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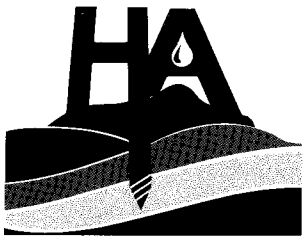
ENVIRONMENTAL PROTECTION



HAGEMAN-AGUIAR, INC.

Underground Contamination Investigations, Groundwater Consultants, Environmental Engineering

QUARTERLY
GROUNDWATER SAMPLING REPORT

(Sampled May 8, 1996)

PACIFIC CRYOGENIC COMPANY
2311 Magnolia Street
Oakland, CA

June 7, 1996

3732 Mt. Diablo Blvd. Suite 372 Lafayette, California 94549 (510) 284-1661 FAX (510) 284-1664

TABLE OF CONTENTS

I. INTRODUCTION

The subject site is the historical location of Pacific Cryogenic Company at 2311 Magnolia Street, Oakland, California. The location of the site is shown on Figure 1 (site location map).

On June 30 and July 12, 1989, Geo-Environmental Technology removed three underground storage tanks from the subject site: one 8,000-gallon underground Diesel tank, one 1,000-gallon underground Gasoline tank, and one 550-gallon underground Waste Oil tank.

Due to the detection of subsurface contamination in the vicinity of the Gasoline and Waste Oil tanks, shallow groundwater monitoring well MW-1 was installed by Geo-Environmental Technology at the previous tank locations (see Figure 2). The results of shallow groundwater sampling on October 26, 1990, indicated the presence of Diesel at a concentration of 5,400 µg/L, and Benzene, Toluene, Ethylbenzene, and Total Xylenes at concentrations of 1,200 µg/L, 18 µg/L, 7.1 µg/L, and 37 µg/L, respectively.

Subsequent to the installation and sampling of monitoring well MW-1, two additional shallow groundwater monitoring wells were installed on the subject site (wells MW-2 and MW-3). No data regarding these well installations appear to be available at the present time.

On November 12, 1992, the underground piping running between the previous Gasoline and Waste Oil underground tanks and the previous dispenser pedestal were removed by Hageman-Aguiar,

