EXXON COMPANY, U.S.A.

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ENVIRONMENTAL ENGINEERING

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STID #3601

September 11, 1992

Ms. Katherine Chesick
Alameda County Health Agency
Division of Hazardous Materials
80 Swan Way, Suite 200
Oakland, California 94621

RE: **Exxon RAS 7-0104**
1725 Park Street
Alameda, California

Dear Ms. Chesick:

Attached for your review and comment is a letter report entitled **Groundwater Monitoring Results, Third Quarter 1992** for the above referenced Exxon station in Alameda. This report, prepared by Harding Lawson Associates of Novato, California, presents the results of the ground water sampling event performed in July, 1992.

Should you have any questions or require additional information, please do not hesitate to call me at the above listed phone number.

Sincerely,

Marla D. Guensler

Attachment

c - w/attachment:
Mr. Richard Hiett - San Francisco Bay RWQCB

w/o attachment:
Mr. G. A. Lieberman - Harding Lawson Associates

MDG/pdp
0559E/70104LTR.9

August 27, 1992

10495 416

Exxon Company, U.S.A.
2300 Clayton Road
Post Office Box 4032
Concord, California 94524

Attention: Mr. Darwin Lyons

Gentlemen:

Groundwater Monitoring Results, Third Quarter 1992
Exxon Station #7-0104
Alameda, California

This letter presents the results of Harding Lawson Associates' (HLA) third quarter 1992 sampling of seven groundwater monitoring wells at Exxon Station #7-0104, 1725 Park Street, Alameda, California (site). The site history and detailed monitoring well sampling procedures are described in HLA's report *Phase II Evaluation of Petroleum Hydrocarbons, Exxon Service Station R/S #7-0104, 1725 Park Street, Alameda, California*, dated March 21, 1989. This sampling event was conducted on July 16, 1992, and represents HLA's first sampling event authorized by Exxon Company, U.S.A. (Exxon), Work Authorization #90066058, Change Order #3.

Groundwater-Level Monitoring and Groundwater Sampling

HLA has obtained monthly groundwater-level and free-phase petroleum product (FPPP) measurements from the monitoring wells since September 1989. All measurements were performed with an electric oil-water interface probe or a chalked steel tape. During monthly monitoring, the groundwater collected from each well was visually inspected for the presence of FPPP using a clear Lucite bailer. No measurable FPPP has been observed in any of the wells during the course of this investigation.

Prior to groundwater sample collection on July 16, 1992, the monitoring wells were purged a minimum of three well volumes using a PVC bailer or centrifugal pump. The purged water was stored onsite in 55-gallon drums. Measurements of pH, conductivity, and temperature of the purged water were monitored and recorded during purging of the wells. Copies of HLA's Groundwater Sampling Forms documenting sampling activities are attached to this letter.

Groundwater samples were collected from each of the monitoring wells using a stainless-steel bailer and decanted into pre-acidified 40-milliliter volatile organic

analysis (VOA) vials. A quality assurance/quality control (QA/QC) field blank was prepared in the field by decanting laboratory-supplied organic-free water into VOA vials. The groundwater samples and QA/QC field blank were labeled, placed in a cooler with blue ice, and transported under chain of custody procedures to PACE Inc., Novato, California. PACE is a state-certified hazardous waste laboratory.

To help prevent potential cross contamination, all water-level measurement and sampling equipment was decontaminated prior to use by steam cleaning or washing in a low phosphorous soap solution.

Laboratory Analyses

The groundwater samples and field blank were analyzed for total petroleum hydrocarbons (TPH) calibrated as gasoline, and for benzene, toluene, ethylbenzene, and xylenes (BTEX). Groundwater analytical results are summarized in Table 1, along with analytical results from HLA's previous groundwater sampling rounds. Copies of laboratory reports from the July 16, 1992, sampling round are attached to this letter.

Groundwater Gradient and Flow Direction

Potentiometric surface elevations from the July 1992 groundwater-level survey are presented in Table 2, along with previously measured potentiometric surface elevations. Potentiometric surface elevations at the site for the third quarter have decreased over previous quarters, most likely as a result of decreased precipitation. Plate 1 presents a generalized potentiometric surface map for the site. As shown on Plate 1, the generalized local direction of groundwater flow is toward the east at an approximate gradient of 0.04 ft/ft. This flow direction is consistent with previous potentiometric surface data obtained during this investigation.

Laboratory Analytical Results

Laboratory analytical results indicate that petroleum hydrocarbon constituents were detected in all seven onsite wells at concentrations similar to those previously detected. Detected concentrations of TPH as gasoline ranged from 3.4 to 42 milligrams per liter (mg/l). The concentration of benzene exceeds the California Maximum Contaminant Level (MCL) of 1.0 microgram per liter (μg/l) in all monitoring wells at the site. The MCLs for ethylbenzene (680 μg/l) and xylenes (1,750 μg/l) were exceeded in Wells MW-2, MW-3, MW-5, MW-6, and MW-7. The highest concentrations of petroleum hydrocarbon constituents were detected in the groundwater sample collected from Monitoring Well MW-2, located downgradient of the pump island. No petroleum hydrocarbons were detected in the field blank submitted to the laboratory for analysis.

HLA plans to continue quarterly sampling and monthly groundwater level monitoring and has submitted a work plan to the Alameda County Health Department (County) for

an offsite groundwater investigation. The next quarterly sampling event is scheduled for October 1992.

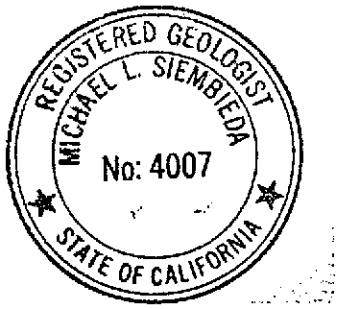
We trust that this is the information Exxon requires at the present time. HLA recommends that copies of this report be submitted to the Regional Water Quality Control Board and the County for their review.

Please call us at (415) 892-0821 if you have any questions.

