BP OIL

BP Oil Company
Aetna Bldg., Suite 360
2868 Prospect Park Drive
Rancho Cordova, California 95670-6020
(916) 631-0733

July 8, 1991

Ms. Katherine Chesick
Alamdea County Division of Hazardous Materials
80 Swan Way, Suite 200
Oakland, CA 94621

RE: BP FACILITY #11266
1541 PARK STREET
ALAMEDA, CALIFORNIA

Dear Ms. Chesick,

Attached please find results of the quarterly sampling and analysis performed at the above referenced facility.

Please call me at 916/631-6919 with any questions regarding this submission.

Respectfully,

Peter J. DeSantis
Environmental Resource Management

PJD:lk

cc: Rich Hiett - RWQCB, San Francisco Bay Reigion
Craig Mayfield - Alameda Flood Control District
Lt. McKinley - Alamdea City Fire Department
Ed Hoepker - Mobil Oil Corporation,
J.R. Rocco - BP Oil, Cleveland
Site file

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

June 28,1991
Project C90-04.07

Mr. Peter DeSantis
BP Oil Company
2868 Prospect Park Drive, Suite 360
Rancho Cordova, California 95670-6020

Re: Second quarter 1991 ground-water monitoring program results, BP Oil Company service station 11266, Alameda, California

Dear Mr. DeSantis:

This letter presents the results of the second quarter 1991 ground-water monitoring program at BP Oil Company (BP) service station 11266, 1541 Park Street, Alameda, California (figure 1). The quarterly monitoring complies with Regional Water Quality Control Board (RWQCB) requirements regarding underground tank investigations.

BACKGROUND

In September 1987, Kaprealian Engineering Incorporated (KEI) performed an initial site assessment and tank removal at the project location. KEI reported on the removal of three gasoline tanks (5,000-, 6,000-, and 8,000-gallon capacities) and one waste-oil tank (250-gallon capacity). The excavations were analyzed for total petroleum hydrocarbons as gasoline (TPHG), TPH as diesel (TPHD), and benzene, toluene, xylenes, and ethylbenzene (BTXE). Soil from the waste-oil tank excavation was analyzed for gravimetric waste oil as petroleum oil (GWO) and TPHD. Certified analytical results indicated that soil and ground water were impacted by TPHG (3,200 parts per million [ppm] and 530 ppm). Soil from the waste-oil tank excavation contained 150 ppm GWO and no detectable TPHD (<10 ppm).

These analytical results prompted the installation of three on-site groundwater monitoring wells (MW-1, MW-2, and MW-3) by KEI in March 1988

1921 Ringwood Avenue, San Jose, California 95131-1721, (408) 453-7300, Fax (408) 437-9526

(figure 2). The analysis indicated that the lateral extent of impacted ground water was limited. Well MW-1 contained 95 ppm TPHG, with no detectable petroleum hydrocarbons in wells MW-2 and MW-3. KEI implemented a quarterly ground-water monitoring program at the site. Levels of TPHG and BTXE decreased over 1 year in MW-1, and no petroleum hydrocarbons were detected in the other wells.

In March 1989, KEI was contracted to install three more monitoring wells (MW-4, MW-5, and MW-6) to define the limits of impacted ground water. These additional wells were constructed identical to the previous wells. Soil and ground-water samples from these locations did not contain detectable levels of petroleum hydrocarbons.

In November 1989, EMCON Associates (EMCON) performed additional site characterization consisting of collecting and analyzing ground-water samples. Direct-push ground-water sampling was used to confirm the lateral extent of the plume, and pumping tests were run to determine aquifer characteristics for evaluating potential remediation options.

Based on the results of this additional site assessment and a review of previous work, the lateral extent of impacted ground water was concluded to be limited to the area near well MW-1. The results of the hydraulic testing indicated that the optimal extraction flow rate is 0.5 gallons per minute (gpm).

The site is being monitored quarterly in compliance with the RWQCB requirements regarding underground tank investigations.

SAMPLE COLLECTION PROCEDURES

The second quarter 1991 ground-water monitoring event was conducted on May 10, 1991. A water-level survey preceded the purging and sampling of the monitoring wells. The wells included in the survey are identified in figure 2. During the survey, wells MW-1 through MW-6 were measured for depth-to-water, floating product thickness, and total depth. No floating product was observed in the six wells. Depth-to-water measurements were recorded to the nearest 0.01 foot, and well depth measurements to the nearest 0.5 foot to facilitate purge volume calculations. Depth-to-water and ground-water elevation data are presented in table 1.

Sample collection was consistent with the procedures presented in appendix A of EMCON's Proposal P91A059, submitted to BP on

January 28, 1991. The monitoring wells were purged with a polyvinyl chloride (PVC) bailer and sampled with a Teflon® bailer on May 10, 1991. During the purging operation, the ground water was monitored for pH, specific conductance, and temperature as a function of volume of water removed. Monitoring continued until these parameters were stable. Purge water from the monitoring wells was temporarily stored in 55-gallon drums.

