| CHECK ONE (1) BOX ONLY                                 | CI/DI | 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"/> (Normal)               |
| Water Classify/Disposal <input type="checkbox"/>       | 4443  | Other <input checked="" type="checkbox"/>               |
| Soil/Air Rem. or Sys. O & M <input type="checkbox"/>   | 4452  | NOTE: Notify lab as soon as possible of 24/48 hrs. TAT. |
| Water Rem. or Sys. O & M <input type="checkbox"/>      | 4453  |   |
| Other <input type="checkbox"/>                         |       |   |

UST AGENCY: Alameda

| MATERIAL DESCRIPTION | SAMPLE CONDITION/ COMMENTS |
|----------------------|----------------------------|
|                      |                            |
|                      | Hold                       |
|                      | Hold                       |
|                      | Hold                       |
|                      | Hold                       |
|                      | Hold                       |

|   |                           |                |
|---|---------------------------|----------------|
| Relinquished By (signature): <i>[Signature]</i> | Printed Name: Paul Waite  | Date: 2/18/98  |
| Relinquished By (signature): <i>[Signature]</i> | Printed Name: Damon Adams | Date: 12/18/97 |
| Relinquished By (signature): _____              | Printed Name: _____       | Date: _____    |

|  |                           |                |
|--|---------------------------|----------------|
| Received (signature): <i>[Signature]</i> | Printed Name: Damon Adams | Date: 12-18-97 |
| Received (signature): _____              | Printed Name: _____       | Date: _____    |
| Received (signature): <i>[Signature]</i> | Printed Name: PERRI DOWNS | Date: 12/18    |

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: 12/17/97

Page 2 of 4

Site Address: 2160 Davis Alameda

WIC#: 204-0072-0502

Shell Engineer: Alex Perez  
 Phone No.: 510-335-5027  
 Fax #: 335-5029

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

Consultant Contact: Paul Waite  
 Phone No.: 510-420-0700  
 Fax #: 420-9770

Comments:

Sampled by: Paul Waite

Printed Name: *[Signature]*

**Analysis Required**

|                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |
|-------------------------|----------------------------|----------------------|------------------------------|-------------------|---------------------------------------|-----------------|----------|----------------|------------------|---------------|
| TPH (EPA 8015 Mod. Gas) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/6022) | Volatile Organics (EPA 8240) | Test for Disposal | Combination TPH 8015 & BTEX 8020 MTBE | TRPH (5520 E*F) | Asbestos | Container Size | Preparation Used | Composite Y/N |
| X                       | X                          |                      |                              |                   | X                                     | X               |          |                |                  |               |
|                         |                            |                      |                              |                   | X                                     |                 |          |                |                  |               |
|                         |                            |                      |                              |                   | X                                     |                 |          |                |                  |               |
|                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |
|                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |
|                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |
|                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |
|                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |
|                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |
|                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |

LAB: Sequoia

| 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"/> (Maximum)              |
| Water Classify/Disposal <input type="checkbox"/>       | 4443  | Other <input checked="" type="checkbox"/>               |
| Soil/Air Rem. or Sys. O & M <input type="checkbox"/>   | 4452  | By 12/29/97   |
| Water Rem. or Sys. O & M <input type="checkbox"/>      | 4453  | NOTE: Notify lab as soon as possible of 24/48 hrs. TAT. |
| Other <input type="checkbox"/>                         |       |   |

UST AGENCY: Alameda

| Sample ID   | Date  | Sludge | Soil | Water | Air | No. of conls. | TPH (EPA 8015 Mod. Gas) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/6022) | Volatile Organics (EPA 8240) | Test for Disposal | Combination TPH 8015 & BTEX 8020 MTBE | TRPH (5520 E*F) | Asbestos | Container Size | Preparation Used | Composite Y/N | MATERIAL DESCRIPTION | SAMPLE CONDITION/ COMMENTS |            |
|-------------|-------|--------|------|-------|-----|---------------|-------------------------|----------------------------|----------------------|------------------------------|-------------------|---------------------------------------|-----------------|----------|----------------|------------------|---------------|----------------------|----------------------------|------------|
| 3) 6-3, 3.5 | 12/17 |        |      |       |     | 1             | X                       | X                          |                      |                              |                   | X                                     | X               |          |                |                  |               |                      |                            |            |
| 6-3, 7.5    |       |        |      |       |     | 1             |                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |                      |                            | Hold       |
| 6-3, 10.5   |       |        |      |       |     | 1             |                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |                      |                            | Hold       |
| 4) 6-4, 3.5 |       |        |      |       |     | 1             |                         |                            |                      |                              |                   | X                                     |                 |          |                |                  |               |                      |                            |            |
| 6-5, 3.5    |       |        |      |       |     | 1             |                         |                            |                      |                              |                   | X                                     |                 |          |                |                  |               |                      |                            | DE 18 1 14 |
| 6-5, 5      |       |        |      |       |     | 1             |                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |                      |                            | Hold       |
| 6-5, 7.5    |       |        |      |       |     | 1             |                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |                      |                            | Hold       |
| 6-5, 11.5   |       |        |      |       |     | 1             |                         |                            |                      |                              |                   |                                       |                 |          |                |                  |               |                      |                            | Hold       |

