PACIFIC
ENVIRONMENTAL
GROUP, INC.

April 13, 1992
Project 305-79.01

Mr. Dan Kirk
Shell Oil Company
P.O. Box 5278
Concord, California 94520

Re: Shell Service Station
285 Hegenberger Road at Leet Drive
Oakland, California
WIC No 204-5508-5504

Dear Mr. Kirk:

This letter presents the results of the first quarter monitoring program for Shell Oil Company (Shell) prepared by Pacific Environmental Group, Inc. (PACIFIC) for the above referenced site (Figures 1 and 2). The scope of work consisted of sampling and analysis of groundwater from site monitoring Wells MW-1 through MW-10, construction of a groundwater elevation contour map, and construction of a gasoline/benzene concentration map, and preparation of this report.

SITE CONDITIONS

The site is currently an active Shell service station and has a total of 10 monitoring wells. Figure 2 presents the service station layout, including storage tank locations and approximate location of station buildings.

FINDINGS

Groundwater samples were collected by EMCON Associates (EMCON) at the direction of PACIFIC on February 6, 1992. Depth to groundwater ranged between 4.94 and 7.29 feet below ground surface on the sample date. The groundwater flow direction during the February 1992 sampling event was generally to the south with an approximate gradient of 0.02. A groundwater mound was present in the eastern portion of the site, and results in a localized northward component of groundwater flow in that portion of the site. Figure 2 presents groundwater elevation contours constructed for the site using the groundwater levels obtained on the sampling date. Table 1 presents groundwater elevation data.

Separate-phase hydrocarbons were not detected in any of the site wells. All groundwater samples collected were analyzed for low-boiling hydrocarbons calculated as gasoline, high-boiling hydrocarbons calculated as diesel, and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). In addition, Well MW-3, adjacent to the waste oil tank, was analyzed for oil and grease.

Benzene was detected in all wells except MW-4 and MW-8 at concentrations ranging from 0.0078 parts per million (ppm) in MW-2 to 16 ppm in MW-7. Other BTEX compounds were detected in all wells except Well MW-4 at concentrations ranging from 0.007 to 8.7 ppm. The laboratory reports that the diesel detected in all wells does not match the diesel standard and appears to be either the less volatile constituents of gasoline or a non-diesel pattern. Shell therefore plans to drop the diesel analyses from the site wells, except Well MW-3 (located adjacent to the waste oil tank). Oil and grease was not detected in Well MW-3. Groundwater analytical results are summarized in Table 2. Gasoline and benzene concentrations for the February 1992 sampling event are shown on Figure 3. EMCONS's groundwater sampling report is presented in Attachment A.

No

If you have any questions regarding the contents of this letter, please call.

Sincerely,

Pacific Environmental Group, Inc.

Michael Hurd
Project Geologist

Susan Willhite
Senior Geologist
CEG 1272

REGISTERED GEOLOGIST
SUSAN WILLHITE
CEG No. 1272
Certified Engineering
GEOLOGIST
STATE OF CALIFORNIA

Attachments: Table 1 - Groundwater Elevation Data
Table 2 - Groundwater Analytical Data - Low and High-Boiling Hydrocarbons
Figure 1 - Site Location Map
Figure 2 - Groundwater Contour Map
Figure 3 - Gasoline/Benzene Concentration Map
Attachment A- Groundwater Sampling Report

cc: Mr. Barney Chan, Alameda County Health Care Services
Mr. Richard Hiett, Regional Water Quality Control Board

Table 1
Groundwater Elevation Data

Shell Service Station
285 Hegenberger Road at Leet Drive
Oakland, California

Well Number	Sample Date	Well Elevation (feet, MSL)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	02/16/89	6.64	3.83	2.81
	05/23/89		3.59	3.05
	08/03/89		4.04	2.60
	12/15/89		4.22	2.42
	02/07/90		4.60	2.04
	04/18/90		4.02	2.62
	07/23/90		4.17	2.47
	09/27/90		4.60	2.04
	01/03/91		4.88	1.76
	04/10/91		3.55	3.09
	07/12/91		3.97	2.67
	10/08/91		4.26	2.38
	02/06/92		4.94	1.70
MW-2	02/16/89	7.68	5.33	2.35
	05/23/89		5.23	2.45
	08/03/89		6.03	1.65
	12/15/89		6.43	1.25
	02/07/90		5.82	1.86
	04/18/90		5.88	1.80
	07/23/90		6.05	1.63
	01/03/91		6.82	0.86
	04/10/91		4.80	2.88
	07/12/91		5.70	1.98
	10/08/91		6.40	1.28
	02/06/92		6.40	1.28
MW-3	02/16/89	7.81	5.17	2.64
	05/23/89		5.09	2.72
	08/03/89		5.34	2.47
	12/15/89		6.02	1.79
	02/07/90		4.95	2.86
	04/18/90		5.55	2.26
	07/23/90		5.81	2.00
	09/27/90		6.86	0.95
	01/03/91		6.84	0.97
	04/10/91		4.93	2.88
	07/12/91		5.56	2.25
	10/08/91		6.62	1.19
	02/06/92		6.28	1.53

Table 1 (continued)
Groundwater Elevation Data

Shell Service Station
285 Hegenberger Road at Leet Drive
Oakland, California

Well Number	Sample Date	Well Elevation (feet, MSL)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-4	05/23/89	7.38	5.60	1.78
	08/03/89		6.37	1.01
	12/15/89		6.91	0.47
	03/08/90		6.06	1.32
	04/18/90		5.84	1.54
	07/23/90		6.92	0.46
	07/23/90		6.92	0.46
	09/27/91		8.03	0.65
	01/03/91		7.54	-0.16
	04/10/91		5.06	2.32
	07/12/91		6.86	0.52
	10/08/91		7.44	-0.06
	02/06/92		7.29	0.09
MW-5	05/23/89	8.18	5.47	2.71
	08/03/89		5.94	2.24
	12/15/89		6.75	1.43
	02/07/90		6.03	2.15
	04/18/90		5.80	2.38
	07/23/90		6.00	2.18
	09/23/90		7.18	1.00
	01/03/91		7.17	1.01
	04/10/91		5.25	2.93
	07/12/91		5.70	2.48
	10/08/91		6.50	1.68
	02/06/92		6.35	1.83
MW-6	05/23/89	8.21	5.47	2.74
	08/03/89		5.91	2.30
	12/15/89		5.98	2.23
	02/07/90		5.47	2.74
	04/18/90		5.80	2.41
	07/23/90		5.85	2.36
	09/27/90		6.42	1.79
	01/03/91		6.73	1.48
	04/10/91		5.24	2.97
	07/12/91		5.78	2.43
	10/08/91		6.36	1.85
	02/06/92		6.15	2.06

Table 1 (continued)
Groundwater Elevation Data

Shell Service Station
285 Hegenberger Road at Leet Drive
Oakland, California

Well Number	Sample Date	Well Elevation (feet, MSL)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-7	05/23/89	7.44	5.48	1.96
	08/03/89		4.22	3.22
	12/15/89		4.58	2.86
	02/07/90		5.34	2.10
	04/18/90		4.92	2.52
	07/23/90		4.99	2.45
	09/27/90		6.16	1.28
	01/03/91		4.96	2.48
	04/10/91		4.13	3.31
	07/12/91		4.98	2.46
	10/08/91		5.48	1.96
	02/06/92		5.05	2.39
MW-8	05/23/89	7.79	6.62	1.17
	08/03/89		6.62	1.17
	12/15/89		6.71	1.08
	03/08/90		4.95	2.84
	04/18/90		6.40	1.89
	07/23/90		6.62	1.17
	09/27/90		6.98	0.81
	01/03/91		7.03	0.76
	04/10/91		4.40	3.39
	07/12/91		6.80	0.99
	10/08/91		7.56	0.23
	02/06/92		6.94	0.85
MW-9	08/03/89	7.63	5.78	1.85
	12/15/89		5.24	2.39
	02/07/90		5.23	2.40
	04/18/90		5.34	2.29
	07/23/90		5.65	1.98
	09/27/90		5.96	1.67
	01/03/91		6.23	1.40
	04/10/91		4.65	2.98
	07/12/91		5.65	1.98
	10/08/91		6.08	1.55
	02/06/92		5.92	1.71

