

Mobil Oil Corporation

3225 GALLOWS ROAD
FAIRFAX, VIRGINIA 22037-0001

92 JUL 17 11:28:05

July 13, 1992

Spencer
Mr. Paul Smith
Alameda County Environmental Health Dept.
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

STID 1108

**FORMER MOBIL STATION 04-E6A
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA**

44610

Dear Mr. Smith:

Attached for your information and review is the Quarterly Groundwater Monitoring and Sampling Report, prepared by Alton Geoscience for the above location.

As indicated by the lab results, MW-2 and MW-3 remain non-detect. BTEX in MW-1 has increased. *→ has .55 ppb benz.*

Groundwater sample analysis suggests that TPH-G and benzene concentrations detected in MW-1, which is upgradient from any potential on-site source, may be reflective of an offsite source.

To date, Mobil has spent \$43,044 for environmental activities.

Should you have any questions, please call me at 1-800-227-0707 extension 5316.

Sincerely,

Michele A. Fear
Michele A. Fear
Environmental Monitoring
Analyst

enclosure:

cc: Mr. Donald Dalke - RWQCB- San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

D. J. Hill - Mobil Environmental Field Supervisor
J. G. Schoepf - Mobil Environmental Monitoring Supervisor



Environmental
Awareness

**QUARTERLY GROUND WATER
MONITORING AND SAMPLING REPORT**

for

**Former Mobil Station 04-E6A
100 MacArthur Boulevard
Oakland, California**

Project No. 30-0063-02

Prepared for:

**Mobil Oil Corporation
3225 Gallows Road - 2M918
Fairfax, Virginia 22037**

Prepared by:

**Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, California 94588**

July 6, 1992

QUARTERLY GROUND WATER MONITORING AND SAMPLING REPORT

Former Mobil Station 04-E6A
100 MacArthur Boulevard
Oakland, California

July 6, 1992

INTRODUCTION

This report presents the results quarterly ground water monitoring and sampling performed May 19, 1992 by Alton Geoscience at former Mobil Station 04-E6A, 100 MacArthur Boulevard, Oakland, California. A site vicinity map is shown in Figure 1. ↘

PROJECT ACTIVITIES

In September 1988, a 280-gallon steel waste oil tank was removed and replaced with a 1,000-gallon double-wall fiberglass waste oil tank. Sheen was observed on the ground water in the tank cavity and ^{6.5 cc/gppm} total oil and grease (TOG) was detected in a soil sample collected from the tank backfill material. Based on these findings, the Alameda County Department of Environmental Health (ACDEH) requested a site assessment.

Mobil Oil Corporation retained Alton Geoscience to complete a site investigation to assess the lateral and vertical extent of hydrocarbon-affected soil and/or ground water at the site. The investigation included drilling three soil borings and installing three ground water monitoring wells (MW-1, MW-2, MW-3). Soil samples collected from the borings did not contain total petroleum hydrocarbons as gasoline (TPH-G), TOG, or halogenated volatile organic compounds (HVOCs) above reported detection limits. A ground water sample collected from MW-1 detected concentrations of benzene, toluene, and 1,2-dichloroethane. A ground water sample from MW-2 contained concentrations of benzene (for details refer to the Alton Geoscience report dated December 20, 1989); while hydrocarbon concentrations above the reported laboratory detection limit were not detected in MW-3. Based on the findings of this investigation, a quarterly ground water monitoring and sampling program was initiated.

we need →

FIELD PROCEDURES

On May 19, 1992, Alton Geoscience monitored and sampled MW-1, MW-2, and MW-3. Alton Geoscience ground water monitoring and sampling protocol is presented in Appendix A along with field survey forms.

Ground water samples were analyzed for TPH-G; benzene, toluene, ethylbenzene, and total xylenes (BTEX). Ground water samples obtained from MW-1 were also analyzed for total petroleum hydrocarbons as diesel (TPH-D), TOG, and HVOCs. The official laboratory reports and chain of custody record are included in Appendix B.

DISCUSSION OF RESULTS

Results of the ground water monitoring and laboratory analysis of water samples are summarized in Table 1. A ground water elevation contour map, based on depth to ground water measurements collected on May 19, 1992, is presented in Figure 2. Concentrations of petroleum hydrocarbons detected in the ground water samples are shown in Figure 3.

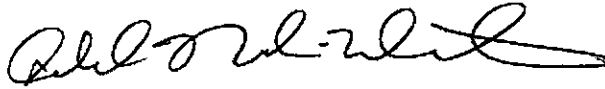
Results of this ground water monitoring and sampling event and laboratory analysis indicated the following:

- Depth to ground water ranged from 11.80 and 15.52 fbg with an average hydraulic gradient of 0.063 foot/foot to the southwest, consistent with previous trends. ✓
W-SW OK
- Measurable or trace free product was not observed in ground water during this or previous monitoring events.
- TPH-G was only detected in the sample from upgradient well MW-1 at a concentration of 4,200 ppb. ✓ Benzene was detected in this well at 440 ppb and diesel at 910 ppb. ✓ These results reflect substantially higher concentrations than detected during any previous sampling event (Table 1). ✓ A resampling of MW-1 on June 17, 1992 appears to confirm these results. Analysis of this sample detected 4,000 ppb TPH-G, 350 ppb benzene, and 560 ppb TPH-D. ✓
- TPH-G was not detected in ground water samples from MW-2 and MW-3 at or above the reported detection limits consistent with historical results, however 0.55 ppb benzene was detected in the sample from MW-2. ✓
- Neither TOG nor HVOCs were detected at or above the reported detection limit in the sample from MW-1. ✓

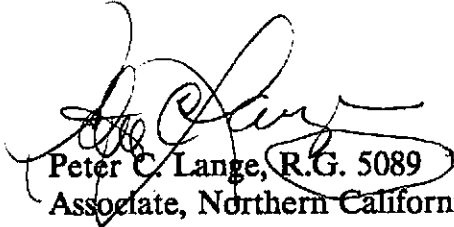
CONCLUSIONS

- A trend indicating increased concentrations of petroleum hydrocarbons in ground water in upgradient Well MW-1, coupled with the relatively steep hydraulic gradient suggest the possibility of an offsite upgradient hydrocarbon source.

