HYDRO ENVIRONMENTAL TECHNOLOGIES, INC.

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Alameda, CA 94501
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1-800-347-HETI
Massachusetts
New York

#113

93 JUL 23 PM 1:31

2-4411

① hw above monthly gradient

July 22, 1993

Mr. Dan Kirk
Shell Oil Company
P. O. Box 5278
Concord, California 94520

Re: Shell Service Station, 4411 Foothill Boulevard, Oakland, California
WIC# 204-6852-1008

Dear Mr. Kirk,

Hydro-Environmental Technologies, Inc. (HETI) is pleased to present this letter report describing the installation of two additional ground water monitoring wells at the referenced location. Findings and recommendations presented in this report are based on observations recorded during drilling, ground water monitoring, and results of lab analysis of ground water samples collected by the Shell Oil Company (Shell) sampling contractor on June 8 and June 29, 1993. This report also serves to satisfy state and local quarterly monitoring requirements. A copy of this report has been forwarded to the Alameda County Department of Environmental Health (ACDEH) and to the Regional Board.

Background

The subject site is located on the southern corner of the intersection of Foothill Boulevard and High Street in Oakland, California (Figure 1). The neighborhood in the immediate vicinity of the site is mixed commercial and residential, with service stations occupying the northern and western corners of the intersection. Fremont High School is located on the eastern corner.

The environmental investigation at the Shell site was initiated in November 1992, following the removal of an underground used oil tank. A single monitoring well (S-1) was installed in the vicinity of the former waste oil tank location during the

first phase of this effort. Petroleum hydrocarbons were detected in soil and ground water samples collected during this preliminary investigation. A complete description of methodologies and results associated with the installation of S-1 are presented in the GeoStrategies January 19, 1993 Monitoring Well Installation Report.

Environmental investigations are also in process at the other service stations present at the intersection of Foothill Boulevard and High Street. Investigative reports submitted by Chevron USA (western corner of intersection, across High Street) indicate the presence of seperate phase hydrocarbons on ground water in the vicinity of the Chevron fuel storage and dispensing system. A plume of dissolved hydrocarbons has been detected in ground water downgradient from the wells containing separate phase hydrocarbons. Chevron reports suggest that ground water beneath this site is moving southwest. It should be noted, however, that the Chevron wells are completed at different depths, and as such may intersect several discrete water bearing zones. A ground water extraction and treatment system is currently in operation at the Chevron site.

Investigative reports prepared by consultants retained by BP Oil Company (northern corner of the intersection) document the presence of separate and dissolved phase hydrocarbons beneath the BP site. BP reports indicate that local ground water is moving towards the northwest.

Investigative Methodologies

Soil Boring and Monitoring Well Installation:

Monitoring wells S-2 and S-3 were installed on the Shell site by HETI on May 21, 1993. Each boring was continuously cored in order to enable a detailed evaluation of subsurface stratigraphic conditions. Soil samples for laboratory analysis were collected from the vadose zone at five foot intervals during borehole advancement. Drilling and sampling methodologies utilized during the installation of these monitoring wells are described in the workplan submitted to the ACDEH by GeoStrategies on February 23, 1993. Boring locations are shown on Figure 2.

Monitoring, Surveying, and Sampling:

Wellhead elevations were surveyed and the depth to water from the top of each well casing was measured by HETI field technicians on May 28, 1993. It was noted

that water in S-1, S-2 and S-3 was under pressure, and that monitoring well caps should be removed several hours prior to gauging in order to allow the water levels to stabilize. Two subsequent gauging events were conducted on June 3 and June 8 in order to collect stabilized water table information. Well caps were removed 12 hours prior to gauging in each case. Manhole covers remained bolted to the ground during the pre-gauging period in order to maintain well security.

Results of Investigation

Site Stratigraphy and Hydrogeology:

The shallow subsurface beneath the Shell site is comprised of interbedded clay, sand, and gravel. As shown on the well logs recorded during the advancement of soil borings S-2 and S-3 (Appendix A), first water was encountered at approximately 14 feet below grade. Ground water stabilized at 8-10 feet below ground surface following well installation.

Ground Water Gradient:

Depth to ground water measurements were combined with surveyed well head elevations to yield a ground water gradient map (Figure 3A and 3B). Water table elevations are recorded in Table 1.

As shown on these figures, ground water gradient as measured on June 3 and June 8 is towards the northwest. This flow direction is consistent with that measured at the BP site, but not consistent with that shown by Chevron.

Soil Sample Analytical Data:

Laboratory analytical data indicate that soil samples collected from S-2 and S-3 contain concentrations of gasoline constituents. Compounds of higher boiling point hydrocarbons (total petroleum hydrocarbons in the diesel range) were detected in soil samples collected from S-3. A complete summary of soil sample results is shown in Table 1. Analytical reports are presented in Appendix B.

Ground Water Analytical Data:

Analytical results indicate the presence of dissolved hydrocarbons in water samples collected from all three monitoring wells. Hydrocarbon concentrations were highest in the sample collected from S-3, located near the downgradient edge of the Shell

site. Complete historical and recent analytical data is presented in Table 2. Benzene distribution in ground water samples is shown on Figure 4.

Summary

Two additional investigative wells were installed at the subject site in May 1993. Laboratory analytical data indicated that soil samples collected during borehole advancement contained concentrations of petroleum hydrocarbons. Lab data also indicated the presence of hydrocarbons in water samples collected from each of the three on-site monitoring wells. The local ground water gradient was determined to be towards the northwest.

Planned Third Quarter Activities

The next round of quarterly monitoring/ground water sample collection is scheduled for September 1993. An evaluation of hydrocarbon distribution/ground water gradient data will be included in the report presenting results of this quarterly event.

All information and interpretation in this report is presented in accordance with currently accepted professional practices. This report has been prepared for the sole use of Shell Oil Company. Any reliance on the information presented herein by third parties will be at such parties' sole risk. HETI is pleased to be of continued service to Shell. If you have any questions or comments regarding this report, please do not hesitate to call.

Very truly yours,
HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

Markus B. Niebanck, R. G.
Western Regional Manager

cc. Mr. Barney Chan, ACDEH
Mr. Rich Hiett, SF Bay RWQCB

Table 1

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS

Shell Service Station - WIC#204-6852-1008
4411 Foothill Boulevard, Oakland, California

Well Number	Sample Depth (feet)	Sampling Date	TPHmo (ppm)	TPHd (ppm)	TPHg (ppm)	B (ppm)	T (ppm)	E (ppm)	X (ppm)
S-1	6.0	11/24/92	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005
	11.0	11/24/92	390	180	110	0.45	<0.005	2.2	8
	16.0	11/24/92	<1.0	<1.0	2.8	<0.050	0.51	0.097	0.50
	21.0	11/24/92	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005
	26.0	11/24/92	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005
S-2	6	5/21/93	NT	<10	<0.5	<0.005	<0.005	<0.005	<0.005
	10.5	5/21/93	NT	<10	95	<0.005	<0.005	0.52	0.56
	15	5/21/93	NT	<10	<0.5	<0.005	<0.005	<0.005	0.013
S-3	6.5	5/21/93	NT	<10	<0.5	<0.005	<0.005	<0.005	<0.005
	11	5/21/93	NT	36	1,300	<0.005	<0.005	35	200
	15	5/21/93	NT	<10	<0.5	<0.005	0.019	0.020	0.11

Notes:

TPHd : Total petroleum hydrocarbons as diesel by EPA Method 8015 (modified)
TPHg : Total petroleum hydrocarbons as gasoline by EPA Method 8015 (modified)
BTEX : Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020 (modified)
NT : Not tested