Yours very truly,

HARDING LAWSON ASSOCIATES

Gary A. Lieberman
Staff Geologist



Michael L. Siembieda
Associate Geologist - RG 4007

GAL/MLS/sg/T25440-H

Attachments:
- Table 1 - Summary of Chemical Results of Groundwater Samples
- Table 2 - Potentiometric Surface Elevations and Product Thickness Measurements
- Plate 1 - Generalized Potentiometric Surface Contour Map, July 16, 1992
- Groundwater Sampling Forms
- Laboratory Analytical Reports

Table 1. Summary of Chemical Results of Groundwater Samples

Well Number	Date	TPH Gasoline mg/l[1]	Benzene µg/l[2]	Toluene µg/l	Ethyl-benzene µg/l	Xylenes µg/l	Total Dissolved Solids mg/l
California MCLs[3]			1.0	1000[4]	680	1750	
MW-1	06/07/88	27	5,000	77	1,100	2,700	NT[5]
	01/17/89	6.8	2,000	91	800	1,600	NT
	06/01/89	1.7	170	6.9	13	230	NT
	09/18/89	2.1	9.0	53	18	130	NT
	12/11/89	5.8	200	42	290	330	NT
	03/07/90	NT	NT	NT	NT	NT	910
	03/13/90	2.3	430	14	16	220	NT
	06/14/90	32	1,400	19	<5[6]	120	NT
	09/19/90	0.95	290	2.9	<0.5	27	NT
	12/17/90	2.1	550	13	350	110	NT
	03/19/91	1.4	900	45	390	150	NT
	07/24/91	9.7	1,300	670	950	2,100	NT
	10/22/91	0.540	220	1.8	110	7.8	NT
	01/21/92	1.8	650	23	300	64	NT
	04/24/92	4.9	1,600	78	660	250	NT
	07/16/92	3.4	1,000	11	550	100	NT
MW-2	06/07/88	110	12,000	12,000	2,100	12,000	NT
	01/17/89	30	6,600	3,300	1,600	7,700	NT
	06/01/89	8.7	330	280	680	1,200	NT
	09/18/89	17	580	280	570	220	NT
	12/11/89	32	1,000	850	310	1,200	NT
	03/13/90	39	3,500	1,500	2,100	3,900	NT
	06/14/90	34	3,800	730	1,600	3,900	NT
	09/19/90	63	670	180	390	1,000	NT
	12/17/90	140	3,700	2,500	3,000	8,300	NT
	03/19/91	48	4,500	1,600	2,100	5,500	NT
	07/24/91	49	3,500	2,200	2,000	6,400	NT
	10/22/91	34	3,700	1,100	1,800	5,200	NT
	01/21/92	21	4,600	1,300	1,700	5,100	NT
	04/24/92	36	5,000	970	2,300	5,200	NT
	07/16/92	42	3,500	490	1,800	3,700	NT
MW-3	06/07/88	28	6,000	80	940	1,900	NT
	01/17/89	5.3	2,500	230	590	1,100	NT
	06/01/89	5.4	330	300	570	680	NT
	09/18/89	12	680	170	350	860	NT
	12/11/89	14	1,100	150	670	690	NT
	03/13/90	18	6,300	200	1,100	1,100	NT
	06/14/90	9.5	1,300	880	310	1,800	NT

Table 1. Summary of Chemical Results of Groundwater Samples (continued)

Well Number	Date	TPH Gasoline mg/l[1]	Benzene µg/l[2]	Toluene µg/l	Ethyl-benzene µg/l	Xylenes µg/l	Total Dissolved Solids mg/l
California MCLs[3]			1.0	1000[4]	680	1750	
MW-3	09/19/90	16	5,000	65	1,500	450	NT
(con't)	12/17/90	6.7	1,500	64	650	460	NT
	03/19/91	18	4,200	2,100	1,100	1,200	NT
	07/24/91	38	6,200	990	2,900	9,600	NT
	10/22/91	23	3,400	150	2,500	4,400	NT
	01/21/92	13	2,700	30	1,800	740	NT
	04/24/92	17	4,200	170	1,600	600	NT
	07/16/92	11	2,700	230	1,100	570	NT
MW-4	01/17/89	19	1,000	1,500	360	2,200	NT
	06/01/89	3.6	180	240	63	810	NT
	09/18/89	6.0	290	200	28	510	NT
	12/11/89	13	750	910	510	1,200	NT
	03/07/90	NT	NT	NT	NT	NT	370
	03/13/90	12	1,500	1,500	470	2,800	NT
	06/14/90	12	5,700	400	1,300	760	NT
	09/19/90	5.5	670	180	390	1,000	NT
	12/17/90	14	1,400	620	540	2,100	NT
	03/19/91	11	1,500	740	620	2,100	NT
	07/24/91	10	1,200	440	410	1,200	NT
	10/22/91	4.6	750	190	350	780	NT
	01/21/92	6	1,300	320	510	1,200	NT
	04/24/92	11	1,700	630	710	1,600	NT
	07/16/92	5.4	870	240	440	700	NT
MW-5	01/17/89	26	8,700	3,900	990	5,900	NT
	06/01/89	5.2	240	220	130	690	NT
	09/18/89	8.0	340	150	140	460	NT
	12/11/89	15	720	320	450	870	NT
	03/13/90	10	3,400	220	280	800	NT
	06/14/90	12	3,300	160	350	730	NT
	09/19/90	8.5	1,800	85	120	460	NT
	12/17/90	18	2,300	810	430	1,400	NT
	03/19/91	17	2,900	610	580	1,200	NT
	07/24/91	16	3,200	320	690	1,100	NT
	10/22/91	6.6	2,000	64	320	480	NT
	01/21/92	14	4,000	190	630	1,300	NT
	04/24/92	12	2,600	120	620	530	NT
	07/16/92	20	4,000	48	880	720	NT

Table 1. Summary of Chemical Results of Groundwater Samples (continued)

Well Number	Date	TPH Gasoline mg/l[1]	Benzene µg/l[2]	Toluene µg/l	Ethyl-benzene µg/l	Xylenes µg/l	Total Dissolved Solids mg/l
California MCLs[3]			1.0	1000[4]	680	1750	
MW-6	01/17/89	38	7,400	9,300	2,000	9,900	NT
	06/01/89	23	1,900	2,500	2,000	6,000	NT
	09/18/89	17	650	410	650	320	NT
	12/11/89	29	1,100	810	330	1,500	NT
	03/13/90	38	12,000	15,000	2,500	12,000	NT
	06/14/90	38	9,100	7,800	2,900	12,000	NT
	09/19/90	22	4,200	300	1,400	3,400	NT
	12/17/90	20	3,100	4,100	890	2,700	NT
	03/19/91	180	11,000	55,000	5,600	28,000	NT
	07/24/91	48	5,400	2,300	2,000	9,000	NT
	10/22/91	18	3,100	700	1,400	2,900	NT
	01/21/92	9.4	2,100	370	1,000	1,100	NT
	04/24/92	42	3,500	8,000	2,100	8,000	NT
	07/16/92	14	1,600	1,000	1,000	2,500	NT
MW-7	01/09/90	17	380	180	330	1,300	NT
	03/13/90	16	360	270	83	460	NT
	06/14/90	14	1,200	2,800	75	930	NT
	09/19/90	16	2,800	95	2,500	1,700	NT
	12/17/90	75	2,600	7,000	3,300	14,000	NT
	03/19/91	44	1,600	740	3,400	8,600	NT
	07/24/91	18	1,300	160	2,700	1,000	NT
	10/22/91	10	990	26	1,900	490	NT
	01/21/92	23	2,200	3,000	1,800	6,100	NT
	04/24/92	25	1,400	220	2,100	2,600	NT
	07/16/92	8.7	470	45	970	86	NT
Field Blank	12/11/89	<0.05	0.88	0.95	0.62	1.7	NT
	12/17/90	<0.05	<0.5	<0.5	<0.5	<0.5	NT
	03/19/91	<0.05	<0.5	<0.5	<0.5	<0.5	NT
	07/24/91	<0.05	<0.5	<0.5	<0.5	<0.6	NT
	10/22/91	<0.05	<0.5	<0.5	<0.5	<0.5	NT
	01/21/92	<0.05	<0.5	<0.5	<0.5	<0.5	NT
	07/16/92	<0.05	<0.5	<0.5	<0.5	<0.5	NT

