Texaco Refining
and Marketing Inc

10 Universal City Plaza
Universal City CA 91608

STID
1039

June 4, 1992

Mr. Paul Smith
Alameda County Environmental
Health Department
80 Swan Way, Room 200
Oakland, CA 94621

Dear Mr. Smith:

Enclosed is a copy of our Quarterly Technical Report dated May 25,1992 for our former Texaco Service Station located at 2225 Telegraph Avenue in Oakland, California. This report covers the first quarter of 1992.

Please call me at (818) 505-2476 if you have any questions or wish to discuss the report further.

Very truly yours,

Bob Robles
Texaco Refining and Marketing Inc.

RR:rr

Enclosure

cc: Mr. Rich Hiett
California Regional Water
Quality Control Board
San Francisco Bay Region
2101 Webster Street, Ste. 500
Oakland, Ca 94612

RRZielinski-Richmond

pr.ltr

A Report Prepared for

Texaco Refining and Marketing Inc.
10 Universal City Plaza
Universal City, California 91608

QUARTERLY TECHNICAL REPORT
**FIRST QUARTER OF 1992**
EXXON STATION
2225 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

HLA Job No. 2251,162.03
**May 21, 1992**
1992 Report No. 1

by

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## INTRODUCTION

This quarterly technical report (QTR) presents the results of site investigation and remediation activities conducted by Harding Lawson Associates (HLA) at a service station site currently owned and operated by Exxon Company U.S.A. (Exxon). The station, at 2225 Telegraph Avenue, Oakland, California (Plate 1), was formerly owned by Texaco Refining and Marketing Inc. This QTR summarizes HLA's work at the site, ongoing since May 1988, and presents results of the recent quarter's work.

## SITE DESCRIPTION

The site is on the southwest corner of the intersection of Telegraph and West Grand Avenues (Plate 2). The surrounding area is primarily commercial; nearby businesses include a Chevron service station immediately across Telegraph Avenue and an abandoned Beacon service station northeast of the site. Adjacent to the site on the south is the First Baptist Church of Oakland. An apartment building, currently occupied, is immediately west of the site.

Surface elevation at the site is approximately 20 feet above mean sea level. The land surface slopes gently southeast, toward Lake Merritt and the Oakland/Alameda Inner Harbor, an area of former tidal flats that has been filled. This area has been extensively developed, and surface runoff is controlled mainly by the municipal storm sewer system.

As shown on Plate 3, structures at the service station include a building, three fuel pump islands, one underground waste oil tank, and three underground fuel storage tanks. Unleaded gasoline is dispensed from these tanks, and automotive repair services are provided. Leaded gasoline was sold at the site in the past.

## HYDROGEOLOGIC SETTING

The East Bay Plain has been divided into seven groundwater subareas, defined by the California Department of Water Resources (DWR) on the basis of hydrologic and geologic conditions. This site lies within the Oakland Upland and Alluvial Plain subarea. Most groundwater used in the East Bay Plain is for agricultural or industrial purposes. The majority of domestic water is supplied by the East Bay Municipal Utility District (EBMUD) from surface sources.

Local groundwater aquifers are primarily within the Alameda and Temescal Formations; these formations have an aggregate thickness of more than 1,100 feet. The Temescal Formation, an alluvial fan deposit, is present at the surface locally. Approximately 1,000 feet west of the site is an outcrop of the Merritt Sand. Direction of regional groundwater flow is south-southwest, toward San Francisco Bay.

Subsurface materials at the site, to the maximum explored depth of 21 feet, generally consist of stiff, silty clay

underlain by a dense layer of silty sand that ranges from 3 to 8 feet in thickness. According to slug test results, the hydraulic conductivity of the shallow, saturated sand aquifer beneath the site ranges from 1.2 to 5.9 feet per day (Table 1).

Static groundwater levels are encountered at approximately 13 feet below grade; water level measurements and survey data are presented in Table 2. The estimated direction of the groundwater gradient, prior to groundwater extraction at the site, was to the southwest, as shown on Plate 4.

## SUMMARY OF PREVIOUS INVESTIGATIONS

### Previous Reports

Since May 1988, HLA has investigated soil and groundwater conditions at this site. To date, results of the investigation and remedial planning have been presented in the following reports:

- Sensitive Receptor Study — May 24, 1988
- Subsurface Investigation — July 20, 1988
- Environmental Assessment — June 22, 1989
- Groundwater Remediation Plan — November 30, 1989
- Quarterly Technical Reports

### Field Investigation

Soil boring, monitoring well, and soil gas survey locations are shown on Plate 3. Because of restricted subsurface access on

Telegraph and West Grand Avenues, no off-site exploration was conducted north or east of the site. These restrictions were imposed by the City of Oakland and the Bay Area Rapid Transit District (BART), whose tunnel is in this area (Plate 2).

The following tasks have been completed during HLA's investigation of the site:

- Conducted a soil-gas survey on site and in city streets near the site. Soil-gas survey results are presented in Table 3.
- Drilled and sampled seven shallow soil borings (B-1 through B-7); B-3 was later converted to recovery well RW-1.
- Drilled, constructed, developed, and sampled six on-site monitoring wells (MW-6A through MW-6F) and three off-site wells (MW-6G through MW-6I). Two of these wells, MW-6C and MW-6D, were subsequently converted to groundwater extraction wells.
- Ordered chemical analyses on soil and water samples to determine concentrations of petroleum hydrocarbons; results of soil and water analyses are presented in Tables 4 and 5, respectively.
- Conducted slug tests in MW-6D, MW-6E, and MW-6H to estimate hydraulic conductivity and transmissivity values for the shallow aquifer; slug test results are presented in Table 1.
- Observed tank, line, and dispenser removal and replacement operations conducted by Exxon in the fourth quarter of 1991. Product dispensers, three underground gasoline storage tanks, and one waste oil tank were removed, as well as associated piping. HLA collected and analyzed soil samples from underneath dispensers; results of the analyses are included in Table 4.

Vadose-zone Soil Condition

Petroleum hydrocarbons have been found in shallow vadose-zone soils, primarily around the fuel dispenser island adjacent

to Grand Avenue. However, the fuel constituents benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH) as gasoline have also been detected in soils from 12 to 13.5 feet below the ground surface; this depth is within the capillary fringe zone. TPH as gasoline concentrations exceeded 100 parts per million (ppm) in some of the soil samples from the capillary fringe (Table 4).

Groundwater Condition

Free floating product (gasoline) has been observed on the groundwater in two recovery wells. As shown on Plates 5 and 6, hydrocarbon-bearing groundwater is present in the vicinity of the underground tanks and fuel dispenser islands.

Groundwater analyses indicate that groundwater has contained concentrations of TPH as gasoline in excess of 10,000 parts per billion (ppb). As of March 1992, the lateral limits of the plume are delineated by MW-6F, MW-6G, and MW-6I; samples from these wells show no detectable hydrocarbons (detection limit for TPH = 50 ppb). Plume definition to the north and east is incomplete because of the restricted subsurface access imposed by the City of Oakland and BART.

## SUMMARY OF REMEDIAL ACTIVITIES

The following tasks were completed during installation and operation of the remedial system:

- Redrilled two monitoring wells and converted them to recovery wells (RW-2 and RW-3 replaced MW-6D and MW-6C, respectively). Drilled and installed RW-1 in the location of B-3. Locations are shown on Plate 3.
- Installed groundwater extraction and collection system.
- Fabricated and installed skid-mounted groundwater treatment system.
- Obtained a Wastewater Discharge Permit from the EBMUD to discharge treated effluent water directly to the sanitary sewer.
- Extracted, treated, and discharged approximately 262,500 gallons of groundwater between the fourth quarter 1990 and the end of the fourth quarter 1991.
- Sampled water from influent, effluent, and midstream in accordance with permit requirements.
- Decommissioned recovery well RW-3 prior to Exxon's excavation of fuel tanks.
- Installed two vapor extraction wells in the backfill of the new tank field during Exxon's retrofit operations.

WORK PERFORMED DURING THE FIRST QUARTER OF 1992

- Extracted, treated, and discharged approximately 34,300 gallons of groundwater to the sanitary sewer (296,800 gallons cumulative since start-up).
- Sampled water from influent, effluent, and midstream for carbon breakthrough and performed chemical analysis as specified in EBMUD Wastewater Discharge Permit No. 001-00007 (Table 6).
- Prepared and submitted EBMUD status reports as required by the EBMUD wastewater discharge permit.
- Measured free product thickness in recovery wells RW-1 and RW-2 on a weekly basis through March 1992 (Table 7). Removed accumulated free product.
- Measured water levels in monitoring wells and updated the potentiometric map accordingly (Table 2 and Plate 7).

- Conducted quarterly groundwater sampling in six monitoring wells. Results of chemical analyses are summarized in Table 5 and laboratory reports are attached in the Appendix.

During the first quarter 1992, water samples were collected from sampling ports to check for potential breakthrough of hydrocarbons downstream of the first two carbon cannisters. In addition, influent and effluent samples were collected on a monthly basis and analyzed for BTEX and TPH as gasoline. Analytical results from the samples taken during the first quarter are presented in Table 6.

Free product was discovered in recovery well RW-1 during early 1991, and in recovery well RW-2 during August 1991. The gasoline in RW-2 has a much fresher appearance than the gasoline product recovered from RW-1. Free product was bailed from RW-1 and RW-2 on a frequent schedule during 1991; approximately 47 gallons were recovered from RW-1 and 13 gallons were recovered from RW-2 during that period (Table 7). Free product thicknesses measured in RW-1 and RW-2 were much lower in the first quarter of 1992; RW-1 contained no measurable product, and 0.5 foot was the maximum thickness measured in RW-2 (Table 7).

Water levels were measured in monitoring wells and recovery wells twice during the quarter (Table 2). The water level data collected on February 25, 1992 are presented on Plate 7, a contour map of the potentiometric surface. Plate 4 is a map of the potentiometric surface based on data collected in October 1990, before start-up of the groundwater extraction system.

