

73 Digital Drive Novato, CA 94949 Phone: (415) 382-7400 FAX: (415) 382-7415

GROUNDWATER MONITORING REPORT

First Quarter 1993 Exxon Service Station No. 7-0236 6630 East 14th Street Oakland, California

4/20/93



73 Digital Drive Novato, CA 94949 Phone: (415) 382-7400 FAX: (415) 382-7415

April 20, 1993

Ms. Marla Guensler Exxon Company, U.S.A. P.O. Box 4032 2300 Clayton Road Concord, California 94524

Subject:

Groundwater Monitoring, First Quarter 1993, Exxon Service Station No. 7-0236,

6630 East 14th Street, Oakland, California

Ms. Guensler:

At the request of Exxon Company, U.S.A (Exxon), RESNA Industries, Inc. (RESNA) performed the first quarter 1993 groundwater monitoring event at the subject site. The location of the site is shown on the Site Vicinity Map (Plate 1). The purpose of quarterly monitoring is to evaluate fluctuations in hydrocarbon concentrations in groundwater below the site and to evaluate the groundwater flow direction and gradient.

BACKGROUND

The subject site is currently operated as an Exxon retail automotive store. Three underground fuel storage tanks and one underground used-oil storage tank are located on the property. In March 1991, Alton Geoscience (Alton) installed on-site groundwater monitoring wells MW-1, MW-2, and MW-3. Samples collected by Alton indicate that petroleum hydrocarbons are present in soil and groundwater beneath the site (Alton, December 21, 1992, Project No. 30-0401-02). In March 1992, Alton installed additional on-site groundwater monitoring wells MW-6 and MW-7, and offsite groundwater monitoring wells MW-4 and MW-5 (Alton, December 21, 1992, Project No. 30-0401-02). Dissolved gasoline petroleum hydrocarbons were not initially detected in groundwater from these wells. Exxon initiated quarterly groundwater monitoring at the site in January 1992.

PRESENT GROUNDWATER MONITORING

On March 9, 1993, RESNA personnel measured depth-to-water in each well, subjectively evaluated water from the wells for separate phase product, and purged and sampled groundwater from wells MW-1 and MW-4 through MW-6 for laboratory analysis. Well MW-7 had a damaged wellhead cover and was not accessible. Monitoring wells MW-2 and MW-3 were not sampled because of the presence of a hydrocarbon sheen. Results of subjective analyses are included in Table 1. Field methods are described in Appendix A.



April 20, 1993 Exxon Service Station No. 7-0236, Oakland, California

RESNA compiled potentiometric data to evaluate the direction of groundwater flow beneath the site. Depth-to-water measurements taken on March 9, 1993, were used to calculate the groundwater elevation in each well. Cumulative depth-to-water and groundwater elevation data are presented in Table 1. Based on the March 9, 1993 data, the evaluated groundwater flow direction was to the southwest with an approximate gradient of 0.036 (Plate 2). This groundwater flow direction is generally consistent with the previous groundwater flow directions interpreted for this site. Groundwater elevations at the site have increased an average of 3.9 feet since last quarter.

Results of Laboratory Analysis

Pace Inc. laboratory of Novato, California (California laboratory certification No. 1282) analyzed the groundwater samples from monitoring wells MW-1 and MW-4 through MW-6. Pace analyzed the samples for benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) and total petroleum hydrocarbons as gasoline (TPHg) using modified Environmental Protection Agency (EPA) Methods 8015 and 8020, and for total petroleum hydrocarbons as diesel (TPHd) using EPA Method 8015. The Chain of Custody Record and Report of Laboratory Analysis are attached (Appendix B). The results of these and previous water analyses are summarized in Table 1.

Results of the laboratory analyses of water samples collected this event indicate that:

• Concentrations of TPHd, TPHg, and BTEX were not detected at or above their respective laboratory detection limits in the samples collected from wells MW-1 and MW-4 through MW-6.

