

Underground Contamination Investigations, Groundwater Consultants, Environmental Engineering

REPORT OF QUARTERLY GROUNDWATER SAMPLING

(sampled August 3, 1994)

PACIFIC CRYOGENIC COMPANY 2311 Magnolia Street Oakland, CA

September 14, 1994

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ATTACHMENT A -- Well Sampling Logs

ATTACHMENT B -- Hazardous Waste Manifest

ATTACHMENT C -- Analytical Results: Groundwater

I. INTRODUCTION

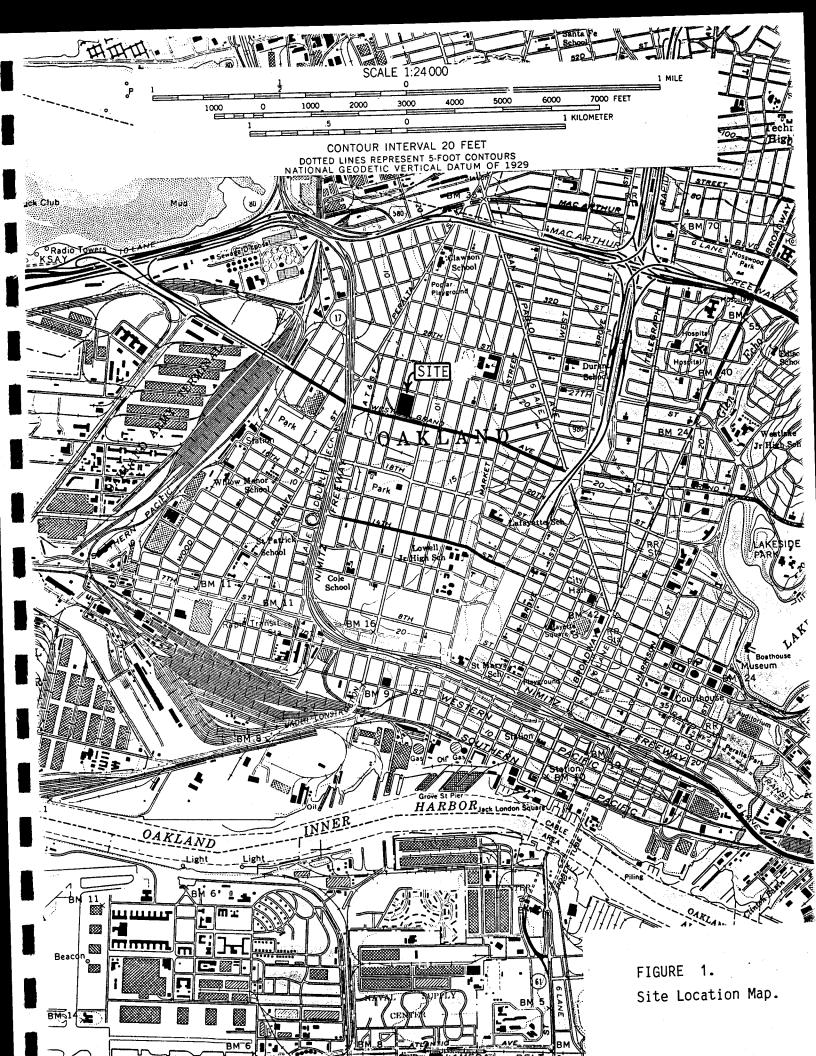
The subject site is the historical location of Pacific Cryogenic Company at 2311 Magnolia Street, Oakland, California. The location of the site is shown on Figure 1 (site location map).

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 μ g/L, and Benzene, Toluene, Ethylbenzene, and Total Xylenes at concentrations of 1,200 μ g/L, 18 μ g/L, 7.1 μ g/L, and 37 μ g/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, Inc. (see Figure 2). During the removal process, several holes were noted in both the waste oil and the gasoline



WEST GRAND AVENUE

FIGURE 2. Site Map.

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 August 3, 1994, 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 August 3, 1994, 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. 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. sample was placed inside appropriate 40 mL VOA vials and 1liter 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.