Ground water from the monitoring wells was collected with a Teflon bailer and transferred to 40-milliliter sample containers. Samples were collected in duplicate, labeled, placed on ice, and transported to a state-certified laboratory for chemical analysis. Chain-of-custody documentation accompanied all ground-water samples. A copy of this documentation is attached.

ANALYTICAL PROCEDURES

The samples were analyzed for TPHG and BTXE. The samples were prepared for analysis by U.S. Environmental Protection Agency (EPA) method 5030 (purge and trap). The samples were analyzed for TPHG using the methods accepted by the Department of Health Services (DHS) and referenced in the *Leaking Underground Fuel Tank (LUFT) Field Manual* (State Water Resources Control Board, May 1988). The samples were analyzed for BTXE by EPA method 8020 described in *Test Methods for Evaluating Solid Waste: Physical/Chemcial Methods*, USEPA, SW-846, November 1986, 3rd Edition. These methods are recommended for use at petroleum hydrocarbon-impacted sites in the *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites* (August 10, 1990).

The samples were also analyzed for volatile organic compounds (VOCs) by EPA method 8240. In this method, VOCs are introduced into a gas chromatograph by the purge-and-trap method or by direct injection. The components are separated via the gas chromatograph and detected using a mass spectrometer.

MONITORING PROGRAM RESULTS

Analytical results for the second quarter 1991 monitoring event are summarized in table 2 (TPHG, BTXE), and table 3 (halogenated VOCs). Wells MW-1, and MW-2 contained 20,000 and 160 parts per billion (ppb) TPHG, and 530 and 5.8 ppb benzene, respectively. Wells MW-3 through

MW-6 did not contain detectable concentrations of TPHG or gasoline constituents. No floating product was observed in the monitoring wells.

Wells MW-1 and MW-4 contained 3.0 and 1.4 ppb chlorobenzene. Well MW-1 contained 1.7 ppb styrene and well MW-4 contained 2.8 ppb tetrachloroethene. Wells MW-2, MW-3, MW-5, and MW-6 did not contain detectable concentrations of halogenated VOCs. The certified analytical reports are attached.

Ground-water elevation data shows the local ground-water flow is to the east, with a calculated hydraulic gradient of approximately 0.01 foot per foot. Table 1 shows ground-water flow direction and gradient data; figure 2 illustrates the ground-water contours for the second quarter 1991 monitoring event.

If you have questions, please call.

Very truly yours,

EMCON Associates

David C. Larsen
Sampling Coordinator

Russell J. Scharlin
Manager, Petroleum Group

REGISTERED PROFESSIONAL ENGINEER
RUSSELL J. SCHARLIN
Nº GE 751
Exp. 12/31/93
GEOTECHNICAL
STATE OF CALIFORNIA

Attachments: Table 1 - Monitoring well data
Table 2 - Ground-water analyses (TPHG, BTXE)
Table 3 - Ground-water analyses (VOCs)
Figure 1 - Site location
Figure 2 - Ground-water contours (May 10, 1991)
Certified analytical report
Chain-of-custody documentation

PJC C900407.DOC

Table 1
Monitoring Well Data
BP Service Station 11266, Alameda, California

Well	Date	TOC[1] Elevation (ft-MSL)[2]	Depth to Ground Water (feet)	Ground-Water Elevation (ft-MSL)	Approximate Ground-Water Flow Direction[3]	Gradient[3]
MW-1	11/28/89	22.63	9.77	12.86	NA[4]	NA[4]
	02/13/91	22.63	9.46	13.17	East	0.009
	05/10/91	22.63	9.07	13.56	East	0.01
MW-2	11/28/89	22.75	10.25	12.50		
	02/13/91	22.75	10.01	12.74		
	05/10/91	22.75	9.74	13.01		
MW-3	11/28/89	23.45	10.72	12.73		
	02/13/91	23.45	10.61	12.84		
	05/10/91	23.45	10.32	13.13		
MW-4	11/28/89	23.63	10.41	13.22		
	02/13/91	23.63	10.02	13.61		
	05/10/91	23.63	9.67	13.96		
MW-5	11/28/91	22.87	9.83	13.04		
	02/13/91	22.87	9.51	13.36		
	05/10/91	22.87	9.03	13.84		
MW-6	11/28/91	22.85	10.30	12.55		
	02/13/91	22.85	10.29	12.56		
	05/10/91	22.85	9.80	13.05		

1. TOC = top of casing
2. Elevation in feet, relative to mean sea level
3. Ground-water flow direction and gradient apply to the entire monitoring well network, not just well MW-1.
4. NA = Not available

Table 2
Ground-Water Analyses
Microgram Per Liter (parts per billion)
BP Service Station 11266, Alameda, California

