PORT OF OAKLAND

May 16, 1997

Mr. Barney M. Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: **Transmittal of Quarterly Groundwater Monitoring Report**
Seabreeze Yacht Center- 280 Sixth Avenue, Oakland

Dear Mr. Chan:

Enclosed please find Baseline Environmental Consulting's "Quarterly Groundwater Monitoring Report" dated May 14, 1997. This report documents the results of sampling monitoring wells PW-2, MW-SB2, MW-SB3, MW-SB4 and MW-SB5 in March 1997 for selected metals (lead and copper) and total extractable hydrocarbons (diesel, bunker C and motor oil). Previous quarterly monitoring was conducted in July, September and December 1996.

We recommend conducting one more round of quarterly monitoring (in June 1997) for diesel in each monitoring well. If you have any questions, please contact me at 272-1467.

Sincerely,

Diane Heinze

Diane Heinze, P.E.
Associate Environmental Scientist

enclosure: March 1997 Quarterly Monitoring Report dated May 14, 1997

cc w/ encls: Sum Arigala, RWQCB

cc w/out encls: Rhodora Del Rosario, Baseline Environmental
Jonathon Redding, Fitzgerald, Abbott & Beardsley
Neil Werner
Mark O'Brien
Michele Heffes

BASELINE
ENVIRONMENTAL CONSULTING

14 May 1997
S9171-C1

Ms. Diane Heinze
Port of Oakland
Environmental Department
530 Water Street
Oakland, California 94607

Subject: Quarterly Groundwater Monitoring Report, March 1997, Former Seabreeze Yacht Center, Inc. Site, 280 6th Avenue, Oakland, California

Dear Ms. Heinze:

This report documents the groundwater sampling activities performed on 12 and 14 March 1997 at the former Seabreeze Yacht Center, Inc. Site (Site), located in Oakland (Figure 1). The groundwater monitoring was conducted in accordance with the 7 June 1996 Port of Oakland (Port) letter to the Alameda County Health Care Services Agency, Department of Environmental Health (County). The groundwater monitoring network includes monitoring wells PW-2, MW-SB2, MW-SB3, MW-SB4, and MW-SB5 (Figure 2).

FIELD ACTIVITIES, MARCH 1997

On 12 March 1997, the presence of free product was checked and water levels were measured in the monitoring network wells using a dual-interface probe. Water levels were measured and recorded to the nearest one-hundredth of a foot. The dual-interface probe was decontaminated after each use by washing in a trisodium phosphate (TSP) solution and rinsing with deionized water. A sheen or free product was not observed in any of the wells.

On 12 March 1997, each monitoring well was purged of approximately three to four well casing volumes except for monitoring well PW-2. The recharge rate in monitoring well PW-2 was too slow to allow the removal of three well volumes; therefore, the well was pumped dry to within one foot from the bottom of the casing. Less than two well volumes were purged from the well. The other wells (MW-SB2, MW-SB3, MW-SB4, and MW-SB5)were slowly purged using a peristaltic pump with new, disposable polyethylene tubing lowered inside the wells after water level measurements were obtained (the portion of tubing attached to the pump was of silicone; the remaining sections of the tubing were of polyethylene). Electrical conductivity, pH, and temperature parameters of the purge water were monitored during purging until stable readings were observed. Dissolved oxygen readings of the groundwater were collected prior to sample collection.

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Emeryville Petaluma San Francisco

The water levels in all the monitoring wells did not recover to 80 percent of their original water levels on 12 March, except in wells MW-SB4 and MW-SB5. Therefore, groundwater samples were collected (14 March 1997) after sufficient water was available in all the wells. Groundwater samples were collected using new disposable polyethylene bailers. The groundwater samples were placed in sample bottles; the sample bottles were labeled and stored in a cooler containing blue ice.

The groundwater samples were submitted under chain-of-custody protocol to Pace Analytical of Petaluma and were analyzed for total lead, total copper, and total extractable hydrocarbons (TEH) as diesel, motor oil, and Bunker C. The samples were filtered by the laboratory then preserved before being analyzed for lead and copper. Prior to the TEH analysis, the samples were subjected to a silica gel cleanup (EPA Method 3630). The groundwater sampling forms, documenting sampling activities, are included in Attachment A and the chain-of-custody form is included in Attachment B.

One drum, containing purge and decontamination water, was generated from the March 1997 sampling activities. The drum was labeled and stored on-site for future off-site disposal.

ANALYTICAL RESULTS

The metals and TEH analytical results are summarized in Table 1 and the laboratory report is presented in Attachment B. A quality control review of the laboratory report was conducted by BASELINE; the corresponding quality control checklist is provided in Attachment C. In summary, the samples were analyzed within an appropriate time frame, the field and laboratory quality control results were reported within laboratory specified recovery limits, and the analytical results for the duplicate groundwater sample (MW-SB5A) were consistent with the original sample results (MW-SB5).

Lead was identified in the samples from monitoring wells PW-2, MW-SB2, and MW-SB4 (up to 0.00519 mg/L); the samples from MW-SB3 and MW-SB5 did not contain lead above the laboratory reporting limit of 0.003 mg/L. The samples from monitoring wells MW-SB3 and MW-SB5 contained copper at 0.00529 mg/L and 0.00318 mg/L, respectively. None of the other samples contained copper above the laboratory reporting limit of 0.003 mg/L.

Diesel was identified in the samples collected from monitoring wells MW-SB2, MW-SB3, MW-SB5, and MW-SB5A (duplicate of MW-SB5) at concentrations up to 0.29 mg/L. However, the laboratory report noted that the chromatographic pattern of groundwater sample MW-SB3 matched that of a known laboratory contaminant. The laboratory indicated that the laboratory contaminant may be due to contamination of the silica gel used to cleanup the sample prior to analysis; therefore, the reported diesel concentration from this sample (0.085 mg/L) may represent a false positive result for this sampling event. The laboratory confirmed that the other samples which contained reportable diesel concentrations (MW-SB-2, MW-SB5, and MW-SB5A) were not affected by the laboratory contaminant.

Diesel was not reported in the samples collected from wells PW-2 and MW-SB4 above the laboratory reporting limit of 0.05 mg/L. The samples from all the wells did not contain Bunker C or motor oil above the laboratory reporting limits of 0.5 mg/L and 0.25 mg/L, respectively. Are these dl acceptable?

GROUNDWATER FLOW DIRECTION

Recently collected and historic groundwater elevation data are summarized in Table 2. The groundwater elevation data collected on 12 March 1997 were used to develop groundwater elevation contours (Figure 2). The calculated groundwater flow direction is toward the southeast (S80E) with a gradient of 0.01 foot/foot.

CONCLUSIONS AND RECOMMENDATIONS

The groundwater monitoring activities performed in March 1997 constitutes the fourth quarterly event conducted at the site starting June 1996 and completes the groundwater monitoring scope, identified in the Port of Oakland letter to the County, dated 7 June 1996. The purpose of the letter was to document the results of the 6 June 1996 meeting between the Port and the County regarding future activities at the site.

The diesel concentration reported in groundwater sample MW-SB3 may represent a false positive result. In addition, as discussed in the December 1996 Quarterly Groundwater Monitoring Report for the site, dated 22 January 1997, the diesel concentrations reported in all the monitoring wells for the December 1996 monitoring event may have represented false positive results since the corresponding laboratory method blank also contained reportable diesel concentrations.

Therefore, it is recommended that one additional groundwater monitoring event be conducted at the site for monitoring wells PW-2, MW-SB2, MW-SB3, MW-SB4, and MW-SB5. The groundwater samples collected from these wells should be subjected to a silica gel cleanup and then analyzed for diesel.

Should you have any questions, or need further information, please contact us at your convenience.

Sincerely,

Yane Nordhav
Principal
Reg. Geologist No. 4009

Rhodora Del Rosario
Civil Engineer

S9171-C1.497-5/14/97

TABLE 1
ANALYTICAL RESULTS
Seabreeze Yacht Center, Oakland, California
(mg/L)

Sample ID	Sample Date	Metals[1]		Total Extractable Hydrocarbons[2]		
		Lead	Copper	Diesel	Bunker C	Motor Oil
PW-2	2/2/95	**0.0043**	--	--	--	--
	3/6/95	--	--	**1.7**[3,4]	**4.4**[3,4]	**1.1**[3,4]
	7/1/96	<0.003	<0.01	<0.049	<0.3	--
	9/16/96	<0.003[10]	<0.005[11]	<0.05	<0.5	<0.25
	12/11/96	**0.0101**[10]	<0.003[11]	**0.11**[13]	<0.5	<0.25
	03/14/97	**0.00401**[10]	<0.003[11]	<0.05	<0.5	<0.25
MW-SB2	4/9/91	<0.06[7]	<0.02[8]	--	--	--
	4/19/91	<0.07	**0.0481**	--	--	--
	1/10/94	<0.10[7]	<0.02[8]	--	--	--
	12/26/94	<0.0048[8]	**0.014**[8]	--	--	--
	3/6/95	--	--	**16.0**[3,4]	**28.0**[3,4]	**4.9**[3,4]
	7/1/96	<0.003	**0.055**	<0.05	<0.3	--
	9/16/96[9]	<0.003[10]	<0.005[11]	<0.05	<0.5	<0.25
	12/11/96	**0.00855**[10]	**0.00354**[11]	**0.16**[13]	<0.5	<0.25
	3/14/97	**0.00314**[10]	<0.003[11]	**0.061**	<0.5	<0.25
MW-SB2A	3/6/95	--	--	**18.0**[3,4,5]	**33.0**[3,4,5]	<25.0[3,4,5]
	7/1/96	<0.003	**0.065**	**0.17**[6]	<0.3[4]	--
	9/16/96	<0.003[10]	<0.005[11]	**0.17**	<0.5[4]	<0.25
MW-SB3	3/6/95	--	--	**4.5**[3,4]	**5.8**[3,4]	**1.5**[3,4]
	7/1/96	**0.0036**	<0.01	<0.049	<0.3	--
	9/16/96	<0.003[10]	<0.005[11]	<0.05[3]	<0.5	**0.28**[3]
	12/11/96	<0.003[10]	<0.003[11]	**0.19**[13]	<0.5	<0.25
	3/14/97	<0.003[10]	**0.00529**[11]	**0.085**[14]	<0.5	<0.25
MW-SB4	3/3/95	--	--	**4.5**[3]	**3.0**[3]	**0.66**[3]
	7/1/96	**0.014**	**0.013**	<0.049	<0.3	--
	9/16/96	<0.003[10]	<0.005[11]	<0.05	<0.5	<0.25
	12/11/96	**0.00465**[10]	**0.00674**[11]	**0.12**[13]	<0.5	<0.25
	3/14/97	**0.00519**[10]	<0.003[11]	<0.05	<0.5	<0.25
MW-SB5	3/6/95	--	--	**15.0**[3,4]	**34.0**[3,4]	**8.1**[3,4]
	7/1/96	**0.0031**	**0.012**	<0.049	<0.3	--
	9/16/96	<0.003[10]	<0.005[11]	**0.14**[3,12]	<0.5	<0.25
	12/11/96	**0.00344**[10]	<0.003[11]	**0.16**[13]	<0.5	<0.25
	3/14/97	<0.003[10]	**0.00318**[11]	**0.29**	<0.5	<0.25
MW-SB5A	3/6/95	--	--	**15.0**[3,4,5]	**31.0**[3,4,5]	**6.9**[3,4,5]
	12/11/96	<0.003[10]	<0.003[11]	**0.081**[13]	<0.5	<0.25
	3/14/97	<0.003[10]	<0.003[11]	**0.22**	<0.5	<0.25

Table 1, *continued*

Notes: <x.x = analyte not identified above laboratory reporting limit of x.x.
x.x = concentrations reported at or above laboratory reporting limit.
— = no analysis performed.
MW-SB2A = duplicate sample of MW-SB2.
MW-SB5A = duplicate sample of MW-SB5.
Refer to Figure 2 for well locations.
Laboratory reports for the March 1997 sampling event are included in Attachment B.

