STID 295 / RO 433

CAMBRIA

March 7, 2002

Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

MAR 12 2002

Re: **Risk-Based Corrective Action Report**
Former Shell Service Station
1230 14th Street
Oakland, California
Incident #97088250
Cambria Project #244-0233

Dear Mr. Chan:

Cambria Environmental Technology, Inc. (Cambria) is submitting this *Risk-Based Corrective Action Report* on behalf of Equiva Services LLC. The purpose of the current risk-based corrective action (RBCA) analysis is to evaluate the health risk posed by site hydrocarbons and to determine whether more active remedial activities are warranted to expedite environmental case closure for the site. Cambria's analysis is based on RBCA guidelines for petroleum release sites provided by the American Society for Testing and Materials (ASTM) Designation E-1739-95[1] and the *Oakland Risk-based Corrective Action: Technical background Document*[2]. Descriptions of the site, surrounding area and previous site environmental activities, and results and conclusions of the RBCA analysis are presented below.

SITE BACKGROUND

Site Location: This former Shell-branded service station is located at the northeast corner of the intersection of 14th Street and Union Street in Oakland (Figures 1 and 2). There is an abandoned station building and a pump island canopy on the site, and much of the property is unpaved. Gas station operations at the site ceased in 1993. The surrounding area is primarily residential.

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

1 **Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites**, E 1739-95 (Revised December 1996): American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

2 **Oakland Risk-Based Correction Action: Technical Background Document**, May 17, 1999: City of Oakland Environmental Services Division, 250 Frank H. Ogawa Plaza, Suite 5301, Oakland CA 94612.

February 1991 Soil Borings: On February 2, 1991, Tank Protect Engineering (TPE) of Northern California advanced soil borings SB-1, SB-2, and SB-3. Maximum concentrations of 1,600 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPHg) and 18 ppm benzene were detected in the soil sample collected at 10.5 feet below grade (fbg) in boring SB-3, located immediately downgradient of the gasoline underground storage tanks (USTs).

August 1993 Tank Removal and Sampling: On August 24, 1993, TPE supervised the removal of two 7,500-gallon unleaded UST's, one 7,500-gallon leaded UST, one 8,000-gallon leaded UST, and one 550-gallon waste-oil tank from the site. Soil samples were collected at depths ranging from 8.5 to 12.0 fbg from the floor of the excavation and from beneath the fill end of the waste oil tank. TPHg and benzene were detected at concentrations ranging from 1.3 milligrams per kilogram (mg/kg) to 18,000 mg/kg and from <5.0 mg/kg to 11,000 mg/kg, respectively. Total petroleum hydrocarbons as diesel (TPHd) and oil and grease were detected in the waste-oil tank pit at 1,200 ppm and 7,700 ppm, respectively. Maximum concentrations of 13 ppm TPHg and 0.007 ppm benzene were detected in soil samples collected beneath the product dispensers. On September 17, 1993, a UST Unauthorized Release Form was filed by TPE.

November 1995 Piping Removal and Tank Pit Re-Sampling: On November 27, 1995, Cambria collected eight soil samples from the open tank pit at the ends of the former USTs and six soil samples beneath the former product piping. TPHg was detected in all tank pit samples at concentrations ranging from 570 mg/kg to 5,600 mg/kg. Benzene was detected in the tank pit samples at concentrations ranging from <0.5 mg/kg to 72 mg/kg. TPHg was detected in two product piping samples at concentrations of 46 mg/kg and 3,100 mg/kg, and benzene was detected at concentrations ranging from <0.005 mg/kg to 30 mg/kg.

March 1996 Subsurface Investigation: On March 6 - 8, 1996, Cambria advanced 11 soil borings on site. Four borings were converted to groundwater monitoring wells (MW-1 through MW-4), two borings were converted to combined air-sparge and soil-vapor-extraction (SVE) wells (VW/AS-1, VW/AS-3), and two borings were converted to combined SVE and groundwater monitoring wells (VW/MW-2, VW/MW-4). The remaining borings were backfilled with neat cement.

1997 Oxygen Releasing Compound (ORC) Installation: Cambria installed ORCs in wells MW-1, VW/MW-2, and VW/MW-4 on March 25, 1997.

October 2000 SVE Testing: On October 16, 2000, Cambria performed SVE testing to determine the viability of SVE at the site. Although groundwater interfered with the SVE testing, Cambria concluded that SVE may be an effective method to remove hydrocarbons from soils above the groundwater table. The lack of detectable vacuum in observation wells during the SVE testing

may have been the result of short-circuiting through the former tank complex. Because of this, a radius of influence for SVE was not estimated. To more accurately determine whether SVE is a viable remedial alternative at the site, additional testing with a more appropriately constructed well or wells would be required.

December 2000 Subsurface Investigation: On December 11, 2000, Cambria advanced five soil borings (GP-1 through GP-5) to depths ranging from 16 to 20.5 fbg. Soil samples were collected from each boring at 5-foot intervals, and groundwater samples were collected when it was encountered. No TPHg, benzene, or methyl tertiary butyl ether (MTBE) was collected in any of the soil samples. TPHg was detected in groundwater samples from GP-1 and GP-3 at concentrations of 11 and 4,400 parts per billion (ppb), respectively. Benzene was detected in groundwater from GP-1 and GP-3 at concentrations of 11 and 4,400 ppb, respectively. MTBE was only detected in groundwater collected from boring GP-1 at 0.067 ppb (EPA Method 8260).

September 2001 Subsurface Investigation: On September 27, 2001, Cambria installed three monitoring wells (MW-5 through MW-7) each to a depth of 20 feet. Two soil samples were collected from the tank pit boring (MW-5) for chemical analysis. TPHg was detected at concentrations of 3.9 ppm and 790 ppm at depths of 9.5 and 14.5 feet. Benzene was detected at a concentration of 2.7 ppm at a depth of 14.5 feet. Groundwater samples were collected from the new wells during the regularly scheduled quarterly monitoring event on December 6, 2001. TPHg was detected at concentrations of 31,000 ppb, 76 ppb and 1800 ppb in wells MW-5, MW-6, and MW-7, respectively. Benzene was detected at concentrations of 3,000 ppb, 5.7 ppb and 390 ppb in the respective wells. No MTBE was detected in any of the soil or groundwater samples from the new wells.

SITE CONDITIONS

Groundwater: Groundwater depth beneath the site ranges from 4.8 to 13.9 fbg. The average depth to groundwater in 2001 was 11.4 fbg. The groundwater flow direction, as calculated from depth to water measurements in onsite monitoring wells, is typically to the northeast.

Lithology: Subsurface materials encountered at the site consist primarily of silty sand, silty gravel, and sand to the total explored depth of 22.5 feet. Boring/well logs are presented as Attachment A.

Hydrocarbon Distribution in Soil: Residual hydrocarbon impact in soil appears to be concentrated in the former UST complex and dispenser islands. No MTBE has been detected in soil, although samples collected prior to 2000 were not analyzed for that chemical. The highest

benzene concentration detected in soil on site was 30 ppm from 3.0 fbg in a dispenser piping sample collected 1995. The highest concentration detected in the former tank pit samples was 18 ppm from a 10.5 fbg sample SB-3. Samples collected in September 2001 from boring MW-5 in the former tank pit indicate lower residual hydrocarbon concentrations in the eastern portion of the tank pit than were encountered during either the August 1993 or November 1995 soil sampling events. The aeration and oxygenation of impacted soils that occurred when the tank pit remained open for over two years following UST removal, likely contributed to the remediation of these soils. Historical soil and groundwater analytical results tables are presented as Attachment B.

Hydrocarbon Distribution in Groundwater: Hydrocarbons are typically not detected in monitoring wells MW-2, MW-3, and MW-4. Currently, the highest concentrations of benzene are detected in monitoring wells in and nearest the former UST complex. Groundwater monitoring data collected since 1996 indicate that hydrocarbon concentrations decrease with time and distance from the tank complex. The decreasing benzene concentration trend in MW-1, located downgradient of the tank complex, is shown in Figure 3. As shown in Figure 5, benzene concentrations in wells VW/AS-3 (located between the tank complex and dispenser islands) and VW/AS-1 (located between the tank complex and MW-1) are also decreasing with time. The decrease in benzene concentration with distance from the tank complex is illustrated in Figure 6 which shows the most recently available data for MW-5 (located in the former tank pit) and MW-1 and MW-7 (located near the downgradient boundary of the site).

RISK ASSESSMENT

To evaluate the potential health risk to onsite and offsite occupants, Cambria conducted a human health risk assessment using Oakland's RBCA spreadsheet. Oakland's RBCA approach is consistent with the ASTM-RBCA and general U.S. Environmental Protection Agency (USEPA) risk assessment guidance. Similar to USEPA or ASTM guidelines, the City of Oakland has established risk-based screening levels (RBSLs) for contaminants based on Oakland's review of toxicological evidence and local site conditions. A completed eligibility checklist for Oakland's RBCA is presented as Attachment C. The checklist was completed based on Cambria's understanding of known site characteristics and an assumption that existing or future onsite structures comply, or will comply, with Uniform Building Code standards. Cambria's risk assessment consists of a conceptual site model (CSM) (Table A) and a Tier 2 RBCA analysis.

CSM

A CSM describes the relationship between the impacted sources and receptors that may be exposed to chemicals originating from the site. Cambria developed the CSM for the site and offsite properties based on review of available geological and analytical data and on evaluation of potential transport and exposure pathways. The following information is included in the CSM: (a) chemical sources and impacted media, (b) representative chemical of concern (COC) concentrations, (c) the protective target risk selected for the analysis. Our conceptual model for this RBCA analysis is summarized in Table A. Potentially exposed receptors and exposure pathways are summarized in Figure 6.

Chemical Sources and Impacted Media: Analytical data collected since 1996 indicate that soil and groundwater at the former Shell site are impacted with petroleum hydrocarbons. The source of the hydrocarbons was probably the USTs and possibly the product piping and/or dispensers that were all removed in 1993. Benzene, toluene, ethlybenzene and xylene isomers (BTEX) are addressed in this RBCA analysis. No BTEX has been detected in onsite downgradient soil samples, however these COCs have been detected in downgradient groundwater samples. Current groundwater monitoring data suggest that the COCs are attenuating; however, offsite migration cannot be ruled out.

Table A: Conceptual Site Model for Risk Assessment

Item	Selected Value	Comment
Contaminant Source Media:	Soil and Groundwater	Hydrocarbons have been detected in soil and groundwater beneath the site.
Chemicals of Concern (COCs):	Benzene, Toluene, Ethylbenzene, Xylenes	These chemicals were detected in representative soil and/or groundwater samples.
Representative Source Concentrations in Subsurface Soil (mg/kg):	Benzene: 0.14 Toluene: 0.27 Ethylbenzene: 0.22 Xylenes: 1.0	Upper 90% confidence level based on 13 representative soil samples collected between February 1991 and September 2001.
Representative Source Concentrations in Groundwater (mg/L):	Benzene: 0.95 Toluene: 0.25 Ethylbenzene: 0.059 Xylenes: 0.19	Upper 90% confidence level based on 14 groundwater samples collected since December 2000.
Representative Source Concentrations in Surface Soil (mg/kg)	Benzene: 0.57 toluene: 0.0097 ethylbenzene: 0.49 xylenes: 9.9	Mean value, based on two dispenser samples collected in February 1991.
Target Carcinogenic Risk Level	Commercial - 1 x 10^{-5} Residential - 1 x 10^{-5}	Target risk level routinely accepted by the USEPA and Cal-EPA. 1 x 10^{-5} is also the default target risk level for Oakland Tier 2 RBCAs. Residential receptor is conservative given the expected future commercial site use.
Non-Carcinogenic Hazard Quotient:	1.0	Consistent with ASTM default value.
Cancer Slope Factor:	0.01 (mg/kg/day)$^{-1}$	Defined by Cal-EPA.

Potentially Exposed Receptors and Exposure Pathways

For this analysis, it was assumed that COCs may volatilize from the impacted underlying soil and groundwater, and migrate to ambient and indoor and outdoor air. Potentially exposed receptors of concern include future onsite commercial occupants and offsite residential occupants. However, Cambria conservatively used onsite residential exposure RBSLs in this analysis. Applicable exposure pathways are summarized in Figure 6.

