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Prepared for



**The Port of Oakland**  
530 Water Street  
Oakland, California

**Quarterly Groundwater Monitoring Report:  
Second Quarter, 1997  
Building C-401, 2277 Seventh Street,  
Oakland, California**

**July 30, 1997**

**U&A Project No. 207-01-10D**

Prepared by



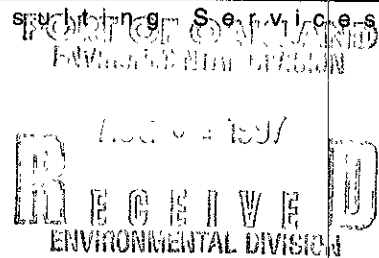
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Engineering and Environmental Consulting Services

July 30, 1997



Mr. John Prall, R.G.  
Associate Environmental Scientist  
Environmental Health and Safety Compliance Department  
Port of Oakland  
530 Water Street  
Oakland, California 94604-2064

Subject: **Quarterly Groundwater Monitoring Report: Second Quarter, 1997**  
Building C-401, 2277 Seventh Street, Oakland, California  
STID 3899  
U&A Project No. 207-01-10

Dear Mr. Prall:

Uribe & Associates (U&A) is pleased to provide the Port of Oakland (Port) this report documenting the results of quarterly groundwater monitoring conducted on June 13, 1997, at Building C-401, located at 2277 Seventh Street in Oakland, California (Figure 1). The monitoring included collecting depth-to-groundwater measurements and groundwater samples from on-site wells MW-2, MW-4, MW-5, and MW-7 (Figure 2). The monitoring also included collecting depth-to-groundwater and depth-to-product measurements from on-site well MW-8 and removing floating liquid hydrocarbons ("product"), if present, from passive skimmer devices installed in wells MW-1 and MW-6. Well MW-8 was not sampled because of the presence of floating liquid hydrocarbons in the well. An active skimmer is installed in well MW-3. Included in this report is an estimate of the amount of product removed from wells MW-1 and MW-3 since November 15, 1996, the date the skimmers were installed in these wells, and December 1996, the date the passive skimmer was installed in MW-6.

This report is based, in part, on information obtained by U&A from the Port and is subject to modification as newly acquired information may warrant.

The Port provided U&A with mapped groundwater elevation data received from Tetra Tech EM Inc. (TTEMI), of Helena, Montana, for groundwater monitoring conducted by TTEMI on April 9, 1997, at the U.S. Navy's Fleet Industrial Supply Center Oakland (FISCO), on U.S. Navy property to the north of the 2277 Seventh Street site, and at the western end of the 2277 Seventh Street site where TTEMI installed two groundwater monitoring wells in



early 1997. The FISCO property lies adjacent to the 2277 Seventh Street site to the west and south and extends to the southeast of the site. The mapping of data collected by TTEMI from the shallow subsurface, referred to as "Upper Water Bearing Fill Unit," indicates that the direction of groundwater flow beneath the 2277 Seventh Street site on April 9, 1997, was to the north. This is consistent with the northerly direction of groundwater flow reported to the Port by U&A for March 28, 1997, in the previous report "Quarterly Groundwater Monitoring Report: First Quarter, 1997," dated June 16, 1997.

### **U&A Groundwater Monitoring**

#### *Groundwater Levels and Data*

On June 13, 1997, U&A personnel measured the depth to groundwater in wells MW-2, MW-4, MW-5, and MW-7. Measurements of the depth-to-groundwater and depth-to-product were also collected from MW-8. The measurements were made to the nearest 0.01 foot, referenced to the surveyed top-of-casing (TOC) elevations, and conducted according to the U&A standard operating procedures (SOPs) included as Attachment 1.

Before purging, the depth to groundwater (DTW) in wells MW-2, MW-4, MW-5, and MW-7 ranged from 6.58 to 9.17 feet below TOC. The DTW in well MW-8 was 9.05 feet below TOC. The groundwater temperature averaged approximately 80 degrees Fahrenheit and the pH averaged 7.2. The DTW, temperature, and pH measurements collected on June 13, 1997, are entered on the U&A Well Purging & Sampling Logs included as Attachment 2. The DTW measurements collected to date are summarized in Table 1.

Figure 3 is a potentiometric surface map of the shallow water-bearing zone for June 13, 1997, based on data summarized in Table 1. The groundwater beneath the site is interpreted to flow toward the north with a hydraulic gradient of approximately 0.008 feet per foot (ft/ft).

#### *Groundwater Sampling and Analysis*

Groundwater samples were collected from the four wells by U&A personnel on June 13, 1997. The samples were collected according to the U&A SOPs included in Attachment 1 and were submitted under chain-of-custody to Pace Analytical Services, Inc., of Petaluma, California, a state-certified analytical laboratory. The samples were analyzed for the following constituents:

- Total petroleum hydrocarbons (TPH) as diesel (TPH-D) by modified EPA Method 8015, with "silica gel cleanup" procedure; "Pace reporting limit" (PRL) of 50 micrograms per liter ( $\mu\text{g}/\text{l}$ )
- TPH as motor oil (TPH-MO) by modified EPA Method 8015, with "silica gel cleanup" procedure; PRL of 250  $\mu\text{g}/\text{l}$
- TPH as gasoline (TPH-G) by modified EPA Method 8015/8020; PRL of 50  $\mu\text{g}/\text{l}$
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by modified EPA Method 8015/8020; PRLs of 0.5, 0.5, 0.5, and 1.0  $\mu\text{g}/\text{l}$ , respectively

The analyses indicated that the concentrations of TPH-G were below the PRL of 50  $\mu\text{g}/\text{l}$  in the samples collected from MW-5 and MW-7. The concentrations of TPH-G in the samples collected from MW-2 and MW-4 were 51 and 1,300  $\mu\text{g}/\text{l}$ , respectively.

The concentrations of TPH-D were below the PRL of 50  $\mu\text{g}/\text{l}$  in the samples collected from MW-2 and MW-5. The concentrations of TPH-D for the samples collected from MW-4 and MW-7 were 92 and 100  $\mu\text{g}/\text{l}$ , respectively. However, the laboratory indicated that the hydrocarbons detected in the sample from MW-4 were present in the requested fuel quantitation range, but that they did not display a chromatographic pattern that resembled any available fuel standard.

The concentrations of TPH-MO were below the PRL of 250  $\mu\text{g}/\text{l}$  in all four samples collected.

The concentrations of each of the BTEX compounds were below the respective PRLs in the samples collected from MW-2, MW-5, and MW-7. In the sample from MW-4, the respective concentrations of BTEX were 500, 5.5, 3.4, and 2.8  $\mu\text{g}/\text{l}$ .

The analytical results to date are summarized in Table 2. The laboratory analytical reports and chain-of-custody form are included as Attachment 3. Figure 4 summarized the groundwater analytical results for June 13, 1997, based on the data summarized in Table 2.

#### **Floating Liquid Hydrocarbon Removal**

Evidence of product was observed in well MW-6 during purging on December 3, 1996. As a result, MW-6 was removed from the well sampling program. In addition, the passive skimmer that had been installed in well MW-8 was removed, cleaned, and installed in MW-6 on January 10, 1997. The transfer of the passive skimmer from MW-8 to MW-6 was done because the high viscosity of the product in MW-8 prevented the skimmer from

operating properly. The product in MW-6 appears diesel like, similar to that in MW-1 and MW-3.

On June 13, 1997, floating liquid hydrocarbons were removed from the passive skimmer installed in well MW-1. The skimmer installed in MW-6 was empty. The volume of product removed from the skimmer was estimated based on the capacity of the skimmer's cylindrical reservoir of 25 milliliters per inch. In addition, an estimated 50 gallons of product had been removed by the active skimmer installed in well MW-3 and pumped into the system's Baker tank. Based on the amounts of product that have been emptied from the Baker tank and disposed of and the amount of collected product estimated on June 13, 1997, approximately 1,588 gallons of product have been pumped from well MW-3 since the active skimmer system became operational on November 15, 1996. Product removal data are summarized in Table 2.

#### **Laboratory Quality Control Data**

U&A reviewed the quality control (QC) data reported by Pace (Attachment 3), for the analyses performed on the groundwater samples collected on June 13, 1997. The QC data includes surrogate recoveries, laboratory control sample (LCS) spike, LCS spike duplicate (LCSD), matrix spike (MS), and MS duplicate (MSD) recovery data and relative percent differences (RPDs). A comparison of the QC data with ranges of acceptable limits for surrogate, LCS and LCSD, and MS and MSD recoveries and RPDs, also provided by Pace, indicated that for the June 13, 1997, analyses:

- the results of MS and MSD recoveries and respective RPDs were within the acceptable limits
- the results of LCS and LCSD recoveries and respective RPDs were within the acceptable limits
- the results of surrogate recoveries were within the acceptable limits

#### **Conclusions**

1. For June 13, 1997, groundwater beneath the site is inferred to have flowed toward the north with a hydraulic gradient of approximately 0.008 ft/ft. The latest inferred direction of groundwater flow is consistent with the northerly direction reported by U&A for the monitoring conducted on March 28, 1997, and for the monitoring conducted by TTEMI on April 9, 1997 (see above). The latest hydraulic gradient is slightly steeper than the gradient of 0.005 ft/ft reported by U&A for the monitoring conducted on March 28, 1997.

J. Prall

**Quarterly Groundwater Monitoring Report:**

**First Quarter, 1997**

July 30, 1997

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2. The results of the laboratory analyses for the groundwater samples collected from the four wells on June 13, 1997, indicated that the concentrations of:
  - TPH-G have remained (since at least April 1996) below the PRL in well MW-5, but were detected at 51 and 1,300  $\mu\text{g}/1$ , respectively, in MW-2 and MW-4 - the concentrations of TPH-G in MW-2 and MW-4 appear to have increased from previous monitoring results
  - TPH-G was below the PRL in well MW-7 - this appears to have decreased from the previous monitoring result
  - TPH-D were below the PRL in MW-2 and MW-5, but were detected at 92 and 100  $\mu\text{g}/1$ , respectively, in MW-4 and MW-7 - the concentrations of TPH-D in MW-4 and MW-7 appear to have increased from previous monitoring results
  - TPH-MO remained (since December 3, 1996) below the PRL in each of the four wells
  - the BTEX compounds remained (since at least April 1996) below the respective PRLs in the samples collected from MW-2, MW-5, and MW-7
  - BTEX were detected in MW-4 ranging from 2.8  $\mu\text{g}/1$  (total xylenes) to 500  $\mu\text{g}/1$  (benzene) - the concentrations of BTEX in MW-4 appear to have increased from the previous monitoring results
3. The active skimmer system installed in well MW-3 has recovered an estimated 1,588 gallons of "product" between November 15, 1996, and May 1, 1997.
4. The QC data reported by Pace are within acceptable limits for recoveries and RPDs.

J. Prall  
Quarterly Groundwater Monitoring Report:  
First Quarter, 1997  
July 30, 1997  
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**Remarks and Signature**

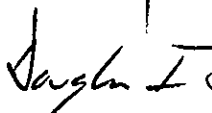

This report is based on available information and was prepared in accordance with currently accepted geologic, hydrogeologic, and engineering practices. No other warranty is implied or intended. This report has been prepared for the sole use of the Port of Oakland and applies to the subject site only. Use of this report by third parties shall be at their sole risk.

The work reported herein was conducted under the direct supervision of the California Registered Geologist whose signature appears below.

We appreciate the opportunity to provide the Port of Oakland with geologic, engineering, and environmental consulting services, and trust this report meets your needs. If you have any questions or concerns, please call us at (510) 832-2233.