[1] Analytical Method EPA 6010A, unless otherwise noted.
[2] Analytical Method California DOHS, LUFT Manual (EPA 8015M). Samples were subjected to silica gel cleanup (EPA Method 3630) prior to analysis, unless otherwise noted.
[3] Sample chromatogram does not resemble hydrocarbon standard.
[4] Samples were not subjected to silica gel cleanup prior to analysis.
[5] Duplicate sample centrifuged prior to TEH analyses.
[6] Sample exhibited fuel pattern which did not resemble standard.
[7] Analyzed using EPA Method 7420.
[8] Analyzed using EPA Method 7210.
[9] Sample also analyzed for mercury, arsenic, cadmium, chromium, iron, nickel, silver, and zinc. All metals were reported below the corresponding laboratory reporting limits except for iron, which was identified at 0.13 mg/L.
[10] Analyzed using EPA method 7421. Sample filtered by the laboratory prior to analysis.
[11] Analyzed using EPA Method 7211. Sample filtered by the laboratory prior to analysis.
[12] Laboratory indicated that miscellaneous peaks were present in the diesel range.
[13] The laboratory indicated that the analyte was also found in the corresponding method blank at a concentration of 0.063 mg/L as well as in the sample, verifying laboratory contamination. The sample chromatographic pattern matched that of the laboratory contaminant reported in the method blank. Therefore, the reported concentration is a false positive concentration.
[14] The laboratory indicated that the chromatographic pattern of the sample matches a known laboratory contaminant. Based on telephone correspondence with Mr. Ron Chu of PACE, the laboratory contaminant may be due to contamination of the silica gel used to clean up the sample prior to analysis.

TABLE 2

GROUNDWATER ELEVATION DATA

Seabreeze Yacht Center, Oakland, California

Well	Date	Time	Surface Elevation (msl)	TOC Elevation (msl)	Depth to Groundwater (feet)	Groundwater Elevation (msl)
PW-2[1]	2/15/95[2]	--	5.56	6.57	4.60	1.97
	3/3/95	9:10			3.90	2.67
	6/28/96	7:37			3.83	2.74
	9/16/96	8:54			4.19	2.38
	12/11/96	10:10			3.64	2.93
	3/12/97	9:00			4.08	2.49
MW-SB2[3]	4/19/91	11:09	6.2	7.18	5.38	1.8
	7/9/91	11:04			3.7	3.48
	1/10/94	12:31			3.08	4.1
	1/26/94	13:40			1.63	5.5
	11/14/94	7:30			4.8	2.38
		11:05			4.76	2.42
		14:14			4.73	2.45
	11/28/94	9:00			2.85	4.33
	3/3/95	8:50			2.84	4.34
	6/28/96	7:40			3.76	3.42
	9/16/96	9:01			4.30	2.88
	12/11/96	11:15			2.00	5.18
	3/12/97	9:02			3.48	3.70
MW-SB3[3]	11/14/94	7:25	6.0	8.10	8.23	-0.13
		11:00			8.14	-0.04
		14:12			8.07	0.03
	11/28/94	8:53			6.32	1.78
	12/06/94	8:37			6.15	1.95
	3/3/95	8:40			6.78	1.32
	6/28/96	7:35			5.46	2.64
	9/16/96	8:55			5.78	2.32
	12/11/96	10:32			5.31	2.79
	3/12/97	9:05			6.03	2.07
MW-SB4[4]	11/28/94	9:02	6.6	6.39	1.05	5.34
	3/3/95	8:35			0.90	5.49
	6/28/96	8:28			3.16	3.23
	9/16/96	8:52			2.85	3.54
	12/11/96	9:28			0.65	5.74
	3/12/97	9:07			2.53	3.86
MW-SB5[4]	11/28/94	8:40	6.9	6.30	6.32	-0.02
	3/3/95	9:00			2.54	3.76
	6/28/96	8:45			2.43	3.87
	9/16/96	10:15			2.52	3.78
	12/11/96	14:12			3.09	3.21
	3/12/97	9:11			2.42	3.88

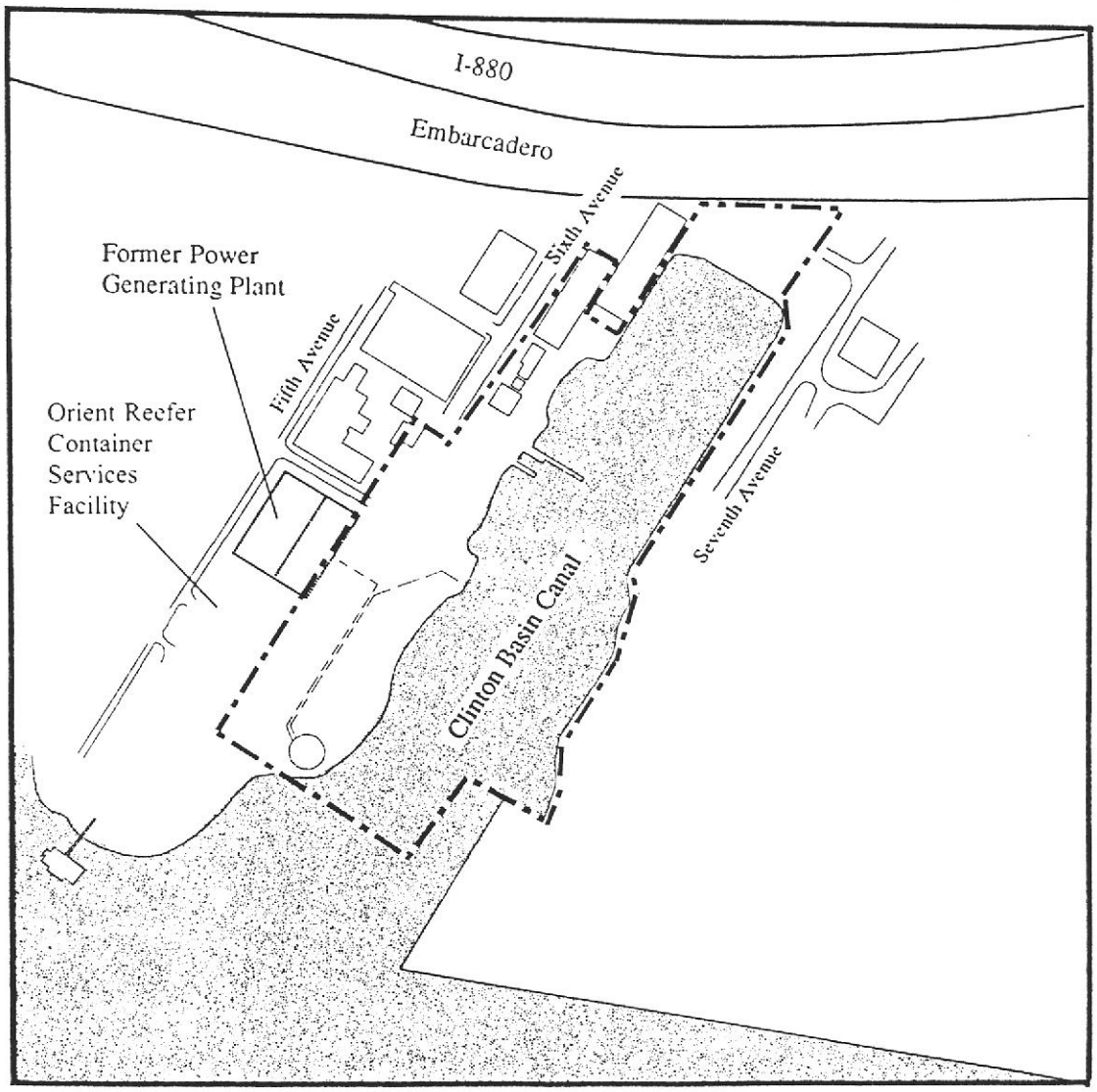
Table 2, *continued*

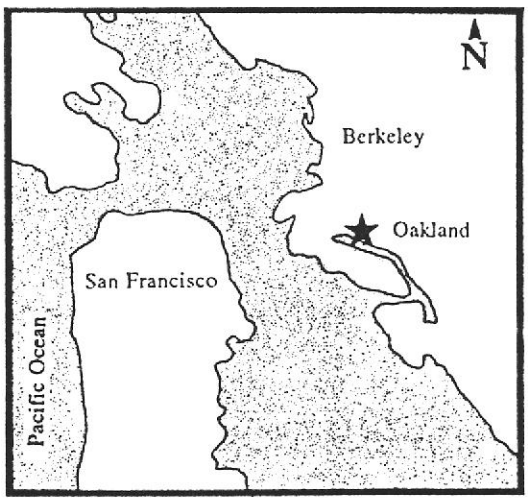
Notes: 11/14/94: High tide 9:21; Low tide 15:50.
11/28/94: High tide 7:46.
2/15/95: High tide 5:14 and 18:03; Low tide 23:34.
3/3/95: High tide 13:14; Low tide 7:03.
6/28/96: High tide 11:41 and 22:32; Low tide 4:35 and 16:09.
9/16/96: High tide 2:57 and 14:57; Low tide 8:23 and 21:07.
12/11/96: High tide 1:02 and 11:47; Low tide 5:35 and 18:30.
3/12/97: High tide 2:17 and 15:02; Low tide 8:23 and 20:29.
-- = No data.
msl = Feet above mean sea level.
TOC = Top of casing.
Refer to Figure 2 for well locations.

[1] Well survey conducted by Bates & Bailey 2/8/95.
[2] Groundwater elevation measured by SOMA; all other elevations measured by BASELINE.
[3] Well survey conducted by Bates & Bailey 11/18/94.
[4] Well survey conducted by Bates & Bailey 11/28/94.