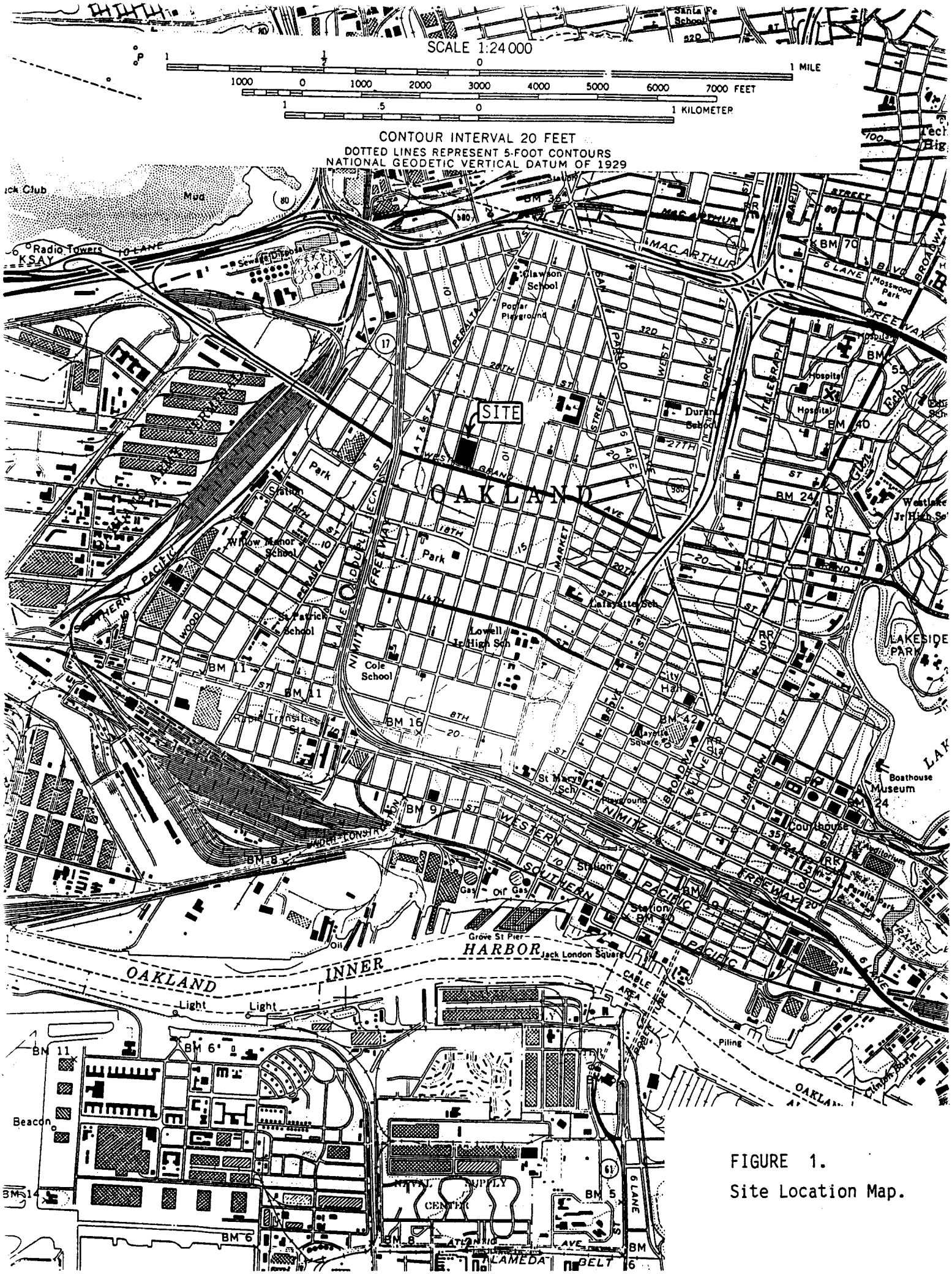


FIGURE 1.
Site Location Map.