Table 1. Summary of Chemical Results of Groundwater Samples (continued)

Well Number	Date	TPH Gasoline mg/l[1]	Benzene µg/l[2]	Toluene µg/l	Ethyl-benzene µg/l	Xylenes µg/l	Total Dissolved Solids mg/l
California MCLs[3]			1.0	1000[4]	680	1750	
Trip Blank	06/14/90	<0.05	<0.5	<0.5	<0.5	<0.5	NT
	09/19/90	<0.05	0.8	<0.5	0.6	1.0	NT
	04/24/92	<0.05	<0.5	<0.5	<0.5	<0.5	NT

1 mg/l: milligrams per liter
2 µg/l: micrograms per liter
3 MCL: Maximum Contaminant Level
4 Represents EPA MCL; California MCL has not been established.
5 NT: Not tested
6 Numbers preceded by "<" indicate that sample was not detected at the indicated detection limit

Table 2. Potentiometric Surface and Product Thickness Measurements

Well Number	Elevation Top of Well Casing[1]	Date	Depth to Water BTOC[2] (feet)	Depth to Product BTOC (feet)	Product Thickness (feet)	Potentiometric Surface Elevation (feet above MSL)
MW-1	17.35	06-10-88	6.35	NP[3]	NP	11.00
		01-17-89	5.81	NP	NP	11.54
		01-24-89	5.16	NP	NP	12.19
		06-01-89	6.27	NP	Sheen	11.08
		09-18-89	7.11	NP	NP	10.24
		10-20-89	7.28	NP	NP	10.07
		11-22-89	7.02	NP	NP	10.33
		12-11-89	6.60	NP	NP	10.75
		02-13-90	6.02	NP	NP	11.33
		03-13-90	5.91	NP	NP	11.44
		04-18-90	6.18	NP	NP	11.17
		05-23-90	6.29	NP	NP	11.06
		06-14-90	6.19	NP	NP	11.28
		08-21-90	7.03	NP	NP	10.32
		09-19-90	7.26	NP	NP	10.09
		12-17-90	6.75	NP	NP	10.60
		01-31-91	6.78	NP	NP	10.57
		02-25-91	6.59	NP	NP	10.76
		03-19-91	5.85	NP	NP	11.50
		04-22-91	5.72	Sheen	Sheen	11.63
		05-17-91	6.00	NP	NP	11.35
		07-24-91	6.79	NP	NP	10.56
		09-10-91	7.25	NP	NP	10.10
		09-23-91	7.33	NP	NP	10.02
		10-21-91	7.53	NP	NP	9.82
		11-18-91	7.13	NP	NP	10.22
		12-11-91	7.25	NP	NP	10.10
		01-21-92	6.54	NP	NP	10.81
		02-20-92	4.82	NP	NP	12.53
		03-19-92	5.24	NP	NP	12.11
		04-24-92	5.71	NP	NP	11.64
		05-13-92	5.99	NP	NP	11.36
		06-24-92	6.65	NP	NP	10.70
		07-16-92	6.72	NP	NP	10.63
MW-2	16.67	06-10-88	6.20	NP	NP	10.47
		01-17-89	5.96	NP	NP	10.71
		01-24-89	5.04	NP	NP	11.63
		06-01-89	6.32	NP	Sheen	10.35
		09-18-89	6.73	NP	NP	9.94
		10-20-89	6.87	NP	NP	9.80

Table 2. Potentiometric Surface and Product Thickness Measurements (continued)

Well Number	Elevation Top of Well Casing[1]	Date	Depth to Water BTOC[2] (feet)	Depth to Product BTOC (feet)	Product Thickness (feet)	Potentiometric Surface Elevation (feet above MSL)
MW-2 (con't)	16.67	11-22-89	6.80	NP	NP	9.87
		12-11-89	6.57	NP	NP	10.10
		02-13-90	6.12	NP	NP	10.55
		03-13-90	6.02	NP	NP	10.65
		04-18-90	6.35	NP	NP	10.32
		05-23-90	6.28	NP	NP	10.39
		06-14-90	6.14	NP	NP	10.53
		08-21-90	6.70	NP	NP	9.97
		09-19-90	6.84	NP	NP	9.83
		12-17-90	6.46	NP	NP	10.21
		01-31-91	6.66	Sheen	Sheen	10.01
		02-25-91	6.50	NP	NP	10.17
		03-19-91	5.76	Sheen	Sheen	10.91
		04-22-91	5.78	NP	NP	10.89
		05-17-91	6.01	NP	NP	10.66
		07-24-91	6.43	NP	NP	10.24
		09-10-91	6.81	NP	NP	9.86
		09-23-91	6.82	NP	NP	9.85
		10-21-91	7.01	NP	NP	9.66
		11-18-91	6.66	NP	NP	10.01
		12-11-91	6.85	NP	NP	9.82
		01-21-92	6.22	NP	NP	10.45
		02-20-92	5.28	NP	NP	11.39
		03-19-92	5.34	NP	NP	11.33
		04-24-92	5.75	Sheen	Sheen	10.92
		05-13-92	5.95	NP	NP	10.72
		06-24-92	6.39	NP	NP	10.28
		07-16-92	6.50	Sheen	Sheen	10.17
MW-3	17.11	06-10-88	6.05	NP	NP	11.06
		01-17-89	5.49	NP	NP	11.62
		01-24-89	5.38	NP	NP	11.73
		06-01-89	5.96	NP	NP	11.15
		09-18-89	6.65	NP	NP	10.46
		10-20-89	6.88	NP	NP	10.23
		11-22-89	6.74	NP	NP	10.37
		12-11-89	6.37	NP	NP	10.74
		02-13-90	5.58	NP	NP	11.53
		03-13-90	5.48	NP	NP	11.63
		04-18-90	6.01	NP	NP	11.10
		05-23-90	6.14	NP	NP	10.97

Table 2. Potentiometric Surface and Product Thickness Measurements (continued)

