June 1, 2000

Mr. Larry Seto Sr. Hazardous Materials Specialist Alameda County Health Care Services Agency Environmental Protection (LOP) 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502-6577

SUBJECT:

2277 SEVENTH STREET SITE, OAKLAND, CALIFORNIA

STID #3899

Dear Mr. Seto:

Please find enclosed the following quarterly monitoring report:

May 30, 2000, Quarterly Groundwater Monitoring and Product Recovery Report, 1sth Quarter of 2000, 2277 Seventh Street, Oakland, California, Harding Lawson Associates.

If you have any questions, please contact me at 627-1373.

Smeerely,

ohn Prall, R.G

Associate Environmental Scientist

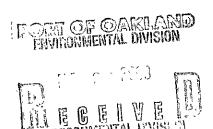
Cc: Jeff Jones



May 30, 2000

42633.1

Mr. John Prall Associate Environmental Scientist Port of Oakland 530 Water Street Oakland, California 94607



Quarterly Groundwater Monitoring and Product Recovery Report 1st Quarter of 2000 2277 Seventh Street Oakland, California

Dear Mr. Prall:

Harding Lawson Associates (HLA) has prepared this Quarterly Groundwater Monitoring and Product Recovery Report on behalf of the Port of Oakland for the groundwater monitoring program and the operation of the product recovery system at 2277 Seventh Street in Oakland, California (Plate 1) between January 1, 2000 and March 31, 2000.

This report summarizes the monitoring of five groundwater monitoring wells, MW-2, MW-4, MW-5, MW-6, and MW-7 and the maintenance activities of the product recovery system during the first quarter of 2000. Wells MW-1 and MW-3 contain product skimmers that recover separate-phase petroleum hydrocarbons from the groundwater surface. Monitoring well MW-8 contains a thick, viscous, tar-like petroleum product. Because of the presence of separate-phase product, HLA did not collect groundwater samples from these three wells. A site map with well locations is presented on Plate 2.

Another consultant to the Port installed the monitoring wells to assess groundwater quality following the removal of underground storage tanks (USTs) from the site in September 1993. The former USTs, located on the south side of Building 401, consisted of two 10,000-gallon gasoline tanks (CF-17 and CF-18), one 500-gallon oil tank (CF-19), and one 300-gallon waste oil tank (CF-20).

#### **GROUNDWATER MONITORING**

HLA conducted this quarter's groundwater monitoring at 2277 7<sup>th</sup> Street on February 11, 2000. Prior to purging and sampling the monitoring wells, HLA measured the depth to groundwater below the top of the well casing with an electric water level indicator. HLA also measured the depth to product and depth to

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groundwater in wells MW-1 and MW-3 to calculate product thickness. The thick product in MW-8 does not allow the measurement of depth to groundwater or product. Groundwater level measurements are summarized in Table 1 and product thickness measurements are summarized on Table 2. Groundwater elevations and the gradient direction are presented on Plate 3. HLA did not use the groundwater level measurements from MW-1 or MW-3 to develop the groundwater gradient because the removal of the product recovery equipment in the wells caused the groundwater levels to be in flux.

After measuring the depth to water, HLA purged MW-2, MW-4, MW-5, MW-6, and MW-7 using a PVC bailer. Conductivity, pH, and temperature were monitored periodically during purging. HLA collected the groundwater samples after removing a minimum of three well-casing volumes of water and the conductivity, pH, and temperature measurements had stabilized. The depths to groundwater and field parameter measurements were recorded on Groundwater Sampling Forms included in Appendix A. The purge water was stored onsite in the treatment system's product recovery tank. The Port's waste disposal contractor, Performance Excavators, Inc. periodically off-hauls and disposes of the purge water along with the product in the tank.

HLA collected groundwater samples from the five monitoring wells using Teflon disposable bailers and then transferred the groundwater into laboratory-provided containers. A duplicate sample was collected from MW-4. Sample containers were labeled with the sample number, date and time of collection, and sampler's initials, then placed in an insulated cooler with blue ice. The samples were accompanied by a laboratory provided trip blank and delivered under chain-of-custody protocol to Curtis and Thompkins, Ltd., a California certified laboratory.

#### LABORATORY ANALYSIS GROUNDWATER SAMPLES

Curtis and Tompkins, Ltd. performed the chemical analyses of the groundwater samples using the following analytical methods:

- Total petroleum hydrocarbons as gasoline (TPHg) in accordance with EPA Method 8015 modified.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl t-butyl ether (MTBE) in accordance with Method 8020B.
- TPH as diesel (TPHd) in accordance with EPA Method 8015 modified following a silica-gel cleanup procedure.
- TPH as motor oil (TPHmo) in accordance with EPA Method 8015 modified following a silica-gel cleanup procedure.

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The trip blank was analyzed for BTEX and MTBE. The laboratory results for the groundwater samples are summarized in Table 3 and are shown on Plate 4. Copies of the laboratory results and chain-of-custody forms are provided in Appendix B.

#### **FINDINGS**

Results of the February 11, 2000 groundwater sampling are summarized below:

- HLA recorded no measurable separate-phase hydrocarbons in monitoring well MW-1. Because the well contained the product skimmer, HLA did not collect a groundwater sample this quarter.
- HLA found measurable product in MW-3 and therefore did not collect a groundwater sample.
- TPHg was reported at a concentration of 200 micrograms per liter (μg/l) in MW-4 and 270 μg/l in MW-6. TPHg was detected in the sample from MW-4 at 330 μg/l and in MW-6 at 150 μg/l last quarter. TPHg was not detected in MW-2, MW-5 or MW-7.
- Benzene was reported at a concentration of 58 μg/l in MW-4, at 23 μg/l in MW-6, and at 5.4 μg/l in MW-2. Benzene was detected in the sample from MW-4 at 740 μg/l, in MW-6 at 27 μg/l and was not detected in MW-2 last quarter. Benzene was not detected in MW-5, or MW-7.
- Toluene was reported at a concentration of 0.73 μg/l in MW-4 and 0.51 μg/l in MW-6. Toluene was not detected above the reporting limit in MW-2, MW-5 and MW-7 or in any of the wells sampled during the previous quarter.
- Ethylbenzene was reported at a concentration of 2.7 μg/l in MW-6 and at 2.2 μg/l last quarter, and was not detected in MW-2, MW-4, MW-5, or MW-7.
- Total xylenes were not detected above the reporting limit in any of the wells sampled.
- MTBE was reported at a concentration of 4.4 μg/l in MW-4, 5.8 μg/l in MW-6, 51 μg/l in MW-7, and was not detected in MW-2 and MW-5. MTBE was detected a concentration of 6.3 μg/l at MW-2, 42 μg/l at MW-4, 5.5 μg/l at MW-5, 13 μg/l at MW-6 and 15 μg/l at MW-7 last quarter.
- TPHd was reported at a concentration of 2,300 μg/l in MW-6 and not detected in MW-2, MW-4, MW-5 and MW-7. During the previous quarter, TPHd was detected at 120 μg/l in MW-2, 840μg/l in MW-4, 110 μg/l in MW-5, 11,000 μg/l in MW-6, and 600 μg/l in MW-7.
- TPHmo was not detected above the reporting limit in any of the wells sampled. Last quarter, TPHmo was reported at a concentration of 3,000 μg/l in MW-6 and 420 μg/l in MW-7 and was not detected in MW-2, MW-4, or MW-5.

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#### QUALITY ASSURANCE AND QUALITY CONTROL

A duplicate sample was collected from monitoring well MW-4 and submitted to the analytical laboratory to evaluate the precision of the analytical results. Precision is an indication of the reproducibility of results and is assessed by calculating the relative percent difference (RPD) between the primary sample result (X1) and the duplicate sample result (X2), as follows:

RPD =  $|X1 - X2|/\{(X1 + X2)/2\} \times 100$ . (For example: A low RPD indicates high precision; a RPD of 67 indicates the two results differ by a factor of two.)

As shown below, the RPD was calculated for chemical compounds detected above the reporting limit in either the duplicate or primary samples.

ANALYTE	X1	X2	X1-X2	(X1+X2)/2	RPD
MTBE	4.4	4.4	0	4.4	0%
В	58	58	0	58	0%
Т	0.77	0.73	0.04	0.75	5%
Е	ND	ND			
X	ND	ND			
TPHd	ND	ND			
TPHmo	ND	ND			**
TPHg	200	190	10	195	5%

- The relative percent difference between the analytical results from MW-4 and the duplicate sample was considered within acceptable limits, ranging from zero to 5 percent.
- MTBE was not detected in the trip blank.
- BTEX was not detected in the trip blank.

#### PRODUCT RECOVERY SYSTEM

The product recovery system consists of an air-actuated (active) product skimmer in MW-3 and a passive product skimmer in MW-1. HLA completed product recovery at MW-6 and removed the passive skimmer on April 19, 1999. The product in MW-3 discharges to a product recovery tank, and HLA removes the product collected in skimmer in MW-1 on a monthly basis. The total volume of product recovered from MW-1 during the fourth quarter of 1999 was 0.4 gallons. The Port's waste disposal contractor, Performance Excavators, Inc., removed product from the product recovery tank on February 23, 2000. According to records provided to the Port, Performance Excavators, Inc removed 470 gallons of product

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and water. Performance Excavators, Inc estimated that of this 470 gallons removed, 125 gallons was free phase product. Table 2 presents a summary of the product removal data. A summary of the activities during the past quarter associated with the operation and maintenance of the product recovery system is presented in Table 4.

If you have any questions, please contact James McCarty at (510) 628-3220.

