BP OIL

BP Oil Company
Bldg. B, Suite 100
33305 First Way South
Federal Way, Washington 98003-6529
(206) 838-2121

SHD # 3877

16400 S. Center Pkwy
Suite 301
Tukwila, WA
98188

July 13, 1992

Barney Eva Chan
Alameda County Department of Environmental Health
80 Swan Way, Suite 200
Oakland, CA 94621

RE: BP OIL FACILITY #11133
2220 98th Avenue
Oakland, California

Dear Mr. Chan:

Attached please find our Groundwater Monitoring, Second Quarter report for the above referenced facility.

Please call me at (206)394-5243 with any questions regarding this submission.

Respectfully,

P.J. DeSantis V.M.

Peter J. DeSantis
Environmental Resources management

PJD:vlm

cc: Richard Hiett, CA Regional Water Quality Control Board
Dave Baker - Mobil Oil Corporation
Site file

RESNA
Working to Restore Nature

73 Digital Drive
Novato, California 94949-5704
Phone: (415) 382-7400
FAX: (415) 382-7415

June 30, 1992

Mr. Peter DeSantis
BP Oil Company
2868 Prospect Park Drive, Suite 360
Rancho Cordova, California 95670

Subject: Groundwater Monitoring, Second Quarter 1992, BP Facility No. 11133, 2220 98th Avenue, Oakland, California

Dear Mr. DeSantis

This letter report presents the results of the groundwater monitoring performed on April 1 and 2, 1992 by RESNA Industries Inc. (RESNA) at the request of BP Oil Company (BP) at the subject site (Figure 1 and Figure 2). The purpose of the monitoring is to evaluate fluctuations in concentrations of hydrocarbons in groundwater and the groundwater flow direction and gradient.

On April 1, 1992, a technician from RESNA measured the depth to groundwater in monitor wells AW-1 through AW-8, MW-1 through MW-3, and recovery well RW-1. On April 1 and 2, 1992, monitor wells AW-1 through AW-8, MW-2 and MW-3 were also purged and sampled. Monitor well MW-1 and recovery well RW-1 were not sampled because of the presence of liquid hydrocarbons. The standard operating procedure for groundwater sampling, SOP-4, and the standard operating procedure for taking liquid levels, SOP-8, are attached.

All purged water was temporarily stored on-site in 55-gallon drums pending receipt of analytic reports. At the request of BP, we contacted Erickson Inc. of Richmond, California to arrange removal of the purge water from the site.

The groundwater-elevation measurements are shown in Table 1, along with the measurements from past site monitorings. Figure 2 shows the potentiometric surface and the groundwater flow direction at the site on April 1, 1992. Table 2 presents a compilation of the laboratory analyses performed this event by RESNA Environmental Laboratories (Applied Analytical), as well as past analytic results.

We recommend that BP forward signed copies of this letter report to Richard Hiett of the California Regional Water Quality Control Board, San Francisco Bay Region, 2101 Webster Street, Suite 500, Oakland, California, 94612 and Barney Chan of the Alameda County Department of Envirnomental Health, 80 Swan Way, Suite 200, Oakland, California, 94621.

32006QMRMY2

Please call us at (415) 382-7400 if you have any questions.

Sincerely,
RESNA Industries Inc.

