WEISS ASSOCIATES
Geologic and Environmental Services
Fax: 415-547-5043 Phone: 415-547-5420
6500 Shellmound Street, Emeryville, CA 94608

90 NOV 21 PM 1:02

TRANSMITTAL LETTER

FROM: Tom Fojut

DATE: November 20, 1990

TO: Mr. Ariu Levi
Alameda County Department
of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621-1426

VIA:
- X First Class Mail
- ____ Fax ____ pages
- ____ UPS (Surface)
- ____ Federal Express
- ____ Courier

SUBJECT: Shell Service Station
WIC# 204-0072-0403
1601 Webster Street, Alameda, CA

JOB: 81-434-01

AS:
- ____ We discussed on the telephone on _____
- ____ You requested _____
- ____ We believe you may be interested
- X Is required

WE ARE SENDING:
- X Enclosed
- ____ Under Separate Cover Via _____

Quarterly status report for the subject site.

FOR:
- ____ Your information
- X Your use
- ____ Your review & comments
- ____ Return to you

PLEASE:
- X Keep this material
- ____ Return within 2 weeks
- ____ Acknowledge receipt

MESSAGE:

Please call if you have any questions.

cc: E. Paul Hayes, Shell Oil Company, P.O. Box 4848, Anaheim, California 92803

Diane Lundquist, Shell Oil Company, P.O. Box 4023, Concord, California 94524

Lester Feldman, California Regional Quality Control Board -San Francisco Bay Region, 1800 Harrison Street, Oakland, California 94612

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

November 20, 1990

Mr. Ariu Levi
Alameda County Department of Environmental Health
Division of Hazardous Materials
80 Swan Way
Oakland, CA 94621-1426

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) fourth quarter 1990 activities at the Shell service station referenced above (Figure 1.) 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. Included below are:

- Descriptions and results of activities performed to date in the fourth quarter 1990, and
- Proposed work for the remainder of the fourth quarter 1990 and the first quarter 1991.

FOURTH QUARTER 1990 ACTIVITIES

During the fourth quarter 1990, WA:

- Collected ground water samples from the three site wells,
- Measured ground water depth and determined ground water elevations and flow direction, and
- Analyzed the ground water samples and tabulated the analytic results.

These activities are described below:

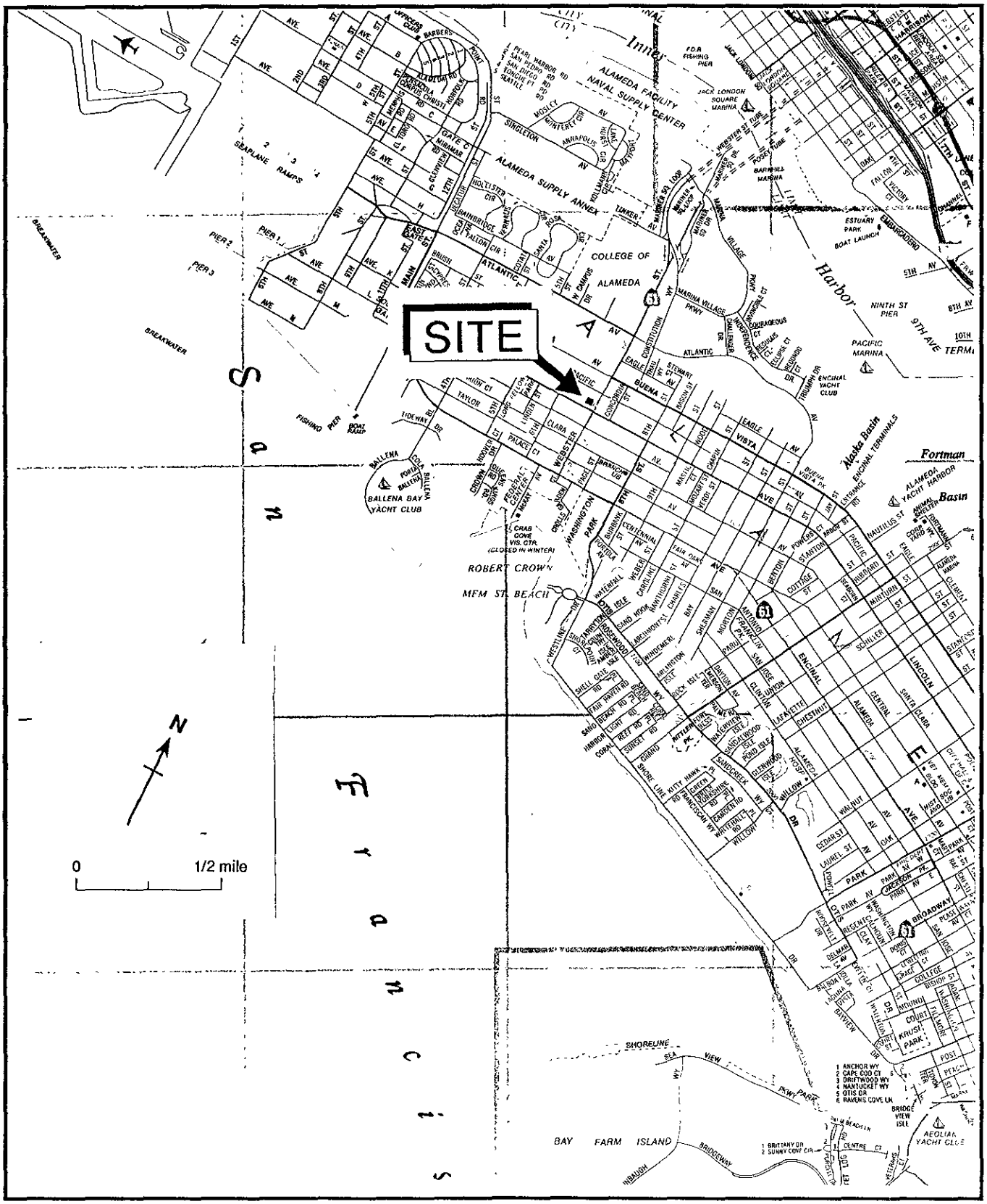

Figure 1. Site Location Map - Shell Service Station, WIC# 204-0072-0403, 1601 Webster Street, Alameda, CA

8/20/90

Ground Water Sampling

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

Sampling Personnel: WA Environmental Technician David Charles

Monitoring Wells Sampled: MW-1, MW-2, and S-1

Method of Purging Wells:

- Dedicated PVC bailers

Volume of Water Purged Prior to Sampling:

- Wells were purged of about four well-casing volumes, about 14 to 28 gallons each.

Method of Collecting Ground Water Samples:

- Samples from wells MW-1 and MW-2 were drawn through sampling port on side of dedicated PVC bailers
- Samples from well S-1 were decanted from dedicated PVC bailers

Methods of Containing Ground Water Samples:

- 40 ml glass, volatile organic analysis (VOA) vials, preserved in hydrochloric acid and packed in protective foam sleeves for total petroleum hydrocarbons as gasoline (TPH-G), benzene, ethylbenzene, toluene, and xylenes (BETX), and halogenated volatile organic compounds (HVOCs) analyses,
- 1000 ml amber glass bottles preserved in hydrochloric acid for total petroleum hydrocarbons as diesel (TPH-D) analysis, and