Well	Date Sampled	TPHG[1]	Benzene	Toluene	Total Ethylbenzene	Xylenes
MW-1	11/28/89[2]	15,000	280	880	340	1,200
	02/13/91[2]	25,000	680	2,700	1,100	3,200
	02/13/91[3]	NA [4]	640	3,270	980	3,620
	05/10/91[2]	20,000	400	1,300	540	1,600
	05/10/91[3]	NA	530	2,200	760	2,100
MW-2	11/28/89[2]	170 [5]	<5.7[6]	<1	<1	<3
	02/13/91[2]	150	1.4	<0.5	<0.5	0.9
	02/13/91[3]	NA	1.5	<1	<1	<1
	05/10/91[2]	160	5.4	<0.5	0.5	0.8
	05/10/91[3]	NA	5.8	<1	<1	<1
MW-3	11/28/89[2]	<50	<0.5	<1	<1	<3
	02/13/91[2]	<50	<0.5	<0.5	<0.5	<0.5
	02/13/91[3]	NA	<1	<1	<1	<1
	05/10/91[2]	<50	<0.5	<0.5	<0.5	<0.5
	05/10/91[3]	NA	<1	<1	<1	<1
MW-4	11/28/89[2]	<50 [5]	<0.5	<1	<1	<3
	02/13/91[2]	430	6.2	0.6	12	3.3
	02/13/91[3]	NA	6.0	<1	16	4.5
	05/10/91[2]	<50	<0.5	<0.5	<0.5	<0.5
	05/10/91[3]	NA	<1	<1	<1	<1
MW-5	11/28/89[2]	<50	<0.5	<1	<1	<3
	02/13/91[2]	<50	<0.5	<0.5	<0.5	<0.5
	02/13/91[3]	NA	<1	<1	<1	<1
	05/10/91[2]	<50	<0.5	<0.5	<0.5	<0.5
	05/10/91[3]	NA	<1	<1	<1	<1
MW-6	11/28/89[2]	<50	<0.5	<1	<1	<3
	02/13/91[2]	<50	<0.5	<0.5	<0.5	<0.5
	02/13/91[3]	NA	<1	<1	<1	<1
	05/10/91[2]	<50	<0.5	<0.5	<0.5	<0.5
	05/10/91[3]	NA	<1	<1	<1	<1

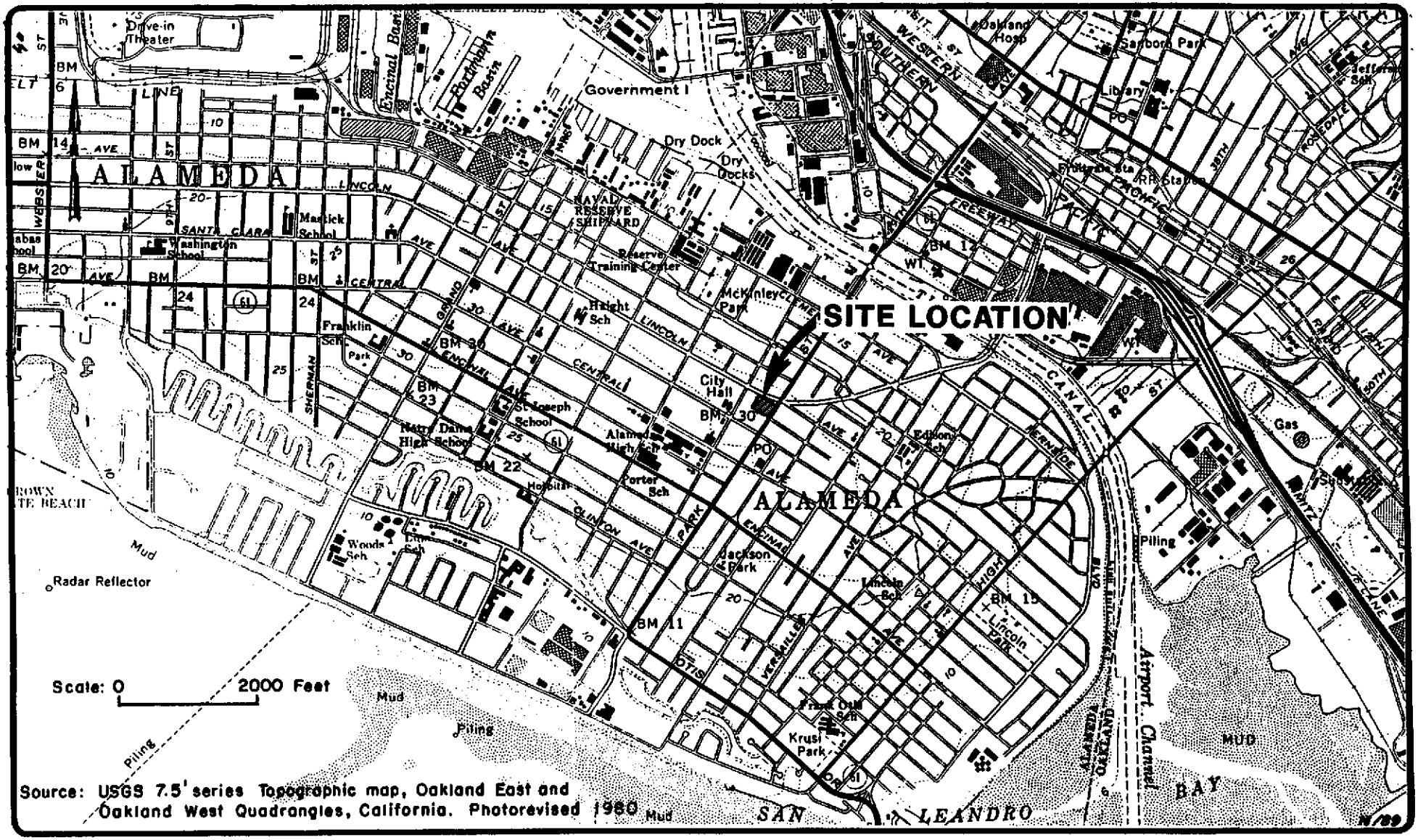
1. TPHG = total petroleum hydrocarbons as gasoline
2. BTXE was analyzed by EPA method 8020
3. BTXE was analyzed by EPA method 8240
4. NA = Not analyzed
5. An unknown, discrete, volatile, non-fuel hydrocarbon was observed.
6. Raised detection limit due to unknown volatile components.

