



June 7, 1993

81-429-203

Juliet Shin
Alameda County Department of
Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621-1426

Re: Shell Service Station
WIC #204-0072-0502
2160 Otis Drive
Alameda, California
WA Job #81-429-203

Dear Ms. Shin:

This letter describes recently completed and anticipated activities at the Shell service station referenced above (Figure 1). This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 265.d. Included below are descriptions and results of activities performed in the second quarter 1993 and proposed work for the third quarter 1993.

Second Quarter 1993 Activities:

- Blaine Tech Services, Inc., (BTS) of San Jose, California measured depths to ground water in all site wells and collected ground water samples from one of the three site wells. Wells MW-1 and S-1 are sampled annually during the first quarter and were not sampled this quarter. BTS' report describing these sampling activities and including the laboratory analytic report for ground water samples is included as Attachment A.
- Weiss Associates (WA) compiled the ground water elevation data (Table 1) and the laboratory analytic results (Tables 2A and 2B) and prepared a ground water elevation contour map (Figure 2).

Juliet Shin
June 7, 1993

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Anticipated Third Quarter 1993 Activities:

WA will submit a report presenting the results of the third quarter 1993 ground water sampling and ground water depth measurements. The report will include tabulated chemical analytic results, ground water elevations and a ground water elevation contour map.

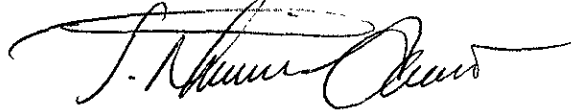
Conclusions and Recommendations

- The ground water appears to flow in a more northerly direction compared to last quarter.
- Hydrocarbon and volatile organic compound (VOC) concentrations are consistent with previous results.

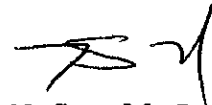
Please call if you have any questions.



Sincerely,
Weiss Associates



J. Michael Asport
Technical Assistant



N. Scott MacLeod, R.G.
Project Geologist

JMA/NSM:jma

J:\SHELL\425\QMRPTS\429QMMY3.WP

Attachments: Figures
 Tables
 A - EMCON's Ground Water Monitoring Report

cc: Dan Kirk, Shell Oil Company, P.O. Box 5278, Concord, CA 94520
 Tom Callaghan, Water Quality Control Board, San Francisco Bay Region, 2101 Webster Street,
 Suite 500, Oakland, CA 94612