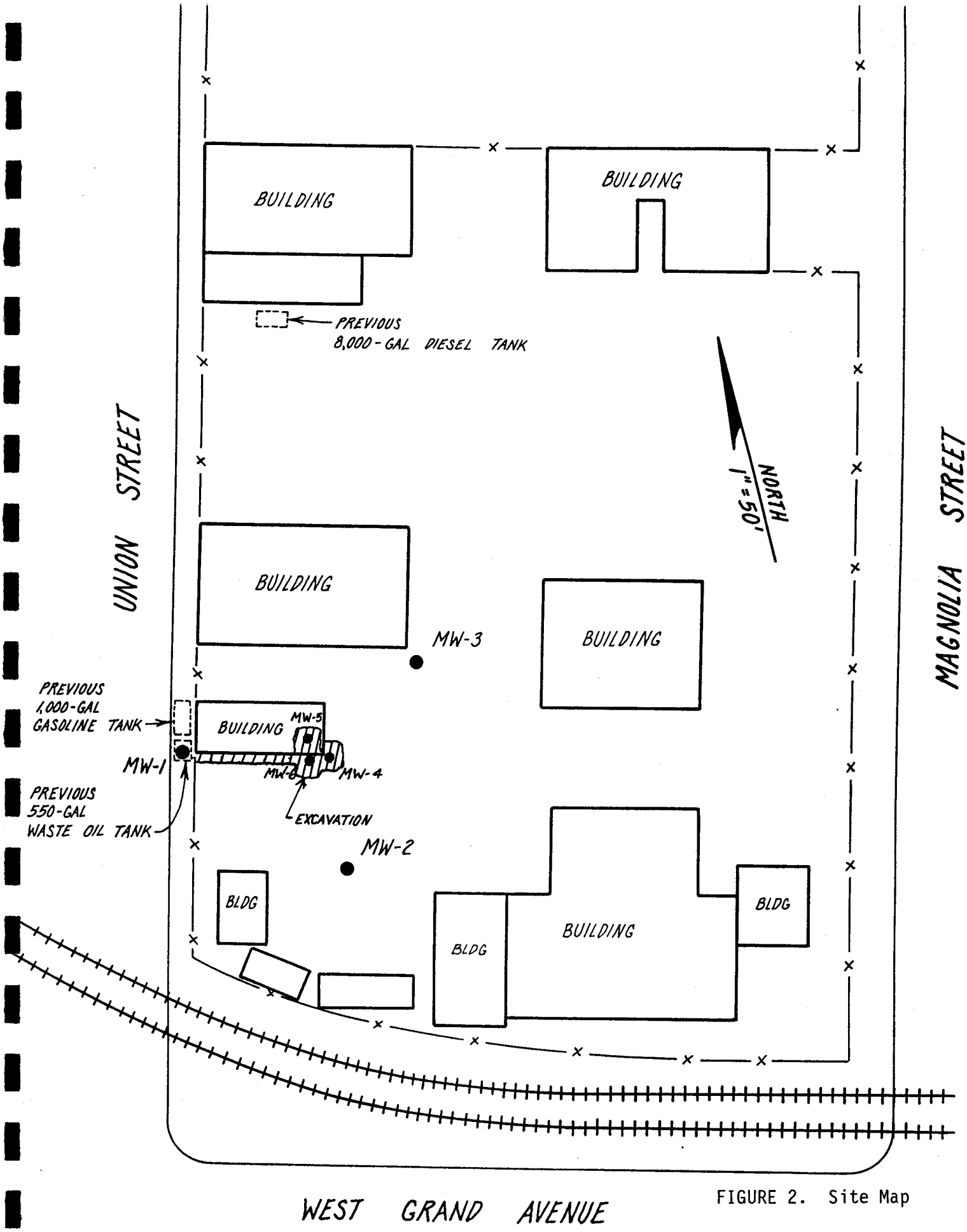


FIGURE 2. Site Map

Inc. (see Figure 2). During the removal process, several holes were noted in both the waste oil and the gasoline underground pipelines. At one location, significant gasoline contamination was apparent in the soil (based upon odor and color).

Subsequent to the piping removal, additional excavation was conducted on November 18, 1992. The excavation extended to a depth of approximately 15 feet below ground surface and was conducted in order to mitigate the apparent subsurface gasoline contamination. Upon completion of the soil excavation on November 18, 1992, three excavation backfill wells were installed. The locations of these monitoring wells MW-4, MW-5 and MW-6 are shown in Figure 2.

On May 8, 1996, on-site monitoring wells MW-1, MW-2, MW-3 and MW-4 were sampled for the laboratory analysis for dissolved petroleum constituents.

II. FIELD WORK

Monitoring Well Sampling

On May 8, 1996, groundwater samples were collected from monitoring wells MW-1, MW-2, MW-3, and MW-4. Prior to groundwater sampling, each well was purged by bailing approximately 5 to 10 casing volumes of water. Field conductivity, temperature, and pH meters were present on-site during the monitoring well sampling. As the purging process proceeded, the three parameters were monitored. Purging continued until readings appeared to have reasonably stabilized. After the water level in the well had attained 80% or more of the original static water level, a groundwater sample was collected using a clean teflon bailer. The water sample was placed inside appropriate 40 mL VOA vials and 1-liter amber bottles free of any headspace. The samples were immediately placed on crushed ice, then transported under chain-of-custody to the laboratory at the end of the work day.

At the time each monitoring well was sampled, the following information was recorded in the field: 1) depth-to-water prior to purging, using an electrical well sounding tape, 2) identification of any floating product, sheen, or odor prior to purging, using a clear teflon bailer, 3) sample pH, 4) sample temperature, and 5) specific conductance of the sample.

Copies of the well sampling logs are included as Attachment A.

Wastewater Generation

All water removed from the wells during purging and sampling was drummed and stored on-site until the results of laboratory analyses were obtained. Based upon these results, the water should be transported as a hazardous liquid waste under proper manifest to an appropriate TSD facility for treatment and disposal.

III. RESULTS OF WATER LEVEL MEASUREMENTS

Shallow Groundwater Flow Direction

Shallow water table elevations were measured on May 8, 1996. These measurements are shown in Table 1. Figure 3 presents a contour map for the shallow groundwater table beneath the site. As shown in this figure, the data from the three monitoring wells indicate that the shallow groundwater flow was in the easterly direction during this round of groundwater sampling.

Shallow Water Table Hydraulic Gradient

Figure 3 presents the contour map for the shallow groundwater table beneath the site. As shown in this figure, the shallow groundwater table beneath the site appears to have a calculated hydraulic gradient of dH/dL = 0.6'/70' = 0.0086.