On September 6, 1994, approximately 250 gallons of accumulated well purge water was transported to Alviso Independent Oil Company by Waste Oil Recovery Systems under Uniform Hazardous Waste Manifest #93730056. VA copy of the manifest is provided in Attachment B.

III. RESULTS OF WATER LEVEL MEASUREMENTS

Shallow Groundwater Flow Direction

Shallow water table elevations were measured on August 3, 1994. 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 = 0.2'/22' = 0.0090.

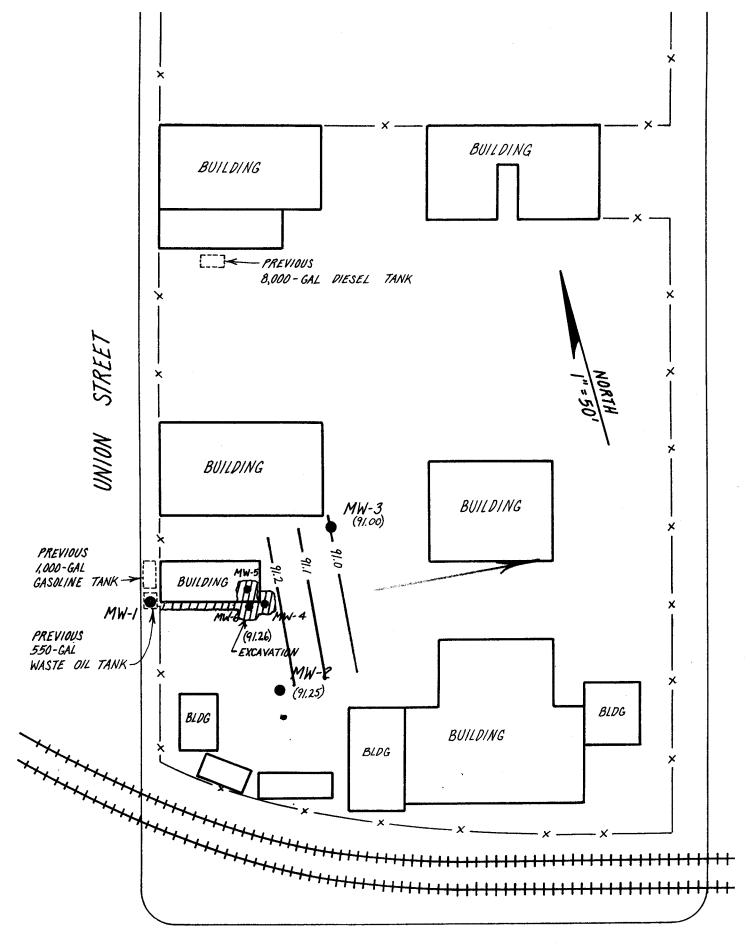
Historical Water Level Measurements

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
August 3, 1994

Well	Top of Casing Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)
MW-1	99.27		
MW-2	100.00	8.75	91.25
MW-3	100.02	9.02	91.00
MW-4	99.95	8.69	91.26



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TABLE 2.

Historical Water Table Elevations (feet)

		Date of Measurement									
Well	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		

		Date of Measurement							
Well	8-3-94								
MW-1									
MW-2	91.25								
MW-3	91.00								
MW-4	91.26								
Flow Direction	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), Benzene, Toluene, Ethylbenzene, and Total Xylenes (EPA method 602) and, Total Petroleum Hydrocarbons as Diesel, Kerosene, Mineral Spirits and Motor Oil (EPA method 8015).

Results of Groundwater Sampling

Tables 3 and 4 presents 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, Total Petroleum Hydrocarbons as Gasoline were detected in the groundwater samples collected from wells MW-3 and MW-4 at concentrations of 2,500 μ g/L (ppb) and 1,000 μ g/L (ppb), respectively. In addition, Benzene was detected in the groundwater samples collected from wells MW-3 and MW-4 at concentrations of 35 μ g/L (ppb) and 22 μ g/L (ppb), respectively.