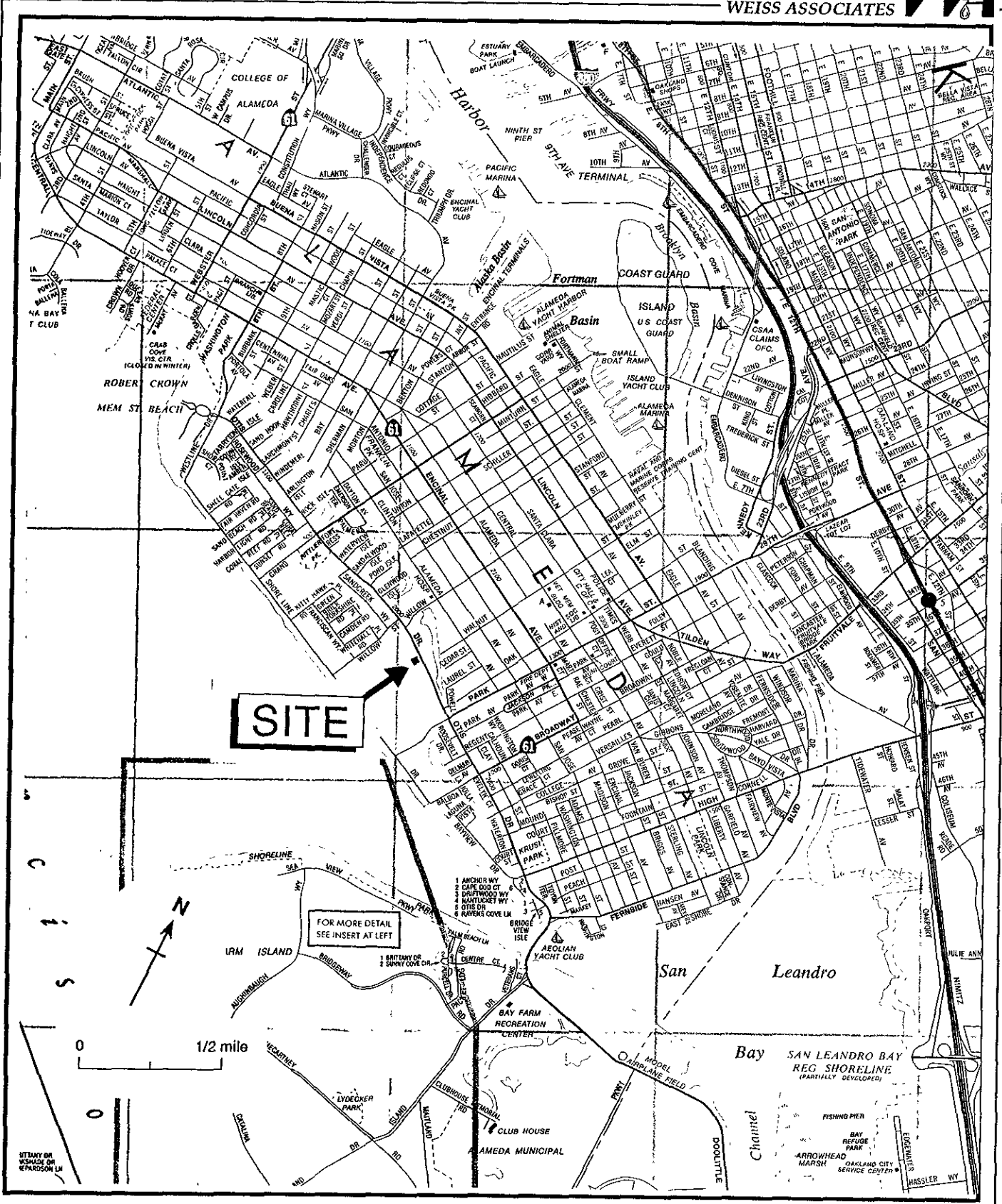
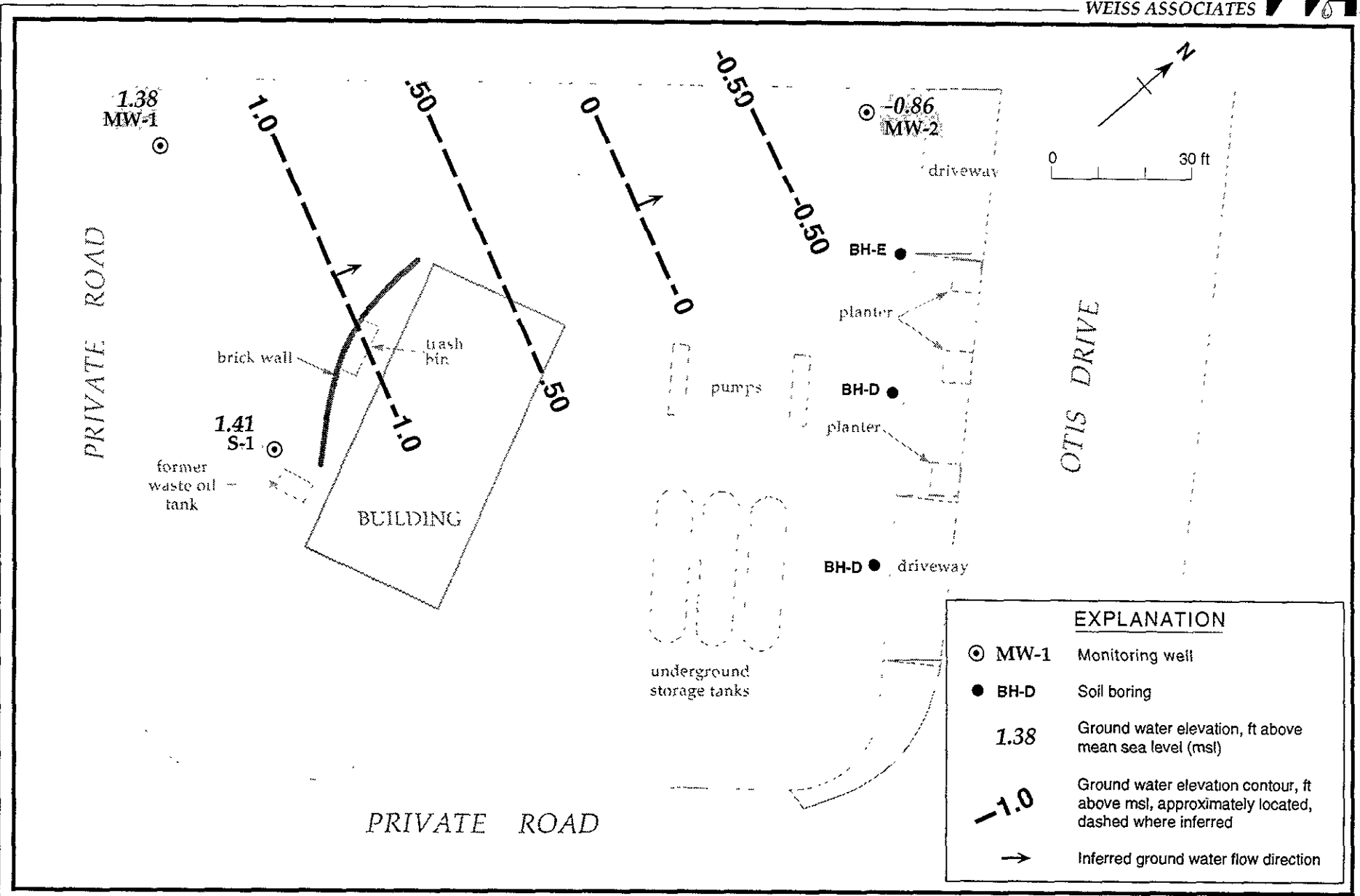


Figure 1. Site Location Map - Shell Service Station, WIC# 204-0072-0502, 2160 Otis Drive, Alameda, CA



EXPLANATION	
⊙ MW-1	Monitoring well
● BH-D	Soil boring
1.38	Ground water elevation, ft above mean sea level (msl)
-1.0	Ground water elevation contour, ft above msl, approximately located, dashed where inferred
→	Inferred ground water flow direction

Figure 2. Monitoring Well Locations, Soil Boring Locations and Ground Water Elevation Contours - April 8, 1993 - Shell Service Station WIC #204-0072-2160, 2160 Otis Drive, Alameda, California