RESNA recommends that signed copies of this report be forwarded to:

Mr. Lester Feldman California Regional Water Quality Control Board San Francisco Bay Region 2101 Webster Street Oakland, California 94612 Mr. Barney Chan Alameda County, Department of Environmental Health Hazardous Materials Division 80 Swan Way, Room 200 Oakland, California 94621

LIMITATIONS

The discussion presented in this report is based on the observations by field personnel; the results of laboratory analyses performed by a California-certified laboratory; referenced documents; and RESNA's understanding of the regulations of the State of California, the County of Alameda, and the City of Oakland.

It is possible that variations in the soil or groundwater could exist beyond the points explored in this investigation. Also, changes in groundwater conditions could occur at some time in the future because of variations in rainfall, temperature, regional water uses, acts of man, and other factors.



April 20, 1993 Exxon Service Station No. 7-0236, Oakland, California

The service performed by RESNA has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession practicing under similar conditions in the Alameda County area. Please note that hydrocarbon-bearing soil and/or groundwater must be reported to the appropriate agencies in a timely manner. No other warranty, expressed or implied, is made.

RESNA includes in this report chemical analytical data from a California-certified laboratory. The analytical tests are performed according to procedures suggested by the U.S. EPA and the State of California.

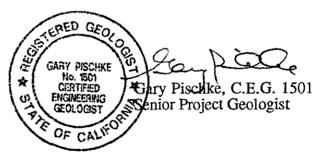
Please call with any questions or comments regarding this letter report.

Sincerely,

RESNA Industries, Inc.

Mark Frye

Environmental Scientist



cc: Mr. Keith Romstad, RESNA, Novato

Enclosures:

Plate 1, Site Vicinity Map

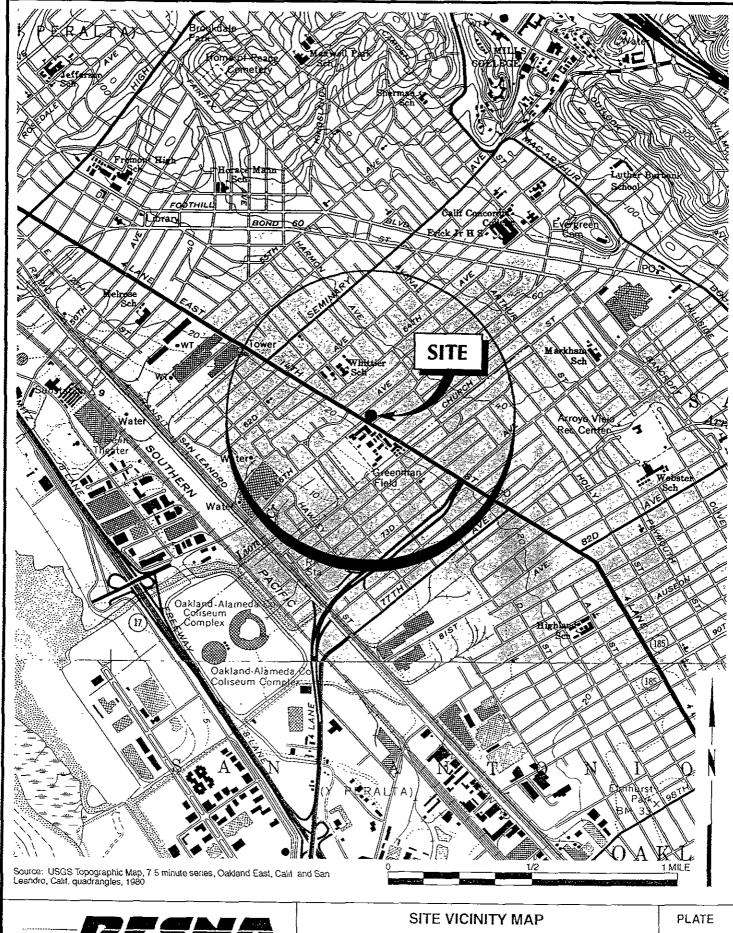
Plate 2, Potentiometric Surface Map (March 9, 1993)