PROJECT AND REGIONAL LOCATION

Figure 1





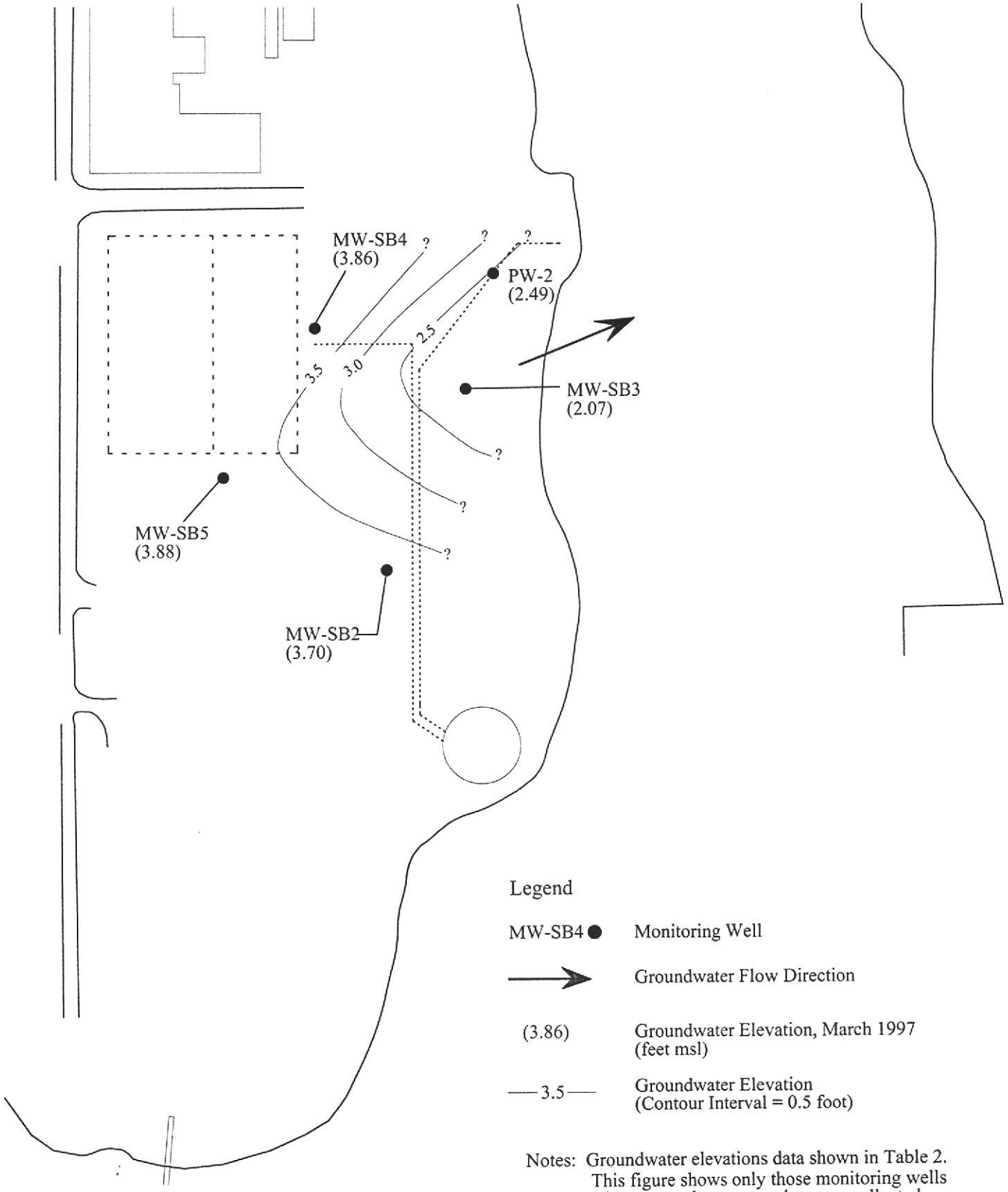
Seabreeze Yacht Center
Oakland, California

BASELINE

S9171-CO 8 18 95

MONITORING WELL LOCATIONS AND GROUNDWATER CONTOUR, MARCH 1997

Figure 2



Notes: Groundwater elevations data shown in Table 2. This figure shows only those monitoring wells where groundwater samples were collected.

0 100 Feet

Seabreeze Yacht Center
Sixth Avenue
Oakland, California

S9171-CO 4/7/97, D:\GCD\S9171MW397 (visual cadd)

D:\GCD\s9171mw397.vcd 4/29/1997

ATTACHMENT A

GROUNDWATER SAMPLING FORMS

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	PW-2	Date:	3/12/97
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	15		
Location:	260 6th Avenue	Well diameter (inch):	4		
	Oakland, CA	Screened interval from TOC (feet):	6.5-15.0		
Recorded by:	WKS	TOC elevation (feet):	6.57		
Weather:	Sunny	Water level from TOC (feet):	4.08	Time:	9:00
Precip in past		Product level from TOC (feet):	None	Time:	9:00
5 days (inch):	None	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(15 ft) - (4.08 ft)] × (0.166 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

7.1 gallons in one well volume
21.2 gallons in 3 well volumes
12.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:			7.00/10.01	1,000
Before Purging:	8:50	16.8	7.00/10.01	900
After Purging:	12:11	18.0	7.14/10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
9:16	17.1	6.78	30,000	4.0	Clear, with black particulate matter
9:26	17.2	6.76	30,000	7.0	Clear, with black particulate matter
9:34	17.8	6.75	30,000	10.0	Clear, with black particulate matter
9:41	WELL PUMPED DRY			12.0	Clear, with black particulate matter

Note: Recharge rate too slow to allow 80% recharge before sampling on 3/12/97. Sample collected on 3/14/97.

DO meter calibration:	9.85 mg/L @ 16° C	Time:	9:30
DO result (after purging well, mg/L):	1.70	Time:	9:38
Water level after purging prior to sampling (feet):	8.75	Time:	3/14/97 11:49
Appearance of sample:	Clear	Time:	3/14/97 11:50
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	One 1-liter amber glass, one 500-ml unpreserved plastic		
Sample analyses:	TEPH, copper, lead	Laboratory:	Pace Analytical
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-SB2 to 5 & PW-2)

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GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB2	Date:	3/12/97
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	11.0		
Location:	260 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	3-11		
Recorded by:	WKS	TOC elevation (feet):	7.18		
Weather:	Sunny	Water level from TOC (feet):	3.48	Time:	9:02
Precip in past		Product level from TOC (feet):	None	Time:	9:02
5 days (inch):	None	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(11.0 ft) - (3.48 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

1.2 gallons in one well volume
3.7 gallons in 3 well volumes
4.0 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:			7.00/10.01	1,000
Before Purging:	8:50	16.8	7.00/10.01	900
After Purging:	12:11	18.0	7.14/10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
10:07	14.8	6.84	11,000	1	Clear, with black particulates
10:11	14.6	6.77	12,000	2.5	Clear, with black particulates
10:15	15.3	6.80	15,000	4.0	Clear, with black particulates

Note: Recharge rate too slow to allow 80% recharge before sampling on 3/12/97. Sample collected on 3/14/97.

DO meter calibration:	9.85 mg/L @ 16° C	Time:	9:30
DO result (after purging well, mg/L):	2.0	Time:	11:16
Water level after purging prior to sampling (feet):	8.20	Time:	3/14/97 11:24
Appearance of sample:	Clear	Time:	3/14/97 11:25
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	One 1-liter amber glass, one 500-ml unpreserved plastic		
Sample analyses:	TEPH, copper, lead	Laboratory:	Pace Analytical
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-SB2 to 5 & PW-2)

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GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB3	Date:	3/12/97
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	11.06		
Location:	280 6th Street	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	4.86-11.06		
Recorded by:	WKS	TOC elevation (feet):	8.10		
Weather:	Sunny	Water level from TOC (feet):	6.03	Time:	9:05
Precip in past		Product level from TOC (feet):	None	Time:	9:05
5 days (inch):	None	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(11.06 ft) - (6.03 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

0.81 gallons in one well volume
2.4 gallons in 3 well volumes
3.5 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:			7.00/10.01	1,000
Before Purging:	8:50	16.8	7.00/10.01	900
After Purging:	12:11	18.0	7.14/10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
11:25	16.8	6.72	19,000	1.0	Clear, with black particulates
11:28	16.0	6.74	23,000	2.0	Clear, with black particulates
11:30	16.7	6.78	26,000	2.75	Clear, with black particulates
11:33	WELL PUMPED DRY			3.5	Clear, with black particulates

Note: Recharge rate too slow to allow 80% recharge before sampling on 3/12/97. Sample collected on 3/14/97.

DO meter calibration:	9.85 mg/L @ 16° C		Time: 9:30
DO result (after purging well, mg/L):	1.5		Time: 11:31
Water level after purging prior to sampling (feet):	8.53		Time: 3/14/97 11:39
Appearance of sample:	Clear		Time: 3/14/97 11:40
Duplicate/blank number:	None		Time: --
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	One 1-liter amber glass, one 500-ml unpreserved plastic		
Sample analyses:	TEPH, copper, lead	Laboratory:	Pace Analytical
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-SB2 to 5 & PW-2)

S9171397.XLS (4/30/97)

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB4	Date:	3/12/97
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	14.75		
Location:	260 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	2.55-14.75		
Recorded by:	WKS	TOC elevation (feet):	6.39		
Weather:	Sunny	Water level from TOC (feet):	2.53	Time:	9:07
Precip in past		Product level from TOC (feet):	None	Time:	9:07
5 days (inch):	None	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(14.75 ft) - (2.53 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

2.0 gallons in one well volume
5.9 gallons in 3 well volumes
7.5 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:			7.00/10.01	1,000
Before Purging:	8:50	16.8	7.00/10.01	900
After Purging:	12:11	18.0	7.14/10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
10:35	17.1	7.04	9,000	1.0	Clear
10:39	16.3	7.22	2,200	2.0	Clear
10:46	16.0	7.26	1,700	4.0	Clear
10:51	15.9	7.26	1,700	6.0	Clear
10:55	15.9	7.23	1,700	7.5	Clear

Note: Recharge rate in other wells too slow to allow 80% recharge before sampling on 3/12/97. Sample collected on 3/14/97.

