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CAMBRIA

Alameda County
NOV 05 2002
Environmental Health

October 31, 2002

Donna Drogos
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-657

Re: **Sensitive Receptor Survey, Conduit Study Report, and Subsurface Investigation Work Plan**
Shell-branded Service Station
230 West MacArthur Boulevard
Oakland, California
Incident # 98995741
Cambria Project # 244-0902-007

Dear Ms. Drogos:

On behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting the results of a sensitive receptor survey, well survey, and conduit study performed at Shell's request for the referenced site. Presented below are the site background, sensitive receptor survey, well survey and conduit study results, and an investigation work plan.

SITE BACKGROUND

Site Location: This operating Shell-branded service station is located at the northwest corner of West Boulevard and Piedmont Avenue in Oakland, California (Figures 1 and 2). The properties surrounding the site are commercial. A former Gulf service station, later a Vogue Tyres store and currently an auto repair shop, is located immediately northwest of the site.

1986 Site Investigation: In April 1986, Emcon Associates of San Jose, California drilled four exploratory borings within the tank complex to a total depth of 20.5 feet below grade (fbg). Groundwater was encountered at approximately 13 fbg. Soil sampling results indicated that hydrocarbon concentrations ranged from 1,200 to 5,700 parts per million (ppm) at depths of 8 to 15 fbg.

1986 Additional Site Assessment: In December 1986, W.W. Irwin, Inc. analyzed soil gas vapors from 38 probe holes located throughout the entire site. The highest concentrations of hydrocarbons were reported discovered in the area of the tank complex and dispenser islands.

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

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Oakland, CA 94608
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1987 Recovery Well Installation: In March 1987, Wayne Perry Construction, Inc. (Wayne Perry) installed three 4-inch diameter, 13-feet deep, soil-vapor recovery wells. The soil venting system utilized an activated carbon scrubber that operated between April and November 1987. Wayne Perry concluded that prolonged venting reduced hydrocarbon concentrations. However, once the venting system stopped, hydrocarbon concentrations in soil increased.

1987 Underground Storage Tank (UST) Removal: In November 1987, the USTs were removed and soil samples were collected from the bottom of the 15-foot deep UST excavation and soil stockpile. Hydrocarbon concentrations ranged from 8.6 to 480 ppm. New USTs were installed in the same excavation.

1988 Soil and Groundwater Investigation: In July 1988, Ensco Environmental Services Inc. (Ensco) of Fremont, California drilled three exploratory borings at the site and converted them to monitoring wells MW-1 through MW-3. MW-1 was completed to 31.5 fbg, and MW-2 and MW-3 were completed to 30 fbg. total petroleum hydrocarbons as gasoline (TPHg) was only detected in MW-3 at 20.5 fbg at a concentration of 278 ppm. Benzene was not detected in any of the soil samples collected during this investigation. Geologic logs and well construction diagrams of MW-1 through MW-3 are presented in Attachment A.

1990 Well Installation: In January 1990, Ensco drilled one exploratory boring at the site and converted it to monitoring well MW-4. MW-4 was screened from 25 to 15 fbg. Geologic log and well construction diagram of MW-4 is presented in Attachment A.

1998 Dispenser/Turbine Sump Upgrades: In February 1998, Paradiso Mechanical of San Leandro, California upgraded fuel-related equipment at the service station. Secondary containment was added to the existing dispensers and to the turbine sumps above the USTs. Cambria inspected the dispenser and tank pit areas. Based on Cambria's February 3, 1998 telephone conversation with Leroy Griffin, the City of Oakland did not require sampling at dispensers during 1998 upgrade projects unless there was evidence of hydrocarbons. No field indications of hydrocarbons, such as staining or odor, were observed during the site visit. Therefore, no sampling was required at this site.

Groundwater Monitoring: Blaine Tech Services, Inc. of San Jose, California has performed quarterly groundwater monitoring at the site since July 1988. Depth to water has ranged historically between 11.03 and 19.59 fbg with a long-term average depth of 14.3 fbg. Historical groundwater elevations in site wells have ranged between 55.09 and 62.88 feet above mean sea level (msl), with a long-term average elevation of 60.15 feet above msl. The lowest, highest and average groundwater elevations in site wells are tabulated in Table 1.

The groundwater depth of 19.59 fbg (55.09 feet above msl) measured in MW-3 on December 18, 1989 is believed to be an anomaly which could be due to a field measurement or data transcription error. All other groundwater depth measurements collected from MW-3 range between 11.80 and 15.92 fbg.

The groundwater flow direction, as calculated from depth to water measurements in onsite monitoring wells, is typically toward the west to southwest. The rose diagram on Figure 2 shows the predominant groundwater flow direction at the site.

No significant concentrations of petroleum hydrocarbon compounds have been detected in monitoring wells MW-1 through MW-3 since July 14, 1988. The maximum MTBE concentrations detected in wells MW-1 through MW-3 was 90 parts per billion (ppb) detected in MW-2. Concentrations of TPHg, benzene and MTBE in MW-4 have ranged between 17 to 7,400 ppb, 2.1 to 300 ppb, and 760 to 3,200 ppb, respectively.

SENSITIVE RECEPTOR SURVEY

Cambria reviewed maps of the site vicinity to evaluate the presence of potential sensitive receptors including surface water bodies, churches, schools, and hospitals within a ½-mile radius of the site. Based on a review of the Oakland East and Oakland West, California USGS topographic quadrangles, Glen Echo Creek is the only surface water body noted within a ½-mile radius of the site (Figure 1). Glen Echo Creek is located approximately 700 feet southeast of the site at its closest point. Based on a review of City of Oakland Engineering maps, USGS aerial photographs, and site reconnaissance, Glen Echo Creek is diverted into a 6-foot by 8-foot underground concrete culvert under Richmond Boulevard approximately 400 feet southeast of the site, and surfaces approximately 600 feet south to southwest of the site. The flow line depth of the culvert is approximately 13 fbg. The creek is concrete lined to within 600 feet of the site.

Eight churches are noted on the quadrangle and in the Yellow Pages within a ½-mile radius of the site. They are located approximately 1,320, 1,848, and 2,112 feet northeast; 2,244 feet east; 1,716, 2,376 feet southwest; 1,716, and 1,920 feet northwest of the site.

Two schools are noted on the quadrangle and in the Yellow Pages within a ½-mile radius of the site. They are located approximately 2,250 and 2,112 feet southwest of the site.

In the *2001 Alameda County Thomas Guide,* five hospitals are noted within a ½-mile radius of the site. Kaiser Foundation Hospital is located one block away from the site to the northwest on MacArthur Boulevard and Howe Street. Summit Medical Center North, is located 1,500 feet

southwest of the site, and Summit Medical Center, and Summit Medical Center West and South are located approximately ½-mile southwest of the site.

California Department of Water Resources (DWR) Well Survey: Cambria contacted the DWR in Sacramento, California for records of wells within a ½-mile radius of the site. Three wells of unknown use were identified within the ½-mile radius (see Table 2 and Attachment B). Two wells are located approximately ½-mile southwest of site, and a third is located approximately 1,500 feet northeast of the site. The results of the survey are tabulated in Table 2, and the well locations are shown on Figure 1. Due to the distance from the site to the nearest identified wells, the site is unlikely to impact the identified wells.

Adjacent Property Well Survey: The property located adjacent to and northwest of the site at 240 West MacArthur Blvd is currently occupied by Oakland Auto Works, an auto repair shop. This site has been investigated by Mittelhauser Corporation (Mittelhauser), Pacific Environmental Group, All Environmental, Inc. (AEI) and Advanced Environmental Concepts (AEC) since 1991. Prior to Oakland Auto Works, Vogue Tyres occupied the property, and prior to that, it was a Gulf service station.

The Gulf service station operated on this property from 1950 until it was demolished (Attachment C, *Additional Groundwater Assessment Workplan,* AEC, Inc., November 1, 2000). The AEC work plan indicates that three 10,000-gallon gasoline and diesel USTs and two fueling islands were operated at the former Gulf station located at this property. The USTs were located in the northern area of the property near Howe Street.

AEC indicates that no documentation of the UST removal was available to verify whether or not the USTs and the associated piping were actually excavated and removed before the existing building was constructed. On February 14, 1991, Mittelhauser conducted a magnetometer survey in the building and the parking lot to evaluate whether or not the USTs have remained in place beneath the buildings. Mittelhauser's February 21, 1991 report describes a large magnetic anomaly in the northwestern portion of the former Gulf station. A 350-gallon waste oil UST and a small waste oil sump were excavated and removed from this smaller anomaly area by AEI on October 3, 1996. The locations of the anomalies and USTs are shown on a figure included in Attachment D.

Currently the Oakland Auto Works site includes six onsite and two offsite groundwater monitoring wells. Quarterly groundwater monitoring has been conducted at this site since July 14, 1988. AEC's *Second Quarter 2002 Quarterly Sampling Report* (Attachment E) indicates groundwater in and around the former Gulf service station USTs and dispenser islands is impacted with TPHg, benzene, toluene, ethylbenzene and xylenes (BTEX), and MTBE. Offsite monitoring wells MW-7 located in Howe Street and MW-8 in MacArthur Boulevard are not

impacted with TPHg, BTEX or MTBE. Monitoring well MW-4 located approximately 25 feet north of Shell's property line is not impacted with TPHg, BTEX or MTBE. Groundwater samples collected by AEC are tested for MTBE by EPA test Method 8021B. This method is known to occasionally detect MTBE falsely in the presence of other hydrocarbons. EPA Method 8260 can be used to confirm MTBE detection. Based on review of the available data, it appears that the impacts to groundwater at Shell and at Vogue Tyres are separate.

CONDUIT STUDY REPORT

A utility conduit survey was performed to determine the locations of potential preferential pathways in the site vicinity. Conduit trenches are often back-filled with materials which are more permeable than the surrounding native soils, and therefore provide a path of least resistance for groundwater and dissolved petroleum hydrocarbon and oxygenate migration. The utility survey consisted of reviewing maps and plans acquired from the City of Oakland Engineering Department, East Bay Municipal Utility District, and Pacific Gas and Electric (PG&E). Conduit locations, and diameters and depths, where determined, are mapped on Figure 2.

Sanitary Sewer Lines: City of Oakland engineering maps indicate 10-inch and 24-inch diameter sanitary sewer lines in Piedmont Avenue and West MacArthur Boulevard, respectively. These sanitary sewer lines are buried approximately 6 and 21 fbg, respectively. The 24-inch diameter sanitary sewer line runs down the center of West MacArthur Boulevard along the median. The flow line elevation of the 24-inch diameter sanitary sewer line in the vicinity of the site ranges between 52.4 and 53.7 feet above msl, with an average elevation of 53.05 feet above msl. Therefore, the elevation of groundwater at the site is between 5 to 10 feet higher than the flow line elevation of the 24-inch diameter sanitary sewer line. Based on this information, the 24-inch diameter sanitary sewer line is installed below the groundwater table and could potentially act as a preferential pathway for groundwater flow and contaminant migration. In addition, an 8-inch and a 24-inch diameter sanitary sewer line are abandoned in place along the south side of the MacArthur Blvd. Cambria could not obtain any information on the buried depths of these abandoned sanitary sewer lines.

Water Lines: Two water mains are located on the north and south side of West MacArthur Boulevard. These water mains connect to the water main in Piedmont Avenue. Typical buried depth for water lines can range from 3 to 10 fbg. Therefore, the water lines are expected to be above the groundwater table, and therefore they do not act as a preferential pathway for groundwater flow and contaminant migration.

Storm Drain Lines: The 24-inch diameter storm drain located adjacent to the site in West MacArthur Boulevard is buried approximately 8 to 10 fbg. Therefore, the 24-inch diameter storm drain line is installed above the groundwater table. A 6-foot by 8-foot storm drain culvert with a flow-line depth of approximately 13 fbg, diverts Glen Echo Creek under Richmond Boulevard, approximately 600 feet south to southeast of the site. The creek is concrete lined to within 600 feet of the site. The average depth of groundwater in site wells is 14.3 fbg. The local groundwater flow direction, based on historical water levels in site wells as shown by the rose diagram on Figure 2, is predominantly toward west to southwest. Therefore, the shallow site groundwater is not flowing toward Glen Echo Creek. Based on this information, the storm drain culvert and Glen Echo Creek are not expected to intersect the groundwater surface, and therefore they do not act as preferential pathways for groundwater flow and contaminant migration.

Gas and Electric Lines: One PG&E natural gas line runs along the south side of West MacArthur Boulevard and another one runs in the center of Piedmont Avenue. A gas line from Howe Street joins the gas line in West MacArthur Boulevard. Typical buried depth of gas lines can vary between 3 and 8 fbg. Electric lines run in Piedmont Avenue and Howe Street. Typical depth for electrical conduits can vary from 3 to 8 fbg. PG&E is not able to provide accurate electrical conduit or gas pipeline depths. The gas and electric lines are expected to be above the groundwater table, and therefore they do not act as a preferential pathways for groundwater flow and contaminant migration.

CONCLUSIONS AND RECOMMENDATIONS

Two wells of unknown use are located approximately ½-mile downgradient of the site but are unlikely to have been impacted by site groundwater. The Kaiser Foundation Hospital is located one block away from the site, approximately 500 feet to the west/northwest. Groundwater from the Shell site is not expected to have impacted the Kaiser property, although groundwater beneath the adjacent Vogue Tyres site may have. The nearest surface water body is Glen Echo Creek, located approximately 600 feet south of the site. Since calculated groundwater flow direction at the site has been to the west-southwest, site groundwater is not expected to impact Glen Echo Creek.

This conduit study indicates that the 24-inch diameter sanitary sewer line adjacent to the site that runs along the median of MacArthur Boulevard is installed five to ten feet below the groundwater table. Therefore, this sanitary sewer line intersects groundwater and could possibly act as a preferential pathway for groundwater flow and contaminant migration.

However, due to the distance of the 24-inch diameter sanitary sewer line from the site, it is possible that groundwater containing petroleum hydrocarbons may not reach the sanitary sewer line. Also, due to the submerged depth of the 24-inch diameter sanitary sewer line, it is possible that the 24-inch diameter sanitary sewer line does not affect groundwater flow in the area.

Given the potential for hydrocarbon migration offsite toward the 24-inch diameter sanitary sewer line, Cambria recommends that an offsite subsurface investigation be conducted to determine if any hydrocarbon impacted groundwater has migrated offsite in the direction of the 24-inch diameter sanitary sewer line in West MacArthur Boulevard.

Cambria recommends that the responsible party for the Oakland Auto Works site analyze future groundwater samples collected from the monitoring wells at 240 West MacArthur Boulevard by EPA Method 8260 to confirm MTBE detections. Cambria also recommends that the responsible party perform additional subsurface or geophysical investigation at 240 West MacArthur Boulevard to determine whether or not the USTs at the former Gulf service station were removed from this property or abandoned in place.

Cambria recommends surveying the monitoring wells at 240 West MacArthur Boulevard to the USGS datum, as required by the State law (Geotracker) so that joint groundwater monitoring and sampling events can be conducted to confirm groundwater flow patterns between the sites.

SUBSURFACE INVESTIGATION WORK PLAN

To assess whether hydrocarbons and MTBE in groundwater have impacted offsite soil and groundwater, Cambria proposes conducting an offsite soil and groundwater investigation. Two offsite soil borings will be advanced in locations shown on Figure 2. Soil and groundwater samples will be collected to determine the lateral extent of the impacted soil and groundwater down-gradient of the site. Soil boring drilling and sampling details are discussed below.

Upon Alameda County Health Care Services Agency (ACHCSA) approval of this work plan, Cambria will complete the following tasks:

Utility Location: Cambria will notify Underground Service Alert (USA) of our drilling activities. USA will contact participating utility companies to locate and mark any underground utilities in the vicinity. Cambria will visit the site before beginning boring activities to properly verify the utility trench locations.

Private Underground Utility Locator: A private underground utility locating contractor will be

hired to verify underground utility locations in the proposed offsite boring locations.

Permits: We will obtain necessary permits for soil boring installation from Alameda County Public Works Department and encroachment and excavation permits from the City of Oakland for drilling in West MacArthur Boulevard.

Site Health and Safety Plan: We will prepare a comprehensive site-specific safety plan to protect site workers. The plan will be kept onsite during field activities and signed by each site worker.

Soil Borings and Sampling Activities: Using a direct push Geoprobe® drilling rig, Cambria will advance two offsite soil borings a total depth of 25 fbg. Soil samples for lithologic logging and chemical analysis will be collected at a minimum of 5-foot depth intervals. A capillary fringe soil sample and a grab groundwater sample for chemical analysis will also be collected from each boring. Our standard field procedures for Geoprobe soil boring and sampling are presented as Attachment F.

Laboratory Analyses: Grab-groundwater and soil samples from the borings will be analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B.

Subsurface Investigation Report: After the analytical results are received, Cambria will prepare a report that, at a minimum, will contain:

- A summary of the site background and history;
- Descriptions of drilling and sampling activities;
- Boring and well logs;
- Tabulated analytical results;
- A figure presenting new boring locations;
- Analytical reports and chain-of-custody forms; and
- A discussion of hydrocarbon distribution in soil and groundwater.

CLOSING

We appreciate the opportunity to work with you on this project. Please call Max Shahbazian at (510) 420-3344, if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc

Max Shahbazian, R.G.
Project Geologist

Matthew W. Derby, P.E.
Senior Project Engineer

Figures:
1 - Area Well Survey
2 - Groundwater Elevation Contour Map with Underground Utility and Proposed Monitoring Well Locations

Tables:
1 - Groundwater and Utility Conduit Elevations and Depths
2 - Well Survey Results

Attachments:
A - Geologic Logs and Construction Diagrams of Onsite Monitoring Wells
B - DWR Well Driller's Report Forms
C - Additional Groundwater Assessment Work Plan, by AEC
D - Phase II Subsurface Investigation Report, AEI
E - Second Quarter 2002 Groundwater Sampling Report by AEC
F - Standard Field Procedures for Geoprobe Sampling

cc: Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, California 91510-7869

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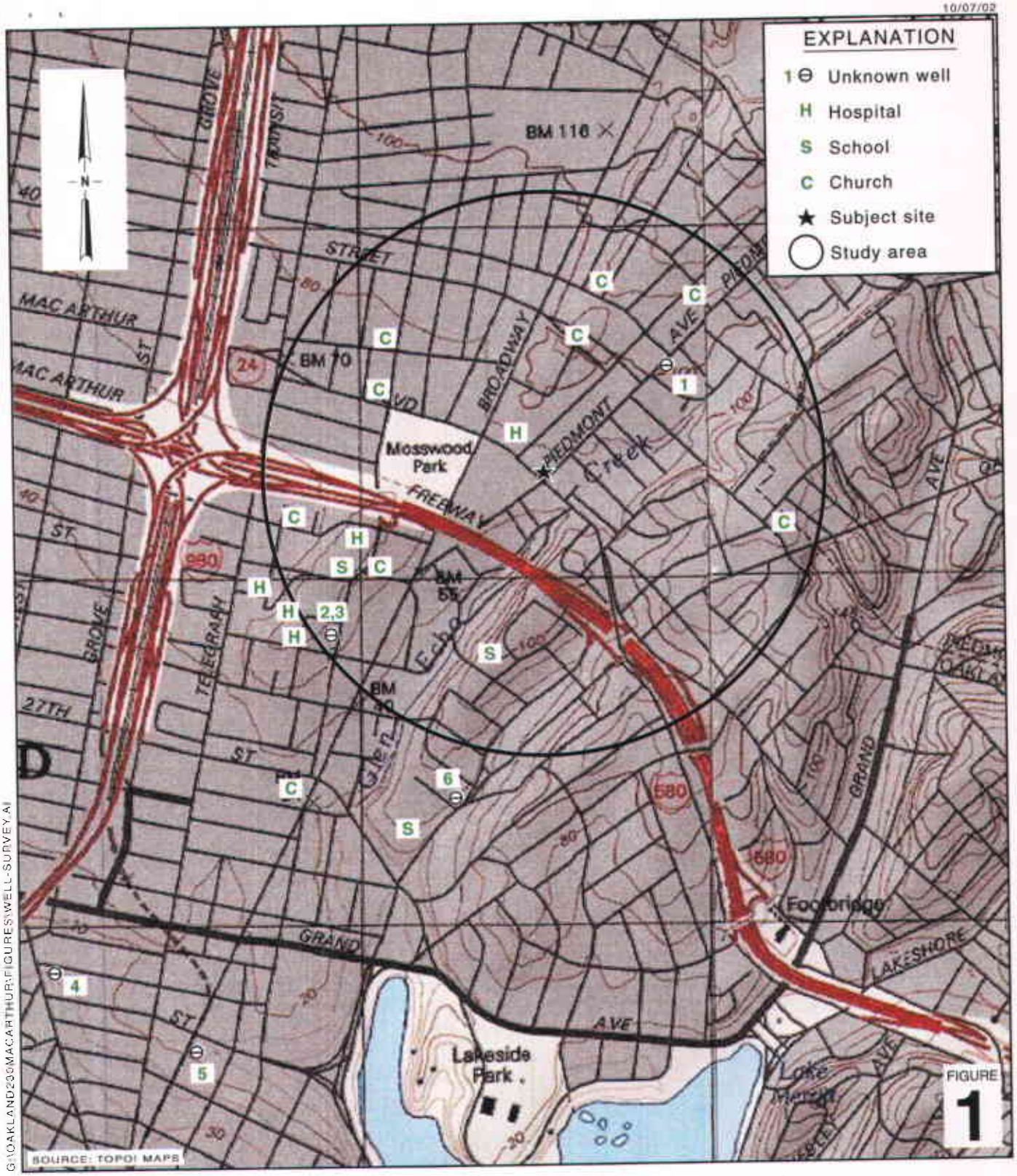


0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

FIGURE 1

G:\OAKLAND230\MACARTHUR\FIGURES\WELL-SURVEY.AI

Shell-branded Service Station
230 West MacArthur Boulevard
Oakland, California
Incident #98995741

CAMBRIA

Area Well Survey
(1/2-Mile Radius)

10/30/02

Groundwater Elevation Contour Map with Underground Utilitiy and Proposed Monitoring Well Locations

September 9, 2002

EXPLANATION

SB-1 — Proposed soil boring location	FL — Flow line elevation, in feet above mean sea level
MW-1 — Monitoring well location	fbg — Feet below grade
Storm drain line (SD)	Groundwater flow direction
Sanitary sewer line (SS)	XX.XX — Groundwater elevation contour, in feet above mean sea level (msl), approximately located; dashed where inferred
Water line (W)	
Gas line (G)	
Electrical line (E)	Well designation
Flow direction	Groundwater elevation, in feet above msl
Storm drain inlet	Benzene and MTBE concentrations are in parts per billion and are analyzed by EPA Method 8260.

Well
ELEV
Benzene
MTBE

SCALE 1:30
0 15 30 60
FEET

Groundwater Flow Direction
(4Q96 through 3Q02)

Shell-branded Service Station
230 W. MacArthur

Oakland Auto Works

Kaiser MB Center
235 W. MacArthur

HOWE STREET

PIEDMONT AVENUE

WEST MACARTHUR BOULEVARD

MW-2
62.76
<0.50
54

MW-3
62.92
<0.50 - 3/14/02
40 - 3/14/02

MW-1
62.62
<0.50 - 3/14/02
<5.0 - 3/14/02

MW-4
62.26
3.7
760

62.80
62.60
62.40

SB-2
SB-1

FL = ~67.24, ~9 fbg
SS (FL = 67.8)
FL = 66.68
FL = 66.7
MH = ~10.5 fbg
SD 24"ϕ — FL = ~66, ~10 fbg
~3-10 fbg
FL = 65.4, ~11 fbg
FL = 65.2
MH = ~11 fbg
benchmark elev. 75.96' msl
FL = 66.5
FL = 52.4
SS ~23 fbg
E 3-8 fbg
SS 24"ϕ — FL = ~53.05, ~22.5 fbg
FL = 53.7, ~22.25 fbg
FL = 53.8
SS 8"ϕ (abandoned)
SS 24"ϕ (abandoned)
G 3-8 fbg

SS 24"ϕ
SS (abandoned)
SD 24"ϕ
SD 12"ϕ
SD 21"ϕ
SS 10"ϕ
SD 12"ϕ
SS 24"ϕ (abandoned)

Shell-branded Service Station
230 West MacArthur Boulevard
Oakland, California
Incident #98995741

FIGURE 2

CAMBRIA

G:\OAKLAND230MACARTHUR\FIGURES\PROP-WELL-10-02.AI

Table 1
Groundwater and Utility Conduit Elevations and Depths
Shell Service Station
230 West MacArthur Blvd.
Oakland, California

Groundwater Elevation in Wells

Well ID	Lowest elevation	Highest elevation	Long-term average elevation
MW-1	58.17	62.86	60.62
MW-2	58.18	62.52	59.83
MW-3	55.09 *	62.88	60.32
MW-4	57.59	62.28	59.85

Depth to Groundwater in Wells

Well ID	Maximum DTW	Minimum DTW	Long-term average DTW
MW-1	15.72	11.03	13.66
MW-2	17.06	12.72	15.42
MW-3	19.59 *	11.80	14.37
MW-4	16.24	11.55	14.00

Utility Conduit Elevations and Depths

Utility Conduit	Lowest Flow line Elev.	Highest Flow line Elev.	Average Flow line Elev.	Average Flow line depth (fbg)
24" Sanitary Sewer Line	52.4	53.7	53.05	21-23
24" Storm Drain Line	65.4	66.7	66.05	8-10
Water Mains	-	-	-	3-10
Gas and Electric	-	-	-	3-8

Notes:
* Anomaly- could be due to a field measurement or data transcription error.
DTW = depth to water below top of well casing.
fbg = feet below grade.
On average groundwater elevations in site wells are 5 to 10 feet higher than the elevation of the 24-inch diameter sanitary sewer line in MacArthur Blvd.

Table 2. Well Survey Results - Shell-branded Service Station, 230 West MacArthur Blvd. Oakland California - Incident # 98995741

Location	DWR Well ID	Owner's Well ID	Well Address	Installation Date	Owner	Use	Well Status	Depth (fbg)	Screened Interval (fbg)
1	01S/4W-24L1	Unk	4082 Piedmont Ave.	July 29, 1979	John Bond	Unk	Active	198	132-189
2	01S/4W-26A	1	30th St. and Webster St.	Unk	Providence Hospital	Unk	Active	150	120-150
3	01S/4W-26G	2	30th St. and Webster St.	Unk	Providence Hospital	Unk	Active	366	Unk
4	01S/4W-28L	649/733	20th St. and San Pablo Ave.	Unk	Great Western Power Co.	Unk	Active	556	Unk
5	01S/4W-26	715	SE corner of 20th St. and Broadway	Unk	Oakland Lodge #171, B.P.O.E.	Unk	Active	153	Unk
6	01S/4W-25E	946	Harrison St. and Hamilton Pl.	April 30, 1927	City of Paris Laundry	Unk	Active	295	125-240

Well Locations Provided by the Department of Water Resources

Notes and Abbreviations:

Location = Number refers to well label on Figure 1.

DWR Well ID = California State well identification number as recorded by the Department of Water Resources in Sacramento, California.

Unk= Unknown

fbg = feet below grade

ATTACHMENT A

Geologic Logs and Construction Diagram of Onsite Monitoring Wells

ensco environmental services, Inc.

PROJECT NAME: SHELL Service Station
230 MacArthur Blvd.
Oakland, California

BORING No.: MW-1
DATE DRILLED: 7-11-88
PROJECT No.: 1847 G
LOGGED BY: SC

EXPLORATORY BORING LOG

DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
				8" concrete over 6" pea gravel		
1-5			SP	CLAYEY SAND, greenish gray, predominantly fine sand 20% fine gravel, damp		
5-6			SP	SAND, greenish gray, predominantly fine to medium sand, 5-10% coarse sand, 10-15% fine gravel, <5% fines, very dense, damp		
6	1-1	72	SP	SAND, olive brown, fine to medium grained trace silt, very dense, damp		0
9-11	1-2	30	SC	CLAYEY SAND, orangish brown, fine to medium grained organic staining, 4" lens of fine to medium sand (poorly sorted, greenish gray), dense, damp		1
15			SW	SAND, bluish gray, fine to coarse grained <5% fines, color to brown at 15.5 feet, wet, dense	▽	
16	1-3	37	CL	SANDY CLAY, yellowish brown, 30% fine sand, very moist		2
17-18			SC	CLAYEY SAND, tannish brown, predominantly fine sand, trace medium sand, 15-20% fines, rare rootholes, moist, dense		
19-20			SP	SAND, brown, predominantly fine sand, becomes silty at 20.5', dense, very moist to wet		

REVIEWED BY R.G./C.E.G.

ensco environmental services, Inc.

PROJECT NAME: SHELL Service Station
230 MacArthur Blvd.
Oakland, California

BORING No.: MW-1
DATE DRILLED: 7-11-88
PROJECT No.: 1847 G
LOGGED BY: SC

EXPLORATORY BORING LOG

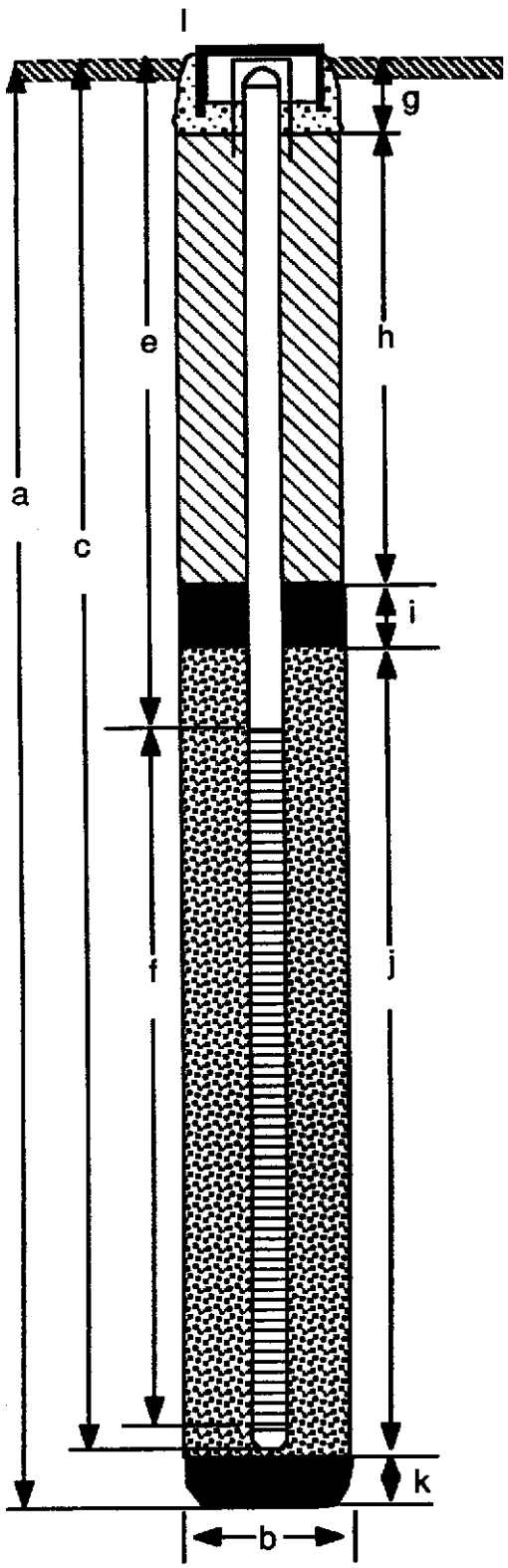
DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
20			SP	SAND cont.		
21	1-4	30	CL	SILTY CLAY, brown, 5-10% fine sand locally to 20% disseminated, hard, very moist		0
22						
23			SP-SC	SAND, light olive, fine to medium grained <10% clay fines, rare oxidation stains, dense, very moist to wet		
24						
25			SC	CLAYEY SAND, light olive, predominantly fine to medium sand, 40% clay, rare organics, dense, very moist to wet		1
26	1-5	48				
27						
28						
29						
30			SP-SC	SAND, light olive, predominantly fine to medium grained, 15% coarse sand, <10% clay fines, dense, saturated		
31	1-6	36				
32				BOTTOM OF BORING 31.5'		
33						
34						
35						
36						
37						
38						
39						
40						

REVIEWED BY R.G./C.E.G.

