EXXON COMPANY, U.S.A.

MARKETING DEPARTMENT•ENVIRONMENTAL ENGINEERING

MARLA D. GUENSLER
SENIOR ENGINEER

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136

February 6, 1997

Mr. Barney Chan
Hazardous Materials Specialist
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, #250
Alameda, California 94502-6577

RE: Former Exxon RAS #7-3006/720 High Street/Oakland, California

Dear Mr. Chan:

Attached for your review and comment is a report entitled ***Quarterly Groundwater Monitoring and Remediation Status Report, Fourth Quarter 1996*** for the above referenced site. The report was prepared by Environmental Resolutions, Inc., (ERI) of Novato, California, and details the results of the fourth quarter 1996 groundwater monitoring and sampling and remedial activities.

If you have any questions or comments, please contact me at (510) 246-8776.

Sincerely,

By: R.A. Hicks

Marla D. Guensler
Senior Engineer

MDG/tm

Attachment: ERI Quarterly Remediation Status Report, dated February 5, 1997.

cc: w/attachment
Mr. Scott Owen - Bay Area Air Quality Management District
Mr. Kevin Graves - California Regional Water Quality Control Board - San Francisco Bay Region

w/o attachment
Marc A. Briggs, ERI

97 FEB 14 PM 2:05
ENVIRONMENTAL PROTECTION

ENVIRONMENTAL RESOLUTIONS, INC.

February 5, 1997
ERI 201013.R08

Ms. Marla Guensler
Exxon Company, U.S.A.
2300 Clayton Road, Suite 640
Concord, California 94524-2032

Subject: Quarterly Groundwater Monitoring and Remediation Status Report, Fourth Quarter 1996, Former Exxon Service Station 7-3006, 720 High Street, Oakland, California.

Ms. Guensler:

At the request of Exxon Company, U.S.A. (Exxon), Environmental Resolutions, Inc. (ERI) performed remedial activities and groundwater monitoring for the fourth quarter 1996 at the subject site (Plate 1). The purpose of ongoing remedial activities at the site is to remove residual hydrocarbons from soil and dissolved hydrocarbons from groundwater. The purpose of quarterly monitoring is to evaluate fluctuations in hydrocarbon concentrations in groundwater, to evaluate the capture zone caused by groundwater pumping, and to evaluate the effectiveness of remedial actions.

GROUNDWATER MONITORING AND SAMPLING

On December 11, 1996, ERI measured the depth to water (DTW) in monitoring wells MW1 through MW4, and MW6 through MW15 and subjectively analyzed water in these wells for the presence of liquid phase hydrocarbons. Monitoring well MW5 was previously destroyed. No measurable liquid phase hydrocarbons or sheen were observed on groundwater from wells MW1, MW3, MW6, MW7, MW9 through MW11, and MW14. Monitoring wells MW2, MW4, MW8, MW12, MW13, and MW15 had a sheen and therefore were not purged or sampled. ERI's groundwater sampling protocol is attached (Attachment A).

The groundwater appears to flow southwest towards the interceptor trench beneath the site with an approximate gradient ranging from 0.011 to 0.015 (Plate 2). Monitoring and sampling data for 1994 through 1996 are summarized in Table 1.

Laboratory Analyses and Results

Groundwater samples were submitted to Sequoia Analytical (California State Certification Number 1210) in Redwood City, California, under chain of custody protocol. The samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tert-butyl ether (MTBE), total extractable petroleum hydrocarbons as diesel (TEPHd), extractable hydrocarbons as stoddard solvent (EHCss) and purgeable halocarbons. The specific methods of analysis are listed in the notes in Table 1. The results of analysis are listed in Table 1 and are shown on Plate 2. The laboratory analysis reports and chain of custody records are attached (Attachment B).

SOIL AND GROUNDWATER REMEDIATION

Air-Sparging/Soil Vapor-Extraction

ERI initiated operation of the air-sparging/soil vapor-extraction (AS/SVE) system in August 1996 utilizing the thermal/catalytic oxidizer. Vapor samples were collected on August 15, 1996. ERI submitted a Source Test Report (dated September 11, 1996) to the Bay Area Air Quality Management District (BAAQMD). Cumulative operational and performance data are presented in Table 2. Copies of the Reports of Laboratory Analysis and Chain of Custody Records for soil vapor-extraction system samples collected during fourth quarter 1996 are attached (Attachment B).

The AS/SVE system currently consists of six air-sparging wells for air injection and vadose wells for vapor extraction within an on-site interceptor trench, a water knock-out tank, a Thermtech VAC-25 thermal/oxidizer, and a propane tank for supplemental fuel. The AS/SVE system is operated in a continuous mode. On November 6, 1996, ERI shut down the AS/SVE system due to operating problems.

Groundwater Extraction And Treatment

The groundwater remediation system (GRS) is designed to treat separate-phase and dissolved petroleum hydrocarbons in groundwater extracted from the interceptor trench beneath the site. Pneumatic pumps are installed in extraction wells RW2 and RW5 to recover groundwater from the interceptor trench. Subsurface and above-ground collection piping are used to transfer extracted groundwater to a holding tank. A transfer pump and poly-vinyl chloride (PVC) piping are used to direct the water stream from the holding tank through water filters, an airstripper, and subsequently through liquid-phase granular activated carbon (GAC) canisters connected in series. The treated groundwater is discharged to the sanitary sewer regulated by East Bay Municipal Utilities District (EBMUD). The remedial system was shut down to change the vapor abatement from carbon to a Thermtech VAC-25 thermal/catalytic oxidizer.

On October 14, 1996, ERI shut down the system due to failure of the electric motor on the air compressor. ERI notified EBMUD the system was not operating during the fourth quarter 1996, and therefore no samples were collected.

Between September 24, 1996 and October 14, 1996, the system recovered 810 gallons of groundwater from beneath the site. System flow rates, total volume extracted, and influent, intermediate, and effluent sample concentrations are presented in Table 3.

SUMMARY AND STATUS OF INVESTIGATION

Based on data collected to date, it appears the system removes residual hydrocarbons in soil and dissolved hydrocarbons in groundwater. ERI estimates approximately 89 pounds of hydrocarbons were removed by the AS/SVE system during the fourth quarter 1996 (Attachment C and Table 2), and 2,746 pounds total since start-up. ERI will restart and operate the remedial systems and monitor groundwater at the site during the first quarter 1997.

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. This report has been prepared for Exxon Company, U.S.A. and any reliance on this report by third parties shall be at such party's sole risk.

If you have any questions or comments regarding this report, please call (415) 382-5991.

Sincerely,
Environmental Resolutions, Inc.

Marc A. Briggs
Project Manager

Steve M. Zigan
R.G. 4333
H.G. 133

Enclosures:

Table 1:	Cumulative Groundwater Monitoring and Sampling Data
Table 2:	Cumulative Hydrocarbon Removal and Emissions for Soil Vapor Extraction System
Table 3:	Operation and Performance Data for Groundwater Remediation System
Plate 1:	Site Vicinity Map
Plate 2:	Generalized Site Plan
Attachment A:	Groundwater Sampling Protocol
Attachment B:	Laboratory Analysis Reports and Chain of Custody Records
Attachment C:	ERI SOP-25 "Hydrocarbons Removed from a Vadose Well"

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-3006
720 High Street
Oakland, California
(Page 1 of 7)

Well ID #	Sampling	SUBJ	DTW	Elev.	TPHg	B	T	E	X	MTBE	TEPHd	VOCs
(TOC)	Date	<	feet	> <	parts per billion							>
MW1	1/20/94	NLPH	9.25	3.62								
(12.87)	02/02-03/94	NLPH	8.60	4.27	<50	<0.5	<0.5	<0.5	0.7	NA	70	NA
	3/10/94	NLPH	8.31	4.56								
	4/22/94	NLPH	7.95	4.92								
	05/10-11/94	NLPH	7.48	5.39	<50	<0.5	<0.5	<0.5	1.6	NA	100	NA
	6/27/94	NLPH	7.65	5.22								
	8/31/94	NLPH	9.39	3.48								
	9/29/94	NLPH	9.83	3.04	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	NA
	10/25/94	NLPH	10.19	2.68	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	NA
	11/30/94	NLPH	8.97	3.90								
	12/27/94	NLPH	7.44	5.43								
	2/6/95	NLPH	5.71	7.16	<50	0.52	<0.5	<0.5	<0.5	100	NA	NA
	6/7/95	NLPH	7.62	5.25	<50	<0.5	<0.5	<0.5	<0.5	3.5	81	NA
	9/18/95	NLPH	10.02	2.85	<50	<0.5	<0.5	<0.5	<0.5	6	82	NA
	11/1/95	NLPH	10.74	2.13	<50	<0.5	<0.5	<0.5	<0.5	8.9	160	NA
	2/14/96	NLPH	7.81	5.06	<50	<0.5	<0.5	<0.5	<0.5	7.8	100	NA
	6/19/96	NLPH	7.47	5.40	<50	<0.5	<0.5	<0.5	<0.5	7.1	93	NA
				Additional EHCss	<50							
	9/24/96	NLPH	10.42	2.45	<50	<0.5	<0.5	<0.5	<0.5	9.5	83	NA
	12/11/96	NLPH	8.50	4.37	<50	<0.5	<0.5	<0.5	<0.5	7.2	81	NA
MW2	1/20/94	NM [NR]	NM									
(12.98)	02/02-03/94	NM [NR]	NM	---								
	3/10/94	[8 c.]	6.96	6.02								
	4/22/94	[10 c.]	NM	---								
	05/10-11/94	[5 c.]	NM	---								
	6/27/94	Sheen	7.10	5.88								
	8/31/94	Sheen	8.58	4.40								
	9/29/94	Sheen	9.11	3.87								
	10/25/94	Sheen	7.76	5.22								
	11/30/94	NM	7.33	5.65								
	12/27/94	Sheen	6.77	6.21								
	2/6/95	Sheen	5.00	7.98								
	6/7/95	Sheen	7.14	5.84								
	9/18/95	Sheen	10.82	2.16								
	11/1/95	Sheen	11.65	1.33								
	2/14/96	Sheen	8.39	4.59								
	6/19/96	Sheen	6.55	6.43								
	9/24/96	Sheen	11.56	1.42								
	12/11/96	Sheen	8.02	4.96								
MW3	1/20/94	Sheen	8.24	4.68								
(12.92)	02/02-03/94	Sheen	7.68	5.24								
	3/10/94	Sheen	7.24	5.68								
	4/22/94	Sheen	6.79	6.13								
	05/10-11/94	Sheen	6.43	6.49								
	6/27/94	0.01 [NR]	6.97	5.95								
	8/31/94	Sheen	8.41	4.51								
	9/29/94	Sheen	8.97	3.95								
	10/25/94	Sheen	9.43	3.49								
	11/28/94	NM	7.19	5.73								
	12/27/94	Sheen	6.64	6.28								
	2/6/95	Sheen	4.87	8.05								
	6/7/95	Sheen	7.05	5.87								
	9/18/95	Sheen	10.61	2.31								
	11/1/95	Sheen	11.58	1.34								
	2/14/96	Sheen	8.34	4.58								
	6/19/96	Sheen	6.35	6.57								
	9/24/96	Sheen	11.45	1.47								
	12/11/96	NLPH	7.89	5.03	4,800	340	<5.0	8.2	20	30	17,000*	NA

