Weiss Associates Environmental and Geologic Services

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RO# 428 DH

August 14, 1996

Jennifer Eberle
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Re: **Tank Removal and Soil Overexcavation Report**
Shell Service Station
WIC #204-5510-0204
350 Grand Avenue
Oakland, California
WA Job #81-0701-10

Dear Ms. Eberle:

On behalf of Shell Oil Products Company (Shell), Weiss Associates (WA) presents the results of activities related to the removal and replacement of four underground storage tanks (USTs) and associated product piping and dispensers at the above referenced Shell service station (Figure 1). The UST removal activities included:

- Documenting the removal and condition of three 10,000-gallon gasoline tanks and one 10,000-gallon diesel tank; and
- Removing hydrocarbon-bearing pea gravel from the tankpit excavations, and hydrocarbon-bearing soil from the product line trenches and from below the product dispensers.

Our scope of work, site background information, and tank removal activities are presented below.

Scope of Work

WA's scope of work for this investigation was to:

- Observe the removal of three 10,000-gallon gasoline USTs and one 10,000-gallon diesel UST;
- Inspect and document the condition of the removed USTs;
- Collect soil samples from the tank excavations, product piping excavations, and from below the removed product dispensers;

- Submit soil samples for analysis by a state certified laboratory for total petroleum hydrocarbons as gasoline (TPH-G), total petroleum hydrocarbons as diesel (TPH-D), benzene, ethylbenzene, toluene and total xylenes (BETX);
- Supervise the overexcavation of approximately 60 yd^3 hydrocarbon-bearing soil; on 4-23-96 ✓
- Coordinate the disposal of the excavated soil; and
- Report the results.

Site Summary

Location: The Shell service station is located on the northeastern corner of Grand Avenue and Perkins Street in Oakland, California (Figure 1).

Surroundings: Mixed commercial and residential development.

Local Hydrogeology: Depth to ground water in the vicinity of the USTs ranges from 6 to 14 ft below ground surface (bgs). Ground water was encountered in the tank excavations at a depth of approximately 7.0 to 8.5 ft bgs.

Tank Removal And Sampling Results

Personnel Present: Steve Crawford of the Oakland Fire Department was present for the tank removal activities. Alameda County Department of Environmental Health (ACDEH) Inspector Jennifer Eberle was present for the tank removal activities and to witness soil sampling and overexcavation activities. WA Staff Scientist Brian Busch collected soil samples from the tank, product piping and dispenser excavations. Mark Freitas of Paradiso Mechanical of San Leandro, California (Paradiso) supervised the tank, product piping and dispenser removal and overexcavation and all construction related activities.

good guy -

Tank, Piping and Dispenser Removals: On April 22, 1996, the Oakland Fire Department allowed Paradiso to remove the four USTs with an excavator. WA collected diesel tankpit soil samples from below each tank end. WA collected gasoline tankpit soil samples from below each tank end as well as sidewall samples from alongside the outer tanks. All tankpit samples were collected less than 0.5 ft above the water level. WA also collected soil samples from the product piping excavations and from below the former dispensers. The sampling locations are illustrated on Figure 2 and the analytical results are presented in Table 1. Analytic reports and chain-of-custody forms are presented in Attachment A.

Tank Conditions: No holes or leaks were noted by either Ms. Eberle of the ACDEH or Brian Busch of WA in any of the fuel tanks. The former tanks and piping were replaced with new state-of-the-art double-walled fiberglass tanks and piping.

Tank Disposals: After the USTs were inspected, Erickson Inc. transported the USTs to their facility in Richmond, California for recycling.

Maximum Excavation Depth: **Tank Excavation:** 16-17 ft
Dispensers: 4.0 ft
Product Piping Excavation: 7.0 ft

Lithology Encountered: Clayey silt to silty sand in the tank excavations, and sandy silt to clayey silt below the dispensers and in the product piping excavation.