Shallow onsite groundwater is not currently used. For the purposes of this RBCA, it is assumed that no drinking water wells intercept impacted groundwater from the site. Cambria is conducting a well receptor survey to identify potential receptors downgradient of the site. If any drinking water receptors are identified near the site, the RBCA results will be modified accordingly. If construction were performed onsite, there is potential for dermal exposure to, and ingestion of, hydrocarbon-impacted soil and inhalation of hydrocarbon vapors from soil in the

vicinity of the former dispenser islands. Outside of this area, dermal exposure is not likely, given the lack of any other known source of shallow soil impact.

Soil Parameters

Oakland's RBCA guidance provides "soil-specific transport parameter" values that reflect characteristics of three predominant soil types found in Oakland. RBSLs are calculated using parameter values established for the particular soil types. The three soil types identified by Oakland are Merritt sands, sandy silts and clayey silts. Based on the predominantly sand/sandy silt/silty-sand stratigraphy observed in soil borings drilled at the site (Attachment A), Cambria selected the "sandy silts" soil type option for input for the analysis.

According to Oakland's guidance document, "Sandy silts are found throughout Oakland. They are made up of unconsolidated, moderately-sorted sand, silt, and clay sediments, with both fine-grained and course-grained materials. Sandy silts have a medium moisture content and moderate permeability."

Representative COC Concentrations

COCs in Subsurface Soil: To assess the risk to onsite and offsite occupants resulting from inhalation of hydrocarbon vapors, Cambria calculated the 95% upper confidence level (UCL) for BTEX compounds using all vadose-zone soil samples in which detectable levels of benzene were found. Because depth to groundwater has been less than 14 feet since monitoring began in 1996, soil samples collected from below 14 feet are not considered representative of unsaturated soil conditions and therfore are not used in this analysis. The 95% UCL was calculated using Groundwater Services, Inc. *Tier 1 and Tier 2 RBCA Spreadsheet System*, version 1.0.1. Results of these calculations are presented in Attachment D and representative concentrations used in this analysis are summarized in Table A.

COCs in Surface Soil: To assess the risk to construction workers by dermal exposure, ingestion and inhalation of vapors and particulates, the hydrocarbon impact to surface soils (0 to 3 fbg) was evaluated. The only samples collected between 0 to 3 fbg were six confirmation samples collected beneath dispensers and piping which were removed in November 1995. Benzene was detected in only 2 of these samples. The concentrations of BTEX compounds in these two samples were averaged for this analysis. The representative concentrations are presented in Table A.

COCs in Groundwater: For this analysis, Cambria used the 95% UCL for hydrocarbon concentrations detected in groundwater from soil borings GP-1 and GP-3 and from several site wells since December 2000 to represent onsite groundwater concentrations. Results of these calculations are presented in Attachment D. Representative concentrations used in this analysis are summarized in Table A.

Tier 2 Analysis

The final step in the Tier 2 analysis was to evaluate the exposure scenarios by comparing the calculated representative concentrations to Oakland's "sandy silts" RBSLs. The results of our Tier 2 analysis are summarized in Table B. Oakland's RBSLs for sandy silts are presented in Attachment D along with tables of sample results used to calculate representative chemical concentrations.

Table B - Results of Tier 2 Analysis

Exposure Pathway	Receptor Scenario	Target Risk Level	Oakland RBSL for Sandy Silts (ppm)	Representative Concentrations (ppm)	Representative Concentration vs. SSTL	
					Exceed	Below
Ingestion, dermal exposure and inhalation of BTEX from surface soil	Commercial (construction worker)	1×10^{-5}	B: 8.5×10^{1} T: 5.6×10^{4} E: 3.3×10^{4} X: 3.1×10^{5}	B: 5.7×10^{-1} T: 9.7×10^{-3} E: 4.9×10^{-1} X: 3.1	30	X X X X
Volatilization of BTEX from subsurface soil to outdoor air	Residential	1×10^{-5}	B: 2.0×10^{1} T: SAT E: SAT X: SAT	B: 1.6×10^{-1} 30 T: 2.9×10^{-1} E: 2.4×10^{-1} X: 1.2		X X X X
Volatilization of BTEX from subsurface soil to indoor air	Residential	1×10^{-5}	B: 1.1 T: 5.7×10^{2} E: SAT X: SAT	B: 1.6×10^{-1} 30 T: 2.9×10^{-1} E: 2.4×10^{-1} X: 1.2		X X X X
Volatilization of BTEX from groundwater to outdoor air	Residential	1×10^{-5}	B: 1.0×10^{3} T: >Sol E: >Sol X: >Sol	B: 9.5×10^{-1} 3000 T: 5.9×10^{-2} E: 2.5×10^{-1} X: 1.9×10^{-1}		X X X X
Volatilization of BTEX from groundwater into indoor air	Residential	1×10^{-5}	B: 3.4 T: >Sol E: >Sol X: >Sol	B: 9.5×10^{-1} T: 5.9×10^{-2} E: 2.5×10^{-1} X: 1.9×10^{-1}		X X X X

BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

SAT = RBSL exceeds saturated soil concentration of chemical

>Sol = RBSL exceeds solubility of chemical in water

All concentrations in ppm.

SSTL = Site-specific target level.

For Benzene, only the carcinogenic (most conservative) RBSL is listed. For Toluene, Ethylbenzene and Xylenes, the RBSL is Based on a hazard quotient of 1.0.

CONCLUSIONS

Although this risk evaluation incorporated conservative calculation of representative hydrocarbon concentrations in soil and groundwater and the conservative assumption of residential site use, the results indicate that residual hydrocarbons at this site do not pose a significant health risk to onsite or offsite occupants.

Hydrocarbon concentrations in groundwater are decreasing with time and distance from the former UST complex, which indicates that the plume in groundwater is collapsing due to natural attenuation. Natural attenuation of the residual hydrocarbons will continue to occur over time, which will further reduce the carcinogenic health risk.

We believe that the distribution of hydrocarbons onsite has been adequately defined and that no additional investigation or corrective action is necessary. Upon completion of the well survey and confirmation that no drinking water wells intercept impacted groundwater from the site, Cambria will submit a request for environmental case closure based on San Francisco Bay Regional Water Quality Control Board criteria for a low-risk fuel site.

CLOSING

We appreciate the opportunity to work with you on this project. Please call Melody Munz at (510) 420-3324 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc

Melody Munz
Project Engineer

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

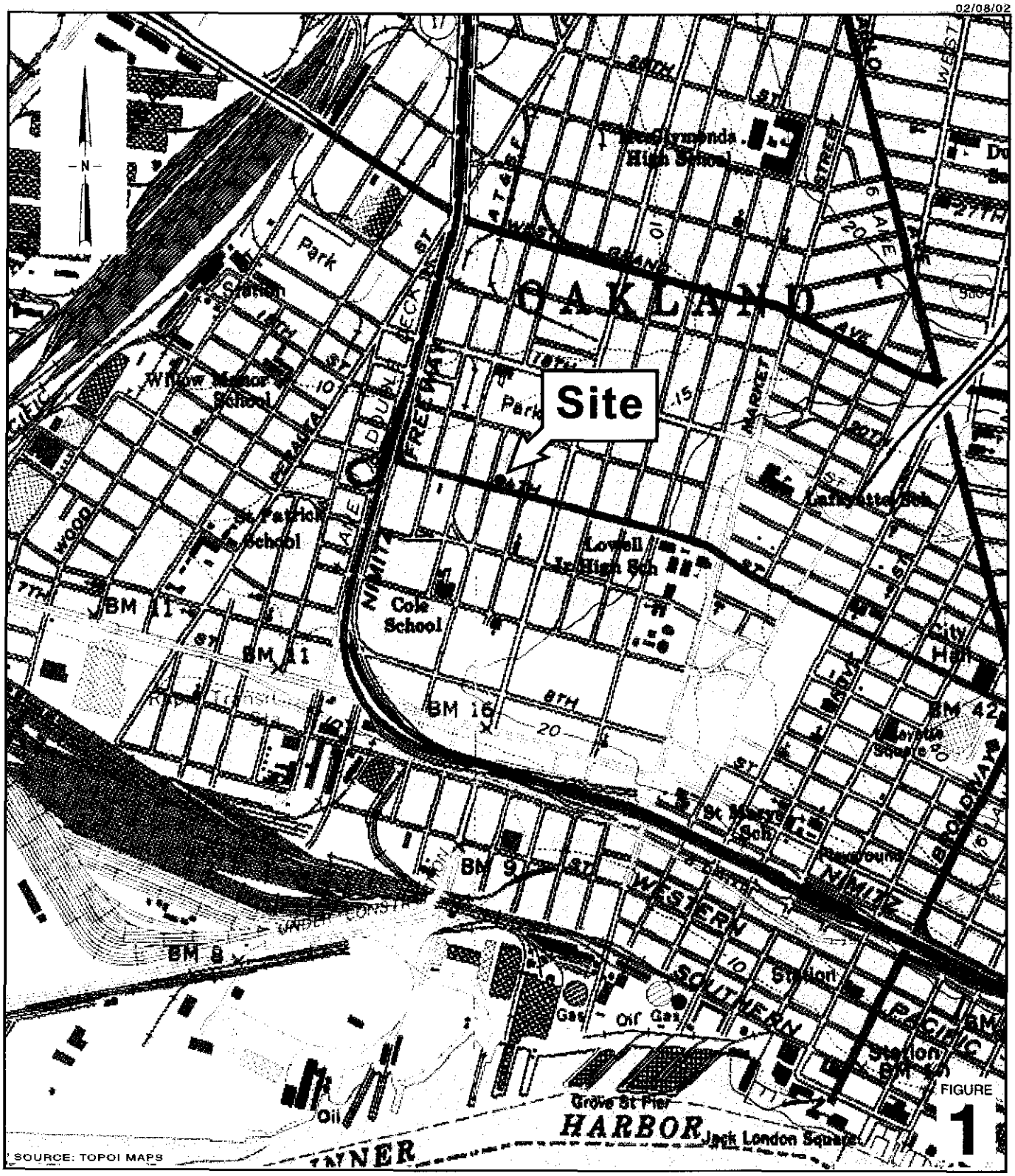
REGISTERED GEOLOGIST
STEPHAN A. BORK
No. EG 2058
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Figures:
1 - Vicinity Map
2 - Soil Boring Locations Map
3 - Benzene Concentrations in Groundwater - MW-1
4 - Time-Attenuation – Benzene (MW-1 and VW/AS/3)
5 - Distance-Attenuation – Benzene
6 - Conceptual Site Model Exposure Pathways

Attachments:
A - Boring/Well Logs
B - Historical Soil and Groundwater Analytical Results
C - Oakland RBCA Eligibility Checklist
D - Oakland RBCA RBSLs for Sandy Silts and Representative Concentration Calculations

cc: Karen Petryna, Equiva Services LLC, P.O. Box 7869, Burbank, California 91510-7869
Tom Saberi, 1045 Airport Boulevard, Suite 12, South San Francisco, CA 94080
Matthew Dudley, Sedgwick, Detert, Moran, & Arnold, 1 Embarcadero Center, 16th Floor, San Francisco, CA 94111-3628