ALTON GEOSCIENCE



Gerald H. Nieder-Westermann
Project Manager



Peter C. Lange, R.G. 5089
Associate, Northern California Operations

seal?
exp. date?

APPENDIX A

**ALTON GEOSCIENCE GENERAL FIELD PROCEDURES FOR
MONITORING WELL SAMPLING, AND FIELD SURVEY FORMS**

ALTON GEOSCIENCE GENERAL FIELD PROCEDURES FOR MONITORING WELL SAMPLING PROCEDURES

Monitoring wells were inspected for the presence of free product using an electronic interface probe prior to purging. Before sampling, monitoring wells were purged of 3 to 4 casing volumes or until pH, temperature, and electroconductivity stabilized. Ground water samples were collected by lowering a 2-inch-diameter bottom-fill disposable polyethylene bailer below the air/water interface in the well. The samples were carefully transferred from the bailer to zero-headspace 40-milliliter and 1-liter glass containers fitted with Teflon-sealed caps. All 40-milliliter samples were inverted to ensure entrapped air was not present. Each sample was labeled with sample number, well number, date, and sampler's initials, and remained on ice prior to and during transport to a California-certified laboratory for analysis. The samples were handled in accordance with proper chain of custody documentation. The purged water was pumped into barrels prior to disposal or recycling at an appropriate waste disposal facility.

APPENDIX B

**ANALYTICAL METHODS, OFFICIAL
LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS**

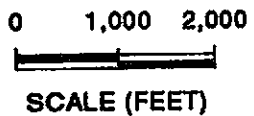
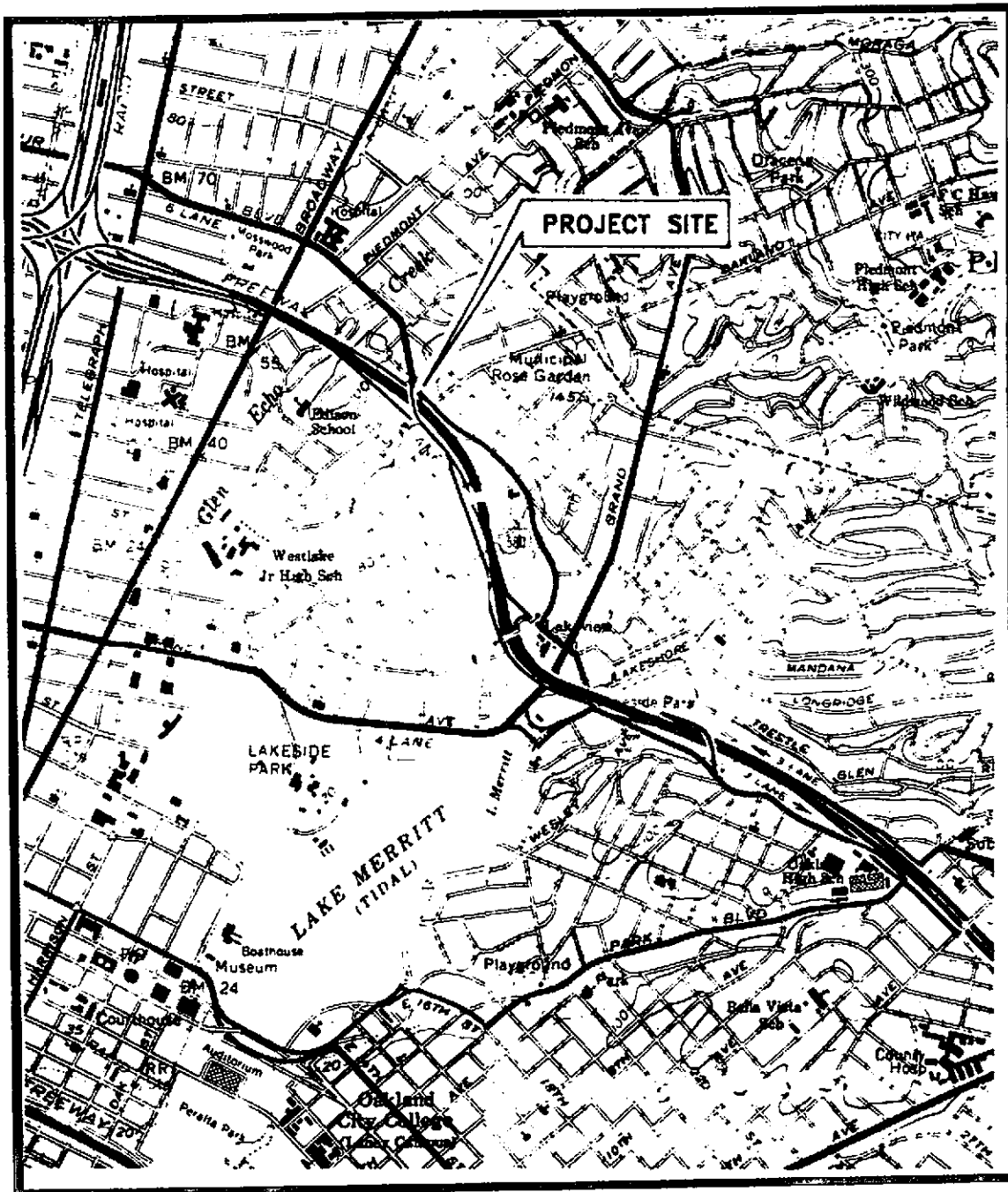
**ANALYTICAL METHODS, OFFICIAL
LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS**

This appendix includes copies of the official laboratory reports and chain of custody records for soil and ground water samples selected for laboratory analysis.

Laboratory analyses were performed by Sequoia Analytical, a California-certified laboratory (California Certification No. 1271).

Chemical analyses of soil and ground water samples were performed using standard test methods of the United States Environmental Protection Agency (EPA) and the California Department of Health Services (Cal-DHS).

Chain of custody protocol was followed for all samples. The chain of custody form(s) accompanies the samples from the sampling locality to the laboratory, providing a continuous record of possession prior to actual analysis.



