added to file 8-5-94 by JE

Mobil Oil Corporation

90 DEC 34 AM 11:51

3800 WEST ALAMEDA AVENUE, SUITE 700
BURBANK, CALIFORNIA 91505-4331

December 17, 1990

GW.

Mr. Rafat Shahid
Alameda County
Health Care Services
80 Swan Way, Room 200
Oakland, CA 94621

MOBIL OIL CORPORATION
FORMER S/S 10-E6A
100 MacARTHUR BOULEVARD 94611
OAKLAND, CALIFORNIA
BP S/S 11102

Dear Mr. Shahid:

Enclosed for your review is the Quarterly Ground Water Monitoring and Sampling Report, dated December 13, 1990. MW-2, downgradient of the tank field, decreased from 6.5 ug/l to 0.3 ug/l benzene. All wells were below 3 ug/l benzene.

Additional site characterization will be very difficult due to the limited space. Oakland Avenue is a steep hill and the freeway is across MacArthur Boulevard. We therefore propose to continue the quarterly monitoring and sampling of the wells.

If you have any questions, please feel free to contact me at (818) 953-2519.

Sincerely,

David M. Noe

David M. Noe, P.E.
GW Projects Engineer

DMN:st
enclosure

cc: Mr. Tom Callaghan (w/ enclosure)
RWQCB - S.F. Bay Region
1800 Harrison Street, Room 700
Oakland, CA 94612

Mr. Peter DeSantis (w/ enclosure)
BP Oil Company
2868 Prospect Park Drive, Suite 360
Rancho Cordova, CA 95670-6020

E. M. Hoepker (w/o)
308 Larkin
Benecia, CA 94510

ALTON GEOSCIENCE, INC.

QUARTERLY GROUND WATER MONITORING AND SAMPLING REPORT

for

Former Mobil Service Station 10-E6A
100 MacArthur Boulevard
Oakland, California

December 13, 1990

Prepared by:

Matthew Hopwood
Project Geologist

Reviewed by:

Al Sevilla
R.C.E. 26392

1000 Burnett Avenue, Suite 140 • Concord, CA 94520 • (415) 682-1582 • Fax 682-8921

GROUND WATER MONITORING AND SAMPLING REPORT
for
Former Mobil Service Station 10-E6A
100 MacArthur Boulevard
Oakland, California
December 13, 1990

Alton Geoscience Project No. 30-063

INTRODUCTION

This report presents the results and findings of the recent quarterly ground water monitoring and sampling activities performed by Alton Geoscience, Inc. at former Mobil Service Station 10-E6A, located at 100 MacArthur Boulevard, Oakland, California. A site vicinity is shown in Figure 1.

PROJECT BACKGROUND

During the removal of the 280-gallon waste oil tank in September 1988, a product sheen was discovered on the ground water encountered in the tank cavity. Analysis of a soil sample collected from the tank backfill material indicated it contained 65,000 parts per million (ppm) of total oil and grease (TOG). Based on this finding, the Alameda County Department of Environmental Health (ACDEH) requested that a site assessment be performed to determine the impact of TOG level on the subsurface soil and/or ground water.

In order to assess the lateral and vertical extent of soil and/or ground water contamination at the site, Mobil Oil Corporation retained Alton Geoscience to conduct a site investigation, drill three soil borings, and install Ground Water Monitoring Wells MW-1, MW-2, and MW-3. Soil samples were collected during installation of the wells and analyzed for the required hydrocarbon constituents. A report dated December 20, 1989, presenting the findings of the site investigation, was submitted to the appropriate regulatory agencies for review. Based on the findings of this investigation, a quarterly ground water monitoring and sampling program was proposed for a period of at least three quarters. This report presents the results of the final ground water monitoring and sampling activities.

FIELD PROCEDURES

On November 20, 1990, Alton Geoscience monitored and sampled Ground Water Monitoring Wells MW-1, MW-2 and MW-3, in accordance with the requirements and procedures of the Regional Water Quality Control Board (RWQCB) and the ACDEH. Prior to purging and sampling, the ground water level in each

well was measured from the top of casing to the nearest 0.01 foot using an electronic sounder. Ground water samples were collected using a hand bailer and visually inspected for the presence of free product or sheen.

