Weiss Associates
Environmental and Geologic Services
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September 29, 1993

Richard Hiett
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, CA 94612

Re: Shell Service Station
WIC #204-5508-5801
500 - 40th Street
Oakland, California
WA Job #81-601-203

Dear Mr. Hiett:

This letter describes recently completed and anticipated activities at the Shell service station referenced above (Figure 1). This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 265.d. Included below are descriptions and results of activities performed in the third quarter 1993 and proposed work for the fourth quarter 1993.

Third Quarter 1993 Activities:

- Blaine Tech Services, Inc. (BTS) of San Jose, California measured depths to ground water in ten of the twelve site wells. Wells MW-2 and MW-4 were inaccessible and were not measured. Ground water samples were collected from wells MW-11 and MW-12. All other wells are sampled on a semi-annual basis and will be sampled in the fourth quarter. BTS' report describing these activities and the analytic report for the ground water samples are included as Attachment A.

- Weiss Associates (WA) compiled the ground water elevation and analytic data (Tables 1 and 2) and prepared a ground water elevation contour map (Figure 2).

Anticipated Fourth Quarter 1993 Activities:

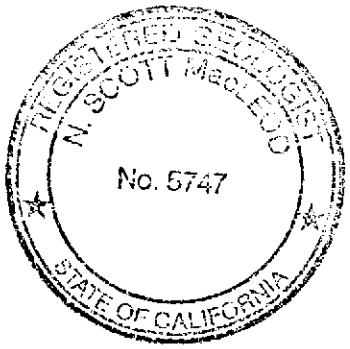
As indicated in our April 15, 1993 monitoring report, WA has implemented semi-annual sampling of wells EW-1 and MW-2 through MW-10. These wells will be sampled in the fourth quarter of 1993. Wells MW-11, MW-12 and MW-13 will continue to be sampled quarterly. WA will submit a report presenting the results of the fourth quarter 1993 ground water sampling and ground water depth measurements. The report will include tabulated chemical analytic results, ground water elevation contour map. The fourth quarter report will include a benzene isoconcentration contour map.

Conclusions and Recommendations:

WA recommends continued ground water sampling to monitor ground water flow directions and hydrocarbon concentrations.

Please call if you have any questions.

Sincerely,
Weiss Associates




Malieka Bundy
Technical Assistant

N. Scott MacLeod, R.G.
Project Geologist

MB/NSM:mb

J:\SHELL\600\QMRPTS\601QMSE3.WP

Attachments: Figures
Tables
A - BTS' Ground Water Monitoring Report

cc: Dan Kirk, Shell, Shell Oil Company, P.O. Box 5728, Concord, CA 94520-9998
Jim Matthews, Shell Oil Company, P.O. Box 4848, Anaheim, CA 92803
Brian Oliva, Alameda County Department of Environmental Health, 80 Swan Way, Room 200, Oakland, CA 94621-1426