Plate 3, Concentrations of Hydrocarbons in Groundwater Samples (March 9, 1993)

Table 1, Cumulative Groundwater Monitoring Data

Appendix A: Groundwater Sampling Protocol

Appendix B: Report of Laboratory Analysis and Chain of Custody Record



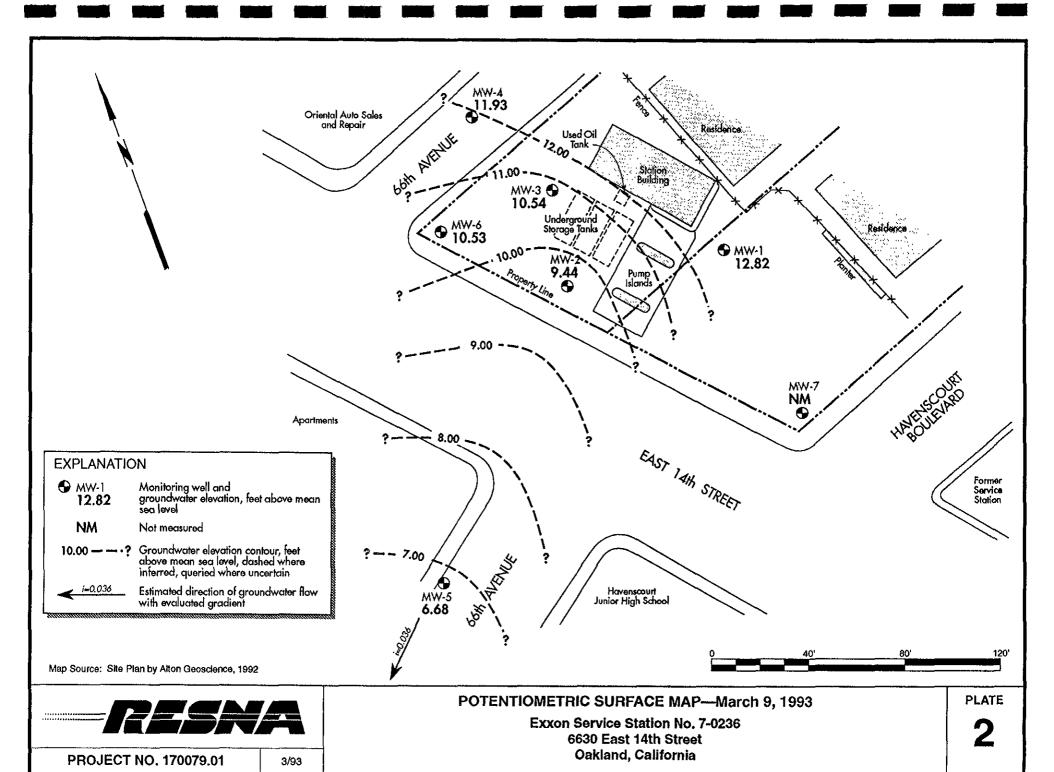
RESNA

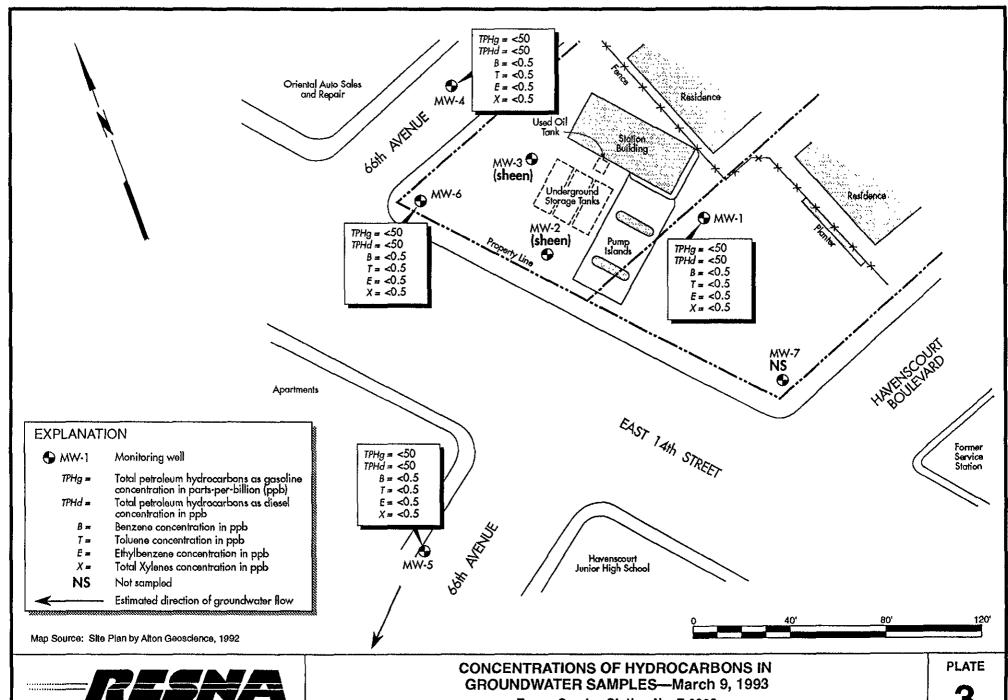
PROJECT NO. 170079.01

1/93

Exxon Service Station No. 7-0236 6630 East 14th Street Oakland, California

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PROJECT NO. 170079.01

4/93

Exxon Service Station No. 7-0236 6630 East 14th Street Oakland, California



TABLE 1 CUMULATIVE GROUNDWATER MONITORING DATA

Exxon Service Station No. 7-0236 6630 East 14th Oakland, California (Page 1 of 2)

				(r age i						
Well ID# (TOC)	Sampling Date	SUBJ	DTW ft	ElevW	<	TPHg	B p _l	T ob	E	×
MW-1	03/15/91	NR	7.44	12.76		<50	<0.3	0.5	0.3	1.3
(20.20)	01/15/92 (H,T)	NR	10.60	9.60	<300	<50	<0.5	0.5	<0.5	0.9
(20.20)	03/23/92 (H,T)	NR	6.38	13.82	<50	<50	<0.5	<0.5	<0.5	<0.5
	04/06/92	NR	7.55	12.65			~		~	~~·
	07/08/92 (H,T)	NR	9.85	10.35	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/13/92 (H,T)	NR	12.95	7.25	<50	<50	<0.5	<0.5	<0.5	<0.5
	03/09/93	NP	7.38	12.82	<50	<50	<0.5	<0.5	<0.5	<0.5
MW-2	03/15/91 (H,T)	NR	9.05	10.10	120	1,700	190	2.6	12	64