Table 2
Groundwater Analytical Data

Low- and High-Boiling Hydrocarbons

Shell Service Station
285 Hegenberger Road at Leet Drive
Oakland, California

Well Number	Sample Date	Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Diesel (ppm)
MW-1	02/16/~~92~~ 89	99.0	20	23	5.7	23	NA
	05/23/~~92~~ 89	48.0	4.2	5.2	1.2	7.7	11.0
	08/04/89	63.0	5.5	5.5	3.2	9.5	11.0
	12/15/89	30.0	ND	ND	ND	ND	11.0
	02/07/90	93.0	13.0	9.6	2.4	14.0	10.0
	04/18/90	55.0	14.0	8.4	3.2	13.0	8.7
	07/24/90	73.0	16.0	7.40	2.80	15.0	3.6
	10/01/90	45.0	8.0	4.3	2.0	11.0	1.7
	01/02/91	43.0	10.0	3.40	1.90	11.0	3.10
	04/09/91	67.0	20.0	9.60	3.50	16.0	1.8
	07/11/91	NR	NR	NR	NR	NR	NR
	10/08/91	55	18	3.5	2.3	8.6	7.4
	02/06/92	48.0	12.0	2.8	1.9	7.4	15.0*
MW-2	02/16/89	20.0	0.2	0.9	2.7	9.6	NA
	05/23/89	1.5	0.0043	0.0029	0.011	0.15	1.6
	08/04/89	15.0	0.075	0.12	0.85	2.2	7.4
	12/15/89	5.0	0.052	0.013	0.0041	0.29	2.6
	02/07/90	13.0	0.032	0.034	0.23	0.640	4.8
	04/18/90	9.8	0.033	0.019	0.46	1.7	3.2
	07/24/90	9.6	0.041	0.027	0.540	0.940	2.7
	10/01/90	0.39	0.0034	0.015	0.0085	0.025	1.6
	01/02/91	1.8	0.056	0.0044	0.0048	0.092	0.83
	04/09/91	1.9	ND	0.028	0.140	0.490	0.28
	07/11/91	8.1	0.089	0.066	0.350	0.930	1.1
	10/08/91	1.4	0.0051	0.0015	0.036	0.270	2.6
	02/06/92	2.0	0.0078	0.0025	0.13	0.210	5.4*
MW-3	02/16/89	60.0	5.5	0.2	3.2	5.2	NA
	05/23/89	ND	ND	ND	ND	ND	1.5
	08/04/89	2.0	0.12	0.012	ND	0.086	1.2
	12/15/89	5.2	0.38	0.047	0.017	0.410	1.7
	03/08/90	0.26	0.017	ND	0.0054	0.0025	0.23
	04/19/90	0.26	ND	ND	ND	0.0094	ND
	07/24/90	0.51	0.046	0.0012	ND	0.0093	0.21
	09/28/90	0.46	0.0063	0.0017	ND	0.015	0.35
	01/02/91	4.8	0.920	0.0088	ND	0.190	0.63
	04/09/91	0.12	0.0012	0.0008	0.0035	0.021	0.06
	07/11/91	0.43	0.012	ND	ND	0.0077	ND
	10/08/91	0.77	0.140	0.0007	ND	0.053	0.56
	02/06/92	0.50	0.074	0.0009	0.0052	0.0053	0.34*

Table 2 (continued)
Groundwater Analytical Data

Low- and High-Boiling Hydrocarbons

Shell Service Station
285 Hegenberger Road at Leet Drive
Oakland, California

Well Number	Sample Date	Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Diesel (ppm)
MW-4	05/23/89	ND	ND	ND	ND	ND	ND
	08/04/89	ND	ND	ND	ND	ND	ND
	12/15/89	ND	ND	ND	ND	ND	ND
	03/08/90	ND	ND	ND	ND	ND	ND
	07/25/90	ND	ND	ND	ND	ND	ND
	09/28/90	ND	ND	ND	ND	ND	ND
	01/02/91	ND	ND	ND	ND	ND	ND
	04/09/91	ND	ND	ND	ND	ND	ND
	07/11/91	ND	ND	ND	ND	ND	ND
	10/08/91	ND	ND	ND	ND	ND	ND
	02/06/92	0.12	ND	ND	ND	ND	2.5*
MW-5	05/23/89	26.0	1.5	0.28	ND	8.1	7.0
	08/05/89	12.0	0.86	0.094	ND	2.6	8.7
	12/15/89	1.00	0.022	0.035	0.018	0.044	0.71
	02/08/90	ND	0.0008	ND	ND	ND	0.62
	04/19/90	19.0	4.5	0.85	0.097	8.0	5.0
	07/24/90	23.0	3.6	0.400	0.160	6.50	2.7
	09/28/90	5.4	1.40	0.026	0.013	1.30	0.55
	01/02/91	0.86	0.280	0.0028	0.0008	0.045	0.56
	04/09/91	12.0	0.710	0.130	0.500	2.4	1.8
	07/11/91	24.0	2.2	0.280	0.430	5.7	1.7
	10/08/91	2.8	0.860	0.013	ND	0.580	1.4
	02/06/92	1.0	0.30	ND	0.014	0.062	1.2
MW-6	05/23/89	22.0	0.016	0.0065	0.0066	3.4	7.0
	08/04/89	28.0	1.2	0.13	2.1	2.8	8.8
	12/15/89	16.0	0.37	0.092	0.20	0.18	5.5
	02/07/90	22.0	0.52	0.085	0.63	0.77	2.6
	04/18/90	21.0	0.9	0.077	2.7	2.7	5.7
	07/24/90	24.0	1.00	0.094	3.40	2.70	3.0
	10/01/90	22.0	0.70	0.093	2.50	2.40	ND
	01/02/91	25.0	1.00	0.088	2.60	3.70	0.96
	04/09/91	18.0	0.560	0.190	0.480	0.830	0.92
	07/11/91	9.5	0.670	0.051	1.1	0.920	1.9
	10/08/91	11.0	1.00	0.043	ND	ND	5.1
	02/06/92	7.2	0.56	0.008	0.72	0.16	15.0*

Table 2 (continued)
Groundwater Analytical Data

Low- and High-Boiling Hydrocarbons

Shell Service Station
285 Hegenberger Road at Leet Drive
Oakland, California

Well Number	Sample Date	Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Diesel (ppm)
MW-7	05/23/89	47.0	3.5	5.0	1.5	7.8	11
	08/04/89	68.0	6.2	6.6	3.6	8.8	22
	12/15/89	100.0	4.5	5.3	1.3	5.3	12
	02/08/90	96.0	15.0	15.0	2.5	14.0	8.1
	04/19/90	94.0	25.0	13.0	3.3	13.0	10.0
	07/24/90	84.0	3.8	26.0	13.0	3.0	12.0
	09/28/90	43.0	25.0	6.10	2.40	9.0	ND
	01/02/91	78.0	26.0	16.0	3.0	14.0	3.10
	04/09/91	140.0	26.0	16.0	2.20	14.0	1.8
	07/11/91	79.0	7.7	7.2	2.3	10.0	1.1
	10/08/91	55.0	29.0	7.5	1.8	9.3	0.39*
	02/06/92	63.0	16.0	8.7	1.6	7.4	9.6*
MW-8	05/23/89	ND	ND	ND	ND	ND	0.10
	08/04/89	ND	ND	ND	ND	ND	0.075
	12/15/89	ND	ND	ND	ND	ND	ND
	03/08/90	ND	ND	ND	ND	ND	ND
	07/25/90	ND	ND	ND	ND	ND	ND
	09/28/90	ND	ND	ND	ND	ND	1.1
	01/02/91	ND	0.0013	ND	ND	ND	ND
	04/09/91	0.05	0.0007	0.0011	0.0008	0.0010	ND
	07/11/91	ND	ND	ND	ND	ND	ND
	10/08/91	ND	0.0014	ND	ND	ND	ND
	02/06/92	ND	ND	0.0007	ND	ND	0.06*
MW-9	08/04/89	47.0	5.6	6.6	1.5	8.5	12.0
	12/15/89	88.0	4.3	5.4	0.14	5.6	9.2
	02/08/90	50.0	1.8	1.4	3.2	1.8	7.4
	04/19/90	50.0	14.0	11.0	0.73	10.0	7.5
	07/24/90	62.0	19.0	16.0	0.950	15.0	3.20
	09/28/90	30.0	16.0	6.50	0.980	11.0	2.70
	01/02/91	34.0	9.20	3.20	0.770	7.00	2.50
	04/09/91	66.0	17.0	13.0	1.40	14.0	2.2
	07/11/91	40.0	7.7	3.2	1.1	9.4	2.0
	10/08/91	20.0	11.0	0.640	0.240	6.0	4.7*
	02/06/92	36.0	11.0	0.49	1.1	6.7	6.6*