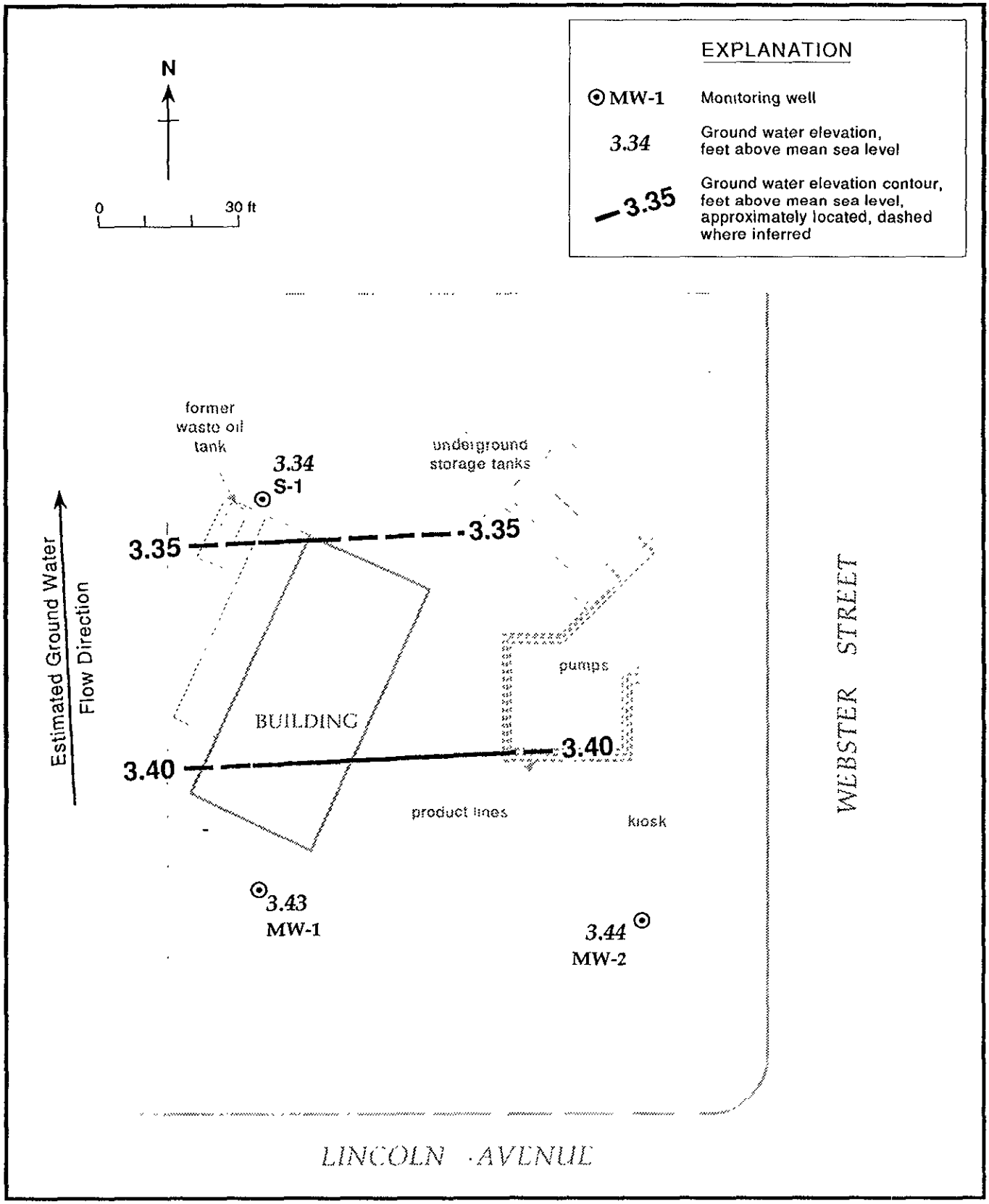

Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - October 18, 1990 - Shell Service Station WIC #204-0072-0403, 1601 Webster Street, Alameda, California

11/17/90

- 1000 ml amber glass bottles preserved with sulfuric acid for total oil and grease (TOG) analysis.

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

Water Samples Transported to:

- International Technology Analytical Services (IT), San Jose, California, and were received on October 19, 1990

Quality Assurance/Quality Control:

- A travel blank was submitted for analysis.

- An equipment blank was not necessary because all bailers are dedicated to specific wells.