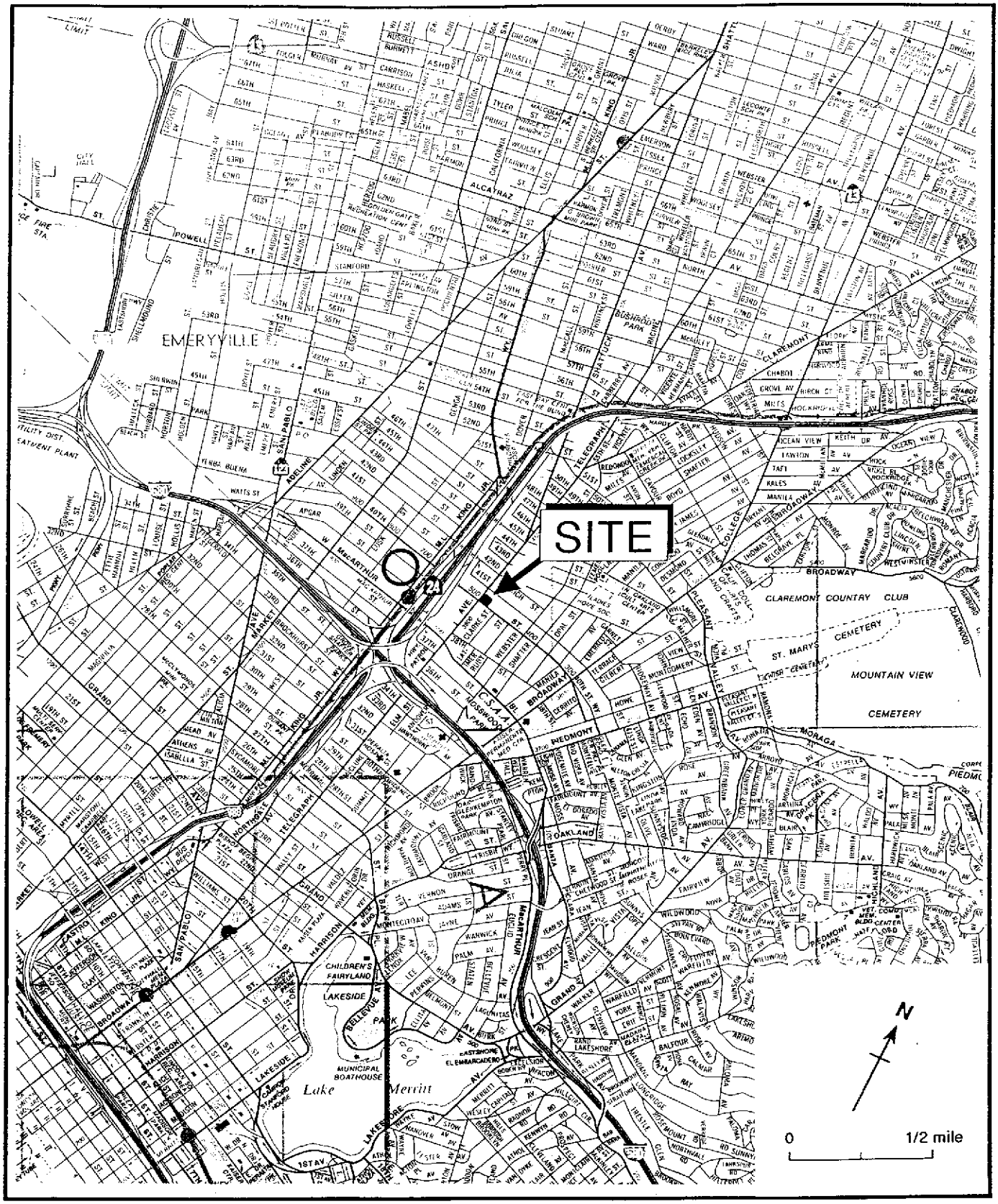



Figure 1. Site Location Map - Shell Service Station WIC #204-5508-4903, 500 40th Street, Oakland, California

2/28/92

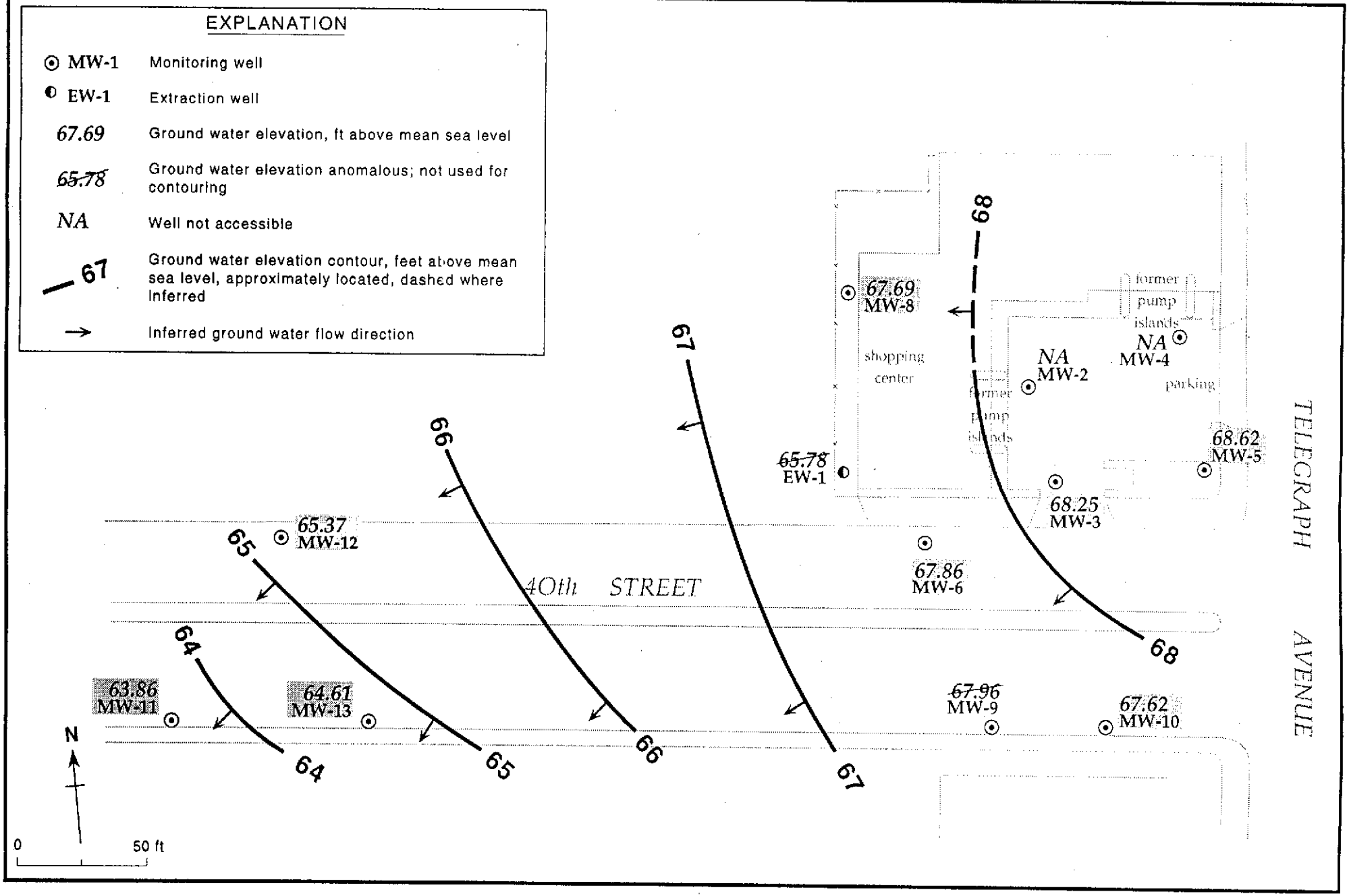



Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - August 18, 1993 - Shell Service Station, WIC #204-5508-4903, 500 40th Street, Oakland, California