Water levels indicate that the extraction of groundwater has resulted in a cone of depression in the water table over much of the site.

Groundwater samples were collected from six monitoring wells during the first quarter. Samples were analyzed for BTEX and TPH as gasoline. Results of those analyses are presented in Table 5, and the distribution is presented on Plates 5 and 6.

## WORK PLANNED FOR THE SECOND QUARTER OF 1992

- Monitor carbon canisters for breakthrough as required by the EBMUD wastewater discharge permit.
- Prepare EBMUD quarterly status reports as required by the EBMUD wastewater discharge permit.
- Check water levels in recovery wells and monitoring wells in order to observe effects of pumping on local groundwater gradient.
- Measure free product thickness in RW-1 and RW-2 on a weekly basis and remove accumulated free product.
- Sample groundwater from all monitoring wells and analyze samples for BTEX and TPH as gasoline.
- Drill and install a replacement well for recovery well RW-3, which was decommissioned prior to Exxon retrofit operations.
- Decommission MW-6A, which was damaged during the retrofit operations.
- Drill and install a vapor extraction well near the fuel dispensers adjacent to Grand Avenue.
- Conduct a soil vapor extraction pilot test at the site.

## LIST OF TABLES



## LIST OF ILLUSTRATIONS

Table 1. Slug Test Results
2225 Telegraph Avenue
Oakland, California

| Well Number | Most Permeable Stratum Adjacent to Well Screen: Lithology | Classification | Thickness (feet) | Estimated Hydraulic Conductivity (feet/day) |
|---|---|---|---|---|
| MW-6D | sand | confined | 2 | 5.9 |
| MW-6E | sand, fine-grained | confined | 2.5 | 1.2 |
| MW-6H | sand, medium-grained | unconfined | 6 | 4.8 |

Table 2. Water Level Measurements and Survey Data
2225 Telegraph Avenue
Oakland, California

| Well No. | Date | Top of Casing Elevation[1] (feet) | Depth to Groundwater (feet) | Groundwater Surface Elevation[2] (feet) |
|---|---|---|---|---|
| MW-6A | 12/15/88 | 98.99 | 13.77 | 85.22 |
| | 10/03/89 | | 13.40 | 85.59 |
| | 05/11/90 | | 12.87 | 86.12 |
| | 10/16/90 | | 13.27 | 85.72 |
| | 12/06/90 | | 13.28 | 85.71 |
| | 01/14/91 | | -- | -- |
| | 02/08/91 | | 12.49 | 86.50 |
| | 04/02/91 | | -- | -- |
| | 05/07/91 | | 11.94 | 87.05 |
| | 05/31/91 | | Blocked | -- |
| | 06/26/91 | | 12.87 | 86.12 |
| | 08/05/91 | | 13.44 | 85.55 |
| | 08/14/91 | | 13.47 | 85.52 |
| | 09/11/91 | | 13.48 | 85.51 |
| | 10/16/91 | | 13.64 | 85.35 |
| | 12/30/91 | | Damaged | -- |
| | 02/25/92 | | Damaged | -- |
| | 03/25/92 | | Damaged | -- |
| MW-6B | 12/15/88 | 98.81 | 13.01 | 85.80 |
| | 10/03/89 | | 12.94 | 85.87 |
| | 04/30/90 | | 12.53 | 86.28 |
| | 10/16/90 | | 12.73 | 86.08 |
| | 12/06/90 | | 12.74 | 86.07 |
| | 01/14/91 | | 12.57 | 86.24 |
| | 02/08/91 | | 12.16 | 86.65 |
| | 04/02/91 | | 11.50 | 87.31 |
| | 05/07/91 | | 12.02 | 86.79 |
| | 05/31/91 | | 12.40 | 86.41 |
| | 06/26/91 | | 12.69 | 86.12 |
| | 08/05/91 | | 12.95 | 85.86 |
| | 08/14/91 | | 12.93 | 85.88 |
| | 09/11/91 | | 13.01 | 85.80 |
| | 10/16/91 | | 13.09 | 85.72 |
| | 12/30/91 | | 12.62 | 86.19 |
| | 02/25/92 | | 11.81 | 87.00 |
| | 03/25/92 | | 11.58 | 87.23 |
| MW-6C | 12/15/88 | 99.89 | 14.41 | 85.48 |
| | 10/03/89 | | 14.10 | 85.79 |
| | 04/30/90 | | 13.81 | 86.68 |
| (RW-3) | 10/16/90 | 98.97[3] | 13.29 | 85.68 |
| | 01/14/91 | | 14.50 | 84.47 |
| | 02/08/91 | | 12.54 | 86.43 |
| | 04/02/91 | | 11.39 | 87.58 |

Table 2. (continued)

| Well No. | Date | Top of Casing Elevation[1] (feet) | Depth to Groundwater (feet) | Groundwater Surface Elevation[2] (feet) |
|---|---|---|---|---|
| (RW-3) | 05/07/91 | | 12.47 | 86.50 |
| | 05/31/91 | | 16.31 | 82.66 |
| | 06/26/91 | | 15.50 | 83.47 |
| | 08/05/91 | | 13.69 | 85.28 |
| | 08/13/91 | | 13.67 | 85.30 |
| | 09/11/91 | | 13.77 | 85.20 |
| | 10/16/91 | | 16.66 | 82.31 |
| | 11/05/91 | Well decommissioned | -- | -- |
| MW-6D | 12/15/88 | 98.78 | 13.53 | 85.25 |
| | 10/03/89 | | 13.44 | 85.34 |
| | 04/30/90 | | 13.19 | 85.59 |
| (RW-2) | 10/16/90 | 98.11[3] | 12.77 | 85.34 |
| | 01/14/91 | | -- | -- |
| | 02/08/91 | | 13.11 | 85.00 |
| | 04/02/91 | | 11.70 | 86.41 |
| | 05/07/91 | | 14.09 | 84.02 |
| | 05/31/91 | | 16.01 | 82.10 |
| | 06/26/91 | | 14.60 | 83.51 |
| | 08/05/91 | | 14.00 | 84.11 |
| | 08/13/91 | | 21.30 | 76.81 |
| | 09/11/91 | | 19.97 | 78.14 |
| | 10/16/91 | | 15.19 | 82.92 |
| | 12/30/91 | | 13.19 | 84.92 |
| | 02/25/92 | | 16.27 | 81.84 |
| | 03/25/92 | -- | -- | -- |
| MW-6E | 12/15/88 | 98.99 | 13.84 | 85.15 |
| | 10/03/89 | | 13.70 | 85.29 |
| | 04/30/90 | | 13.43 | 85.56 |
| | 10/16/90 | | 13.77 | 85.22 |
| | 12/06/90 | | 13.95 | 85.04 |
| | 01/14/91 | | 13.95 | 85.04 |
| | 02/08/91 | | 13.20 | 85.79 |
| | 04/02/91 | | 12.28 | 86.71 |
| | 05/07/91 | | 13.48 | 85.51 |
| | 05/31/91 | | 14.09 | 84.90 |
| | 06/26/91 | | 12.54 | 86.45 |
| | 08/05/91 | | 14.39 | 84.60 |
| | 08/14/91 | | 14.18 | 84.81 |
| | 09/11/91 | | 14.73 | 84.26 |
| | 10/16/91 | | 14.40 | 84.59 |
| | 12/30/91 | | 13.39 | 85.60 |
| | 02/25/92 | | 13.16 | 85.83 |
| | 03/25/92 | | 12.15 | 86.84 |

Table 2. (continued)

| Well No. | Date | Top of Casing Elevation[1] (feet) | Depth to Groundwater (feet) | Groundwater Surface Elevation[2] (feet) |
|---|---|---|---|---|
| MW-6F | 12/15/88 | 99.91 | 14.73 | 85.18 |
| | 10/03/89 | | 14.48 | 85.43 |
| | 04/30/90 | | 14.14 | 85.77 |
| | 10/16/90 | | 14.77 | 85.14 |
| | 12/06/90 | | 14.81 | 85.10 |
| | 01/14/91 | | 14.73 | 85.18 |
| | 02/08/91 | | 13.73 | 86.18 |
| | 04/02/91 | | 12.38 | 87.53 |
| | 05/07/91 | | 13.67 | 86.24 |
| | 05/31/91 | | 14.43 | 85.48 |
| | 06/26/91 | | 14.81 | 85.10 |
| | 08/05/91 | | 14.96 | 84.95 |
| | 08/14/91 | | 14.87 | 85.04 |
| | 09/11/91 | | 15.11 | 84.80 |
| | 10/16/91 | | 15.16 | 84.75 |
| | 12/30/91 | | 13.78 | 86.13 |
| | 02/25/92 | | 12.68 | 87.23 |
| | 03/25/92 | | 11.93 | 87.98 |
| MW-6G | 12/15/88 | 99.16 | 12.39 | 86.77 |
| | 10/03/89 | | 12.22 | 86.94 |
| | 04/30/90 | | 11.73 | 87.43 |
| | 10/16/90 | | 12.28 | 86.88 |
| | 12/06/90 | | 12.27 | 86.89 |
| | 01/14/91 | | 12.14 | 87.02 |
| | 02/08/91 | | 11.44 | 87.72 |
| | 04/02/91 | | 10.03 | 89.13 |
| | 05/07/91 | | 11.00 | 88.16 |
| | 05/31/91 | | 11.75 | 87.41 |
| | 06/26/91 | | 12.91 | 86.25 |
| | 08/05/91 | | 12.43 | 86.73 |
| | 08/14/91 | | 12.43 | 86.73 |
| | 09/11/91 | | 12.48 | 86.68 |
| | 10/16/91 | | 12.64 | 86.52 |
| | 12/30/91 | | 11.80 | 87.36 |
| | 02/25/92 | | 10.32 | 88.84 |
| | 03/25/92 | | 9.93 | 89.23 |