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ <	DTW feet	Elev. > <	TPHg	B	T	E	X	MTBE	TEPHd	VOCs >
					parts per billion							
MW4												
(12.77)	1/20/94	NM [NR]	NM	---								
	02/02-03/94	NM [1 c.]	NM	---								
	3/10/94	[8 c.]	7.12	5.65								
	4/22/94	[10 c.]	NM	---								
	05/10-11/94	[5 c.]	NM	---								
	6/27/94	0.01 [NR]	6.50	6.27								
	8/31/94	0.02 [NR]	7.84	4.93								
	9/29/94	0.03 [NR]	8.43	4.34								
	10/25/94	Sheen	9.24	3.53								
	11/30/94	NM	6.77	6.00								
	12/27/94	Sheen	6.14	6.63								
	2/6/95	Sheen	4.87	7.90								
	6/7/95	Sheen	6.91	5.86								
	9/18/95	Sheen	9.59	3.18								
	11/1/95	Sheen	11.52	1.25								
	2/14/96	Sheen	8.56	4.21								
	6/19/96	Sheen	6.09	6.68								
	9/24/96	Sheen	10.20	2.57								
	12/11/96	Sheen	7.78	4.99								
MW5	7/18/89		Well Destroyed									
MW6	1/20/94	NM [NR]	NM	---								
(14.27)	02/02-03/94	NM [NR]	NM	---								
	3/10/94	[¼ c.]	7.82	6.45								
	4/22/94	[10 c.]	NM	---								
	05/10-11/94	[3 c.]	NM	---								
	6/27/94	Sheen	7.77	6.50								
	8/31/94	Sheen	9.02	5.25								
	9/29/94	Sheen	9.51	4.76								
	10/25/94	Sheen	9.93	4.34								
	11/30/94	NM	8.05	6.22								
	12/27/94	NM	7.54	6.73								
	2/6/95	Sheen	5.86	8.41								
	6/7/95	Sheen	8.07	6.20								
	9/18/95	Sheen	10.54	3.73								
	11/1/95	Sheen	11.41	2.86								
	2/14/96	Sheen	9.17	5.10								
	6/19/96	Sheen	7.13	7.14								
	9/24/96	Sheen	11.24	3.03								
	12/11/96	NLPH	9.20	5.07	9,100	2,100	22	160	260	<100	2,900	NA

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720 High Street
Oakland, California

Well ID #	Sampling	SUBJ	DTW	Elev.	TPHg	B	T	E	X	MTBE	TEPHd	VOCs
(TOC)	Date	<	feet	> <	parts per billion							>
MW7	1/20/94	NLPH	8.67	6.17								
(14.84)	02/02-03/94	NLPH	8.47	6.37	2,900	79	5	8.2	21	NA	1,300	NA
			Additional Analysis TOG:		4,701							
	3/10/94	NLPH	8.24	6.60								
	4/22/94	NLPH	7.95	6.89								
	05/10-11/94	NLPH	7.53	7.31	2,400	88	5.6	5.2	15	NA	1,300	NA
			Additional Analysis TOG:		1,400							
	6/27/94	NLPH	8.01	6.83								
	8/31/94	NLPH	9.19	5.65								
	9/29/94	NLPH	9.65	5.19	1,900	71	3.1	3.5	7.8	NA	56	NA
	10/25/94	NLPH	9.96	4.88	1,400	51	1.5	24	6.8	NA	89	NA
	11/30/94	NM	7.78	7.06						NA		
	12/27/94	NM	7.51	7.33								
	2/6/95	NLPH	5.79	9.05	2,500	130	<10	<10	<10	NA	1,300	ND
			Additional Analysis EHCss		1,100							
	6/7/95	NLPH	7.73	7.11	2,400	91	5	7.6	14	39	1,200	NA
			Additional Analysis EHCss		1,000							
	9/18/95	NLPH	9.81	5.03	1,800	17	<5.0	<5.0	<5.0	<25	1,100	NA
			Additional Analysis EHCss		870							
	11/1/95	NLPH	10.56	4.28	3,000	2.7	11	25	<2.5	<13	1,700	NA
			Additional Analysis EHCss		1,400							
	2/14/96	NLPH	8.04	6.80	1,900	59	<5.0	<5.0	<5.0	<25	1,200	NA
			Additional Analysis EHCss		940							
	6/19/96	NLPH	7.33	7.51	2,000	96	<5.0	<5.0	5.6	<25	1,400	ND
			Additional Analysis EHCss		1,000							
	9/24/96	NLPH	10.10	4.74	950	6.8	<5.0	<5.0	<5.0	<25	1,100	ND
			Additional Analysis EHCss		910							
	12/11/96	NLPH	8.50	6.34	2,500	50	<2.0	6.4	30	<10	1,600	ND
			Additional Analysis EHCss		1,100							
MW8	1/20/94	Sheen	8.90	4.55								
(13.45)	02/02-03/94	Sheen	8.58	4.87								
	3/10/94	Sheen	7.16	6.29								
	4/22/94	Sheen	7.34	6.11								
	05/10-11/94	Sheen	7.04	6.41								
	6/27/94	Sheen	6.01	7.44								
	8/31/94	Sheen	9.26	4.19								
	9/29/94	Sheen	9.76	3.69								
	10/25/94	Sheen	10.05	3.40								
	11/30/94	NM	7.68	5.77								
	12/27/94	Sheen	7.11	6.34								
	2/6/95	Sheen	5.39	8.06								
	6/7/95	Sheen	7.53	5.92								
	9/18/95	Sheen	9.84	3.61								
	11/1/95	Sheen	10.47	2.98								
	2/14/96	Sheen	8.27	5.18								
	6/19/96	Sheen	6.88	6.57								
	9/24/96	Sheen	10.13	3.32								
	12/11/96	Sheen	8.53	4.92								

TABLE 1
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Former Exxon Service Station 7-3006
720 High Street
Oakland, California

Well ID #	Sampling	SUBJ	DTW	Elev.	TPHg	B	T	E	X	MTBE	TEPHd	VOCs
(TOC)	Date	<	feet	> <	parts per billion							>
MW9	1/20/94	NM	NM	---								
(14.64)	02/02-03/94	NM	NM	---								
	3/10/94	NLPH	6.90	7.74								
	4/22/94	NLPH	7.38	7.26								
	05/10-11/94	NLPH	6.96	7.68								
	6/27/94	NLPH	7.65	6.99								
	8/31/94	NLPH	8.87	5.77								
	9/29/94	NLPH	9.19	5.45	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	NA
	10/25/94	NLPH	9.66	4.98	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	NA
	11/30/94	NM	8.38	6.26								
	12/27/94	NLPH	7.29	7.35								
	2/6/95	NLPH	5.74	8.90	<50	<0.5	<0.5	<0.5	<0.5	NA	56	NA
	6/7/95	NLPH	8.33	6.31	<50	<0.5	<0.5	<0.5	<0.5	<2.5	72	NA
	9/18/95	NLPH	9.28	5.36	<50	<0.5	<0.5	<0.5	<0.5	<2.5	60	NA
	11/1/95	NLPH	10.09	4.55	<50	<0.5	<0.5	<0.5	<0.5	<2.5	61	NA
	2/14/96	NLPH	6.26	8.38	<50	<0.5	<0.5	<0.5	<0.5	<2.5	83	NA
	6/19/96	NLPH	6.68	7.96	<50	<0.5	<0.5	<0.5	<0.5	<2.5	68	NA
			Additional Analysis EHCss		<50							
	9/24/96	NLPH	9.72	4.92	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<50	NA
	12/11/96	NLPH	8.11	6.53	<50	<0.5	<0.5	<0.5	<0.5	<2.5	91	NA
MW10	1/20/94	NLPH	8.40	5.65								
(14.05)	02/02-03/94	NLPH	8.00	6.05	<50	<0.5	1	<0.5	1.8	NA	<50	NA
	3/10/94	NLPH	7.56	6.49								
	4/22/94	NLPH	7.35	6.70								
	05/10-11/94	NLPH	7.06	6.99	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	NA
	6/27/94	NLPH	7.59	6.46								
	8/31/94	NLPH	8.73	5.32								
	9/29/94	NLPH	9.07	4.98	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	NA
	10/25/94	NLPH	9.41	4.64	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	NA
	11/30/94	NM	7.62	6.43								
	12/27/94	NLPH	7.01	7.04								
	2/6/95	NLPH	5.60	8.45	<50	<0.5	<0.5	<0.5	<0.5	<50	NA	NA
	6/7/95	NLPH	7.12	6.93	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<50	NA
	9/18/95	NLPH	8.54	5.51	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<50	NA
	11/1/95	NLPH	9.44	4.61	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<50	NA
	2/14/96	NLPH	9.36	4.69	<50	<0.5	<0.5	<0.5	<0.5	<2.5	64	NA
	6/19/96	NLPH	7.32	6.73	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<50	NA
			Additional Analysis EHCss		<50							
	9/24/96	NLPH	9.07	4.98	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<50	NA
	12/11/96	NLPH	7.73	6.32	<50	<0.5	<0.5	<0.5	<0.5	<2.5	67	NA

TABLE 1
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Former Exxon Service Station 7-3006
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Oakland, California
(Page 5 of 7)

