Weiss Associates Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: **510-450-6000**

October 26, 1994

Juliet Shin
Alameda Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Shell Service Station
WIC #204-5510-0600
4255 MacArthur Blvd.
Oakland, California
WA Job #81-0757-104

Dear Ms. Shin:

This letter describes recently completed and anticipated activities at the Shell service station referenced above (Figure 1). This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 2652.d. Included below are descriptions and results of activities performed in the third quarter 1994 and proposed work for the fourth quarter 1994.

Third Quarter 1994 Activities:

- Blaine Tech Services, Inc. (BTS) of San Jose, California measured depths to ground water and collected ground water samples from the site wells. The BTS report describing these activities is included as Attachment A.

- Weiss Associates (WA) compiled the ground water elevation and analytic data (Tables 1 and 2, respectively) and prepared a ground water elevation contour map (Figure 2).

- The California Department of Transportation has only recently issued the permit to drill in the High Street onramp area as proposed in our workplan. Therefore, we are proceeding with the planned soil and ground water investigation.

- WA is currently conducting a title search and reviewing Alameda County Department of Environmental Health files on area businesses. Results of the title search and file review will be included in the soil and ground water investigation report.

Anticipated Fourth Quarter 1994 Activities:

WA will submit a report presenting the results of the fourth quarter 1994 ground water sampling and ground water depth measurements. The report will include tabulated chemical analytic results and a ground water elevation contour map.

Please call if you have any questions.

Sincerely,
Weiss Associates

John Wolf
Technical Assistant

James W. Carmody, C.E.G.
Senior Project Hydrogeologist

REGISTERED GEOLOGIST
JAMES W. CARMODY
No. EG 1576
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

JW/JWC:jw
I:\SHELL\0757\QM\757QMA04.WP

Attachments: A - Ground Water Monitoring Report and Analytic Report

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

Figure 1. Site Location Map- Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

