A Report Prepared for

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

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QUARTERLY TECHNICAL REPORT
FIRST QUARTER OF 1991
FORMER TEXACO STATION
2225 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

HLA Job No. 2251,146.03
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by

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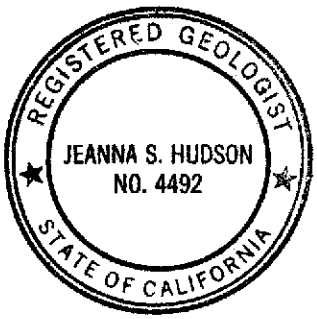

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INTRODUCTION

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 formerly owned by Texaco Refining and Marketing Inc. The station, at 2225 Telegraph Avenue, Oakland, California (see Plate 1), is currently owned and operated by Exxon Company U.S.A. 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 contains commercial/retail businesses, including a Chevron service station immediately across Telegraph Avenue and a Beacon service station northeast of the site. Adjacent to the site on the south is the First Baptist Church of Oakland. There is an apartment building, currently occupied, 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 mainly controlled 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. Leaded and unleaded gasoline are dispensed from these tanks; automotive repair services are also provided.

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, rather than domestic, purposes. The majority of domestic water is supplied by the East Bay Municipal Utility District (EBMUD) from surface sources.

The groundwater aquifers at the site are primarily contained with the Alameda and Temescal Formations; these permeable formations have an aggregate thickness of more than 1,100 feet. According to maps of the area the Temescal Formation, an alluvial fan deposit, is present locally at the surface. 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, down to the maximum explored depth of 20 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).

Groundwater is currently 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 is to the southwest as shown on the Potentiometric Surface Map, 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:

1.	Sensitive Receptor Study	May 24, 1988
2.	Subsurface Investigation	July 20, 1988
3.	Environmental Assessment	June 22, 1989
4.	Groundwater Remediation Plan	November 30, 1989

Field Investigation

Boring 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 (see Plate 2).

During previous investigative activities, the following tasks were completed:

- Conducted a soil-gas survey on site and in city streets near the site. Probe locations are shown on Plate 3 and soil-gas survey results are presented in Table 3.
- Drilled and sampled seven shallow soil borings (B-1 through B-7); locations are shown on Plate 3.
- 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); locations are shown on Plate 5.
- 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.

Vadose-zone Soil Condition

No significant concentrations of petroleum hydrocarbons have been found in shallow vadose-zone soils. However, the fuel constituents benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH) as gasoline have been detected in soils from 12 to 13.5 feet below the ground surface; this depth is probably within the capillary fringe area. TPH as gasoline concentrations exceeded 100 parts per million (ppm) in some of the soil samples (Table 4).

Groundwater Condition

Free floating product (gasoline) has been observed on the groundwater in RW-1. As shown on Plate 5, hydrocarbon-bearing groundwater appears to originate in the vicinity of the underground tanks and pump islands, and it extends southwest.

Groundwater samples from five on-site wells near the tanks and pump islands contain levels of TPH as gasoline ranging from 200 to 30,000 parts per billion (ppb). As of April 1990, the lateral limits of the plume are delineated by MW-6G, MW-6F, and MW-6I; samples from these wells show no detectable hydrocarbons (detection limit for TPH = 50 ppb). Upgradient plume definition is incomplete because of the restricted subsurface access, mentioned above, which is imposed by the City of Oakland and BART.

SUMMARY OF REMEDIAL ACTIVITIES

The following tasks were completed during installation and start-up of the remedial system:

- Drilled and installed three recovery wells, RW-1, RW-2, and RW-3 (locations shown on Plate 3) in the previous locations of B-3, MW-6D, and MW-6C, respectively.
- Installed groundwater extraction and collection system.
- Fabricated and installed skid-mounted groundwater treatment system.
- Obtained a Wastewater Discharge Permit from the East Bay Municipal Utilities District (EBMUD) to discharge treated effluent water directly to the Sanitary Sewer.

- Extracted, treated, and discharged approximately 17,000 gallons of groundwater during the fourth quarter of 1990.
- Sampled water from influent, effluent, and midstream in accordance with permit requirements.

WORK PERFORMED DURING THE FIRST QUARTER OF 1991

- Extracted, treated, and discharged approximately 47,000 gallons of groundwater to the sanitary sewer (64,300 gallons cumulative since startup).
- Sampled water from influent, effluent, and midstream for carbon breakthrough and performed chemical analysis as specified in EBMUD Wastewater Discharge Permit No. 001-00007 (see Tables 6 and 7).
- Measured free product thickness in recovery well RW-1. Removed free product from RW-1 on a weekly basis for one month (Table 8).
- Measured water levels in monitoring wells and updated the potentiometric map accordingly (see Table 2 and Plate 6).
- Prepared EDMUD monthly status reports as required by the EDMUD wastewater discharge permit.

During the first quarter 1991, water samples were collected weekly from midstream sampling points to check for potential breakthrough of hydrocarbons downstream of the 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 7.

Recovery wells were checked for free floating product several times during the quarter, but it has been detected and removed from RW-1 only. Free product was bailed from RW-1 four

times during the quarter, recovering a total of approximately five gallons of product (Table 8).

Water levels were measured in monitoring wells and recovery wells twice during the quarter (Table 2). The water level data collected in February, 1991 are presented on Plate 6, a contour map of the potentiometric surface. This is a very generalized map of the regional potentiometric surface; if additional data points were available in the immediate vicinity of the recovery wells, a map of the groundwater surface would likely show cones of depression around the recovery wells. Plate 4 is a map of the potentiometric surface based on data collected in October 1990, before startup of the groundwater extraction system. A comparison of the October and February data indicates that the extraction of groundwater has steepened the groundwater gradient, especially in the vicinity of RW-1 and RW-2.