Table 2. (continued)

| Well No. | Date | Top of Casing Elevation[1] (feet) | Depth to Groundwater (feet) | Groundwater Surface Elevation[2] (feet) |
|---|---|---|---|---|
| MW-6H | 12/15/88 | 97.93 | 12.39 | 85.54 |
| | 10/03/89 | | 12.36 | 85.57 |
| | 04/30/90 | | 12.10 | 85.83 |
| | 10/16/90 | | 12.18 | 85.75 |
| | 12/06/90 | | 12.29 | 85.64 |
| | 01/14/91 | | 12.22 | 85.71 |
| | 02/08/91 | | 11.93 | 86.00 |
| | 04/02/91 | | 11.59 | 86.34 |
| | 05/07/91 | | 12.24 | 85.69 |
| | 05/31/91 | | 12.22 | 85.71 |
| | 06/26/91 | | 14.34 | 83.59 |
| | 08/05/91 | | 12.62 | 85.31 |
| | 08/14/91 | | 12.43 | 85.50 |
| | 09/11/91 | | 12.83 | 85.10 |
| | 10/16/91 | | 12.71 | 85.22 |
| | 12/30/91 | | 12.16 | 85.77 |
| | 02/25/92 | | 12.17 | 85.76 |
| | 03/25/92 | | 11.65 | 86.28 |
| MW-6I | 12/15/88 | 97.60 | 12.82 | 84.78 |
| | 10/03/89 | | 12.83 | 84.77 |
| | 04/30/90 | | 12.66 | 84.94 |
| | 10/16/90 | | 12.71 | 84.89 |
| | 12/06/90 | | 12.75 | 84.85 |
| | 01/14/91 | | 12.55 | 85.05 |
| | 02/08/91 | | 12.32 | 85.28 |
| | 04/02/91 | | 12.22 | 85.38 |
| | 05/07/91 | | 12.61 | 84.99 |
| | 05/31/91 | | 12.82 | 84.78 |
| | 06/26/91 | | 12.93 | 84.67 |
| | 08/05/91 | | 13.01 | 84.59 |
| | 08/14/91 | | 12.98 | 84.62 |
| | 09/11/91 | | 13.11 | 84.49 |
| | 10/16/91 | | 13.04 | 84.56 |
| | 12/30/91 | | 12.72 | 84.88 |
| | 02/25/92 | | 12.45 | 85.15 |
| | 03/25/92 | | 12.12 | 85.48 |

Table 2. (continued)

| Well No. | Date | Top of Casing Elevation[1] (feet) | Depth to Groundwater (feet) | Groundwater Surface Elevation[2] (feet) |
|---|---|---|---|---|
| RW-1 | 10/16/90 | 97.89 | 12.24 | 85.65 |
| | 01/14/91 | | 12.80 | 85.09 |
| | 02/08/91 | | 12.53 | 85.36 |
| | 04/02/91 | | -- | -- |
| | 05/07/91 | | -- | -- |
| | 05/31/91 | | 12.86 | 85.03 |
| | 08/05/91 | | 13.19 | 84.70 |
| | 08/13/91 | | 14.05 | 83.84 |
| | 09/11/91 | | 15.96 | 81.93 |
| | 10/16/91 | | 16.00 | 81.89 |
| | 12/30/91 | | 12.65 | 85.24 |
| | 02/25/92 | | 14.40 | 83.49 |
| | 03/25/92 | | -- | -- |

Notes:

1 Elevation relative to HLA temporary benchmark located at the western end of the dispenser island nearest West Grand Avenue, with an arbitrary elevation of 100.0 feet (see Plate 3).

2 Groundwater surface elevation = top of casing elevation - depth to water

3 Top of casing elevation changed when monitoring wells were converted into recovery wells.

-- Water levels not measured/values not applicable.

Table 3. Results of Soil-gas Survey
2225 Telegraph Avenue
Oakland, California

Conducted on September 19, 1988
Concentrations in micrograms per liter (μg/L)

| Sample | Depth (feet) | Benzene | Ethyl-benzene | Toluene | Xylenes | Total Petroleum Hydrocarbons |
|---|---|---|---|---|---|---|
| Air | N/A | <0.7 | <0.8 | <0.8 | <0.8 | <0.7 |
| SG-01 | -- | -- | -- | -- | -- | -- |
| SG-02 | 5.0 | <0.7 | <0.8 | <0.8 | <0.8 | <0.7 |
| SG-03 | 12.0 | 10 | 4 | <0.8 | 2,800 | 6,100 |
| SG-04 | 13.0 | <0.7 | <0.8 | <0.8 | 140 | 780 |
| WS-05* | 12.0 | <75 | <76 | <77 | <77 | <75 |
| SG-06 | 13.0 | <0.7 | <0.8 | <0.8 | <0.8 | <0.7 |
| SG-07 | -- | -- | -- | -- | -- | -- |
| Air | N/A | <0.7 | <0.8 | <0.8 | <0.8 | <0.7 |

-- - Not able to obtain sample
N/A - Not applicable
Air - Ambient air sample
* - WS-05 was a sample of groundwater

Table 4. Results of Soil Chemical Analyses
2225 Telegraph Avenue
Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

| Sample Number | Depth (feet) | 1 Benzene | Ethyl- 2 benzene | 3 Toluene | 3 Xylenes | TPH as 4 Gasoline |
|---|---|---|---|---|---|---|
| B-1 | 8.0 | 0.05 | ND | ND | ND | ND |
| B-1 | 13.0 | ND (5) | 10 | 16 | 41 | 2,000 |
| B-2 | 7.0 | ND | ND | ND | ND | ND |
| B-2 | 13.5 | ND | ND | ND | ND | ND |
| B-3 | 7.0 | 0.06 | ND | ND | ND | ND |
| B-3 | 13.5 | 40 | 84 | 390 | 370 | 11,000 |
| B-4 | 13.5 | ND | ND | ND | ND | ND |
| B-5 | 5.5 | ND | ND | ND | ND | ND |
| B-5 | 9.5 | ND | ND | ND | ND | ND |
| B-5 | 12.5 | ND | ND | ND | ND | ND |
| B-6 | 6.0 | ND | ND | ND | ND | ND |
| B-6 | 9.5 | ND | ND | ND | ND | ND |
| B-6 | 12.0 | 40 | 40 | 110 | 450 | 3,000 |
| B-7 | 6.0 | 0.64 | 0.4 | 0.9 | 3.4 | 24 |
| B-7 | 9.5 | 0.5 | ND | 0.7 | 1.0 | ND |
| B-7 | 12.0 | 20 | 20 | 72 | 190 | 1,400 |
| MW-6E | 13.0 | ND | ND | ND | ND | ND |
| MW-6F | 13.0 | ND | ND | ND | ND | ND |
| MW-6G | 13.5 | ND | ND | ND | ND | 5.2 |
| MW-6H | 13.5 | 11 | 8.8 | 3.2 | 19 | 1,000 |
| MW-6I | 13.5 | ND | ND | ND | ND | ND |
| AB-1 | 8 | 1.9 | 1.0 | 3.4 | 4.2 | 65 |
| AB-2 | surface | ND(.0025) | 14 | 43 | 140 | 7,200 |
| AB-2 | 2 | 0.83 | 0.76 | 2.1 | 4.0 | 78 |

Table 4. (continued)

Concentrations in milligrams per kilogram (mg/kg)

| Sample Number | Depth (feet) | 1 Benzene | Ethyl- 2 benzene | 3 Toluene | 3 Xylenes | TPH as 4 Gasoline |
|---|---|---|---|---|---|---|
| AB-3 | 2 | ND(.0025) | ND(.0025) | ND(.0025) | 18 | 540 |
| AB-4 | 6 | ND(.0025) | ND(.0025) | ND(.0025) | ND(.0025) | ND(1) |
| AB-5 | 6 | ND(.0025) | .021 | ND(.0025) | .016 | 5.0 |
| AB-6 | 5 | ND(.0025) | ND(.0025) | ND(.0025) | ND(.0025) | ND(1) |

ND = Not detected.

1 Detection limit 0.05 mg/kg except as noted in parentheses.
2 Detection limit 0.2 mg/kg except as noted in parentheses.
3 Detection limit 0.1 mg/kg except as noted in parentheses.
4 Detection limit 10 mg/kg except as noted in parentheses.
AB Soil samples collected with a hand auger near fuel dispensers

ND = Not detected

Table 5. Results of Groundwater Chemical Analyses
2225 Telegraph Avenue
Oakland, California
Concentrations in micrograms per liter (µg/L)