DO meter calibration:	9.85 mg/L @ 16° C	Time:	9:30
DO result (after purging well, mg/L):	1.4	Time:	10:56
Water level after purging prior to sampling (feet):	2.54	Time:	3/14/97 11:14
Appearance of sample:	Clear	Time:	3/14/97 11:15
Duplicate/blank number:	None	Time:	--
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	One 1-liter amber glass, one 500-ml unpreserved plastic		
Sample analyses:	TEPH, copper, lead	Laboratory:	Pace Analytical
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-SB2 to 5 & PW-2)

S9171397.XLS (4/30/97)

GROUNDWATER SAMPLING

Project no.:	S9171-C1	Well no.:	MW-SB5	Date:	3/12/97
Project name:	Seabreeze Yacht Center	Depth of well from TOC (feet):	14.75		
Location:	260 6th Avenue	Well diameter (inch):	2		
	Oakland, CA	Screened interval from TOC (feet):	2.55-14.75		
Recorded by:	WKS	TOC elevation (feet):	6.30		
Weather:	Sunny	Water level from TOC (feet):	2.42	Time:	9:11
Precip in past		Product level from TOC (feet):	None	Time:	9:11
5 days (inch):	None	Water level measurement:	Dual interface probe		

VOLUME OF WATER TO BE REMOVED BEFORE SAMPLING:

[(14.75 ft) - (2.42 ft)] × (0.083 ft)² × 3.14 × 7.48 =

Well depth Water level Well radius

2.0 gallons in one well volume
6.0 gallons in 3 well volumes
~6.2 total gallons removed

CALIBRATION:

	Time	Temp (° C)	pH	EC (µmho/cm)
Calibration Standard:			7.00/10.01	1,000
Before Purging:	8:50	16.8	7.00/10.01	900
After Purging:	12:11	18.0	7.14/10.10	900

FIELD MEASUREMENTS:

Time	Temp (° C)	pH	EC (µmho/cm)	Cumulative Gallons Removed	Appearance
11:49	17.9	6.86	30,000	0.5	Light amber color
11:52	15.3	6.73	24,000	1.5	Light amber color
11:56	15.8	6.71	25,000	3.0	Light amber color
12:01	17.3	6.86	28,500	5.0	Clear
12:06	17.4	6.90	30,000	6.0	Clear
12:07	WELL PUMPED DRY			~6.2	Clear

Note: Recharge rate too slow to allow 80% recharge before sampling on 3/12/97. Sample collected on 3/14/97.

DO meter calibration:	9.85 mg/L @ 16° C	Time:	9:30
DO result (after purging well, mg/L):	1.4	Time:	12:06
Water level after purging prior to sampling (feet):	2.30	Time:	3/14/97 10:44
Appearance of sample:	Light amber color	Time:	3/14/97 10:45
Duplicate/blank number:	MW-SB5A	Time:	3/14/97 10:50
Purge method:	Peristaltic pump		
Sampling equipment:	Disposable polyethylene bailer	VOC attachment:	None required
Sample containers:	Two 1-liter amber glass, two 500-ml unpreserved plastic		
Sample analyses:	TEPH, copper, lead	Laboratory:	Pace Analytical
Decontamination method:	TSP and water, DI water rinse	Rinsate disposal:	On-site drum (MW-SB2 to 5 & PW-2)

S9171397.XLS (4/30/97)

ATTACHMENT B

LABORATORY REPORTS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Analytical

March 25, 1997

RECEIVED
MAR 26 1997
BASELINE

Ms. Rhodora DelRosario
Baseline
5900 Hollis Street, Suite D
Emeryville, CA 94608

RE: Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Dear Ms. DelRosario:

Enclosed are the results of analyses for sample(s) received on March 14, 1997. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew
Project Manager

CA ELAP Certificate Number 2059

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

DATE: 03/25/97
PAGE: 1

Baseline
5900 Hollis Street, Suite D
Emeryville, CA 94608

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Attn: Ms. Rhodora DelRosario
Phone: (510)420-8686

Pace Sample No: 70918198
Client Sample ID: PW-2

Date Collected: 03/14/97
Date Received: 03/14/97

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
Metals								
Dissolved Lead, Furnace								
Lead, Dissolved	4.01	ug/L	3	03/18/97	EPA 7421	BBF	7439-92-1	
Date Digested				03/17/97				
Dissolved Copper, AAS Furnace								
Copper, Dissolved	ND	ug/L	3	03/20/97	EPA 7211	BBF	7440-50-8	
Date Digested				03/17/97				
GC -- Semi-VOA								
TPH by 8015M w/ silica gel								
Diesel Fuel	ND	mg/L	0.05	03/21/97	EPA 8015M w/ SG	PAA	11-84-7	
Motor Oil	ND	mg/L	0.25	03/21/97	EPA 8015M w/ SG	PAA		
Bunker C	ND	mg/L	0.5	03/21/97	EPA 8015M w/ SG	PAA		
n-Pentacosane (S)	66	%		03/21/97	EPA 8015M w/ SG	PAA	629-99-2	
Date Extracted				03/18/97				

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Analytical

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Pace Sample No: 70918206 Date Collected: 03/14/97
Client Sample ID: MW-SB2 Date Received: 03/14/97

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
Metals								
Dissolved Lead, Furnace								
Lead, Dissolved	3.14	ug/L	3	03/18/97	EPA 7421	BBF	7439-92-1	
Date Digested				03/17/97				
Dissolved Copper, AAS Furnace								
Copper, Dissolved	ND	ug/L	3	03/20/97	EPA 7211	BBF	7440-50-8	
Date Digested				03/17/97				
GC -- Semi-VOA								
TPH by 8015M w/ silica gel								
Diesel Fuel	0.061	mg/L	0.05	03/21/97	EPA 8015M w/ SG	PAA	11-84-7	1
Motor Oil	ND	mg/L	0.25	03/21/97	EPA 8015M w/ SG	PAA		
Bunker C	ND	mg/L	0.5	03/21/97	EPA 8015M w/ SG	PAA		
n-Pentacosane (S)	69	%		03/21/97	EPA 8015M w/ SG	PAA	629-99-2	
Date Extracted				03/18/97				

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Analytical

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Pace Sample No: 70918214 Date Collected: 03/14/97
Client Sample ID: MW-SB3 Date Received: 03/14/97

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
Metals								
Dissolved Lead, Furnace								
Lead, Dissolved	ND	ug/L	3	03/18/97	EPA 7421	BBF	7439-92-1	
Date Digested				03/17/97				
Dissolved Copper, AAS Furnace								
Copper, Dissolved	5.29	ug/L	3	03/20/97	EPA 7211	BBF	7440-50-8	
Date Digested				03/17/97				
GC -- Semi-VOA								
TPH by 8015M w/ silica gel								
Diesel Fuel	0.085	mg/L	0.05	03/21/97	EPA 8015M w/ SG	PAA	11-84-7	1
Motor Oil	ND	mg/L	0.25	03/21/97	EPA 8015M w/ SG	PAA		
Bunker C	ND	mg/L	0.5	03/21/97	EPA 8015M w/ SG	PAA		
n-Pentacosane (S)	76	%		03/21/97	EPA 8015M w/ SG	PAA	629-99-2	
Date Extracted				03/18/97				

REPORT OF LABORATORY ANALYSIS

Pace Analytical

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Pace Sample No: 70918222 Date Collected: 03/14/97
Client Sample ID: MW-SB4 Date Received: 03/14/97

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
Metals								
Dissolved Lead, Furnace								
Lead, Dissolved	5.19	ug/L	3	03/18/97	EPA 7421	BBF	7439-92-1	
Date Digested				03/17/97				
Dissolved Copper, AAS Furnace								
Copper, Dissolved	ND	ug/L	3	03/20/97	EPA 7211	BBF	7440-50-8	
Date Digested				03/17/97				
GC -- Semi-VOA								
TPH by 8015M w/ silica gel								
Diesel Fuel	ND	mg/L	0.05	03/21/97	EPA 8015M w/ SG	PAA	11-84-7	
Motor Oil	ND	mg/L	0.25	03/21/97	EPA 8015M w/ SG	PAA		
Bunker C	ND	mg/L	0.5	03/21/97	EPA 8015M w/ SG	PAA		
n-Pentacosane (S)	78	%		03/21/97	EPA 8015M w/ SG	PAA	629-99-2	
Date Extracted				03/18/97				

REPORT OF LABORATORY ANALYSIS

Pace Analytical

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Pace Sample No: 70918230 Date Collected: 03/14/97
Client Sample ID: MW-S85 Date Received: 03/14/97

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
Metals								
Dissolved Lead, Furnace								
Lead, Dissolved	ND	ug/L	3	03/18/97	EPA 7421	BBF	7439-92-1	
Date Digested				03/17/97				
Dissolved Copper, AAS Furnace								
Copper, Dissolved	3.18	ug/L	3	03/20/97	EPA 7211	BBF	7440-50-8	
Date Digested				03/17/97				
GC -- Semi-VOA								
TPH by 8015M w/ silica gel								
Diesel Fuel	0.29	mg/L	0.05	03/22/97	EPA 8015M w/ SG	PAA	11-84-7	
Motor Oil	ND	mg/L	0.25	03/22/97	EPA 8015M w/ SG	PAA		
Bunker C	ND	mg/L	0.5	03/22/97	EPA 8015M w/ SG	PAA		
n-Pentacosane (S)	81	%		03/22/97	EPA 8015M w/ SG	PAA	629-99-2	
Date Extracted				03/18/97				

REPORT OF LABORATORY ANALYSIS

Pace Analytical

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Pace Sample No: 70918248 Date Collected: 03/14/97
Client Sample ID: MW-S85A Date Received: 03/14/97

Parameters	Results	Units	PRL	Analyzed	Method	Analyst	CAS#	Footnotes
Metals								
Dissolved Lead, Furnace								
Lead, Dissolved	ND	ug/L	3	03/18/97	EPA 7421	BBF	7439-92-1	
Date Digested				03/17/97				
Dissolved Copper, AAS Furnace								
Copper, Dissolved	ND	ug/L	3	03/20/97	EPA 7211	BBF	7440-50-8	
Date Digested				03/17/97				
GC -- Semi-VOA								
TPH by 8015M w/ silica gel								
Diesel Fuel	0.22	mg/L	0.05	03/22/97	EPA 8015M w/ SG	PAA	11-84-7	
Motor Oil	ND	mg/L	0.25	03/22/97	EPA 8015M w/ SG	PAA		
Bunker C	ND	mg/L	0.5	03/22/97	EPA 8015M w/ SG	PAA		
n-Pentacosane (S)	89	%		03/22/97	EPA 8015M w/ SG	PAA	629-99-2	
Date Extracted				03/18/97				

REPORT OF LABORATORY ANALYSIS

Pace Analytical

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

PARAMETER FOOTNOTES

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
(S)	Surrogate
[1]	Chromographic pattern matches known laboratory contaminant.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Analytical

QUALITY CONTROL DATA

Baseline
5900 Hollis Street, Suite D
Emeryville, CA 94608

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Attn: Ms. Rhodora DelRosario
Phone: (510)420-8686

QC Batch ID: 22338
QC Batch Method: EPA 3020
Analysis Method: EPA 7421
Analysis Description: Dissolved Lead, Furnace
Associated Pace Samples: 70918198 70918206 70918214 70918222 70918230 70918248

METHOD BLANK: 70918925
Associated Pace Samples: 70918198 70918206 70918214 70918222 70918230 70918248