Yours very truly,

#### HARDING LAWSON ASSOCIATES

James G. McCarty
Project Engineer

Stephen/I. Osborne Geotechnical Engineer

JGM/SJO/mlw/42633/037553L

4 copies submitted

Attachments: Table 1 – Groundwater Elevations Data

Table 2 - Summary of Product Removal and Product Thickness Data

Table 3 – Groundwater Sample Results

Table 4 – Summary of Operation and Maintenance Activities

Plate 1 – Vicinity Map Plate 2 – Site Plan

Plate 3 - Groundwater Elevations, February 11, 2000

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Plate 4 – Groundwater Sample Results, February 11, 2000

Appendix A - Groundwater Sampling Forms

Appendix B - Laboratory Reports

**TABLES** 

Table 1. Groundwater Elevations Data
Port of Oakland
2277 7th Street, Oakland California

Well ID	Elevation Top of Casing (feet)	Date Of Monitoring	Depth to Water (feet)	Groundwater Elevation (feet)
MW-2	14.36	12/31/97	8,73	5.63
		04/13/98	7.72	6.64
		11/06/98	9.43	4.93
		03/19/99	8,21	6.15
		06/24/99	8.91	5,45
		09/28/99	9.42	4.94
		11/12/99	9.63	4.73
		02/11/00	8.54	5.82
MW-4	13.15	12/31/97	7.09	6.06
		04/13/98	7.71	5.44
		11/06/98	8.69	4.46
		03/19/99	8.00	5.15
		06/24/99	8.45	4.70
		09/28/99	8.73	4.42
		11/12/99	8.83	4.32
		02/11/00	7.71	5.44
MW-5	13.49	12/31/97	6.38	7.11
		04/13/98	5.56	7.93
		11/06/98	6.59	6.90
		03/19/99	6.20	7.29
		06/24/99	6.73	6.76
		09/28/99	6.91	6.58
		11/12/99	7.06	6.43
···		02/11/00	7.00	6.49
MW-6	14.00	06/24/99	8.61	5,39
		09/28/99	9.26	4.74
		11/12/99	8.01	5,99
	**************************************	02/11/00	7.20	6.80
MW-7	14.35	12/31/97	8.88	5.47
		04/13/98	7.86	6.49
		11/06/98	9.55	4.80
		03/19/99	8.41	5.94
		06/24/99	9.08	5.27
		09/28/99	9.60	4.75
		11/12/99	9.77	4,58
		02/11/00	8.67	5.68

Elevation data relative to Port of Oakland datum; well surveys performed on September 12, 1996, and February 4, 1998, by PLS Surveys.

<sup>-</sup> Data prior to November 6, 1998 taken from *Groundwater Monitoring, Sampling and Product Removal System O&M Report* dated July 21, 1998, by Innovative Technical Solutions, Inc.

Table 2. Product Removal and Product Thickness Data
Port of Oakland
2277 7th Street, Oakland California

Well	Elevation	Date Of	Depth	Depth	Product	Estimated	Product Removal
ΠD	of Top of	Monitoring	to Free	to Water	Thickness	Product	Method <sup>2</sup>
	Casing		Product	(feet)	(feet)	Removed	
	(feet)		(feet)	(2000)	(~==+)	(gallons)	
MW-1	14.14	12/31/97	_	-	-	0.2	passive skimmer
		01/29/98	_	-	_	0.2	passive skimmer
		03/02/98	_	-	_	0.018	passive skimmer
		05/11/98	_	-	_	0.02	passive skimmer
		06/15/98	-	-	_	0.2	passive skimmer
		11/06/98	9.34	10.3	0.96	1:2	passive skimmer
		01/07/99	_	-	_	0.2	passive skimmer
		02/11/99	_	-	_	0.2	passive skimmer
		03/12/99	-	_	_	0.2	passive skimmer
		03/19/99	NM	8.45	>0.01	0.07	passive skimmer
		04/14/99	-	-	-	0.2	passive skimmer
		05/11/99	_	-	_	0.2	passive skimmer
		06/24/99	8.88	9.63	0.8	0.2	passive skimmer
		07/15/99				0.2	passive skimmer
		07/16/99				0.2	passive skimmer
		08/27/99				0.2	passive skimmer
		09/28/99			0.65	0.2	passive skimmer
		10/05/99				0.2	passive skimmer
		11/12/99	9.38	10.27	0.89	0.2	passive skimmer
		12/21/99		10.27		0.2	passive skimmer
		01/26/00		and In	ri-insulianigo	90.2	passive skimmer
		01/28/00	9.22	9.24	0.02		passive skimmer
		02/11/00		7.00	0.00	0.2	passive skimmer
		03/01/00	/	7.45	0.00	0.0	passive skimmer
		03/21/00		7.34	0.00	0.0	passive skimmer
MW-3	14.22	12/31/97	<u> </u>	-	-	30	active skimmer
	•	01/29/98	_	-	_	10	active skimmer
		04/13/98	_	_	_	240	active skimmer
		05/11/98	_	_	_	1,545	active skimmer
		06/15/98	_	_	_	1,950	active skimmer
		11/06/98	8.84	9.94	1.1	500	active skimmer
		01/05/99	0.04	7.74	-	275²	active skimmer
		01/14/99	_	_	_	400²	active skimmer
		02/03/99		_	_	400 <sup>2</sup>	active skimmer
		02/03/99	_	_	_	570 <sup>2</sup>	active skimmer
		03/19/99	7.52	8.05	0.5	211	active skimmer
		06/16/99	1.52	0.03	0.5	310	active skimmer
		06/24/99	8.38	8.56	0.2		active skimmer
		07/14/99	0.50	0.50		50²	active skimmer
		09/28/99			0.2	50	active skimmer
		10/29/99				125 <sup>2</sup>	active skimmer
		11/12/99	9.14	9.23	0.09		active skimmer
		01/28/00	9.14 [[8][株][数	9.43 (4478,733	v.ov Jane 14 Jennaria	135	active skimmer
		02/11/00	7.97	8.37	0.40	40	active skimmer
		03/01/00	6.59	7.24	0.65	0.0	active skimmer
		03/21/00	6.50	6.56		1900	active skimmer
		· ····································				35.	and as skillings

# Table 2. Product Removal and Product Thickness Data Port of Oakland 2277 7th Street, Oakland California

Well ID	Elevation of Top of	Date Of Monitoring	Depth to Free	Depth to Water	Product Thickness	Estimated Product	Product Removal Method <sup>2</sup>
	Casing <sup>1</sup> (feet)		Product (feet)	(feet)	(feet)	Removed (gallons)	
MW-6	14.00	13/31/97	-	-	-	0.0014	passive skimmer
		01/29/98		-	-	0.0014	passive skimmer
		03/02/98	-	-	_	0.0014	passive skimmer
		11/06/98	NM	9.62	>0.01	0.0	passive skimmer
		03/19/99	NM	7.37	>0.01	0.0	passive skimmer
MW-8	12.94	12/31/97	8.49	8.82	0.33	4.38	-
		11/06/98	9.25	10.3	1.1	3.48	-

- Data prior to November 6, 1998 taken from Groundwater Monitoring, Sampling and Product Removal System O&M Report dated July 21, 1998, by Innovative Technical Solutions, Inc.
- Data prior to November 6, 1998 taken from Groundwater Monitoring, Sampling and Product
- Product removal volumes from 11/6/98 on represent total product removed during that reporting period.

  Free product in well is too viscous to allow product thickness or groundwater level measurements.
- Product removal totals for MW-3 are estimated from documentation of product removal from the treatment system performed by Performance Excavators, Inc.
- NM Well checked for free product but was not able to detect a measurable amount in the well. Greyed areas indicates data from this reporting period.

Table 3. Groundwater Sample Result
Port of Oakland
2277 7th Street, Oakland California

Monitoring Well ID	Date	TPHg (µg/l)	TPHd (μg/l)	TPHmo (μg/l)	Benzene (µg/l)	Toluene (μg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/l)	MTBE (μg/l)
MW-2	05/27/94	87	470	NA	<0.5	<0.5	<0.5	<0.5	NA
_	03/29/95	<50	110	1,400	<0.4	<0.3	<0.3	<0.4	NA
_	09/06/95	<50	NA	NA	<0.4	<0.3	<0.3	<0.4	NA
_	01/08/96	<50	<50	1200	<0.4	<0.3	<0.3	<0.4	NA
_	04/04/96	<50	160	320	<0.5	<0.5	<0.5	<1.0	NA
-	07/10/96	<50	120	1400	<0.4	<0.3	<0.3	<0.4	NA
_	12/03/96	<50	230 12	<250	<0.5	<0.5	<0.5	<1.0	NA
u.	03/28/97	<50	714	<250	<0.5	<0.5	<0.5	<1.0	NA
_	06/13/97	51	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
-	09/18/97	82	<50	<250	0.56	<0.5	<0.5	<1.0	NA
_	12/31/97	<50	<47	<280	1.4	<0.5	<0.5	<1.0	NA
_	04/13/98	<50	<50	<300	<0.5	<0.5	<0.5	<1.0	NA
_	11/06/98	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
_	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
_	06/24/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
- -	09/28/99	<50	<50	<300	<0.5	<0.5	< 0.5	< 0.5	<2
_	11/12/99	<50	120 2,6	<300	<0.5	<0.5	<0.5	<0.5	6.3 <sup>8,9</sup>
	02/11/00	<50	<50	<300	5,4	<0.5	< 0.5	<0.5	<2.0
MW-4	09/11/95	150	<200	500	23	<0.3	<0.3	<0.4	NA
-	01/08/96	790	90	400	170	1.2	0.6	0.6	NA
-	04/04/96	1,100	180	300	320	1.6	1.1	1.2	NA
_	07/10/96	1,200	120	300	470	1.5	0.8	0.8	NA
_	12/03/96	990	220 <sup>1.2</sup>	<250	350	3.3	1.3	1.3	NA
_	03/28/97	440 <sup>2</sup>	<50	<250	190	1.2	0.64	<1.0	NA
_	06/13/97	1,300	92 <sup>5</sup>	<250	500	5.5	3.4	2.8	NA
	09/18/97	1,300	150	<250	550	4.9	2.1	2.00	NA
•	12/31/97	73 1.2.3	<47	<280	110 1	1.0 1	<0.5	<1.0	NA
-	04/13/98	150 23	<50	<300	520	2.9	<2.5	<5.0	NA
_	11/06/98	<50	<50	<300	250	1.7	<1	<1	<4
-	03/19/99	81	<50	<300	250	<1	1.2	<1	<4
-	06/24/99	190	<50	<300	360	1.4	2.2	1	24
-	09/28/99	750 <sup>3,5</sup>	63 <sup>3,5</sup>	<300	280	1.5	<1	<u> </u>	<4
-	11/12/99	330 <sup>3</sup>	840 <sup>2</sup>	<300	740	<2.5	<2.5	<2.5	42 <sup>9</sup>
-	02/11/00	200 ²	<50	<300	58	0.73	<0.5	<0.5	4.4*
MW-5	09/11/95	90	<300	2,500	3.3	<0.3	<0.3	<0.4	NA
-	04/04/96	<50	180	520	<0.5	<0.5	<0.5	<1.0	NA
-	07/10/96	<50	120	1,500	<0.4	<0.3	<0.3	<0.4	NA
	12/03/96	<50	200 1.2	<250	<0.5	<0.5	<0.5	<1.0	NA
-	03/28/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
-	06/13/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
-	09/18/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
-	12/31/97	<50	<47	<280	<0.5	<0.5	<0.5	<1.0	NA
-	04/13/98	<50	<47	<280	<0.5	<0.5	<0.5	<1.0	NA
		- · ·	• •						4 14 2

