BP OIL

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

91 APR 18 AM 11:19

April 15, 1991

Ms. Katherine Chesick
Alameda 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: David Noe - Mobil Oil Corporation
J.R. Rocco - BP Oil, Cleveland
Site file

EMCON
ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

April 8, 1991
Project C90-04.07

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

Re: First 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 first 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 for TPHD. Certified analytical results revealed that soil and ground water were impacted by TPHG (3,200 parts per million [ppm] and 530 ppm, respectively). 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 ground-water monitoring wells (MW-1, MW-2, and MW-3) by KEI in March 1988

VJM C900407.DOC

(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 a 1-year period 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) for defining the limits of impacted ground water. These additional wells were constructed identically 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, it was concluded that the lateral extent of impacted ground water was limited to the area near well MW-1. Results of hydraulic testing revealed 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 first quarter 1991 ground-water monitoring event was conducted on February 13, 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 February 13, 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 total petroleum hydrocarbons as gasoline (TPHG) according to the method recommended in the Regional Board Staff Recommendations document issued June 2, 1988. The samples were also analyzed for benzene, toluene, xylenes, and ethylbenzene (BTXE) by U.S. Environmental Protection Agency method 8020. In these procedures, the water sample is initially purged with an inert gas to transfer the volatiles to the gas phase. When the gas is exposed to an absorptive material, all volatile compounds of gasoline, including BTXE, are trapped onto the material. The trapped compounds are then desorbed onto a chromatographic column for separation. A photoionization detector (PID) is used to detect the unsaturated compounds including BTXE. A flame ionization detector (FID), in series with the PID, is used to detect all volatile fuel hydrocarbons attributable to gasoline. Certified analytical reports are attached.

MONITORING PROGRAM RESULTS

Analytical results for the first quarter 1991 monitoring event are summarized in table 2. Wells MW-1, MW-4, and MW-2 contained 25,000, 430, and 150 parts per billion (ppb) TPHG, and 680, 6.2, and 1.4 ppb benzene, respectively. Wells MW-3, MW-5, and MW-6 did not contain detectable concentrations of TPHG or gasoline constituents. No floating

product was observed in the monitoring wells. The certified analytical report is attached.

Ground-water elevation data shows the local ground-water flow to the east, with a calculated hydraulic gradient of approximately 0.009. Table 1 shows ground-water flow direction and gradient data; figure 2 illustrates the ground-water contours for the first 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
Figure 1 - Site location
Figure 2 - Ground-water contours (February 13, 1991)
Certified analytical report
Chain-of-custody documentation

VJM 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	02/13/91	22.63	9.46	13.17	East	0.009
MW-2	02/13/91	22.75	10.01	12.74		
MW-3	02/13/91	23.45	10.61	12.84		
MW-4	02/13/91	23.63	10.02	13.61		
MW-5	02/13/91	22.87	9.51	13.36		
MW-6	02/13/91	22.85	10.29	12.56		