Soil Sampling Method: Tank excavation samples were collected by driving a clean brass tube into native, undisturbed soil collected from the sidewalls of the excavations at about 7.0 to 8.5 ft depth using an excavator. Samples from areas less than 5.5 ft depth were collected by driving a clean brass tube into undisturbed sidewall and floor soil. The tubes were immediately sealed with Teflon sheeting, plastic caps and Teflon tape, refrigerated and transported under chain-of-custody to Sequoia Analytical in Redwood City, California, a state-certified laboratory.

Number of Samples: **Tank Excavation:** Ten; eight soil samples from the gasoline tankpit excavation and two soil samples from the diesel tankpit excavation. Although ground water was present in the tankpits, no water samples were collected as approved by ACDEH personnel.

Dispensers and Product Line Trenches: 21 soil samples were initially collected from below each dispenser and below and adjacent to the product lines.

Analytic Methods for Soil: All soil samples were analyzed for TPH-G and TPH-D by Modified EPA Method 8015 and benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020.

Analytic Results for Soil: **Tank Excavations:** The analytic results for this project are tabulated in Table 1. Up to 4,100 parts per million (ppm) TPH-G were detected in soil in samples G-6 and G-7 located on the north side of the gasoline tankpit. In the diesel tankpit, up to 250 ppm TPH-G was detected.

Product Line Trenches and Dispenser: The highest hydrocarbon concentrations in the product line trenches were 4,200 ppm TPH-G,

detected in sample P-9, collected beneath the former eastern pump island. Up to 4,800 ppm TPH-G were detected in samples DISP-7 and DISP-8, which were collected immediately adjacent to sample P-9 beneath the former eastern pump island.

Product Piping/Dispenser Island Overexcavation:

Under the ACDEH's direction, WA overexcavated hydrocarbon-bearing soils in the product piping excavation and from beneath the dispenser islands (Figure 2). Approximately 60 cubic yards of soil was overexcavated from these areas. The eastern and center pump islands were overexcavated to approximately three ft bgs. At that depth, a concrete slab was encountered, making further overexcavation no longer possible (see Figure 2). Confirmatory samples of the trench sidewall above the concrete slab were collected to assess the extent of hydrocarbon-bearing soil in this area. The western pump island was overexcavated to approximately four ft bgs; there was no concrete slab present in this area, but the canopy footing foundation was encountered. The analytic results suggest that hydrocarbons were in soil below the southern end of the western pump island. The area was overexcavated to the fullest extent possible without disturbing the integrity of the canopy footing.

60 yds^3 removed

Three additional confirmation samples were collected from below the dispensers on the western dispenser island and five additional confirmation samples were collected from the sidewalls adjacent to the center and eastern dispenser islands. Two additional confirmation samples were collected from the piping trench excavation. All these confirmation soil samples were collected after overexcavation of hydrocarbon-bearing soils was completed. Confirmatory samples collected on April 23, 1996 indicate relatively low of TPH-G and benzene oncentrations in soil. These samples, P-1 7.0, P-13, DSW-1 through 5, and DB-1 through 3 are presented on Page Two of Table 1.

Soil Disposal:

To avoid stockpiling soil on site and waiting for disposal approval, Shell authorized WA to collect soil samples for preexcavation characterization. These results were reported to Forward Landfill of Stockton, California, who subsequently accepted the soil for disposal. Between April 24 and May 9, 1996, almost 1,600 tons of soil and pea gravel from the tank, dispenser, and product piping excavations were transported to Forward Landfill by Manley and Sons Trucking of Sacramento, California. Analytic results for the precharacterized soil are presented in Table 2 and the soil disposal confirmation sheet is presented in Attachment B.

1600 tons = ? yds^3

Conclusions

The analytic results for soil samples collected during the tank, piping, and dispenser replacement activities indicate the presence of hydrocarbons in the soil below the site. The complete overexcavation of the hydrocarbon-bearing soils in the tankpit area was not feasible due to the possibility of undermining the sidewalk and roadway immediately adjacent to the gasoline tankpit area. However, all of the hydrocarbon-bearing pea gravel from both tankpits was removed and transported to an appropriate landfill for disposal. Laboratory analytical results indicate that most of the hydrocarbon-bearing soil was overexcavated from beneath the dispenser islands and product piping trenches.