Table 2

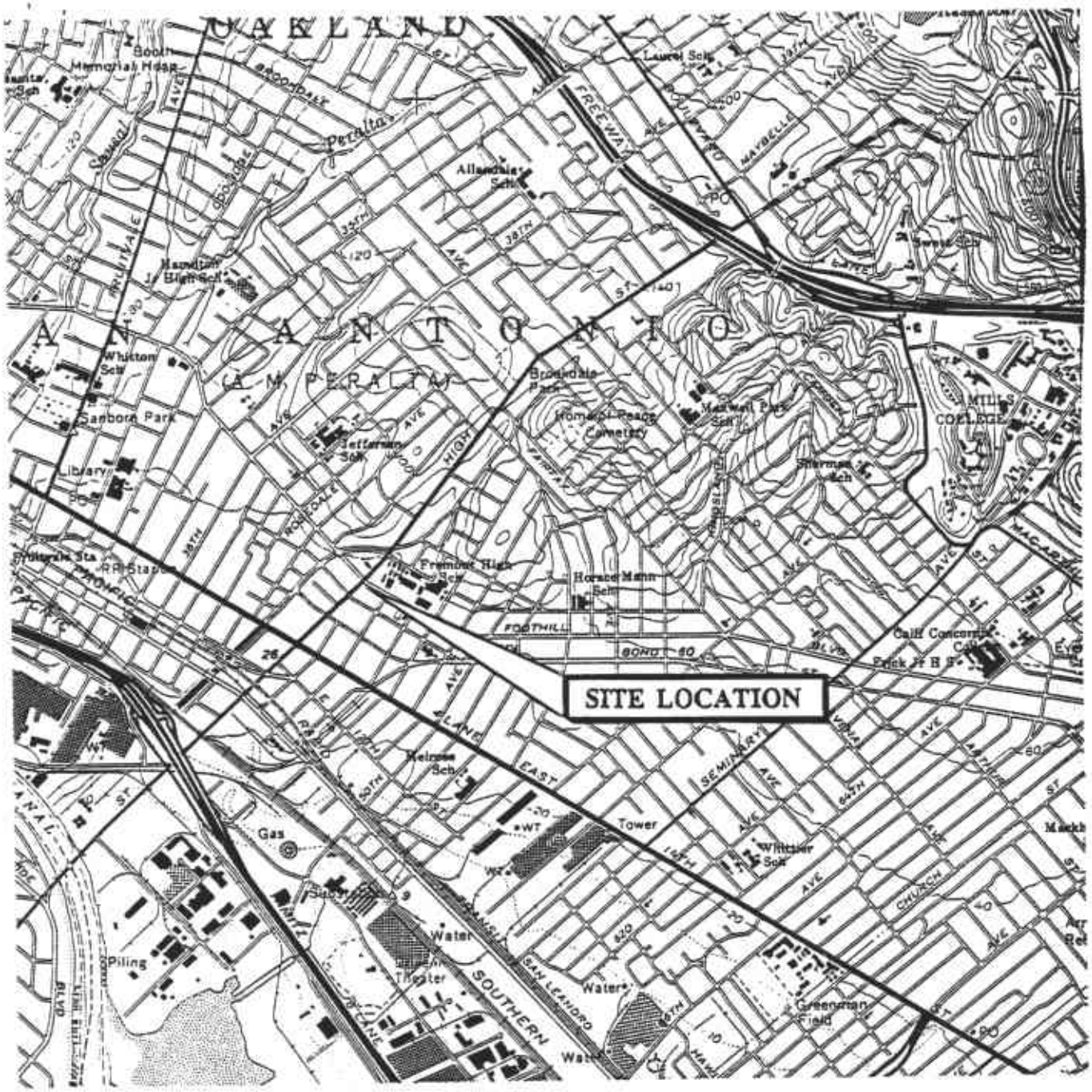
SUMMARY OF GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Shell Service Station - WIC#204-6852-1008
4411 Foothill Boulevard, Oakland, California

Well Number	Sampling Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHmo (ppb)	TPHd (ppb)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
S-1	12/18/92	NM	9.06	NM	9,400	---	41,000	3,100	1,100	1,200	8,700
	5/26/93	35.05	NM	NM	370	6,000	39,000	1,300	4,700	1,500	7,800
	5/28/93	35.05	12.13	22.92**	---	---	---	---	---	---	---
	6/3/93	35.05	8.89	26.16	---	---	---	---	---	---	---
	6/8/93	35.05	8.80	26.25	---	---	---	---	---	---	---
S-2											
	5/28/93	35.46	9.51	25.95	---	---	---	---	---	---	---
	6/3/93	35.46	9.51	25.95	---	---	---	---	---	---	---
	6/8/93	35.46	9.57	25.89	---	---	---	---	---	---	---
	6/29/93	35.46	NM	NM	NT	NT	1,300	290	35	38	130
S-3											
	5/28/93	33.85	8.45	25.40	---	---	---	---	---	---	---
	6/3/93	33.85	8.36	25.49	---	---	---	---	---	---	---
	6/8/93	33.85	8.41	25.44	---	---	---	---	---	---	---
	6/29/93	33.85	NM	NM	NT	NT	29,000	1,500	1,800	950	6,200

Notes:

TOC: Top of well casing referenced to mean sea level
DTW: Depth to water
GWE: Ground water elevation
TPHmo: Total petroleum hydrocarbons as motor oil by EPA Method 8015 (modified)
TPHd: Total petroleum hydrocarbons as diesel by EPA Method 8015 (modified)
TPHg: Total petroleum hydrocarbons as gasoline by EPA Method 8015 (modified)
BTEX: Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020 (modified)
NM: Not measured
NT: Not tested
**: Ground water elevation did not stabilize
---: Ground water samples not collected



SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

North

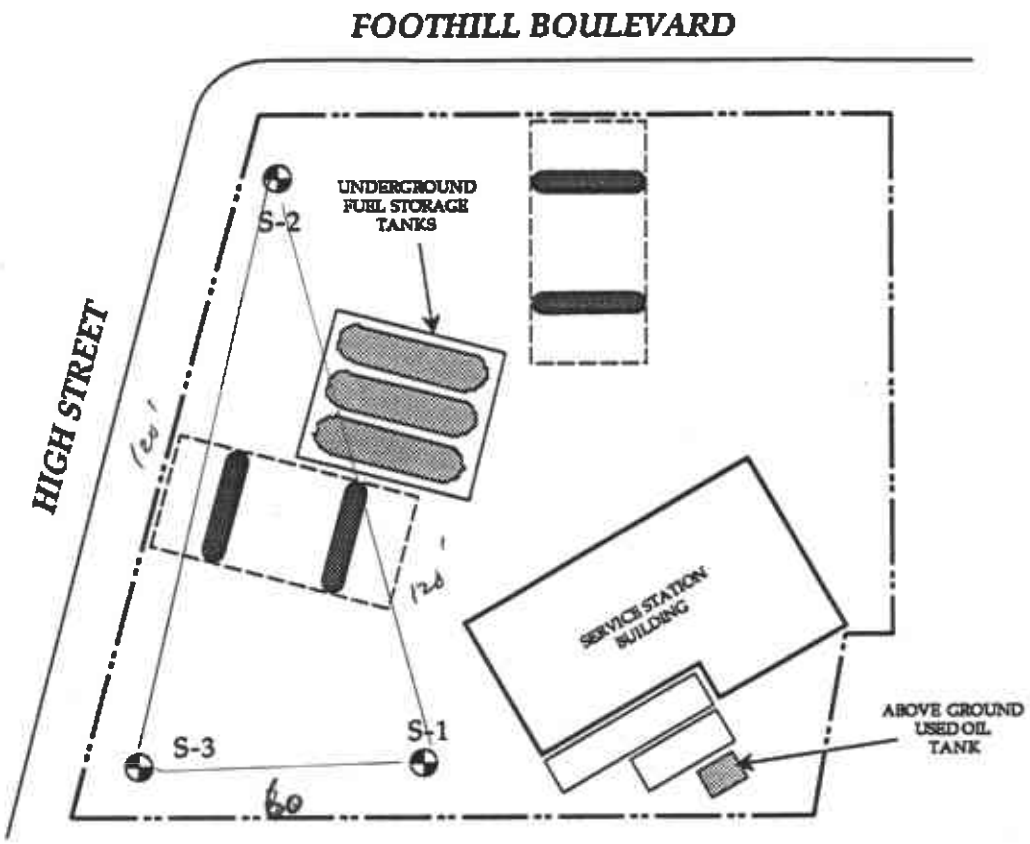
SOURCE:
USGS 7.5 MINUTE SERIES
OAKLAND EAST QUADRANGLE
PHOTOREVISED 1980

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

SITE LOCATION MAP

Shell Service Station
4411 Foothill Boulevard
Oakland, California
WIC #204-5508-3400