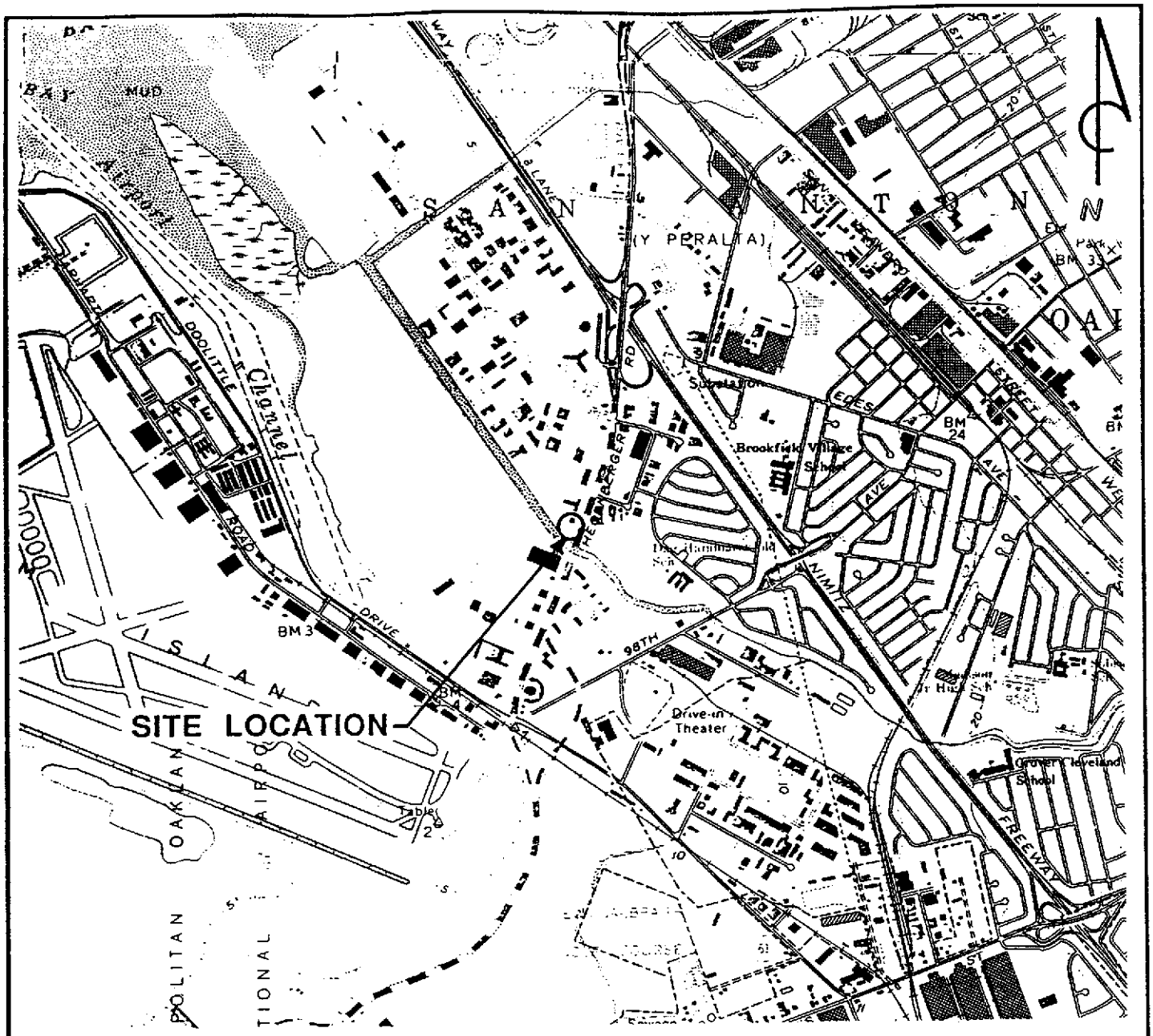
Table 2 (continued)
Groundwater Analytical Data

Low- and High-Boiling Hydrocarbons

Shell Service Station
285 Hegenberger Road at Leet Drive
Oakland, California

Well Number	Sample Date	Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Diesel (ppm)
MW-10	12/15/89	ND	1.5	ND	ND	ND	3.1
	03/08/90	25.0	17	0.330	2.1	1.4	1.8
	04/19/90	23.0	15.0	1.2	0.19	3.3	3.6
	07/25/90	18.0	12.0	0.38	ND	1.40	1.9
	09/28/90	9.5	13.0	0.100	1.80	0.23	0.43
	01/02/91	4.3	3.70	0.0097	ND	0.110	0.63
	04/09/91	45.	16.0	4.60	3.0	6.90	1.4
	07/11/91	ND	ND	ND	ND	ND	
	10/08/91	3.8	13.0	0.082	0.0091	0.500	1.5*
	02/06/92	22.0	12.0	ND	0.60	0.17	1.6*

ppm = Parts per million
NR = Not reported
ND = Not detected
NA = Not analyzed
* = Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.
For detection limits see certified analytical results.



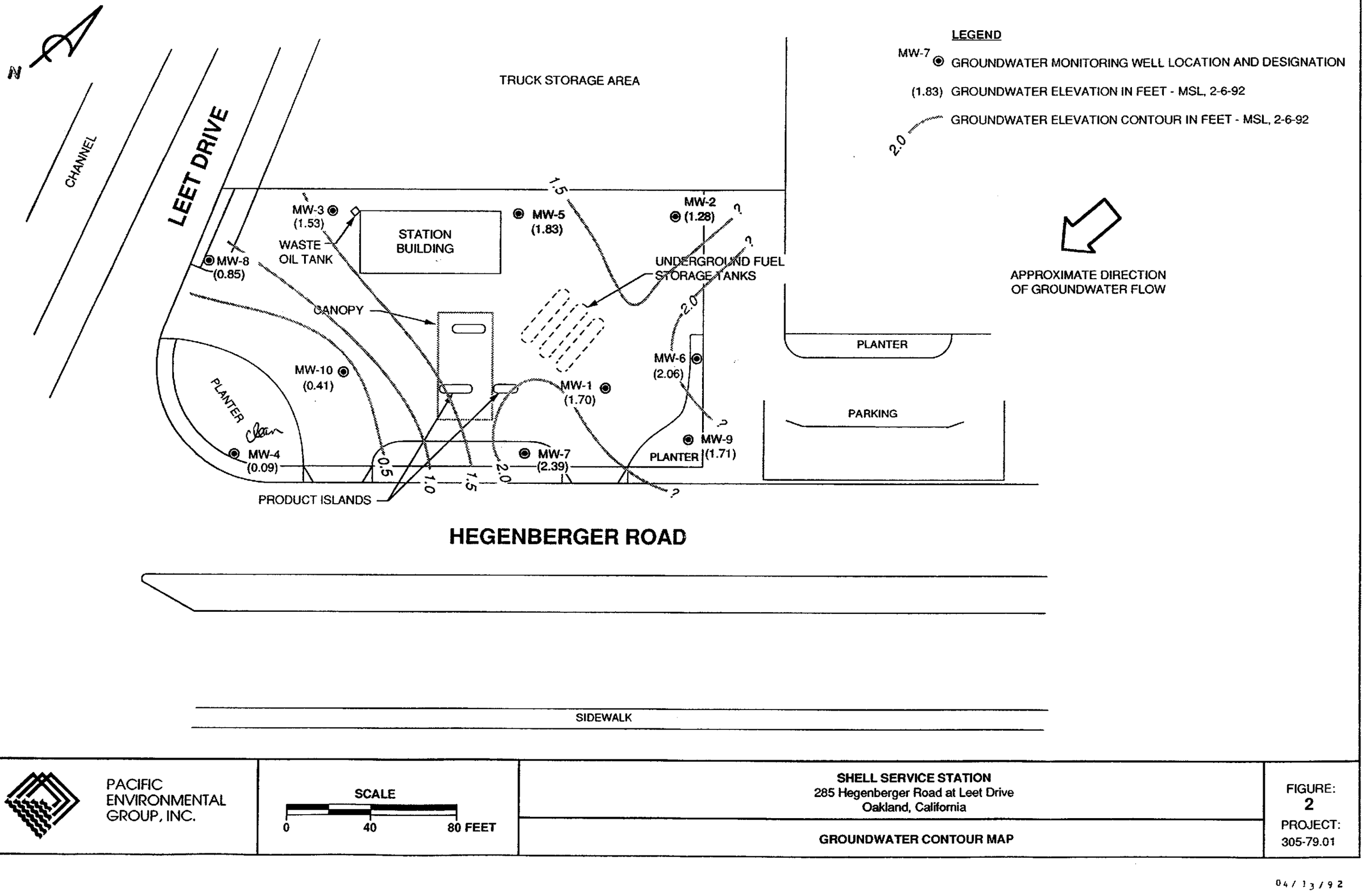
REFERENCES:
USGS 7.5 MIN. TOPOGRAPHIC MAP
TITLED: SAN LEANDRO, CALIFORNIA
DATED: 1959 REVISED: 1980
TITLED: OAKLAND EAST, CALIFORNIA
DATED: 1959 REVISED: 1980

