CAMBRIA

January 8, 2001
Via facsimile
Hard copy to follow in regular mail

Mr. Larry Seto
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Agency Response**
Former Shell Service Station
461 8th Street
Oakland, California
Incident #97093399
Cambria Project #242-1501

Dear Mr. Seto:

On behalf of Equiva Services LLC, Cambria Environmental Technology, Inc. (Cambria) is responding to the Alameda County Health Care Services Agency (ACHCSA) letter dated November 15, 2000. Cambia's responses to questions in your letter are given below.

1) *What is the status of the original monitoring wells S-1, S-2, and S-3? If they are closed, how and when were they closed?*

According to a Phase I Preliminary Site Assessment prepared by Geostrategies Inc. (GSI) on June 30, 1993, wells S-1, S-2, and S-3 were destroyed during onsite construction activities in approximately 1987. The site has been a paved parking lot since at least 1984. Cambria does not have a report of well destruction. However, correspondence from EMCON Associates to Gettler-Ryan, Inc. dated June 26, 1986, transmitted instructions that the wells were to perforated at depth and grouted with neat cement to the surface.

2) *Were the underground storage tanks (USTs) and associated product piping removed from the site?*

Yes. Based on GSI's 1993 Phase I report, GSI reviewed the City of Oakland building permits and found that Shell Oil Company (now Equilon) had obtained permits to demolish the service station and remove the USTs and associated piping in accordance with existing regulations. All USTs and fueling facilities were reportedly removed from the site in 1980.

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

3) Were any soil or groundwater samples taken during the tank removal? Were the samples analyzed by a State certified laboratory? Please provide me with copies of any laboratory results.

It is unknown whether a UST and piping removal report exists. However, soil conditions in the former UST, piping and dispenser areas are represented by data from soil borings L1 (S-1) through L7 (S-7), S-8 through S-10, and B-1 Through B-9. Analytical data from these borings are summarized in Attachment B

4) When were monitoring wells S-4, S-5, and S-6 installed? Please submit a copy of the well logs and monitoring well construction design to this office.

Wells S-1 through S-7 were installed from August 25 through September 10, 1981 by Groundwater Technology, Inc. (GTI). Copies of all soil boring/well logs and a map indicating their locations are included as Attachment A. Note: The GTI logs use the designation "L" for each well instead of "S" as currently used by Cambria. Laboratory reports for samples collected during this investigation are included as Attachment B.

5) Are all of the monitoring wells screened at the same depths?

No. Well construction details of all site wells are presented in Table 1. Well S-7 was reportedly destroyed during freeway construction (Interstate-880) although Cambria does not have records detailing the well destruction. All wells currently existing at the site are shown on Figure 1.

6) Has a conduit study been performed for this site?

A conduit study has not been performed for this site to date.

7) Do you have any knowledge of any upgradient site from the subject facility that may be a potential source?

Figure 1 shows potential offsite sources of MTBE identified in an August 12, 1996 correspondence titled *Offsite Source Investigation*, prepared by Enviros. No other potential offsite MTBE sources have been identified by Cambria, including any sources which are directly upgradient from the subject site. The only potential upgradient source identified by Enviros, the Blue and White Cab Company, was identified by name only and, at that time, was not included on the RWQCB's LUSTIS list which identifies known UST release sites. Therefore, it is unknown whether the Blue and White Cab Company site is an upgradient source.

CAMBRIA

ADDITIONAL INFORMATION

The following information was originally presented in our October 2, 2000 correspondence to your office:

Historical MTBE Use In Gasoline Products Sold at the Subject Facility: On September 30, 1997, Shell Oil Products Company (now Equilon Enterprises LLC) issued correspondence titled *Response to San Francisco Bay Regional Water Quality Control Board Request for Chemical Constituents of Gasoline Data.* According to this document, Shell/Equilon utilizes the Shell Martinez Refining Company (SMRC) as the primary source for refined gasoline products in the San Francisco Bay area (Bay Area). MTBE use in refined gasoline products from the SMRC did not begin until November 1991.

Gasoline underground storage tanks (USTs) at the subject facilty were in operation until site demolition in 1980 when they were removed along with gasoline station improvements. The site has not been used as a gasoline sales facility since that time. The USTs formerly onsite were removed approximately 10 years prior to the use of MTBE in gasoline at SMRC. Therefore, it is not likely that MTBE in groundwater is associated with, or eminating from, the subject facility.

MTBE Reported in Groundwater: MTBE was first reported in groundwater at the site using EPA Method 8020 on October 2, 1996. EPA Method 8020 uses gas chromatography to screen for MTBE but is subject to false-positive detections in the presence of elevated hydrocarbon concentrations. EPA Method 8260 uses mass spectrometry coupled with gas chromatography and provides a more accurate measure of MTBE. No MTBE was detected using method 8260 in samples collected from wells S-8 in October 1996, and wells S-5 and S-6 in November 1999. The first confirmation of MTBE in wells associated with the site was during the July 2000 sampling event in wells S-5 and S-6 at 253 parts per billion (ppb) and 72.7 ppb, respectively (these analyses were run outside of the EPA recommended holding time by the lab).

The most recent groundwater samples were collected from wells S-5, S-6, and S-8 on October 12, 2000. No MTBE was indicated by either EPA Method 8020 or 8260, although elevated hydrocarbon concentrations resulted in higher than normal laboratory detection limits. Analytical results will be presented in the fourth quarter 2000 groundwater monitoring report.

CLOSING

We hope this correspondence adequately addresses your concerns regarding this site. Please call Troy Buggle at (510) 420-3333 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc

STEPHAN BORK

for: Troy A. Buggle
Project Environmental Scientist

Stephan A. Bork, C.E.G., C.H.G.
Associate Hydrogeologist

REGISTERED GEOLOGIST
STEPHAN A. BORK
No. EG 2058
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Figure: 1 - Groundwater Elevation Contour and Potential Offsite Sources – July 19, 2000

Table: 1 - Well Construction Details

Attachment: A - Soil Boring/Well Construction Logs
B – Site Assessment Analytical Data

cc: Karen Petryna, Equiva Services LLC, P.O. Box 7869, Burbank, California 91510-7869
Leah Goldberg, Hanson, Bridgett, Marcus, Vlahos, & Rudy, 333 Market Street, Suite 2300, San Francisco, California 94105-2173
Wells Fargo Bank National Association, Tr. (Property Owners), c/o Pacific Property, 364 Bush Street, San Francisco, CA 94104-2805
Barney Chan , ACHCSA, 1131 Harbor Bay Parkway, Suite 250,Alameda, CA 94502-6577

Table 1. Well Construction Specifications - Former Shell-branded Service Station, 461 8th Street Oakland, California
Incident # 97093399

Well ID	Depth (ft bgs)	Diameter	Screened Interval (ft bgs)	Groundwater Depth Range****
S1 (L1)*	30'	4"	20' to 30'	UNK
S2 (L2)*	30'	4"	20' to 30'	UNK
S3 (L3)*	30'	4"	20' to 30'	UNK
S4 (L4)	30'	4"	20' to 30'	13-23'
S5 (L5)	37' ***	4"	20' to 30'	15-23'
S6 (L6)	40'	4"	20' to 40'	18-22'
S7 (L7)**	40'	4"	20' to 40'	UNK
S8	30'	4"	10' to 30'	21-25'
S9	30'	4"	10' to 30'	21-24'
S10	36.5'	4"	10' to 36.5'	23-26'

Notes and Abbreviations:

UNK - Unknown

* Wells destroyed during construction?