Sincerely,

URIBE & ASSOCIATES

Douglas I. Sheeks, R.G.  
Senior Geologist  
CRG No. 5211

Attachments

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## *List of Attachments*

### **Figures:**

- 1 Site Vicinity Map
- 2 Site Plan
- 3 Potentiometric Surface Map: June 13, 1997
- 4 Distribution Map of TPH (as Gasoline, Diesel, and Motor Oil) and BTEX in Groundwater:  
June 13, 1997

### **Tables:**

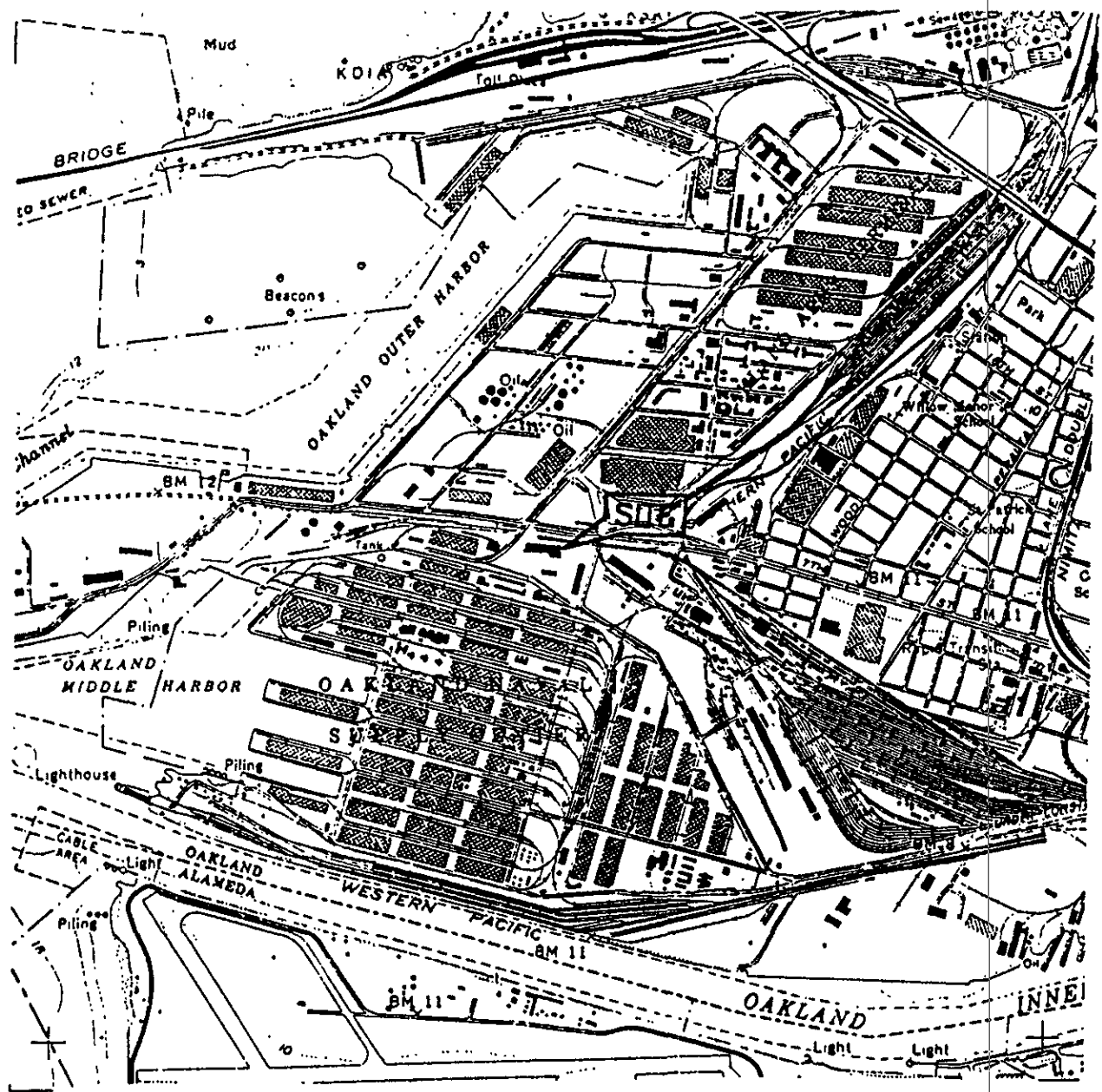
- 1 Groundwater Elevations/Product Removal Data
- 2 Groundwater Analytical Results

### **Attachments:**

- 1 U&A Standard Operating Procedures
- 2 U&A Well Purging & Sampling Logs
- 3 Laboratory Analytical Reports and Chain-of-Custody Form



**Figures**



SOURCE:  
 USGS MAP, OAKLAND WEST QUADRANGLE,  
 7.5 MINUTE SERIES, 1959.  
 PHOTOREVISED 1980.



**FIGURE 1**

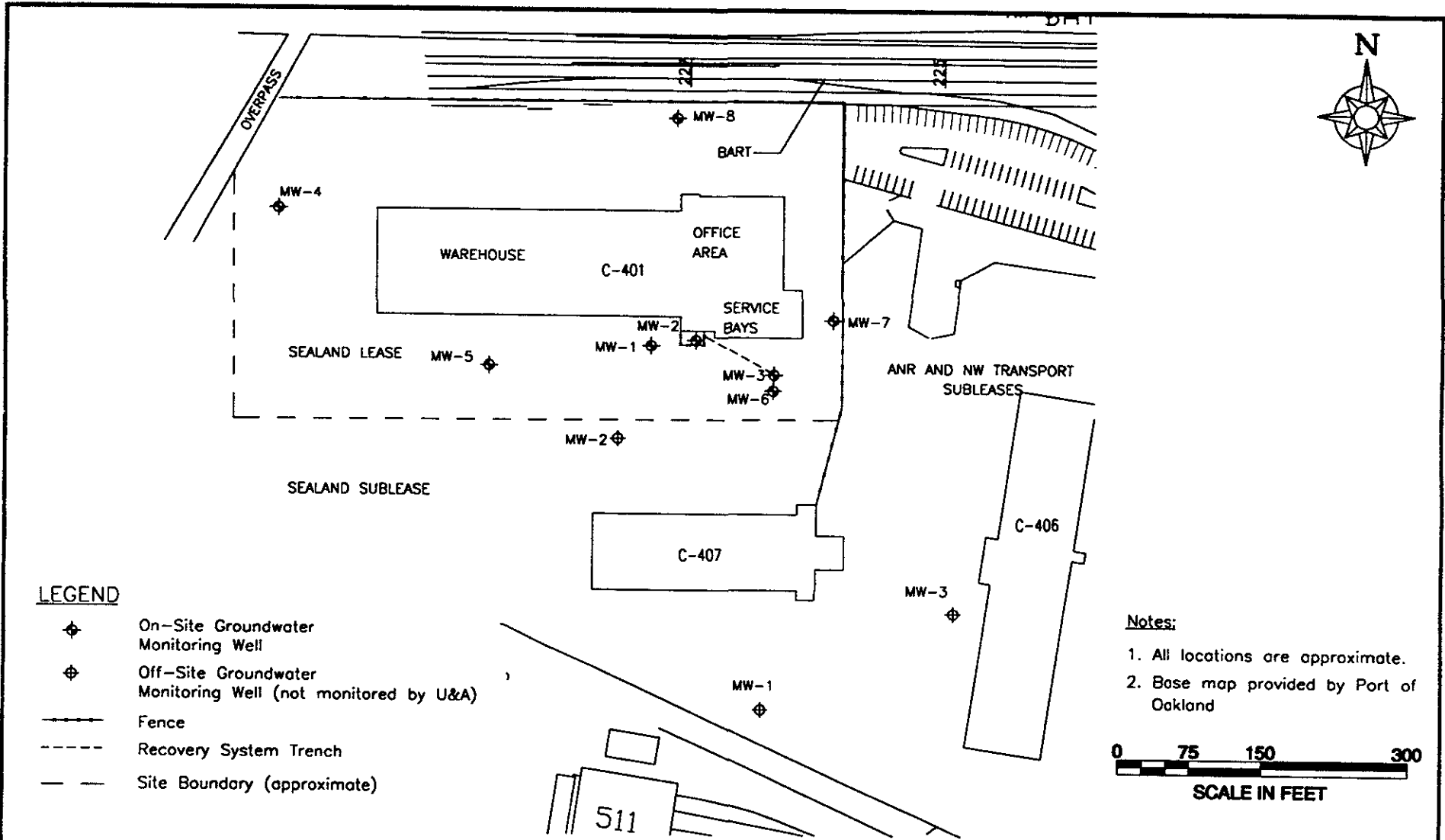
**SITE VICINITY MAP**

PORT OF OAKLAND  
 BUILDING C-401  
 2277 SEVENTH STREET  
 OAKLAND, CALIFORNIA

PROJECT NO. 10-270

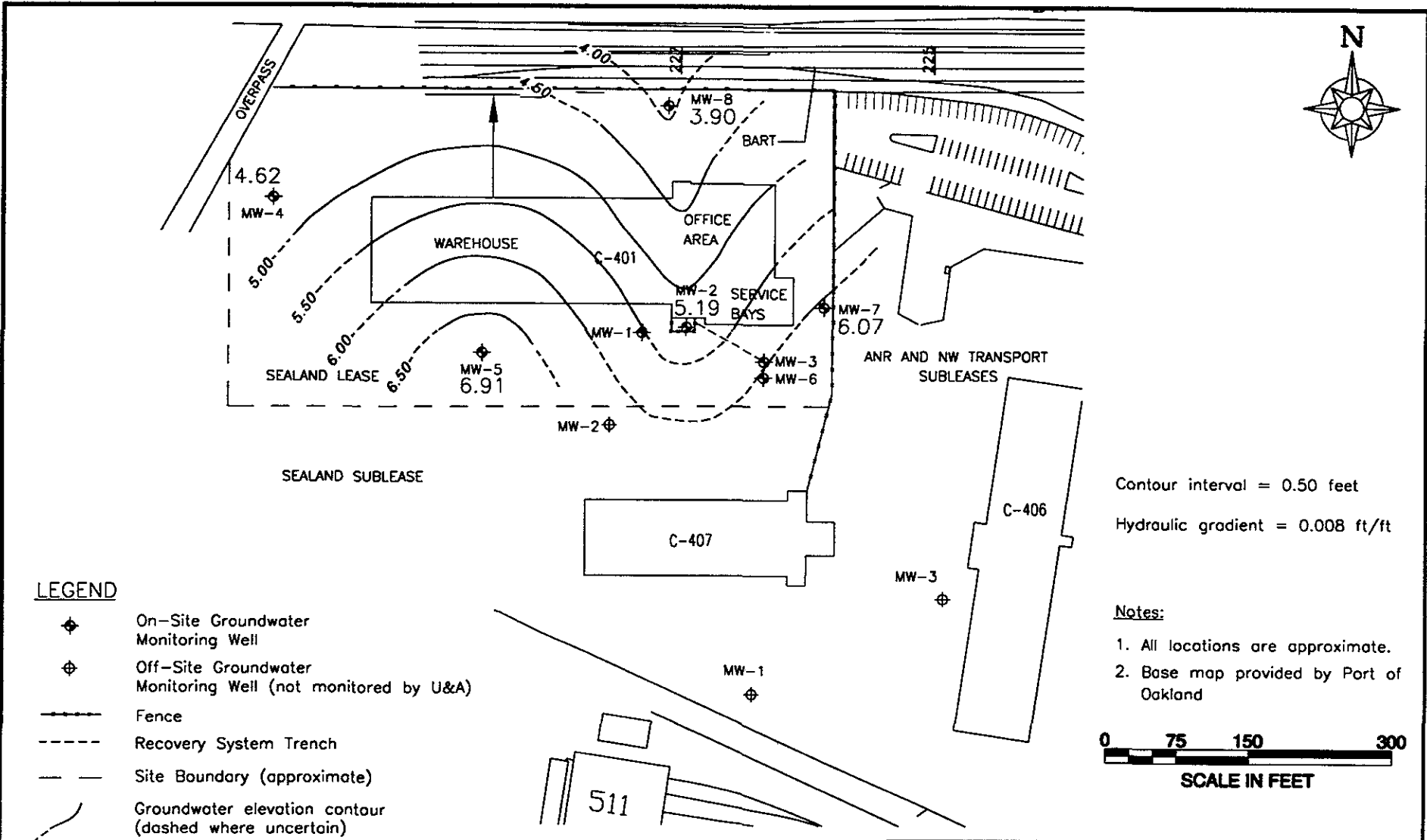


**ALISTO ENGINEERING GROUP**  
 WALNUT CREEK, CALIFORNIA



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**U&A**  
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 Environmental  
 Consulting Services