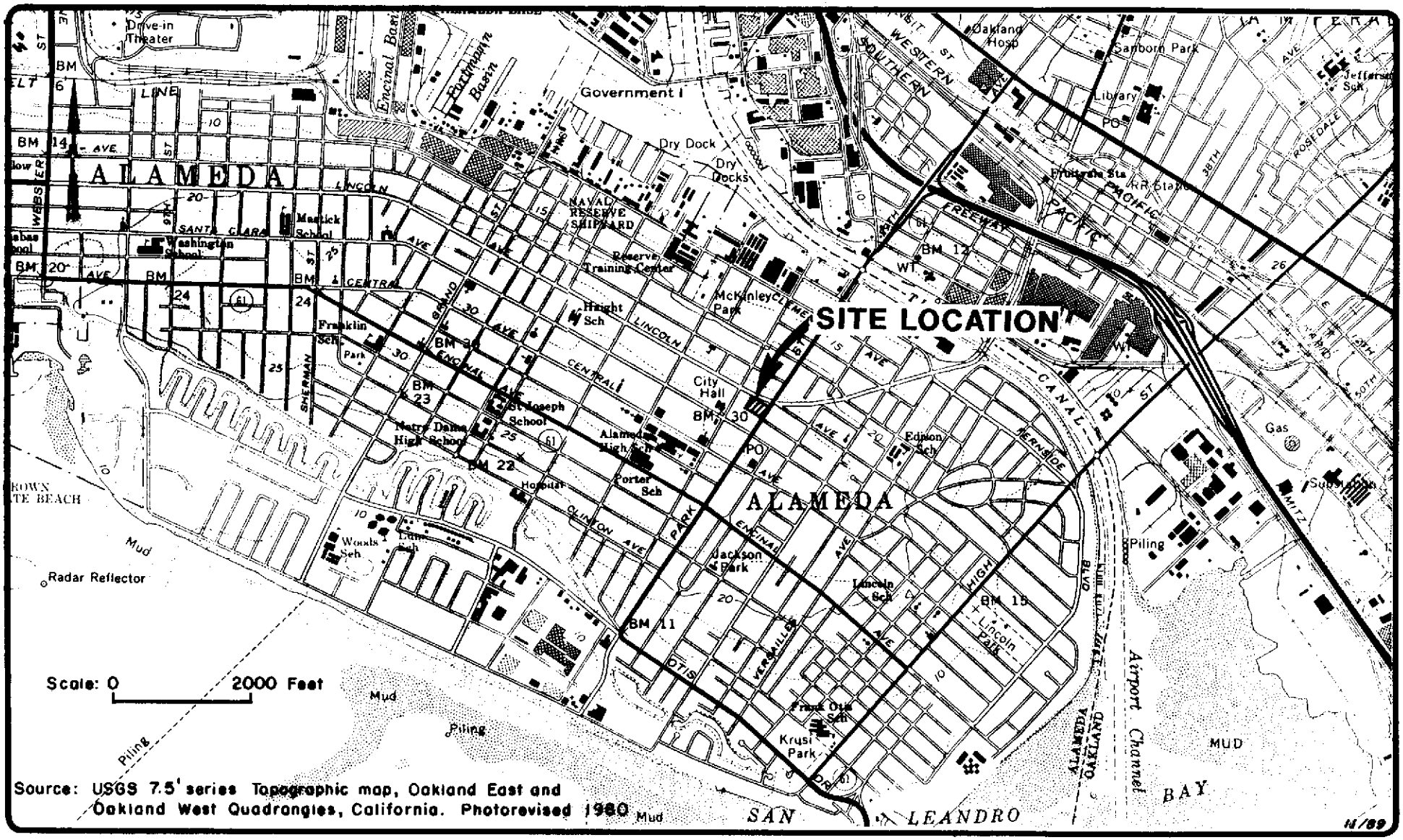
1. TOC = top of casing
2. Elevation in feet, relative to mean sea level
3. Ground-water flow direction and gradient apply to the entire monitoring well network, not just well MW-1.

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

Well	Date Sampled	TPHG[1]	Benzene	Toluene	Ethylbenzene	Total Xylenes
MW-1	02/13/91	25,000	680	2,700	1,100	3,200
MW-2	02/13/91	150	1.4	<0.5	<0.5	0.9
MW-3	02/13/91	<50	<0.5	<0.5	<0.5	<0.5
MW-4	02/13/91	430	6.2	0.6	12	3.3
MW-5	02/13/91	<50	<0.5	<0.5	<0.5	<0.5
MW-6	02/13/91	<50	<0.5	<0.5	<0.5	<0.5

