CAMBRIA



July 31, 1997

Juliet Shin
Alameda Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Second Quarter 1997 Monitoring Report**
Shell Service Station
4255 MacArthur Boulevard
Oakland, California 94619
WIC #204-5510-0600
Cambria Project #24-314-297

STID 3769
BC

Dear Ms. Shin:

On behalf of Shell Oil Products Company, Cambria Environmental Technology, Inc. (Cambria) is submitting this monitoring report to satisfy the quarterly reporting requirements prescribed by California Administrative Code Title 23, Waters Division 3, Chapter 16, Article 5, Section 2652.d.

## SECOND QUARTER 1997 ACTIVITIES

***Ground Water Monitoring:*** Blaine Tech Services, Inc. (Blaine) of San Jose, California, measured ground water depths, checked for separate phase hydrocarbons (SPH) and collected ground water samples from the site wells (Figure 1). The Blaine report describing these activities and the analytic report for the ground water samples are included as Attachment A. Blaine removed SPH from passive skimmer devices in wells MW-2 and MW-3 (Table 1). The quantities removed are presented in the table below.

| Separate-Phase Hydrocarbon Removal Summary | |
|---|---|
| This Quarter (lbs) | Cumulative Removal (lbs) |
| 1.13 | 17.28 |

Cambria calculated ground water elevations (Table 2), compiled the analytic data (Table 3 and Table 4), and prepared a ground water elevation contour map (Figure 1).

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

***Work Plan Addendum:*** In response to an Alameda County Department of Environmental Health (ACDEH) request, Cambria prepared a *Work Plan Addendum* dated June 13, 1997. The *Work Plan Addendum* proposed conducting the soil vapor extraction (SVE) pilot test described by Weiss Associates, and evaluating remediation of the site using dual-phase extraction based on the SVE pilot test results.

## ANTICIPATED THIRD QUARTER 1997 ACTIVITIES

***Ground Water Monitoring:*** Blaine will gauge water levels, check for SPH and collect ground water samples from selected site wells. Per your June 12, 1997 letter, metals will not be analyzed except for total dissolved chromium in well MW-4. Cambria will submit a report presenting a summary of activities for the upcoming quarter.

***SVE Pilot Test:*** We plan to conduct the SVE pilot test in accordance with the Weiss Associates work plan.

***Additional Investigation:*** In response to an ACDEH request, Cambria prepared an *Additional Offsite Subsurface Investigation Work Plan*, which proposed sampling two soil borings at the trailer park property adjacent to the site. We will implement the offsite investigation work plan after receiving written approval from your office.

## CLOSING

We appreciate the opportunity to work with you on this project. Please call if you have any questions.

Sincerely,
Cambria Environmental Technology, Inc.


N. Scott MacLeod, R.G.
Principal Geologist

Attachments: A - Blaine Quarterly Ground Water Monitoring Report

cc: A. E. (Alex) Perez, Shell Oil Products Company, P.O. Box 4023, Concord, California 94524

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CAMBRIA
Environmental Technology, Inc.

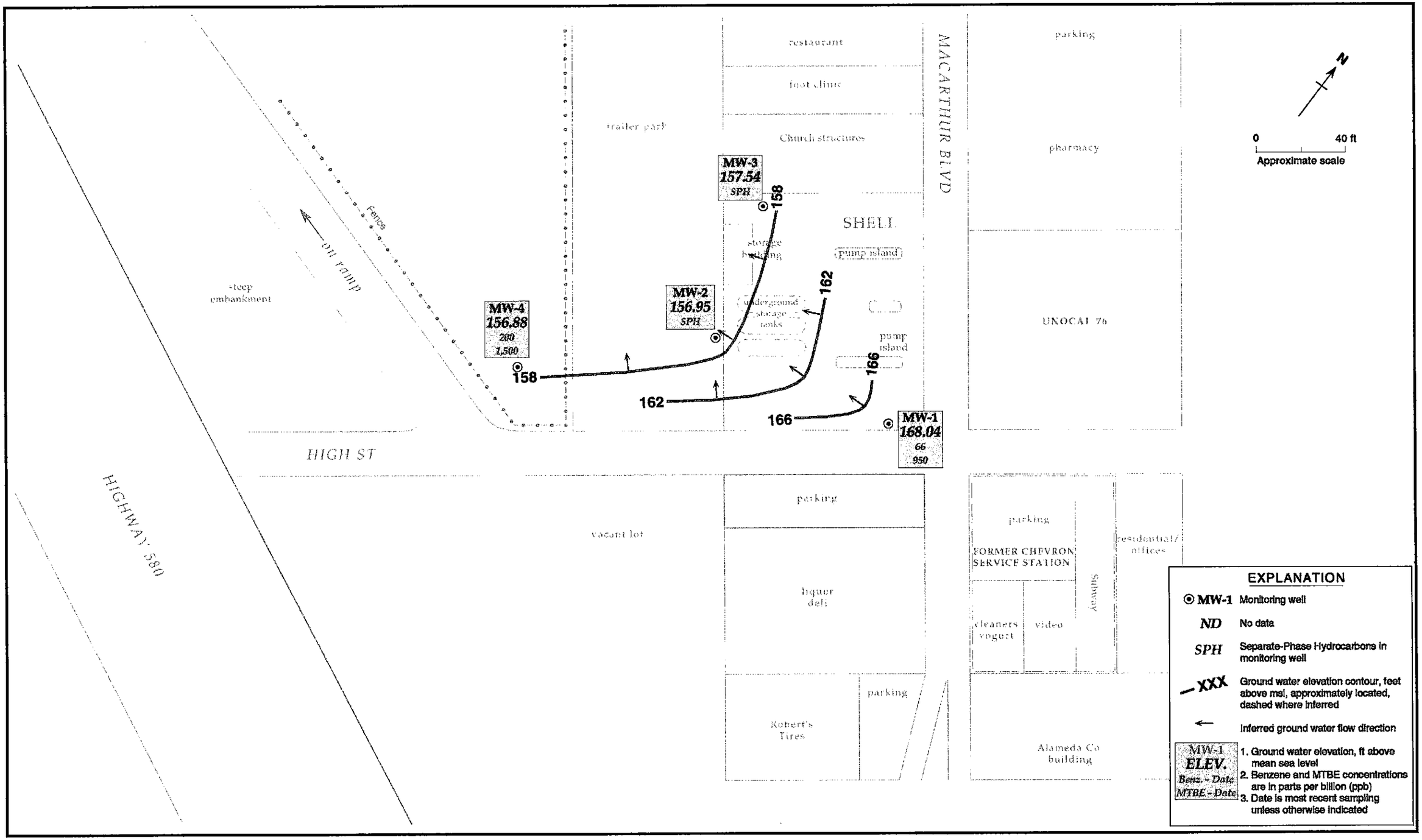


**Figure 1. Montoring Well Locations, Ground Water Elevation Contours, and Benzene Concentrations in Ground Water - April 8, 1997 - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California**