G:\Oakland 1230 14th\RBCA\1230 14th Oakland RBCA - Oakland Stds.doc



G:\OAKLAND\1230-14TH\FIGURES\VICINITY.AI

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

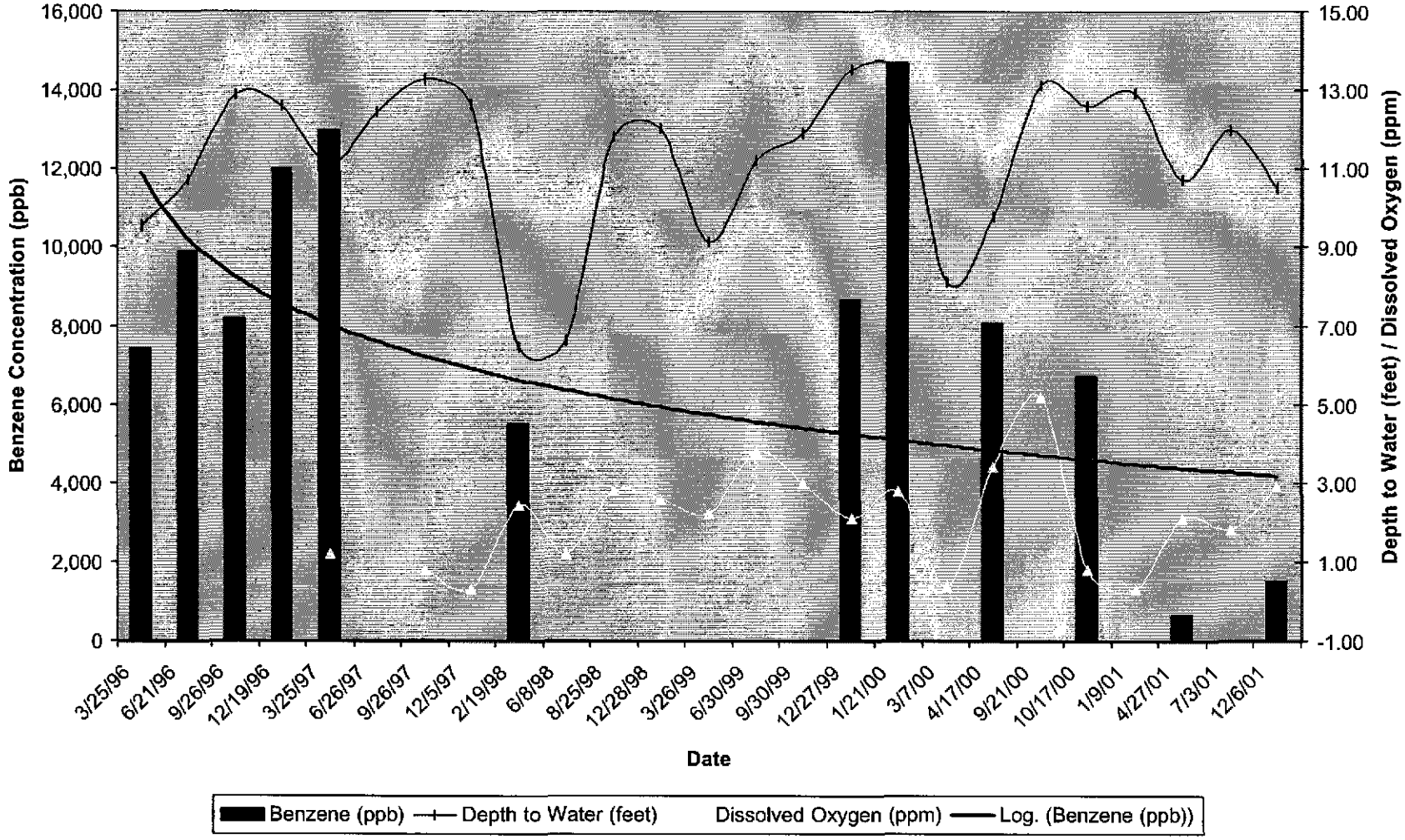
FIGURE 1

Former Shell Service Station
1230 14th Street
Oakland, California
Incident #97088250

CAMBRIA

Vicinity Map

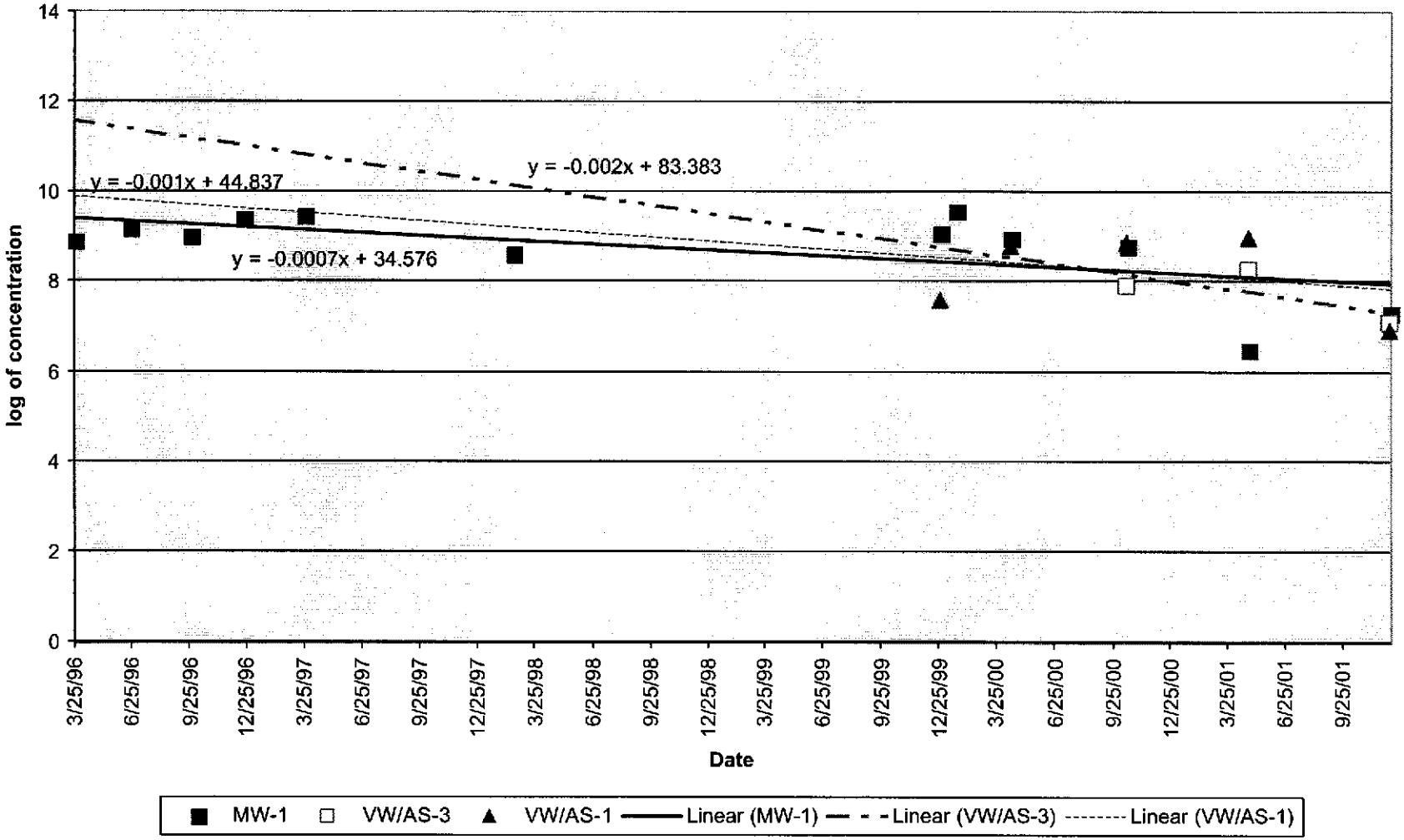
Benzene Concentration in Groundwater
1230 14th Street, Oakland MW-1



G:\Oakland 1230 14th\RBCA\1230 14th MW-1 Benzene Graph.PDF

Figure 3

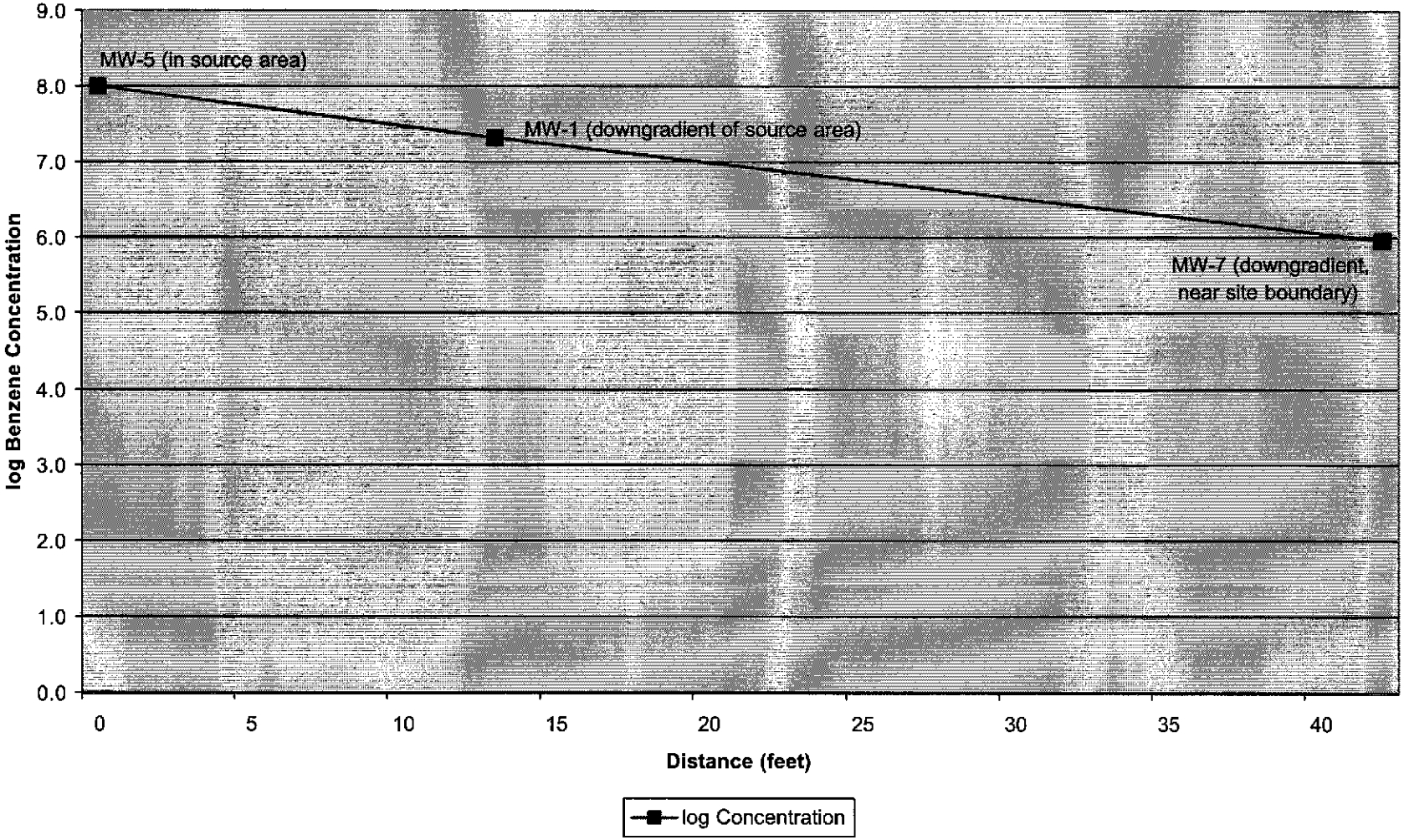
Time-Attenuation - Benzene
1230 14th Street, Oakland - MW-1 and VW/AS-3