Table 3
Ground-Water Analyses
Microgram Per Liter (parts per billion)
BP Service Station 11266, Alameda, California

Well	Date Sampled	2-Butanone (MEK)	Chlorobenzene (CB)	Tetrachloroethene (PCE)	Styrene
MW-1	11/29/89	-- [1]	--	--	--
	02/13/91	14	2.8	<1	<1
	05/10/91	<10	3.0	<1	1.7
MW-2	11/29/89	-- [1]	--	--	--
	02/13/91	<10	<1	<1	<1
	05/10/91	<10	<1	<1	<1
MW-3	11/29/89	-- [1]	--	--	--
	02/13/91	<10	<1	<1	<1
	05/10/91	<10	<1	<1	<1
MW-4	11/29/89	-- [1]	--	--	--
	02/13/91	<10	1.9	2.5	<1
	05/10/91	<10	1.4	2.8	<1
MW-5	11/29/89	-- [1]	--	--	--
	02/13/91	<10	<1	<1	<1
	05/10/91	<10	<1	<1	<1
MW-6	11/29/89	-- [1]	--	--	--
	02/13/91	<10	<1	<1	<1
	05/10/91	<10	<1	<1	<1

1. Ground-water samples were not analyzed for EPA method 8240 during the November 1989 monitoring event.

124965



EMCON Associates

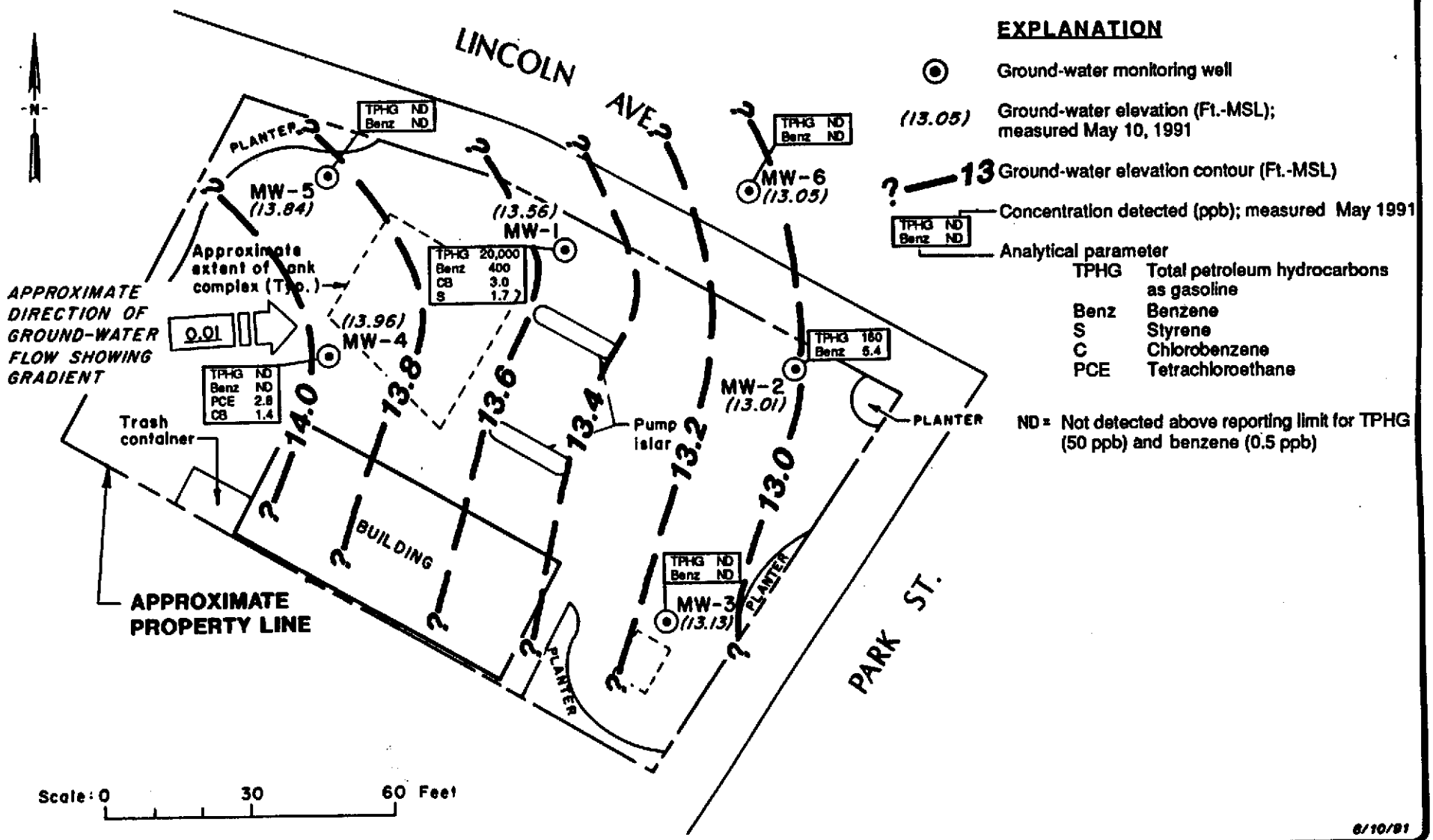
BP OIL CORPORATION
SERVICE STATION No. 11266
SITE ASSESSMENT
ALAMEDA, CALIFORNIA