F:\PROJECT\SHELL\OAK4255\FIGURES\2QM97-MP.AI

07/02/97

**Table 1.** **Separate-Phase Hydrocarbon Removal** - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Blvd., Oakland, California

| Well ID | Date | Separate-Phase Hydrocarbon Thickness (Ft) | Separate-Phase Hydrocarbons Removed (lbs) | Cumulative Hydrocarbons Removed (lbs) |
|---|---|---|---|---|
| MW-2 | 11/17/93 | 0.0 | 0.0 | 0.0 |
| | 01/20/94 | 0.0 | 0.0 | 0.0 |
| | 04/25/94 | 0.0 | 0.0 | 0.0 |
| | 07/07/94 | 0.0 | 0.0 | 0.0 |
| | 01/13/95 | 0.0 | 0.0 | 0.0 |
| | 04/12/95 | 0.0 | 0.0 | 0.0 |
| | 08/10/95 | 0.52 | 5.98[a] | 5.98 |
| | 10/18/95 | 0.13 | 0.0 | 5.98 |
| | 01/17/96 | 0.17 | 1.74 | 7.72 |
| | 04/25/96 | 0.03 | 0.65 | 8.37 |
| | 07/17/96 | 0.48 | 2.11 | 10.48 |
| | 10/01/96 | 0.28 | 0.81 | 11.29 |
| | 01/22/97 | 0.11 | 0.48 | 11.77 |
| | **04/08/97** | **0.20** | **0.97** | **12.74** |
| MW-3 | 11/17/93 | 0.0 | 0.0 | 0.0 |
| | 01/20/94 | 0.0 | 0.0 | 0.0 |
| | 04/25/94 | 0.0 | 0.0 | 0.0 |
| | 07/07/94 | 0.0 | 0.0 | 0.0 |
| | 01/13/95 | --- | 0.02 | 0.02 |
| | 04/12/95 | --- | 0.02 | 0.04 |
| | 08/10/95 | 0.06 | 0.69[a] | 0.73 |
| | 10/18/95 | 0.05 | 0.0 | 0.73 |
| | 01/17/96 | 0.24 | 2.62 | 3.35 |
| | 04/25/96 | 0.02 | 0.33 | 3.68 |
| | 07/17/96 | 0.03 | 0.70 | 4.38 |
| | **04/08/97** | **0.03** | **0.16** | **4.54** |
| **TOTAL HYDROCARBONS REMOVED** | | | | **17.28** |

**Notes and Abbreviations:**

— = not measured

Weight of Separate–phase hydrocarbons (SPH) converted from volume to weight using the relation 1 liter gasoline = 1.61 pounds

a = SPH in 10" boring and 4" well estimated by following factor: 1 ft of SPH = 11.5 lbs of SPH.

**Table 2.** **Ground Water Elevations** - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Blvd., Oakland, California

| Well ID | Date | Top-of-Casing Elevation (ft above msl) | Depth to Water (ft) | Separate-phase Hydrocarbons (ft) | Ground Water Elevation[a] (ft above msl) |
|---|---|---|---|---|---|
| MW-1 | 11/17/93 | 175.79 | 8.59 | --- | 167.20 |
| | 01/20/94 | | 8.22 | --- | 167.57 |
| | 04/25/94 | | 7.63 | --- | 168.16 |
| | 07/07/94 | | 8.31 | --- | 167.48 |
| | 10/27/94 | | 8.84 | --- | 166.95 |
| | 11/17/94 | | 7.60 | --- | 168.19 |
| | 11/28/94 | | 7.56 | --- | 168.23 |
| | 01/13/95 | | 7.11 | --- | 168.68 |
| | 04/12/95 | | 7.08 | --- | 168.71 |
| | 07/25/95 | | 7.73 | --- | 168.06 |
| | 10/18/95 | | 8.42 | --- | 167.37 |
| | 01/17/96 | | 7.83 | --- | 167.96 |
| | 04/25/96 | | 7.35 | --- | 168.44 |
| | 07/17/96 | | 7.70 | --- | 168.09 |
| | 10/01/96 | | 8.07 | --- | 167.72 |
| | 01/22/97 | | 7.21 | --- | 168.58 |
| | **04/08/97** | | **7.75** | **---** | **168.04** |
| MW-2 | 11/17/93 | 170.91 | 12.31 | --- | 158.60 |
| | 01/20/94 | | 11.48 | --- | 159.43 |
| | 04/25/94 | | 10.84 | --- | 160.07 |
| | 07/07/94 | | 11.89 | --- | 159.02 |
| | 10/27/94 | | 12.89 | --- | 158.02 |
| | 11/17/94 | | 9.11 | --- | 161.80 |
| | 11/28/94 | | 9.22 | --- | 161.69 |
| | 01/13/95 | | 8.10 | --- | 162.81 |
| | 04/12/95 | | 10.12 | --- | 160.79 |
| | 07/25/95 | | 11.53 | 0.52 | 159.80 |
| | 10/18/95 | | 14.02 | 0.13 | 156.99 |
| | 01/17/96 | | 10.27 | 0.17 | 160.78 |
| | 04/25/96 | | 11.68 | 0.03 | 159.25 |
| | 07/17/96 | | 12.78 | 0.48 | 158.81 |
| | 10/01/96 | | 14.21 | 0.28 | 156.70 |
| | 01/22/97 | | 10.92 | 0.11 | 160.08 |
| | **04/08/97** | | **14.12** | **0.20** | **156.95** |
| MW-3 | 11/17/93 | 174.61 | 15.40 | --- | 159.21 |
| | 01/20/94 | | 14.61 | --- | 160.00 |
| | 04/25/94 | | 13.12 | --- | 161.49 |
| | 07/07/94 | | 14.54 | 0.02 | 160.07 |
| | 10/27/94 | | 15.62 | 0.05 | 159.03 |
| | 11/17/94 | | 13.83 | --- | 160.78 |
| | 11/28/94 | | 14.02 | --- | 160.59 |

