INTERIM REMEDIAL ACTION REPORT
May 18, 1999

FORMER MOBIL STATION 99-105
6301 San Pablo Avenue
Oakland, California

Alton Project No. 41-0123

Prepared For:

MOBIL BUSINESS RESOURCES CORPORATION
2063 Main Street, Suite 501
Oakley, California 94561

Prepared By:

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Senior Project Manager

Tracy L. Walker, RG
Associate

REGISTERED GEOLOGIST
TRACY WALKER
No. 6808
Exp. 10/31/99
STATE OF CALIFORNIA

ALTON GEOSCIENCE
30A Lindbergh Avenue
Livermore, California 94550
(925) 606-9150

Note: Alisto is doing the RAP for construction of bld for Connie Lamb.

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ALTON GEOSCIENCE

ENVIRONMENTAL PROTECTION
99 MAY 19 AM 8:44

May 18, 1999

Mr. Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Alton Project No. 41-0123

SITE: FORMER MOBIL STATION 99-105
6301 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

RE: INTERIM REMEDIAL ACTION REPORT

Dear Mr. Chan:

Please find enclosed one copy of the Interim Remedial Action Report for the site referenced above. Please call me at (925) 606-9150, extension 104, if you have any questions regarding this report.

Sincerely,

ALTON GEOSCIENCE

Thomas E. Seeliger
Senior Project Manager

- DPVE from MW 3 + MW 4 was successful
- Contamination in the "smear" zone
- very little influence in well pts.

enclosure

cc: Ms. Cherine Foutch, Mobil Business Resources Corporation
Ms. Connie Lamb

p:/projects/mobil/99-105/cvr.ltr

30A Lindbergh Avenue
Livermore, California 94550
(510) 606-9150 • FAX (510) 606-9260

Appendixes

Interim Remedial Action Report
Former Mobil Station 99-105, Oakland, California
May 18, 1999

1.0 INTRODUCTION

This summary report presents the findings of a dual-phase vacuum extraction (DPVE) event and associated remedial assessment activities which were conducted at the former Mobil Station 99-105 located at 6301 San Pablo Avenue in Oakland, California (Figure 1).

The objectives of these activities were to:

- Utilize DPVE to mitigate petroleum hydrocarbon impacted soil and groundwater at the site.
- Further characterize the extent of soil hydrocarbons at the site.

2.0 SITE DESCRIPTION

Present Site Use: The property is currently unoccupied and enclosed by a plywood fence. A former service station building exists onsite.

Past Site Use: The site was a Mobil service station from 1951 to 1980 before being used as a car rental lot. Mobil sold the property to Mr. Randolf Dixon in February 1980 and the property was sold in 1987 to Ken Evans which operated the site as a car rental facility until 1995. The tanks were pulled by Ken Evans in August 1994.

Adjacent Property: The site is located on the northwest corner of San Pablo Avenue and 63rd Street in Oakland, California (Figure 1). Commercial properties are to the north and northeast across San Pablo Avenue. To the southeast, across San Pablo Avenue, is an elementary school, and to the west, south, and southwest are residential properties.

Geography: San Francisco Bay is located approximately 5,000 feet to the west of the site. Topography in the vicinity of the site is relatively flat but slopes gently west towards the bay. The site has an elevation of approximately 22 feet above mean sea level [NGVD 1929].

Regional Hydrogeology: The site is located in the East Bay Plain Groundwater Basin. Generally groundwater flows westward towards the Bay (RWQCB, 1995).

3.0 CURRENT SITE CONDITIONS

Four groundwater monitoring wells (MW-1 through MW-4) and thirteen borings (AB-1 through AB-13) were drilled and/or installed at the site between March 1996 and March 1998 (Alisto 1996 and Alton 1998a).

The average groundwater depth at the site is approximately 6.38 feet below grade (fbg), based on fluid level measurements collected on January 27, 1999 (Alton 1998e). Historical groundwater depths have ranged from 3.83 fbg (MW-1) measured on January 31, 1997 to 11.57 fbg (MW-3) measured on October 20, 1998. The groundwater gradient was calculated to be 0.06 feet per foot (ft/ft) in January 1999 and groundwater flow has varied from the northwest (April 1997) to the southwest (January 1999) (Alton 1998d and Alton 1999e).

During March 1998, the lateral and vertical extent of hydrocarbon-affected vadose-zone soil was characterized onsite and concentrations were limited to the central portion of the site (Alton 1998a).

Liquid-phase hydrocarbons were periodically detected in MW-4 since the third quarter of 1996 (Alton 1998a) and 0.07 feet of liquid-phase hydrocarbons was measured on January 27, 1999 (Alton 1999e).

4.0 REMEDIAL ASSESSMENT ACTIVITIES

Prior to the DPVE event, six monitoring points (MP-1 through MP-6) were installed at specific distance intervals from extraction wells MW-3 and MW-4 (Figure 2). These monitoring points were installed to obtain vacuum readings and groundwater depths to determine the effective radius of vacuum influence and groundwater fluctuations associated with the DPVE event.

4.1 SOIL BORINGS AND SAMPLE COLLECTION

On November 16, 1998, six Geoprobe™ borings were advanced to a maximum depth of 18.5 fbg at the locations shown on Figure 2. Groundwater was encountered at a depth of approximately 10 fbg. Soil cores were collected continuously in order to determine the location of shallow soil contamination. Select soil samples were screened for hydrocarbon vapor content using a flame ionization detector (FID). Soil descriptions were followed according to the Unified Soil Classification System (USCS). Boring logs and hydrocarbon screening results are provided in Appendix A. Refer to Appendix B for soil sampling procedures.

Select soil samples collected during drilling were submitted to a state-certified laboratory and analyzed for total petroleum hydrocarbons as gasoline (TPH-G); benzene, toluene, ethylbenzene, and total xylenes (BTEX), and; methyl tertiary-butyl ether (MTBE).

4.2 MONITORING POINT INSTALLATION

Each boring was converted to a one-inch diameter monitoring point with a screen interval from four fbg to the total depth of each point. A one-to two-foot depth of annular seal, consisting of bentonite and neat cement was placed from one to three fbg. Monitoring point construction details are shown on the boring logs provided in Appendix A.

5.0 DUAL-PHASE VACUUM EXTRACTION ACTIVITIES

On November 19, 1998, Alton Geoscience operated its mobile treatment system (MTS), which utilized dual-phase high-vacuum extraction technology to reduce the level of dissolved-phase hydrocarbons at the site. Refer to Appendix C for a description of the process equipment and the field forms. The event consisted of extracting groundwater and vapors from wells MW-3 and MW-4. Due to the low influent hydrocarbon concentrations observed in MW-3 [1,290 parts per million by volume (ppmv) maximum] during extraction, it was determined that it would be more effective to perform DPVE on MW-4. The maximum influent vapor concentration from MW-4 was 8,590 ppmv. Therefore, extraction from MW-3 was discontinued after 1.0 hour of operation while extraction from MW-4 totaled 6.75 hours. Vacuum responses were monitored in monitoring points MP-1 through MP-6 and monitoring wells MW-1 through MW-4 while extracting from MW-4. A summary of the test conditions is presented below.

DPVE EVENT DATE	11/19/98
EXTRACTION WELLS	MW-3 and MW-4
EXTRACTION WELL SCREEN INTERVAL (fbg)	5-20 (MW-3) 5-25 (MW-4)
DPVE TYPE	Constant Flow
DURATION (hrs)	1 (MW-3) 6.75 (MW-4)
OBSERVATION WELLS	MP-1 through MP-6, MW-1 through MW-4
DISTANCES TO OBSERVATION WELLS (ft)	6 to 75

For the purpose of determining the range of hydrocarbons extracted from the subsurface, soil vapor samples collected from the influent vapor stream were analyzed in the field using a Horiba portable monitoring instrument. In addition, vapor samples were collected at the beginning and at the end of the test period from the flow stream of MW-4 (prior to dilution) and were submitted to a state certified laboratory for analysis. Samples were analyzed for TPH-G, BTEX, and calderon inert gases (O_2, N_2, CO_2, and CH_4).

Prior to commencement of MTS operations, the static groundwater depth was measured at 8.09 feet below grade (fbg) in MW-4 with 0.09 feet of floating liquid phase product. An extraction stinger was placed in MW-4 at a depth of 7.5 fbg and slowly lowered to 8 fbg by the end of the test.

6.0 SOIL AND WASTE WATER DISPOSAL

Soil cuttings generated during drilling activities were placed in four properly labeled 5-gallon buckets and approximately 75 gallons of hydrocarbon affected groundwater from the DPVE event was transported and disposed of by IWM. The non-hazardous waste manifests will be forwarded upon receipt from Integrated Waste Management (IWM).

7.0 FINDINGS

7.1 REMEDIAL ASSESSMENT ACTIVITIES

The results of the remedial assessment activities are summarized as follows:

- Soils encountered during drilling consisted mainly of clayey sand and sandy clays and minor fine gravels and sand lenses, from surface grade to approximately 18 fbg. Saturated soils were generally encountered from 10 to 15 fbg.

- Gasoline-range hydrocarbons were detected in soil samples collected from approximately 6.5 to 10.5 fbg. The highest TPH-G concentration was 240 ppm in MP-6 (10 fbg) located west of the former dispenser islands.

- Benzene was detected only in soil sample MP-2 at a concentration of 0.08 ppm (10.5 fbg) while MP-1 and MP-3 through MP-6 had non-detectable levels of benzene.

- MTBE was not detected in soil based on EPA Method 8260 confirmation analysis.

Results of the laboratory analyses and historical soil sample analyses are listed in Table 1 and summarized on Figure 2. Refer to Appendix D for the soil analytical methods used, copies of the official soil laboratory reports, and the chain of custody records.

7.2 DUAL PHASE VAPOR EXTRACTION EVENT

The results of the DPVE event are summarized as follows:

- During the DPVE test, an average vacuum of 24 inches of mercury was applied to extraction well MW-4. This applied vacuum resulted in an average vapor flow rate of approximately 29 cubic feet per minute (cfm). Vacuum responses ranging from 0 to 0.04 inches of water were observed in wells MW-1, MW-2, and MW-3 which were located at a distance of 59 to 63 feet from extraction well MW-4. Monitoring point MP1, located at a distance of 52 feet from the extraction well, showed the greatest vacuum response with a reading of 0.08 inches of water. Monitoring Points MP-2 through MP-6 showed vacuum responses from 0 to 0.04 inches of water and were located from 12 to 36 feet from the extraction well. Field measurements using an Horiba portable monitoring instrument indicated vapor concentrations between 2,430 and 8,590 ppmv.

- The groundwater level was depressed approximately 0.5 ft in extraction well MW-4. A slight average drop of 0.04 feet in the groundwater level was seen in the observation wells.

- During the DPVE test, an estimated 21 pounds of vapor-phase hydrocarbons, which is approximately equivalent to 3.3 gallons of gasoline, was removed from MW-4.

- Stabilized vacuum responses in the observation wells are used to calculate an effective radius-of-influence (ERI). During this DPVE event, minimal vacuum responses were observed in the observation wells. Therefore, an ERI was not calculated.

System influent (after dilution) and hydrocarbon recovery results are presented in Table 2 and vacuum response results are presented in Table 3. TPH concentrations and total hydrocarbons recovered versus time are presented in Chart 1.

7.3 DUAL PHASE EFFECTIVENESS

As mentioned earlier, vapor samples were collected at the beginning and at the end of the test from the flow stream of MW-4 and submitted to a state certified laboratory for analysis. A TPH-G concentration of 2,400 ppmv was reported 30 minutes into the test while a concentration of 7,400 ppmv was reported at system shutdown. See appendix E for copies of official laboratory results from the system influent sampling.