Mark P. Frye
Engineering Technician

Keith A. Romstad
Project Manager

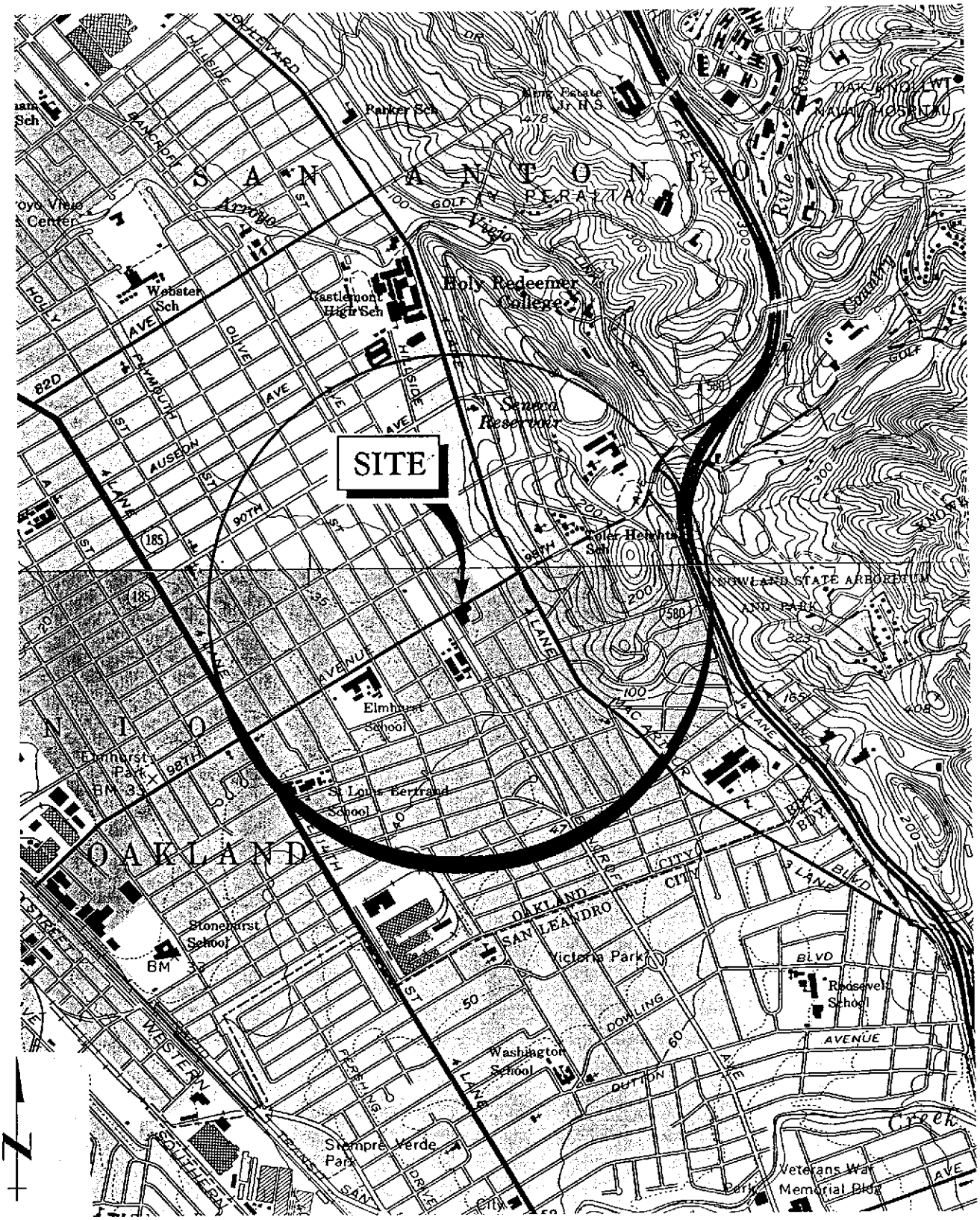
REGISTERED GEOLOGIST
THOMAS J. ECHOLS
No. 4564
Exp. 6-30-92
STATE OF CALIFORNIA

Thomas J. Echols
Senior Geologist
CRG No. 4564

MPF/KAR/TJE:lr

ENCLOSURES

Figure 1: Site Location Map
Figure 2: Potentiometric Surface Map, April 1, 1992
Table 1: Groundwater Elevation Data
Table 2: Analytic Results: Groundwater Samples
SOP-4: Groundwater Purging and Sampling
SOP-8: Gauging Liquid Levels Using Water Level Probe or Interface Probe
Chain of Custody
Laboratory Analytic Report