G:\Oakland 1230 14th\RBCA\1230 14th Log Benzene Graph.PDF

Figure 4

Distance-Attenuation - Benzene
1230 14th Street, Oakland



G:\Oakland 1230 14th\RBCA\1230 14th Dist-Att Graph.pdf

Figure 5

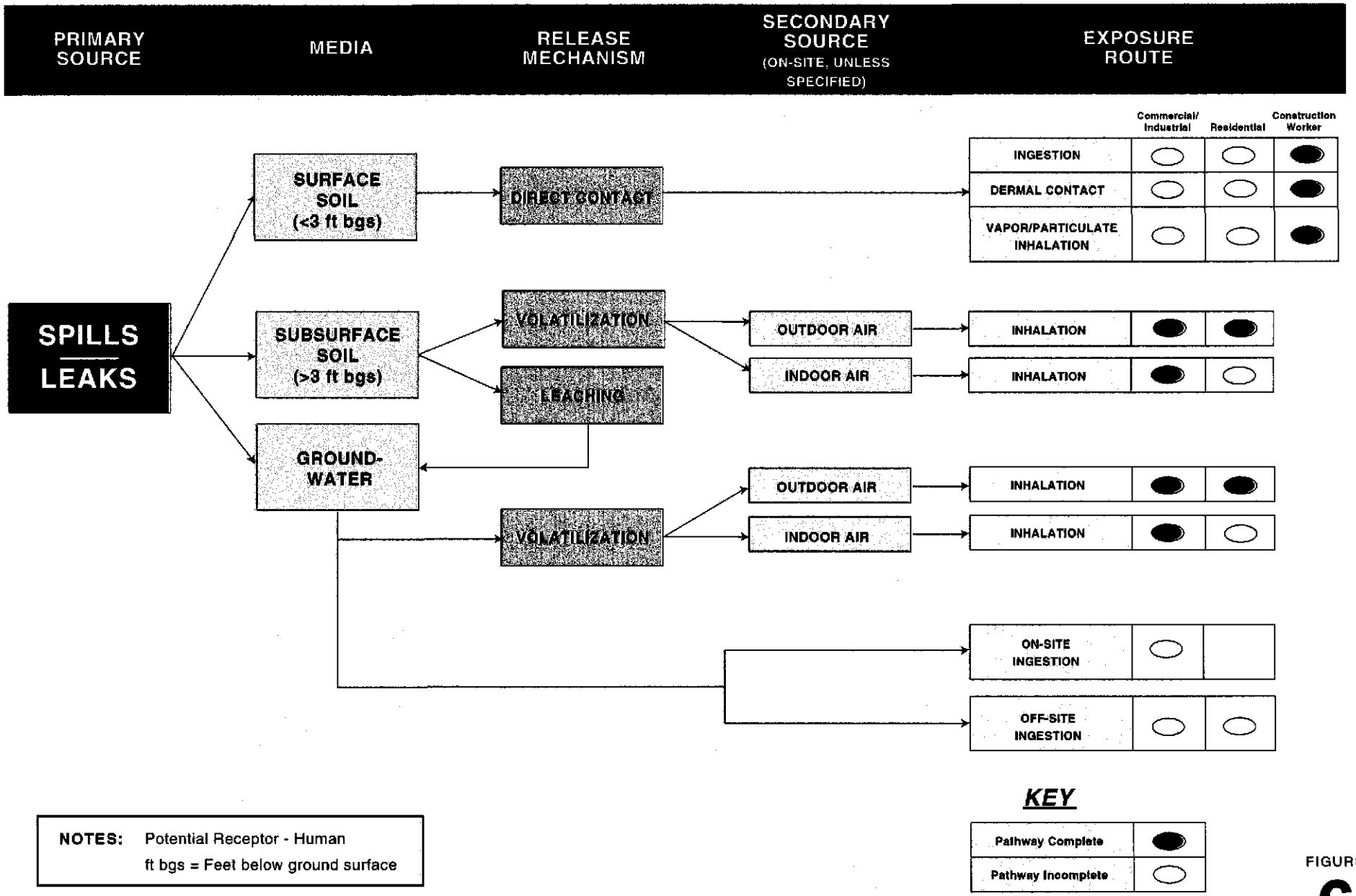


FIGURE
6

G:\OAKLAND 1230 14TH\FIGURES\PDF\CNCPT-CHART.PDF

Former Shell Service Station
1230 14th Street
Oakland, California
Incident #97088250

CAMBRIA

Conceptual Site Model
Exposure Pathways

ATTACHMENT A

Boring/Well Logs

DRILLING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task02

Well ID MW-1 Boring ID SB-A

Location 14th Street, Oakland

Surface Elev. N/A ft,

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description
0	Ground Surface			
				Silty GRAVEL(GM); brown/grey; damp; 2% clay, 20% silt, 20% very fine to medium grained sand, 58% pebble-gravel; no plasticity; moderate estimated permeability.
5	3 7 9			Silty SAND(SM); dark brown; damp; 30% silt, 70% very fine to medium grained sand; no plasticity; moderate estimated permeability. Light brown; loose; 45% silt, 55% very fine to medium grained sand.
10	10 12 21			Medium dense; moist.
15	4 5 5			Brown/mottled grey; loose; wet; 1% clay, 20% silt, 79% fine to medium grained sand.
20	37 50			Sand(SP); grey; wet; 5% silt, 95% fine to medium grained sand; no plasticity; high estimated permeability.
25				
30				

TPHg (ppm)	Graphic Log	Well Construction Graphics	Depth (feet)	Well Construction Details
			0	T.O.C. Elev.
ND			5	
			10	
10			15	
			20	
6			25	Bottom of Well
			30	

Driller Gregg Drilling

Logged By DCE

Drilling Started 3/6/96

Drilling Completed 3/6/96

Construction Completed 3/6/96

Development Completed 3/21/96

Water Bearing Zones N/A

Development Yield N/A

Well Casing 2" Dia. 0' to 7'

Casing Type Schedule 40 PVC

Well Screen 2" Dia. 7' to 22'

Screen Type Schedule 40 PVC

Slot Size 0.020"

Drilling Mud N/A

Grout Type Portland I/II

Bentonite Seal 5' to 6'

Sand Pack Monterey Sand

Sand Pack Type #3 Sand

Static Water Level 9.53 ft Depth

Date 3/26/96

Notes: Well located at corner of former waste oil tank.

DRILLING LOG

Client: Shell-WIC#204-5508-3103

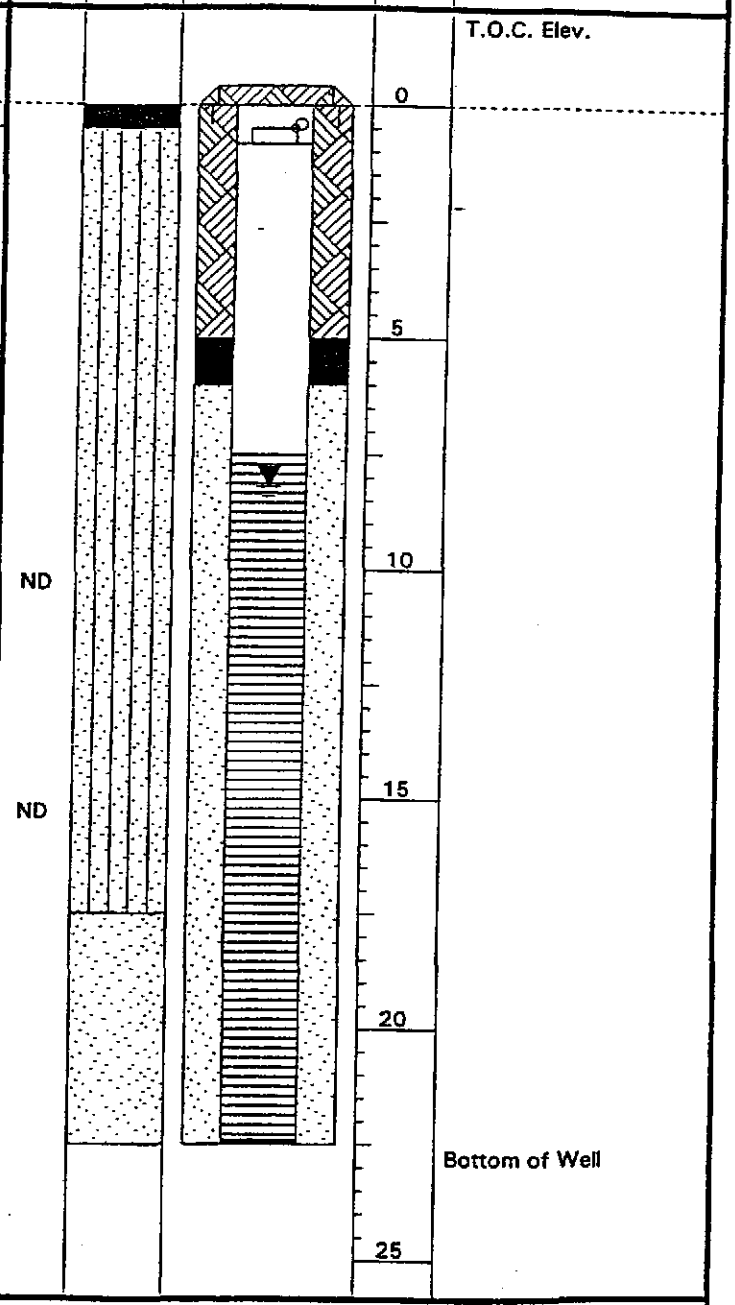
Project No: 24-233 Phase Task02

Well ID MW-2 Boring ID SB-B

Location 14th Street, Oakland

Surface Elev. N/A ft. Page 1 of 1

Depth (feet)	Blow Count	Sample Interval	Lithologic Description
0	Ground Surface		
			Asphalt
			Silty SAND(SM); brown; damp; 35% silt, 65% fine to medium grained sand; no plasticity; moderate estimated permeability.
5	6 8 11		Mottled orange/grey; medium dense; damp; 1% clay, 34% silt, 65% fine to medium grained sand.
10	8 14 16		Moist.
15			Dense, wet.
			Sand(SP); brown; very dense; wet; 5% silt, 95% fine to medium grained sand; no plasticity; high estimated permeability.
20	28 50		
25			



Driller: Gregg Drilling	Development Yield: N/A	Bentonite Seal: 5' to 6'
Logged By: DCE	Well Casing: 2" Dia. 0' to 7.5'	Sand Pack: Monterey Sand
Drilling Started: 3/6/96	Casing Type: Schedule 40 PVC	Sand Pack Type: #3 Sand
Drilling Completed: 3/6/96	Well Screen: 2" Dia. 7.5' to 22.5'	Static Water Level: 8.19 ft Depth
Construction Completed: 3/6/96	Screen Type: Schedule 40 PVC	Date: 3/26/96
Development Completed: 3/21/96	Slot Size: 0.020"	Notes: Well located on southern edge of property.
Water Bearing Zones: N/A	Drilling Mud: N/A	
	Grout Type: Portland I/II	

Cambria Environmental Technology, Inc.

DRILLING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task02

Well ID MW-3 Boring ID SB-D

Location 14th Street, Oakland

Surface Elev. N/A ft.

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description
0	Ground Surface			
				Asphalt
				Silty SAND(SM); dark brown; damp; 35% silt, 65% very fine to medium grained sand; no plasticity; moderate estimated permeability.
5	8 9 12			Brown/mottled orange and grey; medium dense; 3% clay, 35% silt, 62% very fine to medium grained sand; low plasticity; moderate to low permeability.
10				Brown; moist.
15	5 7 9			Moist to wet; 1% clay, 35% silt, 64% very fine to medium grained sand; no plasticity; moderate permeability.
20	8 10 23			
25				

TPHg (ppm)	Graphic Log	Well Construction Graphics	Depth (feet)	Well Construction Details
				T.O.C. Elev.
			0	
			5	
ND			10	
ND			15	
			20	
				Bottom of Well
			25	

Driller Gregg Drilling

Logged By DCE

Drilling Started 3/6/96

Drilling Completed 3/6/96

Construction Completed 3/6/96

Development Completed 3/21/96

Water Bearing Zones N/A

Development Yield N/A

Well Casing 2" Dia. 0' to 7'

Casing Type Schedule 40 PVC

Well Screen 2" Dia. 7' to 21.5'

Screen Type Schedule 40 PVC

Slot Size 0.020"

Drilling Mud N/A

Grout Type Portland I/II

Bentonite Seal 5' to 6'

Sand Pack Monterey Sand

Sand Pack Type #3 Sand

Static Water Level 8.47 ft Depth

Date 3/26/96

Notes: Boring located west of the former pump islands.