** Well abandoned during Interstate 880 construction.

*** Quarterly monitoring field notes indicate S5 total depth to be approximately 40-41fbg.

**** Groundwater depth ranges are approximate

EXPLANATION

- S-1 ● Monitoring well location
- NA Not available
- → Groundwater flow direction
- ~~ xx.xx Groundwater elevation contour, in feet above mean sea level (msl), approximately located; dashed where inferred

Well
ELEV
Benzene
MTBE

- Well designation
- Groundwater elevation, in feet above msl
- Benzene and MTBE concentrations are in parts per billion and are analyzed by EPA Method 8020; MTBE results in parentheses are analyzed by EPA Method 8260. Date is most recent sampling unless otherwise indicated.

NINTH STREET

EIGHTH STREET

SEVENTH SRTEET

WASHINGTON STREET

BROADWAY

FRANKLIN STREET

INTERSTATE 880

Former Blue and White Cab Co.
807 Broadway

Former Phillips 66 Station

Former Richfield Station
800 Franklin

8th Street Garage
362 8th

S-10
5.00
3.75
<2.50

S-8
5.28
228
<12.5

S-4
4.58
<0.500
<2.50

S-9
NA
1.2 - 1/7/00
<2.5 - 1/7/00

S-5
3.93
2,110
355

S-6
3.68
629
124

5.00

5.00

4.50

4.50

4.00

4.00

Approximate UST location

Approximate dispenser island and fuel line locations

Former Shell Service Station
461 Eighth Street

Former True B Service
713 Franklin

Former Service Station
625 Washington

City of Oakland Hall of Justice
Police Administration Building
455 Seventh Street

Former Chevron
636 Broadway

Former Flying A Service
629 Franklin

Approximate UST Location - Oakland Police Motorpool

N

0 50 100
Scale (ft)

FIGURE
1

Groundwater Elevation Contour and Potential Offsite Sources

July 19, 2000

CAMBRIA

Former Shell Service Station
461 Eighth Street
Oakland, California
Incident #97093399

G:\OAKLAND\EIGHTH\FIGURES\EIGHTH-AP.DWG

BROWN AND CALDWELL
CONSULTING ENGINEERS

ENVIRONMENTAL SCIENCES DIVISION

D. H. CALDWELL, PE Chairman
T. V. LUTGE, PE President
R. C. ABERLEY, PE Exec Vice Pres
S. A. FISHER, Vice Pres

September 30, 1981

Mr. Terry Cowhey, President
Cowhey Pacific Drilling
Pier 33
San Francisco, CA 94111

705-4

Dear Mr. Cowhey:

Enclosed are the results from the gasoline fingerprinting work performed on soil samples received for the period of 8/25-9/10/81.

In spite of reported field observations and extensive attempts by our laboratory personnel, no gasoline aliphatic or aromatic hydrocarbons were observed above our detection limit of 250 ppm. The sample handling and analytical methodologies employed in our laboratory are described below. Dr. Steve Havlicek, our technical director, reviewed these methods with the staff members who performed the analytical work to give you the best possible effort. One item which has just recently come to our attention is that if aluminum foil is used to line the caps in order to protect against possible absorbtion of the gasoline on plastic or cardboard liner, the foil must be cut to size and not permitted to hang out over the edges of the container. We have noted a very surprising amount of leakage around foil liners which are not cut to size and plan to be more specific in providing instructions regarding the use of such liners in the future.

This or other sampling/sealing problems may explain why no gasoline oders were noted in the samples as received. We are willing to work more closely with you in your field investigations to help you get to the root of this problem. Perhaps a down hole charcoal tube sampling may be more productive. The sample handling and methodologies are described below.

Sample Handling

Samples were collected in the field by Cowhey drilling personnel. Upon receipt at the laboratory, they were assigned a Brown and Caldwell log number for sample control purposes, then immediately refrigerated. Samples were brought to our

laboratory on seven different occasions. Holding times before analysis ranged from 2 to 5 days for each sample. Samples were kept refrigerated and capped until that time.

Analytical Methodologies

Several separate techniques were employed in an attempt to confirm the presence of gasoline in the soil. Liquid/Liquid Extractions were conducted using three separate solvents; cyclohexane, hexadecane, and freon. Fifty (50) grams of soil were extracted in each case with 25 mL of solvent. These extracts were then analyzed by gas chromatography utilizing a flame ionization detection. We also used a purge and trap technique by placing 5 grams of soil into a warmed sparging vessel, then analyzing by gas chromatography photoionization detection. This method employs the same type of detection which you used in your field testing. Best results were seen with the Liquid/Liquid Extraction, hexadecane technique, and was subsequently used to screen all of the samples.

Samples were spiked with gasoline at 54 and 540 ppm of gasoline. The low level spike was not detected. The high level spike had a recovery of 83 percent.

We share your concern regarding the negative results and are eager to work with you to improve sample integrity and detectibility.