# Table 3. Groundwater Sample Result Port of Oakland 2277 7th Street, Oakland California

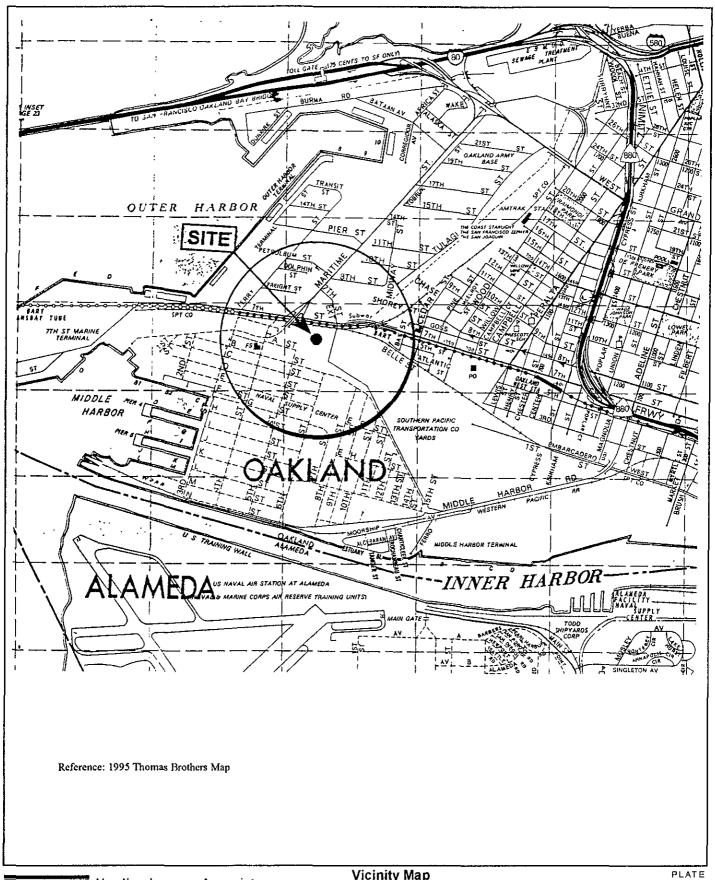
Monitoring Well ID	Date	TPHg (µg/l)	TPHd (µg/l)	TPHmo (μg/1)	Benzene (μg/l)	Toluene (μg/l)	Ethylbenzene (µg/l)	Total Xylenes (µg/1)	MTBE (μg/l)
MW-5	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	< 0.5	<2
(cont.)	06/24/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	3.1
, ,	09/28/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
•	11/12/99	<50	110 <sup>2,6</sup>	<300	<0.5	<0.5	<0.5	<0.5	5.5 <sup>9</sup>
	02/11/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
MW-6	11/06/98	120	12,000	1,200	19	0.65	1.8	<0.5	<2
	03/19/99	170	3,800	580	21	0.86	1.5	2.9	<2
,	06/24/99	120	1,700 <sup>7</sup>	<300 <sup>7</sup>	18	<0.5	1.0	<0.5	54
	09/28/99	130 <sup>3,5</sup>	820	<300	20	0.51	2.2	<0.5	<2
	11/12/99	150	11,000 <sup>2,6</sup>	3,000 3,6	27	<0.5	2.2	<0.5	13 <sup>9</sup>
	02/11/00	270 ²	2,300	<300	23	0.51	2.7	<0.5	5.8
MW-7	09/06/95	<50	<300	800	<0.4	<0.3	<0.3	<0.4	NA
	01/08/96	<50	410	110	<0.4	<0.3	<0.3	<0.4	NA
	04/04/96	<50	530	340	<0.5	<0.5	<0.5	<1.0	NA
	07/10/96	80	840	1,700	<0.4	<0.3	<0.3	<0.4	NA
	12/03/96	<50	280 1.2	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/97	65 <sup>6</sup>	94 <sup>2</sup>	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/97	<50	100	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/97	<50	240	<250	<0.5	<0.5	<0.5	<1.0	NA
	12/31/97	<50	53 <sup>23</sup>	<280	<0.5	<0.5	<0.5	<1.0	NA
	04/13/98	<50	<48	<290	<0.5	<0.5	<0.5	<1.0	NA
	11/06/98	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	5.3
	06/24/99	73	<50	<300	<0.5	<0.5	<0.5	<0.5	12
	09/28/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	14
	11/12/99	<50	600 2,6	420 <sup>3</sup>	<0.5	<0.5	<0.5	<0.5	159
	02/11/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	51

- Analyte found in the associated blank as well as in the sample.
- 2 Hydrocarbons present do not match profile of laboratory standard.
- Low-boiling-point/lighter hydrocarbons are present in the sample
- Chromatographic pattern matches known laboratory contaminant.
- 5 Hydrocarbons are present in the requested fuel quantification range, but do not resemble pattern of available fuel standard.
- 6 High-boiling-point/heavier hydrocarbons are present in sample.
- Sample did not pass laboratory QA/QC and may be biased low
- Presence of this compound confirmed by second column, however, the confirmation concentration differed from the reported result by more than a factor or two.
- <sup>9</sup> Trip blank contained MTBE at a concentration of 4.2 μg/l
  - Data from December 1997 through April 1998 taken from Groundwater Monitoring, Sampling and Product Removal System O&M Report dated July 21, 1998, by Innovative Technical Solutions, Inc.
  - -Data prior to December 1997 taken from Groundwater Analytical Results, Quarterly Groundwater Monitoring Report: Third Quarter 1997, Building C-401, 2277 7th Street, Oakland, CA, dated October 24, 1997, by Uribe and Associate
    - NA Not Analyzed.

# Table 4. Summary of Operation and Maintenance Activities Port of Oakland 2277 7th Street, Oakland California

Date	System Status	Comments
01/26/00	System Running	Remove product from MW-1, raise passive skimmer 12 inches, active skimmer appears to be removing some water, raise skimmer 20 inches, seems to improve
01/28/00	System Running	Remove product from MW-1, only a small film of product, lower passive skimmer 4 inches, active skimmer appears to be removing product at a slow rate, lower skimmer 12 inches, seems to improve
02/11/00	System Down	Remove product from MW-1, product tank full, 850 gallons of liquid, 175 gallon of which is product
03/01/00	System Down	Remove product from MW-1, only a small film of product, raise passive skimmer 2 inches, restart system resetting the active skimmer to pump only product
03/21/00	System Running	Check for product MW-1, no product in passive skimmer, replace hdrophobic filter in active skimmer in MW-3, measure water/product levels

PLATES





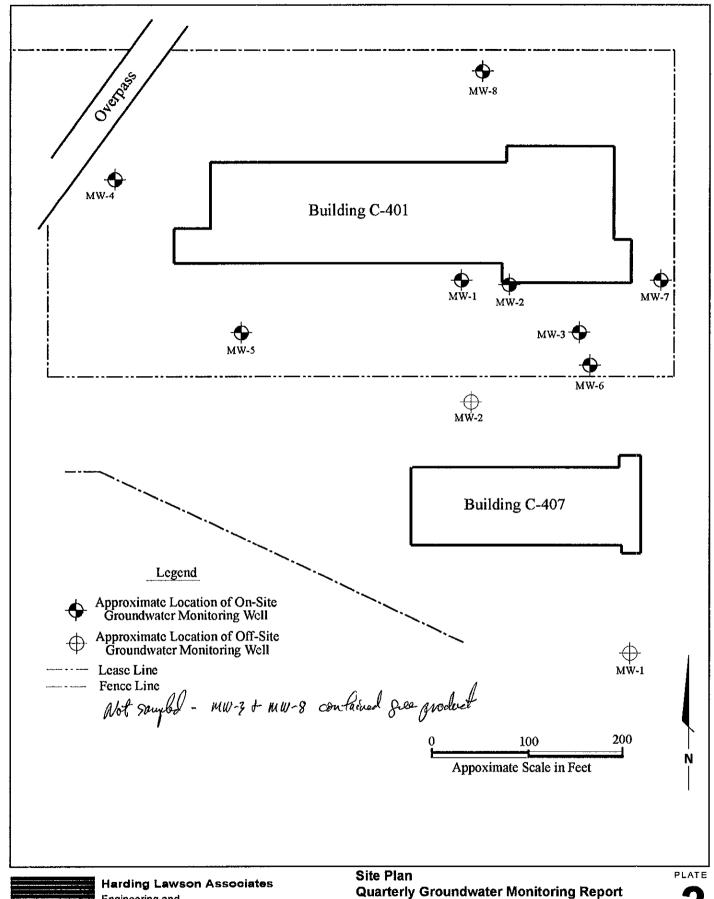
Engineering and Environmental Services Vicinity Map
Quarterly Groundwater Monitoring Report
2277 Seventh Street
Oakland, California 94607

1

DRAWN jgm PROJECT NUMBER 42633.1

APPROVED

DATE 02/29/00





Engineering and Environmental Services

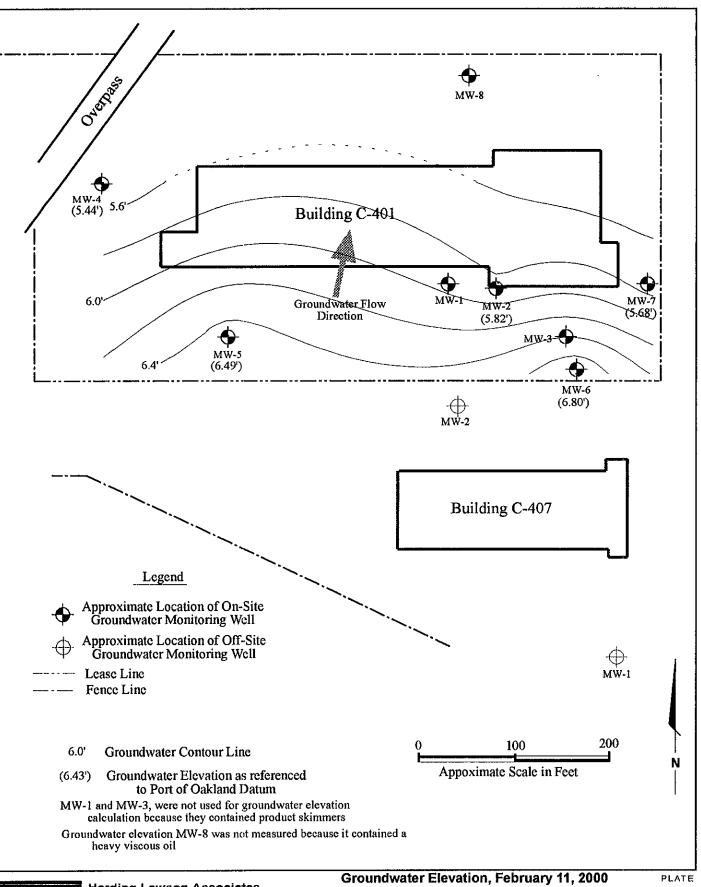
Site Plan
Quarterly Groundwater Monitoring Report
2277 Seventh Street
Oakland, California 94607