Historical Water Level Measurements

Table 2 presents the results of all water level measurements collected between April 3, 1992, and the present time.

TABLE 1.

Shallow Water Table Elevations
May 8, 1996

Well	Top of Casing Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)
MW-1	99.27	5.55	93.72
MW-2	100.00	7.36	92.64
MW-3	100.02	7.18	92.84
MW-4	99.95	6.67	93.28

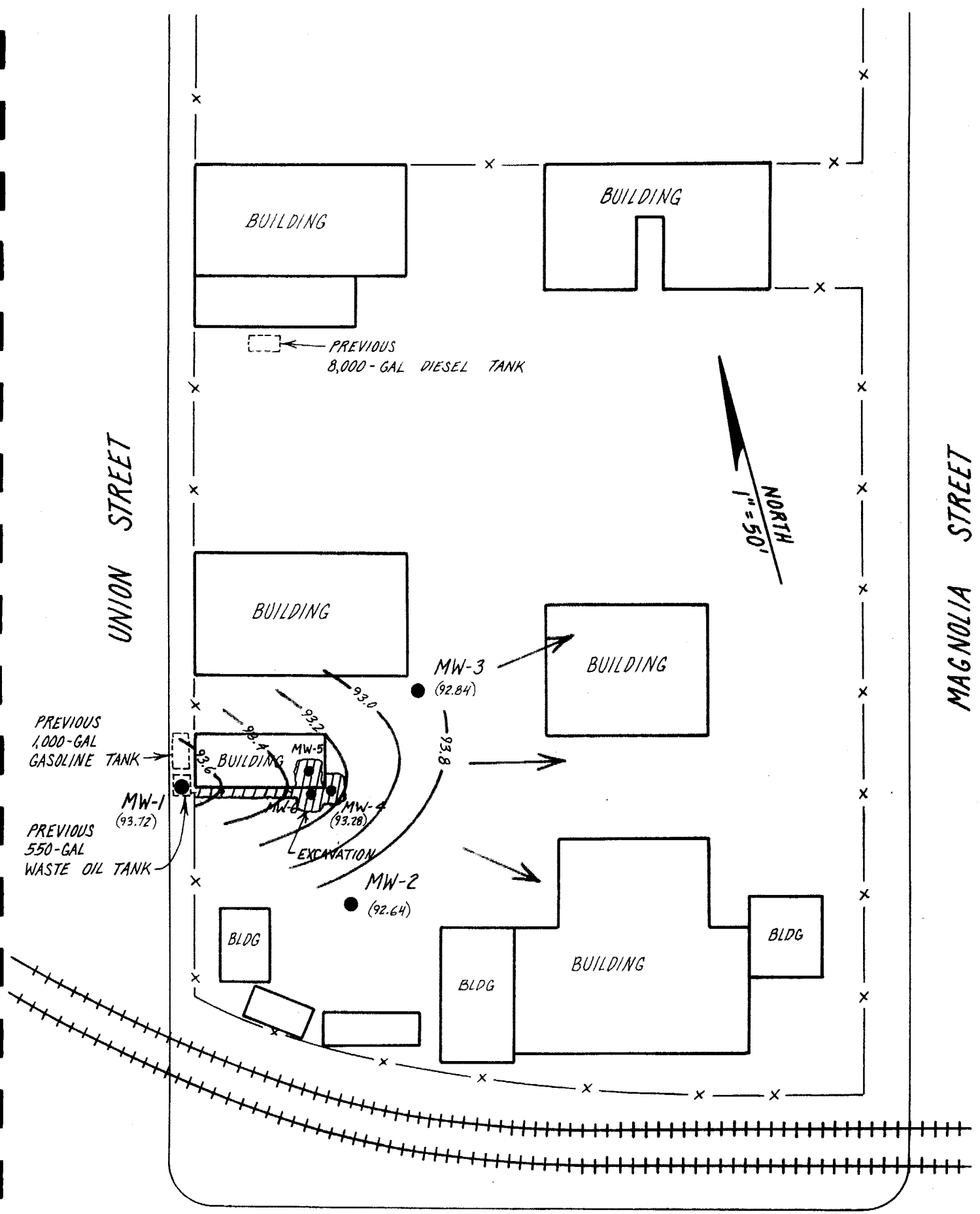


FIGURE 3.
Shallow Groundwater Contour Map
Measured on May 8, 1996.