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

Ground Water Elevations and Flow Direction

- The depth to water was measured in all wells. Ground water elevations have decreased 1.1 to 1.2 ft since last quarter.

- The estimated direction of ground water flow is northward. This is consistent with previous results.

Depth to water measurements and ground water elevations are presented in Table 1. Ground water elevation contours are plotted on Figure 2.

TABLE 1. Ground Water Elevation 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	04-11-90	13.80	8.22	5.58
	07-18-90		9.14	4.66
	10-18-90		10.37	3.43
MW-2	04-11-90	13.20	7.69	5.51
	07-18-90		8.56	4.64
	10-18-90		9.76	3.44
S-1	09-11-90	13.77	9.82	3.95
	04-11-90		8.41	5.36
	07-18-90		9.31	4.46
	10-18-90		10.43	3.34

Chemical Analyses

The Ground Water Samples were Analyzed for:

- TPH-G by modified EPA Method 8015,
- BETX by EPA Method 8020,
- TOG by American Public Health Association Standard Method 503E,
- HVOCs by EPA Method 601, and
- TPH-D by modified EPA Method 8015 (well MW-2 only.)

The laboratory analyzed the samples between October 24 and 31, 1990. The results are presented in Table 2 and the analytic reports are included in Attachment B.

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	B	E	T	X	VOCs	TOG	Metals/ Other
					<----------µg/L (ppb)---------->								
MW-1	04-11-90	WA	601/602/8015/503E	NET	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.4-10	<10,000	---
	07-18-90	WA	601/8015/8020/503E	IT	<50	---	<0.5	<0.5	<0.5	<0.5	3[a]	<5,000	---
	10-18-90	WA	601/8015/8020/503E	IT	<50	---	<0.5	<0.5	<0.5	<0.5	7.9[b] 1,2 DCE	<5,000	---
MW-2	04-11-90	WA	601/602/8015/503E	NET	580	430	20	1.2	4.9	73	1.1[c]	<10,000	---
	07-18-90	WA	601/8015/8020/503E	IT	1,400	---	110	71	310	310	0.7[d]	<5,000	---
	10-18-90	WA	601/8015/8020/503E	IT	1,900	1,300[e]	110	89	470	400	0.9[f] 1,2-DCE	<5,000	---
S-1	09-04-87	PEG	624	IT	---	---	<5	<5	<5	<5	120[g]	---	---[h]
	09-11-89	WA	8015/602/503E/ 624/625/6010	IT	<50	<100	<0.5	<1	<1	<3	<0.4-10	<1,000	
	04-11-90	WA	601/602/8015/503E	NET	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.4-10	<10,000	---
	07-18-90	WA	601/8015/8020/503E	IT	<50	---	<0.5	<0.5	<0.5	<0.5	<0.5	<5,000	---
	10-18-90	WA	601/8015/8020/503E	IT	<50	---	<0.5	<0.5	<0.5	<0.5	<0.5	<5,000	---
Travel Blank	07-18-90	WA	8015/8020	IT	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
	10-18-90	WA	8015/8020	IT	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
DHS MCLs					NE	NE	1	680	100[i]	1,750	[j]	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
DHS RAL = Department of Health Services Recommended Action Level for drinking water
NE = DHS action levels not established
--- = Not analyzed
PEG = Pacific Environmental Group, Santa Clara, California
WA = Weiss Associates

Notes:

[a] = cis-1,2-dichloroethlyene (c-1,2-DCE) detected at 3 ppb
[b] = c-1,2-DCE detected at 7.9 ppb
[c] = 1,2-dichloroethane (1,2-DCA) detected at 1.1 ppb
[d] = 1,2-DCA detected at 0.7 ppb
[e] = Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline
[f] = 1,2-DCA detected at 0.9 ppb
[g] = Acetone detected at 120 ppb
[h] = 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)
[i] = DHS RAL for toluene
[j] = DHS MCL for 1,2-DCA = 0.5 ppb; DHS RAL for c-1,2-DCE = 6 ppb