Parameter	Units	Method Blank Result	PRL	Footnotes
Lead, Dissolved	ug/L	ND	3	
Copper, Dissolved	ug/L	ND	3	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 70918958 70918966

Parameter	Units	70918198	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
Lead, Dissolved	ug/L	4.010	40	40.04	90.1	37.65	84.1	7	
Copper, Dissolved	ug/L	0.8700	20	20.69	99.1	19.91	95.2	4	

LABORATORY CONTROL SAMPLE & LCSD: 70918933 70918941

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	LCSD Result	Spike Dup % Rec	RPD	Footnotes
Lead, Dissolved	ug/L	40	44.10	110	45.25	113	3	
Copper, Dissolved	ug/L	20	19.72	98.6	19.56	97.8	1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
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Fax: 707-792-0342

Pace Analytical

QUALITY CONTROL DATA

Baseline
5900 Hollis Street, Suite D
Emeryville, CA 94608

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

Attn: Ms. Rhodora DelRosario
Phone: (510)420-8686

QC Batch ID: 22381
QC Batch Method: EPA 3520
Analysis Method: EPA 8015M w/ SG
Analysis Description: TPH by 8015M w/ silica gel
Associated Pace Samples: 70918198 70918206 70918214 70918222 70918230 70918248

METHOD BLANK: 70920186
Associated Pace Samples:
70918198 70918206 70918214 70918222 70918230 70918248

Parameter	Units	Method Blank Result	PRL	Footnotes
Diesel Fuel	mg/L	ND	0.05	
Motor Oil	mg/L	ND	0.25	
Bunker C	mg/L	ND	0.5	
n-Pentacosane (S)	%	68		

LABORATORY CONTROL SAMPLE & LCSD: 70920194 70920202

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	LCSD Result	Spike Dup % Rec	RPD	Footnotes
Diesel Fuel	mg/L	1.0	0.6746	67.5	0.5463	54.6	21	
n-Pentacosane (S)				141		138		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

Pace Analytical

Pace Project Number: 707924
Client Project ID: Port of OAK/Seabreeze Site

QUALITY CONTROL DATA PARAMETER FOOTNOTES

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

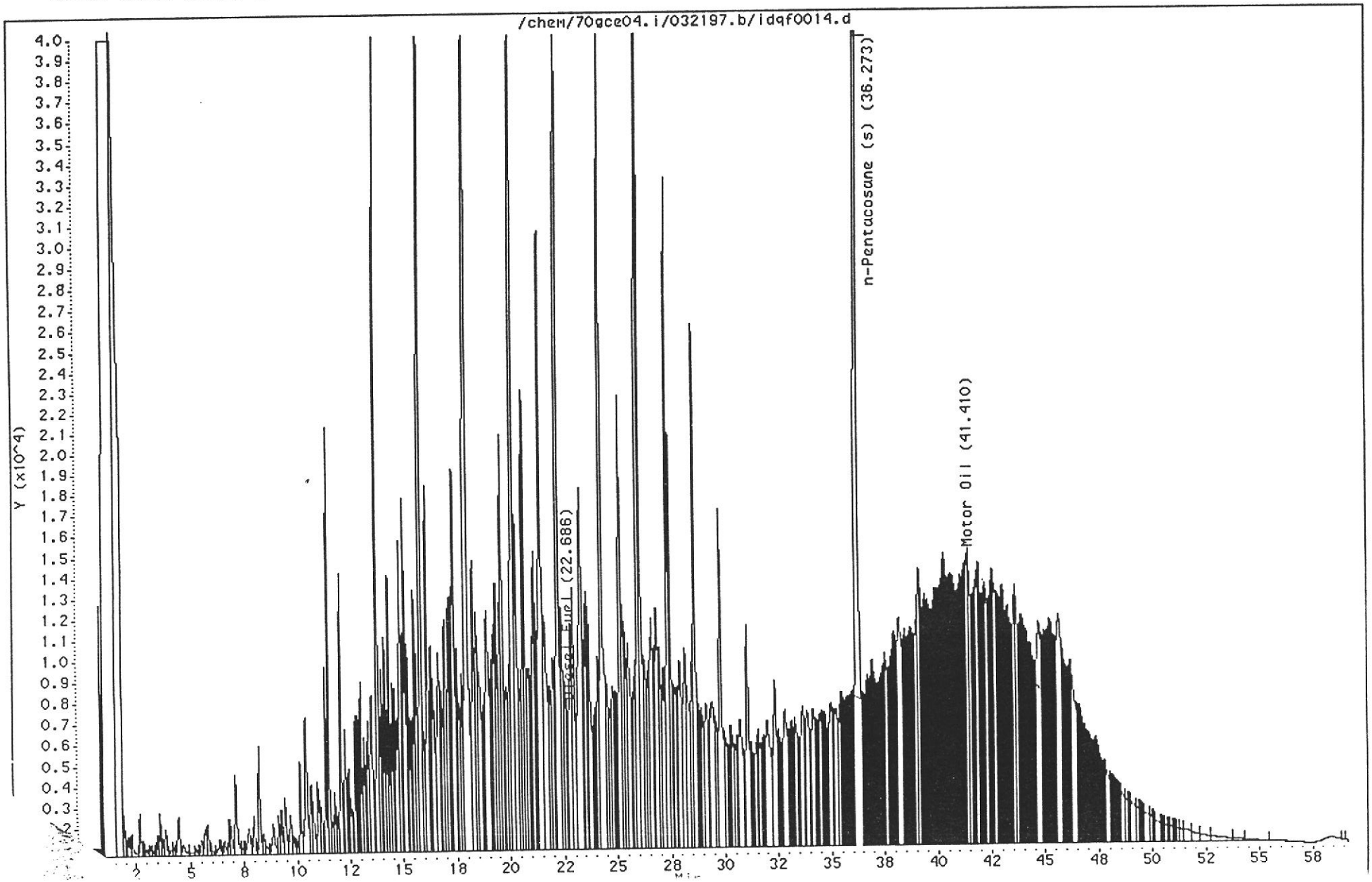
ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
RPD	Relative Percent Difference
(S)	Surrogate

REPORT OF LABORATORY ANALYSIS

Data File: /chem/70gce04.i/032197.b/idqf0014.d
Date : 22-MAR-97 04:32
Client ID:
Lab Sample ID: Pcal-94D (Std)

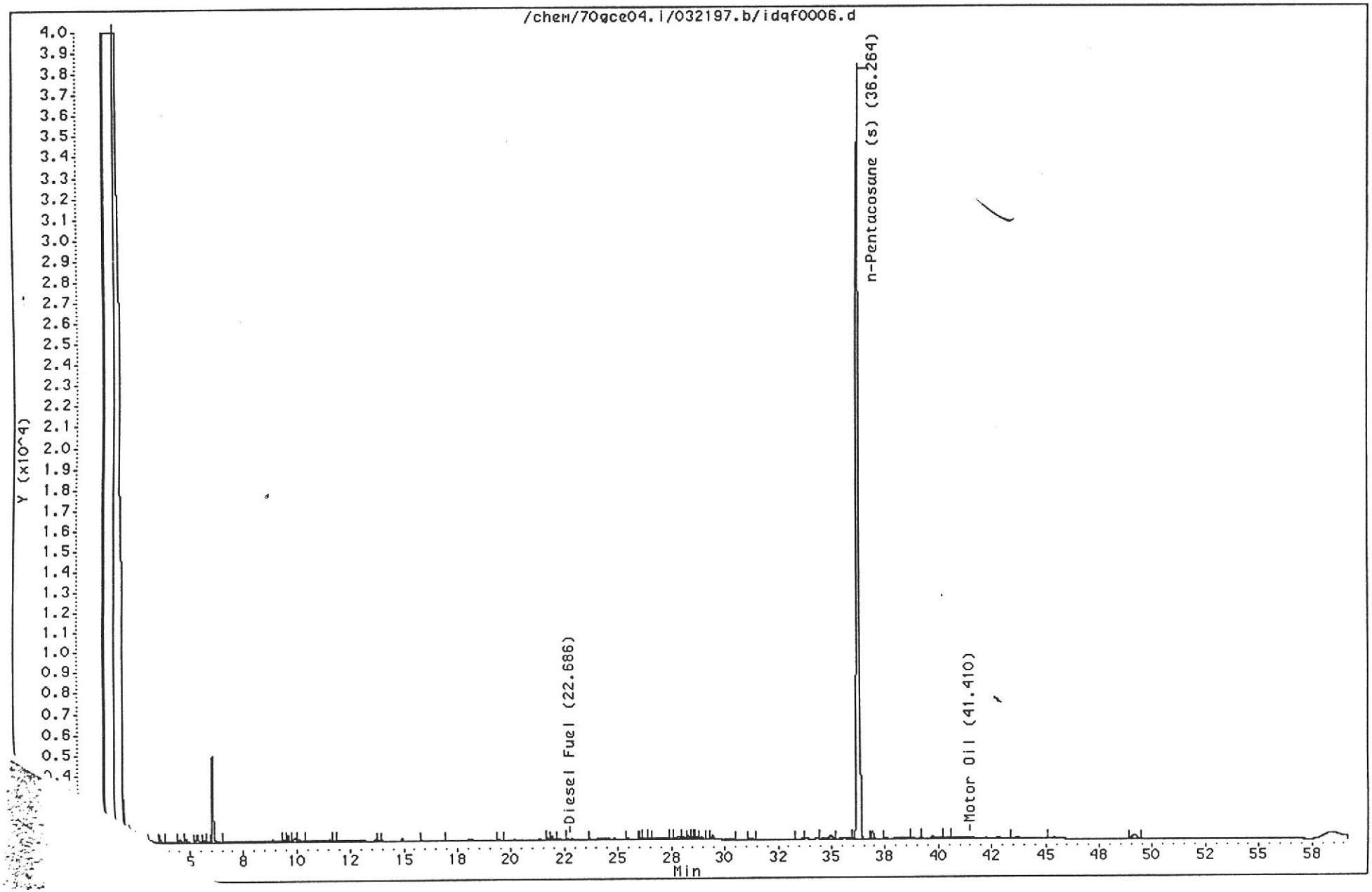
Column phase: RESTEK XTI-5

Instrument: 70gce04.i
Misc Info: Pcal-94D,,,,,2,5,,,,dMof.sub,dMor.sub,
Operator: PAA
Column diameter: 0.53



Data File: /chem/70gce04.i/032197.b/idqf0006.d
Date : 21-MAR-97 19:38
Client ID: PW-2
Lab Sample ID: 70918198
Volume Injected (uL): 1.0
Column phase: RESTEK XTI-5