**LEGEND**

- ◆ On-Site Groundwater Monitoring Well
- ⊕ Off-Site Groundwater Monitoring Well (not monitored by U&A)
- Fence
- - - Recovery System Trench
- - - Site Boundary (approximate)
- Groundwater elevation contour (dashed where uncertain)
- 6.91 Groundwater elevation (in feet above Port of Oakland datum)

Contour interval = 0.50 feet  
 Hydraulic gradient = 0.008 ft/ft

- Notes:**
1. All locations are approximate.
  2. Base map provided by Port of Oakland



**Figure 3**

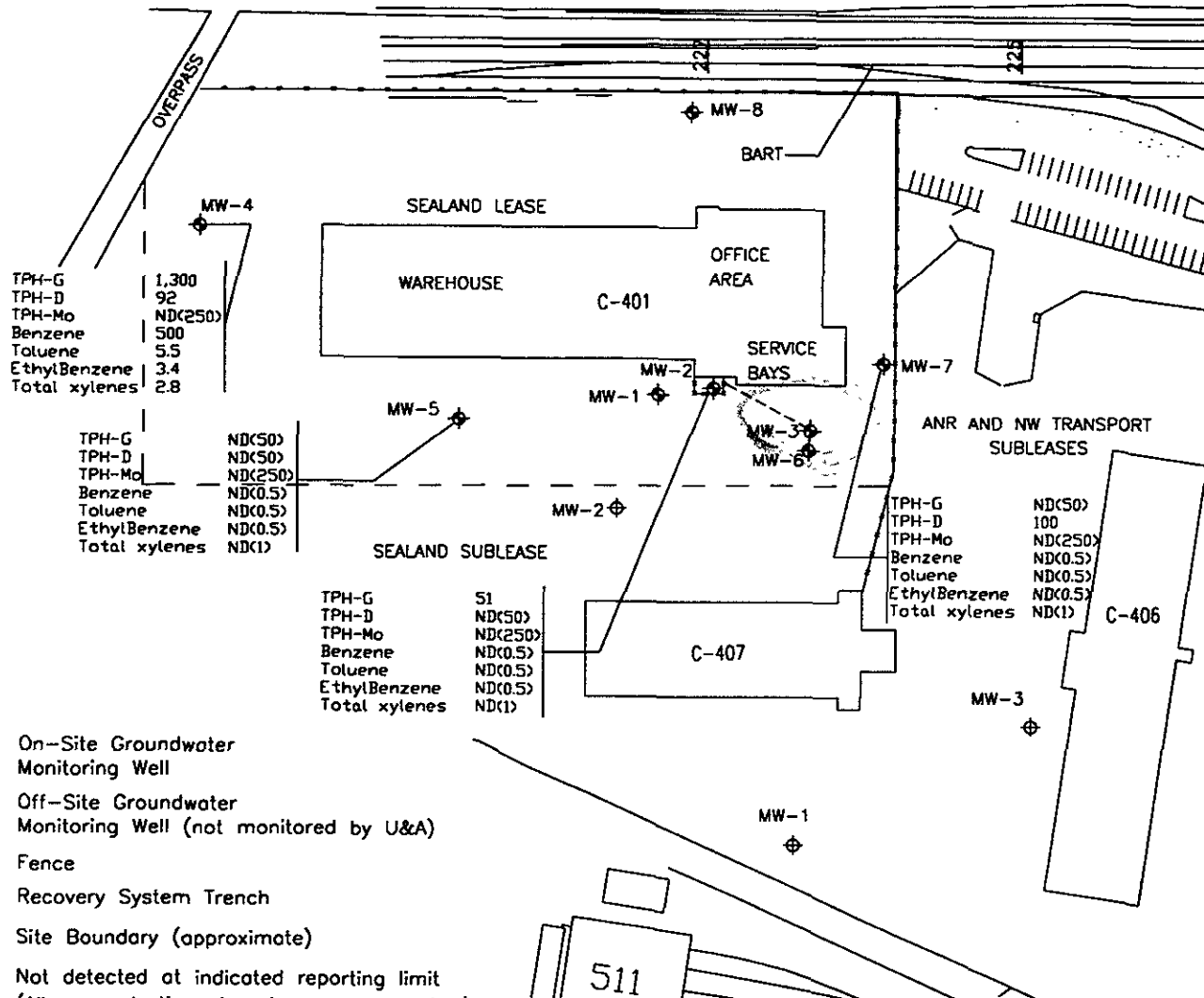
PORT OF OAKLAND OAKLAND, CALIFORNIA

**Potentiometric Surface Map: June 13, 1997**

**Building C-401  
 2277 Seventh Street  
 Oakland, California**

**U&A**  
 URIBE & ASSOCIATES  
 Environmental  
 Consulting Services

Inferred direction of groundwater flow



TPH-G	1,300
TPH-D	92
TPH-Mo	ND(250)
Benzene	500
Toluene	5.5
EthylBenzene	3.4
Total xylenes	2.8

TPH-G	ND(50)
TPH-D	ND(50)
TPH-Mo	ND(250)
Benzene	ND(0.5)
Toluene	ND(0.5)
EthylBenzene	ND(0.5)
Total xylenes	ND(1)

TPH-G	S1
TPH-D	ND(50)
TPH-Mo	ND(250)
Benzene	ND(0.5)
Toluene	ND(0.5)
EthylBenzene	ND(0.5)
Total xylenes	ND(1)

TPH-G	ND(50)
TPH-D	100
TPH-Mo	ND(250)
Benzene	ND(0.5)
Toluene	ND(0.5)
EthylBenzene	ND(0.5)
Total xylenes	ND(1)

**LEGEND**

- ◆ On-Site Groundwater Monitoring Well
- ⊕ Off-Site Groundwater Monitoring Well (not monitored by U&A)
- +—+—+ Fence
- - - - - Recovery System Trench
- — — Site Boundary (approximate)
- ND( ) Not detected at indicated reporting limit (All concentrations in micrograms per liter)
- TPH-G Total petroleum hydrocarbons as Gasoline
- TPH-D Total petroleum hydrocarbons as Diesel
- TPH-Mo Total petroleum hydrocarbons as Motor Oil

**Notes:**

1. All locations are approximate.
2. Base map provided by Port of Oakland.

0 75 150 300  
SCALE IN FEET

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Analytical details are included in U&A's quarterly groundwater monitoring report dated July 30, 1997.

**URIBE & ASSOCIATES**  
Environmental Consulting Services

**Figure 4**

PORT OF OAKLAND OAKLAND, CALIFORNIA

**Distribution map of TPH (as Gasoline, Diesel, and Motor Oil) and BTEX in Groundwater: June 13, 1997**

**Building C-401**  
**2277 Seventh Street**  
**Oakland, California**

**Tables**

**Table 1**  
**Groundwater Elevations/Product Removal Data**  
**Port of Oakland**  
**2277 Seventh Street, Oakland, California**  
**(Page 1 of 3)**

Well	Date	Top of Casing Elevation <sup>1</sup> (feet)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation <sup>2</sup> (feet)	Estimated Product Removed (gallons)	Product Removal Method
MW-1	3/29/95	14.14	7.50	7.67	0.17	6.61		
	9/6/95		8.68	9.45	0.77	5.31		
	9/28/95		8.74	9.85	1.11	5.18		
	12/27/95		8.51	9.04	0.53	5.52		
	1/8/96		8.67	9.15	0.48	5.37		
	4/4/96		8.25	8.50	0.25	5.84		
	7/10/96		8.70	9.52	0.82	5.28		
	12/3/96		---	---	---	---	0.1	passive skimmer
	12/13/96		---	---	---	---	0.23	passive skimmer
	1/6/97		---	---	---	---	0.08	passive skimmer
	3/28/97		---	---	---	---	0.002	passive skimmer
	6/13/97		---	---	---	---	0.23	passive skimmer
MW-2	5/27/94	14.36		8.01		6.35		
	3/29/95			7.47		6.89		
	9/6/95			9.04		5.32		
	9/28/95			7.47		6.89		
	12/27/95			8.95		5.41		
	1/8/96			8.95		5.41		
	4/4/96			8.46		5.90		
	7/10/96			9.03		5.33		
	12/3/96			9.54		4.82		
	3/28/97			7.89		6.47		
	6/13/97			9.17		5.19		
	MW-3		3/29/95	14.22	6.66	9.59	2.93	6.97
9/6/95		8.48	13.70		5.22	4.70		
9/28/95		7.80	13.60		5.80	5.26		
12/27/95		8.01	12.71		4.70	5.27		
1/8/96		8.16	13.10		4.94	5.07		
4/4/96		7.10	11.50		4.40	6.24		
7/10/96		7.94	13.28		5.34	5.21		
10/3/96		8.62	14.45		5.83	4.43	25	peristaltic pump
10/10/96		8.77	14.46		5.69	4.31	25	peristaltic pump
10/18/96		8.85	14.54		5.69	4.23	25	peristaltic pump
10/25/96		8.74	14.43		5.69	4.34	20	peristaltic pump
11/1/96		8.85	14.41		5.56	4.26	20	peristaltic pump
11/8/96		8.82	14.50		5.68	4.26	25	peristaltic pump
12/3/96		---	---		---	---	13	active skimmer
12/13/96		---	---		---	---	---	active skimmer
1/6/97		---	---		---	---	750	active skimmer
2/19/97		---	---		---	---	425	active skimmer
5/1/97		---	---		---	---	350	active skimmer
6/13/97	---	---	---	---	50	active skimmer		

**Table 1 Continued**  
**Groundwater Elevations/Product Removal Data**  
**Port of Oakland**  
**2277 Seventh Street, Oakland, California**  
**(Page 2 of 3)**

Well	Date	Top of Casing Elevation <sup>1</sup> (feet)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation <sup>2</sup> (feet)	Estimated Product Removed (gallons)	Product Removal Method
MW-4	3/29/95	13.15		9.59		3.56		
	9/6/95			8.48		4.67		
	9/11/95			9.59		3.56		
	9/28/95			9.59		3.56		
	12/27/95			8.39		4.76		
	1/8/96			8.42		4.73		
	4/4/96			8.19		4.96		
	7/10/96			8.56		4.59		
	12/3/96			8.69		4.46		
	3/28/97			7.40		5.75		
6/13/97		8.53		4.62				
MW-5	9/6/95	13.49		6.90		6.59		
	9/11/95			9.59		3.90		
	9/28/95			9.59		3.90		
	12/27/95			7.17		6.32		
	4/4/96			6.44		7.05		
	7/10/96			6.79		6.70		
	12/3/96			7.06		6.43		
	3/28/97			6.45		7.04		
	6/13/97			6.58		6.91		
	MW-6		9/6/95	14.00	4.47	7.40	2.93	8.94
9/28/95		6.66	9.59		2.93	6.75		
12/27/96			8.07			5.93		
1/8/96			7.70			6.30		
4/4/96			7.70			6.30		
7/10/96			7.55			6.45		
12/3/96		---	6.41		---	7.59		
3/28/97		---	---		---	---	0.0005	passive skimmer
6/13/97		---	---		---	---	0	passive skimmer
MW-7		9/6/95	14.35			9.10		5.25
	9/28/95			9.74		4.61		
	12/27/96			9.06		5.29		
	1/8/96			9.06		5.29		
	4/4/96			8.57		5.78		
	7/10/96			9.11		5.24		
	12/3/96			9.62		4.73		
	3/28/97			8.06		6.29		
	6/13/97			8.28		6.07		



**Table 1 Continued**  
**Groundwater Elevations/Product Removal Data**  
**Port of Oakland**  
**2277 Seventh Street, Oakland, California**  
**(Page 3 of 3)**

Well	Date	Top of Casing Elevation <sup>1</sup> (feet)	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Groundwater Elevation <sup>2</sup> (feet)	Estimated Product Removed (gallons)	Product Removal Method
MW-8	9/6/95	12.94		7.84		5.10		
	9/28/95		8.79	8.91	0.12	4.13		
	12/27/96		8.30	8.61	0.31	4.58		
	1/8/96		8.35	8.80	0.45	4.50		
	4/4/96		8.32	8.37	0.05	4.61		
	7/10/96		9.41	9.44	0.03	3.52		
	12/3/96		---	---	---	---	0.003	passive skimmer
	12/13/96	---	---	---	---	0.007	passive skimmer	
	1/6/97	---	---	---	---	0.007	passive skimmer	
	3/28/97	---	---	---	---	---	---	
	6/13/97	9.04	9.05	0.01	3.90	---	---	

Notes:

<sup>1</sup> Top of Casing (TOC) Elevations from Groundwater Monitoring and Sampling Report by Alisto Engineering Group, dated September 12, 1996. TOC elevations surveyed to nearest 0.01 foot relative to mean lower low water (Port of Oakland Datum; 3.2 feet below mean sea level).