8.0 SUMMARY

- The MTS was operated for a total of 6.75 hours. Based on hydrocarbon vapor concentrations and air flow rates, an estimated total of 20.70 pounds of hydrocarbons were recovered by the MTS. In addition, approximately 75 gallons of hydrocarbon-affected groundwater was recovered and pumped to a holding tank.

- During the DPVE test, minimal vacuum responses were observed in the observation wells. Vacuum responses ranging from 0 to 0.04 inches of water were seen in observation wells MW-1 through MW-3 and MP-2 through MW-6 while a maximum vacuum of 0.08 inches of water was seen in MP-1. These low vacuum readings were probably due to the low permeability of the clay layer and an ERI was not able to be calculated.

- Gasoline-range hydrocarbons detected in soil were primarily limited to the "smear zone" from 4 to 12 fbg. Benzene in soil is limited to one boring (MP-2) at a relatively low concentration of 0.08 ppm.

is this practical R.A.?

9.0 REFERENCES

Alisto Engineering Group, 1996. Additional Tank Closure and Preliminary Site Investigation Report, Former Mobil Oil Corporation, Station 99-105, 6301 San Pablo Avenue, Oakland, California. April 15, 1996.

Alton Geoscience, 1998a. Supplemental Site Assessment Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. July 15, 1998.

Alton Geoscience, 1998b. Quarterly Progress Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. January 15, 1999.

Alton Geoscience, 1998c. Quarterly Progress Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. July 15, 1998.

Alton Geoscience, 1998d. Quarterly Progress Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. July 15, 1997.

Alton Geoscience, 1999e. Quarterly Progress Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. April 15, 1999.

RWQCB, 1995. Water Quality Control Plan, San Francisco Bay Basin (Region 2), June 21, 1995.

1 MILE 3/4 1/2 1/4 0 1 MILE

SCALE 1 : 24,000

N

SOURCE:

United States Geological Survey
7.5 Minute Topographic Maps:
Oakland West Quadrangle

VICINITY MAP

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

FIGURE 1

ALTON GEOSCIENCE
Livermore, California

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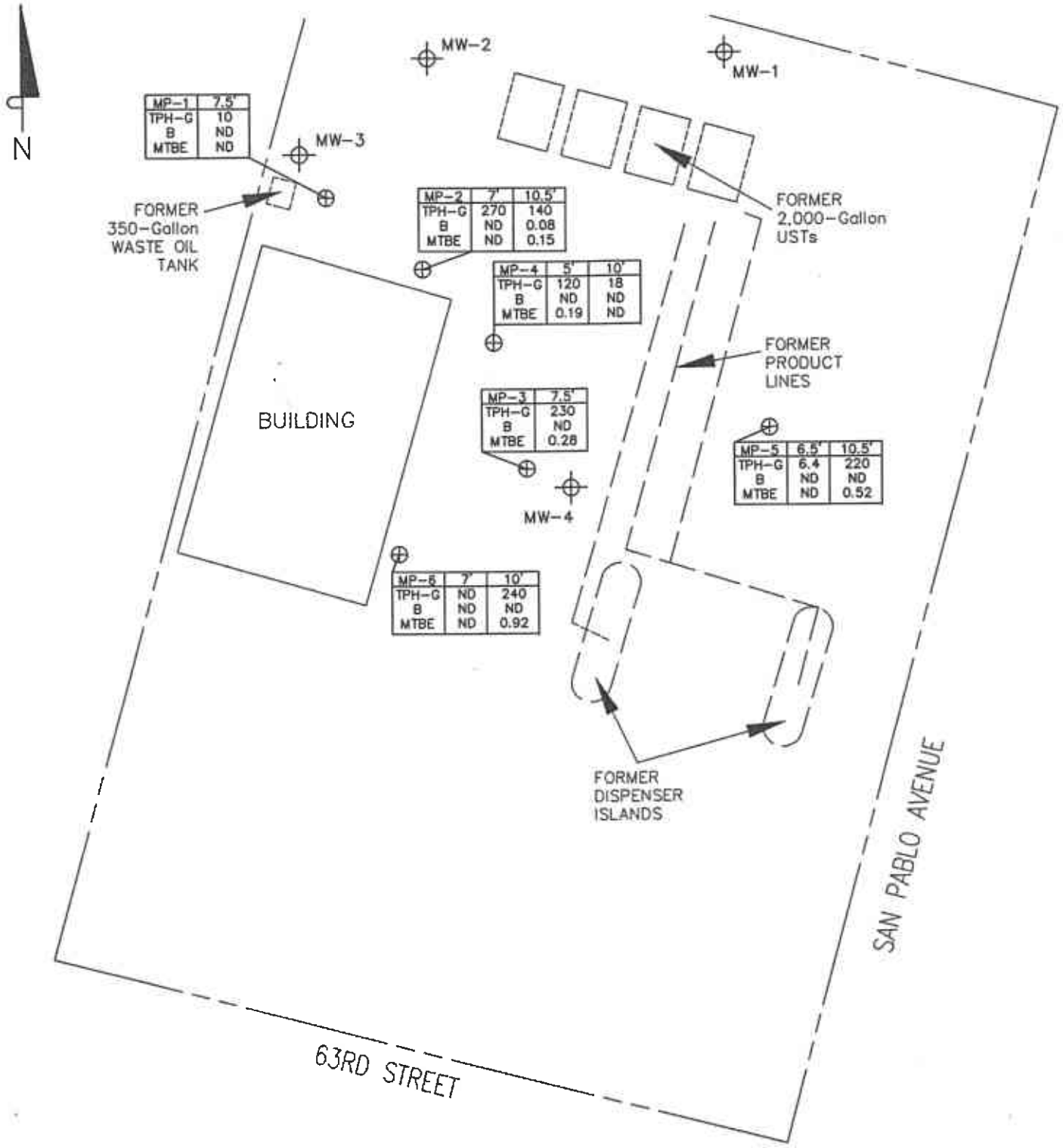


LEGEND

MP-6 | Depth
TPH-G
B
MTBE

Monitoring Point Showing Hydrocarbon Concentrations in Soil (ppm)

HYDROCARBON CONCENTRATIONS IN SOIL
November 16, 1998

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

NOTES:
Hydrocarbon concentrations are based on results of laboratory analysis of soil samples collected November 16, 1998. Depths are in feet below grade. TPH-G = total petroleum hydrocarbons as gasoline; B = benzene; MTBE = methyl tert butyl ether; ppm = parts per million; ND = not detected at or above method detection limit.

ALTON GEOSCIENCE
Livermore, California

SCALE (FEET)
0 20
Source: ALISTO Engineering

FIGURE 2

Table 1
Summary of Soil Sample Analysis
Former Mobil Station 99-105

Sample ID	Depth (feet)	Date	TPH-G (ppm)	TPH-D (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	TOG (ppm)	Lead (ppm)	MTBE (ppm)	MTBE 8260 (ppm)
MW-1	5-5.5'	03/01/96	ND<1.0	3.4	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-1	10-10.5'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-1	15-15.5'	03/01/96	ND<1.0	4.2	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-2	5-5.5'	03/01/96	ND<1.0	2.4	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-2	10-10.5'	03/01/96	220	57	1.2	1.4	2.7	14	—	ND<2.5	—	—
MW-2	15-15.5'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	0.0063	0.035	—	ND<2.5	—	—
MW-3	5.5-6'	03/01/96	ND<1.0	1.1	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	9.0	ND<2.5	—	—
MW-3	10.5-11'	03/01/96	53	72	0.032	0.43	0.65	0.93	290	ND<2.5	—	—
MW-3	15.5-16'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	10	ND<2.5	—	—
MW-4	5.5-6'	03/01/96	280	34	1.2	1.0	4.1	19	—	ND<2.5	—	—
MW-4	10.5-11'	03/01/96	5.8	7.7	0.11	ND<0.0050	0.11	0.093	—	ND<2.5	—	—
MW-4	15.5-16'	03/01/96	5.6	2.1	0.076	0.023	0.083	0.070	—	ND<2.5	—	—
AB-1	5-6'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-2	4-5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-3	5.5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-4	5-6'	03/05/98	18	—	ND	ND	ND	ND	—	—	ND	—
AB-5	3-4'	03/05/98	170	—	ND	ND	0.65	ND	—	—	ND	—
AB-6	5'	03/05/98	230	—	ND	ND	ND	ND	—	—	ND	—
AB-7	4-5'	03/05/98	19	—	ND	ND	0.032	ND	—	—	ND	—
AB-8	5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-9	4'	03/05/98	16	—	0.006	ND	0.028	ND	—	—	ND	—

Table 1
Summary of Soil Sample Analysis
Former Mobil Station 99-105

Sample ID	Depth (feet)	Date	TPH-G (ppm)	TPH-D (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	TOG (ppm)	Lead (ppm)	MTBE (ppm)	MTBE 8260 (ppm)
AB-10	4'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-11	5-6'	03/05/98	3.9	—	ND	ND	ND	ND	—	—	ND	—
AB-12	5-6'	03/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-13	5-6'	03/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
MP-1	7.5'	11/16/98	10	—	ND	0.007	0.013	ND	—	—	ND	—
MP-2	7'	11/16/98	270	—	ND	0.03	0.29	2.1	—	—	ND	—
MP-2	10.5' below GW	11/16/98	140	—	0.08	ND	0.31	ND	—	—	0.15	—
MP-3	7.5'	11/16/98	230	—	ND	0.10	1.6	ND	—	—	0.28	—
MP-4	5'	11/16/98	120	—	ND	ND	0.35	ND	—	—	0.19	—
MP-4	10'	11/16/98	18	—	ND	0.013	0.070	0.086	—	—	ND	—
MP-5	6.5'	11/16/98	6.4	—	ND	ND	0.015	0.022	—	—	ND	—
MP-5	10.5' below GW	11/16/98	220	—	ND	ND	1.4	3.0	—	—	0.52	—
MP-6	7'	11/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
MP-6	10' below GW	11/16/98	240	—	ND	ND	1.6	4.2	—	—	0.92	ND

NOTES:
ppm = parts per million
TPH-G = total petroleum hydrocarbons as gasoline
TPH-D = total petroleum hydrocarbons as diesel
TOG = total oil and grease
MTBE = methyl tert butyl ether
— = not measured/not analyzed
ND = not detected at or above method detection limit

Table 2

MOBILE TREATMENT SYSTEM VACUUM EXTRACTION DATA

Former Mobil Station 99-105 11/19/98

TIME	OPERATING TIME (HOURS)	TOTAL SYSTEM MEASUREMENTS					EXTRACTION WELLS OPEN
		INLET BLOWER VACUUM (IN OF Hg)	COMBINED WELL FLOW (CFM)	AVERAGE CONCENTRATION (undiluted) (PPMV)	TOTAL VAPOR-PHASE HYDROCARBON RECOVERY		
					TPH Recovered (POUNDS)	(GAL) *	
8:30	0	26.0	23.5	2430	0.00	0.00	MW-4
9:00	0.50	26.0	23.8	4780	0.71	0.11	MW-4
9:30	1.0	26.0	23.2	6520	1.81	0.29	MW-4
10:00	1.5	24.5	24.6	8530	3.31	0.53	MW-4
10:30	2.0	25.0	23.7	8590	5.03	0.80	MW-4
11:00	2.5	24.5	23.8	7730	6.64	1.06	MW-4
11:30	3.0	24.5	24.3	7240	8.13	1.30	MW-4
12:00	3.5	24.0	24.2	7350	9.60	1.53	MW-4
12:30	4.0	24.0	23.9	7820	11.12	1.78	MW-4
13:00	4.5	20.5	66.5	4430	13.42	2.14	MW-3, MW-4
13:30	5.0	20.0	66.0	2670	15.37	2.46	MW-3, MW-4
14:00	5.5	24.0	23.0	6440	17.06	2.73	MW-4
14:30	6.0	24.5	23.6	7360	18.40	2.94	MW-4
15:00	6.5	24.0	23.9	8060	19.92	3.18	MW-4
15:15	6.75	24.0	23.0	7950	20.70	3.31	MW-4
		TOTAL HYDROCARBONS RECOVERED			20.70	3.31	
		TOTAL WATER RECOVERED (GAL)			75.0		

IN OF HG = inches of mercury

CFM = cubic feet per minute

PPMV = parts per million per volume

GAL = gallons

* = Based on HC density of 6.26 pounds/gallon.