EPA TEST METHOD 602

| Well Number | Date Sampled | Benzene[1] | Ethyl benzene[2] | Toluene[3] | Xylenes[3] | TPH (as gasoline)[4] | Total Oil and Grease[5] |
|---|---|---|---|---|---|---|---|
| MW-6A | 06/24/88 | ND | ND | ND | ND | - | |
| | 10/20/88 | 1 | ND | ND | ND | | |
| | 09/07/89 | 2 | ND | ND | ND | ND | |
| | 05/11/90 | 150 | ND (0.25) | 6.2 | 13 | ND (500) | |
| | 05/07/91 | 700 | 67 | 64 | 74 | 2,700 | |
| | 08/14/91 | 3.6 | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | 12/31/91 | Well damaged, no sample | | | | | |
| | 03/25/92 | Well damaged, no sample | | | | | |
| MW-6B | 06/24/88 | ND | ND | ND | 5 | - | |
| | 10/20/88 | 4 | ND | 3 | ND | - | |
| | 09/07/89 | 70 | 60 | 8 | 160 | 2,700 | |
| | 04/30/90 | 45 | 20 | 6 | 22 | 168 | |
| | 05/07/91 | 240 | 310 | 42 | 660 | 3,300 | |
| | 08/14/91 | 9.1 | 85 | ND (5) | 150 | 980 | |
| | 12/31/91 | 46 | 84 | 8.6 | 220 | 1,200 | ND |
| | 03/25/92 | 31 | 7.2 | 1.7 | 8.6 | 190 | |
| MW-6C | 06/24/88 | 7,400 | 170 | 7 | 2,300 | - | |
| | 10/20/88 | 9,500 | 170 | 65 | 850 | - | |
| | 09/07/89 | 7,900 | 350 | 430 | 1,100 | 18,000 | |
| | 04/30/90 | 6,100 | 1,000 | 1,500 | 2,700 | 30,000 | |
| (RW-3) | 05/07/91 | 4,200 | 220 | 640 | 670 | 5,800 | |
| | 08/14/91 | 2,300 | 49 | 330 | 360 | 3,800 | |
| | 11/05/91 | Well decommissioned | | | | | |
| MW-6D | 07/11/88 | 220 | ND (20) | 27 | ND (10) | - | |
| | 10/20/88 | 710 | 22 | 74 | 110 | - | |
| | 09/07/89 | 600 | 58 | 26 | 31 | 2,200 | |
| | 04/30/90 | 800 | 310 | 150 | 280 | 3,600 | |
| (RW-2) | 05/07/91 | 3,200 | 150 | 480 | 780 | 11,000 | |
| | 08/14/91 | NA | NA | NA | NA | NA | |
| | 12/31/91 | NA | NA | NA | NA | NA | |
| | 03/25/92 | NA | NA | NA | NA | NA | |
| MW-6E | 10/20/88 | 1 | ND | ND | 3 | - | |
| | 09/07/89 | 3 | ND | ND | ND | 220 | |
| | 04/30/90 | 57 | ND (5) | ND (5) | 53 | 250 | |
| | 05/07/91 | 32 | 2.2 | 1.0 | 1.4 | 160 | |
| | 08/14/91 | 0.9 | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | 12/31/91 | 3.1 | ND (0.5) | ND (0.5) | ND (0.5) | 90 | ND |
| | 03/25/92 | 41 | 3.8 | 1.0 | 16 | 830 | |

Table 5. (continued)

| Well Number | Date Sampled | Benzene[1] | Ethyl benzene[2] | Toluene[3] | Xylenes[3] | TPH (as gasoline)[4] | Total Oil and Grease[5] |
|---|---|---|---|---|---|---|---|
| MW-6F | 10/25/88 | ND | ND | ND | 2 | | |
| | 09/07/89 | ND | ND | ND | ND | ND | |
| | 04/30/90 | ND | ND | ND | ND | ND | |
| | 05/07/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | 08/14/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | 12/31/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | ND |
| | 03/25/92 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| MW-6G | 12/07/88 | ND | ND | ND | ND | - | |
| | 09/07/89 | ND | ND | ND | ND | ND | |
| | 04/30/90 | ND | ND | ND | ND | ND | |
| | 05/07/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | 08/14/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | 12/31/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | ND |
| | 03/25/92 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| MW-6H | 12/07/88 | 1,200 | 110 | 320 | 220 | - | |
| | 09/07/89 | 480 | 16 | ND (10) | ND (15) | 660 | |
| | 04/30/90 | 700 | 31 | 39 | 50 | 630 | |
| | 05/07/91 | 95 | 15 | 14 | 21 | 570 | |
| | 08/14/91 | 52 | 11 | 9.9 | 18 | 540 | |
| | 12/31/91 | 52 | 22 | 28 | 42 | 790 | ND |
| | 03/25/92 | 170 | 25 | 52 | 54 | 920 | |
| MW-6I | 12/07/88 | ND | ND | ND | ND | - | |
| | 09/07/89 | ND | ND | ND | ND | ND | |
| | 04/30/90 | ND | ND | ND | ND | ND | |
| | 05/07/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | 08/14/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | 12/31/91 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | ND |
| | 03/25/92 | ND | ND (0.5) | ND (0.5) | ND (0.5) | ND | |
| | D.L. | 0.5 | 2 | 1 | 1 | 50 | 5,000 |

D.L. = Detection limits

ND = Concentrations below detection limits; detection limits in parentheses if other than those listed above.

Table 6. Results of Chemical Analyses, Groundwater Treatment System
First Quarter, 1992
2225 Telegraph Avenue, Oakland, California

| Sampling Date | Sample | TPH as Gasoline (ppb) | Benzene (ppb) | Toluene (ppb) | Ethyl-benzene (ppb) | Xylenes (ppb) | Flow Meter (gallons) |
|---|---|---|---|---|---|---|---|
| EBMUD Requirements | | NS | 3 | 31 | 5 | 42 | |
| 02/12/92* | INF-25 | 7,300 | 1,400 | 210 | 1,000 | 2,300 | 268,390 |
| 02/12/92 | EFF-25 | ND | ND | ND | ND | ND | 268,390 |
| 02/12/92 | BT-2-35 | 70 | 2.5 | 8.5 | 1.7 | 11 | 268,390 |
| 02/25/92** | BT-2-36 | ND | ND | ND | ND | ND | 283,010 |
| 02/25/92 | RT-1 | 13,000 | 740 | 380 | (50) | 800 | 283,010 |
| 03/05/92 | BT-2-37 | ND | ND | ND | ND | ND | 292,910 |
| 03/16/92 | BT-2-38 | ND | ND | ND | ND | ND | 294,271 |
| 03/25/92 | BT-2-39 | ND | ND | ND | ND | ND | 296,842 |
| Detection Limit | | 50 | 0.5 | 0.5 | 0.5 | 0.5 | |

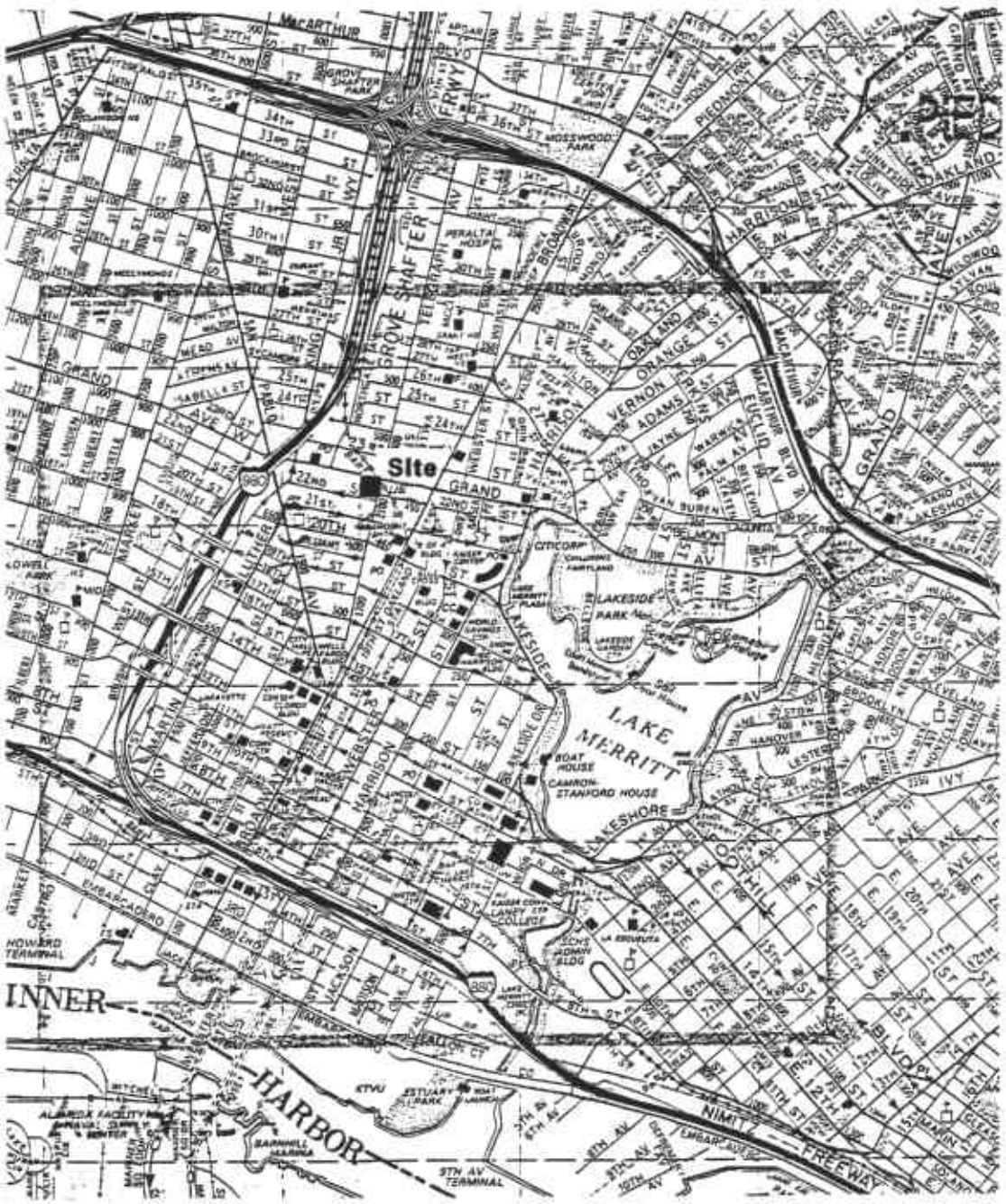
ND = Concentration is below the laboratory detection limit
NS = Not specified
ppb = Parts per billion (µg/l)
TPH = Total petroleum hydrocarbons as gasoline (EPA 8015 modified)
INF = Influent
EFF = Effluent
BT-2 = Breakthrough through No. 2 carbon canister
RT = Retention Tank
* = Treatment system down from 12/18/91 through 02/06/92 to check treatment system sampling results and to repair faulty compressor pressure switch
** = No. 1 carbon canister removed from service, No. 2 and No. 3 moved up in series, new No. 3 carbon canister installed (02/21/92)