(19.15)	01/15/92 (H,T)	NR	11.60	7.55	1,000	6,800	81	<10	320	170
, ,	03/23/92 (H,T)	NR	9.42	9.73	3,000	7,100	740	30	810	490
	04/06/92	NR	9.09	10.06						
	07/08/92	NR	10.08	9.07	2,100	7,000	250	14	300	160
	10/13/92	NR	12.06	7.09	1,900	3,200	97	2.6	97	53
	03/09/93	sheen	9.71	9.44						
E-WN	03/15/91 (H,T)	NR	7.84	11.75	160	3,100	2.2	1.9	100	84
(19.59)	01/15/92 (H,T)	NR	10.30	9.29	<300	250	0.7	6.8	1.5	1.5
	03/23/92 (H,T)	NR	6.84	12.75	440	640	<0.5	12	25	6.5
	04/06/92	NR	7.84	11.75			***			
	07/08/92 (H,T)	NR	8.63	10. 9 6	960	2,900	<0.5	2.6	12	63.7
	10/13/92 (H)	NR	12.10	7.49	400	1,100	5.5	<0.5	4.6	1.1
	03/09/93	sheen	9.05	10.54			***		***	
MW-4	04/06/92	NR	7.76	11.70	<50	<50	<0.5	<0.5	<0.5	<0.5
19.46)	07/08/92	NR	9.56	9.90	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/13/92	NR	12.09	7.37	<80	<50	<0.5	<0.5	<0.5	<0.5
	03/09/93	NP	7.53	11.93	<50	<50	<0.5	<0.5	<0.5	<0.5
VW-5	04/06/92	NR	10.66	6.29	<50	<50	<0.5	<0.5	<0.5	<0.5
(16.95)	07/08/92 *									
	10/13/92	NR	15.02	1.93	<50	69	<0.5	<0.5	<0.5	<0.5
	03/09/93	NP	10.27	6.68	<50	<50	<0.5	<0.5	<0.5	<0.5
4W-6	04/06/92 (H)	NR	8.29	10.50	<50	<50	<0.5	<0.5	<0.5	<0.5
18.79)	07/08/92 (H,T)	NR	9.22	9.57	<50	<50	<0.5	<0.5	<0.5	<0.5
	10/13/92	NR	11.51	7.28	<50	<50	<0.5	<0.5	<0.5	<0.5
	03/09/93	NP	8.26	10.53	<50	<50	<0.5	<0.5	<0.5	<0.5

