WEISS ASSOCIATES
Geologic and Environmental Services
Fax: 415-547-5043 Phone: 415-547-5420
5500 Shellmound Street, Emeryville, CA 94608

August 27, 1990

Mr. Ariu Levi
Alameda County Health Department
Hazardous Materials Department
80 Swan Way, Room 200
Oakland, CA 94621

Re: Shell Service Station
WIC# 204-0072-0403
1601 Webster Street
Alameda, California
WA Job #81-434-01

Dear Mr. Levi:

This letter describes Weiss Associates' (WA) third quarter 1990 ground water monitoring activities at the subject Shell service station. This status report satisfies the quarterly reporting requirements outlined in our workplan dated March 19, 1990, and prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 265.d. A description of WA's proposed activities for the fourth quarter 1990 is also included below.

GROUND WATER SAMPLING

WA collected ground water samples from three monitoring wells on July 18, 1990, as part of the quarterly ground water monitoring program at Shell Service Station WIC #204-0072-0403 in Alameda, California (Figure 1). Ground water samples from monitoring well MW-2 (Figure 2) contained benzene above the California Department of Health Services (DHS) maximum contaminant level (MCL) for drinking water.

Personnel: Darren Green
WA Position: Environmental Technician
Date of sampling: July 18, 1990

Monitoring wells sampled: MW-1, MW-2 and S-1

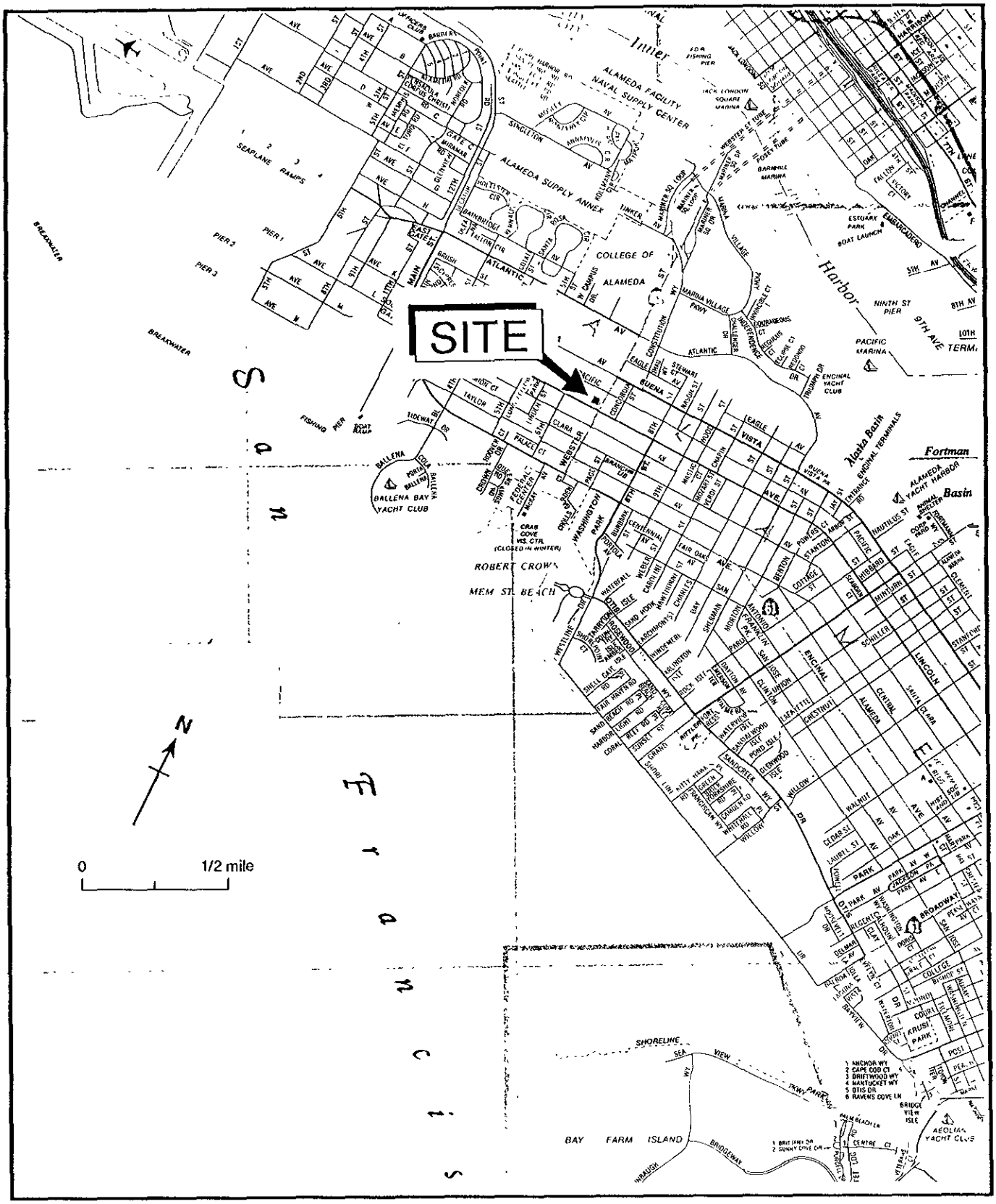


Figure 1. Site Location Map - Shell Service Station, WIC# 204-0072-0403, 1601 Webster Street, Alameda, CA

8/20/90

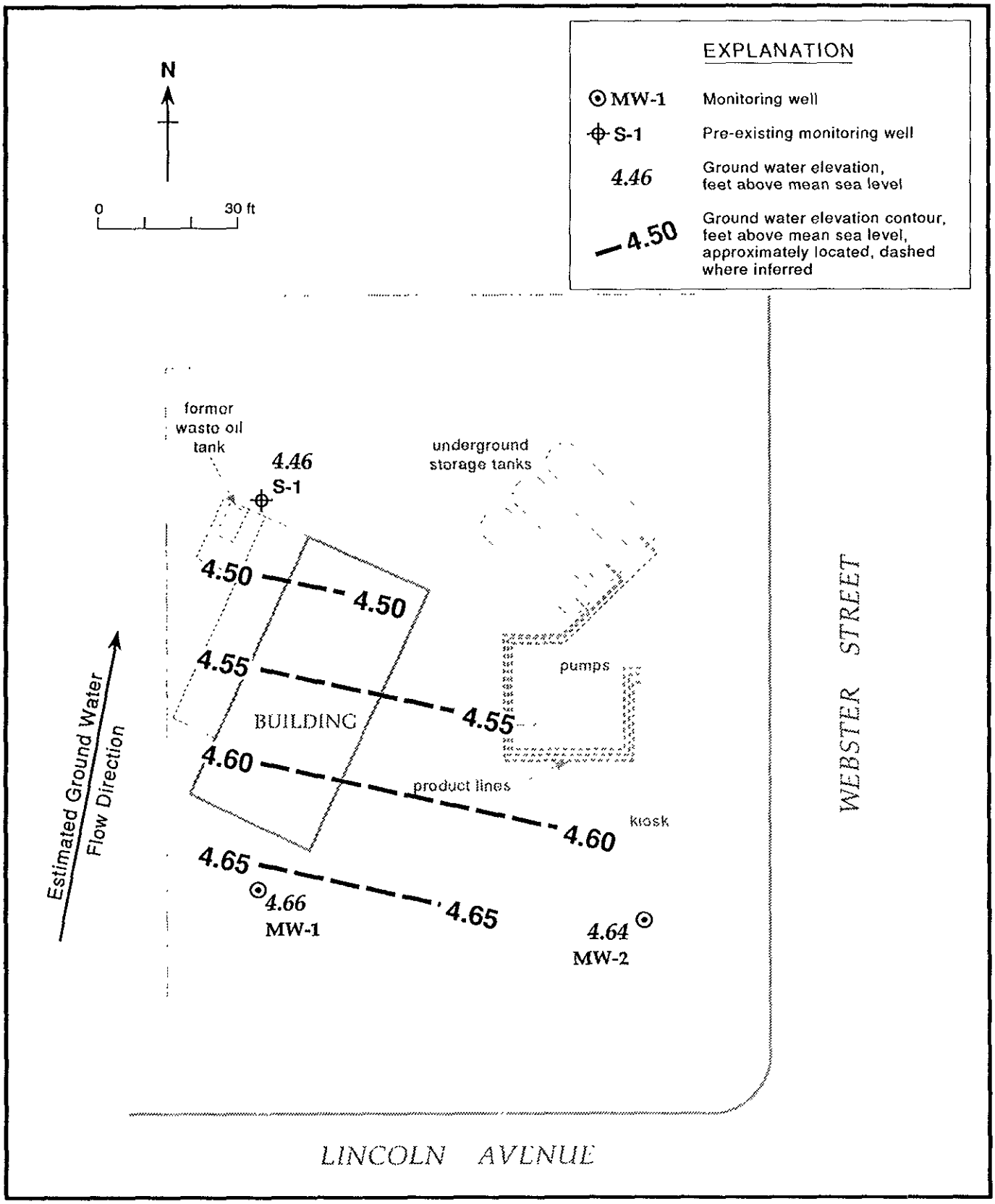


Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - July 18, 1990 - Shell Service Station WIC #204-0072-0403, 1601 Webster Street, Alameda, California

Method of purging wells:

- Steam-cleaned PVC bailer: S-1
- Dedicated PVC bailer: MW-1 and MW-2

Volume of water purged prior to sampling:

- Wells were purged of about four well-casing volumes, approximately 15.5 to 30 gallons each.