Well Number	Elevation Top of Well Casing[1]	Date	Depth to Water BTOC[2] (feet)	Depth to Product BTOC (feet)	Product Thickness (feet)	Potentiometric Surface Elevation (feet above MSL)
MW-3 (con't)	17.11	06-14-90	5.83	NP	NP	11.28
		08-21-90	6.67	NP	NP	10.44
		09-19-90	6.88	NP	NP	10.23
		12-17-90	6.46	NP	NP	10.65
		01-31-91	6.24	NP	NP	10.87
		02-25-91	6.18	NP	NP	10.93
		03-19-91	5.35	NP	NP	11.76
		04-22-91	5.72	NP	NP	11.39
		05-17-91	5.55	NP	NP	11.56
		07-24-91	6.41	NP	NP	10.70
		09-10-91	6.80	NP	NP	10.31
		09-23-91	6.80	NP	NP	10.31
		10-21-91	7.09	NP	NP	10.02
		11-18-91	6.74	NP	NP	10.37
		12-11-91	6.79	NP	NP	10.32
		01-21-92	6.16	NP	NP	10.95
		02-20-92	4.89	NP	NP	12.22
		03-19-92	4.85	NP	NP	12.26
		04-24-92	5.28	NP	NP	11.83
		05-13-92	5.58	NP	NP	11.53
		06-24-92	6.22	NP	NP	10.89
		07-16-92	6.36	NP	NP	10.75
MW-4	17.34	01-17-89	5.36	NP	NP	11.98
		01-24-89	5.46	NP	NP	11.88
		06-01-89	6.01	NP	NP	11.33
		09-18-89	6.80	NP	NP	10.54
		10-20-89	7.08	NP	NP	10.26
		11-22-89	6.82	NP	NP	10.52
		12-11-89	6.37	NP	NP	10.97
		02-13-90	5.49	NP	NP	11.85
		03-13-90	5.44	NP	NP	11.90
		04-18-90	6.14	NP	NP	11.20
		05-23-90	6.22	NP	NP	11.12
		06-14-90	5.92	NP	NP	11.42
		08-21-90	6.83	NP	NP	10.51
		09-19-90	7.07	NP	NP	10.27
		12-17-90	6.50	NP	NP	10.84
		01-31-91	6.66	NP	NP	10.68
		02-25-91	6.21	NP	NP	11.13
		03-19-91	5.29	NP	NP	12.05

Table 2. Potentiometric Surface and Product Thickness Measurements (continued)

Well Number	Elevation Top of Well Casing[1]	Date	Depth to Water BTOC[2] (feet)	Depth to Product BTOC (feet)	Product Thickness (feet)	Potentiometric Surface Elevation (feet above MSL)
MW-4 (con't)	17.34	04-22-91	5.26	NP	NP	12.08
		05-17-91	5.60	NP	NP	11.74
		07-24-91	6.54	NP	NP	10.80
		09-10-91	7.04	NP	NP	10.10
		09-23-91	7.14	NP	NP	10.20
		10-21-91	7.30	Sheen	Sheen	10.04
		11-18-91	6.90	NP	NP	10.44
		12-11-91	7.01	NP	NP	10.33
		01-21-92	6.25	NP	NP	11.09
		02-20-92	4.79	NP	NP	12.55
		03-19-92	4.70	NP	NP	12.64
		04-24-92	5.25	Sheen	Sheen	12.09
		05-13-92	5.62	Sheen	Sheen	11.72
		06-24-92	6.19	Sheen	Sheen	11.15
		07-16-92	6.51	Sheen	Sheen	10.83
MW-5	16.71	01-17-89	5.39	NP	NP	11.32
		01-24-89	5.51	NP	NP	11.20
		06-01-89	5.83	Sheen	Sheen	10.88
		09-18-89	6.52	NP	NP	10.19
		10-20-89	6.72	NP	NP	9.99
		11-22-89	6.54	NP	NP	10.17
		12-11-89	6.21	NP	NP	10.50
		02-13-90	5.60	NP	NP	11.11
		03-13-90	5.54	NP	NP	11.17
		04-18-90	5.75	NP	NP	10.76
		05-23-90	5.98	NP	NP	10.73
		06-14-90	5.81	NP	NP	10.90
		08-21-90	6.51	NP	NP	10.20
		09-19-90	6.70	NP	NP	10.01
		12-17-90	6.24	Sheen	Sheen	10.47
		01-31-91	6.31	NP	NP	10.40
		02-25-91	6.13	NP	NP	10.58
		03-19-91	5.32	NP	NP	11.39
		04-22-91	5.30	Sheen	Sheen	11.41
		05-17-91	5.59	NP	NP	11.12
		07-24-91	6.33	NP	NP	10.38
		09-10-91	6.66	NP	NP	10.05
		09-23-91	6.75	NP	NP	9.96
		10-21-91	6.92	Sheen	Sheen	9.79
		11-18-91	6.55	NP	NP	10.16

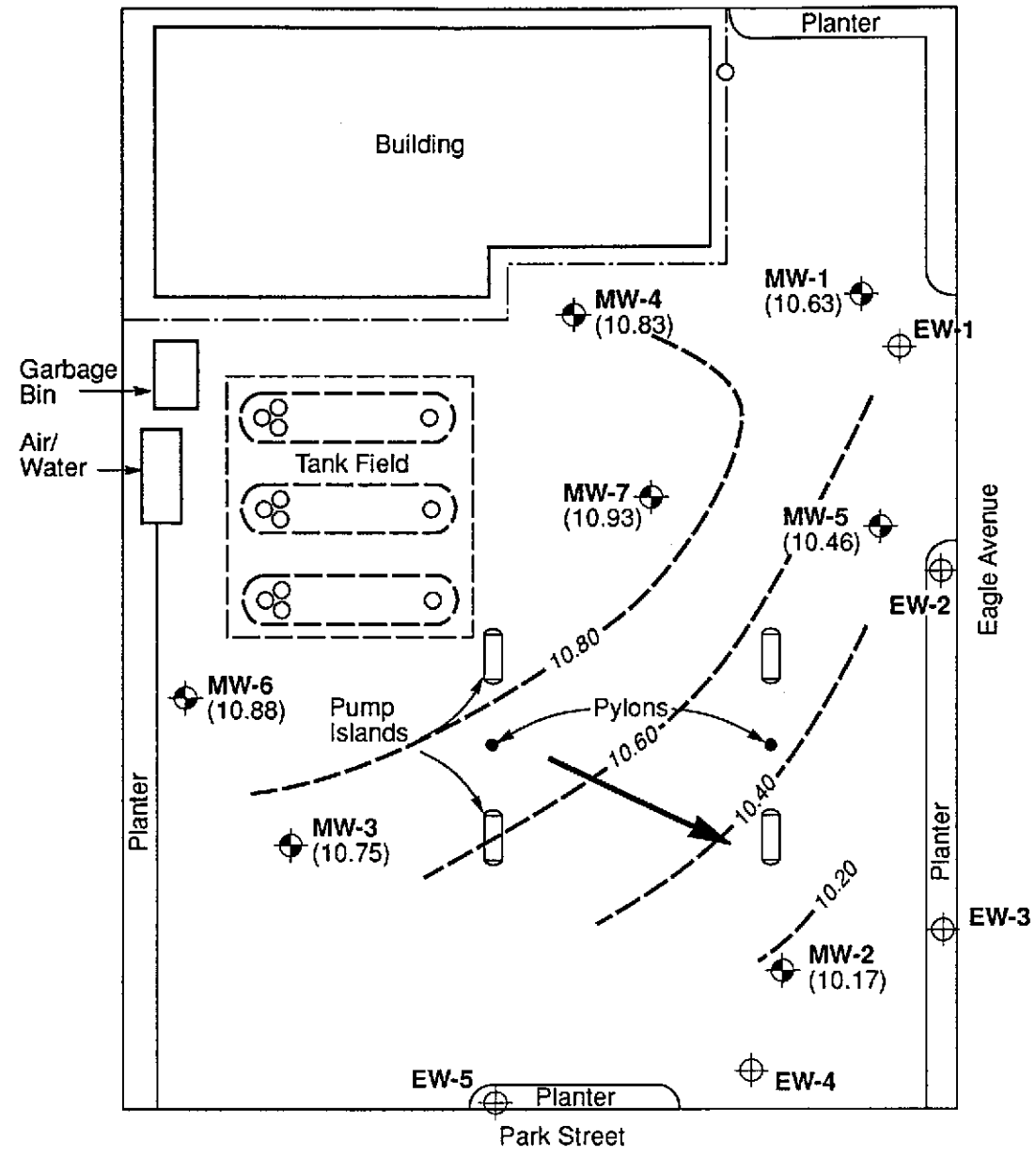
Table 2. Potentiometric Surface and Product Thickness Measurements (continued)