Each well was purged of the required casing volumes or until stabilization of pH, temperature, and conductivity was achieved, prior to sample collection. The water sampling field survey forms are included in Appendix A. Ground water samples for laboratory analyses were collected using a clean Teflon bailer, and then decanted into the appropriate containers for delivery to a state-certified laboratory, following proper sample preservation and chain of custody procedures.

DISCUSSION OF RESULTS

The results of the ground water monitoring and laboratory analysis of water samples are summarized in Table 1. The official laboratory reports and chain of custody records are presented in Appendix B.

A ground water elevation contour map, based on the November, 20, 1990 ground water monitoring data, is shown in Figure 2. The ground water flow direction is to the southwest, with a gradient of 0.086 foot/foot, both of which are generally consistent with the results of the previous monitoring events.

Field observation of the ground water samples indicated no free product or sheen present in any of the wells. Evaluation of the results of ground water sampling and analysis indicated the following:

- Comparison of results of sample analysis for MW-1 for the last three sampling events indicates a decrease in the level of total petroleum hydrocarbons as gasoline (TPH-G), while TOG has remained nondetectable.

- The concentrations of TPH-G and benzene have decreased in MW-2 between the last two sampling events while the other hydrocarbon constituents have remained nondetectable.

- No TPH-G has been detected above the reported detection limit in MW-3 in the last four sampling events. Benzene, toluene, ethylbenzene, and total xylenes (BTEX) were detected in this sampling event, however.

- TPH as diesel (TPH-D) was detected in MW-1 at 79 ppb as well as halogenated volatile organic compounds (HVOC) consisting of bromodichloromethane, trichloroethane, and chloroform at levels of 0.6, 1, and 4 ppb, respectively.

- Generally, the levels of BTEX constituents detected in the ground water samples have been well below the corresponding state primary maximum contaminant level (MCL) for drinking water. Only benzene had been detected in MW-1 and MW-2 at levels above the MCL.

Table 1: Summary of Results of Ground Water Sampling
Project Number: 30-063
Concentrations in parts per billion (ppb)

WELL ID	DATE OF SAMPLING/ MONITORING	DEPTH TO WATER	FREE PRODUCT THICKNESS (ft)	GROUND WATER ELEVATION (ft above msl)	TPH-G (8015)	TPH-D (8015)	HVOC (624/ 601)	TOG (503E/ 503D)	B (602/ 624)	T (602/ 624)	E (602/ 624)	X (602/ 624)	ORG-Pb (DHS METHOD)	ANALYTICAL LAB
MW-1	11/04/89	13.21	0.0	76.99	ND<500	ND<50	0.9*	ND<5000	3.4	0.6	ND<0.3	ND<0.3	---	SAL
MW-1	11/11/89	13.32	0.0	76.88	---	---	---	---	---	---	---	---	---	---
MW-1	04/03/90	12.46	0.0	77.74	820	---	---	---	64	1.9	23	34	---	AI
MW-1	07/30/90	12.92	0.0	77.28	190	ND<50	*	ND<5000	11	ND<5.0	ND<5.0	ND<5.0	---	AI
MW-1	11/20/90	14.08	0.0	76.12	50	79	**	ND<5000	2.4	ND<0.3	ND<0.3	ND<0.3	---	SAL
MW-2	11/04/89	15.84	0.0	72.07	ND<500	---	---	---	6.5	ND<0.3	ND<0.3	ND<0.3	---	SAL
MW-2	11/11/89	14.75	0.0	73.16	---	---	---	---	---	---	---	---	---	---
MW-2	04/03/90	15.25	0.0	72.66	ND<100	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	AI
MW-2	07/30/90	15.59	0.0	72.32	61	---	---	---	6.5	ND<0.5	ND<0.5	ND<0.5	---	AI
MW-2	11/20/90	17.01	0.0	70.10	ND<50	---	---	---	0.3	ND<0.3	ND<0.3	0.3	---	SAL
MW-3	11/04/89	15.40	0.0	71.62	ND<500	---	---	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	SAL
MW-3	11/11/89	14.10	0.0	72.92	---	---	---	---	---	---	---	---	---	---
MW-3	04/03/90	13.90	0.0	73.12	ND<100	ND<50	ND*	ND<5000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	AI
MW-3	07/30/90	13.77	0.0	73.65	ND<50	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	AI
MW-3	11/20/90	14.67	0.0	72.75	ND<50	---	---	---	0.3	0.8	0.4	1.5	---	SAL