Method of ground water sample collection:

- Decanted from steam-cleaned Teflon bailer: S-1
- Drawn through sampling port on side of dedicated PVC bailer: MW-1 and MW-2.

Method of containing ground water samples:

- 40 ml glass, volatile organic analysis (VOA) vials.
- 1000 ml amber glass bottle preserved with sulfuric acid for total oil and grease analysis.

All samples were refrigerated and transported under chain-of-custody to the analytical laboratory.

Water samples transported to:

- IT Analytical Services, San Jose, California

Samples were received by the laboratory on July 20, 1990.

Quality assurance/quality control:

- A travel blank was submitted for analysis.

Water sample collection records and chain-of-custody forms are included as Attachments A and B, respectively.

GROUND WATER ELEVATIONS

Water levels were measured in: all wells on July 18, 1990

Direction of ground water flow: Northward

Water levels and ground water elevations are presented in Table 1. Ground water elevation contours are plotted on Figure 2. The ground water flow direction this quarter is consistent with the previous quarter.

CHEMICAL ANALYSES

All ground water samples were analyzed for:

- Total petroleum hydrocarbons as gasoline (TPH-G) by modified EPA Method 8015.
- Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020.
- Total oil and grease (TOG) by American Public Health Association Standard Method 503E.
- Halogenated volatile organic compounds (HVOC's) by EPA Method 601.

Samples were analyzed by the laboratory on July 25, 27, 30, 31 and August 1, 1990. The results of the water analyses are presented in Table 2 and the analytic reports are included as Attachment C.

Table 1. Water Level Data - Shell Service Station WIC #204-0072-0403, 1601 Webster Street Alameda, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
MW-1	4-11-90	13.80	8.22	5.58
	7-18-90		9.14	4.66
MW-2	4-11-90	13.20	7.69	5.51
	7-18-90		8.56	4.64
S-1	9-11-90	13.77	9.82	3.95
	4-11-90		8.41	5.36
	7-18-90		9.31	4.46

Discussion of analytic results of ground water for this quarter:

- TPH-G, BETX, HVOCs and TOG compounds were not detected in monitoring wells MW-1 and S-1.
- TPH-G, BETX and 1,2-dichloroethane concentrations in monitoring well MW-2 increased since the previous quarter.

Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-0072-0403, 1601 Webster Street, Alameda, California

Sample ID	Date Sampled	Sampled By	Analytic Method	Analytic Lab	TPH-G	TPH-D[a]	B	E	T	X	VOCs	TOG[b]	Metals/ Other
					<----------µg/L (ppb)---------->								
MW-1	4-11-90	WA	601/602/8015/503E	NET	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.4-10	<10,000	---
	7-18-90	WA	601/8015/8020/503E	IT	<50	---	<0.5	<0.5	<0.5	<0.5	3[c] t,2-DCE	<5,000	---
MW-2	4-11-90	WA	601/602/8015/503E	NET	580	430	20	1.2	4.9	73	1.1[d]	<10,000	---
	7-18-90	WA	601/8015/8020/503E	IT	1,400	---	110	71	310	310	0.7[e] t,2-DCE	<5,000	---
S-1	9-04-87	PEG	624	IT	---	---	<5	<5	<5	<5	120[f]	---	---
	9-11-89	WA	8015/602/503E/ 624/625/6010	IT	<50	<100	<0.5	<1	<1	<3	<0.4-10	<1,000	*[g]
	4-11-90	WA	601/602/8015/503E	NET	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.4-10	<10,000	---
	7-18-90	WA	601/8015/8020/503E	IT	<50	---	<0.5	<0.5	<0.5	<0.5	<0.5	<5,000	---
Travel Blank	7-18-90	WA	8015/8020	IT	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
DHS MCLs	---	---	---	---	NE	NE	1	680	100[h]	1,750	0.5[i]	NE	---