|   |                          |                |  |                           |                |
|---|--------------------------|----------------|--|---------------------------|----------------|
| Relinquished By (signature): <i>[Signature]</i> | Printed Name: Paul Waite | Date: 12/18/97 | Received (signature): <i>[Signature]</i> | Printed Name: Damon Aron  | Date: 12-18-97 |
| Relinquished By (signature): <i>[Signature]</i> | Printed Name: Damon Aron | Date: 12/18/97 | Received (signature): <i>[Signature]</i> | Printed Name:             | Date:          |
| Relinquished By (signature): <i>[Signature]</i> | Printed Name:            | Date:          | Received (signature): Terri Downs        | Printed Name: TERRI DOWNS | Date: 12-18    |
|   |                          | Time:          |  |                           | Time: 1314     |

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: 12/17/97  
Page 3 of 4

Site Address: 7160 Old Alameda

WIC#: 204-0072-0502

Shell Engineer: Alex Perez  
Phone No: 510-335-5037  
Fax #: 335-5036

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

Consultant Contact: Karl Waite  
Phone No: 510-420-0700  
Fax #: 420-9170

Comments:

Sampled by: [Signature]  
Printed Name: Karl Waite

| Analysis Required       |                            |                      |                              |                   |                                  |          |                |                  |               |
|-------------------------|----------------------------|----------------------|------------------------------|-------------------|----------------------------------|----------|----------------|------------------|---------------|
| TPH (EPA 8015 Mod. Gas) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/8021) | Volatile Organics (EPA 8240) | Test for Disposal | Combination TPH 8015 & BTEX 8020 | Asbestos | Container Size | Preparation Used | Composite Y/N |
|                         |                            |                      |                              |                   | X                                |          |                |                  |               |
|                         |                            |                      |                              |                   | X                                |          |                |                  |               |
|                         |                            |                      |                              |                   | X                                |          |                |                  |               |
|                         |                            |                      |                              |                   | X                                |          |                |                  |               |

LAB: Sedgwick

| CHECK ONE (1) BOX ONLY              | CI/DI | TURN AROUND TIME   |
|-------------------------------------|-------|--|
| <input type="checkbox"/>            | 4461  | 24 hours <input type="checkbox"/>  |
| <input checked="" type="checkbox"/> | 4441  | 48 hours <input type="checkbox"/>  |
| <input type="checkbox"/>            | 4442  | 16 days <input type="checkbox"/> (Normal)                                |
| <input type="checkbox"/>            | 4443  | Other <input checked="" type="checkbox"/>                                |
| <input type="checkbox"/>            | 4452  | <u>By 12/29/97</u><br>NOTE: Holly Lab is non-optional at 24/48 hrs. IAT. |
| <input type="checkbox"/>            | 4453  |  |
| <input type="checkbox"/>            |       |  |

UST AGENCY: Alameda

| Sample ID   | Date  | Sludge | Soil | Water | Air | No. of conds. | TPH (EPA 8015 Mod. Gas) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/8021) | Volatile Organics (EPA 8240) | Test for Disposal | Combination TPH 8015 & BTEX 8020 | Asbestos | Container Size | Preparation Used | Composite Y/N | MATERIAL DESCRIPTION | SAMPLE CONDITION/ COMMENTS |  |
|-------------|-------|--------|------|-------|-----|---------------|-------------------------|----------------------------|----------------------|------------------------------|-------------------|----------------------------------|----------|----------------|------------------|---------------|----------------------|----------------------------|--|
| 6-6, 3.5    | 12/17 |        |      |       |     | 1             |                         |                            |                      |                              |                   | X                                |          |                |                  |               |                      |                            |  |
| 7-6, 7.5    |       |        |      |       |     | 1             |                         |                            |                      |                              |                   | X                                |          |                |                  |               |                      |                            |  |
| 8-6, 7, 3.5 |       |        |      |       |     | 1             |                         |                            |                      |                              |                   | X                                |          |                |                  |               |                      |                            |  |
| 9-6, 7, 7.5 |       |        |      |       |     | 1             |                         |                            |                      |                              |                   | X                                |          |                |                  |               |                      |                            |  |