Well Number	Elevation Top of Well Casing[1]	Date	Depth to Water BTOC[2] (feet)	Depth to Product BTOC (feet)	Product Thickness (feet)	Potentiometric Surface Elevation (feet above MSL)
MW-5 (con't)	16.71	12-11-91	6.64	NP	NP	10.07
		01-21-92	6.07	Sheen	Sheen	10.64
		02-20-92	4.83	NP	NP	11.88
		03-19-92	4.83	Sheen	Sheen	11.88
		04-24-92	5.32	Sheen	Sheen	11.39
		05-13-92	5.61	Sheen	Sheen	11.10
		06-24-92	6.17	NP	NP	10.54
		07-16-92	6.25	Sheen	Sheen	10.46
MW-6	17.56	01-17-89	5.59	NP	NP	11.97
		01-24-89	5.27	NP	NP	12.29
		06-01-89	6.25	NP	Sheen	11.31
		09-18-89	6.95	NP	NP	10.61
		10-20-89	7.24	NP	NP	10.32
		11-22-89	7.05	NP	NP	10.51
		12-11-89	6.63	NP	NP	10.93
		02-13-90	5.70	NP	NP	11.86
		03-13-90	5.63	NP	NP	11.93
		04-18-90	6.26	NP	NP	11.30
		05-23-90	6.42	NP	NP	11.14
		06-14-90	6.19	NP	NP	11.37
		08-21-90	7.01	NP	NP	10.55
		09-19-90	7.23	NP	NP	10.33
		12-17-90	6.66	NP	NP	10.90
		01-31-91	6.39	NP	NP	11.17
		02-25-91	6.39	NP	NP	11.17
		03-19-91	5.57	NP	NP	11.99
		04-22-91	5.42	NP	NP	12.14
		05-17-91	5.73	NP	NP	11.83
		07-24-91	6.72	NP	NP	10.84
		09-10-91	7.15	NP	NP	10.41
		09-23-91	7.25	NP	NP	10.31
		10-21-91	7.42	NP	NP	10.14
		11-18-91	7.08	NP	NP	10.48
		12-11-91	7.17	NP	NP	10.39
		01-21-92	6.40	NP	NP	11.16
		02-20-92	5.06	NP	NP	12.50
		03-19-92	4.86	NP	NP	12.70
		04-24-92	5.44	NP	NP	12.12

Table 2. Potentiometric Surface and Product Thickness Measurements (continued)

Well Number	Elevation Top of Well Casing[1]	Date	Depth to Water BTOC[2] (feet)	Depth to Product BTOC (feet)	Product Thickness (feet)	Potentiometric Surface Elevation (feet above MSL)
MW-6 (con't)	17.56	05-13-92	5.83	NP	NP	11.73
		06-24-92	6.50	NP	NP	11.06
		07-16-92	6.68	NP	NP	10.88
MW-7	17.12	02-13-90	4.98	NP	NP	12.14
		03-13-90	4.94	NP	NP	12.18
		05-23-90	5.87	NP	NP	11.25
		06-14-90	5.55	NP	NP	11.57
		09-19-90	6.79	NP	NP	10.33
		12-17-90	6.15	NP	NP	10.97
		01-31-91	6.64	NP	NP	10.48
		02-25-91	5.80	NP	NP	11.32
		03-19-91	4.96	NP	NP	12.16
		04-22-91	4.82	Sheen	Sheen	12.30
		05-17-91	5.18	NP	NP	11.94
		07-24-91	6.22	NP	NP	10.90
		09-10-91	6.71	NP	NP	10.41
		09-23-91	6.84	NP	NP	10.28
		10-21-91	7.00	NP	NP	10.12
		11-18-91	6.56	NP	NP	10.56
		12-11-91	6.68	NP	NP	10.44
		01-21-92	5.99	NP	NP	11.13
		02-20-92	4.36	NP	NP	12.76
		03-19-92	4.22	NP	NP	12.90
		04-24-92	4.84	Sheen	Sheen	12.28
		05-13-92	5.24	Sheen	Sheen	11.88
		06-24-92	6.04	NP	NP	11.08
		07-16-92	6.19	NP	NP	10.93

1 Elevations surveyed to mean sea level.
2 BTOC - Below top of casing.
3 NP: No product.



EXPLANATION

MW-3	Monitoring Well Location
EW1	Extraction Well Location
(10.75)	Potentiometric Surface Elevation in Feet Above Mean Sea Level
10.60	Potentiometric Surface Elevation Contour
	Approximate Groundwater Flow Direction

N

0 20 40

APPROXIMATE SCALE IN FEET

0827pg

Harding Lawson Associates
Engineering and Environmental Services

Generalized Potentiometric Surface Contour Map - July 16, 1992
Exxon Station #7-0104
Alameda, California

PLATE **1**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LZc	10495 416	GAL	7/92	

Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Well No. MW-1

Job Name EXXON, ALAMEDA

Job Number 0497.416

Recorded by _____ (Signature)

Well Type: ☒ Monitor ☐ Extraction ☐ Other _____

Well Material: ☒ PVC ☐ St. Steel ☐ Other _____

Date 7/16/92 Time 1520

Sampled by AHH, RWE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☐ 2-inch ☒ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet BTOC): 20.5

Water Level Depth (WL in feet BTOC): 6.74

Number of Well Volumes to be purged (# Vols)
☒ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other _____

PURGE METHOD

☐ Bailer - Type: _____
☐ Submersible ☒ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