Monitoring Well Detail

PROJECT NUMBER 1847 G Shell Oil Co.
PROJECT NAME 230 MacArthur Blvd.
COUNTY Oakland, Alameda Co.
WELL PERMIT NO. 88305

BORING / WELL NO. MW-1
TOP OF CASING ELEV. 73.89'
GROUND SURFACE ELEV. 74.34'
DATUM 72.96' City of Oakland



EXPLORATORY BORING

a. Total Depth 31.5 ft.
b. Diameter 10 in.
Drilling method Hollowstem Auger

WELL CONSTRUCTION

c. Casing length 30 ft.
Material Schedule 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 10 ft.
f. Perforated length 20 ft.
Perforated interval from 30 to 10 ft.
Perforation type machine slot
Perforation size 0.020 in.
g. Surface seal 1 ft.
Seal Material Concrete
h. Backfill 5 ft.
Backfill material Cement Grout
i. Seal 2 ft.
Seal Material Bentonite Pellets
j. Gravel pack 22 ft.
Pack material #2/12 Aqua Sand
k. Bottom seal -- ft.
Seal material NA
l. F-8 vault box, locking cover and lock

ensco
environmental
services, inc.

ensco environmental services, Inc.

PROJECT NAME: SHELL Service Station
230 MacArthur Blvd.
Oakland, California

BORING No.: MW-2
DATE DRILLED: 7-11-88
PROJECT No.: 1847 G
LOGGED BY: SC

EXPLORATORY BORING LOG

DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
0				4" Asphalt pavement over 9" baserock		
5	2-1	44	SC	CLAYEY SAND, orangish brown, fine to medium sand, 20% fines, damp		
			SC	-as above; color to dark olive gray, locally 40% fine to coarse gravel composed of angular chert fragments, rare coarse sand, dense, damp		2
10	2-2	34	SC	-as above, color to yellowish brown with minor olive gray staining, ~40% fines, trace organic black staining, rare rootholes, dense, damp		1
15	2-3	34	CL	SANDY TO SILTY CLAY, olive beige with slight orange staining, 10 to 20% fine sand, orange staining low plasticity, hard, damp	▽	
			SP-SM	SAND, brown, predominantly fine sand, 5 to 10% silt, trace organic staining, dense, wet, fine to medium sand		0.5

REVIEWED BY R.G./C.E.G.

ensco environmental services, inc.

PROJECT NAME: SHELL Service Station
230 MacArthur Blvd.
Oakland, California

BORING No.: MW-2
DATE DRILLED: 7-11-88
PROJECT No.: 1847 G
LOGGED BY: SC

EXPLORATORY BORING LOG

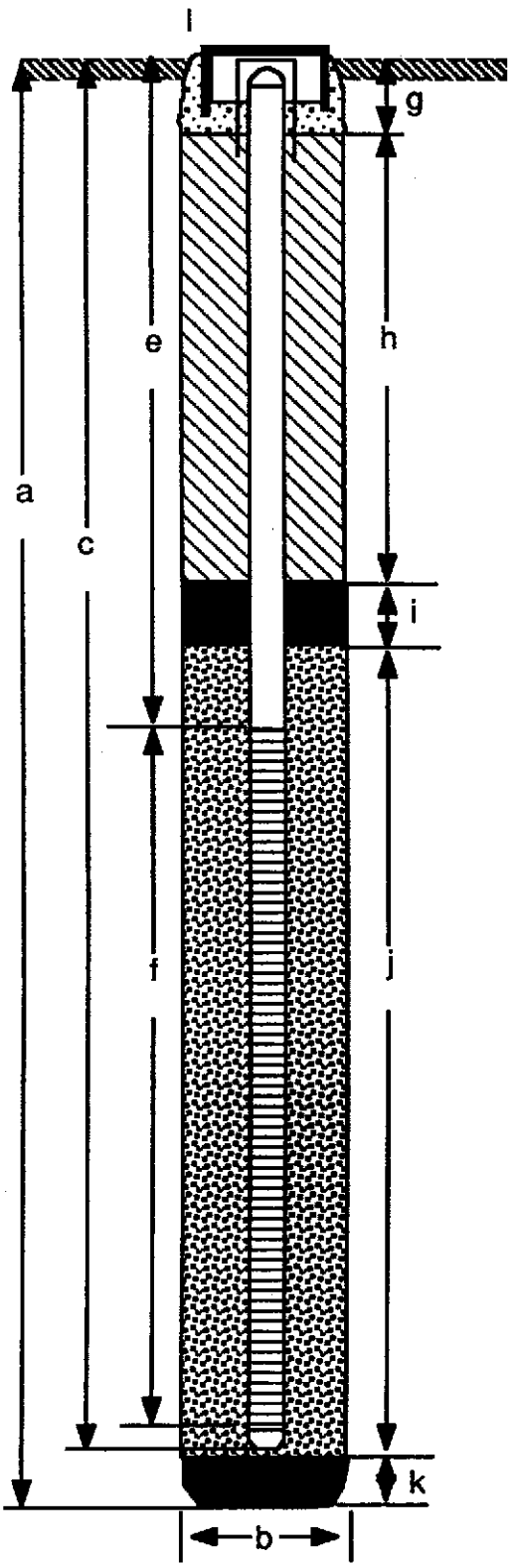
DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
20						
21	2-4	28	CL	SILTY CLAY, tannish brown, trace of organic staining, 10% very fine sand, low plasticity, very stiff, wet, color changes to tan in shoe		0
22						
23						
24						
25				SILTY CLAY, light olive gray and orangish brown, organic staining common, low to moderate plasticity, hard, moist, (4" lens of sandy silt with clay, damp to moist)		0
26	2-5	64				
27						
28						
29				-- as above: becomes sandy and orangish brown, 30% fine sand, abundant silt, very stiff		0
30	2-6	26		BOTTOM OF BORING 30.0'		
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

REVIEWED BY R.G./C.E.G.

Monitoring Well Detail

PROJECT NUMBER 1847 G Shell Oil Co.
PROJECT NAME 230 MacArthur Blvd.
COUNTY Oakland, Alameda Co.
WELL PERMIT NO. 88305

BORING / WELL NO. MW-2
TOP OF CASING ELEV. 75.24'
GROUND SURFACE ELEV. 75.96'
DATUM 72.96' City of Oakland



EXPLORATORY BORING

a. Total Depth 30 ft.
b. Diameter 10 in.
Drilling method Hollowstem Auger

WELL CONSTRUCTION

c. Casing length 28 ft.
Material Schedule 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 10 ft.
f. Perforated length 18 ft.
Perforated interval from 28 to 10 ft.
Perforation type machine slot
Perforation size 0.020 in.
g. Surface seal 1 ft.
Seal Material Concrete
h. Backfill 5 ft.
Backfill material Cement Grout
i. Seal 2 ft.
Seal Material Bentonite Pellets
j. Gravel pack 20 ft.
Pack material #2/12 Aqua Sand
k. Bottom seal -- ft.
Seal material NA
l. F-8 vault box, locking cover and lock

ensco
environmental
services, inc.

ensco environmental services, Inc.

PROJECT NAME: SHELL Service Station
230 MacArthur Blvd.
Oakland, California

BORING No.: MW-3
DATE DRILLED: 7-12-88
PROJECT No.: 1847 G
LOGGED BY: SC

EXPLORATORY BORING LOG

DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
0				8" concrete		
1–9				FILL, pea gravel		0
10–11	3-1	12	SC	CLAYEY SAND, olive grey mottled with orangish brown, 50 to 60% fine sand, trace medium to coarse sand, slight petroleum odor, medium dense, damp		120
12–14			SW	SAND, orangish brown, fine to coarse grained with fine angular chert gravels, medium dense, damp		
15–16	3-2	13		SAND, greenish gray, well graded, fine to coarse grained 10 to 15% fine gravels (angular to subangular white, yellow, and red cherts, graywacke), very faint petroleum odor, medium dense, saturated	▽	2
17–18			CL	SILTY CLAY, tannish brown, trace organic staining, 10% fine sand, rare root holes, low plasticity, stiff, moist		
19–20			SC			

REVIEWED BY R.G./C.E.G.

ensco
environmental
services, inc.

PROJECT NAME: SHELL Service Station
230 MacArthur Blvd.
Oakland, CA

BORING No.: MW-3
DATE DRILLED: 7-12-88
PROJECT No.: 1847 G
LOGGED BY: SC

EXPLORATORY BORING LOG

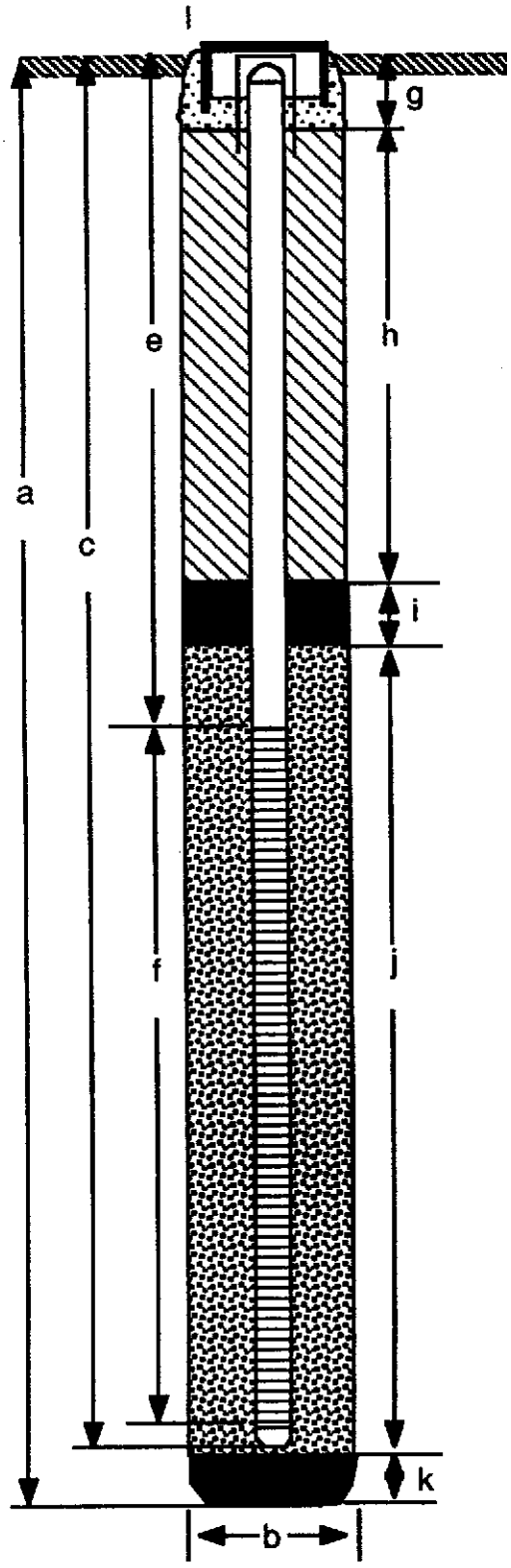
DEPTH (ft.)	SAMPLE No	BLOWS/FOOT 140 ft/lbs.	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
20–21	3-3	31	SC	CLAYEY SAND, brown, 70% fine sand, medium dense, moist to wet		0
21–24			CL	SILTY CLAY, tannish brown, 10% fine sand, trace organic staining, no rootholes, low plasticity, very stiff, wet		
24–25			SC	CLAYEY SAND, olive with minor orange staining, 60% fine sand, 10% medium to coarse sand, shell fragment, very dense, moist to wet		
25–27	3-4	72	CL	SANDY CLAY to SILTY CLAY, olive, 25% fine sand (locally sand <10%), low plasticity, hard, moist		0
27–30	3-5	44	SP	CLAYEY SAND, olive with minor orange oxide staining, 60 to 70% fine sand, locally clay to 50%, (becomes very sandy at 30', olive to bluish gray), dense, moist		
30				BOTTOM OF BORING 30'		0
31–40						

REVIEWED BY R.G./C.E.G.

Monitoring Well Detail

PROJECT NUMBER 1847 G Shell Oil Co.
PROJECT NAME 230 MacArthur Blvd
COUNTY Oakland, Alameda Co.
WELL PERMIT NO. 88305

BORING / WELL NO. MW-3
TOP OF CASING ELEV. 74.68'
GROUND SURFACE ELEV. 75.05'
DATUM 72.96' City of Oakland



EXPLORATORY BORING

a. Total Depth 30 ft.
b. Diameter 10 in.
Drilling method Hollowstem Auger

WELL CONSTRUCTION

c. Casing length 28.5 ft.
Material Schedule 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 11.5 ft.
f. Perforated length 17 ft.
Perforated interval from 28.5 to 11.5 ft.
Perforation type machine slot
Perforation size 0.020 in.
g. Surface seal 1 ft.
Seal Material Concrete
h. Backfill 7.5 ft.
Backfill material Cement Grout
i. Seal 1.5 ft.
Seal Material Bentonite Pellets
j. Gravel pack 18.5 ft.
Pack material #2/12 Aqua Sand
k. Bottom seal -- ft.
Seal material NA
l. F-8 vault box, locking cover and lock

ensco environmental services, inc.

EXPLORATORY BORING LOG

ensco environmental services, inc.

PROJECT NAME: Shell Oil Company
230 MacArthur Blvd.
Oakland, CA

BORING NO. MW-4

DATE DRILLED: 1/9/90

PROJECT NUMBER: 1847-2G

LOGGED BY: J.M.

DEPTH (ft.)	SAMPLE No	BLOWS/FOOT	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVA READING ppm
1–5			CL	SANDY CLAY, light olive brown (2.5Y 5/6), 30-40% rounded to subangular fine to medium grained sand, ≈ 10% coarse gravel to 2", iron stain, black mottling, hard, very low plasticity, dry to damp		
6	MW-4-1	64				0
7–8			SW	SAND, light olive brown (2.5Y 5/6), fine to medium grained sand, 30% clay, rounded to subangular, poorly sorted, medium dense		
9–10	MW-4-2	40	CL	SANDY CLAY, light olive brown (2.5Y 5/6), 35-45% sand, rounded to subangular, fine to medium grained, iron stain, very stiff, low plasticity, damp		0
11–13				Silty lenses	▼	
14–15	MW-4-3	27	SP	SAND, olive gray (5Y 4/2), fine to medium grained sand, well sorted, rounded to subrounded, some iron stain, clay 10-20%, silt 10-20%, loose, moist	▽	0
16–17			CL	SILTY CLAY, brown (10YR 5/3), silt ≈ 40%, black and gray mottling, iron stain, root holes and organic matter, very stiff, low plasticity, moist to damp		
18–20	MW-4-4	33				0
21						

REVIEWED BY R.G./C.E.G.

EXPLORATORY BORING LOG

ensco environmental services, inc.

PROJECT NAME: Shell Oil Company
230 MacArthur Blvd.
Oakland, CA

BORING NO. MW-4

DATE DRILLED: 1/9/90

PROJECT NUMBER: 1847-2G

LOGGED BY: J.M.

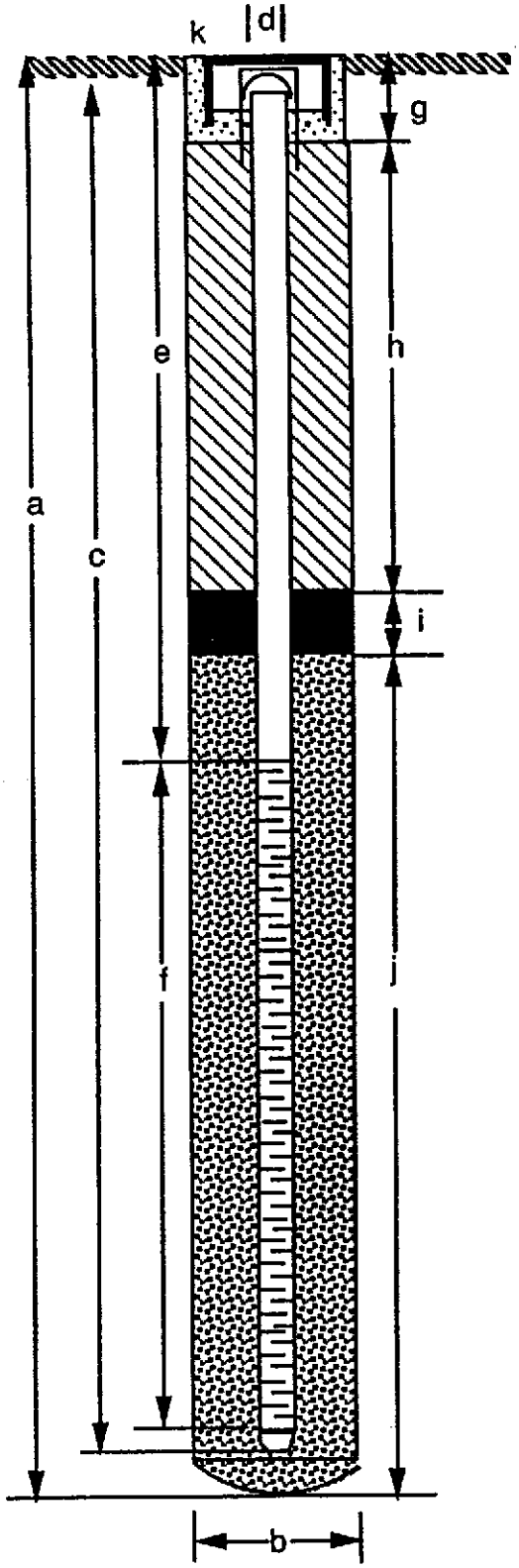
DEPTH (ft.)	SAMPLE No	BLOWS/FOOT	UNIFIED SOIL CLASSIFICATION	SOIL DESCRIPTION	WATER LEVEL	OVM READING ppm
22						
23						
24			CL	same as above		
25	MW-4-5	33				0
26				Bottom of Boring = 25.5 feet		
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						

REVIEWED BY R.G./C.E.G.

Monitoring Well Detail

PROJECT NUMBER 1847-2G
PROJECT NAME Shell -Oakland
COUNTY Alameda
WELL PERMIT NO. 90116

BORING / WELL NO. MW-4
TOP OF CASING ELEV. 73.83
GROUND SURFACE ELEV. 74.46
DATUM 72.96



EXPLORATORY BORING

a. Total depth 25.5 ft.
b. Diameter 12 in.
Drilling method Hollow stem auger

WELL CONSTRUCTION

c. Casing length 25 ft.
Material schedule 40 PVC
d. Diameter 4 in.
e. Depth to top perforations 15 ft.
f. Perforated length 10 ft.
Perforated interval from 15 to 25 ft.
Perforation type slotted screen
Perforation size 0.020 in.
g. Surface seal 1 ft.
Seal material concrete
h. Backfill 12 ft.
Backfill material neat cement grout
i. Seal 1 ft.
Seal material bentonite
j. Gravel pack 11 ft.
Pack material clean sand
k.

ensco environmental services, inc.

ATTACHMENT B

DWR Well Driller's Report Forms

STATE OF CALIFORNIA - THE RESOURCES AGENCY GRAY DAVIS, *Governor*

DEPARTMENT OF WATER RESOURCES
CENTRAL DISTRICT
3251 S STREET
SACRAMENTO, CA 95816-7017

MAY 2 2002

Mr. James Loetterie
Cambria Environmental Technology, Incorporated
1144 – 65th Street, Suite C
Oakland, California 94608

Dear Mr. Loetterie:

In response to your request, enclosed is the well location information for the sites in the following area:

A one-half mile radius of 230 West MacArthur Boulevard, Oakland
Township 01 South, Range 04 West, Section 23-R
Township 01 South, Range 04 West, Section 24
Township 01 South, Range 04 West, Section 25-B, C, and D
Township 01 South, Range 04 West, Section 26-A

Your data request required one hour of staff time. We located ten well drillers reports as a result of this search. The total charge to produce the copies is $50. Your remittance should be made payable to the Department of Water Resources, General Accounting Office, Post Office Box 942836, Sacramento, California 94236-0001. Please show **"Invoice MAY 01-2"** on your remittance and return it with the enclosed copy of this letter to our Accounting Office.

If you need additional information or have any questions, please contact Anne Roth at (916) 227-7632 or fax (916) 227-7600.

Sincerely,

Original Signed By

Robert L. Niblack, Chief
Geology and Groundwater Section

Enclosures

SAP #15204, FY 2001-02, Section 6203

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

(S/4 10. 3 6 r)

01-815

Job #1050. Providence Hospital, Oakland.

LOG OF WELL.

Top soil			4 feet
Cement Gravel	4	to 12	"
Sandy clay	12	" 60	"
Yellow clay	60	" 74	"
Sand	74	" 78	"
Sandy clay	78	" 93	"
Sand	93	" 100	"
Blue clay	100	" 125	"
Sand	125	" 127	"
Gravel	127	" 131	"
Cement Gravel	131	" 136	"
Yellow clay	136	" 150	"

150 feet of 10" No. 12 R. H. Double Casing, including,
1 Starter 10" No. 12 R. H. Double,
30 feet of machine perforations, Shisel Slot 1/8" open,
1 - 10" Shoe 5/7" x 6"

01-825

15/4W-36A

36 6

Job #1050. Providence Hospital, Oakland.
3 of 4 Webster

LOG OF WELL No. 2.

Dry sand, little gravel			57	feet
Sandy clay	57	to	69	"
Sand & gravel	69	"	72	"
Yellow sandy clay	72	"	85	"
Blue clay, soft	85	"	93	"
Blue sandy clay	93	"	127	"
Brown clay	127	"	142	"
Reddish clay & lime rock	142	"	155	"
Soft lime rock	155	"	163	"
Hard lime	163	"	163	"
Lime and Blue clay	164	"	168	"
White clay & lime	168	"	172	"
Hard Lime	172	"	174	"
White clay & lime	174	"	176	"
Brown clay	176	"	177	"
Black water sand & small gravel	177	"	178	"
Yellow sandy clay	178	"	185	"
Soft lime	185	"	192	"
Blue clay & sand	192	"	202	"
Hard lime rock	202	"	204	"
Blue sandy clay, some lime	204	"	257	"
Hard brown clay & lime	257	"	262	"
Black water sand	262	"	264	"
Lime and clay	264	"	272	"
Yellow water sand	272	"	275	"
Hard sand, clay, lime	275	"	279	"
Cementy gravel & loose rocks	279	"	286	"
Sand cementy gravel, yellow clay	286	"	298	"
Sand, clay & lime, a little gravel	298	"	341	"
Sand, red rock & clay, cement	341	"	360	"
Yellow clay	360	"	365	"
Hard sandy red rock, clay	365	"	368	"

13 4

1 9 6
1 6
3 1

01-858

Oakland

Job #649. Great Western Power Co.

LOG OF WELL

Sahd			16	feet
Blue Clay	16	to	32	"
Cement Gravel	32	"	35	"
Sandy Clay	35	"	43	"
Gravel	43	"	45	"
Sandy Clay	45	"	49	"
Cement Gravel	49	"	59	"
Yellow Clay	59	"	75	"
Cement Gravel	75	"	90	"
Yellow Clay	90	"	110	"
Sandy Clay	110	"	118	"
Gravel	118	"	123	"
Yellow Clay	123	"	134	"
Sandy Clay	134	"	152	"
Gravel	152	"	156	"
Sandy Clay	156	"	159	"
Blue Clay	159	"	177	"
Sandy Clay	177	"	180	"
Shale	180	"	189	"
Sandy Clay	189	"	204	"
Blue Clay	204	"	226	"
Brown Clay	226	"	233	"
Blue Clay	233	"	250	"
Clay	250	"	265	"
Blue sandy clay	265	"	266	"
Blue clay	266	"	289	"
Blue clay with limestone	289	"	325	"
Brown clay	325	"	327	"
Yellow clay	327	"	340	"
Red cement	340	"	347	"
Blue clay	347	"	350	"
Yellow clay with limestone	350	"	374	"
Sandy clay	374	"	378	"
Yellow clay	378	"	388	"
Blue Clay	388	"	420	"
Sand and gravel	420	"	428	"
Red cement gravel	428	"	436	"
Yellow clay	436	"	442	"
Cement gravel	442	"	447	"
Yellow clay	447	"	450	"
Cement gravel	450	"	456	"
Yellow clay	456	"	458	"

01-859

Job #733. Deepening Well put down under Job #649 and # 714.

Log of Well. From 285'

Blue clay with Limestone	285	to	325	feet
Blue clay	325	"	327	"
Yellow clay	327	"	340	"
Red cement	340	"	347	"
Blue clay	347	"	350	"
Yellow clay with limestone	350	"	374	"
Sandy clay	374	"	378	"
Yellow clay	378	"	388	"
Blue clay	388	"	420	"
Sand and Gravel	420	"	428	"
Red cement	428	"	436	"
Yellow clay	436	"	442	"
Red cement	442	"	447	"
Yellow clay	447	"	450	"
Red cement	450	"	456	"
Yellow clay	456	"	470	"
Blue clay	470	"	480	"
Red cement	480	"	485	"
Yellow clay	485	"	498	"
Red cement	498	"	500	"
Yellow clay	500	"	510	"
Red cement	510	"	528	"
Yellow clay	528	"	545	"
Red cement	545	"	556	"

01-860

Job # 715. Oakland Lodge #171, B.P.O.E.

SE corner of 20 x 9 foot basement

LOG OF WELL.

Brown Clay			2	feet
Sandy clay	2	to	13	"
Blue clay, streaked	13	"	18	"
Heavy Gravel	18	"	22	"
Hardpan	22	"	26	"
Lime clay	26	"	37	"
Heavy red sand & light gravel	37	"	41	"
Hardpan	41	"	43	"
Clay, hard & dry	43	"	45	"
Hardpan	45	"	48	"
Sand & clay	48	"	49	"
Heavy gravel(some water)	49	"	50	"
Clay	50	"	56	"
Sand & clay	56	"	71	"
Sand & Gravel(Not much water)	71	"	75	"
Clay	75	"	85	"
Water gravel	85	"	87	"
Hard dry brown clay	87	"	95	"
Hard clay	95	"	103	"
Dry sand	103	"	106	"
Sand, some water	106	"	109	"
Clay & sand	109	"	118	"
Black sand & gravel	118	"	119	"
Clay, yellow	119	"	121	"
Gravel, heavy	121	"	124	"
Dry gray clay	124	"	126	"
Sandy clay	126	"	132	"
Cement gravel	132	"	136	"
Blue shale & clay	136	"	142	"
Cement gravel	142	"	145	"
Heavy sand	145	"		

Casing landed in Blue clay at 153'

Water test 100' ---- 6.78
Water tests 50' ---- 8.62

01-737

Job #986. City of Paris Laundry.

LOG OF WELL.

Top soil			6 feet
Sandy clay	6	to 28	"
Cement gravel	28	" 35	"
Yellow clay	35	" 45	"
Loose gravel	45	" 48	"
Yellow clay	48	" 65	"
Cement gravel	65	" 70	"
Yellow clay	70	" 120	"
Dry cement gravel	120	" 125	"
Cement gravel (wet)	125	" 150	"
Yellow clay	150	" 178	"
Cement gravel	178	" 198	"
Yellow clay	198	" 210	"
Cement gravel	210	" 240	"
Yellow clay	240	" 285	"
Cement gravel	285	" 295	"
Sand rock	295		

275 feet of 12" #14 R. H. Double casing.
1 - 12" #14 Dbl. Starter 22' long
18 - feet of machine perforations
1 - 12 Shoe 1/2" x 4"
Extra Perforations 125'-150'
178'-198'
210'-240'

Foreman J. Cerrere.
Finished April 30 - 1927.

01-738

Job #1047. Toscani Bakery, 899 - 40th.St

LOG OF WELL

Took over well at			50	feet
Sandy clay	50	to	60	"
Yellow clay	60	"	82	"
Cement gravel	82	"	83	"
Yellow clay	83	"	90	"
Sandy clay	90	"	97	"
Gravel	97	"	102	"
Sandy clay	102	"	106	"
Clay	106	"	108	"

About 54' of 10" casing put in by Hall.

108 feet of 8" No. 14 R. H. Collar Casing with 50 feet of machine perforations & Welded reband.

Foreman J. Carrere.

Well finished May 8 - 1928.

out of range

01-740

AMERICAN CREAMERY COMPANY.
14th. & Poplar Streets.
Oakland, California.

LOG OF WELL.

Sandy soil		5	feet
Yellow sand	5 to	51	"
Blue clay	51 "	63	"
Yellow sandy clay	63 "	67	"
Blue sandy clay	67 "	92	"
Sand & Gravel	92 "	94	"
Blue clay	94 "	105	"
Blue sandy clay	105 "	120	"
Blue clay & gritt	120 "	141	"
Gravel, no water(made test)	141 "	148	"
Yellow clay	148 "	167	"
Gravel, some clay	167 "	168	"
Yellow clay	168 "	182	"
Water bearing gravel(perf)	182 "	185	"
Clay	185 "	195	"

Casing 10" No. 14 R. H. Dbl.
Total depth of well 200 feet.
Cased to 195 feet.