Table 3

VACUUM RESPONSE RESULTS

Former Mobil Station 99-105 11/19/98

Time	Inlet Blower Vacuum (Inches of H20) At Extraction System	Observation Wells: Wellhead Vacuum (Inches of H20)									Well Hydrocarbon Concentration (ppmv)		COMMENTS
		MW-1	MW-2	MW-3	MP-1	MP-2	MP-3	MP-4	MP-5	MP-6	MW-3	MW-4	
8:30	354.12	*	*	*	*	*	*	*	*	*	*	2430	* = Indicates readings not taken.
9:00	354.12	0.00	0.00	0.00	0.02	0.02	0.01	0.01	0.02	0.01	*	4780	
9:30	354.12	0.01	0.00	0.01	0.02	0.02	0.02	0.01	0.02	0.01	*	6520	
10:00	333.69	0.01	0.01	0.02	0.02	0.01	0.02	0.00	0.02	0.01	*	8530	
10:30	340.50	0.01	0.01	0.02	0.03	0.02	0.02	0.00	0.02	0.01	*	8590	
11:00	333.69	0.01	0.01	0.03	0.03	0.02	0.02	0.02	0.02	0.02	*	7730	
11:30	333.69	0.02	0.02	0.04	0.03	0.01	0.02	0.04	0.02	0.02	*	7240	
12:00	354.12	0.02	0.02	0.03	0.035	0.01	0.02	0.04	0.02	0.02	*	7350	
12:30	340.50	0.02	0.01	0.03	0.03	0.01	0.02	0.04	0.02	0.015	*	7870	
13:00	340.50	0.02	0.01	*	0.08	0.00	0.03	0.01	0.02	0.015	1290	8030	
13:30	333.69	0.02	0.01	*	0.08	0.00	0.03	0.01	0.02	0.015	1130	6560	
14:00	326.88	0.02	0.01	0.01	0.08	0.00	0.03	0.01	0.02	0.015	*	6440	
14:30	320.07	0.01	0.02	0.02	0.04	0.02	0.02	0.01	0.02	0.01	*	7360	
15:00	320.07	0.01	0.01	0.02	0.04	0.02	0.02	0.01	0.02	0.01	*	8060	
15:15	320.07	*	*	*	*	*	*	*	*	*	*	7950	

ppmv = parts per million by volume

Table 4

Groundwater Levels and Chemical Analysis

Former Mobil Station 99-105

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MTBE 8020 (ppb)	MTBE 8240 or 8260 (ppb)	TOG (ppb)	Lead (ppb)	Dissolved Oxygen (mg/L)
TW-1	01/04/96	—	6.00	—	0.00	ND	700	ND	ND	ND	ND	—	—	—	—	—
WW-1	01/04/96	—	3.00	—	0.00	ND	—	ND	ND	ND	ND	—	—	ND	—	—
MW-1	03/14/96	32.79	4.50	28.29	0.00	610	450	0.75	0.54	1.5	59	—	—	—	ND	—
MW-1	05/21/96	32.79	5.64	27.15	0.00	ND	ND	ND	ND	ND	ND	—	—	—	—	—
MW-1	08/13/96	32.79	9.76	23.03	0.00	ND	ND	ND	ND	ND	ND	—	—	—	—	—
MW-1	11/08/96	32.79	10.24	22.55	0.00	ND	ND	ND	0.92	ND	2.1	ND	—	—	—	—
MW-1	01/31/97	32.79	3.83	28.96	0.00	ND	ND	ND	0.85	ND	ND	2.6	ND	—	—	—
MW-1	04/22/97	32.79	9.14	23.65	0.00	ND	ND	ND	ND	ND	ND	ND	—	—	—	—
MW-1†	07/29/97	32.79	10.18	22.61	0.00	ND	60****	0.84	0.95	ND	1.6	36	—	—	—	—
MW-1†	10/09/97	32.79	10.46	22.33	0.00	ND	56****	ND	ND	ND	ND	ND	—	—	—	—
MW-1†	01/23/98	32.79	3.95	28.84	0.00	ND	33	ND	ND	ND	ND	ND	—	—	—	—
MW-1	04/22/98	32.79	5.33	27.46	0.00	ND	ND	ND	ND	ND	ND	ND	—	—	—	1.25
MW-1	07/21/98	32.79	9.17	23.62	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	4.34
MW-1	10/20/98	32.79	10.41	22.38	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	2.49
MW-1	01/27/99	32.79	5.51	27.28	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	5.25
MW-2	03/14/96	32.80	4.51	28.29	0.00	560	250	2.0	0.96	4.3	11	—	—	—	ND	—
MW-2	05/21/96	32.80	5.65	27.15	0.00	730	560	5.1	1.4	6.7	5.9	—	—	—	—	—
MW-2	08/13/96	32.80	10.14	22.66	0.00	490	380*	25	3.5	7.2	13	—	—	—	—	—
MW-2	11/08/96	32.80	10.70	22.10	0.00	520	160***	80	2.7	14	66	6.1	—	—	—	—
MW-2	01/31/97	32.80	3.84	28.96	0.00	74	130*	ND	ND	ND	ND	ND	—	—	—	—
MW-2	04/22/97	32.80	9.61	23.19	0.00	260	430	2.7	ND	2.5	ND	ND	—	—	—	—
MW-2†	07/29/97	32.80	10.53	22.27	0.00	320	150******	28	1.2	10	ND	ND	—	—	—	—
MW-2†	10/09/97	32.80	10.87	21.93	0.00	460	160*	43	2.8	2.0	2.6	2.6	—	—	—	—
MW-2†	01/23/98	32.80	3.75	29.05	0.00	ND	54	ND	ND	ND	ND	ND	—	—	—	—
MW-2	04/22/98	32.80	5.36	27.44	0.00	180	540	1.2	0.3	0.4	ND	ND	—	—	—	0.85
MW-2	07/21/98	32.80	9.55	23.25	0.00	80	—	8.9	2.1	0.6	2.5	ND	—	—	—	1.04
MW-2	10/20/98	32.80	10.75	22.05	0.00	50	—	0.8	0.7	ND	0.8	ND	—	—	—	1.12
MW-2	01/27/99	32.80	5.53	27.27	0.00	ND	—	0.6	ND	ND	ND	ND	—	—	—	0.99
MW-3	03/14/96	32.80	9.55	23.25	0.00	4,200	1,200	220	30	140	520	—	—	ND	ND	—
MW-3	05/21/96	32.80	10.16	22.64	0.00	8,500	2,800	710	110	440	1,700	—	—	—	—	—
MW-3	08/13/96	32.80	11.18	21.62	0.00	5,000	2,300**	430	ND	200	360	—	—	—	—	—
MW-3	11/08/96	32.80	11.51	21.29	0.00	8,400	2,900*	890	82	790	1,700	73	ND	—	—	—
MW-3	01/31/97	32.80	7.90	24.90	0.00	16,000	7,500*	660	85	960	1,800	ND	—	—	—	—
MW-3	04/22/97	32.80	10.64	22.16	0.00	8,000	2,700	340	33	400	490	200	ND	—	—	—
MW-3†	07/29/97	32.80	11.36	21.44	0.00	9,800	2,300*	330	ND	530	530	ND	—	—	—	—
MW-3†	10/09/97	32.80	11.52	21.28	0.00	7,300	2,600*	300	ND	430	460	270	ND	—	—	—
MW-3†	01/23/98	32.80	7.50	25.30	0.00	6,100	2,300	190	23	330	320	ND	—	—	—	—
MW-3	04/22/98	32.80	6.81	25.99	0.00	4,900	2,600	140	12	250	230	ND	ND	—	—	0.45

Groundwater Levels and Chemical Analysis

Former Mobil Station 99-105

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MTBE 8020 (ppb)	MTBE 8240 or 8260 (ppb)	TOG (ppb)	Lead (ppb)	Dissolved Oxygen (mg/L)
MW-3	07/21/98	32.80	10.65	22.15	0.00	7,400	—	250	16	400	370	74	ND	—	—	0.78
MW-3	10/20/98	32.80	11.57	21.23	0.00	6,700	—	200	18	350	350	ND	ND	—	—	0.69
MW-3	01/27/99	32.80	9.11	23.69	0.00	3,100	—	74	4	94	39	13	—	—	—	1.20
MW-4	03/14/96	31.50	4.92	26.58	0.00	12,000	3,500	2,200	140	880	2,000	—	—	—	ND	—
MW-4	05/21/96	31.50	8.60	22.90	0.00	11,000	4,200	1,700	ND	930	470	—	—	—	—	—
MW-4	08/13/96	31.50	10.02	21.50	0.02	—	—	—	—	—	—	—	—	—	—	—
MW-4	11/08/96	31.50	10.28	21.33	0.15	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/31/97	31.50	7.88	23.62	0.00	23,000	8,200*	980	68	1,100	1,400	ND	—	—	—	—
MW-4	04/22/97	31.50	7.40	24.10	0.00	8,800	4,500	950	ND	610	130	ND	—	—	—	—
MW-4	07/29/97	31.50	9.85	21.74	0.12	—	—	—	—	—	—	—	—	—	—	—
MW-4	10/09/97	31.50	10.35	21.38	0.30	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/23/98	31.50	4.68	27.51	0.92	—	—	—	—	—	—	—	—	—	—	—
MW-4	04/22/98	31.50	6.39	25.22	0.14	—	—	—	—	—	—	—	—	—	—	—
MW-4	07/21/98	31.50	7.10	24.55	0.20	—	—	—	—	—	—	—	—	—	—	—
MW-4	10/20/98	31.50	9.03	22.60	0.17	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/27/99	31.50	5.37	26.18	0.07	—	—	—	—	—	—	—	—	—	—	—
AB-1	03/05/98	—	—	—	—	1,600	—	31	5.3	79	130	ND	—	—	—	—
AB-2	03/05/98	—	—	—	—	ND	—	ND	2.9	0.9	5.7	ND	—	—	—	—
AB-3	03/05/98	—	—	—	—	6,800	—	680	100	1,500	2,300	230	—	—	—	—
AB-4	03/05/98	—	—	—	—	8,500	—	240	ND	260	720	ND	—	—	—	—
AB-6	03/05/98	—	—	—	—	12,000	—	350	ND	310	100	ND	—	—	—	—
AB-9	03/05/98	—	—	—	—	1,000	—	57	12	44	93	ND	—	—	—	—
AB-10	03/05/98	—	—	—	—	200	—	3.0	1.2	3.2	2.8	ND	—	—	—	—
AB-11	03/05/98	—	—	—	—	ND	—	ND	ND	ND	ND	ND	—	—	—	—
AB-12	03/05/98	—	—	—	—	8,800	—	660	50	630	940	37	—	—	—	—
AB-13	03/05/98	—	—	—	—	210	—	11	0.8	10	15	ND	—	—	—	—

NOTES:

ppb = parts per billion
mg/L = milligrams per liter
TPH-G = total petroleum hydrocarbons as gasoline
TPH-D = total petroleum hydrocarbons as diesel
TOG = total oil and grease
MTBE = methyl-tert butyl ether