TABLE 2.

Historical Water Table Elevations
(feet)

Well	Date of Measurement								
	4-3-92	6-16-92	10-8-92	1-7-93	4-23-93	7-16-93	11-8-93	2-2-94	5-2-94
MW-1	95.58	92.01	91.11	97.17	95.17	92.07	91.78	94.42	93.55
MW-2	93.25	91.60	90.83	94.24	92.69	91.46	91.04	92.55	92.19
MW-3	92.52	91.87	90.65	94.43	92.64	91.21	91.14	92.21 ↑	91.94
MW-4	---	---	---	---	---	91.48	91.16	92.67	92.37
Flow Direction	SE	SE	E	SE	SE	E	SE	E	E

Well	Date of Measurement								
	8-3-94	8-3-94	11-4-94	3-14-95	8-23-95	5-8-96			
MW-1	---	90.96	90.96	96.33	91.70	93.72			
MW-2	91.25	90.77	90.77	95.08	91.30	92.64			
MW-3	91.00	90.57	90.57	94.96 ↑	91.10 ↓	92.84 ↑			
MW-4	91.26	90.74	90.74	95.60	91.38	93.28			
Flow Direction	E	E	E	E	E	E			

IV. SHALLOW GROUNDWATER SAMPLING RESULTS

Laboratory Analysis

All analyses were conducted by a California State DOHS certified laboratory in accordance with EPA recommended procedures (Priority Environmental Labs, Milpitas, CA). All Groundwater samples were analyzed for Total Petroleum Hydrocarbons as Gasoline (EPA method 8015), and for Benzene, Toluene, Ethylbenzene, and Total Xylenes (EPA method 602).

The past rounds of sampling included analysis of all groundwater samples for Total Petroleum Hydrocarbons as Diesel, Kerosene, Mineral Spirits and Motor Oil by EPA method 8015. As directed by Jennifer Eberle of the Alameda County Environmental Health Department, these analyses were not conducted during this round of quarterly groundwater sample collection. A copy of Ms. Eberle's letter is provided in Attachment B.

Results of Groundwater Sampling

Tables 3 and 4 present the results of the laboratory analysis of the groundwater samples collected from monitoring wells MW-1, MW-2, MW-3 and MW-4.

As shown in Table 3, for this round of sampling, Gasoline was detected in the groundwater samples collected from wells MW-1 and MW-3 at concentrations of 110 µg/l (ppb) and 19,000 µg/L (ppb), respectively. No detectable concentrations of Gasoline were found in shallow groundwater samples from wells

TABLE 3.
Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-1	10-26-90	---	1200	18	7.1	37
	03-04-92	460	120	9.0	16	44
	04-03-92	300	21	6.0	15	36
	06-16-92	220	54	17	29	73
	10-09-92	ND	ND	ND	ND	ND
	01-07-93	210	0.7	3.7	4.4	9.6
	04-23-93	280	0.9	1.3	2.9	6.2
	07-16-93	110	ND	ND	0.5	1.1
	11-08-93	ND	ND	ND	ND	ND
	01-28-94	190	5.7	4.9	6.7	21
	05-02-94	ND	ND	ND	ND	ND
	08-03-94	ND	ND	ND	ND	ND
	11-04-94	ND	ND	ND	ND	ND
	03-14-95	ND	ND	ND	ND	ND
	08-23-95	ND	ND	ND	ND	ND
	05-08-96	110	1.0	ND	ND	2.8
Detection Limit		50	0.5	0.5	0.5	0.5

ND = Not Detected

TABLE 3.
Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-2	03-04-92	ND	ND	ND	ND	ND
	04-03-92	ND	ND	ND	ND	ND
	06-16-92	ND	ND	ND	ND	ND
	10-09-92	ND	ND	ND	ND	ND
	01-07-93	ND	ND	ND	ND	ND
	04-23-93	ND	ND	ND	ND	ND
	07-16-93	ND	ND	ND	ND	ND
	11-08-93	ND	ND	ND	ND	ND
	01-28-94	ND	ND	ND	ND	ND
	05-02-94	ND	ND	ND	ND	ND
	08-03-94	ND	ND	ND	ND	ND
	11-04-94	ND	ND	ND	ND	ND
	03-14-95	ND	ND	ND	ND	ND
	08-23-95	ND	ND	ND	ND	ND
	05-08-96	ND	ND	ND	ND	ND
Detection Limit		50	0.5	0.5	0.5	0.5