**Table 2.** **Ground Water Elevations** - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Blvd., Oakland, California (continued)

| Well ID | Date | Top-of-Casing Elevation (ft above msl) | Depth to Water (ft) | Separate-phase Hydrocarbons (ft) | Ground Water Elevation[a] (ft above msl) |
|---|---|---|---|---|---|
| | 01/13/95 | | 12.13 | --- | 162.48 |
| | 04/12/95 | | 12.96 | --- | 161.65 |
| | 07/25/95 | | 14.28 | 0.06 | 160.38 |
| | 10/18/95 | | 15.88 | 0.05 | 158.77 |
| | 01/17/96 | | 13.86 | 0.24 | 160.94 |
| | 04/25/96 | | 13.82 | 0.02 | 160.81 |
| | 07/17/96 | | 16.11 | 0.03 | 158.52 |
| | 10/01/96 | | 16.56 | --- | 158.05 |
| | 01/22/97 | | 13.07 | --- | 161.54 |
| | **04/08/97** | | **17.09** | **0.03** | **157.54** |
| MW-4 | 11/17/94 | 164.06 | 6.62 | --- | 157.44 |
| | 11/28/94 | | 6.11 | --- | 157.95 |
| | 01/13/95 | | 6.05 | --- | 158.01 |
| | 04/12/95 | | 6.31 | --- | 157.75 |
| | 07/25/95 | | 7.36 | --- | 156.70 |
| | 10/18/95 | | 8.54 | --- | 155.52 |
| | 01/17/96 | | 8.48 | --- | 155.58 |
| | 04/25/96 | | 7.40 | --- | 156.66 |
| | 07/17/96 | | 7.75 | --- | 156.31 |
| | 10/01/96 | | 8.82 | --- | 155.24 |
| | 01/22/97 | | 7.51 | --- | 156.55 |
| | **04/08/97** | | **7.18** | **---** | **156.88** |

**Notes and Abbreviations:**

a = When separate-phase hydrocarbons are present, ground water elevation is corrected using the relation: Corrected ground water elevation equals top of casing elevation minus depth to water plus (0.8 x separate phase hydrocarbon thickness).

--- = Data not available

msl = Mean sea level

**Table 3.** **Ground Water Analytic Results for Petroleum Hydrocarbons** - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

| Well ID | Date Sampled | Depth to Water (ft) | TPH-G | MTBE | B | T | E | X |
|---|---|---|---|---|---|---|---|---|
| | | | ← parts per billion (µg/L) → | | | | | |
| MW-1 | 11/17/93 | 8.59 | 410 | --- | 21 | 11 | 7.9 | 47 |
| | 01/20/94 | 8.22 | 1,200 | --- | 180 | 19 | 48 | 47 |
| | 04/25/94 | 7.63 | 3,100 | --- | 610 | <10 | 130 | 27 |
| | 07/07/94 | 8.31 | 2,400 | --- | 1,000 | 10 | 250 | 20 |
| | 10/27/94 | 8.84 | 2,200 | --- | 500 | 3.1 | 72 | 1.8 |
| | 01/13/95 | 7.11 | 570 | --- | 75 | 2.5 | 6.7 | 11 |
| | 04/12/95 | 7.08 | 1,800 | --- | 480 | <5.0 | 79 | <5.0 |
| | 07/25/95 | 7.73 | 120 | --- | 15 | 1.1 | 2.1 | 2.9 |
| | 07/25/95[dup] | 7.73 | 300 | --- | 88 | 2.4 | 11 | 6.5 |
| | 10/18/95 | 8.42 | 130 | --- | 9.5 | 0.8 | 1.3 | 1.7 |
| | 10/18/95[dup] | 8.42 | 120 | --- | 11 | 0.8 | 1.4 | 1.8 |
| | 01/17/96 | 7.83 | 250 | --- | 22 | 0.9 | 1.6 | 2.3 |
| | 04/25/96 | 7.35 | <50 | 500[b] | 4.6 | <0.5 | <0.5 | 0.60 |
| | 07/17/96 | 7.70 | <250 | 540 | 15 | <2.5 | <2.5 | <2.5 |
| | 10/01/96 | 8.07 | 1,200 | 1,900 | 500 | 12 | 57 | 82 |
| | 01/22/97 | 7.21 | 640 | 1,200 | 170 | 4.3 | 33 | 33 |
| | **04/08/97** | **7.75** | **<200** | **950** | **34** | **<2.0** | **3.3** | **4.3** |
| | **04/08/97[dup]** | **7.75** | **<200** | **740** | **66** | **<2.0** | **6.4** | **8.0** |
| MW-2 | 11/17/93 | 12.31 | 31,000 | --- | 9,400 | 4,600 | 1,000 | 3,900 |
| | 01/20/94 | 11.48 | 40,000 | --- | 6,900 | 5,600 | 780 | 4,100 |
| | 01/20/94[dup] | 11.48 | 41,000 | --- | 7,200 | 6,200 | 900 | 4,800 |
| | 04/25/94 | 10.84 | 60,000 | --- | 9,300 | 6,100 | 1,400 | 6,200 |
| | 07/07/94 | 11.89 | 280,000[a] | --- | 40,000 | 26,000 | 8,100 | 32,000 |
| | 07/07/94[dup] | 11.89 | 53,000 | --- | 13,000 | 6,600 | 2,000 | 8,400 |
| | 10/27/94 | 12.89 | 130,000 | --- | 14,000 | 12,000 | 2,400 | 13,000 |
| | 10/27/94[dup] | 12.89 | 390,000 | --- | 8,800 | 7,000 | 1,700 | 11,000 |
| | 01/13/95 | 8.10 | 75,000 | --- | 5,900 | 12,000 | 3,100 | 17,000 |
| | 04/12/95 | 10.12 | 100,000 | --- | 8,500 | 11,000 | 2,400 | 12,000 |
| | 04/12/95[dup] | 10.12 | 80,000 | --- | 4,200 | 9,300 | 2,500 | 12,000 |
| | 08/10/95[SPH] | 11.53 | --- | --- | --- | --- | --- | --- |
| | 10/18/95[SPH] | 14.02 | --- | --- | --- | --- | --- | --- |
| | 01/17/96[SPH] | 10.27 | --- | --- | --- | --- | --- | --- |