Well ID #	Sampling	SUBJ	DTW	Elev.	TPHg	B	T	E	X	MTBE	TEPHd	VOCs
(TOC)	Date	<	feet	> <	parts per billion							>
MW11	1/20/94	NLPH	9.61	3.94								
(13.55)	02/02-03/94	NLPH	9.56	3.99	<50	<0.5	1	<0.5	0.9	NA	160	NA
	3/10/94	NLPH	8.59	4.96								
	4/22/94	NLPH	8.47	5.08								
	05/10-11/94	NLPH	8.12	5.43	<50	<0.53	<0.5	<0.5	3.2	NA	1002	NA
	6/27/94	NLPH	8.65	4.90								
	8/31/94	NLPH	9.80	3.75								
	9/29/94	NLPH	10.16	3.39	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	NA
	10/25/94	NLPH	10.48	3.07	<50	<0.5	<0.5	<0.5	<0.5	NA	<50	NA
	11/30/94	NM	8.55	5.00								
	12/27/94	NLPH	7.98	5.57								
	2/6/95	NLPH	6.49	7.06	<50	<0.5	<0.5	<0.5	<0.5	NA	160	NA
	6/7/95	NLPH	7.98	5.57	<50	<0.5	<0.5	<0.5	<0.5	42	50	NA
	9/18/95	NLPH	10.12	3.43	<50	<0.5	<0.5	<0.5	<0.5	32	56	NA
	11/1/95	NLPH	10.75	2.80	<50	<0.5	<0.5	<0.5	<0.5	35	170	NA
	2/14/96	NLPH	8.03	5.52	<50	<0.5	<0.5	<0.5	<0.5	37	76	NA
	6/19/96	NLPH	7.85	5.70	<50	<0.5	<0.5	<0.5	<0.5	33	92	NA
		Additional Analysis EHCss		<50								
	9/24/96	NLPH	10.45	3.10	<50	<0.5	<0.5	<0.5	<0.5	40	58	NA
	12/11/96	NLPH	9.02	4.53	<50	<0.5	<0.5	<0.5	<0.5	10	110	NA
MW12	1/20/94	NLPH	7.81	4.80								
(12.61)	02/02-03/94	NLPH	7.22	5.39	48,000	4,000	2,700	2,900	9,900	NA	18,000	NA
	3/10/94	NLPH	6.16	6.45								
	4/22/94	NLPH	6.31	6.30								
	05/10-11/94	NLPH	6.16	6.45	46,000	30,003	1,600	2,900	9,100	NA	8,200	NA
	6/27/94	NLPH	6.55	6.06								
	8/31/94	NLPH	7.97	4.64								
	9/29/94	Sheen	8.52	4.09								
	10/25/94	Sheen	8.74	3.87								
	11/30/94	NM	8.73	3.88								
	12/30/94	NLPH	6.17	6.44								
	2/6/95	Sheen	4.44	8.17								
	6/7/95	Sheen	6.59	6.02								
	9/18/95	Sheen	8.96	3.65								
	11/1/95	Sheen	10.75	1.86								
	2/14/96	Sheen	7.73	4.88								
	6/19/96	Sheen	5.80	6.81								
	9/24/96	Sheen	9.14	3.47								
	12/11/96	Sheen	7.31	5.30								
MW13	1/20/94	NLPH	9.08	5.12								
(14.20)	02/02-03/94	NLPH	8.75	5.45	41,000	3,800	1,500	2,700	9,500	NA	8,100	NA
	3/10/94	Sheen	7.46	6.74								
	4/22/94	Sheen	7.78	6.42								
	05/10-11/94	NLPH	7.61	6.59	39,000	3,400	930	2,400	8,900	NA	15,000	NA
	6/27/94	NLPH	7.97	6.23								
	8/31/94	NLPH	9.21	4.99								
	9/29/94	NLPH	9.61	4.59	57,000	2,100	470	2,600	8,100	NA	320	NA
	10/25/94	Sheen	9.93	4.27								
	11/30/94	NM	8.16	6.04								
	12/27/94	NM	7.61	6.59								
	2/6/95	Sheen	5.89	8.31								
	6/7/95	Sheen	8.05	6.15								
	9/18/95	Sheen	9.94	4.26								
	11/1/95	Sheen	10.48	3.72								
	2/14/96	Sheen	8.88	5.32								
	6/19/96	Sheen	7.22	6.98								
	9/24/96	Sheen	10.27	3.93								
	12/11/96	Sheen	8.77	5.43								

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW feet	Elev.	TPHg	B	T	E	X	MTBE	TEPHd	VOCs
		<		> <	parts per billion							>
MW14	1/20/94	NM	NM	---								
(15.18)	02/02-03/94	Not Accessible										
	3/10/94	NLPH	7.84	7.34								
	4/22/94	NLPH	8.00	7.18								
	05/10-11/94	NLPH	7.93	7.25	300	2.7	7.9	2	27	NA	11,002	NA
	6/27/94	NLPH	8.19	6.99								
	8/31/94	NLPH	9.44	5.74								
	9/29/94	NLPH	9.82	5.36	300	<0.5	<0.5	0.9	1.3	1,600	NA	NA
	10/25/94	NLPH	9.99	5.19	200	<0.5	<0.5	0.8	<0.5	210	NA	NA
	11/30/94	NM	8.16	7.02								
	12/27/94	Sheen	8.15	7.03								
	2/6/95	NLPH	7.18	8.00	360	<1.0	<1.0	<1.0	<1.0	NA	1,200	NA
		Additional Analysis TOG		400								
	6/7/95	NLPH	7.70	7.48	670	<0.5	<0.5	3.6	<0.5	<2.5	1,100	NA
		Additional Analysis EHCss		450								
	9/18/95	NLPH	9.88	5.30	1,300	<2.0	<2.0	<2.0	3	<10	1,900	NA
		Additional Analysis EHCss		1,200								
	11/1/95	NLPH	10.56	4.62	1,100	<2.5	<2.5	3.2	3.1	<13	2,700	NA
		Additional Analysis EHCss		1,600								
	2/14/96	NLPH	9.08	6.10	470	<0.5	<0.5	1.3	<0.5	<2.5	1,500	ND
		Additional Analysis EHCss		680								
	6/19/96	NLPH	8.50	6.68	610	<2.5	<2.5	<2.5	<2.5	<12	2,000	ND
		Additional Analysis EHCss		670								
	9/24/96	NLPH	10.23	4.95	1,000	<5.0	<5.0	<5.0	<5.0	<25	5,100	ND
		Additional Analysis EHCss		4,500								
	12/11/96	NLPH	9.09	6.09	1,100	<2.0	<2.0	<2.0	3.3	<10	2,100*	ND
		Additional Analysis EHCss		750								
MW15	1/20/94	NLPH	7.48	6.25								
(13.73)	02/02-03/94	NLPH	7.30	6.43	4,300	24	6.7	170	26	NA	1,200	NA
	3/10/94	NLPH	7.32	6.41								
	4/22/94	NLPH	6.67	7.06								
	05/10-11/94	NLPH	5.81	7.92	3,900	16	<0.5	150	13	NA	1,400	NA
	6/27/94	NLPH	6.14	7.59								
	8/31/94	NLPH	7.20	6.53								
	9/29/94	NLPH	7.76	5.97	2,500	51	15	48	3.6	NA	420	NA
	10/25/94	Sheen	8.19	5.54								
	11/30/94	NM	8.57	5.16								
	12/27/94	NLPH	6.49	7.24								
	2/6/95	Sheen	4.97	8.76								
	6/7/95	Sheen	7.14	6.59								
	9/18/95	Sheen	9.00	4.73								
	11/1/95	Sheen	10.67	3.06								
	2/14/96	Sheen	7.27	6.46								
	6/19/96	Sheen	6.65	7.08								
	9/24/96	Sheen	9.45	4.28								
	12/11/96	Sheen	7.77	5.96								

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

Notes:		
SUBJ	=	Results of subjective evaluation, liquid-phase hydrocarbon thickness (HT) in feet
NLPH	=	No liquid phase hydrocarbons present in well
TOC	=	Elevation of top of well casing; relative to mean sea level
DTW	=	Depth to water
Elev.	=	Elevation of groundwater. If liquid-phase hydrocarbons present, elevation adjusted using TOC - [DTW - (PT x 0.8)].
[ ]	=	amount recovered
gal.	=	gallons
c.	=	cups
TPHg	=	Total petroleum hydrocarbons as gasoline analyzed using EPA method 5030/8015 (modified).
BTEX	=	Benzene, Toluene, Ethylbenzene, and total Xylenes analyzed using EPA method 5030/8020.
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using EPA method 3510/8015 (modified).
MTBE	=	Methyl tert-butyl ether analyzed using EPA method 5030/8020.
VOCs	=	Volatile organic compounds/purgeable halocarbons analyzed using EPA method 601.
TOG	=	Total oil and grease analyzed using Standard Method 5520.
EHCss	=	Extractable Hydrocarbons as Stoddard Solvent analyzed using EPA method 8015.
NR	=	No liquid-phase hydrocarbons removed from well
NM	=	Not Measured
ND	=	Not Detected at or above the laboratory method detection limits
NA	=	Not Analyzed
---	=	Not Applicable
<	=	Less than the indicated detection limit shown by the laboratory
1	=	A peak eluting earlier than benzene and suspected to be methyl tert-butyl ether was present
*	=	TEPH note: Analyst notes samples resemble paint thinner more than Stoddard Solvent

TABLE 2
CUMULATIVE HYDROCARBON REMOVAL AND EMISSIONS FOR
SOIL VAPOR EXTRACTION SYSTEM
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

2010DATA.XLS
Revision: 2/4/97

DATE	SAMPLE ID	TEMP deg F	PRESS in H2O	AIR FLOW cu ft/min	HC Inf ppmv	HC Eff ppmv	HC Inf Conc* mg/cu M	LB HC for Period	LB HC Cumulative	Benzene Inf Conc* mg/cu M	LB Benzene per Period	LB Benzene Cumulative	LB Benzene Emitted per Day
1/9/95	A-INF	70		160			210			39			
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			
1/10/95	A-INF	70		160			110	2.30	2.3	22	0.44	0.4	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/11/95	A-INF	70		160			70	1.29	3.6	12	0.24	0.7	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/12/95	A-INF	70		160			< 10	< 0.57	4.2	< 0.1	< 0.09	0.8	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/13/95	A-INF	70		160			< 10	< 0.14	4.3	< 0.1	< 0.00	0.8	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/14/95	A-INF	70		160			< 10	< 0.14	4.5	< 0.1	< 0.00	0.8	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/15/95	A-INF	70		158			< 10	< 0.14	4.6	< 0.1	< 0.00	0.8	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/16/95	A-INF	70		151			< 10	< 0.14	4.7	< 0.1	< 0.00	0.8	
	A-INT						10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/17/95	A-INF	70		155			< 10	< 0.14	4.9	0.13	0.00	0.8	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/18/95	A-INF	70		155			100	0.77	5.6	12	0.08	0.9	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0014
1/19/95		70		155	15	0	68	1.17	6.8				
1/20/95		70		155	14.4	0	66	0.93	7.7				

TABLE 2
CUMULATIVE HYDROCARBON REMOVAL AND EMISSIONS FOR
SOIL VAPOR EXTRACTION SYSTEM
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

DATE	SAMPLE ID	TEMP deg F	PRESS in H2O	AIR FLOW cu ft/min	HC Inf ppmv	HC Eff ppmv	HC Inf Conc* mg/cu M	LB HC for Period	LB HC Cumulative	Benzene Inf Conc* mg/cu M	LB Benzene per Period	LB Benzene Cumulative	LB Benzene Emitted per Day
2/1/95	A-INF	70		147			39	13.19	20.9	3.5	1.47	2.3	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0013
2/14/95		70		147									
2/17/95		70		155	9	0	41	8.67	29.6				
2/27/95		70		151									
3/13/95	A-INF	70		176			< 10	< 14.21	43.8	0.42	1.14	3.5	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0016
3/31/95		70		116	2.3	0	10	2.01	45.8				
4/4/95		70		84	129	0.8	587	76.68	122.5				
4/12/95	A-INF	70		176			95	24.88	147.4	6.4	1.62	5.1	
	A-INT						< 10			0.38			
	A-EFF						< 10			< 0.1			< 0.0016
4/19/95	A-INF	70		109			210	13.65	161.0	7.6	0.63	5.7	
	A-INT						47			12			
	A-EFF						< 10			< 0.1			< 0.0010
4/20/95	Replaced 2 ea x 500 lb canisters = 1000 lbs of Carbon												
4/26/95	A-INF	70		84			400	18.49	179.5	9.1	0.64	6.4	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0008
5/1/95	Installed third 500 lb canister in series												
5/1/95	A-INF	70		168			Insufficient sample for analyses						
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0015
5/15/95		70		84									
5/19/95	A-INF	70		105			140	52.68	232.2	3.5	1.23	7.6	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0009
6/6/95	A-INF	70		178			36	20.12	252.3	0.22	0.53	8.1	
	A-INT						< 10			0.1			
	A-EFF						< 10			< 0.1			< 0.0016
6/8/95		70		164									
6/23/95	System Down - hydrocarbon vapor detector shut down												
6/27/95	Replaced one 500 lb carbon canister												