Table 7. Free Product Thickness in Groundwater Extraction Wells and Recovered Volumes

| Date | Free Product Thickness in RW-1 (feet)* | Approximate Volume Recovered from RW-1 (gallons)** | Free Product Thickness in RW-2 (feet)* | Approximate Volume Recovered from RW-2 (gallons)** |
|---|---|---|---|---|
| 1st QTR 1991 Cumulative | 0.30 - 2.5 | 4.80 | 0 | 0 |
| 2nd QTR 1991 Cumulative | 0.02 - 1.46 | 8.04 | 0 | 0 |
| 3rd QTR 1991 Cumulative | 0.27-2.73 | 22.09 | 0.23-4.5 | 10.49 |
| 4th QTR 1991 Cumulative | 0.31-2.75 | 12.04 | 0-1.33 | 2.35 |
| 02/12/92 | 0 | 0 | 0.50 | 0.17 |
| 02/25/92 | 0 | 0 | 0.15 | 0.09 |
| 03/05/92 | 0 | 0 | -- | -- |
| 03/25/92 | 0 | 0 | 0 | 0 |
| 1st QTR 1992 Cumulative | 0 | 0 | 0-0.50 | 0.26 |
| Total volume of free product recovered to date | | 46.97 | | 13.36 |

* Range of free product thickness measured during the quarter
** Free product recovered using a graduated lucite bailer
-- Free product thickness not measured; no access to well

105649



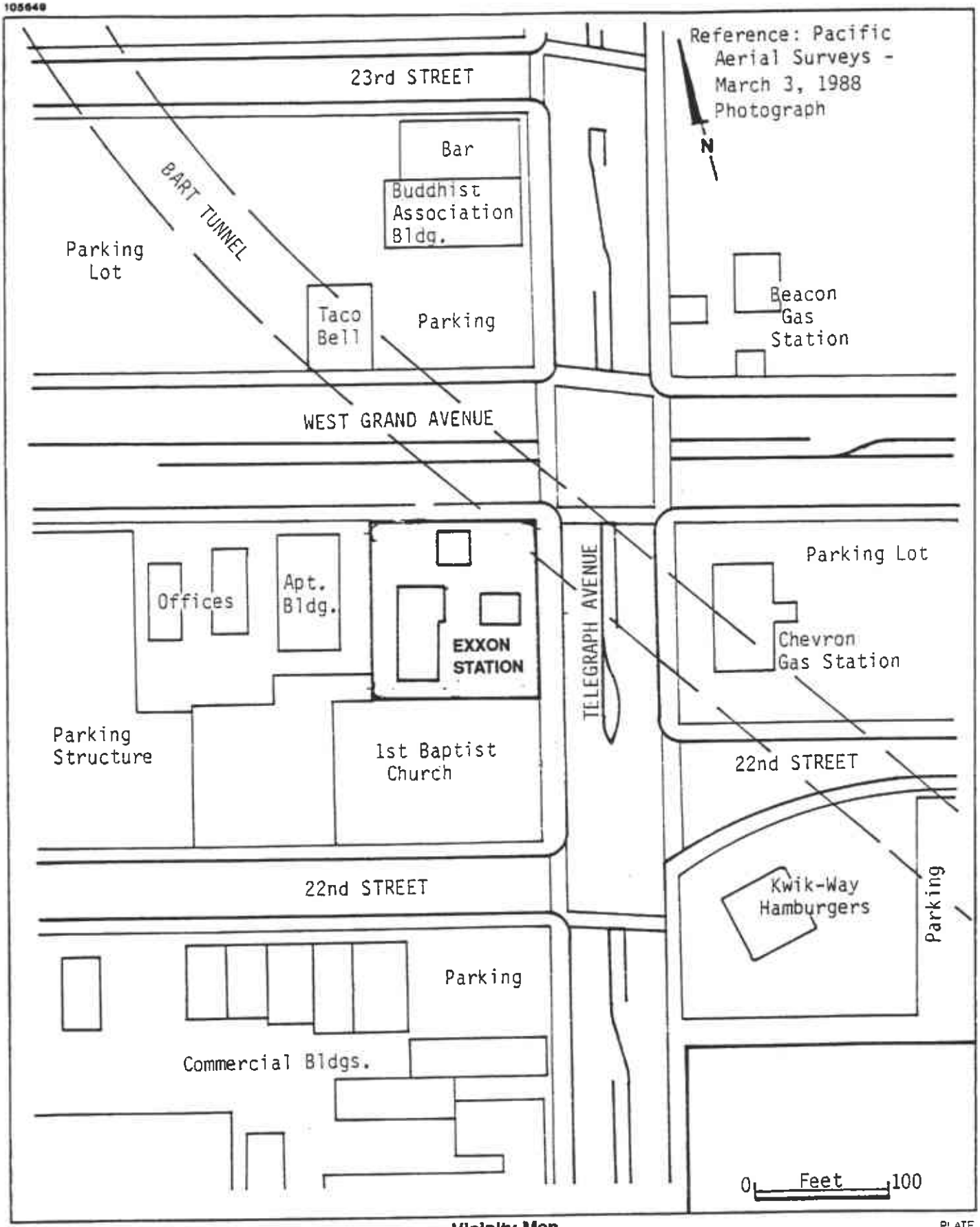

**Harding Lawson Associates**
Engineers and Geoscientists

**Site Location Map**
Exxon Service Station
2225 Telegraph Avenue
Oakland, California

PLATE
**1**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED | DATE |
|---|---|---|---|---|---|
| YC | 2251,162.03 | JSH | 05/08/92 | | |

105649

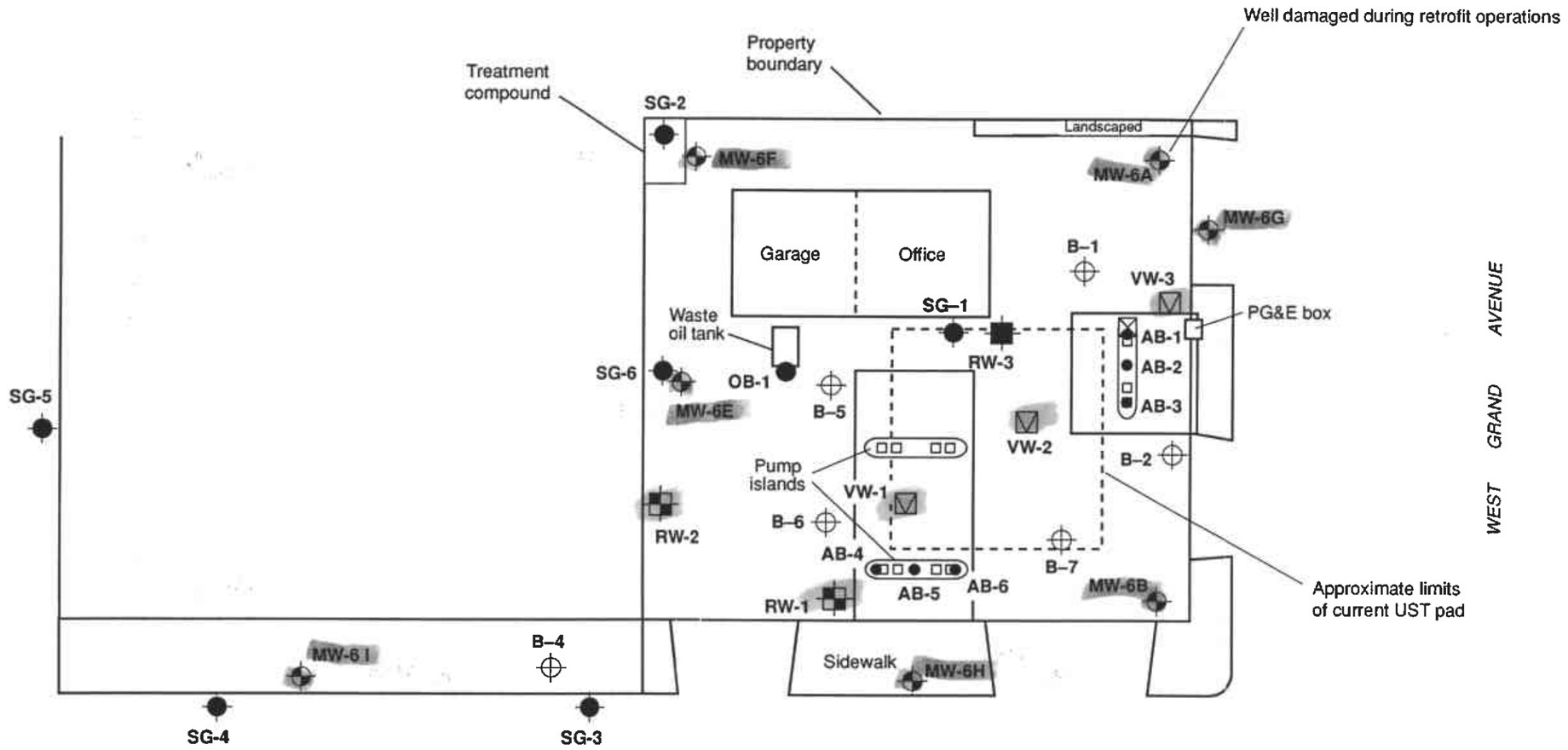



**Harding Lawson Associates**
Engineers and Geoscientists

**Vicinity Map**
**Exxon Service Station**
**2225 Telegraph Avenue**
**Oakland, California**

PLATE **2**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED | DATE |
|---|---|---|---|---|---|
| YC | 2251,162.03 | JST | 05/08/92 | | |




**EXPLANATION**

- GROUNDWATER MONITORING WELL
- GROUNDWATER RECOVERY/VAPOR EXTRACTION WELL
- DECOMMISSIONED RECOVERY WELL (11/5/91)
- SOIL BORING LOCATION
- SOIL-GAS PROBE LOCATION
- SOIL SAMPLE LOCATION, HAND AUGER
- DECOMMISSIONED OBSERVATION WELL
- VAPOR EXTRACTION WELL
- PROPOSED VAPOR EXTRACTION WELL
- HLA DATUM, ARBITRARILY SET AT 100 FEET