DRILLING LOG

Client: Shell-WIC#204-5508-3103

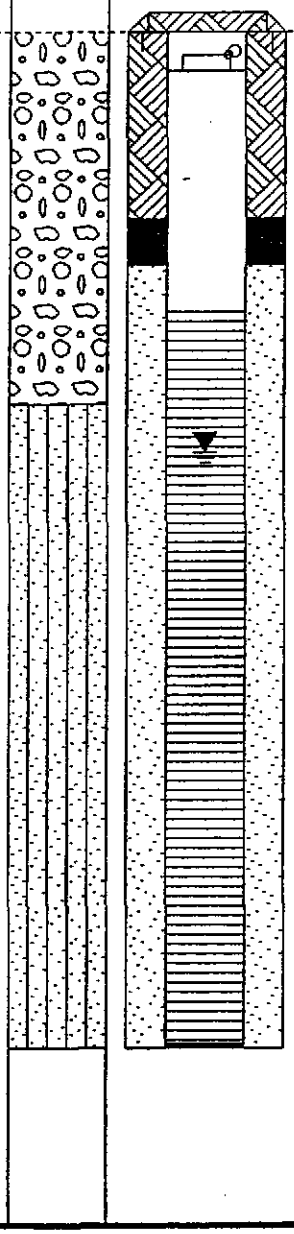
Project No: 24-233 Phase Task02

Well ID VW/MW-2 Boring ID SB-G

Location 14th Street, Oakland

Surface Elev. N/A ft, Page 1 of 1

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description	TPHg (ppm)
0	Ground Surface				
				Silty Sandy GRAVEL(GW); brown; damp; 2% clay, 20% silt, 30% fine to medium grained sand; 48% pebble gravel; no plasticity; moderate to high estimated permeability.	
5	4 5 6	X		Loose; sampler blocked by rock in fill.	
	4 8 13	X		Silty SAND(SM); brown; medium dense; damp to moist; 25% silt, 75% fine to medium grained sand; moderate estimated permeability.	ND
10	20 25 29	X		Grey.	ND
15	8 10 12	X		Wet.	
20	15 50 50	X		Brown; very dense; wet; 15% silt, 85% very fine to medium grained sand; moderate to high estimated permeability.	3.0
25					



Depth (feet)	Well Construction Details
0	T.O.C. Elev.
5	
10	
15	
20	
25	Bottom of Well

Driller Gregg Drilling

Logged By DCE

Drilling Started 3/7/96

Drilling Completed 3/7/96

Construction Completed 3/7/96

Development Completed 3/21/96

Water Bearing Zones N/A

Development Yield N/A

Well Casing 2" Dia. 0' to 6'

Casing Type Schedule 40 PVC

Well Screen 2" Dia. 6' to 22'

Screen Type Schedule 40 PVC

Slot Size 0.020"

Drilling Mud N/A

Grout Type Portland I/II

Bentonite Seal 4' to 5'

Sand Pack Monterey Sand

Sand Pack Type #3 Sand

Static Water Level 9.04 ft Depth

Date 3/26/96

Notes: Well located at the center of the property.

WELL 83103 5/21/96

Cambria Environmental Technology, Inc.

DRILLING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task02

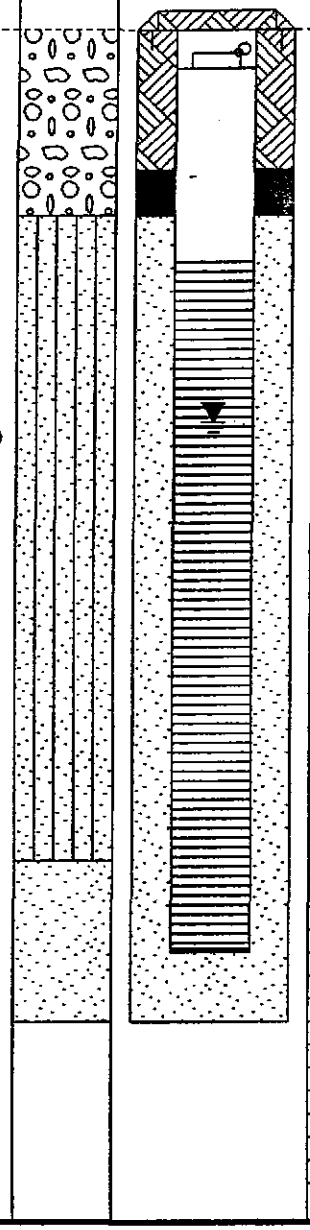
Well ID VW/MW-4 Boring ID SB-I

Location 14th Street, Oakland

Surface Elev. N/A ft,

Page 1 of 1

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description	TPHg (ppm)
0	Ground Surface				
				Silty Sandy GRAVEL(GW); brown; damp; 2% clay, 20% silt, 30% fine to coarse grained sand; 48% pebble gravel; no plasticity; moderate to high *estimated permeability.*	
5	10 15 20	X		Silty SAND(SM); brown/mottled grey; medium dense; damp; 3% clay, 25% silt, 72% fine to medium grained sand; low plasticity; low to moderate permeability.	ND
	20 27 40	X		Grey; dense; 1% clay, 25% silt, 74% fine to medium grained sand; no plasticity; moderate permeability.	80.0
10	20 50	X		Very dense.	
15	8 10 15	X		Medium dense; 1% clay; 30% silt; 69% fine to medium grained sand.	3.0
				Sand(SP); brown; very dense; damp; 5% silt, 95% medium to coarse grained sand; no plasticity; high estimated permeability.	
20	30 50	X			
25					



Depth (feet)	Well Construction Details
0	T.O.C. Elev.
5	
10	
15	
20	Bottom of Well
25	

Driller Gregg Drilling

Logged By DCE

Drilling Started 3/8/96

Drilling Completed 3/8/96

Construction Completed 3/8/96

Development Completed 3/21/96

Water Bearing Zones N/A

Development Yield N/A

Well Casing 2" Dia. 0' to 5'

Casing Type Schedule 40 PVC

Well Screen 2" Dia. 5' to 20'

Screen Type Schedule 40 PVC

Slot Size 0.020"

Drilling Mud N/A

Grout Type Portland I/II

Bentonite Seal 3' to 4'

Sand Pack Monterey Sand

Sand Pack Type #3 Sand

Static Water Level 8.45 ft Depth

Date 3/26/96

Notes: Boring located at the corner of former southern pump island.

WELL 83103 5/21/96

Cambria Environmental Technology, Inc.

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-5
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	27-Sep-01
LOCATION	1230 14th Street, Oakland, California	**DRILLING COMPLETED**	27-Sep-01
PROJECT NUMBER	243-0233	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	10"	**SCREENED INTERVAL**	5 to 20 ft bgs
LOGGED BY	S. Landsittel	**DEPTH TO WATER (First Encountered)**	10.5 ft ▽
REVIEWED BY	S. Bork, RG# 5620	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5' bgs. Located in northeastern end of former tankpit.		

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
				5			**FILL**: light brown; damp; 2% clay, 15% silt, 58% fine to medium sand, 25% subangular to subrounded gravel; no plasticity.		Portland Type I/II Cement
		MW-5-9.0		10	SP		**SAND** (SP); dark green to gray; moist; 8% clay, 10% silt, 82% fine to medium sand; low plasticity. ▽	9.0	Bentonite Seal
		MW-5-14.0		15	SM		**Silty SAND** (SM); dark green to gray; moist; 10% clay, 15% silt, 75% fine to medium sand; low plasticity. @ 15' bgs - wet.	12.0	Monterey Sand #2/12
				20				20.0	4"-diam., 0.010" Slotted Schedule 40 PVC
									Bottom of Boring @ 20 ft

WELL LOG (SHELL) G:\OAKLAN-2\GINT\OK-1230.GPJ DEFAULT.GDT 11/5/01

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-6
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	27-Sep-01
LOCATION	1230 14th Street, Oakland, California	**DRILLING COMPLETED**	27-Sep-01
PROJECT NUMBER	243-0233	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	10"	**SCREENED INTERVAL**	5 to 20 ft bgs
LOGGED BY	S. Landsittel	**DEPTH TO WATER (First Encountered)**	11.0 ft ▽
REVIEWED BY	S. Bork, RG# 5620	**DEPTH TO WATER (Static)**	NA ▼

REMARKS Hand augered to 5' bgs. Located along eastern property boundary.

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
				0			**ASPHALT**	0.3	Portland Type I/II Cement
							Silty SAND *(SM); brown; damp; 5% clay, 15% silt, 80% fine to medium sand; low plasticity.*		Bentonite Seal
				5					Monterey Sand #2/12
							@ 8.5' bgs - moist.		
				10	SM				
									4"-diam., 0.010" Slotted Schedule 40 PVC
				15			@ 14.5' bgs - reddish brown; wet; 8% clay, 15% silt, 77% fine to medium sand.		
				20			@ 19' bgs - reddish brown; 10% clay, 15% silt; 75% fine to medium sand.	20.0	Bottom of Boring @ 20 ft

WELL LOG (SHELL) G:\OAKLAN-2\GINTOK-1230.GPJ DEFAULT.GDT 11/5/01

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-7
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	27-Sep-01
LOCATION	1230 14th Street, Oakland, California	**DRILLING COMPLETED**	27-Sep-01
PROJECT NUMBER	243-0233	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	10"	**SCREENED INTERVAL**	5 to 20 ft bgs
LOGGED BY	S. Landsittel	**DEPTH TO WATER (First Encountered)**	11.0 ft ▽
REVIEWED BY	S. Bork, RG# 5620	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5' bgs. Located along northern property boundary.		

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.3	Portland Type I/II Cement
							FILL brown to gray; damp; 5% clay, 15% silt, 70% fine to medium sand, 10% subangular to subrounded gravel; no plasticity.		Bentonite Seal
								3.5	
				5	SP		**SAND** (SP); reddish brown; damp; 5% clay, 10% silt, 85% fine to medium sand; low plasticity.		Monterey Sand #2/12
								7.5	
				10			**Silty SAND** (SM); reddish brown; moist; 5% clay, 15% silt, 80% fine to medium sand; low plasticity. ▽		
				15	SM		@ 15' bgs - wet.		4"-diam., 0.010" Slotted Schedule 40 PVC
				20				20.0	Bottom of Boring @ 20 ft

WELL LOG (SHELL) G:\OAKLAN-2\GINT\OK-1230.GPJ DEFAULT.GDT 11/5/01

LOG OF EXPLORATORY BORING

PROJECT NUMBER 150 — BORING NO. S8-1

PROJECT NAME 1230 14th Street, Oakland, CA — PAGE

BY J. V. Mrakovich — DATE 2/21/91 — SURFACE ELEV. 17 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			ASPHALT
				2			AGGREGATE BASE: SANDY GRAVEL (GW), yellow-brown, medium to coarse, damp, no odor.
				3			FILL: SILTY SAND (SP), grey to black, fine to medium-grained, medium-dense, damp, gasoline odor.
				4			
1.5/1.5	-	27		5			
				6			Fill: As Above, mottled brown and blue-green, gasoline odor.
				7			
				8			
				9			
1.25/1.5	-	57		10			FILL: As Above, olive-green, very dense at 10 feet, medium dense at 15 feet, gasoline odor.
				11			
				12			
				13			
				14			
1.5/1.5	-	14		15			
				16			SILTY SAND (SP), olive-green, fine to medium grained, medium dense, saturated, stiff seam at 17.5 feet, gasoline odor.
			▽	17			Boring terminated at 20'.
				18			
				19			
				20			

REMARKS: Boring drilled with continuous-flight, 8-inch O. D., hollow-stem augers. Samples collected in a 2.5-inch O. D. California Sampler.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 150 — BORING NO. SB-2

PROJECT NAME 1230 14th Street, Oakland, CA — PAGE

BY J. V. Mrakovich — DATE 2/21/91 — SURFACE ELEV. 17 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			ASPHALT
				2			FILL: SAND (SP), brown, fine to medium-grained, medium dense, damp, musty odor.
				3			
				4			
1.25/1.5	-	22		5			
				6			
				7			FILL: CLAYEY, SILTY SAND (SP), red-brown, 5% fine gravel, organics, damp, musty odor.
				8			FILL: SILTY SAND (SP), olive-green, fine to medium-grained, dense, damp, gasoline odor
				9			
1.5/1.5	-	50		10			
				11			
				12			
				13			
				14			Boring terminated at 15'; sampled to 16.5'.
1.5/1.5	-	53		15			
				16			

REMARKS: Boring drilled with continuous-flight, 8-inch O. D., hollow-stem augers. Samples collected in a 2.5-inch O. D. California Sampler.