|   |                                  |                       |                   |  |                                  |                       |                    |
|---|----------------------------------|-----------------------|-------------------|--|----------------------------------|-----------------------|--------------------|
| Relinquished By (signature): <u>[Signature]</u> | Printed Name: <u>Karl Waite</u>  | Date: <u>12/16/97</u> | Time: <u>4:05</u> | Received (signature): <u>[Signature]</u> | Printed Name: <u>Ramon Arnes</u> | Date: <u>12/16/97</u> | Time: <u>4:05</u>  |
| Relinquished By (signature): <u>[Signature]</u> | Printed Name: <u>Ramon Arnes</u> | Date: <u>12/29/97</u> | Time: _____       | Received (signature): <u>[Signature]</u> | Printed Name: _____              | Date: _____           | Time: _____        |
| Relinquished By (signature): <u>[Signature]</u> | Printed Name: _____              | Date: _____           | Time: _____       | Received (signature): <u>[Signature]</u> | Printed Name: <u>TERRI DOWNS</u> | Date: <u>12/18</u>    | Time: <u>13:14</u> |

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: 12/17/97

Page 4 of 4

Site Address: 2160 Alameda

WIC#: 204-0072-0502

Shell Engineer: Alex Perez  
 Phone No.: 510-335-5027  
 Fax #: 335-5030

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

Consultant Contact: Paul White  
 Phone No.: 510-420-0700  
 Fax #: 420-9170

Comments: Contin All water MTBE  
 Sampled by: detections with 8260  
 Printed Name: Paul White

**Analysis Required**

|                         |                            |                     |                              |                   |                                       |                   |          |                |                  |               |
|-------------------------|----------------------------|---------------------|------------------------------|-------------------|---------------------------------------|-------------------|----------|----------------|------------------|---------------|
| TPH (EPA 8015 Mod. Gas) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/602) | Volatile Organics (EPA 8240) | Test for Disposal | Combination TPH 8015 & BTEX 8020 MTBE | TRPH (5520 E & F) | Asbestos | Container Size | Preparation Used | Composite Y/N |
|                         |                            |                     |                              |                   |                                       |                   |          |                |                  |               |

LAB: Sequoia

| 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"/> (Hazard)              |
| Water Classify/Disposal <input type="checkbox"/>       | 4443  | Other <input checked="" type="checkbox"/>              |
| Soil/Air Rem. or Sys. O & M <input type="checkbox"/>   | 4452  | By 12/29/97  |
| Water Rem. or Sys. O & M <input type="checkbox"/>      | 4453  | NOTE: Holly Lab us soon as Possible of 24/48 hrs. 1AL. |
| Other <input type="checkbox"/>                         |       |  |

UST AGENCY: Alameda

to  
F  
H  
H

| Sample ID | Date  | Sludge | Soil | Water | Air | No. of conls. | TPH (EPA 8015 Mod. Gas) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/602) | Volatile Organics (EPA 8240) | Test for Disposal | Combination TPH 8015 & BTEX 8020 MTBE | TRPH (5520 E & F) | Asbestos | Container Size | Preparation Used | Composite Y/N | MATERIAL DESCRIPTION | SAMPLE CONDITION/ COMMENTS |
|-----------|-------|--------|------|-------|-----|---------------|-------------------------|----------------------------|---------------------|------------------------------|-------------------|---------------------------------------|-------------------|----------|----------------|------------------|---------------|----------------------|----------------------------|
| G-1       | 12/17 |        |      | X     |     | 3             |                         |                            |                     |                              |                   | X                                     |                   |          |                |                  |               |                      | one of 3 is filtered       |
| G-2       | 1     |        |      | X     |     | 3             |                         |                            |                     |                              |                   | X                                     |                   |          |                |                  |               |                      |                            |
| G-3       | 1     |        |      | X     |     | 5             | X                       | X                          |                     |                              |                   | X                                     | X                 |          |                |                  |               |                      | 3 vials 1101<br>2 1101g    |
| G-5       | 1     |        |      | X     |     | 3             |                         |                            |                     |                              |                   | X                                     |                   |          |                |                  |               |                      |                            |