Table 1. Ground Water Elevations - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
MW-1	04/11/90	6.00	5.23	0.77
	07/10/90		5.40	0.60
	10/09/90		5.61	0.39
	01/17/91		5.66	0.34
	04/09/91		4.96	1.04
	07/10/91		5.52	0.48
	10/09/91		5.70	0.30
	01/24/92		5.51	0.49
	04/23/92		5.14	0.86
	07/01/92		4.48	1.52
	10/02/92		5.80	0.20
	01/05/93		5.34	0.66
	04/08/93		4.62	1.38
	MW-2		04/11/90	3.29
07/10/90		4.61	-1.32	
10/09/90		4.74	-1.45	
01/17/91		4.73	-1.44	
04/09/91		4.09	-0.80	
07/10/91		4.66	-1.37	
10/09/91		4.81	-1.52	
01/24/92		4.66	-1.37	
04/23/92		4.51	-1.22	
07/01/92		4.57	-1.28	
10/02/92		4.80	-1.51	
01/05/93		4.39	-1.1	
04/08/93		4.15	-0.86	
S-1		09/11/90	5.10	
	04/11/90	4.00		1.10
	07/10/90	4.25		0.85
	10/09/90	4.46		0.64
	01/17/91	4.53		0.57
	04/09/91	4.20		0.90
	07/10/91	4.42		0.68
	10/09/91	4.87		0.23
	01/24/92	4.90		0.20
	04/23/92	4.66		0.44
	07/01/92	4.85		0.25
	10/02/92	4.80		0.30
	01/05/93	5.38		-0.28
	04/08/93	3.69		1.41

Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID	Date Sampled	Depth to Water (ft)	Analytical Lab	TPH-G	TPH-D	B	E	T	X	TOG
				-----parts per million (mg/L)-----						
S-1 (Annually) (1st Qtr)	09/04/87		IT	---	---	<0.005	<0.005	<0.005	<0.005	---
	09/11/89*	4.29	IT	<0.05	<0.1	<0.0005	<0.001	<0.001	<0.003	<1.0
	04/11/90	4.00	NET	<0.050	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	<10
	07/10/90	4.25	NET	<0.090	---	<0.0005	<0.0005	<0.0005	<0.0005	<10
	10/09/90	4.46	IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	<5
	01/17/91	4.53	IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/09/91	4.20	IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/10/91	4.42	IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/09/91	4.87	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/24/92	4.90	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/23/92	4.66	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/01/92	4.85	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/02/92	5.80	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/05/93	5.38	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
MW-1 (Annually) (1st Qtr)	04/11/90	5.23	NET	<0.050	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	<10
	07/10/90	5.40	NET	0.10	---	<0.0005	<0.0005	<0.0005	<0.0005	<10
	10/09/90	5.61	IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	<5
	01/17/91	5.66	IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/09/91	4.96	IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/10/91	5.52	IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/09/91	5.70	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/24/92	5.51	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/23/92	5.14	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/01/92	4.48	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/02/92	4.80	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/05/93	5.34	AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	MW-2 (Quarterly)	04/11/90	4.51	NET	0.20 ^b	0.22	0.0027	<0.0005	0.0005	0.0024
07/10/90		4.61	NET	0.57 ^b	0.45	0.15	<0.0005	0.0009	0.0031	<10
10/09/90		4.74	IT	0.190 ^b	0.051	0.055	<0.0005	<0.0005	<0.0005	<5
01/17/91		4.73	IT	0.35 ^b	<0.05	0.051	<0.0005	<0.0005	<0.0005	---
04/09/91		4.09	IT	---	<0.05	0.021	<0.005	<0.005	<0.005	---
07/10/91		4.66	IT	0.05 ^b	<0.05	0.0084	<0.0005	<0.0005	<0.0005	---
10/09/91		4.81	AMX	0.15	---	0.022	<0.0005	<0.0005	<0.0005	---
01/24/92		4.66	AMX	<0.05	---	0.0048	<0.0005	<0.0005	<0.0005	---
04/23/92		4.51	AMX	<0.05	---	0.0023	0.0015	<0.0005	<0.0005	---
07/01/92		4.57	AMX	0.13	---	0.019	<0.0005	<0.0005	<0.0005	---
10/02/92		4.80	AMX	0.12	---	0.0078	<0.0005	<0.0005	<0.0008	---
01/05/93		4.39	AMX	0.20	---	0.009	<0.0005	0.0006	0.0018	---
04/08/93		4.15	AMX	0.17	---	0.0096	<0.0005	<0.0005	0.0016	---
BH-C	12/17/92	5.0		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---

Exceeding drinking water
Std's.

Trans-1,2-DCE: 7.8ppb
Cis-1,2-DCE: 38ppb
TCE: 1.13ppb

Proposed MCL's (DHS)

Trans-1,2-DCE: 10ppb
Cis-1,2-DCE: 6ppb
TCE: 5ppb



Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Well ID	Date Sampled	Depth to Water (ft)	Analytical Lab	TPH-G	TPH-D	B	E	T	X	TOG
				-----parts per million (mg/L)-----						
BH-D	12/17/92	5.0		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---
BH-E	12/17/92	5.5		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---
Trip	07/10/90		NET	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---
Blank	10/09/90		IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/17/91		IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/09/91		IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/10/91		IT	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/09/91		AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/24/92		AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/23/92		AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/01/92		AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/02/92		AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/05/93		AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/08/93		AMX	<0.05	---	<0.0005	<0.0005	<0.0005	<0.0005	---
DTSC MCLs				NE	NE	0.001	0.680	0.10 ^c	1.75	---

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015

TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015

B = Benzene by EPA Method 602, 624, 8020, or 8240

E = Ethylbenzene by EPA Method 602, 624, 8020, or 8240

T = Toluene by EPA Method 602, 624, 8020, or 8240

X = Xylenes by EPA Method 602, 624, 8020, or 8240

POG = Petroleum oil and grease by American Public Health Association Standard Methods 503

DTSC MCLs = Department of Toxic Substances Control maximum contaminant levels

<n = Not detected above detection limit of n ppm

NE = DTSC MCL not established

BH-C = Grab Ground Water Sample

Notes:

a = 0.090 ppm chromium, 0.090 ppm lead and 0.10 ppm Zn detected; no cadmium detected above detection limit of 0.010 ppm by EPA Method 6010. No semi-volatile organic compounds or PCBs detected by EPA Method 625. DHS MCLs for Cr = 0.05 ppm; Pb = 0.05 ppm; secondary MCL for Zn = 5 ppm.