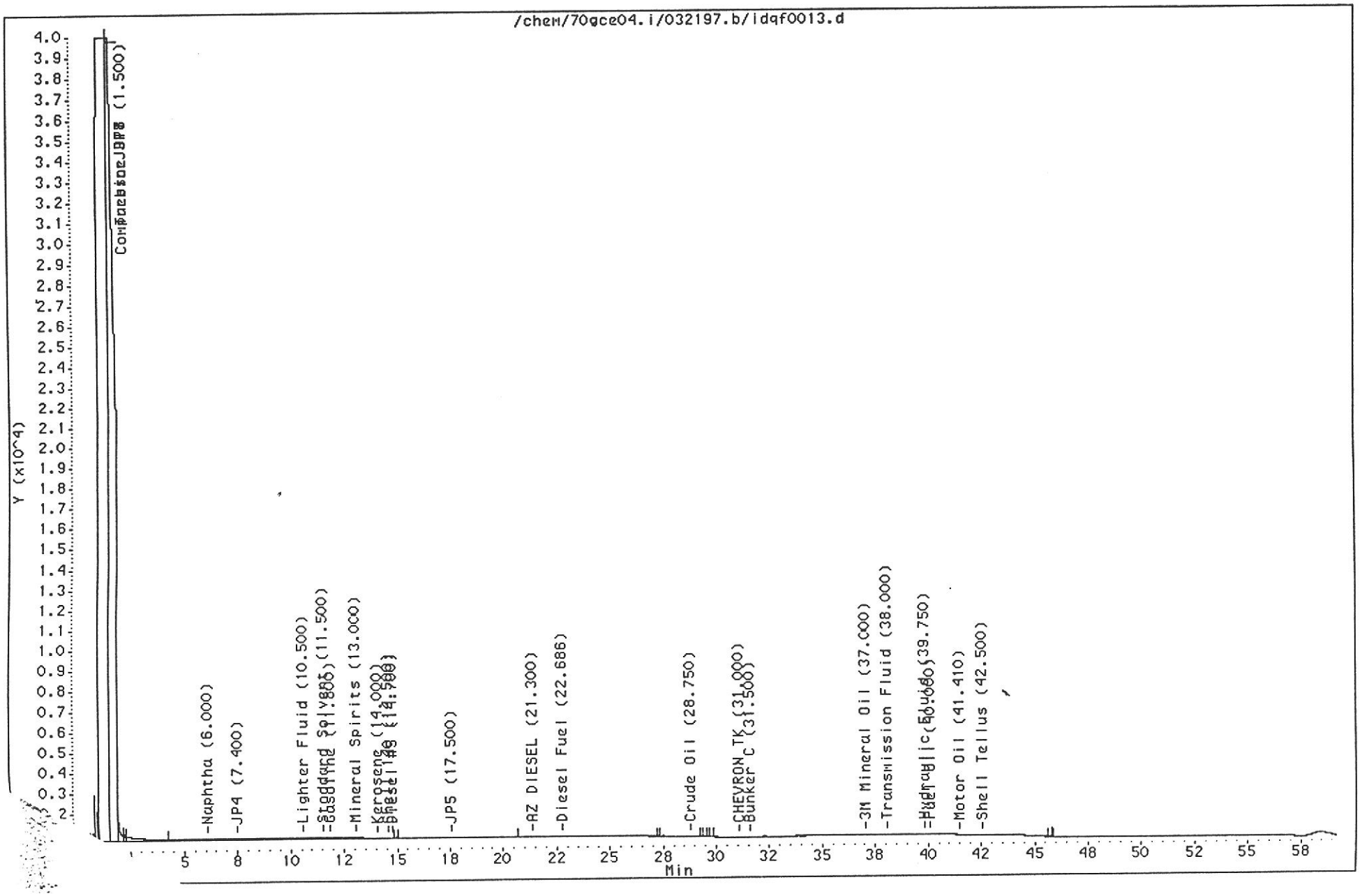
Instrument: 70gce04.i
Misc Info: 70918198,,1,22381,1,0,,SMPL,,,dmof.sub,dmor.sub,
Operator: PAA
Column diameter: 0.53



Data File: /chem/70gce04.i/032197.b/idqf0013.d
Date : 22-MAR-97 03:25
Client ID:
Lab Sample ID: MECL2 (Blank)

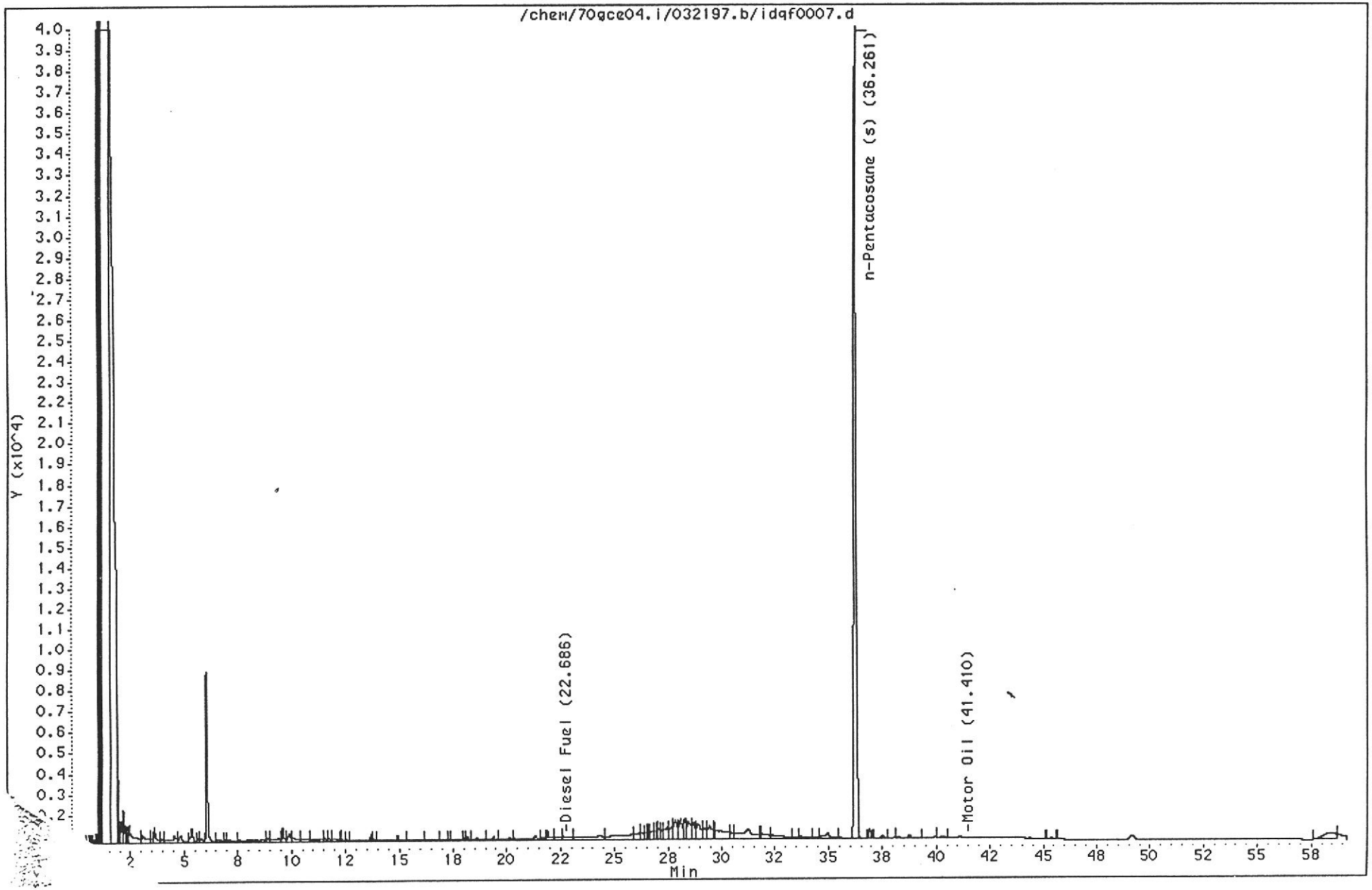
Column phase: RESTEK XTI-5

Instrument: 70gce04.i
Misc Info: MECL2,,,,,,,,,,,
Operator: PAA
Column diameter: 0.53



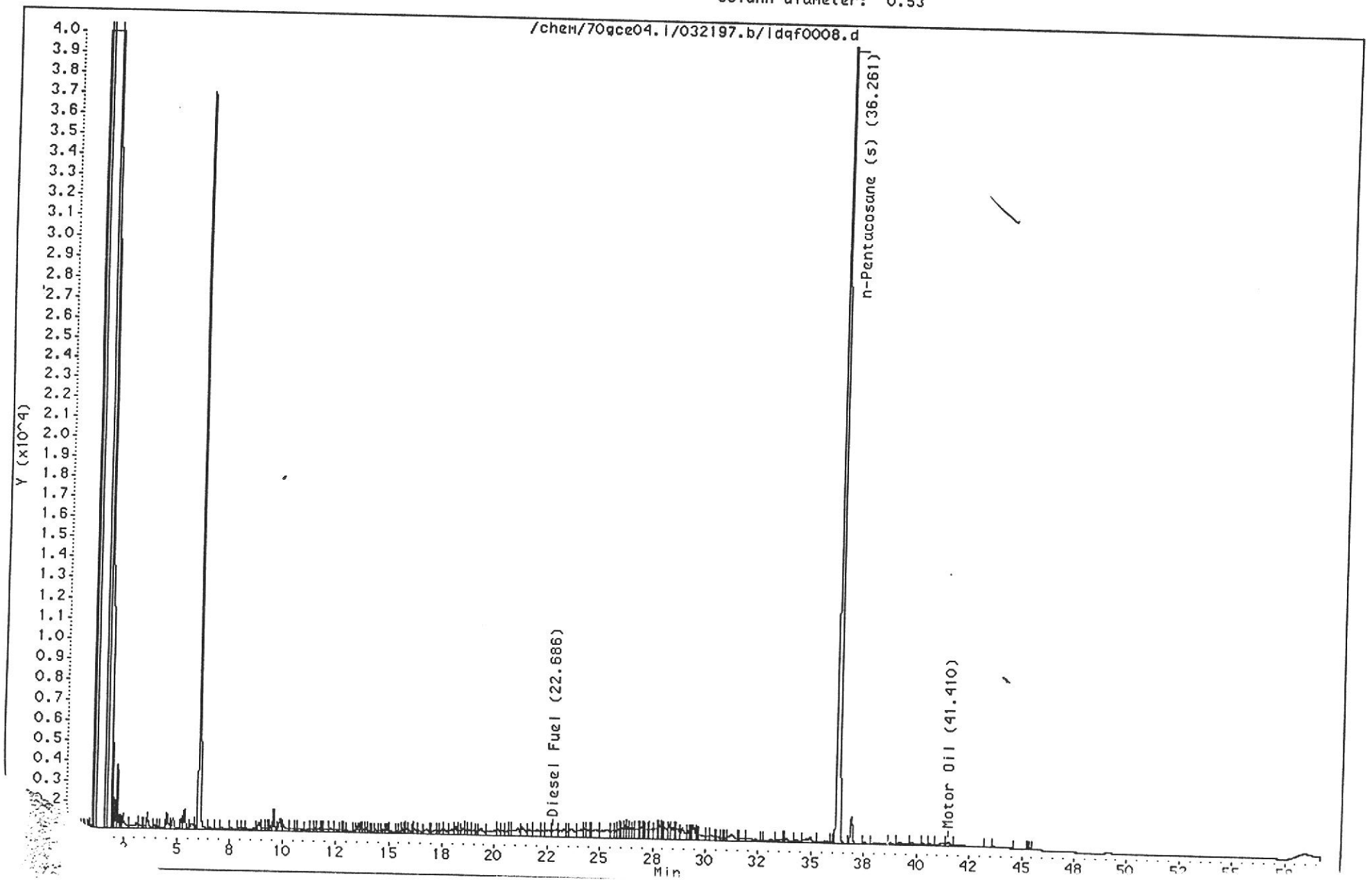
Data File: /chem/70gce04.i/032197.b/idqf0007.d
Date : 21-MAR-97 20:45
Client ID: MW-SB2
Lab Sample ID: 70918206
Volume Injected (uL): 1.0
Column phase: RESTEK XTI-5