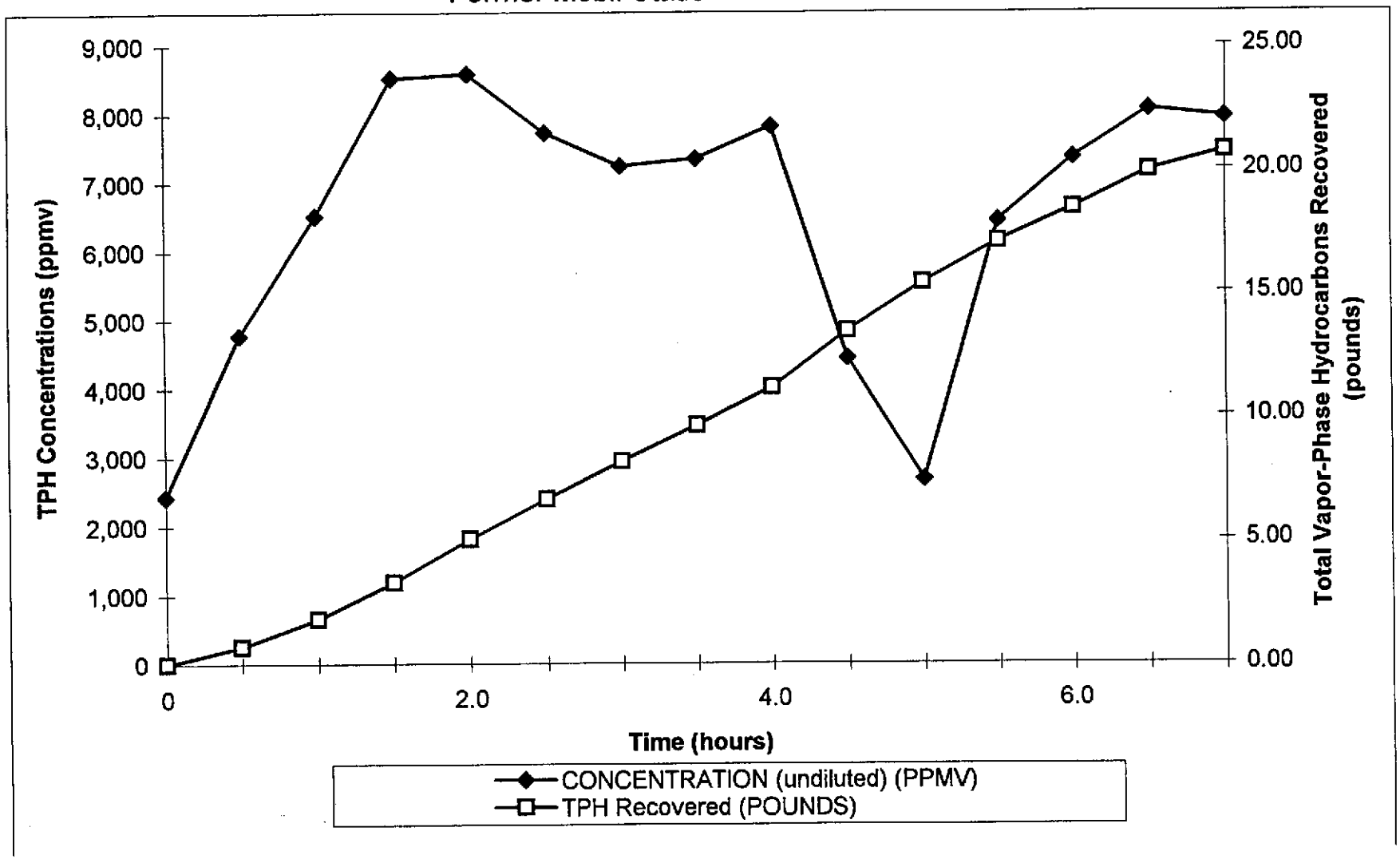
— = not measured/not analyzed
ND = not detected at or above method detection limit
* = diesel and unidentified hydrocarbons <C15>C25
** = diesel and unidentified hydrocarbons <C20
*** = unidentified hydrocarbons >C18
**** = diesel and unidentified hydrocarbons >C20

† = well sampled using no-purge method

Chart 1

Influent TPH Concentrations and Total Vapor-Phase Hydrocarbons Recovered versus Time

Former Mobil Station 99-105 11/19/98



APPENDIX A

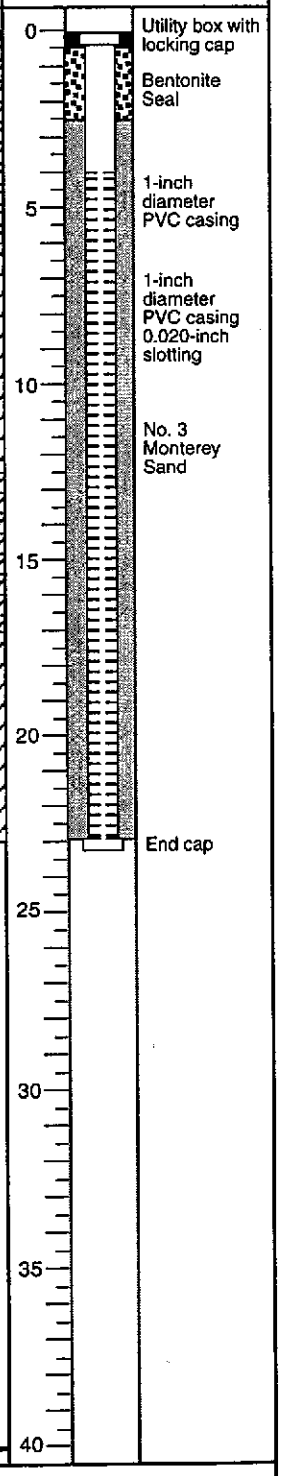
BORING LOGS

PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 23.0 feet DEPTH TO WATER: 10.8 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	3 inches of concrete.		
					CLAYEY SAND: dark grayish-brown, hard, moist, medium plasticity.	SC	
				5			
	100				SANDY CLAY: dark gray, firm, moist, medium plasticity, moderate petroleum odor.	CL	
	150	10			CLAY: olive gray, firm, moist, medium plasticity, strong petroleum odor.		
	700			10			
	80						
					CLAYEY SAND: olve gray, weak cementation, moist, fine-grained, strong hydrocarbon odor.	SC	
				15	Yellowish brown, moderate cementation, moist, medium-grained, fine gravels, slight hydrocarbon odor.		
	30				SANDY CLAY: yellowish brown, firm consistency, fine gravels, no petroleum odor.	CL	
	40			20			
	10						
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

MP-1
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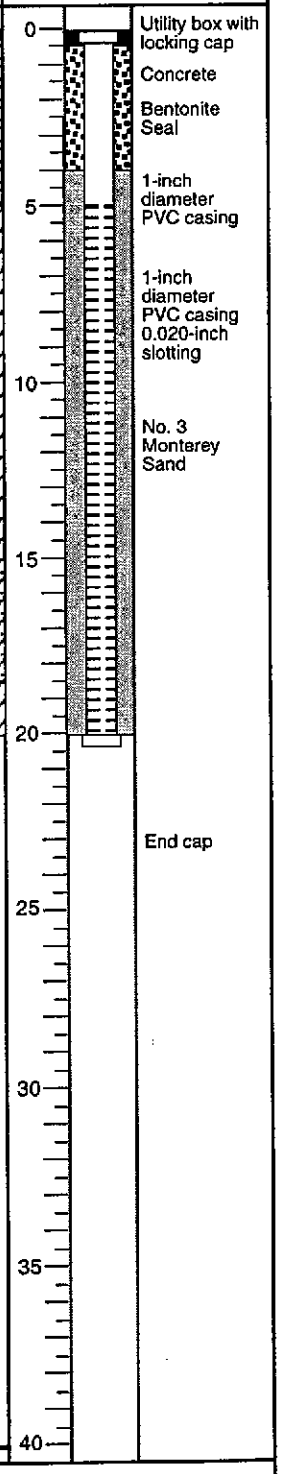
PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 20.0 feet DEPTH TO WATER: 10.2 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. 3 inches of concrete. CLAYEY SAND: dark grayish-brown, hard, moist, medium plasticity.	SC	
				5	SANDY CLAY: dark gray, firm, moist, medium plasticity, moderate petroleum odor.	CL	
	100	270			Olive gray.		
	150	140		10			
				15	CLAYEY SAND: yellowish brown, weak cementation, moist, medium-grained, slight petroleum odor.	SC	
	0				SANDY CLAY: reddish brown, soft, moist, low plasticity, no petroleum odor.	CL	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

MP-2
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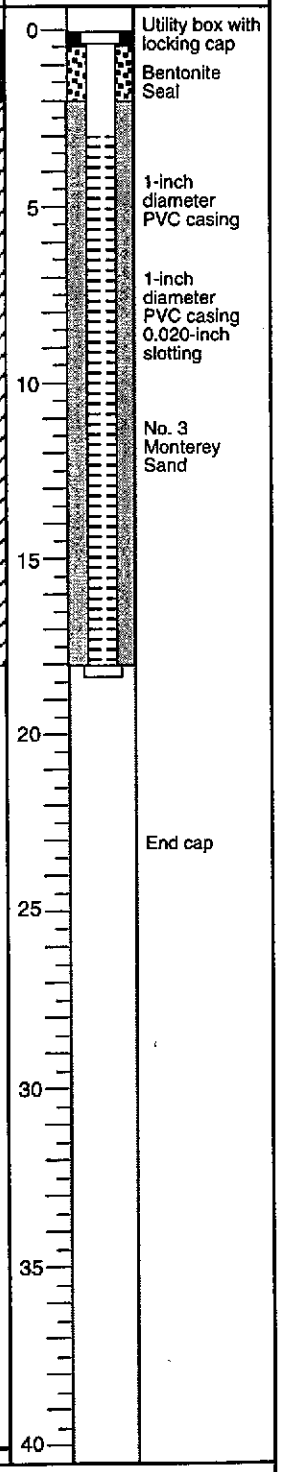
PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8.5 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. Gravelly fill.	Fill	
	50			5	CLAY: dark gray, hard, moist, medium plasticity, moderate petroleum odor.	CL	
		230			Very hard, strong petroleum odor.		
	20			10	Fine gravels.		
	25 80			15	GRAVELLY CLAY: yellowish brown, firm, medium-grained sand.		
					SANDY CLAY: yellowish brown.		
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

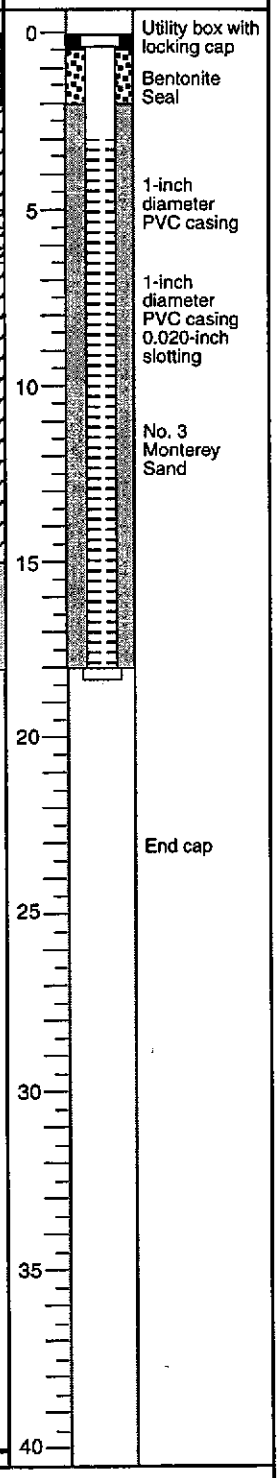
MP-3
PAGE 1 OF 1

PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8.8 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. Gravelly fill.	Fill	
					CLAY: dark gray, hard, moist, medium plasticity, moderate petroleum odor.	CL	
	400	120		5	CLAYEY SAND: olive gray, soft, moist, fine-grained, strong hydrocarbon odor.	SC	
	375				SANDY CLAY: olive gray, firm, moist, medium plasticity.	CL	
		18		10	Fine gravels.		
	200						
	70			15	SAND: brownish yellow, weak cementation, moist, medium-grained, no petroleum odor.	SW	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