Job No.: 12-010
Figure 1



LEGEND

S-1 = Existing Monitoring Well

= Canopy and Dispenser Islands

= Storage Containers

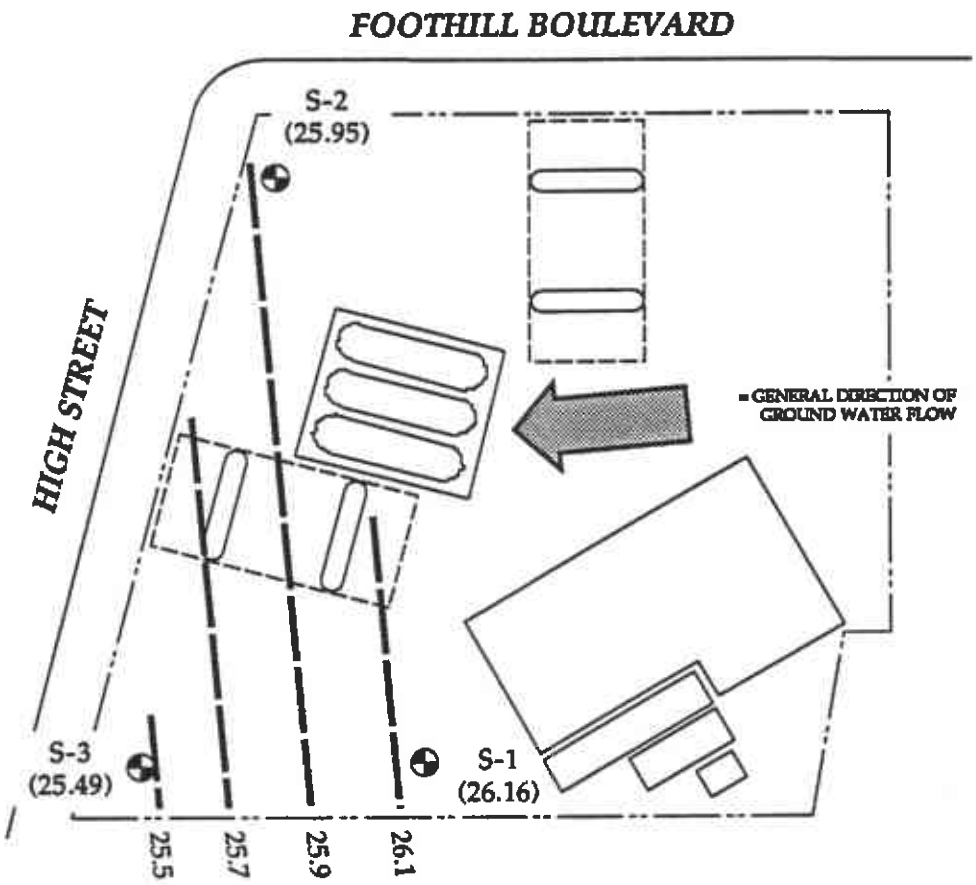
= Property Boundary

NORTH

0 40 80

APPROXIMATE SCALE IN FEET

HYDR-ENVIRONMENTAL TECHNOLOGIES, INC.	**SITE PLAN** Shell Service Station 4411 Foothill Boulevard Oakland, California WIC #204-5508-3400	Figure 2 12-010 6/93



LEGEND

S-1 = Existing Monitoring Well

(25.95) = Ground Water Elevation

25.5 = Ground Water Elevation Contour

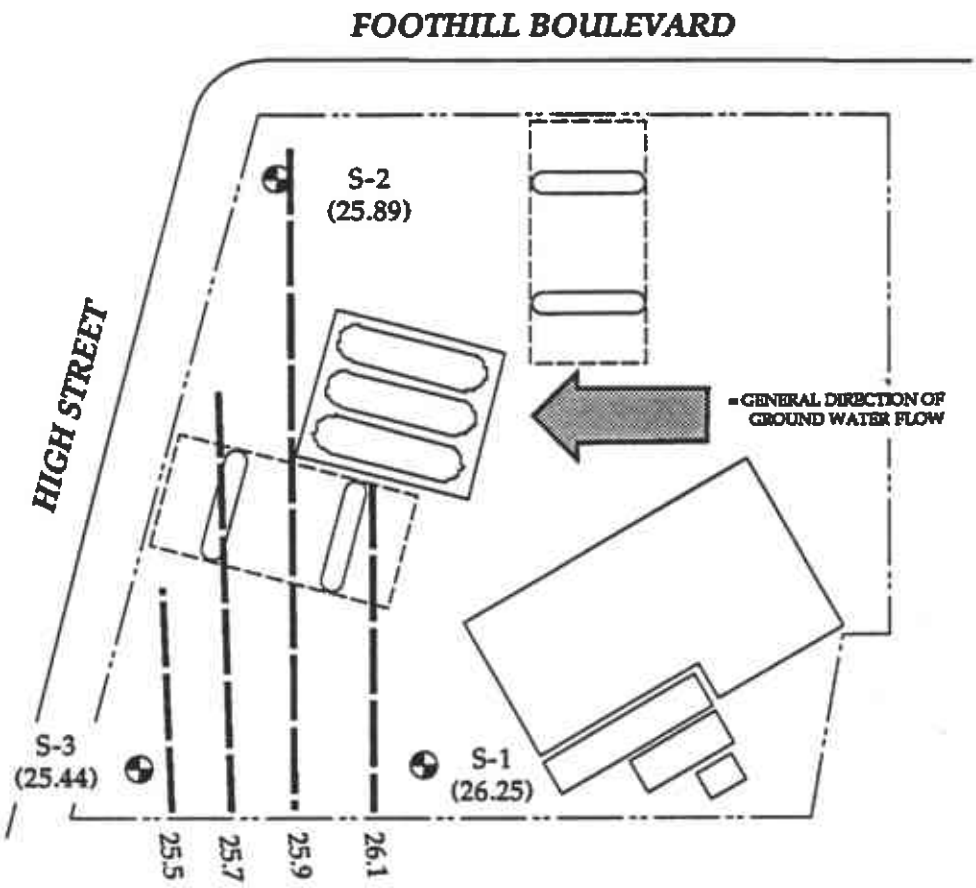
NORTH

0 40 80

APPROXIMATE SCALE IN FEET

BASED ON DATA COLLECTED ON 6/3/93

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.	GROUND WATER CONTOUR MAP Shell Service Station 4411 Foothill Boulevard Oakland, California WIC #204-5508-3400	Figure 3A 12-010 6/93



LEGEND

S-1 = Existing Monitoring Well

(25.89) = Ground Water Elevation

25.5 = Ground Water Elevation Contour

NORTH

0 40 80

APPROXIMATE SCALE IN FEET

BASED ON DATA COLLECTED ON 6/8/93

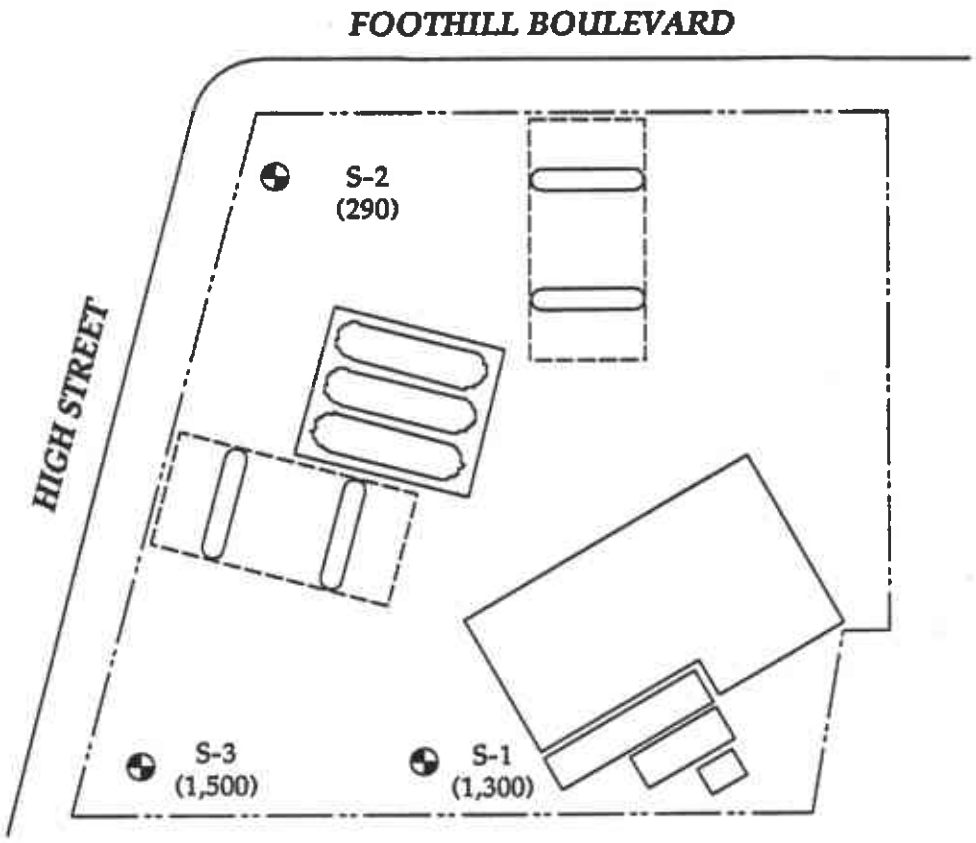
HYDR-ENVIRONMENTAL TECHNOLOGIES, INC.