5/92

EXPLANATION

Site Location Map

BP Facility # 11133
2220 98th Avenue
Oakland, California

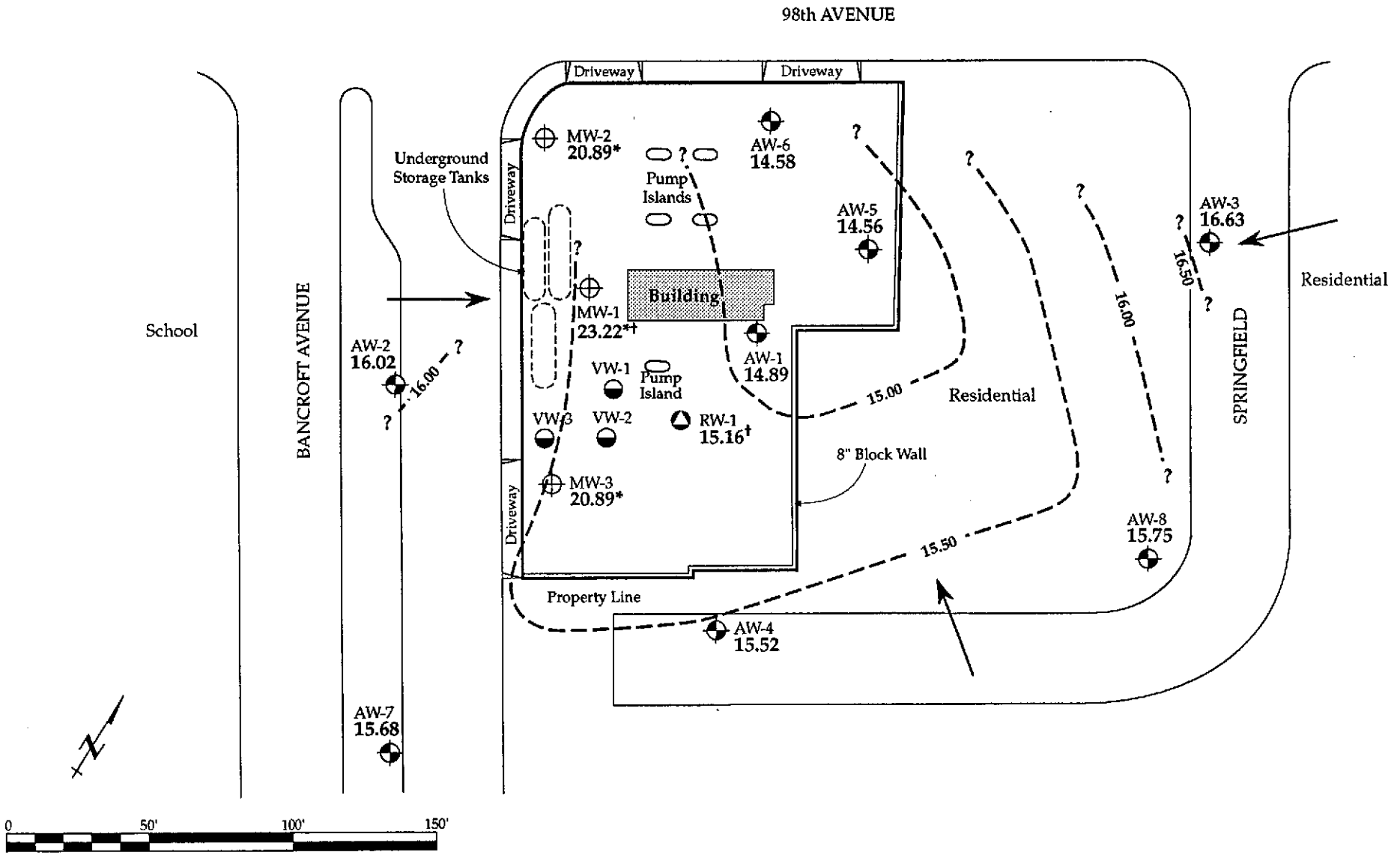
FIGURE

1

Map Reference: USGS topographic, 7.5 min. series, San Leandro, Calif. and Oakland East, Calif. quadrangles