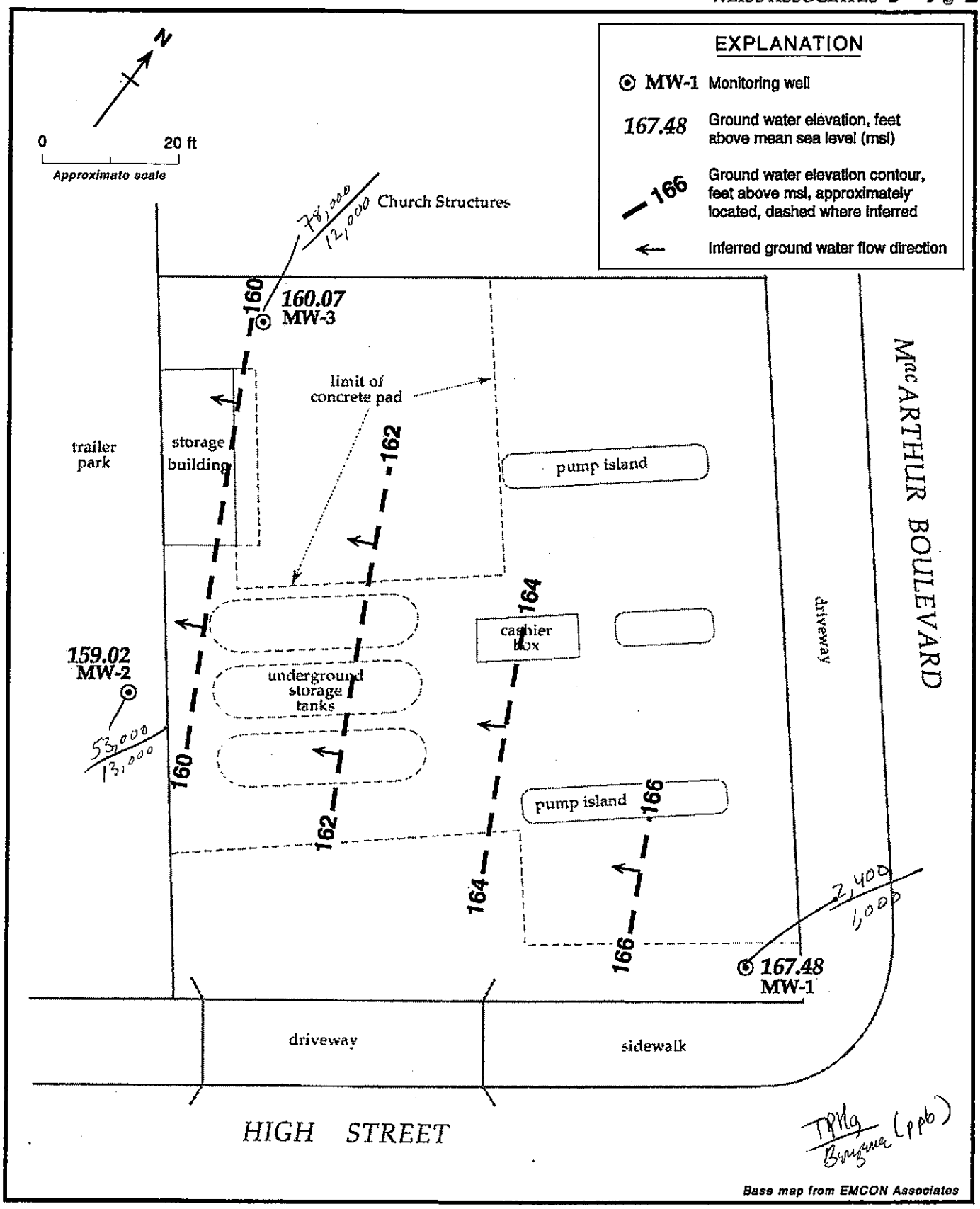

Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - July 7, 1994
Shell Service Station WIC #204-5510-0600, 4255 MacArthur Boulevard, Oakland, California

Table 1. Ground Water Elevations - Shell Service Station WIC #204-5510-0600, 4255 MacArthur Blvd., Oakland, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Separtate-phase Hydrocarbons	Ground Water Elevation (ft above msl)
MW-1	11/17/93	175.79	8.59	---	167.20
	01/20/94		8.22	---	167.57
	04/25/94		7.63	---	168.16
	07/07/94		**8.31**	**---**	**167.48**
MW-2	11/17/93	170.91	12.31	---	158.60
	01/20/94		11.48	---	159.43
	04/25/94		10.84	---	160.07
	07/07/94		**11.89**	**---**	**159.02**
MW-3	11/17/93	174.61	15.40	---	159.21
	01/20/94		14.61	---	160.00
	04/25/94		13.12	---	161.49
	07/07/94		**14.54**	**0.02**	**160.07**

Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-5510-0600, 4255 MacArthur Blvd., Oakland, California

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X
			<----------parts per billion (µg/L)---------->				
MW-1	11/17/93	8.59	410	21	7.9	11	47
	01/20/94	8.22	1,200	180	48	19	47
	04/25/94	7.63	3,100	610	130	<10	27
	07/07/94	**8.31**	**2,400**	**1,000**	**250**	**10**	**20**
MW-2	11/17/93	12.31	31,000	9,400	1,000	4,600	3,900
	01/20/94	11.48	40,000	6,900	780	5,600	4,100
	01/20/94[dup]	11.48	41,000	7,200	900	6,200	4,800
	04/25/94	10.84	60,000	9,300	1,400	6,100	6,200
	07/07/94	**11.89**	**280,000[a]**	**40,000**	**8,100**	**26,000**	**32,000**
	07/07/94[dup]	**11.89**	**53,000**	**13,000**	**2,000**	**6,600**	**8,400**
MW-3	11/17/93	15.40	18,000	5,400	720	660	2,200
	01/20/94	14.61	55,000	13,000	2,200	2,600	6,500
	04/25/94	13.12	96,000	11,000	3,100	1,600	9,900
	04/25/94[dup]	13.12	78,000	12,000	2,600	1,900	7,300
	07/07/94[SPH]	**14.54**	---	---	---	---	---
Trip Blank	01/20/94		<50	<0.5	<0.5	<0.5	<0.5
	04/25/94		<50	<0.5	<0.5	<0.5	<0.5
	07/07/94		**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
DTSC MCLs			NE	1	680	100[b]	1,750

-- Table 2 continues on next page --

Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-2004-020, 301 North Hartz Avenue Danville, California (continued)

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
B = Benzene by EPA Method 8020
E = Ethylbenzene by EPA Method 8020
T = Toluene by EPA Method 8020
X = Xylenes by EPA Method 8020
SPH = Separate-phase hydrocarbons present, well not sampled
NE = Not established
DTSC MCLs = California Department of Toxic Substances Control maximum contaminant levels for drinking water
--- = Not analyzed
<n = Not detected at detection limits of n ppb
dup = Duplicate sample

Notes:

a = Ground water surface had a sheen when sampled.
b = DTSC recommended action level; MCL not established

ATTACHMENT A

GROUND WATER MONITORING REPORT AND ANALYTIC REPORT

BLAINE
TECH SERVICES INC.