WORK PLANNED FOR THE SECOND QUARTER OF 1991

- 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.
- Remove free product from RW-1 on a weekly basis.
- Sample groundwater from all monitoring wells and recovery wells, excluding RW-1. Analyze samples for BTEX and TPH as gasoline.

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			Estimated Hydraulic Conductivity (feet/day)
	Lithology	Classification	Thickness (feet)	
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)	Incremental Water Elevation Change[3] (feet)	Total Water Elevation Change Since 12/15/88[4] (feet)
MW-6A	12/15/88	98.99	13.77	85.22	--	--
	10/03/89		13.40	85.59	+0.37	+0.37
	05/11/90		12.87	86.12	+0.53	+0.90
	10/16/90		13.27	85.72	-0.40	+0.50
	12/06/90		13.28	85.71	-0.01	+0.49
	01/14/91		--	--	--	--
	02/08/91		12.49	86.50	+0.79	+1.28
MW-6B	12/15/88	98.81	13.01	85.80	--	--
	10/03/89		12.94	85.87	+0.07	+0.07
	04/30/90		12.53	86.28	+0.41	+0.48
	10/16/90		12.73	86.08	-0.20	+0.28
	12/06/90		12.74	86.07	-0.01	+0.27
	01/14/91		12.57	86.24	+0.17	+0.44
	02/08/91		12.16	86.65	+0.41	+0.85
MW-6C	12/15/88	99.89	14.41	85.48	--	--
	10/03/89		14.10	85.79	+0.31	+0.31
	04/30/90		13.81	86.68	+0.29	+0.60
(RW-3)	10/16/90	98.97[5]	13.29	85.68	-0.40	+0.20
	01/14/91		14.50	84.47	-1.21	-0.01
	02/08/91		12.54	86.43	+1.96	+0.95
MW-6D	12/15/88	98.78	13.53	85.25	--	--
	10/03/89		13.44	85.34	+0.09	+0.09
	04/30/90		13.19	85.59	+0.25	+0.34
(RW-2)	10/16/90	98.11[5]	12.77	85.34	-0.25	+0.09
	01/14/91		--	--	--	--
	02/08/91		13.11	85.00	-0.34	-0.25
MW-6E	12/15/88	98.99	13.84	85.15	--	--
	10/03/89		13.70	85.29	+0.14	+0.14
	04/30/90		13.43	85.56	+0.27	+0.41
	10/16/90		13.77	85.22	-0.34	+0.07
	12/06/90		13.95	85.04	-0.18	-0.11
	01/14/91		13.95	85.04	0.0	-0.11
	02/08/91		13.20	85.79	+0.75	+0.64

Table 2. continued

Well No.	Date	Top of Casing Elevation[1] (feet)	Depth to Groundwater (feet)	Groundwater Surface Elevation[2] (feet)	Incremental Water Elevation Change[3] (feet)	Total Water Elevation Change Since 12/15/88[4] (feet)
MW-6F	12/15/88	99.91	14.73	85.18	--	--
	10/03/89		14.48	85.43	+0.25	+0.25
	04/30/90		14.14	85.77	+0.34	+0.59
	10/16/90		14.77	85.14	-0.63	-0.04
	12/06/90		14.81	85.10	-0.04	-0.08
	01/14/91		14.73	85.18	+0.08	0.0
	02/08/91		13.73	86.18	+1.00	+1.00
MW-6G	12/15/88	99.16	12.39	86.77	--	--
	10/03/89		12.22	86.94	+0.17	+0.17
	04/30/90		11.73	87.43	+0.49	+0.66
	10/16/90		12.28	86.88	-0.55	+0.11
	12/06/90		12.27	86.89	+0.01	+0.12
	01/14/91		12.14	87.02	+0.13	+0.25
	02/08/91		11.44	87.72	+0.70	+0.95
MW-6H	12/15/88	97.93	12.39	85.54	--	--
	10/03/89		12.36	85.57	+0.03	+0.03
	04/30/90		12.10	85.83	+0.26	+0.29
	10/16/90		12.18	85.75	-0.08	+0.21
	12/06/90		12.29	85.64	-0.11	+0.10
	01/14/91		12.22	85.71	+0.07	+0.17
	02/08/91		11.93	86.00	+0.29	+0.46
MW-6I	12/15/88	97.60	12.82	84.78	--	--
	10/03/89		12.83	84.77	-0.01	-0.01
	04/30/90		12.66	84.94	+0.17	+0.16
	10/16/90		12.71	84.89	-0.05	+0.11
	12/06/90		12.75	84.85	0.04	+0.07
	01/14/91		12.55	85.05	+0.20	+0.27
	02/08/91		12.32	85.28	+0.23	+0.50
RW-1	10/16/90	97.89	12.24	85.65	--	--
	01/14/91		12.80	85.09	-0.56	--
	02/08/91		12.53	85.36	+0.27	--

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 Incremental groundwater elevation change = groundwater elevation - previous groundwater elevation

4 Total groundwater elevation change = groundwater elevation - groundwater elevation on 12/15/88

5 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)	Benzene [1]	Ethyl-benzene [2]	Toluene [3]	Xylenes [3]	TPH as Gasoline [4]
B-1	8.0	0.05	ND	ND	ND	ND
B-1	13.0	ND (5)	10 (10)	16 (10)	41 (10)	2,000 (1,000)
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 (25)	84 (50)	390 (50)	370 (50)	11,000 (5,000)
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 (5)	40 (20)	110 (10)	450 (10)	3,000 (1,000)
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 (5)	20 (20)	72 (10)	190 (10)	1,400 (1,000)
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 (0.5)	8.8 (2)	3.2 (1)	19 (1)	1,000 (495)
MW-6I	13.5	ND	ND	ND	ND	ND

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.