LOG OF EXPLORATORY BORING

PROJECT NUMBER 150 — BORING NO. SB-3

PROJECT NAME 1230 14th Street, Oakland, CA — PAGE

BY J. V. Mrakovich — DATE 2/21/91 — SURFACE ELEV. 17 FT

RECOVERY (FT/FT)	OVA (PPM)	PENETRATION (BLOWS/FT)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				1			ASPHALT
				2			AGGREGRATE BASE AND FILL: GRAVELLY SAND (SP), yellow-brown first 3-inches, then grey, fine to coarse-grained, red brick fragments, damp, strong gasoline odor.
				3			
				4			
1.5/1.5	-	34		5			SILTY SAND (SP), olive-green, fine to medium-grained, dense, damp, strong gasoline odor.
				6			FILL: As Above, mottled red-brown and grey, gasoline odor.
				7			
				8			FILL: As Above, brown, minor clay, very dense at 10 feet, dense and saturated at 15 feet, gasoline odor.
				9			
1.5/1.5	-	65		10			
				11			
				12			
				13			
				14			Boring terminated at 15': sampled to 16.5'.
1.5/1.5	-	32		15			
				16			

REMARKS: Boring drilled with continuous-flight, 8-inch O. D., hollow-stem augers. Samples collected in a 2.5-inch O. D. California Sampler.

DRILLING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task02

Well ID VW/AS-1 Boring ID SB-F

Location 14th Street, Oakland

Surface Elev. N/A ft.

Page 1 of 1

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description	TPHg (ppm)
0	Ground Surface				
				Asphalt	
				Silty SAND(SM); dark brown; damp; 30% silt, 70% very fine to medium grained sand; no plasticity; moderate estimated permeability.	
5	6 20 30			Red brown/mottled grey; medium dense; 1% clay, 44% silt, 55% very fine to coarse grained sand.	ND
	8 20 24				
10	20 35 40			Red brown; very dense; damp.	62.0
15	8 10 12			Grey/mottled red-brown; medium dense; moist; 3% clay, 42% silt, 55% very fine to coarse grained sand; low plasticity; moderate to low plasticity.	7.0
20	25 50			Grey; very dense; wet; 45% silt, 55% very fine to coarse grained sand; no plasticity.	20.0
25					

Graphic Log

Well Construction Graphics

Depth (feet)	Well Construction Details
0	T.O.C. Elev.
5	
10	
15	
20	Bottom of Well
25	

Driller	Gregg Drilling	Development Yield	N/A	Bentonite Seal	4' to 5'/15' to 17'
Logged By	DCE	Well Casing	1",2" Dia. 0',0' to 6',17.5'	Sand Pack	Monterey Sand
Drilling Started	3/7/96	Casing Type	Schedule 40 PVC	Sand Pack Type	#3 Sand
Drilling Completed	3/7/96	Well Screen	1",2" Dia.6',17.5to 15,19.5	Static Water Level	8.98 ft Depth
Construction Completed	3/7/96	Screen Type	Schedule 40 PVC	Date	3/26/96
Development Completed	3/21/96	Slot Size	0.020"	Notes:	Boring located between station building and former USTs.
Water Bearing Zones	N/A	Drilling Mud	N/A		
		Grout Type	Portland I/II		

WELL 83103 5/21/96

Cambria Environmental Technology, Inc.

DRILLING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task02

Well ID VW/AS-3 Boring ID SB-H

Location 14th Street, Oakland

Surface Elev. N/A ft,

Depth (feet)	Blow Count	Sample	Interval	Lithologic Description
0	Ground Surface			
5	14 18 12			Silty Sandy GRAVEL(GW); brown; damp; 2% clay, 20% silt, 30% fine to medium grained sand; 48% pebble gravel; no plasticity; moderate to high estimated permeability.
				Dense; no recovery.
10	8 8 8			Silty SAND(SM); grey green; medium dense; damp to moist; 20% silt, 80% fine to medium grained sand; moderate estimated permeability.
	4 8 12			25% silt, 75% fine to medium grained sand.
15	6 8 18			Wet; 1% clay, 25% silt, 74% fine to medium grained sand.
20	25 50			Very dense; 15% silt, 85% very fine to medium grained sand.
25				

TPHg (ppm)	Graphic Log	Well Construction Graphics	Depth (feet)	Well Construction Details
			0	T.O.C. Elev.
ND			10	
ND				
1.0			20	Bottom of Well

Driller Gregg Drilling	Development Yield N/A	Bentonite Seal 4' to 5'/15' to 17'
Logged By DCE	Well Casing 1",2" Dia. 0',0' to 6',18'	Sand Pack Monterey Sand
Drilling Started 3/7/96	Casing Type Schedule 40 PVC	Sand Pack Type #3 Sand
Drilling Completed 3/7/96	Well Screen 1",2" Dia. 6',18' to 15',20'	Static Water Level 8.50 ft Depth
Construction Completed 3/7/96	Screen Type Schedule 40 PVC	Date 3/26/96
Development Completed 3/21/96	Slot Size 0.020"	Notes: Well located between the two former pump islands.
Water Bearing Zones N/A	Drilling Mud N/A	
	Grout Type Portland I/II	

BORING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task 02

Boring ID SB-J

Location 14th Street, Oakland

Surface Elev. N/A ft.

Page 1 of 1

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface						0	
			Asphalt					
			Silty SAND(SM); dark brown; damp; 30% silt, 70% very fine to fine grained sand; no plasticity; moderate estimated permeability.					
5	10 10 13		Clayey to Silty SAND(SM); red brown/mottled grey; medium dense; damp; 12% clay, 20% silt, 68% very fine to fine grained sand; low plasticity; low estimated permeability.				5	
10	20 20 25		Silty SAND(SM); Red/brown/mottled tan; dense; damp; 1% clay, 20% silt, 79% fine to medium grained sand; no plasticity; moderate permeability.	ND			10	
15	10 20 70		Brown; wet; 20% silt, 80% fine to medium grained sand.				15	Bottom of Boring
20							20	

Driller Gregg Drilling

Logged By DCE

Water-Bearing Zones N/A

Drilling Started 3/8/96

Drilling Completed 3/8/96

Grout Type Portland I/II

Notes: Boring located on southeastern edge of the property.

BOR 83103 4/5/96

Cambria Environmental Technology, Inc.

BORING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task 02

Boring ID SB-E

Location 14th Street, Oakland

Surface Elev. N/A ft.

Page 1 of 1

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface						0	
5			Silty SAND(SM); dark brown; damp; 4% clay; 40% silt; 56% fine to medium grained sand; low plasticity; low to moderate estimated permeability.				5	
10	4 8 9		Red brown/mottled grey; medium dense; damp; 3% clay, 37% silt, 60% fine to medium grained sand; no to low plasticity; moderate estimated permeability.				10	
15	11 14 21		Brown; 35% silt, 65% fine to medium grained sand; no plasticity.	ND			15	
20	4 4 6		Loose; 1% clay, 34% silt, 65% fine to medium grained sand; moderate to low estimated permeability.	ND			20	
25	11 19 22		Medium dense; wet; 35% silt, 65% fine to medium grained sand; moderate estimated permeability.				25	Bottom of Boring

Driller Gregg Drilling

Logged By DCE

Water-Bearing Zones N/A

Drilling Started 3/6/96

Drilling Completed 3/6/96

Grout Type Portland I/II

Notes: Boring located on the northeastern corner of the property.

BOR 83103 4/5/96

Cambria Environmental Technology, Inc.

BORING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task 02

Boring ID SB-C

Location 14th Street, Oakland

Surface Elev. N/A ft.

Page 1 of 1

Depth Feet	Blow Count	Sample Interval	Lithologic Description
0	Ground Surface		
			Asphalt
			Silty SAND(SM); dark brown; damp; 25% silt, 75% fine to medium grained sand; no plasticity; moderate estimated permeability. Occasional gravel to 1/4".
5			No gravel.
	2 3 4		Light brown; loose.
10			
	10 17 16		Medium dense.
			Sandy SILT(ML); brown; loose; damp; 5% clay, 50% silt, 45% very fine to medium grained sand; low plasticity; low permeability.
15	4 4 5		
			Sand(SP); brown; dense; wet; 10% silt, 90% fine to medium grained sand; no plasticity; high estimated permeability.
20	15 27 28		
25			

TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
			0	
			5	
			10	
ND			15	
2.00			20	
			25	Bottom of Boring

Driller Gregg Drilling

Logged By DCE

Water-Bearing Zones N/A

Drilling Started 3/6/96

Drilling Completed 3/6/96

Grout Type Portland I/II

Notes: Boring located near the west corner of the station building.

BOR 83103 4/5/96

Cambria Environmental Technology, Inc.

BORING LOG

Client: Shell-WIC#204-5508-3103

Project No: 24-233 Phase Task 02

Boring ID S8-C

Location 14th Street, Oakland

Surface Elev. N/A ft.

Page 1 of 1

Depth Feet	Blow Count	Sample Interval	Lithologic Description
0	Ground Surface		
			Asphalt
			Silty SAND(SM); dark brown; damp; 25% silt, 75% fine to medium grained sand; no plasticity; moderate estimated permeability. Occasional gravel to 1/4".
			No gravel.
5	2 3 4		Light brown; loose.
10	10 17 16		Medium dense.
			Sandy SILT(ML); brown; loose; damp; 5% clay, 50% silt, 45% very fine to medium grained sand; low plasticity; low permeability.
15	4 4 5		
			Sand(SP); brown; dense; wet; 10% silt, 90% fine to medium grained sand; no plasticity; high estimated permeability.
20	15 27 28		
25			

TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
			0	
ND			5	
			10	
2.00			15	
			20	
			25	Bottom of Boring

Driller Gregg Drilling

Logged By DCE

Water-Bearing Zones N/A

Drilling Started 3/6/96

Drilling Completed 3/6/96

Grout Type Portland I/II

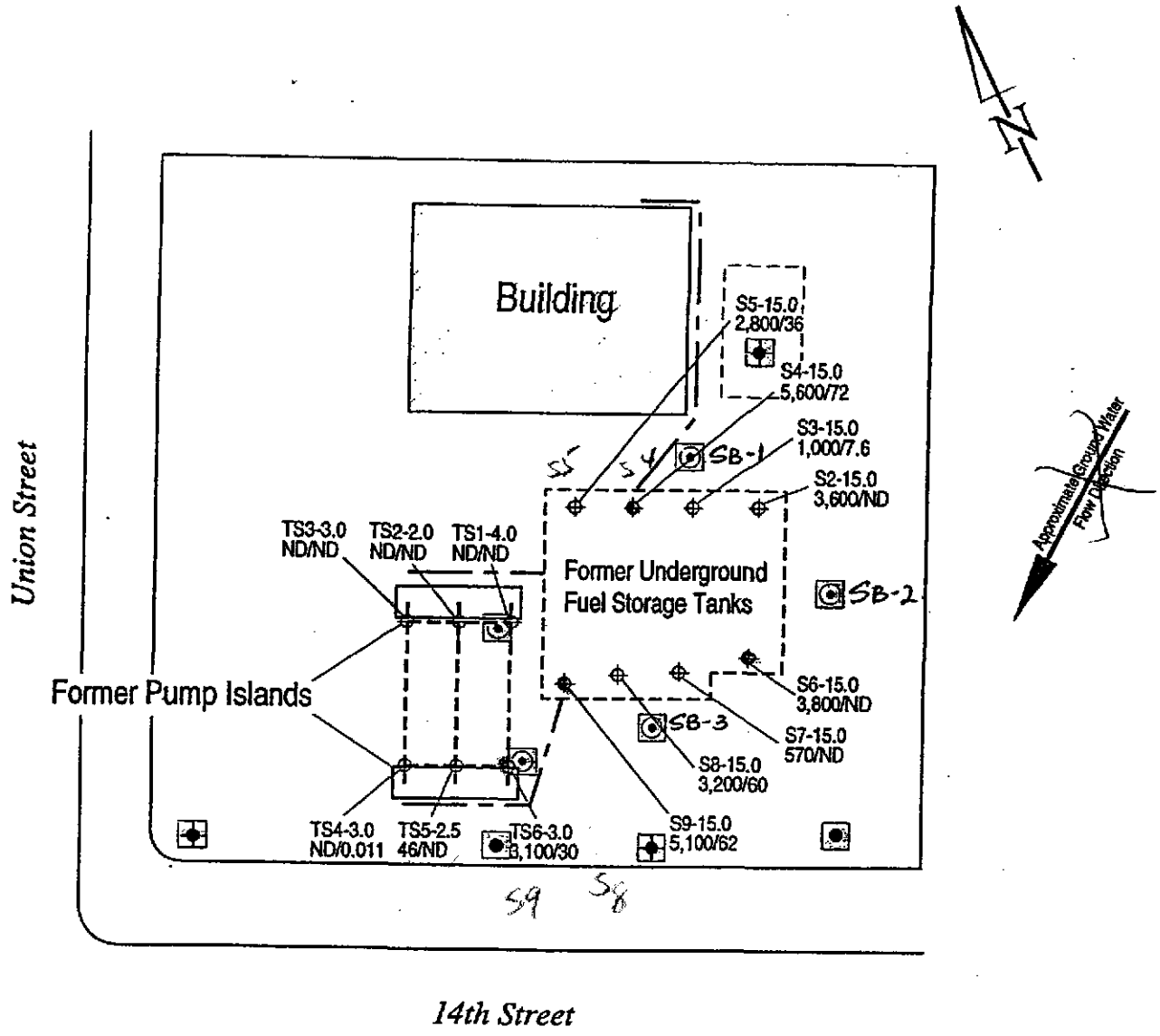
Notes: Boring located near the west corner of the station building.