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

July 29, 1994

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

Attn: Daniel Kirk

SITE:
Shell WIC #204-5510-0600
4255 MacArthur Blvd.
Oakland, California

QUARTER:
3rd quarter of 1994

QUARTERLY GROUNDWATER SAMPLING REPORT 940707-E-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 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.

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 are removed in cases where more evacuation is needed to achieve stabilization of water parameters and when requested by the local implementing agency. Less water may be removed 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. Effluent water from purging and on-site equipment cleaning is collected and transported to Shell's Martinez Manufacturing Complex in Martinez, California.

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 sites 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.

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 National Environmental Testing, Inc. in santa Rosa City, California. NET is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #178.

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/lp

attachments: table of well gauging data
chain of custody
certified analytical report

cc: Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608-2411
ATTN: Janet MacDonald

TABLE OF WELL GAUGING DATA

WELL I.D.	DATA COLLECTION DATE	MEASUREMENT REFERENCED TO	QUALITATIVE OBSERVATIONS (sheen)	DEPTH TO FIRST IMMISCIBLES LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLES LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
MW-1	7/7/94	TOC	ODOR	NONE	--	--	8.31	23.32
MW-2 *	7/7/94	TOC	SHEEN/ODOR	--	--	--	11.89	19.65
MW-3	7/7/94	TOC	FREE PRODUCT	14.52	0.02	250	14.54	--

* Sample DUP was a duplicate sample taken from well MW-2.

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No: 46707-E1

12.74

Date: 7/7/94
Page 1 of 1

Site Address: 4255 MacArthur Blvd., Oakland

WIC#: 204-5510-0600

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

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

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

Comments:

Sampled by: [signature]

Printed Name: KENTE BROWN

LAB: ~~Sequoia~~ NET

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
MW-1	7/7/94			W		3						X								
EB				W		3						X								
MW-2				W		3						X								
DUP				W		3						X								
T.B.	↓			W		2						X								

CUSTODY SEALED 7/8/94 [signature] intact

Relinquished By (signature)	Printed Name	Date	Time	Received (signature)	Printed Name	Date	Time
[signature]	KENTE BROWN	7/7/94	1445	[signature]	G. LUMBLE	7/8/94	12:40
[signature]	G. LUMBLE	7/8/94	17:00	Received (signature):	Printed Name:	Date:	Time:
Relinquished By (signature): (VIA NCL)	Printed Name:	Date:	Time:	Received (signature): [signature]	Printed Name: K. Temple	Date: 7/9/94	Time: 1030

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

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Jim Keller
Blaine Tech Services
985 Timothy Dr.
San Jose, CA 95133

Date: 07/19/1994
NET Client Acct. No: 1821
NET Pacific Job No: 94.02927
Received: 07/09/1994

Client Reference Information

SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Judy Ridley
Project Coordinator

Jim Hoch
Operations Manager

Enclosure(s)

Ref: SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

SAMPLE DESCRIPTION: MW-1
Date Taken: 07/07/1994
Time Taken:
NET Sample No: 199615

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						07/17/1994
DILUTION FACTOR*	1						07/17/1994
as Gasoline	2,400		50	ug/L	5030		07/17/1994
Carbon Range:	C5-C14						07/17/1994
METHOD 8020 (GC,Liquid)	--						07/17/1994
DILUTION FACTOR*	1						07/17/1994
Benzene	1,000	FF	0.5	ug/L	8020		07/18/1994
Toluene	10		0.5	ug/L	8020		07/17/1994
Ethylbenzene	250		0.5	ug/L	8020		07/18/1994
Xylenes (Total)	20		0.5	ug/L	8020		07/17/1994
SURROGATE RESULTS	--						07/17/1994
Bromofluorobenzene (SURR)	96			% Rec.	5030		07/17/1994

FF : Compound quantitated at a 100X dilution factor.