Table 1. Ground Water Elevations - Shell Service Station WIC #204-5508-5801, 500 40th Street, Oakland, California

| Well ID | Date | Top-of-Casing Elevation (ft above msl) | Depth to Water (ft) | Ground Water Elevation (ft above msl) |
|---|---|---|---|---|
| EW-1 | 08/06/91 | 78.26 | --- | --- |
| | 10/30/91 | | 12.72 | 65.54 |
| | 03/18/92 | | 11.71 | 66.55 |
| | 05/20/92 | | 12.84 | 65.42 |
| | 08/19/92 | | 13.04 | 65.22 |
| | 11/18/92 | | 12.90 | 65.36 |
| | 02/11/93 | | 11.28 | 66.98 |
| | 05/19/93 | | 12.52 | 65.74 |
| | **08/18/93** | | **12.48** | **65.78** |
| MW-2 | 08/06/91 | 80.80 | 12.12 | 68.68 |
| | 10/30/91 | | 11.70 | 69.10 |
| | 03/18/92 | | 11.10 | 69.70 |
| | 05/20/92 | | 12.12 | 68.68 |
| | 08/19/92 | | 12.18 | 68.62 |
| | 11/18/92 | | 12.03 | 68.77 |
| | 02/11/93 | | 11.15 | 69.65 |
| | 05/19/93 | | 11.80 | 69.00 |
| | **08/18/93[a]** | | **—** | **—** |
| MW-3 | 08/06/91 | 79.60 | 11.12 | 68.48 |
| | 10/30/91 | | 10.93 | 68.67 |
| | 03/18/92 | | 10.54 | 69.06 |
| | 05/20/92 | | 10.79 | 68.81 |
| | 08/19/92 | | 11.23 | 68.37 |
| | 11/18/92 | | 11.20 | 68.40 |
| | 02/11/93 | | 11.00 | 68.60 |
| | 05/19/93 | | 11.16 | 68.44 |
| | **08/18/93** | | **11.35** | **68.25** |
| MW-4 | 08/06/91 | 81.00 | 12.36 | 68.64 |
| | 10/30/91 | | 12.02 | 68.98 |
| | 03/18/92 | | 11.34 | 69.66 |
| | 05/20/92 | | 12.35 | 68.65 |
| | 08/19/92 | | 12.41 | 68.59 |
| | 11/18/92 | | 12.28 | 68.72 |
| | 02/11/93 | | 11.65 | 69.35 |
| | 05/19/93 | | 11.92 | 69.08 |
| | **08/18/93[a]** | | **—** | **—** |

-- Table 1 continues on next page --

Table 1. Ground Water Elevations - Shell Service Station WIC #204-5508-5801, 500 40th Street, Oakland, California (continued)

| Well ID | Date | Top-of-Casing Elevation (ft above msl) | Depth to Water (ft) | Ground Water Elevation (ft above msl) |
|---|---|---|---|---|
| MW-5 | 08/06/91 | 81.50 | 13.02 | 68.48 |
| | 10/30/91 | | 12.73 | 68.77 |
| | 03/18/92 | | 12.52 | 68.98 |
| | 05/20/92 | | 13.05 | 68.45 |
| | 08/19/92 | | 13.04 | 68.46 |
| | 11/18/92 | | 12.91 | 68.59 |
| | 02/11/93 | | 12.44 | 69.06 |
| | 05/19/93 | | 12.84 | 68.66 |
| | **08/18/93** | | **12.88** | **68.62** |
| MW-6 | 08/06/91 | 77.90 | 10.71 | 67.19 |
| | 10/30/91 | | 10.50 | 67.40 |
| | 03/18/92 | | 9.24 | 68.66 |
| | 05/20/92 | | 10.13 | 67.77 |
| | 08/19/92 | | 10.16 | 67.74 |
| | 11/18/92 | | 9.94 | 67.96 |
| | 02/11/93 | | 9.20 | 68.70 |
| | 05/19/93 | | 10.64 | 67.86 |
| | **08/18/93** | | **10.04** | **67.86** |
| MW-8 | 08/06/91 | 79.91 | 13.08 | 66.83 |
| | 10/30/91 | | 12.87 | 67.04 |
| | 03/18/92 | | 11.54 | 68.37 |
| | 05/20/92 | | 12.32 | 67.59 |
| | 08/19/92 | | 12.58 | 67.33 |
| | 11/18/92 | | 12.47 | 67.44 |
| | 02/11/93 | | 11.02 | 68.89 |
| | 05/19/93 | | 11.78 | 68.13 |
| | **08/18/93** | | **12.22** | **67.69** |
| MW-9 | 08/06/91 | 77.71 | 10.38 | 67.33 |
| | 10/30/91 | | --- | --- |
| | 03/18/92 | | 8.76 | 68.95 |
| | 05/20/92[a] | | --- | --- |
| | 08/19/92 | | 9.98 | 67.73 |
| | 11/18/92 | | 9.81 | 67.90 |
| | 02/11/93[a] | | --- | --- |
| | 05/19/93 | | --- | --- |
| | **08/18/93** | | **9.75** | **67.96** |