2

project number jgm 42633.1

APPROVED

DATE 02/29/00





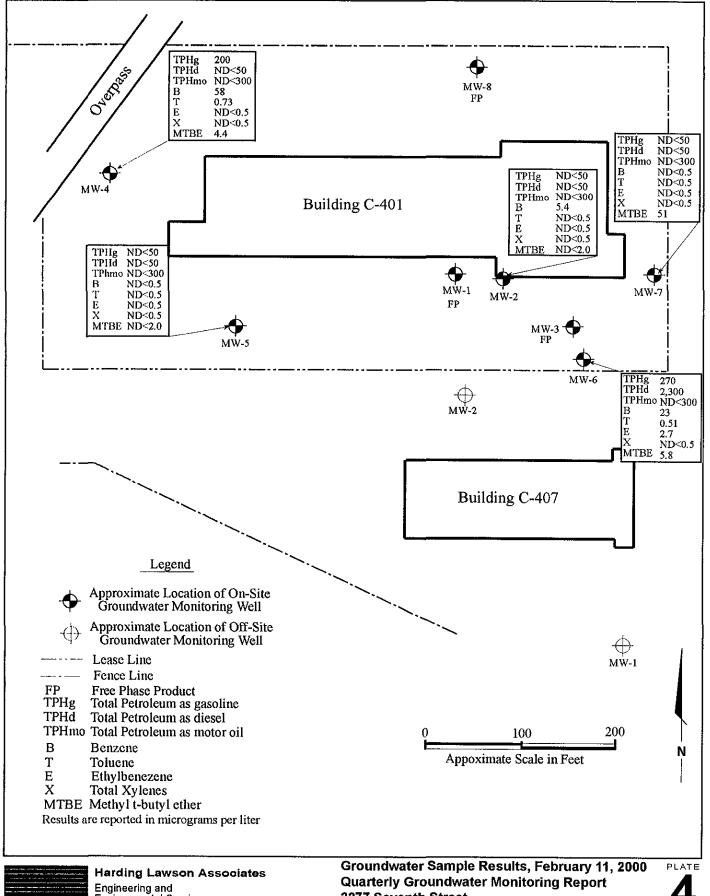
Engineering and Environmental Services

**Quarterly Groundwater Monitoring Report** 2277 Seventh Street Oakland, California 94607

DRAWN PROJECT NUMBER jgm 42633.1

APPROVED

DATE 02/29/00





**Environmental Services** 

2277 Seventh Street Oakland, California 94607

DRAWN PROJECT NUMBER jgm 42633.1

APPROVED

DATE 02/29/00

# APPENDIX A GROUNDWATER SAMPLE FORMS

#### **Engineering and Environmental Services** Well Number: MW-Well Type: Monitor Extraction Other x PVC Job Name: 2277 7th Street St. Steel Other Job Number: Date: 2/11/2000 Recorded By: Sampled By: HDL WELL PURGING PURGE VOLUME PURGE METHOD: Casing Diameter (D in inches): Bailer - Type: Total Depth of Casing (TD in ft BTOC): Submersible - Type: 7.01 Water Level Depth (WL in ft BTOC): Other - Type: No. of Well Volumes to be purged (# V): PUMP INTAKE SETTING product thickness PURGE VOLUME CALCULATION Near Bottom Near Top Other <sup>2</sup> X 3 X 0.0408 = Depth in feet (BTOC): Screen Interval in feet (BTOC): TD (feet) WL (Fact) Calculated Purge Volume from PURGE TIME Field Parameter Measurement **PURGE RATE** °C Turbidity Conductivity Purge Start: GPM: ☐ °F (µ\$) (NTU) Purge Stop: pΗ Minutes Temp. Initial Elapsed: RURGE VOLUME gallons Volume Observations During Purging (Well Condition, Color, Odor): Discharge Water Disposal: Sanitary Sewer Meter S/N Storm Sewer Other WELL SAMPLING 1.08 3366 Sample Time: Bailer - Type: Sample No. Volume/Cont. Analysis Requested Preservatives Lab Comments QUALITY CONTROL SAMPLES Blank Samples **Duplicate Samples** Other Samples Original Sample No. Dupl. Sample No. Type Sample No. Sample No. Type

**Harding Lawson Associates** 

**GROUNDWATER SAMPLING FORM** 

#### Engineering and Environmental Services MW- Z Well Number: Well Type: Monitor Extraction Other Job Name: 2277 7th Street x PVC St. Steel Other Job Number: Date: 2/11/2000 Recorded By: Sampled By: HDL WELL PURGING PURGE VOLUME PURGE METHOD Casing Diameter (D in inches): Bailer - Type: Total Depth of Casing (TD in ft BTOC): Submersible - Type: Water Level Depth (WL in ft BTOC): Other - Type: No.of Well Volumes to be purged (# V): PUMP INTAKE SETTING PURGE VOLUME CALCULATION Near Bottom Near Top Other (15.27.8.54) x 2 2x 3 x 0.0408 = 3.29 gals Depth in feet (BTOC): TD (feet) Screen Interval in feet (BTOC): Field Parameter Measurement PURGE TIME PURGE RATE °C Turbidity 1010 Conductivity Purge Start: GPM: (µS) (NTU) 1019 Minutes рΗ Purge Stop Initial 7.01 Elapsed: 7.04 09 2240 PURGE VOLUME 3.5 2260 Volume: gallons Observations During Purging (Well Condition, Color, Odor): Estean, no odor Discharge Water Disposal: Sanitary Sewer Meter S/N 9510 Storm Sewer x Other onsite drum WELL SAMPLING Bailer - Type: 02 Sample Time: Sample No. Volume/Cont. Analysis Requested Preservatives Lab Comments Mw-1 LA TPHd, TPHmo none Curtis & Tomp w/ filtration and silical gel cleanup 4 VOAs TPHg, BTEX, MTBE HCI C&T \* QUALITY CONTROL SAMPLES Blank Samples **Duplicate Samples** Other Samples Dupl. Sample No. Original Sample No. Туре Sample No. Type Sample No.

GROUNDWATER SAMPLING FORM

**Harding Lawson Associates** 

#### **GROUNDWATER SAMPLING FORM** Harding Lawson Associates Engineering and Environmental Services MW- 2 Well Number: Well Type: Monitor Extraction Other Job Name: 2277 7th Street x PVC St. Steel Other Job Number: 42633.1 Date: 2/11/2000 Recorded By: Sampled By: HDL (initials) WELL PURGING PURGEMETHOD PURGE VOLUME Bailer - Type: Casing Diameter (D in inches): Total Depth of Casing (TD in ft BTOC): Submersible - Type: Water Level Depth (WL in ft BTOC): Other - Type: No. of Well Volumes to be purged (# V) product begins = 7 PUMP INTAKE SETTING PURGE VOLUME CALCULATION Near Bottom Near Top Other 2 X 3 X 0.0408 = Depth in feet (BTOC): Screen Interval in feet (BTOC): Calculated Purge Volume 14.19.77 PURGE RATE PURGE TIME Field Parameter Measurement C Turbidity GPM: Conductivity Purge Start: \_]ºF (µS) (NTU) рΗ Temp. Purge Stop: GPM: Minutes Initial Elapsed: PURGE VOLUME Volume: gallons Observations During Purging (Well Condition, Color, Odor): active skimmer Discharge Water Disposal: Sanitary Sewer Storm Sewer Meter S/N WELL SAMPLING Sample Time: Bailer - Type: Volume/Cont. Analysis Requested Preservatives Lab Comments Sample No. QUALITY CONTROL SAMPLES Blank Samples Other Samples **Duplicate Samples** Sample No. Sample No. Туре Dupl. Sample No. Type Original Sample No.

		awson Associ		0110011	IDWATER SAI	240 ! 01(1)	
	Engineena	ig and Environn	nental Services	Well Number:	mw- 4	**	
				Well Type:	x Monitor	Extraction Oti	ner
lob Name:		2277 7th Street		V \	x PVC	St. Steel Oth	
Job Number:		42633.1		 Date:	2/11/2000	jo.: 0.00i0.	
	-d/	20 AA	\$ 200	<u> </u>			
Recorded By:		(Sign	nature)	Sampled By:	HDL,	(initials)	<del></del>
			WELI	PURGING			erija.
l part of the			asiana a kantama kamaya			HOD	
Casing Diame	ter (D in inche	1 11.11.11 1 11.11.11.11	2	Bailer - Type:	DVC	HUD.	<u> 200 aca</u>
_	of Casing (TD i		18.34	Submersible - Ty			
	Depth (WL in f		4.71	Other - Type:			
No.of Well Vo I	olumes to be p	ourged (# V):	3	P 443 A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Die 1850 STATE & CONTRACTOR		
<del>jaijais aras aras ar</del>			<del> </del>		PUMPINIAKES	ETTING	ee naac
	PURGE VOLU	ME CALCULATION			<u> </u>	Near Top	
(18.84.7.	71 x Z	2 Y 3 Y 0 0400	= 5. 44 gals	Other			
	VL (Feet) D (inches		Calculated Purge Volume	Depth in feet (BTOC Screen Interval in fe		from	to
(1797)	2 y		we go to desire	a second married in 19	\		
	Fletd Parame	ter Measurement		PURGE TIME		PURGE RATE	۶, <sub>۲</sub> ,
		Conductivity	C Turbidity	Purge Start: 10	040	GPM:	
Minutes	pH	(μS)	Temp. 🕰 °F (N	L L	(05 <u>0</u>	GPM:	<del></del> -
Initial	7.05	2380_	60.2	Elapsed:	10		
1.5	7.09	2460	62.2				
3.5	7.0%	2480_	62.7	PURGE VOLUME			
5.5	7.67	2450	62.0	Volume:	gal	lons	
		ļ					
' !				Observations During	Purging (Well Condi	tion, Color, Odor):	
				i		A A	
				nurky b	Lanu 100	odor, sheer	
Meter S/N	9510	9510	9510	Discharge Water Di	sposal:	Sanitary Sewer	,
Meter S/N	9510	9510	9510	Discharge Water Di	sposal:	Sanitary Sewer Other onsite	drum
Meter S/N	enan en en en e		WELL	Discharge Water Di	sposal:	Sanitary Sewer	drum
Meter S/N	. C1		WELL	Discharge Water Di	sposal:	Sanitary Sewer Other onsite	drum
Bailer - Type:	. C1		WELL	Discharge Water Di Storm Sewer  SAMPLING Sample Time:	sposal: x	Sanitary Sewer Other onsite	drum
Bailer - Type:	tef lo	n dispos	able	Discharge Water Di Storm Sewer  SAMPLING Sample Time:	sposal: x	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drum
Bailer - Type:	tef lo	Volume/Cont.	Analysis Requi	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative	x	Sanitary Sewer Other onsite Comments	drum
Bailer - Type;	tef lo	Volume/Cont.	WELL Analysis Requ	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative none	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drun
Bailer - Type;	tef lo	Volume/Cont.	Analysis Requi	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative none	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drun
Bailer - Type;	tef lo	Volume/Cont.	Analysis Requi	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative none	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drun
Bailer - Type;	tef lo	Volume/Cont.	Analysis Requi	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative none	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drun
Bailer - Type:	tef lo	Volume/Cont.	Analysis Requi	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative none	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drun
Bailer - Type:	tef lo	Volume/Cont.	Analysis Requi	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative none	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drun
Bailer - Type:	tef lo	Volume/Cont.	Analysis Requi	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative none	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drun
Bailer - Type;	tef lo	Volume/Cont.	Analysis Requirements of the Control	Discharge Water Di Storm Sewer  SAMPLING  Sample Time: ested Preservative none	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  w/ filtration and silical	drun
Bailer - Type: Samp	tef lo	Volume/Cont.  1 LA  4 VOAs	Analysis Requirements of the Control	Discharge Water Discharge Wate	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer Other onsite  Comments w/ filtration and silical cleanup	drun
Bailer - Type: Samp	Lefto	Volume/Cont.  1 LA  4 VOAs  2s  upl. Sample No.	Analysis Requirements of the Control	Discharge Water Discharge Wate	sposal:  x  1000  s Lab  Curtis & Tomp	Sanitary Sewer  Other onsite  Comments  W/ filtration and silical cleanup  Other Samples Sample No	gel
Bailer - Type: Samp M W  Conginal Sample I	Jeflo ple No. Duplicate Sample No. Dup (	Volume/Cont.  1 LA  4 VOAs  2s  upl. Sample No.	Analysis Requirements of the Control	Discharge Water Discharge Wate	sposal:	Sanitary Sewer Other onsite  Comments w/ filtration and silical cleanup  Other Samples	gel
Bailer - Type: Samp	Jeflo ple No. Duplicate Sample No. Dup (	Volume/Cont.  1 LA  4 VOAs  2s  upl. Sample No.	Analysis Requirements of the Control	Discharge Water Discharge Wate	sposal:	Sanitary Sewer  Other onsite  Comments  W/ filtration and silical cleanup  Other Samples Sample No	gel