GROUND WATER CONTOUR MAP

Shell Service Station
4411 Foothill Boulevard
Oakland, California
WIC #204-5508-3400

Figure
3 B

12-010 6/93



LEGEND

S-1 = Existing Monitoring Well

(1,500) = Dissolved Benzene Concentration - in ppb

1,000 = Dissolved Benzene Isoconcentration Contour - in ppb

NORTH

0 40 80

APPROXIMATE SCALE IN FEET

GROUND WATER SAMPLES COLLECTED COLLECTED ON 5/29/93 AND 6/29/93

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

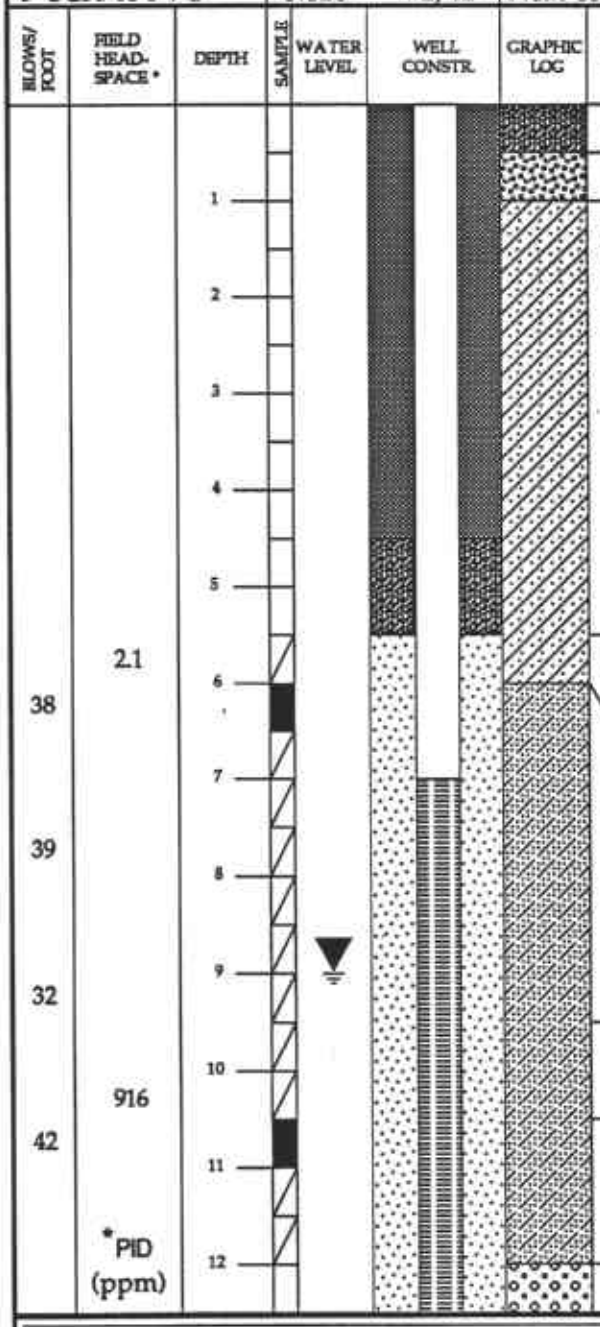
BENZENE CONCENTRATION MAP

Shell Service Station
4411 Foothill Boulevard
Oakland, California
WIC #204-5508-3400

Figure 4

12-010 6/93

SITE/LOCATION	BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
4411 Foothill Boulevard, Oakland, CA	5/21/93	10 Inches	90 Degrees	S-3
DRILLING CONTRACTOR	**COMPLETED**	**FIRST ENCOUNTERED WATER DEPTH**		**BOTTOM OF BORING**
Gregg Drilling	5/21/93	14 Feet		20 Feet
OPERATOR	**LOGGED BY**	**STATIC WATER DEPTH/DATE**		
Ted Hogan	Tony Ramirez	9 Feet		
DRILL MAKE & MODEL	**SAMPLING METHOD**			**WELL NO.**
Mobile B-53	Continuous sample			S-3
WELL MATERIAL	**SLOT SIZE**	**FILTER PACK**	**WELL SEAL**	**BOTTOM OF WELL**
4" SCH 40 PVC	0.020"	#2/12	Neat cement over hydrated pellets	20 Feet



MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION

ASPHALT

BASEROCK

Sandy Lean CLAY (CL); black; moderate plasticity; 30% fine to coarse, angular to sub-rounded sand; dry.

Sandy Lean CLAY (CL); olive-grey; moderate plasticity; 25% fine to coarse, angular to sub-rounded sand; dry.

Clayey SAND (SC); brown-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 25% clay; 10% fine, sub-angular to sub-rounded gravel; moist.

Clayey SAND (SC); olive-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 25% clay; moist.

Clayey SAND (SC); olive-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 25% clay; 15% fine, sub-angular to sub-rounded gravel; moist.

Sandy GRAVEL (GP); explanation on sheet 2.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: June 7, 1993

APPROVED BY: John H. Turney, P.E.

SOIL BORING LOG S-3 AND WELL CONSTRUCTION S-3

Shell Service Station
4411 Foothill Boulevard
Oakland, CA
WIC #204-5508-3400

PLATE C-3

SHEET 1 OF 2

JOB NO. 12-010

SITE/LOCATION 4411 Foothill Boulevard, Oakland, CA	BEGUN 5/21/93	BORING DIAMETER 10 Inches	ANGLE/BEARING 90 Degrees	BORING NO S-3
DRILLING CONTRACTOR Gregg Drilling	COMPLETED 5/21/93	FIRST ENCOUNTERED WATER DEPTH 14 Feet		BOTTOM OF BORING 20 Feet
OPERATOR Ted Hogan	LOGGED BY Tony Ramirez	STATIC WATER DEPTH/DATE 9 Feet		
DRILL MAKE & MODEL Mobile B-53	SAMPLING METHOD Continuous sample			WELL NO. S-3
WELL MATERIAL 4" SCH 40 PVC	SLOT SIZE 0.020"	FILTER PACK #2/12	WELL SEAL Neat cement over hydrated pellets	BOTTOM OF WELL 20 Feet

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLER	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
90		13					Sandy GRAVEL (GP); brown; poorly graded; fine sub-angular gravel; 35% fine to coarse sand; 10% clay; moist.
32		14		▽			Clayey GRAVEL (GC); brown; poorly graded; fine sub-angular gravel; 30% clay; 10% fine to coarse sand; wet.
29	244	15					Fat CLAY (CH); light brown with grey mottling; high plasticity; 10% fine to medium, angular to sub-rounded sand; wet.
33		16					Clayey SAND (SC); brown; poorly graded; fine to coarse, angular to rounded sand; 20% clay; 10% fine gravel; wet.
26		17					Fat CLAY (CH); light brown; high plasticity; moist.
22		18					Same as above.
		19					
		20					
		21					
		22					
		23					
	*PID (ppm)	24					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: June 7, 1993

APPROVED BY: John H. Turney, P.E.