We trust that this submittal meets your needs. Please call Brian Busch as (510) 450-6189 if you have any questions or comments.

Sincerely,
Weiss Associates

Brian Busch
Staff Scientist

REGISTERED GEOLOGIST
JAMES WILLIAM CARMODY
No HG217
CERTIFIED
HYDRO-
GEOLOGIST
STATE OF CALIFORNIA

James W. Carmody, C.H.G.
Senior Project Hydrogeologist

Attachments: Figures
Table 1 - Analytic Results for Soil
Table 2 - Analytic Results for Soil from Precharacterization Sampling
A - Analytic Reports and Chain-of-Custody Forms
B - Soil Disposal Confirmation Sheet

cc: Jeff Granberry, Shell Oil Company, P.O. Box 4023, Concord, California 94524
Jeff Byram, Shell Oil Company, P.O. Box 5500, San Bruno, California 94066

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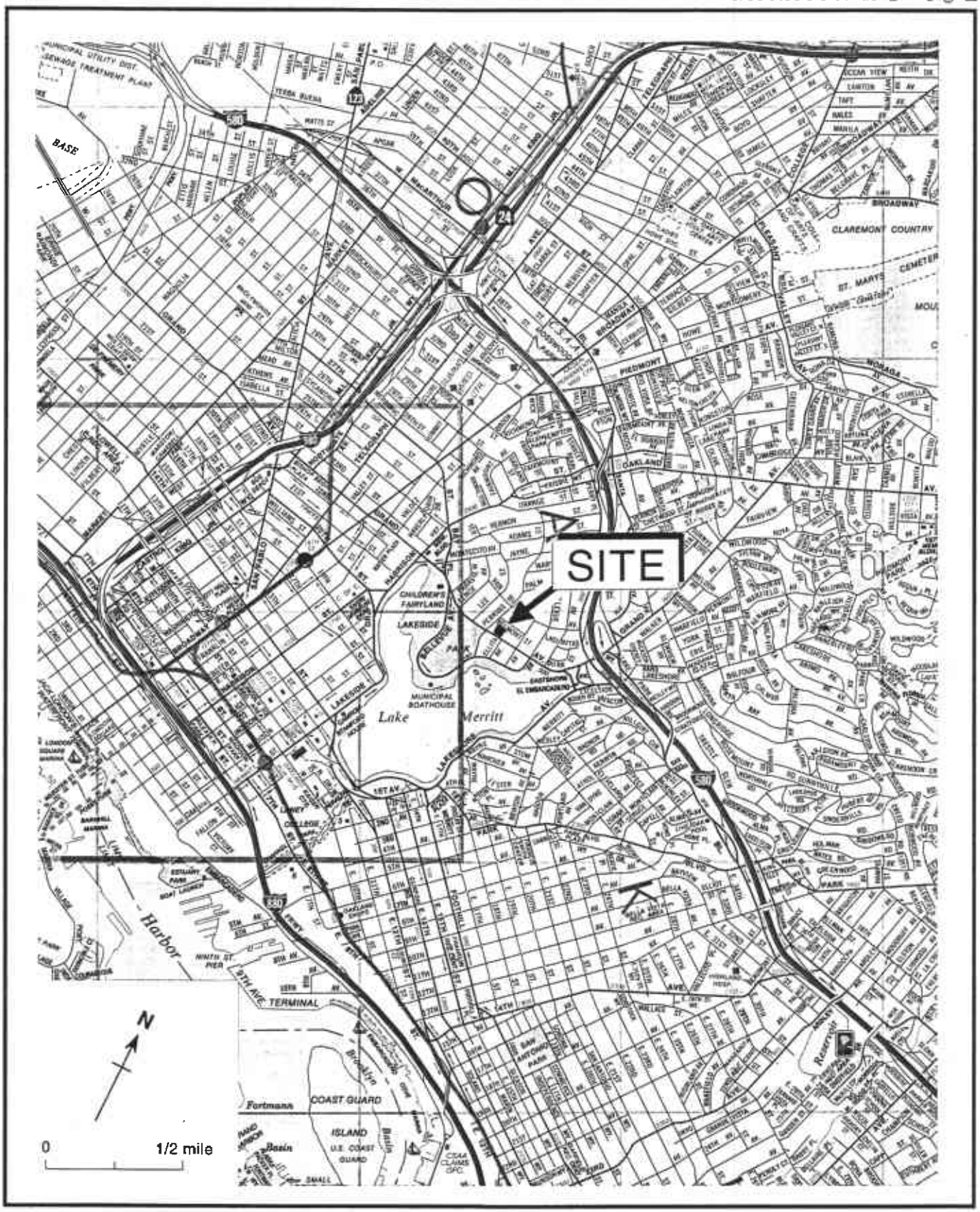