-- Table 1 continues on next page --

Table 1. Ground Water Elevations - Shell Service Station WIC #204-5508-5801, 500 40th Street, Oakland, California (continued)

| Well ID | Date | Top-of-Casing Elevation (ft above msl) | Depth to Water (ft) | Ground Water Elevation (ft above msl) |
|---|---|---|---|---|
| MW-10 | 08/06/91 | 77.91 | 10.00 | 67.91 |
| | 10/31/91 | | 10.10 | 67.81 |
| | 03/18/92 | | 9.55 | 68.36 |
| | 05/20/92 | | 10.41 | 67.50 |
| | 08/19/92 | | 10.46 | 67.45 |
| | 11/18/92 | | 10.31 | 67.60 |
| | 02/11/93 | | 9.68 | 68.23 |
| | 05/19/93 | | 10.19 | 67.72 |
| | **08/18/93** | | **10.29** | **67.62** |
| MW-11 | 11/22/91 | 75.76 | 11.90 | 63.86 |
| | 02/15/92[a] | | --- | --- |
| | 03/18/92[a] | | --- | --- |
| | 05/20/92[a] | | --- | --- |
| | 08/19/92 | | 12.06 | 63.70 |
| | 11/18/92 | | 12.01 | 63.75 |
| | 02/11/93[a] | | --- | --- |
| | 05/19/93 | | 11.90 | 63.86 |
| | **08/18/93** | | **11.90** | **63.86** |
| MW-12 | 12/02/91 | 75.65 | 10.31 | 65.34 |
| | 03/18/92 | | 8.93 | 66.72 |
| | 05/20/92 | | 10.26 | 65.39 |
| | 08/19/92 | | 10.53 | 65.12 |
| | 11/18/92 | | 10.45 | 65.20 |
| | 02/11/93 | | 8.90 | 66.75 |
| | 05/19/93 | | 10.60 | 65.05 |
| | **08/18/93** | | **10.28** | **65.37** |
| MW-13 | 11/22/91 | 76.36 | 11.96 | 64.40 |
| | 03/18/92 | | 10.84 | 65.52 |
| | 05/20/92[a] | | --- | --- |
| | 08/19/92 | | 12.12 | 64.24 |
| | 11/18/92 | | 12.00 | 64.42 |
| | 02/11/93[a] | | --- | --- |
| | 05/19/93 | | 12.26 | 64.10 |
| | **08/18/93** | | **11.75** | **64.61** |

Notes:
a = Inaccessible well, ground water depth not measured

Table 2. Analytical Results for Ground Water - Shell Service Station WIC #204-5508-5801, 500 40th Street, Oakland, California

| Well ID | Date Sampled | Depth to Water (ft) | TPH-G | TPH-D | B | E | T | X |
|---|---|---|---|---|---|---|---|---|
| | | | <----------parts per billion (µg/L)----------> | | | | | |
| EW-1 | 08/06/91 | --- | 180 | <50 | 5.4 | 0.9 | <0.5 | 0.7 |
| (Semi-annually | 10/30/91 | 12.72 | 70 | <50 | 2.6 | <0.5 | <0.5 | <0.5 |
| 2nd & 4th Qtrs) | 02/15/92 | 11.71 | <50 | --- | 2.1 | <0.5 | <0.5 | <0.5 |
| | 05/22/92 | 12.84 | 99 | --- | 4.1 | <0.5 | <0.5 | <0.5 |
| | 08/19/92 | 13.04 | 140 | --- | 6.6 | <0.5 | <0.5 | <0.5 |
| | 11/18/92 | 12.90 | 56 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 02/11/93 | 11.28 | 63 | --- | <0.5 | <0.5 | <0.5 | 0.9 |
| | 02/11/93[a] | 11.28 | 63 | --- | <0.5 | <0.5 | <0.5 | 0.8 |
| | 05/19/93 | 12.52 | 60[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-2 | 08/07/91 | 12.12 | 1,200 | 230 | 59 | 38 | 1.1 | 56 |
| (Semi-annually | 10/30/91 | 11.70 | 520 | 300 | 56 | 56 | <0.5 | 100 |
| 2nd & 4th Qtrs) | 02/15/92 | 11.10 | 2,300 | 2,200[b] | 87 | 88 | <2.5 | 150 |
| | 05/21/92 | 12.12 | 700 | --- | 24 | 34 | 1.0 | 48 |
| | 08/19/92 | 12.18 | 740 | --- | 21 | 24 | <2.5 | 26 |
| | 08/19/92[a] | 12.18 | 840 | --- | 31 | 36 | <2.5 | 43 |
| | 11/18/92 | 12.03 | 920 | --- | 19 | 30 | <2.5 | 51 |
| | 11/18/92[a] | 12.03 | 870 | --- | 25 | 34 | <2.5 | 52 |
| | 02/11/93 | 11.15 | 1,000 | --- | 25 | 43 | 6.0 | 73 |
| | 05/19/93 | 11.80 | 570 | --- | 19 | 37 | <0.5 | 42 |
| MW-3 | 08/07/91 | 11.12 | 1,900 | 470 | 220 | 57 | 57 | 260 |
| (Semi-annually | 10/30/91 | 10.93 | 1,900 | 480 | 160 | 63 | 28 | 180 |
| 2nd & 4th Qtrs) | 02/15/92 | 10.54 | 2,300 | 780[b] | 170 | 59 | 31 | 180 |
| | 05/21/92 | 10.79 | 1,500 | --- | 160 | 44 | 20 | 140 |
| | 08/19/92 | 11.23 | 4,500 | --- | 210 | 89 | 64 | 310 |
| | 11/18/92 | 11.20 | 2,400 | --- | 81 | 39 | 14 | 140 |
| | 02/11/93 | 11.0 | 3,000 | --- | 200 | 90 | 47 | 260 |
| | 05/19/93 | 11.16 | 2,100 | --- | 240 | 100 | 44 | 330 |
| MW-4 | 08/07/91 | 12.36 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| (Semi-annually | 10/30/91 | 12.02 | 50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2nd & 4th Qtrs) | 02/15/92 | 11.34 | 90 | --- | 0.9 | <0.5 | <0.5 | <0.5 |
| | 05/21/92 | 12.35 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 08/19/92 | 12.41 | 82[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 11/18/92 | 12.28 | 85[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 02/11/93 | 11.65 | 62[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/19/93 | 11.92 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-5 | 08/07/91 | 13.02 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| (Semi-annually | 10/30/91 | 12.73 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2nd & 4th Qtrs) | 02/15/92 | 12.52 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/20/92 | 13.05 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |

-- Table 2 continues on next page --

Table 2. Analytical Results for Ground Water - Shell Service Station WIC #204-5508-5801, 500 40th Street, Oakland, California (continued)

| Well ID | Date Sampled | Depth to Water (ft) | TPH-G | TPH-D | B | E | T | X |
|---|---|---|---|---|---|---|---|---|
| | | | <----------parts per billion (µg/L)----------> | | | | | |
| | 08/19/92 | 13.04 | 55[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 11/18/92 | 12.91 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 02/11/93 | 12.44 | 59[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/19/93 | 12.84 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/19/93[dup] | 12.84 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-6 | 08/06/91 | 10.71 | 26,000 | 3,600 | 910 | 560 | 420 | 1,900 |
| (Semi-annually | 10/30/91 | 10.50 | 20,000 | 4,600 | 710 | 410 | 240 | 1,700 |
| 2nd & 4th Qtrs) | 02/15/92 | 9.24 | 35,000 | 27,000 | 690 | 650 | 420 | 3,000 |
| | 05/21/92 | 10.13 | 15,000 | --- | 460 | 300 | 110 | 1,600 |
| | 08/19/92 | 10.16 | 24,000 | --- | 600 | 460 | 300 | 2,000 |
| | 11/18/92 | 9.94 | 29,000 | --- | 480 | 450 | 250 | 2,300 |
| | 02/11/93 | 9.20 | 24,000 | --- | 1,300 | 630 | 250 | 2,400 |
| | 05/19/93 | 10.04 | 18,000 | --- | 750 | 520 | 180 | 2,500 |
| MW-8 | 08/06/91 | 13.08 | 90 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| (Semi-annually | 10/30/91 | 12.87 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2nd & 4th Qtrs) | 02/15/92 | 11.54 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/20/92 | 12.32 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 08/19/92 | 12.58 | 60 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 11/18/92 | 12.47 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 02/11/93 | 11.02 | 76[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/18/93 | 11.78 | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-9 | 08/06/91 | 10.38 | 3,900 | 190 | 58 | 80 | 8.8 | 220 |
| (Semi-annually | 10/30/91 | --- | --- | --- | --- | --- | --- | --- |
| 2nd & 4th Qtrs) | 03/18/92 | 8.76 | 1,800[d] | 210 | 84 | 49 | 11 | 60 |
| | 05/20/92 | --- | --- | --- | --- | --- | --- | --- |
| | 08/19/92 | 9.98 | 4,600 | 22[b] | 63 | 48 | <25 | 70 |
| | 11/18/93 | 9.81 | 1,800 | 130[b] | 30 | 46 | 9.2 | 61 |
| | 02/11/93 | --- | --- | --- | --- | --- | --- | --- |
| | 05/19/93 | --- | --- | --- | --- | --- | --- | --- |
| MW-10 | 08/07/91 | 10.00 | 460 | <50 | 73 | 18 | 1.0 | 8.4 |
| (Semi-annually | 10/31/91 | 10.10 | 630 | 150 | 100 | 33 | <0.5 | 26 |
| 2nd & 4th Qtrs) | 02/15/92 | 9.55 | 810 | 570[b] | 85 | 44 | 2.5 | 38 |
| | 05/21/92 | 10.41 | 280 | --- | 47 | 4.0 | 0.7 | 3.1 |
| | 08/19/92 | 10.46 | 330 | --- | 35 | 6.0 | <1 | 4.1 |
| | 11/18/93 | 10.31 | 300 | --- | 30 | 7.1 | 0.8 | 6.3 |
| | 02/11/93 | 9.68 | 510[c] | --- | 49 | 18 | 3.8 | 18 |
| | 05/19/93 | 10.19 | <50 | --- | 96 | 3.4 | <0.5 | 1.5 |

-- Table 2 continues on next page --

Table 2. Analytical Results for Ground Water - Shell Service Station WIC #204-5508-5801, 500 40th Street, Oakland, California (continued)