Instrument: 70gce04.i
Misc Info: 70918206,,1,22381,1,0,,SMPL,,,dmof.sub,dmor.sub,
Operator: PAA
Column diameter: 0.53



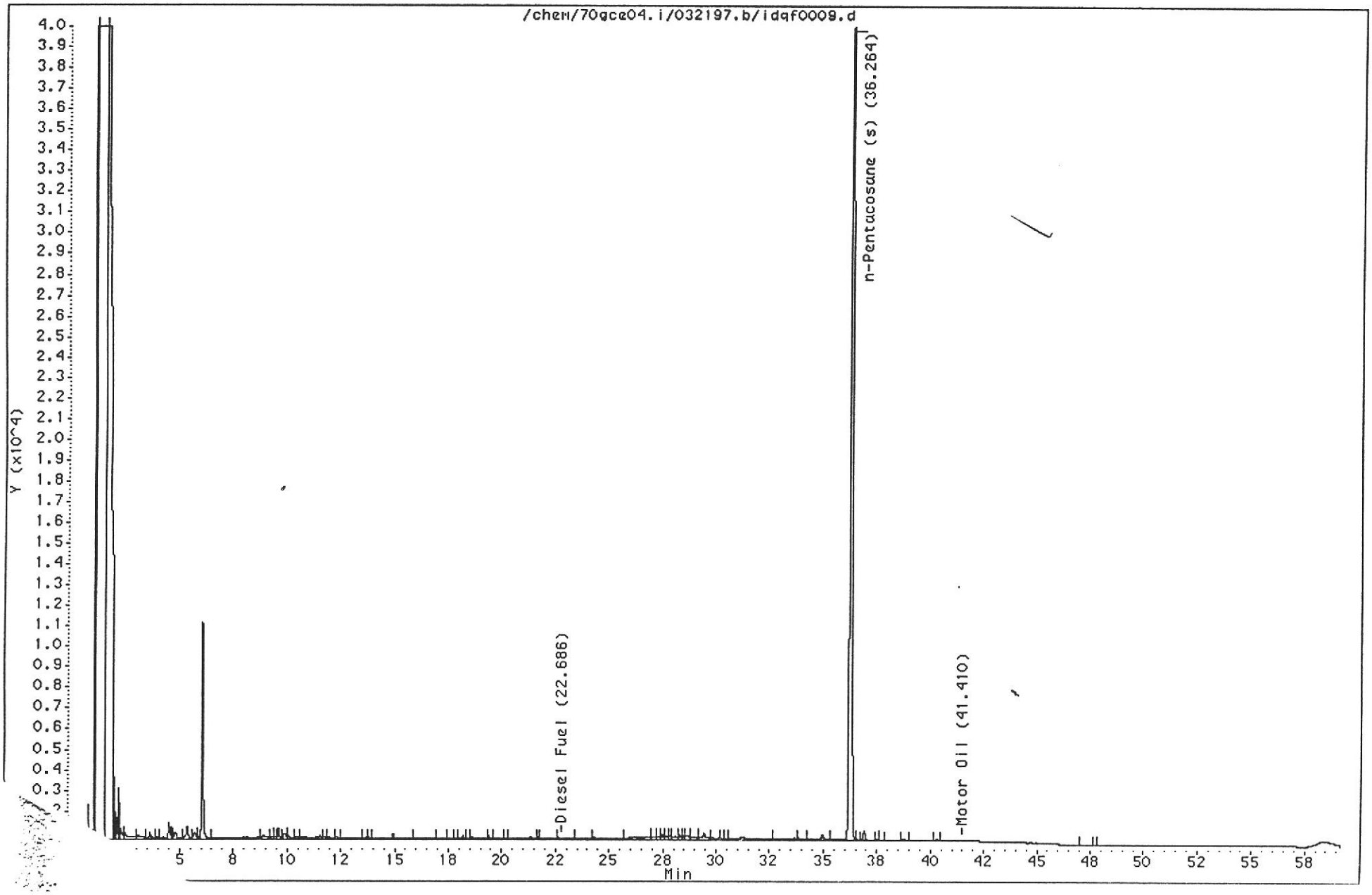
Data File: /chem/70gce04.i/032197.b/idqf0008.d
Date : 21-MAR-97 21:52
Client ID: MW-SB3
Lab Sample ID: 70918214
Volume Injected (uL): 1.0
Column phase: RESTEK XTI-5

Instrument: 70gce04.i
Misc Info: 70918214,,1,22381,1,0,,SMPL,,,dmof.sub,dmor.sub,
Operator: PAA
Column diameter: 0.53



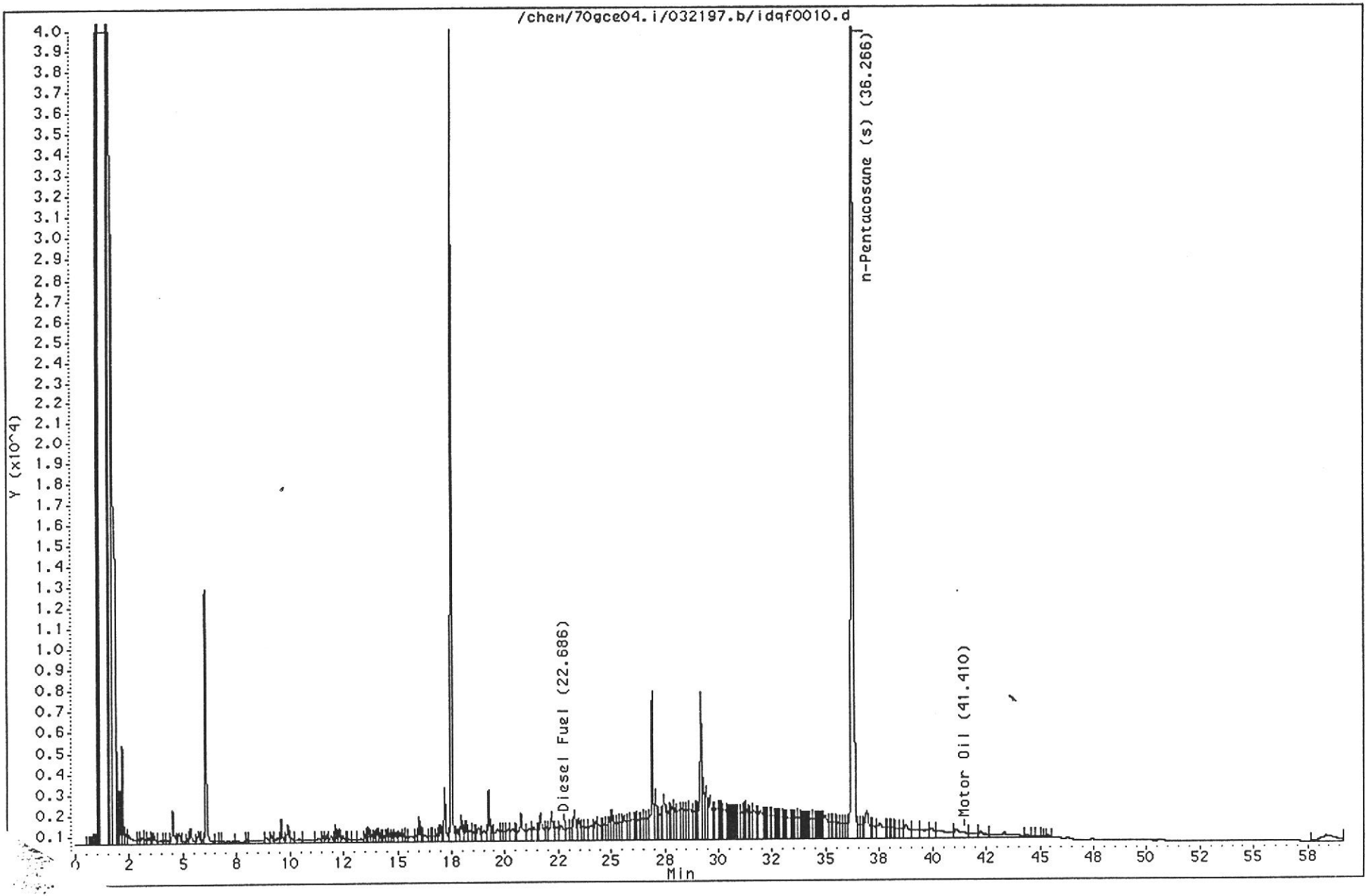
Data File: /chem/70gce04.i/032197.b/idqf0009.d
Date : 21-MAR-97 22:58
Client ID: MW-SB4
Lab Sample ID: 70918222
Volume Injected (uL): 1.0
Column phase: RESTEK XTI-5

Instrument: 70gce04.i
Misc Info: 70918222,,1,22381,1,0,,SMPL,,,dmof.sub,dmor.sub,
Operator: PAA
Column diameter: 0.53