MP-4
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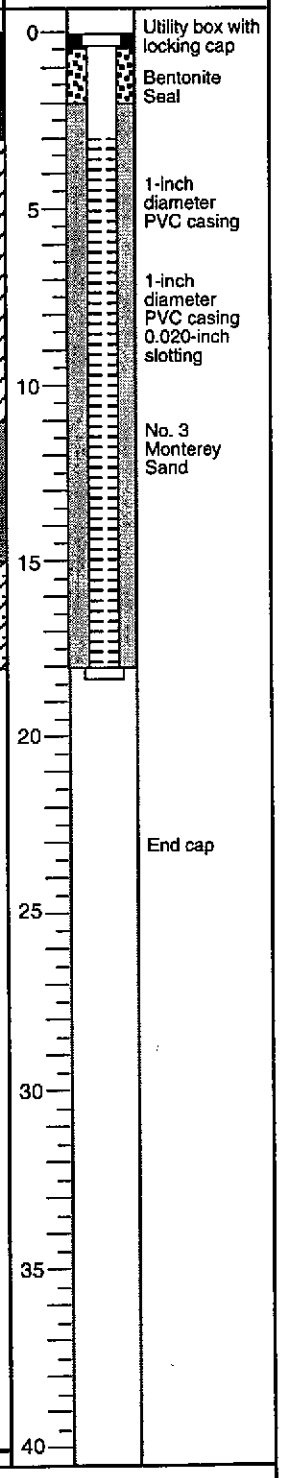
PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8.2 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. 1 foot of concrete. Gravelly fill.	Fill	
	200	6.4		5	SANDY CLAY: dark gray, firm, moist, medium plasticity.	CL	
	800	220		10	SAND: dark gray, weak cementation, moist, fine-grained, poorly graded, moderate hydrocarbon odor.	SP	
	45			15	CLAYEY SAND: brownish yellow, weak cementation, moist, well graded with fine gravels, no hydrocarbon odor.	SC	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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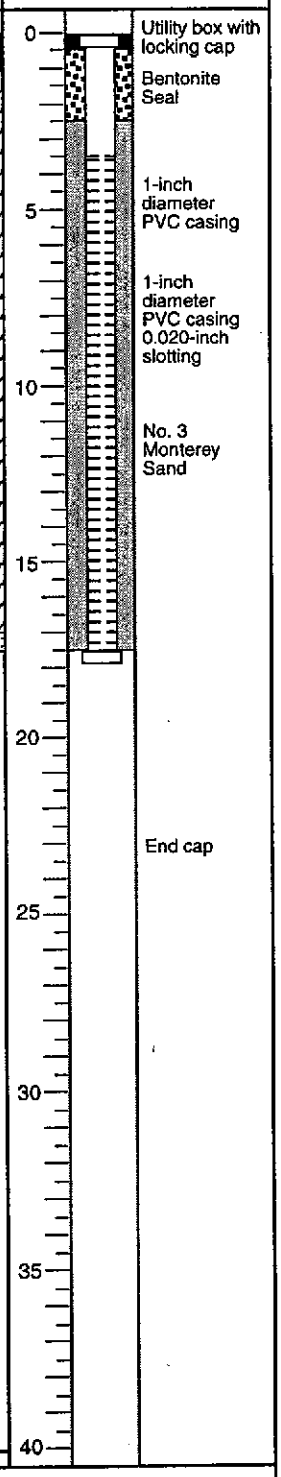
PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 17.5 feet DEPTH TO WATER: 7.95 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. 6 inches asphalt. Gravelly fill to 1 foot.	Fill	
	0	ND		5	GRAVELLY CLAY: dark grayish brown, firm, moist, medium plasticity, no petroleum odor.	CL	
	110	240		10			
	0			15	SILTY SAND: reddish brown, moderate cementation, moist, fine gravels, no petroleum odor.	SM	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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APPENDIX B

SOIL SAMPLING PROCEDURES

GENERAL FIELD PROCEDURES

A description of the general field procedures used during site monitoring point installation activities is presented below. For an overview of protocol, refer to the appropriate section(s).

DRILLING AND SOIL SAMPLING

Soil borings were advanced using a truck-mounted Geoprobe™ rig. Borings were completed as monitoring points for DPVE activities.

Soil samples were obtained for soil description, field hydrocarbon vapor screening, and possible laboratory analysis. Soil samples were retrieved from the borings by one of two methods: 1) continuously, using a 1 and 3/4-inch diameter 4-foot-long, continuous-core macro core sampler lined with acetate or brass sleeves, or; 2) at specific intervals using an 1-inch diameter 2-foot-long, continuous-core micro core sampler lined with acetate or brass sleeves , each advanced into the soil with a weighted or vibrating hammer.

During drilling activities, soil adjacent to the laboratory sample is screened for combustible vapors using a combustible gas indicator (CGI) or equivalent field instrument. For each hydrocarbon vapor screening event, a 6-inch-long by 2.5-inch-diameter sample insert is filled approximately 1/3 full with the soil sample, capped at both ends, and shaken. The probe is then inserted through a small opening in the cap, and a reading is taken after approximately 15 seconds and recorded on the boring log. The remaining soil recovered is removed from the sample insert or sampler, and described in accordance with the Unified Soil Classification System. For each sampling interval, field estimates of soil type, density/consistency, moisture, color, and grading were recorded on the boring logs.

SOIL SAMPLE HANDLING

Upon retrieval, soil samples were immediately removed from the sampler, sealed with Teflon sheeting and polyurethane caps, and wrapped with tape. Each sample is labeled with the project number, boring/well number, sample depth, geologist's initials, and date of collection. After the samples have been labeled and documented in the chain of custody record, they were placed in a cooler with ice at approximately 4 degrees Celsius (°C) prior to and during transport to a state-certified laboratory for analysis. Samples not selected for immediate analysis may be transported in a cooler with ice and archived in a frostless refrigerator at approximately 4°C for possible future testing.

CHAIN OF CUSTODY PROTOCOL

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

DECONTAMINATION

Drilling/Geoprobe™ equipment is decontaminated by steam cleaning before being brought onsite. The rods were also steam cleaned before each new boring is commenced. Prior to use, the sampler and sampling tubes were brush-scrubbed in a Liqui-nox and potable water solution and rinsed twice in clean potable water.

APPENDIX C

DPVE PROTOCOL AND FIELD FORMS

DUAL-PHASE VAPOR EXTRACTION (DPVE) FIELD PROTOCOL

Following is a general description of the Dual-Phase Vapor Extraction field protocol and data acquisition procedures.

FIELD PROTOCOL

The dual-phase vacuum extraction system consisted of a high vacuum liquid ring pump, an in-line liquid knockout tank, and a thermal/catalytic oxidizer. Vapor and dissolved phased hydrocarbons were extracted from above and/or below the groundwater table by inserting a stinger into two extraction wells (MW-3 and MW-4) and applying a vacuum. Each stinger was sealed at the top of the well casing with a sanitary well seal, and manifold together. An integrated transfer pump transferred the extracted liquids from the knockout vessel to an onsite Baker Tank. The hydrocarbon vapors from the knockout vessel were abated by the all electric oxidizer. Electrical power for all equipment was provided through the use of a portable diesel generator.

PRESSURE MONITORING

Suction pressure was recorded with a magnehelic gauge fitted at the influent end of the blower to determine air flow rate. Well caps fitted with magnehelic pressure gauges with sensitivity levels as low as 0.01 in. H20 were used to record the pressure drawdown data from the observation wells.

AIR FLOW RATE

The air flow rate is obtained by recording the pressure on a magnehelic gauge fitted on a Pitot tube at the influent end of the vapor conduit hose. Vacuum readings are converted to flow rate by referring to the appropriate Pitot tube size conversion chart.

VAPOR EXTRACTION EQUIPMENT

The vapor extraction test equipment used is the Stealth 300 cfm catalytic oxidizer. The system uses a generator to produce electricity to power the unit. The system extracts vapor using the vacuum created by the unit. The extracted vapors are heated and combusted in the catalytic oxidizer

GROUND WATER MONITORING

All observation and extraction wells are monitored prior to system startup. Depth to water is recorded in the observation well(s) during the test as well as after the test is completed.

Dual-Phase Vacuum Extraction Field Sheet

oject No.: 41-0123.50
Task No.:
chnician: DY CG

Client: Mobil
Site: 99-105
Date: 10-19-98

	Cumulative Wells and System Operation	Extraction Well # 1	Extraction Well # 2	Extraction Well # 3	Extraction Well # 4
Well ID		MW-4	MW-3		
DTW (ft)		8.09	10.91		
n to FP (ft)		8.0	NONE		
reen Int (ft)					
g Diam. (in)					
DO (mg/L)					

Time	Total Well Flow Rate (cfm)	Total Well Inf. Conc. (ppmv)	Total Well Vacuum (in. of Hg)	System Flowrate (cfm)	System Inf. Conc (ppm)	System Temp (deg. F)	System Eff. Conc. (ppmv)	Extraction wells open	Flow Rate (cfm)	HC Conc. (ppmv)	Vacuum (in. of Hg)	Stinger Depth (ft)	Flow Rate (cfm)	HC Conc. (ppmv)	Vacuum (in. of Hg)	Stinger Depth (ft)	Flow Rate (cfm)	HC Conc. (ppmv)	Vacuum (in. of Hg)	Stinger Depth (ft)	Flow Rate (cfm)	HC Conc. (ppmv)	Vacuum (in. of Hg)	Stinger Depth (ft)
8:30	23.5	2430	26			1240		1				7.5												
9:00	23.8	4780	26																					
9:30	23.2	6520	26			1203	⊖																	
10:00	24.6	8530	24.5																					
10:30	23.7	8590	25																					
11:00	23.8	7730	24.5									8												
11:30	24.3	7240	24.5																					
12:00	24.2	7350	24																					
12:30	23.9	7870	24																					
1:00	66.5	4430	20.5					1,2	24.3	8030	24.5		64.5	1290	20	6'								
1:30	66.0	2670	20						23.8	6560	24.5		64.9	1130	20									
2:00	23.0	6440	24					1																
2:30	23.6	7360	24.5																					
3:00	23.9	8060	24																					
3:15	23.0	7950	24																					

s:

Form #162 - Effective Date: 2-13-92

VAPOR EXTRACTION TEST

Project No. 41-0123-50 Site: 99-105

Task No. _____ Date: 11-19-98

Start Time. 8:30 Stop Time. _____

Vacuum (in. H_2O)

	Extraction Well		Observation Wells				
Well I.D.	MW-4		MW-2	MW-1	MW-3	MW-4	MP-6
Distance (feet)							
Casing Dia. (inches)							
Screen Interval (ft)							
Time (min)	Flow Rate (cfm)	HC Conc. (ppm)	Vacuum (inch H20)				
9:00 ~~0:00~~			0	0	0	—	.01
9:30 ~~0:05~~			0	.01	.01		.01
10:00 ~~0:10~~			.01	.01	.02	—	.01
10:30 ~~0:15~~			.01	.01	.02	—	.01
11:00 ~~0:20~~			.01	.01	.03	—	.02
11:30 ~~0:25~~			.02	.02	.04	—	.02
12:00 0:30			.02	.02	.03	—	.02
12:30 0:35			.01	.02	.03	—	.015
1:00 0:40			.01	.02	—	—	.015
1:30 0:45			.01	.02	—	—	.015
2:00 0:50			.01	.02	.01	—	.015
2:30 0:55			.02	.01	.02	—	.01
3:00 1:00			.01	.01	.02	—	.01
1:10							
1:20							
1:30							
1:40							
1:50							
2:00							
2:30							
3:00							
3:30							
4:00							
4:30							
5:00							
6:00							
7:00							
8:00							
9:00							
10:00							
12:00							
14:00							
16:00							
18:00							
20:00							
25:00							
30:00							
40:00							
50:00							
60:00							
70:00							
80:00							
90:00							
100:00							