No. 2 well. No log.
Cased 164 feet of 10" Casing and 36' of 8" column

JOHN N. MILLER
PRESIDENT

C. A. ORNBAUM
VICE PRESIDENT

I. MILLER
SECRETARY

CALIFORNIA LINEN SUPPLY CO., INC.

BRANCH OFFICE
989 41st STREET
OAKLAND, CALIF.

TELEPHONE
PIEDMONT 3430

HEAD OFFICE
1246 FOLSOM STREET

TELEPHONE MARKET 1388

SAN FRANCISCO

01-741

LOGG OF OUTSIDE WELL OF PEARL LAUNDRY CO.

Top of ground

25 feet

23 feet top

Water perforation 10ft. Total 48 feet from ground

Hard clay and cement.

Sand and gravel

Water perforation 20ft. 180 feet from top ground.

Hard clay, cement and sand stone.

Up to 400 Feet.
10 inch pipe down.

8 inch pipe down 110 feet.

5 feet sand and gravel on bed rock

Water perforation 14 ft. BED ROCK

Depth of well 510 feet in all.
Finished July 30-August 1, 1926, by

H. E. NORMAN.

ATTACHMENT C

Additional Groundwater Assessment Work Plan by AEC

ADVANCED ENVIRONMENTAL CONCEPTS INC

November 1, 2000

Mr. Don Hwang
Alameda County Health Care Services Agency
Environmental Health Services
1131 Habor Bay Parkway, Suite #250
Alameda, CA 94502-6577

Regarding: **Additional Groundwater Assessment Workplan**
Vogue Tyres
240 W. McArthur Blvd.
Oakland, California
Stld 6059

Dear Mr. Hwang:

Please find enclosed the revised Additional Groundwater Assessment Workplan prepared by **Advanced Environmental Concepts, Inc.** (AEC) for the above referenced project/location.

Enclosed please find that report, which AEC is submitting for your review.

Should you have any questions or require clarification on any aspects of the enclosed, please do not hesitate to contact our office at (661) 831-1646.

Respectfully yours,

Advanced Environmental Concepts, Inc.

Debbie Irwin
Project Coordinator / Office Administrator

Attachments: Reports (1)

ADVANCED ENVIRONMENTAL CONCEPTS INC

Advanced Environmental Concepts, Inc. is pleased to present the following:

Additional Groundwater Assessment Workplan

for

Former Vogue Tyres Facility

240 West MacArthur Boulevard
County of Alameda • Oakland, California

This report has been prepared for:

Mr. Warren Dodson

October 2000

4400 ASHE ROAD #206 • BAKERSFIELD, CA 93313 661/831-1646 • FAX 661/831-1771

Table of Contents

Appendices:

• ENVIRONMENTAL CONCEPTS WITH DESIGN IN MIND •

4400 ASHE ROAD #206 • BAKERSFIELD, CA 93313 661/831-1646 • FAX 661/831-1771

1.0 INTRODUCTION

Mr. Warren Dodson, owner of the subject property, has authorized **Advanced Environmental Concepts, Inc. (AEC)** to prepare this additional groundwater assessment workplan. The former service station facility is located at 240 West MacArthur Boulevard in Oakland, California. The regulatory contact for this project is Mr. Don Hwang of the Alameda County Health Care Services Agency (ACHCSA). The location of the facility is shown on **Figure 1**.

1.1 Purpose

The drilling and sampling of additional soil borings and the installation and sampling of additional groundwater monitoring wells described in this workplan have the following objectives, as requested in a May 16, 2000 letter issued to Mr. Warren Dodson by the ACHCSA:

- To further delineate and characterize the vertical and lateral limits of the contaminant plume and assess the potential offsite migration of gasoline-range petroleum hydrocarbons, volatile organic compounds (specifically benzene), and the oxygenated fuel additive Methyl Tertiary Butyl Ether (MTBE);

- To evaluate Benzene concentrations beneath the subject property and adjoining commercial parcels in accordance with the City of Oakland's modified version of the Tier 1 Table of American Society for Testing and Materials' Risk Based Corrective Action Guidelines (ASTM RBCA E 1739-95); and

- To evaluate the presence or absence of horizontal and vertical conduits which could act as preferential pathways for the dissolved plume.

1.2 Response to May 16, 2000 Letter

The following section is in response to the May 16, 2000 letter from Alameda County to Mr. Warren Dodson regarding Vogue Tyres.

1) Contrary to Mr. Buck's statement that "Quarterly sampling has shown that the contaminants are generally degrading passively...", groundwater contamination doesn't appear ti be attenuating. Instead, Total Petroleum Hydrocarbons as Gasoline (TPH-G) nas increased in MW3 from the last sampling on January 19, 1999, compared to the previous quarter, October 19, 1998. Benzene has increased from the last sampling on January 19, 1999, compared to the previous quarter, October 19, 19998 in MW1, MW2, and MW3. Methyl Tertiary-Butyl Ether (MTBE) has increased in MW1 and MW3 with MTBE as high as 2,100 μg/l, and MTBE is not decreasing in MW2. He attributes the spikes of elevated concentrations to seasonal precipitation changes. This trend is not readily apparent when groundwater contaminant concentrations are compared to sample dates. Therefore, quarterly groundwater monitoring needs to be continued until the plume has stabilized as indicated by decreases or no change in concentrations of contaminants. Although passive biroremediation us the usual remedial alternative, more aggressive remediation may be proposed.

   Response: AEC concurs with the recommendation for continued quarterly groundwater sampling. Future mitigation strategy will be planned based on the results of the additional assessment defined within this work plan.

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2) Additionally, the increasing contaminant concentrations may indicate that the contaminant plume may have migrated off site. Therefore, further delineation and characterization of the plume is required. A perched lens consisting of a less permeable clayey silt and a water-bearing zone that is 3 feet thick was not apparent from a review of the boring logs. Even if these statements were true, only the vertical extent of contamination would be limited but not the horizontal extent. Also, in order for the water source to be of insufficient volume for municipal or domestic use, Regional Board Resolution No. 89-39, "Sources of Drinking Water" states that it must not be capable of supplying a single well with an average sustained yield of 200 gallons per day.

Response: The additional borings and monitoring wells proposed within this workplan will serve to provide horizontal delineation data. Additionally, it is our interpretation that Resolution No. 89-39 also defines "Sources of Drinking Water" to include limitations on the maximum allowable Total Dissolved Solids. AEC proposes to sample groundwater beneath the property and analyze it for drinking water parameters prior to undertaking extensive aquifer pump tests.

3) Concentrations of Methyl Tertiary-Butyl Ether (MTBE) in groundwater beneath the site were as high as 2,100 μg/l. The Regional water Quality Control Board is currently not closing any sites with MTBE concentrations exceeding 200 μg/l.

Response: None required

4) Thje benzene concentration of 1,200 ppb found in the most recent groundwater monitoring sample collected on January 19, 1999 exceeded the human health protective threshold value of 214 ppb for a 1/100,000 risk at a commercial site, per the Tier 1 Table of the American Society for Testing and Materials' Risk Based Corrective Action Guidelines (ASTM RBCA E 1739-95). Unless it can be shown that the groundwater-vapor intrusion from groundwater to buildings and the groundwater volatilization to outdoor air exposure pathways are limited, the benzene concentrations must be evaluated.

Response: AEC understands the City of Oakland has developed a modified RBCA to be applied to sites located within city boundaries. AEC intends to utilize the modified parameters in performing the requested risk assessment, subject to Alameda County approval.

5) The next round of groundwater monitoring needs to include analyses for additional oxygenates and additives, specifically ether oxygenates: Tertiary Amyl Methyl Ether (TAME), Diisopropyl Ether (DIPE), Ethyl Tertiary Butyl Ether (ETBE), Tertiary Butyl Alcohol (TBA); and the lead scavengers Ethylene Dibromide (EDB) and Ethylene Dichloride (EDC, also known as 1,2-Dichloroethane and 1,2-DCA). Future analyses need not include any of these constituents no found in the next round of groundwater monitoring.

Response: Evaluation of the fuel oxygenates TAME, DIPE, ETBE, TBA, and the lead scavengers EDB and EDC was performed during the June 2000 quarterly groundwater sampling event. No detectable concentrations of any of these constituents were present, as shown by the June 2000 sampling. Based on these analytical results, AEC recommended discontinuing future analysis for these oxygenated compounds and lead scavengers in AEC's Quarterly Groundwater Sampling Report issued on August 11, 2000. Additional analyses for these compounds will not be performed within the scope of this workplan unless required by ACHCSA prior to commencement of drilling and sampling operations.

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6) The presence or absence of horizontal and vertical conduits with could act as preferential pathways for the dissolved plume needs to be evaluated.

Response: Evaluation of preferential pathways is incorporated within the scope of this workplan.

7) Lastly, "Phase 2 Subsurface Investigation Report" dated February 14, 1997 by All Environmental, Inc., tabulated Polynuclear Aromatic Hydrocarbons (PNA's) concentrations in soil sampled January 1997, for all six borings in Table 1, on page 3. These concentrations for PNA's in soil were as high as 41 mg/kg. However, the "Chain of Custody Record" showed that PNA analyses were only requested for BH2,L3-15'; BH3,L3-15', and BH2W. These concentrations for PNA's were all nondetectable. Hence the PNA concentrations in the report differed from those reported by the laboratory. Explain the discrepancy.

Response: Upon careful review of the All Environmental, Inc. report dated February 14, 1997, it appears the positive PNA data was tabulated in error. Only the three samples listed were apparently analyzed for PNA's and all were below detection limits. AEC apologizes for this oversight.

1.3 Scope of Work

The scope of services described in this workplan are summarized below for clarification purposes. Detailed investigative methods are presented in section 4.0 of this report:

1. Procure City of Oakland Encroachment Permits for the drilling of exploratory soil borings and installation of groundwater monitoring wells within the public easement;
2. Locate underground utilities using client records and Underground Service Alert (USA);
3. Using a hydraulically driven geoprobe soil sampling device, advance three exploratory soil borings in the area downgradient from the former UST location;
4. Using a limited access hollow-stem auger unit, advance two additional soil borings and convert the borings to 2-inch diameter groundwater monitoring wells;
5. Sample all soil borings at intervals of 5-feet, and at the capillary fringe, and have selected soil samples analyzed for TPH-gasoline, BTXE, and MTBE.
6. Develop and sample each of the groundwater monitoring wells and submit the collected samples to a California-certified analytical laboratory for TPH-gasoline, BTXE, and MTBE;
7. Conduct a visual survey of the site and nearby areas for potential surface conduits and combine the surface data with logged subsurface soil profile data in order to evaluate the potential presence of preferential vertical and horizontal pathways for migration of dissolved plume components;

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8. Prepare a report detailing the findings of this assessment and providing conclusions and recommendations based on this third phase of environmental study combined with data obtained from previous studies and cumulative groundwater monitoring program.

1.4 Schedule

Advanced Environmental Concepts, Inc. anticipates beginning the services described in this workplan within two weeks upon approval by the ACHCA, City of Alameda, and authorization to proceed from Mr. Warren Dodson. Drilling will commence only after applicable permits have been obtained from the Zone 7 Water Agency and the City of Oakland. The installation of the monitoring wells should be completed within two days of mobilization to the site.

2.0 BACKGROUND

Historic records indicate that a Gulf station had been located at the site since at least 1950 until it was demolished. An existing Shell Service Station is currently located adjacent to and south of the subject site. The adjoining Shell Station has been a retail fueling and auto service station since at least 1952. Three 10,000-gallon underground storage tanks and two fueling islands were operated at the former Gulf station located at the subject property from approximately 1950 until the demolition of the facility. Gulf's underground tank emplacement was in the northern area of the property, now developed with the current site building. The tanks, dispensers, and product piping are thought to have been excavated and removed at some unidentified time prior to construction of the currently existing building. No documentation of the removal was available to verify that the tanks were actually excavated and removed before the existing building was constructed. In order to evaluate whether or not the tanks remained in place beneath the existing structure, a geophysical magnetometer survey was conducted by Mittlehauser Corporation on February 14, 1991. The report of findings described a large magnetic anomaly located in the northwestern portion of the former Gulf station. The anomaly signature was not characteristic of USTs and was interpreted to represent widely-spaced reinforcement shoring placed for sidewall support during the UST removals. A smaller anomaly depicted by a signature typical of metal underground tanks did identify the presence of a 350 gallon waste oil UST in the area west of the former auto service bays. A small waste sump was identified visually at the same time.

Mittlehauser Corporation vacuumed the remaining liquid waste from the UST and sump, steam cleaned the sump, and disposed of the waste liquid and cleaning rinseate in March of 1991. The sump was excavated and removed following steam cleaning operations. Soil stained with what appeared to be oily waste residue was observed around the former sump area. Soil samples were collected and analyzed for total oil and grease, diesel-range petroleum hydrocarbons, and kerosene-range petroleum hydrocarbons. Laboratory results indicated a concentration of 2,600 mg/kg total oil and grease but no detectable concentrations of either diesel or kerosene. Contaminated soil was adequately excavated and removed from the sump area, as demonstrated by confirmation sampling.

The 350 gallon waste oil UST cleaned by Mittlehauser in 1991 was finally excavated and removed by All Environmental, Inc (AEI) on October 3, 1996. Visual staining was observed within the sidewalls and floor of the excavation during the tank removal operations. As directed by Alameda County officials, AEI over excavated the visually impacted soil and then collected confirmation soil samples to ensure that adequate soil removal had been performed. Laboratory analyses of the confirmation samples indicated no detectable concentrations of petroleum compounds remained in the former waste oil emplacement.

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Six exploratory soil borings were advanced in the area around Gulf's former gasoline tank emplacement and fueling island locations by AEI on January 8, 1997. Groundwater was encountered at approximately 16 feet below grade level (BGL). Soil and groundwater samples collected and analyzed from three of the soil borings (BH-4, BH-5, and BH-6) exhibited significant gasoline-range petroleum hydrocarbons beneath the site. Results of the soil analyses are listed in **Table 1;** groundwater results are listed in **Table 2.** Based on this phase of soil and groundwater analytical data, ACHCSA required additional subsurface investigation to further evaluate underlying soil and groundwater conditions.

Table 1
Exploratory Soil Borings - Phase 1
Analytical Results of Soil Samples
January, 1997
(ppm)

Sample ID	TPH-d	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
BH-1-15'	ND	ND	ND	ND	ND	ND	ND
BH-2-15'	ND	ND	ND	ND	ND	ND	ND
BH-3-15'	ND	ND	ND	ND	ND	ND	ND
BH-4-15'	370	1100	ND	ND	14	4.4	ND
BH-5-15'	1.9	2.1	0.009	0.006	0.016	ND	ND
BH-6-15'	140	190	0.25	0.5	3.6	0.84	ND
Detection Limits	50	1.0	0.005	0.005	0.005	0.005	0.005

ND: Non-detected at indicated level of detection.

Total lead concentrations in soil ranged from 4.6 milligrams per kilogram (mg/kg) to 23 mg/kg, well below the recommended action level of 50 mg/kg. MTBE was below detectable concentrations for all samples analyzed. Analysis for total oil and grease was performed on samples from borings BH-2 and BH-3 and resulted in detectable concentrations less than 50 mg/kg. Poly nuclear aromatics (PNA) analyses did not exhibit detectable concentrations within soil or groundwater samples.

The groundwater samples were analyzed in accordance with California Department of Health Services (CA DHS) method for total petroleum hydrocarbons as gasoline and diesel (TPH-g,d) and EPA Method 8020 for volatile aromatics (BTXE) and methyl tertiary butyl ether (MTBE). Groundwater samples were also analyzed for total lead, oil and grease, and PNAs. Results of the laboratory analyses are summarized below. Units are reported in micrograms per Liter (μg/L), equivalent to parts per billion (ppb). Results of these analyses are listed in **Table 2.**

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Table 2
Exploratory Soil Borings - Phase 1
Analytical Results of Groundwater Samples
January, 1997
(ppb)

Sample ID	TPH-d	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
BH1W	490	330	2.0	0.72	1.3	ND	ND
BH2W	320	ND	ND	ND	ND	ND	ND
BH4W	NA	6600	58	13	2740	110	ND
BH6W	450	13,000	870	65	570	130	320
Detection Limits	10	1.0	0.005	0.005	0.005	0.005	0.005

ND: Non-detected at indicated level of detection.
NA: Not analyzed

Soluble lead concentrations were below detection limits in all samples analyzed. MTBE ranged from below detectable concentrations to 320 ug/L in BH6W. Total oil and grease analysis performed on BH2W resulted in concentrations below 5 mg/L and PNA analysis results were below detectable concentrations. ACHCSA reviewed the results of this first phase of assessment and required additional borings and groundwater monitoring wells to be installed in order to further delineate the identified gasoline and diesel plume(s).

Three Geoprobe soil borings (BH-7, BH-8, and BH-9), and four groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-4) were drilled proximal to the western dispenser islands, and south, west, and north of the former Gulf tank emplacement on August 7, 1997 under supervision of Advanced Environmental Concepts (AEC). The groundwater monitoring wells and Geoprobe borings were positioned to assess the vertical and lateral migration of gasoline and diesel-range petroleum hydrocarbons in the subsurface and to evaluate groundwater quality.

Soil analyses were performed by Associated Laboratories, Inc. to determine the presence and concentrations of hydrocarbons and MTBE at the subject site by EPA methods 8015M and 8020. Analytical results for soil samples are presented in **Table 3**. Units are in milligrams per kilogram (mg/kg) which are equivalent to parts per million (ppm).

Table 3
Exploratory Soil Borings - Phase 2
Analytical Results - Soil Borings
August 7, 1997
(ppm)

Sample ID	TPH-d	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
BH-7-12'	<10	<5	<0.005	<0.005	<0.015	<0.005	<0.05
BH-7-16'	<10	<5	<0.005	<0.005	<0.015	<0.005	<0.05

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Sample ID	TPH-d	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
BH-8-8'	<10	<5	<0.005	<0.005	<0.015	<0.005	<0.05
BH-8-12'	<10	168	0.02	<0.005	5.1	0.45	<0.05
BH-8-16'	<10	21	0.027	0.07	0.75	<0.005	<0.05
BH-9-8'	<10	<5	<0.005	0.032	0.28	0.029	<0.05
BH-9-12'	<10	<5	<0.005	0.012	<0.015	<0.005	<0.05
BH-9-16'	<10	<5	<0.005	<0.005	<0.015	<0.005	<0.05
MW-1-10'	<10	<50	<0.005	<0.005	<0.015	<0.005	<0.05
MW-1-17'	<10	<5	<0.005	0.031	<0.015	<0.005	<0.05
MW-2-10'	<10	<5	<0.005	<0.005	<0.015	<0.005	<0.05
MW-2-17'	<10	16	0.035	0.037	0.15	0.018	<0.05
MW-3-10'	<10	<5	<0.005	<0.005	<0.015	<0.005	<0.05
MW-3-15'	<10	<5	0.027	<0.005	<0.015	<0.005	<0.05
MW-4-10'	<10	<5	<0.005	<0.005	<0.015	<0.005	<0.05
MW-4-17'	<10	<5	<0.005	<0.005	<0.015	<0.005	<0.05
Detection Limits	10	5	0.005	0.005	0.015	0.005	0.05

ND: Non Detected at indicated limit of detection

Water analyses were performed by Associated Laboratories, Inc. to determine the presence and concentrations of hydrocarbons at the subject site by EPA methods and 8015M and 8020. Analytical results for groundwater samples are presented in **Table 4**. Units are in micrograms per Liter (μg/L) which are equivalent to parts per billion (ppb).

Table 4
Exploratory Soil Borings - Phase 2
Analytical Results - Water Samples
August 8, 1997
(ppb)

Sample ID	TPH-d	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
MW-1	<1,000	1,140	110	16	112	15	43
MW-2	<1,000	5,530	108	36	144	33	925
MW-3	<1,000	8,500	450	30	106	53	1,080

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Sample ID	TPH-d	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
MW-4	<1,000	<500	<0.5	<0.5	<1.5	<0.5	<20
Detection Limits	1,000	500	0.5	0.5	01.5	0.5	20

ND: Non Detected at indicated limit of detection

Table 5
Exploratory Soil Borings - Phase 2
Biological Factors - Monitor Wells
August 8, 1997
(ppb)

Sample ID	2580 B	300.0 (Nitrate)	300.0 (Sulfate)	310.1	3500 FED	360.1
MW-1	311	7.1	92	238	0.10	8.2
MW-2	331	0	43	398	0.50	6.3
MW-3	330	0	56	368	ND	7.9
MW-4	307	19.5	87	140	ND	7.8
Detection Limits	n/a	5	5	5	0.1	n/a

2580B: Redox Potential @ Temp
300.0: Nitrate As NO3 by Ion Chromatograph
310.1 Alkalinity
3500FED: Ferrous Iron
360.1: Dissolved Oxygen, Membrane Electrode

The following tables summarize the cumulative analytical results for AEC's ongoing groundwater sampling program. Units are presented in micrograms per liter (µg/L) which are equivalent to parts per billion (ppb).

Table 6
Quarterly Groundwater Monitoring Program
Analytical Results - Monitoring Wells
(ppb)

Sample ID	Date	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
MW-1	08/8/97	1,140	110	16	112	15	NA
	12/3/97	ND	ND	ND	31	ND	NA
	03/16/98	370	8.9	ND	2.2	ND	18
	07/9/98	6,400	1,300	23	58	3.7	97

Sample ID	Date	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
	10/19/98	2,500	360	44	150	1.3	ND
	01/19/99	2,700	1,200	28	78	140	130
MW-1	6/26/00	27,000	5,200	500	3,100	320	1,300
MW-2	08/08/97	5,350	108	36	144	33	NA
	12/3/97	1,600	73	ND	ND	ND	NA
	3/16/98	3,400	830	100	240	210	870
	07/09/98	3,100	25	2.2	0.9	ND	1,900
	10/19/98	4,300	ND	1.2	1	ND	4,200
	01/19/99	2,900	160	8.9	7.4	6.9	2,100
MW-2	06/26/00	2,700	200	17	16	30	680
MW-3	08/08/97	8,500	450	30	106	53	NA
	12/03/97	5,200	180	6	9.3	5	NA
	03/16/98	1,000	6.0	ND	ND	ND	810
	07/09/98	6,400	490	57	78	23	220
	10/19/98	2,100	ND	ND	ND	ND	ND
	01/19/99	4,400	450	65	42	26	1,300
MW-3	06/26/00	1,700	110	13	13	34	96
MW-4	08/08/97	ND	ND	ND	ND	ND	NA
	12/03/97	ND	ND	ND	ND	ND	NA
	03/16/98	ND	ND	ND	ND	ND	ND
	07/09/98	ND	ND	ND	ND	ND	ND
	10/19/98	ND	ND	ND	ND	ND	ND
	01/19/99	ND	ND	ND	ND	ND	ND
MW-4	06/26/00	<50.0	<0.5	<0.5	<0.5	<0.5	<0.5
Detection Limits		50	0.5	0.5	0.5	0.5	0.5

ND: Not detected at the indicated level of detection
TPH-g: Total Petroleum Hydrocarbons as gasoline

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In accordance with directives issued by ACHCS in a letter dated May 16, 2000, groundwater samples collected during June 2000 were also analyzed for the presence of ether oxygenates, specifically: Tertiary Amyl Methyl Ether (TAME), Diisopropyl Ether (DIPS), Ethyl Tertiary Butyl Ether (ETBE), Tertiary Butyl Alcohol (TBA) and the following lead scavengers: Ethylene Dibromide (EDB), Ethylene Dichloride (EDC), and 1,2-Dichloroethane (1,2-DCA). The following Table 7 presents the results of these additional analyses.

Table 7
Analytical Results
Ether Oxygenates & Lead Scavengers

Sample ID:	Date:	TAME	DIPE	ETBE	TBA	EDB	EDC	1,2-DCA
MW-1	06/26/00	<50.0	<50.0	<50.0	<1,000	<5.0	<5.0	<5.0
MW-2	06/26/00	<5.0	<5.0	<5.0	<100.0	<0.5	<0.5	<0.5
MW-3	06/26/00	<5.0	<5.0	<5.0	<100.0	<0.5	<0.5	<0.5
MW-4	06/26/00	<5.0	<5.0	<5.0	<100.0	<0.5	<0.5	<0.5
Units:		µg/l	µg/l	µg/l	µg/l	µg/l	µg/l	µg/l

The current state maximum contaminant levels (MCLs) for drinking water adopted by the California Department of Health Services, Title 22 are as follows:

Benzene	1 µg/L
Toluene	2000 µg/L
Ethylbenzene	680 µg/L
Total Xylenes	1750 µg/L
MTBE	13 µg/L

Based on review of previous environmental studies combined with the laboratory analyses obtained during AEC's ongoing groundwater monitoring program and the calculated hydraulic gradient, Alameda County is requiring an additional phase of exploratory borings and two additional groundwater monitoring wells. This third phase of subsurface exploration is intended to delineate the downgradient extent of migration of the contaminant plume(s) and provide data pertaining to the stability of the plume(s) and concentrations of volatile organic compounds (specifically benzene) and MTBE. This work plan outlines the methods and procedures to be used during the course of this additional assessment.

3.0 SITE CHARACTERISTICS

The Dodson property is located east of the San Francisco Bay in the foothills of Oakland. The foothills of Oakland are composed of alluvial fans and non-marine terraces with elevations ranging from 150 to 500-feet above mean sea level. The area slopes regionally to the southwest with gradients ranging from 25 to 200-feet per mile.

Recent alluvial deposits comprise near surface sediments in the area beneath the subject property. These sediments consist of unconsolidated gravels, sands, silts, and clays. Generally, the coarser grained sediments are deposited near the inland hills as alluvial fans, whereas deposition of progressively finer grained

sediments occurs toward the San Francisco Bay and marshlands. The upper fan areas are interpreted as intake areas where recharge of groundwater occurs. Hydraulic continuity may exist between alluvial sediments of the fan areas and certain water-bearing sediments of the central lowlands. Replenishment of groundwater occurs in the intake area by infiltration from major streams and from seasonal precipitation.

The current groundwater flow direction is calculated at North 178° West, and the gradient is 0.50'/100'. These values were calculated based on the latest depth measurements made during the June 2000 quarterly monitoring event. Although there have been shifts in the gradient over time, the general trend has always been toward the north and northwest.

4.0 WORK PLAN

AEC proposes to drill and sample a total of five soil borings at the subject site. Two of these borings will be completed as additional groundwater monitoring wells in order to provide water quality information in the downgradient direction. The installation of new wells will require an encroachment permit from the City of Oakland due to the proximity of the city easement. The borings will be drilled to approximately 20-feet bgl. Soil sampling will occur at intervals of 5-feet, and at the capillary fringe. The monitoring wells will be positioned to evaluate the residual gasoline concentrations in the capillary fringe, and identify the stability of the plume migration. The monitoring wells will be designated MW-5 and MW-6 and advanced on the north side of Howe Street. Location of the proposed borings and groundwater monitoring wells are plotted on **Figure 2**. These locations may be 'stepped out' based on actual field observations. Well construction details are presented on **Figure 3**. AEC anticipates the perforated casing interval will be set from ten to twenty feet BGL in order to accommodate groundwater level fluctuations.

4.1 Drilling Methods

The borings to be completed as monitoring wells will be advanced using Gregg Drilling's Rhino track-mounted limited access rig, equipped with 8-inch O.D., hollow-stem, continuous-flight augers in accordance with ASTM Method D 1452-80 for soil investigations and sampling by auger borings. The three borings which are not planned for completion as monitoring wells will be advanced using a hydraulically driven probe.

Prior to drilling each boring, the augers and probe stems will be steam cleaned to minimize the potential for downhole or cross-hole contamination affecting a potentially "clean" location. No water or other liquids will be added to any boring. Drill cuttings generated during advancement of hollow-stem auger borings will be enveloped in plastic sheeting or placed drums and stored on-site pending laboratory analytical results. If laboratory analyses indicate that the cuttings are impacted by hydrocarbons or volatile organic compounds, transportation and disposal or treatment will be the responsibility of the Client.

Once groundwater is encountered, two of the borings will be advanced an additional 5 feet into the water-bearing zone and completed as 2-inch diameter groundwater monitoring wells. AEC will obtain groundwater monitoring well permits from Alameda County prior to any boring activity.

5.0 INSTALLATION OF MONITORING WELLS

The monitoring wells will be constructed according to **Figure 3** and installed in the following manner: Approximately 20-feet of 2-inch diameter, flush-threaded, Schedule 40 PVC casing with an end cap, will be

set in the well through the auger after the final depth has been reached and sampling is complete. The bottom 10-feet of casing will consist of 0.010-inch diameter factory-slotted liner, thus approximately 5-feet of slotted casing will be above the potentiometric surface allowing for seasonal fluctuations in the water table. Number 2/16 kiln-dried Monterey sand will be slowly poured down the annulus while removing five feet of auger at a time. The volume of added sand per foot will be tracked and the filter pack thickness continuously measured during this process in order to ensure bridging does not occur. The filter pack will extend from the bottom of the casing to one foot above the screened interval. Six feet of bentonite chips will be poured and hydrated to form an impermeable seal above the filter pack. A cement slurry will be used to fill the annular space to within one foot of grade level. A traffic-rate metal well cover box will then be cemented in and sloped to minimize water accumulation.

5.1 Well Development/Sampling

The monitoring wells will be developed using a submersible pump after installation. The wells will be pumped until the effluent is clear and free of fine-grained soil particles and then be allowed to stand and regain equilibrium before measuring the static depth to groundwater and collection of samples for laboratory analysis. The water depth sounder will be washed in a solution of phosphate-free Alconox and triple rinsed with distilled water prior to initial use and between each well in order to minimize the potential for cross-site or cross-well contamination.

Groundwater removed during the well development process will be pumped into appropriately labeled DOT approved 55-gallon drums and stored on-site pending the outcome of laboratory analyses. If the analyses identify the presence of significant concentrations of contaminants, the water will be transported to an authorized disposal facility under standard Uniform Hazardous Waste Manifest protocol. The Client is responsible for costs associated with transport and disposal of impacted groundwater.

Groundwater samples will be collected using new Teflon bailers, one dedicated to each well. The water samples will be transferred to clean 40 ml VOA vials having Teflon septa (for gasoline constituents and volatile organic compounds), and 1 Liter amber jars (for oil & grease and/or diesel constituents). Care will be exercised to ensure that no air pockets are present in any of the vials containing samples to be analyzed for volatile or semi-volatile organic compounds.

The VOA vials and sample bottles will be labeled, placed in a protective covering, stored on blue ice, and recorded on a Chain-Of-Custody Record. Samples will be analyzed for TPH-g,d BTEX, and MTBE according to EPA methods 8015 modified and 8021B, respectively. Positive MTBE results will be confirmed using EPA Method 8260B.