PACIFIC ENVIRONMENTAL GROUP INC.

SHELL SERVICE STATION
285 Hegenberger Road at Left Drive
Oakland, California

SITE LOCATION MAP

FIGURE: 1
PROJECT: 305-79.01



PACIFIC ENVIRONMENTAL GROUP, INC.

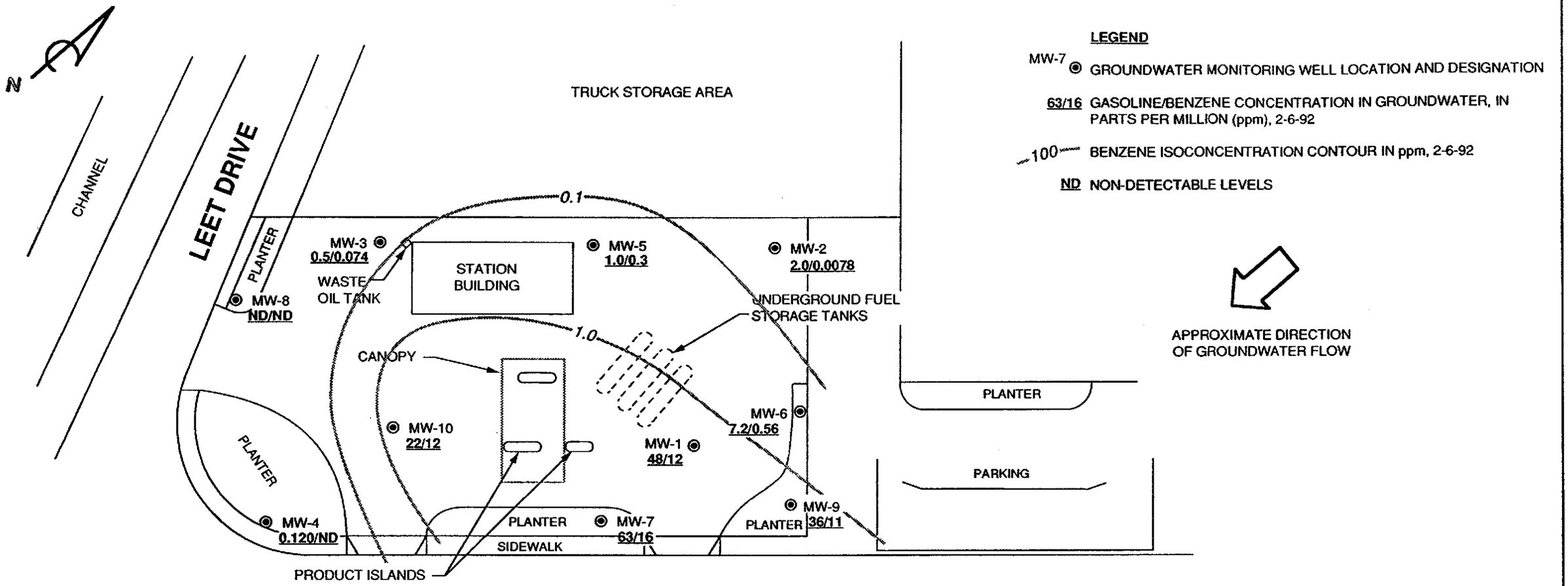
SCALE
0 40 80 FEET

SHELL SERVICE STATION
285 Hegenberger Road at Leet Drive
Oakland, California

GROUNDWATER CONTOUR MAP

FIGURE: **2**
PROJECT: 305-79.01

04/13/92



PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 40 80 FEET

SHELL SERVICE STATION
285 Hegenberger Road at Leet Drive
Oakland, California

GASOLINE/BENZENE CONCENTRATION MAP

FIGURE:
3
PROJECT:
305-79.01

04/13/92

ATTACHMENT A

GROUNDWATER SAMPLING REPORT

ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

March 3, 1992
Project: G67-50.01
WIC#: 204-5508-5504

Mr. Gerald O'Regan
Pacific Environmental Group, Inc.
1601 Civic Center Drive, Suite 202
Santa Clara, California 95050

Re: First quarter 1992 ground-water monitoring report, Shell Oil Company, 285 Hegenberger Road, Oakland, California

Dear Mr. O'Regan:

This letter presents the results of the first quarter 1992 ground-water monitoring event for the Shell Oil Company (Shell) service station located at 285 Hegenberger Road, Oakland, California. First quarter monitoring was conducted on February 6, 1992. The site is monitored quarterly.

GROUND-WATER LEVEL SURVEY

A water-level survey preceded the purging and sampling of the monitoring wells. The wells included in the survey are identified in figure 1 (supplied by Converse Environmental West). During the survey, wells MW-1 through MW-10 were measured for depth to water, floating product thickness, and total depth. Depth to water and floating product thickness were measured to the nearest 0.01 foot with an oil/water interface probe. No floating product was observed in any wells. Total depth was measured to the nearest 0.1 foot. Results of the first quarter 1992 water-level survey, and four previous water-level surveys, are summarized in table 1.

SAMPLING AND ANALYSIS

Ground water samples were collected from wells MW-1 through MW-10 on February 6, 1992. Prior to sample collection, the wells were purged with polyvinyl chloride (PVC) bailers. During the purging operation, ground water was monitored for pH, electrical conductivity, and temperature as a function of volume of water removed. Purging continued until these parameters were stable and a minimum of three casing volumes of ground water were removed. Wells MW-4, MW-5, and MW-7 through MW-10 were evacuated to dryness before three casing volumes were removed. The wells were allowed to recharge for up to 24 hours. Samples were collected after the wells had recharged to a level sufficient for sample collection. Field measurements from first quarter monitoring,

1938 Junction Avenue, San Jose, California 95131, (408) 453-0719 Fax (408) 453-0452

and four previous monitoring events, are summarized in table 1. Purge water from the monitoring wells was contained in 55-gallon drums. The drums were identified with Shell-approved labels and secured for on-site storage.