As shown in Table 4, for this round of sampling, Total Petroleum Hydrocarbons as Diesel, Kerosene, Mineral Spirits or Motor Oil were not detected in the groundwater samples collected from wells MW-1, MW-2, MW-3 and MW-4.

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

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 03-04-92 04-03-92 06-16-92 10-09-92 01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 08-03-94	460 300 220 ND 210 280 110 ND 190 ND	1200 120 21 54 ND 0.7 0.9 ND ND ND ND ND	18 9.0 6.0 17 ND 3.7 1.3 ND ND ND ND	7.1 16 15 29 ND 4.4 2.9 0.5 ND 6.7 ND ND	37 44 36 73 ND 9.6 6.2 1.1 ND 21 ND
MW-2 03-04-92 04-03-92 06-16-92 10-09-92 01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 08-03-94		ND N		ND N	ND ND ND ND ND ND ND ND ND	
Detection Limit		50	0.5	0.5	0.5	0.5

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 04-03-92 06-16-92 10-09-92 01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 08-03-94	14,000 5,200 6,000 11,000 4,200 21,000 16,000 10,000 7,500 22,000 2,500	6,200 120 180 87 3.3 23 19 4.3 8.5 69	60 32 45 49 13 43 21 5.7 10 39	110 57 82 94 44 49 25 7.9 50 60 27	740 180 190 200 92 130 78 35 95 110 25
MW-4	01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 08-03-94	4,800 2,700 3,000 1,400 830 900 1,000	6.4 8.3 3.7 0.6 8.5 7.3	25 11 4.2 0.8 10 3.2 0.7	60 31 4.9 1.1 12 0.5 8.0	110 59 15 4.8 27 14 7.4
Detection Limit		50	0.5	0.5	0.5	0.5

TABLE 4.

Shallow Groundwater Sampling Results

Well	Date	TPH as Kerosene (ug/L)	TPH as Diesel (ug/L)	TPH as Mineral Spirits (ug/L)	TPH as Motor Oil (ug/L)
MW-1	10-26-90 03-04-92 04-03-92 06-16-92 10-09-92 01-07-93 04-23-93 07-16-93 11-08-93 01-28-94	 ND ND ND ND	5,400 590 ND 730 ND ND ND S9 ND	 ND	 ND ND ND ND
	05-02-94 08-03-94	ND ND	ND ND	ND ND	ND ND
MW-2	MW-2 03-04-92 04-03-92 06-16-92 10-09-92 01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 08-03-94		ND ND ND ND ND ND ND ND	 ND ND ND	 ND ND ND ND ND
Detection	Detection Limit		50	50	50

TABLE 4. (continued)