1. TPHG = total petroleum hydrocarbons as gasoline

124965



EMCON Associates

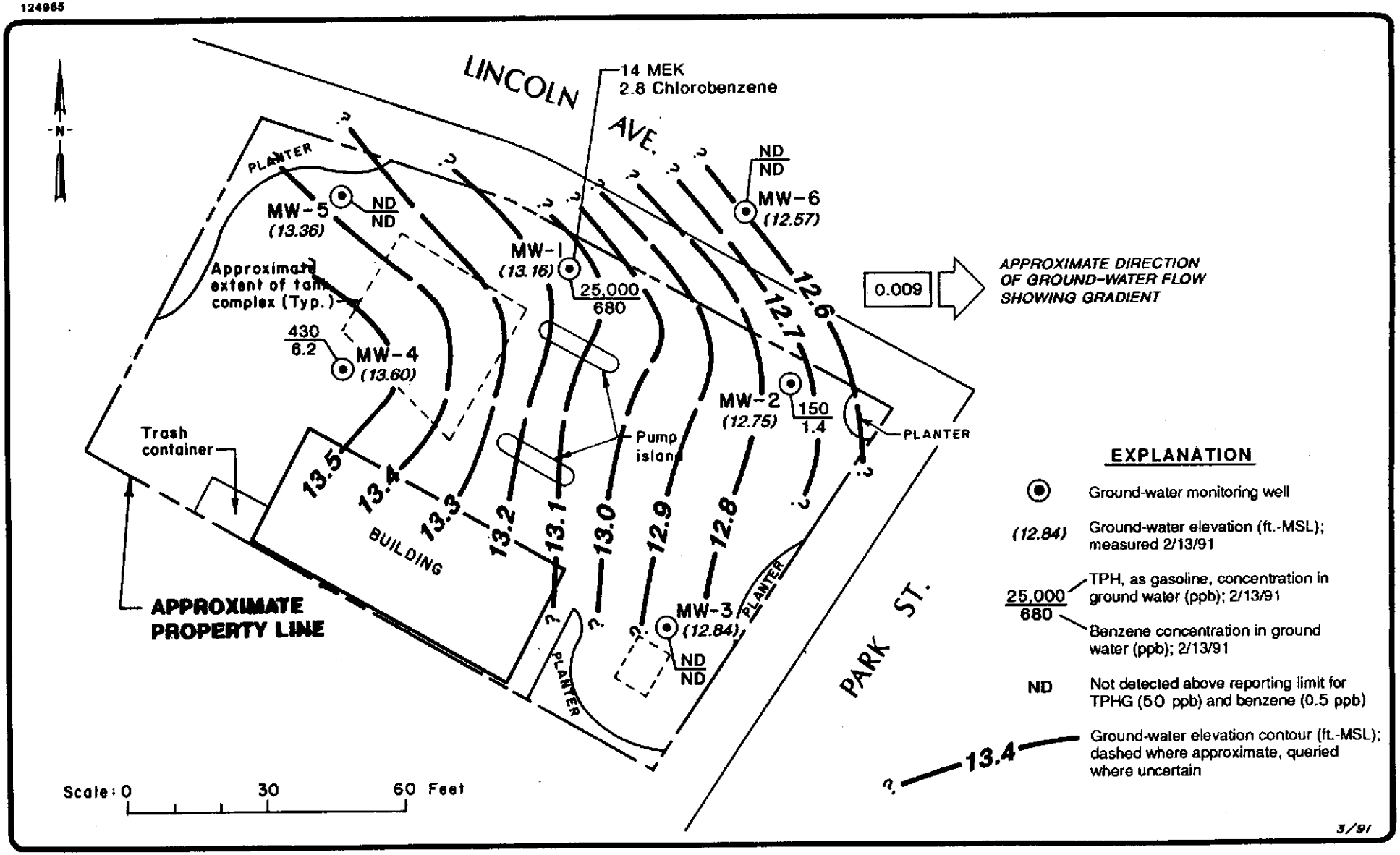
BP OIL CORPORATION
SERVICE STATION No. 11266
SITE ASSESSMENT
ALAMEDA, CALIFORNIA

SITE LOCATION

FIGURE 1

PROJECT NO. C90-04.06

124965



EMCON Associates

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

GROUND-WATER CONTOURS
FEBRUARY 1991

FIGURE
2

PROJECT NO.
C90 - 04.07

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Columbia Analytical Services INC.