Very truly yours,

BROWN AND CALDWELL

Edward Wilson
Laboratory Director

EW:ms

BROWN AND CALDWELL
CONSULTING ENGINEERS

ENVIRONMENTAL SCIENCES DIVISION

D. H. CALDWELL, PE Chairman
T. V. LUTGE, PE President
R. C. ABERLEY, PE Exec Vice Pres
S. A. FISHER, Vice Pres

September 30, 1981

Mr. Terry Cowhey
Cowhey Pacific Drilling
P.O. Box 11252
Santa Rosa, CA 94506

705-4

TRANSMITTAL OF GASOLINE FINGERPRINTING RESULTS

Date Sampled: As Noted
Date Received: As Noted

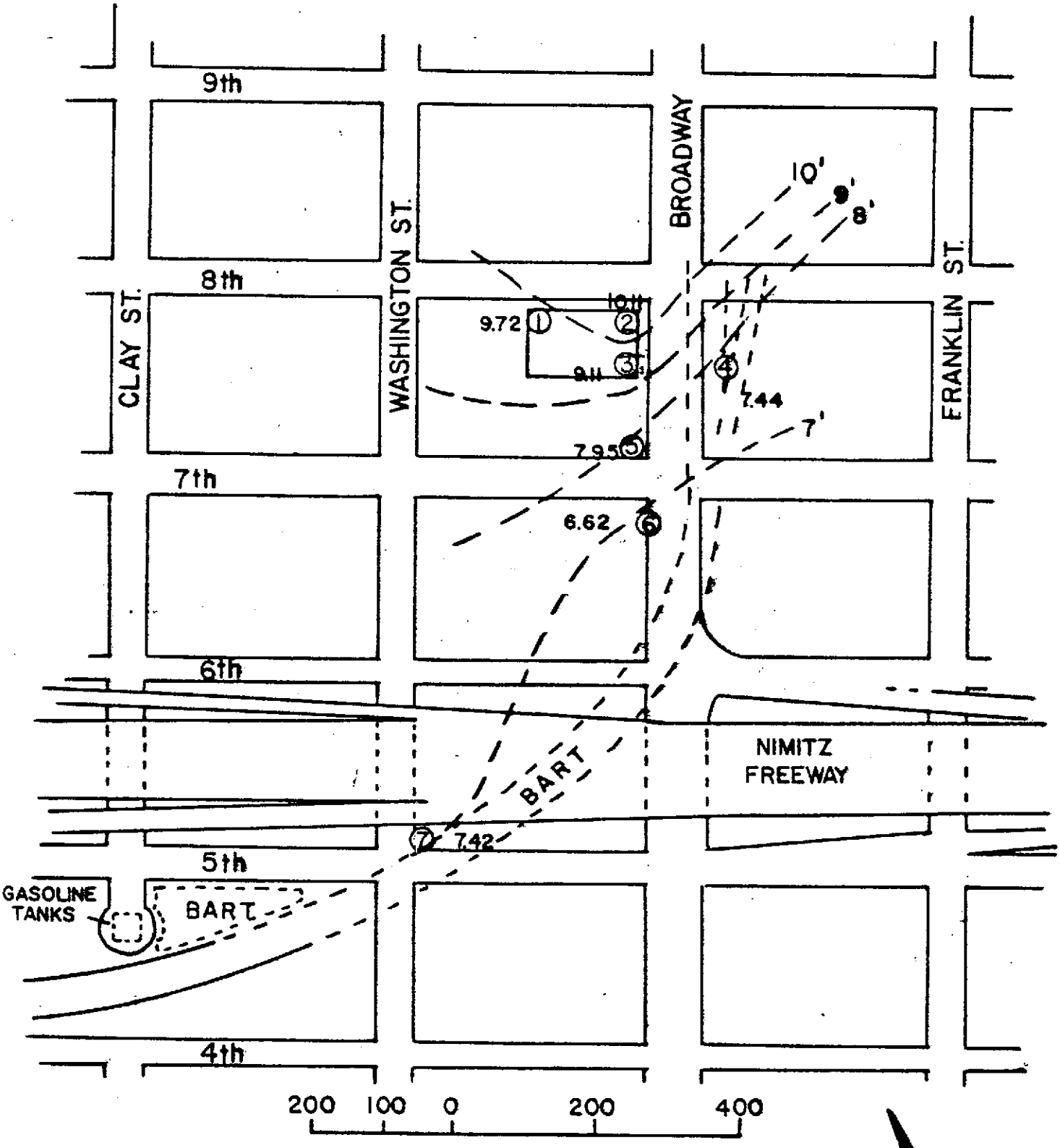
Log No.	Sample Description/Identification	Results
79D1	Gas Standard; 8/25/81	Standard
79D2	Soil Sample L-1; 8/25/81	None Detected
79M2	Soil Sample L-2; 8/26/81	None Detected
80D1	Soil Sample L-3 #1; 8/28/81	None Detected
80D2	Soil Sample L-3 #2; 8/28/81	None Detected
80D3	Soil Sample L-3 #3; 8/28/81	None Detected
81A1	Soil Sample L-4 #1; 8/31/81	None Detected
81A2	Soil Sample L-3 #4; 8/31/81	None Detected
81A3	Gasoline Pump East Oakland; Police Department; 8/31/81	Standard
82W1	Soil Sample L-5 #1; 9/3/81	None Detected
82W2	Soil Sample L-5 #2; 9/3/81	None Detected
82W3	Soil Sample L-6 #1; 9/3/81	None Detected
84E1	Soil Sample L-6 #1; 9/8/81	None Detected
84E2	Soil Sample L-6 #2; 9/8/81	None Detected
84E3	Soil Sample L-6 #3; 9/8/81	None Detected
84E4	Soil Sample L-6 #4; 9/8/81	None Detected

Log No.	Sample Description/Identification	Results
85M1	Soil Sample L-7 #1; 9/10/81	None Detected
85M2	Soil Sample L-7 #2; 9/10/81	None Detected
85M3	Soil Sample L-7 #3; 9/10/81	None Detected

Positive identifications would have been made if the concentration of gasoline had been greater than 250 ppm.

Reported by: _____
Edward Wilson
Laboratory Director

cc Mr. James Ballerino, Cowhey Pacific Drilling



WATER-TABLE GRADIANT MAP from 9/14/81

Figure # 6

- Well Locations

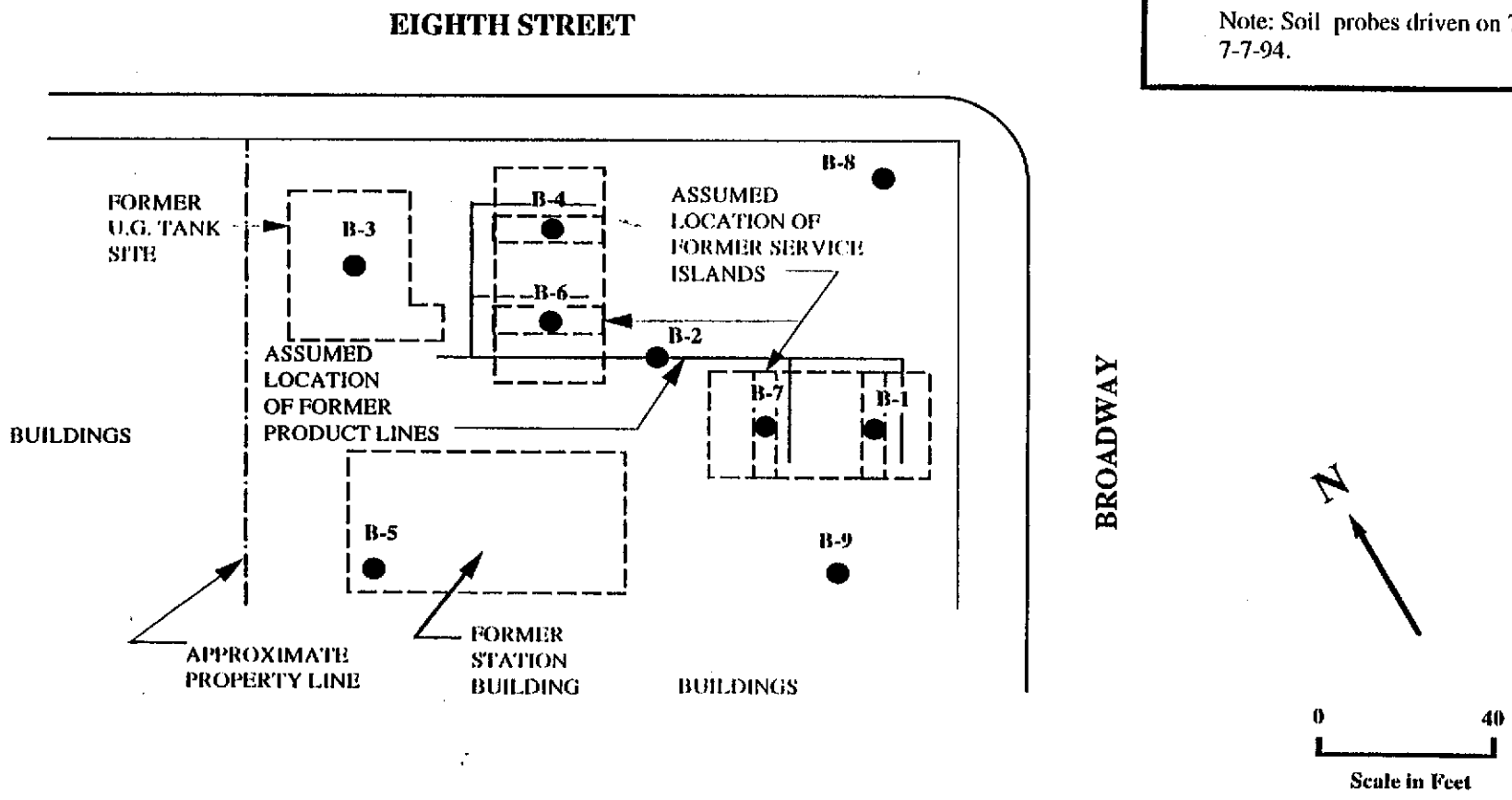
(2.)