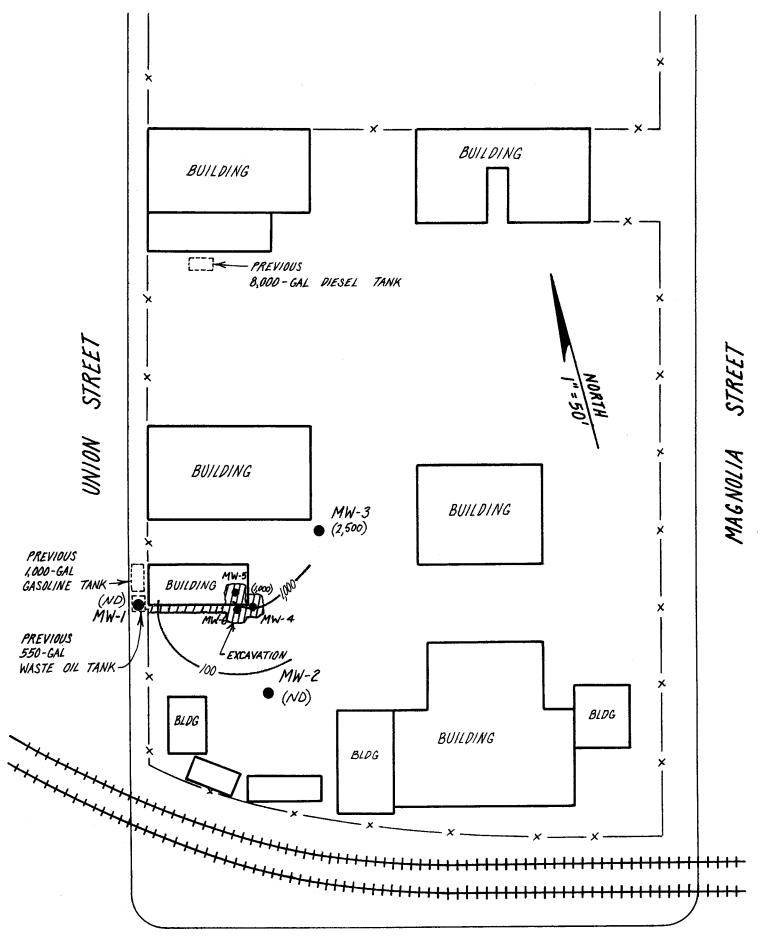
Shallow Groundwater Sampling Results

TPH as TPH as TPH as **TPH** as **Motor Oil** Mineral Diesel Kerosene (ug/L) **Spirits** (ug/L) (ug/L) Well **Date** (ug/L) MW-3 03-04-92 360 ND 04-03-92 ND ND ND 06-16-92 ND ND 10-09-92 ND ND 01-07-93 ND ND ND 04-23-93 07-16-93 ND ND 11-08-93 370 ND 310 01-28-94 ND ND ND ND 05-02-94 ND ND ND ND 08-03-94 ND ND MW-4 ND 01-07-93 NĎ 04-23-93 ND ND 07-16-93 ND 11-08-93 ND 180 01-28-94 160 ND ND ND ND 05-02-94 ND ND ND ND 08-03-94 ND 50 **50** 50 **Detection Limit** 50

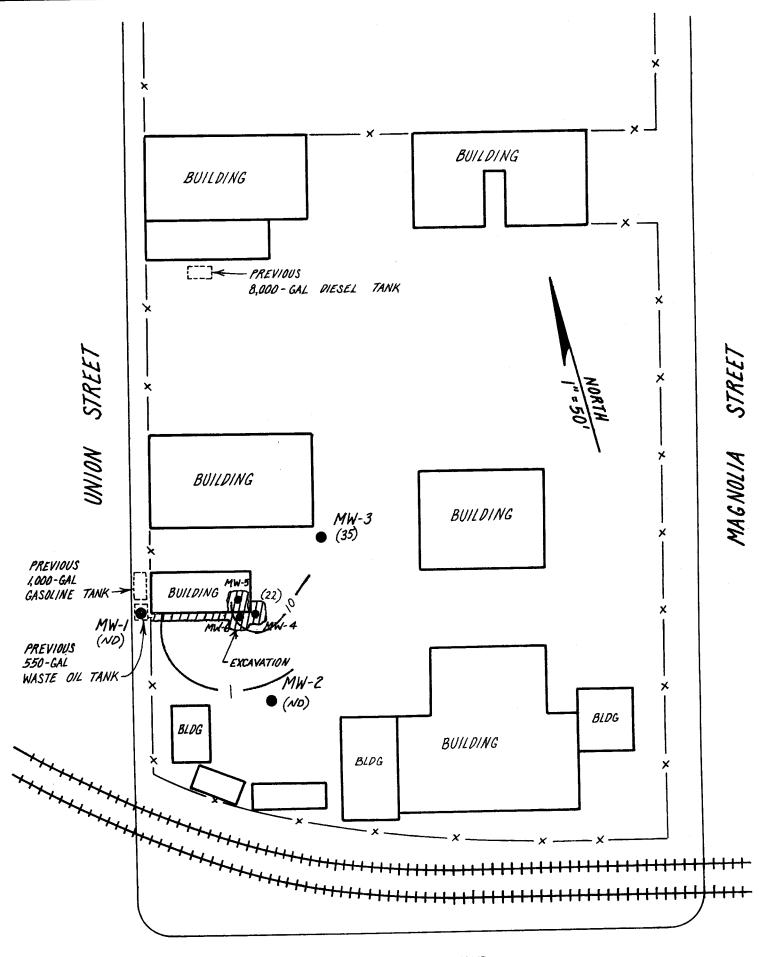
Chemical Concentration Contours

Figures 4 and 5 show lines of equal concentration for Gasoline and Benzene in the shallow groundwater. Since these lines have been drawn based upon relatively limited data (four data points), the plot represents only a small portion of the respective concentration plume. The plot does suggest, however, that the dissolved concentrations are now centered somewhere around the area of monitoring well MW-3.