TABLE 2
CUMULATIVE HYDROCARBON REMOVAL AND EMISSIONS FOR
SOIL VAPOR EXTRACTION SYSTEM
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

DATE	SAMPLE ID	TEMP deg F	PRESS in H2O	AIR FLOW cu ft/min	HC Inf ppmv	HC Eff ppmv	HC Inf Conc* mg/cu M	LB HC for Period	LB HC Cumulative	Benzene Inf Conc* mg/cu M	LB Benzene per Period	LB Benzene Cumulative	LB Benzene Emitted per Day
6/27/95	A-INF	70		164			440	76.72	329.0	4.9	0.83	8.9	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0015
7/3/95	A-EFF						< 10			< 0.1			
7/10/95	Replaced one 500 lb carbon canister												
7/10/95	A-INF	70		168			230	64.89	393.9	2.8	0.75	9.7	
	A-INT						120			2.8			
	A-EFF						< 10			< 0.1			< 0.0015
7/19/95	Replaced 2 ea x 500 lb canisters = 1000 lbs of Carbon												
7/25/95	Collect samples and shut system down pending results												
7/25/95	A-INF	70		205			67	37.29	431.2	< 0.5	< 0.41	10.1	
	A-INT						< 100			< 1			
	A-EFF						< 10			< 0.1			< 0.0018
7/28/95	System down - could not restart												
7/31/95	Restart system												
7/31/95	A-INF	70		164			500	28.17	459.4	14	0.72	10.8	
	A-INT						12			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0015
8/9/95	Replaced one 500 lb carbon canister												
8/15/95	System down - Remove hydrocarbon vapor detector and send to manufacture for calibration												
9/11/95	Replaced hydrocarbon vapor detector - Restarted system												
9/13/95	System Down - hydrocarbon vapor detector shut down												
9/18/95	Replaced 2 ea x 500 lb canisters = 1000 lbs of carbon												
9/18/95	A-INF	70		164			980	196.08	655.5	13	3.58	14.4	
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0015
9/20/95	System Down - hydrocarbon vapor detector shut down												
9/25/95	Restarted system												
9/25/95	A-INF	70		164			NA			2.4			
	A-INT						NA			< 0.1			
	A-EFF						NA			< 0.1			

TABLE 2
CUMULATIVE HYDROCARBON REMOVAL AND EMISSIONS FOR
SOIL VAPOR EXTRACTION SYSTEM
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

DATE	SAMPLE ID	TEMP deg F	PRESS in H2O	AIR FLOW cu ft/min	HC Inf ppmv	HC Eff ppmv	HC Inf Conc* mg/cu M	LB HC for Period	LB HC Cumulative	Benzene Inf Conc* mg/cu M	LB Benzene per Period	LB Benzene Cumulative	LB Benzene Emitted per Day
10/13/95	Replaced 2 ea x 500 lb canisters = 1000 lbs of carbon												
10/13/95	A-INF	70		168			2000	444.04	1,099.5	100	16.84	31.2	
	A-INT						< 10			< 0.05			
	A-EFF						< 10			< 0.05			< 0.0008
10/26/95	Replaced 2 ea x 500 lb canisters = 1000 lbs of carbon												
10/26/95		70		168	165	0	751	269.69	1,369.2				
11/6/95													
11/20/95	Replaced 2 ea x 500 lb canisters = 1000 lbs of carbon												
11/20/95	A-INF1	70		170			180	176.60	1,545.8	3.6	1.04	32.3	
	A-INF2						82			2			
	A-INT						< 10			< 0.1			
	A-EFF						< 10			< 0.1			< 0.0015
11/26/95	System down												
12/4/95	Restart system	70		168	18.5	0.5	84	12.03	1,557.8				
12/18/95	A-INF	70		151			4600	469.45	2,027.3	50	10.10	42.4	
	A-INT						< 10			< 0.1	< 0.00	42.4	
	A-EFF						< 10			< 0.1			< 0.0014
1/2/96		70		147	51.7	8.2	235	485.04	2,512.3				
1/3/96	Shut system down, pending carbon change out												
1/8/96	changed out three carbon beds, #1, #2, #3			two carbon beds in-line									
1/8/96		70		151.2	105.4	0	480	28.72	2,541.0				
1/16/96	A-INF	70		142.8	62.3	0	180	7.50	2,548.5	< 0.1	< 0.00	42.4	
	A-EFF									< 0.1			< 0.0013
1/30/96		70		147	50.4	0	230	37.28	2,585.8				
2/14/96	A-INF	72		147	39.7	0	< 10	< 0.49	2,586.3	0.16	0.05	42.4	
	A-EFF						< 10			< 0.1			< 0.0013
2/27/96		70		136.5	1	0	5	1.20	2,587.5				
3/12/96	A-INF	70		136.5	2.2	0	< 10	< 1.25	2,588.8	< 0.1	< 0.04	42.5	
	A-EFF						< 10			< 0.1			< 0.0012

TABLE 2
CUMULATIVE HYDROCARBON REMOVAL AND EMISSIONS FOR
SOIL VAPOR EXTRACTION SYSTEM
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

DATE	SAMPLE ID	TEMP deg F	PRESS in H2O	AIR FLOW cu ft/min	HC Inf ppmv	HC Eff ppmv	HC Inf Conc* mg/cu M	LB HC for Period	LB HC Cumulative	Benzene Inf Conc* mg/cu M	LB Benzene per Period	LB Benzene Cumulative	LB Benzene Emitted per Day
3/25/96	A-INF	70		147	2.4	0	< 10	< 1.65	2,590.4	< 0.1	< 0.02	42.5	
	A-EFF						< 10			< 0.1			< 0.0013
3/25/96	System shutdown to install Thermtech VAC-25 thermal/catalytic oxidizer												
8/5/96	Start-up system utilizing Thermtech VAC-25 thermal/catalytic oxidizer												
8/15/96	A-INF			110			410			4.7			
	A-EFF						< 10			< 0.05			< 0.0005
8/29/96				42	45.8	1.1	194	28.84	2,619.3				
9/6/96	A-INF			42			150	5.19	2,624.4	< 0.1	< 0.36	42.8	
	A-EFF						< 10			< 0.1			< 0.0004
9/9/96				42	96	4.4	406	3.15	2,627.6				
9/24/96				44.1	141	5.1	597	29.07	2,656.7				
10/3/96	A-INF			42			1300	32.98	2,689.6	< 1	< 0.06	42.9	
	A-EFF						< 10			< 0.1			< 0.0004
10/9/96				42	173	4.5	732	22.98	2,712.6				
10/14/96				44.1	105	4.4	444	11.37	2,724.0				
10/21/96				42	89.2	4.5	378	11.12	2,735.1				
10/30/96				42	58.3	0.7	247	10.59	2,745.7				
11/6/96	System down, unable to restart due to reset failure												

Notes:

A-INF	= Air Influent	A-INF1	= Air Influent before stripper	HC	= Hydrocarbon
A-INT	= Air Intermediate	A-INF2	= Air Influent after stripper	ug/l	= micrograms per liter
A-EFF	= Air Effluent			mg/cuM	= milligrams per cubic meter
NA	= Not Analyzed			lb	= pounds
cu. ft/min	= cubic feet per minute			acfm	= actual cubic feet per minute
ppmv	= parts per million by volume			<	= less than the laboratory method detection limit

*If value is below laboratory detection limit, detection limit value is used.
*Values calculated using ERI SOP-25 "Hydrocarbons Removed from a Vadose Well" (Attachment C)

TABLE 3
OPERATION AND PERFORMANCE DATA FOR
GROUNDWATER REMEDIATION SYSTEM
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

Revised 2/4/97

Date	Total Flow [gal]	Average Flowrate [gpd]	Sample ID	Analytical Data TPHg [ug/l]	B [ug/l]	T [ug/l]	E [ug/l]	X [ug/l]	Arsenic [mg/l]	TPHg Removed Per Period [lb]	TPHg Removed Cumlative [lb]	Benzene Removed Per Period [lb]	Benzene Removed Cumlative [lb]
1/9/95	0		W-INF	3400	630	190	100	460	NA				
	--	--	W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
	--	--	W-EFF	<50	<0.5	<0.5	<0.5	<0.5	0.0076				
1/10/95	--	--	--										
1/11/95	795	398	--	--	--	--	--	--	--				
1/13/95	1065	135	System shut down pending EBMUD arsenic revision (discharge limit of 0.0012 ppm)										
1/23/95	1065	0	--	--	--	--	--	--	--				
2/13/95	1065	0	--	--	--	--	--	--	--				
2/14/95	1065	0	--	--	--	--	--	--	--				
2/17/95	1065	0	--	--	--	--	--	--	--				
2/27/95	1065	0	--	--	--	--	--	--	--				
3/7/95	1065	0	EBMUD arsenic revision (discharge limit of 0.05 ppm)										
3/13/95	10800	1623	W-INF	110	7.4	0.5	0.53	6	NA	0.1581	0.1581	0.0287	0.0287
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	<0.005				
3/21/95	11660	108	W-INF	<50	4.5	<0.5	<0.5	5.5	NA	0.0006	0.1587	0.0000	0.0288
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	0.0059				
			System shut down - 55-gallon liquid phase carbon canister (leak)										
3/30/95	11760	11	Replaced one 55-gallon liquid phase carbon canister (leak)										
4/4/95	11760		Replaced one 55-gallon liquid phase carbon canister (leak) - Started system										
4/4/95	12660	180	W-INF	220	66	11	4.8	16	NA	0.0011	0.1598	0.0003	0.0291
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	0.0096				
4/12/95	53200	5068	W-INF	770	110	19	<5.0	160	NA	0.1674	0.3273	0.0298	0.0588
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	<0.005				
4/19/95	73710	2930	W-INF	400	47	5.4	<0.5	40	NA	0.1001	0.4274	0.0134	0.0723
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	0.0055				
4/26/95	82820	1301	W-INF	1500	190	44	12	150	NA	0.0722	0.4996	0.0090	0.0813
			W-INT	200	31	3.2	<0.5	15	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	0.008				
5/9/95	83750	72	Replaced two 55-gallon liquid phase carbon canisters (leaks)										
5/26/95	97840	829	W-INF	680	210	16	5.8	28	NA	0.1366	0.6362	0.0251	0.1063
			W-INT	<50	0.94	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				

TABLE 3
OPERATION AND PERFORMANCE DATA FOR
GROUNDWATER REMEDIATION SYSTEM
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