ND = Not Detected

TABLE 3. (continued)
Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-3	03-04-92	14,000	6,200	60	110	740
	04-03-92	5,200	120	32	57	180
	06-16-92	6,000	180	45	82	190
	10-09-92	11,000	87	49	94	200
	01-07-93	4,200	3.3	13	44	92
	04-23-93	21,000	23	43	49	130
	07-16-93	16,000	19	21	25	78
	11-08-93	10,000	4.3	5.7	7.9	35
	01-28-94	7,500	8.5	10	50	95
	05-02-94	22,000	69	39	60	110
	08-03-94	2,500	35	12	27	25
	11-04-94	2,900	4.0	8.1	18	27
	03-14-95	2,500	9.5	3.0	4.6	8.3
	08-23-95	12,000	35.0	8.2	14.0	20.0
	05-08-96	19,000 ↑	57.0 ↑	17.0	32.0	56.0
Detection Limit		50	0.5	0.5	0.5	0.5

ND = Not Detected

TABLE 3. (continued)
Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-4	01-07-93	**4,800**	**6.4**	**25**	**60**	**110**
	04-23-93	**2,700**	**8.3**	**11**	**31**	**59**
	07-16-93	**3,000**	**3.7**	**4.2**	**4.9**	**15**
	11-08-93	**1,400**	**0.6**	**0.8**	**1.1**	**4.8**
	01-28-94	**830**	**8.5**	**10**	**12**	**27**
	05-02-94	**900**	**7.3**	**3.2**	**0.5**	**14**
	08-03-94	**1,000**	**22**	**0.7**	**8.0**	**7.4**
	11-04-94	**160**	**0.6**	ND	**1.9**	**2.9**
	03-14-95	**120**	**3.6**	ND	ND	**3.7**
	08-23-95	ND	ND	ND	ND	ND
	05-08-96	ND	ND	ND	ND	ND
Detection Limit		50	0.5	0.5	0.5	0.5

ND = Not Detected

MW-2 and MW-4.

Benzene was detected in the groundwater samples collected from wells MW-1 and MW-3 at a concentrations of 110 µg/L (ppb) and 57 µg/l (ppb). No detectable concentrations of Benzene were found in shallow groundwater samples from wells MW-2 and MW-4.

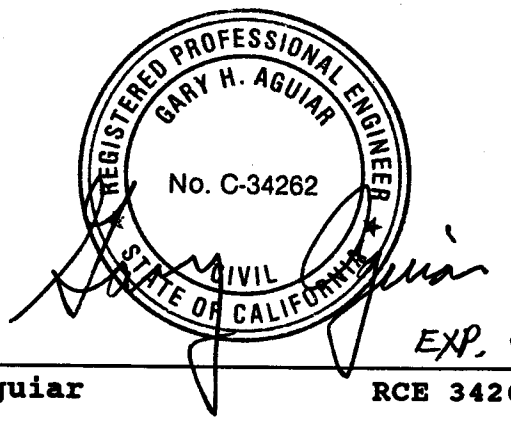
As shown in Table 3, Toluene and Ethyl Benzene were detected in the shallow groundwater sample taken from well MW-3 at a concentrations of 17 µg/l (ppb) and 32 µg/l (ppb), respectively. No detectable concentrations of Toluene or Ethyl Benzene were found in any of the shallow groundwater samples collected from wells MW-1, MW-2, or MW-4.

Total Xylenes were detected in the shallow groundwater samples taken from MW-1 and MW-3 at concentrations of 2.8 µg/l (ppb) and 56 µg/l (ppb), respectively. No detectable concentrations of Total Xylenes were found in any of the shallow groundwater samples collected from wells MW-2 and MW-4.

A copy of the laboratory certificate for the water sample analysis is included in Attachment C.