b = Chromatographic pattern not typical for gasoline; according to the laboratory, the concentration is due mostly to lighter hydrocarbon compounds.

c = DTSC recommended action level for drinking water; MCL not established



Table 2B. Analytic Results for Ground Water - Volatile Organic Compounds - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID	Date Sampled	Depth to Water (ft)	TCE	TCA	PCE	Chloroform	cis-1,2-DCE	trans-1,2-DCE	1,2-DCA	Carbon Disulfate	Vinyl Chloride
			-----Parts Per Million (mg/L)-----								
S-1	09/04/87 ^a	---	---	---	---	---	---	---	---	---	---
	09/11/89	4.29	ND	ND	ND	ND	ND	ND	ND	ND	ND
	04/11/90	4.00	<0.0004	<0.0004	<0.0004	0.0017	<0.0004	<0.0004	<0.0004	---	<0.0004
	07/10/90	9.25	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	---	<0.002
	10/09/90	4.96	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---	<0.002
MW-1	04/11/90	5.23	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	---	<0.0004
	07/10/90	5.40	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	---	<0.002
	10/09/90	5.61	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---	<0.002
MW-2	04/11/90	4.51	0.0012	<0.0004	<0.0004	0.0045	<0.0004	0.016	<0.0004	---	<0.002
	07/10/90	4.61	0.00093	<0.0004	<0.0004	0.0017	<0.0004	0.011	0.00044	---	<0.002
	10/09/90	4.74	0.0013	<0.0005	0.0016	0.015	0.046	0.0067	<0.0005	---	0.0025
	01/17/91 ^b	4.73	0.0012	<0.0005	0.0006	0.0026	0.074	0.012	0.0005	---	0.0030
	04/09/91 ^c	4.09	<0.0005	<0.0005	<0.0005	<0.0005	0.064	<0.0005	<0.0005	<0.0005	<0.010
	07/10/91 ^d	4.66	<0.0005	<0.0005	0.0069	0.043	<0.0005	<0.0005	<0.0005	0.014	<0.010
	10/09/91	4.81	0.0019	<0.0005	0.028	0.0074	0.054	0.016	<0.0005	---	0.0017
	01/24/92	4.66	0.0025	<0.0005	0.0070	0.0190	0.0160	0.0043	0.0006	---	<0.0005
	04/23/92	4.51	<0.0005	<0.0005	0.003	<0.0005	0.084	0.018	<0.0005	---	<0.003
	07/01/92	4.57	0.002	<0.0005	0.002	<0.0005	0.054	0.014	<0.0005	---	0.001
	10/92/92	4.80	0.001	<0.0005	<0.0005	<0.0005	0.061	0.012	<0.0005	---	<0.001
	01/05/93	4.39	0.0017	<0.0005	0.0022	<0.0005	0.033	0.0087	<0.0005	---	0.00067
	04/08/93	4.15	0.0013	<0.0005	<0.0005	<0.0005	0.038	0.0078	<0.0005	---	<0.001
BH-C	12/17/93	5.0	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	---	0.002
BH-D	12/17/93	5.0	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	---	0.002
BH-E	12/17/93	5.5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	---	0.002
DTSC MCLs			0.005	0.200	0.005	NE	0.006	0.01	0.0005	NE	0.0005

Abbreviations:

TCE = Trichloroethene by EPA Method 601/8010 or 8240
 TCA = 1,1,1-Trichloroethane by EPA Method 601/8010 or 8240
 PCE = Tetrachloroethene by EPA Method 601/8010 or 8240
 cis-1,2-DCE = cis-1,2-Dichloroethene by EPA Method 601/8010 or 8240
 trans-1,2-DCE = trans-1,2-Dichloroethene by EPA Method 601/8010 or 8240
 --- = Not analyzed
 <0.0004 = Not detected, detection limit not known
 1,2-DCA = 1,2 dichloroethane by EPA Method 601/8010 or 8240

DTSC MCLs = Department of Toxic Substance control maximum contaminant levels

NE = DTSC MCL not established
 ND = Analyte not detected, detection limit not known

Notes:

a = 0.007 ppm unknown alcohol and 0.27 ppm acetone detected
 b = 0.005 ppm chlorobenzene detected
 c = 0.064 ppm 1,2-DCE detected
 d = 0.0092 ppm benzene detected by EPA Method 8240



ATTACHMENT A
GROUND WATER MONITORING REPORT AND ANALYTIC REPORT

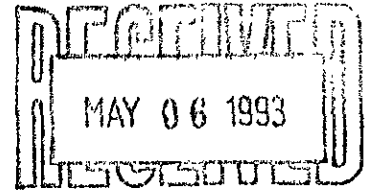
BLAINE TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

April 27, 1993

Shell Oil Company
P.O. Box 5278
Concord, CA 94520-9998

Attn: Daniel T. Kirk



SITE:
Shell WIC # 204-0072-0502
2160 Otis Drive
Alameda, California

QUARTER:
2nd quarter of 1993

QUARTERLY GROUNDWATER SAMPLING REPORT 930408-T-2

This report contains data collected during routine inspection, gauging and sampling of groundwater monitoring wells performed by Blaine Tech Services, Inc. in response to the request of the consultant who is overseeing work at this site on behalf of our mutual client, Shell Oil Company. Data collected in the course of our field work is presented in a **TABLE OF WELL GAUGING DATA**. The field information was collected during our preliminary gauging and inspection of the wells, the subsequent evacuation of each well prior to sampling, and at the time of sampling.