--- = not measured/not estimated

<sup>2</sup> Groundwater Elevation corrected for the presence of floating product according to the formula:  
 $CDTW = DTW - (0.80 \times PT)$ , where CDTW is the corrected depth to groundwater, DTW is the measured depth to groundwater, 0.80 is the density correction factor for diesel, and PT is the measured thickness of floating product.

Measurements on and since 12/3/96 by U&A; all other measurements listed from Alisto Engineering Group (1996).

**Table 2**  
**Groundwater Analytical Results**  
**Port of Oakland**  
**2277 Seventh Street, Oakland, California**  
**Page 1 of 2**

Well	Date	Analyte (µg/l)							Lab
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl Benzene	Total Xylenes	
MW-2	5/27/94	87	470	na	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	D&M
	3/29/95	ND(50)	110	1,400	ND(0.4)	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	9/6/95	ND(50)	na	na	ND(0.4)	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	1/8/96	ND(50)	ND(50)	1,200	ND(0.4)	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	4/4/96	ND(50)	160	320	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
	7/10/96	ND(50)	120	1,400	ND(0.4)	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	12/3/96	ND(50)	230 <sup>1,2</sup>	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
	3/28/97	ND(50)	71 <sup>4</sup>	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
6/13/97	51	ND(50)	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace	
MW-4	9/11/95	150	ND(200)	500	23	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	1/8/96	790	90	400	170	1.2	0.6	0.6	CEC
	4/4/96	1,100	180	300	320	1.6	1.1	1.2	Pace
	7/10/96	1,200	120	300	470	1.5	0.8	0.8	CEC
	12/3/96	990	220 <sup>1,2</sup>	ND(250)	350	3.3	1.3	1.3	Pace
	3/28/97	440 <sup>2</sup>	ND(50)	ND(250)	190	1.2	0.64	ND(1)	Pace
	6/13/97	1,300	92 <sup>5</sup>	ND(250)	500	5.5	3.4	2.8	Pace
MW-5	9/11/95	90	ND(300)	2,500	3.3	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	4/4/96	ND(50)	180	520	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
	7/10/96	ND(50)	120	1,500	ND(0.4)	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	12/3/96	ND(50)	200 <sup>1,2</sup>	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
	3/28/97	ND(50)	ND(50)	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
	6/13/97	ND(50)	ND(50)	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
MW-6	1/8/96	480	11,000	6,100	15	1.9	9.7	5.2	CEC
	4/4/96	440	6,100	1,200	16	0.97	3.9	3	Pace
	7/10/96	550	8,300	5,500	16	0.9	3	2.7	CEC
	12/3/96	na	na	na	na	na	na	na	
	3/28/97	na	na	na	na	na	na	na	
	6/13/97	na	na	na	na	na	na	na	

Notes:  
see Notes on Page 2

**Table 2**  
**Groundwater Analytical Results**  
**Port of Oakland**  
**2277 Seventh Street, Oakland, California**  
**Page 2 of 2**

Well	Date	Analyte (µg/l)							Lab
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl Benzene	Total Xylenes	
MW-7	9/6/95	ND(50)	ND(300)	800	ND(0.4)	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	1/8/96	ND(50)	410	110	ND(0.4)	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	4/4/96	ND(50)	530	340	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
	7/10/96	80	840	1,700	ND(0.4)	ND(0.3)	ND(0.3)	ND(0.4)	CEC
	12/3/96	ND(50)	280 <sup>1,2</sup>	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
	3/28/97	65 <sup>3</sup>	94 <sup>2</sup>	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace
	6/13/97	ND(50)	100	ND(250)	ND(0.5)	ND(0.5)	ND(0.5)	ND(1)	Pace

Notes:

TPH = total petroleum hydrocarbons; as gasoline (G), diesel (D), and motor oil (MO)

µg/l = micrograms per liter

ND ( ) = not detected at indicated reporting limit

<sup>1</sup> Analyte found in the associated blank as well as in the sample

<sup>2</sup> Hydrocarbons present do not match profile of laboratory standard

<sup>3</sup> High boiling point hydrocarbons are present in sample

<sup>4</sup> Chromatographic pattern matches known laboratory contaminant

<sup>5</sup> Hydrocarbons are present in the requested fuel quantitation range, but do not resemble pattern of any available fuel standard. Carbon range is C8 to C14.

na = not analyzed

Samples collected on 12/3/96, 3/28/97, and 6/13/97 by U&A; all other data from Groundwater Monitoring and Sampling Report by Alisto Engineering Group, dated September 12, 1996.

D&M = D&M Laboratories/CEC = Clayton Env. Consultants, Inc./Pace = Pace Analytical Services, Inc.

**Attachment 1**

**U&A Standard Operating Procedures**

## CHAIN-OF-CUSTODY PROCEDURES

### **Sample Handling**

All soil and water samples will be labeled with the sample number, date, company name, preservative used, and sampler's initials. A chain-of-custody form will then be filled out including the time and date of the sample, the sample number, the number of containers for each sample, the analysis required, and any distinguishing comments or laboratory notifications. The chain-of-custody form will remain with the samples at all times during transportation and storage.

### **Transfer of Custody to Laboratory**

The chain-of-custody will be signed and dated by the sampler when relinquished to the laboratory. The laboratory courier or sample receiver will also sign and date the chain-of-custody.

## GROUNDWATER SAMPLING FROM WELLS

Groundwater samples for chemical analysis will be collected according to the following procedure:

All purging and sampling equipment will be decontaminated prior to use.

Upon arrival at the site, the wells will be located and opened up, to allow for equilibration with the atmosphere. The monitoring well is first checked for floating product with a dual interface probe. Water or liquid-level measurements will be collected, to the nearest one hundredth of a foot (0.01 foot). If a probe is not available, a clear plastic bailer may be used to check for product. The volume of water in the well casing will be calculated and three to five casing volumes of water will be evacuated. The well will be bailed or pumped to remove the correct volume of water. Stabilization parameters, temperature, conductivity and pH, will be monitored. For wells with extremely low flow rates, i.e., less than 0.01 gallon per minute (gpm), the well will be bailed dry and allowed to recover overnight, and then sampled.

Once the well has been purged, samples will be collected with a bailer and transferred to appropriate sampling vials or bottles. Samples will be labeled and placed in a cooler, cooled to 4°C and transported to the analytical laboratory under chain-of-custody. Purge water will be stored on-site pending analytical results, and then properly disposed of.

**Attachment 2**

**U&A Well Purging & Sampling Logs**



## Well Purging &amp; Sampling Log

SITE LOCATION: <u>Sealand</u>	WELL NUMBER: <u>MW-2</u>
DATE(S): <u>6/13/97</u>	WELL TYPE, (MONITORING, EXTRACTION, ETC.): <u>monitoring</u>
PURGING EQUIPMENT: <u>disp bailer</u>	MEASUREMENT REFERENCE DATUM:

## DATA FROM IMMEDIATELY BEFORE AND AFTER DEVELOPMENT:

Depth to water measured from TOC (ft): Before Purging: 9.17      ~~After Purging:~~ After sampling: 13.57

Total purging time (min): \_\_\_\_\_

Depth to sediment in well (ft) Before purging: 15.11      After purging: \_\_\_\_\_  
*bottom of*

	Time Since Purging Started (min)	Time	Cumulative Volume Removed (gal)	PARAMETERS				Other
				(°F) Temp (°C)	pH	(µS/cm) Conductivity (µmhos/cm)	Turbidity (NTUs)	
Initial		<u>1250</u>	<u>1.0</u>	<u>47.5</u>	<u>7.35</u>	<u>7.29 x 1000</u>		
During			<u>2.0</u>	<u>43.2</u>	<u>7.31</u>	<u>7.27 x 1000</u>		
During			<u>3.0</u>	<u>41.1</u>	<u>7.33</u>	<u>7.33 x 1000</u>		
During								
During								
During								
During								
After								

\*CL = clear      CO = cloudy      TU = turbid

## Well Sampling

Sample #: <u>MW2-6-97</u>	Lab: <u>Pace</u>
Container Type: <u>Amber LS/VOAS</u>	Filtered? -Y/N: <u>N</u>
Preservatives: <u>none / HCl</u>	Analysis Requested: <u>TPH-d, mp, g, BTEX</u>
Comments Related to Sample: <u>cloudy grey-brown</u> <u>had to wait for well to recharge</u>	

## Quality Control Samples:

Duplicated Sample Info:	<b>Formulas/Conversions</b> $r$ = well radius in feet $h$ = ht. of water col. in feet vol. of col. = $\pi r^2 h$ $V_2$ casing = 0.163 gal./ft. $V_3$ casing = 0.367 gal./ft. $V_4$ casing = 0.653 gal./ft. $V_{4.5}$ casing = 0.826 gal./ft. $V_6$ casing = 1.47 gal./ft. $V_8$ casing = 2.61 gal./ft.
Blank Sample Info:	
Other Sample Info: <u>well volume = 1.0 gal</u>	



# Well Purging & Sampling Log

SITE LOCATION: <u>Sealand</u>	WELL NUMBER: <u>MW4</u>
DATE(s): <u>6/13/97</u>	WELL TYPE, (MONITORING, EXTRACTION, ETC.): <u>monitoring</u>
PURGING EQUIPMENT: <u>dip bailey</u>	MEASUREMENT REFERENCE DATUM:

DATA FROM IMMEDIATELY BEFORE AND AFTER DEVELOPMENT:

Depth to water measured from TOC (ft): Before Purging: 8.53      { After Purging: \_\_\_\_\_  
 After sampling: 8.48

Total purging time (min): \_\_\_\_\_

Depth to ~~sediment in well~~ bottom (ft) Before purging: 18.63      After purging: \_\_\_\_\_

Time Since Purging Started (min)	Time	Cumulative Volume Removed (gal)	PARAMETERS				Other
			(°F) Temp	pH	(µS/cm) Conductivity	Turbidity (NTUs)	
Initial	1125	1.6	90.3	7.10	1.36 x 1000		
During	1132	3.2	83.4	7.06	1.49 x 1000		
During	1138	4.8	81.7	7.02	1.43 x 1000		
During							
During							
During							
During							
After							

\*CL = clear      CO = cloudy      TU = turbid

Well Sampling

Sample #: <u>MW4-6-97</u>	Lab: <u>Pace</u>
Container Type: <u>Amber LS/Vials</u>	Filtered? -Y/N: <u>N</u>
Preservatives: <u>none/HCl</u>	Analysis Requested: <u>TPH-d, ms, g, BTEX</u>
Comments Related to Sample: <u>cloudy, dark brown</u>	

Quality Control Samples:

Duplicated Sample Info:
Blank Sample Info:
Other Sample Info: <u>well volume = 1.6 gal</u>

Formulas/Conversions  
 r = well radius in feet  
 h = ht. of water col. in feet  
 vol. of col. =  $\pi r^2 h$   
 7.48 gal./ft.<sup>3</sup>  
 V<sub>2"</sub> casing = 0.163 gal./ft.  
 V<sub>3"</sub> casing = 0.367 gal./ft.  
 V<sub>4"</sub> casing = 0.653 gal./ft.  
 V<sub>4.5"</sub> casing = 0.826 gal./ft.  
 V<sub>6"</sub> casing = 1.47 gal./ft.  
 V<sub>8"</sub> casing = 2.61 gal./ft.