See notes on page 2 of 2



TABLE 1 CUMULATIVE GROUNDWATER MONITORING DATA

Exxon Service Station No. 7-0236 6630 East 14th Oakland, California (Page 2 of 2)

Well ID# (TOC)	Sampling Date	SUBJ <	DTW ft	ElevW	TPHd <	TPHg	B pr	T	E	>
MW-7	04/06/92	NR	8.34	10.89	<50	<50	<0.5	<0.5	<0.5	<0.5
(19.23)	07/08/92	NR	10.30	8.93	<50	<50	<0.5	<0.5	<0.5	<0.5
(10/13/92	NR	12.91	6.32	94	670	0.8	<0.5	<0.5	2.5
	03/09/93 *									

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ft SUBJ	 Feet Results of subjective evaluation, separate phase product thickness (PT) in feet NP = separate phase product not present in well sheen = separate phase product present as a sheen emulsion = separate phase product present as an emulsion
TOC	= Elevation of top of well casing; datum is mean sea level
DTW	= Depth to water
ElevW	= Elevation of groundwater; datum is mean sea level
	ElevW = TOC - (DTW+(PT*0.8))
ppb	= Parts-per-billion
TPHg	= Total petroleum hydrocarbons as gasoline
В	= Benzene
T	= Toluene
E	= Ethylbenzene
X	= Total xylene isomers
<	= Less than the indicated detection limit established by the laboratory
	= Not sampled / not measured
*	= Well not accessible : well obstructed / wellhead cover damaged
Н	= EPA Method 8010 compounds not detected at or above their respective laboratory detection limits
	Exceptions: MW-2, 03/15/91, Methylene chloride detected at 1 ppb
-	MW-3, 03/15/91, Methylene chloride detected at 21 ppb
Τ	 Total Oil and Grease (TOG) using EPA Method 5520 not detected at or above the laboratory detection limit of 5,000 ppb.
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APPENDIX 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 Model No. 106801, 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 and corrected for product thickness, when necessary, by multiplying product thickness (PT) by a correction factor 0.8 and subtracting from the DTW level (Adjusted DTW = DTW-[PT x 0.8])

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. Approximately four well casing volumes are purged before those characteristics stabilized. 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 = $\pi r2h(7.48)$ 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 so 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 PVC bailer which had been cleaned with Alconox® and deionized water, 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.

APPENDIX B REPORT OF LABORATORY ANALYSIS AND CHAIN OF CUSTODY RECORD



Resna 73 Digital Dr.