| Well ID | Date Sampled | Depth to Water (ft) | TPH-G | TPH-D | B | E | T | X |
|---|---|---|---|---|---|---|---|---|
| | | | <----------parts per billion (µg/L)----------> | | | | | |
| MW-11 (Quarterly) | 11/22/91 | 11.90 | 450 | 240 | 1.1 | <0.5 | <0.5 | <0.5 |
| | 02/15/92 | --- | --- | --- | --- | --- | --- | --- |
| | 03/18/92 | --- | --- | --- | --- | --- | --- | --- |
| | 05/20/92 | --- | --- | --- | --- | --- | --- | --- |
| | 08/19/92 | 12.06 | 270[c] | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| | 11/18/92 | 12.01 | 400[c] | 100 | <0.5 | <0.5 | <0.5 | <0.5 |
| | 02/11/93 | --- | --- | --- | --- | --- | --- | --- |
| | 05/20/93 | 11.90 | 200[c] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| | 08/18/93 | 11.90 | 180[c] | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-12 (Quarterly) | 12/02/91 | 10.31 | <1,000 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| | 03/18/92 | 8.93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/20/92 | 10.26 | 180[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 08/19/92 | 10.53 | 230[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 11/18/92 | 10.45 | 220[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 02/11/93 | 8.90 | 240 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/19/93 | 10.60 | 110[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 08/18/93 | 10.28 | 140[c] | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| MW-13 (Semi-annually 2nd & 4th Qtrs) | 11/22/91 | 11.96 | 900 | 1,000 | 37 | 74 | 9.5 | 130 |
| | 03/18/92 | 10.84 | 900[d] | 590[b] | 24 | 320 | 28 | 320 |
| | 05/20/92 | --- | --- | --- | --- | --- | --- | --- |
| | 08/19/92 | 12.12 | 7,000 | 470[b] | 180 | 150 | 36 | 150 |
| | 11/18/92 | 12.00 | --- | --- | --- | --- | --- | --- |
| | 02/11/93 | --- | --- | --- | --- | --- | --- | --- |
| | 05/20/93 | 12.26 | 9,200 | --- | 320 | 490 | 83 | 950 |
| Field Blank | 08/19/92 | | <50 | --- | <0.5 | <0.5 | 0.5 | 0.5 |
| | 11/18/92 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| Trailer Blank | 02/15/92 | | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| | 03/18/92 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/21/92 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 08/19/92 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 11/18/92 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 02/11/93 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 05/20/93 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| | 08/18/93 | | <50 | --- | <0.5 | <0.5 | <0.5 | <0.5 |
| DTCS MCLs | | | NE | NE | 1 | 680 | 100[e] | 1,750 |

-- Table 2 continues on next page --

Table 2. Analytical Results for Ground Water - Shell Service Station WIC #204-5508-5801, 500 40th Street, Oakland, California (continued)

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
TPH-MO = Total petroleum hydrocarbons as motor oil by EPA Method 8015
B = Benzene by EPA Method 8020
E = Ethylbenzene by EPA Method 8020
T = Toluene by EPA Method 8020
X = Xylenes by EPA Method 8020
NE = Not established
DTSC MCLs = California Department of Toxic Substances Control maximum contaminant levels for drinking water
--- = Not analyzed
ND = Not detected

Notes:

a = Duplicate sample
b = Concentration reported as diesel is primary due to the presence of a lighter petroleum product, possible gasoline or kerosene
c = Concentration reported as gasoline is primarily due to the presence of discrete hydrocarbon peaks not indicative of gasoline
d = Compounds detected and calculated as gasoline do not match the standard gasoline chromatographic pattern
e = DTSC recommended action level; MCL not established

# ATTACHMENT A

## GROUND WATER MONITORING REPORT AND ANALYTIC REPORT

BLAINE
TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

September 7, 1993

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

Attn: Lynn Walker

SITE:
Shell WIC #204-5508-4903
500 40th Street
Oakland, California

QUARTER:
3rd quarter of 1993

## QUARTERLY GROUNDWATER SAMPLING REPORT 930818-F-1

This report contains data collected during routine inspection, gauging and sampling of groundwater monitoring wells performed by Blaine Tech Services, Inc. in reponse to the request of the consultant who is overseeing work at this site on behalf of our mutual client, Shell Oil Company. Data collected in the course of our field work is presented in a TABLE OF WELL GAUGING DATA. The field information was collected during our preliminary gauging and inspection of the wells, the subsequent evacuation of each well prior to sampling, and at the time of sampling.

Measurements taken include the total depth of the well and the depth to water. The surface of water was further inspected for the presence of immiscibles which may be present as a thin film (a sheen on the surface of the water) or as a measurable free product zone (FPZ). At intervals during the evacuation phase, the purge water was monitored with instruments that measure electrical conductivity (EC), potential hydrogen (pH), temperature (degrees Fahrenheit), and turbidity (NTU). In the interest of simplicity, fundamental information is tabulated here, while the bulk of the information is turned over directly to the consultant who is making professional interpretations and evaluations of the conditions at the site.

## STANDARD PROCEDURES

### Evacuation

Groundwater wells are thoroughly purged before sampling to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The selection of equipment to evacuate each well is based on the physical characteristics of the well and what is known about the performance of the formation in which the well has been installed. There are several suitable devices which can be used for evacuation. The most commonly employed devices are air or gas actuated pumps, electric submersible pumps, and hand or mechanically actuated bailers. Our personnel frequently employ USGS/Middleburg positive displacement pumps or similar air actuated pumps which do not agitate the water standing in the well.

Normal evacuation removes three case volumes of water from the well. More than three case volumes of water may be removed in cases where more evacuation is needed to achieve stabilization of water parameters. Less than three case volumes of water may be obtained in cases where the well dewaters and does not recharge to 80% of its original volume within two hours and any additional time our personnel have reason to remain at the site. In such cases, our personnel return to the site within twenty four hours and collect sample material from the water which has recharged into the well case.

### Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site.

### Free Product Skimmer

The column headed, VOLUME OF IMMISCIBLES REMOVED (ml) is included in the TABLE OF WELL GAUGING DATA to cover situations where a free product skimming device must be removed from the well prior to gauging. Skimmers are installed in wells with a free product zone on the surface of the water. The skimmer is a free product recovery device which often prevents normal well gauging and free product zone measurements. The 2.0" and 3.0" PetroTraps fall into the category of devices that obstruct normal gauging. In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the PetroTrap before putting it back in the well. This recovered free product is measured and logged in the VOLUME OF IMMISCIBLES REMOVED column. Gauging at such site is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on Shell's behalf.