Figure 1. Site Location Map - Shell Service Station WIC #204-5510-0204, 350 Grand Avenue, Oakland, California

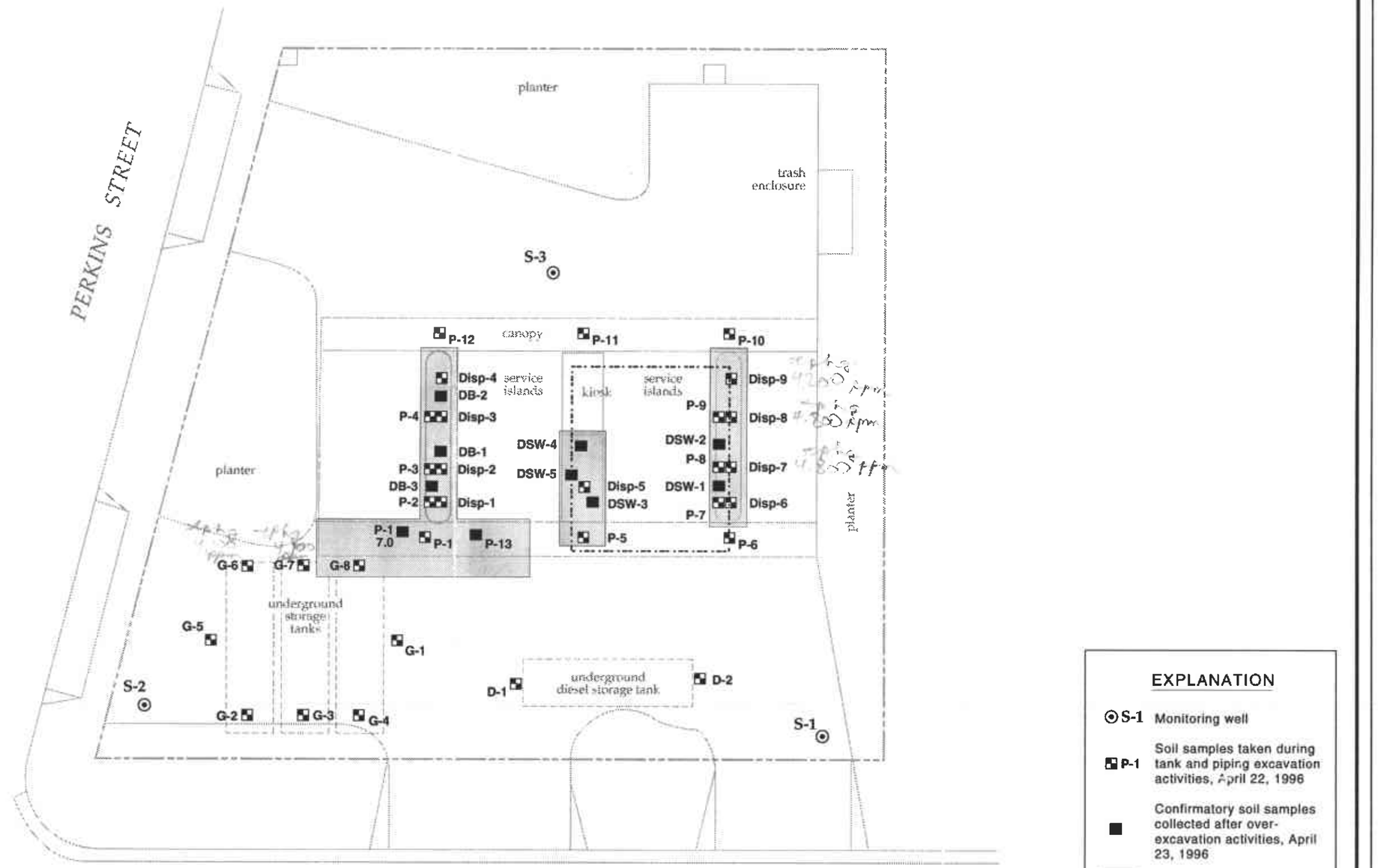

Figure 2. Soil Sampling and Existing Monitoring Well Locations - Shell Service Station WIC #204-5510-0204, 350 Grand Avenue, Oakland, California

S701-025.ai

07/29/96

Table 1. Analytic Results for Soil - Shell Service Station WIC#204-5510-0204, 350 Grand Avenue, Oakland, California

Sample ID	Date Sampled	Depth (ft)	TPH-G	TPH-D	B	T	E	X
			← parts per million (mg/kg) →					
G-1	4/22/96	7.0	840	430	<1.5 ☆	<1.5	7.0	5.0
G-2	4/22/96	7.0	9.1	17	.025	0.34	0.072	0.93
G-3	4/2296	7.0	4.4	11	0.0087	0.020	<0.005	0.014
G-4	4/22/96	7.0	830	420	<1.5 ☆	<1.5	10	5.5
G-5	4/22/96	7.0	130	100	<0.10 ☆	<0.10	0.17	0.74
G-6	4/22/96	7.0	4,100	1,600	<10 ☆	<10	17	12
G-7	4/22/96	7.0	2,700	1,900	<3.0 ☆	<3.0	8.8	14
G-8	4/22/96	7.0	340	210	<0.25 ☆	<0.25	0.77	0.94
D-1	4/22/96	8.5	250	59	<0.25 ☆	<0.25	0.89	2.7
D-2	4/22/96	8.5	230	230	<0.12 ☆	<0.12	0.46	1.3