QUARTERLY GROUNDWATER SAMPLING REPORT
PACIFIC CRYOGENIC COMPANY
2311 Magnolia Street, Oakland, CA

June 7, 1996



EXP. 9-30-99

Gary Aguiar **RCE 34262**

Mark Hainsworth **Staff Engineer**

ATTACHMENT A

Well Sampling Logs

WELL SAMPLING LOG

Project/No. PACIFIC OXYGEN

Page 1 of 4

Site Location OAKLAND, CA

Date 5.8.96

Well No. MW-1

Time Began _____

Weather CLOUDY LOW 60'S

Completed _____

Sampling Personnel J. CONNORS

EVACUATION DATA

Description of Measuring Point (MP) WELL BOX @ GRADE

Total Sounded Depth of Well Below MP 15.83

Diameter of Casing 2"

- Depth to Water Below MP 5.55

= Water Column in Well 10.28

Gallons in Casing 1.6 + Annular Space (30% porosity) (x 4 / x 10) = Total Gallons (6.5 / 16.3)

Gallons Pumped Prior to Sampling 15

Evacuation Method PVC BAILER

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: SM OIL DROPLETS, STRONG FUEL ODOR
(thickness to 0.1 inch, if any)

Time	11:55	12:03	12:12	
Gals Removed	5	10	15	
Temperature	68.9	69.5	68.9	
Conductivity	800	730	750	
pH	7.22	7.17	7.20	
Color / Odor	SHEEN FUEL ODOR	GREY SHEEN FUEL ODOR	GREY SHEEN FUEL ODOR	
Turbidity	LOW	MOD	MOD	

Comments: OIL GREASE ON SOUNDING

WELL SAMPLING LOG

Project/No. PACIFIC OXYGEN

Page 3 of 4

Site Location OAKLAND, CA

Date 5·8·96

Well No. MW-3

Time Began _____

Completed _____

Weather SUNNY, MID 70's

Sampling Personnel J. CONNORS

EVACUATION DATA

Description of Measuring Point (MP) WELL BOX @ GRADE

Total Sounded Depth of Well Below MP 22.37

- Depth to Water Below MP 7.18

Diameter of Casing 2"

= Water Column in Well 15.19

Gallons in Casing 2.4 + Annular Space (30% porosity) (x 4 / x 10) = Total Gallons (9.6 / 24.5)

Gallons Pumped Prior to Sampling 25

Evacuation Method PVC BAILER

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: NONE STRONG FUEL ODOR
(thickness to 0.1 inch, if any)

Time	13:10	13:18	13:25	13:33	13:42
Gals Removed	5	10	15	20	25
Temperature	66.5	66.7	66.0	65.9	65.9
Conductivity	1150	1060	1130	1220	1150
pH	7.01	6.99	6.94	6.90	6.91
Color / Odor	GREY SILT FUEL ODOR	GREY SILT FUEL ODOR	GREY SILT FUEL ODOR	GREY SILT FUEL ODOR	SILT FUEL ODOR
Turbidity	HIGH	HIGH	HIGH	HIGH	HIGH

Comments: VERY STRONG FUEL ODOR WHILE EXTRACTING BAILER

WELL SAMPLING LOG

Project/No. PACIFIC OXYGEN

Page 4 of 4

Site Location OAKLAND, CA

Date 5.8.96

Well No. MW-4

Time Began _____

Weather SUNNY HIGH 70's

Completed _____

Sampling Personnel J. CONNORS

EVACUATION DATA

Description of Measuring Point (MP) WELL BOX @ GRADE

Total Sounded Depth of Well Below MP 13.42

\- Depth to Water Below MP 6.67

Diameter of Casing 4"

= Water Column in Well 6.75

Gallons in Casing 3.9 + Annular Space (30% porosity) (x 4 / x 10) = Total Gallons (15.7 / 39.2)

Gallons Pumped Prior to Sampling 40

Evacuation Method PVC BAILER

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: NONE, CLEAR
(thickness to 0.1 inch, if any)

Time	13:55	14:07	14:18	14:26
Gals Removed	5	20	30	40
Temperature	66.5	66.3	66.1	65.6
Conductivity	820	860	890	860
pH	7.10	7.07	7.10	7.06
Color / Odor	CLEAR FUEL ODOR	CLEAR FUEL ODOR	CLEAR FUEL ODOR	CLEAR FUEL ODOR
Turbidity	Ø	LOW	LOW	LOW