SITE LOCATION

FIGURE 1

PROJECT NO. C90-04.06

124966



EMCON Associates

BP OIL CORPORATION
SERVICE STATION No. 11266
QUARTERLY GROUND-WATER MONITORING
ALAMEDA, CALIFORNIA

GROUND-WATER CONTOURS
MAY 1991

FIGURE 2

PROJECT NO. C90-04.07

Columbia
Analytical
Services inc.

May 24, 1991

Mr. Bill Woods
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

RE: BP/C90-04.07

Dear Mr. Woods:

Enclosed are the results of the water samples submitted to our lab on May 10, 1991. For your reference, our service request number for this work is SJ91-0664.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted:

Keoni A. Murphy
COLUMBIA ANALYTICAL SERVICES, INC.

le/KAM

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/10/91
Submitted By:	Client	**Work Order #:**	SJ91-0664
Project:	BP/C90-04.07	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
µg/L (ppb)

Sample Name:		MW-1	MW-2	MW-3
Date Analyzed:		05/20/91	05/20/91	05/20/91
Analytes	**MRL**			
Benzene	0.5	400.	5.4	ND
Toluene	0.5	1,300.	ND	ND
Ethylbenzene	0.5	540.	0.5	ND
Total Xylenes	0.5	1,600.	0.8	ND
TPH as Gasoline	50	20,000.	160.	ND

TPH	Total Petroleum Hydrocarbons
MRL	Method Reporting Limit
ND	None Detected at or above the method reporting limit

Approved by Kenneth Murphy Date May 24, 1991

1094 Riverwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/10/91
Submitted By:	Client	**Work Order #:**	SJ91-0664
Project:	BP/C90-04.07	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
µg/L (ppb)

Sample Name:		MW-4	MW-5	MW-6
Date Analyzed:		05/20/91	05/20/91	05/20/91
Analytes	**MRL**			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Kevin A. Murphy Date May 24, 1991

1264 Pierwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/10/91
Submitted By:	Client	**Work Order #:**	SJ91-0664
Project:	BP/C90-04.07	**Sample Matrix:**	Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
µg/L (ppb)

Sample Name:		**Method Blank**
Date Analyzed:		**05/20/91**
Analytes	**MRL**	
Benzene	0.5	ND
Toluene	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
TPH as Gasoline	50	ND

TPH	Total Petroleum Hydrocarbons
MRL	Method Reporting Limit
ND	None Detected at or above the method reporting limit

Approved by Kevin Murphy Date May 24, 1991

1924 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

APPENDIX A

LABORATORY QC RESULTS

1934 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Client: EMCON Associates
Submitted By: Client
Project: BP/C90-04.07

Date Received: 05/10/91
Work Order #: SJ91-0664
Sample Matrix: Water

QA/QC Report
Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-1	05/20/91	97.
MW-2	05/20/91	108.
MW-3	05/20/91	96.
MW-4	05/20/91	93.
MW-5	05/20/91	95.
MW-6	05/20/91	83.
Method Blank	05/20/91	102.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons

Approved by Kevin Murphy Date May 24, 1991

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

Columbia Analytical Services, Inc.