-- Table 2 continues on next page --

Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-0072-0403, 1601 Webster Street, Alameda, California (continued)

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
B = Benzene
E = Ethylbenzene
T = Toluene
X = Xylenes
VOCs = Volatile Organic compounds including Halogenated volatile organic compounds
SVOCs = Semi-volatile organic compounds
TOG = Total oil and grease (non-polar)
ppb = parts per billion
<n = Not detected at detection limit of n ppb
DHS MCL = Department of Health Services Maximum Contaminant Level
NE = DHS action levels not established
--- = Not analyzed or not applicable
PEG = Pacific Environmental Group, Santa Clara, California

Notes:

[a] = Analytic results for total petroleum hydrocarbons as motor oil (TPH-MO) are reported with TPH-D results by the laboratory. TPH-MO results are included in the analytic reports in Appendix C.
[b] = Analytic results for total oil and grease (polar and non-polar) are reported with the hydrocarbon (non-polar) TOG by the laboratory. These results are included in the analytic reports in Appendix C.

Analytical Laboratory:

NET = National Environmental Testing Pacific, Inc., Santa Rosa, California
IT = International Technology Corporation, San Jose, California

Analytic Methods:

503E = American Public Health Association Standard Method 503E for TOG
601 = EPA Method 601 for Halogenated VOCs
602 = EPA Method 602 for BETX
624 = EPA Method 624 for VOCs
625 = EPA Method 625 for SVOCs
6010 = EPA Method 6010 for Metals
8015 = Modified EPA Method 8015 for TPH-G, TPH-D and TPH-MO
8020 = EPA Method 8020 for BETX

Notes: (continued)

[c] = cis-1,2-dichloroethene detected at 3 ppb
[d] = 1,2-dichloroethane detected at 1.1 ppb
[e] = 1,2-dichloroethane detected at 0.7 ppb
[f] = Acetone detected at 120 ppb
[g] = Metals include: Cadmium, <10 ppb; Chromium, 20 ppb; Lead, 60 ppb; Zinc, 30 ppb; also analyzed for PCBs (<0.5 ppb) and SVOCs (<10-50 ppb)
[h] = DHS recommended action level for drinking water
[i] = MCL for 1,2-dichloroethane

ANTICIPATED WORK FOR FOURTH QUARTER 1990

During the fourth quarter 1990, on behalf of Shell Oil, WA plans to:

- Continue quarterly monitoring of ground water at this site, and
- Prepare a quarterly status report presenting all data generated during the previous quarter inlcuding the reuslts of water sampling and analysis.

We trust that this submittal satisfied your requirements. If you have any questions, please call Eric Anderson or Karen Sixt.

Sincerely,
Weiss Associates

Eric W. Anderson
Staff Geologist

Eric M. Nichols
Senior Water Resources Engineer

EWA/EMN:ea

E:\ALL\SHELL\425\434QMAU0.WP

Attachments:
A - Water Sample Collection Records
B - Chain-of-Custody
C - Analytic Reports

ATTACHMENT A

WATER SAMPLE COLLECTION RECORDS

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-1 Date 7/18/90 Time of Sampling 12:45
Job Name Shell Alameda IT Job Number 81-933-01 Initials DTF
Sample Point Description M (M = Monitoring Well)
Location LOT

WELL DATA: Depth to Water 9.19 ft (static, pumping) Depth to Product NA ft.
Product Thickness NA Well Depth 20.84 ft (spec) Well Depth 20.73 ft(sounded) Well Diameter 3 in
Initial Height of Water in Casing 11.59 ft. = volume ~~4.25~~ 7.56 gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 30. gal.

EVACUATION METHOD: Pump # and type NA Hose # and type NA
Bailer# and type 3X3 PVC Dedicated X (Y/N)
Other NA

Evacuation Time: Stop 1249
Start 1230
Total Evacation Time 19
Total Evacuated Prior to Sampling 30 gal.
Evacuation Rate 2.14 gal. per minute

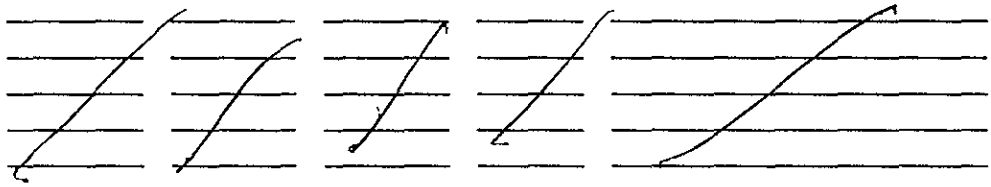
Noticed about one(1) cup of sand in bottom of buckets, HEAVY Black and Brown Silt Also