Date	Total Flow [gal]	Average Flowrate [gpd]	Sample ID	Analytical Data TPHg [ug/l]	B [ug/l]	T [ug/l]	E [ug/l]	X [ug/l]	Arsenic [mg/l]	TPHg Removed Per Period [lb]	TPHg Removed Cumlative [lb]	Benzene Removed Per Period [lb]	Benzene Removed Cumlative [lb]
6/6/95			Added two 55-gallon liquid phase carbon canisters in series										
6/6/95			Replaced one 55-gallon liquid phase carbon canister (leak)										
6/8/95			W-INF	2800	660	300	54	340	NA				
			W-INT1	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-INT2	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF1	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF2	<50	<0.5	<0.5	<0.5	<0.5	NA				
6/27/95	125010	849	W-INF1	4500	1700	99	35	220	NA	0.5871	1.2233	0.2165	0.3228
			W-INF2	810	420	20	7.9	58	NA				
			W-INT1	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-INT2	<50	0.53	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF2	<50	<0.5	<0.5	<0.5	<0.5	NA				
7/10/95	131370	489	Replaced two 55-gallon liquid phase carbon canisters										
7/11/95	131690	320	W-INF1	1600	530	15	<10	59	NA	0.1700	1.3933	0.0621	0.3850
			W-INF2	630	270	7.0	<5.0	25	NA				
			W-INT1	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-INT2	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	0.041				
			Additional Analyses: ND Purgeable Volatile Organics, ND Priority Pollutant Metals, except for 12 ppb nickel and 8.0 ppb zinc										
7/25/95	141550	704	System down pending results of air samples										
7/28/95			System Down - Could not Restart										
7/31/95			Restart System										
8/15/95			System Down - Remove hydrocarbon vapor detector and send to manufacturer for calibration										
9/11/95			Replaced hydrocarbon vapor detector - Restarted System										
9/13/95			System Down - hydrocarbon vapor detector shut down										
9/18/95			Restart System										
9/18/95	148550	244	W-INF1	1900	590	33	16	120	NA	0.2462	1.6395	0.0788	0.4637
			W-INF2	490	150	7.6	3.1	30	NA				
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
9/20/95			System Down - hydrocarbon vapor detector shut down										
9/25/95			Restart System										
9/28/95			System Down - hydrocarbon vapor detector shut down										
10/13/95	151380	113	W-INF1	4900	1400	310	120	480	NA	0.0803	1.7197	0.0235	0.4872
			W-INF2	780	230	49	15	72	NA				
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				

TABLE 3
OPERATION AND PERFORMANCE DATA FOR
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720 High Street
Oakland, California

Date	Total Flow [gal]	Average Flowrate [gpd]	Sample ID	Analytical Data TPHg [ug/l]	B [ug/l]	T [ug/l]	E [ug/l]	X [ug/l]	Arsenic [mg/l]	TPHg Removed Per Period [lb]	TPHg Removed Cumlative [lb]	Benzene Removed Per Period [lb]	Benzene Removed Cumlative [lb]
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	0.0079				
			Additional Analyses: ND Purgeable Volatile Organics										
10/26/95	154143	213											
11/6/95	157906	342											
11/20/95	159664	126	W-INF1	630	140	<5.0	6.9	22	NA	0.1911	1.9108	0.0532	0.5404
			W-INF2	230	36	1.6	2.2	7.6	NA				
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
11/27/95			System Down										
11/29/95	160361	77	Restart System										
12/4/95	161442	216											
12/18/95	168304	490	W-INF1	8900	1100	240	130	2200	NA	0.3435	2.2543	0.0447	0.5851
			W-INF2	3900	380	85	60	890	NA				
			W-INT	<50	1.3	<0.5	<0.5	5.1	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
1/2/96	171770	231											
1/8/96	173707	323											
1/16/96	178573	608	W-INF	490	53	1.8	3.9	35	NA	0.4023	2.6566	0.0038	0.5889
			W-INF2	150	8.1	<0.5	0.61	6.8	NA				
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
1/30/96	190030	818											
2/14/96	202610	839	W-INF1										
			W-INF2										
			W-INT										
			W-EFF										
2/27/96	216100	1038											
3/12/96	SYSTEM DOWN UPON ARRIVAL												
3/12/96	216590	35	W-INF1	1700	410	110	26	130	NA	0.3473	3.0039	0.0734	0.6624
			W-INF2	420	94	24	5.9	33	NA				
			W-INT	<50	0.53	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
3/25/96	217460	67	W-INF1	100	6.6	<0.5	<0.5	7	NA	0.0065	3.0104	0.0015	0.6639
			W-INF2	<50	3.9	<0.5	<0.5	1.5	NA				
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
3/25/96	System shutdown, removal of blower/carbon to thermal oxidizer												

TABLE 3
OPERATION AND PERFORMANCE DATA FOR
GROUNDWATER REMEDIATION SYSTEM
Former Exxon Service Station 7-3006
720 High Street
Oakland, California

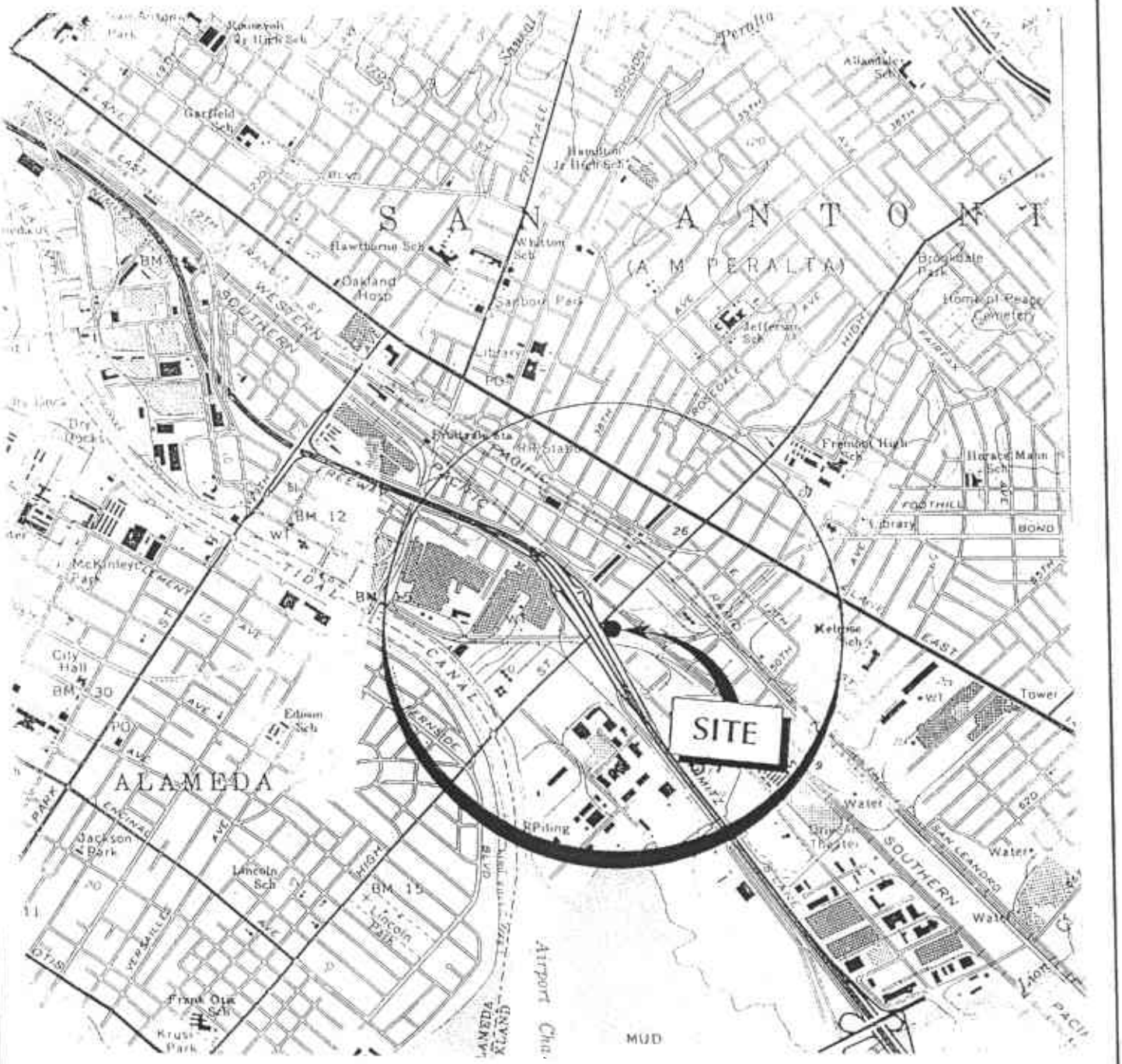
Date	Total Flow [gal]	Average Flowrate [gpd]	Sample ID	Analytical Data TPHg [ug/l]	B [ug/l]	T [ug/l]	E [ug/l]	X [ug/l]	Arsenic [mg/l]	TPHg Removed Per Period [lb]	TPHg Removed Cumlative [lb]	Benzene Removed Per Period [lb]	Benzene Removed Cumlative [lb]
7/22/96	Start-up remediation system												
7/22/96	219802	20	W-INF1	3100	330	53	180	630	NA	0.0313	3.0417	0.0033	0.6672
			W-INF2	2500	330	41	140	480	NA				
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
8/1/96	System down on arrival, unable to obtain emission flow rate and samples. Notified BAAQMD												
8/1/96	247305	2750											
8/9/96			W-INF1	1500	550	6.0	12	69	NA				
			W-INF2	240	71	0.91	1.3	9.2	NA				
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
8/15/96	252600	378											
8/29/96	256508	279											
9/6/96	258828	290	W-INF1	<50	<0.5	<0.5	<0.5	<0.5	NA	0.5128	3.5545	0.0538	0.7210
			W-INF2	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-INT	<50	<0.5	<0.5	<0.5	<0.5	NA				
			W-EFF	<50	<0.5	<0.5	<0.5	<0.5	NA				
9/20/96	260063	88											
9/24/96	262422	590											
10/3/96	263150	81											
10/14/96	263232	7	System down, air compressor, unable to obtain samples. Notified EBMUD										

W-INF = W-INF1 = water influent before stripper
W-INF2 = water influent after stripper
W-INT = W-INT1 W-INT2 = water intermediate
W-EFF = W-EFF1 W-EFF2 = water effluent
TPHg = Total petroleum hydrocarbons as gasoline

B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
< = less than the laboratory method detection limit

NA = Not applicable
NS = Not sampled
ND = Not detected

ug/L = micrograms per liter
mg/L = milligrams per Liter
gpd = gallons per day
gal = gallons



20100001

N

APPROXIMATE SCALE

0 1/2 1

MILE

Source: U.S.G.S. 7.5 minute topographic quadrangle map Oakland/San Leandro, California Photorevised 1980

ERI ENVIRONMENTAL RESOLUTIONS, INC.