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]	Ethylbenzene[2]	Toluene[3]	Xylenes[3]	TPH[4] (as gasoline)
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)
MW-6B	06/24/88	ND	ND	ND	5	-
	10/20/88	4	ND	3	ND	-
	09/07/89	70 (2.5)	60 (3)	8 (3)	160 (4)	2,700 (25)
	04/30/90	45 (5)	20 (5)	6 (5)	22 (5)	168 (50)
MW-6C	06/24/88	7,400	170	7	2,300	-
	10/20/88	9,500 (50)	170 (2)	65 (100)	850 (1)	-
	09/07/89	7,900 (25)	350 (25)	430 (25)	1,100 (38)	18,000 (2,500)
	04/30/90	6,100 (250)	1,000 (250)	1,500 (250)	2,700 (250)	30,000 (25,000)
MW-6D	07/11/88	220 (5)	ND (20)	27 (10)	ND (10)	-
	10/20/88	710 (5)	22 (20)	74 (10)	110 (10)	-
	09/07/89	600 (12.5)	58 (13)	26 (13)	31 (19)	2,200 (1,250)
	04/30/90	800 (50)	310 (50)	150 (50)	280 (50)	3,600 (500)
MW-6E	10/20/88	1	ND	ND	3	
	09/07/89	3	ND	ND	ND	220
	04/30/90	57 (5)	ND (5)	ND (5)	53 (5)	250 (50)
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
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
MW-6H	12/07/88	1,200 (25)	110 (20)	320 (10)	220 (10)	-
	09/07/89	480 (10)	16 (10)	ND (10)	ND (15)	660 (500)
	04/30/90	700 (50)	31 (5)	39 (5)	50 (5)	630 (500)
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

ND = Not detected.

Detection limits given in parentheses, where applicable. If not:

1. Detection limit = 0.5
2. Detection limit = 2
3. Detection limit = 1
4. Detection limit = 50

Table 6. Results of Chemical Analyses,
Groundwater Treatment System Initial Sampling
2225 Telegraph Avenue
Oakland, California
(Reported in parts per billion, ppb)

	INF-1 (Influent)	EFF-1 (Effluent)	EBMUD Requirements
Organics			
TPH-Gas (EPA 8015)	22,000	35	NS
Benzene	3,000	ND	3
Toluene	3,800	ND	31
Ethylbenzene	390	ND	5
Xylenes (EPA 8020)	2,000	ND	42
Benzene	3,100	ND	3
Ethylbenzene	340	ND	5
m,p-Xylene	640	ND	NS
x-Xylene	600	ND	NS
Toluene	3,900	ND	31
1,2,4-Trimethylbenzene (EPA 524.2)[1]	230	ND	203
Inorganics			
Arsenic (EPA 200)[1]	23	30	2,000
CODF (SMWWA 2540D)	96,000	140,000	Fee
TSS (SMWWA 5220D)	34,000	68,000	Fee
Conductivity (umhos/cm) (EPA 120.1)	1,200	1,300	NS
pH (EPA 9040)	7.4	8.1	NS

1 Only contaminants detected are listed in this table; all others were below analytical detection limits

NS = Not specified

ND = Not detected above laboratory detection limits

TPH = Total petroleum hydrocarbons

CODF = Chemical Oxygen Demand

TSS = Total Suspended Solids

Fee = Used to determine discharge fee

Table 7. Results of Chemical Analyses, Groundwater Treatment System - Periodic Sampling
2225 Telegraph Avenue, Oakland, California

Harding Lawson Associates

Sampling Date	Sample	TPH (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	CODF (ppb)	TSS (ppb)	Tempera-ture (°C)	pH	Conduc-tivity (umhos/cm)	Flow Meter (gallons)
EBMUD Requirements		NS	3	31	5	42	Fee	Fee	NS	NS	NS	
01/02/91	INF-9	17,000	2,600	2,300	200	1,900	49,000	7,000	58.2	7.4	1,200	18,061
	EFF-9	ND	ND	ND	ND	ND	40,000	17,000	55.2	7.5	1,200	
	BT-1-5	55	7.7	1.7	ND	5.3	--	--	--	--	--	
01/09/91	BT-2-6	ND	ND	ND	ND	ND	--	--	--	--	--	24,551
01/16/91	BT-2-7	ND	ND	ND	ND	ND	--	--	--	--	--	29,270
01/26/91	BT-2-8	ND	0.51	0.58	ND	1.2	--	--	--	--	--	32,160
01/30/91	INF-10	18,000	2,500	1,700	300	2,000	68,000	ND	54.9	7.0	1,200	33,530
	EFF-10	ND	ND	ND	ND	ND	22,000	5,000	47.1	8.7	1,100	33,530
	BT-2-9	ND	ND	ND	ND	ND	--	--	--	--	--	33,530
02/06/91	BT-2-10	ND	ND	ND	ND	.55	--	--	--	--	--	35,110
02/13/91	BT-2-11	ND	ND	ND	ND	ND	--	--	--	--	--	38,070
02/19/91	BT-2-12	ND	0.95	0.45	ND	ND	--	--	--	--	--	42,400
02/26/91	INF-11	8,700	1,200	880	130	1,100	--	--	--	--	--	45,630
	EFF-11	ND	ND	ND	ND	ND	--	--	--	--	--	45,630
	BT-2-13	ND	ND	ND	ND	ND	--	--	--	--	--	45,630
03/07/91	BT-2-14	ND	ND	ND	ND	ND	--	--	--	--	--	51,720
03/13/91	BT-2-15	ND	ND	ND	ND	ND	--	--	--	--	--	56,890
03/19/91	BT-2-16	ND	ND	ND	ND	ND	--	--	--	--	--	61,370
03/26/91	BT-2-17	ND	ND	ND	ND	ND	--	--	--	--	--	64,300
	INF-12	32,000	3,300	4,800	270	4,400	--	--	--	--	--	64,300
	EFF-12	ND	ND	ND	ND	ND	--	--	--	--	--	64,300
Detection Limit		30	0.3	0.3	0.3	0.3	20,000	1,000	--	--	1.0	