SOIL BORING LOG S-3
AND
WELL CONSTRUCTION S-3

Shell Service Station
4411 Foothill Boulevard
Oakland, CA
WIC #204-5508-3400

PLATE
C-3
SHEET 2 OF 2

JOB NO.
12-010

SITE/LOCATION	BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
4411 Foothill Boulevard, Oakland, CA	5/21/93	10 Inches	90 Degrees	S-2
DRILLING CONTRACTOR	**COMPLETED**	**FIRST ENCOUNTERED WATER DEPTH**		**BOTTOM OF BORING**
Gregg Drilling	5/21/93	14 Feet		22 Feet
OPERATOR	**LOGGED BY**	**STATIC WATER DEPTH/DATE**		
Moe Ruud	Tony Ramirez	9 Feet		
DRILL MAKE & MODEL	**SAMPLING METHOD**			**WELL NO.**
Mobile B-53	Continuous sample			S-2
WELL MATERIAL	**SLOT SIZE**	**FILTER PACK**	**WELL SEAL**	**BOTTOM OF WELL**
4" SCH 40 PVC	0.020"	#2/12	Neat cement over hydrated pellets	22 Feet

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLE	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
							ASPHALT
							BASEROCK
		1					Sandy Lean CLAY (CL); black; moderate plasticity; 30% fine to coarse, angular to sub-rounded sand; dry.
		2					
		3					
		4					
	6.5	5					Sandy Lean CLAY (CL); olive-grey; moderate plasticity; 35% fine to coarse, angular to sub-rounded sand; dry.
38		6					
		7					Same as above, but moist.
33		8					
		9		▼			Clayey SAND (SC); brown-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 40% clay; moist.
37	68.8	10					
52		11					Clayey GRAVEL (GC); brown; poorly graded; fine, sub-angular gravel; 30% clay; 10% fine to coarse sand; moist.
31	*PID (ppm)	12					Clayey SAND (SC); brown-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 40% clay; moist.

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: June 7, 1993

APPROVED BY: John H. Turney, P.E.

SOIL BORING LOG S-2
AND
WELL CONSTRUCTION S-2

Shell Service Station
4411 Foothill Boulevard
Oakland, CA
WIC #204-5508-3400

PLATE
C-2
SHEET 1 OF 2

JOB NO.
12-010

SITE/LOCATION	BEGUN	BORING DIAMETER	ANGLE/BEARING	BORING NO
4411 Foothill Boulevard, Oakland, CA	5/21/93	10 Inches	90 Degrees	S-2
DRILLING CONTRACTOR	**COMPLETED**	**FIRST ENCOUNTERED WATER DEPTH**		**BOTTOM OF BORING**
Gregg Drilling	5/21/93	14 Feet		22 Feet
OPERATOR	**LOGGED BY**	**STATIC WATER DEPTH/DATE**		
Moe Ruud	Tony Ramirez	9 Feet		
DRILL MAKE & MODEL	**SAMPLING METHOD**			**WELL NO.**
Mobile B-53	Continuous sample			S-2
WELL MATERIAL	**SLOT SIZE**	**FILTER PACK**	**WELL SEAL**	**BOTTOM OF WELL**
4" SCH 40 PVC	0.020"	#2/12	Neat cement over hydrated pellets	22 Feet

BLOWS/FOOT	FIELD HEAD-SPACE *	DEPTH	SAMPLER	WATER LEVEL	WELL CONSTR.	GRAPHIC LOG	MATERIAL CLASSIFICATION & PHYSICAL DESCRIPTION
							Clayey SAND (SC); continued from sheet 1.
							Clayey GRAVEL (GC); same as 10' to 11'.
26		13					Clayey SAND (SC); same as 11' to 12.5'.
		14		▽			Silty SAND (SM); light brown; poorly graded; fine to medium, angular to sub-rounded sand; 20% silt; wet.
	10.8						
31		15					Clayey SAND (SC); brown-grey; poorly graded; fine to coarse, angular to sub-rounded sand; 40% clay; wet.
		16					
21							
		17					Fat CLAY (CH); light brown; high plasticity; 10% fine to medium, angular to sub-rounded sand; wet.
18		18					Fat CLAY (CH); light brown; high plasticity; moist.
		19					
26							
		20					
27		21					Same as above.
43		22					
		23					
	*PID (ppm)	24					

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.

DATE: June 7, 1993

APPROVED BY: John H. Turney, P.E.

SOIL BORING LOG S-2 AND WELL CONSTRUCTION S-2

Shell Service Station
4411 Foothill Boulevard
Oakland, CA
WIC #204-5508-3400

PLATE C-2

SHEET 2 OF 2

JOB NO. 12-010

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

File 12-010 Analy

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive #E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

RECEIVED JUN 0 9 1993

MR. TONY RAMIREZ
HYDRO-ENVIRONMENTAL TECH. INC.
2363 MARINER SQUARE DR. SUITE 243
ALAMEDA, CA 94501

Workorder # : 9305244
Date Received : 05/24/93
Project ID : 204-5508-3400
Purchase Order: MOH-B813

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

ANAMETRIX ID	CLIENT SAMPLE ID
9305244- 1	S-2-6'
9305244- 2	S-2-10.5
9305244- 3	S-2-15'
9305244- 4	S-3-6.5'
9305244- 5	S-3-11'
9305244- 6	S-3-15'

This report consists of 10 pages not including the cover letter, and is organized in sections according to the specific Anametrix 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 Anametrix 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.

Anametrix 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 Anametrix.

Sarah Schoen, Ph.D
Laboratory Director

6-8-93
Date

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

MR. TONY RAMIREZ
HYDRO-ENVIRONMENTAL TECH. INC.
2363 MARINER SQUARE DR. SUITE 243
ALAMEDA, CA 94501

Workorder # : 9305244
Date Received : 05/24/93
Project ID : 204-5508-3400
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9305244- 1	S-2-6'	SOIL	05/21/93	TPHd
9305244- 2	S-2-10.5	SOIL	05/21/93	TPHd
9305244- 3	S-2-15'	SOIL	05/21/93	TPHd
9305244- 4	S-3-6.5'	SOIL	05/21/93	TPHd
9305244- 5	S-3-11'	SOIL	05/21/93	TPHd
9305244- 6	S-3-15'	SOIL	05/21/93	TPHd
9305244- 1	S-2-6'	SOIL	05/21/93	TPHgBTEX
9305244- 2	S-2-10.5	SOIL	05/21/93	TPHgBTEX
9305244- 3	S-2-15'	SOIL	05/21/93	TPHgBTEX
9305244- 4	S-3-6.5'	SOIL	05/21/93	TPHgBTEX
9305244- 5	S-3-11'	SOIL	05/21/93	TPHgBTEX
9305244- 6	S-3-15'	SOIL	05/21/93	TPHgBTEX

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

MR. TONY RAMIREZ
HYDRO-ENVIRONMENTAL TECH. INC.
2363 MARINER SQUARE DR. SUITE 243
ALAMEDA, CA 94501

Workorder # : 9305244
Date Received : 05/24/93
Project ID : 204-5508-3400
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- The concentration reported as gasoline for sample S-2-10.5 is primarily due to the presence of a heavier petroleum product, possibly aged gasoline.
- The concentration reported as diesel for sample S-3-11' is primarily due to the presence of a lighter petroleum product, possibly gasoline.

Cheryl Balmer 6/8/93
Department Supervisor Date

CR Patel 06/08/93
Chemist Date

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

Anametrix W.O.: 9305244
Matrix : SOIL
Date Sampled : 05/21/93

Project Number : 204-5508-3400
Date Released : 06/03/93

COMPOUNDS	Reporting Limit (mg/Kg)	Sample I.D.# S-2-6' -01	Sample I.D.# S-2-10.5 -02	Sample I.D.# S-2-15' -03	Sample I.D.# S-3-6.5' -04	Sample I.D.# S-3-11' -05
Benzene	0.005	ND	ND	ND	ND	ND
Toluene	0.005	ND	ND	ND	ND	ND
Ethylbenzene	0.005	ND	0.52	ND	ND	35
Total Xylenes	0.005	ND	0.56	0.013	ND	200
TPH as Gasoline	0.5	ND	95	ND	ND	1300
% Surrogate Recovery		135%	105%	134%	128%	112%
Instrument I.D.		HP21	HP21	HP21	HP21	HP21
Date Analyzed		05/27/93	05/28/93	05/27/93	05/27/93	05/28/93
RLMF		1	25	1	1	500

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.

Anametrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

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

CRPatel 06/04/93
Analyst Date

Cheryl Baerman 6/4/93
Supervisor Date

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

Anametrix W.O.: 9305244
Matrix : SOIL
Date Sampled : 05/21/93

Project Number : 204-5508-3400
Date Released : 06/03/93

COMPOUNDS	Reporting Limit (mg/Kg)	Sample I.D.# S-3-15' -06	Sample I.D.# BY2701E3 BLANK	Sample I.D.# BY2802E3 BLANK
Benzene	0.005	ND	ND	ND
Toluene	0.005	0.019	ND	ND
Ethylbenzene	0.005	0.020	ND	ND
Total Xylenes	0.005	0.11	ND	ND
TPH as Gasoline	0.5	ND	ND	ND
% Surrogate Recovery		105%	117%	126%
Instrument I.D.		HP21	HP21	HP21
Date Analyzed		05/27/93	05/27/93	05/28/93
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.