March 1, 1991

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

RE: BP 11266, Alameda/C90-04.07

Dear Mr. Woods:

Enclosed are the results of the water samples submitted to our lab on February 13, 1991. For your reference, our service request number for this work is SJ91-0227.

Please call if you have any questions.

Respectfully submitted:

Keoni A. Murphy

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:**	02/13/91
Submitted By:	Client	**Work Order #:**	SJ91-0227
Project:	BP 11266, Alameda/C90-04.07	**Sample Matrix:**	Water

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

Sample Name:		MW-1	MW-2	MW-3
Date Analyzed:		02/22/91	02/22/91	02/22/91
Analytes	**MRL**			
Benzene	0.5	680.	1.4	ND
Toluene	0.5	2,700.	ND	ND
Ethylbenzene	0.5	1,100.	ND	ND
Total Xylenes	0.5	3,200.	0.9	ND
TPH as Gasoline	50	25,000.	150.	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 March 1, 1991

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-0995

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	02/13/91
Submitted By:	Client	**Work Order #:**	SJ91-0227
Project:	BP 11266, Alameda/C90-04.07	**Sample Matrix:**	Water

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

Sample Name:		MW-4	MW-5	MW-6
Date Analyzed:		02/22/91	02/22/91	02/22/91
Analytes	**MRL**			
Benzene	0.5	6.2	ND	ND
Toluene	0.5	0.6	ND	ND
Ethylbenzene	0.5	12.	ND	ND
Total Xylenes	0.5	3.3	ND	ND
TPH as Gasoline	50	430.	ND	ND

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

Approved by Keen A Murphy Date March 1, 1991

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-0705

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	02/13/91
Submitted By:	Client	**Work Order #:**	SJ91-0227
Project:	BP 11266, Alameda/C90-04.07	**Sample Matrix:**	Water

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

Sample Name:		**MB**
Date Analyzed:		**02/22/91**
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
MB	Method Blank

Approved by Kevin Murphy Date March 1, 1991

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

Client: EMCON Associates
Submitted By: Client
Project: BP 11266, Alameda/C90-04.07

Date Received: 02/13/91
Work Order #: SJ91-0227
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-1	02/22/91	90.
MW-2	02/22/91	111.
MW-3	02/22/91	97.
MW-4	02/22/91	118.
MW-5	02/22/91	96.
MW-6	02/22/91	97.
MW-2 (MS)	02/22/91	95.
MW-2 (MSD)	02/22/91	90.
MB	02/22/91	97.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons
MB Method Blank

Approved by Kevin Murphy Date March 1, 1991

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9036

Client: EMCON Associates
Submitted By: Client
Project: BP 11266, Alameda/C90-04.07

Date Received: 02/13/91
Work Order #: SJ91-0227
Sample Matrix: Water

QA/QC Report
Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline
California DHS LUFT Method
µg/L (ppb)

Sample Name: MW-2
Date Analyzed: 02/22/91

					Percent Recovery		
		Sample	Spike Result				Acceptance
Analytes	Spike Level	Result	MS	DMS	MS	DMS	Criteria
TPH as Gasoline	250.	151.	433.	418.	113.	107.	70-140

TPH Total Petroleum Hydrocarbons
ND None Detected at or above the method reporting limit

Approved by Keen A Murphy Date March 1, 1991

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

Columbia Analytical Services inc.