6.0 EVALUATION OF CONDUITS

In order to evaluate the potential presence of conduits which may act as preferential pathways for contaminant migration, AEC proposes to perform a visual survey of the subject property and surrounding areas and review of public agency records. The visual survey will identify the presence of onsite and nearby wells, drains, sewer systems, pits, sumps, streams, rivers, and any other readily identifiable features judged to present a significant potential to increase the vertical migration of contaminants within the subsurface. Preferential pathways in the horizontal plane will be evaluated based on 3-dimensional interpretation of soil lithologies and textures logged by the AEC geologist during the drilling and sampling operations combined with previous subsurface investigation data and information pertaining to nearby features such as underground pipelines and utility corridors, building foundations, wall footings, etc.

7.0 EVALUATION OF BENZENE EXPOSURE PATHWAYS

In order to evaluate the potential pathways for groundwater-vapor intrusion from groundwater to buildings and the groundwater volatilization to outdoor air exposure, AEC will perform a review of current and historical data and evaluate current site conditions and possible conduits to assess the pathway for pathway. If these pathways are found to be limited, further evaluation of these potential exposure pathways will not be warranted.

8.0 REPORT OF FINDINGS

Following the completion of the field work and laboratory analyses of collected samples, AEC will prepare and present a final report documenting the methods and procedures used in this project. The report will present field data and laboratory analytical data and resultant interpretation and will also include AEC's conclusions and recommendations for this facility.

4400 ASHE ROAD #206 • BAKERSFIELD, CA 93313 661/831-1646 • FAX 661/831-1771

9.0 REMARKS/SIGNATURES

This workplan represents **Advanced Environmental Concepts, Inc.'s** professional opinions. These opinions are based on currently available data and were arrived at in accordance with accepted hydrogeologic and environmental engineering practices. No other warranty, expressed or implied, is given.

This workplan was prepared by:

Advanced Environmental Concepts, Inc.

Jonathan L. Buck
Project Hydrogeologist
California Environmental Assessor II #20017

This workplan has been prepared under my direct supervision:

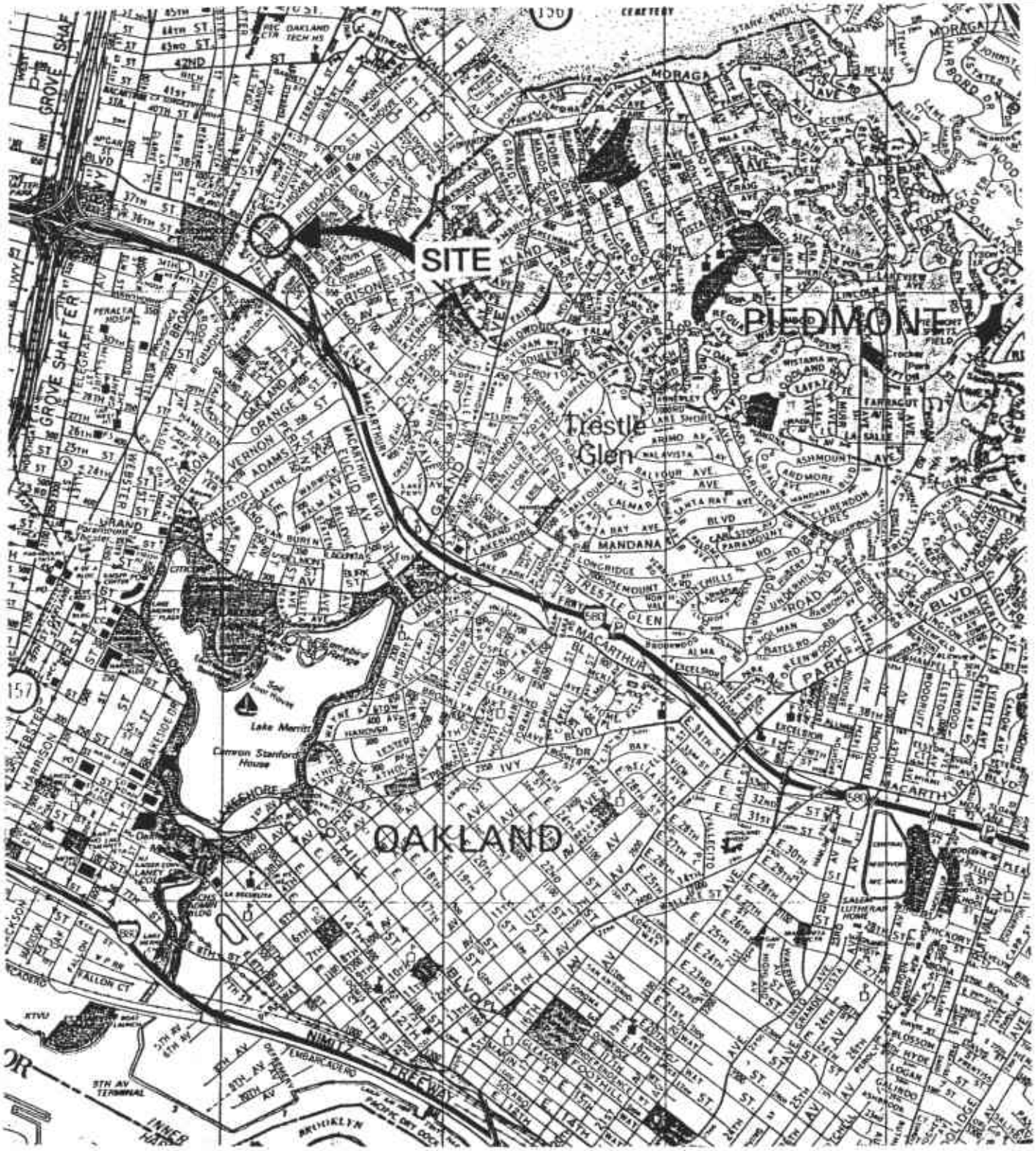
Ailsa S. Le May
Registered Professional Geologist #6717

DOC16II

"Appendix A"

PROJECT MAPS / FIGURES

4400 ASHE ROAD #206 • BAKERSFIELD, CA 93313 661/831-1646 • FAX 661/831-1771



Map Source: Thomas Maps

ADVANCED ENVIRONMENTAL CONCEPTS INC

ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40672 BAKERSFIELD, CA 93384

- SITE AREA -

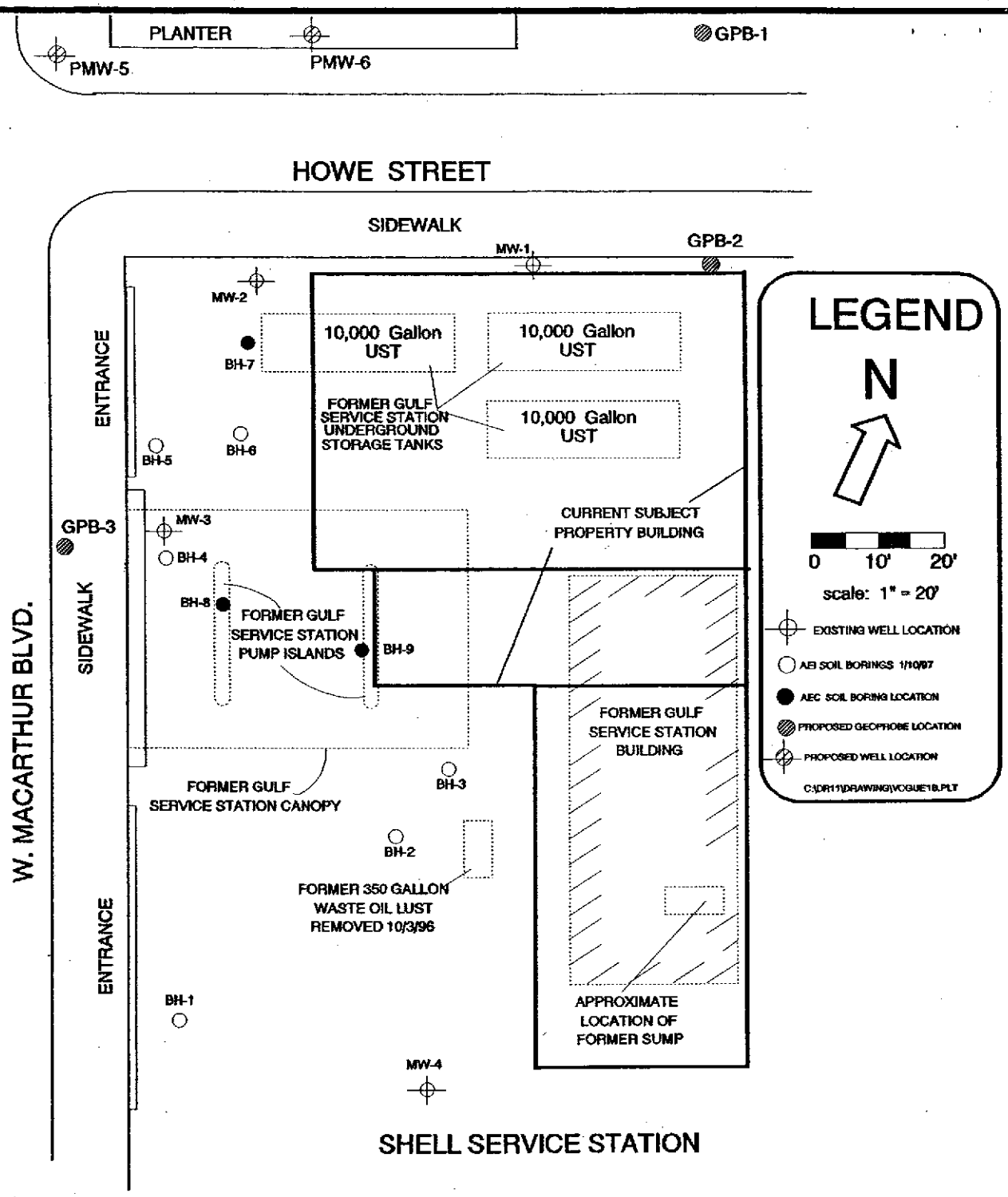
Prestige Products Corporation

240 West MacArthur Blvd.

County of Alameda - Oakland, California

FIGURE

1



ADVANCED ENVIRONMENTAL CONCEPTS INC

ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40672 BAKERSFIELD, CA 93384

- Proposed Boring Locations -

VOGUE TYRES

Prestige Products Corporation

240 West MacArthur Blvd.

County of Alameda - Oakland, California

FIGURE

2

"Appendix B"

HEALTH & SAFETY PLAN

4400 ASHE ROAD #206 • BAKERSFIELD, CA 93313 661/831-1646 • FAX 661/831-1771

Health & Safety Plan

for

Former Vogue Tyres Facility
Warren Dodson Property
240 West MacArthur Boulevard
County of Alameda • Oakland, California

Introduction:

A Site Safety Plan (SSP) has been designed to address safety provisions needed during the site soil assessment/remediation. Its purpose is to provide established procedures to protect all on-site personnel from direct skin contact, inhalation, or ingestion of potentially hazardous materials that may be encountered at the site. The SSP establishes personnel responsibilities, personal protective equipment standards, decontamination procedures and emergency action plans.

Advanced Environmental Concepts, Inc. seeks to enter the property described above for the purpose of conducting a site assessment. The work will consist of exploratory soil coring using both hollow-stem auger and hydraulic probe equipment, soil and groundwater sampling, and groundwater monitor well installation for the purpose of assessing hydrocarbon-impacted soil and groundwater.

Undisturbed soil samples will be collected to assess the extent of hydrocarbon impacted soil at the subject site. Each sample to be chemically analyzed will be collected in a brass sleeve, capped with lined plastic lids, sealed with tape, and immediately stored in a cooler with frozen Blue Ice immediately. All Chain-of-Custody protocol will be followed.

Drilling equipment will be brought to the site and operated by:

Gregg Drilling
1014 E. South Street
Anaheim, California 92805

Contractor's License # C57-574490

This SSP describes the means for protecting all on-site personnel from exposure to contamination and/or personal injury while conducting on-site activities. As described below, AEC will strive to meet all requirements promulgated by the California Department of Health Services.

Responsibilities of Key Personnel:

All personnel on-site will have assigned responsibilities. Mr. Jonathan L. Buck will serve as Project Manager and on-site geologist. He will also serve as Site Safety Officer (SSO). As SSO, Mr. Buck will ensure that on-site personnel have received a copy of the SSP. Personnel will be required to document their full understanding of the SSP before admission to the site. Compliance with the SSP will be monitored at all times by the SSO. Appropriate personal protective equipment, listed below, will be available and utilized by all on-site personnel. Prior to beginning work, the SSO will conduct a "tailgate safety" training session to assure that all personnel are aware of safe work practices and potential exposure risks. Mr. Buck will also be responsible

for keeping field notes, collecting and securing samples, and assuring sample integrity by adherence to Chain-of-Custody protocol.

All on-site employees will take reasonable precautions to avoid unforeseen hazards. After documenting their understanding of the SSP, each on-site employee will be responsible for strict adherence to all points contained herein. Any deviation observed will be reported to the SSO and corrected. On-site employees are held responsible for performing only those tasks for which they are qualified. Provisions of this SSP are mandatory and personnel associated with on-site activities will adhere strictly hereto.

Job Hazard Analyses:

Hazards likely to be encountered on-site include those commonly encountered when operating any mechanical equipment, such as the danger of falling objects or moving machinery. Simple precautions will reduce or eliminate risks associated with operating such equipment.

A drilling contractor has been employed to deliver and operate all drilling equipment. Qualified personnel only will have any contact with this equipment. All on-site personnel, including the excavation contractor and his employees, are required to wear hard hats when in close proximity to excavating equipment. Latex sampling gloves will be worn by persons collecting or handling samples to prevent exposure to contaminants. Gloves will be changed between samples and used ones discarded, to avoid cross-contamination. Proper respiratory equipment will be worn if vapor contamination levels on-site exceed action levels as determined using a Photoionization Detector (PID). Action levels requiring respiratory apparatus will be 10-ppm above background level in the breathing zone. Furthermore, no on-site smoking, open flames or sparks will be permitted in order to prevent accidental ignition.

Risk Assessment Summary:

Exposure to chemicals anticipated on-site include gasoline, diesel, and benzene, toluene, and xylene (BTX). These chemicals represent a hazard because they are moderately to extremely toxic and most are highly flammable.

Threshold Limit Values (TLV's), Short Term Exposure Limits (STEL's) and Toxicity levels (LD50, oral-rat), all in mg/kg (ppm), are listed below:

Compound	TLV	STEL	Toxicity
Gasoline	200	300	----
Diesel	50	75	----
Benzene	10	25	4894
Toluene	100	150	5000
Xylenes	100	150	4300

Benzene is considered an extreme cancer hazard.

Exposure Monitoring Plan:

A PID will be used to monitor vapor concentrations around the site. Should concentrations exceed TLV's, protective measures will be taken. Passive dosimeter badges will be placed in downwind locations if PID readings indicate high levels of volatile organics in the breathing space.

Personal Protective Equipment:

Personnel on-site will have access to respirators with organic vapor cartridges. Replacement cartridges will be available on-site as needed. When handling samples, the on-site Geologist will wear latex gloves. Hard hats will be worn by all personnel on-site when in proximity of drilling equipment.

Work Zones and Security Measures:

Access to the site will be restricted to authorized personnel. A set of cones, placards, or wide yellow tape surrounding the site will define the perimeter, if necessary. The Project Manager will be responsible for site security.

Decontamination Measures:

Avoidance of contamination whenever possible is the best method for protection. Common sense dictates that on-site personnel avoid sitting, leaning or placing equipment on potentially contaminated soil. A ll personnel will be advised to wash their hands, neck and face with soap and water before taking a break or leaving the site. Respirators will be washed with soap and water following each day's use.

Drilling and sampling equipment used will be decontaminated by steam-cleaning. Sampling equipment will be decontaminated before each sample is collected.

General Safe Work Practices:

On-site personnel will be briefed each day in "tailgate" meetings as to the day's goals and equipment to be used. Anticipated contaminants and emergency procedures will be reviewed. Appropriate personal protective equipment will be put on and verified correct by the SSO, including respirator fit.

Drilling and sampling equipment will be steam-cleaned before arriving on-site. Split-spoon sampling equipment will be cleaned before each use. Augers will be steam-cleaned between borings.

The on-site engineer will oversee operations and log borings. The Sample Coordinator will assure that proper protocol is used at all times in collecting and handling samples.

Training Requirements:

The SSO will conduct a "tailgate" training session before work begins which will include contaminant properties, warning signs, health hazard data, risk from exposure and emergency first aid. All chemicals are to be covered and the SSO will assure that everyone fully understands site hazards.

Medical Surveillance Program:

According to CFR 29, 1910.120, Paragraph (f), employees who wear respirators thirty (30) days or more during one (1) year or who have been exposed to hazardous substances or health hazards above established permissible exposure limits are required to be monitored medically. All site personnel are required to have had a complete physical (including blood chemistry) within the past year.

Record Keeping:

Documentation will be kept on personnel exposed to contaminant hazards on the job site according to OSHA regulations. These will include documentation that employees have received training on the SSP, respiratory protection, MSDS forms and all emergency procedures. These will be reviewed during the pre-work training meeting.

Exposure records on each job will be kept for thirty (30) years to meet requirements. Included will be names and social security numbers of employees, medical evaluations, on-the-job logs from entry to exit, First Aid administered, visits on-site by outside persons and personal air-monitoring records.

Contingency Plans:

In the event of an accident, injury, or other emergency, the Project Director, Senior Project Manager, or other person, will notify the appropriate government agencies or individuals as follows:

1. Police, Fire, or Ambulance Emergency
   9 - 1 - 1

2. Alameda County Health Care Services Environmental Protection Division
   1131 Harbor Bay Parkway, Suite 250
   Alameda, California 94502-6577
   (510) 567-6700

3. Emergency Hospital:
   Kaiser Permanente Hospital
   280 W. MacArthur Boulevard
   Oakland, California

I have read the Health and Safety Plan and understand the contents herein:

NAME:	COMPANY

ATTACHMENT D

Phase II Subsurface Investigation Report by AEI

February 14, 1997

PHASE II SUBSURFACE INVESTIGATION REPORT

240 West MacArthur Blvd.
Oakland, California

Project No. 1493

Prepared For

Mr. Warren Dodson
Dodson, Ltd.
1323 South Flower Street
Los Angeles, CA 90015

Prepared by

All Environmental, Inc.
3364 Mt. Diablo Blvd.
Lafayette, CA 94549
(510) 283-6000

AEI

ALL ENVIRONMENTAL, INC.
Environmental Engineering & Construction

February 14, 1997
Project No. 1493

Mr. Warren Dodson
Dodson Ltd.
1323 South Flower Street
Los Angeles, CA 90015

Subject: **240 West MacArthur Blvd. , Oakland, California**

Dear Mr. Dodson:

The following letter report describes the activities and results of the subsurface investigation conducted by All Environmental, Inc. (AEI) at the above referenced property (Figure 1: Site Location Map). This investigation was intended to investigate potential groundwater contamination resulting from the storage of petroleum hydrocarbons in a former waste oil UST. In addition, soil and groundwater samples were collected and analyzed in the vicinity of a magnetic anomaly and assumed former UST excavation. The subject property currently supports the operation of Prestige Products Corporation, an automotive repair facility.

I Previous Investigative Work

On February 14, 1991, a magnetometer survey was conducted by Mittelhauser Corporation on the property to determine whether or not underground storage tanks were present on the property. The report issued by Mittelhauser Corporation on February 21, 1991 describes a large magnetic anomaly in the northwestern portion of the property. The anomaly was not characteristic of USTs, however the surveyor believed the anomaly represented wide-spaced reinforcement placed for support following the removal of the tanks. In addition, a UST was identified west of the service bays. The UST was thought to be a waste oil UST based upon a observed cap labeled "fill box". According to the survey report, the City Fire Department records indicate that all fuel USTs were previously removed. A copy of the report is included in Attachment A for reference.

In March, 1991, Mittelhauser Corporation removed waste liquid from the waste oil UST and from an on-site sump. The sump was steamed cleaned prior to being broken up and removed. Soil staining was observed following the sump removal. Soil samples indicated up to 2,600 mg/Kg total oil and grease (TOG) present. Analyses for kerosene and diesel were non-detect. Contaminated soil was removed from in the vicinity of the former sump. Confirmation soil samples indicated the successful removal of the majority of TOG contamination. One soil sample indicated the presence of 360 mg/Kg of TOG remaining. A copy of the Mittelhauser Corporation report is included in Attachment A.

On October 3, 1996, AEI removed the previously identified 350 gallon waste oil UST from in front of the service bay doors. Visual staining was observed on the excavation bottom and sidewalls. Soil samples collected from the excavation indicated the soil beneath the UST was impacted with minor concentrations of petroleum hydrocarbons. At Alameda County Health Care Services Agency's (ACHCSA) request, AEI removed additional soil from the excavation bottom and sidewalls of the excavation. Confirmation soil samples collected from the excavation sidewalls and bottom indicated the successful removal of the petroleum hydrocarbon contamination. Groundwater was not encountered during the excavation activities. A report detailing the removal and subsequent excavation of contaminated soil was issued by AEI on January 3, 1997.

A workplan to investigate potential soil and groundwater contamination in the vicinity of the former waste oil UST and the magnetic anomaly was requested, submitted and approved by Ms. Madhulla Logan of the ACHCSA. The following report describes the activities and results of the investigation.

II Investigative Efforts

Soil Borings

All Environmental, Inc. (AEI) performed a subsurface investigation at the property on January 8, 1997. The investigation included the advancement of six soil borings (BH-1, BH-2, BH-3, BH-4, BH-5 and BH-6) using a Geoprobe drilling rig. Soil borings BH-1, BH-2, BH-4 and BH-6 were advanced to a depth of 20 feet below ground surface and soil borings BH-3 and BH-5 were advanced to 16 feet bgs. BH-1 was advanced in the southwest corner of the property to obtain up gradient groundwater samples. BH-2 and BH-3 were advanced near the former waste oil UST and BH-4, BH-5 and BH-6 were advanced near the magnetic anomaly. The borings were advanced through the asphalt surface. No concrete was encountered during the boring advancement. The locations of the soil borings are shown on Figure 2. Moderate yellowish brown silty clay and silty sand was encountered in the near surface sediments during the boring advancement as described in detail in the borings logs (Attachment B).

Soil samples were collected at 5 foot intervals in 7/8 inch acrylic liners which were sealed with teflon tape and caps and placed on ice in an ice chest for transportation to McCampbell Analytical Inc. (DOHS Certification Number 1644) under chain of custody protocol for analysis.

Groundwater was encountered at approximately 16 feet bgs during the advancement of the borings. Grab groundwater samples were collected from BH-1, BH-2, BH-4 and BH-6 and labeled BH1W, BH2W, BH4W and BH6W, respectively. The groundwater samples were collected using a clean stainless steel bailer. Water was poured from the bailer into 40 ml VOA vials, one liter bottles and/or 500 milliliter plastic containers and capped so that no head space or visible air bubbles were within the sample containers.

The soil and groundwater samples were labeled and placed on ice in an ice chest for transportation to McCampbell Analytical Inc. under chain of custody protocol for analysis. All soil and groundwater samples were analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline (EPA method 5030/8015), TPH as diesel (EPA method 3550/8015), benzene, toluene, ethylbenzene, xylenes (BTEX), methyl tertiary butyl ether (MTBE) (EPA method 8020/602) and lead (EPA method 6010) with the exception of groundwater sample BH4W. Only two VOA vials were generated from boring BH-4 and therefore, groundwater sample BH4W was analyzed for TPH as gasoline, BTEX and MTBE. Soil and groundwater samples collected from BH-2 and BH-3 were analyzed for total oil and grease (TOG) and polynuclear aromatic hydrocarbons (PNAs) in addition to the above mentioned constituents at the request of Ms. Logan.

The borings were backfilled with cement slurry as per ACHCSA requirements.

Magnetic Anomaly (Concrete Slab)

On February 20, 1997, AEI investigated the area of the magnetic anomaly discovered by Mittelhauser Corporation in February, 1991. AEI probed through the overlying asphalt in the area of the anomaly. Two probes were advanced to two feet below ground surface. No concrete pad was encountered, however strong hydrocarbon odors were emitted from the soil.

III Findings

On January 10, 1997, soil and groundwater samples collected during the investigation were transported to McCampbell Analytical, Inc. for analysis. One soil sample collected at 15 feet bgs from each boring and the groundwater samples from BH-1, BH-2, BH-4 and BH-6 were analyzed on January 10, 1997. Analytical results and chain of custody documents are included as Attachment C.

No detectable concentrations of petroleum hydrocarbons were present in the soil samples analyzed from BH-1, BH-2 and BH-3. PNAs were not present above method detection limits within soil samples analyzed from BH-2, and BH-3. TPH as gasoline was present in soil samples analyzed from borings advanced in the vicinity of the magnetic anomaly (BH-4, BH-5 and BH-6) at concentrations ranging from 1.2 mg/kg to 1100 mg/kg. TPH as diesel was present at concentrations ranging from 1.9 mg/kg to 370 mg/kg in the BH-4, BH-5 and BH-6 soil samples. Minor concentrations of BTEX and MTBE were present in the analyzed soil samples. Lead concentrations in the soil ranged from 4.6 mg/kg to 23 mg/kg. Soil sample analytical data is summarized in Table 1, below.

Table 1 - Soil Sample Analyses, January 10, 1997

Sample ID (Depth)	TPHg mg/kg	TPHd mg/kg	MTBE mg/kg	Benzene mg/kg	Toluene mg/kg	Ethyl-benzene mg/kg	Xylenes mg/kg	Lead mg/kg	TOG mg/kg	PNAs mg/kg
BH-1 (15')	<1.0	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005	15	NA	19
BH-2 (15')	<1.0	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005	8.4	<50	41
BH-3 (15')	<1.0	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005	7.6	<50	13
BH-4 (15')	1100	370	<3.0	<0.02	<0.02	4.4	14	6.2	NA	1.1
BH-5 (15')	2.1	1.9	<0.05	0.009	0.006	<0.005	0.016	4.6	NA	19
BH-6 (15')	190	140	<0.6	0.25	0.50	0.84	3.6	23	NA	0.27

TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
MTBE = methyl tertiary butyl ether
TOG = total oil and grease
PNAs = poly nuclear aromatics
mg/kg = milligrams per kilogram (ppm)

Concentrations of TPH as gasoline and was detected the groundwater samples collected from BH-1, BH-4 and BH-6 at concentrations ranging from 330 ug/L to 13,000 ug/L. Benzene and MTBE concentrations ranged from 2.0 ug/L to 870 ug/L and 170 ug/L to 320 ug/L, respectively. No TPH as gasoline, MTBE or BTEX was detected in groundwater sample BH2W, however concentrations of TPH as diesel were present at 320 ug/L. TPH as diesel concentrations were also detected in water sample BH1W and BH6W at 490 ug/L and 450,000 ug/L, respectively. PNAs were not present in the groundwater collected from BH-2. Lead was not found present in the groundwater samples. The groundwater analytical results are summarized below in Table 2.

Table 2 - Groundwater Sample Analyses, January 10, 1997

Sample ID (Depth)	TPHg ug/L	TPHd ug/L	MTBE ug/L	Benzene ug/L	Toluene ug/L	Ethyl-benzene ug/L	Xylenes ug/L	Lead mg/L	TOG mg/L	PNAs ug/L
BH1W	330	490	220	2.0	0.72	<0.5	1.3	<0.005	NA	NA
BH2W	<50	320	<5.0	<0.5	<0.5	<0.5	<0.5	<0.005	<5.0	N.D
BH4W	6600	NA	170	58	13	110	270	NA	NA	NA
BH6W	13,000	450,000	320	870	65	130	570	<0.005	NA	NA

ug/L = micrograms per liter (ppb)
mg/L = milligrams per liter (ppm)

IV Discussion

A Shell Service Station is located immediately south and up gradient of the subject property. The station has reported groundwater contamination from leaking underground storage tanks. Four groundwater monitoring wells were installed at the Shell Service Station at an unknown date. The earliest record of groundwater monitoring was from July, 1988. The most recent documented quarterly groundwater monitoring episode occurred in March, 1992 by Pacific Environmental Group, Inc. The four on-site wells were sampled for TPH as gasoline and BTEX. No analyses for TPH as diesel were conducted. According to the analytical results, no detectable concentrations of TPH as gasoline or BTEX were present in groundwater collected from three of the wells. Monitoring of the fourth well (MW-4) indicated TPH as gasoline and BTEX present at concentrations of 2,700 ppb, 180 ppb, 70 ppb, 5.9 ppb and 29 ppb, respectively. MW-4 is located approximately 10 feet from the southern subject property boundary. Refer to Figure 2 for a location of MW-4 and Attachment A for a copy of the Pacific Environmental Group, Inc. report.

Based upon the analytical data and reported groundwater gradient, there is a potential that off-site migration of contaminated groundwater originating from the Shell Service Station has impacted the subject property.

V Conclusions/Recommendations/Additional Investigations

Based upon analytical results of the subsurface investigation, there is a potential that groundwater contamination resulting from a release of petroleum hydrocarbons on the adjacent, up gradient Shell Service Station has migrated to the southwest corner of the subject property.

Significant concentrations of TPH as gasoline and TPH as diesel are present in the soil and groundwater in the vicinity of the magnetic anomaly. The source of the contamination is believed to be the former USTs reportedly located in this area. Further investigation would need to be conducted in order to determine the extent of soil contamination in the vicinity of the magnetic anomaly.

VI Report Limitation

This report presents a summary of work completed by All Environmental, Inc. (AEI). The completed work includes observations and descriptions of site conditions encountered. Where appropriate, it includes analytical results for samples taken during the course of the work. The number and location of samples are chosen to provide the required information, but it cannot be assumed that they are representative of areas not sampled. All conclusions and/or recommendations are based on these analyses and observations, and the governing regulations. Conclusions beyond those stated and reported herein should not be inferred from this document.

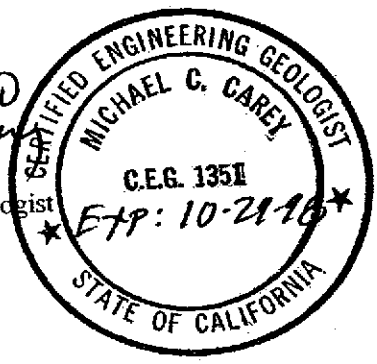
These services were performed in accordance with generally accepted practices, in the environmental engineering and construction field, which existed at the time and location of the work.

If you have any questions regarding our investigation, please do not hesitate to contact me at (510) 283-6000.