PROJECT ERI 2010

SITE VICINITY MAP

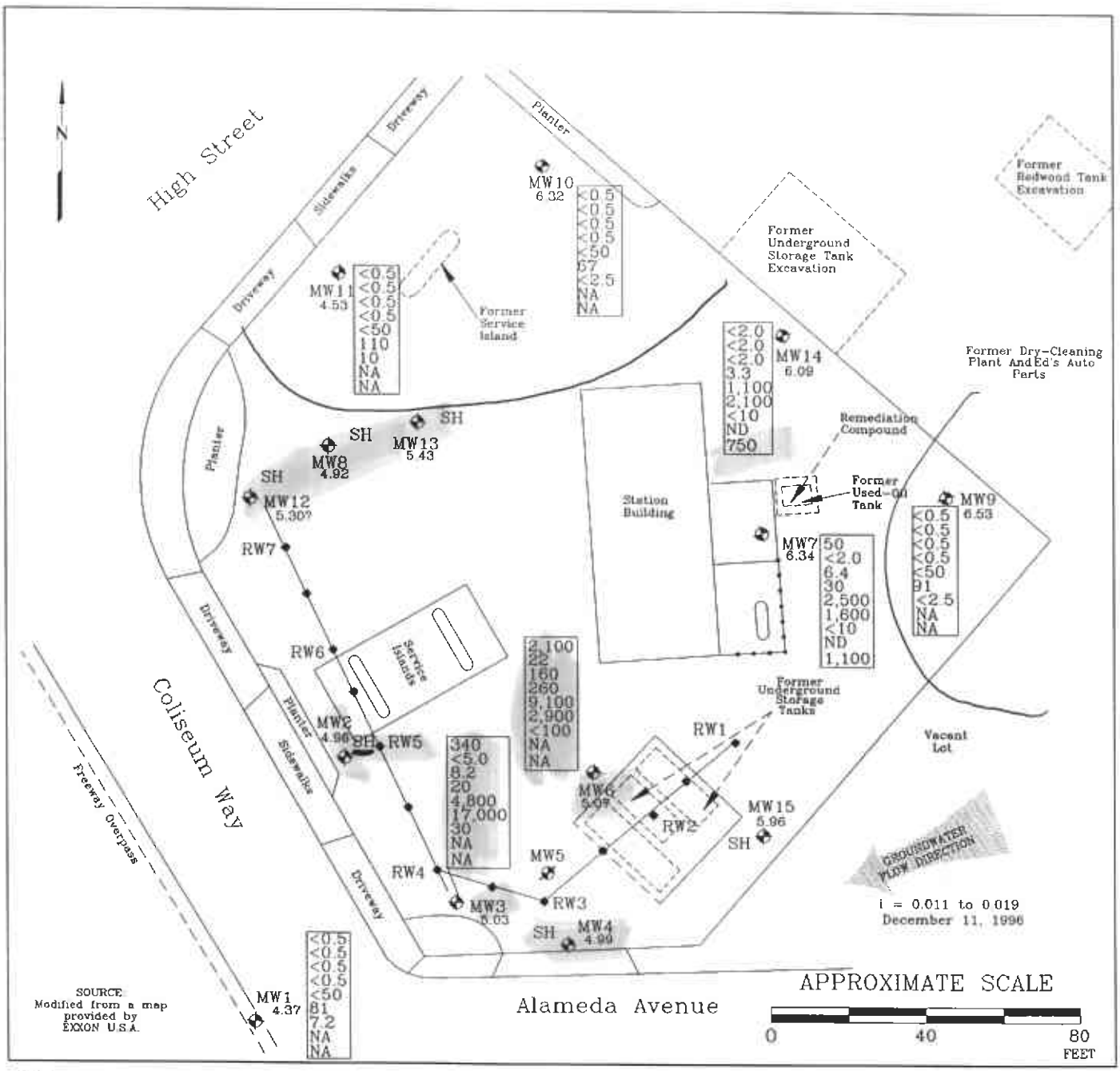
FORMER EXXON SERVICE STATION 7-3006

720 High Street

Oakland, California

PLATE

1



FN 20100002

EXPLANATION

MW15 5.96 ⊕ Groundwater Monitoring Well
Groundwater Elevation

MW5 ⊗ Groundwater Monitoring Well (Destroyed)

RW7 • Recovery Monitoring Well

i —— Interpreted Groundwater Gradient

? Not Used for Groundwater Flow Direction and Gradient Calculation

Groundwater Concentrations in ug/L
Sampled December 11, 1996

2,100	Benzene	ND	=	Not Detected
22	Toluene	NA	=	Not Analyzed
160	Ethylbenzene	SH	=	Sheen
260	Xylene			
9,100	Total Petroleum Hydrocarbons as gasoline			
2,900	Total Extractable Petroleum Hydrocarbons as diesel			
<100	Methyl tert-butyl ether			
NA	Volatile Organic Compounds			
NA	Extractable Hydrocarbons as Stoddard Solvent			

ERI ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

PROJECT NO. 2010

PLATE 2

DATE 1/3/97

ATTACHMENT A

GROUNDWATER SAMPLING PROTOCOL

GROUNDWATER SAMPLING PROTOCOL

The static water level and separate phase product level, if present, in each well that contained water and/or separate phase product are measured with a ORS Interface Probe, which is accurate to the nearest 0.01 foot. To calculate groundwater elevations and evaluate groundwater gradient, depth to water (DTW) levels are subtracted from wellhead elevations.

Water samples collected for subjective evaluation are collected by gently lowering approximately half the length of a clean Teflon® bailer past the air-water interface (if possible) and collecting a sample from near the surface of the water in the well. The samples were checked for measurable separate phase hydrocarbon product or sheen. Any separate phase product is removed from the well.

Before water samples are collected from the groundwater monitoring wells, the wells are purged until stabilization of the temperature, pH, and conductivity are obtained. Water samples from the wells that do not obtain stability of the temperature, pH, and conductivity are considered to be "grab samples". The quantity of water purged from each well is calculated as follows:

1 well casing volume = $\pi r^2 h(7.48)$ where:

r	=	radius of the well casing in feet.
h	=	column of water in the well in feet (depth to bottom - depth to water)
7.48	=	conversion constant from cubic feet to gallons

gallons of water purged/gallons in 1 well casing volume = well casing volumes removed.

After purging, each well was allowed to recharge to at least 80% of the initial water level. Water samples from wells that do not recover to at least 80% (due to slow recharging of the well) between purging and sampling are considered to be "grab samples". Water samples were collected with a new, disposable Teflon bailer, and were carefully poured into 40-milliliter (ml) glass vials, which are filled so as to produce a positive meniscus. Each vial is preserved with hydrochloric acid, sealed with a cap containing a Teflon® septum, and subsequently examined for air bubbles to avoid headspace which would allow volatilization to occur. The samples are promptly transported in iced storage in a thermally-insulated ice chest, accompanied by a Chain of Custody Record, to a California-certified laboratory.

ATTACHMENT B

LABORATORY ANALYSIS REPORTS AND CHAIN OF CUSTODY RECORDS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Resolutions	Client Proj. ID: Exxon 7-3006, 201013X	Sampled: 12/11/96
74 Digital Drive , Suite 6	Sample Descript: W-9-MW1	Received: 12/16/96
Novato, CA 94949	Matrix: LIQUID	Extracted: 12/20/96
	Analysis Method: EPA 8015 Mod	Analyzed: 12/23/96
Attention: Marc Briggs	Lab Number: 9612971-01	Reported: 01/02/97

QC Batch Number: GC1220960HBPEXA
Instrument ID: GCHP5B

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	50	81
Chromatogram Pattern:		
Unidentified HC		C9-C24

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	109

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

nvironmental Resolutions
4 Digital Drive , Suite 6
ovato, CA 94949

ttention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-9-MW1
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612971-01

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/17/96
Reported: 01/02/97

Batch Number: GC121796BTEX21A
strument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	7.2
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	92

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

nvironmental Resolutions	Client Proj. ID: Exxon 7-3006, 201013X	Sampled: 12/11/96
4 Digital Drive , Suite 6	Sample Descript: W-14-MW9	Received: 12/16/96
Novato, CA 94949	Matrix: LIQUID	Extracted: 12/18/96
	Analysis Method: EPA 8015 Mod	Analyzed: 12/20/96
ttention: Marc Briggs	Lab Number: 9612971-02	Reported: 01/02/97

C Batch Number: GC1218960HBPEXZ
strument ID: GCHP5A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	50	91
Chromatogram Pattern:		
Unidentified HC		C9-C24

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	124

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

nvironmental Resolutions
4 Digital Drive , Suite 6
lovato, CA 94949

ttention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-14-MW9
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612971-02

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/17/96
Reported: 01/02/97

C Batch Number: GC121796BTEX21A
strument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	97

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

nvironmental Resolutions	Client Proj. ID: Exxon 7-3006, 201013X	Sampled: 12/11/96
4 Digital Drive , Suite 6	Sample Descript: W-8-MW10	Received: 12/16/96
lovato, CA 94949	Matrix: LIQUID	Extracted: 12/18/96
	Analysis Method: EPA 8015 Mod	Analyzed: 12/20/96
ttention: Marc Briggs	Lab Number: 9612971-03	Reported: 01/02/97

C Batch Number: GC1218960HBPEXZ
strument ID: GCHP5A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	50	67
Chromatogram Pattern: Unidentified HC		C9-C24

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	111

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

nvironmental Resolutions
4 Digital Drive , Suite 6
ovato, CA 94949

ttention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-8-MW10
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612971-03

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/17/96
Reported: 01/02/97

Batch Number: GC121796BTEX21A
trument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	95

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

nvironmental Resolutions
4 Digital Drive , Suite 6
ovato, CA 94949

ttention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-10-MW11
Matrix: LIQUID
Analysis Method: EPA 8015 Mod
Lab Number: 9612971-04

Sampled: 12/11/96
Received: 12/16/96
Extracted: 12/18/96
Analyzed: 12/20/96
Reported: 01/02/97

C Batch Number: GC1218960HBPEXZ
strument ID: GCHP5A

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	50	110
Chromatogram Pattern:		
Unidentified HC		C9-C24

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	122

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

Sequoia Analytical

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ovato, CA 94949

ttention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-10-MW11
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612971-04

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/17/96
Reported: 01/02/97

Batch Number: GC121796BTEX21A
trument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

nalyte	Detection Limit ug/L	Sample Results ug/L
PPH as Gas	50	N.D.
Methyl t-Butyl Ether	**2.5**	**10**
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	96

nalytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
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ttention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-11-MW7
Matrix: LIQUID
Analysis Method: EPA 8015 Mod
Lab Number: 9612971-05

Sampled: 12/11/96
Received: 12/16/96
Extracted: 12/18/96
Analyzed: 12/20/96
Reported: 01/02/97

C Batch Number: GC1218960HBPEXZ
strument ID: GCHP5B

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	50	1600
Chromatogram Pattern:		
Unidentified HC		C9-C24

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	115

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

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Novato, CA 94949

Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-11-MW7
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612971-05