		awson Associ g and Environn		e	GROON	DWATER SA	WIPLING F	ORIVI
	- d	g and Chaton	Hetifal Getvice	3	Weil Number:	MW- 5		
					Well Type:	x Monitor	Extraction	Other
Job Name:		2277 7th Street				x PVC	St. Steel	Other
Job Number:		42633 1			Date:	2/11/2000	]	
Recorded By:	-4	100-10	97/	201	Sampled By:	HDL		
		(Sign	nature)		Campied By.	HUL	(initials)	
			1 4 1 5 2 1 2 2	WELL PURGI	lG.		11, 100 (1.18 to 2 de 11)	
	PURGE	VOLUME.			Eminal gala di Sagonia			- 11 - 12 - 12 - 12 - 12 - 12 - 12 - 12
Casing Diame	eter (D in inche	<u> </u>	2	··· · · · · · · · · · · · · · · · · ·	Bailer - Type:	OVC		2.121. 11 1. 191. 14.81 [1]
Total Depth of	of Casing (TD is	n ft BTOC):	17.68		Submersible - Typ			
	Depth (WL in fi		<u> </u>		Other - Type:	·		
ivo,or veit vo	olumes to be p	lurgea (# v):				PUMP INTAKES	TETINO ( ) v	T. 1. 0 - 0000 71
- Paleta III.	* * ** *** **** **** ****	** A & A & B ***		2		. Pont-lietAtec	•	<u>retrivisco annaugios</u>
Line in the	PURGE VOLUE	NE LALGULATIO			Near Bottom	L.	Near Top	
(17.68).	Sxc F	<sup>2</sup> X 3 X 0.0408	= 5.22	gals	Other Depth in feet (BTOC)			
	VL (Faet) D (inches		Calculated Purge Vo		Screen Interval in fee	<del></del>	from	to
	• ***		-				<del></del> -	
	Field Paramet	ter Measurement			PURGE TIME		PURGE RATI	1,000
		Conductivity	. <del></del>	Turbidity	Purge Start:	930	GPM:	1877. 188 ()
Minutes	pН	(μS)	Temp. △ °F	(NTU)	Purge Stop:	941	GPM;	
Initial	6.71	2112	61.0		Elapsed:	/		
1.5	6.82	2050	60.4					
3.5	6.96	2180	60.3		PURGE VOLUME			
5.5	6.98	2180	57.6		Volume;	5.5 gai	lons	
			<u> </u>		Observations During	Purging (Well Cond	ition, Color, Od	or):
					grey bran	m, no oda	-	
					Discharge Water Dis		Caritan Carr	
Meter S/N	9510	9510	9510		Storm Sewer	=	Sanitary Sew	onsite drum
INICIEI O/IV	3310	3310						
	ili an aig ann a 🔾	1949 12 A 100 20 A		WELL SAMPL	NG COLOR			
Sailer - Type:	tetla	n dispo	sable		Sample Time:	0950		
Samı	ple No.	Volume/Cont.	Anai	ysis Requested	Preservatives	Lab	Con	ıments
MW-E	5	1 LA	TPHd, TPHmo		none	Curtis & Tomp		d silical gel
		4 VOAs	TPHg, BTEX, M	ITRE	HCI	C&T	cleanup	
/			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1101			
		-						
								•
		· · · · · · · · · · · · · · · · · · ·	QU	ALITY CONTROL'S	AMPLES			
	Duplicate Sample	s	]	***************************************	Samples	1	Other Samp	
Original Sample I	No. Du	ıpl. Sample No.	ТУЕ	)e	Sample No	Туре	-	imple No
	-			RIP	1005	-		
		<del> </del>	<b>├</b> -			1	<del></del>	
			] !			i		
	****						<del></del>	

#### Engineering and Environmental Services Well Number: Well Type: Monitor Extraction Other Job Name: 2277 7th Street x PVC St. Steel Other Job Number: Date: 2/11/2000 Recorded By: Sampled By: HDL 经公司 使激发激励 WELL PURGING 化化物质性物质性质性 医抗性肾髓 ini kata da da da da ka maria PURGE VOLUME PURGE METHOD Casing Diameter (D in inches): 2 Bailer - Type: Total Depth of Casing (TD in ft BTOC): Submersible - Type: Water Level Depth (WL in ft BTOC): Other - Type: No.of Well Volumes to be purged (# V): PUMP INTAKE SETTING PURGE VOLUME CALCULATION Near Bottom Near Top Other (18.05. X 3 X 0.0408 = Depth in feet (BTOC): TO (feet) Screen Interval in feet (BTOC): Field Parameter Measurement PURGE TIME PURGE RATE Conductivity Turbidity Purge Start: GPM: Minutes (µS) (NTU) На Temo. Purge Stop GPM: 3900 Initial Elapsed: 4010 7.2 4140 5.5 PURGE VOLUME 417D 5.5 Volume: gailons Observations During Purging (Well Condition, Color, Odor): sheen fuel adar clear tog Discharge Water Disposal: Sanitary Sewer Meter S/N 9510 9510 9510 Storm Sewer X Other onsite drum WELL SAMPLING 115) Bailer - Type: Sample Time: Sample No. Volume/Cont. Analysis Requested Preservatives Comments MW-1 LA TPHd, TPHmo none Curtis & Tomp w/ filtration and silical gel cleanup 4 VOAs TPHg, BTEX, MTBE HCI C&T QUALITY CONTROL SAMPLES **Duplicate Samples Blank Samples** Other Samples Onginal Sample No. Dupl. Sample No. Sample No. Type Sample No. Type

Harding Lawson Associates

GROUNDWATER SAMPLING FORM

#### Engineering and Environmental Services MW-Well Number: Well Type: Monitor Extraction Other 2277 7th Street x PVC St. Steel Other Job Name: Date: 2/11/2000 Job Number: 42633 1 Sampled By: HDL Recorded By: T 50명 경우 1 WELL PURGING PURGE METHOD PURGE VOLUME Bailer - Type: $\square \mathcal{N} \mathsf{C}$ Casing Diameter (D in inches): Total Depth of Casing (TD in ft BTOC): Submersible - Type: Water Level Depth (WL in ft BTOC): Other - Type; No.of Well Volumes to be purged (# V): PUMP INTAKE SETTING PURGE VOLUME CALCULATION Near Bottom Near Top Other 8.67)x 22x 3 x 0.0408 = 4.65 18.16. Depth in feet (BTOC): Screen Interval in feet (BTOC): TD (feet) Field Parameter Measurement PURGE TIME PURGE RATE C Turbidity 1208 Conductivity Purge Start: GPM: 1218 (PS) (NTU) Purge Stop: GPM: Minutes pН 60.7 2030 Elapsed: Initial 20**0**0 61.9 627 -020 PURGE VOLUME 1970 61-9 Volume: gallons Observations During Purging (Well Condition, Color, Odor): Brown Discharge Water Disposal: Sanitary Sewer 9510 Storm Sewer x Other 9510 onsite drum Meter S/N 9510 NEL SAMPLING teflanditocsable 1225 Sample Time: Bailer - Type: Volume/Cont. Analysis Requested Preservatives Lab Comments Sample No. Curtis & Tomp w/ filtration and silical gel 1 LA TPHd, TPHmo T-WM none cleanup HCI C&T 4 VOAs TPHg, BTEX, MTBE QUALITY CONTROL SAMPLES Other Samples **Duplicate Samples Blank Samples** Sample No. Dupl. Sample No Sample No Type Original Sample No. Type

Harding Lawson Associates

GROUNDWATER SAMPLING FORM

## APPENDIX B

**LABORATORY REPORTS** 



# Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900, Fax (510) 486-0532

#### ANALYTICAL REPORT

Prepared for:

Harding Lawson Associates 383 Fourth Street Third Floor Oakland, CA 94607

Date: 24-FEB-00 Lab Job Number: 143956 Project ID: 42633.1

Location: Port of Oakland-2277

RECEIVED

MAR 1 2000

HARDING LAWSON

Reviewed by:

Reviewed by:

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Receipt Date: 02/11/00

Laboratory Number: 143956

Client: Harding Lawson Associates

Location: Port of Oakland-2277 7th Street

Project#: 42633.1

# CASE NARRATIVE

This hardcopy data package contains sample and QC results for seven water samples that were received on February 11, 2000.

**TVH/BTXE:** No analytical problems were encountered.

**Total Extractable Hydrocarbons:** All extracts were treated with silica gel prior to analysis. No analytical problems were encountered.