Form 8182 - Effective Date: 2-12-92

VAPOR EXTRACTION TEST

Project No. 41-0123-50 Site: 99-105

Task No. _____ Date: 11-19-98

Start Time 8:30 Stop Time _____

Vacuum (in. H_2O)

	Extraction Well		Observation Wells				
Well I.D.			MP-3	MP-4	MP-5	MP-2	MP-1
Distance (feet)							
Casing Dia. (inches)							
Screen Interval (ft)							
Time (min)	Flow Rate (cfm)	HC Conc. (ppm)	Vacuum (inch H20)				
9:00 ~~0:00~~			.01	.01	.02	.02	.02
9:30 ~~0:05~~			.02	.01	.02	.02	.02
10:00 ~~0:10~~			.02	0	.02	.01	.02
10:30 ~~0:15~~			.02	0	.02	.02	.03
11:00 ~~0:20~~			.02	.02	.02	.02	.03
11:30 ~~0:25~~			.02	.04	.02	.01	.03
12:00 0:30			.02	.04	.02	.01	.035
12:30 0:35			.02	.01	.02	.01	.03
1:00 0:40			.03	.01	.02	0	.03
1:30 0:45			.03	.01	.02	0	.03
2:00 0:50			.03	.01	.02	0	.03
2:30 0:55			.02	.01	.02	.02	.04
3:00 1:00			.02	.01	.02	.02	.04
1:10							
1:20							
1:30							
1:40							
1:50							
2:00							
2:30							
3:00							
3:30							
4:00							
4:30							
5:00							
6:00							
7:00							
8:00							
9:00							
10:00							
12:00							
14:00							
16:00							
18:00							
20:00							
25:00							
30:00							
40:00							
50:00							
60:00							
70:00							
80:00							
90:00							
100:00							

Form #182 - Effective Date: 2-13-92

VAPOR EXTRACTION TEST

Project No. 41-0123-50 Site: 99-105

Task No. _____ Date: 11-19-98

Start Time 8:30 Depth To Water Stop Time. _____

	Extraction Well		Observation Wells				
Well I.D.			MW-2	MW-1	MW-3	MW-4	MP-6
Distance (feet) DTW(ft)			10.26'	9.82'	10.91'	8.09'	Subtract 0.90'
Casing Dia. (inches)			4"	4"	4"	4"	
Screen Interval (ft)							
Time (min)	Flow Rate (cfm)	HC Conc. (ppm)	DTW(ft)			~~Vacuum (inch H2O)~~	
9:00 0:00			10.28	9.83	10.95	—	—
9:30 0:05			10.28	9.83	10.97	—	—
10:00 0:10			10.28	9.83	10.98	—	—
10:30 0:15			10.28	9.83	10.98	—	—
11:00 0:20			10.31	9.86	11.06	—	15.24
11:30 0:25			10.31	9.86	11.06	—	15.24
12:00 0:30			10.31	9.86	11.06	—	15.24
12:30 0:35			10.31	9.86	11.06	—	15.24
1:00 0:40			10.33	9.87	—	—	15.24
1:30 0:45			10.33	9.87	—	—	15.24
2:00 0:50			10.37	9.87	11.10	—	15.24
2:30 0:55			10.31	9.87	11.07	—	15.24
3:00 1:00			10.31	9.87	11.07	—	15.24
1:10							
1:20							
1:30							
1:40							
1:50							
2:00							
2:30							
3:00							
3:30							
4:00							
4:30							
5:00							
6:00							
7:00							
8:00							
9:00							
10:00							
12:00							
14:00							
16:00							
18:00							
20:00							
25:00							
30:00							
40:00							
50:00							
60:00							
70:00							
80:00							
90:00							
100:00							

← New Soil

Form #162 - Effective Date: 2-13-92

VAPOR EXTRACTION TEST

Project No. 41-0123-50 Site: 99-105

Task No. _____ Date: 11-19-98

Start Time. 8:30 Stop Time. _____

Depth to Water

	Extraction Well		Observation Wells				
Well I.D.			MP-3	MP-4	MP-5	MP-2	MP-1
Distance (feet)			Subtract 1.90	Subtract 2.25	Subtract 1.27	Subtract 1.28	Subtract 0.97
Casing Dia. (inches)							
Screen Interval (ft)							
Time (min)	Flow Rate (cfm)	HC Conc. (ppm)	DTW (ft)		Vacuum (inch H20)		
9:00 ~~0:00~~			—	—	—	—	—
9:30 ~~0:05~~			—	—	—	—	—
10:00 ~~0:10~~			—	—	—	—	—
10:30 ~~0:15~~			—	—	—	—	—
11:00 ~~0:20~~			11.27	4.18	13.61	12.00	11.90 New Sound
11:30 ~~0:25~~			11.27	4.18	13.60	12.00	11.90
12:00 0:30			11.27	4.18	13.61	12.00	11.90
12:30 0:35			11.27	4.18	13.61	12:00	11.90
1:00 0:40			11.28	4.18	13.60	12:00	11.91
1:30 0:45			11.28	4.18	13.60	12:00	11.91
2:00 0:50			11.28	4.18	13.60	12.00	11.91
2:30 0:55			11.30	4.18	13.63	12:00	11.91
3:00 1:00			11.30	4.18	13.62	12:00	11.91
1:10							
1:20							
1:30							
1:40							
1:50							
2:00							
2:30							
3:00							
3:30							
4:00							
4:30							
5:00							
6:00							
7:00							
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9:00							
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16:00							
18:00							
20:00							
25:00							
30:00							
40:00							
50:00							
60:00							
70:00							
80:00							
90:00							
100:00							

APPENDIX D

SOIL LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041856
Collected: 11/16/98 at 09:23 by KR

Submitted: 11/18/98 Reported: 12/ 5/98
Discard: 1/ 5/99

MP1-7.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	N.D.	0.1	mg/kg
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D.	0.005	mg/kg
2604	Toluene	0.007	0.005	mg/kg
2606	Ethylbenzene	0.013	0.005	mg/kg
5327	Total Xylenes	N.D. #	0.060	mg/kg
5555	TPH - GRO CA LUFT (Soils)	10.	1.	mg/kg

According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).
Due to interferences from the sample matrix, the limit of quantitation for the xylenes determination was increased.

QUALITY CONTROL REPORT

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464 Methyl tertiary butyl ether		Batch: 98324A33									
0.1	mg/kg	N.D.		99	101	2	111			54	129
5550 8015 Mod. for Gasoline & BTEX		Batch: 98324A33									
2603 Benzene											
0.005	mg/kg	N.D.		86	87	1	95			65	118
2604 Toluene											
0.005	mg/kg	N.D.		83	84	1	92			72	131
2606 Ethylbenzene											
0.005	mg/kg	N.D.		91	93	2	101			73	123
5327 Total Xylenes											
0.060	mg/kg	N.D.		86	87	2	95			72	126
5555 TPH - GRO CA LUFT (Soils)											

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
03:13:19 D 0001 10 REP 134751 641362
288 0.00 00005500 ASR000

Donald I Shuly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041856
Collected: 11/16/98 at 09:23 by KR

Submitted: 11/18/98 Reported: 12/ 5/98
Discard: 1/ 5/99

MP1-7.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
1.	mg/kg	N.D.		80	82	2	94			76	117

SURROGATE SUMMARY

TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether	TFT	82	62	131
5550 8015 Mod. for Gasoline & BTEX	TFT-P	82	62	131
	TFT-F	86	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1		11/24/98 0243	Stephanie A. Selis
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1		11/24/98 0243	Stephanie A. Selis

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald L Shelly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041857
Collected: 11/16/98 at 11:00 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP2-7.0 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	N.D.	0.1	mg/kg
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D. #	0.02	mg/kg
2604	Toluene	0.03	0.02	mg/kg
2606	Ethylbenzene	0.29	0.02	mg/kg
5327	Total Xylenes	2.1	0.050	mg/kg
5555	TPH - GRO CA LUFT (Soils)	270.	2.	mg/kg
	According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).			
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
	Due to interferences from the sample matrix, the limit of quantitation for the benzene determination was increased.			

QUALITY CONTROL REPORT

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464 Methyl tertiary butyl ether		Batch: 98324A33									
0.1	mg/kg	N.D.		99	101	2	111			54	129
5550 8015 Mod. for Gasoline & BTEX		Batch: 98324A33									
2603 Benzene											
0.02	mg/kg	N.D.		86	87	1	95			65	118
2604 Toluene											
0.02	mg/kg	N.D.		83	84	1	92			72	131

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
22:10:58 D 0001 10 134751 641362
320 0.00 00005500 ASR000

Donald L. Shelly
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041857
Collected: 11/16/98 at 11:00 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP2-7.0 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2606	Ethylbenzene											
	0.02	mg/kg	N.D.		91	93	2	101			73	123
5327	Total Xylenes											
	0.050	mg/kg	N.D.		86	87	2	95			72	126
5555	TPH - GRO CA LUFT (Soils)											
	2.	mg/kg	N.D.		80	82	2	94			76	117

SURROGATE SUMMARY

TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether	TFT	15	62	131
5550 8015 Mod. for Gasoline & BTEX	TFT-P	15	62	131
	TFT-F	18	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1		11/24/98 0322	Stephanie A. Selis
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1		11/24/98 0322	Stephanie A. Selis

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald J. Shelly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041858
Collected: 11/16/98 at 11:15 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP2-10.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	0.15	0.1	mg/kg
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	0.08	0.02	mg/kg
2604	Toluene	N.D. #	0.02	mg/kg
2606	Ethylbenzene	0.31	0.02	mg/kg
5327	Total Xylenes	N.D. #	5.0	mg/kg
5555	TPH - GRO CA LUFT (Soils)	140.	2.	mg/kg
	According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).			
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
	Due to interferences from the sample matrix, the limits of quantitation for the toluene and xylenes determinations were increased.			

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464	Methyl tertiary butyl ether		Batch: 98322A34									
	0.1	mg/kg	N.D.		99	95	4	102			54	129
5550	8015 Mod. for Gasoline & BTEX		Batch: 98322A34									
2603	Benzene											
	0.02	mg/kg	N.D.		104	102	2	109			65	118
2604	Toluene											
	0.02	mg/kg	N.D.		99	99	1	105			72	131

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
22:11:35 D 0001 10 134751 641362
320 0.00 00005500 ASR000

Donald L. Shelly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041858
Collected: 11/16/98 at 11:15 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP2-10.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2606 Ethylbenzene											
0.02	mg/kg	N.D.		110	107	3	112			73	123
5327 Total Xylenes											
5.0	mg/kg	N.D.		102	101	1	106			72	126
5555 TPH - GRO CA LUFT (Soils)											
2.	mg/kg	N.D.		107	105	2	116			76	117

SURROGATE SUMMARY

TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether	TFT	13	62	131
5550 8015 Mod. for Gasoline & BTEX	TFT-P	13	62	131
	TFT-F	13	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL ID	ANALYSIS DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1	11/24/98 0556	Stephanie A. Selis
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1	11/24/98 0556	Stephanie A. Selis

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald L. Shirley Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041859
Collected: 11/16/98 at 12:10 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP3-7.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	0.28	0.1	mg/kg
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D. #	0.02	mg/kg
2604	Toluene	0.10	0.02	mg/kg
2606	Ethylbenzene	1.6	0.02	mg/kg
5327	Total Xylenes	N.D. #	5.0	mg/kg
5555	TPH - GRO CA LUFT (Soils)	230.	2.	mg/kg
	According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).			
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
	Due to interferences from the sample matrix, the limits of quantitation for the benzene and xylenes determinations were increased.			