EXPLANATION TO ABBREVIATIONS:

TPH-G : Total Petroleum Hydrocarbons as Gasoline (EPA method 8015 modified)

TPH-D : Total Petroleum Hydrocarbons as Diesel (EPA method 8015 modified)

TOG : Total Oil and Grease (EPA method 503D&503E)

HVOC : Halogenated Volatile Organic Constituents (EPA method 624/8010)

B : Benzene (EPA method 8020)

T : Toluene (EPA method 8020)

E : Ethylbenzene (EPA method 8020)

X : Xylenes (EPA method 8020)

ORG-Pb : Organic lead (EPA method 7420)

--- : Not analyzed

ND< : Not detected at method detection limit shown

NA : Not applicable

ft above msl : Feet above Mean Sea Level

SAL : Superior Analytical Laboratory

AI : Anametrix Inc.

NOTES:

1. Depth to Water level measured from top of well casing in feet

2. * = Benzene was only HVOC detected above detection limit.

3. ** = HVOC's were detected at levels up to 4ppb, see lab reports.

FIGURE 1. VICINITY MAP

ALTON GEOSCIENCE
1170 Burnett Ave., Ste. S
Concord, CA 94520

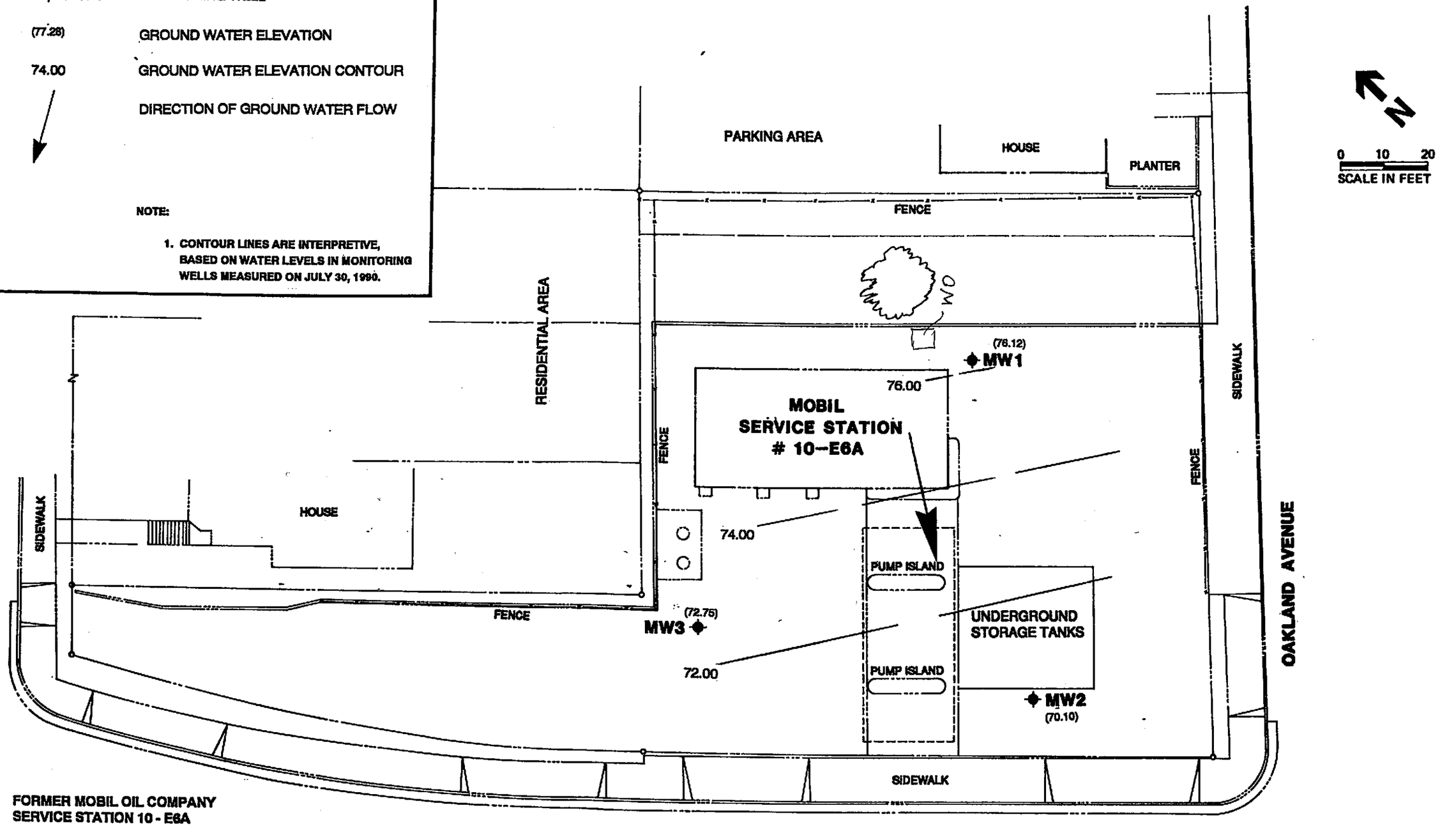
PROJECT NO. 30-063

LEGEND:

MW1	MONITORING WELL
(77.28)	GROUND WATER ELEVATION
74.00	GROUND WATER ELEVATION CONTOUR
	DIRECTION OF GROUND WATER FLOW

NOTE:

1. CONTOUR LINES ARE INTERPRETIVE, BASED ON WATER LEVELS IN MONITORING WELLS MEASURED ON JULY 30, 1990.



FORMER MOBIL OIL COMPANY
SERVICE STATION 10 - E6A
100 MAC ARTHUR BOULEVARD.
OAKLAND, CALIFORNIA

PROJECT NO. 30--063