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/18/96
Reported: 01/02/97

QC Batch Number: GC121796BTEX02B
Instrument ID: GCHP2

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**200**	**2500**
Methyl t-Butyl Ether	10	N.D.
Benzene	**2.0**	**50**
Toluene	2.0	N.D.
Ethyl Benzene	**2.0**	**6.4**
Xylenes (Total)	**2.0**	**30**
Chromatogram Pattern:		
Gas & Unidentified HC		**>C10**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	74

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

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ovato, CA 94949

ttention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-11-MW7
Matrix: LIQUID
Analysis Method: EPA 601
Lab Number: 9612971-05

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/19/96
Reported: 01/02/97

C Batch Number: GC121996060108A
strument ID: GCHP08

Purgeable Halocarbons (EPA 601)

Analyte	Detection Limit ug/L	Sample Results ug/L
Bromodichloromethane	1.2	N.D.
Bromoform	1.2	N.D.
Bromomethane	2.5	N.D.
Carbon Tetrachloride	1.2	N.D.
Chlorobenzene	1.2	N.D.
Chloroethane	2.5	N.D.
2-Chloroethylvinyl ether	2.5	N.D.
Chloroform	1.2	N.D.
Chloromethane	2.5	N.D.
Dibromochloromethane	1.2	N.D.
1,2-Dichlorobenzene	1.2	N.D.
1,3-Dichlorobenzene	1.2	N.D.
1,4-Dichlorobenzene	1.2	N.D.
1,1-Dichloroethane	1.2	N.D.
1,2-Dichloroethane	1.2	N.D.
1,1-Dichloroethene	1.2	N.D.
cis-1,2-Dichloroethene	1.2	N.D.
trans-1,2-Dichloroethene	1.2	N.D.
1,2-Dichloropropane	1.2	N.D.
cis-1,3-Dichloropropene	1.2	N.D.
trans-1,3-Dichloropropene	1.2	N.D.
Methylene chloride	12	N.D.
1,1,2,2-Tetrachloroethane	1.2	N.D.
Tetrachloroethene	1.2	N.D.
1,1,1-Trichloroethane	1.2	N.D.
1,1,2-Trichloroethane	1.2	N.D.
Trichloroethene	1.2	N.D.
Trichlorofluoromethane	1.2	N.D.
Vinyl chloride	2.5	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	70	130	94

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

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Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-11-MW7
Matrix: LIQUID
Analysis Method: EPA 8015 Mod
Lab Number: 9612971-05

Sampled: 12/11/96
Received: 12/16/96
Extracted: 12/18/96
Analyzed: 12/20/96
Reported: 01/02/97

QC Batch Number: GC1218960HBPEXZ
Instrument ID: GCHP5B

Fuel Fingerprint : Stoddard Solvent

Analyte	Detection Limit ug/L	Sample Results ug/L
Extract HC as Stoddard Solvent	50	1100
Chromatogram Pattern:		
Unidentified HC		C9-C13

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	115

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
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Environmental Resolutions
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Novato, CA 94949

Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-13-MW14
Matrix: LIQUID
Analysis Method: EPA 8015 Mod
Lab Number: 9612971-06

Sampled: 12/11/96
Received: 12/16/96
Extracted: 12/18/96
Analyzed: 12/20/96
Reported: 01/02/97

QC Batch Number: GC1218960HBPEXZ
Instrument ID: GCHP5B

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	50	2100
Chromatogram Pattern: Unidentified HC		C9-C24

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	230 Q

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

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ttention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-13-MW14
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612971-06

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/19/96
Reported: 01/02/97

C Batch Number: GC121896BTEX21B
strument ID: GCHP21

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	200	1100
Methyl t-Butyl Ether	10	N.D.
Benzene	2.0	N.D.
Toluene	2.0	N.D.
Ethyl Benzene	2.0	N.D.
Xylenes (Total)	2.0	3.3
Chromatogram Pattern:		
Unidentified HC		>C10

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	77

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

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Environmental Resolutions
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Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-13-MW14
Matrix: LIQUID
Analysis Method: EPA 601
Lab Number: 9612971-06

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/19/96
Reported: 01/02/97

QC Batch Number: GC121996060108A
Instrument ID: GCHP08

Purgeable Halocarbons (EPA 601)

Analyte	Detection Limit ug/L	Sample Results ug/L
Bromodichloromethane	1.2	N.D.
Bromoform	1.2	N.D.
Bromomethane	2.5	N.D.
Carbon Tetrachloride	1.2	N.D.
Chlorobenzene	1.2	N.D.
Chloroethane	2.5	N.D.
2-Chloroethylvinyl ether	2.5	N.D.
Chloroform	1.2	N.D.
Chloromethane	2.5	N.D.
Dibromochloromethane	1.2	N.D.
1,2-Dichlorobenzene	1.2	N.D.
1,3-Dichlorobenzene	1.2	N.D.
1,4-Dichlorobenzene	1.2	N.D.
1,1-Dichloroethane	1.2	N.D.
1,2-Dichloroethane	1.2	N.D.
1,1-Dichloroethene	1.2	N.D.
cis-1,2-Dichloroethene	1.2	N.D.
trans-1,2-Dichloroethene	1.2	N.D.
1,2-Dichloropropane	1.2	N.D.
cis-1,3-Dichloropropene	1.2	N.D.
trans-1,3-Dichloropropene	1.2	N.D.
Methylene chloride	12	N.D.
1,1,2,2-Tetrachloroethane	1.2	N.D.
Tetrachloroethene	1.2	N.D.
1,1,1-Trichloroethane	1.2	N.D.
1,1,2-Trichloroethane	1.2	N.D.
Trichloroethene	1.2	N.D.
Trichlorofluoromethane	1.2	N.D.
Vinyl chloride	2.5	N.D.

Surrogates	Control Limits %		% Recovery
1-Chloro-2-fluorobenzene	70	130	100

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

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Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-13-MW14
Matrix: LIQUID
Analysis Method: EPA 8015 Mod
Lab Number: 9612971-06

Sampled: 12/11/96
Received: 12/16/96
Extracted: 12/18/96
Analyzed: 12/20/96
Reported: 01/02/97

QC Batch Number: GC1218960HBPEXZ
Instrument ID: GCHP5B

Fuel Fingerprint : Stoddard Solvent

Analyte	Detection Limit ug/L	Sample Results ug/L
Extract HC as Stoddard Solvent	50	750
Chromatogram Pattern:		
Unidentified HC		C9-C13

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	230 Q

Analytes reported as N.D. were not present above the stated limit of detection.

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Environmental Resolutions
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Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-8-MW3
Matrix: LIQUID
Analysis Method: EPA 8015 Mod
Lab Number: 9612971-07

Sampled: 12/11/96
Received: 12/16/96
Extracted: 12/18/96
Analyzed: 12/20/96
Reported: 01/02/97

QC Batch Number: GC1218960HBPEXZ
Instrument ID: GCHP5B

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	500	17000
Chromatogram Pattern:		
Weathered Diesel		C9-C24

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	181 Q

Analytes reported as N.D. were not present above the stated limit of detection.

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Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-8-MW3
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612971-07

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/18/96
Reported: 01/02/97

QC Batch Number: GC121796BTEX02B
Instrument ID: GCHP2

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	500	4800
Methyl t-Butyl Ether	25	30
Benzene	5.0	340
Toluene	5.0	N.D.
Ethyl Benzene	5.0	8.2
Xylenes (Total)	5.0	20
Chromatogram Pattern:		
Gas & Unidentified HC		>C10

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	91

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

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Novato, CA 94949

Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-27-MW6
Matrix: LIQUID
Analysis Method: EPA 8015 Mod
Lab Number: 9612971-08

Sampled: 12/11/96
Received: 12/16/96
Extracted: 12/18/96
Analyzed: 12/20/96
Reported: 01/02/97

QC Batch Number: GC1218960HBPEXZ
Instrument ID: GCHP5B

Total Extractable Petroleum Hydrocarbons (TEPH)

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	50	2900
Chromatogram Pattern: **Unidentified HC**		C9-C24

Surrogates	Control Limits %		% Recovery
n-Pentacosane (C25)	50	150	132

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
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Novato, CA 94949

Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Sample Descript: W-27-MW6
Matrix: LIQUID
Analysis Method: 8015Mod/8020
Lab Number: 9612971-08

Sampled: 12/11/96
Received: 12/16/96

Analyzed: 12/18/96
Reported: 01/02/97

QC Batch Number: GC121796BTEX02B
Instrument ID: GCHP2

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**2000**	**9100**
Methyl t-Butyl Ether	100	N.D.
Benzene	**20**	**2100**
Toluene	**20**	**22**
Ethyl Benzene	**20**	**160**
Xylenes (Total)	**20**	**260**
Chromatogram Pattern:		**Gas**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	84

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

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EXXON COMPANY, U.S.A.

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CHAIN OF CUSTODY

Page 1 of 2

Consultant's Name: Environmental Resolutions Inc			
Address: 74 Digital Dr Suite 6 Novato Ca 94949		Site Location: 720 High Street	
Project #: 7-3006	Consultant Project #: 201013X	Consultant Work Release #: 19432503	
Project Contact: Marc Briggs	Phone #: 415 382 9105	Laboratory Work Release #:	
EXXON Contact: Marla Guensler	Phone #: 510 246 8776	EXXON RAS #: 7-3006	
Sampled by (print): Scott Graham	Sampler's Signature: Scott Graham	Oakland, Ca	
Shipment Method:	Air Bill #:		

TAT: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☐ 96 hr ☒ Standard (10 day)

ANALYSIS REQUIRED 9612971

Sample Description	Collection Date	Collection Time	Matrix Soil/Water/Air	Prsv	# of Cont.	Sequoia's Sample #	TPH/Gas BTEX/ 8015/ 8020	TPH/ Diesel EPA 8015	[redacted] MTBE	Stoddard Solvent 3510/ 8015	Purgable Halocarbons 601	Temperature: ____ Inbound Seal: Yes No Outbound Seal: Yes No
W-9-MW1	12/11/96	15:40	Water	HCl ICE	3	1	X		X			
W-14-MW9	"	15:55	"	"	"	2	X		X			
W-8-MW10	"	1610	"	"	2	3	X		X			
W-10-MW11	"	16:25	"	"	3	4	X		X			
W-11-MW7	"	16:40	"	"	9	5	X		X		X	
W-13-MW14	"	16:55	"	"	"	6	X		X		X	
W-8-MW3	"	17:10	"	"	3	7	X		X			
W-27-MW6	"	17:25	"	"	"	8	X		X			

RELINQUISHED BY / AFFILIATION	Date	Time	ACCEPTED / AFFILIATION	Date	Time	Additional Comments
Scott Graham	12/11/96	1112	[illegible] Seaworx	12/11/96	1112	
[illegible] Seaworx	12/16/96	1240				
			SR	12/16/96		

Pink - Client
Yellow - Sequoia
White - Sequoia

P.21

JAN 03 '97 12:10PM SEQUOIA ANALYTICAL

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Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

EXXON COMPANY, U.S.A.