DISP-1	4/22/96	2.0	0.57	2.0	<0.005	<0.005	<0.005	<0.005
DISP-2	4/22/96	2.0	420	64	<0.5 ☆	1.4	5.1	22
DISP-3	4/22/96	2.0	9.2	49	<0.012 ☆	0.018	0.059	0.29
DISP-4	4/22/96	2.0	2.6	14	0.065	<0.005	0.053	0.095
DISP-5	4/22/96	2.0	1.4	3.3	<0.005	0.0056	<0.005	0.0085
DISP-6	4/22/96	2.0	7.2	4.6	0.0072	0.012	0.012	0.0075
DISP-7	4/22/96	2.0	4,800	2,800	<10 ☆	85	35	280
DISP-8	4/22/96	2.0	4,000	1,400	<5.0 ☆	120	49	420
DISP-9	4/22/96	2.0	770	2,800	3.6	11	8	61
P-1	4/22/96	4.0	1,300	820	5.5	57	24	140
P-2	4/22/96	3.0	3,200	1,000	22	130	48	290
P-3	4/22/96	3.0	12	5.8	0.31	0.032	0.37	1.0
P-4	4/22/96	3.0	11	10	0.23	0.085	0.26	0.83
P-5	4/22/96	2.5	1.5	2.1	<0.005	<0.005	<0.005	0.0077
P-6	4/22/96	2.0	1.1	1.6	<0.005	<0.005	<0.005	0.0055
P-7	4/22/96	2.0	21	3.7	<0.010 ☆	<0.010	0.075	0.20
P-8	4/22/96	2.0	1,400	650	<2.5 ☆	17	11	83
P-9	4/22/96	2.0	4,200	610	6.8	210	74	490
P-10	4/2296	2.0	2.3	3.7	<0.005	0.017	0.010	0.055
P-11	4/22/96	2.5	360	13	1.9	17	6.5	45
P-12	4/22/96	2.5	240	460	4.7	<0.5	4.8	2.1