18 1 14

|  |                           |                |   |                           |                           |
|--|---------------------------|----------------|---|---------------------------|---------------------------|
| Relinquished By (signature):<br><i>[Signature]</i> | Printed Name: Paul White  | Date: 12/18/97 | Received (signature):<br><i>[Signature]</i> | Printed Name: Damon Armas | Date: 12-18-97            |
| Relinquished By (signature):<br><i>[Signature]</i> | Printed Name: Damon Armas | Date: 12/18/97 | Received (signature):                       | Printed Name:             | Date: 11/85               |
| Relinquished By (signature):                       | Printed Name:             | Date:          | Received (signature):<br><i>[Signature]</i> | Printed Name: TERRI DOWNS | Date: 12/18<br>Time: 1314 |

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



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  
FAX (510) 988-9673  
FAX (916) 921-0100

Cambria  
1144 65th St. Suite C  
Oakland, CA 94608  
Attention: Paul Waite

Client Proj. ID: Shell 2160 Otis, Alameda

Received: 12/18/97

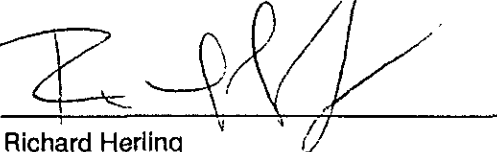
Lab Proj. ID: 9712C83

Reported: 01/06/98

### LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 31 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





# 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  
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FAX (510) 988-9673  
FAX (916) 921-0100

Cambria  
1144 65th St. Suite C  
Oakland, CA 94608  
Attention: Paul Waite

Project: Shell 2160 Otis, Alameda

Enclosed are the results from samples received at Sequoia Analytical on December 18, 1997.  
The requested analyses are listed below:

| <u>SAMPLE #</u> | <u>SAMPLE DESCRIPTION</u> | <u>DATE COLLECTED</u> | <u>TEST METHOD</u>     |
|-----------------|---------------------------|-----------------------|------------------------|
| 9801D60 -01     | LIQUID, G-3               | 12/17/97              | TPHD_W Extractable TPH |

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





|   |  |  |
|---|--|--|
| Cambria<br>1144 65th St. Suite C<br>Oakland, CA 94608 | Client Proj. ID: Shell 2160 Otis, Alameda<br>Sample Descript: G-3<br>Matrix: LIQUID<br>Analysis Method: EPA 8015 Mod<br>Lab Number: 9801D60-01 | Sampled: 12/17/97<br>Received: 12/18/97<br>Extracted: 01/26/98<br>Analyzed: 01/27/98<br>Reported: 01/27/98 |
|---|--|--|

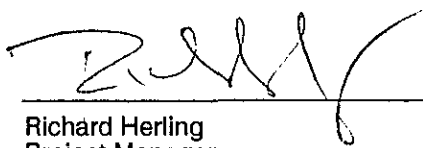
QC Batch Number: GC012698OHBPEXA  
Instrument ID: GCHP4B

**Total Extractable Petroleum Hydrocarbons (TEPH)**

| Analyte                                 | Detection Limit<br>ug/L     | Sample Results<br>ug/L |
|---|-----------------------------|------------------------|
| TEPH as Diesel<br>Chromatogram Pattern: | 50                          | N.D.                   |
| <b>Surrogates</b>                       | <b>Control Limits %</b>     | <b>% Recovery</b>      |
| n-Pentacosane (C25)                     | 50                      150 | 72                     |

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

**SEQUOIA ANALYTICAL - ELAP #1210**




---

Richard Herling  
Project Manager





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

Client Project ID: Shell 2160 Otis, Alameda  
Matrix: Liquid

Work Order #: 9801D60 01

Reported: Jan 27, 1998

**QUALITY CONTROL DATA REPORT**

|                       |                 |
|-----------------------|-----------------|
| <b>Analyte:</b>       | Diesel          |
| <b>QC Batch#:</b>     | GC0126980HBPEXA |
| <b>Analy. Method:</b> | EPA 8015M       |
| <b>Prep. Method:</b>  | EPA 3510        |