## Well Purging &amp; Sampling Log

SITE LOCATION: <i>Sealand</i>	WELL NUMBER: <i>MW05</i>
DATE(S): <i>6/13/97</i>	WELL TYPE, (MONITORING, EXTRACTION, ETC.): <i>monitoring</i>
PURGING EQUIPMENT: <i>disp. bailer</i>	MEASUREMENT REFERENCE DATUM:

## DATA FROM IMMEDIATELY BEFORE AND AFTER DEVELOPMENT:

Depth to water measured from TOC (ft): Before Purging: 6.58 { After Purging: \_\_\_\_\_  
After sampling: 6.85

Total purging time (min): \_\_\_\_\_

Depth to sediment in well (ft) Before purging: 17.61 After purging: \_\_\_\_\_  
*bottom of*

	Time Since Purging Started (min)	Time	Cumulative Volume Removed	PARAMETERS				Other
				°F Temp (°C)	pH	(µS/cm) Conductivity (µmhos/cm)	Turbidity (NTUs)	
Initial	0910		1.8	79.5	8.05	2.31x1000		
During	0930		3.6	74.1	7.9	2.37x1000		
During	0935		5.4	73.0	7.27	2.24x1000		
During								
During								
During								
During								
After								

\*CL = clear CO = cloudy TU = turbid

## Well Sampling

Sample #: <i>MW5-6-97</i>	Lab: <i>Dace</i>
Container Type: <i>amber Ls, VOAS</i>	Filtered? - Y/N: <i>N</i>
Preservatives: <i>none, HCl</i>	Analysis Requested: <i>TPH-g,d, mo STEX</i>
Comments Related to Sample: <i>cloudy, brown</i>	

## Quality Control Samples:

Duplicated Sample Info:
Blank Sample Info:
Other Sample Info: <i>well volume = 1.8 gal</i>

## Formulas/Conversions

r = well radius in feet  
h = ht. of water col. in feet  
vol. of col. =  $\pi r^2 h$   
7.48 gal./ft.<sup>3</sup>  
V<sub>2</sub> casing = 0.163 gal./ft.  
V<sub>3</sub> casing = 0.367 gal./ft.  
V<sub>4</sub> casing = 0.653 gal./ft.  
V<sub>4.5</sub> casing = 0.826 gal./ft.  
V<sub>6</sub> casing = 1.47 gal./ft.  
V<sub>8</sub> casing = 2.61 gal./ft.



## Well Purging &amp; Sampling Log

PAGE 2 OF 4

SITE LOCATION: <u>Sealand</u>	WELL NUMBER: <u>MW7</u>
DATE(S): <u>6/13/97</u>	WELL TYPE, (MONITORING, EXTRACTION, ETC.): <u>monitoring</u>
PURGING EQUIPMENT: <u>disp. bailer</u>	MEASUREMENT REFERENCE DATUM:

## DATA FROM IMMEDIATELY BEFORE AND AFTER DEVELOPMENT:

Depth to water measured from TOC (ft): Before Purging: 8.28 } After Purging: \_\_\_\_\_  
 After sampling: 9.46

Total purging time (min): \_\_\_\_\_

Depth to ~~sediment~~ bottom of in well (ft) Before purging: 18.23 After purging: \_\_\_\_\_

	Time Since Purging Started (min)	Time	Cumulative Volume Removed	PARAMETERS			Other
				(°F) Temp (°F)	pH	(µS/cm) Conductivity (µmhos/cm)	
Initial		1012	1.6	79.9	7.11	2.33 x 1000	
During		1020	3.2	79.3	7.02	2.20 x 1000	
During		1025	4.8	72.0	6.98	2.17 x 1000	
During							
During							
During							
During							
After							

\*CL = clear CO = cloudy TU = turbid

## Well Sampling

Sample #: <u>MW7-6-97</u>	Lab: <u>Pace</u>
Container Type: <u>amber L, VOA</u>	Filtered? -Y/N: <u>N</u>
Preservatives: <u>none, HCl</u>	Analysis Requested: <u>TPE-d, m, g, BTEX</u>
Comments Related to Sample: <u>murky, grey-brown</u>	

## Quality Control Samples:

Duplicated Sample Info:	<b>Formulas/Conversions</b> r = well radius in feet h = ht. of water col. in feet vol. of col. = $\pi r^2 h$ 7.48 gal./ft. <sup>3</sup> $V_{2.0}^{\text{casing}} = 0.163 \text{ gal./ft.}$ $V_{3.0}^{\text{casing}} = 0.367 \text{ gal./ft.}$ $V_{4.0}^{\text{casing}} = 0.653 \text{ gal./ft.}$ $V_{4.5}^{\text{casing}} = 0.826 \text{ gal./ft.}$ $V_{6.0}^{\text{casing}} = 1.47 \text{ gal./ft.}$ $V_{8.0}^{\text{casing}} = 2.61 \text{ gal./ft.}$
Blank Sample Info:	
Other Sample Info: <u>well volume = 1.6</u>	

$$V_{1.0} = 0.6403 \text{ gal./ft}$$

**Attachment 3**

**Laboratory Analytical Reports and  
Chain-of-Custody Form**

# Pace Analytical

Pace Analytical Services, Inc.  
1455 McDowell Blvd. North, Suite D  
Petaluma, CA 94954

Tel: 707-792-1865  
Fax: 707-792-0342

June 25, 1997

Mr. Doug Sheeks  
Uribe & Associates  
Suite 200  
2930 Lakeshore Avenue  
Oakland, CA 94610-3614

RE: Pace Project Number: 708594  
Client Project ID: Port Of Oakland/207-01-10C

Dear Mr. Sheeks:

Enclosed are the results of analyses for sample(s) received by the Laboratory on June 16, 1997. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Ron Chew  
Project Manager

CA ELAP Certificate Number I2245

Enclosures

## REPORT OF LABORATORY ANALYSIS

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# Pace Analytical

Pace Analytical Services, Inc.  
1455 McDowell Blvd. North, Suite D  
Petaluma, CA 94954

Tel: 707-792-1865  
Fax: 707-792-0342

DATE: 06/25/97  
PAGE: 1

Uribe & Associates  
Suite 200  
2930 Lakeshore Avenue  
Oakland, CA 94610-3614

Pace Project Number: 708594  
Client Project ID: Port Of Oakland/207-01-10C

Attn: Mr. Doug Sheeks  
Phone: (510)832-2233

Solid results are reported on a wet weight basis

Pace Sample No: 701002719 Date Collected: 06/13/97 Matrix: Water  
Client Sample ID: MW5-6-97 Date Received: 06/16/97

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
------------	---------	-------	-----	----------	---------	------	-----------

## GC -- Volatiles

### GAS/BTEX, Water

Method: EPA 8015M/8020M

Prep Method: EPA 8015M/8020M

Gasoline	ND	ug/L	50	06/23/97	AMH		
Benzene	ND	ug/L	0.5	06/23/97	AMH	71-43-2	
Toluene	ND	ug/L	0.5	06/23/97	AMH	108-88-3	
Ethylbenzene	ND	ug/L	0.5	06/23/97	AMH	100-41-4	
Xylene (Total)	ND	ug/L	1	06/23/97	AMH	1330-20-7	
a,a,a-Trifluorotoluene (S)	113	%		06/23/97	AMH	2164-17-2	
4-Bromofluorobenzene (S)	97	%		06/23/97	AMH	460-00-4	

## GC -- Semi-VOA

### TPH by 8015M w/ silica gel

Method: EPA 8015M w/ SG

Prep Method: EPA 3520

Diesel Fuel	ND	mg/L	0.05	06/21/97	JMH	11-84-7	
Motor Oil	ND	mg/L	0.25	06/21/97	JMH		
n-Pentacosane (S)	103	%		06/21/97	JMH	629-99-2	
Date Extracted				06/19/97			

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Fax: 707-792-0342

DATE: 06/25/97

PAGE: 2

Pace Project Number: 708594

Client Project ID: Port Of Oakland/207-01-10C

Pace Sample No: 701002727 Date Collected: 06/13/97 Matrix: Water  
Client Sample ID: MW7-6-97 Date Received: 06/16/97

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC -- Volatiles							
GAS/BTEX, Water							
		Method: EPA 8015M/8020M			Prep Method: EPA 8015M/8020M		
Gasoline	ND	ug/L	50	06/23/97	AMH		
Benzene	ND	ug/L	0.5	06/23/97	AMH	71-43-2	
Toluene	ND	ug/L	0.5	06/23/97	AMH	108-88-3	
Ethylbenzene	ND	ug/L	0.5	06/23/97	AMH	100-41-4	
Xylene (Total)	ND	ug/L	1	06/23/97	AMH	1330-20-7	
a, a, a-Trifluorotoluene (S)	103	%		06/23/97	AMH	2164-17-2	
4-Bromofluorobenzene (S)	105	%		06/23/97	AMH	460-00-4	
GC -- Semi-VQA							
TPH by 8015M w/ silica gel							
		Method: EPA 8015M w/ SG			Prep Method: EPA 3520		
Diesel Fuel	0.10	mg/L	0.05	06/21/97	JMH	11-84-7	
Motor Oil	ND	mg/L	0.25	06/21/97	JMH		
n-Pentacosane (S)	88	%		06/21/97	JMH	629-99-2	
Date Extracted				06/19/97			

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DATE: 06/25/97  
PAGE: 3

Pace Project Number: 708594  
Client Project ID: Port Of Oakland/207 01-10C

Pace Sample No: 701002735 Date Collected: 06/13/97 Matrix: Water  
Client Sample ID: MW4-6-97 Date Received: 06/16/97

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
GC -- Volatiles							
GAS/BTEX, Water							
Method: EPA 8015M/8020M				Prep Method: EPA 8015M/8020M			
Gasoline	1300	ug/L	100	06/24/97	AMH		
Benzene	500	ug/L	1	06/24/97	AMH	71-43-2	
Toluene	5.5	ug/L	1	06/24/97	AMH	108-88-3	
Ethylbenzene	3.4	ug/L	1	06/24/97	AMH	100-41-4	
Xylene (Total)	2.8	ug/L	2	06/24/97	AMH	1330-20-7	
a,a,a-Trifluorotoluene (S)	116	%		06/24/97	AMH	2164-17-2	
4-Bromofluorobenzene (S)	102	%		06/24/97	AMH	460-00-4	
GC -- Semi-VOA							
TPH by 8015M w/ silica gel							
Method: EPA 8015M w/ SG				Prep Method: EPA 3520			
Diesel Fuel	0.092	mg/L	0.05	06/21/97	JMH	11-84-7	1
Motor Oil	ND	mg/L	0.25	06/21/97	JMH		
n-Pentacosane (S)	91	%		06/21/97	JMH	629-99-2	
Date Extracted				06/19/97			

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Fax: 707-792-0342

DATE: 06/25/97

PAGE: 4

Pace Project Number: 708594

Client Project ID: Port Of Oakland/207-01-10C

Pace Sample No: 701002743 Date Collected: 06/13/97 Matrix: Water  
Client Sample ID: MW2-6-97 Date Received: 06/16/97

Parameters	Results	Units	PRL	Analyzed	Analyst	CAS#	Footnotes
------------	---------	-------	-----	----------	---------	------	-----------

GC -- Volatiles

GAS/BTEX, Water

Method: EPA 8015M/8020M

Prep Method: EPA 8015M/8020M

Gasoline	51	ug/L	50	06/23/97	AMH		
Benzene	ND	ug/L	0.5	06/23/97	AMH	71-43-2	
Toluene	ND	ug/L	0.5	06/23/97	AMH	108-88-3	
Ethylbenzene	ND	ug/L	0.5	06/23/97	AMH	100-41-4	
Xylene (Total)	ND	ug/L	1	06/23/97	AMH	1330-20-7	
a,a,a-Trifluorotoluene (S)	105	%		06/23/97	AMH	2164-17-2	
4-Bromofluorobenzene (S)	97	%		06/23/97	AMH	460-00-4	

GC -- Semi-VOA

TPH by 8015M w/ silica gel

Method: EPA 8015M w/ SG

Prep Method: EPA 3520

Diesel Fuel	ND	mg/L	0.05	06/21/97	JMH	11-84-7	
Motor Oil	ND	mg/L	0.25	06/21/97	JMH		
n-Pentacosane (S)	92	%		06/21/97	JMH	629-99-2	
Date Extracted				06/19/97			

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Fax: 707-792-0342

DATE: 06/25/97

PAGE: 5

Pace Project Number: 708594

Client Project ID: Port Of Oakland/207-01-10C

## PARAMETER FOOTNOTES

ND Not Detected  
NC Not Calculable  
PRL Pace Reporting Limit  
(S) Surrogate

[1] Hydrocarbons are present in the requested fuel quantitation range but do not resemble pattern of any available fuel standard. Carbon range is C8 - C14.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, Inc.