Chain of Custody/ Laboratory Analysis Request

1921 Ringwood Avenue • San Jose, CA 95131 • (408) 437-2400, FAX (408) 437-9356

DATE 051091 PAGE 1 OF 1

PROJECT BP 11266, Alameda, #C10-0407
SEND REPORT TO Bill Woods
ADDRESS
TELEPHONE#
SAMPLERS NAME J Butler PHONE# 453-0267
SAMPLERS SIGNATURE J Butler

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020 BTEX	Gas/BTEX DHS Luft	Pesticides/PCBs 608/8080	HBHC/Diesel					Total Recoverable Petroleum Hydrocarbons - 418.1	Oil & Grease Method	Total Organic Carbon (TOC) 415/9060	ICP Metals As, Se, Hg, Pb, Tl	Metals (total or dissolved) List Below	Total Phenols	Ph, Cond, Cl, SO^4, PO^4, F, NO^3, ALK, TDS, TSS	NH3-N, COD, Total-P, TKN, NO^3 (Circle)	NUMBER OF CONTAINERS
1. MW-1	05/1491	1420	1-2	H2O		X			X															4
2. MW-2		1245	3-4			X			X															4
3. MW-3		1315	5-6			X			X															4
4. MW-4		1335	7-8			X			X															4
5. MW-5		1135	9-10			X			X															4
6. MW-6		1110	11-12			X			X															4
7.																								
8.																								

Relinquished By	Relinquished By
Signature J Butler	Signature
Printed Name J Butler	Printed Name
Firm EMCON SJ	Firm
Date/Time 051091 1531	Date/Time
Received By: HF	Received By:
Signature	Signature
Printed Name Howard Friedman	Printed Name
Firm CAS - SJ	Firm
Date/Time 5-10-91 1531	Date/Time

Invoice Information:
P.O.#
Bill to:

Project Information
Site Contact:
Site Address:

Sample Receipt
Shipped Via: Sampler
Seals Intact:
Condition: ok
Lab No. 3391-0664
SR Number: 1576

Special Instruction/Comments:

DISTRIBUTION: WHITE ... YELLOW ... PINK ... retained by originator

Columbia
Analytical
Services inc.

May 23, 1991

Bill Woods
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Re: **BP 11266, Alameda/Project #C90-04.07/SJ91-0664**

Dear Bill:

Enclosed are the results of the samples submitted to our lab on May 11, 1991. For your reference, our service request number for this work is K912557C.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Abbie Spielman
Project Chemist

AS/das

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-10

Analytical Report

Client: EMCON Associates
Project: BP 11266, Alameda/#C90-04.07
Sample Matrix: Water

Date Received: 05/11/91
Work Order #: K912557C

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name:		MW-1	MW-3
Lab Code:		K2557-1	K2557-3
Date Analyzed:		05/14/91	05/14/91
Analyte	**MRL**		
Chloromethane	1	ND	ND
Vinyl Chloride	1	ND	ND
Bromomethane	1	ND	ND
Chloroethane	1	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND
1,1-Dichloroethene	1	ND	ND
Acetone	20	ND	ND
Carbon Disulfide	1	ND	ND
Methylene Chloride	10	ND	ND
trans-1,2-Dichloroethene	1	ND	ND
cis-1,2-Dichloroethene	1	ND	ND
2-Butanone (MEK)	10	ND	ND
1,1-Dichloroethane	1	ND	ND
Chloroform	1	ND	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND
Carbon Tetrachloride	1	ND	ND
Benzene	1	*530	ND
1,2-Dichloroethane	1	ND	ND
Vinyl Acetate	10	ND	ND
Trichloroethene (TCE)	1	ND	ND
1,2-Dichloropropane	1	ND	ND
Bromodichloromethane	1	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND
trans-1,3-Dichloropropene	1	ND	ND
2-Hexanone	10	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND
Toluene	1	*2,200	ND
cis-1,3-Dichloropropene	1	ND	ND
1,1,2-Trichloroethane	1	ND	ND
Tetrachloroethene (PCE)	1	ND	ND
Dibromochloromethane	1	ND	ND
Chlorobenzene	1	3.0	ND
Ethylbenzene	1	*760	ND
Styrene	1	1.7	ND
Total Xylenes	1	*2,100	ND
Bromoform	1	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND
1,3-Dichlorobenzene	1	ND	ND
1,4-Dichlorobenzene	1	ND	ND
1,2-Dichlorobenzene	1	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* Result from analysis of a diluted sample performed on May 15, 1991.

Approved by Alle Apfelman Date 5/23/91

00001

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-10

Analytical Report

Client: EMCON Associates
Project: BP 11266, Alameda/#C90-04.07
Sample Matrix: Water