Ref: SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

SAMPLE DESCRIPTION: EB
Date Taken: 07/07/1994
Time Taken:
NET Sample No: 199616

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						07/17/1994
DILUTION FACTOR*	1						07/17/1994
as Gasoline	ND		50	ug/L	5030		07/17/1994
Carbon Range:	--						07/17/1994
METHOD 8020 (GC,Liquid)	--						07/17/1994
DILUTION FACTOR*	1						07/17/1994
Benzene	ND		0.5	ug/L	8020		07/17/1994
Toluene	ND		0.5	ug/L	8020		07/17/1994
Ethylbenzene	ND		0.5	ug/L	8020		07/17/1994
Xylenes (Total)	ND		0.5	ug/L	8020		07/17/1994
SURROGATE RESULTS	--						07/17/1994
Bromofluorobenzene (SURR)	84			% Rec.	5030		07/17/1994

Ref: SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

SAMPLE DESCRIPTION: MW-2
Date Taken: 07/07/1994
Time Taken:
NET Sample No: 199617

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						07/17/1994
DILUTION FACTOR*	500						07/17/1994
as Gasoline	280,000		25,000	ug/L	5030		07/17/1994
Carbon Range:	C5-C14						07/17/1994
METHOD 8020 (GC,Liquid)	--						07/17/1994
DILUTION FACTOR*	500						07/17/1994
Benzene	40,000		250	ug/L	8020		07/17/1994
Toluene	26,000		250	ug/L	8020		07/17/1994
Ethylbenzene	8,100		250	ug/L	8020		07/17/1994
Xylenes (Total)	32,000		250	ug/L	8020		07/17/1994
SURROGATE RESULTS	--						07/17/1994
Bromofluorobenzene (SURR)	95			% Rec.	5030		07/17/1994

Ref: SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

SAMPLE DESCRIPTION: DUP
Date Taken: 07/07/1994
Time Taken:
NET Sample No: 199618

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						07/17/1994
DILUTION FACTOR*	10						07/17/1994
as Gasoline	53,000		500	ug/L	5030		07/17/1994
Carbon Range:	C5-C14						07/17/1994
METHOD 8020 (GC,Liquid)	--						07/17/1994
DILUTION FACTOR*	500						07/17/1994
Benzene	13,000		250	ug/L	8020		07/17/1994
Toluene	6,600		250	ug/L	8020		07/17/1994
Ethylbenzene	2,000		250	ug/L	8020		07/17/1994
Xylenes (Total)	8,400		250	ug/L	8020		07/17/1994
SURROGATE RESULTS	--						07/17/1994
Bromofluorobenzene (SURR)	94			% Rec.	5030		07/17/1994

Ref: SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

SAMPLE DESCRIPTION: TB
Date Taken: 07/07/1994
Time Taken:
NET Sample No: 199619

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed
TPH (Gas/BTXE,Liquid)							
METHOD 5030/M8015	--						07/17/1994
DILUTION FACTOR*	1						07/17/1994
as Gasoline	ND		50	ug/L	5030		07/17/1994
Carbon Range:	--						07/17/1994
METHOD 8020 (GC,Liquid)	--						07/17/1994
DILUTION FACTOR*	1						07/17/1994
Benzene	ND		0.5	ug/L	8020		07/17/1994
Toluene	ND		0.5	ug/L	8020		07/17/1994
Ethylbenzene	ND		0.5	ug/L	8020		07/17/1994
Xylenes (Total)	ND		0.5	ug/L	8020		07/17/1994
SURROGATE RESULTS	--						07/17/1994
Bromofluorobenzene (SURR)	82			% Rec.	5030		07/17/1994