The shift in the location of the center of the concentration plume appears to coincide with the removal of the subsurface contamination source (contaminated soil beneath piping leak). The elevated petroleum hydrocarbons concentrations detected in well MW-3 are representative of residual concentrations that have migrated down-gradient of this location. With continued shallow groundwater movement beneath the site, future shallow groundwater sampling results are likely to reflect continued attenuation of concentrations due to hydrodynamic dispersion.



WEST GRAND AVENUE



WEST GRAND AVENUE

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

September 14, 1994

Gary Aguiar RCE 34262

Gerard F. Aarons

'Geologist

ATTACHMENT A

WELL SAMPLING LOGS

WELL SAMPLING LOG

Project/No. 🚄	ACIFIC (XYGEN	P	age of	2
Well No. Mil	OAKLA. VEAR/F	ŕ	Time E	Date <u>8/3/</u> Began <u>///5</u> Leted <u>/205</u>	
weather	E-72/7		Comp	7	
	TVAC	NIATION DAT			
	EVAC	CUATION DATA		h	·
Description of Measu	ring Point (MP)	NE	u Box	HT G	SEALE
Total Sounded Depth	of Well Below M	23,24			
- Depth	to Water Below M	8.75	Diame: of Ca	ter sing	
= Vate	er Column in Wel	14.49			
		*			73
Gallons in Casing	<u> </u>	Annular Space (30% porosity)	$\frac{(x / c)}{(x / c)} =$	Total Gallons	23
		•			23
	· 		llons Pumped Prio		
Evacuation Method		PVC	BAILET	<u> </u>	
	SAMPL	ING DATA /	FIELD PARAME	TERS	
		·			
Inspection for I	Free Product:	NONE	Derec	TED	
(thickness to 0.	.1 inch, if any)				
Time	115	1130	1140	1150	
Gals Removed	0		16	23	
Temperature	19.5	19.0	19.3	19.3	
Conductivity	290	340	765	392	
pH	7,3	7.0	(,-7	7.0	
Color / Odor		orq.		Coxlass	
			Stell west	GEY JORG	
Turbidity	10 w	lou	med	med	
. /	1/000				

WELL SAMPLING LOG

Project/No. PACIFIC OXYGEN	Page 2 of 3
Site Location ORKLAND CA	Date <u>6/3/9</u> 4
Well No. MW 3	•
Weather CLEAR 750F	me Began <u>1015</u> ompleted <u>1435</u>
EVACUATION DATA	
Description of Measuring Point (MP) WELL Ro	LA CONS
	X M GRADE
Total Sounded Depth of Well Below MP 22,96	ameter //
- Depth to Water Below MP 9,01 of	ameter Casing
= Water Column in Well 13.95	
Gallons in Casing $\frac{2 - 2}{2}$ + Annular Space $\frac{2 - 2}{2}$	= Total Gallons 10,4
(30% porosity)	C ,
Gallons Pumped P	rior to Sampling
Evacuation Method PVC BAILE	R
SAMPLING DATA / FIELD PARA	METERS
A . X	
Inspection for Free Product: Nove Determine (thickness to 0.1 inch, if any)	CTEL A
	- 7
Time 1015 1021 1425	-
Gals Removed S	
Temperature 21-8 20,4 20,1	
Conductivity 350 400 480	
pt 7,3 7,2 7.0	
color 1 Odor CLE/HC GRY/HC GRY/H	<u>e</u>
Turbidity Low HIEH HIEH	
,	
Comments: * DEWATERED! VE	
RECHARGE RA	97E .