Note: Water level contours are tied into verticle datum B.M.# KB 64748 at 5th & Broadway, Oakland

EXPLANATION

● Exploratory Soil Boring

Note: Soil probes driven on 7-6-94 and 7-7-94.



Base Map: GeoStrategies, Inc. Site Plan 9/93

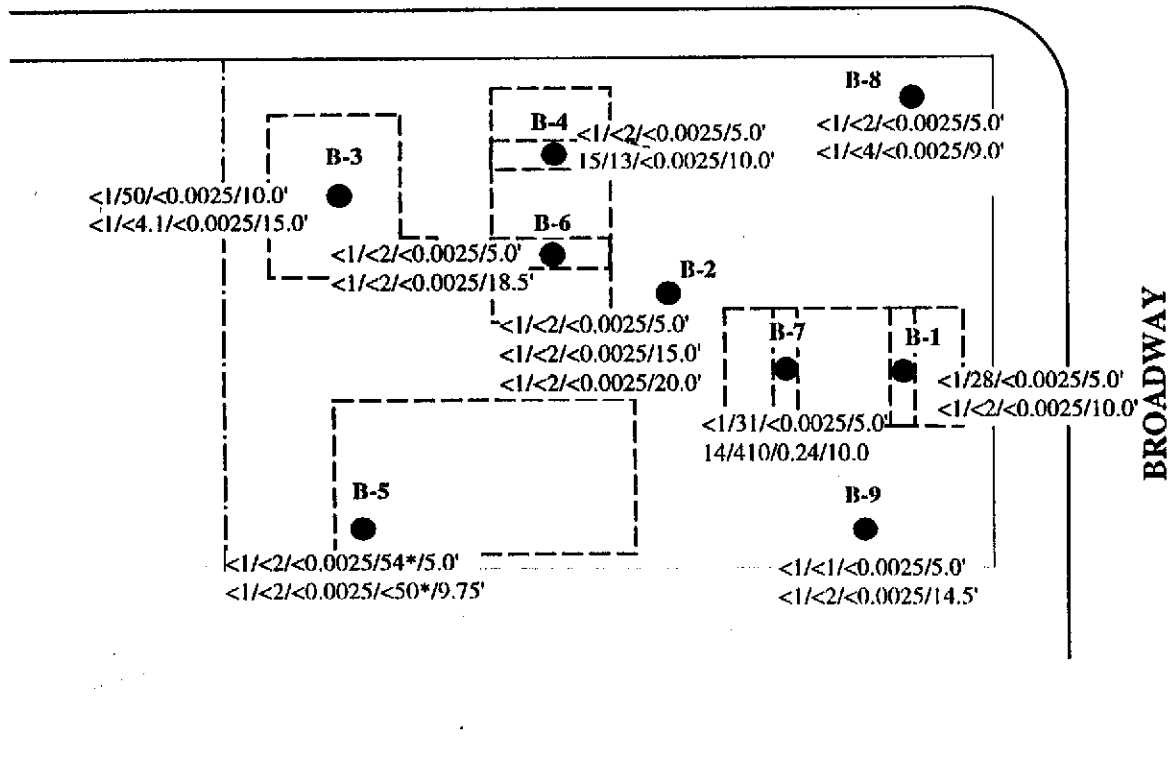
PLATE **2**

SITE PLAN
Former Shell Service Station
461 Eighth Street
Oakland, California

enviros®
E493216

Drawn By: DML/JLP Date: 8-4-94

Approved By: _____ Date: 8-5-94



EXPLANATION

● Exploratory Soil Boring

<1/<2/<0.0025/10.0'

TPH-G/TPH-D/Benzene/Depth in ft. Concentrations in parts per milliom (ppm).

54* Oil & Grease in ppm.

N

0 40

Scale in Feet

Base Map: GeoStrategies, Inc. Site Plan 9/93

PLATE 3

SOIL ANALYTICAL MAP
Former Shell Service Station
461 Eighth Street
Oakland, California

enviros®
E493216

Drawn By: DML/JLP Date: 8-4-94

Approved By: _____ Date: 8-15-94

TABLE 1
SOIL ANALYTICAL DATA
Former Shell Service Station
461 Eighth Street
Oakland, California
WIC 204-5508-6205

SAMPLE DATE	SAMPLE NO.	DEPTH (FT.)	TPH-G (PPM)	TPH-D (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYL BENZENE (PPM)	XYLENES (PPM)	OIL & GREASE (PPM)
7/6/94	**B1-5.0**	5.0	<1	28a	<0.0025	<0.0025	<0.0025	<0.0025	---
7/6/94	**B1-10.0**	10.0	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	---
7/6/94	**B2-5.0**	5.0	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	---
7/6/94	**B2-15.0**	15.0	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	---
7/6/94	**B2-20.0**	20.0	<1	<2	<0.0025	0.0028b	<0.0025	0.003b	---
7/6/94	**B3-10.0**	10.0	<1	50a	<0.0025	<0.0025	<0.0025	<0.0025	---
7/6/94	**B3-15.0**	15.0	<1	4.1	<0.0025	<0.0025	<0.0025	0.025	---
7/6/94	**B4-5.0**	5.0	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	---
7/6/94	**B4-10.0**	10.0	15	13c	<0.0025	0.037	0.027	0.21	---
7/7/94	**B5-5.0**	5.0	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	54
7/7/94	**B5-9.75**	9.75	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	<50
7/7/94	**B6-5.0**	5.0	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	---
7/7/94	**B6-18.5**	18.5	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	---
7/7/94	**B7-5.0**	5.0	<1	31a	<0.0025	<0.0025	<0.0025	<0.0025	---
7/7/94	**B7-10.0**	10.0	14	410c	0.24	0.89	0.31	2.0	---
7/7/94	**B8-5.0**	5.0	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	---
7/7/94	**B8-9.0**	9.0	<1	<4	<0.0025	<0.0025	<0.0025	<0.0025	---
7/7/94	**B9-5.0**	5.0	<1	<1	<0.0025	<0.0025	<0.0025	<0.0025	---
7/7/94	**B9-14.5**	14.5	<1	<2	<0.0025	<0.0025	<0.0025	<0.0025	---