Depth to Water during Evacuation ____ ft. ____ time
Depth to Water at Sampling 12.90 ft. 1247 time
Evacuated Dry? NO After NA gal. Time NA
80% Recovery = NA
% Recovery at Sample Time NA Time NA

Formulas/Conversions
r = well radius in ft.
h = ht of water col in ft.
vol. in cyl. = $\pi r^2 h$
7.48 gal/ft^3
V_2" casing = 0.163 gal/ft
V_3" casing = 0.367 gal/ft
V_4" casing = 0.653 gal/ft
$V_{4.5}$" casing = 0.826 gal/ft
V_6" casing = 1.47 gal/ft
V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number NA
Calibration: ____ 4.0 ____ 7.0 ____ 10.0

Measured:	SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)



SAMPLE: Color Light Brown Odor MODERATE
Description of matter in sample: Sandy Silt
Sampling Method: Decanted from side port of PVC Bailer
Sample Port: Rate NA gpm Totalizer NA gal.
Time NA

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	060-1	W/V	40ml	N	Y	HCl	8015 8020	N	IT
3	"	"	"	"	"	Hcl	601	"	"
4	"	BG	1 LTR	"	"	H2SO4	503 A/E	Y	"

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-2 Date 7-18-90 Time of Sampling 1135

Job Name Shell Alameda JC Job Number 81-434-01 Initials DTC

Sample Point Description M (M = Monitoring Well)

Location Lot

WELL DATA: Depth to Water 8.56 ft (static, pumping) Depth to Product NA ft.

Product Thickness NA Well Depth 20.03 ft (spec) Well Depth 20.02 ft (sounded) Well Diameter 4 in

Initial Height of Water in Casing 11.96 ft. = volume 7.98 gal.

9 Casing Volumes to be Evacuated. Total to be evacuated 29.9 gal.

EVACUATION METHOD: Pump # and type NA Hose # and type NA

Bailer# and type 3X3pvc Dedicated Y (Y/N)

Other NA

Evacuation Time: Stop 1127

Start 1117

Total Evacation Time 15

Total Evacuated Prior to Sampling 30. gal.

Evacuation Rate 2. gal. per minute

Depth to Water during Evacuation NA ft. NA time

Depth to Water at Sampling 10.97 ft. 1136 time

Evacuated Dry? NO After NA gal. Time NA

80% Recovery = NA

% Recovery at Sample Time NA Time NA

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

V_2" casing = 0.163 gal/ft

V_3" casing = 0.367 gal/ft

V_4" casing = 0.653 gal/ft

$V_{4.5}$" casing = 0.826 gal/ft

V_6" casing = 1.47 gal/ft

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number NA

Calibration: ____ 4.0 ____ 7.0 ____ 10.0

Measured:	SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color Light brown, TAN Odor Moderate

Description of matter in sample: SILT, SAND,

Sampling Method: decanted from side port of 3X3pvc bailer

Sample Port: Rate Negpm Totalizer NA gal.

Time na

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	060-2	w/V	40ml	N	Y	HCl	8015 8020	N	IT
3	"	"	"	"	"	"	601	"	"
2	"	BG	1LTR	"	"	H2SO4	503A/E	"	"

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name S-1 Date 7.18.90 Time of Sampling 1025

Job Name Shell Alameda #F Job Number 81-939-01 Initials DJG

Sample Point Description M (M = Monitoring Well)

Location Lot

WELL DATA: Depth to Water 9.31 ft (static, pumping) Depth to Product NA ft.

Product Thickness NA Well Depth 19.95 ft (spec) Well Depth 19.95 ft (sounded) Well Diameter 3 in

Initial Height of Water in Casing 10.62 ft. = volume 3.89 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 15.5 gal.

EVACUATION METHOD: Pump # and type NA Hose # and type NA

Bailer# and type 1¼x3 pvc E Dedicated NO. (Y/N)

Other NA

Evacuation Time: Stop 1020

Start 945

Total Evacation Time 35

Total Evacuated Prior to Sampling 15.5 gal.