WELL SAMPLING LOG

Project/No. 👱	PACIFIC	DX YEER	✓ P	age <u>3</u> of <u>3</u>	<u>3</u>
	CAKL	and, CA	•	Date <u>8/3</u>	194
Well No. 💋	W4			•	
Weather	IEAR/	750F	Time E Compl	eted <u>// 7.5</u>	<u></u>
		CUATION DATA	/	4 -	
Description of Meas	uring Point (MP)	NEL	c Box	AT GR	MAE
Total Sounded Depth	of Well Below Mi	14.30	Diamet		
- Depth	to Water Below M	· <u>8.69</u>	of Ca	sing 4	
	er Column in Wel				
Gallons in Casing _	3,5+	Annular Space (NONE)=	Total Gallons	3,5
		Gall	ons Pumped Prior	to Sampling	15
Evacuation Method _	P	ve B.			
	SAMPL	ING DATA / F	IELD PARAMET	TERS	
	Free Product:	NONE	DETER	TED	
Time	1121	1126	1130	1135	
Gals Removed		_5	10	15	
Temperature	21.3	19.9	20.2	20.7	
Conductivity	280	270	280	290	
Hq	7,3	7,2	7.1	7,0	
Color / Odor	<u>cirloses</u>	Ex/ore	Ext ORE	Ex GRE	
Turbidity	Low	MED	MED	MED	
Comments:	NONE				

ATTACHMENT B

HAZARDOUS WASTE MANIFEST

CALL 1-800-852-7550

CENTER 1-800-424-8802: WITHIN CALIFORNIA,

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE

See Instructions on back of page 6.

_	10th designed for use on elife (12-pi				•	•			iacramento, Cali	
	UNIFORM HAZARDOUS WASTE MANIFEST	1 2 1	1 US EPA 10 No. 9018089k	Manifest Do		· .	2. Page 1		n in the shaded ired by Federal	
	3-Generator's Name and Mailing Address PACIFIC OXYGEN		7 7		1	State Ma	nifest Document	Number		
	2311 MAGNOLIA 4. Generator's Phone (5/0) Z { 416/	1 00 v	YAA IN CA				elekar (P			
	5. Transporter 1 Company Name	1 UAR	6. US EPA ID Number	<u> </u>		iale Iral	esanos es			
	WASTE OIL RECOV 7. Transporter 2 Company Name	FRY	CAIDODO	60650			a de la companya de	V/A4.0	referit	
ļ	7. Transporter 2 Company Name		8. US EPA ID Numbe	10 0 5 1	D SE S	tale Tran	sporter's ID			<u> </u>
						ransport	er's Phone			
	9. Designated Facility Name and Site Address ALVISO INDEPENDE 5002 ARCHER STI	NT O	10. US EPA ID Numbe	er ·	6	itate Fac	liny's ID 😘 🧱			
	5002 ARCHER STI	REET			SH. F	ocility's f	hone			
-	ALVISO, CA 9500	2	CALIODO	041851	7/	Kin,	3+40	4 2 5		500
-	11. US DOT Description (including Proper Ship		·	N	. Container		13. Total Quantity	14. Unit Wt/Vol	Waste North	ber .
Ì	· USED OILS, NON	RCRA	HAZARDO	27					27	750
	WASTE, LIQUI	Ď,		00	1 7	MO1	0750	6	TIST D	701
ſ	b.	··· <u>···</u>	**		** * 		CHP	9	Sight .	
					, ,				EPA/Other	
	c.				1-1-1				State at Section	
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ŀ	d.				1 1	_1				
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2	Additional Descriptions for Moterials Unlead A								EPA/ORe/Ap	
	AND TEACH		VATER		K. H	andling (odes for Wast	s Listed Abo bu		
C						011	5			
							a de la companya de			
1	15. Special Handling Instructions and Additional WEAR PERSONAL	Information PROTE	CTIVE EG	MIPMER	JT					
	24 HOLUR EMERG									
-	EKG#27									
	 GENERATOR'S CERTIFICATION: I hereby packed, marked, and labeled, and are in a 	declare that the c	ontents of this consignmen	t are fully and accu	rately descr	ibed abo	ove by proper st	nipping name	and are classif	fied,
										- [
	If I am a large quantity generator, I certification and that I have sufficed to human health and the environment	elected the practic	able method of treatment	: storage, or dispo	al currently	availab	le to me which	minimizes the	a present and f	interes
\vdash	waste management method that is available Printed/Typed Name	to me and that I	can afford.	i nave made a go	oa taim ett	or to m	inimize my wast	e generation	and select the	best
	VETE CTH		Signature	一つなる。	/			019	10161	94
	17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name	of Materials	Signation	47.						
	MONICA FALCON		Marie	160				09	10161	9 1
	18. Transporter 2 Acknowledgement of Receipt Printed/Typed Name	of Materials	Signature	*** \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				Month	Day	Year
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	19. Discrepancy Indication Space						-			
										.
-	20. Facility Owner or Operator Certification of	receipt of hazarda	us moterials sovered by	his manifest august	ar ant-d :-	Ham. 10				
Γ	Printed/Typed Name	- action of nuzurao	Signature	mannest except	us noted in	irem 19.		Month	Day	Year
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ATTACHMENT C