FIGURE 2 : GROUND WATER ELEVATION CONTOUR MAP

APPENDIX A

FIELD SAMPLING FORMS

ALTON GEOSCIENCE, INC
1170 Burnett Ave., Ste. S
Concord, CA 94520

JOB NUMBER 30-063 TECHNICIAN Larry

JOB LOCATION Oakland DATE 11/20/90

PUMPOUT ☒ YES ☐ NO	DATE OF LAST PUMPOUT:			WEATHER: 12/17 TIME: Cloudy		COMMENTS (Notes, conditions, etc.)
	HOLD	CUT	LEVEL			
WELL #	DEPTH TO WATER	DEPTH TO PRODUCT	PROD. THICKNESS (FT)	TOTAL DEPTH	DEPTH TO PUMP	
4" MW1	14.08			31.72		
4" MW2	17.81			32.12		
4" MW3	19.67			32.28		water around casing

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey

Project # 30-063 Site: Mobil, Oakland Date: 11/20/90

Well: MW1 Sampling Team: Larry

Well Development Method: Diaphram pump

Sampling Method: 2" PVC Bailer

Describe Equipment Before Sampling This Well: Triple Rinsed

Well Development/ Well Sampling Data

Total Well Depth: 31.72 feet Time: 1235 Water level Before Pumping: 14.08

Water Column	Casing Diameter 2-inch	4-inch	Volume	Factor	Volume to Purge
17.64 feet x	0.16	(0.65)	11.47 X	4	45.88

Depth Purging From: 28' feet. Time Purging Begins: 1237

Notes on Initial Discharge: _____

Time	Volume	pH	Conductivity	T	Notes
1241	8	7.60	1.08	65.8	Clear
1243	16	7.23	.93	66.7	" "
1245	24	7.21	1.06	66.6	" "
1247	32	7.15	1.06	66.0	Lt Brown
1249	40	7.16	1.06	65.2	" "

Time Field Parameter Measurement Begins: 1241

	Rep #1	Rep #2	Rep #3	Rep #4
pH				
Conductivity				
Temperature (F)				