RESNA

32006.04



5/92

EXPLANATION

- AW-8 **15.75** — Monitor Well location (Alton Geoscience) and groundwater elevation, feet above mean sea level
- MW-3 **20.89** — Monitor Well location (Kapreallan Engineering, Inc.) and groundwater elevation, feet above mean sea level
- * — Not used in construction of potentiometric surface map (screened in different zone)
- † — Elevation of potentiometric surface corrected for the presence of liquid hydrocarbons
- VW-3 — Vadose Well location
- RW-1 — Recovery well location (Alton Geoscience)
- 15.00 — — ·? — Groundwater elevation contour, feet above mean sea level, dashed where inferred, queried where uncertain
- ← — Estimated Direction of Groundwater Flow

Potentiometric Surface Map
April 1, 1992
BP Facility # 11133
2220 98th Avenue
Oakland, California

FIGURE
2

RESNA

32006.04

TABLE 1. Groundwater-Elevation Data
BP Facility #11133
Oakland, California

Well ID #	Date	TOC	DTW	Elev-W/PS
		<---------- ft---------->		
AW-1	5 Apr 91	38.99*	25.44	13.55
AW-1	1 Apr 92	38.11**	23.22	14.89
AW-2	5 Apr 91	37.69*	22.36	15.33
AW-2	1 Apr 92	36.83**	20.81	16.02
AW-3	5 Apr 91	40.00*	23.90	16.10
AW-3	1 Apr 92	39.13**	22.50	16.63
AW-4	5 Apr 91	39.96*	25.12	14.84
AW-4	1 Apr 92	39.08**	23.56	15.52
AW-5	5 Apr 91	39.35*	25.48	13.87
AW-5	1 Apr 92	38.51**	23.95	14.56
AW-6	5 Apr 91	37.95*	22.48	15.47
AW-6	1 Apr 92	37.08**	22.50	14.58
AW-7	5 Apr 91	38.17*	23.38	14.79
AW-7	1 Apr 92	37.60**	21.92	15.68
AW-8	5 Apr 91	41.74*	26.68	15.06
AW-8	1 Apr 92	40.86**	25.11	15.75
MW-1	5 Apr 91	37.33*	NM	NM
MW-1	1 Apr 92	34.46**	11.25	23.22***
MW-2	5 Apr 91	36.36*	16.62	19.74
MW-2	1 Apr 92	35.50**	11.25	24.25
MW-3	5 Apr 91	37.40*	17.84	19.56
MW-3	1 Apr 92	36.53**	15.64	20.89
RW-1	5 Apr 91	38.60*	NM	NM
RW-1	1 Apr 92	37.73**	22.81	15.16***

NOTES:

TOC = Top-of-Casing elevation in feet above mean sea level
DTW = Depth to Water
Elev-W/PS = Elevation of Water/Potentiometric Surface in feet above mean sea level
NM = Not Measured

Free product

TABLE 1. Groundwater-Elevation Data (continued)
BP Facility #11133
Oakland, California

NOTES:

* = Elevations relative to a common datum (AW-3) with an assumed elevation of 40.00 feet above mean sea level, as measured on July 5,1990 by Alton Geoscience. Monitor wells AW-1, AW-2, and AW-3 were used as reference bench marks for survey performed April 5, 1991.

** = T.O.C. elevations in feet above mean sea level as of April 4, 1992. Datum is City of Oakalnd = (USGS) + 3.00 feet. Surveyed by John E. Koch, Land Surveyor, California Lic. No. LS4811.