**Analyst:** D. Lockhart  
**MS/MSD #:** BLK012698  
**Sample Conc.:** N.D.  
**Prepared Date:** 1/26/98  
**Analyzed Date:** 1/27/98  
**Instrument I.D.#:** GCHP4A  
**Conc. Spiked:** 1000 µg/L

**Result:** 690  
**MS % Recovery:** 69

**Dup. Result:** 850  
**MSD % Recov.:** 85

**RPD:** 21  
**RPD Limit:** 0-50

**LCS #:**

**Prepared Date:**  
**Analyzed Date:**  
**Instrument I.D.#:**  
**Conc. Spiked:**

**LCS Result:**  
**LCS % Recov.:**

|                       |        |
|-----------------------|--------|
| <b>MS/MSD</b>         | 50-150 |
| <b>LCS</b>            | 60-140 |
| <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

9801D60.CCC <1>





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

**CHAIN OF CUSTODY RECORD**

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

Date: 12/17/97

Page 4 of 4

Site Address: 2160 Alameda

WIC#: 204-0072-0502

Shell Engineer: Alex Perez  
Phone No.: 510-335-5027  
Fax #: 335-5030

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

Consultant Contact: Paul White  
Phone No.: 510-420-0700  
Fax #: 420-9170

Comments: Contin All water MTBE

Sampled by: detections with 8260

Printed Name: Paul White

| Sample ID | Date  | Sludge | Solt | Water | Air | No. of conds. |
|-----------|-------|--------|------|-------|-----|---------------|
| 1-1       | 12/17 |        |      | X     |     | 3             |
| 1-2       |       |        |      | X     |     | 3             |
| 1-3       |       |        |      | X     |     | 5             |
| 1-5       |       |        |      | X     |     | 3             |

| Analysis Required       |                            |                     |                              |                   |                                       |                   |          |                |                  |               |
|-------------------------|----------------------------|---------------------|------------------------------|-------------------|---------------------------------------|-------------------|----------|----------------|------------------|---------------|
| TPH (EPA 8015 Mod. GSS) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/602) | Volatile Organics (EPA 8240) | Test for Disposal | Combination TPH 8015 & BTEX 8020 MTBE | TRPH (5520 E & F) | Asbestos | Container Size | Preparation Used | Composite Y/N |
|                         |                            |                     |                              |                   | X                                     | X                 |          |                |                  |               |
|                         |                            |                     |                              |                   | X                                     | X                 |          |                |                  |               |
|                         |                            | X                   | X                            |                   | X                                     | X                 |          |                |                  |               |
|                         |                            |                     |                              |                   | X                                     |                   |          |                |                  |               |

LAB: Sequoia

| CHECK ONE (BY BOX ONLY)                                | C1/D1 | 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 Classfy/Disposal <input type="checkbox"/>         | 4442  | 16 days <input type="checkbox"/> (Normal)              |
| Water Classfy/Disposal <input type="checkbox"/>        | 4443  | Other <input checked="" type="checkbox"/>              |
| Soil/Air Rem. or Sys. O & M <input type="checkbox"/>   | 4452  | By 12/29/97  |
| Water Rem. or Sys. O & M <input type="checkbox"/>      | 4453  | NOTE: Notify lab as soon as possible of 24/48 hr. IAL. |
| Other <input type="checkbox"/>                         |       |  |

UST AGENCY: Alameda

| MATERIAL DESCRIPTION | SAMPLE CONDITION/ COMMENTS |
|----------------------|----------------------------|
|                      | 2nd of 3 is followed       |
|                      | 3 vials 11/12/97           |

Relinquished By (signature):  
Relinquished By (signature):  
Relinquished By (signature):

Printed Name: Paul White  
Printed Name: James Lewis  
Printed Name:

Date: 12/18/97  
Time: 1:05  
Date: 12/18/97  
Time:  
Date:  
Time:

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

Printed Name: James Lewis  
Printed Name:  
Printed Name:

Date: 12-18-97  
Time: 1:05  
Date:  
Time:  
Date:  
Time:



Sequoia  
Analytical

680 Chesapeake Drive  
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Redwood City, CA 94063  
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FAX (650) 364-9233  
FAX (510) 988-9673  
FAX (916) 921-0100

Cambria  
1144 65th St. Suite C  
Oakland, CA 94608  
Attention: Paul Waite

Client Proj. ID: Shell 2160 Otis, Alameda

Received: 12/18/97

Lab Proj. ID: 9801D60

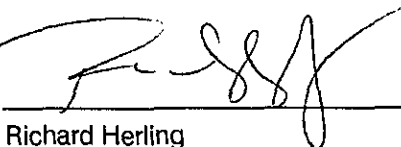
Reported: 01/27/98

### LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 5 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

Please Note: This sample was extracted and analyzed outside of hold time.  
For this reason, the result should be considered an estimate.