Source: U.S.G.S. Map
Oakland West Quadrangle
California
7.5 Minute Series

SITE VICINITY MAP






Mobil Station 04-E6A
100 MacArthur Boulevard
Oakland, California

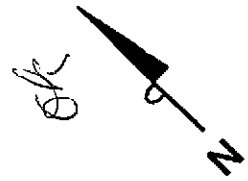
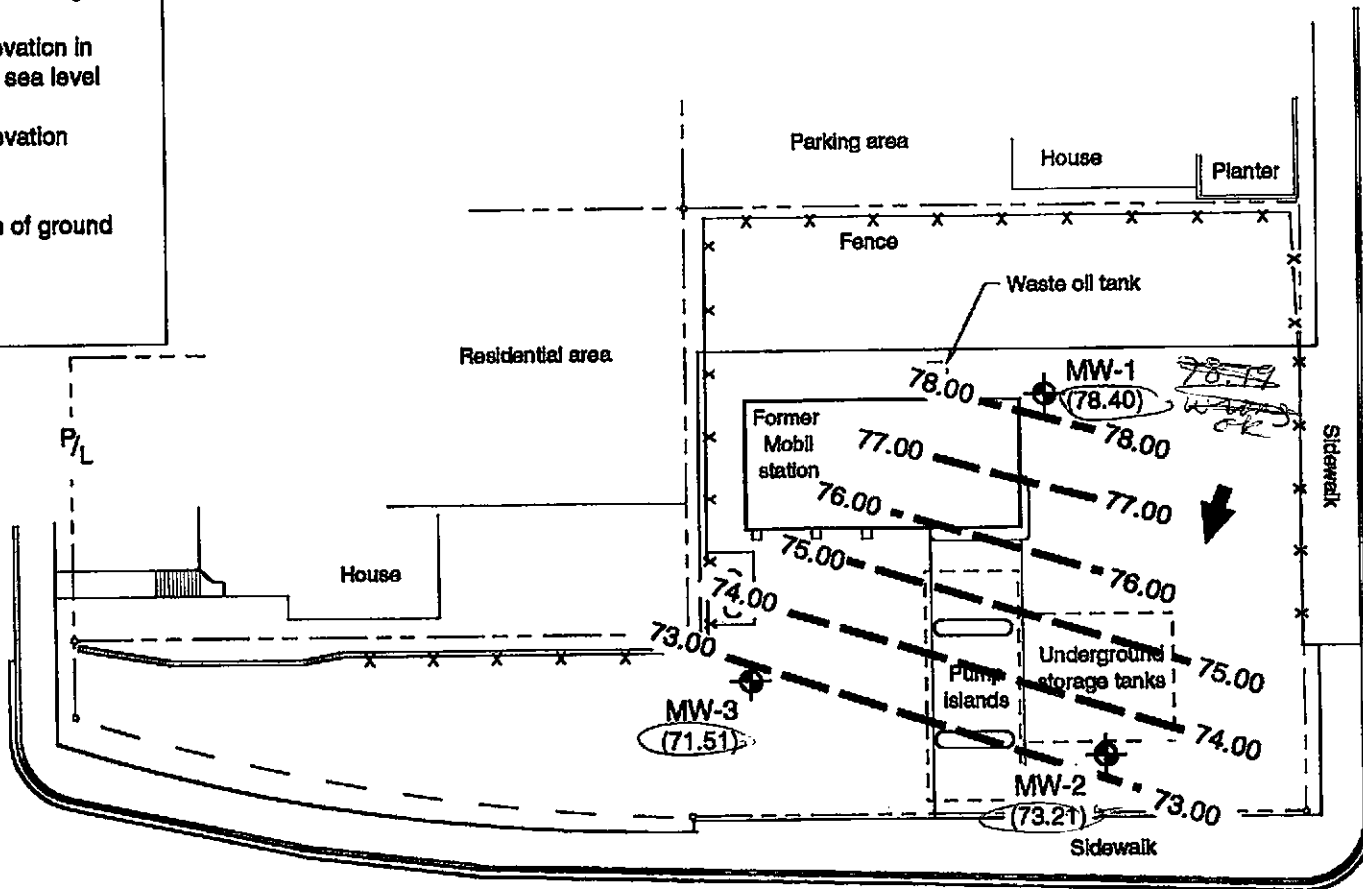
FIGURE 1

ALTON GEOSCIENCE
Pleasanton, California

Project No. 30-0063

LEGEND

-  MW-3 Ground water monitoring well
-  (71.51) Ground water elevation in feet above mean sea level
-  Ground water elevation contour line
-  General direction of ground water gradient
-  P/L Property line



- NOTE: 1. Ground water gradient based upon ground water level measurements collected May 19, 1992.
 2. Contour interval = 1.0 foot.
 3. Gradient = 0.063 foot/foot southwest.