NOTE :
RW-1 PREVIOUSLY B-3
RW-2 PREVIOUSLY MW-6D
RW-3 PREVIOUSLY MW-6C

N

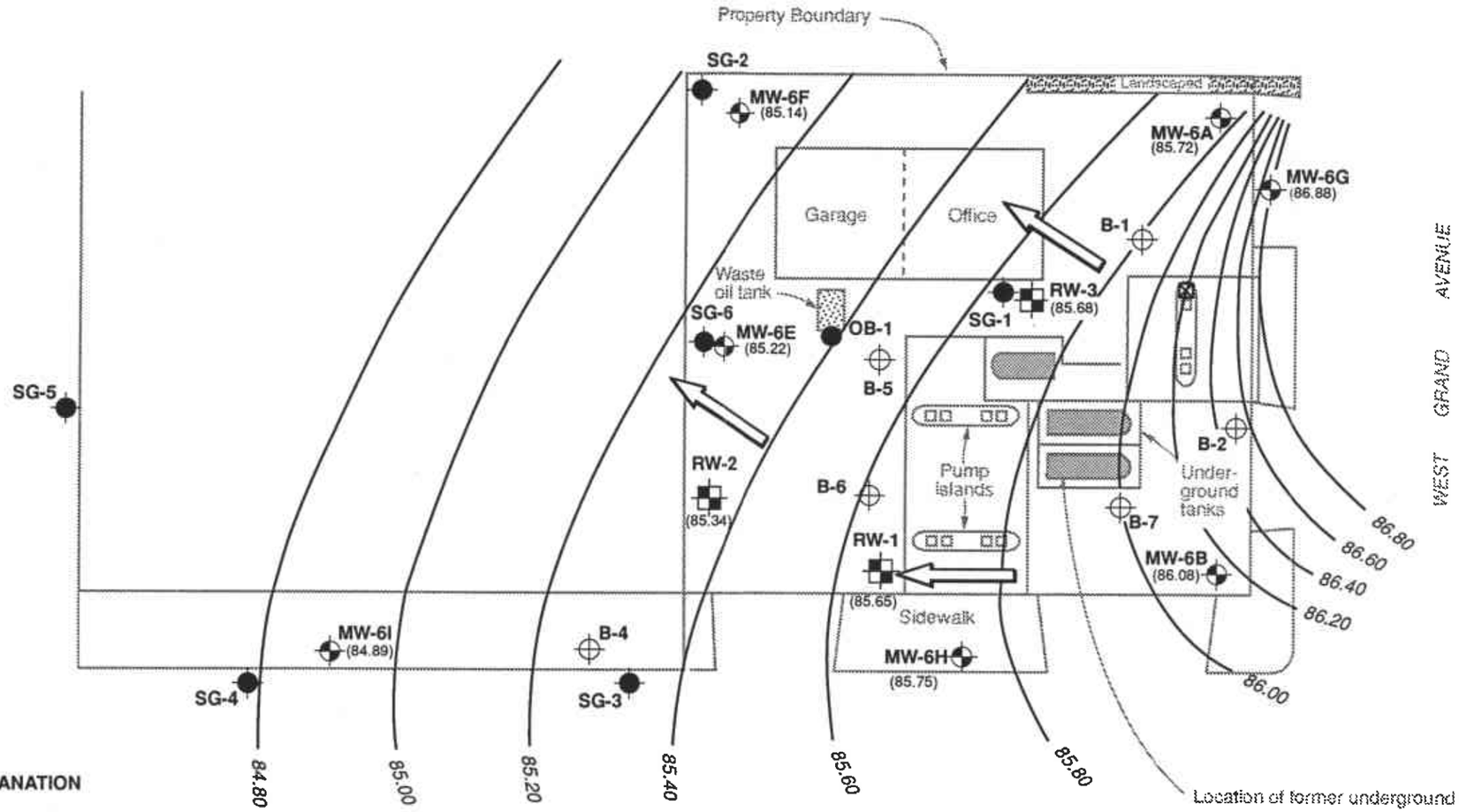
0 30 60
SCALE IN FEET

**Harding Lawson Associates**
Engineering and Environmental Services

**Site Plan**
Exxon Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **3**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| S. Patel | 2251,162.03 | JSH | 5/21/92 | |




**EXPLANATION**

- Monitoring well
- Recovery well
- Soil-gas probe location
- Observation well
- Soil boring location
- Benchmark (HLA datum; elevation = 100 feet)
- (85.36) Relative groundwater elevation on 2/8/91
- Contour interval 0.20 feet
- Direction of groundwater flow

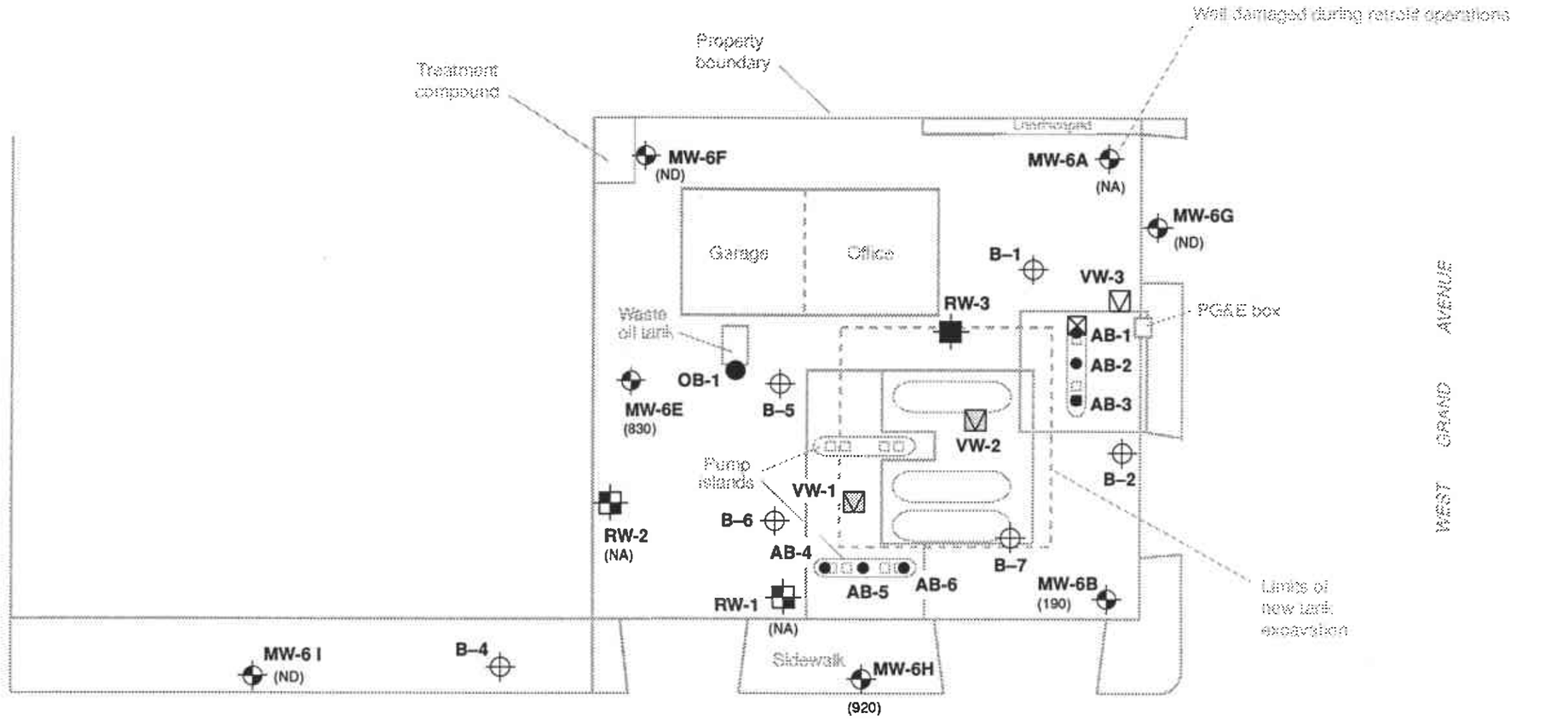
NOTE: RW-1 previously B-3
RW-2 previously MW-6D
RW-3 previously MW-6C

**Harding Lawson Associates**
Engineering and
Environmental Services

**Potentiometric Surface 10/16/90**
Exxon Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **4**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| RHC | 2251,162.03 | JSH | 05/08/92 | |




**EXPLANATION**

- GROUNDWATER MONITORING WELL
- GROUNDWATER RECOVERY/VAPOR EXTRACTION WELL
- DECOMMISSIONED RECOVERY WELL (11/5/91)
- SOIL BORING LOCATION
- SOIL SAMPLE LOCATION, HAND AUGER
- DECOMMISSIONED OBSERVATION WELL
- VAPOR EXTRACTION WELL
- PROPOSED VAPOR EXTRACTION WELL
- HLA DATUM, ARBITRARILY SET AT 100 FEET

| | |
|---|---|
| (190) | TPH AS GASOLINE CONCENTRATIONS IN GROUNDWATER (PPB) ON 3/25/92 |
| (ND) | CONCENTRATIONS BELOW DETECTION LIMIT OF 50 PPB |
| (NA) | GROUNDWATER NOT ANALYZED ON 3/25/92 |