Evacuation Rate .442 gal. per minute

Depth to Water during Evacuation NA ft. NA time

Depth to Water at Sampling 11.20 ft. 10:30 time

Evacuated Dry? no After ____ gal. Time NA

80% Recovery = NA

% Recovery at Sample Time NA Time NA

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

V_2" casing = 0.163 gal/ft

V_3" casing = 0.367 gal/ft

V_4" casing = 0.653 gal/ft

$V_{4.5}$" casing = 0.826 gal/ft

V_6" casing = 1.47 gal/ft

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number NA

Calibration: ____ 4.0 ____ 7.0 ____ 10.0

Measured:

SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color Rusty brown Light brown Odor mild

Description of matter in sample:

Sampling Method: Decanted from top of teflon bailer #E.

Sample Port: Rate NA gpm Totalizer NA gal.

Time NA

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	060-S1	V/V	40ml	n	Y	HCl	8015 8020	n	IT
3	↓	↓	↓	↓	↓	↓	601	↓	
2	↓	BG	1 LTR	↓	↓	H2SO4	503 A/E	↓	

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

TRIP BLANKS

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name OEG-31 Date 7/18/90 Time of Sampling 1308

Job Name Shell Alameda II Job Number 81-939-01 Initials PTO

Sample Point Description _____ (M = Monitoring Well)

Location _____

WELL DATA: Depth to Water _____ ft (static, pumping) Depth to Product _____ ft.

Product Thickness _____ Well Depth ____ ft (spec) Well Depth _____ ft(sounded) Well Diameter ____ in

Initial Height of Water in Casing _____ ft. = volume _____ gal.

_____ Casing Volumes to be Evacuated. Total to be evacuated _____ gal.

EVACUATION METHOD: Pump # and type _____ Hose # and type _____

Bailer# and type _____ Dedicated _____ (Y/N)

Other _____

Evacuation Time: Stop _____ _____ _____

Start _____ _____ _____

Total Evacation Time _____

Total Evacuated Prior to Sampling _____ gal.

Evacuation Rate _____ gal. per minute

Depth to Water during Evacuation _____ ft. _____ time

Depth to Water at Sampling _____ ft. _____ time

Evacuated Dry? _____ After _____ gal. Time _____

80% Recovery = _____

% Recovery at Sample Time _____ Time _____

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

V_2" casing = 0.163 gal/ft

V_3" casing = 0.367 gal/ft

V_4" casing = 0.653 gal/ft

$V_{4.5}$" casing = 0.826 gal/ft

V_6" casing = 1.47 gal/ft

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number _____

Calibration: _____ 4.0 _____ 7.0 _____ 10.0

Measured:	SC/μmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color none Odor none

Description of matter in sample: clear

Sampling Method: _____

Sample Port: Rate ____ gpm Totalizer _____ gal.

Time _____

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround (N = Normal, W = 1 week, R = 24 hour, HOLD (spell))

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

ATTACHMENT B

CHAIN-OF-CUSTODY

TO-07-198

Page 1 of 1

WEISS ASSOCIATES
5500 Shellmound St., Emeryville, CA 94608
Phone: 415-547-5420 FAX: 415-547-5043

Shell Service Station Address:
1601 Webster Street
Alameda, CA

Shell Contact: E. Paul Hayes
WIC #: 204-0072-0403
AFE #: 086723

Please send analytic results and a copy of the signed chain of custody form to:

Eric Anderson

Project ID: 81-434-01

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Lab Personnel:
1) Specify analytic method and detection limit in report.
2) Notify us if there are any anomalous peaks on GC or other scans.
3) ANY QUESTIONS/CLARIFICATIONS: CALL US.

Sampled by: D. Green

Laboratory Name: IT

	No. of Containers	Sample ID	Container Type	Sample Date	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analyze for	Analytic Method	Turn[5]	COMMENTS
1ABC	3	060-1	W/V	7.18.90	40ml	N	Y	HCl	T.p.h. Gas BETX	8015 8020	N	Cool
DEF	3								Halogenated Vocs	601		
GH	2		BG		1LTR			H_2SO_4	T.O.G.	503 A/E		
2ABC	3	060-2	W/V		40ml			HCl	T.p.h. Gas BETX	8015 8020		
DEF	3								Halogenated Vocs	601		
GH	2		BG		1LTR			H_2SO_4	T.O.G.	503 A/E		
3ABC	3	060-21	W/V		40ml			HCl	T.p.h. Gas BETX	8015 8020		
DEF	3								Halogenated Vocs	601		
GH	2		BG		1LTR			H_2SO_4	T.O.G.	503 A/E		
4ABC	3	060-21	W/V		40ml			HCl	Gas BETX	8015 8020		

1 Released by (Signature), Date: Darren Green 7.18.90

1 Affiliation: Weiss Associates

2 Received by (Signature), Date: A J Pinkard 7/19/90

2 Affiliation: Weiss Assoc.

3 Released by (Signature), Date: A J Pinkard 7/19/90

3 Affiliation: Weiss Assoc.

4 Shipping Carrier, Method, Date: [signature] 7/20/90 1000

4 Affiliation: ET Corp.

5 Released by (Signature), Date: [signature] 7/20/90 1050

5 Affiliation:

6 Received by Lab Personnel, Date: [signature] 7-20-90 1050

6 Affiliation, Telephone:

x Seal intact?