GROUND WATER ELEVATION CONTOUR MAP

Former Mobil Station 04-E6A
 100 MacArthur Boulevard
 Oakland, California

FIGURE 2

ALTON GEOSCIENCE
 Pleasanton, California

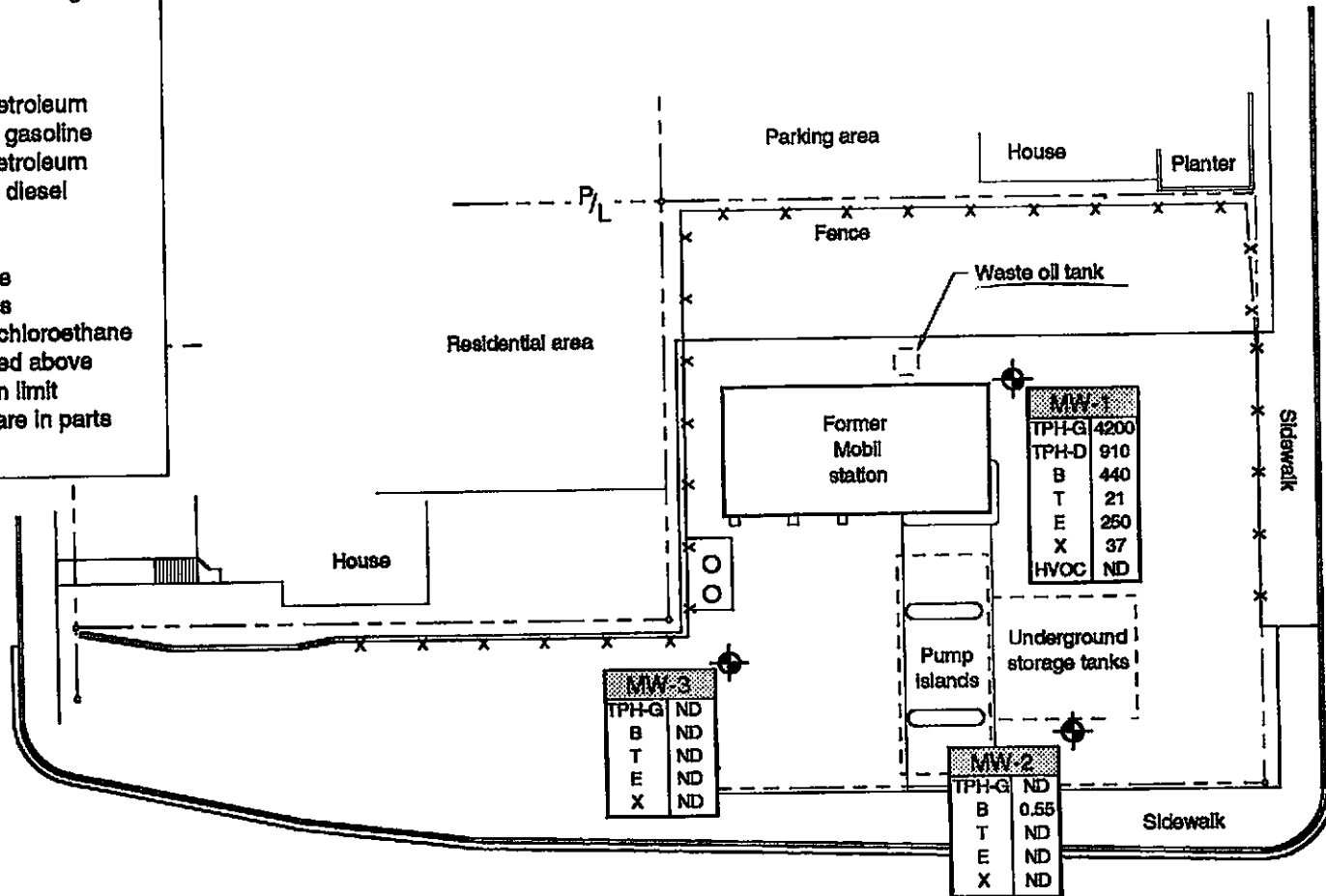
LEGEND

⊕ MW-3 Ground water monitoring well

P/L Property line

MW-3	
TPH-G	ND
TPH-D	ND
B	ND
T	ND
E	ND
X	ND
HVOC	ND

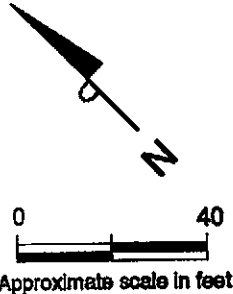
TPH-G = Total petroleum hydrocarbons as gasoline
 TPH-D = Total petroleum hydrocarbons as diesel
 B = Benzene
 T = Toluene
 E = Ethylbenzene
 X = Total Xylenes
 HVOCs = 1,2-Dichloroethane
 ND = Not detected above method detection limit
 Concentrations are in parts per billion (ppb)



MW-1	
TPH-G	4200
TPH-D	910
B	440
T	21
E	250
X	37
HVOC	ND

MW-3	
TPH-G	ND
B	ND
T	ND
E	ND
X	ND

MW-2	
TPH-G	ND
B	0.55
T	ND
E	ND
X	ND



MW-1 is ~20' from former w.o. tank

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUND WATER in ppb (May 19, 1992)

Former Mobil Station 04-E6A
 100 MacArthur Boulevard
 Oakland, California

FIGURE 3

Table 1
Summary of Results of Ground Water Sampling
Former Mobil Station 04-E6A
100 MacArthur Boulevard, Oakland, California
Project No. 30-0063

Concentrations in parts per billion (ppb)

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION TO WATER	DEPTH TO WATER	GROUND WATER ELEVATION	TPH-G	TPH-D	HVOC	TOG	B	T	E	X	LAB
MW-1	11/04/89	90.20	13.21	76.99	ND<500	ND<50	0.9 a	ND<5000	3.4	0.6	ND<0.3	ND<0.3	SAL
MW-1	11/11/89	90.20	13.32	76.88	---	---	---	---	---	---	---	---	NA
MW-1	04/03/90	90.20	12.46	77.74	820	---	---	---	64	1.9	23	34	AI
MW-1	07/30/90	90.20	12.92	77.28	190	ND<50	ND *	ND<5000	11	ND<5.0	ND<5.0	ND<5.0	AI
MW-1	11/20/90	90.20	14.08	76.12	50	79	4.0 a	ND<5000	2.4	ND<0.3	ND<0.3	ND<0.3	SAL
MW-1	03/01/91	90.20	13.81	76.59	ND<100	ND<1000	ND *	14000	0.9	ND<0.3	ND<0.3	0.3	SAL
MW-1	08/19/91	90.20	15.74	74.46	370	ND<50	1.4 a	ND<5000	35	0.73	6.4	5.8	SEQ
MW-1	11/13/91	90.20	14.08	76.12	60	ND<50	1.0 a	ND<5000	0.68	ND<0.3	ND<0.3	ND<0.3	SEQ
MW-1	02/24/92	90.20	12.52	77.68	140	100	1.7 a	ND<5000	3.9	0.68	1.2	3.8	SEQ
MW-1	05/19/92	90.20	11.80	76.40	4200	810	ND *	ND<5000	440	21	250	37	SEQ
MW-1	06/17/92	90.20	12.01	76.19	4000	560	ND *	ND<5000	350	14	150	17	SEQ
MW-2	11/04/89	87.91	15.84	72.07	ND<500	---	---	---	6.5	ND<0.3	ND<0.3	ND<0.3	SAL
MW-2	11/11/89	87.91	14.75	73.16	---	---	---	---	---	---	---	---	NA
MW-2	04/03/90	87.91	15.25	72.68	ND<100	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	AI
MW-2	07/30/90	87.91	15.59	72.32	61	---	---	---	6.5	ND<0.5	ND<0.5	ND<0.5	AI
MW-2	11/20/90	87.91	17.81	70.10	ND<50	---	---	---	0.3	ND<0.3	ND<0.3	ND<0.3	SAL
MW-2	03/01/91	87.91	17.11	70.80	ND<100	---	4.0 a	---	0.4	ND<0.3	ND<0.3	ND<0.3	SAL
MW-2	08/19/91	87.91	17.97	69.94	ND<30	---	---	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	SEQ
MW-2	11/13/91	87.91	16.76	71.15	38	---	---	---	0.32	ND<0.3	ND<0.3	ND<0.3	SEQ
MW-2	02/24/92	87.91	15.07	72.84	ND<50	---	16 a	---	ND<0.50	ND<0.50	ND<0.50	0.58	SEQ
MW-2	05/19/92	87.91	14.70	73.21	ND<50	---	---	---	0.55	ND<0.50	ND<0.50	ND<0.50	SEQ
MW-3	11/04/89	87.02	15.40	71.62	ND<500	---	---	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	SAL
MW-3	11/11/89	87.02	14.10	72.92	---	---	---	---	---	---	---	---	NA
MW-3	04/03/90	87.02	13.90	73.12	ND<100	---	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	AI
MW-3	07/30/90	87.02	13.77	73.25	ND<50	---	---	ND<5000	ND<0.5	ND<0.5	ND<0.5	ND<0.5	AI
MW-3	11/20/90	87.02	14.67	72.35	ND<50	---	---	---	0.3	0.8	0.4	1.5	SAL
MW-3	03/01/91	87.02	15.22	71.60	ND<100	---	ND *	---	0.4	ND<0.3	ND<0.3	ND<0.3	SAL
MW-3	08/19/91	87.02	13.15	73.87	ND<30	---	---	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	SEQ
MW-3	11/13/91	87.02	15.66	71.38	ND<30	---	---	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	SEQ
MW-3	02/24/92	87.02	15.01	72.01	ND<50	---	ND *	---	0.65	1.4	0.66	4.4	SEQ
MW-3	05/19/92	87.02	15.52	71.50	ND<50	---	---	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	SEQ