Sincerely,

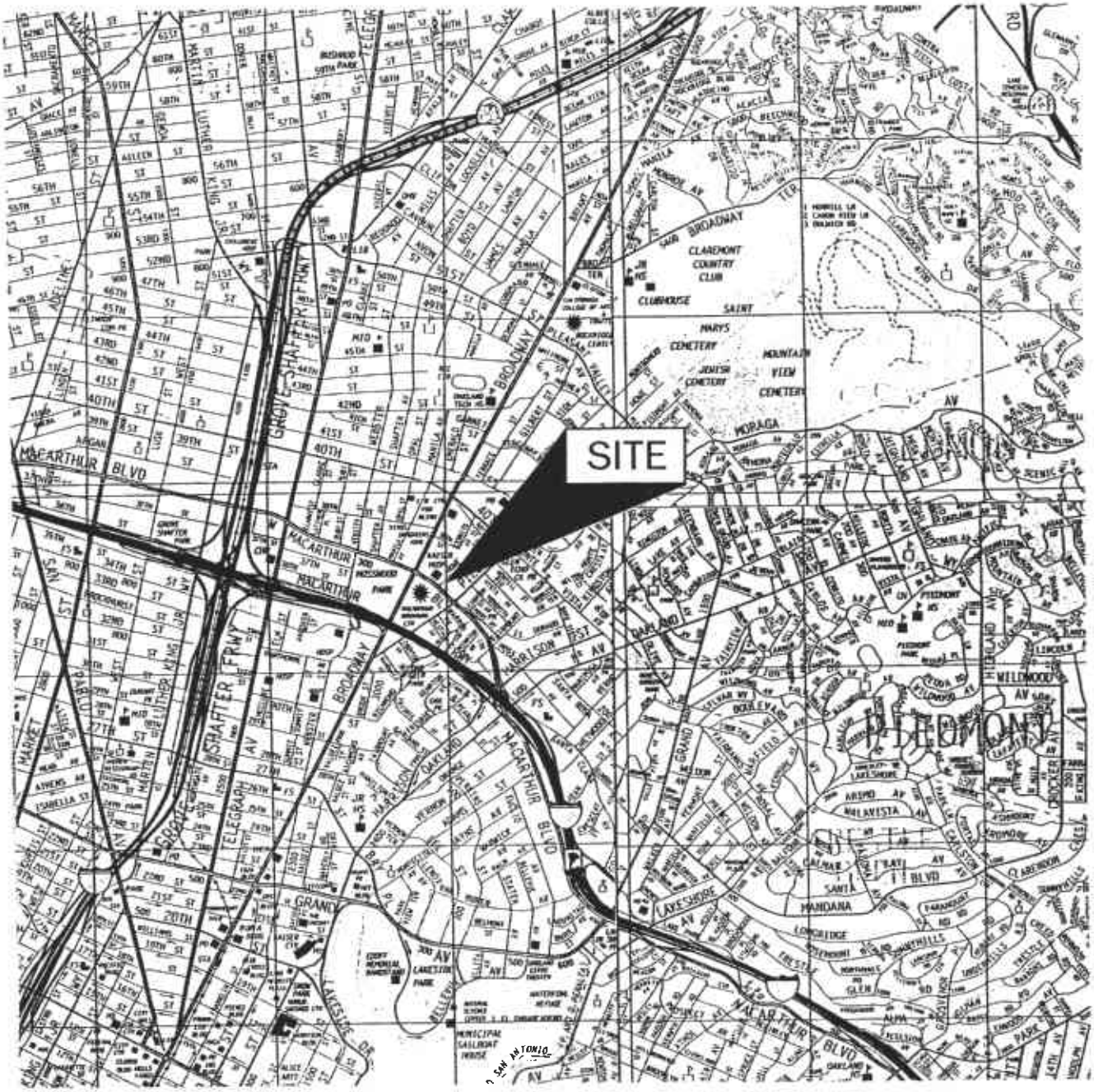
Jennifer Anderson
Project Manager

Michael C. Carey
Engineering Geologist
CEG 1351



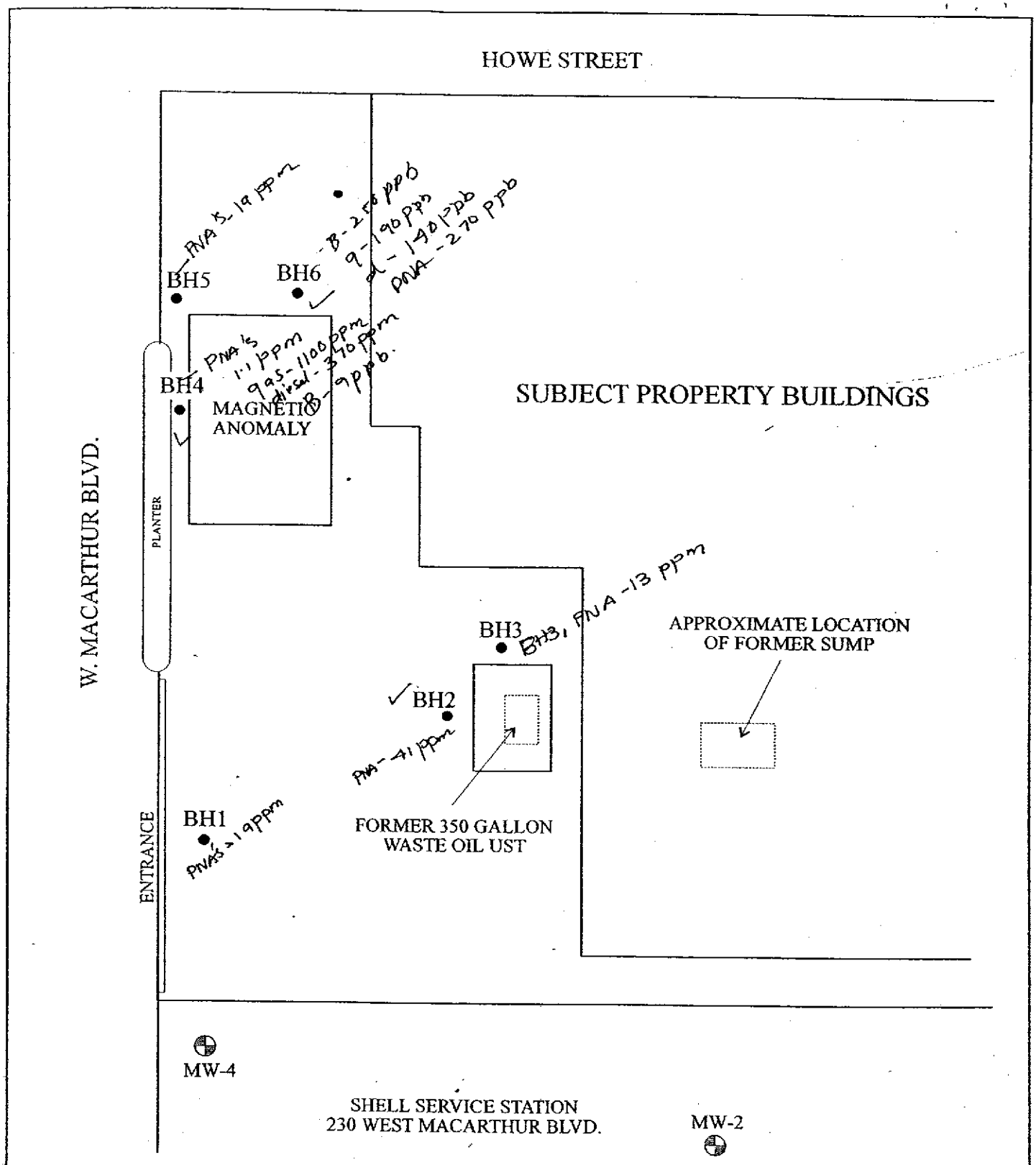
Figures
Attachment A
Attachment B
Attachment C

cc: Ms. Madhulla Logan



FROM:
THOMAS BROS. MAPS
1997

ALL ENVIRONMENTAL, INC. 3364 MT. DIABLO BOULEVARD, LAFAYETTE		
SCALE: 1 IN = 2400 FT	APPROVED BY:	DRAWN BY:
DATE: 2 JANUARY 97		REVISED:
SITE LOCATION MAP		
240 WEST MACARTHUR BLVD. OAKLAND, CALIFORNIA		DRAWING NUMBER: FIGURE 1



ALL ENVIRONMENTAL, INC.

3364 MT. DIABLO BOULEVARD, LAFAYETTE, CA

SCALE: 1"=20'		REVISED BY: N. WALCHUK
DATE: 20 JANUARY 1997		APPROVED BY: J. ANDERSON

SOIL BORING LOCATION MAP

240 WEST MACARTHUR BLVD.
OAKLAND, CALIFORNIA

DRAWING NUMBER:
FIGURE 2

MITTELHAUSER corporation

2401 Crow Canyon Road, Suite 100
San Ramon, California 94583
(415) 743-0335

April 9, 1991

Mr. Warren Dodson
Dodson, Ltd.
1323 South Flower Street
Los Angeles, California 90015

Dear Mr. Dodson:

Enclosed is a letter report to you on the oil clean-up at 240 West MacArthur Boulevard. I suggest you keep this letter report with your records about the station, in the event you are ever asked by a regulatory agency to explain how the site has been cleaned (particularly to demonstrate that the ground under the sump was clean before the hole was backfilled). Another reason might be if you attempt to reclaim costs from the present owner of the Gulf properties, which I understand is Chevron.

Other soil sampling was done which did not apply to the report, but which I wanted to explain to you because you will be getting charged for the laboratory work. For example, an interim set of samples taken from the pit did not pass the regulatory levels and more soil was then removed and the pit was sampled again. Also, samples have been taken from the pile of excavated soil because the soil cannot be disposed of at a dump without the dump knowing what is in it.

I understand the soil piles will be removed from the site within a few days and a slurry coat put on the drive to cover the stains so that things will be pretty much back to normal.

Sincerely,
MITTELHAUSER COPORATION

Marjorie Bushnell

MITTELHAUSER corporation

2401 Crow Canyon Road, Suite 100
San Ramon, California 94583
(415) 743-0335

April 9, 1991

Mr. Warren Dodson
Dodson, Ltd.
1323 South Flower Street
Los Angeles, California 90015

Subject: Sump Removal and Waste Oil Cleanup at
240 W. MacArthur Blvd., Oakland, California

Dear Mr. Dodson:

This letter is to report to you the removal of waste oil and the waste-oil sump at the above-referenced property.

All oil, sludge, and other materials standing in the sumps and in the underground waste-oil storage tank (approximately 650 gallons) were removed by Erickson, Inc. on March 13, 1991, and taken away for appropriate disposal. The sumps were steam-cleaned by the Erickson operator, and the waste-water was also transported with the other fluids.

The concrete sump was then broken up and removed. Prior visual inspection had revealed that the sump appeared intact; however, fluids were noted on the exposed pit floor, and had ponded toward the east end. Moisture and staining was apparent on the sides under floor-drain pipes entering from the sides. Samples were taken from the floor and sides, with results as follows:

Pit bottom, east end	2,600 mg/Kg oil and grease
Pit bottom, west end	630 mg/Kg oil and grease
Pit east wall	150 mg/Kg oil and grease
Pit west wall	no oil and grease detected

The samples were also tested for kerosene and for diesel and were non-detect for those components.

Based on these findings, one foot of soil was excavated from the bottom of the pit. In addition, soil was removed from the east wall until all stained soil was removed. Following this, samples were again taken from the bottom of the pit. These were non detect for oil and grease. Laboratory-analysis reports are attached to this letter.

The pit was then filled with clean, imported fill material, the soil was compacted, and the floor was reconstructed with concrete.

Dodson, Ltd.
April 9, 1991

Discussion

This phase of work addressed the problem of oil, grease, and sludge in the waste-oil sump, and any leakage underlying the sump. Soil was removed from beneath the sump until only clean soil was encountered.

Contents of the waste-oil storage tank were also removed because it was cost-efficient to have this done at the same time and because it removes a potential source of leakage.

Upon inspection, fluids underlying the waste-oil sump did not appear to have come from within the sump. Instead, floor drains carrying cleaning water, which were directed towards the sump but did not enter the sump, appeared to have leaked along the outside walls of the sump, and the fluids run underneath. The liquid appeared to be mostly water, but there were black stains. Replacement of the rusted drain pipe after sump removal should have corrected leakage at this location.

Recommendations

The possibility of oil leaking from the pipe which leads from the former sump to the waste-oil storage tank should be addressed when you remove the underground waste-oil storage tank.

Although the empty tank no longer presents a source of potential contamination, its removal and the required concurrent sampling of the underlying soil is advised. The benefit of addressing this matter early is to detect any contamination from possible earlier leakage before it has migrated to the ground water table.

Upon your request, Mittelhauser Corporation would be pleased to submit a proposal to remove the underground waste-oil storage tank. If you have any comments or questions please call me at (415) 743-0335.

Sincerely,
MITTELHAUSER CORPORATION

Marjorie Bushnell
Registered Geologist

attachment: lab reports

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103235
CLIENT: MITTELHAUSER CORPORATION
PROJECT ID: 1522-02
LOCATION: DODSON OAKLAND

DATE RECEIVED: 03/14/91
DATE EXTRACTED: 03/14/91
DATE ANALYZED: 03/15/91
DATE REPORTED: 03/15/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
103235-1	1522-WEST WALL	ND	ND	1
103235-2	1522-EAST WALL	ND	ND	1
103235-3	1522-BOTTOM WEST	ND	ND	1
103235-4	1522-BOTTOM EAST	ND	ND	1

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	10
RECOVERY, %	124

Curtis & Tompkins, Ltd.

LAB NUMBER: 103235
CLIENT: MITTELHAUSER CORPORATION
PROJECT #: 1522-02

DATE RECEIVED: 03/14/91
DATE ANALYZED: 03/15/91
DATE REPORTED: 03/15/91

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520 E&F

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
103235-1	1522-WEST WALL	ND	mg/Kg	50
103235-2	1522-EAST WALL	150	mg/Kg	50
103235-3	1522-BOTTOM WEST	630	mg/Kg	50
103235-4	1522-BOTTOM EAST	2,600	mg/Kg	50

ND = Not detected at or above reporting limit

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	87

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

March 29, 1991 ChromaLab File No.: 0391122

MITTELHAUSER CORPORATION

Attn: Marjorie Bushnell

RE: Three soil samples for Oil & Grease analysis

Project Name: DODSON OAKLAND
Project Number: 1522-02
Date Sampled: March 19-24, 1991 Date Submitted: March 25, 1991
Date Extracted: March 28, 1991 Date Analyzed: March 29, 1991

RESULTS:

Sample No.	Oil & Grease (mg/Kg)
1522-3	N.D.
1522-4	N.D.
1522-C	360
BLANK	N.D.
DETECTION LIMIT	10
METHOD OF ANALYSIS	5520 D&F

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

MITTELHAUSER corporation

2401 Crow Canyon Road, Suite 100
San Ramon, California 94583
(415) 743-0335

February 21, 1991

Mr. Warren Dodson
Dodson, Ltd.
1323 South Flower Street
Los Angeles, California 90015

Subject: Magnetic Survey for Underground Utilities and Recommendations
240 W. MacArthur Blvd., Oakland, California

Dear Mr. Dodson:

This letter is to report to you the results of an electronic survey conducted on February 14, 1991 to determine the presence of underground utilities and possible remaining storage tanks at your property at 240 West MacArthur Boulevard in Oakland. This survey was conducted prior to cleaning the oil sump, in case fixtures connected to the sump were revealed.

A sketch accompanying this letter shows the general features of the property. An obsolete electrical line leads to what was probably a service station sign at the southwest corner. Three other electrical lines run from the buildings to light fixtures along the MacArthur Boulevard boundary. Water, telephone, and sewer service is from Howe Street and does not impact the area of potential boring placement.

An object thought to be a waste-oil storage tank of at least 500 gallon size was identified west of the service bays, as suspected by the previously-observed cap labelled "Fill Box". A pipe leading from oil sumps in the service bays to the north side of this tank was also electronically identified. Upon opening the cap, the tank was found to be filled with what appeared to be old oil.

There is a large area of magnetic anomaly situated west of the office portion of the buildings. It is not a continuous area, but rather is in "squares" in a large region shown on the sketch. Although the signal was strong, it was the opinion of the survey operator that this was not an underground storage tank. City Fire Department records indicate that all fuel tanks have been removed. The anomaly may represent wide-spaced reinforcement placed for support

after the former tanks were removed.

While conducting the survey, I asked that potential drilling sites be given particular attention. These sites which were declared clear as a result of the survey are indicated on the attached sketch and are marked on the ground at the site with white paint.

Recommendation

We are proceeding with clean-up of the oil sumps and testing of soil underlying the sumps. If the soil is uncontaminated the sumps can be filled and surfaced. If the soil has been contaminated by the oil, the soil and the sump will need to be removed and disposed of at an appropriate site prior to backfilling the hole. Our estimated price for this work included disposing of the sludge observed within the sumps, but did not include any cost for disposing of underlying contaminated soil as this is an unknown and, with luck, there won't be any.

The underground waste-oil tank should be removed as the next step, for the following reasons.

(1) if the tank has been leaking, it is better to remove the source and complete the clean-up before the leaked substance travels further.

(2) draining and cementing the tank is a possibility, if allowed by the regulatory agencies, however this method requires extensive testing of soil from beneath the tank and it is never entirely certain that contamination has been ruled out. The tank still may need to be pulled later.

We recommend that you have this tank removed even though you postpone drilling monitoring wells until you are strongly interested in selling the property.

I will soon send you a proposal and work plan related to removing the tank; however there is some urgency to the sump clean-up due to recent E.P.A. rulings and that work will take priority.

Impact on Future Work

You once inquired how much of this work would have to be repeated if the property were not sold for, for example, ten years.

The Phase I survey we have completed for you would need to be updated to reflect interim uses of the property and changes in the neighborhood.

The sump clean-up and tank removal will be closed issues. At tank removal a representative of the Oakland Fire Department is present. Official records will show that this tank no longer exists and will also record the condition of the soil underlying the tank, its pipe, and the sumps.

The monitoring wells, should you decide to go ahead with this step following the tank removal, should be usable for several years; however, it is always possible that a well can fail.

Should you postpone the monitoring wells, the underground survey will remain valid and this letter indicating the results of that survey should be kept for guidance at the time the wells are installed.

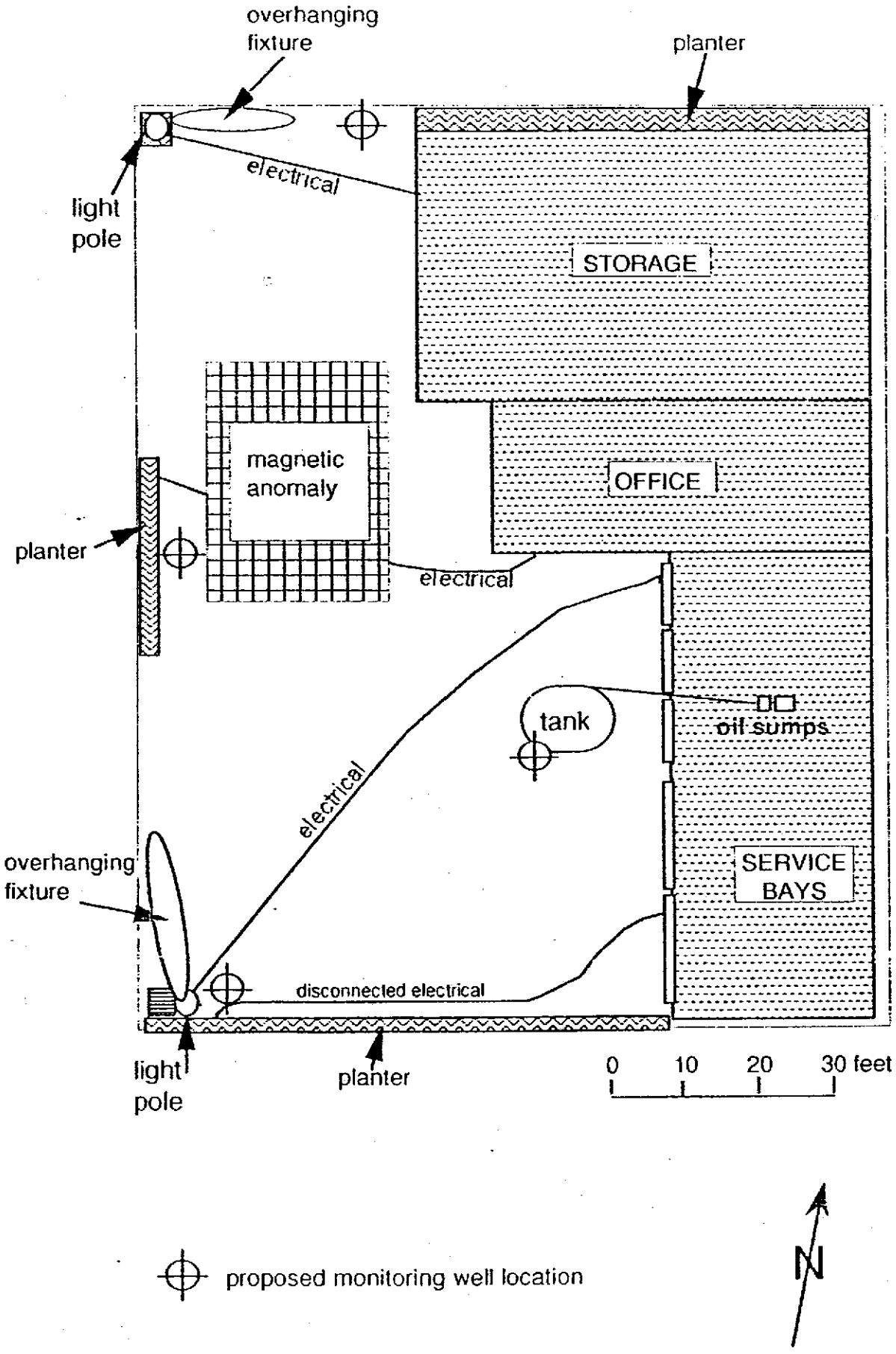
Hope this answers some questions; if I can elaborate further please phone me at (415) 743-0335.

(510)

Sincerely,
MITTELHAUSER COPORATION

Marjorie Bushnell

enclosure:
site drawing


overhanging fixture
planter
light pole
electrical
STORAGE
magnetic anomaly
OFFICE
planter
electrical
tank
oil sumps
electrical
overhanging fixture
SERVICE BAYS
disconnected electrical
light pole
planter
0 10 20 30 feet
proposed monitoring well location
N

PACIFIC
ENVIRONMENTAL
GROUP, INC.

May 8, 1992
Project 305-85.01

01

Mr. Dan Kirk
Shell Oil Company
P.O. Box 5278
Concord, California 94520

Re: Shell Service Station
230 West MacArthur Boulevard at Piedmont Avenue
Oakland, California
WIC No 204-5508-0703

Dear Mr. Kirk:

This letter presents the results of the first quarter 1992 monitoring program prepared for Shell Oil Company (Shell) by Pacific Environmental Group, Inc. (PACIFIC) for the above referenced site (Figures 1 and 2). The scope of work included sampling and analysis of groundwater from four on-site monitoring wells (MW-1 through MW-4), construction of a groundwater elevation map and a gasoline/benzene concentration map, and preparation of this report.

SITE CONDITIONS

The site is currently operational. Three underground fuel storage tanks are located in the southern portion of the site. Figure 2 presents the service station layout, including storage tank locations and pump islands. There are currently four groundwater monitoring wells on site (MW-1 through MW-4).

GROUNDWATER MONITORING

The four on-site monitoring wells were sampled on March 13, 1992 by Emcon Associates (Emcon) at the direction of PACIFIC. Depth to groundwater in the four on-site wells ranged between 12.72 and 14.66 feet. Historically, the groundwater flow direction has been towards the west or northwest. This quarter the groundwater level data shows a groundwater trough trending north-south. The gradient in the eastern portion of the site is 0.012. Table 1 presents groundwater elevation data. Figure 2 presents groundwater contours for March 1992.

1601 Civic Center Drive, Suite 202, Santa Clara, California 95050 (408) 984-6536 FAX: (408) 243-3911
620 Contra Costa Boulevard, Suite 209, Pleasant Hill, California 94523 (510) 825-0855 FAX: (510) 825-0882

Groundwater samples from each well were analyzed for low-boiling hydrocarbons (calculated as gasoline) and for benzene, toluene, ethylbenzene and xylene isomers (BTEX compounds).

Gasoline and benzene was detected only in Well MW-4 at concentrations of 2,700 parts per billion (ppb) and 180 ppb, respectively. The hydrocarbon sheen noted during the previous quarterly event was not present during the current event. Figure 3 presents a gasoline/benzene concentration map and Table 2 presents groundwater analytical data. Emcon's groundwater sampling report is presented in Attachment A. The next quarterly sampling event is scheduled for June 1992.

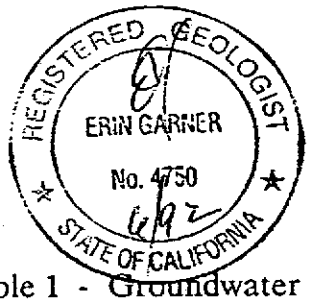
If you have any questions regarding the contents of this letter, please call.

Sincerely,

Pacific Environmental Group, Inc.

Michael Hurd
Project Geologist

Erin Garner
Senior Geologist
RG 4750



Attachments: Table 1 - Groundwater Elevation Data
Table 2 - Groundwater Analytical Data - Low-Boiling Hydrocarbons
Figure 1 - Site Location Map
Figure 2 - Groundwater Contour Map
Figure 3 - Gasoline/Benzene Concentration Map
Attachment A - Groundwater Sampling Report

cc: Ms. Lisa McCann, California Regional Water Quality Control Board Bay Area Region
Mr. Craig Mayfield, Alameda County Flood Control and Water Conservation District
Mr. Gil Wistar, Alameda County Health Department

Table 1
Groundwater Elevation Data

Shell Service Station
230 West MacArthur Boulevard at Piedmont Avenue
Oakland, California

Well Number	Date Sampled	Well Elevation (feet, MSL)	Depth to Water (feet)	Groundwater Elevation (feet, MSL)
MW-1	07/14/88	73.89	13.30	60.59
	10/04/88		13.65	60.24
	11/10/88		13.55	60.34
	12/09/88		13.22	60.67
	01/10/89		12.86	61.03
	01/20/89		12.91	60.98
	02/06/89		12.94	60.95
	03/10/89		12.59	61.30
	06/06/89		14.05	59.84
	09/07/89		14.92	58.97
	12/18/89		14.88	59.01
	03/08/90		14.08	59.81
	06/07/90		13.89	60.00
	09/05/90		14.83	59.06
	12/03/90		15.05	58.84
	03/01/91		14.34	59.55
	06/03/91		14.16	59.73
	09/04/91		14.60	59.29
	03/13/92		13.40	60.49
MW-2	07/14/88	75.24	15.18	60.06
	10/04/88		15.30	59.94
	11/10/88		15.17	60.07
	12/09/88		14.82	60.42
	01/20/89		14.54	60.70
	02/06/89		14.59	60.65
	03/10/89		14.88	60.36
	06/06/89		15.30	59.94
	09/07/89		16.76	58.48
	12/18/89		16.65	58.59
	03/08/90		15.92	59.32
	06/07/90		16.10	59.14
	09/05/90		16.61	58.63
	12/03/90		17.06	58.18
	03/01/91		16.62	58.62
	06/03/91		16.65	58.59
	09/04/91		16.57	58.67
	03/13/92		14.66	60.58

Table 1 (continued)
Groundwater Elevation Data

Shell Service Station
230 West MacArthur Boulevard at Piedmont Avenue
Oakland, California

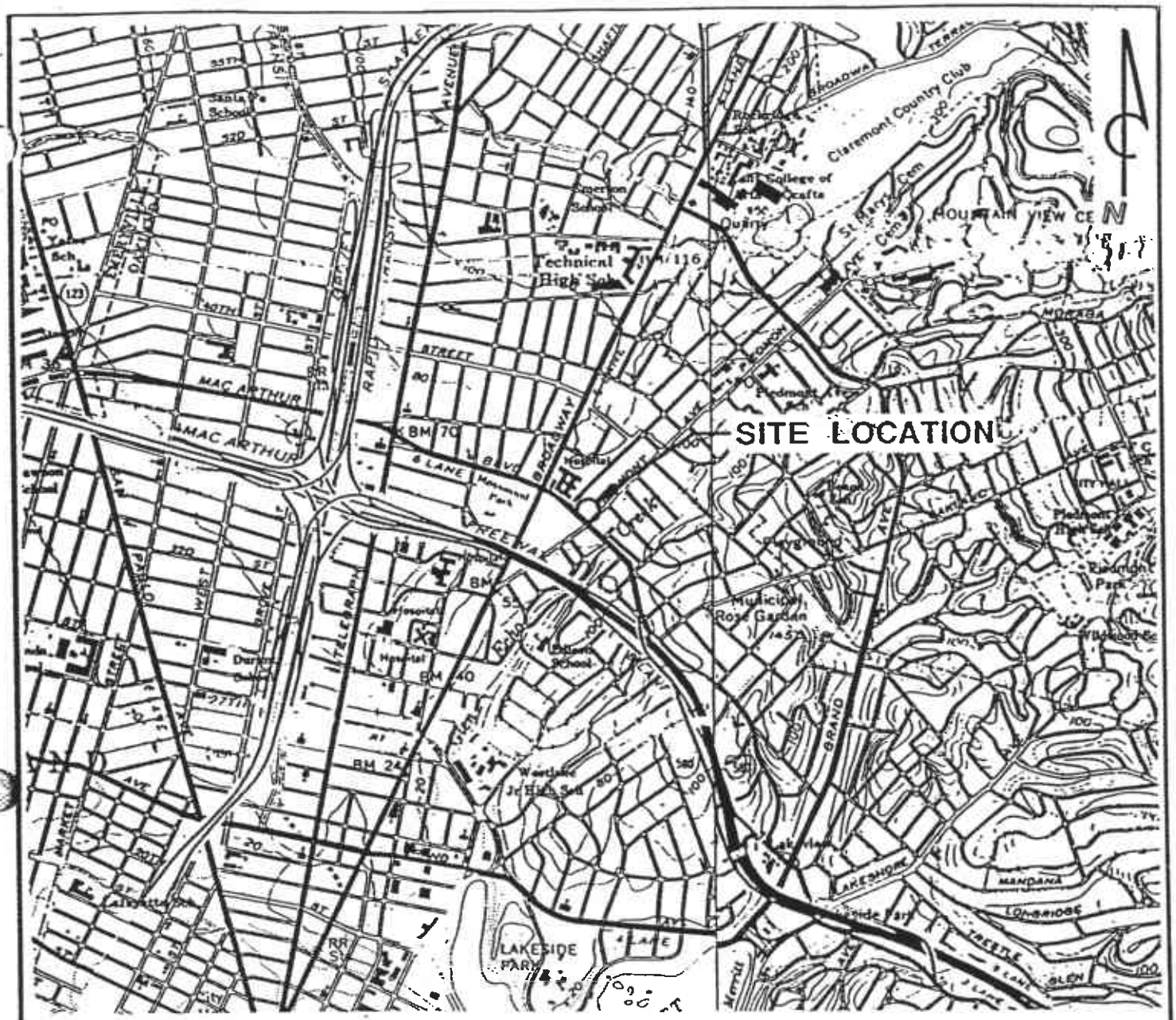
Well Number	Date Sampled	Well Elevation (feet, MSL)	Depth To Water (feet)	Groundwater Elevation (feet, MSL)
MW-3	07/14/88	74.68	14.05	60.63
	10/04/88		14.60	60.08
	11/10/88		14.35	60.33
	12/09/88		14.04	60.64
	01/10/89		13.70	60.98
	01/20/89		13.72	60.96
	02/06/89		13.75	60.93
	03/10/89		13.42	61.26
	06/06/89		14.52	60.16
	09/07/89		15.52	59.16
	12/18/89		19.59	55.09
	03/08/90		14.72	59.96
	06/07/90		14.65	60.03
	09/05/90		15.51	59.17
	12/03/90		14.85	59.83
	03/01/91		14.92	59.76
	06/03/91		14.75	59.93
	09/04/91		15.14	59.54
	03/13/92		13.50	61.18
MW-4	01/23/90	73.83	14.68	59.15
	03/08/90		14.38	59.45
	06/07/90		14.27	59.56
	09/05/90		15.40	58.43
	12/03/90		15.90	57.93
	06/03/91		14.60	59.23
	09/04/91		15.25	58.58
	03/13/92		12.72	61.11

MSL = Mean sea level, measurements taken from top of casing.