Ground water samples were collected with a Teflon® bailer, labeled, placed on ice, and transported to a Shell-approved and state-certified analytical laboratory for analysis. Shell chain-of-custody documents accompanied all samples to the laboratory.

All equipment that was placed down a well or that came in contact with ground water was steam cleaned on site with steaming hot deionized water prior to use at each well.

Quality control (QC) samples for first quarter 1992 monitoring included a trip blank (called TB). All water samples from first quarter monitoring were analyzed for total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Samples collected from well MW-3 were also analyzed for oil and grease by SM 5520 B&F.

ANALYTICAL RESULTS

Analytical results from the first quarter 1992 monitoring event, and four previous quarterly monitoring events, are summarized in table 2. The original certified analytical reports and a copy of the final chain-of-custody documents are attached.

If you have any questions, please call.

Very truly yours,

EMCON Associates

David Larsen
Environmental Sampling Coordinator

Orrin Childs
Environmental Sampling Supervisor

DL/OC:dl

Attachments: Table 1 - Monitoring well field measurement data, first quarter 1992
Table 2 - Summary of analytical results, first quarter 1992
Figure 1 - Site map
Certified analytical report
Chain-of-custody document

Table 1
Monitoring Well Field Measurement Data
First Quarter 1992

Shell Station: 285 Hegenberger Road
Oakland, California
WIC #: 204-5508-5504

Date: 03/03/92
Project Number: G67-50.01

Well Designation	Water Level Field Date	TOC Elevation (ft-MSL)	Depth to Water (feet)	Groundwater Elevation (ft-MSL)	Total Well Depth (feet)	Floating Product Thickness (feet)	Water Sample Field Date	pH (std. units)	Electrical Conductivity (micromhos/cm)	Temperature (degrees F)	Turbidity (NTU)
MW-1	01/02/91	6.64	4.88	1.76	NR	ND	01/03/91	NR	NR	NR	NR
MW-1	04/09/91	6.64	3.55	3.09	NR	ND	04/10/91	NR	NR	NR	NR
MW-1	07/11/91	6.64	3.97	2.67	NR	ND	07/12/91	NR	NR	NR	NR
MW-1	10/08/91	6.64	4.26	2.38	NR	ND	10/08/91	NR	NR	NR	NR
MW-1	02/06/92	6.64	4.94	1.70	9.9	ND	02/06/92	6.91	3700	60.1	>200
MW-2	01/02/91	7.68	6.66	1.02	NR	ND	01/03/91	NR	NR	NR	NR
MW-2	04/09/91	7.68	4.80	2.88	NR	ND	04/10/91	NR	NR	NR	NR
MW-2	07/11/91	7.68	5.70	1.98	NR	ND	07/12/91	NR	NR	NR	NR
MW-2	10/08/91	7.68	6.40	1.28	NR	ND	10/08/91	NR	NR	NR	NR
MW-2	02/06/92	7.68	6.40	1.28	10.1	ND	02/06/92	7.13	2340	58.8	>200
MW-3	01/02/91	7.81	6.84	0.97	NR	ND	01/03/91	NR	NR	NR	NR
MW-3	04/09/91	7.81	4.93	2.88	NR	ND	04/10/91	NR	NR	NR	NR
MW-3	07/11/91	7.81	5.56	2.25	NR	ND	07/12/91	NR	NR	NR	NR
MW-3	10/08/91	7.81	6.62	1.19	NR	ND	10/08/91	NR	NR	NR	NR
MW-3	02/06/92	7.81	6.28	1.53	9.9	ND	02/06/92	6.99	3520	59.4	>200
MW-4	01/02/91	7.38	7.54	-0.16	NR	ND	01/03/91	NR	NR	NR	NR
MW-4	04/09/91	7.38	5.06	2.32	NR	ND	04/10/91	NR	NR	NR	NR
MW-4	07/11/91	7.38	6.86	0.52	NR	ND	07/12/91	NR	NR	NR	NR
MW-4	10/08/91	7.38	7.44	-0.06	NR	ND	10/08/91	NR	NR	NR	NR
MW-4	02/06/92	7.38	7.29	0.09	10.4	ND	02/06/92	7.59	4050	58.2	>200
MW-5	01/02/91	8.18	7.17	1.01	NR	ND	01/03/91	NR	NR	NR	NR
MW-5	04/09/91	8.18	5.25	2.93	NR	ND	04/10/91	NR	NR	NR	NR
MW-5	07/11/91	8.18	5.70	2.48	NR	ND	07/12/91	NR	NR	NR	NR
MW-5	10/08/91	8.18	6.50	1.68	NR	ND	10/08/91	NR	NR	NR	NR
MW-5	02/06/92	8.18	6.35	1.83	10.1	ND	02/06/92	7.30	4340	57.2	>200

TOC = top of casing
ft-MSL = elevation in feet, relative to mean sea level
std. units = standard pH units
micromhos/cm = micromhos per centimeter
degrees F = degrees Fahrenheit
NTU = nephelometric turbidity units
NR = not reported; data not available
ND = none detected

Table 1
Monitoring Well Field Measurement Data
First Quarter 1992

Shell Station: 285 Hegenberger Road
Oakland, California
WIC #: 204-5508-5504

Date: 03/03/92
Project Number: G67-50.01

Well Designation	Water Level Field Date	TOC Elevation (ft-MSL)	Depth to Water (feet)	Groundwater Elevation (ft-MSL)	Total Well Depth (feet)	Floating Product Thickness (feet)	Water Sample Field Date	pH (std. units)	Electrical Conductivity (micromhos/cm)	Temperature (degrees F)	Turbidity (NTU)
MW-6	01/02/91	8.21	6.73	1.48	NR	ND	01/03/91	NR	NR	NR	NR
MW-6	04/09/91	8.21	5.24	2.97	NR	Sheen	04/10/91	NR	NR	NR	NR
MW-6	07/11/91	8.21	5.78	2.43	NR	ND	07/12/91	NR	NR	NR	NR
MW-6	10/08/91	8.21	6.36	1.85	NR	ND	10/08/91	NR	NR	NR	NR
MW-6	02/06/92	8.21	6.15	2.06	11.1	ND	02/06/92	6.91	2030	59.8	>200
MW-7	01/02/91	7.44	4.96	2.48	NR	ND	01/03/91	NR	NR	NR	NR
MW-7	04/09/91	7.44	4.13	3.31	NR	ND	04/10/91	NR	NR	NR	NR
MW-7	07/11/91	7.44	4.98	2.46	NR	ND	07/12/91	NR	NR	NR	NR
MW-7	10/08/91	7.44	5.48	1.96	NR	ND	10/08/91	NR	NR	NR	NR
MW-7	02/06/92	7.44	5.05	2.39	10.3	ND	02/06/92	7.30	6430	58.4	>200
MW-8	01/02/91	7.79	7.03	0.76	NR	ND	01/03/91	NR	NR	NR	NR
MW-8	04/09/91	7.79	4.40	3.39	NR	ND	04/10/91	NR	NR	NR	NR
MW-8	07/11/91	7.79	6.80	0.99	NR	ND	07/12/91	NR	NR	NR	NR
MW-8	10/08/91	7.79	7.56	0.23	NR	ND	10/08/91	NR	NR	NR	NR
MW-8	02/06/92	7.79	6.94	0.85	10.4	ND	02/06/92	8.01	5510	61.5	>200
MW-9	01/02/91	7.63	6.23	1.40	NR	ND	01/03/91	NR	NR	NR	NR
MW-9	04/09/91	7.63	4.65	2.98	NR	ND	04/10/91	NR	NR	NR	NR
MW-9	07/11/91	7.63	5.65	1.98	NR	ND	07/12/91	NR	NR	NR	NR
MW-9	10/08/91	7.63	6.08	1.55	NR	ND	10/08/91	NR	NR	NR	NR
MW-9	02/06/92	7.63	5.92	1.71	11.1	ND	02/06/92	7.15	5480	58.8	>200
MW-10	01/02/91	7.45	6.96	0.49	NR	ND	01/03/91	NR	NR	NR	NR
MW-10	04/09/91	7.45	4.70	2.75	NR	ND	04/10/91	NR	NR	NR	NR
MW-10	07/11/91	7.45	5.90	1.55	NR	ND	07/12/91	NR	NR	NR	NR
MW-10	10/08/91	7.45	6.68	0.77	NR	ND	10/08/91	NR	NR	NR	NR
MW-10	02/06/92	7.45	7.04	0.41	10.6	ND	02/06/92	7.15	3740	61.5	>200