EXPLANATION OF ABBREVIATIONS:

TPH-G :total petroleum hydrocarbons quantified as gasoline
 TPH-D :total petroleum hydrocarbons quantified as diesel
 TOG :total oil and grease
 HVOCs :halogenated volatile organic compounds
 B :benzene
 T :toluene
 E :ethylbenzene
 X :total xylenes

NA :not applicable/not available
 ND :not detected at or above method detection limits
 ND * :not detected at various detection limits
 --- :not analyzed
 AI :Anametrix Incorporated
 SAL :Superior Analytical Laboratory
 SEQ :Sequoia Analytical Laboratory
 a: :1,2-Dichloroethane

MDL = .5 →

Note: Top of casing and ground water elevations are in reference to feet above mean sea level (NGVD 1929).

APPENDIX A

ALTON GEOSCIENCE GENERAL FIELD
FOR **MONITORING WELL SAMPLING PROCEDURES,**
AND FIELD SURVEY FORMS

MONITORING WELL SAMPLING PROCEDURES

Monitoring wells were inspected for the presence of free product using an electronic interface probe prior to purging. ^{Before} ~~Prior to~~ sampling, monitoring wells were purged of 3 to 4 casing volumes or until pH, temperature, and electroconductivity stabilized. Ground water samples were collected by lowering a 2-inch-diameter bottom-fill disposable polyethylene bailer below the air/water interface in the well. The samples were carefully transferred from the bailer to zero-headspace 40-milliliter and 1-liter glass containers fitted with Teflon-sealed caps. All 40-milliliter samples were inverted to ensure that entrapped air was not present. Each sample was labeled with sample number, well number, date, and sampler's initials. ^{Each} ~~The samples~~ remained on ice prior to and during transport to a California-certified laboratory for analysis. The samples were handled in accordance with proper chain of custody documentation. The purged water was pumped into barrels prior to disposal or recycling at an appropriate waste disposal facility.

doc?

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # MW-1 PROJECT # 30-0063-02 LOCATION Oakland DATE 5-19-92
 SAMPLING TEAM Jon VAIL SAMPLING METHOD: ^{Disposable} BAILER PUMP
 DECONTAMINATION METHOD: TRIPLE RINSE W/ Liquinox AND DEIONIZED WATER
 STEAM CLEAN

WELL DATA:

DEPTH TO WATER 11.80 ft
 TOTAL DEPTH 32.42 ft
 HT. WATER COL 20.62 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
<u>4 in</u>	<u>X0.65</u>
6 in	X1.44

Volume of Water Column 13.4 gal
 Volumes to Purge X 3 Vol
 Total Volume to Purge 40.25 gal

CHEMICAL DATA:

T (F)	SC/umhos x 1,000	pH	Time	Turbidity ↓	Comments	Volume (gal)
70.3	1.12	6.74	13:22	Light	Clear to Light Gray	0-6.0
67.9	1.08	6.81	13:30	Light	Light Grayish	6.0- 17.0
67.1	1.06	6.77	13:35	Light	Light Gray-Brown	17.0 -26.0
66.8	1.05	6.79	13:40	Light to Moderate	Lt-Med Gray-Brn	26.0-32.5
66.5	1.05	6.82	13:45	Light	Light Gray-Brn	32.5-40.25

PURGE: START 1317 / STOP 1346

ACTUAL VOLUME PURGED

40.25 gal

SAMPLE: 1352

COMMENTS:

Purge Method: Bailer Pump

MW-1 Recharged Fine.

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # MW-3 PROJECT # 30-0063-02 LOCATION Oakland DATE 5-19-92
 SAMPLING TEAM Jon VAIL SAMPLING METHOD: BAILER PUMP
 DECONTAMINATION METHOD: TRIPLE RINSE W/ ^{Liquinox} AND DEIONIZED WATER
 STEAM CLEAN

WELL DATA:

DEPTH TO WATER 15.52 ft
 TOTAL DEPTH 32.05 ft
 HT. WATER COL 16.53 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 10.74 gal
 Volumes to Purge x 3 Vol
 Total Volume to Purge 32.25 gal

CHEMICAL DATA:

T (F)	SC/umhos x 1,000	pH	Time	Turbidity ↓	Comments	Volume (gal)
67.7	0.93	6.75	12:17	very low	Clear	0-8.0
68.0	0.86	6.79	12:24	low	Clear	8.0-13.0
67.9	0.89	6.70	12:28	low	Clear to slight Haze	13.0-18.0
68.2	0.90	6.80	12:34	light	Hazy Brown	18.0-26.0
68.2	0.99	7.00	12:40	light	Light Brown	26.0-31.0
68.3	1.02	7.19	12:44	light	Lt Brown	31.0-32.25

PURGE: START 12:12 / STOP 12:45
 SAMPLE: 1254

ACTUAL VOLUME PURGED 32.25 gal

COMMENTS:

Purge Method: Bailer Pump
 Depleted column after 31.0 gallons at 12:40. Since I was so close to my goal of 32.25 gallons I bailed many more times & received another 1.25 gallons by 12:45.
 As it is rising Temp. here - result was coming out from behind the clouds.