## Sample Containers

Sample material is collected in specially prepared containers which are provided by the laboratory that performs the analyses.

## Sampling

Sample material is collected in stainless steel bailer type devices normally fitted with both a top and a bottom check valve. Water is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

## Sample Designations

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label. Either the requested analyses or the specific analytes are written on the sample label (e.g. TPH-G, BTEX).

## Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Shell Oil Company chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

## Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to Anametrix, Inc. in San Jose, California. Anametrix, Inc. is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #1234.

## Objective Information Collection

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. performs no consulting and does not become involved in the marketing or installation of remedial systems of any kind. Blaine Tech Services, Inc. is concerned only with the generation of objective information, not with the use of that information to support evaluations and recommendations concerning the environmental condition of the site. Even the straightforward interpretation of objective analytical data is better performed by interested regulatory agencies, and those engineers and geologists who are engaged in the work of providing professional opinions about the site and proposals to perform additional investigation or design remedial systems.

## Reportage

Submission of this report and the attached laboratory report to interested regulatory agencies is handled by the consultant in charge of the project. Any professional evaluations or recommendations will be made by the consultant under separate cover.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/lpn

attachments: table of well gauging data
chain of custody
certified analytical report

cc: Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608-2411
ATTN: Michael Asport

# 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-2 | 8/18/93 | INACCESSIBLE | | | | | | |
| MW-3 | 8/18/93 | TOC | -- | NONE | -- | -- | 11.35 | 18.64 |
| MW-4 | 8/18/93 | INACCESSIBLE | | | | | | |
| MW-5 | 8/18/93 | TOC | -- | NONE | -- | -- | 12.88 | 20.09 |
| MW-8 | 8/18/93 | TOC | -- | NONE | -- | -- | 12.22 | 38.63 |
| OMW-6 | 8/18/93 | TOC | -- | NONE | -- | -- | 10.04 | 20.05 |
| OMW-9 | 8/18/93 | TOC | -- | NONE | -- | -- | 9.75 | 17.16 |
| OMW-10 | 8/18/93 | TOC | -- | NONE | -- | -- | 10.29 | 16.04 |
| OMW-11 | 8/18/93 | TOC | -- | NONE | -- | -- | 11.90 | 19.65 |
| OMW-12 | 8/18/93 | TOC | -- | NONE | -- | -- | 10.28 | 19.49 |
| OMW-13 | 8/18/93 | TOC | ODOR | NONE | -- | -- | 11.75 | 21.00 |
| EW-1 | 8/18/93 | TOC | -- | NONE | -- | -- | 12.48 | 38.43 |

9308305

18

10/20

# SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

## CHAIN OF CUSTODY RECORD
Serial No: 230818 F1

Date: 8-18-93
Page 1 of 1

Site Address: 500 40th Street, Oakland

WIC#: 204-5508-4903

Shell Engineer: Lynn Walker — Phone No.: (510) 675-6169 Fax #: 675-6172

Consultant Name & Address: Blaine Tech Services, Inc. 985 Timothy Drive San Jose, CA 95133

Consultant Contact: Jim Keller — Phone No.: (408) 995-5535 Fax #: 293-8773

Comments:

Sampled by:

Printed Name:

LAB: Anametrix

| 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 | | | Asbestos | Container Size | Preparation Used | Composite Y/N | MATERIAL DESCRIPTION | SAMPLE CONDITION/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ① OMW-11 | 8/18/93 | | | X | | 5 | | X | | | | X | | | | | | | | |
| ② OMW-12 | " | | | X | | 3 | | | | | | X | | | | | | | | |
| ③ TB | " | | | X | | 2 | | | | | | X | | | | | | | | |

Analysis Required

CHECK ONE (1) BOX ONLY — C1/D1

- Quarterly Monitoring [X] 6441
- Site Investigation [ ] 6441
- Soil Clean Fy/Disposal [ ] 6443
- Water Clean Fy/Disposal [ ] 6443
- Soil/Air Rem. or Sys. O & M [ ] 6483
- Water Rem. or Sys. O & M [ ] 6483
- Other [ ]

TURN AROUND TIME

- 24 hours [ ]
- 48 hours [ ]
- 5 days [X] (Normal)
- Other [ ] ___

NOTE: Notify lab as soon as possible of 24/48 hr. TAT.

| Relinquished By (Signature) | Printed Name | Date | Time | Received (Signature) | Printed Name | Date | Time |
|---|---|---|---|---|---|---|---|
| | Tom Hary | 8-19-93 | 1950 | Simon Harper | Simon Harper | 8-19-93 | 1950 |
| Simon Harper | Simon Harper | 8-19-93 | 1315 | | Maria Barajas | 8/19/93 | 1315 |
| | | Date: | | | | Date: | |
| | | Time: | | | | Time: | |

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

# Inchcape Testing Services
## Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198


MR. JIM KELLER
BLAINE TECH
985 TIMOTHY DRIVE
SAN JOSE, CA 95133

Workorder # : 9308305
Date Received : 08/19/93
Project ID : 204-5508-4903
Purchase Order: MOH-B813

The following samples were received at Anametrix, Inc. for analysis :

| ANAMETRIX ID | CLIENT SAMPLE ID |
|---|---|
| 9308305- 1 | OMW-11 |
| 9308305- 2 | OMW-12 |
| 9308305- 3 | TB |

This report consists of 6 pages not including the cover letter, and is organized in sections according to the specific Anametrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anametrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

Anametrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234. A detailed list of the approved fields of testing can be obtained by calling our office, or the DHS Environmental Laboratory Accreditation Program at (415)540-2800.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anametrix.