**Table 3.** **Ground Water Analytic Results for Petroleum Hydrocarbons** - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California (continued)

| Well ID | Date Sampled | Depth to Water (ft) | TPH-G | MTBE | B | T | E | X |
|---|---|---|---|---|---|---|---|---|
| | | | ← parts per billion (µg/L) → | | | | | |
| | 04/25/96[SPH] | 11.68 | --- | --- | --- | --- | --- | --- |
| | 07/17/96[SPH] | 12.78 | --- | --- | --- | --- | --- | --- |
| | 10/01/96[SPH] | 14.21 | --- | --- | --- | --- | --- | --- |
| | 01/22/97[SPH] | 10.92 | --- | --- | --- | --- | --- | --- |
| | **04/08/97[SPH]** | **14.12** | --- | --- | --- | --- | --- | --- |
| MW-3 | 11/17/93 | 15.40 | 18,000 | --- | 5,400 | 660 | 720 | 2,200 |
| | 01/20/94 | 14.61 | 55,000 | --- | 13,000 | 2,600 | 2,200 | 6,500 |
| | 04/25/94 | 13.12 | 96,000 | --- | 11,000 | 1,600 | 3,100 | 9,900 |
| | 04/25/94[dup] | 13.12 | 78,000 | --- | 12,000 | 1,900 | 2,600 | 7,300 |
| | 07/07/94[SPH] | 14.54 | --- | --- | --- | --- | --- | --- |
| | 10/27/94[SPH] | 15.62 | --- | --- | --- | --- | --- | --- |
| | 01/13/95 | 12.13 | 180,000 | --- | 3,200 | 2,700 | 1,700 | 5,200 |
| | 01/13/95[dup] | 12.13 | 23,000 | --- | 4,000 | 690 | 960 | 3,000 |
| | 04/12/95 | 12.96 | 56,000 | --- | 8,700 | 1,500 | 2,100 | 6,300 |
| | 08/10/95[SPH] | 14.28 | --- | --- | --- | --- | --- | --- |
| | 10/18/95[SPH] | 15.88 | --- | --- | --- | --- | --- | --- |
| | 01/17/96[SPH] | 13.86 | --- | --- | --- | --- | --- | --- |
| | 04/25/96[SPH] | 13.82 | --- | --- | --- | --- | --- | --- |
| | 07/17/96[SPH] | 16.11 | --- | --- | --- | --- | --- | --- |
| | 10/01/96 | 16.56 | 46,000 | 3,200 | 7,300 | 530 | 1,700 | 3,900 |
| | 10/01/96[dup] | 16.56 | 47,000 | 2,900 | 7,100 | 530 | 1,700 | 4,000 |
| | 01/22/97 | 13.07 | 82,000 | 1,100 | 5,200 | 1,300 | 2,800 | 8,900 |
| | 01/22/97[dup] | 13.07 | 61,000 | 2,700 | 8,400 | 1,100 | 2,300 | 7,000 |
| | **04/08/97[SPH]** | **17.09** | --- | --- | --- | --- | --- | --- |
| MW-4 | 11/28/94 | 6.11 | 2,900 | --- | 200 | 17 | 76 | 260 |
| | 01/13/95 | 6.05 | 1,900 | --- | 130 | 5.6 | 13 | 40 |
| | 04/14/95 | 6.31 | 680 | --- | 150 | <2.0 | 10 | 13 |
| | 07/25/95 | 7.36 | 340 | --- | 100 | 0.8 | 8.8 | 3.0 |
| | 10/18/95 | 8.54 | 150 | --- | 31 | <0.5 | 3.5 | 0.8 |
| | 01/17/96 | 8.48 | 290 | --- | 14 | <0.5 | 1.8 | 0.8 |
| | 04/25/96 | 7.40 | <500 | 1,700 | 65 | <5 | <5 | <5 |

**Table 3.** **Ground Water Analytic Results for Petroleum Hydrocarbons** - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California (continued)

| Well ID | Date Sampled | Depth to Water (ft) | TPH-G | MTBE | B | T | E | X |
|---|---|---|---|---|---|---|---|---|
| | | | ← parts per billion (µg/L) → | | | | | |
| | 04/25/96[dup] | 7.40 | <500 | 1,500 | 66 | <5 | 8.7 | <5 |
| | 07/17/96 | 7.75 | <500 | 1,500 | 84 | <5.0 | 6.5 | <5.0 |
| | 07/17/96[dup] | 7.75 | <500 | 1,700 (2,100) | 54 | <5.0 | <5.0 | <5.0 |
| | 10/01/96 | 8.82 | <500 | 3,000 | 1.9 | <5.0 | <5.0 | <5.0 |
| | 01/22/97 | 7.51 | 580 | 1,200 | 130 | <2.5 | 18 | 5.2 |
| | **04/08/97** | **7.18** | **770** | **1,500** | **200** | **7.0** | **26** | **55** |
| Trip Blank | 01/20/94 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 04/25/94 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 07/07/94 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 10/27/94 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 01/13/95 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 04/12/95 | | <50 | --- | <0.5 | <0.5 | <0.5 | 0.89 |
| | 07/25/95 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 10/18/95 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| MCLs | | | NE | NE | 1 | 150 | 700 | 1,750 |