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # MW-2 PROJECT # 30-0063-02 LOCATION Oakland DATE 5-19-92
 SAMPLING TEAM Jon VAIL SAMPLING METHOD: ^{Disposable} BAILER PUMP
 DECONTAMINATION METHOD: TRIPLE RINSE W/ ^{Liquinex} AND DEIONIZED WATER
 STEAM CLEAN

WELL DATA:

DEPTH TO WATER 14.70 ft
 TOTAL DEPTH 32.36 ft
 HT. WATER COL 17.66 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.65
6 in	X1.44

Volume of Water Column 11.48 gal
 Volumes to Purge x 3 Vol
 Total Volume to Purge 34.50 gal

CHEMICAL DATA:

T (F)	SC/umhos x 1,000	pH	Time	Turbidity ↓	Comments	Volume (gal)
70.7	1.38	6.67	11:47	Very Low	Clear	0-3.0
68.9	1.33	6.66	11:51	light	Hazy Brown	3.0-9.5
68.1	1.46	6.69	11:58	Light	Light Brown	9.5-16.5
68.0	1.63	6.66	12:02	Modest	Lt.-Med Btm	16.5-21.0
67.9	2.76	6.81	12:07	Heavy	Thick Brown	21.0-26.0
71.6	3.64	7.04	14:33	Modest	Med. Brown	26.0-29.0
69.7	2.27	6.89	14:37	↓	↓	29.0-34.50

PURGE: START 11:42 / STOP 12:08

SAMPLE: 14:45

ACTUAL VOLUME PURGED

OTW	Time
22.80'	13:10
20.14'	14:04

In 63 minutes recharge was ~ 8.75' = 5.65 gallons = 49.5% recharge
 In 2 hours it was 7.5 gal = 65.7% recharge

COMMENTS:

Purge Method: Bailer Pump

Depleted H₂O column at 12:07 after 26.0 gallons.
 Began hitting bottom with bailer at 19.0 gallons -- that's when turbidity increased even more.
 Start purge again at 14:30. Stop at 14:38 after a grand total of 34 1/2 gal.
 Recharge is returned at this time.

ALTON GEOSCIENCE, INC.
Water Sampling Field Survey

WELL # MW-1 PROJECT # 30-023-02 LOCATION 100 McArthur Blvd DATE 6/17/92

SAMPLING TEAM TM SAMPLING METHOD: BAILER PUMP

DECONTAMINATION METHOD: TRIPLE RINSE W/TSP AND DEIONISED WATER
STEAM CLEAN

WELL DATA:

DEPTH TO WATER 12.0 ft
TOTAL DEPTH 32.0 ft
HT. WATER COL 20 ft

CONVERSION	
diam	gal/ft
2 in	X0.16
3 in	X0.36
4 in	X0.63
6 in	X1.44

Volume of Water Column 13 gal
Volumes to Purge X 3 Vol
Total Volume to Purge 39 gal

CHEMICAL DATA:

T (F)	SC/umhos	pH	Time	Comments	Volume (gal)
				H.C. odor	
70.5	1240	6.91	15:30	Light brown w/fines	8
68.4	1200	6.87	15:41	Light gray w/fines	16
68.0	1200	6.79	15:47	(minor sand)	24
67.9	1150	6.81	15:53		32
67.9	1140	6.83	16:02	Light Gray (w/fines)	39
ACTUAL VOLUME PURGED					39 gal

COMMENTS: H.C. odor

APPENDIX B

**ANALYTICAL METHODS, OFFICIAL
LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS**

ANALYTICAL METHODS, OFFICIAL LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS

This appendix includes copies of the official laboratory reports and chain of custody records for soil and ground water samples selected for laboratory analysis.

Laboratory analyses were performed by Sequoia Analytical, a California-certified laboratory (California Certification No. 1271).

Chemical analyses of soil and ground water samples were performed using standard test methods of the United States Environmental Protection Agency (EPA) and the California Department of Health Services (Cal-DHS).

Chain of custody protocol was followed for all samples. The chain of custody form(s) accompanies the samples from the sampling locality to the laboratory, providing a continuous record of possession prior to actual analysis.



SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

JUN 02 1992

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, CA 94588
Attention: Tim Quane

Client Project ID: Mobil #04-E6A/ 30-0063-02
Matrix Descript: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 205-0827

Sampled: May 19, 1992
Received: May 19, 1992
Analyzed: 5/21-5/22/92
Reported: May 29, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene	Toluene	Ethyl Benzene	Xylenes
		Hydrocarbons				
		$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)
205-0827	MW-2	N.D.	0.55	N.D.	N.D.	N.D.
205-0828	MW-3	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:

50

0.50


0.50

0.50

0.50

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Scott A. Chieffo
Project Manager

2050827.ALT <1>



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JUN 02 1992

Alton Geoscience	Client Project ID: Mobil #04-E6A/ 30-0063-02	Sampled: May 19, 1992
5870 Stoneridge Drive, Suite 6	Matrix Descript: Water	Received: May 19, 1992
Pleasanton, CA 94588	Analysis Method: EPA 5030/8015/8020	Analyzed: 5/21-5/22/92
Attention: Tim Quane	First Sample #: 205-0829	Reported: May 29, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene	Toluene	Ethyl	Xylenes
		Hydrocarbons			Benzene	
		$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)
205-0829	MW-1	4,200	440	21	250	37

Detection Limits:

500

5.0

5.0

5.0

5.0

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Scott A. Chieffo
Project Manager



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JUN 02 1992

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, CA 94588
Attention: Tim Quane