Measurements taken include the total depth of the well and the depth to water. The surface of the water was further inspected for the presence of immiscibles which may be present as a thin film (a sheen on the surface of the water) or as a measurable free product zone (FPZ). At intervals during the evacuation phase, the purge water was monitored with instruments that measure electrical conductivity (EC), potential hydrogen (pH), temperature (degrees Fahrenheit), and turbidity (NTU). In the interest of simplicity, fundamental information is tabulated here, while the bulk of the information is turned over directly to the consultant who is making professional interpretations and evaluations of the conditions at the site.

TABLE OF WELL GAUGING DATA

WELL I.D.	WELL DIAMETER (inches)	DATA COLLECTION DATE	MEASUREMENTS REFERENCED TO	QUALITATIVE OBSERVATIONS (sheen)	DEPTH TO FIRST IMMISCIBLE LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLE LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
MW-1	4	04-08-93	TOP OF PIPE	--	NONE	--	--	4.62	16.52
MW-2	4	04-08-93	TOP OF PIPE	--	NONE	--	--	4.15	17.16
S-1	3	04-08-93	TOP OF PIPE	--	NONE	--	--	3.69	18.79

STANDARD PROCEDURES

Evacuation

Groundwater wells are thoroughly purged before sampling to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The selection of equipment to evacuate each well is based on the physical characteristics of the well and what is known about the performance of the formation in which the well has been installed. There are several suitable devices which can be used for evacuation. The most commonly employed devices are air or gas actuated pumps, electric submersible pumps, and hand or mechanically actuated bailers. Our personnel frequently employ USGS/Middleburg positive displacement pumps or similar air actuated pumps which do not agitate the water standing in the well.

Normal evacuation removes three case volumes of water from the well. More than three case volumes of water may be removed in cases where more evacuation is needed to achieve stabilization of water parameters. Less than three case volumes of water may be obtained in cases where the well dewateres and does not recharge to 80% of its original volume within two hours and any additional time our personnel have reason to remain at the site. In such cases, our personnel return to the site within twenty four hours and collect sample material from the water which has recharged into the well case.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site.

Free Product Skimmer

The column headed, VOLUME OF IMMISCIBLES REMOVED (ml) is included in the TABLE OF WELL GAUGING DATA to cover situations where a free product skimming device must be removed from the well prior to gauging. Skimmers are installed in wells with a free product zone on the surface of the water. The skimmer is a free product recovery device which often prevents normal well gauging and free product zone measurements. The 2.0" and 3.0" PetroTraps fall into the category of devices that obstruct normal gauging. In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the PetroTrap before putting it back in the well. This recovered free product is measured and logged in the VOLUME OF IMMISCIBLES REMOVED column. Gauging at such site is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on Shell's behalf.

Sample Containers

Sample material is collected in specially prepared containers which are provided by the laboratory that performs the analyses.

Sampling

Sample material is collected in stainless steel bailer type devices normally fitted with both a top and a bottom check valve. Water is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label. Either the requested analyses or the specific analytes are written on the sample label (e.g. TPH-G, BTEX).

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Shell Oil Company chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to Anametrix, Inc. in San Jose, California. Anametrix, Inc. is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #1234.

Objective Information Collection

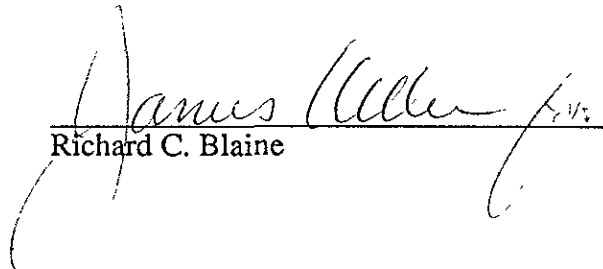
Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. performs no consulting and does not become involved in the marketing or installation of

remedial systems of any kind. Blaine Tech Services, Inc. is concerned only with the generation of objective information, not with the use of that information to support evaluations and recommendations concerning the environmental condition of the site. Even the straightforward interpretation of objective analytical data is better performed by interested regulatory agencies, and those engineers and geologists who are engaged in the work of providing professional opinions about the site and proposals to perform additional investigation or design remedial systems.

Reportage

Submission of this report and the attached laboratory report to interested regulatory agencies is handled by the consultant in charge of the project. Any professional evaluations or recommendations will be made by the consultant under separate cover.

Please call if we can be of any further assistance.



Richard C. Blaine

RCB/kkl

attachments: chain of custody
certified analytical report

cc: Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608-2411
ATTN: Kristina Koltavary

204
0502

9304114

18 10



SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD

Serial No: _____

Date: 0408-93

Page 1 of 1

Site Address: 2160 OTIS DRIVE, ALAMEDA, CA

WIC#: 204 0072 0502

Shell Engineer: DANIEL T. KIRK Phone No.:
Fax #:

Consultant Name & Address: BLAINE TECH SERVICES

Consultant Contact: GLEN BENNETT Phone No.:
Fax #:

Comments:

Sampled by: Francisco Thie

Printed Name: FRANCIS THIE

Analysis Required

TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/802)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	EPA 601	Asbestos	Container Size	Preparation Used	Composite Y/N
✓	✓	✓	✓	✓	✓	✓				

LAB: AN AMETRIX

CHECK ONE (1) BOX ONLY	C1/D1	TURN AROUND TIME
Quality Monitoring <input checked="" type="checkbox"/> 8441		24 hours <input type="checkbox"/>
Site Investigation <input type="checkbox"/> 8441		48 hours <input type="checkbox"/>
Soil Cleanup/Disposal <input type="checkbox"/> 8442		16 days <input checked="" type="checkbox"/> (Normal)
Water Cleanup/Disposal <input type="checkbox"/> 8443		Other <input type="checkbox"/>
Soil/Air Rem. of Sys. O & M <input type="checkbox"/> 8442		
Water Rem. of Sys. O & M <input type="checkbox"/> 8443		
Other <input type="checkbox"/>		

NOTE: Notify Lab as soon as Possible of 24/48 hr. TAT.

Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/802)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	EPA 601	Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS	
① MW 2	4/8			✓		6	✓	✓	✓	✓	✓	✓	✓							
② Trip Blank	↓			✓		2	✓	✓	✓	✓	✓	✓	✓							this sample was not written in as received. 4/9/93

Relinquished By (signature): <i>Francisco Thie</i>	Printed Name: FRANCIS THIE	Date: 4-9-93 Time: 15:40	Received (signature): <i>[Signature]</i>	Printed Name: J L THOMPSON	Date: 4/9/93 Time: 16:00
Relinquished By (signature): <i>[Signature]</i>	Printed Name: J L THOMPSON	Date: 4/9/93 Time: 17:20	Received (signature): <i>[Signature]</i>	Printed Name: Maria Barajas	Date: 4/9/93 Time: 17:20
Relinquished By (signature):	Printed Name:	Date: Time:	Received (signature):	Printed Name:	Date: Time:

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS



MR. GLEN BENNETT
BLAINE TECH
985 TIMOTHY STREET
SAN JOSE, CA 95133

Workorder # : 9304114
Date Received : 04/09/93
Project ID : 204-0072-0502
Purchase Order: MOH-B813

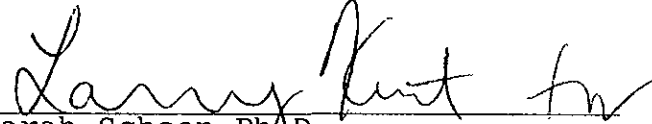
The following samples were received at Anamatrix, Inc. for analysis :

ANAMETRIX ID	CLIENT SAMPLE ID
9304114- 1	MW-2
9304114- 2	T. BLANK

This report consists of 12 pages not including the cover letter, and is organized in sections according to the specific Anamatrix laboratory group or section which performed the analysis(es) and generated the data. The Report Summary that precedes each section will help you determine which Anamatrix group is responsible for those test results, and will bear the signatures of the department supervisor and the chemist who have reviewed the analytical data. Please refer all questions to the department supervisor who signed the form.

Anamatrix is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234. A detailed list of the approved fields of testing can be obtained by calling our office, or the DHS Environmental Laboratory Accreditation Program at (415)540-2800.

If you have any further questions or comments on this report, please give us a call as soon as possible. Thank you for using Anamatrix.



Sarah Schoen, Ph.D.
Laboratory Director

4-23-93
Date

ANAMETRIX REPORT DESCRIPTION GC

Organic Analysis Data Sheets (OADS)

OADS forms contain tabulated results for target compounds. The OADS are grouped by method and, within each method, organized sequentially in order of increasing Anamatrix ID number.

Surrogate Recovery Summary (SRS)

SRS forms contain quality assurance data. An SRS form will be printed for each method, if the method requires surrogate compounds. They will list surrogate percent recoveries for all samples and any method blanks. Any surrogate recovery outside the established limits will be flagged with an "*", and the total number of surrogates outside the limits will be listed in the column labelled "Total Out".

Matrix Spike Recovery Form (MSR)

MSR forms contain quality assurance data. They summarize percent recovery and relative percent difference information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. Any percent recovery or relative percent difference outside established limits will be flagged with an "*", and the total number outside the limits will be listed at the bottom of the page. Not all reports will contain an MSR form.

Qualifiers

Anamatrix uses several data qualifiers (Q) in its report forms. These qualifiers give additional information on the compounds reported. They should help a data reviewer to verify the integrity of the analytical results. The following is a list of qualifiers and their meanings:

- U - Indicates that the compound was analyzed for, but was not detected at or above the specified reporting limit.
- B - Indicates that the compound was detected in the associated method blank.
- J - Indicates that the compound was detected at an amount below the specified reporting limit. Consequently, the amount should be considered an approximate value. Tentatively identified compounds will always have a "J" qualifier because they are not included in the instrument calibration.
- E - Indicates that the amount reported exceeded the linear range of the instrument calibration.
- D - Indicates that the compound was detected in an analysis performed at a secondary dilution.

Absence of a qualifier indicates that the compound was detected at a concentration at or above the specified reporting limit.

REPORTING CONVENTIONS

- ◆ Due to a size limitation in our data processing step, only the first eight (8) characters of your project ID and sample ID will be printed on the report forms. However, the report cover letter and report summary pages display up to twenty (20) characters of your project and sample IDs.
- ◆ Amounts reported are gross values, i.e., not corrected for method blank contamination.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. GLEN BENNETT
BLAINE TECH
985 TIMOTHY STREET
SAN JOSE, CA 95133

Workorder # : 9304114
Date Received : 04/09/93
Project ID : 204-0072-0502
Purchase Order: MOH-B813
Department : GC
Sub-Department: VOA

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9304114- 1	MW-2	WATER	04/08/93	8010

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. GLEN BENNETT
BLAINE TECH
985 TIMOTHY STREET
SAN JOSE, CA 95133

Workorder # : 9304114
Date Received : 04/09/93
Project ID : 204-0072-0502
Purchase Order: MOH-B813
Department : GC
Sub-Department: VOA

QA/QC SUMMARY :

- No QA/QC problems encountered for sample.