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

Chain of Custody/ Laboratory Analysis Request

DATE 02-13-91 PAGE 1 OF 1

PROJECT BP11266 #C90-04.07

SEND REPORT TO

ADDRESS

TELEPHONE#

SAMPLERS NAME J Butera PHONE# 453-2267

SAMPLERS SIGNATURE J Butera

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^2, ALK, TDS, TSS	NH^3-N, COD, Total-P, TKN, NO^3 (Circle)	NUMBER OF CONTAINERS
1. MW-1	2/13	1350	L2	H_2O		X			X															4
2. MW-2		1205	3-4			X			X															4
3. MW-3		1117	5-6			X			X															4
4. MW-4		1030	7-8			X			X															4
5. MW-5		1445	9-10			X			X															4
6. MW-6		1300	11-12			X			X															4
7.																								
8.																								

ORGANIC ANALYSIS (OTHER) INORGANIC ANALYSIS

Relinquished By	Relinquished By
Signature J Butera	Signature
Printed Name J Butera	Printed Name
Firm EMCON SJ	Firm
Date/Time 2/13/91 1655	Date/Time
Received By:	Received By:
Signature	Signature
Printed Name Howard Friedman	Printed Name
Firm CAS/SJ	Firm
Date/Time 2/13/91 1655	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. SJ91-0227

Special Instruction/Comments:
8240's to Kelso

SR Number: 1358

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

Printed on Recycled Paper

Columbia Analytical Services, Inc.

March 5, 1991

RECEIVED
MAR 8 1991
CASSD

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

Re: **BP 11266, ALAMEDA/Project #C90-04.07/SJ91-0227**

Dear Bill:

Enclosed are the results of the water samples submitted to our lab on February 15, 1991. For your reference, our service request number for this work is K910843C.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Abbie Spielman

Abbie Spielman
Project Chemist

AS/mbm

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	02/15/91
Submitted By:	Bill Woods	**Work Order #:**	K910843C
Project:	BP 11266, ALAMEDA/#C90-04.07		
Sample Matrix:	Water		

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

Sample Name:		MW-1	MW-2	MW-3
Lab Code:		K0843-1	K0843-2	K0843-3
Date Analyzed:		02/19/91	02/20/91	02/19/91
Analytes	**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	14	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	*640	1.5	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	*3,270	ND	ND
cis-1,3-Dichloropropene	1	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND
Tetrachloroethene (PCE)	1	ND	ND	ND
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	2.8	ND	ND
Ethylbenzene	1	*980	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	1	*3,620	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
* Result from analysis of a diluted sample performed on February 20, 1991.

00001

Approved by Abhi Apielman Date 3/5/91

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	02/15/91
Submitted By:	Bill Woods	**Work Order #:**	K910843C
Project:	BP 11266, ALAMEDA/#C90-04.07		
Sample Matrix:	Water		

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

Sample Name:		MW-4	MW-5	MW-6
Lab Code:		K0843-4	K0843-5	K0843-6
Date Analyzed:		02/20/91	02/19/91	02/20/91
Analytes	**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	6.0	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	2.5	ND	ND
Dibromochloromethane	1	ND	ND	ND
Chlorobenzene	1	1.9	ND	ND
Ethylbenzene	1	16	ND	ND
Styrene	1	ND	ND	ND
Total Xylenes	1	4.5	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

00002

Approved by Abie Spielman Date 3/5/91

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	02/15/91
Submitted By:	Bill Woods	**Work Order #:**	K910843C
Project:	BP 11266, ALAMEDA/#C90-04.07		
Sample Matrix:	Water		

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

Sample Name:		Method Blank	Method Blank
Lab Code:		K0843-MB	K0843-MB
Date Analyzed:		02/19/91	02/20/91
Analytes	**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

00003

Approved by Ann Spielman Date 3/5/91

APPENDIX A

LABORATORY QC RESULTS

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EMCON Associates	**Date Received:**	02/15/91
Submitted By:	Bill Woods	**Date Analyzed:**	02/19/91
Project:	BP 11266, ALAMEDA/#C90-04.07	**Work Order #:**	K910843C
Sample Matrix:	Water		

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	K0843-1	109	103	*119
MW-3	K0843-3	108	107	114
MW-5	K0843-5	99.6	107	106
MW-6	K0843-6MS	98.5	104	112
MW-6	K0843-6DMS	110	**112	114
Method Blank	K0843-MB	108	108	108
EPA Acceptance Criteria		76-114	88-110	86-115

* Outside acceptance criteria due to matrix interferences. The surrogate was within acceptance criteria in the diluted sample analyzed on February 20, 1991.