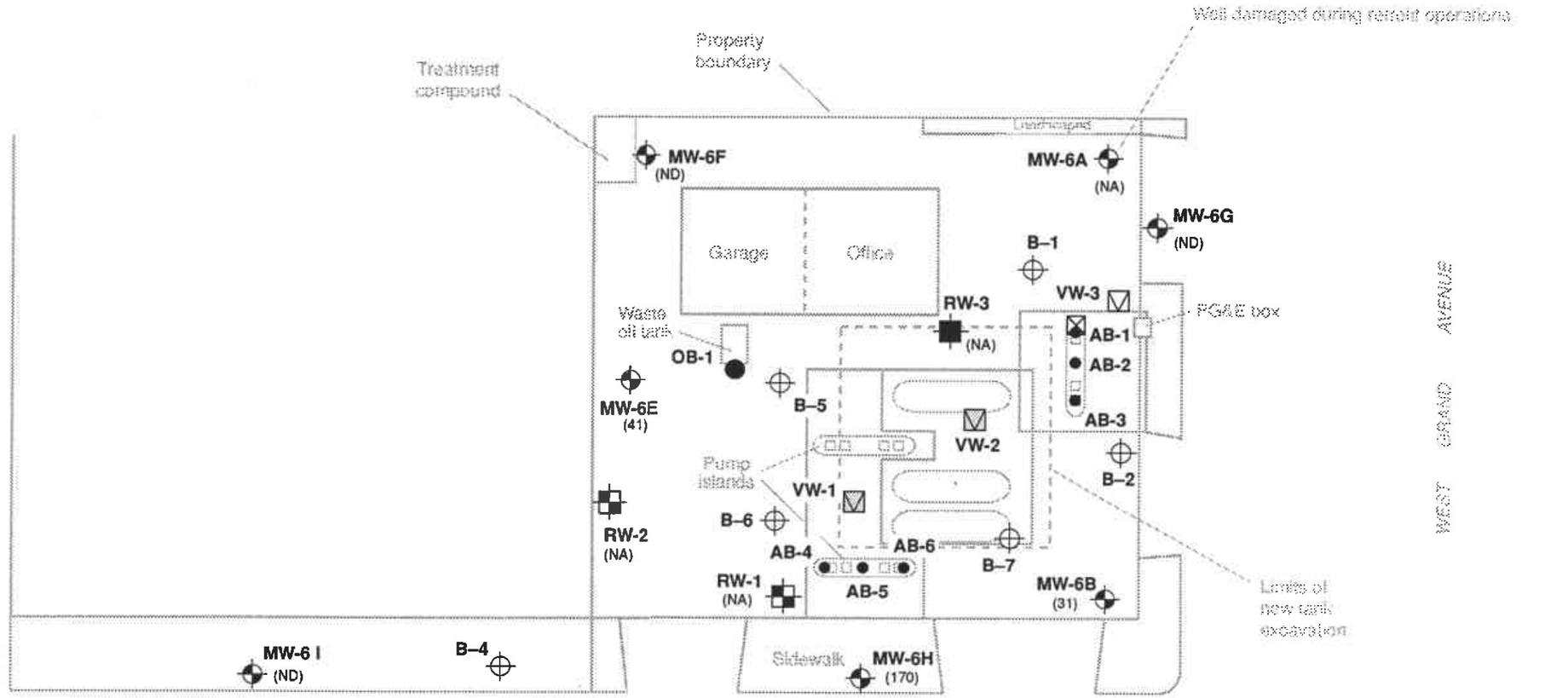
NOTE :
RW-1 PREVIOUSLY B-3
RW-2 PREVIOUSLY MW-6D
RW-3 PREVIOUSLY MW-6C

**Harding Lawson Associates**
Engineering and Environmental Services

**TPH as Gasoline in Groundwater (3/25/92)**
Exxon Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **5**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| S. Patel | 2251,162.03 | JSH | 05/08/92 | |




**EXPLANATION**

- GROUNDWATER MONITORING WELL
- GROUNDWATER RECOVERY/VAPOR EXTRACTION WELL
- DECOMMISSIONED RECOVERY WELL (11/5/91)
- SOIL BORING LOCATION
- SOIL SAMPLE LOCATION, HAND AUGER
- DECOMMISSIONED OBSERVATION WELL
- VAPOR EXTRACTION WELL
- PROPOSED VAPOR EXTRACTION WELL
- HLA DATUM, ARBITRARILY SET AT 100 FEET

| | |
|---|---|
| (31) | BENZENE CONCENTRATIONS IN GROUNDWATER (PPB) ON 3/25/92 |
| (ND) | CONCENTRATIONS BELOW DETECTION LIMIT OF 0.5 PPB |
| (NA) | GROUNDWATER NOT ANALYZED ON 3/25/92 |

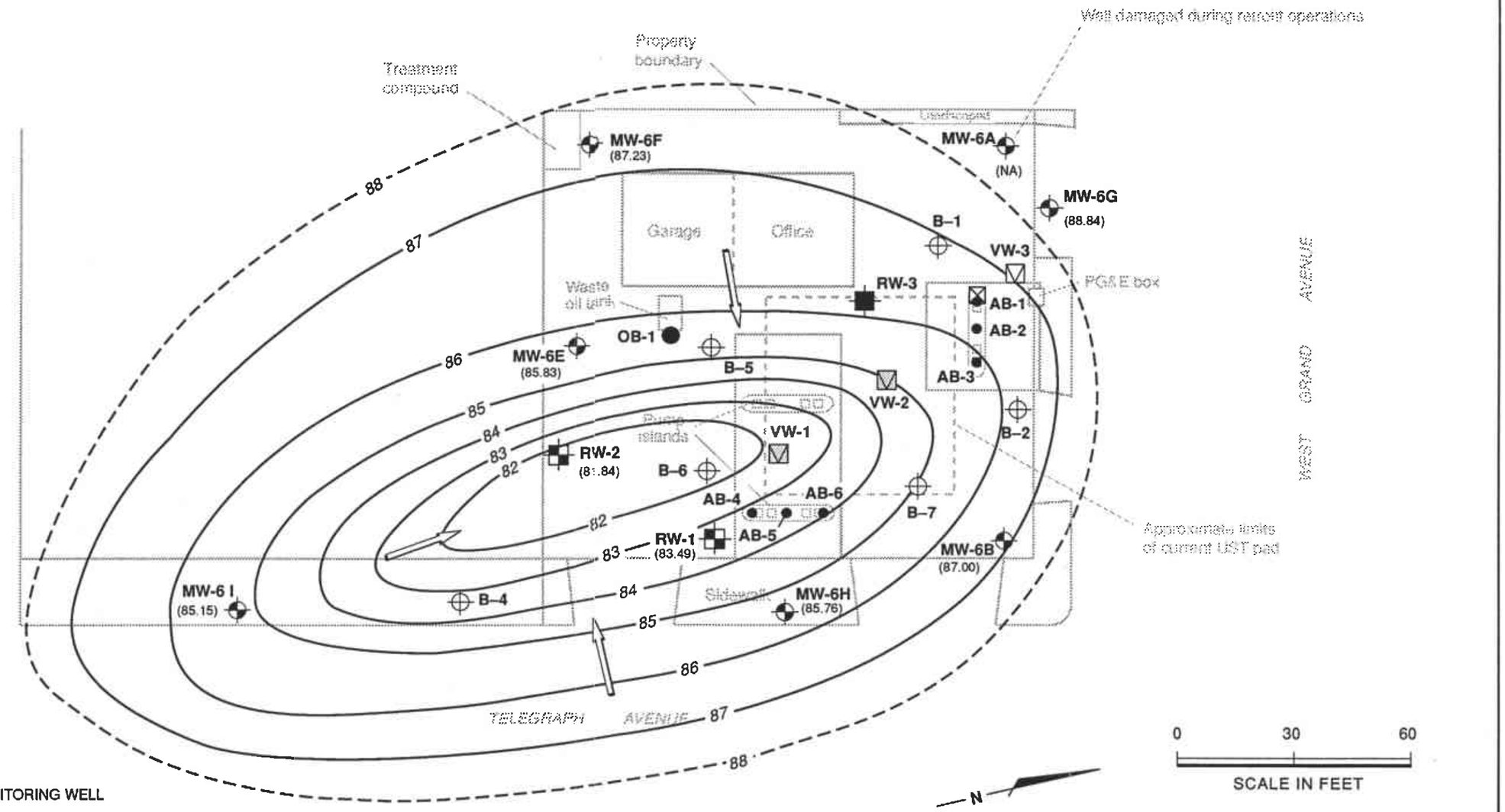
NOTE :
RW-1 PREVIOUSLY B-3
RW-2 PREVIOUSLY MW-6D
RW-3 PREVIOUSLY MW-6C

Harding Lawson Associates
Engineering and Environmental Services

**Benzene In Groundwater (3/25/92)**
Exxon Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **6**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| S. Patel | 2251,162.03 | JSH | 05/08/92 | |




**EXPLANATION**

- GROUNDWATER MONITORING WELL
- GROUNDWATER RECOVERY/VAPOR EXTRACTION WELL
- DECOMMISSIONED RECOVERY WELL (11/5/91)
- SOIL BORING LOCATION
- SOIL SAMPLE LOCATION, HAND AUGER
- DECOMMISSIONED OBSERVATION WELL
- VAPOR EXTRACTION WELL
- PROPOSED VAPOR EXTRACTION WELL
- HLA DATUM, ARBITRARILY SET AT 100 FEET

(85.83) RELATIVE GROUNDWATER ELEVATION ON 2/25/92

CONTOUR INTERVAL 1.0 FEET

DIRECTION OF GROUNDWATER FLOW

NOTE :
RW-1 PREVIOUSLY B-3
RW-2 PREVIOUSLY MW-6D
RW-3 PREVIOUSLY MW-6C

**Harding Lawson Associates**
Engineering and Environmental Services

**Potentiometric Surface Map 2/25/92**
Exxon Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **7**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| S. Patel | 2251,162.03 | JSH | 5/22/92 | |

# APPENDIX

## RESULTS OF LABORATORY ANALYSES ON QUARTERLY GROUNDWATER SAMPLES

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623



Jeanna Hudson
Harding Lawson Associates
1355 Willow Way, Ste. 109
Concord, CA 94520

Date: 04/13/1992
NET Client Acct No: 1001
NET Pacific Job No: 92.1591
Received: 03/27/1992

Client Reference Information

TEXACO-Telegraph, Job: 2251,162.03

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)

NET Pacific, Inc

Client No: 1001 Date: 04/13/1992
Client Name: Harding Lawson Associates
NET Job No: 92.1591 Page: 2