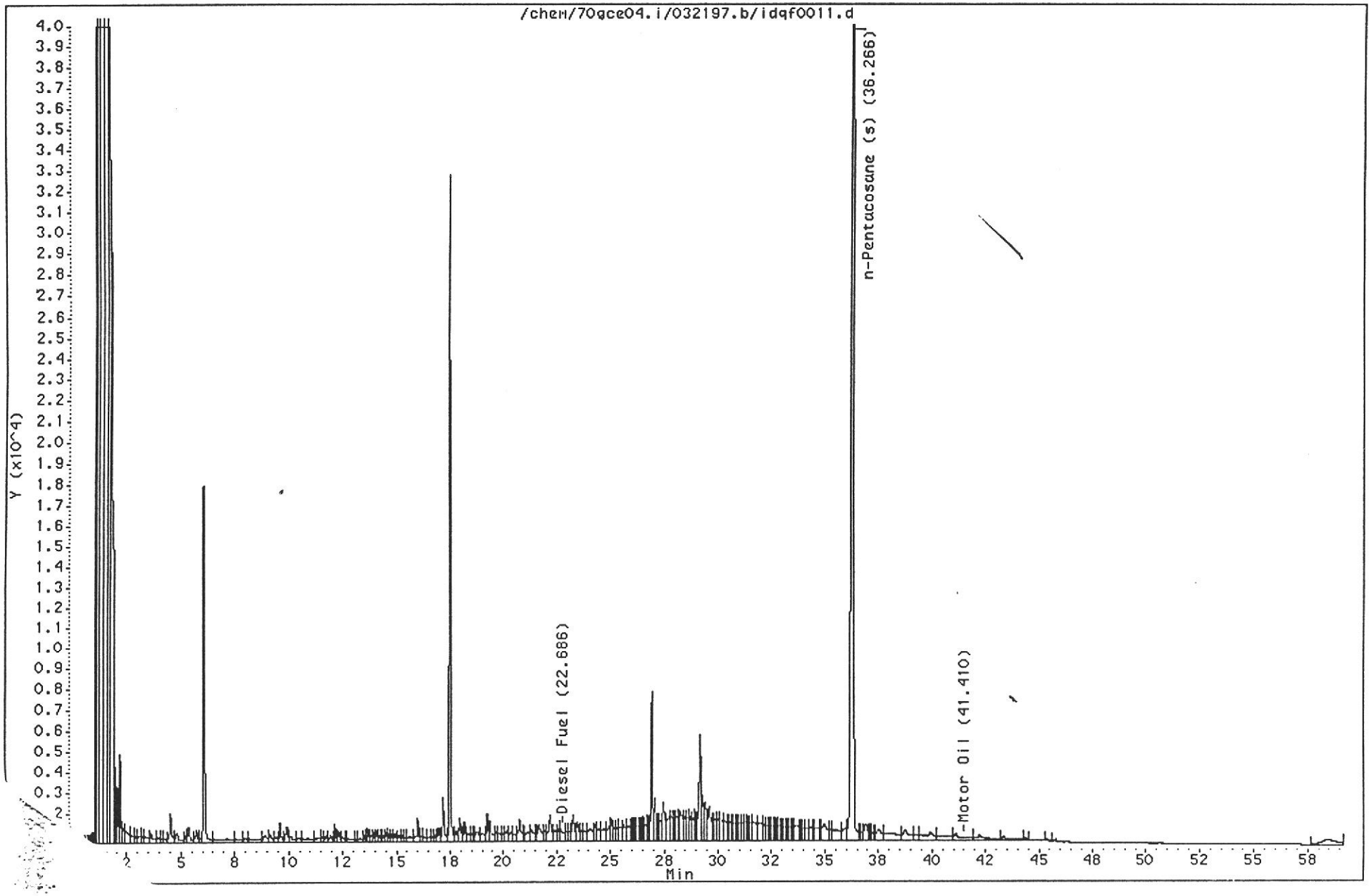
Data File: /chem/70gce04.i/032197.b/idqf0010.d
Date : 22-MAR-97 00:05
Client ID: MW-SB5
Lab Sample ID: 70918230
Volume Injected (uL): 1.0
Column phase: RESTEK XTI-5

Instrument: 70gce04.i
Misc Info: 70918230,,1,22381,1,0,,SMPL,,,dmof.sub,dmor.sub,
Operator: PAA
Column diameter: 0.53



Data File: /chem/70gce04.i/032197.b/idqf0011.d
Date : 22-MAR-97 01:12
Client ID: MW-SB5A
Lab Sample ID: 70918248
Volume Injected (uL): 1.0
Column phase: RESTEK XTI-5

Instrument: 70gce04.i
Misc Info: 70918248,,1,22381,1,0,,SMPL,,,dmof.sub,dmor.sub,
Operator: PAA
Column diameter: 0.53



BASELINE
5900 Hollis Street, Suite D
Emeryville, CA 94608
(510) 420-8686

CHAIN OF CUSTODY RECORD

Turn-around Time: Standard 2 week
Lab: PACE
BASELINE Contact Person: Rhodora del Rosario

Project No.	Project Name and Location
S9171-C1	Seabreeze, 280 60th Avenue, Oakland

Samplers: (Signature) William K Scott

Sample ID No. Station	Date	Time	Media	Depth	No. of Containers	TEPH (diesel, motor oil, bunker c)*	Lead and Copper**	Remarks/ Composite	Detection Limits
PW-2	3-14-97	11:50	Water	–	2	X	X	709/3193	3 ug/L
MW-SB2		11:25	Water	–	2	X	X	709/3206	for
MW-SB3		11:40	Water	–	2	X	X	709/3217	Cu & Pb
MW-SB4		11:15	Water	–	2	X	X	709/3222	
MW-SB5		10:45	Water	–	2	X	X	709/3230	
MW-SB5A		10:50	Water	–	2	X	X	709/3243	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Conditions of Samples Upon Arrival at Laboratory:
William K Scott	3-14-97 / 14:00		3-14-97 1400	
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Remarks:
	3-14-97 1530		3/14/97 15:30	* perform a silicagel cleanup on samples prior to TEPH analyses
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	** samples are UNPRESERVED. Filter samples prior Pb & Cu analyses.

ATTACHMENT C
QUALITY CONTROL CHECKLIST

Quality Control Checklist
for Review of Laboratory Report

Job No.: S9171-C1 **Site:** Seabreeze Site

Laboratory: PACE Analytical **Laboratory Report No:** 707924

Report Date: 25 March 1997 **BASELINE Review By:** RPD

	Yes	No	NA
GENERAL QUESTIONS **(Describe "no" responses below in "comments" section)**			
1. Are the units in the laboratory report appropriate and consistent throughout the report? (e.g., mg/L for liquids, µg/kg vs. mg/kg)	X		
2. Are the detection limits appropriate based on the intended use of the data?	X		
3a. Are detection limits appropriate based on the analysis performed? (i.e., not elevated due to dilution effects)	X		
3b. If no, is an explanation provided? (*If no, call the lab for an explanation*).			X
4a. Were the samples analyzed within the appropriate holding time? (generally 2 weeks for volatiles, and up to 6 months for metals)	X		
4b. If no, was it flagged in the report?			X
5. Was the lab report signed and dated as being reviewed by the laboratory director, QA manager, or other appropriate personnel?	X		
6. Are the results consistent with previous analytical results from the site? *(Contact the lab if results do not appear to be consistent with previous results and request review/reanalysis of data, as appropriate.)*	X		
7a. Do the chromatograms confirm quantitative laboratory results? (petroleum hydrocarbons)	X		
7b. Do the chromatograms confirm laboratory notes, if present? (e.g., sample exhibits lighter hydrocarbon than standard).	X[1]		
QA/QC QUESTIONS			
Field/Laboratory Quality Control			
8. Are field blanks reported as "ND"? (groundwater samples) *A field blank is a sample of DI water which is prepared in the field using the same collection and handling procedures as the other samples collected, and used to demonstrate that the sampling procedure has not contaminated the sample.*			X
9. Are trip blanks reported as "ND"? (groundwater samples/volatiles analyses) *A trip blank is a sample of contaminant-free matrix placed in an appropriate container by the laboratory and transported with field samples collected. Provides information regarding positive interferences introduced during sample transport, storage, preservation, and analysis. The sample is NOT opened in the field.*			X
10. Are duplicate samples results consistent with the original sample? (groundwater samples) *Field duplicates consist of two independent samples collected at the same sampling location during a single sampling event. Used to evaluate precision of analytical data and sampling technique. (Differences between the duplicate and sample results may also be attributed to environmental variability.)*	X		

	Yes	No	NA
Batch Quality Control *(Samples are batched together by matrix [soil or water] and analyses requested. A batch generally contains 20 or fewer samples of the same matrix type, and is prepared using the same reagents, standards, procedures, and time frame. QC samples are run with each batch to assess performance of the entire measurement process.*			
11a. Are all sample QA/QC limits within laboratory control limits?	X		
11b. If exceedances of lab QC goals were identified, were they flagged in the report?			X
11c. If exceedances of lab QC goals were identified, were any corrective actions made by the laboratory? (*Call lab to verify*)			X
12. Are method blanks for the analytical method(s) below laboratory reporting limits? *A method blank is run for each analytical batch. Used to assess laboratory contamination and prevent false positive results. Method blanks should be "ND." However, common laboratory contaminants include acetone, methylene chloride, diethylhexyl phthalate, and di-n-octyl phthalate.*	X		
13. Are laboratory control samples (LCS) and LCS duplicate (LCSD) within laboratory limits? Limits should be provided on the report. *LCS is a reagent blank spiked with a representative selection of target analyte(s) and prepared in same manner as samples analyzed. The LCS should be spiked with the same analytes at the same concentrations as the matrix spike (below). The LCS is free of interferences from the sample matrix and demonstrates the ability of the laboratory instruments to recover the target analytes, especially if the MS/MSD fails QC goals. Accuracy (recovery information) is generally reported as % spike recovery; precision (reproducibility of results) between LCS and LCSD is generally reported as relative percent difference (RPD). LCS/LCSD can be run in addition to, or in lieu of, matrix QC data (if insufficient sample material is available).*	X		
14. Are the Matrix QC data (e.g., MS/MSD) within laboratory limits? Limits should be provided on laboratory report. *The lab selects a sample and analyses a spike and spike duplicate of that sample. Alternatively, the lab can analyze a duplicate, and spike of a sample, if the sample is expected to contain target analytes. Matrix QC data is used to obtain precision and accuracy information; this information is reported in the same manner as LCS/LCSD.*	X		
Sample Quality Control			
15. Are the surrogate spikes reported within the laboratory's acceptable recovery limits? *A surrogate is a non-target analyte, which is similar in chemical structure as the analyte(s) being analyzed for. The surrogate is not commonly found in environmental samples. A known concentration of the surrogate is spiked into the sample or QA "sample" prior to extraction or sample preparation. Results are usually reported as % recovery of the spike. Used to evaluate the lab's accuracy of individual samples for volatiles including EPA Methods 8240, 8260, 8270, 8220, 8080, 8010, and 8015M. Failure to meet lab's acceptance limits results in rebatching and reanalysis of the sample. Repeated failure indicates that the sample result may be biased or is not amenable to analysis by the method used.*	X		

Comments: [1] The laboratory report indicated that the chromatogram for sample MW-SB3 matched that of the known laboratory contaminant for the diesel result; the sample was subjected to a silica gel cleanup prior to analysis. Based on a telephone conversation with Mr. Ron Chu of PACE Analytical, PACE has been having laboratory contamination problems with samples subjected to silica gel cleanup prior to analysis and believes that the laboratory contamination is likely due to contamination from the silica gel cleanup.