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 and TPH-D
8020 = EPA Method 8020 for BETX

Discussion of Analytic Results of Ground Water for this Quarter:

- No TPH-G or BETX were detected in wells MW-1 and S-1 and no TOG was detected in any well.
- Samples from well MW-2 contained benzene and 1,2-DCA above the DHS MCL for drinking water, and samples from well MW-1 contained c-1,2-DCE above the DHS RAL for drinking water.
- TPH-G concentrations in well MW-2 samples have increased from previous quarters.
- Based on chromotographic profiles, the TPH-D detected in well MW-2 appears to be the less volatile fraction of gasoline.

ANTICIPATED WORK FOR FIRST QUARTER 1991

During the remainder of the fourth quarter 1990 and the first quarter 1991, 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 including water sampling results and analysis.

We trust that this submittal satisfies your requirements. Please contact Tom Fojut or Karen Sixt if you have any questions.

Sincerely,
Weiss Associates

Thomas Fojut

Thomas J. Fojut
Staff Geologist

Joseph P. Theisen, R.G.
Senior Project Hydrogeologist

TJF/JPT:jg

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

ATTACHMENT A

WATER SAMPLE COLLECTION RECORDS

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-1 Date 10/18 Time of Sampling 1417

Job Name SHELL ALAMEDA II Job Number 81-434-01 Initials OC

Sample Point Description M (M = Monitoring Well)

Location BY SIDE- AIR/WTR.

WELL DATA: Depth to Water 10.37 ft (static, pumping) Depth to Product 0 ft.

Product Thickness 0 Well Depth 21 ft (spec) Well Depth 20.86 ft(sounded) Well Diameter 4 in

Initial Height of Water in Casing 10.49 ft. = volume 6.85 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 27.39 gal.

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

Bailer# and type 3Y36 PVC Dedicated YES (Y/N)

Other —

Evacuation Time: Stop 1404

Start 1350

Total Evacation Time 16 MIN

Total Evacuated Prior to Sampling 27.5 gal.

Evacuation Rate 1.7 gal. per minute

Depth to Water during Evacuation — ft. — time

Depth to Water at Sampling 12.34 ft. 1414 time

Evacuated Dry? NO 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 VERY LT. BROWN Odor LIGHT

Description of matter in sample: ORANGE-BR. SLT ON BTM LITE

Sampling Method: FROM DISP. BLR. PORT

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
3	100-1	W/CV	40mL	N	Y	HCL	8015/8020	N	LT
3	↓	"	"	↓	↓	"	601	↓	↓
1	↓	B/GLASS	1L	↓	↓	H_2SO_4	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

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-2 Date 10/18/90 Time of Sampling 1322

Job Name ~~CHEVRON-HAYWARD~~ SHELL ALAMEDA JL Job Number 81-434-01 Initials DC

Sample Point Description M (M = Monitoring Well)

Location MIDDLE OF LOT

WELL DATA: Depth to Water 9.76 ft (static, pumping) Depth to Product 0 ft.

Product Thickness 0 Well Depth 20 ft (spec) Well Depth 20.02 ft(sounded) Well Diameter 4 in

Initial Height of Water in Casing 10.26 ft. = volume 6.69 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 26.79 gal.

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

Bailer# and type 3"X36" PVC Dedicated YES (Y/N)

Other _____

Evacuation Time: Stop 1305 1310 _____

Start 1253 1305 _____

Total Evacation Time 14 MIN

Total Evacuated Prior to Sampling 27 gal.

Evacuation Rate 1.9 gal. per minute

Depth to Water during Evacuation – ft. – time

Depth to Water at Sampling 10.95 ft. 13:24 time

Evacuated Dry? NO 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 VERY LT. BROWN Odor MODERATE

Description of matter in sample: SUSPENDED SILT - VERY LT.