Ref: SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

CONTINUING CALIBRATION VERIFICATION STANDARD REPORT

Parameter	CCV Standard % Recovery	CCV Standard Amount Found	CCV Standard Amount Expected	Units	Date Analyzed	Analyst Initials
TPH (Gas/BTXE,Liquid)						
as Gasoline	99.0	0.99	1.00	mg/L	07/17/1994	jmh
Benzene	88.8	4.44	5.00	ug/L	07/17/1994	jmh
Toluene	96.2	4.81	5.00	ug/L	07/17/1994	jmh
Ethylbenzene	93.8	4.69	5.00	ug/L	07/17/1994	jmh
Xylenes (Total)	100.3	15.04	15.0	ug/L	07/17/1994	jmh
Bromofluorobenzene (SURR)	92.0	92	100	% Rec.	07/17/1994	jmh
TPH (Gas/BTXE,Liquid)						
as Gasoline	93.0	0.93	1.00	mg/L	07/18/1994	jmh
Benzene	86.0	4.30	5.00	ug/L	07/18/1994	jmh
Toluene	91.0	4.55	5.00	ug/L	07/18/1994	jmh
Ethylbenzene	100.6	5.03	5.00	ug/L	07/18/1994	jmh
Xylenes (Total)	98.7	14.8	15.0	ug/L	07/18/1994	jmh
Bromofluorobenzene (SURR)	81.0	81	100	% Rec.	07/18/1994	jmh

Ref: SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

METHOD BLANK REPORT

Parameter	Method Blank Amount Found	Reporting Limit	Units	Date Analyzed	Analyst Initials
TPH (Gas/BTXE,Liquid)					
as Gasoline	ND	0.05	mg/L	07/17/1994	jmh
Benzene	ND	0.5	ug/L	07/17/1994	jmh
Toluene	ND	0.5	ug/L	07/17/1994	jmh
Ethylbenzene	ND	0.5	ug/L	07/17/1994	jmh
Xylenes (Total)	ND	0.5	ug/L	07/17/1994	jmh
Bromofluorobenzene (SURR)	84		% Rec.	07/17/1994	jmh
TPH (Gas/BTXE,Liquid)					
as Gasoline	ND	0.05	mg/L	07/18/1994	jmh
Benzene	ND	0.5	ug/L	07/18/1994	jmh
Toluene	ND	0.5	ug/L	07/18/1994	jmh
Ethylbenzene	ND	0.5	ug/L	07/18/1994	jmh
Xylenes (Total)	ND	0.5	ug/L	07/18/1994	jmh
Bromofluorobenzene (SURR)	82		% Rec.	07/18/1994	jmh

Ref: SHELL, 4255 MacArthur Blvd., Oakland, Job No. 940707-E1

MATRIX SPIKE / MATRIX SPIKE DUPLICATE

Parameter	Matrix Spike % Rec.	Matrix Spike Dup % Rec.	RPD	Spike Amount	Sample Conc.	Matrix Spike Conc.	Matrix Spike Dup. Conc.	Units	Date Analyzed	Analyst Initials
TPH (Gas/BTXE,Liquid)										
as Gasoline	86.0	83.0	3.6	1.00	0.26	1.12	1.09	mg/L	07/17/1994	jmh
Benzene	84.9	84.3	0.7	32.4	8.7	36.2	36.0	ug/L	07/17/1994	jmh
Toluene	96.2	95.9	0.3	97.9	2.5	96.7	96.4	ug/L	07/17/1994	jmh
TPH (Gas/BTXE,Liquid)										
as Gasoline	97.0	93.0	4.2	1.00	ND	0.97	0.93	mg/L	07/18/1994	jmh
Benzene	106.6	108.3	1.6	28.8	ND	30.7	31.2	ug/L	07/18/1994	jmh
Toluene	103.2	102.6	0.6	95.6	ND	98.7	98.1	ug/L	07/18/1994	jmh

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. Actual reporting limits and results have been multiplied by the listed dilution factor. **Do not** multiply the reporting limits or reported values by the dilution factor.
dw	:	Result expressed as dry weight.
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than the applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, Rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, Rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986., Rev. 1, December 1987.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

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COOLER RECEIPT FORM

roject: Shell 4255 MacArthur Blvd. Oakland Log No: _____
ooler received on: 7/9/94 and checked on 7/9/94 by K Temple
(signature)

ere custody papers present?..... YES NO
ere custody papers properly filled out?..... YES NO
ere the custody papers signed?..... YES NO
as sufficient ice used?..... YES NO 2.4°C
id all bottles arrive in good condition (unbroken)?..... YES NO
id bottle labels match COC?..... YES NO
ere proper bottles used for analysis indicated?..... YES NO
orrect preservatives used?..... YES NO
OA vials checked for headspace bubbles?..... YES NO
Note which voas (if any) had bubbles:*

ample descriptor:

Number of vials:

All VOAs with headspace bubbles have been set aside so they will not be used for analysis..... YES NO

ist here all other jobs received in the same cooler:

lient Job #	NET log #

(coolerrec)