Ref: TEXACO-Telegraph, Job: 2251,162.03

| | | | Descriptor, Lab No. and Results | | |
|---|---|---|---|---|---|
| | | | 6I | 6G | |
| | | | 03/25/1992 | 03/25/1992 | |
| Parameter | Method | Reporting Limit | 117517 | 117518 | Units |
| TPH (Gas/BTXE,Liquid) | | | | | |
| METHOD 5030 (GC,FID) | | | -- | -- | |
| DATE ANALYZED | | | 04-04-92 | 04-04-92 | |
| DILUTION FACTOR* | | | 1 | 1 | |
| as Gasoline | 5030 | 0.05 | ND | ND | mg/L(ppm) |
| METHOD 8020 (GC,Liquid) | | | -- | -- | |
| DATE ANALYZED | | | 04-04-92 | 04-04-92 | |
| DILUTION FACTOR* | | | 1 | 1 | |
| Benzene | 8020 | 0.5 | ND | ND | ug/L(ppb) |
| Ethylbenzene | 8020 | 0.5 | ND | ND | ug/L(ppb) |
| Toluene | 8020 | 0.5 | ND | ND | ug/L(ppb) |
| Xylenes (Total) | 8020 | 0.5 | ND | ND | ug/L(ppb) |
| SURROGATE RESULTS | | | -- | -- | |
| Bromofluorobenzene | 5030 | | 107 | 104 | % Rec. |

NET Pacific, Inc

Client No: 1001 Date: 04/13/1992
Client Name: Harding Lawson Associates
NET Job No: 92.1591 Page: 3

Ref: TEXACO-Telegraph, Job: 2251,162.03

| | | | Descriptor, Lab No. and Results | | |
|---|---|---|---|---|---|
| | | | 6F | 6E | |
| | | | 03/25/1992 | 03/25/1992 | |
| Parameter | Method | Reporting Limit | 117519 | 117520 | Units |
| TPH (Gas/BTXE,Liquid) | | | | | |
| METHOD 5030 (GC,FID) | | | -- | -- | |
| DATE ANALYZED | | | 04-04-92 | 04-04-92 | |
| DILUTION FACTOR* | | | 1 | 1 | |
| as Gasoline | 5030 | 0.05 | ND | 0.83 | mg/L(ppm) |
| METHOD 8020 (GC,Liquid) | | | -- | -- | |
| DATE ANALYZED | | | 04-04-92 | 04-04-92 | |
| DILUTION FACTOR* | | | 1 | 1 | |
| Benzene | 8020 | 0.5 | ND | 41 | ug/L(ppb) |
| Ethylbenzene | 8020 | 0.5 | ND | 3.8 | ug/L(ppb) |
| Toluene | 8020 | 0.5 | ND | 1.0 | ug/L(ppb) |
| Xylenes (Total) | 8020 | 0.5 | ND | 16 | ug/L(ppb) |
| SURROGATE RESULTS | | | -- | -- | |
| Bromofluorobenzene | 5030 | | 108 | 115 | % Rec. |

NET Pacific, Inc

Client No: 1001 Date: 04/13/1992
Client Name: Harding Lawson Associates
NET Job No: 92.1591 Page: 4

Ref: TEXACO-Telegraph, Job: 2251,162.03

| | | | Descriptor, Lab No. and Results | | |
|---|---|---|---|---|---|
| | | | 6H | 6B | |
| | | | 03/25/1992 | 03/25/1992 | |
| Parameter | Method | Reporting Limit | 117521 | 117522 | Units |
| TPH (Gas/BTXE,Liquid) | | | | | |
| METHOD 5030 (GC,FID) | | | -- | -- | |
| DATE ANALYZED | | | 04-05-92 | 04-07-92 | |
| DILUTION FACTOR* | | | 2 | 1 | |
| as Gasoline | 5030 | 0.05 | 0.92 | 0.12 | mg/L(ppm) |
| METHOD 8020 (GC,Liquid) | | | -- | -- | |
| DATE ANALYZED | | | 04-05-92 | 04-07-92 | |
| DILUTION FACTOR* | | | 2 | 1 | |
| Benzene | 8020 | 0.5 | 170 | 31 | ug/L(ppb) |
| Ethylbenzene | 8020 | 0.5 | 25 | 7.2 | ug/L(ppb) |
| Toluene | 8020 | 0.5 | 52 | 1.7 | ug/L(ppb) |
| Xylenes (Total) | 8020 | 0.5 | 54 | 8.6 | ug/L(ppb) |
| SURROGATE RESULTS | | | -- | -- | |
| Bromofluorobenzene | 5030 | | 107 | 123 | % Rec. |

NET Pacific, Inc

Client No: 1001 Date: 04/13/1992
Client Name: Harding Lawson Associates
NET Job No: 92.1591 Page: 5

Ref: TEXACO-Telegraph, Job: 2251,162.03

QUALITY CONTROL DATA

| Parameter | Reporting Limits | Units | Cal Verf Stand % Recovery | Blank Data | Spike % Recovery | Duplicate Spike % Recovery | RPD |
|---|---|---|---|---|---|---|---|
| Gasoline | 0.05 | mg/L | 102 | ND | 94 | 105 | 10 |
| Benzene | 0.5 | ug/L | 116 | ND | 94 | 104 | 11 |
| Toluene | 0.5 | ug/L | 108 | ND | 90 | 99 | 9.6 |
| COMMENT: Blank Results were ND on other analytes tested. | | | | | | | |
| Gasoline | 0.05 | mg/L | 95 | ND | 85 | 86 | 1.2 |
| Benzene | 0.5 | ug/L | 87 | ND | 91 | 91 | < 1 |
| Toluene | 0.5 | ug/L | 100 | ND | 95 | 95 | < 1 |
| COMMENT: Blank Results were ND on other analytes tested. | | | | | | | |
| Gasoline | 0.05 | mg/L | 91 | ND | 73 | 75 | 2.7 |
| Benzene | 0.5 | ug/L | 92 | ND | 101 | 99 | 1.3 |
| Toluene | 0.5 | ug/L | 93 | ND | 100 | 100 | < 1 |
| COMMENT: Blank Results were ND on other analytes tested. | | | | | | | |

NET Pacific, Inc

## KEY TO ABBREVIATIONS and METHOD REFERENCES

| | | |
|---|---|---|
| < | : | Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit. |
| * | : | Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values). |
| ICVS | : | Initial Calibration Verification Standard (External Standard). |
| mean | : | Average; sum of measurements divided by number of measurements. |
| mg/Kg (ppm) | : | Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million). |
| mg/L | : | Concentration in units of milligrams of analyte per liter of sample. |
| mL/L/hr | : | Milliliters per liter per hour. |
| MPN/100 mL | : | Most probable number of bacteria per one hundred milliliters of sample. |
| N/A | : | Not applicable. |
| NA | : | Not analyzed. |
| ND | : | Not detected; the analyte concentration is less than applicable listed reporting limit. |
| NTU | : | Nephelometric turbidity units. |
| RPD | : | Relative percent difference, 100 [Value 1 - Value 2]/mean value. |
| SNA | : | Standard not available. |
| ug/Kg (ppb) | : | Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion). |
| ug/L | : | Concentration in units of micrograms of analyte per liter of sample. |
| umhos/cm | : | Micromhos per centimeter. |

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

**Harding Lawson Associates**
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Concord, California 94520
415/687-9660
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# CHAIN OF CUSTODY FORM

Lab: NET 4747

Samplers: JAMES E. McCOY

Job Number: 2251.162.03

Name/Location: TEXACO - TELEGRAPH

Project Manager: JEANNA S. HUDSON

Recorder: J-E McCoy (Signature Required)

| SOURCE CODE | MATRIX: Water | Sediment | Soil | Oil | #CONTAINERS & PRESERV.: Unpres. | $H_2SO_4$ | $HNO_3$ | HCl | SAMPLE NUMBER OR LAB NUMBER: Yr | Wk | Seq | DATE: Yr | Mo | Dy | Time | STATION DESCRIPTION/ NOTES | ANALYSIS REQUESTED: EPA 601/8010 | EPA 602/8020 | EPA 624/8240 | EPA 625/8270 | ICP METALS | EPA 8015M/TPH | TPHg BTEX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | X | | | | | | | 3 | 61 | | | 92 | 03 | 25 | | STANDARD T.A.T. | | | | | | | X |
| 23 | X | | | | | | | 3 | 6G | | | 92 | 03 | 25 | | | | | | | | | X |
| 23 | X | | | | | | | 3 | 6F | | | 92 | 03 | 25 | | | | | | | | | X |
| 23 | X | | | | | | | 3 | 6E | | | 92 | 03 | 25 | | | | | | | | | X |
| 23 | X | | | | | | | 3 | 6H | | | 92 | 03 | 25 | | | | | | | | | X |
| 23 | X | | | | | | | 3 | 6B | | | 92 | 03 | 25 | | | | | | | | | X |
| | | | | | | | | | | | | | | | | CUSTODY SEALED 3/26/92 | | | | | | | |
| | | | | | | | | | | | | | | | 1400 | scal intact | | | | | | | |

| LAB NUMBER: Yr | Wk | Seq | DEPTH IN FEET | COL MTD CD | QA CODE | MISCELLANEOUS |
|---|---|---|---|---|---|---|
| | | | | | | |

## CHAIN OF CUSTODY RECORD

| | | |
|---|---|---|
| RELINQUISHED BY: (Signature) J-E McCoy | RECEIVED BY: (Signature) Mark Tanner | DATE/TIME 3/26/92 1400 |
| RELINQUISHED BY: (Signature) Mark Tanner | RECEIVED BY: (Signature) | DATE/TIME |
| RELINQUISHED BY: (Signature) | RECEIVED BY: (Signature) | DATE/TIME |
| RELINQUISHED BY: (Signature) | RECEIVED BY: (Signature) | DATE/TIME |
| DISPATCHED BY: (Signature) DATE/TIME | RECEIVED FOR LAB BY: (Signature) | DATE/TIME 3/27/92 0800 |
| METHOD OF SHIPMENT NCS | | |

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink

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JSH/ERC/mlw 033067P/R56

QUALITY CONTROL REVIEWER

Michael A. Sides
Environmental Engineer