Client Project ID: Mobil #04-E6A/ 30-0063-02
Matrix Descript: Water
Analysis Method: EPA 3510/8015
First Sample #: 205-0829

Sampled: May 19, 1992
Received: May 19, 1992
Extracted: May 26, 1992
Analyzed: May 27, 1992
Reported: May 29, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons $\mu\text{g/L}$ (ppb)
205-0829	MW-1	910

Detection Limits:

50

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Scott A. Chieffo
Project Manager

2050827.ALT <3>



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JUN 02 1992

Alton Geoscience 5870 Stoneridge Drive, Suite 6 Pleasanton, CA 94588 Attention: Tim Quane	Client Project ID: Mobil #04-E6A/ 30-0063-02 Matrix Descript: Water Analysis Method: SM 5520 B&F (Gravimetric) First Sample #: 205-0829	Sampled: May 19, 1992 Received: May 19, 1992 Extracted: May 21, 1992 Analyzed: May 21, 1992 Reported: May 29, 1992
--	--	--

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
205-0829	MW-1	N.D.

Detection Limits:

5.0

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Scott A. Chieffo
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Project Manager

2050827.ALT <4>



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JUN 02 1992

Alton Geoscience 5870 Stoneridge Drive, Suite 6 Pleasanton, CA 94588 Attention: Tim Quane	Client Project ID: Mobil #04-E6A/ 30-0063-02 Sample Descript: Water, MW-1 Analysis Method: EPA 5030/8010 Lab Number: 205-0829	Sampled: May 19, 1992 Received: May 19, 1992 Analyzed: May 26, 1992 Reported: May 29, 1992
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HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	5.0	N.D.
Bromoform.....	5.0	N.D.
Bromomethane.....	5.0	N.D.
Carbon tetrachloride.....	5.0	N.D.
Chlorobenzene.....	5.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	5.0	N.D.
Chloroform.....	5.0	N.D.
Chloromethane.....	5.0	N.D.
Dibromochloromethane.....	5.0	N.D.
1,3-Dichlorobenzene.....	5.0	N.D.
1,4-Dichlorobenzene.....	5.0	N.D.
1,2-Dichlorobenzene.....	5.0	N.D.
1,1-Dichloroethane.....	5.0	N.D.
1,2-Dichloroethane.....	5.0	N.D.
1,1-Dichloroethene.....	5.0	N.D.
cis-1,2-Dichloroethene.....	5.0	N.D.
trans-1,2-Dichloroethene.....	5.0	N.D.
1,2-Dichloropropane.....	5.0	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	50	N.D.
1,1,2,2-Tetrachloroethane.....	5.0	N.D.
Tetrachloroethene.....	5.0	N.D.
1,1,1-Trichloroethane.....	5.0	N.D.
1,1,2-Trichloroethane.....	5.0	N.D.
Trichloroethene.....	5.0	N.D.
Trichlorofluoromethane.....	5.0	N.D.
Vinyl chloride.....	5.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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JUN 02 1992

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, CA 94588
Attention: Tim Quane

Client Project ID: Mobil #04-E6A/ 30-0063-02

QC Sample Group: 2050827-829

Reported: May 29, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel	Oil and Grease
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA8015	SM5520
Analyst:	A.T.	A.T.	A.T.	A.T.	K. Wimer	D. Newcomb
Reporting Units:	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L
Date Analyzed:	May 21, 1992	May 21, 1992	May 21, 1992	May 21, 1992	May 28, 1992	May 21, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	20	20	20	60	300	100
Conc. Matrix Spike:	23	23	22	71	260	89
Matrix Spike % Recovery:	115	115	110	118	87	89
Conc. Matrix Spike Dup.:	22	22	23	70	250	88
Matrix Spike Duplicate % Recovery:	110	110	115	117	83	88
Relative % Difference:	4.4	4.4	4.4	1.4	3.9	1.0

SEQUOIA ANALYTICAL

Scott Chieffo
Scott A. Chieffo
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

2050827.ALT <6>



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JUN 02 1992

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, CA 94588
Attention: Tim Quane

Client Project ID: Mobil #04-E6A/ 30-0063-02

QC Sample Group: 2050827-829

Reported: May 29, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
	Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	J.F.	A.T.	A.T.	A.T.
Reporting Units:	ug/L	ug/L	ug/L	ug/L
Date Analyzed:	May 22, 1992	May 22, 1992	May 22, 1992	May 22, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	20	20	20	60
Conc. Matrix Spike:	24	23	21	66
Matrix Spike % Recovery:	120	115	105	110
Conc. Matrix Spike Dup.:	24	23	22	66
Matrix Spike Duplicate % Recovery:	120	115	110	110
Relative % Difference:	0.0	0.0	4.7	0.0

SEQUOIA ANALYTICAL

Scott A. Chieffo
Scott A. Chieffo
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

2050827.ALT <7>



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JUN 02 1992

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, CA 94588
Attention: Tim Quane

Client Project ID: Mobil #04-E6A/ 30-0063-02

QC Sample Group: 2050827-829

Reported: May 29, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloroethene	Chlorobenzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	M. Nguyen	M. Nguyen	M. Nguyen
Reporting Units:	ug/L	ug/L	ug/L
Date Analyzed:	May 26, 1992	May 26, 1992	May 26, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10
Conc. Matrix Spike:	9.4	11	9.9
Matrix Spike % Recovery:	94	110	99
Conc. Matrix Spike Dup.:	9.7	12	11
Matrix Spike Duplicate % Recovery:	97	120	110
Relative % Difference:	3.1	8.7	11

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Scott A. Chieffo
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

2050827.ALT <8>



SEQUOIA ANALYTICAL CHAIN OF CUSTODY

JUN 02 1992

- 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600 FAX (415) 364-9233
- 819 West Striker Ave. • Sacramento, CA 95834 • (916) 921-9600 FAX (916) 921-0100
- 1900 Bates Ave., Suite LM • Concord, CA 94520 • (510) 686-9600 FAX (510) 686-9689