Corinne K. Giam
Department Supervisor

4/23/93
Date

Kamel G. Kamel 4/23/93
Chemist Date

DESCRIPTIONS FOR SPECIFIC COMPOUNDS ANALYZED
EPA METHOD 601/8010

<u>CAS #</u>	<u>COMPOUND NAME</u>	<u>ABBREVIATED NAME</u>
74-87-3	Chloromethane	Chloromethane
74-83-9	Bromomethane	Bromoethane
75-71-8	Dichlorodifluoromethane	Freon 12
75-01-4	Vinyl Chloride	Vinyl Chloride
75-00-3	Chloroethane	Chloroethane
75-09-2	Methylene Chloride	Methylene Chlor
75-69-4	Trichlorofluoromethane	Freon 11
75-35-4	1,1-Dichloroethene	1,1-DCE
75-34-3	1,1-Dichloroethane	1,1-DCA
156-59-2	Cis-1,2-Dichloroethene	Cis-1,2-DCE
156-60-5	Trans-1,2-Dichloroethene	Trans-1,2-DCE
67-66-3	Chloroform	Chloroform
76-13-1	Trichlorotrifluoroethane	Freon 113
107-06-2	1,2-Dichloroethane	1,2-DCA
71-55-6	1,1,1-Trichloroethane	1,1,1-TCA
56-23-5	Carbon Tetrachloride	Carbon Tet
75-27-4	Bromodichloromethane	BromodichloroMe
78-87-5	1,2-Dichloropropane	1,2-DCPA
10061-02-6	Trans-1,3-Dichloropropene	Trans-1,3-DCPE
79-01-6	Trichloroethene	TCE
124-48-1	Dibromochloromethane	DibromochloroMe
79-00-5	1,1,2-Trichloroethane	1,1,2-TCA
10061-01-5	Cis-1,3-Dichloropropene	Cis-1,3-DCPE
110-75-8	2-Chloroethylvinylether	Chloroethylvinl
75-25-2	Bromoform	Bromoform
127-18-4	Tetrachloroethene	PCE
79-34-5	1,1,2,2-Tetrachloroethane	PCA
108-90-7	Chlorobenzene	Chlorobenzene
95-50-1	1,2-Dichlorobenzene	1,2-DCB
541-73-1	1,3-Dichlorobenzene	1,3-DCB
106-46-7	1,4-Dichlorobenzene	1,4-DCB

ORGANIC ANALYSIS DATA SHEET -- EPA METHOD 8010
 ANAMETRIX, INC. (408)432-8192

Project ID : 204-0072
 Sample ID : MW-2
 Matrix : WATER
 Date Sampled : 4/ 8/93
 Date Analyzed : 4/21/93
 Instrument ID : HP10

Anamatrix ID : 9304114-01
 Analyst :
 Supervisor : *ef KK*
 Dilution Factor : 2.0
 Conc. Units : ug/L

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Freon 12	2.0	ND	U
74-87-3	Chloromethane	2.0	ND	U
75-01-4	Vinyl Chloride	1.0	ND	U
74-83-9	Bromomethane	1.0	ND	U
75-00-3	Chloroethane	1.0	ND	U
75-69-4	Freon 11	1.0	ND	U
76-13-1	Freon 113	1.0	ND	U
75-35-4	1,1-DCE	1.0	ND	U
75-09-2	Methylene Chlor	2.0	ND	U
156-60-5	Trans-1,2-DCE	1.0	7.8	U
75-34-3	1,1-DCA	1.0	ND	U
156-59-2	Cis-1,2-DCE	1.0	38.	U
67-66-3	Chloroform	1.0	ND	U
71-55-6	1,1,1-TCA	1.0	ND	U
56-23-5	Carbon Tet	1.0	ND	U
107-06-2	1,2-DCA	1.0	ND	U
79-01-6	Trichloroethene	1.0	1.3	U
78-87-5	1,2-DCPA	1.0	ND	U
75-27-4	Bromodichlorome	1.0	ND	U
110-75-8	Chloroethylvinl	2.0	ND	U
10061-01-5	Cis-1,3-DCPE	1.0	ND	U
10061-02-6	Trans-1,3-DCPE	1.0	ND	U
79-00-5	1,1,2-TCA	1.0	ND	U
127-18-4	PCE	1.0	ND	U
124-48-1	Dibromochlorome	1.0	ND	U
108-90-7	Chlorobenzene	1.0	ND	U
75-25-2	Bromoform	1.0	ND	U
79-34-5	1,1,2,2-PCA	1.0	ND	U
541-73-1	1,3-DCB	2.0	ND	U
106-46-7	1,4-DCB	2.0	ND	U
95-50-1	1,2-DCB	2.0	ND	U

ORGANIC ANALYSIS DATA SHEET -- EPA METHOD 8010
 ANAMETRIX, INC. (408)432-8192

Project ID : 204-00
 Sample ID : BLK421
 Matrix : WATER
 Date Sampled : 0/ 0/ 0
 Date Analyzed : 4/21/93
 Instrument ID : HP10

Anamatrix ID : 10B0421H01
 Analyst : KK
 Supervisor : CP
 Dilution Factor : 1.0
 Conc. Units : ug/L