TOC = top of casing
ft-MSL = elevation in feet, relative to mean sea level
std. units = standard pH units
micromhos/cm = micromhos per centimeter
degrees F = degrees Fahrenheit
NTU = nephelometric turbidity units
NR = not reported; data not available
ND = none detected

Table 2
Summary of Analytical Results
First Quarter 1992
milligrams per liter (mg/l) or parts per million (ppm)

Shell Station: 285 Hegenberger Road
Oakland, California
WIC #: 204-5508-5504

Date: 03/03/92
Project Number: G67-50.01

Sample Designation	Water Sample Field Date	TPH-g (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Total Xylenes (mg/l)	TPH-d (mg/l)	TOG (mg/l)
MW-1	01/03/91	43.0	10.0	3.40	1.90	11.0	3.10	
MW-1	04/10/91	67.0	20.0	9.60	3.50	16.0	1.8	
MW-1	07/12/91	NR	NR	NR	NR	NR	NR	
MW-1	10/08/91	55	18	3.5	2.3	8.6	7.4&	
MW-1	02/06/92	48.	12.	2.8	1.9	7.4	15.#	
MW-2	01/03/91	1.8	0.056	0.0044	0.0048	0.092	0.83	
MW-2	04/10/91	1.9	<0.0005	0.028	0.140	0.490	0.28	
MW-2	07/12/91	8.1	0.089	0.066	0.350	0.930	1.1	
MW-2	10/08/91	1.4	0.0051	0.0015	0.036	0.270	2.6	
MW-2	02/06/92	2.0	0.0078	0.0025	0.13	0.21	5.4+	
MW-3	01/03/91	4.8	0.920	0.0088	<0.0005	0.190	0.63	
MW-3	04/10/91	0.12	0.0012	0.0008	0.0035	0.021	0.06	
MW-3	07/12/91	0.43	0.012	<0.0005	<0.0005	0.0077	<0.05	
MW-3	10/08/91	0.77	0.140	0.0007	<0.0005	0.053	0.56	
MW-3	02/06/92	0.50	0.074	0.0009	0.0052	0.0053	0.34@	<5.0
MW-4	01/03/91	<0.5	<0.0005	<0.0005	<0.0005	<0.0005		
MW-4	04/10/91	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	
MW-4	07/12/91	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	
MW-4	10/08/91	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	
MW-4	02/06/92	0.12	<0.0005	<0.0005	<0.0005	<0.0005	2.5@	
MW-5	01/03/91	0.86	0.280	0.0028	0.0008	0.045	0.56	
MW-5	04/10/91	12.	0.710	0.130	0.500	2.4	1.8	
MW-5	07/12/91	24.	2.2	0.280	0.430	5.7	1.7	
MW-5	10/08/91	2.8	0.860	0.013	<0.005	0.580	1.4	
MW-5	02/06/92	1.0	0.30	<0.0025	0.014	0.062	1.2+	

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TOG = total oil and grease by SM 5520 B&F
NR = not reported; data not available
& = The positive result for diesel analysis on this sample appears to be a lighter hydrocarbon than diesel.
# = Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.
+ = Results include compounds apparently due to gasoline as well as those due to diesel.
@ = Compounds detected within the diesel range are not characteristic of the standard diesel chromatographic pattern.

Table 2
Summary of Analytical Results
First Quarter 1992
milligrams per liter (mg/l) or parts per million (ppm)

Shell Station: 285 Hegenberger Road
Oakland, California
WIC #: 204-5508-5504

Date: 03/03/92
Project Number: G67-50.01

Sample Designation	Water Sample Field Date	TPH-g (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Total Xylenes (mg/l)	TPH-d (mg/l)	TOG (mg/l)
MW-6	01/03/91	25.	1.00	0.088	2.60	3.70	0.96	
MW-6	04/10/91	18.	0.560	0.190	0.480	0.830	0.92	
MW-6	07/12/91	9.5	0.670	0.051	1.1	0.920	1.9	
MW-6	10/08/91	11.	1.00	0.043	<0.005	<0.005	5.1&	
MW-6	02/06/92	7.2	0.56	0.008	0.72	0.16	15.#	
MW-7	01/03/91	78.0	26.0	16.0	3.0	14.0	3.10	
MW-7	04/10/91	140.	26.0	16.0	2.20	14.0	1.8	
MW-7	07/12/91	79.	7.7	7.2	2.3	10.0	1.1	
MW-7	10/08/91	55.	29.0	7.5	1.8	9.3	0.39&	
MW-7	02/06/92	63.	16.	8.7	1.6	7.4	9.6#	
MW-8	01/03/91	<0.05	0.0013	<0.0005	<0.0005	<0.0005	<0.05	
MW-8	04/10/91	0.05	0.0007	0.0011	0.0008	0.0010	<0.05	
MW-8	07/12/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	
MW-8	10/08/91	<0.05	0.0014	<0.0005	<0.0005	<0.0005	<0.05	
MW-8	02/06/92	<0.05	<0.0005	0.0007	<0.0005	<0.0005	0.06@	
MW-9	01/03/91	34.0	9.20	3.20	0.770	7.00	2.50	
MW-9	04/10/91	66.	17.0	13.0	1.40	14.0	2.2	
MW-9	07/12/91	40.	7.7	3.2	1.1	9.4	2.0	
MW-9	10/08/91	20.	11.0	0.640	0.240	6.0	4.7&	
MW-9	02/06/92	36.	11.	0.49	1.1	6.7	6.6#	
MW-10	01/03/91	4.3	3.70	0.0097	<0.0005	0.110	0.63	
MW-10	04/10/91	45.	16.0	4.60	3.0	6.90	1.4	
MW-10	07/12/91	NR	NR	NR	NR	NR		
MW-10	10/08/91	3.8	13.0	0.082	0.0091	0.500	1.5&	
MW-10	02/06/92	22.	12.	<0.005	0.60	0.17	1.6#	

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TOG = total oil and grease by SM 5520 B&F
& = The positive result for diesel analysis on this sample appears to be a lighter hydrocarbon than diesel.
# = Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.
@ = Compounds detected within the diesel range are not characteristic of the standard diesel chromatographic pattern.
NR = not reported; data not available

Table 2
Summary of Analytical Results
First Quarter 1992
milligrams per liter (mg/l) or parts per million (ppm)

Shell Station: 285 Hegenberger Road
Oakland, California
WIC #: 204-5508-5504

Date: 03/03/92
Project Number: G87-50.01

Sample Designation	Water Sample Field Date	TPH-g (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Total Xylenes (mg/l)	TPH-d (mg/l)	TOG (mg/l)
TB	02/06/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TOG = total oil and grease by SM 5520 B&F

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Shell Oil Company
Emcon Associates
1938 Junction Ave.
San Jose, CA 95131
David Larsen

Date: 02/24/92

Work Order: T2-02-063

P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: G6750,285 Hegenberger,Oakland
Date Received: 02/07/92
Number of Samples: 8
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Thomas L. Paulson
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **MW-4**
SAMPLE DATE: **02/07/92**
LAB SAMPLE ID: **T202063-01**
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/14/92
Low Boiling Hydrocarbons	Mod.8015		02/13/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/11/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.12
BTEX		
Benzene	0.0005	None.
Toluene	0.0005	None.
Ethylbenzene	0.0005	None.
Xylenes (total)	0.0005	None.
High Boiling Hydrocarbons calculated as Diesel	0.05	2.5 @

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	98.
1,3-Dichlorobenzene (BTEX)	88.
nC32 (Diesel)	84.