Presample Collection Gallons Purged: 45.5

Time Sample Collection Begins: 1410

Time Sample Collection Ends: 1416

Total Gallons Purged: 46.0

Comments: meter X1000

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey

Project # 30-063 Site: Mobil, Oakland Date: 11/20/90

Well: MW2 Sampling Team: Lang

Well Development Method: Drysham Pump

Sampling Method: 2" PVC Bailer

Describe Equipment Decontamination Before Sampling: Triple Rinsed

---

Well Development/ Well Sampling Data

Total Well Depth: 32.12 feet Time: 1301 Water level Before Pumping: 17.81

Water Column	Casing Diameter 2-inch	4-inch	Volume	Factor	Volume to Purge
14.31 feet x	0.16	(0.65)	9.30 X	4	37.20

Depth Purging From: 28' feet. Time Purging Begins: 1304

Notes on Initial Discharge: _____

Time	Volume	pH	Conductivity	T	Notes
1306	7	7.41	1.67	66.6	clear
1308	14	7.11	2.39	68.9	"
1309	21	7.00	3.09	68.0	cloudy
1310	28	6.98	3.61	67.5	"
1312	35	6.98	3.60	66.9	"

Time Field Parameter Measurement Begins: 1306

	Rep #1	Rep #2	Rep #3	Rep #4
pH				
Conductivity				
Temperature (F)				

Presample Collection Gallons Purged: 37.0

Time Sample Collection Begins: 1431

Time Sample Collection Ends: 1433

Total Gallons Purged: 37.5

Comments: mstr X1000

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey

Project # 30-063 Site: Mobil, Oakland Date: 11/20/90

Well: MW3 Sampling Team: Larry

Well Development Method: Diaphram Pump

Sampling Method: 2" PVC Bailer

Describe Equipment Decontamination Before Sampling: Triple Rinsed

Well Development/Well Sampling Data

Total Well Depth: 32.28 feet Time: 1317 Water level Before Pumping: 14.67

Water Column		Casing Diameter 2-inch	4-inch	Volume	Factor	Volume to Purge
17.61	feet x	0.16	(0.65)	11.45 x	4	45.80

Depth Purging From: 28' feet. Time Purging Begins: 1521

Notes on Initial Discharge: _____

Time	Volume	pH	Conductivity	T	Notes
1330	9	7.50	.81	66.4	Clear
1332	18	7.31	.71	67.5	"
1333	27	7.25	.70	68.7	"
1335	36	7.17	.74	69.6	"
1337	45	7.17	.75	69.9	"

Time Field Parameter Measurement Begins: 1330

	Rep #1	Rep #2	Rep #3	Rep #4
pH				
Conductivity				
Temperature (F)				

Presample Collection Gallons Purged: 45.5

Time Sample Collection Begins: 1425

Time Sample Collection Ends: 1427

Total Gallons Purged: 46

Comments: meter X1000

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY DOCUMENTAION

ALTON GEOSCIENCE
1000 BURNETT ST., #140
CONCORD, CA 94520 (415) 682-1582

CHAIN of CUSTODY RECORD

PAGE 1 of 1

DATE: 11/21/90

RESULTS DUE BY:

PROJECT NUMBER: 30-063

PROJECT NAME AND ADDRESS: Mobil, Oakland

PROJECT MANAGER: Matt Hopwood

SAMPLER'S SIGNATURE: Tony Buenrostro

LABORATORY: Superior ~~Analytical~~

REMARKS OR SPECIAL INSTRUCTIONS:
Please Run TPH-G & BTXE in Series!.

NOTE: PLEASE INDICATE VERBAL REQUESTS FOR ADDITIONAL ANALYSES IN THIS BOX.