*** = Liquid hydrocarbons present. Elev-W/PS calculated as follows: Elev-W/PS = TOC - (DTW - (0.8 X thickness of liquid hydrocarbons))

1 Apr 92: MW-1, Liquid hydrocarbon thickness = 0.01 ft
RW-1, Liquid hydrocarbon thickness = 0.30 ft

Table 2. Analytic Results: Groundwater Samples
BP Facility #11133
Oakland, California

Well ID #	Date	TPHg	B	T	E	X
		<----------ppb---------->				
AW-1	Apr, 1991	4,100	1,500	69	100	83
AW-1	Apr 2, 1992	**11,000**	**1,800**	**210**	210	490
AW-2	Apr, 1991	<50	<0.3	<0.3	<0.3	<0.3
AW-2	Apr 2, 1992	**130**	**25**	2.3	0.7	2.1
AW-3	Apr, 1991	5,200	980	450	95	310
AW-3	Apr 1, 1992	**4,700**	**890**	47	43	110
AW-4	Apr, 1991	110,000	40,000	13,000	2,000	5,500
AW-4	Apr 1, 1992	**230,000**	**57,000**	**31,000**	**2,900**	**7,600**
AW-4D	Apr 1, 1992	210,000	55,000	23,000	2,900	7,000
AW-5	Apr, 1991	420	31	7.5	20	68
AW-5	Apr 2, 1992	4,000	270	63	190	290
AW-6	Apr, 1991	**1,100**	80	19	1.4	230
AW-6	Apr 2, 1992	<50	<0.5	<0.5	<0.5	<0.5
AW-7	Apr, 1991	<50	0.4	0.7	<0.3	<0.3
AW-7	Apr 2, 1992	<50	<0.5	3.2	1.0	5.4
AW-8	Apr, 1991	80	1.9	2.2	0.5	1.3
AW-8	Apr 1, 1992	73	<0.5	0.7	<0.5	0.6
MW-1	Apr, 1991	---	---	---	---	---
MW-1	Apr 1, 1992	---	---	---	---	---
MW 2	Apr, 1991	<50	0.6	0.9	<0.3	<0.3
MW-2	Apr 2, 1992	<50	<0.5	<0.5	<0.5	<0.5
MW-3	Apr, 1991	<50	<0.3	<0.3	<0.3	<0.3
MW-3	Apr 2, 1992	<50	1.4	<0.5	<0.5	<0.5
TB	Apr 1, 1992	<50	<0.5	<0.5	<0.5	<0.5
EQ	Apr 1, 1992	<50	<0.5	<0.5	<0.5	<0.5

Notes:

TPHg = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
D = duplicate analysis
TB = travel blank
EQ = equipment blank
ppb = parts-per-billion
< = Less than indicated detection limit
--- = not analyzed

RESNA

STANDARD OPERATING PROCEDURES
RE: GROUNDWATER PURGING AND SAMPLING
SOP-4

Prior to water sampling, each well is purged by evacuating a minimum of three well-casing volumes of groundwater or until the temperature, conductivity, and pH of the discharge water stabilize. If a well is purged dry before three casing volumes have been removed, the sample will be taken after the well has recovered to within 80 percent of the static water level.

The sampling equipment consists of either a teflon or steam-cleaned PVC bailer, a stainless steel bladder pump with a teflon bladder, or submersible stainless steel pump. If the sampling system is dedicated to the well, then the bailer is made of teflon, and the bladder pump is PVC with a polypropylene bladder. A submersible stainless steel and teflon electric pump will be used for purging larger volume wells. Forty milliliter (ml) glass volatile-organic-analysis (VOA) vials, with teflon septa, are used as sample containers. For other analyses the appropriate EPA approved sampling container is used.

The groundwater sample is decanted into each VOA vial in such a manner that there is a meniscus at the top of the vial. The cap is quickly placed over the top of the vial and securely tightened. The VOA vial is then inverted and tapped to see if air bubbles are present. If none are present, the sample is labeled and refrigerated for delivery under chain-of-custody to the laboratory. Label information should include a sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name.