1 Water retained in Baker Tank waiting verification chemical analysis
2 System shut down waiting for EBMUD permission to discharge Baker Tank (12/6/90-12/12/90)
3 Added 90 lbs of carbon evenly between 3 carbon canisters (12/12/90)
4 System down after taking out 1st canister (12/19/90-12/21/90)

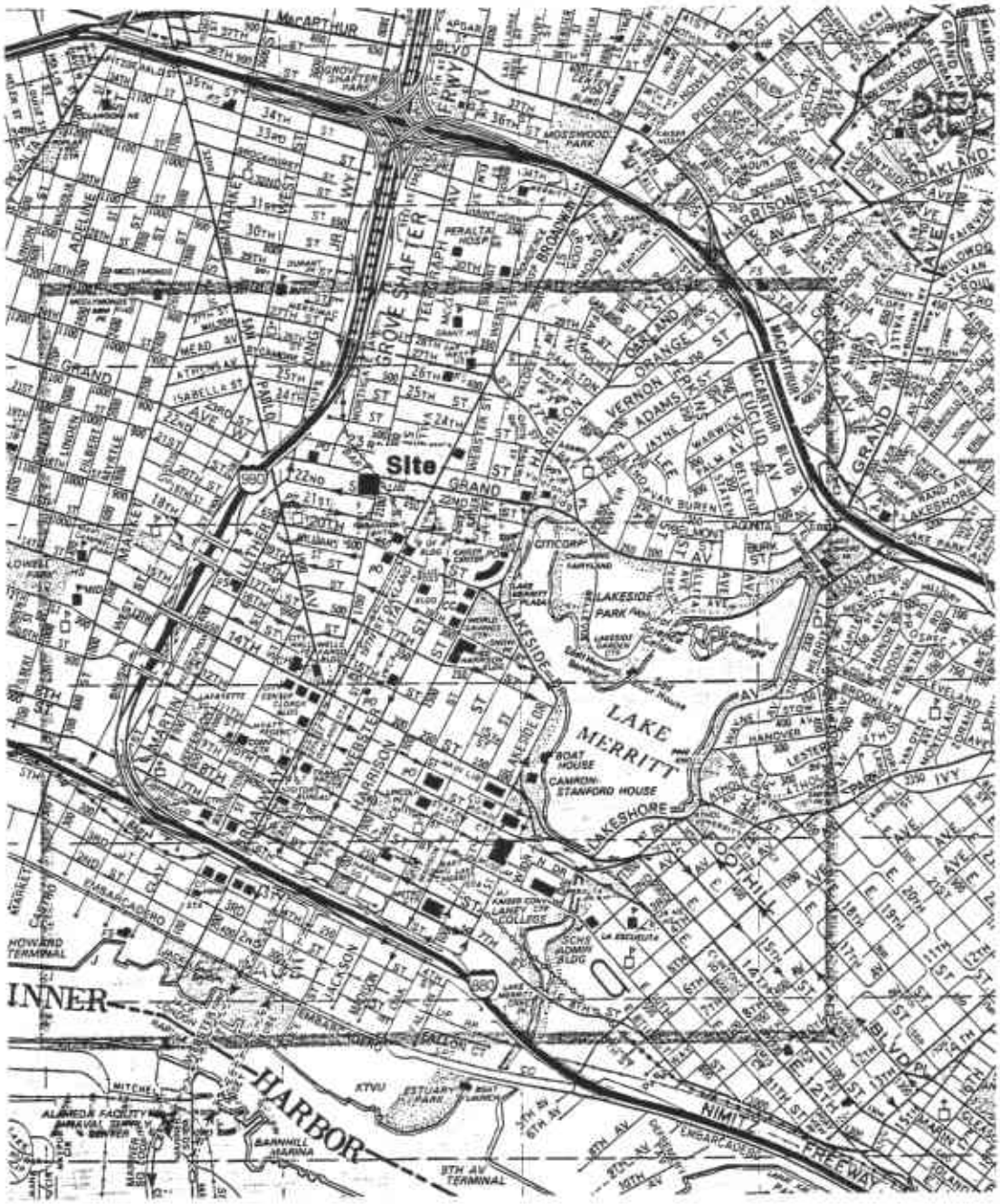
-- = Not tested
ND = Not detected above laboratory detection limit
NS = Not specified
Fee = Used to determine discharge fee
ppb = Parts per billion (µg/l)
TPH = Total petroleum hydrocarbons as gasoline (EPA 8015 modified)
CODF = Chemical oxygen demand, filtered (SMWWA 2540D)
TSS = Total suspended solids (SMWWA 5220D)

032198M/R46

Table 8. Free Product Thickness in RW-1 and Recovered Volumes

Date	Free Product Thickness (feet)	Approximate Volume Recovered (gallons)
01/16/91	1.50	0
01/17/91	2.25	0
01/26/91	--	2.1
01/30/91	0.82	1.2
02/08/91	0.97	1.2
02/12/91	0.30	0.3
03/19/91	2.50	0
Cumulative		4.8