**Abbreviations:**

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
MTBE = Methyl-tert-butyl-ether by EPA Method 8020. Result in parentheses indicates MTBE by EPA Method 8260
B = Benzene by EPA Method 8020
E = Ethylbenzene by EPA Method 8020
T = Toluene by EPA Method 8020
X = Xylenes by EPA Method 8020
SPH = Separate-phase hydrocarbons present, well not sampled
NE = Not established
MCLs = California primary maximum contaminant levels for drinking water (22 CCR 64444)
--- = Not analyzed
<n = Not detected at detection limits of n µg/L
dup = Duplicate sample
µg/L = Micrograms per liter

**Notes:**

a = Ground water surface had a sheen when sampled.
b = MTBE value is estimated by Sequoia Analytical of Redwood City, California

**Table 4.** **Ground Water Analytic Results for Metals** - Shell Station WIC #204-5510-0600 - 4255 MacArthur Boulevard, Oakland, California

| Well ID | Date | Cadmium | Chromium | Copper | Lead |
|---|---|---|---|---|---|
| | | ← (mg/L) → | | | |
| MW-1 | 01/22/97 | <0.010 | <0.010 | <0.010 | <0.10 |
| | 04/08/97 | <0.010 | 0.02 | 0.017 | <0.10 |
| | 04/08/97[dup] | <0.010 | <0.010 | <0.010 | <0.10 |
| MW-2 | 01/22/97[SPH] | — | — | — | — |
| MW-3 | 01/22/97 | <0.010 | 0.025 | 0.034 | <0.10 |
| MW-4 | 01/22/97 | <0.010 | 0.19 | 0.14 | <0.10 |
| | 04/08/97 | <0.010 | 0.065 | 0.052 | <0.10 |
| MCLs | | 0.005 | 0.050 | NE | NE |

**Abbreviations:**

SPH = Well not sampled due to presence of separate-phase hydrocarbons.
mg/L = Milligrams per liter
dup = Duplicate sample

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**ATTACHMENT A**

Blaine Quarterly Ground Water Monitoring Report

BLAINE
TECH SERVICES INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112
(408) 573-7771 FAX
(408) 573-0555 PHONE

May 5, 1997

Shell Oil Company
P.O. Box 5278
Concord, CA 94520-9998

Attn: Alex Perez

Shell WIC #204-5510-0600
4255 MacArthur Blvd.
Oakland, California

2nd Quarter 1997

# Quarterly Groundwater Monitoring Report 970408-T-1

Blaine Tech Services, Inc. performs environmental sampling and documentation as an independent third party. Copies of our Sampling Report along with the laboratory's Certified Analytical Report are forwarded to the consultant overseeing work at this site. Submission of the assembled documents to interested regulatory agencies will be made by the designated consultant.

Groundwater monitoring at this site was performed in accordance with Standard Operating Procedures provided to the interested regulatory agencies. If you have any questions about the work performed at this site please call me at (408) 573-0555 ext. 201.

Yours truly,

Francis Thic

attachments: Table of Well Gauging Data
Chain of Custody
Field Data Sheets
Certified Analytical Report

cc: Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, CA 94608
Attn: Josh Bergstrom

(Any professional evaluations or recommendations will be made by the consultant under separate cover.)

# TABLE OF WELL GAUGING DATA

| WELL I.D. | DATA COLLECTION DATE | MEASUREMENT REFERENCED TO | QUALITATIVE OBSERVATIONS (sheen) | DEPTH TO FIRST IMMISCIBLES LIQUID (FPZ) (feet) | THICKNESS OF IMMISCIBLES LIQUID ZONE (feet) | VOLUME OF IMMISCIBLES REMOVED (ml) | DEPTH TO WATER (feet) | DEPTH TO WELL BOTTOM (feet) |
|---|---|---|---|---|---|---|---|---|
| MW-1* | 4/8/97 | TOC | -- | NONE | -- | -- | 7.75 | 23.42 |
| MW-2 | 4/8/97 | TOC | FREE PRODUCT/ODOR | 13.92 | 0.20 | 600 | 14.12 | -- |
| MW-3 | 4/8/97 | TOC | FREE PRODUCT/ODOR | 17.06 | 0.03 | 100 | 17.09 | -- |
| MW-4 | 4/8/97 | TOC | -- | NONE | -- | -- | 7.18 | 30.34 |

* Sample DUP was a duplicate sample taken from well MW-1.

# SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

## CHAIN OF CUSTODY RECORD
Serial No: 970408-T1

Date: 4/8/97
Page 1 of 1

Site Address: 4255 MacArthur Blvd., Oakland

WIC#: 204-5510-0600

Shell Engineer: R. Jeff Granberry — Phone No.: (510) 675-6168 Fax #: 675-6172

Consultant Name & Address: Blaine Tech Services, 1680 Rogers Ave., San Jose, CA 95112

Consultant Contact: Fran Thie — Phone No.: (408) 573-0555 Fax #: 573-7771

Comments:

Sampled by: mitchell

Printed Name: MikeToll

LAB: SEQUOIA

| CHECK ONE (1) BOX ONLY | CT/DT | TURN AROUND TIME |
|---|---|---|
| Quarterly Monitoring XX | 6441 | 24 hours ☐ |
| Site Investigation ☐ | 6441 | 48 hours ☐ |
| Soil Closure/Disposal ☐ | 6442 | 15 days XX (Normal) |
| Water Closure/Disposal ☐ | 6443 | Other ☐ ____ |
| Soil/Air Rem. or Sys. O & M ☐ | 6452 | NOTE: Notify Lab as soon as Possible of 24/48 hr. TAT. |
| Water Rem. or Sys. O & M ☐ | 6453 | |
| Other ☐ | | |

Analysis Required

| Sample ID | Date | Sludge | Soil | Water | Air | No. of conts. | 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 | Methyl (Cadmium, Chromium, Copper, Lead) | | Asbestos | Container Size | Preparation Used | Composite Y/N | MATERIAL DESCRIPTION | SAMPLE CONDITION/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW1 | 4/8 | | | Y | | 4 | | | | | | Y | x | | | | | | 9704517 | |
| MW4 | 4/8 | | | Y | | 4 | | | | | | Y | Y | | | | | | | |
| EB | 4/8 | | | X | | 4 | | | | | | Y | x | | | | | | | |
| DUP | 4/8 | | | X | | 4 | | | | | | Y | Y | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Relinquished By (signature): mitchell | Printed Name: MikeToll | Date: 4/9/97 Time: 11:10 | Received (signature): | Printed Name: Fletcher | Date: 4/9/97 Time: 11:10 |
| Relinquished By (signature): | Printed Name: | Date: 4/9/97 Time: | Received (signature): | Printed Name: | Date: Time: |
| Relinquished By (signature): | Printed Name: | Date: Time: | Received (signature): M Sakai | Printed Name: M SAKAI | Date: 4-9-97 Time: 1205 |