Abbreviations:

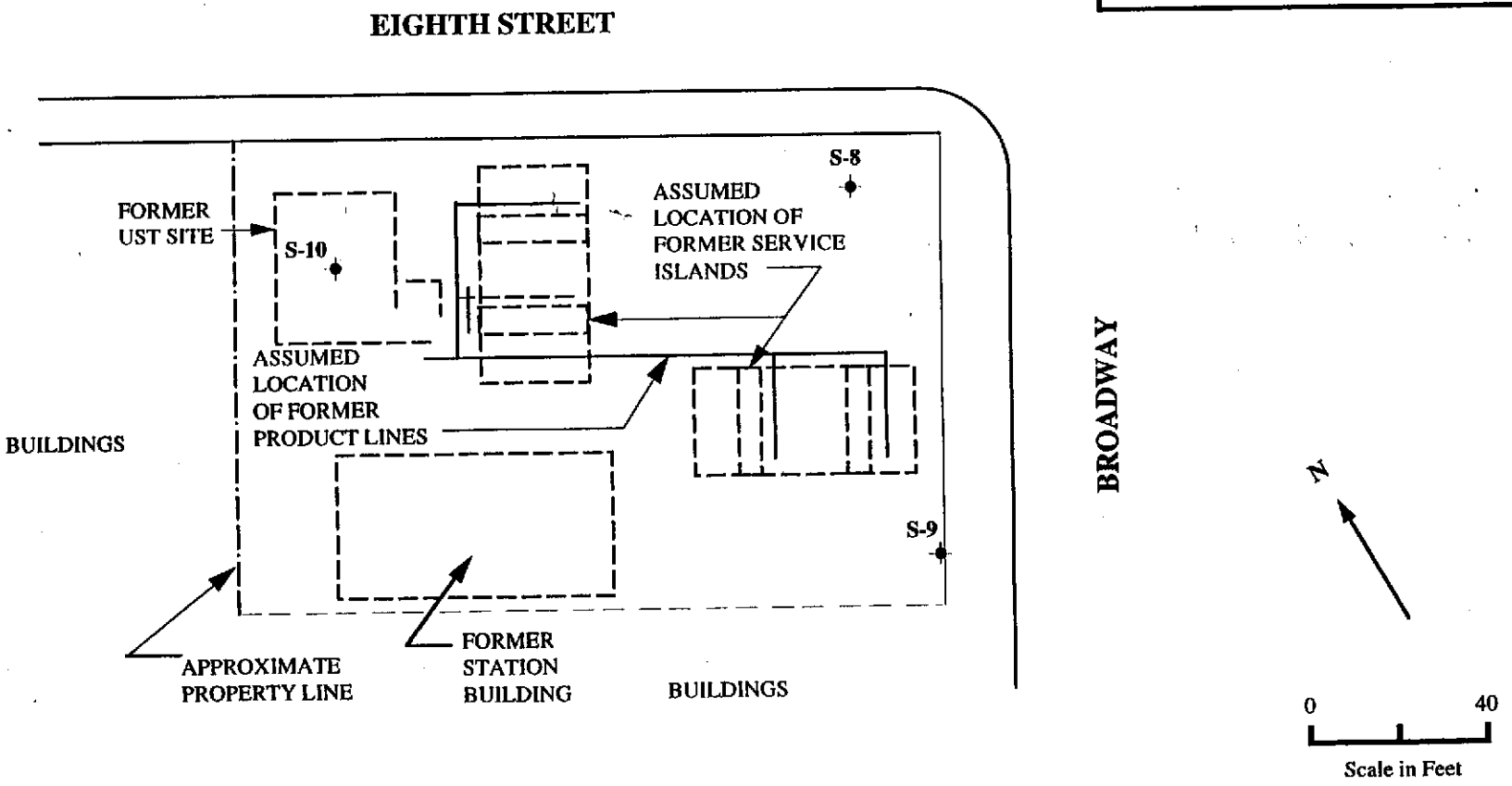
TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
TPH-D = Total Petroleum Hydrocarbons calculated as Diesel.
PPM = Parts Per Million.
<x = Not Detected at detection limit of x
--- = Not Analyzed

Notes:

a = The polotive result appears to be a heavier hydrocarbon than Diesel.
b = Positive result confirmed by secondary column or GC/MS analysis.
c = The positive result appears to be a lighter hydrocarbon than Diesel.