Sampling Method: FROM DEP. BLR. PORT

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
3	100-2	W/CV	40mL	N	Y	HCL	8015/8020	N	IT
3	↓	"	"	↓	↓	HCL	601	↓	↓
2		B/GLPY	1L.			HCL	8015-DIESEL		
1		"	"			H_2SO_4	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:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name S-1 Date 10/18/90 Time of Sampling 1540
Job Name SHELL ALAMEDA II Job Number 61-434-01 Initials DC
Sample Point Description M (M = Monitoring Well)
Location BEHIND STATION

WELL DATA: Depth to Water 10.43 ft (static, pumping) Depth to Product 0 ft.
Product Thickness 0 Well Depth 20' ft (spec) Well Depth 19.93 ft (sounded) Well Diameter 3 in
Initial Height of Water in Casing 9.50 ft. = volume 3.48 gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 13.95 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —
Bailer# and type 4"X 48" PVC Dedicated YES (Y/N)
Other DED. BLR. 10/18/90

Evacuation Time: Stop 1443 1458 1524
Start 1438 1454 1518
Total Evacation Time 15 MIN
Total Evacuated Prior to Sampling 14 gal.
Evacuation Rate N/A gal. per minute
Depth to Water during Evacuation — ft. — time
Depth to Water at Sampling ____ ft. ____ time
Evacuated Dry? YES After 4 gal. Time 1443
80% Recovery = / * CONT'D. BAILING AS WTR. MIGRATED IN
% Recovery at Sample Time — Time ____ UNTIL 4 CAS. VOLS. WERE PURGED

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.)
	O.C.	CLEAR			

SAMPLE: Color ~~VERY LT. BROWN~~ Odor NONE TO LIGHT
Description of matter in sample: ORANGE BROWN SILT ON BTM. < 1%
Sampling Method: DECANT FROM DED. BLR.
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
3	100-S1	w/cV	40mL	N	Y	HCl	8015/8020	N	LT
3	↓	"	"	↓	↓	"	601	↓	↓
1	↓	B/GLPY	1L.	↓	↓	H_2SO_4	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.

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name — Date 10/18/90 Time of Sampling 1600

Job Name SHELL ALAMEDA II Job Number 81-434-01 Initials OC

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: NONE

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
3	100-21	W/CV	40ML	N	Y	HCL	8015/8020	N	IT

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

ANALYTIC RESULTS AND CHAIN-OF-CUSTODY FORM

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Shell Oil Company
Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608
Tom Fojut

Date: 11/07/90

Work Order: TO-10-254

P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: 81-434-01, 1601 Webster St.Al
Date Received: 10/19/90
Number of Samples: 4
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

PAGES	LABORATORY #	SAMPLE IDENTIFICATION
3	TO-10-254-01	100-1
5	TO-10-254-02	100-2
7	TO-10-254-03	100-S1
8	TO-10-254-04	100-21

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 11/07/90
Client Work ID: 81-434-01, 1601 Webster St.Al

Work Order: TO-10-254

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

SAMPLE ID: **100-1**
SAMPLE DATE: **10/18/90**
LAB SAMPLE ID: **T010254-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **10/24/90**

RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.5	None
Bromoform	0.5	None
Bromomethane	0.5	None
Carbon tetrachloride	0.5	None
Chlorobenzene	0.5	None
Chloroethane	0.5	None
Chloroform	0.5	None
Chloromethane	0.5	None
Dibromochloromethane	0.5	None
1,2-Dichlorobenzene	0.5	None
1,3-Dichlorobenzene	0.5	None
1,4-Dichlorobenzene	0.5	None
Dichlorodifluoromethane	0.5	None
1,1-Dichloroethane	0.5	None
1,2-Dichloroethane	0.5	None
1,1-Dichloroethene	0.5	None
cis-1,2-Dichloroethene	0.5	7.9
trans-1,2-Dichloroethene	0.5	None
1,2-Dichloropropane	0.5	None
cis-1,3-Dichloropropene	0.5	None
trans-1,3-Dichloropropene	0.5	None
Methylene chloride	0.5	None
1,1,2,2-Tetrachloroethane	0.5	None
Tetrachloroethene	0.5	None
1,1,1-Trichloroethane	0.5	None
1,1,2-Trichloroethane	0.5	None
Trichloroethene	0.5	None
Trichlorofluoromethane	0.5	None
1,1,2-Trichlorotrifluoroethane	0.5	None
Vinyl chloride	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 11/07/90
Client Work ID: 81-434-01, 1601 Webster St.Al