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

Shell Co Chn of Custody

Sequoia Analytical

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Blaine Tech Services
1680 Rogers Avenue
San Jose, CA 95112
Attention: Fran Thle

Project: Shell Oakland/970408-T1

Enclosed are the results from samples received at Sequoia Analytical on April 9, 1997. The requested analyses are listed below:

| SAMPLE # | SAMPLE DESCRIPTION | DATE COLLECTED | TEST METHOD |
|---|---|---|---|
| 9704517 -01 | LIQUID, MW1 | 04/08/97 | Cadmium |
| 9704517 -01 | LIQUID, MW1 | 04/08/97 | Chromium |
| 9704517 -01 | LIQUID, MW1 | 04/08/97 | Copper |
| 9704517 -01 | LIQUID, MW1 | 04/08/97 | Lead |
| 9704517 -01 | LIQUID, MW1 | 04/08/97 | TPGBMW Purgeable TPH/BTEX |
| 9704517 -02 | LIQUID, MW4 | 04/08/97 | Cadmium |
| 9704517 -02 | LIQUID, MW4 | 04/08/97 | Chromium |
| 9704517 -02 | LIQUID, MW4 | 04/08/97 | Copper |
| 9704517 -02 | LIQUID, MW4 | 04/08/97 | Lead |
| 9704517 -02 | LIQUID, MW4 | 04/08/97 | TPGBMW Purgeable TPH/BTEX |
| 9704517 -03 | LIQUID, EB | 04/08/97 | Cadmium |
| 9704517 -03 | LIQUID, EB | 04/08/97 | Chromium |
| 9704517 -03 | LIQUID, EB | 04/08/97 | Copper |

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| SAMPLE # | SAMPLE DESCRIPTION | DATE COLLECTED | TEST METHOD |
|---|---|---|---|
| 9704517 -03 | LIQUID, EB | 04/08/97 | Lead |
| 9704517 -03 | LIQUID, EB | 04/08/97 | TPGBMW Purgeable TPH/BTEX |
| 9704517 -04 | LIQUID, DUP | 04/08/97 | Cadmium |
| 9704517 -04 | LIQUID, DUP | 04/08/97 | Chromium |
| 9704517 -04 | LIQUID, DUP | 04/08/97 | Copper |
| 9704517 -04 | LIQUID, DUP | 04/08/97 | Lead |
| 9704517 -04 | LIQUID, DUP | 04/08/97 | 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**

Peggy Penner
Project Manager

Sequoia Analytical

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Blaine Tech Services
1680 Rogers Avenue
San Jose, CA 95112

Attention: Fran Thie

Client Proj. ID: Shell Oakland/970408-T1

Lab Proj. ID: 9704517

Sampled: 04/08/97
Received: 04/09/97
Analyzed: see below

Reported: 04/21/97

## LABORATORY ANALYSIS

| Analyte | Units | Date Analyzed | Detection Limit | Sample Results |
|---|---|---|---|---|
| Lab No: 9704517-01 | | | | |
| Sample Desc : **LIQUID,MW1** | | | | |
| Cadmium | mg/L | 04/15/97 | 0.010 | N.D. |
| **Chromium** | **mg/L** | **04/15/97** | **0.010** | **0.020** |
| **Copper** | **mg/L** | **04/15/97** | **0.010** | **0.017** |
| Lead | mg/L | 04/15/97 | 0.10 | N.D. |
| Lab No: 9704517-02 | | | | |
| Sample Desc : **LIQUID,MW4** | | | | |
| Cadmium | mg/L | 04/15/97 | 0.010 | N.D. |
| **Chromium** | **mg/L** | **04/15/97** | **0.010** | **0.065** |
| **Copper** | **mg/L** | **04/15/97** | **0.010** | **0.052** |
| Lead | mg/L | 04/15/97 | 0.10 | N.D. |
| Lab No: 9704517-03 | | | | |
| Sample Desc : **LIQUID,EB** | | | | |
| Cadmium | mg/L | 04/15/97 | 0.010 | N.D. |
| Chromium | mg/L | 04/15/97 | 0.010 | N.D. |
| Copper | mg/L | 04/15/97 | 0.010 | N.D. |
| Lead | mg/L | 04/15/97 | 0.10 | N.D. |
| Lab No: 9704517-04 | | | | |
| Sample Desc : **LIQUID,DUP** | | | | |
| Cadmium | mg/L | 04/15/97 | 0.010 | N.D. |
| Chromium | mg/L | 04/15/97 | 0.010 | N.D. |
| Copper | mg/L | 04/15/97 | 0.010 | N.D. |
| Lead | mg/L | 04/15/97 | 0.10 | N.D. |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Peggy Penner
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

| | | |
|---|---|---|
| Blaine Tech Services | Client Proj. ID: Shell Oakland/970408-T1 | Sampled: 04/08/97 |
| 1680 Rogers Avenue | Sample Descript: MW1 | Received: 04/09/97 |
| San Jose, CA 95112 | Matrix: LIQUID | |
| | Analysis Method: 8015Mod/8020 | Analyzed: 04/17/97 |
| Attention: Fran Thie | Lab Number: 9704517-01 | Reported: 04/21/97 |

QC Batch Number: GC041797BTEX18A
Instrument ID: GCHP18

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

| Analyte | Detection Limit ug/L | Sample Results ug/L |
|---|---|---|
| TPPH as Gas | 200 | N.D. |
| **Methyl t-Butyl Ether** | **10** | **950** |
| **Benzene** | **2.0** | **34** |
| Toluene | 2.0 | N.D. |
| **Ethyl Benzene** | **2.0** | **3.3** |
| **Xylenes (Total)** | **2.0** | **4.3** |
| Chromatogram Pattern: | | |

| Surrogates | Control Limits % | | % Recovery |
|---|---|---|---|
| Trifluorotoluene | 70 | 130 | 113 |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Peggy Penner
Project Manager