EXPLANATION

Monitoring Well Location



Base Map: GeoStrategies, Inc. Site Plan 9/93

PLATE **2**

SITE PLAN
Former Shell Service Station
461 Eighth Street
Oakland, California

enviros®
95 216.05

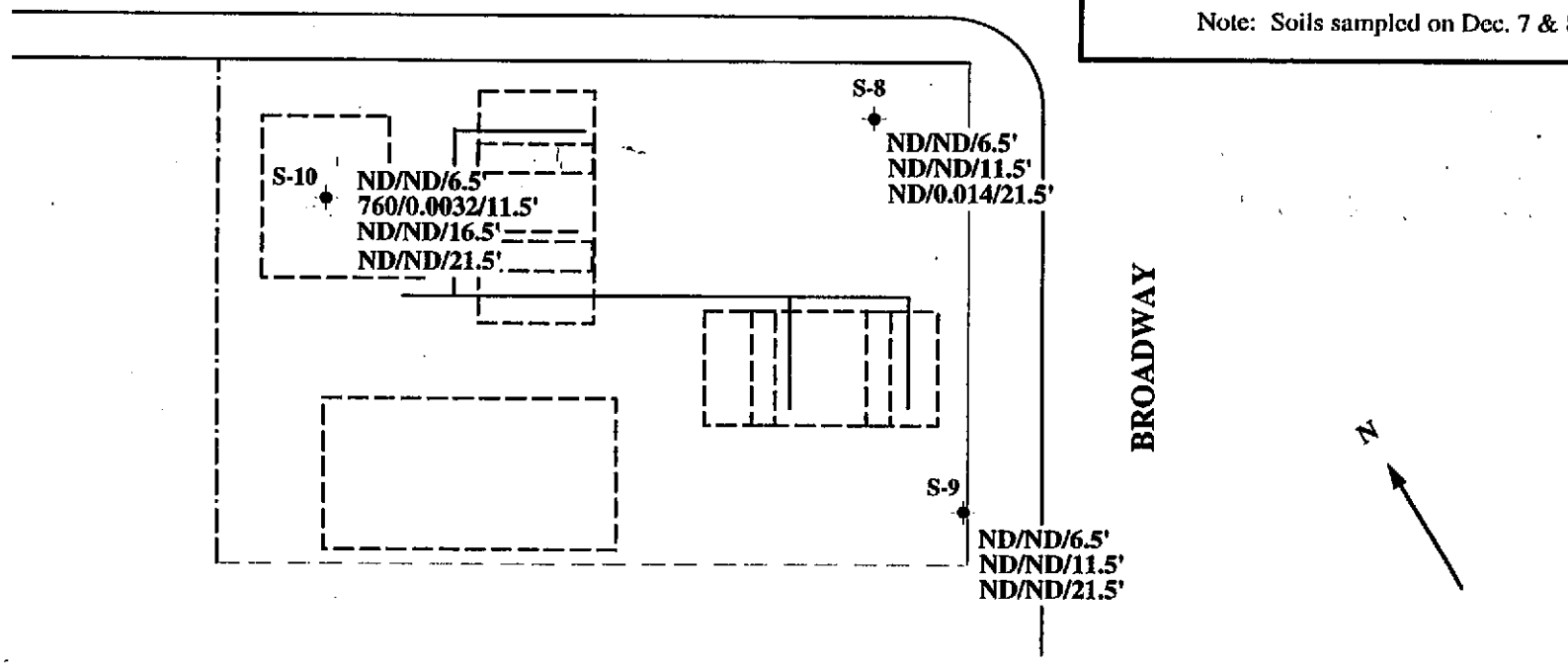
Drawn By: JWN Date: 1-18-95

Approved By: JN Date: 14-Feb-95

EXPLANATION

♦	Monitoring Well Location
ND/0.014/21.5'	TPH-Gasoline/Benzene/Depth in feet. Concentrations in parts per million (ppm).

Note: Soils sampled on Dec. 7 & 8, 1994.



Base Map: GeoStrategies, Inc. Site Plan 9/93

PLATE **3**

SOIL CHEMICAL ANALYTICAL MAP
Former Shell Service Station
461 Eighth Street
Oakland, California

enviros®
95 216.05

Drawn By: JWN Date: 1-18-95

Approved By: JN Date: 14-Feb-95

TABLE 1
SOIL CHEMICAL ANALYTICAL DATA

FORMER SHELL SERVICE STATION
461 8TH STREET,
OAKLAND, CALIFORNIA
WIC 204-5508-6205

WELL NUMBER	SAMPLE NO.	DEPTH (FT.)	SAMPLE DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYL BENZENE (PPM)	XYLENES (PPM)
S-8	S-8-6.5	6.5	7-Dec-94	<1	<0.0025	<0.0025	<0.0025	<0.0025
	S-8-11.5	11.5	7-Dec-94	<1	<0.0025	<0.0025	<0.0025	<0.0025
	S-8-21.5	21.5	7-Dec-94	<1	0.014	<0.0025	<0.0025	<0.0025
S-9	S-9-6.5	6.5	7-Dec-94	<1	<0.0025	<0.0025	<0.0025	<0.0025
	S-9-11.5	11.5	7-Dec-94	<1	<0.0025	<0.0025	<0.0025	<0.0025
	S-9-21.5	21.5	7-Dec-94	<1	<0.0025	<0.0025	<0.0025	<0.0025
S-10	S-10-6.5	6.5	7-Dec-94	<1	<0.0025	<0.0025	<0.0025	<0.0025
	S-10-11.5	11.5	7-Dec-94	760	0.0032	0.028	6.4	6.9
	S-10-16.5	16.5	7-Dec-94	<1	<0.0025	<0.0025	0.0031	<0.0025
	S-10-21.5	21.5	7-Dec-94	<1	<0.0025	<0.0025	<0.0025	<0.0025

Abbreviations:

FT = Measurements in feet
TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
PPM = Parts Per Million.
<x = Not Detected at detection limit of x

CAMBRIA

ATTACHMENT A

Soil Boring/Well Construction Logs

GROUNDWATER TECHNOLOGY, INC.

Table 1A

DRILLING LOG

Project: Bart/Shell
Name: Oakland, California
Date: 8/25/81

Well Designation: L-1
Driller: Powell
Equip. Used: LDH Hughes 50' Auger

Geologist: J. Ballerino

Time	Diam	Bar	At	Interval from	to		Description of Rock Cuttings	Remarks (e.g. Soft Spots)	SAMPLE #
300	12"			0	4'		Artificial Fill -	silt, sand and clay some small pieces of brick	
				4'	7'		Yellow-brown to brown sand	- slightly damp	
				7'	10'		Becoming moist, plastic, clayey sand		
				10'	17'		Increasing in clay: clayey sand		
					17'	Lowered Gas	Tech probe: reads 40%	What is sand g.s.?	
				18'	22'	Damp brown	sand yellow & red streaks	smells of gasoline	
				22'	24'	continues	lt. brown sand - water table	begins @ 23'	
300	12"			24'	30'	cont'd sand	and water		
							Hole cased w/4" PVC; 10' of .020" screen and 20' of unslotted PVC		
							Gravel packed w/ pea gravel		
									Sample No. L-1

32

GROUNDWATER TECHNOLOGY, INC.

Table 1B

DRILLING LOG

Project: Bart/Shell
Name: Oakland, California
Date: 8/26/81

Well Designation: L-2
Driller: Powell
Equip. Used: LDH Hughes 50' Auger

Geologist: J. Ballerino

Time	Diam	Bar	At	Interval from	Interval to		Description of Rock Cuttings	Remarks (e.g. Soft Spots)	SAMPLE #
0945	12"			0	6'		Artificial fill: brown sand - concrete, asphalt and rock		
				6'	7'		begin clayey sand: light brown to yellow brown, damp		
				7'	10'		well sorted brown sand, some darker streaks		
				10'	12'		small fraction of clay binder		
				12'	15'		loose, unconsolidated uniform sand - moist	(what is g.s ?)	
				15'	16'	Gas detector reads 14% slight gasoline smell			
				16'	18'		cont'd brown, uniform sand, damp		sample no. L-2
				18'	19'	gas detector reads greater than 100% - purged with nitrogen			
				19'	23'	no smell cont'd damp brown sand - (well sorted)			
				23'	24'	begin water seepage			
				24'	26'	hole caving from water			
1530	12"			26'	30'	hole kept open only to 26'			
							cased with 4" PVC 10' of slotted .020" screen 20' of regular PVC;		
							gravel packed.		
						Note:	It was necessary to drive casing 4' into sand due to caved condition		
							at bottom of hole.		

33

GROUNDWATER TECHNOLOGY, INC.