Date Received: 05/11/91
Work Order #: K912557C

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name:		**MW-2**
Lab Code:		**K2557-2**
Date Analyzed:		**05/15/91**
Analyte	**MRL**	
Chloromethane	1	ND
Vinyl Chloride	1	ND
Bromomethane	1	ND
Chloroethane	1	ND
Trichlorofluoromethane (Freon 11)	1	ND
Trichlorotrifluoroethane (Freon 113)	10	ND
1,1-Dichloroethene	1	ND
Acetone	20	ND
Carbon Disulfide	1	ND
Methylene Chloride	10	ND
trans-1,2-Dichloroethene	1	ND
cis-1,2-Dichloroethene	1	ND
2-Butanone (MEK)	10	ND
1,1-Dichloroethane	1	ND
Chloroform	1	ND
1,1,1-Trichloroethane (TCA)	1	ND
Carbon Tetrachloride	1	ND
Benzene	1	5.8
1,2-Dichloroethane	1	ND
Vinyl Acetate	10	ND
Trichloroethene (TCE)	1	ND
1,2-Dichloropropane	1	ND
Bromodichloromethane	1	ND
2-Chloroethyl Vinyl Ether	10	ND
trans-1,3-Dichloropropene	1	ND
2-Hexanone	10	ND
4-Methyl-2-pentanone (MIBK)	10	ND
Toluene	1	ND
cis-1,3-Dichloropropene	1	ND
1,1,2-Trichloroethane	1	ND
Tetrachloroethene (PCE)	1	ND
Dibromochloromethane	1	ND
Chlorobenzene	1	ND
Ethylbenzene	1	ND
Styrene	1	ND
Total Xylenes	1	ND
Bromoform	1	ND
1,1,2,2-Tetrachloroethane	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Arthur Friedman Date 5/23/91

00002

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Analytical Report

Client:	EMCON Associates	Date Received:	05/11/91
Project:	BP 11266, Alameda/#C90-04.07	Work Order #:	K912557C
Sample Matrix:	Water		

Volatile Organic Compounds
EPA Method 8240
μg/L (ppb)

Sample Name:		MW-4	MW-5	MW-6
Lab Code:		K2557-4	K2557-5	K2557-6
Date Analyzed:		05/14/91	05/14/91	05/14/91
Analyte	**MRL**			
Chloromethane	1	ND	ND	ND
Vinyl Chloride	1	ND	ND	ND
Bromomethane	1	ND	ND	ND
Chloroethane	1	ND	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND	ND
1,1-Dichloroethene	1	ND	ND	ND
Acetone	20	ND	ND	ND
Carbon Disulfide	1	ND	ND	ND
Methylene Chloride	10	ND	ND	ND
trans-1,2-Dichloroethene	1	ND	ND	ND
cis-1,2-Dichloroethene	1	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND
1,1-Dichloroethane	1	ND	ND	ND
Chloroform	1	ND	ND	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND	ND
Carbon Tetrachloride	1	ND	ND	ND
Benzene	1	ND	ND	ND
1,2-Dichloroethane	1	ND	ND	ND
Vinyl Acetate	10	ND	ND	ND
Trichloroethene (TCE)	1	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND
Bromodichloromethane	1	ND	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND	ND
trans-1,3-Dichloropropene	1	ND	ND	ND
2-Hexanone	10	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND	ND
Toluene	1	ND	ND	ND
cis-1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND
Tetrachloroethene (PCE)	1	2.8	ND	ND
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	1.4	ND	ND
Ethylbenzene	1	ND	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	1	ND	ND	ND
Bromoform	1	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

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Approved by *Alin Agnelina* Date 5/23/91

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Analytical Report

Client: EMCON Associates
Project: BP 11266, Alameda/#C90-04.07
Sample Matrix: Water

Date Received: 05/11/91
Work Order #: K912557C

Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name:		Method Blank	Method Blank
Lab Code:		K2557-MB	K2557-MB
Date Analyzed:		05/14/91	05/15/91
Analyte	**MRL**		
Chloromethane	1	ND	ND
Vinyl Chloride	1	ND	ND
Bromomethane	1	ND	ND
Chloroethane	1	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND
1,1-Dichloroethene	1	ND	ND
Acetone	20	ND	ND
Carbon Disulfide	1	ND	ND
Methylene Chloride	10	ND	ND
trans-1,2-Dichloroethene	1	ND	ND
cis-1,2-Dichloroethene	1	ND	ND
2-Butanone (MEK)	10	ND	ND
1,1-Dichloroethane	1	ND	ND
Chloroform	1	ND	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND
Carbon Tetrachloride	1	ND	ND
Benzene	1	ND	ND
1,2-Dichloroethane	1	ND	ND
Vinyl Acetate	10	ND	ND
Trichloroethene (TCE)	1	ND	ND
1,2-Dichloropropane	1	ND	ND
Bromodichloromethane	1	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND
trans-1,3-Dichloropropene	1	ND	ND
2-Hexanone	10	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND
Toluene	1	ND	ND
cis-1,3-Dichloropropene	1	ND	ND
1,1,2-Trichloroethane	1	ND	ND
Tetrachloroethene (PCE)	1	ND	ND
Dibromochloromethane	1	ND	ND
Chlorobenzene	1	ND	ND
Ethylbenzene	1	ND	ND
Styrene	1	ND	ND
Total Xylenes	1	ND	ND
Bromoform	1	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND
1,3-Dichlorobenzene	1	ND	ND
1,4-Dichlorobenzene	1	ND	ND
1,2-Dichlorobenzene	1	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Artie Spielman Date 5/23/91