PUMP INTAKE SETTING

☒ Near Bottom ☐ Near Top ☐ Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION

(20.5 (TD feet) - 6.74 (WL feet)) X 4 (D inches)^2 X 3 (# Vols) X 0.0408 = 27 gallons (Calculated Purge Volume)

PURGE TIME

1507 Start 1512 Stop 5 Elapsed

PURGE RATE

Initial 3 gpm Final _____ gpm

ACTUAL PURGE VOLUME

DRY @ 15 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☒ °C ☐ °F	Other TURB
INITIAL	6.8	700	24.0	
10 gals	6.9	600	24.0	>100
15 gals	6.84	600	24.5	>100

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐ °C ☐ °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): TAN, TURBID, SLIGHT PROD ODOR

Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☐ Other DRUMS

WELL SAMPLING

SAMPLING METHOD

☒ Bailer - Type: SS ☐ Same As Above

☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____ ☐ Grab - Type: _____

☐ Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9207

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
1608	3 VOA	TPH, BTEX / BTEX	HCl	PACE	
(1608)					

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Harding Lawson Associates
Engineering and Environmental Services

GROUND-WATER SAMPLING FORM

Job Name EXXON, ALAMEDA
Job Number 10497.416
Recorded by _____ (Signature)

Well No. MW-2
Well Type: ☒ Monitor ☐ Extraction ☐ Other _____
Well Material: ☒ PVC ☐ St. Steel ☐ Other _____
Date 7/16/92 Time 1220
Sampled by AHH, RWE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☐ 2-inch ☒ 4-inch ☐ 6-inch ☐ Other _____
Total Depth of Casing (TD in feet BTOC): 15.9
Water Level Depth (WL in feet BTOC): 6.5
Number of Well Volumes to be purged (# Vols)
☒ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other _____

PURGE METHOD

☒ Bailer - Type: PVC
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

PUMP INTAKE SETTING

☐ Near Bottom ☐ Near Top ☐ Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION

(15.9 (TD feet) - 6.5 (WL feet)) X 4 (D inches) ^{2} X 3 (# Vols) X 0.0408 = 18.5 gallons (Calculated Purge Volume)

PURGE TIME

1202 Start 1214 Stop 12 Elapsed

PURGE RATE

Initial _____ gpm Final _____ gpm

ACTUAL PURGE VOLUME

DRY @ 10 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☒ °C ☐ °F	Other TARP
INITIAL	6.84	600	22	151
5 GAL	6.80	625	23.5	7100
10 GAL	7.09	600	23.0	7100

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐ °C ☐ °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): TAN, FAINT ODOR, VISIBLE SHEEN
Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☒ Other DRUMS

WELL SAMPLING

SAMPLING METHOD

☒ Bailer - Type: SS
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Same As Above
☐ Grab - Type: _____
☐ Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9207

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
1604	3 VOA	TPH GAS/BTEX	HCl	PACE	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Job Name EXXON ALAMEDA
Job Number 19497.416
Recorded by _____ (Signature)

Well No. MW-3
Well Type: ☑ Monitor ☐ Extraction ☐ Other _____
Well Material: ☑ PVC ☐ St. Steel ☐ Other _____
Date 7/16/92 Time 1125
Sampled by AMH, RWE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☐ 2-inch ☑ 4-inch ☐ 6-inch ☐ Other _____
Total Depth of Casing (TD in feet BTOC): 14.2
Water Level Depth (WL in feet BTOC): 6.36
Number of Well Volumes to be purged (# Vols)
☑ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other _____

PURGE METHOD

☑ Bailer - Type: PVC
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

PUMP INTAKE SETTING

☐ Near Bottom ☐ Near Top ☐ Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION

$(14.2 - 6.36) \times 4^2 \times 3 \times 0.0408 = 15.5$ gallons

(TD (feet) − WL (feet)) × D (inches)² × # Vols × 0.0408 = Calculated Purge Volume

PURGE TIME

1116 Start 1120 Stop 4 Elapsed

PURGE RATE

Initial _____ gpm Final _____ gpm

ACTUAL PURGE VOLUME

DRY @ 9 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☑ °C ☐ °F	Other TARB
INITIAL	6.85	500	23	65
5 GAL	6.74	500	23	95
9 GAL	6.70	500	23	>100

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐ °C ☐ °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): TAN, TURBID, ODORLESS
Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☑ Other DRUM

WELL SAMPLING

SAMPLING METHOD

☑ Bailer - Type: SS
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Same As Above
☐ Grab - Type: _____
☐ Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9207

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
1602	3 VOA	TPHGAS/BTEX	HCl	PACE	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.
FIELD	1603

Other Samples

Type	Sample No.

Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Job Name EXXON, ALAMEDA
Job Number 10497.416
Recorded by _____ (Signature)

Well No. MW-4
Well Type: ☒ Monitor ☐ Extraction ☐ Other _____
Well Material: ☒ PVC ☐ St. Steel ☐ Other _____
Date 7/16/92 Time 1440
Sampled by AHH, RWE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☐ 2-inch ☒ 4-inch ☐ 6-inch ☐ Other _____
Total Depth of Casing (TD in feet BTOC): _____
Water Level Depth (WL in feet BTOC): _____
Number of Well Volumes to be purged (# Vols)
☒ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other _____

PURGE METHOD

☒ Bailer - Type: PVC
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

PUMP INTAKE SETTING

☐ Near Bottom ☐ Near Top ☐ Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION

(18 (TD feet) - 6.51 (WL feet)) X 4 (D inches)^2 X 3 (# Vols) X 0.0408 = 22.5 gallons (Calculated Purge Volume)

PURGE TIME

1415 Start 1431 Stop 16 Elapsed

PURGE RATE

Initial _____ gpm Final _____ gpm

ACTUAL PURGE VOLUME

DRY @ 15 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☒ °C ☐ °F	Other TURB
INITIAL	6.48	600	25	14
7 GAL	6.71	500	24	42
15 GAL	6.88	520	24.5	>100

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐ °C ☐ °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): CLEAR · SLIGHT PRODUCT ODOR
Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☒ Other DRUMS

WELL SAMPLING

SAMPLING METHOD

☐ Same As Above
☒ Bailer - Type: SS
☐ Grab - Type: _____
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9207

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
1607	3 VOA	TPH GAS/BTEX	HCl	PACE	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Job Name EXXON, ALAMEDA
Job Number 0497.416
Recorded by _____ (Signature)

Well No. MW-5
Well Type: ☒ Monitor ☐ Extraction ☐ Other _____
Well Material: ☒ PVC ☐ St. Steel ☐ Other _____
Date 7/16/92 Time 1305
Sampled by AHH, RWE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☐ 2-inch ☒ 4-inch ☐ 6-inch ☐ Other _____
Total Depth of Casing (TD in feet BTOC): 18.9
Water Level Depth (WL in feet BTOC): 6.25
Number of Well Volumes to be purged (# Vols)
☒ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other _____