# Pace Analytical

Pace Analytical Services, Inc.  
 1455 McDowell Blvd. North, Suite D  
 Petaluma, CA 94954

Tel: 707-792-1865  
 Fax: 707-792-0342

## QUALITY CONTROL DATA

DATE: 06/25/97  
 PAGE: 6

Uribe & Associates  
 Suite 200  
 2930 Lakeshore Avenue  
 Oakland, CA 94610-3614

Pace Project Number: 708594  
 Client Project ID: Port Of Oakland/207-01-10C

Attn: Mr. Doug Sheeks  
 Phone: (510)832-2233

QC Batch ID: 24515                      QC Batch Method: EPA 3520  
 Analysis Method: EPA 8015M w/ SG      Analysis Description: TPH by 8015M w/ silica gel  
 Associated Pace Samples:              701002719    701002727    701002735    701002743

METHOD BLANK: 701005373  
 Associated Pace Samples:

Parameter	Units	701002719	701002727	701002735	701002743
			Method Blank Result	PRL	Footnotes
Diesel Fuel	mg/L		ND	0.05	
Motor Oil	mg/L		ND	0.25	
n-Pentacosane (S)	%		87		

LABORATORY CONTROL SAMPLE & LCSD: 701005381    701005399

Parameter	Units	701005381		701005399		Spike Dup		Footnotes
		Spike Conc.	LCS Result	Spike % Rec	LCSD Result	% Rec	RPD	
Diesel Fuel	mg/L	1.0	0.5258	52.6	0.4362	43.6	19	
n-Pentacosane (S)				90		86		

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## QUALITY CONTROL DATA

Tel: 707-792-1865  
 Fax: 707-792-0342  
 DATE: 06/25/97  
 PAGE: 7

Uribe & Associates  
 Suite 200  
 2930 Lakeshore Avenue  
 Oakland, CA 94610-3614

Pace Project Number: 708594  
 Client Project ID: Port Of Oakland/207-01-10C

Attn: Mr. Doug Sheeks  
 Phone: (510)832-2233

QC Batch ID: 24538                      QC Batch Method: EPA 8015M/8020M  
 Analysis Method: EPA 8015M/8020M      Analysis Description: GAS/BTEX, Water  
 Associated Pace Samples:      701002719      701002727      701002735      701002743

### METHOD BLANK: 701007254

Associated Pace Samples:

Parameter	Units	Method Blank		Footnotes
		Result	PRL	
Gasoline	ug/L	ND	50	
Benzene	ug/L	ND	0.5	
Toluene	ug/L	ND	0.5	
Ethylbenzene	ug/L	ND	0.5	
Xylene (Total)	ug/L	ND	1	
a,a,a-Trifluorotoluene (S)	µ	103		
4-Bromofluorobenzene (S)	µ	94		

### MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 701006306 701006314

Parameter	Units	Spike		Matrix Spike Result	Matrix Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
		Conc.	701002669						
Gasoline	ug/L	24.26	1000	945.5	92.1	887.7	86.3	7	

### LABORATORY CONTROL SAMPLE: 701006280

Parameter	Units	Spike		Footnotes
		Conc.	% Rec	
Gasoline	ug/L	1000	95.1	

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Petaluma, CA 94954

Tel: 707-792-1865

DATE: 06/25/97 Fax: 707-792-0342

PAGE: 8

Pace Project Number: 708594

Client Project ID: Port Of Oakland/207-01-10C

## QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

ND Not Detected  
NC Not Calculable  
PRL Pace Reporting Limit  
RPD Relative Percent Difference  
(S) Surrogate

## REPORT OF LABORATORY ANALYSIS

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Data File: /chem/70gce04.i/062097.b/fidr0002.d