1 Sample Type Codes: W = Water, S = Soil, Describe Other; Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B - Clear/Brown Glass, Describe Other; Cap Codes: PT = Plastic, Teflon Lined 2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)]
ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

locked and Stored overnight

F:\ALL\ADMIN\FORMS\COCSHELL.WP2

ATTACHMENT C

ANALYTIC REPORTS

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Shell Oil Company
Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608
Eric Anderson

Date: 08/03/90

Work Order: TO-07-198 P.O. Number: MOH 880-021

This is the Certificate of Analysis for the following samples:

Client Work ID: 81-434-01, 1601 Webster, Almd
Date Received: 07/20/90
Number of Samples: 4
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/03/90
Client Work ID: 81-434-01, 1601 Webster, Almd

Work Order: TO-07-198

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **060-1**
SAMPLE DATE: **07/18/90**
LAB SAMPLE ID: **T007198-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **08/01/90**

RESULTS in Milligrams per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.0005	None
Bromoform	0.0005	None
Bromomethane	0.0005	None
Carbon tetrachloride	0.0005	None
Chlorobenzene	0.0005	None
Chloroethane	0.0005	None
Chloroform	0.0005	None
Chloromethane	0.0005	None
Dibromochloromethane	0.0005	None
1,2-Dichlorobenzene	0.0005	None
1,3-Dichlorobenzene	0.0005	None
1,4-Dichlorobenzene	0.0005	None
Dichlorodifluoromethane	0.0005	None
1,1-Dichloroethane	0.0005	None
1,2-Dichloroethane	0.0005	None
1,1-Dichloroethene	0.0005	None
cis-1,2-Dichloroethene	0.0005	0.0030
trans-1,2-Dichloroethene	0.0005	None
1,2-Dichloropropane	0.0005	None
cis-1,3-Dichloropropene	0.0005	None
trans-1,3-Dichloropropene	0.0005	None
Methylene chloride	0.0005	None
1,1,2,2-Tetrachloroethane	0.0005	None
Tetrachloroethene	0.0005	None
1,1,1-Trichloroethane	0.0005	None
1,1,2-Trichloroethane	0.0005	None
Trichloroethene	0.0005	None
Trichlorofluoromethane	0.0005	None
1,1,2-Trichlorotrifluoroethane	0.0005	None
Vinyl chloride	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/03/90
Client Work ID: 81-434-01, 1601 Webster, Almd

Work Order: TO-07-198

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **060-1**
SAMPLE DATE: **07/18/90**
LAB SAMPLE ID: **T007198-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	ANALYSIS DATE	DATE
BTEX	8020		07/25/90
Low Boiling Hydrocarbons	Mod.8015		07/25/90
Oil and Grease	503E	07/30/90	07/31/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None
Oil and Grease	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/03/90
Client Work ID: 81-434-01, 1601 Webster, Almd

Work Order: TO-07-198

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **060-2**
SAMPLE DATE: **07/18/90**
LAB SAMPLE ID: **T007198-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **07/31/90**

RESULTS in Milligrams per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.0005	None
Bromoform	0.0005	None
Bromomethane	0.0005	None
Carbon tetrachloride	0.0005	None
Chlorobenzene	0.0005	None
Chloroethane	0.0005	None
Chloroform	0.0005	None
Chloromethane	0.0005	None
Dibromochloromethane	0.0005	None
1,2-Dichlorobenzene	0.0005	None
1,3-Dichlorobenzene	0.0005	None
1,4-Dichlorobenzene	0.0005	None
Dichlorodifluoromethane	0.0005	None
1,1-Dichloroethane	0.0005	None
1,2-Dichloroethane	0.0005	0.0007
1,1-Dichloroethene	0.0005	None
cis-1,2-Dichloroethene	0.0005	None
trans-1,2-Dichloroethene	0.0005	None
1,2-Dichloropropane	0.0005	None
cis-1,3-Dichloropropene	0.0005	None
trans-1,3-Dichloropropene	0.0005	None
Methylene chloride	0.0005	None
1,1,2,2-Tetrachloroethane	0.0005	None
Tetrachloroethene	0.0005	None
1,1,1-Trichloroethane	0.0005	None
1,1,2-Trichloroethane	0.0005	None
Trichloroethene	0.0005	None
Trichlorofluoromethane	0.0005	None
1,1,2-Trichlorotrifluoroethane	0.0005	None
Vinyl chloride	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/03/90
Client Work ID: 81-434-01, 1601 Webster, Almd