PURGE METHOD

☐ Bailer - Type: _____
☐ Submersible ☒ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

PUMP INTAKE SETTING

☐ Near Bottom ☒ Near Top ☐ Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION

(18.9 TD (feet) - 6.25 WL (feet)) X 4 D (inches)^2 X 3 # Vols X 0.0408 = 24.8 gallons Calculated Purge Volume

PURGE TIME

1245 Start 1257 Stop 12 Elapsed

PURGE RATE

Initial N/I gpm Final _____ gpm

ACTUAL PURGE VOLUME

DRY @ 9 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☒ °C ☐ °F	Other TURB
INITIAL	7.07	670	25	>100
5 GAL	6.82	620	25	>100
9 GAL	6.80	620	25.5	>100

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐ °C ☐ °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): GREY TURBID, SLIGHT PRODUCT ODOR, SHEEN, DK. OIL GLOBULES
Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☒ Other DRUMS

WELL SAMPLING

SAMPLING METHOD

☐ Same As Above
☐ Bailer - Type: _____
☐ Grab - Type: _____
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9207

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
1605	3 VOA	TPHGAS/BTEX	HCl	PACE	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Well No. MW-6

Job Name EXXON ALAMEDA

Job Number 10497.416

Well Type: ☒ Monitor ☐ Extraction ☐ Other _____

Well Material: ☒ PVC ☐ St. Steel ☐ Other _____

Date 7/16/92 Time 1045

Recorded by _____ (Signature) Sampled by AHA, RWE (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☐ 2-inch ☒ 4-inch ☐ 6-inch ☐ Other _____

Total Depth of Casing (TD in feet BTOC): 15.5

Water Level Depth (WL in feet BTOC): 6.68

Number of Well Volumes to be purged (# Vols)
☒ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other _____

PURGE METHOD

☒ Bailer - Type: PVC
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

PUMP INTAKE SETTING

☐ Near Bottom ☐ Near Top ☐ Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION

$(15.5 - 6.68) \times 4^2 \times 3 \times 0.0408 = 17.3$ gallons

(TD (feet) − WL (feet)) × D (inches)² × # Vols × 0.0408 = Calculated Purge Volume

PURGE TIME / PURGE RATE / ACTUAL PURGE VOLUME

1025 Start 1040 Stop 15 Elapsed Initial _____ gpm Final _____ gpm 18 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☒ °C ☐ °F	Other TURB
INITIAL	6.53	330	21.5	22
6 GAL	6.65	400	21.0	>100
12 GAL	6.76	400	21.0	>100
18 GAL	6.77	400	21.0	>100

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐ °C ☐ °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): TAN, TURBID. SLIGHT ODOR

Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☒ Other DRUMS

WELL SAMPLING

SAMPLING METHOD

☐ Same As Above

☒ Bailer - Type: SS

☐ Grab - Type: _____

☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____

☐ Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9207

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
1601	3 VOA	TPH GAS/BTEX	HCl	PACE	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Harding Lawson Associates
Engineering and
Environmental Services

GROUND-WATER SAMPLING FORM

Job Name EXXON, ALAMEDA
Job Number 10497.416
Recorded by _____ (Signature)

Well No. MW-7
Well Type: ☒ Monitor ☐ Extraction ☐ Other _____
Well Material: ☒ PVC ☐ St. Steel ☐ Other _____
Date 7/16/92 Time 1350
Sampled by AHH (Initials)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☐ 2-inch ☒ 4-inch ☐ 6-inch ☐ Other _____
Total Depth of Casing (TD in feet BTOC): 16.5
Water Level Depth (WL in feet BTOC): 6.19
Number of Well Volumes to be purged (# Vols)
☒ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other _____

PURGE METHOD

☒ Bailer - Type: PVC
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Other - Type: _____

PUMP INTAKE SETTING

☐ Near Bottom ☐ Near Top ☐ Other _____
Depth in feet (BTOC): _____ Screen Interval in Feet (BTOC) from _____ to _____

PURGE VOLUME CALCULATION

$(16.5 - 6.19) \times 4^2 \times 3 \times 0.0408 = 20$ gallons

(16.5 TD (feet) − 6.19 WL (feet)) × 4 D (inches)^2 × 3 # Vols × 0.0408 = 20 Calculated Purge Volume

PURGE TIME

1320 Start 1345 Stop 17 Elapsed

PURGE RATE

Initial _____ gpm Final _____ gpm

ACTUAL PURGE VOLUME

20 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☒ °C ☐ °F	Other TURB
INITIAL	6.47	400	26	>100
7 GAL	6.57	400	25	>100
13 GAL	6.58	400	25	>100
20 GAL	6.57	400	25.5	>100

Minutes Since Pumping Began	pH	Cond. (µmhos/cm)	T ☐ °C ☐ °F	Other _____
Meter Nos.				

Observations During Purging (Well Condition, Turbidity, Color, Odor): GREY TURBID, SLIGHT PROD. ODOR
Discharge Water Disposal: ☐ Sanitary Sewer ☐ Storm Sewer ☒ Other DRUMS

WELL SAMPLING

SAMPLING METHOD

☒ Bailer - Type: SS
☐ Submersible ☐ Centrifugal ☐ Bladder; Pump No.: _____
☐ Same As Above
☐ Grab - Type: _____
☐ Other - Type: _____

SAMPLING DISTRIBUTION

Sample Series: 9207

Sample No.	Volume/Cont.	Analysis Requested	Preservatives	Lab	Comments
1606	3 VOA	TPH GAS/BTEX	HCl	PACE	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

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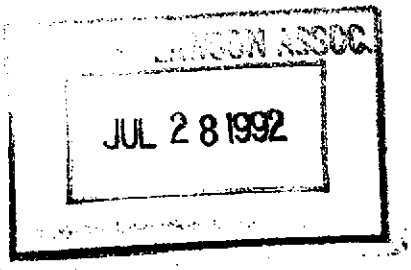
REPORT OF LABORATORY ANALYSIS



July 24, 1992

Mr. Gary Leiberman
Harding Lawson Associates
7655 Redwood Boulevard
Novato, CA 94948

RE: PACE Project No. 420717.501
Client Reference: Exxon 7-0104 (EE)

Dear Mr. Leiberman:

Enclosed is the report of laboratory analyses for samples received July 17, 1992.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Carol Reid

Carol Reid
Project Manager

Enclosures

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

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REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates
7655 Redwood Boulevard
Novato, CA 94948

July 24, 1992
PACE Project Number: 420717501

Attn: Mr. Gary Leiberman

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0182590	
Date Collected:			07/16/92	
Date Received:			07/17/92	
Client Sample ID:			92071601	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/20/92
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	500	14000	07/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	07/20/92
Benzene	ug/L	5.0	1600	07/20/92
Toluene	ug/L	5.0	1000	07/20/92
Ethylbenzene	ug/L	5.0	1000	07/20/92
Xylenes, Total	ug/L	5.0	2500	07/20/92