105649



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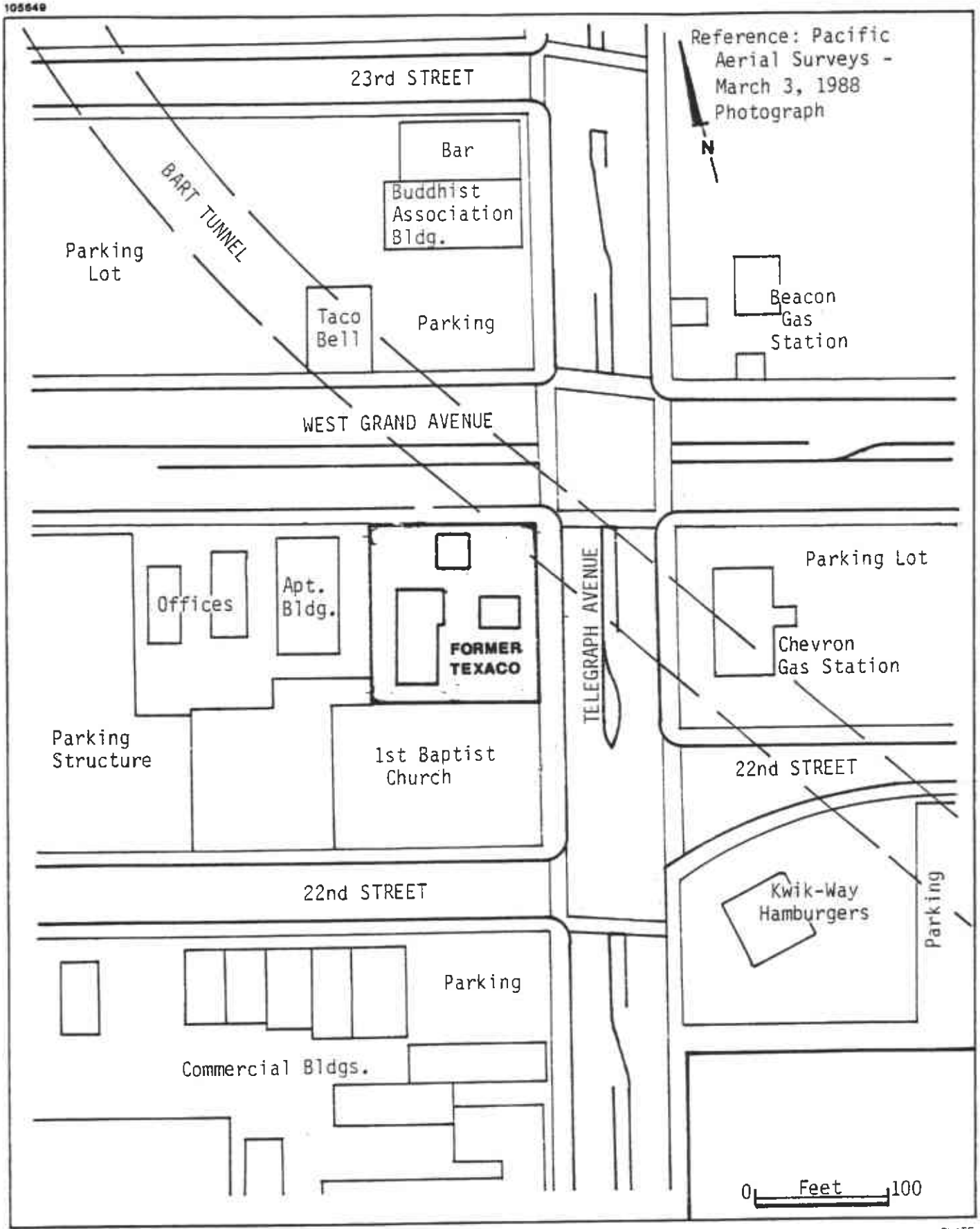
Engineers and Geoscientists

Site Location Map
Former Texaco Service Station
2225 Telegraph Avenue
Oakland, California