BOR 83103 4/5/96

Cambria Environmental Technology, Inc.

ATTACHMENT B

Historical Soil and Groundwater Analytical Results



LEGEND

- Sample ID-Depth (ft)
  TPHg/Benzene Concentration in ppm
- Former Vent Piping
- Former Product Piping
- ND = Not Detected
- Proposed Ground Water Monitoring Well
- Proposed Combination Air Sparge/Soil Vapor Extraction Wells
- Proposed Soil Boring

0 20
Scale (ft)

Base Map by Tank Protect Engineering

CAMBRIA
Environmental Technology, Inc.

Former Shell Service Station
WIC # 204-4878-1300
1230 14th Street
Oakland, California

D:/PROJECT/SHELL/OAKLAND/SITE.DWG

Proposed Soil
Boring and Well Locations

FIGURE
1

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Tank Protect Engineering of N. Calif	Client Project ID:	#150B-022191	Sampled: Feb 21, 1991
2821 Whipple Road	Matrix Descript:	Soil	Received: Feb 22, 1991
Union City, CA 94587	Analysis Method:	EPA 5030/8015/8020	Analyzed: Feb 28, 1991
Attention: John Mrakovich	First Sample #:	102-0534	Reported: Mar 1, 1991

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

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
102-0534	SB1-6-6.5	11	0.014	0.37	0.22	1.2
102-0535	SB1-10.5-11	4.6	0.15	0.50	0.13	0.68
102-0536	SB1-15.5-16	7.5	2.1	1.8	0.18	1.1
102-0537	SB2-6-6.5	N.D.	N.D.	N.D.	N.D.	0.034
102-0538	SB2-10.5-11	1.8	0.062	0.038	0.035	0.082
102-0539	SB2-15.5-16	6.1	1.2	1.4	0.15	0.80
102-0540	SB3-6-6.5	N.D.	0.038	0.0054	0.015	0.034
102-0541	SB3-10.5-11	1,600	18	98	35	190
102-0542	SB3-15.5-16	2.4	0.31	0.21	0.064	0.35
Detection Limits:		1.0	0.0050	0.0050	0.0050	0.0050

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

EQUOIA ANALYTICAL

Julia R. Malerstein
Project Manager

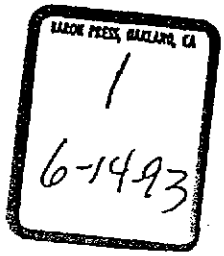


Table 1. Soil Analytic Data - Former Shell Service Station - 1230 14th Street, Oakland, California

Boring/ well ID	Date Sampled	Sample Depth (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes
			All concentrations in parts per million (mg/kg)				
Product Piping Samples							
TS-1-4.0	11/27/95	4.0	<1.0	<0.0050	0.0050	<0.0050	<0.0050
TS-2-2.0	11/27/95	2.0	<1.0	<0.0050	0.0057	<0.0050	0.0075
TS-3-3.0	11/27/95	3.0	<1.0	<0.0050	<0.0050	<0.0050	0.0069
TS-4-3.0	11/27/95	3.0	<0.0	0.011	0.038	0.0073	0.043
TS-5-2.5	11/27/95	2.5	46	<0.10	<0.10	<0.10	2.0
TS-6-3.0	11/27/95	3.0	3,100	30	<6.0	33	230
Tankpit Excavation Samples							
S2-15.0	11/27/95	15.0	3,600	<6.0	140	78	430
S3-15.0	11/27/95	15.0	1,000	7.6	33	19	100
S4-15.0	11/27/95	15.0	5,600	72	280	110	580
S5-15.0	11/27/95	15.0	2,800	36	160	64	350
S6-15.0	11/27/95	15.0	3,800	<6.0	<6.0	76	350
S7-15.0	11/27/95	15.0	570	<0.50	<0.50	4.9	13
S8-15.0	11/27/95	15.0	3,200	60	200	69	350
S9-15.0	11/27/95	15.0	5,100	62	260	110	570

Abbreviations
TPHg = Total petroleum hydrocarbons as gasoline
<x.xx = not detected above x.xx ppm detection limit

Notes
TPHg analyzed by modified EPA Method 8015
Benzene, ethylbenzene, toluene and xylenes analyzed by EPA Method 8020

Table 1 Soil Analytical Results - Former Shell-branded Service Station, 1230 14th St., Oakland, California - Incident #97088250

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Petroleum Oil and Grease
			← mg/kg (ppm) →						
MW-5-9.5	9/27/01	9.5	**3.9**	<0.0050	<0.0050	**0.0069**	**0.019**	<0.50	--
MW-5-14.0	9/27/01	14.5	**790**	**2.7**	**30**	**11**	**67**	<1.0	--
GP-1-5	12/11/00	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-1-10	12/11/00	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-1-15	12/11/00	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-1-20	12/11/00	20.0	**120**	<0.020	**0.022**	**0.64**	**1.1**	<0.020	--
GP-2-5	12/11/00	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-2-10.5	12/11/00	10.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-2-15	12/11/00	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-3-5	12/11/00	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-3-10.0	12/11/00	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-3-15.0	12/11/00	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-4-5	12/11/00	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-4-10	12/11/00	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-4-15	12/11/00	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-5-5	12/11/00	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--

Table 1 Soil Analytical Results - Former Shell-branded Service Station, 1230 14th St., Oakland, California - Incident #97088250

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Petroleum Oil and Grease
			← mg/kg (ppm) →						
GP-5-10	12/11/00	10.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
GP-5-15	12/11/00	15.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
SB-A/(MW-1)-10.5	03/06/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	160
SB-A/(MW-1)-16.0	03/06/96	16.0	9.8	1.9	0.4	0.22	1.1	--	57
SB-A/(MW-1)-20.5	03/06/96	20.5	5.9	0.89	0.049	0.19	0.25	--	80
SB-B/(MW-2)-10.5	03/06/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-B/(MW-2)-16.0	03/06/96	16.0	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-C-11.75	03/06/96	11.8	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-C-15.5	03/06/96	15.5	1.9	0.022	0.12	0.086	0.32	--	--
SB-D/(MW-3)-10.5	03/06/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-D/(MW-3)-15.5	03/06/96	15.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-E-10.5	03/06/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	<50

Table 1 Soil Analytical Results - Former Shell-branded Service Station, 1230 14th St., Oakland, California - Incident #97088250

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Petroleum Oil and Grease
			← mg/kg (ppm) →						
SB-E-16.0	03/06/96	16.0	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	200
SB-F(VW/AS)-1-5.5	03/07/96	5.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-F(VW/AS-1)-10.5	03/07/96	10.5	62	0.97	4.2	1.4	8.0	--	--
SB-F(VW/AS-1)-15.5	03/07/96	15.5	7.4	1.7	0.44	0.2	0.6	--	--
SB-F(VW/AS-1)-20.5	03/07/96	20.5	20	2.6	1.7	0.5	2.0	--	--
SB-G(VW/MW-2)-8.5	03/07/96	8.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-G(VW/MW-2)-10.5	03/07/96	10.5	<1.0	0.0032	<0.0025	<0.0025	<0.0025	--	--
SB-G(VW/MW-2)-20.5	03/07/96	20.5	2.9	0.47	0.34	0.15	0.57	--	--
SB-H(VW/AS-3)-8.5	03/07/96	8.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-H(VW/AS-3)-10.5	03/07/96	10.5	<1.0	0.018	<0.0025	<0.0025	0.014	--	--
SB-H(VW/AS-3)-21.0	03/07/96	21.0	1.0	0.047	0.016	0.0037	0.017	--	--
SB-I(VW/MW-4)-5.5	03/08/96	5.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025	--	--
SB-I(VW/MW-4)-8.5	03/08/96	8.5	80	0.14	0.33	1.3	5.2	--	--

Table 1 Soil Analytical Results - Former Shell-branded Service Station, 1230 14th St., Oakland, California - Incident #97088250

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE	Petroleum Oil and Grease
			← mg/kg (ppm) →						
SB-I(VW/MW-4)-15.5	03/08/96	15.5	3.4	0.23	0.093	0.1	0.42		--
SB-J-10.5	03/08/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025		--
SB-K(MW-4)-10.5	03/08/96	10.5	<1.0	<0.0025	<0.0025	<0.0025	<0.0025		--

Abbreviations and Notes:
ppm = parts per million (milligrams per kilogram).
TPHg = Total Petroleum Hydrocarbons as gasoline, analyzed by EPA Method 8015 in 3/6/96 event; by EPA Method 8260B for susequent events.
Benzene, toluene, ethylbenzene, and xylene analyzed by EPA Method 8020 in 3/6/96 event; by EPA Method 8260B for subsequent events
MTBE = Methyl tertiary butyl ether, analyzed by EPA Method 8260B.
Petroleum oil and grease (POG) by Standard Method 5520.

-- = Not sampled
ppm=parts per million
<x=not detected above x ppm

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-1	03/25/1996	37,000	7,400	1,500	720	3,300	<500	NA	18.58	9.53	9.05	NA
MW-1	06/21/1996	35,000	9,900	460	340	3,500	890	NA	18.58	10.72	7.86	NA
MW-1	09/26/1996	19,000	8,200	510	780	790	<250	NA	18.58	12.88	5.70	NA
MW-1	12/19/1996	27,000	120	1,200	1,400	2,800	<100	NA	18.58	12.59	5.99	NA
MW-1	12/19/1996	32,000	12,000	1,300	1,600	3,100	830	NA	18.58	12.59	5.99	NA
MW-1	03/25/1997	39,000	13,000	1,600	840	3,100	730	NA	18.58	11.10	7.48	1.2
MW-1	06/26/1997	NA	NA	NA	NA	NA	NA	NA	18.58	12.42	6.16	NA
MW-1	09/26/1997	NA	NA	NA	NA	NA	NA	NA	18.58	13.31	5.27	0.8
MW-1	12/05/1997	NA	NA	NA	NA	NA	NA	NA	18.58	12.65	5.93	0.3
MW-1	02/19/1998	16,000	5,500	450	500	800	<500	NA	18.58	6.46	12.12	2.4
MW-1	06/08/1998	NA	NA	NA	NA	NA	NA	NA	18.58	6.62	11.96	1.2
MW-1	08/25/1998	NA	NA	NA	NA	NA	NA	NA	18.58	11.83	6.75	2.8
MW-1	12/28/1998	NA	NA	NA	NA	NA	NA	NA	18.58	12.01	6.57	2.6
MW-1	03/26/1999	NA	NA	NA	NA	NA	NA	NA	18.58	9.15	9.43	2.2
MW-1	06/30/1999	NA	NA	NA	NA	NA	NA	NA	18.58	11.22	7.36	3.8
MW-1	09/30/1999	NA	NA	NA	NA	NA	NA	NA	18.58	11.89	6.69	3.0
MW-1	12/27/1999	34,800	8,660	953	956	2,770	<1,000	NA	18.58	13.55	5.03	2.4/2.1
MW-1	01/21/2000	40,600	14,700	1,850	1,210	3,670	<500	NA	18.58	13.42	5.16	2.8
MW-1	03/07/2000	NA	NA	NA	NA	NA	NA	NA	18.58	8.11	10.47	0.4
MW-1	04/17/2000	NA	NA	NA	NA	NA	NA	NA	18.58	9.78	8.80	3.0/3.4
MW-1	04/18/2000	18,300	8,060	543	528	872	<50.0	NA	18.58	NA	NA	NA
MW-1	09/21/2000	NA	NA	NA	NA	NA	NA	NA	18.58	13.11	5.47	5.2
MW-1	10/17/2000	15,800	6,720	435	587	887	351	<66.7	18.58	12.61	5.97	1.2/0.8
MW-1	01/09/2001	NA	NA	NA	NA	NA	NA	NA	18.58	12.94	5.64	0.3
MW-1	04/27/2001	1,400	650	28	58	48	NA	<10	18.58	10.73	7.85	1.8/2.1
MW-1	07/03/2001	NA	NA	NA	NA	NA	NA	NA	18.58	12.00	6.58	1.8
MW-1	12/06/2001	4,500	1,500	85	160	210	NA	<50	18.58	10.53	8.05	2.5/2.9