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464	Methyl tertiary butyl ether		Batch: 98322A34									
	0.1	mg/kg	N.D.		99	95	4	102			54	129
5550	8015 Mod. for Gasoline & BTEX		Batch: 98322A34									
2603	Benzene											
	0.02	mg/kg	N.D.		104	102	2	109			65	118
2604	Toluene											
	0.02	mg/kg	N.D.		99	99	1	105			72	131

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
22:12:12 D 0001 10 134751 641362
320 0.00 00005500 ASR000

Donald I Stark
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041859
Collected: 11/16/98 at 12:10 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP3-7.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2606	Ethylbenzene											
	0.02	mg/kg	N.D.		110	107	3	112			73	123
5327	Total Xylenes											
	5.0	mg/kg	N.D.		102	101	1	106			72	126
5555	TPH - GRO CA LUFT (Soils)											
	2.	mg/kg	N.D.		107	105	2	116			76	117

SURROGATE SUMMARY

TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether 5550 8015 Mod. for Gasoline & BTEX	TFT	14	62	131
	TFT-P	14	62	131
	TFT-F	23	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL ID	ANALYSIS DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1	11/24/98 0641	Stephanie A. Selis
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1	11/24/98 0641	Stephanie A. Selis

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald L. Shelly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041860
Collected: 11/16/98 at 13:00 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP4-5.0 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	0.19	0.1	mg/kg
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D. #	0.02	mg/kg
2604	Toluene	N.D. #	0.05	mg/kg
2606	Ethylbenzene	0.35	0.02	mg/kg
5327	Total Xylenes	N.D. #	5.0	mg/kg
5555	TPH - GRO CA LUFT (Soils)	120.	2.	mg/kg
	According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).			
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
	Due to interferences from the sample matrix, the limits of quantitation for the above determinations were increased.			

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464	Methyl tertiary butyl ether		Batch: 98322A34									
	0.1	mg/kg	N.D.		99	95	4	102			54	129
5550	8015 Mod. for Gasoline & BTEX		Batch: 98322A34									
2603	Benzene											
	0.02	mg/kg	N.D.		104	102	2	109			65	118
2604	Toluene											
	0.05	mg/kg	N.D.		99	99	1	105			72	131

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
22:12:49 D 0001 10 134751 641362
320 0.00 00005500 ASR000

Donald L. Shelly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

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A division of Thermo Analytical Inc.

LLI Sample No. SW 3041860
Collected: 11/16/98 at 13:00 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP4-5.0 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2606 Ethylbenzene											
0.02	mg/kg	N.D.		110	107	3	112			73	123
5327 Total Xylenes											
5.0	mg/kg	N.D.		102	101	1	106			72	126
5555 TPH - GRO CA LUFT (Soils)											
2.	mg/kg	N.D.		107	105	2	116			76	117

SURROGATE SUMMARY

TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether	TFT	13	62	131
5550 8015 Mod. for Gasoline & BTEX	TFT-P	13	62	131
	TFT-F	20	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1		11/24/98 1005	Steven A. Skiles
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1		11/24/98 1005	Stephanie A. Selis

State of California Lab Certification No. 2116

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Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald T. Shelly for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

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PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

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LLI Sample No. SW 3041861
Collected: 11/16/98 at 13:10 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP4-10.0 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	N.D.	0.1	mg/kg
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D.	0.005	mg/kg
2604	Toluene	0.013	0.005	mg/kg
2606	Ethylbenzene	0.070	0.005	mg/kg
5327	Total Xylenes	0.086	0.015	mg/kg
5555	TPH - GRO CA LUFT (Soils)	18.	1.	mg/kg

According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464	Methyl tertiary butyl ether		Batch: 98328A34									
	0.1	mg/kg	N.D.		86	103	17	92			54	129
5550	8015 Mod. for Gasoline & BTEX		Batch: 98328A34									
2603	Benzene											
	0.005	mg/kg	N.D.		90	91	1	105			65	118
2604	Toluene											
	0.005	mg/kg	N.D.		87	88	1	101			72	131
2606	Ethylbenzene											
	0.005	mg/kg	N.D.		95	96	1	116			73	123
5327	Total Xylenes											
	0.015	mg/kg	N.D.		89	90	0	103			72	126
5555	TPH - GRO CA LUFT (Soils)											
	1.	mg/kg	N.D.		95	94	1	112			76	117

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

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Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
22:13:27 D 0001 10 134751 641362
320 0.00 00005500 ASR000

Donald T. Lehman Ph.D.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

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PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

See reverse side for explanation of symbols and abbreviations.

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LLI Sample No. SW 3041861
Collected: 11/16/98 at 13:10 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP4-10.0 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH

SURROGATE SUMMARY

TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether	TFT	92	62	131
5550 8015 Mod. for Gasoline & BTEX	TFT-P	92	62	131
	TFT-F	106	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1		11/24/98 2021	Paul Vogel
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1		11/24/98 2021	Paul Vogel

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald L Shelly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

See reverse side for explanation of symbols and abbreviations.

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041862
Collected: 11/16/98 at 14:05 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP5-6.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	N.D.	0.1	mg/kg
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D.	0.005	mg/kg
2604	Toluene	N.D.	0.005	mg/kg
2606	Ethylbenzene	0.015	0.005	mg/kg
5327	Total Xylenes	0.022	0.015	mg/kg
5555	TPH - GRO CA LUFT (Soils)	6.4	1.	mg/kg

According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464	Methyl tertiary butyl ether		Batch: 98328A34									
	0.1	mg/kg	N.D.		86	103	17	92			54	129
5550	8015 Mod. for Gasoline & BTEX		Batch: 98328A34									
2603	Benzene											
	0.005	mg/kg	N.D.		90	91	1	105			65	118
2604	Toluene											
	0.005	mg/kg	N.D.		87	88	1	101			72	131
2606	Ethylbenzene											
	0.005	mg/kg	N.D.		95	96	1	116			73	123
5327	Total Xylenes											
	0.015	mg/kg	N.D.		89	90	0	103			72	126
5555	TPH - GRO CA LUFT (Soils)											
	1.	mg/kg	N.D.		95	94	1	112			76	117

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

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Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
22:14:03 D 0001 10 134751 641362
320 0.00 00005500 ASR000

Donald T. Shelly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

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2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041862
Collected: 11/16/98 at 14:05 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP5-6.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH

SURROGATE SUMMARY

	TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether		TFT	91	62	131
5550 8015 Mod. for Gasoline & BTEX		TFT-P	91	62	131
		TFT-F	96	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL ID	ANALYSIS DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1	11/24/98 2104	Paul Vogel
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1	11/24/98 2104	Paul Vogel

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald L. Shirley Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041863
Collected: 11/16/98 at 14:15 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP5-10.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	0.52	0.1	mg/kg
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D. #	0.02	mg/kg
2604	Toluene	N.D. #	0.1	mg/kg
2606	Ethylbenzene	1.4	0.02	mg/kg
5327	Total Xylenes	3.0	0.050	mg/kg
5555	TPH - GRO CA LUFT (Soils)	220.	2.	mg/kg
	According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons). Due to interferences from the sample matrix, the limits of quantitation for the above determinations were increased.			
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464	Methyl tertiary butyl ether		Batch: 98328A34									
	0.1	mg/kg	N.D.		86	103	17	92			54	129
5550	8015 Mod. for Gasoline & BTEX		Batch: 98328A34									
2603	Benzene											
	0.02	mg/kg	N.D.		90	91	1	105			65	118
2604	Toluene											
	0.1	mg/kg	N.D.		87	88	1	101			72	131

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N.D.=Not detected at or above the Reporting Limit

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Questions? Contact your Client Services Representative
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22:14:43 D 0001 10 134751 641362
320 0.00 00005500 ASR000

Donald J. Shelly Jr.
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

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PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041863
Collected: 11/16/98 at 14:15 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP5-10.5 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2606	Ethylbenzene										
0.02	mg/kg	N.D.		95	96	1	116			73	123
5327	Total Xylenes										
0.050	mg/kg	N.D.		89	90	0	103			72	126
5555	TPH - GRO CA LUFT (Soils)										
2.	mg/kg	N.D.		95	94	1	112			76	117

SURROGATE SUMMARY

TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether	TFT	18	62	131
5550 8015 Mod. for Gasoline & BTEX	TFT-P	18	62	131
	TFT-F	31	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1		11/24/98 2210	Paul Vogel
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1		11/24/98 2210	Paul Vogel

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald J. Hurley
for

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

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PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041864
Collected: 11/16/98 at 14:40 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP6-7 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2464	Methyl tertiary butyl ether	N.D.	0.1	mg/kg
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D.	0.005	mg/kg
2604	Toluene	N.D.	0.005	mg/kg
2606	Ethylbenzene	N.D.	0.005	mg/kg
5327	Total Xylenes	N.D.	0.015	mg/kg
5555	TPH - GRO CA LUFT (Soils)	N.D.	1.	mg/kg

According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464	Methyl tertiary butyl ether		Batch: 98328A34									
	0.1	mg/kg	N.D.		86	103	17	92			54	129
5550	8015 Mod. for Gasoline & BTEX		Batch: 98328A34									
2603	Benzene											
	0.005	mg/kg	N.D.		90	91	1	105			65	118
2604	Toluene											
	0.005	mg/kg	N.D.		87	88	1	101			72	131
2606	Ethylbenzene											
	0.005	mg/kg	N.D.		95	96	1	116			73	123
5327	Total Xylenes											
	0.015	mg/kg	N.D.		89	90	0	103			72	126
5555	TPH - GRO CA LUFT (Soils)											
	1.	mg/kg	N.D.		95	94	1	112			76	117

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
22:15:21 D 0001 10 134751 641362
320 0.00 00005500 ASR000

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041864
Collected: 11/16/98 at 14:40 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP6-7 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH

SURROGATE SUMMARY

	TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2464 Methyl tertiary butyl ether		TFT	103	62	131
5550 8015 Mod. for Gasoline & BTEX		TFT-P	103	62	131
		TFT-F	91	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1		11/25/98 0301	Stephanie A. Selis
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1		11/25/98 0301	Stephanie A. Selis

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald T. Shelly Jr.

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041865
Collected: 11/16/98 at 14:50 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP6-10 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS
2307	MTBE by GC/MS (soil)			
2016	Methyl t-butyl ether	N.D. #	50.	ug/kg
2464	Methyl tertiary butyl ether	0.92	0.1	mg/kg
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			
5550	8015 Mod. for Gasoline & BTEX			
2603	Benzene	N.D. #	0.02	mg/kg
2604	Toluene	N.D. #	0.02	mg/kg
2606	Ethylbenzene	1.6	0.02	mg/kg
5327	Total Xylenes	4.2	0.050	mg/kg
5555	TPH - GRO CA LUFT (Soils)	240.	2.	mg/kg
	According to the California LUFT Protocol, the quantitation for Gasoline Range Organics was performed by peak area comparison of the sample pattern to that of a gasoline reference standard (between C6 and C12 normal hydrocarbons).			
	Due to interferences from the sample matrix, the limits of quantitation for the above determinations were increased.			
	Poor surrogate recoveries were observed for this sample due to the dilution needed to perform the analysis.			