Sequoia Analytical

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| | | |
|---|---|---|
| Blaine Tech Services | Client Proj. ID: Shell Oakland/970408-T1 | Sampled: 04/08/97 |
| 1680 Rogers Avenue | Sample Descript: MW4 | Received: 04/09/97 |
| San Jose, CA 95112 | Matrix: LIQUID | |
| | Analysis Method: 8015Mod/8020 | Analyzed: 04/17/97 |
| Attention: Fran Thie | Lab Number: 9704517-02 | Reported: 04/21/97 |

QC Batch Number: GC041797BTEX18A
Instrument ID: GCHP18

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

| Analyte | Detection Limit ug/L | Sample Results ug/L |
|---|---|---|
| **TPPH as Gas** | **500** | **770** |
| **Methyl t-Butyl Ether** | **25** | **1500** |
| **Benzene** | **5.0** | **200** |
| **Toluene** | **5.0** | **7.0** |
| **Ethyl Benzene** | **5.0** | **26** |
| **Xylenes (Total)** | **5.0** | **55** |
| **Chromatogram Pattern:** | | **C6-C12** |

| Surrogates | Control Limits % | | % Recovery |
|---|---|---|---|
| Trifluorotoluene | 70 | 130 | 113 |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Peggy Penner
Project Manager

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| | | |
|---|---|---|
| Blaine Tech Services | Client Proj. ID: Shell Oakland/970408-T1 | Sampled: 04/08/97 |
| 1680 Rogers Avenue | Sample Descript: EB | Received: 04/09/97 |
| San Jose, CA 95112 | Matrix: LIQUID | |
| | Analysis Method: 8015Mod/8020 | Analyzed: 04/16/97 |
| Attention: Fran Thie | Lab Number: 9704517-03 | Reported: 04/21/97 |

QC Batch Number: GC041697BTEX07A
Instrument ID: GCHP07

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

| Analyte | Detection Limit ug/L | Sample Results ug/L |
|---|---|---|
| TPPH as Gas | 50 | N.D. |
| Methyl t-Butyl Ether | 2.5 | N.D. |
| Benzene | 0.50 | N.D. |
| Toluene | 0.50 | N.D. |
| Ethyl Benzene | 0.50 | N.D. |
| Xylenes (Total) | 0.50 | N.D. |
| Chromatogram Pattern: | | |

| Surrogates | Control Limits % | | % Recovery |
|---|---|---|---|
| Trifluorotoluene | 70 | 130 | 86 |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Peggy Penner
Project Manager

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| | | |
|---|---|---|
| Blaine Tech Services | Client Proj. ID: Shell Oakland/970408-T1 | Sampled: 04/08/97 |
| 1680 Rogers Avenue | Sample Descript: DUP | Received: 04/09/97 |
| San Jose, CA 95112 | Matrix: LIQUID | |
| | Analysis Method: 8015Mod/8020 | Analyzed: 04/17/97 |
| Attention: Fran Thie | Lab Number: 9704517-04 | Reported: 04/21/97 |

QC Batch Number: GC041797BTEX18A
Instrument ID: GCHP18

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

| Analyte | Detection Limit ug/L | Sample Results ug/L |
|---|---|---|
| TPPH as Gas | 200 | N.D. |
| **Methyl t-Butyl Ether** | **10** | **740** |
| **Benzene** | **2.0** | **66** |
| Toluene | 2.0 | N.D. |
| **Ethyl Benzene** | **2.0** | **6.4** |
| **Xylenes (Total)** | **2.0** | **8.0** |
| Chromatogram Pattern: | | |

| Surrogates | Control Limits % | | % Recovery |
|---|---|---|---|
| Trifluorotoluene | 70 | 130 | 111 |

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Peggy Penner
Project Manager

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| | | |
|---|---|---|
| Blaine Tech Services | Client Proj. ID: Shell Oakland/970408-T1 | Received: 04/09/97 |
| 1680 Rogers Avenue<br>San Jose, CA 95112<br>Attention: Fran Thie | Lab Proj. ID: 9704517 | Reported: 04/21/97 |

## LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 11 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

**SEQUOIA ANALYTICAL**

Peggy Penner
Project Manager

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Blaine Tech Services, Inc.
1680 Rogers Avenue
San Jose, CA 95112
Attention: Fran Thie

Client Project ID: Shell Oakland/ 970408-T1
Matrix: Liquid
Work Order #: 9704517 -01 -04

Reported: Apr 24, 1997

# QUALITY CONTROL DATA REPORT

| Analyte: | Beryllium | Cadmium | Chromium | Nickel |
|---|---|---|---|---|
| QC Batch#: | ME0415976010MDA | ME0415976010MDA | ME0415976010MDA | ME0415976010MDA |
| Analy. Method: | EPA 6010 | EPA 6010 | EPA 6010 | EPA 6010 |
| Prep. Method: | EPA 3010 | EPA 3010 | EPA 3010 | EPA 3010 |
| Analyst: | RB/CM | RB/CM | RB/CM | RB/CM |
| MS/MSD #: | 970461601 | 970461601 | 970461601 | 970461601 |
| Sample Conc.: | N.D. | N.D. | N.D. | N.D. |
| Prepared Date: | 4/15/97 | 4/15/97 | 4/15/97 | 4/15/97 |
| Analyzed Date: | 4/15/97 | 4/15/97 | 4/15/97 | 4/15/97 |
| Instrument I.D.#: | MTJA2 | MTJA2 | MTJA2 | MTJA2 |
| Conc. Spiked: | 1.0 mg/L | 1.0 mg/L | 1.0 mg/L | 1.0 mg/L |
| Result: | 0.99 | 0.97 | 0.99 | 1.0 |
| MS % Recovery: | 99 | 97 | 99 | 100 |
| Dup. Result: | 0.92 | 0.91 | 0.93 | 0.94 |
| MSD % Recov.: | 92 | 91 | 93 | 94 |
| RPD: | 7.3 | 6.4 | 6.2 | 6.2 |
| RPD Limit: | 0-30 | 0-30 | 0-30 | 0-30 |
| LCS #: | BLK041597 | BLK041597 | BLK041597 | BLK041597 |
| Prepared Date: | 4/15/97 | 4/15/97 | 4/15/97 | 4/15/97 |
| Analyzed Date: | 4/15/97 | 4/15/97 | 4/15/97 | 4/15/97 |
| Instrument I.D.#: | MTJA2 | MTJA2 | MTJA2 | MTJA2 |
| Conc. Spiked: | 1.0 mg/L | 1.0 mg/L | 1.0 mg/L | 1.0 mg/L |
| LCS Result: | 0.94 | 0.94 | 0.94 | 0.95 |
| LCS % Recov.: | 94 | 94 | 94 | 95 |
| MS/MSD Control Limits | 80-120 | 80-120 | 80-120 | 80-120 |
| LCS Control Limits | 80-120 | 80-120 | 80-120 | 80-120 |