March 16, 1993 PACE Project Number: 430309505

Novato, CA 94949

Attn: Mr. Mark Frye

Client Reference: Exxon 7-0236 (EE)

PACE Sample Number: Date Collected:

70 0023335 03/09/93 03/09/93

Date Received:

Parameter	<u>Units</u>	MDL	MW-1 '	DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT): Purgeable Fuels, as Gasoline (EPA 8015M) PURGEABLE AROMATICS (BTXE BY EPA 8020M): Benzene Toluene Ethylbenzene	ug/L ug/L ug/L ug/L	50 0.5 0.5 0.5	- ND - ND ND ND	03/11/93 03/11/93 03/11/93 03/11/93 03/11/93
Xylenes, Total	ug/L	0.5	ND	03/11/93
EXTRACTABLE FUELS EPA 3510/8015 Extractable Fuels, as Diesel Date Extracted	mg/L	0.05	, ND 03/11/93	03/11/93



70 0023343

03/09/93

Mr. Mark Frye Page 2

March 16, 1993

PACE Project Number: 430309505

Client Reference: Exxon 7-0236 (EE)

PACE Sample Number:

Date Collected:

Date Received:

Client Sample ID: Parameter

03/09/93 MW-4 Units MDL

DATE ANALYZED

03/11/93

03/11/93

03/11/93

03/11/93

03/11/93

03/11/93

ORGANIC ANALYSIS

PURGEABLE FUELS AND AROMATICS

TOTAL FUEL HYDROCARBONS, (LIGHT):
Purgeable Fuels, as Gasoline (EPA 8015M) ug/L
PURGEABLE AROMATICS (BTXE BY EPA 8020M):

Benzene
Toluene
Ethylbenzene

Xylenes, Total

EXTRACTABLE FUELS EPA 3510/8015 Extractable Fuels, as Diesel Date Extracted ug/L 0.5

ug/L

ug/L

mg/L

0.5

0.05

50

0.5

0.5

5 ND

ND

ND

ND

ND

03/11/93

03/11/93

ND 03/11/93

11 Digital Drive Novato, CA 94949 TEL: 415-883-6190 FAX: 415-883-2673



Mr. Mark Frye Page

March 16, 1993

PACE Project Number: 430309505

Client Reference: Exxon 7-0236 (EE)

PACE	Sample	Number:
	Callact	

70 0023351 03/09/93

Date Received: Client Sample ID:

03/09/93

03/11/93

Parameter

MW-6 Units MDL

DATE ANALYZED

ORGANIC ANALYSIS				
101uene Ethylhonzone	ug/L ug/L ug/L ug/L	50 0.5 0.5 0.5	ND - ND ND ND	03/11/93 03/11/93 03/11/93 03/11/93 03/11/93 03/11/93
Xylenes, Total	ug/L	0.5	ND	03/11/93
EXTRACTABLE FUELS EPA 3510/8015 Extractable Fuels, as Diesel Date Extracted	mg/L	0.05	ND 03/11/93	03/11/93



Mr. Mark Frye Page

March 16, 1993

PACE Project Number: 430309505

Client Reference: Exxon 7-0236 (EE)

PACE Sample Number: Date Collected: Date Received:

70 0023360 03/09/93 03/09/93

Client Sample ID:

Parameter

MW-5 Units MDL

DATE ANALYZED

ORGANIC ANALYSIS

ORGANIC ANALISIS				
PURGEABLE FUELS AND AROMATICS TOTAL FUEL HYDROCARBONS, (LIGHT): Purgeable Fuels, as Gasoline (EPA 8015M) PURGEABLE AROMATICS (BTXE BY EPA 8020M): Benzene Toluene Ethylbenzene	ug/L ug/L ug/L ug/L	50 0.5 0.5 0.5	- ND ND ND ND	03/11/93 03/11/93 03/11/93 03/11/93 03/11/93 03/11/93
Xylenes, Total	ug/L	0.5	ND	03/11/93
EXTRACTABLE FUELS EPA 3510/8015 Extractable Fuels, as Diesel Date Extracted	mg/L	0.05	ND 03/11/93	03/11/93

These data have been reviewed and are approved for release.