Corinne Ham for
Sarah Schoen, Ph.D.
Laboratory Director

09/02/93
Date

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. JIM KELLER
BLAINE TECH
985 TIMOTHY DRIVE
SAN JOSE, CA 95133

Workorder # : 9308305
Date Received : 08/19/93
Project ID : 204-5508-4903
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

| ANAMETRIX SAMPLE ID | CLIENT SAMPLE ID | MATRIX | DATE SAMPLED | METHOD |
|---|---|---|---|---|
| 9308305- 1 | OMW-11 | WATER | 08/18/93 | TPHd |
| 9308305- 1 | OMW-11 | WATER | 08/18/93 | TPHgBTEX |
| 9308305- 2 | OMW-12 | WATER | 08/18/93 | TPHgBTEX |
| 9308305- 3 | TB | WATER | 08/17/93 | TPHgBTEX |

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. JIM KELLER
BLAINE TECH
985 TIMOTHY DRIVE
SAN JOSE, CA 95133

Workorder # : 9308305
Date Received : 08/19/93
Project ID : 204-5508-4903
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- The concentrations reported as gasoline for samples OMW-11 and OMW-12 are primarily due to the presence of discrete peaks not indicative of gasoline.

Cheryl Balman 9/2/93
Department Supervisor Date

Chemist 2 Sept 93
Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anametrix W.O.: 9308305
Matrix : WATER
Date Sampled : 08/17 & 18/93

Project Number : 204-5508-4903
Date Released : 09/01/93

| COMPOUNDS | Reporting Limit (ug/L) | Sample I.D.# OMW-11 -01 | Sample I.D.# OMW-12 -02 | Sample I.D.# TB -03 | Sample I.D.# BG2701E2 BLANK |
|---|---|---|---|---|---|
| Benzene | 0.5 | ND | ND | ND | ND |
| Toluene | 0.5 | ND | ND | ND | ND |
| Ethylbenzene | 0.5 | ND | ND | ND | ND |
| Total Xylenes | 0.5 | ND | ND | ND | ND |
| TPH as Gasoline | 50 | 180 | 140 | ND | ND |
| % Surrogate Recovery | | 106% | 93% | 99% | 94% |
| Instrument I.D. | | HP21 | HP21 | HP21 | HP21 |
| Date Analyzed | | 08/27/93 | 08/27/93 | 08/27/93 | 08/27/93 |
| RLMF | | 1 | 1 | 1 | 1 |

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
RLMF - Reporting Limit Multiplication Factor.

Anametrix control limits for surrogate p-Bromofluorobenzene recovery are 61-139%.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Analyst — 2 Sept 93 Date

Supervisor — 9/2/93 Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9308305
Matrix : WATER
Date Sampled : 08/18/93
Date Extracted: 08/26/93

Project Number : 204-5508-4903
Date Released : 09/01/93
Instrument I.D.: HP9 & HP23

| Anametrix I.D. | Client I.D. | Date Analyzed | Reporting Limit (ug/L) | Amount Found (ug/L) | Surrogate %Rec |
|---|---|---|---|---|---|
| 9308305-01 | OMW-11 | 08/27/93 | 50 | ND | 77% |
| BG2611F1 | METHOD BLANK | 08/27/93 | 50 | ND | 75% |

Note : Reporting limit is obtained by multiplying the dilution factor times 50 ug/L.
The surrogate recovery limits for C25 are 30-130%.

ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3510.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Analyst 2 Sept 93
Date

Supervisor 9/2/93
Date

TOTAL VOLATILE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 5030 WITH GC/PID
ANAMETRIX, INC. (408) 432-8192

| | | | |
|---|---|---|---|
| Sample I.D. | : LAB CONTROL SAMPLE | Anametrix I.D. | : MG2701E3 |
| Matrix | : WATER | Analyst | : |
| Date Sampled | : N/A | Supervisor | : |
| Date Analyzed | : 08/27/93 | Date Released | : 09/02/93 |
| | | Instrument I.D. | : HP21 |

| COMPOUND | SPIKE AMT. (ug/L) | LCS (ug/L) | REC LCS | %REC LIMITS |
|---|---|---|---|---|
| Benzene | 20.0 | 20.6 | 103% | 52-133 |
| Toluene | 20.0 | 20.3 | 102% | 57-136 |
| Ethylbenzene | 20.0 | 19.7 | 99% | 56-139 |
| TOTAL Xylenes | 20.0 | 20.8 | 104% | 56-141 |
| P-BFB | | | 97% | 61-139 |

* Limits established by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3510 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

| | | | |
|---|---|---|---|
| Sample I.D. | : LAB CONTROL SAMPLE | Anametrix I.D. | : MG2611F1 |
| Matrix | : WATER | Analyst | : |
| Date Sampled | : N/A | Supervisor | : |
| Date Extracted | : 08/26/93 | Date Released | : 08/30/93 |
| Date Analyzed | : 08/27/93 | Instrument I.D. | : HP23 |

| COMPOUND | SPIKE AMT (ug/L) | LCS REC (ug/L) | % REC LCS | LCSD REC (ug/L) | % REC LCSD | RPD | % REC LIMITS |
|---|---|---|---|---|---|---|---|
| DIESEL | 1250 | 770 | 62% | 820 | 66% | 6% | 47-130 |
| SURROGATE | | | 67% | | 68% | | 30-130 |

*Quality control established by Anametrix, Inc.