Anametrix control limits for surrogate p-Bromofluorobenzene recovery are 53-147%.

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

CR Patel 06/04/93
Analyst Date

Cheryl Brenner 6/4/93
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9305244
Matrix : SOIL
Date Sampled : 05/21/93
Date Extracted: 05/26/93

Project Number : 204-5508-3400
Date Released : 06/03/93
Instrument I.D.: HP9

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)
9305244-01	S-2-6'	05/27/93	10	ND
9305244-02	S-2-10.5	05/27/93	10	ND
9305244-03	S-2-15'	05/27/93	10	ND
9305244-04	S-3-6.5'	05/27/93	10	ND
9305244-05	S-3-11'	05/27/93	10	36
9305244-06	S-3-15'	05/27/93	10	ND
BY26H1F1	METHOD BLANK	05/27/93	10	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3550.

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

CRPate 06/04/93
Analyst Date

Cheryl Balmer 6/4/93
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9305244
Matrix : SOIL
Date Sampled : 05/21/93
Date Extracted: 05/26/93

Project Number : 204-5508-3400
Date Released : 06/03/93
Instrument I.D.: HP9

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (mg/Kg)	Amount Found (mg/Kg)
9305244-01	S-2-6'	05/27/93	10	ND
9305244-02	S-2-10.5	05/27/93	10	12
9305244-03	S-2-15'	05/27/93	10	ND
9305244-04	S-3-6.5'	05/27/93	10	ND
9305244-05	S-3-11'	05/27/93	10	ND
9305244-06	S-3-15'	05/27/93	10	ND
BY26H1F1	METHOD BLANK	05/27/93	10	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 10 mg/Kg.
ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as motor oil is determined by GCFID following sample extraction by EPA Method 3550.

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

JR Patel 06/04/93
Analyst Date

Cheryl Balmer 6/4/93
Supervisor Date

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

Sample I.D.	: 204-5508-3400 S-2-6'	Anametrix I.D.	: 05244-01
Matrix	: SOIL	Analyst	: APP.
Date Sampled	: 05/21/93	Supervisor	: [illegible]
Date Analyzed	: 05/27/93	Date Released	: 06/04/93
		Instrument ID	: HP21

COMPOUND	SPIKE AMT (mg/Kg)	SAMPLE CONC (mg/Kg)	REC MS (mg/Kg)	% REC MS	REC MD (mg/Kg)	% REC MD	RPD	% REC LIMITS
GASOLINE	1.00	0.00	0.80	80%	0.83	83%	4%	48-149
P-BFB				125%		122%		53-147

* Limits established by Anametrix, Inc.

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 : SOIL
Date Sampled : N/A
Date Analyzed : 05/27/93

Anametrix I.D. : LCSS0527
Analyst : AR
Supervisor : CS
Date Released : 06/02/93
Instrument I.D.: HP21

COMPOUND	SPIKE AMT. (mg/Kg)	REC LCS (mg/Kg)	%REC LCS	% REC LIMITS
GASOLINE	0.50	0.43	86%	58-130
p-BFB			130%	53-147

* Quality control established by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON MATRIX SPIKE REPORT
EPA METHOD 3550 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 204-5508-3400 S-3-15'	Anametrix I.D.	: 05244-06
Matrix	: SOIL	Analyst	: PJP
Date Sampled	: 05/21/93	Supervisor	: CB
Date Extracted	: 05/26/93	Date Released	: 06/04/93
Date Analyzed	: 05/27/93	Instrument I.D.	: HP9

COMPOUND	SPIKE AMT (mg/Kg)	SAMPLE CONC (mg/Kg)	REC MS (mg/Kg)	% REC MS	REC MD (mg/Kg)	% REC MD	RPD	% REC LIMITS
Diesel	125	0	70	56%	81	65%	15%	32-143

* Quality control limit established by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3550 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
Matrix : SOIL
Date Sampled : N/A
Date Extracted: 05/26/93
Date Analyzed : 05/27/93

Anametrix I.D. : MY26H1F1
Analyst : AP
Supervisor : CP
Date Released : 06/04/93
Instrument I.D.: HP9

COMPOUND	SPIKE AMT (mg/Kg)	REC LCS (mg/Kg)	% REC LCS	% REC LIMITS
Diesel	125	99	79%	72-143

*Limits established by Anametrix, Inc.

(2) 8:16:30 9305244

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No:_____

Date:
Page 1 of 1

Site Address: 4411 Foothill Blvd., Oakland, CA

WIC#: 204-5508-3400

Shell Engineer: Mr. Dan Kirk — Phone No.: 510 685-3850 Fax #: 685-3943

Consultant Name & Address: HETI
2363 Mariner Square Dr. #243, Alameda, CA

Consultant Contact: Marcus Nielsen — Phone No.: 510 521-2684 Fax #: 521-5078

Comments:

Sampled by:

Printed Name: Tony Ramirez

LAB: Anametrix

CHECK ONE (1) BOX ONLY	CT/DT	TURN AROUND TIME
G.W. Monitoring	☐ 4461	24 hours ☐
Site Investigation	☒ 4441	48 hours ☐
Soil Classify/Disposal	☐ 4442	15 days ☒ (Normal)
Water Classify/Disposal	☐ 4443	Other ☐ ____
Soil/Air Rem. or Sys. O & M	☐ 4452	NOTE: Notify Lab as soon as Possible of 24/48 hrs. TAT.
Water Rem. or Sys. O & M	☐ 4453	
Other	☐	

UST AGENCY: _____

Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	TPH - motor oil (8015 modified)		Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
(1) S-2-6'	5/21/93		X			1		X				X	X							
(2) S-2-10.5'								X				X	X							
(3) S-2-15'								X				X	X							
(4) S-3-6.5'								X				X	X							
(5) S-3-11'								X				X	X							
(6) S-3-15'								X				X	X							

Relinquished By (signature):	Printed Name:	Date: 5/24/93 Time: 1350	Received (signature):	Printed Name:	Date: 5-24-93 Time: 1350
Relinquished By (signature):	Printed Name:	Date: 5-24-93 Time: 1455	Received (signature):	Printed Name:	Date: 5/24/93 Time: 14:55
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

Rev. 1/12/93 — Shell Oil Chn. of Custody

12-010 Anal

BLAINE
TECH SERVICES INC.

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

June 22, 1993

RECEIVED JUN 2 4 1993

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

Attn: Daniel T. Kirk

SITE:
Shell WIC # 204-5508-3400
4411 Foothill Blvd.
Oakland, California

QUARTER:
2nd quarter of 1993

QUARTERLY GROUNDWATER SAMPLING REPORT 930526-N-1

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)
S-1	4	05-26-93	TOB	ODOR	NONE	--	--	8.86	24.79

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 dewaters 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: Hydro Environmental Technologies, Inc.
2363 Mariner Square Drive, Suite #243
Alameda, CA 94501
ATTN: Markus Niebanck

9305311 (18) (10/3)

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No: _____

Date: 5.26.93
Page 1 of 1

Site Address: 4911 FOOTHILL BLVD., OAKLAND

WIC #: 204-5568-3400

Shell Engineer: DAN KIRK — Phone No.: 510 — Fax #: 675-6168

Consultant Name & Address: BTS 985 TIMOTHY SAN JOSE CA 95122

Consultant Contact: JIM KELLER — Phone No.: 408 — Fax #: 995 5535

Comments: BTS # 930526.N.2

Sampled by: [signature]

Printed Name: NATE OVERMEYER

LAB: ANALYTICA

CHECK ONE (1) BOX ONLY — C1/D1

- Quarterly Monitoring ☑ 6441
- Site Investigation ☐ 6441
- Soil Closure/Disposal ☐ 6442
- Water Closure/Disposal ☐ 6443
- Soil/Air Rem. or Sys. O & M ☐ 6442
- Water Rem. or Sys. O & M ☐ 6443
- Other ☐