Table 2
Groundwater Analytical Data
Low-Boiling Hydrocarbons

Shell Service Station
230 MacArthur Boulevard at Piedmont Avenue
Oakland, California

Well Number	Date Sampled	Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)
MW-1	07/14/88	ND	ND	ND	ND	ND
	10/04/88	ND	8	4.3	ND	9
	11/10/88	ND	ND	ND	ND	ND
	12/09/88	ND	ND	ND	ND	ND
	01/10/89	ND	ND	ND	ND	NA
	01/20/89	ND	ND	NA	NA	ND
	02/06/89	ND	ND	ND	ND	ND
	03/10/89	ND	ND	ND	ND	ND
	06/06/89	ND	ND	ND	ND	ND
	09/07/89	ND	ND	ND	ND	ND
	12/18/89	ND	ND	ND	ND	ND
	03/08/90	ND	ND	ND	ND	ND
	06/07/90	ND	ND	ND	ND	ND
	09/05/90	ND	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND
	03/01/91	ND	ND	ND	ND	ND
	06/03/91	ND	ND	ND	ND	ND
	09/04/91	ND	ND	ND	ND	ND
	03/13/92	ND	ND	ND	ND	ND
MW-2	07/14/88	ND	7.9	2.6	1.1	4
	10/04/88	90	ND	1.3	2.3	12
	11/10/88	ND	ND	ND	ND	2
	12/09/88	ND	ND	0.6	ND	3
	01/20/89	ND	ND	ND	ND	ND
	02/06/89	NA	ND	ND	ND	ND
	03/10/89	ND	ND	ND	ND	ND
	06/06/89	ND	ND	0.5	ND	ND
	09/07/89	ND	ND	ND	ND	ND
	12/18/89	ND	ND	ND	ND	ND
	03/08/90	ND	ND	ND	ND	ND
	06/07/90	ND	ND	ND	ND	ND
	09/05/90	ND	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND
	03/01/91	ND	ND	ND	ND	ND
	06/03/91	ND	ND	ND	ND	ND
	09/04/91	ND	ND	ND	ND	ND
	03/13/92	ND	ND	ND	ND	ND



QUADRANGLE LOCATION

REFERENCES:

USGS 7.5 MIN. TOPOGRAPHIC MAP
TITLED: OAKLAND WEST, CALIFORNIA
DATED: 1959 REVISED: 1980
TITLED: OAKLAND EAST, CALIFORNIA
DATED: 1959 REVISED: 1980

SCALE

2000 0 2000 FEET

PACIFIC ENVIRONMENTAL GROUP INC

SHELL SERVICE STATION
230 Mac Arthur Boulevard at Piedmont Avenue
Oakland, California

SITE LOCATION MAP

FIGURE: 1

PROJECT: 305-85.01

Table 2 (continued)
Groundwater Analytical Data
Low-Boiling Hydrocarbons

Shell Service Station
230 MacArthur Boulevard at Piedmont Avenue
Oakland, California

Well Number	Date Sampled	Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)
MW-3	07/14/88	ND	ND	ND	ND	ND
	10/04/88	ND	ND	ND	ND	5
	11/10/88	ND	ND	ND	ND	ND
	12/09/88	ND	ND	ND	ND	ND
	01/10/89	ND	ND	ND	ND	NA
	01/20/89	NA	NA	ND	ND	ND
	02/06/89	70	ND	ND	ND	ND
	03/10/89	150	ND	ND	ND	ND
	06/06/89	ND	ND	ND	ND	ND
	09/07/89	ND	0.65	ND	ND	ND
	12/06/89	46	1.3	ND	0.44	0.66
	03/08/90	ND	ND	ND	ND	ND
	06/07/90	ND	ND	ND	ND	ND
	09/05/91	ND	ND	ND	ND	ND
	12/03/90	ND	ND	ND	ND	ND
	03/01/91	1.9	59	ND	22	ND
	06/03/91	ND	ND	ND	ND	ND
	09/04/91	ND	ND	ND	ND	ND
	03/13/92	ND	ND	ND	ND	ND
MW-4	01/23/90	1,600	100	10	30	20
	03/08/90	4,200	260	18	88	39
	06/07/90	2,000	150	6.9	14	17
	09/05/90	1,700	130	10	7.2	19
	12/03/90	2,600	108	41	17	59
	06/03/91	2,800	160	15	8.8	32
	09/04/91	NS	NS	NS	NS	NS
	03/13/92	2,700	180	70	5.9	29

ppb = Parts per billion
ND = Not detected
NA = Not analyzed
NS = Not sampled, hydrocarbon sheen observed
See certified analytical results for detection limits.

PROJECT: DODSON - Project No. 1493	**LOG OF BOREHOLE:** BH-1
BORING LOC.: SOUTHWEST CORNER OF PROPERTY	ELEVATION, TOC: --
DRILLING CONTRACTOR: GREGG DRILLING	START DATE: 1/8/97 / END DATE: 1/8/97
DRILLING METHOD: DIRECT PUSH	TOTAL DEPTH: 20.0'
DRILLING EQUIPMENT: GEOPROBE DRILL RIG	DEPTH TO WATER: 15.0'
SAMPLING METHOD: 2" DRIVE SAMPLER	LOGGED BY: J.S. ANDERSON
HAMMER WEIGHT and FALL: N/A	RESPONSIBLE PROFESSIONAL: MC

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
0	AB	0.0 - 0.6; Asphalt, 3" Aggregate Base.				
4	CL	4.0 - 6.0; Silty Clay w/ sand; moderate yellowish brown, 10YR 5/4.	L-1			No Hydrocarbon odor.
9	SM	9.0 - 11.0; Silty Sand; mod. yellowish brown 10YR 4/2.	L-2			No Hydrocarbon odor.

PROJECT: DODSON - Project No. 1493

LOG OF BOREHOLE: BH-1

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
15	CL	14.0 - 16.0; Silty Sand (cont.)	L-3			▼ No Hydrocarbon odor. Moist.
16						
17						
18						
19						
20		Borehole terminated at 20.0 feet.				Borehole backfilled with cement grout.
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

PROJECT: DODSON - Project No. 1493	**LOG OF BOREHOLE:** BH-2
BORING LOC.: WEST OF FORMER W.O. UST	ELEVATION, TOC: --
DRILLING CONTRACTOR: GREGG DRILLING	START DATE: 1/8/97 / END DATE: 1/8/97
DRILLING METHOD: DIRECT PUSH	TOTAL DEPTH: 20.0'
DRILLING EQUIPMENT: GEOPROBE DRILL RIG	DEPTH TO WATER: 15.0'
SAMPLING METHOD: 2" DRIVE SAMPLER	LOGGED BY: J.S. ANDERSON
HAMMER WEIGHT and FALL: N/A	RESPONSIBLE PROFESSIONAL: MC

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
0	AB	0.0 - 0.6; Asphalt, 3" Aggregate Base.				
4	CL	4.0 - 6.0; Silty Clay; yellowish brown, 10YR 5/4.	L-1			No Hydrocarbon odor.
9	CL	9.0 - 11.0; Same.	L-2			No Hydrocarbon odor.

PROJECT: DODSON - Project No. 1493

LOG OF BOREHOLE: BH-2

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
15	CL	14.0 - 16.0; Silty Clay: moderate yellowish brown, 10YR 5/4, moist.	L-3			No Hydrocarbon odor. Moist. ▼
16						
17						
18						
19						
20		Borehole terminated at 20.0 feet.				Borehole backfilled with cement grout.
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

PROJECT: DODSON - Project No. 1493	**LOG OF BOREHOLE:** BH-3
BORING LOC.: NORTH OF FORMER W.O. UST	ELEVATION, TOC: --
DRILLING CONTRACTOR: GREGG DRILLING	START DATE: 1/8/97 / END DATE: 1/8/97
DRILLING METHOD: DIRECT PUSH	TOTAL DEPTH: 16.0'
DRILLING EQUIPMENT: GEOPROBE DRILL RIG	DEPTH TO WATER: NA
SAMPLING METHOD: 2" DRIVE SAMPLER	LOGGED BY: J.S. ANDERSON
HAMMER WEIGHT and FALL: N/A	RESPONSIBLE PROFESSIONAL: MC

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
0	AB	0.0 - 0.6; Asphalt, 3" Aggregate Base.				
1						
2						
3						
4						
5	CL	4.0 - 6.0; Silty Clay; mod. yellowish brown, 10YR 5/4.	L-1			No Hydrocarbon odor.
6						
7						
8						
9						
10	CL	9.0 - 11.0; Same.	L-2			No Hydrocarbon odor.
11						
12						
13						
14						

PROJECT: DODSON - Project No. 1493	**LOG OF BOREHOLE:** BH-4
BORING LOC.: WEST OF MAGNETIC ANOMALY	ELEVATION, TOC: --
DRILLING CONTRACTOR: GREGG DRILLING	START DATE: 1/8/97 / END DATE: 1/8/97
DRILLING METHOD: DIRECT PUSH	TOTAL DEPTH: 20.0'
DRILLING EQUIPMENT: GEOPROBE DRILL RIG	DEPTH TO WATER: 15.0'
SAMPLING METHOD: 2" DRIVE SAMPLER	LOGGED BY: J.S. ANDERSON
HAMMER WEIGHT and FALL: N/A	RESPONSIBLE PROFESSIONAL: MC

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
0	AB	0.0 - 0.6; Asphalt, 3" Aggregate Base.				
4	CL	4.0 - 6.0; Sandy Gravely Clay; mod. yellowish brown, 10YR 5/4, gravel up to 1/4".	L-1			No Hydrocarbon odor.
9	CL	9.0 - 11.0; Silty Clay; mod. yellowish brown, 10YR 5/4, med. stiff.	L-2			Slight odor.

PROJECT: DODSON - Project No. 1493

LOG OF BOREHOLE: BH-4

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
15	CL	14.0 - 16.0; Silty Clay: grayish green, 10GY 5/2.	L-3			▼ Strong Hydrocarbon odor. Moist.
16						
17						
18						
19						
20		Borehole terminated at 20.0 feet.				Borehole backfilled with cement grout.
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

PROJECT: DODSON - Project No. 1493	**LOG OF BOREHOLE:** BH-5
BORING LOC.: NW OF MAGNETIC ANOMALY	ELEVATION, TOC: --
DRILLING CONTRACTOR: GREGG DRILLING	START DATE: 1/8/97 / END DATE: 1/8/97
DRILLING METHOD: DIRECT PUSH	TOTAL DEPTH: 16.0'
DRILLING EQUIPMENT: GEOPROBE DRILL RIG	DEPTH TO WATER: NA
SAMPLING METHOD: 2" DRIVE SAMPLER	LOGGED BY: J.S. ANDERSON
HAMMER WEIGHT and FALL: N/A	RESPONSIBLE PROFESSIONAL: MC

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
0	AB	0.0 - 0.6; Asphalt, 3" Aggregate Base.				
4	CL	4.0 - 6.0; Sandy Gravely Clay; dark yellowish orange, 10YR 6/6, gravel up to 1/4".	L-1			No Hydrocarbon odor.
9	CL	9.0 - 11.0; Silty Clay; dark yellowish orange, 10YR 6/6.	L-2			No Hydrocarbon odor.

PROJECT: DODSON - Project No. 1493 | **LOG OF BOREHOLE:** BH-5

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
15	CL	14.0 - 16.0; Silty Clay: dark yellowish orange, 10 YR 6/6 w/ pale green mottling 10 G 6/2.	L-3			Slight Hydrocarbon odor.
16		Borehole terminated at 16.0 feet.				Borehole backfilled with cement grout.
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

PROJECT: DODSON - Project No. 1493	**LOG OF BOREHOLE:** BH-6
BORING LOC.: NORTH OF MAGNETIC ANOMALY	ELEVATION, TOC: --
DRILLING CONTRACTOR: GREGG DRILLING	START DATE: 1/8/97 / END DATE: 1/8/97
DRILLING METHOD: DIRECT PUSH	TOTAL DEPTH: 20.0'
DRILLING EQUIPMENT: GEOPROBE DRILL RIG	DEPTH TO WATER: 15.0'
SAMPLING METHOD: 2" DRIVE SAMPLER	LOGGED BY: J.S. ANDERSON
HAMMER WEIGHT and FALL: N/A	RESPONSIBLE PROFESSIONAL: MC

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
0	AB	0.0 - 0.6; Asphalt, 3" Aggregate Base.				
4	CL	4.0 - 6.0; Sandy Gravely Clay; mod. yellowish brown, 10YR 5/4 w/ gray mottling.	L-1			No Hydrocarbon odor.
9	CL	9.0 - 11.0; Silty Clay; mod. yellowish brown, 10YR 5/4, gray mottling.	L-2			No Hydrocarbon odor.

PROJECT: DODSON - Project No. 1493

LOG OF BOREHOLE: BH-6

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
15	CL	14.0 - 16.0; Silty Clay; grayish green, 10GY 5/2.	L-3a			▼ Strong Hydrocarbon odor. Moist.
16			L-3			
17						
18						
19						
20		Borehole terminated at 20.0 feet.				Borehole backfilled with cement grout.
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

PROJECT: DODSON - Project No. 1493

LOG OF BOREHOLE: BH-3

DEPTH (feet)	SOIL SYMBOLS	DESCRIPTION	SAMPLES: SAMPLE NO.	SAMPLES: INTERVAL	SAMPLES: BLOW COUNTS	COMMENTS
15	CL	14.0 - 16.0; Silty Clay: moderate yellowish brown, 10YR 5/4.	L-3			No Hydrocarbon odor. Moist.
16		Borehole terminated at 16.0 feet.				Borehole backfilled with cement grout.
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

01/17/97

Dear Jennifer:

Enclosed are:

1). the results of 10 samples from your # **1493; Dodson** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

All Environmental, Inc. 3364 Mt. Diablo Blvd. Lafayette, CA 94549	Client Project ID: # 1493; Dodson	Date Sampled: 01/08/97
		Date Received: 01/10/97
	Client Contact: Jennifer Anderson	Date Extracted: 01/10-01/13/97
	Client P.O:	Date Analyzed: 01/10-01/13/97

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*
EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethylben-zene	Xylenes	% Rec. Surrogate
72755	BH4,L3-15'	S	1100,j	ND< 3	ND< 0.02	ND< 0.02	4.4	14	---#
72758	BH5,L3-15'	S	2.1,j	ND	0.009	0.006	ND	0.016	104
72762	BH6,L3-15'	S	190,j	ND< 0.6	0.25	0.50	0.84	3.6	118#
72765	BH2,L3-15'	S	ND	ND	ND	ND	ND	ND	97
72768	BH3,L3-15'	S	ND	ND	ND	ND	ND	ND	98
72771	BH1,L3-15'	S	ND	ND	ND	ND	ND	ND	97
72772	BH4W	W	6600,b,d	170	58	13	110	270	97
72773	BH6W	W	13,000,a,h	320	870	65	130	570	102
72774	BH2W	W	ND,i	ND	ND	ND	ND	ND	105
72775	BH1W	W	330,c,j,i	220	2.0	0.72	ND	1.3	105
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.	110 2nd Avenue South, #D7, Pacheco, CA 94553 Tele: 510-798-1620 Fax: 510-798-1622

All Environmental, Inc. 3364 Mt. Diablo Blvd. Lafayette, CA 94549	Client Project ID: # 1493; Dodson	Date Sampled: 01/08/97
		Date Received: 01/10/97
	Client Contact: Jennifer Anderson	Date Extracted: 01/10/97
	Client P.O:	Date Analyzed: 01/10/97

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
72755	BH4,L3-15'	S	370,d	102
72758	BH5,L3-15'	S	1.9,d	102
72762	BH6,L3-15'	S	140,d	102
72765	BH2,L3-15'	S	ND	107
72768	BH3,L3-15'	S	ND	107
72771	BH1,L3-15'	S	ND	108
72773	BH6W	W	450,000,d,h	108
72774	BH2W	W	320,g,b,i	105
72775	BH1W	W	490,g,d,i	108
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	1.0 mg/kg	

* water samples are reported in ug/L, soil and sludge samples in mg/kg, and all TCLP and STLC extracts in mg/L

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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All Environmental, Inc. 3364 Mt. Diablo Blvd. Lafayette, CA 94549	Client Project ID: # 1493; Dodson	Date Sampled: 01/08/97
		Date Received: 01/10/97
	Client Contact: Jennifer Anderson	Date Extracted: 01/10/97
	Client P.O:	Date Analyzed: 01/10/97

Petroleum Oil & Grease (with Silica Gel Clean-up) *

EPA methods 413.1, 9070 or 9071; Standard Methods 5520 D/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease*
72765	BH2,L3-15'	S	ND
72768	BH3,L3-15'	S	ND
72774	BH2W	W	ND,i
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	5 mg/L
		S	50 mg/kg

* water samples are reported in mg/L and soil and sludge samples in mg/kg

h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5vol. % sediment.

DHS Certification No. 1644

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All Environmental, Inc. 3364 Mt. Diablo Blvd. Lafayette, CA 94549	Client Project ID: # 1493; Dodson	Date Sampled: 01/08/97
		Date Received: 01/10/97
	Client Contact: Jennifer Anderson	Date Extracted: 01/13/97
	Client P.O:	Date Analyzed: 01/13/97

Dissolved Lead*

EPA analytical methods 6010/200.7, 239.2+

Lab ID	Client ID	Matrix	Extraction°	Lead*	% Recovery Surrogate
72773	BH6W	W	TTLC	ND	NA
72774	BH2W	W	TTLC	ND,i	NA
72775	BH1W	W	TTLC	ND,i	NA
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		S	TTLC	3.0 mg/kg	
		W	TTLC	0.005 mg/L	
		---	STLC,TCLP	0.2 mg/L	

* soil and sludge samples are reported in mg/kg, and water samples and all STLC & TCLP extracts in mg/L

+ Lead is analysed using EPA method 6010 (ICP)for soils, sludges, STLC & TCLP extracts and method 239.2 (AA Furnace) for water samples

° EPA extraction methods 1311(TCLP), 3010/3020(water,TTLC), 3040(organic matrices,TTLC), 3050(solids,TTLC); STLC from CA Title 22

surrogate diluted out of range; N/A means surrogate not applicable to this analysis

& reporting limit raised due matrix interference

i) liquid sample that contains greater than ~ 2 vol. % sediment; this sediment is extracted with the liquid, in accordance with EPA methodologies and can significantly effect reported metal concentrations.

DHS Certification No. 1644

Edward Hamilton, Lab Director

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All Environmental, Inc. 3364 Mt. Diablo Blvd. Lafayette, CA 94549	Client Project ID: # 1493; Dodson	Date Sampled: 01/08/97
		Date Received: 01/10/97
	Client Contact: Jennifer Anderson	Date Extracted: 01/10/97
	Client P.O:	Date Analyzed: 01/13/97

Lead*

EPA analytical methods 6010/200.7, 239.2+

Lab ID	Client ID	Matrix	Extraction°	Lead*	% Recovery Surrogate
72755	BH4,L3-15'	S	TTLC	6.2	102
72758	BH5,L3-15'	S	TTLC	4.6	102
72762	BH6,L3-15'	S	TTLC	23	102
72765	BH2,L3-15'	S	TTLC	8.4	103
72768	BH3,L3-15'	S	TTLC	7.6	103
72771	BH1,L3-15'	S	TTLC	15	101
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		S	TTLC	3.0 mg/kg	
		W	TTLC	0.005 mg/L	
		---	STLC,TCLP	0.2 mg/L	

* soil and sludge samples are reported in mg/kg, and water samples and all STLC & TCLP extracts in mg/L

+ Lead is analysed using EPA method 6010 (ICP)for soils, sludges, STLC & TCLP extracts and method 239.2 (AA Furnace) for water samples

° EPA extraction methods 1311(TCLP), 3010/3020(water,TTLC), 3040(organic matrices,TTLC), 3050(solids,TTLC); STLC from CA Title 22

surrogate diluted out of range; N/A means surrogate not applicable to this analysis

& reporting limit raised due matrix interference

i) liquid sample that contains greater than ~ 2 vol. % sediment; this sediment is extracted with the liquid, in accordance with EPA methodologies and can significantly effect reported metal concentrations.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 01/10/97 Matrix: Soil

Analyte	Concentration (mg/kg) Sample (#68847)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.000	1.941	1.760	2.03	96	87	9.8
Benzene	0.000	0.180	0.192	0.2	90	96	6.5
Toluene	0.000	0.186	0.196	0.2	93	98	5.2
Ethylbenzene	0.000	0.190	0.194	0.2	95	97	2.1
Xylenes	0.000	0.582	0.588	0.6	97	98	1.0
TPH (diesel)	0	315	307	300	105	102	2.5
TRPH (oil and grease)	0.0	23.9	24.3	20.8	115	117	1.7

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
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QC REPORT FOR HYDROCARBON ANALYSES

Date: 01/10/97 Matrix: Water

Analyte	Concentration (mg/L) Sample (#72590)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	101.2	99.2	100.0	101.2	99.2	2.0
Benzene	0.0	10.7	10.8	10.0	107.0	108.0	0.9
Toluene	0.0	10.7	10.8	10.0	107.0	108.0	0.9
Ethyl Benzene	0.0	10.8	11.0	10.0	108.0	110.0	1.8
Xylenes	0.0	32.4	32.8	30.0	108.0	109.3	1.2
TPH (diesel)	0	151	155	150	101	103	2.1
TRPH (oil & grease)	0	24000	23300	23700	101	98	3.0

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 01/13/97 Matrix: Water

Analyte	Concentration (mg/L) Sample (#72698)	MS	MSD	Amount Spiked	% Recovery MS	MSD	RPD
TPH (gas)	0.0	97.6	94.9	100.0	97.6	94.9	2.9
Benzene	0.0	10.3	10.5	10.0	103.0	105.0	1.9
Toluene	0.0	10.5	10.6	10.0	105.0	106.0	0.9
Ethyl Benzene	0.0	10.5	10.6	10.0	105.0	106.0	0.9
Xylenes	0.0	31.3	31.5	30.0	104.3	105.0	0.6
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	0	25300	24600	23700	107	104	2.8

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR ICP and/or AA METALS

Date: 01/13/97 Matrix: Soil/TTLC

Analyte	Concentration (mg/kg, mg/L)			Amount	% Recovery		
	Sample	MS	MSD	Spiked	MS	MSD	RPD
Total Lead	0.0	5.08	5.25	5.0	102	105	3.2
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
STLC Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR METALS

Date: 01/13/97 Matrix: Water/Dissolved

Extraction: TTLC

Analyte	Concentration (mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Arsenic	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Molybdenum	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Thallium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beryllium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Antimony	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead	0.0	4.5	4.8	5.0	91	95	4.7
Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cobalt	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mercury	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

CHROMALAB, INC.

Environmental Services (SDB)

January 17, 1997 *Submission #:* 9701132

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: A-D1493 *Project#:* 7933
Received: January 13, 1997

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *SW846 Method 8270A Nov 1990*

Client Sample ID: **BH2, L3-15'**
Spl#: 113775 *Matrix:* SOIL *Extracted:* January 15, 1997
Sampled: January 8, 1997 *Run#:* 4917 *Analyzed:* January 15, 1997

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	0.10	N.D.	--	1
ACENAPHTHYLENE	N.D.	0.10	N.D.	--	1
ACENAPHTHENE	N.D.	0.10	N.D.	76.6	1
FLUORENE	N.D.	0.10	N.D.	--	1
PHENANTHRENE	N.D.	0.10	N.D.	--	1
ANTHRACENE	N.D.	0.10	N.D.	--	1
FLUORANTHENE	N.D.	0.10	N.D.	--	1
PYRENE	N.D.	0.10	N.D.	72.3	1
BENZO(A)ANTHRACENE	N.D.	0.10	N.D.	--	1
CHRYSENE	N.D.	0.10	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	0.10	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	0.20	N.D.	--	1
BENZO(A)PYRENE	N.D.	0.035	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	0.20	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	0.20	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	0.20	N.D.	--	1

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

January 17, 1997 *Submission #:* 9701132

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: A-D1493 *Project#:* 7933
Received: January 13, 1997

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *SW846 Method 8270A Nov 1990*

Client Sample ID: **BH3, L3-15'**
Spl#: 113776 *Matrix:* SOIL *Extracted:* January 15, 1997
Sampled: January 8, 1997 *Run#:* 4917 *Analyzed:* January 15, 1997

ANALYTE	RESULT (mg/Kg)	REPORTING LIMIT (mg/Kg)	BLANK RESULT (mg/Kg)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	0.10	N.D.	--	1
ACENAPHTHYLENE	N.D.	0.10	N.D.	--	1
ACENAPHTHENE	N.D.	0.10	N.D.	76.6	1
FLUORENE	N.D.	0.10	N.D.	--	1
PHENANTHRENE	N.D.	0.10	N.D.	--	1
ANTHRACENE	N.D.	0.10	N.D.	--	1
FLUORANTHENE	N.D.	0.10	N.D.	--	1
PYRENE	N.D.	0.10	N.D.	72.3	1
BENZO(A)ANTHRACENE	N.D.	0.10	N.D.	--	1
CHRYSENE	N.D.	0.10	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	0.10	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	0.20	N.D.	--	1
BENZO(A)PYRENE	N.D.	0.035	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	0.20	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	0.20	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	0.20	N.D.	--	1

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

January 17, 1997 *Submission #:* 9701132

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: A-D1493 *Project#:* 7933
Received: January 13, 1997

re: **Surrogate** report for 2 samples for Polynuclear Aromatic
Method: SW846 Method 8270A Nov 1990
Lab Run#: 4917
Matrix: SOIL

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
113775-1	BH2, L3-15'	NITROBENZENE-D5	61.3	23-120
113775-1	BH2, L3-15'	2-FLUOROBIPHENYL	65.3	30-115
113775-1	BH2, L3-15'	TERPHENYL-D14	76.4	18-137
113776-1	BH3, L3-15'	NITROBENZENE-D5	64.5	23-120
113776-1	BH3, L3-15'	2-FLUOROBIPHENYL	74.3	30-115
113776-1	BH3, L3-15'	TERPHENYL-D14	78.9	18-137

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
114421-1	*Reagent blank (MDB)*	NITROBENZENE-D5	67.4	23-120
114421-1	*Reagent blank (MDB)*	2-FLUOROBIPHENYL	73.7	30-115
114421-1	*Reagent blank (MDB)*	TERPHENYL-D14	73.6	18-137
114422-1	*Spiked blank (BSP)*	NITROBENZENE-D5	74.8	23-120
114422-1	*Spiked blank (BSP)*	2-FLUOROBIPHENYL	79.4	30-115
114422-1	*Spiked blank (BSP)*	TERPHENYL-D14	78.7	18-137
114423-1	*Spiked blank duplicate (BSD)*	NITROBENZENE-D5	49.6	23-120
114423-1	*Spiked blank duplicate (BSD)*	2-FLUOROBIPHENYL	58.4	30-115
114423-1	*Spiked blank duplicate (BSD)*	TERPHENYL-D14	76.3	18-137
114424-1	*Matrix spike (MS)*	NITROBENZENE-D5	81.6	23-120
114424-1	*Matrix spike (MS)*	2-FLUOROBIPHENYL	68.6	30-115
114424-1	*Matrix spike (MS)*	TERPHENYL-D14	56.0	18-137
114425-1	*Matrix spike duplicate (MSD)*	NITROBENZENE-D5	93.6	23-120
114425-1	*Matrix spike duplicate (MSD)*	2-FLUOROBIPHENYL	77.6	30-115
114425-1	*Matrix spike duplicate (MSD)*	TERPHENYL-D14	65.8	18-137

S105
QCSURR1229 MIKELEE 17-Jan-97 12

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(510) 484-1919 • Facsimile (510) 484-1096
Federal ID #68-0140157

CHROMALAB, INC.

Environmental Services (SDB)

January 17, 1997 *Submission #:* 9701132

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: A-D1493 *Project#:* 7933
Received: January 13, 1997

re: One sample for Polynuclear Aromatic Hydrocarbons (PAHs) analysis.
Method: *SW846 Method 8270A Nov 1990*

Client Sample ID: **BH2W**
Spl#: 113777 *Matrix:* WATER *Extracted:* January 16, 1997
Sampled: January 8, 1997 *Run#:* 4921 *Analyzed:* January 16, 1997

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	3.2	N.D.	--	1
ACENAPHTHYLENE	N.D.	3.2	N.D.	--	1
ACENAPHTHENE	N.D.	3.2	N.D.	66.0	1
FLUORENE	N.D.	8.0	N.D.	--	1
PHENANTHRENE	N.D.	3.2	N.D.	--	1
ANTHRACENE	N.D.	3.2	N.D.	--	1
FLUORANTHENE	N.D.	3.2	N.D.	--	1
PYRENE	N.D.	3.2	N.D.	74.0	1
BENZO(A)ANTHRACENE	N.D.	3.2	N.D.	--	1
CHRYSENE	N.D.	3.2	N.D.	--	1
BENZO(B)FLUORANTHENE	N.D.	3.2	N.D.	--	1
BENZO(K)FLUORANTHENE	N.D.	3.2	N.D.	--	1
BENZO(A)PYRENE	N.D.	3.2	N.D.	--	1
INDENO(1,2,3-CD)PYRENE	N.D.	3.2	N.D.	--	1
DIBENZO(A,H)ANTHRACENE	N.D.	3.2	N.D.	--	1
BENZO(GHI)PERYLENE	N.D.	3.2	N.D.	--	1

Note: Reporting limits raised due to limited of sample size.