Darrell C. Cain Regional Director



Mr. Mark Frye Page

FOOTNOTES for pages

1 through

March 16, 1993 PACE Project Number: 430309505

Client Reference: Exxon 7-0236 (EE)

MDL ND

Method Detection Limit

Not detected at or above the MDL.



Mr. Mark Frye

Page 6

QUALITY CONTROL DATA

March 16, 1993

PACE Project Number: 430309505

Client Reference: Exxon 7-0236 (EE)

EXTRACTABLE FUELS EPA 3510/8015

Batch: 70 19345

Samples: 70 0023335, 70 0023343, 70 0023351, 70 0023360

METHOD BLANK:

Parameter

Extractable Fuels, as Diesel

Units

MDL

 $\overline{0.05}$

Method Blank ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter

Extractable Fuels, as Diesel

Units mg/L

mg/L

 $\frac{\text{MDL}}{0.05}$

Reference Value

1.00

Dup1 Recv Recv RPD 88% 81% 89

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



Mr. Mark Frye Page 7

QUALITY CONTROL DATA

March 16, 1993

PACE Project Number: 430309505

Client Reference: Exxon 7-0236 (EE)

PURGEABLE FUELS AND AROMATICS

Batch: 70 19380

Samples: 70 0023335, 70 0023343, 70 0023351, 70 0023360

METHOD BLANK:

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

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Damamatau			Reference		Dupl	
Parameter	<u>Units</u>	MDL	Value	Recv	Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	1000	99%	103%	3%
Benzene	ug/L	0.5	40.0	102%	100%	1%
Toluene	ug/L	0.5	40.0	101%	99%	2%
Ethylbenzene	ug/L	0.5	40.0	103%	101%	1%
Xylenes, Total	ug/L	0.5	120	104%	101%	2%



Mr. Mark Frye

FOOTNOTES

Page 8

for pages 6 through

March 16, 1993 PACE Project Number: 430309505

Client Reference: Exxon 7-0236 (EE)

MDL

Method Detection Limit

ND

Not detected at or above the MDL.

RPD Relative Percent Difference

PACORPORATED

EXXON COMPANY, U.S.A.

P.O. Box 4415, Houston, TX 77210-4415 CHAIN OF CUSTODY

THE ASSURANCE	OF QUALITY			, CA, 1 383-610	1 Digital D 0	rive, 9	4949								gton B 892-25		CA, 57	702 Bolsa Avenue, 92649
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Project #:	170 170	0079.0	01			Cons	ultant P	roject #	<i>‡</i> :						Consultant Work Release #:			
Project Contact:	MARKI	FRYE				Phone	e#: 3	82-1	KANA.	740	O Fa	x #:			Laboral	ory Wo	rk Rele	ease #:
EXXON Conlact:	MARIA (<u> </u>	EE · [] с&м	Phone						x #:			EXXO	N RAS	#: 7	7-0236
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Shipment Method:	Н	PNO DEL	WER			Air B	ill #:		_		_				Shipme	nt Date		
TAT: 24 hr	48 hr	72 hr	Xs	tandard	(5 day)					ANA	LYSIS	REQU	IRED					Sample Condition as Received
Sample Description	Collection Date/Time	Matrix Soil/Water	Prsv	# of Cont	PACE Sample #	TPH/GAS/BTEX EPA 8015/8020	TPH/Diesel EPA 8015	TRPH EPA 418.1		Diesel								Temperature ° C:
MW-1	3/9 12:30	WATER	HCL	34	2333.5	7				X								
MW-1 RINGE	3/9 12:00	WATEL	HU	1	37.8	}-	40	LV	\sum									
MW-4	3/9 12:50			84		1 . 7				×								
MW-4 ROUSATE				1	38.6	+	10	LY	<u> </u>									
nw-6	3/9 1:22			34	35.1	X				×								
MW-6 LINSAIE	1			1	39.4	1	10	1. 1	<u> </u>			<u> </u>						
mw-5	3/9 1:53			74		X			İ	×				***				
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