Company Name: ALTON GEOSCIENCE		Project Name: Mobil SS#04-E6A (Job # 30-0063-02 (Task # 6004))	
Address: 5870 Stoneridge Dr, Suite 6		Billing Address (if different):	
City: Pleasanton	State: CA	Zip Code: 94588	
Telephone: 510-734-8134		FAX #: 510-734-8420	
Report To: Tim Quane		P.O. #:	
Sampler: Jan VAIL		QC Data: <input type="checkbox"/> Level A (Standard) <input type="checkbox"/> Level B <input type="checkbox"/> Level C <input type="checkbox"/> CLP	

Turnaround Time: 15 Working Days 3 Working Days 2 - 8 Hours
 10 Working Days 2 Working Days
 5 Working Days 24 Hours

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Sequoia's Sample #	Analyses Requested				Comments
						TPH-G/BTEX	Total Oil + Grease	TPH-D	HVOC	
1. MW-2	5-19-92	Water	2		2050827AB	X				Analyze
2. MW-3	5-19-92	Water	2		828AB	X				Analyze
3. MW-1	5-19-92	Water	6		829AF	X	X	X	X	Analyze
4.										
5.										(* Reporting Limits to be: TPH-G > 50 ppb TPH-D > 50 ppb T.O.G. 50 ppb BTXE 0.5 ppb
6.										
7.										
8.										
9.										
10.										

Relinquished By:	Date: 5-19-92	Time: 4:10 PM	Received By:	Date: 5-19-92	Time: 4:10 PM
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By Lab:	Date:	Time:

Were Samples Received in Good Condition? Yes No

Samples on Ice? Yes No Method of Shipment _____

Page ___ of ___

Pink - Client

Yellow - Sequoia

White - Sequoia



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JUN 29 1992

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, CA 94588
Attention: Gerry Nieder-Westermann

Client Project ID: Mobil #10-E6A/30-0063-02
Sample Descript.: Water, MW-1
Analysis Method: EPA 5030/8015/8020
Lab Number: 206-0824

Sampled: Jun 17, 1992
Received: Jun 18, 1992
Analyzed: Jun 22, 1992
Reported: Jun 25, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION (EPA 8015/8020)

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Low to Medium Boiling Point Hydrocarbons	300	4,000
Benzene	3.0	350
Toluene	3.0	14
Ethyl Benzene	3.0	150
Xylenes	3.0	17

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL


Scott A. Chieffo
Project Manager



SEQUOIA ANALYTICAL

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JUN 29 1992

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, CA 94588
Attention: Gerry Nieder-Westermann

Client Project ID: Mobil #10-E6A/ 30-0063-02
Matrix Descript: Water
Analysis Method: EPA 3510/8015
First Sample #: 206-0825

Sampled: Jun 17, 1992
Received: Jun 18, 1992
Extracted: Jun 23, 1992
Analyzed: Jun 24, 1992
Reported: Jun 25, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons $\mu\text{g/L}$ (ppb)
206-0825	MW-1	560

Detection Limits:

50

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL


Scott A. Chieffo
Project Manager

2060824.ALT <2>



SEQUOIA ANALYTICAL

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JUN 29 1992

Alton Geoscience
5870 Stoneridge Drive, Suite 6
Pleasanton, CA 94588
Attention: Gerry Nieder-Westermann

Client Project ID: Mobil #10-E6A/ 30-0063-02

QC Sample Group: 2060824-825

Reported: Jun 25, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA8015
Analyst:	A.T.	A.T.	A.T.	A.T.	K.Wimer
Reporting Units:	ug/L	ug/L	ug/L	ug/L	ug/L
Date Analyzed:	Jun 22, 1992	Jun 22, 1992	Jun 22, 1992	Jun 22, 1992	Jun 26, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	20	20	20	60	300
Conc. Matrix Spike:	19	19	19	62	298
Matrix Spike % Recovery:	95	95	95	103	99
Conc. Matrix Spike Dup.:	19	19	19	62	293
Matrix Spike Duplicate % Recovery:	95	95	95	103	98
Relative % Difference:	0.0	0.0	0.0	0.0	1.7

SEQUOIA ANALYTICAL

Scott A. Chieffo
Scott A. Chieffo
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

2060824-825-1-92

Mobil Chain of Custody



SEQUOIA
ANALYTICAL

Redwood City: (415) 364-9600
Concord: (510) 686-9600
Sacramento: (916) 921-9600

Consulting Firm Name: <u>Olton Geoscience</u>			Site SS #: <u>10-ECA</u>			Phase of Work:					
Address: <u>5870 Stoneridge Drive, Suite 6</u>			Mobil Site Address: <u>100 MACARTHUR BLVD</u>			<input type="checkbox"/> A. Emrg. Response					
City: <u>Pleasanton</u> State: <u>CA</u>		Zip Code: <u>94588</u>		Mobil Engineer:			<input type="checkbox"/> B. Site Assessment				
Telephone: <u>(510) 234-9134</u>		FAX #: <u>(510) 734-9420</u>		Consultant Project #: <u>30-0063-02</u>			<input type="checkbox"/> C. Remediation				
Project Contact: <u>G. Norder-Wester</u>			Sampled by: <u>Ted Morse</u>			Sequoia's Work Order Release #:			<input type="checkbox"/> D. Monitoring		
									<input type="checkbox"/> E. OGC/Claims		

Turnaround Time: Standard TAT (5 - 10 Working Days)
 Other _____

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Description	# of Containers	Sequoia's Sample #	Analyses Requested					Comments	
					TPH Gas/BTEX	TPH Diesel	TPPH by I.R. EPA 418.1	Oil & Grease EPA 413.2			
1. MW-1	6/17/92	Water	3	2060824AC	✓						Analyze
2. MW-1	↓	↓	3								Hold
3. MW-1	↓	↓	2	2060825AB		✓					Analyze
4.											
5.											Detection limits TPH-G & TPH-D - 50 ppb
6.											Detection limits BTEX - 0.5 ppb
7.											
8.											
9.											
10.											

Relinquished By: <u>Ted Morse</u>	Date: <u>4/15/92</u>	Time: <u>8:00</u>	Received By: <u>[Signature]</u>	Date: <u>4/18/92</u>	Time: <u>8:00 AM</u>
Relinquished By: <u>[Signature]</u>	Date: <u>6-18-92</u>	Time: <u>1430</u>	Received By: <u>[Signature]</u>	Date: <u>6/18/92</u>	Time: <u>2:30pm</u>
Relinquished By:	Date:	Time:	Received By:	Date:	Time: