Weiss Associates
Environmental and Geologic Services
5500 Shellmound Street, Emeryville, CA 94608-2411
Fax: 510-547-5043 Phone: 510-547-5420

February 12, 1993

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

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

Dear Mr. Hiett:

This letter describes recently completed and anticipated activities at the Shell service station referenced above (Figure 1). This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 265.d. Included below are descriptions and results of activities performed in the fourth quarter 1992 and proposed work for the first quarter 1993.

Fourth Quarter 1992 Activities:

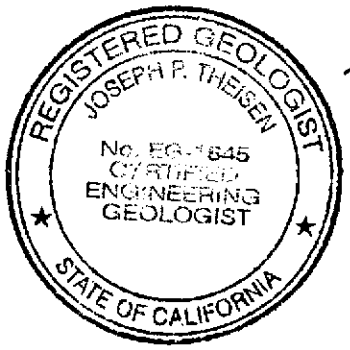
- EMCON Associates (EMCON) of San Jose, California measured depths to ground water in all site wells and collected ground water samples from eleven of the twelve site wells. Well OMW-13 contained floating hydrocarbons and was not sampled. EMCON's report describing these activities and presenting analytic results for ground water is included as Attachment A.

- Weiss Associates (WA) used EMCON's ground water elevation calculations to prepare a ground water elevation contour map (Figure 2) and a benzene concentration contour map (Figure 3).

Anticipated First Quarter 1993 Activities:

WA will submit a report presenting the results of the first quarter 1993 ground water sampling and ground water depth measurements. The report will include tabulated chemical analytic results, ground water elevation contour map, and a benzene concentrations contour map.

Please call if you have any questions.



Sincerely,
Weiss Associates

J. Michael Asport
Technical Assistant

Joseph P. Theisen, C.E.G.
Senior Hydrogeologist

JMA/JPT:jma

J:\SHELL\600\601QMJA3.WP

Attachments: Figures
A - EMCON's Ground Water Monitoring Report

cc: Paul Hayes, Shell Oil Company, P.O. Box 5278, Concord, CA 94520-9998
Larry Turner, Shell Oil Company, P.O. Box 4848, Anaheim, CA 92803
Brian Oliva, Alameda County Department of Environmental Health, 80 Swan Way, Room 200, Oakland, CA 94621-1426

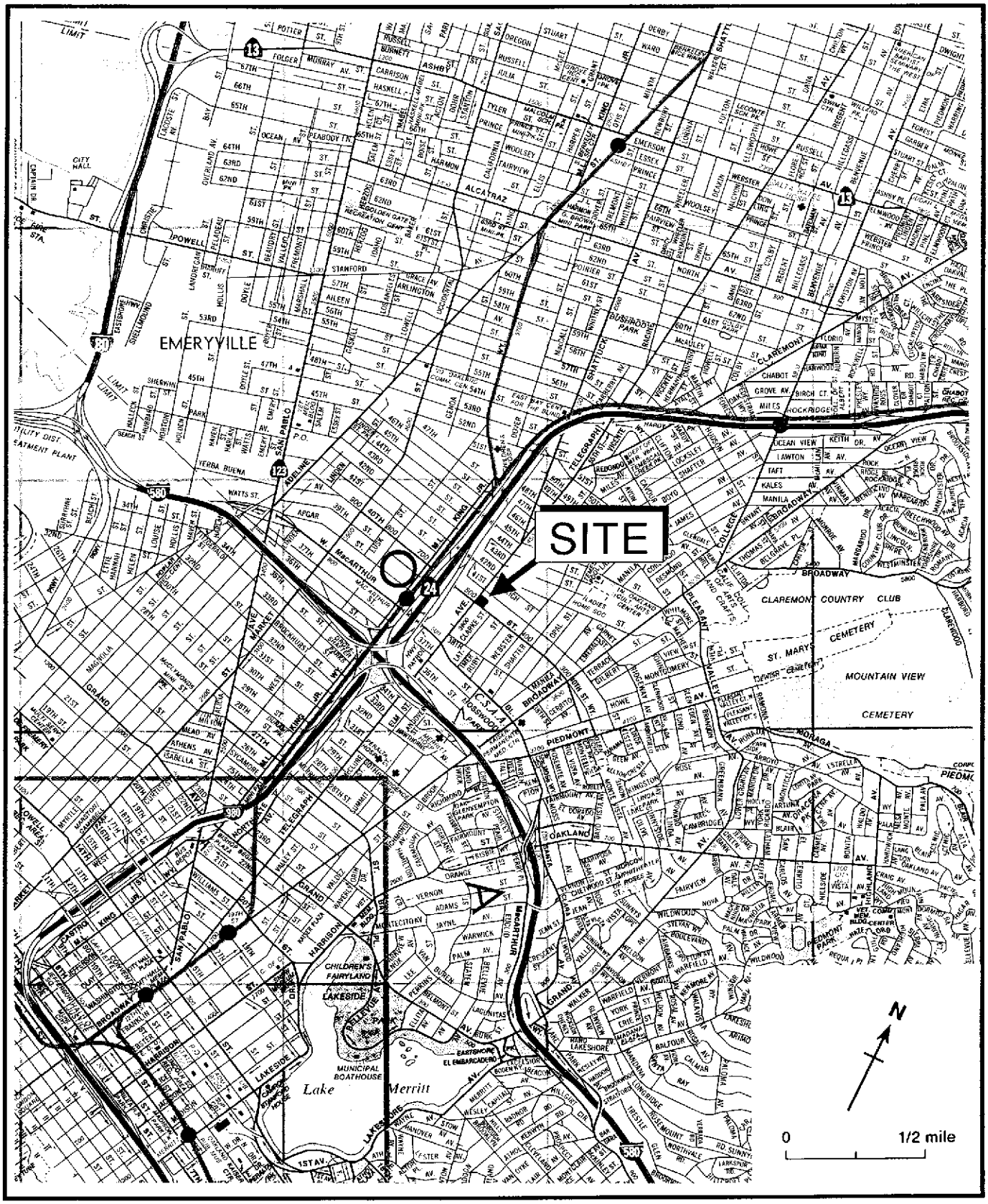


Figure 1. Site Location Map - Shell Service Station WIC #204-5508-4903, 500 40th Street, Oakland, California

2/28/92

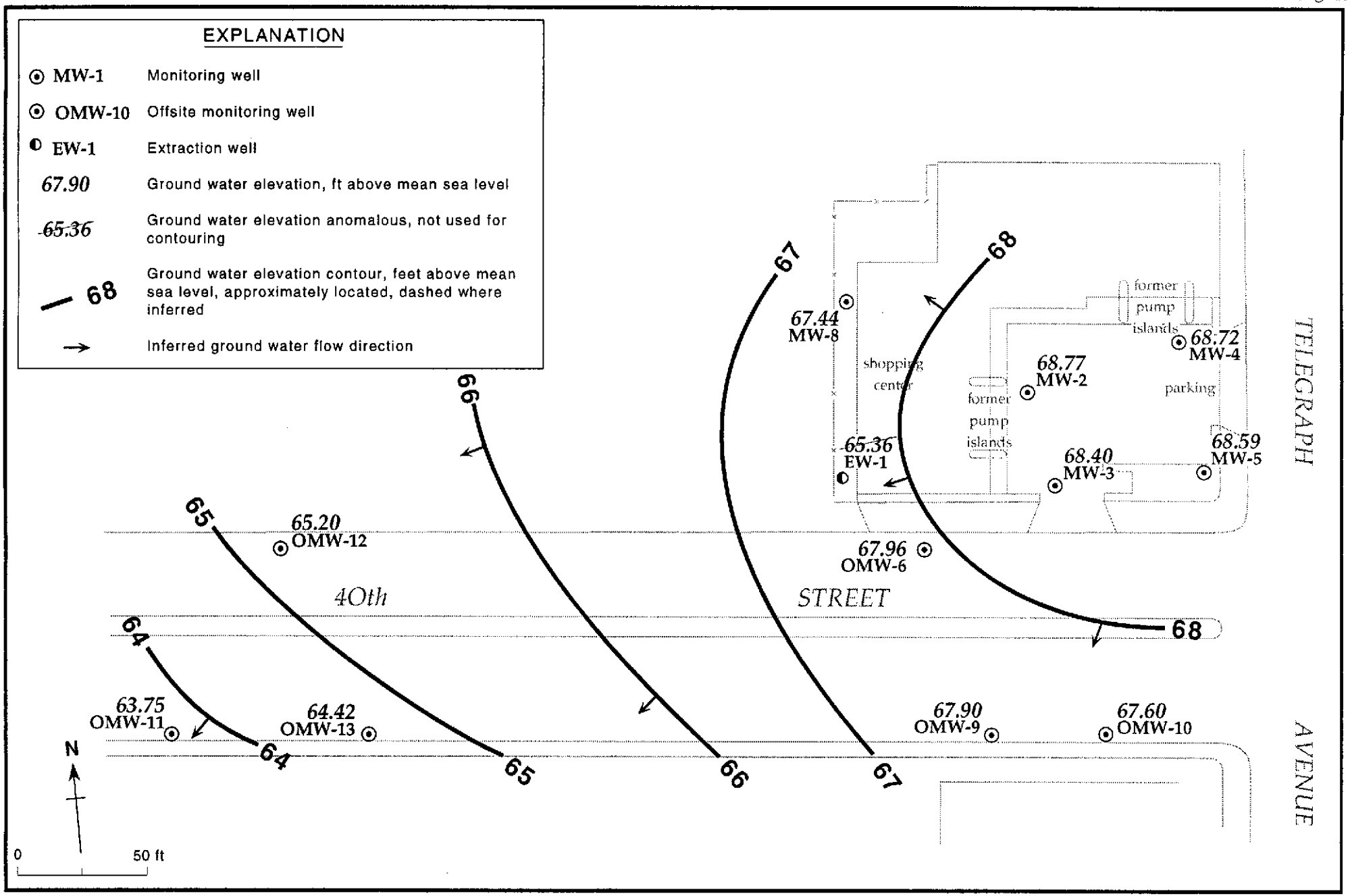


Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - November 18, 1992 - Shell Service Station, WIC #204-5508-4903, 500 40th Street, Oakland, California

1/25/93

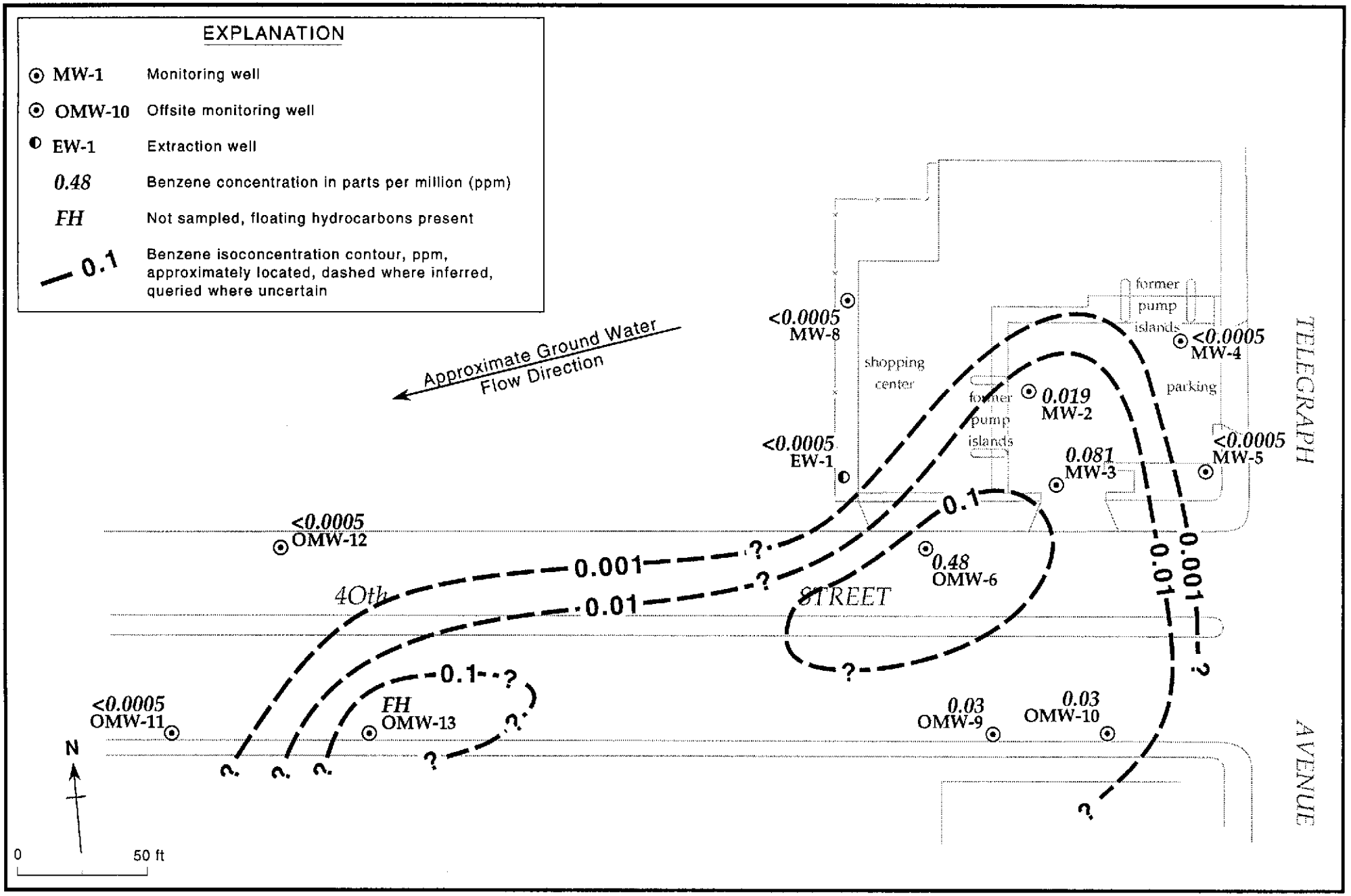


Figure 3. Benzene Concentrations in Ground Water - November 18, 1992 - Shell Service Station, WIC #204-5508-4903, 500 40th Street, Oakland, California

1/25/93

ATTACHMENT A
GROUND WATER MONITORING REPORT AND ANALYTIC REPORT

EMCON
ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

December 8, 1992
Project: 0G67-049.01
WIC#: 204-5508-4903

Mr. David Elias
Weiss Associates
5500 Shellmound Street
Emeryville, California 94608-2411

Re: Fourth quarter 1992 ground-water monitoring report, Shell Oil Company, 500 40th Street, Oakland, California

Dear Mr. Elias:

This letter presents the results of the fourth quarter 1992 ground-water monitoring event for the Shell Oil Company (Shell) site located at 500 40th Street, Oakland, California (figure 1). Fourth quarter monitoring was conducted on November 18, 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 2 (supplied by Weiss Associates). During the survey, wells EW-1, MW-2 through MW-5, OMW-6, MW-8, and OMW-9 through OMW-13 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. Floating product, 0.07 foot thick, was observed in well OMW-13. Total depth was measured to the nearest 0.1 foot. Results of the fourth quarter water-level survey, and available data from four previous surveys, are summarized in table 1.

SAMPLING AND ANALYSIS

Ground-water samples were collected from monitoring wells EW-1, MW-2 through MW-5, OMW-6, MW-8, and OMW-9 through OMW-12 on November 18, 1992. Well OMW-13 contained floating product and was not sampled during fourth quarter monitoring. Prior to sample collection, the wells were purged with an electric submersible pump (well EW-1), a centrifugal pump (wells MW-8 and OMW-11), or polyvinyl chloride bailers (all other wells). 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. Well OMW-10 was evacuated to dryness before three casings were removed. The well was allowed to recharge for up to 24 hours.

1938 Junction Avenue, San Jose, California 95131-2102, (408) 453-0719, Fax (408) 453-0452

Samples were collected after the well had recharged to a sufficient level. Field measurements from fourth quarter monitoring, and available measurements from 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 Anametrix Inc. 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 with deionized water prior to use at each well.

Quality control samples for fourth quarter monitoring included a trip blank (TB), a field blank (FB), and a duplicate well sample (MW-2D) collected from well MW-2. All water samples collected during fourth quarter monitoring were analyzed for total petroleum hydrocarbons as gasoline (TPH-g), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Additional ground-water samples collected from wells OMW-9 and OMW-11 were analyzed for total petroleum hydrocarbons as diesel (TPH-d).

ANALYTICAL RESULTS

Analytical results for the fourth quarter 1992 monitoring event, and available results from four previous monitoring events, are summarized in table 2. The original certified analytical report and final chain-of-custody document 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
Table 2 - Summary of analytical results
Figure 1 - Site location
Figure 2 - Monitoring well locations
Certified analytical report
Chain-of-custody document

Table 1
Monitoring Well Field Measurement Data
Fourth Quarter 1992

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

Date: 12/08/92
Project Number: G67-49.01

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)
EW-1	10/30/91	78.26	12.72	65.54	NR	ND	10/30/91	NR	NR	NR	NR
EW-1	03/18/92	78.26	11.71	66.55	38.6	ND	02/15/92	6.56	575	62.5	24
EW-1	05/20/92	78.26	12.84	65.42	38.5	ND	05/22/92	6.64	676	66.3	6.0
EW-1	08/19/92	78.26	13.04	65.22	38.5	ND	08/19/92	6.62	570	68.7	5.58
EW-1	11/18/92	78.26	12.90	65.36	38.4	ND	11/18/92	6.74	516	69.0	4.90
MW-2	10/30/91	80.80	11.70	69.10	NR	ND	10/30/91	NR	NR	NR	NR
MW-2	03/18/92	80.80	11.10	69.70	19.5	ND	02/15/92	6.25	401	64.7	130
MW-2	05/20/92	80.80	12.12	68.68	19.5	ND	05/21/92	6.50	465	69.9	>200
MW-2	08/19/92	80.80	12.18	68.62	19.4	ND	08/19/92	6.62	412	69.7	336
MW-2	11/18/92	80.80	12.03	68.77	19.5	ND	11/18/92	6.50	395	68.6	63.0
MW-3	10/30/91	79.60	10.93	68.67	NR	ND	10/30/91	NR	NR	NR	NR
MW-3	03/18/92	79.60	10.54	69.06	18.7	ND	02/15/92	6.28	409	64.1	96
MW-3	05/20/92	79.60	10.79	68.81	18.7	ND	05/21/92	6.58	500	69.1	>200
MW-3	08/19/92	79.60	11.23	68.37	18.7	ND	08/19/92	6.40	450	71.4	36.1
MW-3	11/18/92	79.60	11.20	68.40	16.8	ND	11/18/92	6.52	439	71.0	16.3
MW-4	10/30/91	81.00	12.02	68.98	NR	ND	10/30/91	NR	NR	NR	NR
MW-4	03/18/92	81.00	11.34	69.66	14.9	ND	02/15/92	6.26	339	66.2	40
MW-4	05/20/92	81.00	12.35	68.65	14.9	ND	05/21/92	6.27	394	70.7	>200
MW-4	08/19/92	81.00	12.41	68.59	14.7	ND	08/19/92	6.29	425	70.9	259
MW-4	11/18/92	81.00	12.28	68.72	14.9	ND	11/18/92	6.38	368	69.7	251

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
Fourth Quarter 1992

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

Date: 12/08/92
Project Number: G67-49.01

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-5	10/30/91	81.50	12.73	68.77	NR	ND	10/30/91	NR	NR	NR	NR
MW-5	03/18/92	81.50	12.52	68.98	20.1	ND	02/15/92	6.45	377	66.1	>200
MW-5	05/20/92	81.50	13.05	68.45	20.2	ND	05/20/92	6.43	367	67.3	>200
MW-5	08/19/92	81.50	13.04	68.46	20.1	ND	08/19/92	6.37	421	68.6	953
MW-5	11/18/92	81.50	12.91	68.59	20.1	ND	11/18/92	6.49	369	68.2	422
OMW-6	10/30/91	77.90	10.50	67.40	NR	ND	10/30/91	NR	NR	NR	NR
OMW-6	03/18/92	77.90	9.24	68.66	20.1	ND	02/15/92	6.57	957	61.9	144
OMW-6	05/20/92	77.90	10.13	67.77	20.2	ND	05/21/92	6.80	1249	68.1	>200
OMW-6	08/19/92	77.90	10.16	67.74	20.1	ND	08/19/92	6.59	1055	70.6	150
OMW-6	11/18/92	77.90	9.94	67.96	20.1	ND	11/18/92	6.69	990	66.3	283
MW-8	10/30/91	79.91	12.87	67.04	NR	ND	10/30/91	NR	NR	NR	NR
MW-8	03/18/92	79.91	11.54	68.37	38.7	ND	02/15/92	6.28	381	62.2	>200
MW-8	05/20/92	79.91	12.32	67.59	38.8	ND	05/20/92	6.69	372	68.2	>200
MW-8	08/19/92	79.91	12.58	67.33	38.7	ND	08/19/92	6.28	390	65.9	>200
MW-8	11/18/92	79.91	12.47	67.44	38.7	ND	11/18/92	6.51	380	68.0	484
OMW-9	10/30/91	77.71	NR	NR	NR	ND	10/30/91	NR	NR	NR	NR
OMW-9	03/18/92	77.71	8.76	68.95	17.2	ND	03/18/92	6.81	663	62.3	>200
OMW-9	05/20/92	77.71	IW	IW	IW	IW	05/20/92	IW	IW	IW	IW
OMW-9	08/19/92	77.71	9.98	67.73	17.2	ND	08/19/92	6.83	657	67.1	132
OMW-9	11/18/92	77.71	9.81	67.90	17.2	ND	11/18/92	6.71	645	67.2	291

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
IW = Inaccessible well; well was inaccessible and was not sampled

Table 1
Monitoring Well Field Measurement Data
Fourth Quarter 1992

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

Date: 12/08/92
Project Number: G67-49.01

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)
OMW-10	10/31/91	77.91	10.10	67.81	NR	ND	10/31/91	NR	NR	NR	NR
OMW-10	03/18/92	77.91	9.55	68.36	16.0	ND	02/15/92	6.61	469	59.3	>200
OMW-10	05/20/92	77.91	10.41	67.50	16.0	ND	05/21/92	6.93	543	70.3	>200
OMW-10	08/19/92	77.91	10.46	67.45	16.0	ND	08/19/92	6.93	558	67.9	755
OMW-10	11/18/92	77.91	10.31	67.60	16.0	ND	11/18/92	6.65	472	63.8	385
OMW-11	02/15/92	75.76	IW	IW	IW	IW	02/15/92	IW	IW	IW	IW
OMW-11	03/18/92	75.76	IW	IW	IW	IW	03/18/92	IW	IW	IW	IW
OMW-11	05/20/92	75.76	IW	IW	IW	IW	05/20/92	IW	IW	IW	IW
OMW-11	08/19/92	75.76	12.06	63.70	19.7	ND	08/19/92	6.39	458	70.6	>1000
OMW-11	11/18/92	75.76	12.01	63.75	19.7	ND	11/18/92	6.49	450	70.1	>1000
OMW-12	12/02/91	75.65	10.31	65.34	NR	NR	12/02/91	NR	NR	NR	NR
OMW-12	03/18/92	75.65	8.93	66.72	19.5	ND	03/18/92	6.23	458	65.0	>200
OMW-12	05/20/92	75.65	10.26	65.39	19.4	ND	05/20/92	6.55	434	65.9	>200
OMW-12	08/19/92	75.65	10.53	65.12	19.5	ND	08/19/92	6.58	459	69.0	570
OMW-12	11/18/92	75.65	10.45	65.20	19.5	ND	11/18/92	6.54	425	67.3	343
OMW-13	11/22/91	76.36	11.96	64.40	NR	NR	11/22/91	NR	NR	NR	NR
OMW-13	03/18/92	76.36	10.84	65.52	21.0	ND	03/18/92	6.50	885	66.8	>200
OMW-13	05/20/92	76.36	IW	IW	IW	IW	05/20/92	IW	IW	IW	IW
OMW-13	08/19/92	76.36	12.12	64.24	21.0	ND	08/19/92	6.66	897	65.8	183
OMW-13	11/18/92	76.36	12.00	64.42**	21.0	0.07	11/18/92	FP	FP	FP	FP

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
IW = Inaccessible well; well was inaccessible and was not sampled
** = groundwater elevation corrected to include 80 percent of the floating product thickness measured in the well
FP =

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

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

Date: 12/08/92
Project Number: G67-49.01

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)
EW-1	10/30/91	0.07	0.0026	<0.0005	<0.0005	<0.0005	<0.05
EW-1	02/15/92	<0.05	0.0021	<0.0005	<0.0005	<0.0005	NA
EW-1	05/22/92	0.099	0.0041	<0.0005	<0.0005	<0.0005	NA
EW-1	08/19/92	0.14	0.0066	<0.0005	<0.0005	<0.0005	NA
EW-1	11/18/92	0.056	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-2	10/30/91	0.52	0.056	<0.0005	0.056	0.1	0.3
MW-2	02/15/92	2.3	0.087	<0.0025	0.088	0.15	2.2#
MW-2	05/21/92	0.70	0.024	0.0010	0.034	0.048	NA
MW-2	08/19/92	0.74	0.021	<0.0025	0.024	0.026	NA
MW-2	11/18/92	0.92	0.019	<0.0025	0.030	0.051	NA
MW-2D	08/19/92	0.84	0.031	<0.0025	0.036	0.043	NA
MW-2D	11/18/92	0.87	0.025	<0.0025	0.034	0.052	NA
MW-3	10/30/91	1.9	0.16	0.028	0.063	0.18	0.48
MW-3	02/15/92	2.3	0.17	0.031	0.059	0.18	0.78#
MW-3	05/21/92	1.5	0.16	0.020	0.044	0.14	NA
MW-3	08/19/92	4.5	0.21	0.064	0.089	0.31	NA
MW-3	11/18/92	2.4	0.081	0.014	0.039	0.14	NA
MW-4	10/30/91	0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
MW-4	02/15/92	0.09	0.0009	<0.0005	<0.0005	<0.0005	NA
MW-4	05/21/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-4	08/19/92	0.082^	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-4	11/18/92	0.085^	<0.0005	<0.0005	<0.0005	<0.0005	NA

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
NA = Not analyzed
# = Concentration reported as diesel is primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene
^ = Concentration reported as gasoline is primarily due to the presence of discrete hydrocarbon peaks not indicative of gasoline

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

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

Date: 12/08/92
Project Number: G67-49.01

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)
MW-5	10/30/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
MW-5	02/15/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-5	05/20/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-5	08/19/92	0.055^	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-5	11/18/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
OMW-6	10/30/91	20.	0.71	0.24	0.41	1.7	4.6
OMW-6	02/15/92	35.	0.69	0.42	0.65	3.0	27.#
OMW-6	05/21/92	15.	0.46	0.11	0.30	1.6	NA
OMW-6	08/19/92	24.	0.60	0.30	0.46	2.0	NA
OMW-6	11/18/92	29.	0.48	0.25	0.45	2.3	NA
MW-8	10/30/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
MW-8	02/15/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-8	05/20/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-8	08/19/92	0.060^	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-8	11/18/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
OMW-9	10/30/91	NR	NR	NR	NR	NR	NR
OMW-9	03/18/92	1.8*	0.084	0.011	0.049	0.060	0.21
OMW-9	05/20/92	IW	IW	IW	IW	IW	IW
OMW-9	08/19/92	4.6	0.063	<0.025	0.048	0.070	0.22#
OMW-9	11/18/92	1.8	0.030	0.0092	0.046	0.061	0.13#

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
NA = Not analyzed
^ = Concentration reported as gasoline is primarily due to the presence of discrete hydrocarbon peaks not indicative of gasoline
# = Concentration reported as diesel is primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene
NR = Not reported; data not available
* = Compounds detected and calculated as gasoline do not match the standard gasoline chromatographic pattern
IW = Inaccessible well; well was inaccessible and was not sampled

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

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

Date: 12/08/92
Project Number: G67-49.01

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)
OMW-10	10/31/91	0.63	0.100	<0.0005	0.033	0.026	0.15
OMW-10	02/15/92	0.81	0.085	0.0025	0.044	0.038	0.57#
OMW-10	05/21/92	0.28	0.047	0.0007	0.0040	0.0031	NA
OMW-10	08/19/92	0.33	0.035	<0.0010	0.0060	0.0041	NA
OMW-10	11/18/92	0.30	0.030	0.0008	0.0071	0.0063	NA
OMW-11	02/15/92	IW	IW	IW	IW	IW	IW
OMW-11	03/18/92	IW	IW	IW	IW	IW	IW
OMW-11	05/20/92	IW	IW	IW	IW	IW	IW
OMW-11	08/19/92	0.27^	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
OMW-11	11/18/92	0.40^	<0.0005	<0.0005	<0.0005	<0.0005	0.10
OMW-12	12/02/91	<1	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
OMW-12	03/18/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
OMW-12	05/20/92	0.18^	<0.0005	<0.0005	<0.0005	<0.0005	NA
OMW-12	08/19/92	0.23^	<0.0005	<0.0005	<0.0005	<0.0005	NA
OMW-12	11/18/92	0.22^	<0.0005	<0.0005	<0.0005	<0.0005	NA
OMW-13	11/22/91	0.90	0.037	0.0095	0.074	0.130	1.0
OMW-13	03/18/92	9.*	0.24	0.028	0.32	0.32	0.59#
OMW-13	05/20/92	IW	IW	IW	IW	IW	IW
OMW-13	08/19/92	7.0	0.18	0.036	0.15	0.15	0.47#
OMW-13	11/18/92	FP	FP	FP	FP	FP	FP

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
# = Concentration reported as diesel is primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene
NA = Not analyzed
IW = Inaccessible well; well was inaccessible and was not sampled
^ = Concentration reported as gasoline is primarily due to the presence of discrete hydrocarbon peaks not indicative of gasoline
* = Compounds detected and calculated as gasoline do not match the standard gasoline chromatographic pattern
FP =

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

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

Date: 12/08/92
Project Number: G67-49.01

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)
FB	08/19/92	<0.05	<0.0005	0.0005	<0.0005	0.0005	NA
FB	11/18/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
TB	02/15/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
TB	03/18/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
TB	05/21/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
TB	08/19/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
TB	11/18/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA

TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
NA = Not analyzed

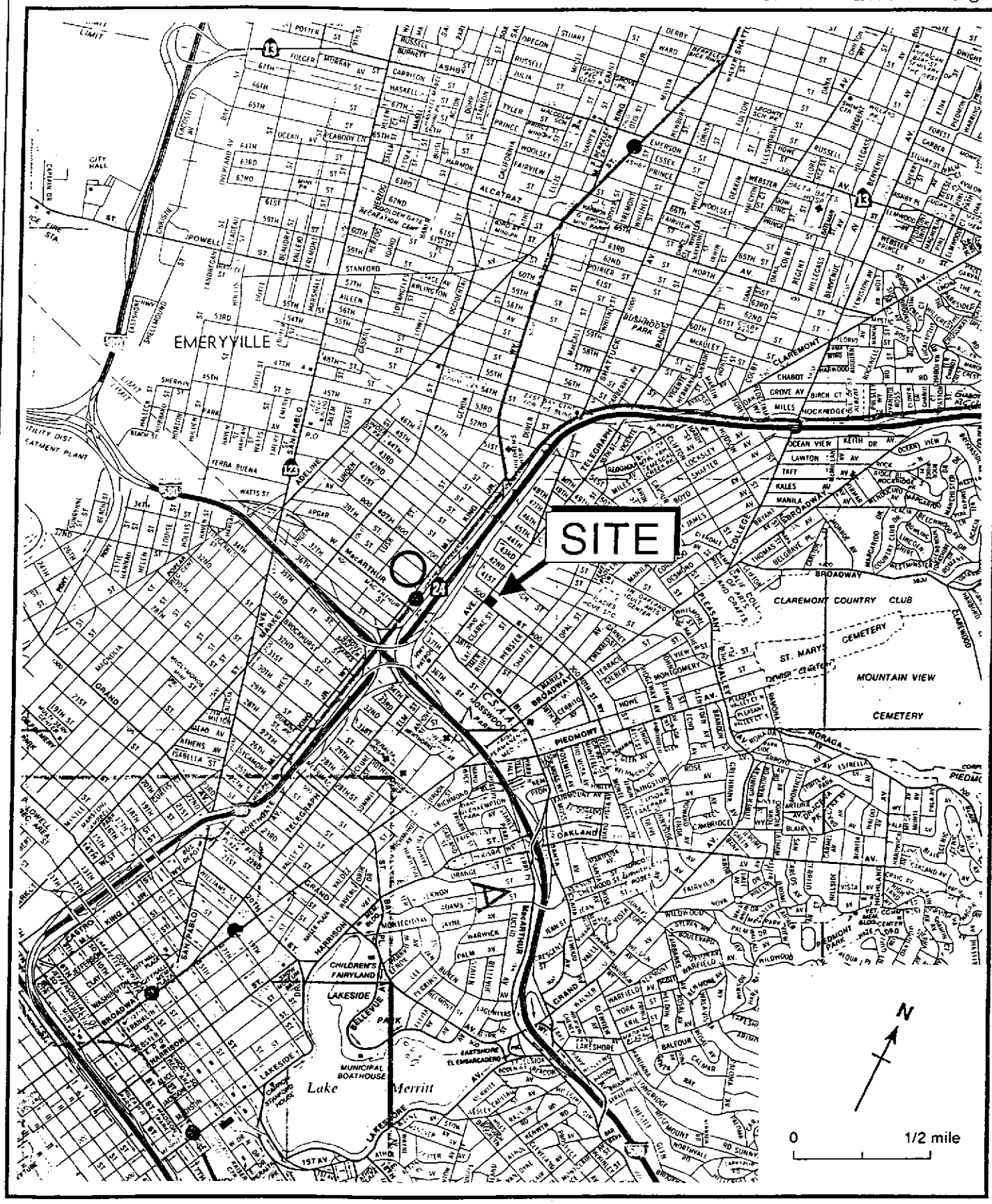


Figure 1. Site Location Map - Shell Service Station WIC #204-5508-4903, 500 40th Street, Oakland, California

2/28/92

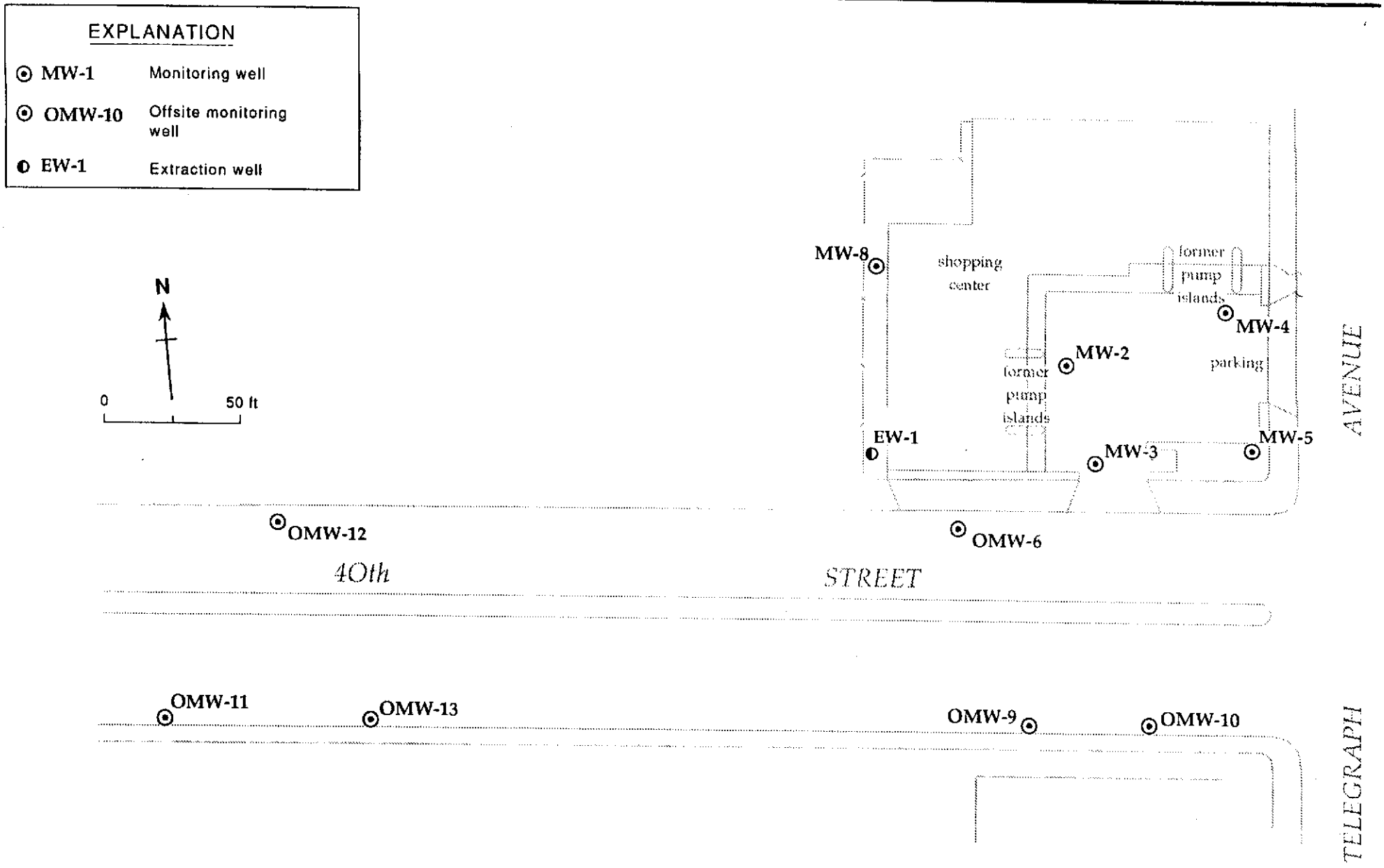


Figure 2. Monitoring Well Locations - Shell Service Station WIC #204-5508-4903, 500 40th Street, Oakland, California

ANAMETRIX INC
Environmental & Analytical Chemistry

Part of INCHCAPE ENVIRONMENTAL

REPORT

MR. DAVID LARSEN
EMCON ASSOCIATES
1938 JUNCTION AVE.
SAN JOSE, CA 95131

Workorder # : 9211283
Date Received : 11/18/92
Project ID : 204-5508-4903
Purchase Order: MOH-B813

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

ANAMETRIX ID	CLIENT SAMPLE ID
9211283- 1	MW-5
9211283- 2	MW-8
9211283- 3	OMW-12
9211283- 4	MW-4
9211283- 5	EW-1
9211283- 6	OMW-11
9211283- 7	OMW-10
9211283- 8	MW-2
9211283- 9	MW-3
9211283-10	OMW-9
9211283-11	OMW-6
9211283-12	MW-2D
9211283-13	TB
9211283-14	FB

This report consists of 10 pages not including the cover letter, and is organized in sections according to the specific Anametrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anametrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

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

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

Sarah Schoen, Ph.D.
Laboratory Director

12-04-92
Date

EMCON ASSOCIATES

DEC 07 1992

RECEIVED

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

MR. DAVID LARSEN
EMCON ASSOCIATES
1938 JUNCTION AVE.
SAN JOSE, CA 95131

Workorder # : 9211283
Date Received : 11/18/92
Project ID : 204-5508-4903
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9211283- 6	OMW-11	WATER	11/18/92	TPHd
9211283-10	OMW-9	WATER	11/18/92	TPHd
9211283- 1	MW-5	WATER	11/18/92	TPHg/BTEX
9211283- 2	MW-8	WATER	11/18/92	TPHg/BTEX
9211283- 3	OMW-12	WATER	11/18/92	TPHg/BTEX
9211283- 4	MW-4	WATER	11/18/92	TPHg/BTEX
9211283- 5	EW-1	WATER	11/18/92	TPHg/BTEX
9211283- 6	OMW-11	WATER	11/18/92	TPHg/BTEX
9211283- 7	OMW-10	WATER	11/18/92	TPHg/BTEX
9211283- 8	MW-2	WATER	11/18/92	TPHg/BTEX
9211283- 9	MW-3	WATER	11/18/92	TPHg/BTEX
9211283-10	OMW-9	WATER	11/18/92	TPHg/BTEX
9211283-11	OMW-6	WATER	11/18/92	TPHg/BTEX
9211283-12	MW-2D	WATER	11/18/92	TPHg/BTEX
9211283-13	TB	WATER	11/12/92	TPHg/BTEX
9211283-14	FB	WATER	11/18/92	TPHg/BTEX

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

MR. DAVID LARSEN
EMCON ASSOCIATES
1938 JUNCTION AVE.
SAN JOSE, CA 95131

Workorder # : 9211283
Date Received : 11/18/92
Project ID : 204-5508-4903
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- The concentrations reported as gasoline for samples OMW-12, MW-4 and OMW-11 are primarily due to the presence of discrete hydrocarbon peaks not indicative of gasoline.
- The concentration reported as diesel for sample OMW-9 is primarily due to the presence of a lighter petroleum product, possibly gasoline or kerosene.

Department Supervisor 12/2/92 Date

Chemist 12/02/92 Date

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

Anametrix W.O.: 9211283
Matrix : WATER
Date Sampled : 11/18/92

Project Number : 204-5508-4903
Date Released : 12/01/92

COMPOUNDS	Reporting Limit (mg/L)	Sample I.D.# MW-5 -01	Sample I.D.# MW-8 -02	Sample I.D.# OMW-12 -03	Sample I.D.# MW-4 -04	Sample I.D.# EW-1 -05
Benzene	0.0005	ND	ND	ND	ND	ND
Toluene	0.0005	ND	ND	ND	ND	ND
Ethylbenzene	0.0005	ND	ND	ND	ND	ND
Total Xylenes	0.0005	ND	ND	ND	ND	ND
TPH as Gasoline	0.050	ND	ND	0.22	0.085	0.056
% Surrogate Recovery		117%	116%	112%	121%	120%
Instrument I.D.		HP12	HP12	HP12	HP12	HP12
Date Analyzed		11/20/92	11/20/92	11/20/92	11/20/92	11/21/92
RLMF		1	1	1	1	1

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

Anametrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

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

Steve Sun 12/02/92
Analyst Date

Cheryl Balmer 12/1/92
Supervisor Date

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

Anametrix W.O.: 9211283
Matrix : WATER
Date Sampled : 11/18/92

Project Number : 204-5508-4903
Date Released : 12/01/92

	Reporting Limit	Sample I.D.# OMW-11	Sample I.D.# OMW-10	Sample I.D.# MW-2	Sample I.D.# MW-3	Sample I.D.# OMW-9
COMPOUNDS	(mg/L)	-06	-07	-08	-09	-10
Benzene	0.0005	ND	0.030	0.019	0.081	0.030
Toluene	0.0005	ND	0.0008	ND	0.014	0.0092
Ethylbenzene	0.0005	ND	0.0071	0.030	0.039	0.046
Total Xylenes	0.0005	ND	0.0063	0.051	0.14	0.061
TPH as Gasoline	0.050	0.40	0.30	0.92	2.4	1.8
% Surrogate Recovery		98%	118%	100%	109%	112%
Instrument I.D.		HP12	HP12	HP12	HP12	HP4
Date Analyzed		11/30/92	11/21/92	11/21/92	11/21/92	11/23/92
RLMF		1	1	5	25	5

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

Anametrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

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

Reggie Davison 12/4/92
Analyst Date

Supervisor Date

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

Anametrix W.O.: 9211283
Matrix : WATER
Date Sampled : 11/18/92

Project Number : 204-5508-4903
Date Released : 12/01/92

COMPOUNDS	Reporting Limit (mg/L)	Sample I.D.# OMW-6 -11	Sample I.D.# MW-2D -12	Sample I.D.# TB -13	Sample I.D.# FB -14	Sample I.D.# BN2001E2 BLANK
Benzene	0.0005	0.48	0.025	ND	ND	ND
Toluene	0.0005	0.25	ND	ND	ND	ND
Ethylbenzene	0.0005	0.45	0.034	ND	ND	ND
Total Xylenes	0.0005	2.3	0.052	ND	ND	ND
TPH as Gasoline	0.050	29	0.87	ND	ND	ND
% Surrogate Recovery		120%	99%	127%	102%	99%
Instrument I.D.		HP4	HP12	HP4	HP12	HP12
Date Analyzed		11/23/92	11/21/92	11/23/92	11/20/92	11/20/92
RLMF		100	5	1	1	1

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

Anametrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

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

Steve Sma 12/02/92
Analyst Date

Cheryl Bal 12/1/92
Supervisor Date

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

Anametrix W.O.: 9211283
Matrix : WATER
Date Sampled : N/A

Project Number : 204-5508-4903
Date Released : 12/01/92

COMPOUNDS	Reporting Limit (mg/L)	Sample I.D.# BN2303E2 BLANK	Sample I.D.# BN3001E3 BLANK
Benzene	0.0005	ND	ND
Toluene	0.0005	ND	ND
Ethylbenzene	0.0005	ND	ND
Total Xylenes	0.0005	ND	ND
TPH as Gasoline	0.050	ND	ND
% Surrogate Recovery		125%	86%
Instrument I.D.		HP4	HP12
Date Analyzed		11/23/92	11/30/92
RLMF		1	1

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

Anametrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

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

Steve Sosa 12/01/92
Analyst Date

Cheryl Bateman 12/1/92
Supervisor Date

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

Anametrix W.O.: 9211283
Matrix : WATER
Date Sampled : 11/18/92
Date Extracted: 11/19/92

Project Number : 204-5508-4903
Date Released : 12/01/92
Instrument I.D.: HP23

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/L)	Amount Found (mg/L)
9211283-06	OMW-11	11/20/92	0.050	0.10
9211283-10	OMW-9	11/20/92	0.050	0.13
DWBL111992	METHOD BLANK	11/19/92	0.050	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 0.050 mg/L.
ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3510.

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

Reggie Davison 12/3/92
Analyst Date

Cheryl Bulmer 12/3/92
Supervisor Date

TOTAL VOLATILE HYDROCARBON MATRIX SPIKE REPORT
EPA METHOD 5030 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 204-5508-4903 MW-8
Matrix : WATER
Date Sampled : 11/18/92
Date Analyzed : 11/20/92

Anametrix I.D. : 9211283-02
Analyst : [illegible]
Supervisor : [illegible]
Date Released : 12/01/92
Instrument I.D.: HP12

COMPOUND	SPIKE AMT (mg/L)	SAMPLE CONC (mg/L)	REC MS	%REC MS	REC MD (mg/L)	%REC MD	RPD	%REC LIMITS
BENZENE	0.020	0.000	0.021	105%	0.022	110%	5%	49-159
TOLUENE	0.020	0.000	0.022	110%	0.023	115%	4%	53-156
ETHYLBENZENE	0.020	0.000	0.022	110%	0.023	115%	4%	54-151
TOTAL XYLENES	0.020	0.000	0.022	110%	0.021	105%	-5%	56-157
p-BFB				107%		104%		53-147

* Quality control established by Anametrix, Inc.

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

Sample I.D.	: LAB CONTROL SAMPLE	Anametrix I.D.	: LCSW1120
Matrix	: WATER	Analyst	: M
Date Sampled	: N/A	Supervisor	: CP
Date Analyzed	: 11/20/92	Date Released	: 12/01/92
		Instrument ID	: HP12

COMPOUND	SPIKE AMT. (mg/L)	LCS (mg/L)	REC LCS	%REC LIMITS
Benzene	0.020	0.025	125%	49-159
Toluene	0.020	0.026	130%	53-156
Ethylbenzene	0.020	0.027	135%	54-151
TOTAL Xylenes	0.020	0.026	130%	56-157
P-BFB			80%	53-147

* Limits established by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3550 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: LAB CONTROL SAMPLE	Anametrix I.D.	: LCSW1119
Matrix	: WATER	Analyst	: M
Date Sampled	: N/A	Supervisor	: CB
Date Extracted	: 11/19/92	Date Released	: 12/01/92
Date Analyzed	: 11/19/92	Instrument I.D.	: HP23

COMPOUND	SPIKE AMT (mg/L)	REC LCS (mg/L)	% REC LCS	% REC LIMITS
Diesel	1.25	1.18	94%	72-143

*Limits established by Anametrix, Inc.

9211283 (1) 10/30

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No: 1506-C

Date: 11-18-92
Page 1 of 2

Site Address: 500 40th Street Oakland, CA

WIC#: 204-5508-4903

Shell Engineer: Paul Hayes Phone No.: (510) Fax#: 675-6169

Consultant Name & Address: 1938 Junction Avenue EMCON Associates San Jose, CA 95131

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

Comments: 3- VOAs (HCl) for gas, BTEX
2- Liter Glass (SE) for diesel

Sampled by: MAdler Kevin Reichelderfer

Printed Name: MADLER KEVIN REICHELDERFER

LAB: Anametrix

CHECK ONE (1) BOX ONLY | CT/DT
- Quarterly Monitoring [X] 6441
- Site Investigation [ ] 6441
- Soil Classify/Disposal [ ] 6442
- Water Classify/Disposal [ ] 6443
- Soil/Air Rem. or Sys. O & M [ ] 6452
- Water Rem. or Sys. O & M [ ] 6453
- Other [ ]

TURN AROUND TIME
- 24 hours [ ]
- 48 hours [ ]
- 15 days [X] (Normal)
- Other [ ] ____

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

Analysis Required

	Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020 gasoline			Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
(1)	MW-5	11-18-92			X		3						X				40 ml	HCl	No		
(2)	MW-8	"			X		3						X				"	"	"		
(3)	OMW-12	"			X		3						X				"	"	"		
(4)	MW-4	"			X		3						X				"	"	"		
(5)	EW-1	"			X		3						X				"	"	"		
(6)	OMW-11	"			X		5		X				X				"	"	"		
(7)	OMW-10	"			X		3						X				"	"	"		
(8)	MW-2	"			X		3						X				"	"	"		

Relinquished By (signature): MAdler	Printed Name: MADLER	Date: 11-18-92 Time: 1700	Received (signature): Josephine DeCarli	Printed Name: Josephine DeCarli	Date: 11/18/92 Time: 16:10
Relinquished By (signature):	Printed Name:	Date: Time:	Received (signature):	Printed Name:	Date: Time:
Relinquished By (signature):	Printed Name:	Date: Time:	Received (signature):	Printed Name:	Date: Time:

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

Rev. 8/92

Shell Oil Co. COC

9211283 (14) 10/30

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No: 1506-C

Date: 11-18-92
Page 2 of 2

Site Address: 500 40th Street Oakland, CA

WIC#: 204-5508-4903

Shell Engineer: Paul Hayes — Phone No.: (510) 675-6169

Consultant Name & Address: EMCON Associates 1938 Junction Avenue San Jose, CA 95131

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

Comments: See page 1

Sampled by: M Adler Kevin Reichelderfer

Printed Name: M ADLER KEVIN REICHELDERFER

LAB: Anametrix

CHECK ONE (1) BOX ONLY — CT/DT

- Quarterly Monitoring: X — 6441
- Site Investigation: ☐ — 6441
- Soil Classify/Disposal: ☐ — 6442
- Water Classify/Disposal: ☐ — 6443
- Soil/Air Rem. or Sys. O & M: ☐ — 6452
- Water Rem. or Sys. O & M: ☐ — 6453
- Other: ☐

TURN AROUND TIME

- 24 hours ☐
- 48 hours ☐
- 15 days X (Normal)
- Other ☐ ____

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

	Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020 gasoline	Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
	OMW-13				X		5		X				X		40 ml	HCl	NO	No samples - Product in well	
(9)	MW-3	11-18-92			X		3						X						
(10)	OMW-9				X		5		X				X						
(11)	OMW-6				X		3						X						
(12)	MW-2D				X		3						X						
(13)	TB	11-12-92			X		3						X						
(14)	FB	11-18-92			X		3						X						

Relinquished By (signature): M Adler	Printed Name: M ADLER	Date: 11-18-92	Received (signature): Josephine DeCarli	Printed Name: Josephine DeCarli	Date: 11/18/92
Relinquished By (signature):	Printed Name:	Time: 1610	Received (signature):	Printed Name:	Time: 1610
Relinquished By (signature):	Printed Name:	Date:	Received (signature):	Printed Name:	Date:
		Time:			Time:
		Date:			Date:
		Time:			Time:

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