Table 1C

DRILLING LOG

Project: Bart/Shell
Name: Oakland, California
Date: 8-27-81

Well Designation: L-3
Driller: Powell
Equip. Used: LDH Hughes 50' Auger

Geologist: J. Ballerino

Time	Diam	Bar	At	Interval from	Interval to	Pressure	Description of Rock Cuttings	Remarks (e.g. Soft Spots)	SAMPLE #
900	12"			0	4'		Sand, silt and clay, fill, bits of debris and rock		
				4'	6'		begin uniform grained, damp yellow brown sand		
				6'	9'		some clayey sand		
				9'	11'		cont'd brown sand slight gasoline smell		
							detector reads: 10%		
				11'	12'		damp, uniform sand - some gray sand		L-3 #1
				12'	14'		slight gasoline smell(thin 1mm seam on water of gasoline)		#2
				14'	16'		gas detector reads: 10% sand		
				16'	18 1/2'		gas detector reads: 40% sand		#3
				18 1/2	19 1/2		slightly stiff w/ clay - sand	g.s. ?	
				19 1/2	21'		some gray sand mostly brown sand		
							stronger gasoline smell		#4
				21'	27		water infiltration		
				27'	30'		caving in water-logged sand -re drill		
							several passes to 37' - casing lowered		
							10' of slotted 4" PVC; 20' of reg. PVC		
00	12"						Gravel packed -		

34

GROUNDWATER TECHNOLOGY, INC.

Table 1D

DRILLING LOG

Project: Bart/Shell
Name: Oakland, California
Date: 8/31/81

Well Designation: L-4
Driller: Powell
Equip. Used: LDH Hughes 50' Auger & Barrel

Geologist: J. Ballerino

Time	Diam	Bar	At	Interval from	Interval to	Description of Rock Cuttings	Remarks (e.g. Soft Spots)	SAMPLE #
:00	12"			0	4'	Fill: sand-silt-clay, rock, debris, concrete and bricks		
				4'	7'	light brown sand (backfill?) some clayey sand		
						slightly moist clayey sand - gas detector: Nil		
				7'	13'	cont'd moist sand - some gray sand mixed		
						detector reads: 3%		
				13'	16'	cont'd moist sand - minor clay. detector reads: 5%		
				16'	21'	brown moist sand - layered gray sand		
				21'	23'	cont'd sand - spoon sample - wet		L-4 #1
				23'	24'	bucket grinding put on auger - clear		
				24'	31'	caving from water at 22' -	g.s.?	
						cont'd drilling out to 35' +		
						able to place 30' of casing:		
						10' slotted PVC @ .020"		
						20' regular PVC		
500	12"					Gravel packed - no evidence of gasoline		

35

GROUNDWATER TECHNOLOGY, INC.

Table 1E

DRILLING LOG

Project: Bart/Shell
Name: Oakland, California
Date: 9/2/81

Well Designation: L-5
Driller: Powell
Equip. Used: LDH Hughes 50' Auger

Geologist: J. Ballerino

Time	Diam	Bar	At	Interval from	Interval to		Description of Rock Cuttings	Remarks (e.g. Soft Spots)	SAMPLE #
:00	12"			0	5'		Inside drop inlet - storm drain broadway		
							invert elev: -5' below street level		
				5'	7'		fill sand - gas detector: 7%		
				7'	13'		moist brown sand; gas detector: 10%		
				13'	14'		begin wet sand - smells of gasoline		
				14'	15'		gas detector: 15%		#1
				15'	19'		spoon sample-loose sand		
					19'		detector reads: 50%		#2
				19'	22'		sand saturated with gasoline; reads: 80%	g.s ?	
				22'	23'		encountered water - begin revert		
				23'	27'		caving sand - revert not holding well		
				27'	32'		cont'd sand - in water table		
							strong gasoline fumes		
				32'	40'		becoming more compact sand		
							some clay- (gray to gray-green)		
				40'	42'		dense, stiff clay- bay mud - bottom hole		
							cased with 20' slotted PVC .020" (4")		
)0	12"						17' regular PVC & gravel packed		

36

GROUNDWATER TECHNOLOGY, INC.

Table 1F

DRILLING LOG

Project: Bart/Shell
Name: Oakland, California
Date: 9-3-81 & 9-8-81

Well Designation: L-6
Driller: Powell
Equip. Used: LDH Hughes 50' Auger

Geologist: J. Ballerino

Time	Diam	Bar	At	Interval from	Interval to	Description of Rock Cuttings	Remarks (e.g. Soft Spots)	SAMPLE #
.000	12"			0	2'	Street concrete and old cobblestones		
				2'	4'	mixed fill and cobbles		
					4'	begin brown sand -		
				4'	10'	sand fill some small pieces brick and rock		
				10'	16'	cont'd sand and clayey sand - moist		
					16'	slight gasoline smell ?	- stopped	#1
:30						hole 9-3-81 to prepare revert		
:00	12"	9-8-81		16'	20'	cont'd sand, gas detector reads: 35%		#2
				20'	24'	slightly clayey sand		
					24'	top of water table - caving sand	(g.s)	#3
				24'	30'	revert introduced		
				30'	34'	wet gray-brown clayey sand		#4
				34'	40'	sand to clay - top of bay mud		
				40'	42'	stiff, dense clay - bay mud		
						placed 40' of casing: 20' slotted PVC .020'		
						and 20' reg. PVC - collar of casing 2" below street level		
00	12"					Gravel-packed		

GROUNDWATER TECHNOLOGY, INC.

Table 1G

DRILLING LOG

Project: Bart/Shell
Name: Oakland, California
Date: 9-10-81

Well Designation: L-7
Driller: Powell
Equip. Used: LDH Hughes 50' Auger

Geologist: J. Ballerino

Time	Diam	Bar	At	Interval from	Interval to	Description of Rock Cuttings	Remarks (e.g. Soft Spots)	SAMPLE #
1030	12"			0	5'	2" asphalt - damp, loose light brown sand		
				5'	12'	cont'd loose brown sand		
				12'	16'	gas detector: Nil - moist sand		
				16'	17'	spoon sample - no gasoline smell		#1
				17'	18'	wet sand becoming slightly clayey-mottled		
					18'	top of water table caving sand		
				18'	24'	cont'd caving - placed revert		
					24'	much water - "quicksand"		#2
				24'	34'	cont'd slow drilling with revert		
					34'	sand - brown - some gray revert "weak"	g.s?	#3
				34'	40'	becoming clayey sand - (no gasoline smell)		
700	12"			40'	41'	end hole in clayey sand - gray to brown		
						cased with 20' slotted PVC .020" (4")		
						and 20' regular PVC		
						Gravel packed		

Table # 2

GROUNDWATER TECHNOLOGY, INC.
CONSULTING GROUNDWATER GEOLOGISTS

Project: Shell - Bart
Date: _____

Well: _____

PRODUCT THICKNESS KEY

0 - Slight odor of Product
1 - Thin film of product
2 - Slight odor neither product or sewage
3 - Sewage odor

Depth to water measured in Monitoring Wells

Date	Note	1	2	3	4	5	6	7						
	ELEV.	33.54'	32.69'	31.94'	31.94'	28.96'	28.10'	20.04'						
		30.45'	30.3'	31.38'	27.55'	20.8'	40.35'	38.55'						
8-28-81	DTW	23.75	22.40	22.72										
	DTOP	23.75	22.40	22.72										
	Product Thick.	0[1]	0[2]	0[2]										
	Elev. of water	9.79'	10.3'	9.22'										
9-14	DTW	23.82'	22.58'	22.83'	24.5'	21.01'	21.48'	12.62'						
	DTOP	23.82'	22.58'	22.83'	24.5'	21.01'	21.48'	12.62'						
	Product Thick.	0[1]	0[1]	0[1]	0	0[1]	0[3]	0[3]						
	Elev. of water	9.72'	10.11'	9.11'	7.44'	7.95'	6.62'	7.42'						
10-2	DTW	23.83'	22.63'	22.75'	24.6'	21.20'	21.51'	14.72'						
	DTOP	23.83'	22.63'	22.75'	24.6'	21.20'	21.51'	14.72'						
	Product Thick.	0[1]	0[1]	0[2]	0[4]	0[1]	0	0[3]						
	Elev. of water	9.71'	10.06'	9.16'	7.34'	7.76'	6.59'	5.32'						

Note: Elev. is street grade

Total Depth Drilled

Should show schematics of wells w/ samples
Where are screens set?