ANALYTICAL RESULTS: GROUNDWATER

PRIORITY LABS

FAX NO. 4089469663

P. 01



ENTAL LABS

Equironthenial Analytical Laboratory

August 08, 1994

PEL # 9408012

HAGEMAN-AGUIAR, INC.

Attn: Jeffrey Roth

Re: Four water samples for Gasoline/STEX and TEPH analyses.

Project name: Pacific Oxygen

Project location: Union Street - Oakland, CA

Date sampled: Aug 03, 1994

Date extracted: Aug 04-06, 1994

Date submitted: Aug 04, 1994 Date analyzed: Aug 04-06, 1994

RESULTS:

I.D.	(ug/L)	<pre>Gasoline (ug/L)</pre>		Benzene (vg/L)		e Ethyl Benzene (ug/L)	Total Motor Xylenes Gil (ug/L)(mg/L)	Spirits
MW 1 MW 2 MW 3 MW 4	N.D. N.D. N.D. N.D.	N.D. N.D. 2500 1000	N.D. N.D. N.D. N.D.	N.D. N.D. 35 22	N.D. N.D. 12 0.7	N.D. N.D. 27 8.0	N.D. N.D. N.D. N.D. 25 N.D. 7.4 N.D.	N.D. N.D. N.D. N.D.
Blank	N.D.	N.D.	N - D -	N.D.	N.D.	N.D.	N.D. N.D.	N.D.
Spiked Recovery	· · · · · · · · · · · · · · · · · · ·	97.9%	100.72	90.3%	92.5%	105.2%	98.5%	
Detection limit	50	50	, 5 q	0.5	0.5	0.5	0.5 0.5	5.0
Method of Analysi		5030/ 8015	3510/ 8015	602	602	602	3510/ 602 8015	3510/ 8015

David Duong Laboratory Director

CHAIN OF CUSTODY RECORD

PEL # 9408012

INV # 25058

PROJECT NAME AND ADDRESS: PACIFIC OXYGEN LINION ST. CANLAND, CA					HAGEMAN - AGL!IAR, INC. 3732 Mt. Diablo Blvc., Suite 372 Lafayette, CA 94548 (415)284-1661 (415)284-1664 (FAX)			ANALYSIS REQUESTED								
CROSS REFERENCE NUMBER	REFERENCE DATE TIME I T E E E R				STATION LOCATION			REMARKS								
mw/	9-3-94	1015		λ	MONITOR WELL	# /		X	X					Noe	n TAT	
mw2	0-3-94			X	1 1	# 2		×	×						/	
MW 3	0-394	1430		×		#3		×	X							
	8-3-94	1145		λ	V V	#4		×	X					\mathcal{V}		
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RELINQUISHED BY	: (Signature)	DATE TIME	RECEIVED BY: (Signature)									DATE				
RELINQUISHED BY	: (Signature)		DATE TIME	RECEIVED FOR LABORATORY BY: (Signature)									TIME 12 2			