walls at 7' so all remains in place

☆ raised DL's.

Table 1. Analytic Results for Soil - Shell Service Station WIC#204-5510-0204, 350 Grand Avenue, Oakland, California

Sample ID	Date Sampled	Depth (ft)	TPH-G	TPH-D	B	T	E	X
			← parts per million (mg/kg) →					
P-1 7.0	4/23/96	7.0	68	6.2	0.80	<0.05	0.32	0.28
P-13	4/23/96	5.5	3.8	1.6	0.053	0.0083	0.0098	0.020
DSW-1	4/23/96	2.5	510	130	<0.5 ☆	<0.5	1.2	3.0
DSW-2	4/23/96	2.5	87	13	0.34	2.2	0.94	7.1
DSW-3	4/23/96	2.5	<1.0	1.6	<0.005	<0.005	<0.005	<0.005
DSW-4	4/23/96	2.5	3.8	2.5	<0.005	0.014	0.028	0.077
DSW-5	4/23/96	2.0	270	31	<0.25 ☆	<0.25	0.68	1.6
DB-1	4/23/96	4.0	46	5.2	0.091	0.13	0.66	1.7
DB-2	4/23/96	4.0	8.1	4.5	0.081	0.078	0.11	0.34
DB-3	4/23/96	3.5	33	3.6	0.34	0.077	0.20	0.14

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
B = Benzene by EPA Method 8020
T = Toluene by EPA Method 8020
E = Ethylbenzene by EPA Method 8020
X = Xylenes by EPA Method 8020

Shaded areas denote confirmatory soil samples collected after soil overexcavation activities.

☆ raised DLs.

Table 2. Analytic Results for Soil from Preexcavation Characterization Sampling - Shell Service Station WIC #204-5510-0204, 350 Grand Avenue, Oakland, California