SEQUOIA ANALYTICAL



---

Richard Herling  
Project Manager



# **Attachment B**

Soil Boring Logs



**BORING LOG**

Boring ID **G-1**

Client: **Shell Oil Products Company**

Location **2160 Otis Drive, Alameda**

Project No: **24-627**

Phase

Task **111**

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 |                 |   |            |             |                            | 0            |                            |
|              |                |                 | <b>Silty SAND; (SM); brown; loose; damp; 20% silt, 80% fine to medium sand; no plasticity; high estimated permeability.</b> |            |             |                            |              |                            |
|              |                |                 | green to black; moist.  |            |             |                            |              |                            |
| 5            |                |                 | wet; fine sand; low plasticity.   |            |             |                            | 5            | Water level @ 4 feet       |
|              |                |                 |   |            |             |                            |              |                            |
| 10           |                |                 | black; damp; 15% silt, 85% fine to medium sand with shells.   |            |             |                            | 10           |                            |
|              |                |                 |   |            |             |                            |              |                            |
|              |                |                 |   |            |             |                            |              | Bottom of boring @ 12 feet |

Driller **Vironex**

Drilling Started **12/17/97**

Notes: **see site map**

Logged By **Paul Waite**

Drilling Completed **12/17/97**

Water-Bearing Zones **NA**

Grout Type **Portland Type I/II**

**BORING LOG**

Boring ID **G-2**

Client: **Shell Oil Products Company**

Location **2160 Otis Drive, Alameda**

Project No: **24-627**

Phase

Task **111**

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 |                 |  |            |             |                            | 0            |                            |
|              |                |                 | <b>Silty SAND;</b> (SM); brown; loose; damp; 20% silt, 80% medium sand; no plasticity; high estimated permeability.  |            |             |                            |              |                            |
|              |                |                 | green; wet; 30% silt, 70% fine sand; low plasticity.   |            |             |                            |              |                            |
| 5            |                |                 |  |            |             |                            | 5            | Water level @ 5 feet       |
|              |                |                 | <b>SILT;</b> (ML); green to brown; soft; damp; 95% silt, 5% fine sand; low to medium plasticity; moderate estimated permeability.  |            |             |                            |              |                            |
| 10           |                |                 | <b>Silty SAND;</b> (SM); green to brown; loose; wet; 30% silt, 70% fine sand; low plasticity; high estimated permeability.<br>black; moist; 20% silt, 80% fine to medium sand with shells. |            |             |                            | 10           |                            |
|              |                |                 |  |            |             |                            |              | Bottom of boring @ 12 feet |

Driller **Vironex**

Drilling Started **12/17/97**

Notes: **see site map**

Logged By **Paul Waite**

Drilling Completed **12/17/97**

Water-Bearing Zones **NA**

Grout Type **Portland Type I/II**

**BORING LOG**

Boring ID **G-3**

Client: **Shell Oil Products Company**

Location **2160 Otis Drive, Alameda**


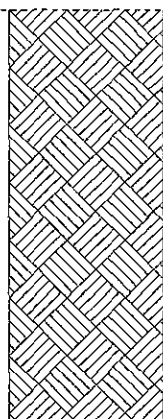

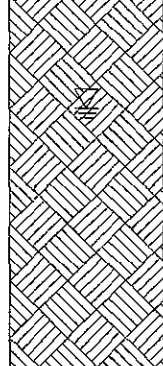
Project No: **24-627**

Phase

Task **111**

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            |            |                 |  |            |   |  | 0            |                            |
|              |            |                 | <b>SAND; (SP);</b> light brown; loose; damp; 5% silt, 95% fine to medium sand; no plasticity; high estimated permeability.       |            |   |   |              |                            |
|              |            |                 | <b>Silty SAND; (SM);</b> light brown; loose; wet; 20% silt, 80% fine to medium sand; no plasticity; high estimated permeability. |            |  |  | 5            | Water level @ 5 feet       |
|              |            |                 | dark brown; damp.  |            |   |  |              |                            |
|              |            |                 | light brown; wet.  |            |   |  |              |                            |
| 10           |            |                 | black; damp; sand with shells.   |            |   |  | 10           |                            |
|              |            |                 |  |            |   |  |              | Bottom of boring @ 12 feet |