Field Exploratory Boring Log S-8

OVM PPM	Blows/ 6"	Sample Number	Well Construction	Depth (ft)	Soil Group (USCS)	Materials Description
0.0	7 14 30	S-8-6.5	Wellbox 0 - 1 ft. Cement 1 - 8 ft. 4-in. Sch. 40 PVC Bentonite 8 to 9 ft.	5		0-3" Asphalt Sand (SP) - Fill Olive brown (2.5Y 4/4); moist, 75-85% fine to medium sand, 5-10% silt, 5-10% gravel and construction debris. Sand (SP) Olive brown (2.5Y 4/4); dense, moist, 85-95% fine to medium sand, 5-10% fines, iron staining beginning at 5.5'.
0.0	15 30 30	S-8-11.5	Lonestar #3 Sand 4-in. Sch. 40 PVC - 0.02-in. Slot 10 to 30 ft.	10		@ 10': As above, very dense, moist, some iron staining - less than at 6'.
0.0	15 30 40	S-8-16.5		15		@ 15': As above, very dense, moist to wet.
0.2	30 50-5"	S-8-21.5		20		@ 20': As above, color change to dark greenish gray (5GY 4/1), very dense, wet, no iron staining.
0.0	30 50	S-8-26.5		25		@ 25': As above, color change to olive brown (2.5Y 4/3), very dense, wet, some iron staining.
0.0	20 50	S-8-30		30		@ 28.5': As above, very dense, wet. Total Depth of Boring = 30 feet

BORING
S-8

SHELL OIL COMPANY
Former Shell Service Station
461 8th Street
Oakland, California

Borehole Diameter:	10 inches
Logged by:	J. Neely
Driller:	Gregg Drilling
Date Started:	07-Dec-94
Date Completed:	07-Dec-94

enviros®
94216.05

Field Exploratory Boring Log S-9

OVM PPM	Blows/ 6"	Sample Number	Well Construction	Depth (ft)	Soil Group (USCS)	Materials Description
			Wellbox 0 - 1 ft.			0-3" Asphalt Sand (SP) - Fill Olive brown (2.5Y 4/4); moist, 75-85% fine to medium sand, 5-10% silt, 5-10% construction debris.
0.0	20 50	S-9-6.5	Cement 1 - 8 ft. 4-in. Sch. 40 PVC	5		@ 5': As above, very dense, moist, some iron staining, brick fragments at 5.5', sparse black nodules noted.
			Bentonite 8 to 9 ft.			Sand (SP) Dark yellowish brown (10YRY 4/4); very dense, moist, 85-95% fine to medium sand, 5-10% fines.
0.0	30 50	S-9-11.5		10		
0.0	20 30 50-4"	S-9-16.5	Lonestar #3 Sand 4-in. Sch. 40 PVC - 0.02-in. Slot 10 to 30 ft.	15		@ 15': As above, color change to olive brown (2.5Y 4/4), very dense, moist to wet.
0.7	18 50	S-9-21.5		20		@ 20': As above, color change to dark greenish gray (5GY 4/1), very dense, wet, no iron staining.
56.6	20 50	S-9-26.5		25		@ 25': As above, very dense, wet.
0.0	30 50	S-9-30		30		@ 28.5': As above, dark grayish brown (2.5Y 4/2) very dense, wet. Total Depth of Boring = 30 feet

BORING
S-9

SHELL OIL COMPANY
Former Shell Service Station
461 8th Street
Oakland, California

Borehole Diameter:	10 inches
Logged by:	J. Neely
Driller:	Gregg Drilling
Date Started:	07-Dec-94
Date Completed:	07-Dec-94

enviros®
94216.05

Field Exploratory Boring Log S-10

OVM PPM	Blows/ 6"	Sample Number	Well Construction	Depth (ft)	Soil Group (USCS)	Materials Description
			Wellbox 0 - 1 ft.			0-3" Asphalt Silty Sand (SC) - Fill Dark Brown (10YR 3/3); moist, 65-75% fine to medium sand, 15-20% fine to medium gravel and construction debris.
13.8	13 20 30	S-10-6.5	Cement 1 - 8 ft. 4-in. Sch. 40 PVC	5		@ 5': As above, very dense, moist.
			Bentonite 8 to 9 ft.			
1420	3 4 5	S-10-11.5	Lonestar #3 Sand 4-in. Sch. 40 PVC - 0.02-in. Slot 10 to 30 ft.	10		Sand (SP) Very dark gray (5Y 3/1); loose, moist, 85-95% fine to medium sand, 5-10% fines.
24.2	15 20 35	S-9-16.5		15		Clayey Sand (SC) Dark olive gray (5Y 3/2); very dense, moist, 80-90% fine to medium sand, 10-20% clayey fines, slight iron staining noted.
19.0	15 30 50	S-10-21.5		20		Sand (SP) Olive gray (5Y 4/2); very dense, moist, 85-95% fine to medium sand, 5-10% fines.
18.5	30 50	S-10-26.5		25		@ 25': As above, very dense, wet.
12.2	30 50			30		@ 30': As above, color change to dark olive brown (2.5Y 3/3) very dense, wet.

BORING
S-10

SHELL OIL COMPANY
Former Shell Service Station
461 8th Street
Oakland, California

Borehole Diameter:	10 inches
Logged by:	J. Neely
Driller:	Gregg Drilling
Date Started:	08-Dec-94
Date Completed:	08-Dec-94

enviros®
94216.05

Field Exploratory Boring Log S-10

OVM PPM	Blows/ 6"	Sample Number	Well Construction	Depth (ft)	Soil Group (USCS)	Materials Description
9.0	40 50-4"	S-10-36.5	Lonestar #3 Sand 4-in. Sch. 40 PVC - 0.02-in. Slot.	35 40 45 50 55 60		@ 35': As above, very dense, wet. Clayey Sand (SC) Olive Brown (2.5Y 4/4); very dense, wet, 70-80% fine to medium sand, 10-20% clayey fines. Total Depth of Boring = 36.5 feet

BORING
S-10

SHELL OIL COMPANY
Former Shell Service Station
461 8th Street
Oakland, California

Borehole Diameter:	10 inches
Logged by:	J. Neely
Driller:	Gregg Drilling
Date Started:	08-Dec-94
Date Completed:	08-Dec-94

enviros®
94216.05

CAMBRIA

ATTACHMENT B

Site Assessment Analytical Data