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Peggy Penner
Project Manager

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.

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

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Blaine Tech Services, Inc.
1680 Rogers Avenue
San Jose, CA 95112
Attention: Fran Thle

Client Project ID: Shell Oakland/ 970408-T1
Matrix: Liquid
Work Order #: 9704517 -01 -02, 04

Reported: Apr 24, 1997

# QUALITY CONTROL DATA REPORT

| Analyte: | Benzene | Toluene | Ethyl Benzene | Xylenes | Gas |
|---|---|---|---|---|---|
| QC Batch#: | GC041697BTEX18A | GC041697BTEX18A | GC041697BTEX18A | GC041697BTEX18A | GC041697BTEX18A |
| 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 #: | 970451904 | 970451904 | 970451904 | 970451904 | 970451904 |
| Sample Conc.: | N.D. | N.D. | N.D. | N.D. | N.D. |
| Prepared Date: | 4/17/97 | 4/17/97 | 4/17/97 | 4/17/97 | 4/17/97 |
| Analyzed Date: | 4/17/97 | 4/17/97 | 4/17/97 | 4/17/97 | 4/17/97 |
| 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: | 9.5 | 9.6 | 9.6 | 28 | 59 |
| MS % Recovery: | 95 | 96 | 96 | 93 | 98 |
| Dup. Result: | 8.9 | 8.9 | 8.7 | 26 | 55 |
| MSD % Recov.: | 89 | 89 | 87 | 87 | 92 |
| RPD: | 6.5 | 7.6 | 9.8 | 7.4 | 7.0 |
| RPD Limit: | 0-50 | 0-50 | 0-50 | 0-50 | 0-50 |

| LCS #: | BLK041797BSA | BLK041797BSA | LK041797BSA | BLK041797BSA | BLK041797BSA |
|---|---|---|---|---|---|
| Prepared Date: | 4/17/97 | 4/17/97 | 4/17/97 | 4/17/97 | 4/17/97 |
| Analyzed Date: | 4/17/97 | 4/17/97 | 4/17/97 | 4/17/97 | 4/17/97 |
| 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: | 9.1 | 9.0 | 8.9 | 27 | 55 |
| LCS % Recov.: | 91 | 90 | 89 | 90 | 92 |

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

SEQUOIA ANALYTICAL

Reggy Penner
Project Manager

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.

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

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Blaine Tech Services, Inc.
1680 Rogers Avenue
San Jose, CA 95112
Attention: Fran Thie

Client Project ID: Shell Oakland/ 970408-T1
Matrix: Liquid
Work Order #: 9704517 -03
Reported: Apr 24, 1997

## QUALITY CONTROL DATA REPORT

| Analyte: | Benzene | Toluene | Ethyl Benzene | Xylenes | Gas |
|---|---|---|---|---|---|
| QC Batch#: | GC041697BTEX07A | GC041697BTEX07A | GC041697BTEX07A | GC041697BTEX07A | GC041697BTEX07A |
| 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. Porter | A. Porter | A. Porter | A. Porter | A. Porter |
| MS/MSD #: | 970428107 | 970428107 | 970428107 | 970428107 | 970428107 |
| Sample Conc.: | N.D. | N.D. | N.D. | N.D. | N.D. |
| Prepared Date: | 4/16/97 | 4/16/97 | 4/16/97 | 4/16/97 | 4/16/97 |
| Analyzed Date: | 4/16/97 | 4/16/97 | 4/16/97 | 4/16/97 | 4/16/97 |
| Instrument I.D.#: | GCHP07 | GCHP07 | GCHP07 | GCHP07 | GCHP07 |
| Conc. Spiked: | 10 µg/L | 10 µg/L | 10 µg/L | 30 µg/L | 60 µg/L |
| Result: | 11 | 11 | 11 | 34 | 74 |
| MS % Recovery: | 110 | 110 | 110 | 113 | 123 |
| Dup. Result: | 11 | 10 | 10 | 31 | 68 |
| MSD % Recov.: | 110 | 100 | 100 | 103 | 113 |
| RPD: | 0.0 | 9.5 | 9.5 | 9.2 | 8.5 |
| RPD Limit: | 0-50 | 0-50 | 0-50 | 0-50 | 0-50 |

| LCS #: | BLK041697BSA | BLK041697BSA | LK041697BSA | BLK041697BSA | BLK041697BSA |
|---|---|---|---|---|---|
| Prepared Date: | 4/16/97 | 4/16/97 | 4/16/97 | 4/16/97 | 4/16/97 |
| Analyzed Date: | 4/16/97 | 4/16/97 | 4/16/97 | 4/16/97 | 4/16/97 |
| Instrument I.D.#: | GCHP07 | GCHP07 | GCHP07 | GCHP07 | GCHP07 |
| Conc. Spiked: | 10 µg/L | 10 µg/L | 10 µg/L | 30 µg/L | 60 µg/L |
| LCS Result: | 10 | 10 | 10 | 30 | 66 |
| LCS % Recov.: | 100 | 100 | 100 | 100 | 110 |

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

SEQUOIA ANALYTICAL

Peggy Penner
Project Manager

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.

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