Driller **Vironex**

Drilling Started **12/17/97**

Notes: **see site map**

Logged By **Paul Waite**

Drilling Completed **12/17/97**

Water-Bearing Zones **NA**

Grout Type **Portland Type I/II**

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**BORING LOG**

Client: **Shell Oil Products Company**

Project No: **24-627**

Phase

Task **111**


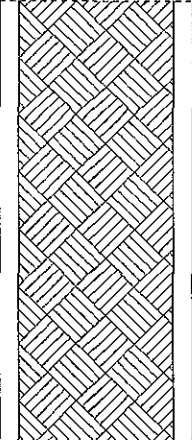
Boring ID

**G-4**

Location **2160 Otis Drive, Alameda**

Surface Elev. **NA ft,**

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| Depth (feet) | Blow Count     | Sample Interval | Lithologic Description   | TPHg (ppm) | Graphic Log  | Boring Completion Graphics  | Depth (feet) | Additional Comments         |
|--------------|----------------|-----------------|--|------------|--|---|--------------|-----------------------------|
| 0            | Ground Surface |                 |  |            |  |   | 0            |                             |
|              |                |                 | <p><b>SAND;</b> (SP); brown; loose; damp; 10% silt, 90% fine to medium sand; no plasticity; high estimated permeability.</p> |            |  |  |              |                             |
| 5            |                |                 |  |            |  |   | 5            | Bottom of boring @ 4.3 feet |
|              |                |                 |  |            |  |   |              |                             |
| 10           |                |                 |  |            |  |   | 10           |                             |

|                               |                                      |                            |
|-------------------------------|--------------------------------------|----------------------------|
| Driller <b>Vironex</b>        | Drilling Started <b>12/17/97</b>     | Notes: <b>see site map</b> |
| Logged By <b>Paul Waite</b>   | Drilling Completed <b>12/17/97</b>   |                            |
| Water-Bearing Zones <b>NA</b> | Grout Type <b>Portland Type I/II</b> |                            |

BOR 24627 12/24/97

**BORING LOG**

Boring ID **G-5**

Client: **Shell Oil Products Company**

Location **2160 Otis Drive, Alameda**

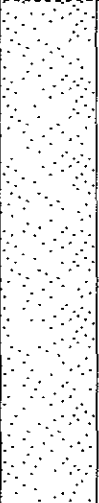
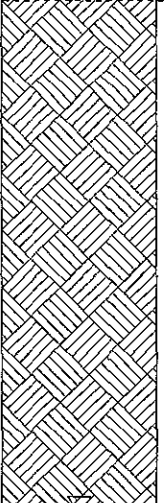

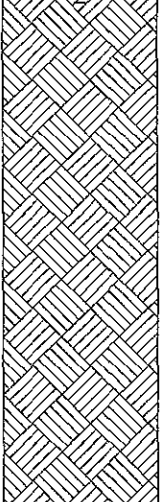
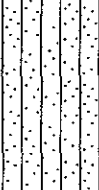
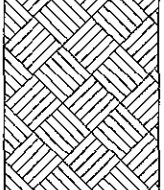


Project No: **24-627**

Phase

Task **111**

Surface Elev. **NA ft.**

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| Depth (feet) | Blow Count     | Sample Interval | Lithologic Description  | TPHg (ppm) | Graphic Log  | Boring Completion Graphics  | Depth (feet) | Additional Comments        |
|--------------|----------------|-----------------|---|------------|--|---|--------------|----------------------------|
| 0            | Ground Surface |                 |   |            |  |   | 0            |                            |
|              |                |                 | <b>SAND; (SP);</b> brown; loose; damp; 10% silt, 90% fine to medium sand; no plasticity; high estimated permeability. |            |    |    |              |                            |
| 5            |                |                 | <b>Silty SAND; (SM);</b> green; loose; wet; 20% silt, 80% fine sand; low plasticity; high estimated permeability.     |            |   |   | 5            | Water level @ 5 feet       |
|              |                |                 | brown; fine to medium sand; no plasticity.  |            |  |  |              |                            |
| 10           |                |                 | black; damp.  |            |  |  | 10           |                            |
|              |                |                 |   |            |  |   |              | Bottom of boring @ 12 feet |