QUALITY CONTROL REPORT

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2307 MTBE by GC/MS (soil)		Batch: 98328A67									
2016 Methyl t-butyl ether											
50.	ug/kg	N.D.		73	74	0	97			70	130

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
22:16:06 D 0001 10 134751 641362
320 0.00 00015000 ASR000

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. SW 3041865
Collected: 11/16/98 at 14:50 by KR

Submitted: 11/18/98 Reported: 12/ 2/98
Discard: 1/ 2/99

MP6-10 Soil Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
Mobil: 6301 San Pablo Ave., Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
2464 Methyl tertiary butyl ether	Batch: 98328A34										
0.1	mg/kg	N.D.		86	103	17	92			54	129
5550 8015 Mod. for Gasoline & BTEX	Batch: 98328A34										
2603 Benzene											
0.02	mg/kg	N.D.		90	91	1	105			65	118
2604 Toluene											
0.02	mg/kg	N.D.		87	88	1	101			72	131
2606 Ethylbenzene											
0.02	mg/kg	N.D.		95	96	1	116			73	123
5327 Total Xylenes											
0.050	mg/kg	N.D.		89	90	0	103			72	126
5555 TPH - GRO CA LUFT (Soils)											
2.	mg/kg	N.D.		95	94	1	112			76	117

SURROGATE SUMMARY

TRIAL ID	SURROGATE	RECOVERY %	SURROGATE LIMITS LOW	SURROGATE LIMITS HIGH
2307 MTBE by GC/MS (soil)	DBFM	90	80	120
2464 Methyl tertiary butyl ether	TFT	20	62	131
5550 8015 Mod. for Gasoline & BTEX	TFT-P	20	62	131
	TFT-F	0	54	144

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL ID	ANALYSIS DATE AND TIME	ANALYST
2307	MTBE by GC/MS (soil)	SW846 Method 8260	1	11/25/98 2135	Matthew T. Balmer
2464	Methyl tertiary butyl ether	SW-846 8020A, mod.	1	11/25/98 0345	Stephanie A. Selis
5550	8015 Mod. for Gasoline & BTEX	CA LUFT /SW-846 8020A, mod.	1	11/25/98 0345	Stephanie A. Selis

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Respectfully Submitted
Thomas C. Lehman, Ph.D.
Group Leader, Petrol. Analysis

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

[redacted] Mobil Water Region Analysis Request/Chain of Custody

Lancaster Laboratories
A division of Thermo Analytical Inc.

For Lancaster Laboratories use only
Acct. #: 9728 Sample #: 304856-65

SCR#: _____

Please print.

Mobil Consultant/Office: Alton Geoscience
Consultant Prj. Mgr: K. Racke Prj. #: _____
Consultant Phone #: 925 6006-9150 X11 D Fax #: 925 6006-9200
Location Code #: 99-105 PRCA/AFE/Release #: 980044
Commitment Code #: _____ Phase Code: 1L
Site Address: 6301 San Pablo Ave. Oakland State: CA
Sampler: K. Racke
Mobil Engineer: C. Foutch

Sample Identification	Date Collected	Time Collected	Grab	Composite	Matrix: Soil	Water	Oil	Air	Total # of Containers	TPHg (8015M)	BTEX (8020)	MTBE (8020)	Remarks	Temperature of samples upon receipt (if requested)
MP1-7.5	11/16/98	0923			X				1	X	X	X	Confirm highest MTBE hit by 8260 - T. Seliger	
MP2-7.0		1100			X				1	X	X	X		
MP2-10.5		1115			X				1	X	X	X		
MP3-7.5		1210			X				1	X	X	X		
MP4-5.0		1300			X				1	X	X	X		
MP4-10.0		1310			X				1	X	X	X		
MP5-6.5		1405			X				1	X	X	X		
MP5-10.5		1415			X				1	X	X	X		
MP6-7		1440			X				1	X	X	X		
MP6-10		1450			X				1	X	X	X		

Turnaround Time Requested (TAT) (please circle):
MOBIL **STD. TAT** 72 hour 48 hour
24 hour other ____ day

Data Package Options (please circle if requested)
QC Summary GLP
Type I (Tier I) Other
Type III (NJ Red. Del.) Disk
Type IV (CLP)
Type VI (Raw Data)
WIP

SDG Complete? Yes No

Site-specific QC required? Yes (No) (If yes, indicate QC sample and submit triplicate volume.

Internal Chain of Custody required? Yes (No)

	Date	Time		Date	Time
Relinquished by: K. Racke	10/17/98	1015	Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by: Fed Ex w/ intact COC seals	11/18		Received by:	11/18/98	1052

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300 Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client # 1808 Rev. 8/6/97

APPENDIX E

DPVE LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. AQ 3043793
Collected: 11/19/98 at 09:00 by DY

Submitted: 11/20/98 Reported: 11/24/98
Discard: 11/24/98

MW-4 Tedlar Bag Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
MOBIL: 6301 San Pablo Ave. Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

AS RECEIVED

CAT NO.	ANALYSIS NAME	RESULTS	REPORTING LIMIT	UNITS
7048	C2-C10 Hydrocarbons	2,400.	1.0	ppm(v) hexane
7059	BTEX			
7063	Benzene	12.	0.5	ppm(v)
7064	Toluene	4.	0.8	ppm(v)
7065	Ethylbenzene	2.	0.4	ppm(v)
7068	Xylene (total)	6.	0.7	ppm(v)

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
7048	C2-C10 Hydrocarbons		Batch: M983271AA									
	1.0	ppm(v) hexa	N.D.									
7059	BTEX		Batch: M983271AA									
7063	Benzene											
	0.5	ppm(v)	N.D.					94			48	151
7064	Toluene											
	0.8	ppm(v)	N.D.					97			49	151
7065	Ethylbenzene											
	0.4	ppm(v)	N.D.					86			45	155
7068	Xylene (total)											
	0.7	ppm(v)	N.D.					88			27	173

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
7042	Whole Air Analysis by GC	EPA Methods 18 & 25 modified.	1		11/20/98 2104	David I. Ressler
7048	C2-C10 Hydrocarbons	EPA Method 18 & 25 modified	2		11/20/98 2104	David I. Ressler
7059	BTEX	EPA Method 18 & 25 modified	1		11/20/98 2104	David I. Ressler

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

RECEIVED
NOV 30 1998
BY:

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
09:26:15 D 0001 2 134750 641811
320 70.00 00009000 DIS000

Donald I. Shelly Jr.
for

Respectfully Submitted
Michele Turner, B.A.
Manager, Volatiles

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. AQ 3043793
Collected: 11/19/98 at 09:00 by DY

Submitted: 11/20/98 Reported: 11/24/98
Discard: 11/24/98

MW-4 Tedlar Bag Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
MOBIL: 6301 San Pablo Ave. Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Respectfully Submitted
Michele Turner, B.A.
Manager, Volatiles

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. AQ 3043794
Collected: 11/19/98 at 15:15 by DY

Submitted: 11/20/98 Reported: 11/24/98
Discard: 11/24/98

MW-4 Tedlar Bag Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
MOBIL: 6301 San Pablo Ave. Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

AS RECEIVED

CAT NO.	ANALYSIS NAME	RESULTS	REPORTING LIMIT	UNITS
7048	C2-C10 Hydrocarbons	7,400.	1.0	ppm(v) hexane
7059	BTEX			
7063	Benzene	50.	0.5	ppm(v)
7064	Toluene	5.	0.8	ppm(v)
7065	Ethylbenzene	25.	0.4	ppm(v)
7068	Xylene (total)	52.	0.7	ppm(v)

QUALITY CONTROL REPORT

	SAMPLE RPT LIM	SAMPLE UNITS	BLANK	DUP RPD	MS	MSD	MS RPD	LCS	LCS DUP	LCS RPD	LCS LIMITS LOW	LCS LIMITS HIGH
7048 C2-C10 Hydrocarbons			Batch: M983271AA									
	1.0	ppm(v) hexa	N.D.									
7059 BTEX			Batch: M983271AA									
7063 Benzene												
	0.5	ppm(v)	N.D.					94			48	151
7064 Toluene												
	0.8	ppm(v)	N.D.					97			49	151
7065 Ethylbenzene												
	0.4	ppm(v)	N.D.					86			45	155
7068 Xylene (total)												
	0.7	ppm(v)	N.D.					88			27	173

LABORATORY CHRONICLE

CAT NO	ANALYSIS NAME	METHOD	TRIAL	ANALYSIS ID	DATE AND TIME	ANALYST
7042	Whole Air Analysis by GC	EPA Methods 18 & 25 modified.	1		11/20/98 2136	David I. Ressler
7048	C2-C10 Hydrocarbons	EPA Method 18 & 25 modified	2		11/20/98 2136	David I. Ressler
7059	BTEX	EPA Method 18 & 25 modified	1		11/20/98 2136	David I. Ressler

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

1 COPY TO Alton Geoscience ATTN: Kathleen Racke

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300
09:27:50 D 0001 2 134750 641811
320 70.00 00009000 DIS000

Donald J. Shelly Jr.
for

Respectfully Submitted
Michele Turner, B.A.
Manager, Volatiles

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Lancaster Laboratories
A division of Thermo Analytical Inc.

LLI Sample No. AQ 3043794
Collected: 11/19/98 at 15:15 by DY

Submitted: 11/20/98 Reported: 11/24/98
Discard: 11/24/98

MW-4 Tedlar Bag Sample
LOC# 99-105 PRCA# 980044 PHC# 1L
MOBIL: 6301 San Pablo Ave. Oakland, CA

Account No: 09728
Mobil Business Resources Corp.
2063 Main Street
Suite 501
Oakley CA 94561

P.O. 99-105
Rel.

CAT NO.	ANALYSIS NAME	AS RECEIVED RESULTS	REPORTING LIMIT	UNITS

State of California Lab Certification No. 2116

#=Laboratory Method Detection Limit exceeded State Regulatory Limit
N.D.=Not detected at or above the Reporting Limit

Questions? Contact your Client Services Representative
Jedidiah E. Turzi at (717) 656-2300

Donald I Shultz Jr.
for

Respectfully Submitted
Michele Turner, B.A.
Manager, Volatiles

MEMBER ACIL
Lancaster Laboratories
2425 New Holland Pike
PO Box 12425
Lancaster, PA 17605-2425
717-656-2300 Fax: 717-656-2681

Mobil Western Region Analysis Request/Chain of Custody

Lancaster Laboratories
A division of Thermo Analytical Inc.

For Lancaster Laboratories use only
Acct. #: 9728 Sample #: 304373-94

SCR#:

Please print.

Mobil Consultant/Office: Alton Geoscience
Consultant Prj. Mgr: Katy Backe Prj. #: 41-0123-50
Consultant Phone #: (925) 606-9150 Fax #: (925) 606-9260
Location Code #: 99-105
PRCA/AFE/Release #: 980044 Phase Code: 14
Site Address: 6301 San Pablo Ave. Oakland State: CA
Sampler: David York
Mobil Engineer: Cherine Fowtch

Sample Identification	Date Collected	Time Collected	Matrix: Grab	Composite	Soil	Water	Oil	Air	Total Number of Containers	BTEX 8020	8021 + MTBE	TPH 8015 MOD	GRO	DRO	NWTPH Gx	Dx	TPHAZ	Title 22 Metals	Lead 7420	7421	Remarks
MW4 Tedlar - per labels	11/19	900								X		X									

Preservative Codes: H = HCl, T = Thiosulfate, N = HNO_3, B = NaOH, S = H_2SO_4, O = Other

Turnaround Time Requested (TAT) (please circle):
MOBIL STD. TAT (72 hour) 48 hour 24 hour other ____ day

Data Package Options (please circle if requested)
QC Summary, Type I (Tier I), Type III (NJ Red. Del.), Type IV (CLP), Type VI (Raw Data), WIP, GLP, Other, Disk

SDG Complete? Yes (No)

Site-specific QC required? Yes (No) (If yes, indicate QC sample and submit triplicate volume.)

Internal Chain of Custody required? Yes (No)

	Date	Time		Date	Time
Relinquished by: Chris Longa	11-19-98		Received by:		
Relinquished by:			Received by:		
Relinquished by:			Received by:		
Relinquished by Commercial Carrier: UPS (FedEx) Other			Received by: Joanna Wyand	11/20/98	0855

Temperature Upon Receipt ____ °C

Custody Seals Intact? Yes No (N/A)