Harding Lawson Associates 383 Fourth Street, Third Floor Oakland, California 94607 (510) 451-1001 - Phone (510) 451-3165 - Fax

/ W3956

# **CHAIN OF CUSTODY FORM**

Lab: C+T

ANALYSIS REQUESTED

	(510) 451-31	165 - Fax				Samplers:						ANA	LYSIS	REQUES	ΓED	
Job <b>Num</b> l	ber:	1263	3.1										ATTR.			
Name/Lo	cation:	Pact o	$\mathcal{L} \bigcirc$	Kland	-227	77 7th Stree	<u> </u>					၂	77 o'p			
Project M	lanager: _	Jim	Mc(	arty		Recorder: 📈	eath.	Mature Required)				M/TPH	M/TPH			
SOURCE	Sediment Soil Oil	Unpres.	ERV.	SAMPLE O LAB N	NUMBER OR UMBER Seq	DATE  Yr Mo Day Ti		STATION DESCRIPTION/ NOTES	0108 A01	EPA 8020	EPA 8260 EPA 8270	METALS *EPA 8015	• EPA 8020/BTEX 3/ M • EPA 8015M/TPHd,0.			
X   X   X   X   X   X   X   X   X   X		1   1   1   1   1   1   1   1   1   1		M W - 5 T R I P M W - 2 M W - 4 D U P O M W - 6 M W - 3	200	00021109 00021110 00021110 000211110 000211111	0 5 2 5 5 6					X   x   X   X	XX			
	AB MBER	DEPTH IN FEET	COL MTD CD	QA CODE	M	ISCELLANEOUS	RELINQUISHED BY		N OF CUS	1		- ()			<del></del>	re/TiME
	Joeq	-   -			Stan	dard TAT	RELINQUISHED BY:	et Det	RECEIVE		X	Su	n		,	100 / 100
	1				Silica	gel deanus	RELINQUISHED BY:	(Signature)	RECEIVE	D BY	(Signati		.(		DV	TECTIME
-					0/4	TPHd +TPHno	RELINQUISHED BY	(Signature)	RECEIVE	D BY	(Signat	ure)			DA'	TEATIME
		-					DISPATCHED BY: (S	ignature) DA	TETIME	RECI (Sign.	EIVED :	FOR LAB	BY		DA	TETIME
			-  -  -	1-1-1-	<del> </del>	<del></del>	METHOD OF SHIPME	NT		ι.,						u# -
		_					SAMPLE CONDITION	WHEN RECEIVED BY THE LABO Y. C. NCO. CO.C.	~7 Түнөтан	24	~ ~ *	ا ا	-	-		:



	Gasoline by	GC/FID CA L	N <b>ET</b> Companyang managanan pangkan pangkan kanakan an
Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	${\tt Analyzed:}$	02/17/00
Batch#:	53849		

Field ID: Type:

MW-5

SAMPLE

Lab ID:

143956-001

Ī	Analyte	wind whom and working <b>K</b>	esult	Rich	to be a set on online problem of the problem of the set of personal problems.	
į	Gasoline C7-C12	ND_		50		
ŀ	Surrogate	*REC	Limits		eria de la composición del composición de la composición de la composición del composición de la composición de la composición del composición de la composición del composici	
Ī	Trifluorotoluene (FID)	100	59-135			
ı	Bromofluorobenzene (FID)	1.05	60-140			

Field ID: Type:

TRIP

SAMPLE

Lab ID:

143956-002

Analyte	Result	
Gasoline C7-C12	ND	50
	description of the second seco	
Trifluorotoluene (FID)	101 59-135 107 60-140	
Bromofluorobenzene (FID)	<u> 107 60-140</u>	

Field ID:

Type:

MW-2

SAMPLE

Lab ID:

143956-003

Analyta	Result		
Gasoline C7-C12	ND	50	
Surrogate	%REC Limits		
Trifluorotoluene (FID)	104 59-135		
Bromofluorobenzene (FID)	114 60-140		

Field ID:

MW-4

Lab ID:

143956-004

Type:

SAMPLE

Analyte	naranan er maranang iya ya Sina ar inanan mana yang	Result	$\mathbf{R}\mathbf{L}$	
Gasoline C7-C12		200 Y	50	
	% REC	702		
Trifluorotoluene (FID)	107	59-135	<u> </u>	
Bromofluorobenzene (FID)	113	60-140		

RL = Reporting Limit Page 1 of 2

Y = Sample exhibits fuel pattern which does not resemble standard ND = Not Detected



	Gasoline by	GC/FID CA LUB	
Lab #:	143956	Location:	Port of Oakland-2277
TClient:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
<b>P</b> Diln Fac:	1.000	Analyzed:	02/17/00
Batch#:	53849		

Field ID: Type:

DUP0200

SAMPLE

Lab ID:

143956-005

Analyte	Result.	RL	
Gasoline C7-C12	190 Y	50	
Annual Paris No.	%REC Limits	an english eng ar ya wasanin ikanan wasanin na alifa	
L Surrogate	TREE BIRLES	5 44 54 J 42 434415 C 2 2	4 2 40 4 4 14 4660 1 1 1 4 3 3 3 3 4 3 4 3 5 5 5 5 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Trifluorotoluene (FID)	107 59-135	2	

ield ID: ype:

MW-6

SAMPLE

Lab ID:

143956-006

Analyte	r i grisi i	Result	······································		The model with the property of the
Gasoline C7-C12		270 Y	50	)	
Surrogate	%REC	Limits		o the state of the	
Trifluorotoluene (FID)	106	59-135			
Bromofluorobenzene (FID)	106	<u>60-140</u>			

ield ID:

ype:

MW-7

SAMPLE

Lab ID:

143956-007

Analyte	Result	Connection of the Control Right and the Section of the Control of	. Cro star
Gasoline C7-C12	ND	50	
Surrogate	%REC Limits		
Trifluorotoluene (FID)	103 59-135		
Bromofluorobenzene (FID)	113 60-140		

Туре:

BLANK

Lab ID:

QC108166

Analyte	Result	. Dans a second o <mark>rre</mark> t. The second	
Gasoline C7-C12	ND	50	
Surrogate	%REC Limits	The same of the sa	
Trifluorotoluene (FID)	95 59-135		
Bromofluorobenzene (FID)	93 60-140		

Y = Sample exhibits fuel pattern which does not resemble standard D = Not Detected L = Reporting Limit Page 2 of 2

Sample Name: 143956-004,53849 Sample #: Page 1 of 1 FileName : G:\GC07\DATA\048A010.raw Date : 2/17/00 06:07 PM : TVHBTXE Time of Injection: 2/17/00 05:40 PM Method Start Time : 0.00 min End Time : 26.00 min Low Point : 5.18 mV High Point: 255.18 mV Plot Offset: 5 mV Plot Scale: 250.0 mV Scale Factor: -1.0 Response [mV] MW-4 220 1180 1100 1100 1100 -+CB <u>-4.52</u> \_5.43  $_{-5.93}$ TRIFLUO \_ 6.83 -7.47\_7.99 \_8.61 \_9.39 \_9.95 -10.7\_11.3 \_13.0 \_15.1 **BROMOF** --17.4\_19.0 \_19.4 \_19.8 -20.5 -20.9 \_21.5 \_22.9 -24.3

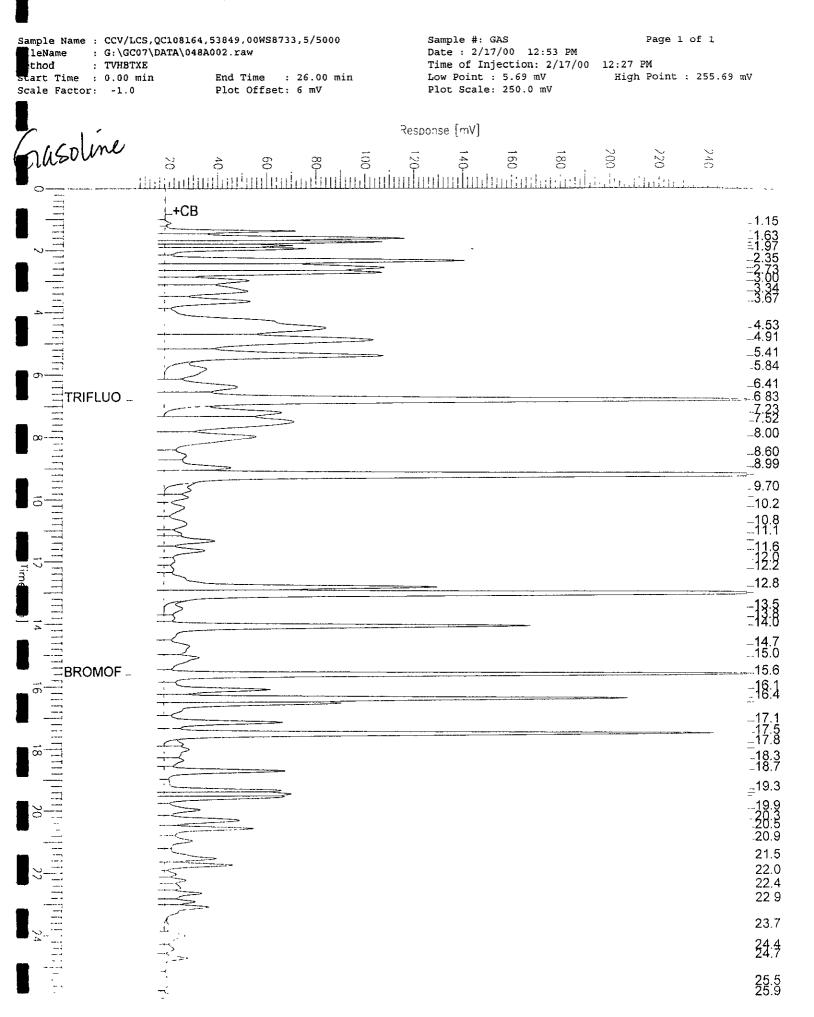
Sample #:

Page 1 of 1

Sample Name: 143956-005,53849

: G:\GC07\DATA\048A011.raw leName Date: 2/17/00 06:44 PM thod : TVHBTXE Time of Injection: 2/17/00 06:18 PM art Time : 0.00 min End Time : 26.00 min Low Point : 5.25 mV High Point: 255.25 mV Scale Factor: -1.0 Plot Offset: 5 mV Plot Scale: 250.0 mV Response [mV] DUP0200 \_+CB -5.43-5.93TRIFLUO \_ \_6.83 \_7.46  $_{-7.98}$ -8.59\_9.00 \_9.39 \_9.73 -10.7-11.3-13.0\_15.1 \_ \_\_15.6 BROMOF ...  $_{-17.4}$ \_19.4 -19.8\_20.6 \_20.9 \_21.4 ...22.3 -23.2\_24.3