Work Order: TO-10-254

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **100-1**
SAMPLE DATE: **10/18/90**
LAB SAMPLE ID: **T010254-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		10/31/90
Low Boiling Hydrocarbons	Mod.8015		10/31/90
Oil and Grease	503E	10/25/90	10/26/90

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	5.0	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 11/07/90
Client Work ID: 81-434-01, 1601 Webster St.Al

Work Order: TO-10-254

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

SAMPLE ID: **100-2**
SAMPLE DATE: **10/18/90**
LAB SAMPLE ID: **T010254-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **10/24/90**

RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.5	None
Bromoform	0.5	None
Bromomethane	0.5	None
Carbon tetrachloride	0.5	None
Chlorobenzene	0.5	None
Chloroethane	0.5	None
Chloroform	0.5	None
Chloromethane	0.5	None
Dibromochloromethane	0.5	None
1,2-Dichlorobenzene	0.5	None
1,3-Dichlorobenzene	0.5	None
1,4-Dichlorobenzene	0.5	None
Dichlorodifluoromethane	0.5	None
1,1-Dichloroethane	0.5	None
1,2-Dichloroethane	0.5	0.9
1,1-Dichloroethene	0.5	None
cis-1,2-Dichloroethene	0.5	None
trans-1,2-Dichloroethene	0.5	None
1,2-Dichloropropane	0.5	None
cis-1,3-Dichloropropene	0.5	None
trans-1,3-Dichloropropene	0.5	None
Methylene chloride	0.5	None
1,1,2,2-Tetrachloroethane	0.5	None
Tetrachloroethene	0.5	None
1,1,1-Trichloroethane	0.5	None
1,1,2-Trichloroethane	0.5	None
Trichloroethene	0.5	None
Trichlorofluoromethane	0.5	None
1,1,2-Trichlorotrifluoroethane	0.5	None
Vinyl chloride	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 11/07/90
Client Work ID: 81-434-01, 1601 Webster St.Al

Work Order: TO-10-254

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **100-2**
SAMPLE DATE: **10/18/90**
LAB SAMPLE ID: **T010254-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		10/31/90
Low Boiling Hydrocarbons	Mod.8015		10/31/90
High Boiling Hydrocarbons	Mod.8015	10/26/90	10/29/90
Oil and Grease	503E	10/26/90	10/26/90

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	0.1	1.9	
BTEX			
Benzene	0.001	0.11	
Toluene	0.0025	0.47	
Ethylbenzene	0.001	0.089	
Xylenes (total)	0.001	0.40	
High Boiling Hydrocarbons calculated as Diesel	0.05	1.3	#
Oil and Grease	5.0	None	

Comments:
Compounds detected and calculated as diesel appear to be the less volatule constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 11/07/90
Client Work ID: 81-434-01, 1601 Webster St.Al

Work Order: TO-10-254

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

SAMPLE ID: **100-S1**
SAMPLE DATE: **10/18/90**
LAB SAMPLE ID: **T010254-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **10/24/90**