Comments:
@ Compounds detected and calculated as high boiling hydrocarbons consist of compounds eluting within the chromatographic range of diesel, but are not characteristic of the standard diesel chromatographic pattern.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: MW-8
SAMPLE DATE: 02/06/92
LAB SAMPLE ID: T202063-02
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/14/92
Low Boiling Hydrocarbons	Mod.8015		02/14/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None.
BTEX		
Benzene	0.0005	None.
Toluene	0.0005	0.0007
Ethylbenzene	0.0005	None.
Xylenes (total)	0.0005	None.
High Boiling Hydrocarbons calculated as Diesel	0.05	0.06 @

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	101.
1,3-Dichlorobenzene (BTEX)	94.
nC32 (Diesel)	95.

Comments:
@ Compounds detected and calculated as high boiling hydrocarbons consist of compounds eluting within the chromatographic range of diesel, but are not characteristic of the standard diesel chromatographic pattern.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **MW-3**
SAMPLE DATE: **02/06/92**
LAB SAMPLE ID: **T202063-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
Oil and Grease	503E	02/11/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED
Oil and Grease	5.0	None.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: MW-3
SAMPLE DATE: 02/06/92
LAB SAMPLE ID: T202063-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/14/92
Low Boiling Hydrocarbons	Mod.8015		02/14/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	0.05	0.50	
BTEX			
Benzene	0.0005	0.074	
Toluene	0.0005	0.0009	
Ethylbenzene	0.0005	0.0052	
Xylenes (total)	0.0005	0.0053	
High Boiling Hydrocarbons calculated as Diesel	0.05	0.34	@

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	119.
1,3-Dichlorobenzene (BTEX)	106.
nC32 (Diesel)	91.

Comments:
@ Compounds detected and calculated as high boiling hydrocarbons consist of compounds eluting within the chromatographic range of diesel, but are not characteristic of the standard diesel chromatographic pattern.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **MW-2**
SAMPLE DATE: **02/06/92**
LAB SAMPLE ID: **T202063-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/14/92
Low Boiling Hydrocarbons	Mod.8015		02/14/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.25	**2.0**
BTEX		
Benzene	0.0025	**0.0078**
Toluene	0.0025	**0.0025**
Ethylbenzene	0.0025	**0.13**
Xylenes (total)	0.0025	**0.21**
High Boiling Hydrocarbons calculated as Diesel	0.25	**5.4 +**

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	**131*.**
1,3-Dichlorobenzene (BTEX)	**114.**
nC32 (Diesel)	**95.**

Comments:
+ **Results** include compounds apparently due to gasoline as well as those due to diesel.

*Surrogate elevated due to hydrocarbon interferences.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: MW-5
SAMPLE DATE: 02/06/92
LAB SAMPLE ID: T202063-05
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/14/92
Low Boiling Hydrocarbons	Mod.8015		02/14/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.25	1.0
BTEX		
Benzene	0.0025	0.30
Toluene	0.0025	None.
Ethylbenzene	0.0025	0.014
Xylenes (total)	0.0025	0.062
High Boiling Hydrocarbons calculated as Diesel	0.05	1.2 +

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	122*.
1,3-Dichlorobenzene (BTEX)	113.
nC32 (Diesel)	35.

Comments:
+ Results include compounds apparently due to gasoline as well as those due to diesel.

*Surrogate elevated due to hydrocarbon interferences.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **MW-6**
SAMPLE DATE: **02/06/92**
LAB SAMPLE ID: **T202063-06**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/17/92
Low Boiling Hydrocarbons	Mod.8015		02/17/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.5	7.2
BTEX		
Benzene	0.005	0.56
Toluene	0.005	0.008
Ethylbenzene	0.005	0.72
Xylenes (total)	0.005	0.16
High Boiling Hydrocarbons calculated as Diesel	0.5	15. #

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	118*.
1,3-Dichlorobenzene (BTEX)	102.
nC32 (Diesel)	111.

Comments:
Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

*Surrogate elevated due to hydrocarbon interferences.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **MW-10**
SAMPLE DATE: **02/06/92**
LAB SAMPLE ID: **T202063-07**
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/15/92
Low Boiling Hydrocarbons	Mod.8015		02/15/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	0.5	22.	
BTEX			
Benzene	0.005	12.	
Toluene	0.005	None.	
Ethylbenzene	0.005	0.60	
Xylenes (total)	0.005	0.17	
High Boiling Hydrocarbons calculated as Diesel	0.05	1.6	#

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	102.
1,3-Dichlorobenzene (BTEX)	99.
nC32 (Diesel)	49.

Comments:
Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: MW-9
SAMPLE DATE: 02/06/92
LAB SAMPLE ID: T202063-08
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/15/92
Low Boiling Hydrocarbons	Mod.8015		02/15/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/13/92

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	0.5	36.	
BTEX			
Benzene	0.005	11.	
Toluene	0.005	0.49	
Ethylbenzene	0.005	1.1	
Xylenes (total)	0.005	6.7	
High Boiling Hydrocarbons calculated as Diesel	0.1	6.6	#

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	114.
1,3-Dichlorobenzene (BTEX)	117.
nC32 (Diesel)	28.

Comments:
Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T202063-09B
EXTRACTION DATE: 02/10/92
ANALYSIS DATE: 02/11/92
ANALYSIS METHOD: Mod.8015

QUALITY CONTROL REPORT

Laboratory Spike(LS) and Laboratory Spike Duplicate(LSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	LS Result	LSD Result	LS %Rec	LSD %Rec	RPD
Diesel	None	1000	1306	1276	131	128	2

SURROGATES	LS %Rec	LSD %Rec
nC32	123	125

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T202063-09A**
EXTRACTION DATE:
ANALYSIS DATE: **02/17/92**
ANALYSIS METHOD: **8020**

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Benzene	None	50.0	52.8	45.0	106	90	16
Toluene	None	50.0	48.9	41.6	98	83	16
Ethylbenzene	None	50.0	49.4	42.4	99	85	15
Total Xylenes	None	150	149	128	99	85	15

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	101	99

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST CODE ONGEW TEST NAME EPA 503E in Water

The method of analysis for oil and grease is taken from Standard Methods for the Examination of Water and Wastewater, Section 503E. Samples are extracted with repeated portions of solvent and the extract is treated with silica gel to remove polar compounds. The extract is evaporated and oil and grease is determined gravimetrically.

TEST CODE QC TEST NAME Quality Control

Quality control (QC) samples are analyzed and used to assess the laboratory control measures. Routine QC samples include method blanks, spikes and duplicates. The purpose of the method blank (MB) analysis is to demonstrate that artifacts of the test do not yield false positives. The laboratory control spike (LS) and /or matrix spike (MS) analysis is used to evaluate the ability of the test to recover analytes of interest, i.e. accuracy. Accuracy is expressed as percent (%) recovery. The laboratory spike duplicate (LSD), matrix spike duplicate (MSD), or duplicate sample (DUP) is used to determine the precision of the test, by comparing the result from the original spike (or sample) to the duplicate spike (or sample). Precision is expressed as relative percent difference (RPD).

The results of appropriate QC samples from QC batches associated with the listed samples are included in this report.

TEST CODE TPHN TEST NAME TPH High Boiling by 8015

The method of analysis for high boiling hydrocarbons is taken from the LUFT field manual. Samples are extracted with solvent and examined by gas chromatography using a flame ionization detector. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

TEST CODE TPHVB TEST NAME TPH Gas,BTEX by 8015/8020

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/24/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-063

TEST CODE TPHVB TEST NAME TPH Gas,BTEX by 8015/8020

otherwise noted.

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No.: 12-02-063

Date:

Site Address: 285 Hegenberger Rd, Oakland

WIC#: 204-5508-5504

Shell Engineer: Kurt Miller | **Phone No.** (510) | **Fax #:** 685-3853

Consultant Name & Address: EMCON Assoc. 1938 Junction Ave. San Jose, CA 95131

Consultant Contact: David Larsen | **Phone No.** (408) | **Fax #:** 453-2269

Comments: 3 VOAs for TPHG, BTXE
1 Liter for diesel
1 Liter for oil & Grease.
* 3 VOAs ½ liter taken well dried to collect 1 liter on 2-7-92

Sampled By: Chris Chao
Printed Name: Chris Chao

Analysis Required

LAB: IT Analytical - San Jose

CHECK ONE (1) BOX ONLY		CT/DT
Quarterly Monitoring	XXX	5461
Site Investigation	[ ]	5441
Soil for disposal	[ ]	5442
Water for disposal	[ ]	5443
Air Sample- Sys O&M	[ ]	5452
Water Sample - Sys O&M	[ ]	5453
Other	[ ]	

TURN AROUND TIME
24 hours [ ]
48 hours [ ]
15 days XXX (Normal)
Other [ ]

NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.