For quality control purposes, a duplicate water sample is collected from each well. This sample is put on hold at the laboratory. A trip blank is prepared at the laboratory and placed in the transport cooler. It remains with the cooler and is analyzed by the laboratory along with the groundwater samples. A field blank is prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been steam-cleaned, prior to use in a second well, and is analyzed along with the other samples. The field blank demonstrates the quality of in-field cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all the well-development and water sampling equipment that is not dedicated to a well is steam-cleaned between each well. As a second precautionary measure, wells will be sampled in order of least to highest concentrations as established by previous analyses.

RESNA

STANDARD OPERATING PROCEDURES
RE: GAUGING LIQUID LEVELS USING WATER LEVEL PROBE OR INTERFACE PROBE
SOP-8

The complete list of field equipment for liquid level gauging is assembled in the Technical office prior to departure to the field. This includes the probe(s), light filter(s), and product bailer(s) to be used for liquid levels (tested in test well before departure). The field kit also includes cleaning supplies (buckets, TSP, spray bottles, and deionized water) to clean the equipment between gauging wells.

When using the water level probe to gauge liquid levels, the probe tip is lowered into the well until the unit sounds. The top-of-casing (TOC) point is determined. This point is marked with a dot or a groove, or is an obvious high point on the casing, or is the north end of the casing. The place on the probe-cord that corresponds with this TOC point is marked and an engineer's tape is used to measure the distance between the probe end and marking on the cord. This measurement is then recorded on the liquid level data sheet as depth to water (DTW).

When using the interface probe to gauge liquid levels, the probe is first grounded by clamping it to the metal stove pipe or another metal object nearby. When no ground is available, reproduceable measurements can be obtained by clipping the ground lead to the handle of the interface probe case. After grounding the probe, the top of the well casing is fitted with a light filter to insure that sunlight does not interfere with the operation of the probe's optical mechanisms. The probe tip is then lowered into the well and submerged in the groundwater. An oscillating (beeping) tone indicates that the probe is in water. The probe is slowly raised until either the oscillating tone ceases or becomes a solid tone. In either case, this is the depth-to-groundwater (DTW) measurement. The solid tone indicates that liquid hydrocarbon is present on top of the groundwater. To determine the thickness of the liquid hydrocarbon, the probe is slowly raised until the solid tone ceases. This is the depth-to-liquid hydrocarbon (DTLH) measurement. The process of lowering and raising the probe must be repeated several times to insure accurate measurements. DTW and DTLH measurements are recorded in hundredths of feet on the liquid level data sheet. When liquid hydrocarbon is found in a well, a product bailer must be lowered partially through the water/liquid hydrocarbon interface to confirm the thickness of liquid hydrocarbon on the water surface. This measurement is recorded on the data sheet as liquid hydrocarbon thickness (PT).

In order to avoid cross contamination of wells during the liquid level gauging process, wells are gauged in a clean to dirty order (where this information is available). In addition, any gauging equipment is cleaned with TSP and water and thoroughly rinsed with deionized water before daily use, before gauging another well on a site, and at the completion of daily use.

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

1894892

PROJECT NO.	PROJECT NAME/SITE
60-431.04	SS# 11133 BP OIL - Oakland 98th Ave

SAMPLERS (SIGN) Dean Osaki / (PRINT) Dean Osaki

SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	ANALYSIS REQUESTED: (BTEX (602/8020))	(TPHg (8015))	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	P.O. #: / REMARKS
AW-1, 01A,B,C	4/2/92	14:10			HCl	X	3	W	X	X						W/204120
AW-2, 02A,B,C	4/2/92	15:20														121
AW-3, 03A,B,C	4/1/92	14:30														122
AW-4, 04A,B,C	4/1/92	15:50														123
AW-5, 05A,B,C	4/2/92	11:50														124
AW-6, 06A,B,C	4/2/92	14:35														125
AW-7, 07A,B,C	4/2/92	15:45														126
AW-8, 08A,B,C	4/1/92	15:20														127
MW-2, 10A,B,C	4/2/92	12:35														128
MW-3, 11A,B,C	4/2/92	13:20														129
TB, 13A,B	4/2/92	—					2									130
EQ-BL, 14A,B,C	4/1/92	14:15					3									131
DUP, 15A,B,C	4/1/92	15:50					3									132