Date : 20-JUN-1997 16:29

Client ID: SST02500

Lab Sample ID: SST02500D

Column phase: J&W DB-1

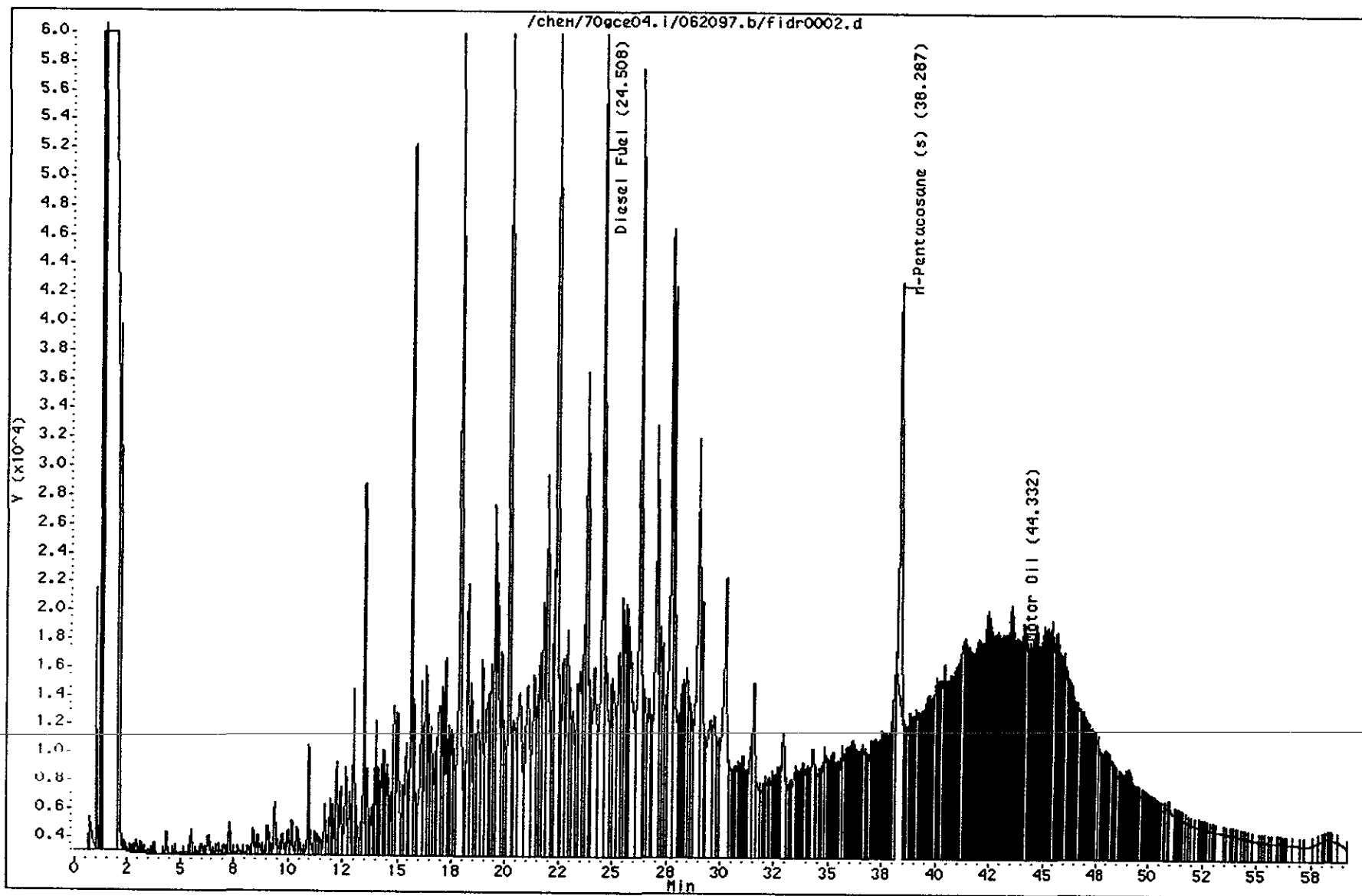
Page 1

Instrument: 70gce04.i

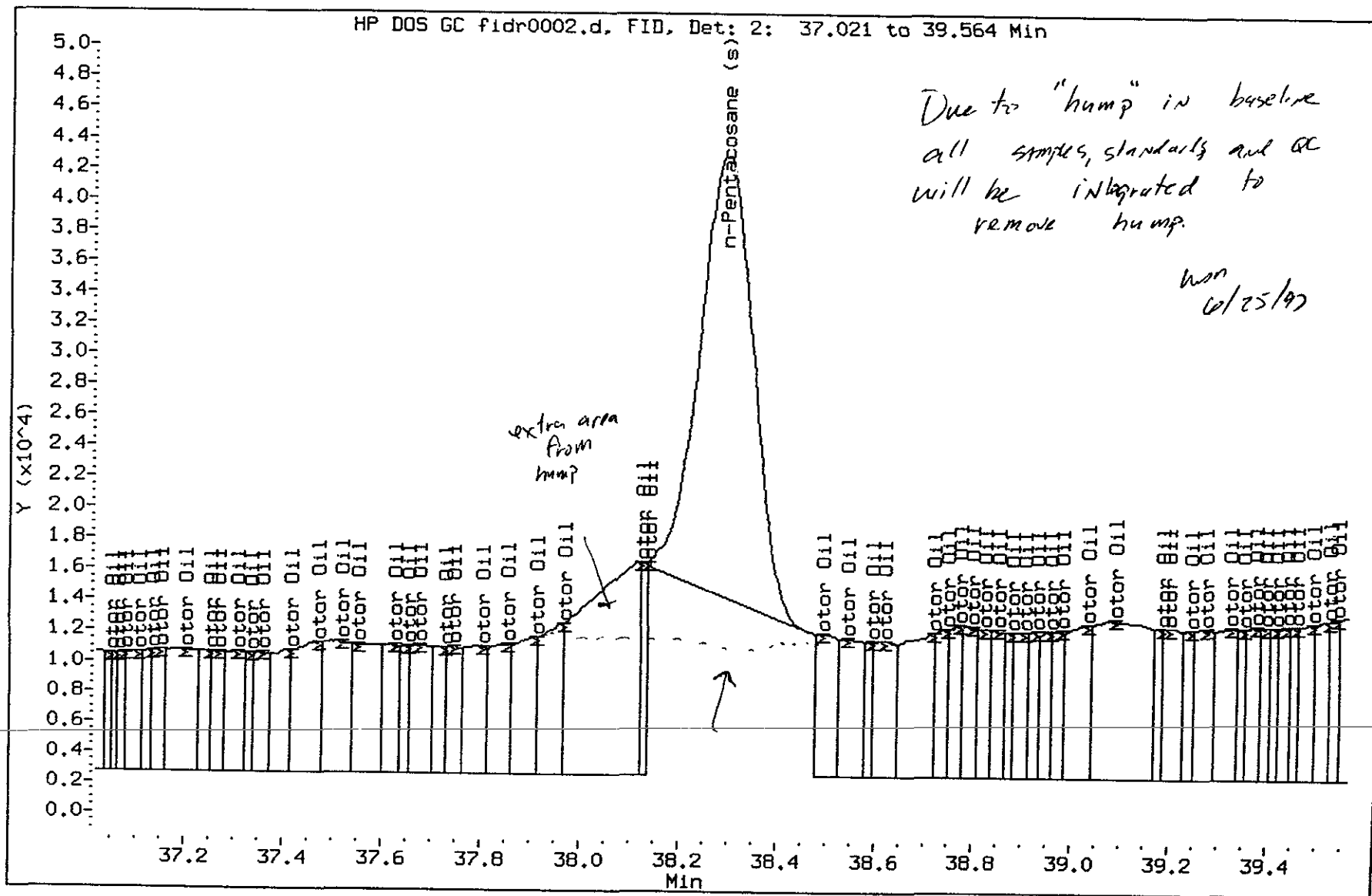
Misc Info: SST02500D,,,,,Dcal-97D

Operator: HSN

Column diameter: 0.53



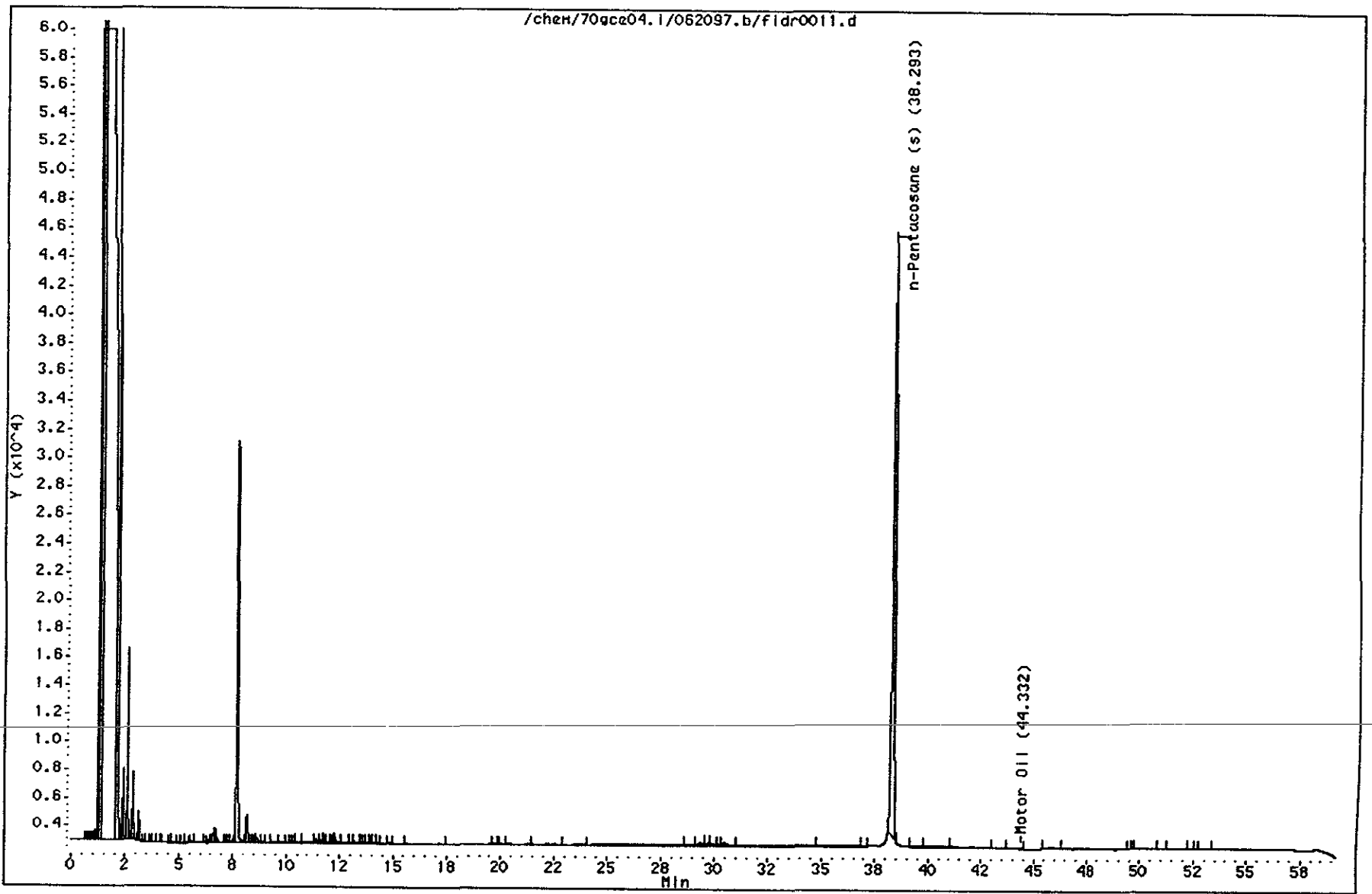
Data File: /chem/70gce04.i/062097.b/fidr0002.d  
Injection Date: 20-JUN-97 16:29  
Instrument: 70gce04.i  
Client Sample ID: SST02500



Data File: /chem/70gce04.i/062097.b/fidr0011.d  
Date : 21-JUN-1997 02:56  
Client ID: SBLKF1  
Lab Sample ID: 701005373  
Volume Injected (uL): 1.0  
Column phase: J&W DB-1

BLMIL

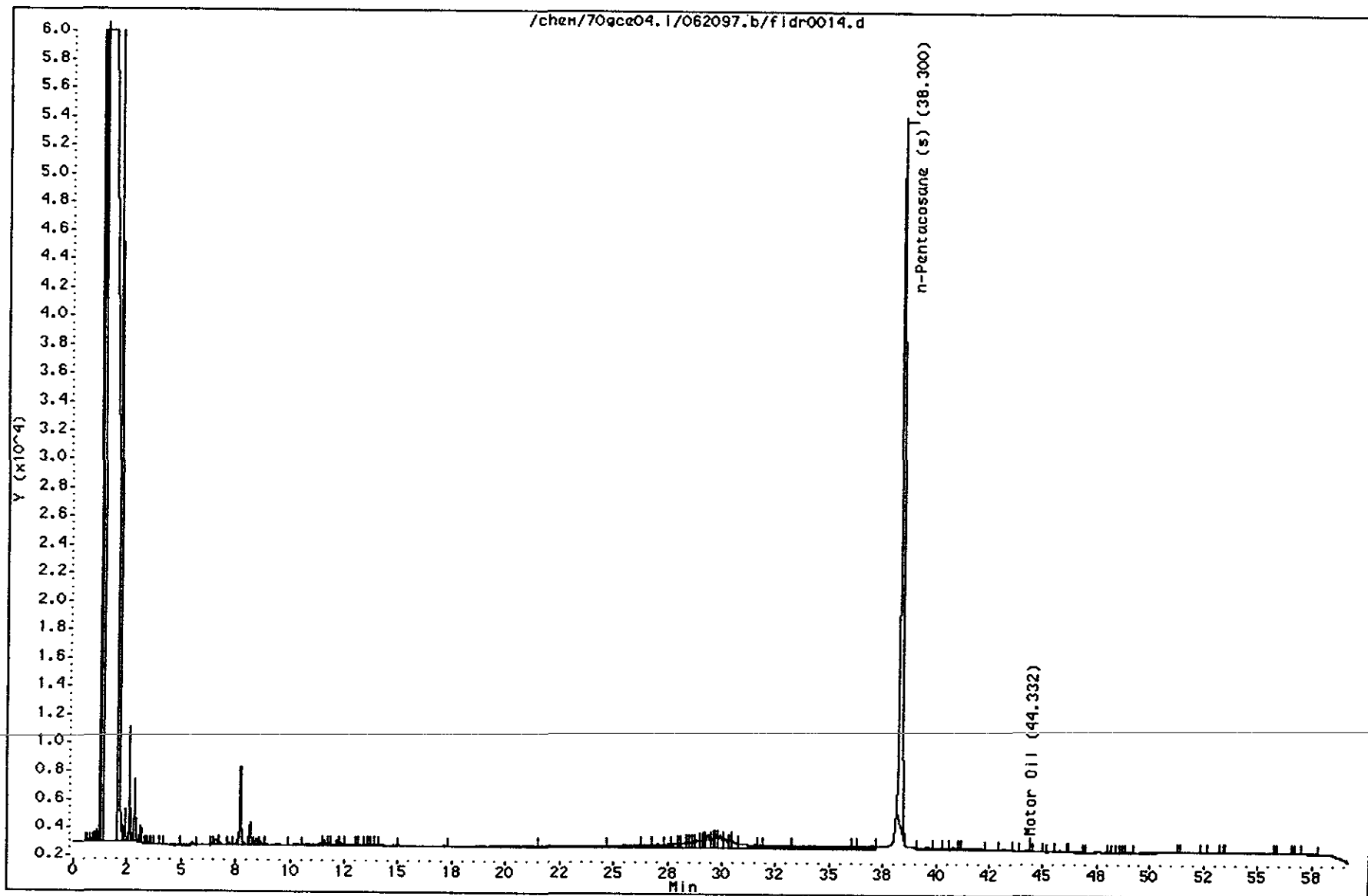
Instrument: 70gce04.i  
Misc Info: 701005373,1,24515,,  
Operator: JMH  
Column diameter: 0.53





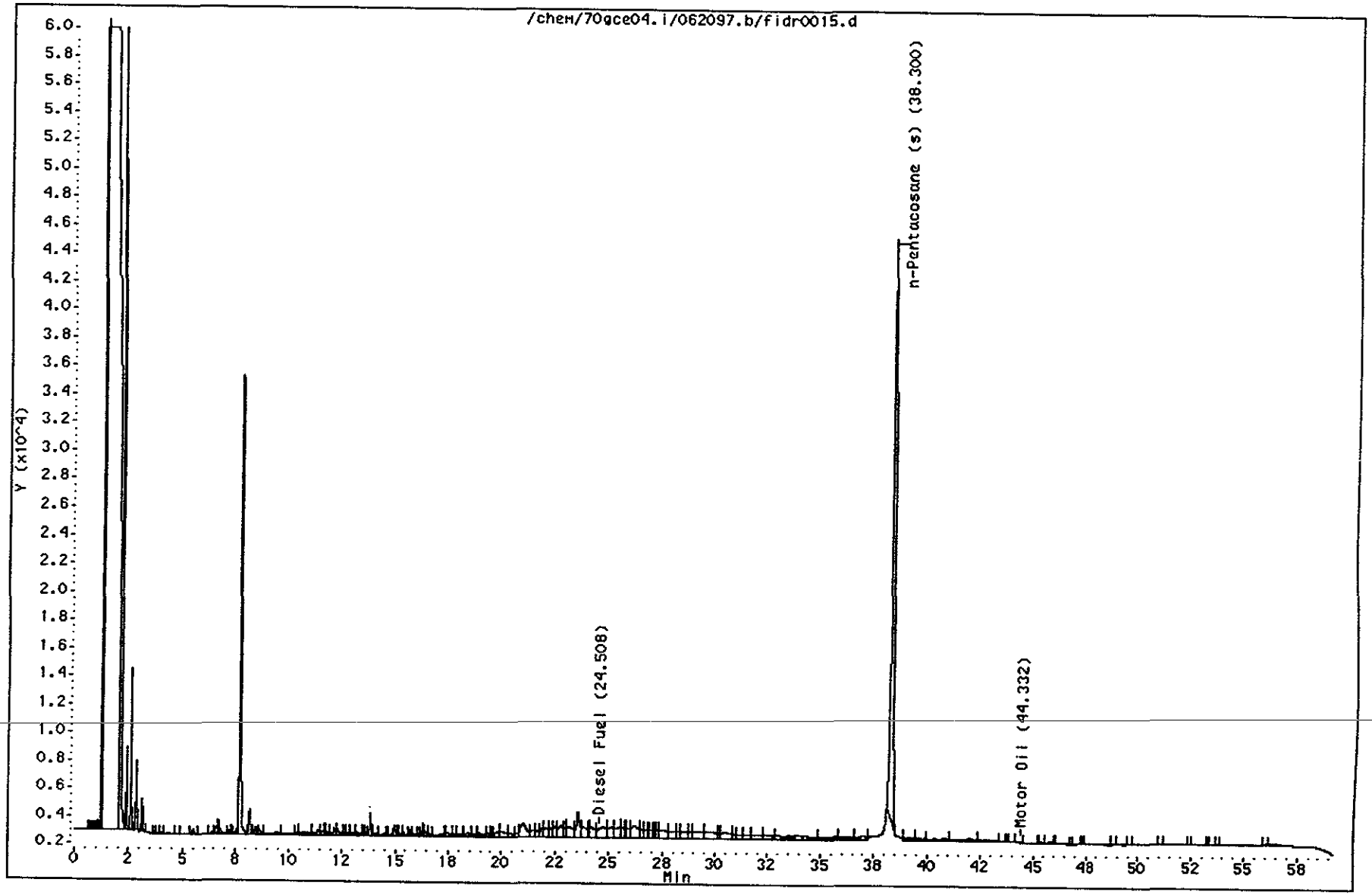
Data File: /chem/70gce04.1/062097.b/fidr0014.d  
Date : 21-JUN-1997 06:16  
Client ID: M45-6-97  
Lab Sample ID: 701002719  
Volume Injected (uL): 1.0  
Column phase: J&W DB-1