RESULTS in Micrograms per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.5	None
Bromoform	0.5	None
Bromomethane	0.5	None
Carbon tetrachloride	0.5	None
Chlorobenzene	0.5	None
Chloroethane	0.5	None
Chloroform	0.5	None
Chloromethane	0.5	None
Dibromochloromethane	0.5	None
1,2-Dichlorobenzene	0.5	None
1,3-Dichlorobenzene	0.5	None
1,4-Dichlorobenzene	0.5	None
Dichlorodifluoromethane	0.5	None
1,1-Dichloroethane	0.5	None
1,2-Dichloroethane	0.5	None
1,1-Dichloroethene	0.5	None
cis-1,2-Dichloroethene	0.5	None
trans-1,2-Dichloroethene	0.5	None
1,2-Dichloropropane	0.5	None
cis-1,3-Dichloropropene	0.5	None
trans-1,3-Dichloropropene	0.5	None
Methylene chloride	0.5	None
1,1,2,2-Tetrachloroethane	0.5	None
Tetrachloroethene	0.5	None
1,1,1-Trichloroethane	0.5	None
1,1,2-Trichloroethane	0.5	None
Trichloroethene	0.5	None
Trichlorofluoromethane	0.5	None
1,1,2-Trichlorotrifluoroethane	0.5	None
Vinyl chloride	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: **Shell Oil Company**
Date: **11/07/90**
Client Work ID: **81-434-01, 1601 Webster St.Al**

Work Order: **T0-10-254**

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **100-S1**
SAMPLE DATE: **10/18/90**
LAB SAMPLE ID: **T010254-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		10/31/90
Low Boiling Hydrocarbons	Mod.8015		10/31/90
Oil and Grease	503A	10/25/90	10/26/90

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	5.0	**None**

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 11/07/90
Client Work ID: 81-434-01, 1601 Webster St.Al

Work Order: TO-10-254

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **100-21**
SAMPLE DATE: **10/18/90**
LAB SAMPLE ID: **TO10254-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH > 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		10/31/90
Low Boiling Hydrocarbons	Mod.8015		10/31/90

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

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 11/07/90
Client Work ID: 81-434-01, 1601 Webster St.Al

Work Order: TO-10-254

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.

Results for organic chemical parameters in soils have been corrected for moisture content and are reported on a dry soil basis unless noted otherwise. Results for inorganic chemical parameters have not been corrected for moisture content.

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 portions 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 **TPHN** TEST NAME **TPH High Boiling by 8015**

The method of analysis for high boiling hydrocarbons involves extracting the samples with solvent and examining the extracts by gas chromatography using a flame ionization detector.

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.

TO-10-254

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 ST ALAMEDA CA
Shell Contact: E PAUL HAYES
WIC #: 204-0072-0403
AFE #:

Please send analytic results and a copy of the signed chain of custody form to:
TOM FOJUT
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. CHARLES
Laboratory Name: I.T.

	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	100-1	W/CV	10/18/90	40 mL	N	Y	HCL	GAS/BETX	8015/8020	N	~~Carbon~~
2ABC	3	100-2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
3ABC	3	100-S1							HVOC's	EPA 601		
1DEF	3	100-1							↓	↓		
2DEF	3	100-2										
3DEF	3	100-S1							GAS/BETX	8015/8020		
4ABC	3	100-21	↓		↓			↓	TPH-DIESEL	8015-DIESEL		
02GH	2	100-2	B6/PT					H2SO4	TOTAL OIL/GREASE	503 A/E		
01G	1	100-1	↓					↓	↓	↓		
02I	1	100-2										
03G	1	100-S1	↓	↓	↓	↓	↓	↓	↓	↓	↓	

1 Carol Clarke 10/18/90
Released by (Signature), Date

3 A.J. Pintard 10-19-90 0?
Released by (Signature), Date

5 Gary Van Berg 10/19/90 1725
Released by (Signature), Date

1 Weiss Assoc. 1800
Affiliation

3 Weiss Assoc.
Affiliation

5 I T
Affiliation

2 A.J. Pintard 10-19-90 0815
Received by (Signature), Date

4 Gary Van Berg 10/19/90 1335
Shipping Carrier, Method, Date

6 Tom Fojut 10/19/90 1725
Received by Lab Personnel, Date

x yes
Seal intact?

2 Weiss Assoc.
Affiliation

4 I T
Affiliation

6 ITAS 4089431540
Affiliation, Telephone

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:
Release to Secure, locked area

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