00004

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APPENDIX A

LABORATORY QC RESULTS

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-10

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EMCON Associates	**Date Received:**	05/11/91
Project:	BP 11266, Alameda/#C90-04.07	**Date Analyzed:**	05/14/91
Sample Matrix:	Water	**Work Order #:**	K912557C

QA/QC Report
Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8240

Sample Name	Lab Code	Percent Recovery		
		1,2-Dichloroethane - D_4	Toluene - D_8	4-Bromofluorobenzene
MW-1	K2557-1	101	98.8	102
MW-3	K2557-3	99.5	94.0	102
MW-4	K2557-4	98.0	88.0	95.7
MW-5	K2557-5	93.5	93.5	99.1
MW-6	K2557-6	105	98.2	105
MW-6	K2557-6MS	99.0	95.4	105
MW-6	K2557-6DMS	96.3	92.0	100
Method Blank	K2557-MB	94.4	102	101
EPA Acceptance Criteria		76-114	88-110	86-115

Approved by Ami Spielman Date 5/23/91

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APPENDIX A

LABORATORY QC RESULTS

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-106

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EMCON Associates	**Date Received:**	05/11/91
Project:	BP 11266, Alameda/#C90-04.07	**Date Analyzed:**	05/15/91
Sample Matrix:	Water	**Work Order #:**	K912557C

QA/QC Report
Surrogate Recovery Summary
Volatile Organic Compounds
EPA Method 8240

Sample Name	Lab Code	Percent Recovery		
		1,2-Dichloroethane - D_4	Toluene - D_8	4-Bromofluorobenzene
MW-2	K2557-2	100	97.7	94.0
Method Blank	K2557-MB	101	98.0	102
	EPA Acceptance Criteria	76-114	88-110	86-115

Approved by *Cathie D'Spielman* Date 5/23/91

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COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EMCON Associates	**Date Received:**	05/11/91
Project:	BP 11266, Alameda/#C90-04.07	**Date Analyzed:**	05/14/91
Sample Matrix:	Water	**Work Order #:**	K912557C

QA/QC Report
Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds
EPA Method 8240
µg/L (ppb)

Sample Name: MW-6
Lab Code: K2557-6

Analytes	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria
1,1-Dichloroethene	50	ND	38.8	37.9	77.6	75.8	61-145
Trichloroethene	50	ND	43.7	44.0	87.4	88.0	71-120
Chlorobenzene	50	ND	49.7	48.8	99.4	97.6	75-130
Toluene	50	ND	47.2	47.7	94.4	95.4	76-125
Benzene	50	ND	48.0	47.9	96.0	95.8	76-127

ND None Detected at or above the method reporting limit

Approved by Ann Appleman Date 5/23/91

00009

APPENDIX B

CHAIN OF CUSTODY INFORMATION

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-10

K2557C

Chain of Custody/ Laboratory Analysis Request

Columbia Analytical Services inc.
1921 Ringwood Avenue • San Jose, CA 95131 • (408) 437-2400, FAX (408) 437-9356

DATE 051091 PAGE 1 OF 1

PROJECT BP 11266, Alameda # C410-04.07
SEND REPORT TO Bill Woods
ADDRESS
TELEPHONE#
SAMPLERS NAME PHONE# 453-2269
SAMPLERS SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	ORGANIC ANALYSIS: Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated Volatiles 601/8010	Aromatic Volatiles 602/8020 BTEX	Gas/BTEX DHS Luft	Pesticides/PCBs 608/8080	(OTHER): HBMC/Diesel	Total Recoverable Petroleum Hydrocarbons - 418.1	Oil & Grease Method	Total Organic Carbon (TOC) 415/9060	INORGANIC ANALYSIS: ICP Metals As, Se, Hg, Pb, Tl	Metals (total or dissolved) List Below	Total Phenols	Ph, Cond, Cl, SO4, PO4, F, NO3, ALK, TDS, TSS	NH3-N, COD, Total-P, TKN, NO3 (Circle)	NUMBER OF CONTAINERS
1. MW-1	05/09/91	1420	1-2	H2O		X			X											4
2. MW-2	↓	1245	3-4	↓		X			X											4
3. MW-3		1305	5-6			X			X											4
4. MW-4		1335	7-8			X			X											4
5. MW-5		1135	9-10			X			X											4
6. MW-6		1110	11-12			X			X											4
7.																				
8.																				

Relinquished By	Relinquished By
Signature	Signature
Printed Name	Printed Name
Firm BMCON SJ	Firm
Date/Time 051091 1331	Date/Time
Received By: HF	Received By: Ruth Allison
Signature	Signature Ruth Allison
Printed Name Howard Friedman	Printed Name CAS
Firm CAS-SJ	Firm 5/11/91 0900
Date/Time 5-10-91 1531	Date/Time

Invoice Information:
P.O.#
Bill to:

Project Information
Site Contact:
Site Address:

Sample Receipt
Shipped Via: Sampler
Seals Intact:
Condition: ok
Lab No. 3391-0664
SR Number: 1576

Special Instruction/Comments:

00011