SAMPLE NUMBER	SAMPLE DATE/TIME	LOCATION/ DESCRIPTION	SAMPLE MATERIAL	SAMPLE TYPE: GRAB	SAMPLE TYPE: COMP.	NUMBER OF CONTAINERS
MW1	11/20/90/1410		6x40mL 4x1 Liter	X		
MW2	11/20/90/1431		↓	↓		
MW3	11/20/90/1425		↓	↓		
			TOTAL NO. OF CONTAINERS:			

SAMPLE PREP.				SOIL ANALYSIS					WATER ANALYSIS					
3510: SOLV. EXTR.	3810: HEAD SPACE	5030: PURGE & TRAP	40 mL VOAs HCl Pres.	418.1: TPHC (IR)	8010: HALOCARBONS	8020: BTXE	DHS METHOD: TPHC (GC)	7420: TOTAL Pb	~~418.1: TPHC (IR)~~ TOG	~~8010: HALOCARBONS~~	602: BTXE & TPH-G	DHS METHOD: TPHC (GC)	~~7421: TOTAL Pb~~ HVOC	TPH-D.
			X						X		X		X	X
			↓								↓			
			↓								↓			

RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	METHOD OF SHIPMENT:
Tony Buenrostro		11/21/90 0830	
RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	SHIPPED BY:
RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	COURIER:

DEC - 3 1990

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE, UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 52830-1
CLIENT: Alotn Geoscience
JOB NO.: 30-063

DATE SAMPLED: 11/20/90
DATE RECEIVED: 11/21/90
DATE ANALYZED: 11/29/90

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE: MW-1

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.6	ND
1,1-Dichloroethene	0.6	ND
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	4
1,1,1-Trichloroethane	0.5	ND
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	1
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	0.6
cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene		

MDL = Method Detection Limit
ug/l = parts per billion (ppb)
QA/QC Summary: Daily Standard RPD = <15% :MS/MSD RPD =< 2%
MS/MSD average recovery = 92%

Richard Srna, Ph.D.
Laboratory Director

DEC = 3 1990

SUPERIOR ANALYTICAL LABORATORIES, INC.

825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 81962
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-063

DATE RECEIVED: 11/21/90
DATE REPORTED: 11/30/90

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 8015

LAB #	Sample Identification	Concentration (mg/L) Diesel Range
1	MW-1	0.079

mg/L - parts per million (ppm)

Method Detection Limit for Diesel in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 200mg/L: RPD Diesel = 12
MS/MSD Average Recovery = 98%: Duplicate RPD = 8

Richard Srna, Ph.D.

Robert Ulstrom for
Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

DEC - 3 1990

SUPERIOR ANALYTICAL LABORATORIES, INC.
825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512
DOHS #319
DOHS #220

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 81962
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-063

DATE RECEIVED: 11/21/90
DATE REPORTED: 11/30/90

ANALYSIS FOR TOTAL OIL AND GREASE
by Standard Method 5520F

LAB #	Sample Identification	Concentration(mg/L) Oil & Grease
1	MW-1	ND<5

mg/L - parts per million (ppm)

Method Detection Limit for Oil and Grease in Water: 5mg/L

QAQC Summary: Duplicate RPD : 15

Richard Srna, Ph.D.

Laboratory Manager

OUTSTANDING QUALITY AND SERVICE

DEC - 3 1990

SUPERIOR ANALYTICAL LABORATORIES, INC.
825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512
DOHS #319
DOHS #220

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 81962
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-063

DATE RECEIVED: 11/21/90
DATE REPORTED: 11/30/90

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	MW-1	0.05
2	MW-2	ND<0.05
3	MW-3	ND<0.05

mg/L - parts per million (ppm)

Method Detection Limit for Gasoline in Water: 0.05 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = 9
MS/MSD Average Recovery = 113%: Duplicate RPD = 5

Richard Srna, Ph.D.

Laboratory Manager

DEC - 3 1990

SUPERIOR ANALYTICAL LABORATORIES, INC.
825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512
DOHS #319
DOHS #220

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 81962
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-063

DATE RECEIVED: 11/21/90
DATE REPORTED: 11/30/90

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/L) Benzene	Toluene	Ethyl Benzene	Xylenes
1	MW-1	2.4	ND<0.3	ND<0.3	ND<0.3
2	MW-2	0.3	ND<0.3	ND<0.3	0.3
3	MW-3	0.3	0.8	0.4	1.5

ug/L - parts per billion (ppb)

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15%
MS/MSD Average Recovery = 99 %: Duplicate RPD = <3

Richard Srna, Ph.D.

Laboratory Manager

OUTSTANDING QUALITY AND SERVICE