TURN AROUND TIME

- 24 hours ☐
- 48 hours ☐
- 15 days ☑ (Normal)
- Other ☐ ____

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 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	TPH as MOTOR OIL	Asbestos	Container Size	Preservation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
(1) S-1	5/26			X		5		X				X	X		40 ML / 1 Liter	HCL / —	N	GROUNDWATER	
(2) TB	"			X		2						X			40 ML	HCL	"	TRIP BLANK	

Relinquished By (signature): [signature]	Printed Name: NATE OVERMEYER	Date: 5-28-93 Time: 1416	Received (signature): [signature]	Printed Name: Maria Barajas — Date 5/28/93 Time: 1612
Relinquished By (signature):	Printed Name:	Date: Time:	Received (signature):	Printed Name: — Date: Time:
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

Rev 6/93 — Pink Copy of Custody

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive #E
San Jose, CA 95131
Tel: 408-432-8192
Fax: 408-432-8198

MR. JIM KELLER
BLAINE TECH
985 TIMOTHY STREET
SAN JOSE, CA 95133

Workorder # : 9305311
Date Received : 05/28/93
Project ID : 204-5568-3400
Purchase Order: MOH-B813

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

ANAMETRIX ID	CLIENT SAMPLE ID
9305311- 1	S-1
9305311- 2	TB

This report consists of 7 pages not including the cover letter, and is organized in sections according to the specific Anametrix 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 Anametrix 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.

Anametrix 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 Anametrix.

Corinne Khan for
Sarah Schoen, Ph.D.
Laboratory Director

06/11/93
Date

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

MR. JIM KELLER
BLAINE TECH
985 TIMOTHY STREET
SAN JOSE, CA 95133

Workorder # : 9305311
Date Received : 05/28/93
Project ID : 204-5568-3400
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9305311- 1	S-1	WATER	05/26/93	TPHd
9305311- 1	S-1	WATER	05/26/93	TPHgBTEX
9305311- 2	TB	WATER	05/26/93	TPHgBTEX

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

MR. JIM KELLER
BLAINE TECH
985 TIMOTHY STREET
SAN JOSE, CA 95133

Workorder # : 9305311
Date Received : 05/28/93
Project ID : 204-5568-3400
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- The concentration reported as diesel for sample S-1 is primarily due to the presence of a lighter petroleum product of hydrocarbon range C6-C12.

Luna Shor 6/10/93
Department Supervisor Date

Reggie Dawson 6/10/93
Chemist Date

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

Anametrix W.O.: 9305311
Matrix : WATER
Date Sampled : 05/26/93

Project Number : 204-5568-3400
Date Released : 06/09/93

COMPOUNDS	Reporting Limit (ug/L)	Sample I.D.# S-1 -01	Sample I.D.# TB -02	Sample I.D.# BU0703E3 BLANK
Benzene	0.5	1300	ND	ND
Toluene	0.5	4700	ND	ND
Ethylbenzene	0.5	1500	ND	ND
Total Xylenes	0.5	7800	ND	ND
TPH as Gasoline	50	39000	ND	ND
% Surrogate Recovery		110%	110%	102%
Instrument I.D.		HP4	HP4	HP4
Date Analyzed		06/07/93	06/07/93	06/07/93
RLMF		250	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.

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

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

Peggie Davison 6/10/93
Analyst Date

Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS DIESEL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9305311
Matrix : WATER
Date Sampled : 05/2693
Date Extracted: 06/02/93

Project Number : 204-5568-3400
Date Released : 06/09/93
Instrument I.D.: HP9

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (ug/L)	Amount Found (ug/L)
9305311-01	S-1	06/04/93	280	6000
BU0311F1	METHOD BLANK	06/03/93	50	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 50 ug/L.
ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following sample extraction by EPA Method 3510.

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

Peggie Davison 6/10/93
Analyst / Date

Dina Shen 6/10/93
Supervisor Date

ANALYSIS DATA SHEET - TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
ANAMETRIX, INC. (408) 432-8192

Anametrix W.O.: 9305311
Matrix : WATER
Date Sampled : 05/2693
Date Extracted: 06/02/93

Project Number : 204-5568-3400
Date Released : 06/09/93
Instrument I.D.: HP9

Anametrix I.D.	Client I.D.	Date Analyzed	Reporting Limit (ug/L)	Amount Found (ug/L)
9305311-01	S-1	06/04/93	280	370
BU0311F1	METHOD BLANK	06/03/93	50	ND

Note : Reporting limit is obtained by multiplying the dilution factor times 50 ug/L.
ND - Not detected at or above the practical quantitation limit for the method.
TPHd - Total Petroleum Hydrocarbons as motor oil is determined by GCFID following sample extraction by EPA Method 3510.

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

Reggie Davison
Analyst Date

Supervisor 6/10/93
Date

BTEX LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 5030 WITH GC/PID
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: LAB CONTROL SAMPLE	Anametrix I.D.	: LCSW0607
Matrix	: WATER	Analyst	: AD
Date Sampled	: N/A	Supervisor	: IS
Date Analyzed	: 06/07/93	Date Released	: 06/10/93
		Instrument ID	: HP4

COMPOUND	SPIKE AMT. (ug/L)	LCS (ug/L)	REC LCS	%REC LIMITS
Benzene	20.0	17.6	88%	52-133
Toluene	20.0	19.0	95%	57-136
Ethylbenzene	20.0	19.5	98%	56-139
TOTAL Xylenes	20.0	19.8	99%	56-141
P-BFB			107%	61-139

* Limits established by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON LABORATORY CONTROL SAMPLE REPORT
EPA METHOD 3510 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : LAB CONTROL SAMPLE
Matrix : WATER
Date Sampled : N/A
Date Extracted: 06/02/93
Date Analyzed : 06/03/93

Anametrix I.D. : MU0211F1
Analyst : RD
Supervisor : [illegible]
Date Released : 06/10/93
Instrument I.D.: HP9

COMPOUND	SPIKE AMT (ug/L)	LCS REC (ug/L)	% REC LCS	LCSD REC (ug/L)	% REC LCSD	RPD	% REC LIMITS
DIESEL	1250	710	57%	680	54%	-4%	47-130

*Quality control established by Anametrix, Inc.

BLAINE
TECH SERVICES INC.

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

July 12, 1993

RECEIVED JUL 14 1993

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

Attn: Daniel T. Kirk

SITE:
Shell WIC # 204-5508-3400
4411 Foothill Blvd.
Oakland, California

QUARTER:
2nd quarter of 1993

QUARTERLY GROUNDWATER SAMPLING REPORT 930629-W-1

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)
S-1	4	06-29-93	TOB	ODOR	NONE	--	--	8.75	24.72
S-2	4	06-29-93	TOB	--	NONE	--	--	10.0	22.42
S-3 *	4	06-29-93	TOB	ODOR	NONE	--	--	8.96	20.52

* Sample DUP was a duplicate sample taken from well S-3.

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 dewaters 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/lpn

attachments: chain of custody
certified analytical report

cc: Hydro Environmental Technologies, Inc.
2363 Mariner Square Drive, Suite #243
Alameda, CA 94501
ATTN: Markus Niebanck

9306 376 (18)

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No:

Date: 6/29/93
Page 1 of 1

Site Address: 4411 Foothill Blvd., Oakland

WIC#: 204-5508-3400

Shell Engineer: Dan Kirk — Phone No.: (510) 675-6168 Fax #: 675-6160

Consultant Name & Address: Blaine Tech Services, Inc. 985 Timothy Drive San Jose, CA 95133

Consultant Contact: Jim Keller — Phone No.: (408) 995-5535 Fax #: 293-8773

Comments:

Sampled by: DW Weltz

Printed Name: DOW WELTZ

LAB: Anametrix

Analysis Required

Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020			Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
(1) S-3	6/29			X		3						X				40 ml	#1	N	Groundwater	
(2) S-2	"			X		3						X				"	"	"	"	
(3) DUP	"			X		3						X				"	"	"	"	
(4) TB	"			X		2						X				"	"	"	Trip Blank	

CHECK ONE (1) BOX ONLY — CT/DT — TURN AROUND TIME

	CT/DT	TURN AROUND TIME
Quarterly Monitoring	☒ 8441	24 hours ☐
Site Investigation	☐ 8441	48 hours ☐
Soil Closure/Disposal	☐ 8442	10 days ☒ (Normal)
Water Closure/Disposal	☐ 8443	Other ☒
Soil/Air Rem. or Sys. O & M	☐ 8462	
Water Rem. or Sys. O & M	☐ 8463	NOTE: Notify L soon as Possible of 24/48 hr. TAT.
Other	☐	5 DAY TAT

NOTE

	Printed Name:	Date:	Received (signature):	Printed Name:	Date:
Relinquished By (signature): DW Weltz	DOW WELTZ	6/29/93 Time: 1650		Maria Barajas	6/29/93 Time: 16:50
Relinquished By (signature):	Printed Name:	Date: Time:	Received (signature):	Printed Name:	Date: Time:
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

Inchcape Testing Services
Anametrix Laboratories

1961 Concourse Drive
Suite E
San Jose, CA 95131
Tel: 408-452-8192
Fax: 408-452-8198

MR. JIM KELLER
BLAINE TECH
985 TIMOTHY DRIVE
SAN JOSE, CA 95133

Workorder # : 9306376
Date Received : 06/29/93
Project ID : 204-5508-3400
Purchase Order: MOH-B813

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

ANAMETRIX ID	CLIENT SAMPLE ID
9306376- 1	S-3
9306376- 2	S-2
9306376- 3	DUP
9306376- 4	TB

This report consists of 4 pages not including the cover letter, and is organized in sections according to the specific Anametrix 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 Anametrix 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.