	Sample ID	Date	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel) D	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal (NO!)		Oil & Grease (5520 B&F) E			Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
01 ABCD	MW-4	2-6-92 * 2-7-92		X		4	X	X	X							40 ml	HCl	No		Cool ul
02 ABCD	MW-8	2-6-92		↓		4	X	X	X							↓	↓	↓		↓
03 ABCDE	MW-3	2-6-92		↓		5	X	X	X				X			↓	↓	↓		↓
04 ABCD	MW-2	2-6-92		↓		4	X	X	X							↓	↓	↓		↓
05 ABCD	MW-5	2-6-92		↓		4	X	X	X							↓	↓	↓		↓
06 ABCD	MW-6	2-6-92		↓		4	X	X	X							↓	↓	↓		↓
07 ABCD	MW-10	2-6-92		↓		4	X	X	X							↓	↓	↓		↓
08 ABCD	MW-9	2-6-92		↓		4	X	X	X							↓	↓	↓		↓

Relinquished By (signature):	Printed name:	Date / Time	Received (signature):	Printed name:	Date / Time
Chris Chao	Chris Chao	Date: 2-7-92 Time: 12:37	David Larsen	David Larsen	Date: 2-7-92 Time: 12:37
David Larsen	David Larsen	Date: 2-7-92 Time: 13:00	[signature]	C. Rasmussen	Date: 2-7-92 Time: 1300
		Date: Time:			Date: Time:

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

Last Revision Date: 10/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Shell Oil Company
Emcon Associates
1938 Junction Ave.
San Jose, CA 95131
David Larsen

Date: 02/21/92

Work Order: T2-02-062

P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: G6750,285 Hegenberger,Oakland
Date Received: 02/07/92
Number of Samples: 3
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Thomas L. Paulson
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/21/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-062

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: MW-1
SAMPLE DATE: 02/06/92
LAB SAMPLE ID: T202062-01
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/14/92
Low Boiling Hydrocarbons	Mod.8015		02/14/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	10.	48.	
BTEX			
Benzene	0.1	12.	
Toluene	0.1	2.8	
Ethylbenzene	0.1	1.9	
Xylenes (total)	0.1	7.4	
High Boiling Hydrocarbons calculated as Diesel	0.25	15.	#

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	102.
1,3-Dichlorobenzene (BTEX)	104.
nC32 (Diesel)	11.

Comments:
Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/21/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-062

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: MW-7
SAMPLE DATE: 02/06/92
LAB SAMPLE ID: T202062-02
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/14/92
Low Boiling Hydrocarbons	Mod.8015		02/14/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/12/92

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	10.	63.	
BTEX			
Benzene	0.1	16.	
Toluene	0.1	8.7	
Ethylbenzene	0.1	1.6	
Xylenes (total)	0.1	7.4	
High Boiling Hydrocarbons calculated as Diesel	0.25	9.6	#

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	102.
1,3-Dichlorobenzene (BTEX)	106.
nC32 (Diesel)	32.

Comments:
Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/21/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-062

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: TRIP BLANK
SAMPLE DATE: not spec
LAB SAMPLE ID: T202062-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		02/14/92
Low Boiling Hydrocarbons	Mod.8015		02/14/92
High Boiling Hydrocarbons	Mod.8015	02/10/92	02/11/92

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None.
BTEX		
Benzene	0.0005	None.
Toluene	0.0005	None.
Ethylbenzene	0.0005	None.
Xylenes (total)	0.0005	None.
High Boiling Hydrocarbons calculated as Diesel	0.05	None.

SURROGATES	% REC
1,3-Dichlorobenzene (Gasoline)	99.
1,3-Dichlorobenzene (BTEX)	94.
nC32 (Diesel)	127.

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/21/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-062

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T202062-04B**
EXTRACTION DATE: **02/10/92**
ANALYSIS DATE: **02/11/92**
ANALYSIS METHOD: **Mod.8015**

QUALITY CONTROL REPORT

Laboratory Spike(LS) and Laboratory Spike Duplicate(LSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	LS Result	LSD Result	LS %Rec	LSD %Rec	RPD
Diesel	None	1000	1306	1276	131	128	2

SURROGATES	LS %Rec	LSD %Rec
nC32	123	125

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/21/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-062

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T202062-04A**
EXTRACTION DATE:
ANALYSIS DATE: **02/13/92**
ANALYSIS METHOD: **Mod.8015**

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Gasoline	None	500	541	494	102	99	3

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	110	114

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/21/92
Client Work ID: G6750,285 Hegenberger,Oakland

Work Order: T2-02-062

TEST CODE QC TEST NAME Quality Control

Quality control (QC) samples are analyzed and used to assess the laboratory control measures. Routine QC samples include method blanks, spikes and duplicates. The purpose of the method blank (MB) analysis is to demonstrate that artifacts of the test do not yield false positives. The laboratory control spike (LS) and /or matrix spike (MS) analysis is used to evaluate the ability of the test to recover analytes of interest, i.e. accuracy. Accuracy is expressed as percent (%) recovery. The laboratory spike duplicate (LSD), matrix spike duplicate (MSD), or duplicate sample (DUP) is used to determine the precision of the test, by comparing the result from the original spike (or sample) to the duplicate spike (or sample). Precision is expressed as relative percent difference (RPD).

The results of appropriate QC samples from QC batches associated with the listed samples are included in this report.

TEST CODE TPHN TEST NAME TPH High Boiling by 8015

The method of analysis for high boiling hydrocarbons is taken from the LUFT field manual. Samples are extracted with solvent and examined by gas chromatography using a flame ionization detector. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

TEST CODE TPHVB TEST NAME TPH Gas,BTEX by 8015/8020

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No.: 12-02-062

Date:
Page 2 of 2

Site Address: 285 Hegenberger Rd, Oakland

WIC#: 204-5508-5504

Shell Engineer: Kurt Miller — **Phone No.** (510) **Fax #:** 685-3853

Consultant Name & Address: EMCON Assoc. — 1938 Junction Ave. San Jose, CA 95131

Consultant Contact: David Larsen — **Phone No.** (408) **Fax #:** 453-2269

Comments: see page 1

Sampled By: Chris Claco

Printed Name: Chris Claco

LAB: IT Analytical - San Jose

CHECK ONE (1) BOX ONLY

	CT/DT
Quarterly Monitoring	XX 5461
Site Investigation	[ ] 5441
Soil for disposal	[ ] 5442
Water for disposal	[ ] 5443
Air Sample- Sys O&M	[ ] 5452
Water Sample - Sys O&M	[ ] 5453
Other	[ ]

TURN AROUND TIME

- 24 hours [ ]
- 48 hours [ ]
- 15 days XX (Normal)
- Other [ ] _____

NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.

Analysis Required

Sample ID	Date	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	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
MW-1	2-6-92		X		4	X	X	X			40 ml	HCl	No		Cool
MW-7	2-6-92		↓		4	X	X	X			↓	↓	↓		↓
TB	2-7-92		↓		2	X	X	X			↓	↓	↓		↓

Relinquished By (signature):	Printed name: Chris Claco	Date: 2-7-92	Received (signature):	Printed name: David Larsen	Date: 2-7-92
Relinquished By (signature):	Printed name: David Larsen	Time: 1237	Received (signature):	Printed name: C. Rasmussen	Time: 1237
Relinquished By (signature):	Printed name:	Date: 2-7-92	Received (signature):	Printed name:	Date: 2-7-92
		Time: 1300			Time: 1300
		Date:			Date:
		Time:			Time:

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

Last Revision Date: 10/15/91