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
YC	2251,111.03		2/89		

105649

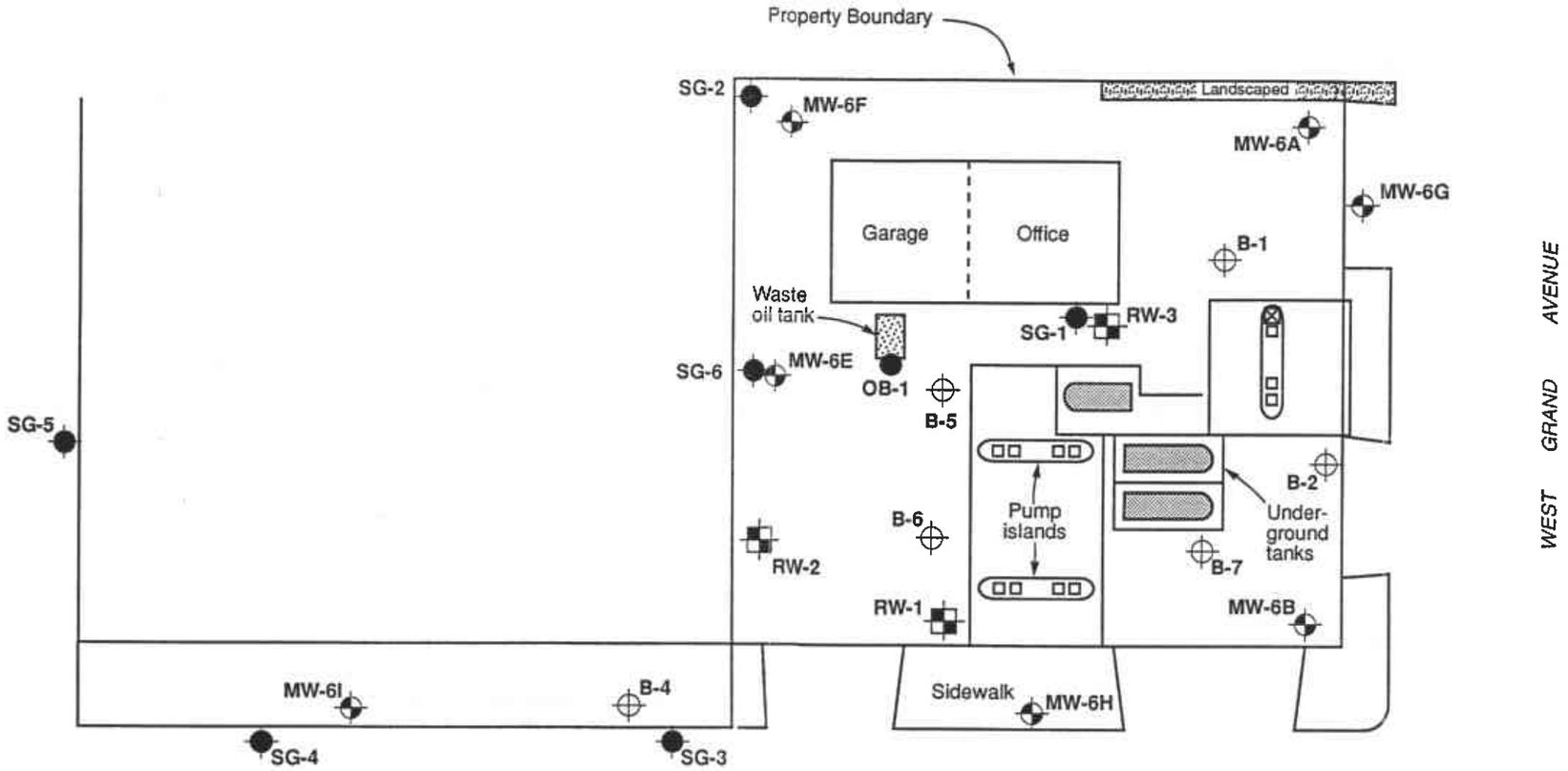


Harding Lawson Associates
Engineers and Geoscientists

Vicinity Plan
Former Texaco Service Station
2225 Telegraph Avenue
Oakland, California

PLATE 2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
YC	2251,146.03		2/91		



NOTE:-

RW–1 Previously B–3
RW–2 Previously MW–6D
RW–3 Previously MW–6C

EXPLANATION

- Monitoring well
- Recovery well
- Soil-gas probe location
- Observation well
- Soil boring location
- Benchmark (HLA datum; elevation = 100 feet)

N

0 30 60

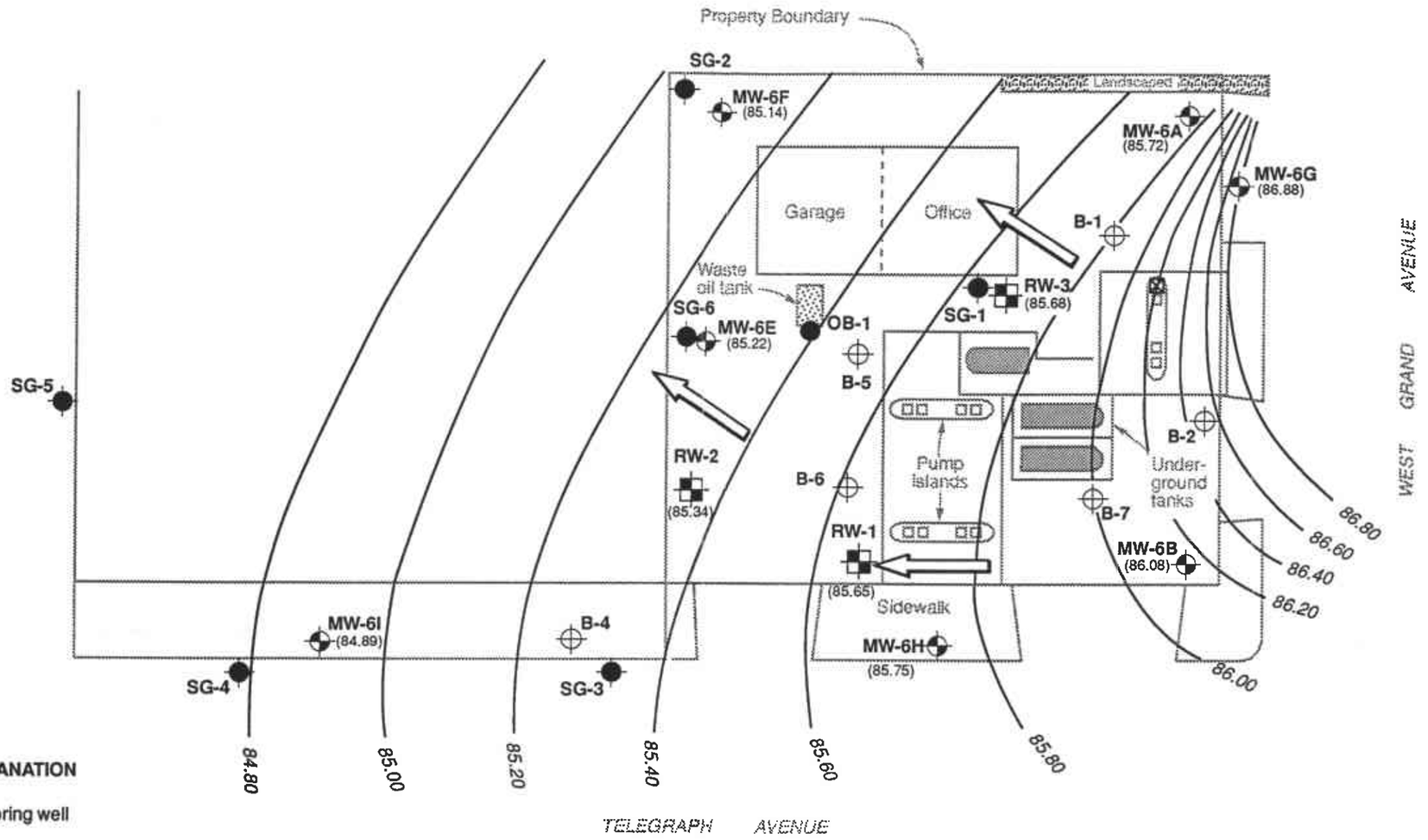
SCALE IN FEET

Harding Lawson Associates
Engineering and
Environmental Services

Site Plan
Former Texaco Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **3**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
RHC	2251,146.03	JSH	1/91	02/22/91

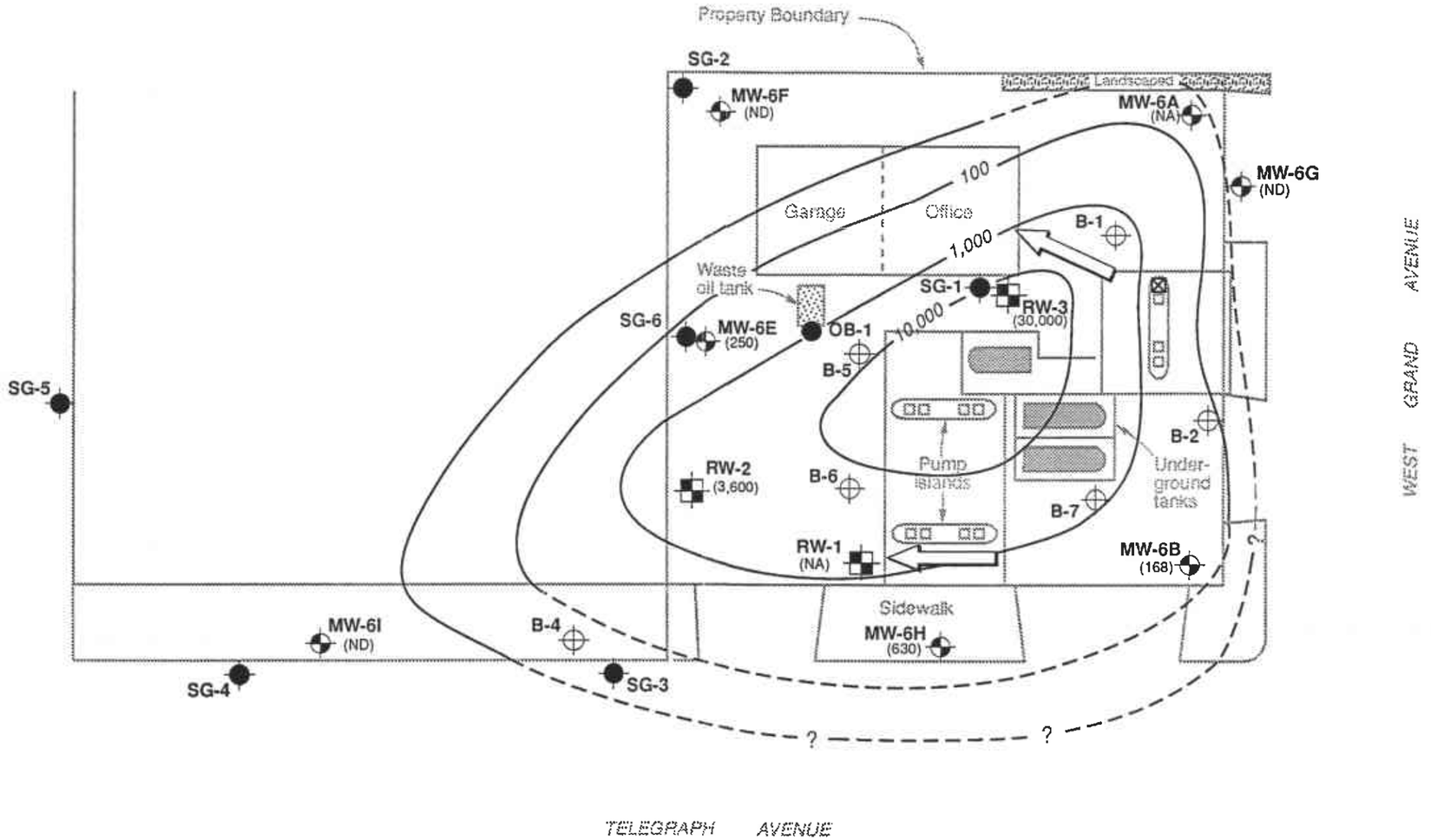


Harding Lawson Associates
Engineering and Environmental Services

Potentiometric Surface 10/16/90
Former Texaco Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **4**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
RHC	2251,162.03	JSH	05/31/91	



EXPLANATION

- Monitoring well
- Recovery well
- Soil-gas probe location
- Observation well
- Soil boring location
- Benchmark (HLA datum; elevation = 100 feet)