Driller **Vironex**  
 Logged By **Paul Waite**  
 Water-Bearing Zones **NA**

Drilling Started **12/17/97**  
 Drilling Completed **12/17/97**  
 Grout Type **Portland Type I/II**

Notes: **see site map**

**BORING LOG**

Boring ID **G-6**

Client: **Shell Oil Products Company**

Location **2160 Otis Drive, Alameda**

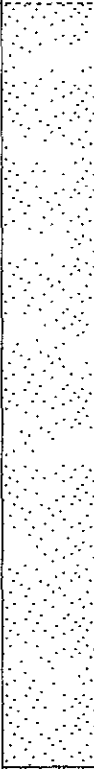
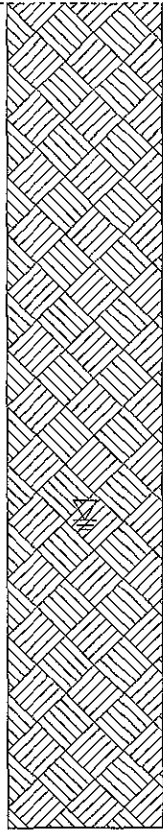

Project No: **24-627**

Phase

Task **111**

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   |            |  |  | 0            |                           |
|              |            |                 | <b>SAND</b> ; (SP); brown; loose; damp; 10% silt, 90% fine to medium sand; no plasticity; high estimated permeability. |            |   |  |              |                           |
|              |            |                 | green; wet.  |            |  |  |              |                           |
| 5            |            |                 |  |            |  |  | 5            | Water level @ 5 feet      |
|              |            |                 | <b>Silty SAND</b> ; (SM); brown; loose; wet; 25% silt, 75% fine sand; low plasticity; high estimated permeability.     |            |  |  |              | Bottom of boring @ 8 feet |
| 10           |            |                 |  |            |  |  | 10           |                           |

Driller **Vironex**

Drilling Started **12/17/97**

Notes: **see site map**

Logged By **Paul Waite**

Drilling Completed **12/17/97**

Water-Bearing Zones **NA**

Grout Type **Portland Type I/II**

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**BORING LOG**

Boring ID **G-7**

Client: **Shell Oil Products Company**

Location **2160 Otis Drive, Alameda**

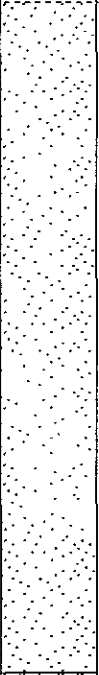
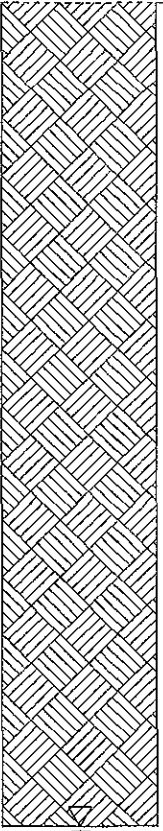
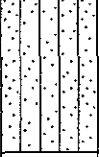
Project No: **24-627**

Phase

Task **111**

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            |            |                 |  |            |  |   | 0            |                     |
|              |            |                 | <b>SAND</b> ; (SP); brown; loose; damp; 10% silt, 90% fine to medium sand; no plasticity; high estimated permeability. |            |   |   |              |                     |
|              |            |                 | green.   |            |  |   |              |                     |
| 5            |            |                 |  |            |  |   | 5            |                     |
|              |            |                 | <b>Silty SAND</b> ; (SM); brown; loose; wet; 20% silt, 80% fine sand; low plasticity; high estimated permeability.     |            |  |  |              |                     |
| 10           |            |                 |  |            |  |   | 10           |                     |

Water level @ 8 feet  
Bottom of boring @ 8 feet

|                               |                                      |                            |
|-------------------------------|--------------------------------------|----------------------------|
| Driller <b>Vironex</b>        | Drilling Started <b>12/17/97</b>     | Notes: <b>see site map</b> |
| Logged By <b>Paul Waite</b>   | Drilling Completed <b>12/17/97</b>   |                            |
| Water-Bearing Zones <b>NA</b> | Grout Type <b>Portland Type I/II</b> |                            |

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# **Attachment C**

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.