P.O. Box 2180, Houston, TX 77002-7426

CHAIN OF CUSTODY

Page 2 of 2

Consultant's Name: Environmental Resolutions Inc		Site Location: 720 High Street	
Address: 74 Digital Dr Suite 6 Novato Ca 94949		Consultant Work Release #: 1943503	
Project #: 7-3006	Consultant Project #: 201013X	Laboratory Work Release #:	
Project Contact: Marc Briggs	Phone #: 415 382 9105	EXXON RAS #: 7-3006	
EXXON Contact: Marla Guenster	Phone #: 510 246 8776	Oakland, Ca	
Sampled by (print): Scott Graham	Sampler's Signature: Scott Graham		
Shipment Method:	Air Bill #:		

TAT: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☐ 96 hr ☒ Standard (10 day)

ANALYSIS REQUIRED

9612971

Sample Description	Collection Date	Collection Time	Matrix Soil/Water/Air	Prsv	# of Cont.	Sequoia's Sample #	TPH/Gas BTEX/ 8015/ 8020	TPH/ Diesel EPA 8015	~~TPH~~ ~~BTEX~~ MTBE	Stoddard Solvent 3510/ 8015	Purgable Halocarbons 601	Temperature: _____ Inbound Seal: Yes No Outbound Seal: Yes No
W-9-MW1	12/11/96	15:45	Water	ICE	2	1		X				
W-14-MW9	"	16:00	"	"	"	2		X				
W-8-MW10	"	16:15	"	"	"	3		X				
W-10-MW11	"	16:30	"	"	do	4		X				
W-11-MW7	"	16:45	"	"	3	5		X		X		
W-13-MW14	"	17:00	"	"	do	6		X		X		
W-8-MW3	"	17:15	"	"	2	7		X				
W-27-MW6	do	17:20	do	do	do	8		X				

RELINQUISHED BY / AFFILIATION	Date	Time	ACCEPTED / AFFILIATION	Date	Time	Additional Comments
Scott Graham	12/11/96	1112	[signature] / SEQUOIA	12/11/96	1112	
[signature] / SEQUOIA	12/11/96	1241	[signature]	12/11/96		

Pink - Client
Yellow - Sequoia
White - Sequoia

P.22

JAN 03 '97 16:11 SEQUOIA ANALYTICAL

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Resolutions
74 Digital Drive , Suite 6
Novato, CA 94949
Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201013X
Lab Proj. ID: 9612971

Received: 12/16/96
Reported: 01/02/97

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of_____ pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

601 note: samples 9612971-06 and -07 were diluted due to matrix effect.

TEPH note: Analyst notes that samples 9612971-06 and -07 resemble paint thinner more than Stoddard Solvent.

SEQUOIA ANALYTICAL

Kevin Follett
Project Manager

Sequoia Analytical

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Environmental Resolutions
74 Digital Drive , Suite 6
Novato, CA 94949

Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201011X
Sample Descript: A-INF
Matrix: AIR
Analysis Method: 8015Mod/8020
Lab Number: 9610348-01

Sampled: 10/03/96
Received: 10/04/96

Analyzed: 10/07/96
Reported: 10/10/96

QC Batch Number: GC100796BTEX17A
Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	**100**	**1300**
Benzene	1.0	N.D.
Toluene	**1.0**	**5.5**
Ethyl Benzene	**1.0**	**1.6**
Xylenes (Total)	**1.0**	**11**
Chromatogram Pattern:		
Weathered Gas		**<C8**

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	466 Q

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

RECEIVED
OCT 16 1996

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Resolutions
74 Digital Drive , Suite 6
Novato, CA 94949

Attention: Marc Briggs

Client Proj. ID: Exxon 7-3006, 201011X
Sample Descript: A-EFF
Matrix: AIR
Analysis Method: 8015Mod/8020
Lab Number: 9610348-02

Sampled: 10/03/96
Received: 10/04/96

Analyzed: 10/07/96
Reported: 10/10/96

QC Batch Number: GC100796BTEX17A
Instrument ID: GCHP17

Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	10	N.D.
Benzene	0.10	N.D.
Toluene	0.10	N.D.
Ethyl Benzene	0.10	N.D.
Xylenes (Total)	0.10	N.D.
Chromatogram Pattern:		

Surrogates	Control Limits %		% Recovery
Trifluorotoluene	70	130	113

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Kevin Follett
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Resolutions 74 Digital Drive , Suite 6 Novato, CA 94949 Attention: Marc Briggs	Client Proj. ID: Exxon 7-3006, 201011X Lab Proj. ID: 9610348	Received: 10/04/96 Reported: 10/10/96

LABORATORY NARRATIVE

TPPH note: high surrogate recovery for 9610348-01 due to matrix coelution.

SEQUOIA ANALYTICAL

Kevin Follett
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Environmental Resolutions	Client Project ID:	Exxon 7-3006, 201011X	
74 Digital Drive, Ste. 6	Matrix:	Liquid	
Novato, CA 94949			
Attention: Marc Briggs	Work Order #:	9610348 01, 02	Reported: Oct 11, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC100796BTEX17A	GC100796BTEX17A	GC100796BTEX17A	GC100796BTEX17A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	R. Burton	R. Burton	R. Burton	R. Burton
MS/MSD #:	9609G8205	9609G8205	9609G8205	9609G8205
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	10/7/96	10/7/96	10/7/96	10/7/96
Analyzed Date:	10/7/96	10/7/96	10/7/96	10/7/96
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Result:	11	11	10	31
MS % Recovery:	110	110	100	103
Dup. Result:	12	12	11	33
MSD % Recov.:	120	120	110	110
RPD:	8.7	8.7	9.5	6.3
RPD Limit:	0-25	0-25	0-25	0-25
LCS #:	BLK100796	BLK100796	BLK100796	BLK100796
Prepared Date:	10/7/96	10/7/96	10/7/96	10/7/96
Analyzed Date:	10/7/96	10/7/96	10/7/96	10/7/96
Instrument I.D.#:	GCHP17	GCHP17	GCHP17	GCHP17
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
LCS Result:	12	11	11	33
LCS % Recov.:	120	110	110	110
MS/MSD	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130
Control Limits				

SEQUOIA ANALYTICAL

Kevin Follett
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

Sequoia Analytical
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9610348

EXXON COMPANY, U.S.A.

P.O. Box 2180, Houston, TX 77002-7426

CHAIN OF CUSTODY

SAME DAY PICK UP

Page 1 of 1

Consultant's Name: ENVIRONMENTAL RESOLUTIONS INC		
Address: 74 Digital Drive, Suite 6, Novato CA 94949		Site Location: 720 High St Oakland
Project #: 2010111X	Consultant Project #: 2010111X	Consultant Work Release #: 19432503
Project Contact: Marc Briggs	Phone #: 415 382 905	Laboratory Work Release #:
EXXON Contact: Maria Gruensfelder	Phone #: 510 246 8768	EXXON RAS #: 73006
Sampled by (print): Peter Petro	Sampler's Signature:	
Shipment Method:	Air Bill #:	

TAT: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☐ 96 hr ☒ Standard (10 day)

ANALYSIS REQUIRED

Sample Description	Collection Date	Collection Time	Matrix Soil/Water/Air	Prsv	# of Cont.	Sequoia's Sample #	TPH/Gas BTEX/ 8015/ 8020	TPH/ Diesel EPA 8015	TRPH S.M. 5520			Temperature: _____ Inbound Seal: Yes No Outbound Seal: Yes No
A-INF	10/3/96		Air	1	1	01	X					
A-ESS	"		"	"	"	02	X					

RELINQUISHED BY / AFFILIATION	Date	Time	ACCEPTED / AFFILIATION	Date	Time	Additional Comments
	10/4/96	3:40	T. Stewart DFNovato	10/4	240	
T. Stewart	10/4/96	6:35				
			D Cardenas	10/4/96	1835	

Pink - Client
Yellow - Sequoia
White - Sequoia

ATTACHMENT C

ERI SOP-25 "HYDROCARBONS REMOVED FROM A VADOSE WELL"

HYDROCARBON REMOVED FROM A VADOSE WELL
SOP-25
Rev. JO'C

Rev. 1/29/95

POUNDS OF HYDROCARBON IN AN AIR STREAM

INPUT DATA:
1) Air flow rate acfm (usually by Pitot tube)
2) Air pressure at the flow measuring device (in inches of H_2O) (use {-} for vacuum)
3) Air temperature at the flow measuring device.
4) Hydrocarbon content of air (usually in mg/M^3) for ppmv you need molecular weight.
5) Length of time (usually hours) over which flow rate occurred)

From periodic measurements, a calculation of total pounds of hydrocarbons removed from a well or from a system are calculated. The input data listed above are measured at a point in time. To calculate quantities removed, some assumptions must be made about what was happening between measurements. The following assumptions will be used for the sake of consistency:

ASSUMPTIONS:
1) Air flow for the period equals the average of the initial and final reading for the period.
2) Pressure and temperature for the entire period will be the final reading.
3) Hydrocarbon concentration for the period equals the average of the initial and final reading.
4) The hours of operation can be taken from an hour meter, an electric meter or will be assumed to be equal to the time between measurements.
5) If the unit is found down - try to determine how many hours it did operate and use the data taken for the previous period to make the calculations. Restart the unit and then take data to start the next period.

SAMPLE DATA AND CALCULATIONS

Date	Time	Temp deg F	Press in H_2O	HC conc mg/M3	Air flow acfm	Calc. lb. rem.
1/6/95	11:00	70	-46	2000	120	
1/7/95	13:00	55	-50	1350	90	
1/8/95	10:00	80	-13	750	100	7.4

Calculate the pounds of hydrocarbon removed from the system during the basis period from 13:00 (1:00 pm) on the 7th to 10 am on the 8th. Pressure and temperature of the measurements (at the flow meter) must be corrected to the P and T used to report the HC concentration (which are P = 1 atm and T = 70 deg F). 1 atm = 14.7psia, 760 mm Hg, or 407 in H_2O. T_{abs} = 460 + T deg F

Hours of operation = 21, T = 80, P = -13, HC = (1350+750)/2 = 1050 mg/M^3, Flow = 95

$$21 \times 60 \times 95 \times \frac{(460+70)}{(460+80)} \times \frac{(407-13)}{407} \times \frac{28.3}{1000} \times \frac{1050}{1000} \times \frac{1}{454} = 7.4 \text{ lb}$$

$$\frac{\text{hr}}{\text{basis}} \times \frac{\text{min}}{\text{hr}} \times \frac{\text{cu ft}}{\text{min}} \times T_{Corr} \times P_{Corr} \times \frac{M^3}{\text{cu ft}} \times \frac{g}{M^3} \times \frac{lb}{g} = \frac{lb}{basis}$$

$$21 \times 60 \times 95 \times 0.98 \times 0.97 \times 0.0283 \times 1.050 \times 1/454 = 7.4 \text{ lb.}$$

cumulative lbs. (the running total) = the sum of all the previous periods.

Note: If results are given in ppm, an assumption about the molecular weight of the hydrocarbon must be made to get mg/M^3. ppmv x molecular wt. /24.1 = mg/M^3. (Use 102 for gasoline)