Michael Lee
Chemist

Chip Poalinelli
Operations Manager

510-798-1622 MV 01/17

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Federal ID #68-0140157

S105 D:0CD405 MIKELEE 13:59

CHROMALAB, INC.

Environmental Services (SDB)

January 17, 1997 *Submission #:* 9701132

MCCAMPBELL ANALYTICAL, INC.

Atten: Ed Hamilton

Project: A-D1493 *Project#:* 7933
Received: January 13, 1997

re: **Surrogate** report for 1 sample for Polynuclear Aromatic
Method: SW846 Method 8270A Nov 1990
Lab Run#: 4921
Matrix: WATER

Sample#	Client Sample ID	Surrogate	% Recovered	Recovery Limits
113777-1	BH2W	NITROBENZENE-D5	57.0	35-114
113777-1	BH2W	2-FLUOROBIPHENYL	61.2	43-116
113777-1	BH2W	TERPHENYL-D14	74.2	33-141

Sample#	QC Sample Type	Surrogate	% Recovered	Recovery Limits
114448-1	*Reagent blank (MDB)*	NITROBENZENE-D5	50.7	35-114
114448-1	*Reagent blank (MDB)*	2-FLUOROBIPHENYL	57.2	43-116
114448-1	*Reagent blank (MDB)*	TERPHENYL-D14	79.4	33-141
114449-1	*Spiked blank (BSP)*	NITROBENZENE-D5	60.1	35-114
114449-1	*Spiked blank (BSP)*	2-FLUOROBIPHENYL	68.2	43-116
114449-1	*Spiked blank (BSP)*	TERPHENYL-D14	81.8	33-141
114450-1	*Spiked blank duplicate (BSD)*	NITROBENZENE-D5	59.0	35-114
114450-1	*Spiked blank duplicate (BSD)*	2-FLUOROBIPHENYL	65.4	43-116
114450-1	*Spiked blank duplicate (BSD)*	TERPHENYL-D14	82.8	33-141

S105
QCSURR1229 MIKELEE 17-Jan-97 1

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Federal ID #68-0140157

132/113775 - 113777

McCAMPBELL ANALYTICAL

110 2nd AVENUE, # D7
PACHECO, CA 94553

(510) 798-1620 FAX (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME: ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY ☐ ROUTINE

REPORT TO: Ed Hamilton BILL TO: MAI

PROJECT NUMBER: 7933 PROJECT NAME: A-D1493

PROJECT LOCATION:

SUBM #: 9701132 REP: MV
CLIENT: MCCAM
DUE: 01/17/97
REF #: 31597

SAMPLE ID	LOCATION	SAMPLING DATE	SAMPLING TIME	# CONTAINERS	TYPE CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	OTHER	METHOD PRESERVED: HCL	HNO_3	ICE	OTHER	EPA 601/8010	EPA 602/8020	EPA 608/8080	EPA 608/8080 – PCBs Only	EPA 624/8240/8260	EPA 625/8270	CAM – 17 Metals	EPA – Priority Pollutant Metals	LUFT Metals	LEAD (7240/7421/239.2/6010)	ORGANIC LEAD	RCI	PNAs						COMMENTS
BH2, L3-15'		1/8/97	1155	1	VOA		X						X														X						72765
BH3, L3-15'		↓	1300	1	VOA		X						X														X						72768
BH2W		↓	—	1	Liter	X							X														X						72774

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Angela Rydelius	1/13/97	1329	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE 1/13/97	TIME 1625	RECEIVED BY LABORATORY: Mimi

REMARKS:

ALL ENVIRONMENTAL, INC.

3364 Mt. Diablo Boulevard
Lafayette, CA 94549
(510) 283-6000 FAX: (510) 283-6121

7933

Chain of Custody

DATE: 1/8/97 PAGE: 1 OF 2

AALE1140

AEI PROJECT MANAGER: Jennifer Anderson
PROJECT NAME: Dodson
PROJECT NUMBER: 1493
SIGNATURE: J. Anderson
TOTAL # OF CONTAINERS: 38
RECD. GOOD COND./COLD: Yes

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline (EPA 5030.8015) w/ BTEX and MTBE (EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX and MTBE (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 E&F)	TOTAL LEAD (AA) (EPA 7420)	VOLATILE ORGANIC COMPOUNDS (EPA 8240)	LUFT Metals (EPA 7130.7190.7420.7520.7950)	STLC CAM 17 (EPA 1310/6010)	RCI REACTIVITY, CORROSIVITY, IGNITABILITY (Title 22, CCR 66261.21-3)	PNAs	
BH4, L1 - 5'	1/8/97	915	SOIL												72753
BH4, L2 - 10'		920													72754
BH4, L3 - 15'		945			X	X			X						72755
BH5, L1 - 5'		1015													72756
BH5, L2 - 10'		1025													72757
BH5, L3 - 15'		1035			X	X			X						72758
BH6, L1 - 5'		1045													72759
BH6, L2 - 10'		1055													72760
BH6, L3a - 14'		1100													72761
BH6, L3 - 15'		1102			X	X			X						72762
BH2, L1 - 5'		1135													72763
BH2, L2 - 10'		1145													72764
BH2, L3 - 15'		1155			X	X		X	X					X	72765
BH3, L1 - 5'		1235													72766
BH3, L2 - 10'		1250													72767

ANALYTICAL LAB: McCampbell
ADDRESS:
PHONE: ( ) FAX: ( )
INSTRUCTIONS/COMMENTS:

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
Signature: J. Anderson	Signature: Ron Hamilton	Signature: Ron Hamilton	Signature: H. Ricca
Printed Name: Jennifer Anderson	Printed Name: Ron Hamilton	Printed Name: Ron Hamilton	Printed Name: MAI
Company: A&T	Company: ORST/JRH	Company: MAI/JRH	Company: MAI
Time: 11:25 Date: 1/10/97	Time: 11:25 Date: 1/10/97	Time: 5:00 Date: 1/10/97	Time: 1500 Date: 1/10/97

ALL ENVIRONMENTAL, INC. 1493
3364 Mt. Diablo Boulevard
Lafayette, CA 94549
(510) 283-6000 FAX: (510) 283-6121

AALE 116

DATE: 1/8/97 PAGE: 2 OF: 2

AEI PROJECT MANAGER: Jennifer Anderson
PROJECT NAME: Dodson
PROJECT NUMBER: 1493
SIGNATURE: [signature]
TOTAL # OF CONTAINERS: 38
RECD. GOOD COND./COLD: YES

ANALYSIS REQUEST

SAMPLE I.D.	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline (EPA 5030.8015) w/ BTEX and MTBE (EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX and MTBE (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 E&F)	TOTAL LEAD (AA) (EPA 7420)	VOLATILE ORGANIC COMPOUNDS (EPA 8240)	LUFT Metals (EPA 7130.7190.7420.7550.7950)	STLC CAM 17 (EPA 1310/6010)	RCI REACTIVITY, CORROSIVITY, IGNITABILITY (Title 22, CCR 66261.21-3)	PAHs		
BH3, L3 - 15'	1/8/97	1300	SOIL		X	X		X	X					X		72768
BH1, L1 - 5'		1320														72769
BH1, L2 - 11'		1330														72770
BH1, L3 - 16'		1345			X	X			X							72771
BH1W	1/8/97	—	WATER		X										2 VOAs	72772
BH6W		—			X	X			Diss.						4-1 L amber	72773
BH2W		—			X	X		X	dissolved					X	7	72774
BH1W		—			X	X			Diss						6	72775

ANALYTICAL LAB: McCampbell
ADDRESS:
PHONE: ( ) FAX: ( )
INSTRUCTIONS/COMMENTS:

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
Signature: [signature]	Signature: [signature]	Signature: [signature]	Signature: [signature]
Printed Name: Jennifer Anderson	Printed Name: Ron Hamilton	Printed Name: Ron Hamilton	Printed Name: H. RICCA
Company: AEI	Company: MAI/JRH	Company: MAI	Company: MAI
Time: 1125 Date: 1/10/97	Time: 1625 Date: 1/10/97	Time: 3:00 Date: 1/10/97	Time: 1500 Date: 1/10/97

ATTACHMENT E

Second Quarter 2002 Groundwater Sampling Report by AEC

■ ADVANCED ENVIRONMENTAL CONCEPTS INC ■

AUG 2 0 2002

July 17, 2002

Mr. Warren Dodson
Dodson Ltd.
P.O. Box 67809
Los Angeles, California 90067-0809

Regarding: **2nd Quarter Groundwater Sampling (2002)**
Former Vogue Tyres Facility
240 West MacArthur Boulevard
Oakland, California

Dear Mr. Dodson:

Advanced Environmental Concepts, Inc. (AEC) is pleased to present this report of groundwater sampling performed at the former Vogue Tyres facility, 240 West MacArthur Boulevard, Oakland, California **(Attachment A, Figure 1)**.

Background

The former Gulf Service Station originally operated three 10,000 gallon gasoline underground storage tanks (USTs), and one 350 gallon waste oil UST. Historical records indicate that the Gulf station existed since at least 1950. The current location of the Shell Service Station, located adjacent to, and south of the subject site was a fueling station since at least 1952. The three Gulf gasoline USTs were located at the northern portion of the property, (underneath the current building), and the waste oil UST was west of the service bays. The two pump islands were west of the northern portion of the existing building. The 350 gallon waste oil UST was removed in October 1996 by All Environmental, Inc (AEI).

On October 3, 1996, AEI removed the previously identified 350 gallon waste oil UST located west of the service bays. Visual staining of waste oil range hydrocarbons was identified on the floor and sidewalls of the excavation. Confirmation soil samples collected from the excavation indicated that soil beneath the former UST emplacement were impacted with minor concentrations of petroleum hydrocarbons. At the request of ACHCS, AEI expanded the size of the excavation, then collected additional confirmation soil samples which indicated the successful removal of the contamination. Groundwater was not encountered during this excavation phase, however, due to the estimated proximity of the contamination to groundwater, a subsurface investigation was required by the County.

On January 8, 1997, AEI conducted a subsurface investigation consisting of six borings using a Geoprobe. Borings BH-1, BH-2, BH-4, and BH-6 were advanced to 20 feet below grade level (BGL), and BH-3 and BH-5 were probed to 16 feet BGL. Soil samples were collected at intervals of 5 feet, and "grab" groundwater samples were collected from inside the borings. Groundwater was identified at approximately 16 feet BGL.

The soil samples were analyzed in accordance with California Department of Health Services (CA DHS) method for total petroleum hydrocarbons as gasoline and diesel (TPH-g,d) and EPA Method 8020 for volatile aromatics (BTXE), and methyl tertiary butyl ether (MTBE). The soil samples were also analyzed for total lead, oil and grease, and poly nuclear aromatics (PNAs).

4400 ASHE ROAD, #206 • BAKERSFIELD, CA 93313 661/831-1646 • FAX 661/831-1771

Total lead concentrations ranged from 4.6 mg/kg to 23 mg/kg which is below the recommended action level of 50 mg/kg. MTBE was non-detect for all samples analyzed, oil and grease were only run on BH-2 and BH-3 and was less than 50 mg/kg, and the PNAs exhibited trace concentrations ranging between 1.1 and 41 μg/kg.

The groundwater samples were analyzed in accordance with California Department of Health Services (CA DHS) method for total petroleum hydrocarbons as gasoline and diesel (TPH-g,d) and EPA Method 8020 for volatile aromatics (BTXE), and methyl tertiary butyl ether (MTBE). Groundwater samples were also analyzed for total lead, oil and grease, and poly nuclear aromatics (PNAs).

Soluble lead concentrations were below detection limits, MTBE ranged from below detection limits to 320 ug/L in BH6W, oil and grease were only run on BH2W and was less than 5 mg/L, and the PNAs exhibited non detectable concentrations.

On August 7, 1997, AEC supervised the drilling of three Geoprobe soil borings (BH-7, BH-8, and BH-9), and installation of four groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-4) proximal to the western dispenser islands, and south, west, and north of the former UST emplacement. The investigative groundwater wells and Geoprobe borings were positioned to assess the vertical and lateral migration of hydrocarbons in the subsurface and to evaluate groundwater quality.

In accordance with directives issued by ACHCS in a letter dated May 16, 2000, groundwater samples collected during June 2000 were also analyzed for the presence of ether oxygenates, specifically: Tertiary Amyl Methyl Ether (TAME), Diisopropyl Ether (DIPE), Ethyl Tertiary Butyl Ether (ETBE), Tertiary Butyl Alcohol (TBA) and the following lead scavengers: Ethylene Dibromide (EDB), Ethylene Dichloride (EDC), and 1,2-Dichloroethane (1,2-DCA).

On February 13, 2001 AEC drilled, sampled, and installed four additional groundwater monitoring wells (MW-5, MW-6, MW-7, and MW-8) on the subject property and offsite in MacArthur Boulevard and Howe Street. Soil and groundwater samples were collected from the newly installed wells and reported in prior quarterly sampling reports.

In addition to the quarterly groundwater sampling AEC conducted a "hi-vac" feasibility study from October 22-26, 2001. The "hi-vac" study consisted of removing impacted soil vapor and groundwater primarily from monitoring wells MW-1, MW-2, MW-3, and MW-5.

This latest groundwater sampling report documents the methods and procedures used and the laboratory analytical results obtained from the latest groundwater sampling event conducted at the subject property on July 12, 2002.

Groundwater Sampling

The groundwater samples were collected in accordance with the following protocol.

1) Depth to ground water was measured in each of the wells;

2) A bailer was used to collect a water sample from the potentiometric surface to visually determine whether free hydrocarbons or a sheen can be identified;

3) Initial readings of pH, Temperature, and Conductivity were obtained (**Attachment B**);

4) The water samples were collected in a clean, stainless steel bailer, then transferred to 40-ml. glass VOA vials with Teflon septa. Care was exercised to ensure that no air bubbles were present in the vials;

5) The VOA vials were labeled, sealed with tape, wrapped in a protective covering, and placed in an ice chest chilled with frozen Blue Ice with two (2) bailer blanks for transport to the laboratory. Chain-of-custody protocol was followed to ensure sample integrity and traceability;

6) The July 2002 samples were analyzed by Baseline On-Site analysis, a California-certified laboratory in Huntington Beach, California, for total petroleum hydrocarbons as gasoline (TPH-g), volatile aromatics (BTXE), and MTBE by EPA methods 8015-modified and 8021B, respectively. The laboratory reports and chain-of-custody documentation are presented in **Attachment C**.

TABLE 1
Analytical Results - Monitoring Wells
(ppb)

Sample ID	Date	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
MW-1	08/8/97	1,140	110	16	112	15	NA
	12/3/97	ND	ND	ND	31	ND	NA
	03/16/98	370	8.9	ND	2.2	ND	18
	07/9/98	6,400	1,300	23	58	3.7	97
	10/19/98	2,500	360	44	150	1.3	ND
	01/19/99	2,700	1,200	28	78	140	130
	6/26/00	27,000	5,200	500	3,100	320	1,300
	12/15/00	976,000	2,490	1,420	10,100	3,640	<150
	02/14/01	NA	NA	NA	NA	NA	NA
	05/11/01	20,000	2,900	310	1,900	230	<30
	07/11/01	92,000	2,900	580	20,000	2,800	560
Pre "hi-vac"	10/22/01	**20,000**	**3,700**	**560**	**4,600**	**410**	**2,600**
Post "hi-vac"	10/26/01	**<0.05**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
	12/19/01	3,300	200	12	43	5.7	44
	03/18/02	4,600	820	4.4	300	100	210
	05/24/02	1,600	100	23	190	20	7.7
	07/12/02	2,300	250	15	180	13	180

Sample ID	Date	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
MW-2	08/08/97	5,350	108	36	144	33	NA
	12/3/97	1,600	73	ND	ND	ND	NA
	3/16/98	3,400	830	100	240	210	870
	07/09/98	3,100	25	2.2	0.9	ND	1,900
	10/19/98	4,300	ND	1.2	1	ND	4,200
	01/19/99	2,900	160	8.9	7.4	6.9	2,100
	06/26/00	2,700	200	17.0	16.0	30.0	680
	12/15/00	3,020	56.7	<1.5	<1.5	<3.0	3,040
	02/14/01	NA	NA	NA	NA	NA	NA
	05/11/01	720	49	<3	<3	4.6	380
	07/09/01	8,400	350	44	78	77	550
Pre "hi-vac"	10/22/01	**850**	**170**	**4.9**	**14**	**5.1**	**260**
Post "hi-vac"	10/26/01	**770**	**86**	**5.5**	**8.5**	**9.6**	**310**
	12/19/01	1,300	9.2	<2	<2	<2	370
	03/18/02	1,300	76	3.8	15	21	460
	05/24/02	320	12	1.1	4.8	4.6	160
	07/12/02	1,300	130	1.0	5.6	9.4	420
MW-3	08/08/97	8,500	450	30	106	53	NA
	12/03/97	5,200	180	6	9.3	5	NA
	03/16/98	1,000	6.0	ND	ND	ND	810
	07/09/98	6,400	490	57	78	23	220
	10/19/98	2,100	ND	ND	ND	ND	ND
	01/19/99	4,400	450	65	42	26	1,300
	06/26/00	1,700	110	13.0	13.0	34.0	96.0
	12/15/00	5,450	445	<7.5	<7.5	23.8	603
	02/14/01	NA	NA	NA	NA	NA	NA
	05/11/01	1,900	180	12	19	<3	330
	07/09/01	10,000	830	160	260	150	560
Pre "hi-vac"	10/22/01	**1,400**	**240**	**7.8**	**15**	**4.1**	**220**

Sample ID	Date	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
Post "hi-vac"	10/26/01	**1,900**	**200**	**16**	**30**	**51**	**290**
MW-3	12/19/01	5,800	93	<20	<20	31	330
	03/18/02	1,900	220	16	24	31	400
	05/24/02	1,600	110	3.4	14	29	320
	07/12/02	1,900	210	27	55	30	200
MW-4	08/08/97	ND	ND	ND	ND	ND	NA
	12/03/97	ND	ND	ND	ND	ND	NA
	03/16/98	ND	ND	ND	ND	ND	ND
	07/09/98	ND	ND	ND	ND	ND	ND
	10/19/98	ND	ND	ND	ND	ND	ND
	01/19/99	ND	ND	ND	ND	ND	ND
	06/26/00	<50.0	<0.5	<0.5	<0.5	<0.5	<0.5
	12/15/00	<500	<0.3	<0.3	<0.3	<0.6	<0.3
	02/14/01	NA	NA	NA	NA	NA	NA
	05/11/01	<50	1.2	<0.3	1.2	0.55	2.9
	07/09/01	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Pre "hi-vac"	10/22/01	**<5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Post "hi-vac"	10/26/01	**<5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
	12/19/01	<0.5	<0.5	<0.5	<0.5	<0.5	<50
	03/18/02	<50	<1	<1	<1	<1	<1
	05/24/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5
	07/12/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5
MW-5	02/14/01	5,660	76.9	21.1	312	47.3	<0.3
	05/11/01	22,000	2,600	480	2,700	220	<30
	07/09/01	72,000	3,500	1,100	22,000	4,300	2,500
Pre "hi-vac"	10/22/01	**26,000**	**2,800**	**980**	**950**	**6,000**	**2,300**
Post "hi-vac"	10/26/01	**17,000**	**1,200**	**470**	**440**	**2,900**	**900**
	12/19/01	<2,000	620	190	910	110	<20
	03/18/02	8,800	1,200	72	350	7.4	1,200

Sample ID	Date	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
MW-5	05/24/02	2,000	150	38	260	21	13
	07/12/02	4,200	480	68	280	29	450
MW-6	02/14/01	1,340	17.0	0.967	51.4	11.1	<0.3
	05/11/01	610	15	0.97	46	<0.5	<0.5
	07/09/01	2,500	130	4.7	170	53	120
Pre "hi-vac"	10/22/01	**280**	**18**	**1.2**	**4.7**	**6.2**	**6**
Post "hi-vac"	10/26/01	**3,600**	**210**	**20**	**62**	**170**	**120**
	12/19/01	5,300	69	5.6	17	14	<2
	03/18/02	71	54	4.2	17	27	8.5
	05/24/02	150	9.3	<0.5	<0.5	<0.5	1.5
	07/12/02	2,200	98	32	150	46	66
MW-7	02/14/01	<0.005	<0.3	<0.3	<0.3	<0.3	284
	05/11/01	<50	0.75	0.77	2.4	0.48	1.1
	07/09/01	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Pre "hi-vac"	10/22/01	**<5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Post "hi-vac"	10/26/01	**6,000**	**170**	**550**	**120**	**110**	**970**
	12/19/01	<50	<0.5	<0.5	0.9	<0.5	43
	03/18/02	<50	<1	<1	<1	<1	<1
	05/24/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5
	07/12/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5
MW-8	02/14/01	1,000	3.97	<0.3	1.63	3.78	620
	05/11/01	<50	<0.5	<0.5	<0.5	<0.5	4.4
	07/09/01	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Pre-"hi-vac"	10/22/01	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Post "hi-vac"	10/26/01	<5	<0.5	<0.5	<0.5	<0.5	<0.5
	12/19/01	<50	<0.5	<0.5	<0.5	<0.5	<0.5
	03/18/02	<50	<1	<1	<1	<1	<1
	05/24/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5
	07/12/02	<50	<0.5	<0.5	<0.5	<0.5	<0.5

TPH-g: Total Petroleum Hydrocarbons as gasoline

The current state maximum contaminant levels (MCLs) for drinking water set by the California Department of Health Services, Title 22 are as follows:

Benzene	1 µg/L
Toluene	1500 µg/L
Ethylbenzene	700 µg/L
Total Xylenes	1750 µg/L
MTBE	13 µg/L

Conclusions

The groundwater sampling results continue to indicate trace to non detectable concentrations of gasoline constituents analyzed within MW-4 (upgradient well), MW-7 and MW-8 (downgradient wells). MW-7 exhibited a marked increase in gasoline-range hydrocarbons after the vacuum extraction of groundwater in October 2001; however, this appeared to be an anomaly and has proven out based on results from the December 19, 2001, March 18, 2002, May 24, 2002, and July 12, 2002 groundwater sampling. MW-6 exhibited moderate concentrations of TPH-gasoline and all volatiles. The gasoline concentrations for MW-6 had exhibited a decreasing trend since the "hi-vac" process in October 2001 until this sampling round of July 12, 2002.

MW-1, MW-2, MW-3, and MW-5 continue to exhibit elevated concentrations for TPH-gasoline and volatile organic concentrations, however, the concentrations are on a stabilizing and primarily decreasing trend. It appears that using vacuum extraction on the contaminated groundwater in MW-1 and MW-5 has reduced and stabilized the groundwater plume. The wells occasionally "spike" upwards, however, concentrations remain well below pre "hi-vac" concentrations.

Oxygenate analyses were not conducted on the groundwater samples collected in July 2002, however, will be re-instated for the October 2002 quarterly sampling.

The current flow direction was calculated to be North 80° West and the gradient is 0.75 ft/100ft. Flow direction and gradient have remained relatively consistent with previous sampling rounds. The monitoring wells yield adequate water volume and cannot be bailed dry. Recharge is good in all eight monitoring wells.

Recommendations

Advanced Environmental Concepts, Inc. recommends one additional quarter of sampling for this site (October 2002). If the plume continues to exhibit stable gasoline concentrations AEC will recommend closure for the site and permission to abandon the groundwater wells. AECs rationale is based on the following:

(1) There are no drinking water supply wells in this area of Oakland. All water is imported through subsurface plumbing from outside this area, therefore, there is no opportunity for this gasoline release to affect drinking water supplies.

(2) The plume has not migrated greater that 30-feet from the former UST and dispenser release points.

(3) The gasoline plume in water is "perched" on a malleable "fat" clay at approximately 16-feet bgs and has exhibited no vertical migration into the clay layer. The water-bearing zone is also confined by a "fat" clay layer, thereby, reducing the potential for vertical vapor migration to the surface. The upper clay layer also retains the gasoline hydrocarbons rendering complete removal impossible by any

remediation methods with the exception of excavation. However, the close proximity of the aboveground structures on the subject property, and numerous subsurface utility vaults and lines, negates the possibility of excavation as a viable option, therefore, there will always be some leaching of the hydrocarbons from the clay into groundwater.

(4) The most elevated gasoline concentrations have been recorded from monitoring wells 1 and 5 which are along the north wall of the onsite car warehouse structure. The "hi-vac" method has reduced the gasoline concentrations from "free product" in wells 1 and 5 to less than 4,500 ppb of TPH-gasoline in well 5. In addition, benzene concentrations have decreased from a high of 5,200 ppb to the current measured result of 250 ppb in MW-1. The sampling results from the prior three quarters indicate a stabilizing and decreasing trend and that an asymptopic line is being reached.

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Closing

Advanced Environmental Concepts, Inc. appreciates the opportunity of providing our professional services to Mr. Warren Dodson. Should there be any questions or additional information required, please do not hesitate to contact our office at your convenience.

Respectfully yours,

Advanced Environmental Concepts, Inc.

Jonathan L. Buck
Registered Environmental Assessor II #20017

REGISTERED ENVIRONMENTAL ASSESSOR II
JONATHAN L. BUCK
No. 20017
Expires 7/03
STATE OF CALIFORNIA

All environmental site work with which **Advanced E nvironmental C oncepts, I nc.** was involved, was performed under my supervision to ensure proper sampling protocol and environmental assessment. This report has been technically reviewed by the undersigned.

Christian Bellue
Registered Professional Engineer #C53934

REGISTERED PROFESSIONAL ENGINEER
CHRISTIAN ROBERT BELLUE
No. C53934
Exp 12/31/03
CIVIL
STATE OF CALIFORNIA

Doc30IV

"Appendix A"

PROJECT MAPS / FIGURES

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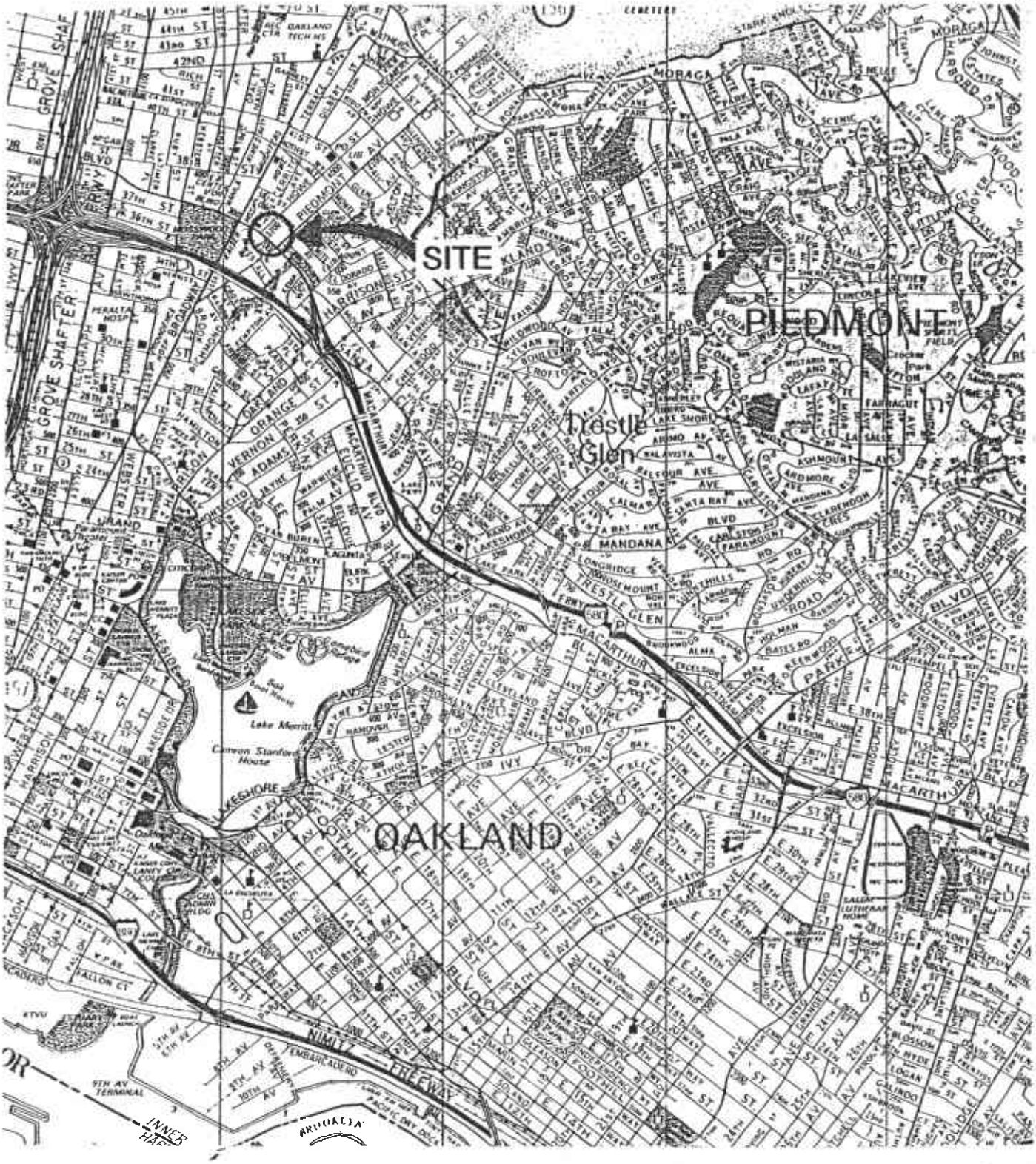