Anametrix 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 Anametrix.

Larry Kent for

Sarah Schoen, Ph.D.
Laboratory Director

7-8-93
Date

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

MR. JIM KELLER
BLAINE TECH
985 TIMOTHY DRIVE
SAN JOSE, CA 95133

Workorder # : 9306376
Date Received : 06/29/93
Project ID : 204-5508-3400
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

ANAMETRIX SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9306376- 1	S-3	WATER	06/29/93	TPHgBTEX
9306376- 2	S-2	WATER	06/29/93	TPHgBTEX
9306376- 3	DUP	WATER	06/29/93	TPHgBTEX
9306376- 4	TB	WATER	06/29/93	TPHgBTEX

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

MR. JIM KELLER
BLAINE TECH
985 TIMOTHY DRIVE
SAN JOSE, CA 95133

Workorder # : 9306376
Date Received : 06/29/93
Project ID : 204-5508-3400
Purchase Order: MOH-B813
Department : GC
Sub-Department: TPH

QA/QC SUMMARY :

- No QA/QC problems encountered for these samples.

Cheryl Baerman 7/9/93
Department Supervisor Date

Kamel C. Kamel 7/9/93
Chemist Date

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

Anametrix W.O.: 9306376
Matrix : WATER
Date Sampled : 06/29/93

Project Number : 204-5508-3400
Date Released : 07/09/93

	Reporting Limit	Sample I.D.# S-3	Sample I.D.# S-2	Sample I.D.# DUP	Sample I.D.# TB	Sample I.D.# BL0101E3
COMPOUNDS	(ug/L)	-01	-02	-03	-04	BLANK
Benzene	0.5	1500	290	1700	ND	ND
Toluene	0.5	1800	35	2200	ND	ND
Ethylbenzene	0.5	950	38	1100	ND	ND
Total Xylenes	0.5	6200	130	6600	1.1	ND
TPH as Gasoline	50	29000	1300	35000	ND	ND
% Surrogate Recovery		73%	84%	75%	87%	86%
Instrument I.D.		HP4	HP4	HP4	HP4	HP4
Date Analyzed		07/01/93	07/01/93	07/02/93	07/01/93	07/01/93
RLMF		250	5	250	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.

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

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

Kamel G. Kamel 7/9/93
Analyst Date

Cheryl Balmer 7/9/93
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 : SOIL
Date Sampled : N/A
Date Analyzed : 07/01/93

Anametrix I.D. : ML0101E1
Analyst : KK
Supervisor : ca
Date Released : 07/09/93
Instrument I.D.: HP4

COMPOUND	SPIKE AMT. (mg/Kg)	REC LCS (mg/Kg)	%REC LCS	% REC LIMITS
GASOLINE	0.50	0.48	96%	58-130
p-BFB			63%	53-147

* Quality control established by Anametrix, Inc.

WELL GAUGING DATA

Shell WIC #204-5308-3400

Project # 930629-W1 Date 6/29/93 Client Shell

Site 4411 Foothill Blvd Oakland Sampler JW.

	Well I.D.	Well Size (in.)	Sheen/ Odor	Depth to Immisible Liquid (feet)	Thickness of Immisible Liquid (ft.)	Volume of Immisibles Removed (ml)	Depth to Water (feet)	Depth to Well Bottom (feet)	Measured to: Top of Pipe or Grade	
No Lock	S-1	4	odor	none	—	—	8.75	24.72	Grade	Δ=.2
*	S-2	4	none	↓	—	—	9.69	22.11	T.O.C	Δ=.3
							10.00	22.42	Grade	
*	S-3	4	slt odor		—	—	8.50	20.06	T.O.C.	Δ=.4
							8.96	20.52	Grade	

* No X mark on well box rim so measured to both. on new wells.

** Need shell locks on all wells (New ones S-2 & S-3 have Dorman locks)

SHELL WELL MONITORING DATA SHEET

Project #: 930629-W1 Wic # 204-5508-3400

Sampler: RW Date Sampled: 6/28/93

Well I.D.: S-2 Well Diameter: (circle one) 2 3 (4) 6 ____

Total Well Depth: Before 22.42 After Depth to Water: Before 10.80 After

Depth to Free Product: None Thickness of Free Product (feet): ____

Measurements referenced to: PVC (Grade) Other -- TOB

Volume Conversion Factor (VCF):
$(12 \times (d^2/4) \times \pi)/231$
where
12 = in/feet
d = diameter (in.)
π = 3.1416
231 = in3/gal

Well dia.	VCF
2"	0.16
3"	0.37
4"	0.65
6"	1.47
10"	4.08
12"	5.87

8.1 x 3 = 24.3

1 Case Volume x Specified Volumes = gallons

Purging: Bailer ☐ Middleburg ☐ Electric Submersible ☑ Suction Pump ☐ Type of Installed Pump ____

Sampling: Bailer ☑ Middleburg ☐ Electric Submersible ☐ Suction Pump ☐ Installed Pump ☐

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1337	71.6	7.7	1100	60	9	
1347	71.6	7.8	1100	97	17	
1358	72.6	7.8	1000	130	25	

Did Well Dewater? No * If yes, gals. Gallons Actually Evacuated: 25

Sampling Time: 1400

Sample I.D.: S-2 Laboratory: Anametrix

Analyzed for: TPHg/BTEX

Duplicate I.D.: Cleaning Blank I.D.:

Analyzed for:

Shipping Notations:

Additional Notations: * slow recharging well < 1gpm.

SHELL WELL MONITORING DATA SHEET

Project #: 930629-W1 | Wic # 204-5508-3400

Sampler: MW | Date Sampled: 6/29/93

Well I.D.: S-3 | Well Diameter: (circle one) 2 3 (4) 6 ____

Total Well Depth: Before 20.52 After | Depth to Water: Before 8.96 After

Depth to Free Product: None | Thickness of Free Product (feet): ____

Measurements referenced to: PVC (Grade) Other -- TOB

Volume Conversion Factor (VCF):
(12 × (d²/4) × π)/231
where
12 = in/foot
d = diameter (in.)
π = 3.1416
231 = in³/gal

Well dia.	VCF
2"	= 0.16
3"	= 0.37
4"	= 0.65
6"	= 1.47
10"	= 4.08
12"	= 5.87

7.5 (1 Case Volume) × 3 (Specified Volumes) = 22.5 gallons

Purging: Bailer ☐ Middleburg ☐ Electric Submersible ☒ Suction Pump ☐ Type of Installed Pump ____

Sampling: Bailer ☒ Middleburg ☐ Electric Submersible ☐ Suction Pump ☐ Installed Pump ☐

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1412	68.6	7.9	950	76	8	slt odor
1418	69.4	7.9	970	>200	16	4
1435	70.6	8.0	1000	109	23	4

Did Well Dewater? No * If yes, gals. Gallons Actually Evacuated: 23

Sampling Time: 1440

Sample I.D.: S-3 | Laboratory: Argus/Mx

Analyzed for: TPH-g / BTEX

Duplicate I.D.: DUP | Cleaning Blank I.D.:

Analyzed for: TPH-g / BTEX

Shipping Notations:

Additional Notations: * Slow recharge < 1 gpm.