Page 1 of 1 Sample Name: 143956-006,53849 Sample #: : G:\GC07\DATA\048A012.raw FileName Date: 2/18/00 10:36 AM 06:55 PM Method : TVHBTXE Time of Injection: 2/17/00 Start Time : 0.00 min End Time High Point : 255.49 mV : 26.00 min Low Point : 5.49 mV Scale Factor: -1.0 Plot Offset: 5 mV Plot Scale: 250.0 mV MW-6 Response [mV] \_+HF \_4.78 \_5.42 TRIFLUO \_ -7.98\_8.60 \_9.01 \_9.40 \_9.71 \_10.8 -11.3<u>-</u>12:8 \_13.5 **BROMOF** \_ \_\_16.1 \_\_16.4 \_\_16.8 \_\_17.4 \_\_17.8 \_19:2 \_19:5  $_{-19.9}$ \_20.5 \_20.9 \_21.5 \_22.0 \_22.4 \_22.8





BTXE Compounds by GC/PID Port of Oakland-2277 Lab #: 143956 Location: Prep: Analysis: EPA 5030 Harding Lawson Associates Client: EPA 8021B Project#: 42633.1 Matrix: Water Sampled: 02/11/00 02/11/00 02/17/00 Units: ug/L Received: Diln Fac: 1.000 Prepared: 53849 Batch#:

Field ID: MW-5 Lab ID: 143956-001 Type: SAMPLE Analyzed: 02/17/00

Analyte	Result	o some more and the more of the source of th	1, 0, 1 10 11 100
MTBE	ND	2.0	
Benzene	ND	0.50	
Toluene	ND	0.50	
Ethylbenzene	ND	0.50	i
m,p-Xylenes	ND	0.50	
o-Xylene	ND	0.50	

Surrogate &REC Limits
Trifluorotoluene (PID) 103 56-142
Bromofluorobenzene (PID) 104 55-149

Field ID: TRIP Lab ID: 143956-002 Type: SAMPLE Analyzed: 02/18/00

TO THE WORLD	Analyte Result	
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzen	e ND	0.50
m,p-Xylenes		0.50
o-Xylene	ND	0.50

Surrogate RRC Limits
Trifluorotoluene (PID) 104 56-142
Bromofluorobenzene (PID) 107 55-149

Field ID: MW-2 Lab ID: 143956-003 Type: SAMPLE Analyzed: 02/17/00

Analyte	Result	RD (1995)
MTBE	ND	2.0
Benzene	5.4	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits	
Trifluorotoluene (PID)	105	56-142	
Bromofluorobenzene (PID)	108	<u>55-149</u>	

RL = Reporting Limit Page 1 of 3

C = Presence confirmed, but confirmation concentration differed by more than a factor of two ND = Not Detected



	BTXE Compo	ounds by GC/PII	
Lab #:	143956	Location:	Port of Oakland-2277
TClient:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Prepared:	02/17/00
Batch#:	53849		

Field ID: Type:

MW-4 SAMPLE Lab ID: Analyzed:

143956-004 02/17/00

Analyte Result 2.0 0.50 MTBE 4.4 58 Benzene 0.77 0.50 Toluene 0.50 Ethylbenzene ND m,p-Xylenes o-Xylene 0.50 ND 0.50 ND

Surrogate (1)	%REC	Limits	
Trifluorotoluene (PID)	106	56-142	
Bromofluorobenzene (PID)	108	55-149	

ield ID: Type:

DUP0200

143956-005 02/17/00

Lab ID: Analyzed: SAMPLE

Analyte	Result	" Maria Rich " La la Salaria "	The same of the sa
MTBE	4.4 C	2.0	•
Benzene	58	0.50	
Toluene	0.73	0.50	
Ethylbenzene	ND	0.50	
m,p-Xylenes	ND	0.50	
o-Xvlene	ND	0.50	

Surrogate	%REC	Limits	
Trifluorotoluene (PID)	105	56-142	<del></del>
Bromofluorobenzene (PID)	108	55-149	

ield ID:

MW-6 SAMPLE

Lab ID: Analyzed: 143956-006 02/17/00

Analyte	Result	The second REGISTERS AND ASSESSMENT OF THE SECOND S	
MTBE	5.8	2.0	
Benzene	23	0.50	
Toluene	0.51	0.50	
Ethylbenzene	2.7	0.50	
m,p-Xylenes	ND	0.50	
o-Xylene	ND	0.50	

Surrogate	%REC	Limits	
Trifluorotoluene (PID)	104	56-142	
Bromofluorobenzene (PID)	102	55-149	

<sup>=</sup> Presence confirmed, but confirmation concentration differed by more than a factor of two

D = Not Detected L = Reporting Limit Page 2 of 3



	BTXE Comp	ounds by GC/PI	D
Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Prepared:	02/17/00
Batch#:	53849		

Field ID: Type:

MW-7 SAMPLE Lab ID: Analyzed:

143956-007 02/17/00

Secretary was been as a second	Result		The section of the se
MTBE	51	2 0	
Benzene	ND	0.50	
Toluene	ND ND	0.50	
	ND	0.50	1
Ethylbenzene	ND	0.50	1
m,p-Xylenes			
o-Xylene	ND	0.50	

Surrogate	%RE(	Limits	
Trifluorotoluene (PID)	105	56-142	
Bromofluorobenzene (PID)	110	55-149	

Type: Lab ID:

BLANK QC108166 Analyzed:

02/17/00

Analyte	en en la companya de <b>Result</b> ione de la companya del la companya de la companya d	y.,	
MTBE	ND	2.0	
Benzene	ЙD	0.50	
Toluene	ND	0.50	
Ethylbenzene	ND	0.50	
m,p-Xylenes	ND	0.50	
o-Xylene	ND	0,50	

F	to an about the testing of the control of the contr	*REC	
	as accepts the administration in <b>Studies contact to</b> expend of the land contact of	XXXXXXXX	
	a transfer in a group and it? Substitute the last term in a group and it.	0.11.44	
	Trifluorotoluene (PID)	97	
	LEST ENDERGE AFTER	<b>3</b> /	56-142
	Bromofluorobenzene (PID)	^^	55-149
- L	Bromofluorobenzene (PID)	92	55-149
L		~ =	JJ 447

C = Presence confirmed, but confirmation concentration differed by more than a factor of two ND = Not Detected RL = Reporting Limit Page 3 of 3  $\,$ 



	Gasoline by	GC/FID CA LUFT	
Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC108164	Batch#:	53849
Matrix:	Water	Analyzed:	02/17/00
Units:	ug/L		

Analyte	Spiked.	Result	%REC	Limits	
Gasoline C7-C12	2,000	2,028	101	73-121	

Surrogate	*REC	Limits
Trifluorotoluene (FID)	1.1.1	59-135
Bromofluorobenzene (FID)	102	60-140



		unds by GC/Pi	en e
Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC108165	Batch#:	53849
Matrix:	Water	Analyzed:	02/17/00
Units:	ug/L		

Analyte	Spiked	Result	%REC	. Cimits	
MTBE	20.00	17.76	89	51-125	
Benzene	20.00	18.81	94	67-117	
Toluene	20.00	20.77	104	69-117	
Ethylbenzene	20.00	19.71	99	68-124	
m,p-Xylenes	40.00	40.78	102	70-125	
o-Xylene	20.00	20.46	102	65-129	

Surrogate	%REC	Dimits	
Trifluorotoluene (PID)	100	56-142	
Bromofluorobenzene (PID)	99	55-149	



and and a second a	Gasoline by	GE/FID CA LUFT	
Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 5030
Project#:	42633.1	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	53849
MSS Lab ID:	143993-007	Sampled:	02/16/00
Matrix:	Water	Received:	02/16/00
Units:	ug/L	Prepared:	02/17/00
Diln Fac:	1.000	Analyzed:	02/18/00

ype:

MS

Lab ID: QC108167

Analyte	MSS Re	sult	Spiked	Result	%REC	Limits
Gasoline C7-C12	<5	0.00	2,000	2,002	100	65-131
Surrogate	%REC	Limits				
Trifluorotoluene (FID)	115	59-135				
Bromofluorobenzene (FID)	111	60-140				

MSD

Analyte

Lab ID:

QC108168

Result %REC Limits RPD Lim

Gasoline C7-C12	*	2,000	1,870	93	65-131	7	20
Surrogate	*REC	Limits		440		10 to 1	
rifluorotoluene (FID)	113	59-135		*******			
Bromofluorobenzene (FID)	112	60-140					

Spiked



ge in a garage die CD, was gebiedlichte	Total Extractable	Hydrodarbons	, GC/FID
Lab #: Client:	143956 Harding Lawson Associates	Location: Prep:	Port of Oakland-2277 EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
Matrix:	Water	Sampled:	02/11/00
Units:	ug/L	Received:	02/11/00
Diln Fac:	1.000	Prepared:	02/15/00

Field ID: Type:

Batch#:

MW-5

SAMPLE

53813

Lab ID: Analyzed: 143956-001 02/19/00

Diesel C10-C24 Result RL ND 50 Motor Oil C24-C36 ND 300

%REC Limits
3 44-121 Surrogate Hexacosane

Field ID: Type:

MW ~ 2 SAMPLE Lab ID: Analyzed: 143956-003 02/19/00

Analyte
Diesel C10-C24 Result ND 300 Motor Oil C24-C36 ND

Surrogate %REC Limits Hexacosane 44-121

Field ID: Type:

MW - 4 SAMPLE Lab ID: Analyzed: 143956-004 02/19/00

Analyte Result Diesel C10-C24 ND 50 3<u>00</u> Motor Oil C24-C36 ND

Surrogate

93 <u>44-121</u> Hexacosane

Field ID: Type:

DUP0200 SAMPLE

Lab ID: Analyzed: 143956-005 02/19/00

Analyte Result RL 50 Diesel C10-C24 ND 300 Motor Oil C24-C36 ND

%REC Limits Surrogate Hexacosane

ND = Not Detected RL = Reporting Limit Page 1 of 2

## Chromatogram

Sample Name : ccv,00ws8795,dsl

: G:\GC15\CHB\047B001.RAW

thod : BTEH041.MTH

tart Time : 0.01 min Scale Factor: 0.0

leName

End Time : 31.83 min Plot Offset: -18 mV Sample #: 500mg/1

Date: 02/16/2000 12:05 PM

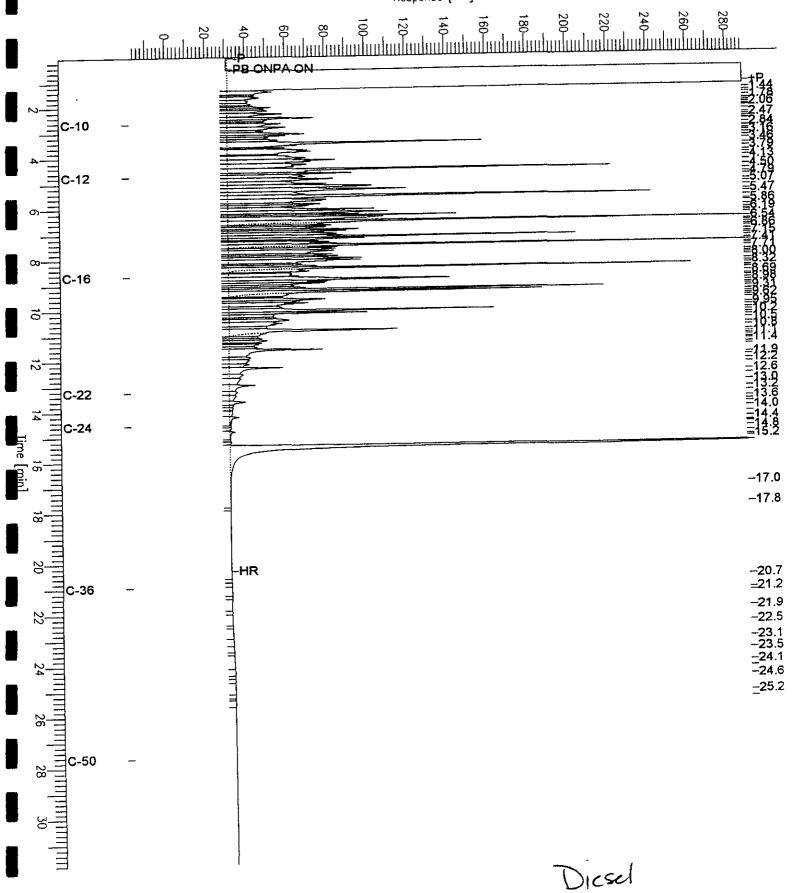
Time of Injection: 02/16/2000 11:18 AM

Low Point: -17.68 mV High Point: 288.73 mV

Page 1 of 1

Plot Scale: 306.4 mV





## Chromatogram

Sample Name : ccv, 99ws8570, mo

: G:\GC15\CHB\047B002.RAW

FileName : G:\GC15\CHB'
Method : BTEH041.MTH

Start Time : 0.29 min

min End Time : 31.91 min

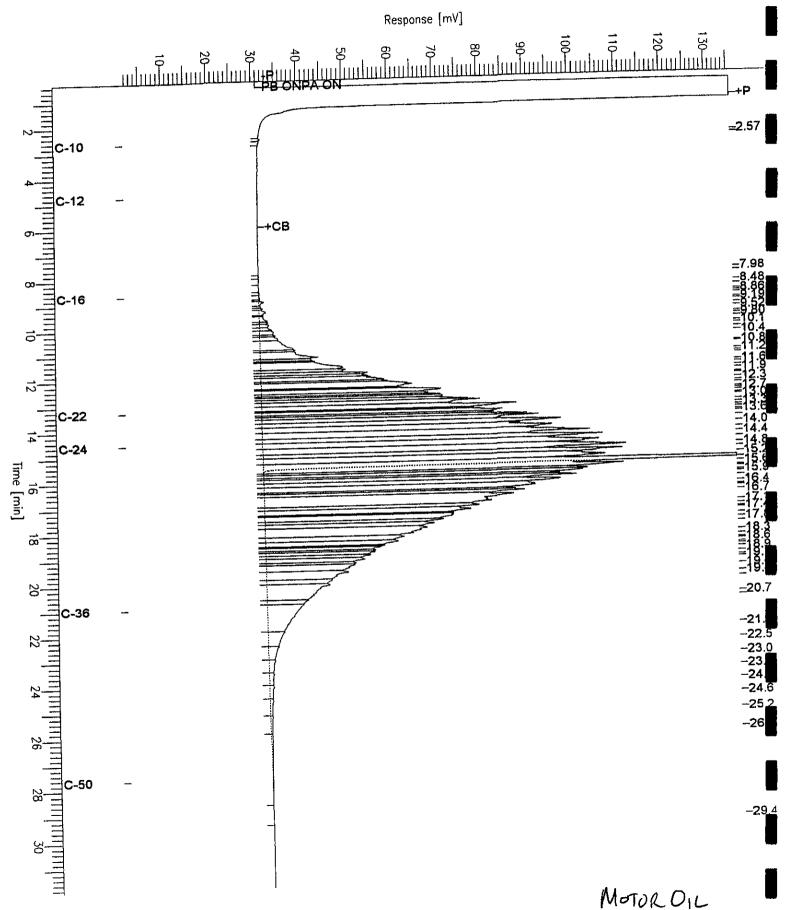
Start Time : 0.25 min
Scale Factor: 0.0 Plot Offset: 2 mV

Sample #: 500mg/l Page 1 of 1

Date: 02/16/2000 01:08 PM

Time of Injection: 02/16/2000 12:01 PM
Low Point: 1.67 mV High Point: 135.70 mV

Plot Scale: 134.0 mV





	Total Extrac	ctable Hydrocarbons	, GC/FID
ab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associ	<b>4</b> .	EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
_Matrix:	Wațer	Sampled:	02/11/00
nits: iln Fac:	ug/L	Received:	02/11/00
	1.000	Prepared:	02/15/00
Batch#:	53813		

Held ID: Type:

MW~6 SAMPLE

Lab ID: Analyzed:

143956-006 02/23/00

Result 2,300 **RL** 50 Analyte Diesel C10-C24 Motor Oil C24-C36 ND\_ 300

%REC Limits 8 44-121 Surrogate exacosane

eld ID:

MW - 7 SAMPLE

143956-007 02/19/00

Lab ID: Analyzed:

Analyte	Result	RE	
Diesel C10-C24	ND	50	
otor Oil C24-C36	ND	300	
<b>—</b>		<del></del>	

Limits 44-121 **%REC** 99 Surrogate exacosane

vpe: ib ID:

BLANK QC108044

Analyzed:

02/17/00

Analyte	Result	Market and Reference to the second	
Diesel C10-C24	ND	50	
■totor Oil C24-C36	<u>ND</u>	300	
Surrogate	*REC Limits		
Hevacosane	70 44-121		

= Not Detected rage 2 of 2

## Chromatogram

Sample Name: 143956-006sg, 53813

: G:\GC15\CHB\052B057.RAW FileName

: BTEH041.MTH Method

Start Time : 0.01 min

End Time : 31.55 min Plot Offset: -21 mV 0.0 Scale Factor:

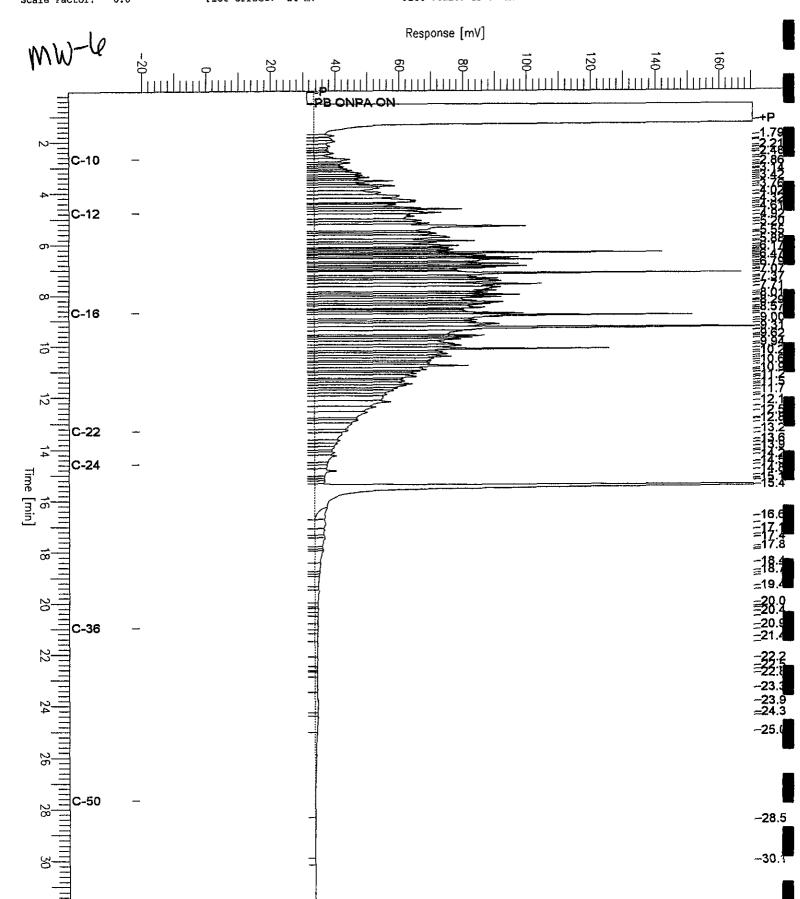
Sample #:

Page 1 of 1

Date: 02/23/2000 03:08 PM

Time of Injection: 02/23/2000 01:52 PM High Point: 170.36 mV

Low Point : -20.97 mV Plot Scale: 191.3 mV





	Total Extractable	Hydrocarbon	
Lab #:	143956	Location:	Port of Oakland-2277
■lient:	Harding Lawson Associates	Prep:	EPA 3520
roject#:	42633.1	Analysis:	EPA 8015M
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC108045	Batch#:	53813
latrix:	Water	Prepared:	02/15/00
Units:	ug/L	Analyzed:	02/18/00

Analyte	Spiked	Result	%REC	Limits
iesel C10-C24	2,475	1,858	75	45-110

Surrogate	8REC	Limita
lexacosane	89	44-121



	Total Extractable	Hydrocarbous	/ GC/FID
Lab #:	143956	Location:	Port of Oakland-2277
Client:	Harding Lawson Associates	Prep:	EPA 3520
Project#:	42633.1	Analysis:	EPA 8015M
Field ID:	ZZZZZZZZZZ	Batch#:	53813
MSS Lab ID:	143935-001	Sampled:	02/14/00
Matrix:	Water	Received:	02/14/00
Units:	ug/L	Prepared:	02/15/00
Diln Fac:	1.000	Analyzed:	02/18/00

Туре:

MS

Lab ID: QC108046

Analyte	MSS Result	Spiked	Result	SREC	Limits
Diesel C10-C24	11.75	2,475	1,861	75	38-122

Surrogate	%RE	- Limits
Hexacosane	88	44-121

Type:

MSD

Lab ID: QC108047

Analyte	o primary na program s <b>piked</b> na primara na primara	Result	%REC	Limite	RPD	Lim
Diesel C10-C24	2,475	1,851	74	38-122	1	28

Surrogate	*REC	Limits	
Hexacosane	88	44-121	