** Outside acceptance limits. Since no target analytes were detected in the sample, the elevated percent recovery does not adversely impact the data. Sample and matrix spike surrogates were all within acceptance criteria.

Approved by Attie Spielman Date 3/5/91

00005

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EMCON Associates	**Date Received:**	02/15/91
Submitted By:	Bill Woods	**Date Analyzed:**	02/20/91
Project:	BP 11266, ALAMEDA/#C90-04.07	**Work Order #:**	K910843C
Sample Matrix:	Water		

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	K0843-1	109	106	110
MW-2	K0843-2	99.5	107	102
MW-4	K0843-4	107	103	102
MW-6	K0843-6	95.5	98.2	102
Method Blank	K0843-MB	102	100	97.7
EPA Acceptance Criteria		76-114	88-110	86-115

Approved by Abhi Apelmo Date 3/5/91

00006

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EMCON Associates	**Date Received:**	02/15/91
Submitted By:	Bill Woods	**Date Analyzed:**	02/19/91
Project:	BP 11266, ALAMEDA/#C90-04.07	**Work Order #:**	K910843C
Sample Matrix:	Water		

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

Sample Name: MW-6
Lab Code: K0843-6MS/DMS

					Percent Recovery		
Analytes	**Spike Level**	**Sample Result**	**Spike Result** MS	DMS	MS	DMS	EPA Acceptance Criteria
1,1-Dichloroethene	50	ND	59.0	55.4	118	111	61-145
Trichloroethene	50	ND	51.7	52.6	103	105	71-120
Chlorobenzene	50	ND	49.8	50.3	99.6	101	75-130
Toluene	50	ND	54.6	55.2	109	110	76-125
Benzene	50	ND	51.5	50.6	103	101	76-127

ND None Detected at or above the method reporting limit

Approved by Ann Spielman Date 3/5/91

00007

APPENDIX B

CHAIN OF CUSTODY INFORMATION

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 Fax 206/636-1068

KC5430

Columbia Analytical Services inc.

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

Chain of Custody/ Laboratory Analysis Request

DATE 02-13-91 PAGE 1 OF 1

PROJECT BP11266 #C90-04.07

SEND REPORT TO

ADDRESS

TELEPHONE#

SAMPLERS NAME J Butera PHONE# 453-2267

SAMPLERS SIGNATURE J Butera

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 BTEX 602/8020	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	NH^3-N, COD, Total-P, TKN, NO^3 (Circle)	NUMBER OF CONTAINERS
1. MW-1	2/13	1350	1-2	H_2O		X			X															4
2. MW-2	↓	1205	3-4	↓		X			X															4
3. MW-3		1117	5-6			X			X															4
4. MW-4		1030	7-8			X			X															4
5. MW-5		1445	9-10			X			X															4
6. MW-6		1300	11-12			X			X															4
7.																								
8.																								

Relinquished By	Relinquished By
J Butera	
Signature J Butera	Signature
Printed Name J Butera	Printed Name
Firm EMCON SJ	Firm
Date/Time 2/13/91 1655	Date/Time
Received By: HF	Received By:
Signature HF	Signature Lance Jordan
Printed Name Howard Friedman	Printed Name LANCE JORDAN
Firm CAS/SJ	Firm CAS
Date/Time 2/13/91 1655	Date/Time 2/15/91 [illegible]

Invoice Information:

P.O.#

Bill to:

Project Information

Site Contact:

Site Address:

Sample Receipt

Shipped Via: Sampler

Seals Intact:

Condition: ok

Lab No. SJ91-0227

SR Number: 1358

Special Instruction/Comments:

8240's to Kelso

Printed on Recycled Paper