CAS No.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
75-71-8	Freon 12	1.0	ND	U
74-87-3	Chloromethane	1.0	ND	U
75-01-4	Vinyl Chloride	.50	ND	U
74-83-9	Bromomethane	.50	ND	U
75-00-3	Chloroethane	.50	ND	U
75-69-4	Freon 11	.50	ND	U
76-13-1	Freon 113	.50	ND	U
75-35-4	1,1-DCE	.50	ND	U
75-09-2	Methylene Chlor	1.0	ND	U
156-60-5	Trans-1,2-DCE	.50	ND	U
75-34-3	1,1-DCA	.50	ND	U
156-59-2	Cis-1,2-DCE	.50	ND	U
67-66-3	Chloroform	.50	ND	U
71-55-6	1,1,1-TCA	.50	ND	U
56-23-5	Carbon Tet	.50	ND	U
107-06-2	1,2-DCA	.50	ND	U
79-01-6	Trichloroethene	.50	ND	U
78-87-5	1,2-DCPA	.50	ND	U
75-27-4	Bromodichlorome	.50	ND	U
110-75-8	Chloroethylvinl	1.0	ND	U
10061-01-5	Cis-1,3-DCPE	.50	ND	U
10061-02-6	Trans-1,3-DCPE	.50	ND	U
79-00-5	1,1,2-TCA	.50	ND	U
127-18-4	PCE	.50	ND	U
124-48-1	Dibromochlorome	.50	ND	U
108-90-7	Chlorobenzene	.50	ND	U
75-25-2	Bromoform	.50	ND	U
79-34-5	1,1,2,2-PCA	.50	ND	U
541-73-1	1,3-DCB	1.0	ND	U
106-46-7	1,4-DCB	1.0	ND	U
95-50-1	1,2-DCB	1.0	ND	U

SURROGATE RECOVERY SUMMARY -- EPA METHOD 8010
 ANAMETRIX, INC. (408)432-8192

Project ID : 204-0072
 Matrix : LIQUID

Anamatrix ID : 9304114
 Analyst :
 Supervisor : *CP KK*

	SAMPLE ID	SU1	SU2	SU3
1	BLK421	57		
2	MW-2	89		
3				
4				
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6				
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8				
9				
10				
11				
12				
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29				
30				

QC LIMITS

SU1 = CHLOROFLUOROBEN

(51-136)

* Values outside of Anamatrix QC limits

LABORATORY CONTROL SAMPLE
 EPA METHOD 601/8010
 ANAMETRIX, INC. (408)432-8192

Project/Case : LABORATORY CONTROL SAMPLE
 Matrix : WATER
 SDG/Batch : N/A
 Date analyzed : 04/21/93

Anamatrix I.D. : W0042193
 Analyst :
 Supervisor : *ep kc*
 Instrument I.D.: HP10

COMPOUND	SPIKE AMOUNT (ug/L)	AMOUNT RECOVERED (ug/L)	PERCENT RECOVERY	%RECOVERY LIMITS
FREON 113	10	8.9	89%	34 - 128
1,1-DICHLOROETHENE	10	9.9	99%	63 - 133
trans-1,2-DICHLOROETHENE	10	10.5	105%	55 - 145
1,1-DICHLOROETHANE	10	9.6	96%	49 - 121
cis-1,2-DICHLOROETHENE	10	10.6	106%	66 - 168
1,1,1-TRICHLOROETHANE	10	10.1	101%	72 - 143
TRICHLOROETHENE	10	9.8	98%	63 - 147
TETRACHLOROETHENE	10	9.8	98%	60 - 133
CHLOROBENZENE	10	10.2	102%	70 - 148
1,3-DICHLOROBENZENE	10	10.7	107%	49 - 139
1,4-DICHLOROBENZENE	10	10.8	108%	70 - 133
1,2-DICHLOROBENZENE	10	11.1	111%	69 - 140

* Limits based on data generated by Anamatrix, Inc., August, 1992.

REPORT SUMMARY
ANAMETRIX, INC. (408)432-8192

MR. GLEN BENNETT
BLAINE TECH
985 TIMOTHY STREET
SAN JOSE, CA 95133

Workorder # : 9304114
Date Received : 04/09/93
Project ID : 204-0072-0502
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9304114- 1	MW-2	WATER	04/08/93	TPHg/BTEX
9304114- 2	T. BLANK	WATER	04/08/93	TPHg/BTEX

REPORT SUMMARY
ANAMETRIX, INC. (408) 432-8192

MR. GLEN BENNETT
BLAINE TECH
985 TIMOTHY STREET
SAN JOSE, CA 95133

Workorder # : 9304114
Date Received : 04/09/93
Project ID : 204-0072-0502
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for these samples.

Cheryl Bauman 4/15/93
Department Supervisor Date

Lucy Stier 4/15/93
Chemist Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS
(GASOLINE WITH BTEX)
ANAMETRIX, INC. - (408) 432-8192

Anamatrix W.O.: 9304114
Matrix : WATER
Date Sampled : 04/08/93

Project Number : 204-0072-0502
Date Released : 04/15/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# MW-2	Sample I.D.# T. BLANK	Sample I.D.# BA1301E3
Benzene	0.5	9.6	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	1.6	ND	ND
TPH as Gasoline	50	170	ND	ND
% Surrogate Recovery		88%	94%	100%
Instrument I.D.		HP12	HP12	HP12
Date Analyzed		04/13/93	04/13/93	04/13/93
RLMF		1	1	1

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using modified EPA Method 8015 following sample purge and trap by EPA Method 5030.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA Method 8020 following sample purge and trap by EPA Method 5030.
- RLMF - Reporting Limit Multiplication Factor.

Anamatrix control limits for surrogate p-Bromofluorobenzene recovery are 61-139%

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

Lucia Starz 4/15/93
Analyst Date

Cheryl Balmer 4/15/93
Supervisor Date

TOTAL VOLATILE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
 EPA METHOD 5030 WITH GC/FID
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
 Matrix : WATER
 Date Sampled : N/A
 Date Analyzed : 04/13/93

Anamatrix I.D. : LCSW0413
 Analyst : IS
 Supervisor : *JS*
 Date Released : 04/15/93
 Instrument I.D.: HP12

COMPOUND	SPIKE AMT. (ug/L)	REC LCS (ug/L)	%REC LCS	% REC LIMITS
GASOLINE	250	259	104%	67-127
SURROGATE			70%	61-139

* Quality control established by Anamatrix, Inc.