Comments: GOOD RECHARGE

ATTACHMENT B

ALAMEDA COUNTY
DEPARTMENT OF ENVIRONMENTAL HEALTH
LETTER

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Environmental Protection Division
1131 Harbor Bay Parkway, #250
Alameda, CA 94502-6577
(510) 567-6700

August 23, 1995
STID 1211

Aldo Guidotti
Estate of Jean Josephine
1 Bates Blvd., #300
Orinda CA 94536

RE: Pacific Cryogenic, 2311 Magnolia St., Oakland CA 94607

Dear Mr. Guidotti,

Since my last letter to you, dated 3/23/94, I have received the following documents:

1) 5/9/94 "Report of Quarterly Groundwater Sampling," prepared by Hageman-Aguiar

2) 9/14/94 "Report of Quarterly Groundwater Sampling," prepared by Hageman-Aguiar

3) 11/15/94 "Report of Quarterly Groundwater Sampling," prepared by Hageman-Aguiar

4) 4/6/95 "Report of Quarterly Groundwater Sampling," prepared by Hageman-Aguiar

Based on a review of these documents, it appears that some changes can be made in the sampling matrix. Since MW2 has been cross-gradient and ND for TPH-gasoline and BTEX for the past 13 quarters, **it would be acceptable to reduce the sampling frequency from quarterly to annually.** Since MW1 has been upgradient and NDfor TPH-gasoline and BTEX for the past 4 quarters, **it would be acceptable to reduce the sampling frequency from quarterly to annually. These wells should be sampled in the spring quarter. The extractable analyses (TPH-kerosene, -diesel, -mineral spirits, and -motor oil) may be deleted entirely from all four wells. Quarterly monitoring should continue in order to determine flow direction.**

If you have any questions, please contact me at 510-567-6700, ext 6761; our fax number is 510-337-9335. **You are encouraged to submit reports on double-sided paper in order to save trees.**

Sincerely,

Jennifer Eberle
Hazardous Materials Specialist

cc: Gary Aguiar, 3732 Mt. Diablo Blvd., suite 372, Lafayette CA 94549
Leroy Todd/file
je.1211

ATTACHMENT C

ANALYTICAL RESULTS: GROUNDWATER

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

May 10, 1996 PEL # 9605015

HAGEMAN - AGUIAR, INC.

Attn: Mark Hainsworth

Re: Four water samples for Gasoline/BTEX analysis.

Project name: Pacific Cryogenic Co.
Project location: 2311 Magnolia St., - Oakland, CA.

Date sampled: May 08, 1996 Date submitted: May 09, 1996
Date extracted: May 09-10, 1996 Date analyzed: May 09-10, 1996

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylene (ug/L)
MW-1	110	1.0	N.D.	N.D.	2.8
MW-2	N.D.	N.D.	N.D.	N.D.	N.D.
MW-3	19000	57	17	32	56
MW-4	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	102.7%	100.1%	84.8%	80.8%	81.4%
Detection limit	50	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	602	602	602	602

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PEL # 9605015

INV # 26977

CHAIN OF CUSTODY RECORD

PROJECT NAME AND ADDRESS:
PACIFIC CRYOGENIC CO.
2311 MAGNOLIA ST.
OAKLAND, CA

SAMPLER: (Signature)

HAGEMAN - AGUIAR, INC.
3732 Mt. Diablo Blvd., Suite 372
Lafayette, CA 94549
(415)284-1661 (415)284-1664 (FAX)

ANALYSIS REQUESTED: TPH GAS/BTXE

CROSS REFERENCE NUMBER	DATE	TIME	SOIL	WATER	STATION LOCATION	TPH GAS/BTXE	REMARKS
MW-1	5.8.96	15:10		X	MONITORING WELL # 1	X	NORM. TAT
MW-2	5.8.96	15:20		X	# 2	X	
MW-3	5.8.96	15:30		X	# 3	X	
MW-4	5.8.96	15:40		X	# 4	X	

RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
John L Common	5.9.96 / 0745		
RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED FOR LABORATORY BY: (Signature)	DATE 5/9/96 / TIME 7:45