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Dean T. Osaki	4/3/92	1715	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
	4/3/92	1458	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY:
	4/3/92	14:38	

LABORATORY: (510) 651-1906
APPLIED ANALYTICAL
42501 Albrae St.
Fremont, CA 94538

REQUESTED TURNAROUND TIME:
NORMAL - 2 WKS

RECEIPT CONDITION:
Good / cold.

PLEASE SEND RESULTS TO:
RESNA (415) 382-7400
73 DIGITAL DR.
NOVATO, CA
94949
C/O MARK FRYE

PROJECT MANAGER:
KEITH ROMSTAD

Environmental Laboratories

RESNA
Working to Restore Nature

42501 Albrae Street
Fremont, CA 94538
Phone: (510) 623-0775
(800) 247-5223
FAX: (510) 651-8754

ANALYSIS REPORT

1020lab.frm

Attention:	Mr. Keith Romstad	Date Sampled:	04-01/02-92
	RESNA	Date Received:	04-03-92
	73 Digital Dr.	BTEX Analyzed:	04-09/10-92
	Novato, CA 94949	TPHg Analyzed:	04-09/10-92
Project:	AGS 19519-L,Project 86-431.04	TPHd Analyzed:	NR
	BP Oil, Oakland	Matrix:	Water

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	100
SAMPLE Laboratory Identification						
AW-1.01 W1204120	1800	210	210	490	11000	NR
AW-2.02 W1204121	25	2.3	0.7	2.1	130	NR
AW-3.03 W1204122	890	47	43	110	4700	NR
AW-4.04 W1204123	57000	31000	2900	7600	230000	NR
AW-5.05 W1204124	270	63	190	290	4000	NR

ppb = parts per billion = µg/L = micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020/602, which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) and a flame-ionization detector (FID) in series.

TPHg–Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are measured by extraction using EPA Method 5030, followed by analysis using modified EPA Method 8015, which utilizes a GC equipped with an FID.

TPHd–Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 for soils and EPA Method 3510 for water, followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

April 14, 1992
Date Reported

RESNA ENVIRONMENTAL LABORATORY IS CERTIFIED BY THE STATE OF CALIFORNIA DEPARTMENT OF HEALTH SERVICES AS A HAZARDOUS WASTE TESTING LABORATORY
(Certification No. 1211)

Environmental Laboratories

RESNA
Working to Restore Nature

42501 Albrae Street
Fremont, CA 94538
Phone: (510) 623-0775
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	Novato, CA 94949	TPHg Analyzed:	04-09/10-92
Project:	AGS 19519-L,Project 86-431.04	TPHd Analyzed:	NR
	BP Oil, Oakland	Matrix:	Water

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	100
SAMPLE Laboratory Identification						
AW-6.06 W1204125	ND	ND	ND	ND	ND	NR
AW-7.07 W1204126	ND	3.2	1.0	5.4	ND	NR
AW-8.08 W1204127	ND	0.7	ND	0.6	73	NR
MW-2.10 W1204128	ND	ND	ND	ND	ND	NR
MW-3.11 W1204129	1.4	ND	ND	ND	ND	NR

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	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection Limit:	0.5	0.5	0.5	0.5	50	100
SAMPLE Laboratory Identification						
TB.13 W1204130	ND	ND	ND	ND	ND	NR
EQ-BL.14 W1204131	ND	ND	ND	ND	ND	NR
DUP.15 W1204132	55000	23000	2900	7000	210000	NR

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