Map Source: Thomas Maps

ADVANCED ENVIRONMENTAL CONCEPTS INC

ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40672 BAKERSFIELD, CA 93384

- SITE AREA -

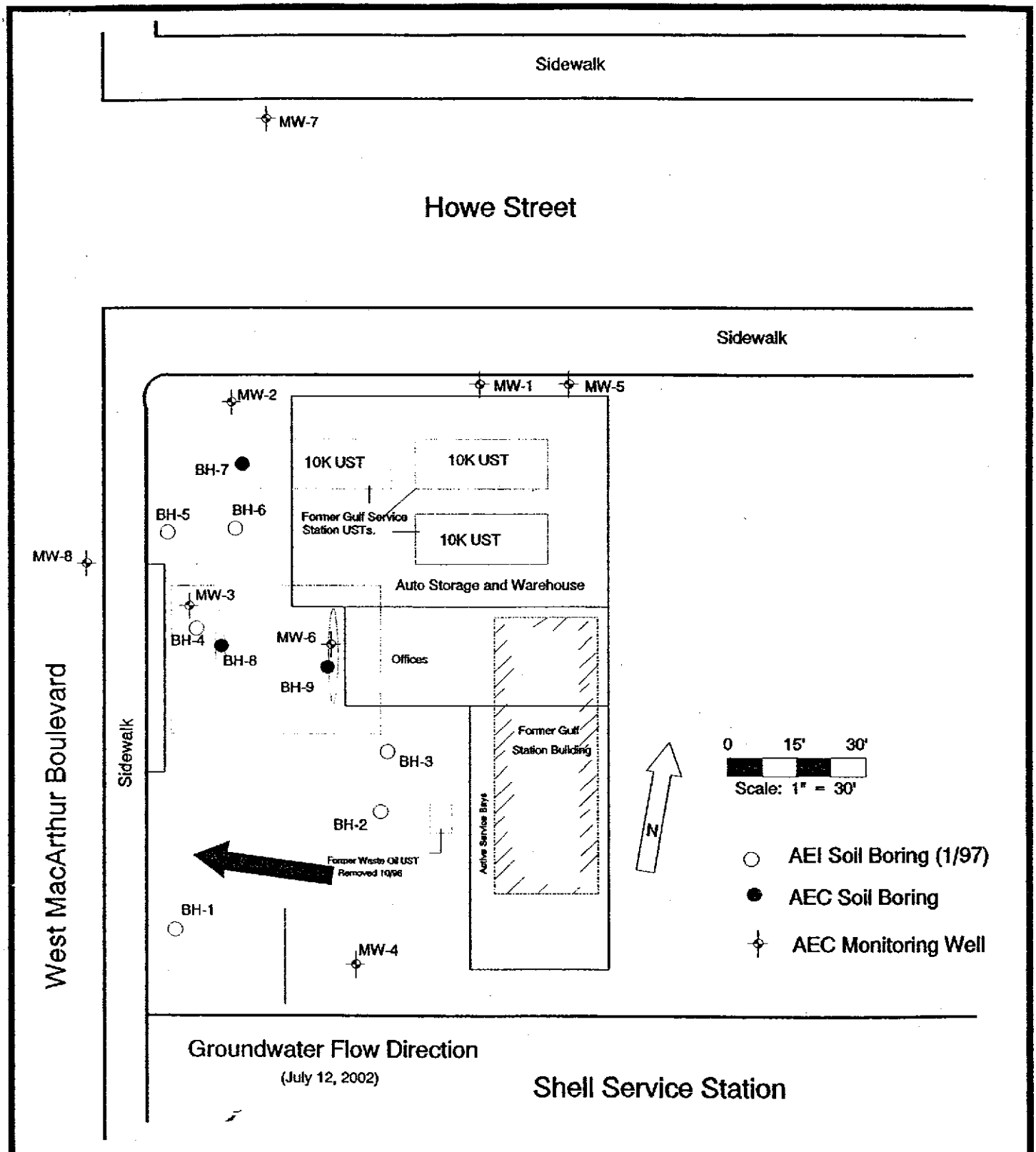
Prestige Products Corporation

240 West MacArthur Blvd.

County of Alameda - Oakland, California

FIGURE

1



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ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40672 BAKERSFIELD, CA 93384

- Location Map -

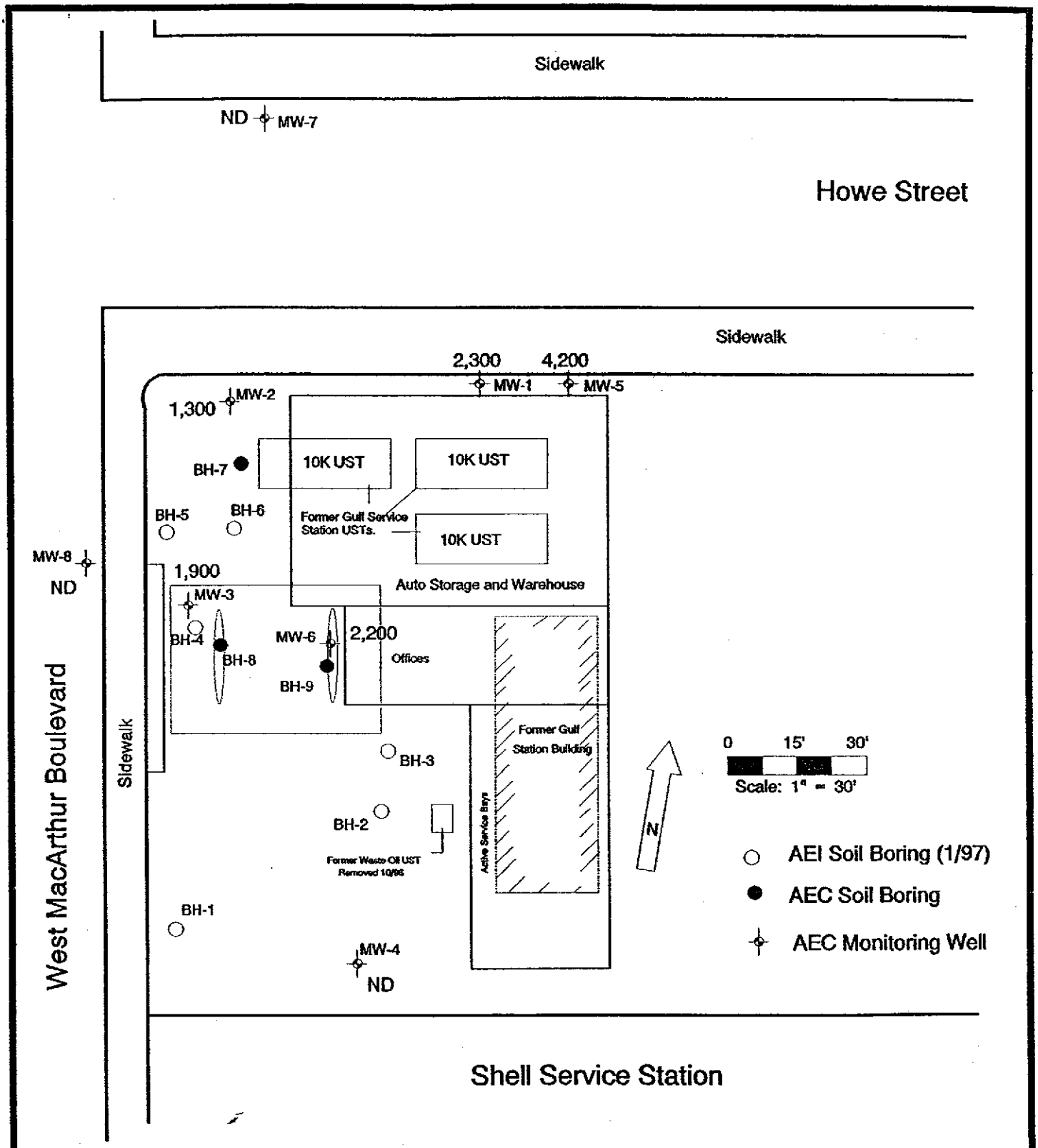
Former Vogue Tyres Facility

240 West MacArthur Boulevard

County of Alameda • Oakland, CA

FIGURE

2



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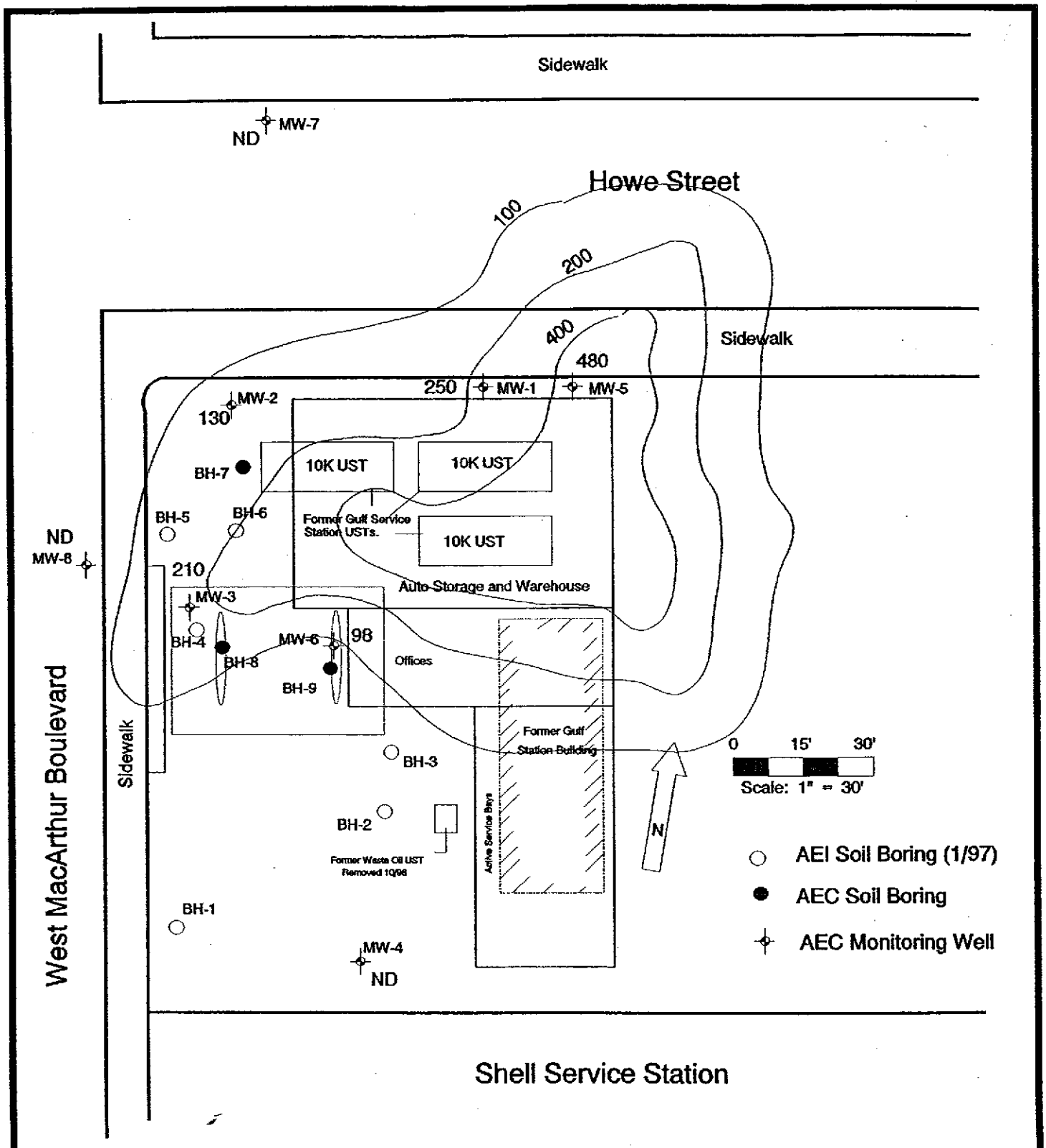
ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40672 BAKERSFIELD, CA 93384

TPH-Gasoline in Water (ppb)
(July 12, 2002)
Former Vogue Tyres Facility
240 West MacArthur Boulevard
County of Alameda • Oakland, CA

FIGURE
3

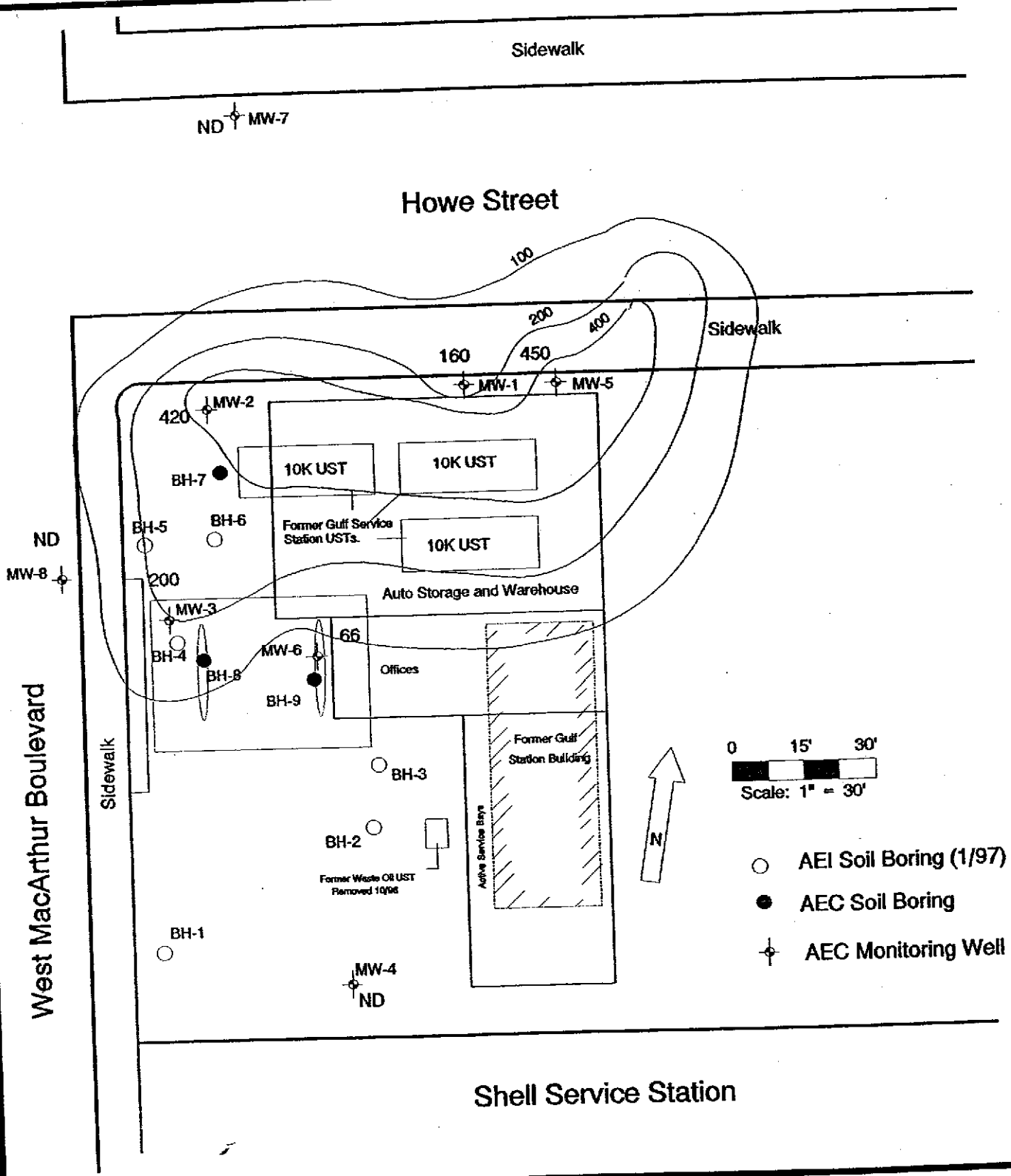


ADVANCED ENVIRONMENTAL CONCEPTS INC

ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40672 BAKERSFIELD, CA 93384

Benzene in Groundwater (ppb)
(July 12, 2002)
Former Vogue Tyres Facility
240 West MacArthur Boulevard
County of Alameda • Oakland, CA

FIGURE
4



ADVANCED ENVIRONMENTAL CONCEPTS INC

ADVANCED ENVIRONMENTAL CONCEPTS
P.O. BOX 40672 BAKERSFIELD, CA 93384

MTBE in Groundwater (ppb)
(July 12, 2002)
Former Vogue Tyres Facility
240 West MacArthur Boulevard
County of Alameda • Oakland, CA

FIGURE
5

"Appendix B"

GROUNDWATER PARAMETERS

4400 ASHE ROAD #206 • BAKERSFIELD, CA 93313 661/831-1646 • FAX 661/831-1771

Groundwater Parameters

Site Name: Former Vogue Tyres
Location: 240 West MacArthur
Oakland, CA

AEC P.O. #:
Project #:
Date: July 12, 2002

TIME	GALLONS PURGED	CONDUCTIVITY	TEMPERATURE	pH	TURBIDITY
	MONITORING WELL # 1				
		2,030	63.0	6.81	12.6
	MONITORING WELL # 2				
		1,950	63.7	6.73	9.4
	MONITORING WELL # 3				
		2,090	64.8	6.59	15.1

3 Casing Volumes

4" Screen = (.66 gal/ft) (_____ ft) = _____ 2" Screen = (.17 gal/ft) (_____ ft) = _____

MW # MW-1 Depth to Groundwater = 16.39' Corrected Depth: 16.62' Survey: 4.38'

MW # MW-2 Depth to Groundwater = 15.86' Corrected Depth: 17.51' Survey: 5.80'

MW # MW-3 Depth to Groundwater = 14.97' Corrected Depth: 16.79' Survey: 5.97'

Smallest Number is the highest elevation

Groundwater Parameters

Site Name: Former Vogue Tyres
Location: 240 West MacArthur
Oakland, CA

AEC P.O. #:
Project #:
Date: July 12, 2002

TIME	GALLONS PURGED	CONDUCTIVITY	TEMPERATURE	pH	TURBIDITY
	MONITORING WELL # 4				
		1,430	64.3	6.78	14.1
	MONITORING WELL # 5				
		1,350	62.8	6.76	15.2
	MONITORING WELL # 6				
		2,540	65.0	6.12	14.8

3 Casing Volumes

4" Screen = (.66 gal/ft) (_____ ft) = _____ 2" Screen = (.17 gal/ft) (_____ ft) = _____

MW # MW-4 Depth to Groundwater = 14.81' Corrected Depth: 16.51' Survey: 5.85'

MW # MW-5 Depth to Groundwater = 16.46' Corrected Depth: 16.46' Survey: 4.15'

MW # MW-6 Depth to Groundwater = 15.55' Corrected Depth: 16.54' Survey: 5.14'

Groundwater Parameters

Site Name: Former Vogue Tyres
Location: 240 West MacArthur
Oakland, CA

AEC P.O. #: _____
Project #: _____
Date: July 12, 2002

TIME	GALLONS PURGED	CONDUCTIVITY	TEMPERATURE	pH	TURBIDITY
	MONITORING WELL # 7				
		1,770	64.5	6.75	15.7
	MONITORING WELL # 8				
		1,040	63.8	6.59	14.1
	MONITORING WELL # ___				

3 Casing Volumes

4" Screen = (.66 gal/ft) (_____ ft) = _____ 2" Screen = (.17 gal/ft) (_____ ft) = _____

MW # MW-7 Depth to Groundwater = 15.72' Corrected Depth: 16.81' Survey: 5.24'

MW # MW-8 Depth to Groundwater = 13.96' Corrected Depth: 16.99' Survey: 7.18' lowest elev.

MW # _____ Depth to Groundwater = _____ Corrected Depth: _____ Survey: _____

"Appendix C"

LABORATORY RESULTS / CHAIN-OF-CUSTODY DOCUMENTS

4400 ASHE ROAD #206 • BAKERSFIELD, CA 93313 661/831-1646 • FAX 661/831-1771

Baseline On-Site Analysis
P. O. Box 2243
Huntington Beach, CA 92647
Toll Free: 888.753.7553
FAX: 714.840.1584

Laboratory Report

Client: AEC, Inc.
Client Address: 4400 Ashe Road, #206
Bakersfield, CA 93313

Report Date: 6/5/02
Lab Project Number: 02253
Client Project Number: ---

Project Name: Vogue Tyres
Project Address: 240 W. MacArthur Avenue
Oakland, California
Contact: Jon Buck

Dates Sampled: 5/24/02
Dates Received: 5/29/02
Dates Analyzed: 5/29/02
Sample Matrix: Water

Analyses Requested:

1. **EPA M8015 – Total Petroleum Hydrocarbons as Gasoline (TPH-G)**
2. **EPA 8021B – Volatile Aromatics with MTBE**

On May 29, 2002, *Baseline* received water samples from the project shown above. A Chain-of-Custody Record (COC) is attached.

Baseline analyzed the samples for the parameters shown above per the COC. In this report, *Baseline* presents the results and QA/QC summary for these analyses.

Brian K. Kato

Approved
Brian K. Kato, Laboratory Manager

BASELINE ON-SITE ANALYSIS™

Baseline On-Site Analysis
P. O. Box 2243
Huntington Beach, CA 92647

Toll Free: 888.753.7553
FAX: 714.840.1584

Laboratory Report

Client: AEC, Inc.
Client Address: 4400 Ashe Road, #206
Bakersfield, CA 93313

Project Name: Vogue Tyres
Project Address: 240 W. MacArthur Avenue
Oakland, California
Contact: Jon Buck

Report Date: 6/5/02
Lab Project Number: 02253
Client Project Number: ---

Dates Sampled: 5/24/02
Dates Received: 5/29/02
Dates Analyzed: 5/29/02
Sample Matrix: Water

TPH as Gasoline (TPH-G) and Volatile Aromatics (BTEX) with MTBE Results

Constituent:	TPH-G	MTBE	Benzene	Toluene	Ethylbenzene	Total Xylenes
Method:	M8015	8021B	8021B	8021B	8021B	8021B
Units:	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sample ID						
MW-1	1.6	7.7	100	23	20	190
MW-2	0.32	160	12	1.1	4.6	4.8
MW-3	1.6	320	110	3.4	29	14
MW-4	ND<0.050	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-5	2.0	13	150	38	21	260
MW-6	0.15	1.5	9.3	ND<0.5	ND<0.5	ND<0.5
MW-7	ND<0.050	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-8	ND<0.050	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Method Blank	ND<0.050	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

ND: Not detected at the indicated reporting limit.

BASELINE ON-SITE ANALYSIS™

Baseline On-Site Analysis
P. O. Box 2243
Huntington Beach, CA 92647

Toll Free: 888.753.7553
FAX: 714.840.1584

Laboratory Report

Client: AEC, Inc.
Client Address: 4400 Ashe Road, #206
Bakersfield, CA 93313

Project Name: Vogue Tyres
Project Address: 240 W. MacArthur Avenue
Oakland, California
Contact: Jon Buck

Report Date: 6/5/02
Lab Project Number: 02253
Client Project Number: ---

Dates Sampled: 5/24/02
Dates Received: 5/29/02
Dates Analyzed: 5/29/02
Sample Matrix: Water

Quality Control Summary

Analytes	MS Recovery (%)	MSD Recovery (%)	RPD (%)	QC Sample
TPH-Gasoline (EPA 8015)	98	95	3	MW-8
Toluene (EPA 8021B)	96	94	2	MW-8
Total Xylenes (EPA 8021B)	99	95	4	MW-8
Acceptable QC Limits:	(65-135)	(65-135)	(0-30)	

MS: Matrix Spike; MSD: Matrix Spike Duplicate; RPD: Relative Percent Difference
LCS/LCSD: Lab Control Sample/Duplicate

CHAIN-OF-CUSTODY RECORD

Client: AEC

Date: 5/29/02

Project Name: VOGUE TYRES

Client Project #:

Project Address: 225 W MacArthur
Oakland, CA

Sampler's Signature: [signature]

LAB Project #: 02253

Page 1 of 1

Turn Around Requested:

- ☐ 24-Hour-Rush
- ☐ 48-Hour-Rush
- ☒ Normal
- ☐ Mobile Lab

Lab Use Only. Sample Condition as received:

Chilled (Yes) / No
Sealed (Yes) / No

Sample	Sample Location	Date	Time	Laboratory Sample Number	Sample Matrix: Soil(S) Sludge(SL), Aqueous(A)	TPH-g/BTXE/MTBE						Number of Containers	Container / Comments
MW-4		5/24/02			A	/						2	
MW-8		"			A	/						2	
MW-7		"			A	/						2	
MW-6		"			A	/						2	
MW-3		"			A	/						2	
MW-2		"			A	/						2	
MW-5		"			A	/						2	
MW-1		5/24/02			A	/						2	

Total Number of Containers: 16

❶ Relinquished by: (Signature) [signature]	Date 5/29/02	❷ Received by: (Signature)	Date
Company: AEC	Time 1400	Company:	Time
❸ Relinquished by: (Signature)	Date	❹ Received by Laboratory: (Signature) [signature]	Date 5/29/02
Company:	Time	Company: BASELINE	Time 1400

•ADVANCED ENVIRONMENTAL CONCEPTS INC•

661/831-1646
FAX 661/831-1771

4400 ASHE ROAD, #206
BAKERSFIELD, CA 93313

E-mail: advanced@lightspeed.net

Baseline On-Site Analysis
P. O. Box 2243
Huntington Beach, CA 92647

Toll Free: 888.753.7553
FAX: 714.840.1584

Laboratory Report

Client: AEC, Inc.
Client Address: 4400 Ashe Road, #206
Bakersfield, CA 93313

Project Name: Vogue Tyres
Project Address: 240 W. MacArthur Avenue
Oakland, California
Contact: Jon Buck

Report Date: 7/19/02
Lab Project Number: 02299
Client Project Number: ---

Dates Sampled: 7/12/02
Dates Received: 7/14/02
Dates Analyzed: 7/15/02
Sample Matrix: Water

Analyses Requested:

1. **EPA M8015 – Total Petroleum Hydrocarbons as Gasoline (TPH-G)**
2. **EPA 8021B – Volatile Aromatics with MTBE**

On July 14, 2002, *Baseline* received water samples from the project shown above. A Chain-of-Custody Record (COC) is attached.

Baseline analyzed the samples for the parameters shown above per the COC. In this report, *Baseline* presents the results and QA/QC summary for these analyses.

Brian K. Kato

Approved
Brian K. Kato, Laboratory Manager

BASELINE ON-SITE ANALYSIS INC.

Baseline On-Site Analysis
P. O. Box 2243
Huntington Beach, CA 92647

Toll Free: 888.753.7553
FAX: 714.840.1584

Laboratory Report

Client: AEC, Inc.
Client Address: 4400 Ashe Road, #206
Bakersfield, CA 93313

Project Name: Vogue Tyres
Project Address: 240 W. MacArthur Avenue
Oakland, California
Contact: Jon Buck

Report Date: 7/19/02
Lab Project Number: 02299
Client Project Number: ---

Dates Sampled: 7/12/02
Dates Received: 7/14/02
Dates Analyzed: 7/15/02
Sample Matrix: Water

TPH as Gasoline (TPH-G) and Volatile Aromatics (BTEX) with MTBE Results

Constituent:	TPH-G	MTBE	Benzene	Toluene	Ethylbenzene	Total Xylenes
Method:	M8015	8021B	8021B	8021B	8021B	8021B
Units:	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Sample ID						
MW-1	2.3	180	250	15	13	180
MW-2	1.3	420	130	1.0	9.4	5.6
MW-3	1.9	200	210	27	30	55
MW-4	ND<0.050	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-5	4.2	450	480	68	29	280
MW-6	2.2	66	98	32	46	150
MW-7	ND<0.050	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-8	ND<0.050	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Method Blank	ND<0.050	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

ND: Not detected at the indicated reporting limit.

BASELINE ON-SITE ANALYSIS™

Baseline On-Site Analysis
P. O. Box 2243
Huntington Beach, CA 92647

Toll Free: 888.753.7553
FAX: 714.840.1584

Laboratory Report

Client: AEC, Inc.
Client Address: 4400 Ashe Road, #206
Bakersfield, CA 93313

Report Date: 7/19/02
Lab Project Number: 02299
Client Project Number: ---

Project Name: Vogue Tyres
Project Address: 240 W. MacArthur Avenue
Oakland, California
Contact: Jon Buck

Dates Sampled: 7/12/02
Dates Received: 7/14/02
Dates Analyzed: 7/15/02
Sample Matrix: Water

Quality Control Summary

Analytes	MS Recovery (%)	MSD Recovery (%)	RPD (%)	QC Sample
TPH-Gasoline (EPA 8015)	79	90	13	MW-8
Toluene (EPA 8021B)	82	88	7	MW-8
Total Xylenes (EPA 8021B)	85	90	6	MW-8
Acceptable QC Limits:	(65-135)	(65-135)	(0-30)	

MS: Matrix Spike; MSD: Matrix Spike Duplicate; RPD: Relative Percent Difference
LCS/LCSD: Lab Control Sample/Duplicate

CHAIN-OF-CUSTODY RECORD

Client: AEC		Date: 7-12-02				Analysis Requested									LAB Project #: 02299		
Project Name: VOGUE tyres		Client Project #				TPH - G/BTEX/MTBE	8260B								Page: 1 of 1		
Project Address: 245 W MACArthur		Turn Around Requested: ☐ 24-Hour-Rush ☐ 48-Hour-Rush ☐ Normal ☐ Mobile Lab													Lab Use Only. Sample Condition as received: Chilled Yes / No Sealed Yes / No		
OAKLAND CA																	
Sampler's Signature: Kenneth J Beck																	
Sample	**Sample Location**	**Date**	**Time**	**Laboratory Sample Number**	**Sample Matrix: Soil(S) Sludge(SL), Aqueous(A)**									**Number of Containers**	**Container / Comments**		
MW-1		7-12-02			A	X	X							2			
MW-2		7-12-02			A	X	X							2			
MW-3		7-12-02			A	X	X							2			
MW-4		7-12-02			A	X	X							2			
MW-5		7-12-02			A	X	X							2			
MW-6		7-12-02			A	X	X							2			
MW-7		7-12-02			A	X	X							2			
MW-8		7-12-02			A	X	X							2			

❶ Relinquished by: (Signature) Kenneth J Beck	Date 7/14/02	❷ Received by: (Signature) B Kato	Date 7/14/02	16	Total Number of Containers
Company: AEC	Time 1400	Company: BAGLELINE	Time 1400		
❸ Relinquished by: (Signature)	Date	❹ Received by Laboratory: (Signature)	Date		
Company:	Time	Company:	Time		

ADVANCED ENVIRONMENTAL CONCEPTS INC
661/831-1646 4400 ASHE ROAD, #206
FAX 661/831-1771 BAKERSFIELD, CA 93313
E-mail: advanced@lightspeed.net

ATTACHMENT F

Standard Procedures for Geoprobe Sampling

CAMBRIA

STANDARD FIELD PROCEDURES FOR GEOPROBE® SAMPLING

This document describes Cambria Environmental Technology's standard field methods for GeoProbe® soil and ground water sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e., sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or separate-phase hydrocarbon saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Sampling

GeoProbe® soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned or washed prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon® tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable GasTech® or photoionization detector measures volatile hydrocarbon vapor concentrations in the bag's headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Grab Ground Water Sampling

Ground water samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting ground water using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory quality assurance/quality control (QA/QC) blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.