Sample ID	Date Sampled	Depth (ft)	TPH-G	TPH-D	B	T	E	X
			← parts per million (mg/kg) →					
SB-1A	3/26/96	5.0	4.2	5.2	0.013	0.0066	0.012	0.016
SB-1B	3/26/96	9.0	950	67	8.0	6.0	9.7	7.2
SB-1C	3/26/96	13.0	<1.0	14	0.0052	<0.0050	<0.0050	0.0079
SB-1D	3/26/96	17.0	<1.0	2.3	<0.0050	<0.0050	<0.0050	<0.0050
SB-2A	3/26/96	5.0	5.4	4.6	<0.0050	0.0074	0.012	0.031
SB-2B	3/26/96	9.0	1,100	590	4.3	7.0	18	8.2
SB-2C	3/26/96	13.0	8.3	6.1	0.53	0.039	0.071	0.14
SB-2D	3/26/96	17.0	19	7.5	0.077	<0.050	0.11	0.24
SB-3A	3/26/96	5.0	1.0	7.0	0.0080	<0.0050	0.28	0.41
SB-3B	3/26/96	9.0	1,800	890	7.5	9.8	59	<2.0
SB-3C	3/26/96	13.0	8.4	7.5	0.041	0.082	0.047	0.16
SB-3D	3/26/96	17.0	6.1	14	<0.012	<0.012	0.027	0.033
SB-4A	3/26/96	5.0	2.4	3.6	0.011	0.0054	0.015	0.021
SB-4B	3/26/96	9.0	680	330	4.7	2.9	9.5	20
SB-4C	3/26/96	13.0	<1.0	2.3	0.010	<0.0050	0.0058	0.011
SB-4D	3/26/96	17.0	12	4.3	<0.050	<0.050	<0.050	0.092
SB-5A	3/26/96	5.0	4.0	7.1	<0.0050	<0.0050	0.019	0.035
SB-5B	3/26/96	9.0	230	270	1.1	<0.12	2.9	8.5
SB-5C	3/26/96	13.0	<1.0	4.5	<0.0050	<0.0050	<0.0050	<0.0050
SB-5D	3/26/96	17.0	<1.0	1.3	<0.0050	<0.0050	<0.0050	<0.0050
SB-6A	3/26/96	5.0	8.6	7.8	0.0054	0.027	0.031	0.056
SB-6B	3/26/96	9.0	160	50	0.57	<0.12	1.4	4.3
SB-6C	3/26/96	13.0	<1.0	5.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-6D	3/26/96	17.0	<1.0	1.2	<0.0050	<0.0050	<0.0050	<0.0050
SB-7A	3/27/96	5.0	<1.0	3.2	<0.0050	<0.0050	<0.0050	<0.0050
SB-7B	3/27/96	9.0	24	4.9	0.092	<0.012	0.31	0.27
SB-7C	3/27/96	13.0	<1.0	3.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-7D	3/27/96	17.0	<1.0	2.5	<0.0050	<0.0050	<0.0050	<0.0050
SB-8A	3/27/96	5.0	1,400	580	6.9	28	17	120
SB-8B	3/27/96	9.0	<1.0	2.6	<0.0050	<0.0050	<0.0050	<0.0050
SB-8C	3/27/96	13.0	<1.0	2.3	<0.0050	<0.0050	<0.0050	<0.0050
SB-8D	3/27/96	17.0	<1.0	1.2	<0.0050	<0.0050	<0.0050	<0.0050
SB-9A	3/27/96	5.0	<1.0	2.6	<0.0050	<0.0050	<0.0050	<0.0050
SB-9B	3/27/96	9.0	<1.0	110	<0.0050	<0.0050	<0.0050	<0.0050

Table 2. Analytic Results for Soil from Preexcavation Characterization Sampling - Shell Service Station WIC #204-5510-0204, 350 Grand Avenue, Oakland, California

Sample ID	Date Sampled	Depth (ft)	TPH-G	TPH-D	B	T	E	X
			← parts per million (mg/kg) →					
SB-9C	3/27/96	13.0	<1.0	3.3	<0.0050	<0.0050	<0.0050	<0.0050
SB-9D	3/27/96	17.0	<1.0	2.0	<0.0050	<0.0050	<0.0050	<0.0050
SB-10A	3/27/96	5.0	<1.0	4.5	<0.0050	<0.0050	<0.0050	<0.0050
SB-10B	3/27/96	9.0	<1.0	2.5	<0.0050	<0.0050	<0.0050	<0.0050
SB-10C	3/27/96	13.0	<1.0	3.2	<0.0050	<0.0050	<0.0050	<0.0050
SB-10D	3/27/96	17.0	<1.0	2.6	<0.0050	<0.0050	<0.0050	<0.0050
SB-11A	3/27/96	5.0	<1.0	1.9	<0.0050	<0.0050	<0.0050	<0.0050
SB-11B	3/27/96	9.0	<1.0	3.1	<0.0050	<0.0050	<0.0050	<0.0050
SB-11C	3/27/96	13.0	<1.0	1.7	<0.0050	<0.0050	<0.0050	<0.0050
SB-11D	3/27/96	17.0	<1.0	1.5	<0.0050	<0.0050	<0.0050	<0.0050

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
B = Benzene by EPA Method 8020
T = Toluene by EPA Method 8020
E = Ethylbenzene by EPA Method 8020
X = Xylenes by EPA Method 8020