Work Order: TO-07-198

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **060-2**
SAMPLE DATE: **07/18/90**
LAB SAMPLE ID: **T007198-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/26/90
Low Boiling Hydrocarbons	Mod.8015		07/26/90
Oil and Grease	503E	07/30/90	07/31/90

PARAMETER	*DETECTION LIMIT*	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.5	**1.4**
BTEX		
Benzene	0.005	**0.11**
Toluene	0.005	**0.31**
Ethylbenzene	0.005	**0.071**
Xylenes (total)	0.005	**0.31**
Oil and Grease	5.	**None**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/03/90
Client Work ID: 81-434-01, 1601 Webster, Almd

Work Order: TO-07-198

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **060-S1**
SAMPLE DATE: **07/18/90**
LAB SAMPLE ID: **T007198-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **07/27/90**

RESULTS in Milligrams per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.0005	None
Bromoform	0.0005	None
Bromomethane	0.001	None
Carbon tetrachloride	0.0005	None
Chlorobenzene	0.0005	None
Chloroethane	0.0005	None
Chloroform	0.0005	None
Chloromethane	0.0005	None
Dibromochloromethane	0.0005	None
1,2-Dichlorobenzene	0.0005	None
1,3-Dichlorobenzene	0.0005	None
1,4-Dichlorobenzene	0.0005	None
Dichlorodifluoromethane	0.0005	None
1,1-Dichloroethane	0.0005	None
1,2-Dichloroethane	0.0005	None
1,1-Dichloroethene	0.0005	None
cis-1,2-Dichloroethene	0.0005	None
trans-1,2-Dichloroethene	0.0005	None
1,2-Dichloropropane	0.0005	None
cis-1,3-Dichloropropene	0.0005	None
trans-1,3-Dichloropropene	0.0005	None
Methylene chloride	0.0005	None
1,1,2,2-Tetrachloroethane	0.0005	None
Tetrachloroethene	0.0005	None
1,1,1-Trichloroethane	0.0005	None
1,1,2-Trichloroethane	0.0005	None
Trichloroethene	0.0005	None
Trichlorofluoromethane	0.0005	None
1,1,2-Trichlorotrifluoroethane	0.0005	None
Vinyl chloride	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: **Shell Oil Company**
Date: **08/03/90**
Client Work ID: **81-434-01, 1601 Webster, Almd**

Work Order: **T0-07-198**

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **060-S1**
SAMPLE DATE: **07/18/90**
LAB SAMPLE ID: **T007198-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/25/90
Low Boiling Hydrocarbons	Mod.8015		07/25/90
Oil and Grease	503E	07/30/90	07/31/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None
Oil and Grease	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/03/90
Client Work ID: 81-434-01, 1601 Webster, Almd

Work Order: TO-07-198

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **060-21**
SAMPLE DATE: **07/18/90**
LAB SAMPLE ID: **T007198-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		07/25/90
Low Boiling Hydrocarbons	Mod.8015		07/25/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 08/03/90
Client Work ID: 81-434-01, 1601 Webster, Almd

Work Order: TO-07-198

TEST CODE **601** TEST NAME **Halocarbons by 8010/601**

The method of analysis for volatile halocarbons is taken from E.P.A. Methods 601 and 8010. Samples are examined using the purge and trap technique. Final detection is by gas chromatography using an electrolytic conductivity detector.

TEST CODE **ONGEW** TEST NAME **EPA 503E in Water**

The method of analysis for oil and grease is taken from Standard Methods for the Examination of Water and Wastewater, Section 503E. Samples are extracted with repeated protions of solvent and the extract is treated with silica gel to remove polar compounds. The extract is evaporated and oil and grease is determined gravimetrically.

TEST CODE **TPHVB** TEST NAME **TPH Gas,BTEX by 8015/8020**

The method of analysis for low boiling hydrocarbons is taken from E.P.A. Methods 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatograhy using a flame ionization detector as well as a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline and includes benzene, toluene, ethylbenzene and xylenes.