(250) TPH as gasoline concentrations in groundwater (ppb) on 4/30/90

ND Concentrations below detection limits

NA Groundwater not analyzed on 4/30/90

Logarithmic contour interval

Direction of groundwater flow

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

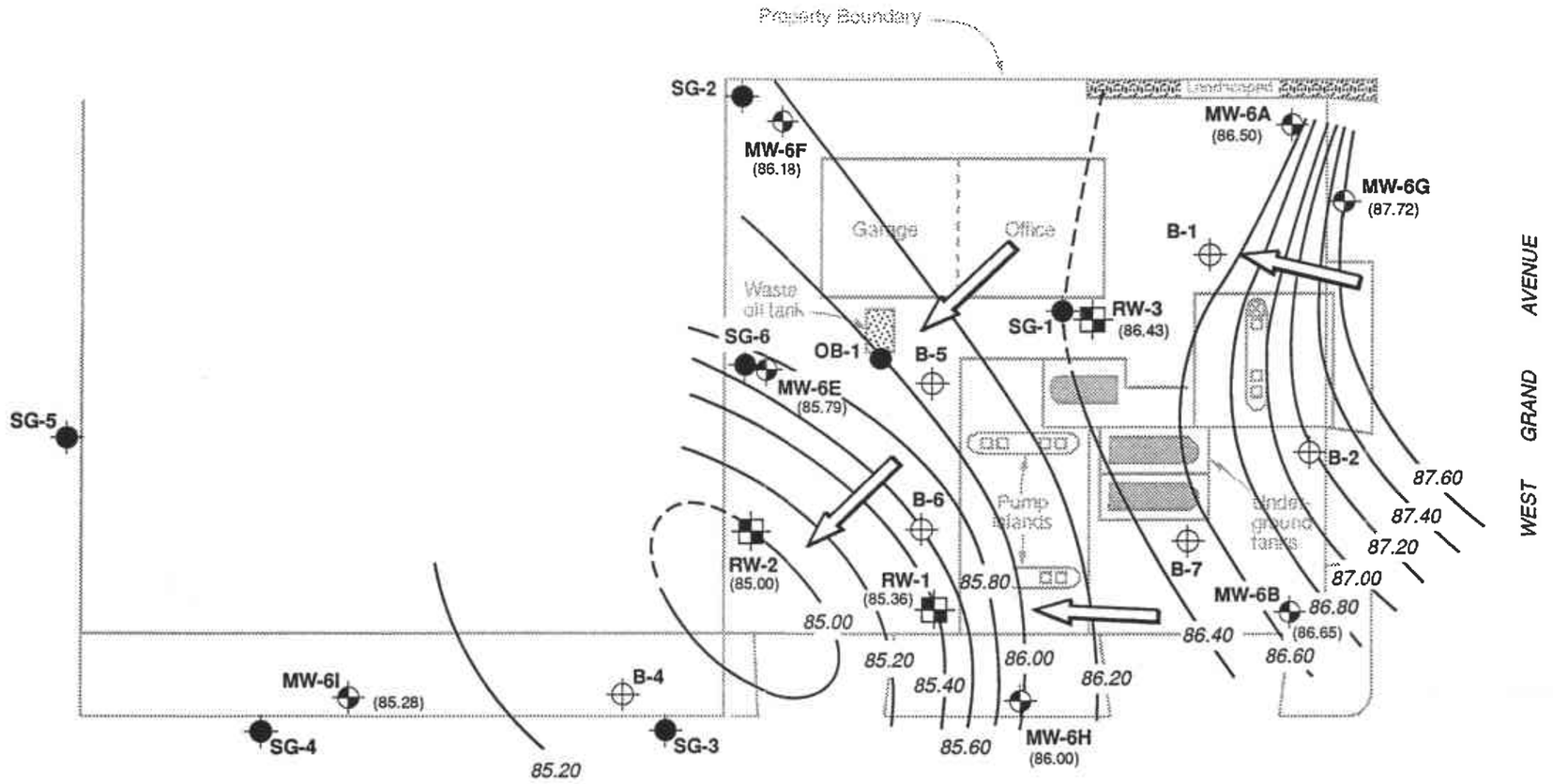
0 30 60
SCALE IN FEET

Harding Lawson Associates
Engineering and
Environmental Services

TPH (gasoline) Concentrations in Groundwater, 4/30/90
Former Texaco Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **5**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
RHC	2251,146.03	JSH	2/91	



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

0 30 60

SCALE IN FEET

Harding Lawson Associates
Engineering and Environmental Services

Potentiometric Surface Map 2/8/91
Former Texaco Service Station
2225 Telegraph Avenue
Oakland, California

PLATE **6**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
RHC	2251,162.03	JSK	05/31/91	

DISTRIBUTION

4 copies: Texaco Refining and Marketing Inc.
108 Cutting Boulevard
Richmond, California 94804
Attention: Mr. R. R. Zielinski

MAS/JSH/mlw 032198M/R46

QUALITY CONTROL REVIEWER

Donald B. Bray FOR
Stephen J. Osborne
Principal Engineer

Texaco Refining
and Marketing Inc

108 Cutting Boulevard
Richmond CA 94804

July 17, 1991

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

Dear Mr. Smith: 94612

Enclosed is a copy of our Quarterly Technical Report dated June 7, 1991 for our former Texaco Service Station located at 2225 Telegraph Avenue in Oakland, California. This report covers the period from January through March, 1991.

Please call me at (415) 236-1770 if you have any questions.

Best Regards,

R.R. Zielinski
Area Supervisor

RRZ:pap

Enclosure

cc: Mr. Tom Callaghan
California Regional Water
Quality Control Board
San Francisco Bay Area Region
2101 Webster Street, Ste. 500
Oakland, CA 94612

pr: 6RT

KEG

2225TA.PS

91 JUL 22 PM 12:15

Texaco Refining
and Marketing Inc

108 Cutting Boulevard
Richmond CA 94804

October 10, 1991

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 September 12, 1991 for our former Texaco Service Station located at 2225 Telegraph Avenue in Oakland, California. This report covers the period from April through June, 1991.

Please call me at (415) 236-1770 if you have any questions.

Best Regards,

R.R. Zielinski
Area Supervisor

RRZ:pap

Enclosure

cc: Mr. Tom Callaghan
California Regional Water
Quality Control Board
San Francisco Bay Area Region
2101 Webster Street, Ste. 500
Oakland, CA 94612

pr:KRP

KEG

2225TA.PS2