Instrument: 70gce04.1  
Misc Info: 701002719,1,24515,,,  
Operator: JMH  
Column diameter: 0.53



Data File: /chen/70gce04.i/062097.b/fidr0015.d  
Date : 21-JUN-1997 07:22  
Client ID: M47-6-97  
Lab Sample ID: 701002727  
Volume Injected (uL): 1.0  
Column phase: J&W DB-1

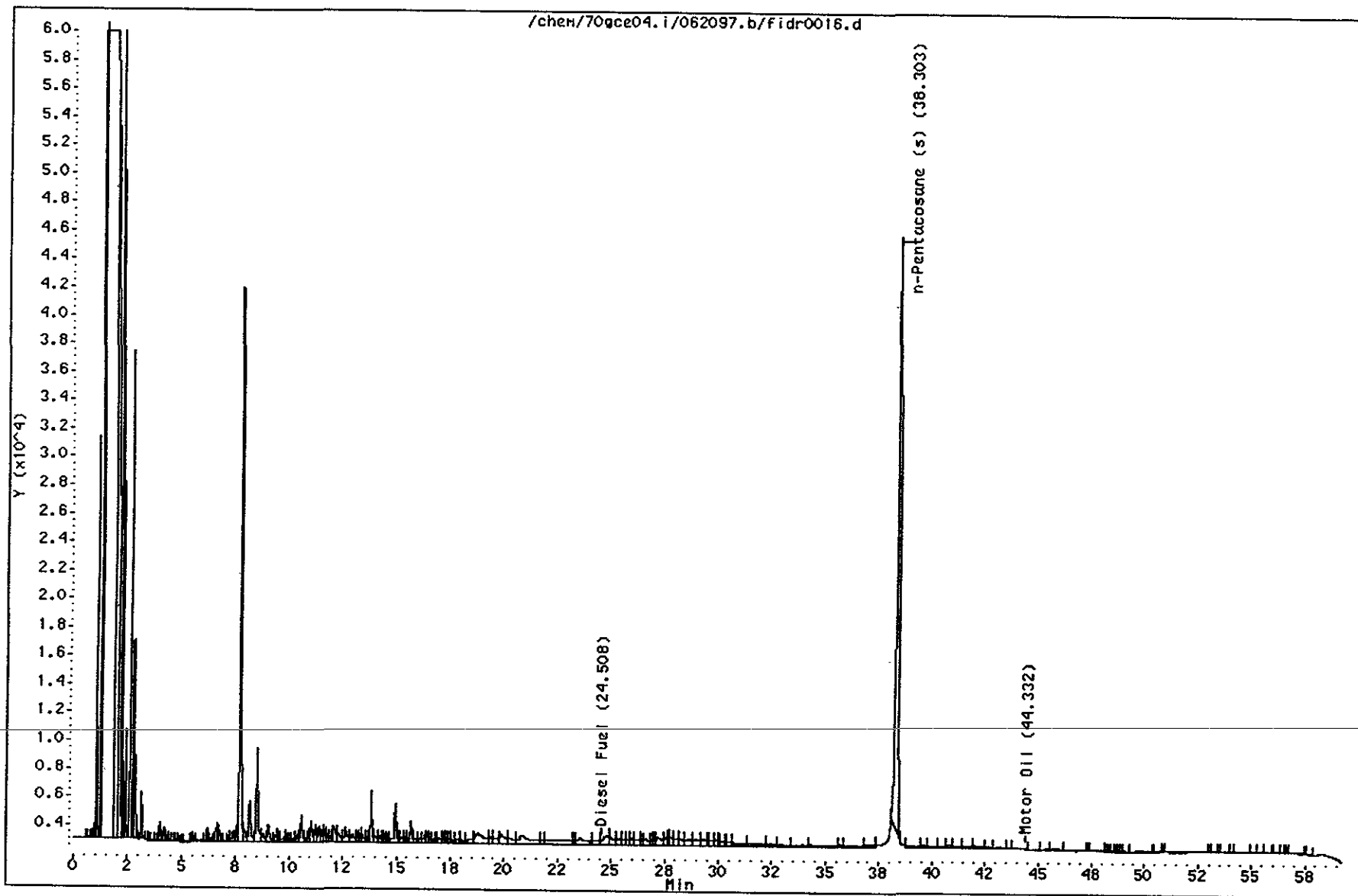
Instrument: 70gce04.i  
Misc Info: 701002727,1,24515,,  
Operator: JMH  
Column diameter: 0.53



Data File: /chem/70gce04.i/062097.b/fidr0016.d  
Date : 21-JUN-1997 08:29  
Client ID: MW4-6-97  
Lab Sample ID: 701002735  
Volume Injected (uL): 1.0  
Column phase: J&W DB-1

Page 1

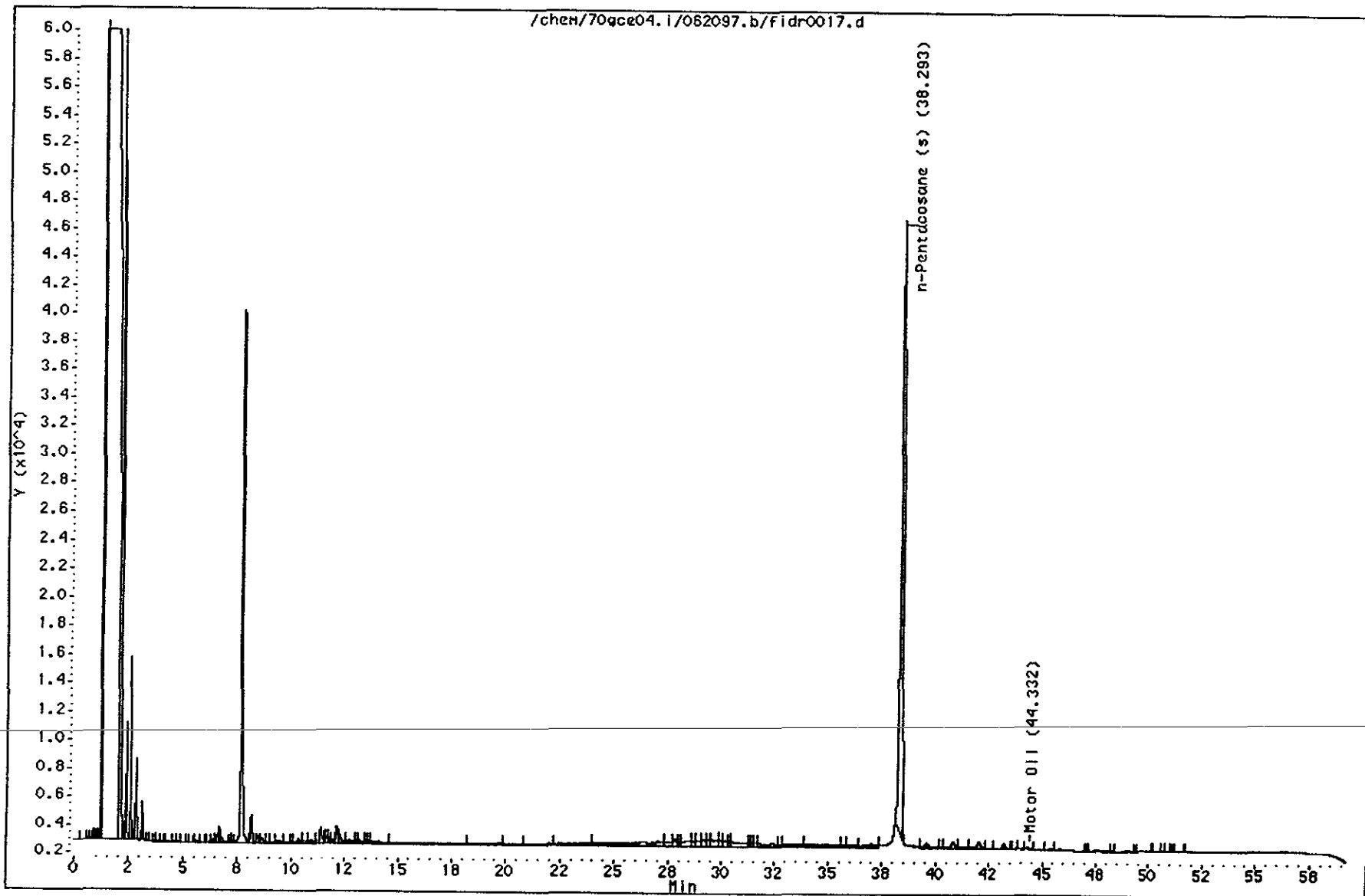
Instrument: 70gce04.i  
Misc Info: 701002735,1,24515,,  
Operator: JMH  
Column diameter: 0.53



Data File: /chem/70gce04.i/062097.b/fidr0017.d  
Date : 21-JUN-1997 09:36  
Client ID: M42-6-97  
Lab Sample ID: 701002743  
Volume Injected (uL): 1.0  
Column phase: J&W DB-1

Page 1

Instrument: 70gce04.i  
Misc Info: 701002743,1,24515,,  
Operator: JMH  
Column diameter: 0.53





**CHAIN-OF-CUSTODY RECORD**

Project No: 207-01 10C Project Name: Port of Oakland

708594

**REPORT RESULTS TO**  
Name: Douglas Sheeks  
Company: URIBE & ASSOCIATES  
Mailing Address: 2930 LAKESHORE AVENUE, SUITE 200  
City, State, Zip: OAKLAND, CA 94610-3614  
Telephone No.: 510-832-2233 Telefax No: 510-832-2237

**SEND INVOICE TO**  
Purchase Order Number: 202386  
Name: \_\_\_\_\_  
Company: Port of Oakland Dept: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_

Turn-Around Time:  24 hr  48 hr  72 hr  
 5 day  10 day (Standard)  
Rush Charges Authorized?  Yes  No  
Phone Results  Fax Results

Special Instructions:  
Do silica gel clean up for TPH-d

No.	Date	Time	Matrix/Medium	Sample Identification Number
<u>1</u>	<u>6/13/97</u>	<u>0935</u>	<u>water</u>	<u>MW5-6-97</u>
<u>2</u>	<u>↓</u>	<u>1025</u>	<u>↓</u>	<u>MW7-6-97</u>
<u>3</u>	<u>↓</u>	<u>1138</u>	<u>↓</u>	<u>MW4-6-97</u>
<u>4</u>	<u>↓</u>	<u>1250</u>	<u>↓</u>	<u>MW2-6-97</u>

# OF CONTAINERS	ANALYSES REQUESTED				Remarks
	TPH-g	BTEX	TPH-d	TPH-MO	
<u>4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>701 602 719</u>
<u>5</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>701 602 727</u>
<u>4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>701 002 735</u>
<u>5</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>701 002 743</u>

**CHAIN OF CUSTODY**  
Collected by: Nicole Peirce (Print)  
Relinquished by: Nicole Peirce Date: 6/16/97 Time: 14:00  
Relinquished by: John Jackson Date: 6/16/97 Time: 16:00

Collector's Signature: Nicole Peirce  
Received by: [Signature] Date: 6/16/97 Time: 14:00  
Received by: [Signature] Date: 6/16/97 Time: 16:00

Method of Shipment: \_\_\_\_\_  
COOLER CUSTODY SEALS INTACT  NOT INTACT  NA

Sample Condition Upon Receipt:  Acceptable  Other (explain)