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

July 24, 1992
PACE Project Number: 420717501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0182603	
Date Collected:			07/16/92	
Date Received:			07/17/92	
Client Sample ID:			92071602	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS			mw-3	
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/20/92
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	500	11000	07/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	07/20/92
Benzene	ug/L	5.0	2700	07/20/92
Toluene	ug/L	5.0	230	07/20/92
Ethylbenzene	ug/L	5.0	1100	07/20/92
Xylenes, Total	ug/L	5.0	570	07/20/92

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

Mr. Gary Leiberman
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July 24, 1992
PACE Project Number: 420717501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0182611	
Date Collected:			07/16/92	
Date Received:			07/17/92	
Client Sample ID:			92071603	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/20/92
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	ND	07/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	07/20/92
Benzene	ug/L	0.5	ND	07/20/92
Toluene	ug/L	0.5	ND	07/20/92
Ethylbenzene	ug/L	0.5	ND	07/20/92
Xylenes, Total	ug/L	0.5	ND	07/20/92

MDL Method Detection Limit
ND Not detected at or above the MDL.

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REPORT OF LABORATORY ANALYSIS

Mr. Gary Leiberman
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July 24, 1992
PACE Project Number: 420717501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0182620	
Date Collected:			07/16/92	
Date Received:			07/17/92	
Client Sample ID:			92071604	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/20/92
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	1000	42000	07/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	07/20/92
Benzene	ug/L	10	3500	07/20/92
Toluene	ug/L	10	490	07/20/92
Ethylbenzene	ug/L	10	1800	07/20/92
Xylenes, Total	ug/L	10	3700	07/20/92

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

Mr. Gary Leiberman
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July 24, 1992
PACE Project Number: 420717501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0182638	
Date Collected:			07/16/92	
Date Received:			07/17/92	
Client Sample ID:			92071605	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS			mw-5	
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/20/92
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	2500	20000	07/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	07/20/92
Benzene	ug/L	25	4000	07/20/92
Toluene	ug/L	25	48	07/20/92
Ethylbenzene	ug/L	25	880	07/20/92
Xylenes, Total	ug/L	25	720	07/20/92

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

July 24, 1992
PACE Project Number: 420717501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0182646	
Date Collected:			07/16/92	
Date Received:			07/17/92	
Client Sample ID:			92071606	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS			mw-7	
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/20/92
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	8700	07/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	07/20/92
Benzene	ug/L	0.5	470	07/20/92
Toluene	ug/L	0.5	45	07/20/92
Ethylbenzene	ug/L	0.5	970	07/20/92
Xylenes, Total	ug/L	0.5	86	07/20/92

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

Mr. Gary Leiberman
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July 24, 1992
PACE Project Number: 420717501

Client Reference: Exxon 7-0104 (EE)

MW-4

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0182654	
Date Collected:			07/16/92	
Date Received:			07/17/92	
Client Sample ID:			92071607	
ORGANIC ANALYSIS			MW-4	
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/20/92
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	5400	07/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	07/20/92
Benzene	ug/L	0.5	870	07/20/92
Toluene	ug/L	0.5	240	07/20/92
Ethylbenzene	ug/L	0.5	440	07/20/92
Xylenes, Total	ug/L	0.5	700	07/20/92

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

Mr. Gary Leiberman
Page 8

July 24, 1992
PACE Project Number: 420717501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0182662	
Date Collected:			07/16/92	
Date Received:			07/17/92	
Client Sample ID:			92071608	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/20/92
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	3400	07/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	07/20/92
Benzene	ug/L	0.5	1000	07/20/92
Toluene	ug/L	0.5	11	07/20/92
Ethylbenzene	ug/L	0.5	550	07/20/92
Xylenes, Total	ug/L	0.5	100	07/20/92

MDL Method Detection Limit

These data have been reviewed and are approved for release.

Mark A. Valentini

Mark A. Valentini, Ph.D.
Regional Director

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Mr. Gary Leiberman
Page 9

QUALITY CONTROL DATA

July 24, 1992
PACE Project Number: 420717501

Client Reference: Exxon 7-0104 (EE)

TPH GASOLINE/BTEX
Batch: 70 14199
Samples: 70 0182590, 70 0182603, 70 0182611, 70 0182620, 70 0182638
70 0182646, 70 0182654, 70 0182662

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015)	ug/L	50	320	112%	111%	0%
Benzene	ug/L	0.5	40.0	97%	99%	2%
Toluene	ug/L	0.5	40.0	99%	100%	1%
Ethylbenzene	ug/L	0.5	40.0	109%	110%	0%
Xylenes, Total	ug/L	0.5	80.0	108%	109%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

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(415) 883-6100

☐ Irvine, CA
Alton Business Park
30 Hughes St., Suite 206, 92718
(714) 380-9559

EXXON COMPANY, U.S.A.

P.O. Box 4415, Houston, TX 77210-4415

CHAIN OF CUSTODY

Consultant Name: HARDING AND LAWSON ASSOC.
Address: 7655 REDWOOD BLVD. NOVATO, CA
Project Contact: G. LIEBERMAN Project #: 10497.416
Phone #: (415) 892-0821 Fax #:
Consultant Work Release #: 91064698

Exxon Contact: MARLA GHENSLER Phone #:
Site RAS #: 7014
Site Location: PARK AVE, ALAMEDA, CA (#7-0104)
Laboratory Work Release #:

Sampled by (please print): A.H. HENKE, R.W. ERDMAN
Sampler Signature: Date Sampled:

Sample Description	Collection Date/Time	Matrix	Prsv.	# of Cont.	SOIL/H2O TPH/GAS/BTEX EPA 8015/8020	SOIL/H2O TPH/Diesel EPA 8015	SOIL/H2O Organic Lead DHS Method	WATER TPH/GAS/BTEX EPA 8015/602	WATER TPH/Diesel EPA 8015	WATER Organic Lead DHS Method	TRPH EPA 418.1	Total Oil & Grease SM 5520					Remarks
92071601	7/16 1045	H2O	HCl	3	✓				18259.0								
92071602	1185				✓				60.3								
92071603	1145				✓				61.1								
92071604	1220				✓				62.0								VISIBLE PRODUCT
92071605	1305				✓				63.8								VISIBLE PRODUCT
92071606	1350				✓				64.6								
92071607	1440				✓				65.4								
92071608	1520				✓				66.2								
5/1																	

Relinquished by/Affiliation	Accepted by/Affiliation	Date	Time
HLA	Jim Oyp / Pace	7/17/92	900

Cooler No. N/A
Cooler Seal Intact: ☒ Yes ☐ No
Turnaround Time (circle choice): 24 hr. 48 hr. 72 hr. ~~96 hr.~~ → 5 workday (standard)
Shipment Method:
Shipment Date:

Additional Comments:

Distribution: White - Original Yellow - Exxon Pink - Lab Goldenrod - Consultant Field Staff

420717.501