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-1	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.58**	**9.33**	**9.25**	**0.1**
MW-2	03/25/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	8.19	9.71	NA
MW-2	06/21/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	9.94	7.96	NA
MW-2	09/26/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	12.15	5.75	NA
MW-2	12/19/1996	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	17.90	11.70	6.20	NA
MW-2	03/25/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	9.25	8.65	1.8
MW-2	06/26/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	11.36	6.54	2.4
MW-2	09/26/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	12.56	5.34	1.1
MW-2	09/26/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	12.56	5.34	1.1
MW-2	12/05/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	11.15	6.75	0.7
MW-2	02/19/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	17.90	5.61	12.29	2.7
MW-2	06/08/1998	<50	<0.30	<0.30	<0.30	<0.60	<10	NA	17.90	5.58	12.32	3.2
MW-2	08/25/1998	NA	NA	NA	NA	NA	NA	NA	17.90	10.67	7.23	1.7
MW-2	12/28/1998	<50.0	<0.500	<0.500	<0.500	<0.500	<2.00	NA	17.90	11.65	6.25	0.4/0.8
MW-2	03/26/1999	NA	NA	NA	NA	NA	NA	NA	17.90	8.60	9.30	0.7
MW-2	06/30/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	NA	17.90	10.30	7.60	2.3
MW-2	09/30/1999	NA	NA	NA	NA	NA	NA	NA	17.90	10.77	7.13	1.9
MW-2	12/27/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	NA	17.90	12.21	5.69	0.7/0.7
MW-2	03/07/2000	NA	NA	NA	NA	NA	NA	NA	17.90	7.13	10.77	1.1
MW-2	04/17/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	17.90	8.35	9.55	1.8/1.8
MW-2	09/21/2000	NA	NA	NA	NA	NA	NA	NA	17.90	11.76	6.14	2.1
MW-2	10/17/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	17.90	11.80	6.10	0.9/0.6
MW-2	01/09/2001	NA	NA	NA	NA	NA	NA	NA	17.90	12.14	5.76	0.7
MW-2	04/27/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	17.90	9.85	8.05	1.1/0.9
MW-2	07/03/2001	NA	NA	NA	NA	NA	NA	NA	17.90	11.20	6.70	1.2
MW-2	12/06/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	17.90	10.77	7.13	3.9/2.1

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-2	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**17.90**	**8.64**	**9.26**	**2.5**
MW-3	03/25/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.18	8.47	9.71	NA
MW-3	06/21/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.18	10.40	7.78	NA
MW-3	09/26/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.18	12.45	5.73	NA
MW-3	12/19/1996	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	18.18	12.14	6.02	NA
MW-3	03/25/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.18	9.54	8.64	2.2
MW-3	06/26/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.18	11.66	6.52	3.6
MW-3	09/26/1997	<50	<0.50	<050	<0.50	<0.50	<2.5	NA	18.18	12.85	5.33	1.1
MW-3	12/05/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.18	11.44	6.74	0.6
MW-3	02/19/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.18	6.78	11.40	3.6
MW-3	06/08/1998	<50	<0.30	<0.30	<0.30	<0.60	<10	NA	18.18	6.82	11.36	3.8
MW-3	06/08/1998	<50	<0.30	<0.30	<0.30	<0.60	<10	NA	18.18	6.82	11.36	3.8
MW-3	08/25/1998	NA	NA	NA	NA	NA	NA	NA	18.18	11.09	7.09	1.2
MW-3	12/28/1998	<50.0	<0.500	<0.500	<0.500	<0.500	<2.00	NA	18.18	11.84	6.34	0.9/0.6
MW-3	03/26/1999	NA	NA	NA	NA	NA	NA	NA	18.18	8.57	9.61	0.8
MW-3	06/30/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	NA	18.18	10.61	7.57	4.8
MW-3	09/30/1999	NA	NA	NA	NA	NA	NA	NA	18.18	11.53	6.65	1.4
MW-3	12/27/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	NA	18.18	12.35	5.83	1.4/2.5
MW-3	03/07/2000	NA	NA	NA	NA	NA	NA	NA	18.17	7.36	10.81	5.8
MW-3	04/17/2000	<50.0	<0.500	<0.500	<0.500	<0.500	19.3	NA	18.17	8.39	9.78	6.5/5.1
MW-3	09/21/2000	NA	NA	NA	NA	NA	NA	NA	18.17	12.01	6.16	3.0
MW-3	10/17/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	18.17	12.10	6.07	2.0/1.0
MW-3	01/09/2001	NA	NA	NA	NA	NA	NA	NA	18.17	12.43	5.74	1.9
MW-3	04/27/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	18.17	10.10	8.07	2.3/2.4
MW-3	07/03/2001	NA	NA	NA	NA	NA	NA	NA	18.17	11.45	6.72	1.4
MW-3	12/06/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	18.17	11.07	7.10	2.8/3.9

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-3	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.17**	**8.89**	**9.28**	**3.1**
MW-4	03/25/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	9.20	8.81	NA
MW-4	06/21/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	10.25	7.76	NA
MW-4	09/26/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	12.29	5.72	NA
MW-4	12/19/1996	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	18.01	12.47	5.54	NA
MW-4	03/25/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	9.44	8.57	1.8
MW-4	06/26/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	11.57	6.44	6.2
MW-4 (D)	06/26/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	11.57	6.44	6.2
MW-4	09/26/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	12.75	5.26	2.1
MW-4	12/05/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	11.37	6.64	1.0
MW-4 (D)	12/05/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	11.37	6.64	1.0
MW-4	02/19/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	18.01	5.59	12.42	6.5
MW-4	06/08/1998	<50	<0.30	<0.30	<0.30	<0.60	<10	NA	18.01	5.65	12.36	2.6
MW-4	08/25/1998	NA	NA	NA	NA	NA	NA	NA	18.01	10.98	7.03	2.4
MW-4	12/28/1998	<50.0	<0.500	<0.500	<0.500	<0.500	<2.00	NA	18.01	11.83	6.18	1.3/1.2
MW-4	03/26/1999	NA	NA	NA	NA	NA	NA	NA	18.01	8.40	9.61	1.9
MW-4	06/30/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	NA	18.01	10.53	7.48	7.6
MW-4	09/30/1999	NA	NA	NA	NA	NA	NA	NA	18.01	11.03	6.98	2.6
MW-4	12/27/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	NA	18.01	12.53	5.48	1.9/0.8
MW-4	03/07/2000	NA	NA	NA	NA	NA	NA	NA	18.01	7.00	11.01	6.5
MW-4	04/17/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	18.01	8.57	9.44	5.1/5.1
MW-4	09/21/2000	NA	NA	NA	NA	NA	NA	NA	18.01	12.05	5.96	3.0
MW-4	10/17/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	18.01	11.96	6.05	5.5/1.2
MW-4	01/09/2001	NA	NA	NA	NA	NA	NA	NA	18.01	12.33	5.68	2.1
MW-4	04/27/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	18.01	9.96	8.05	5.3/3.8
MW-4	07/03/2001	NA	NA	NA	NA	NA	NA	NA	18.01	11.35	6.66	4.5

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-4	12/06/2001	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	18.01	10.99	7.02	10.23/6.5
MW-4	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.01**	**8.80**	**9.21**	**8.8**
MW-5	12/03/2001	NA	NA	NA	NA	NA	NA	NA	18.47	11.86	6.61	NA
MW-5	12/06/2001	31,000	3,000	2,000	1,100	3,000	NA	<50	18.47	11.40	7.07	3.1/3.2
MW-5	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.47**	**9.24**	**9.23**	**0.9**
MW-6	12/03/2001	NA	NA	NA	NA	NA	NA	NA	18.84	12.19	6.65	NA
MW-6	12/06/2001	76	5.7	3.8	1.4	7.0	NA	<5.0	18.84	11.70	7.14	6.3/6.1
MW-6	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.84**	**9.57**	**9.27**	**8.7**
MW-7	12/03/2001	NA	NA	NA	NA	NA	NA	NA	19.20	12.66	6.54	NA
MW-7	12/06/2001	1,800	390	<2.0	6.2	<2.0	NA	<20	19.20	12.20	7.00	3.9/3.8
MW-7	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**19.20**	**10.00**	**9.20**	**9.4**
VW/MW-2	03/25/1996	13,000	900	920	180	1,500	<250	NA	18.30	9.04	9.26	NA
VW/MW-2	06/21/1996	27,000	4,100	1,100	1,400	3,200	700	NA	18.30	10.48	7.82	NA
VW/MW-2	09/26/1996	27,000	5,300	1,900	980	2,200	<500	NA	18.30	12.52	5.78	NA
VW/MW-2 (D)	09/26/1996	29,000	5,800	2,200	1,100	2,500	<250	NA	18.30	12.52	5.78	NA
VW/MW-2	12/19/1996	50,000	6,200	5,100	1,700	5,600	590	NA	18.30	12.42	5.88	NA
VW/MW-2	03/25/1997	210	5.6	<0.50	0.52	<0.50	14	NA	18.30	9.83	8.47	2.0
VW/MW-2 (D)	03/25/1997	250	1.7	0.58	0.51	<0.50	4.7	NA	18.30	9.83	8.47	2.0
VW/MW-2	06/26/1997	NA	NA	NA	NA	NA	NA	NA	18.30	12.43	5.87	NA
VW/MW-2	09/26/1997	NA	NA	NA	NA	NA	NA	NA	18.30	12.98	5.32	0.9
VW/MW-2	12/05/1997	NA	NA	NA	NA	NA	NA	NA	18.30	12.20	6.10	0.4
VW/MW-2	02/19/1998	<50	1.5	<0.50	<0.50	0.71	<2.5	NA	18.30	5.83	12.47	3.6
VW/MW-2	06/08/1998	NA	NA	NA	NA	NA	NA	NA	18.30	5.80	12.50	1.0

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
VW/MW-2	08/25/1998	NA	NA	NA	NA	NA	NA	NA	18.30	11.72	6.58	4.8
VW/MW-2	12/28/1998	NA	NA	NA	NA	NA	NA	NA	18.30	11.69	6.61	2.7
VW/MW-2	03/26/1999	NA	NA	NA	NA	NA	NA	NA	18.30	8.75	9.55	2.8
VW/MW-2	06/30/1999	NA	NA	NA	NA	NA	NA	NA	18.30	10.72	7.58	4.7
VW/MW-2	09/30/1999	NA	NA	NA	NA	NA	NA	NA	18.30	12.24	6.06	4.9
VW/MW-2	12/27/1999	13,500	1,330	1,310	490	1,400	<250	NA	18.30	13.92	4.38	2.1/1.9
VW/MW-2	01/21/2000	12,100	2,200	1,080	429	1,120	<250	NA	18.30	13.26	5.04	2.8
VW/MW-2	03/07/2000	NA	NA	NA	NA	NA	NA	NA	18.28	7.87	10.41	3.7
VW/MW-2	04/17/2000	NA	NA	NA	NA	NA	NA	NA	18.28	9.65	8.63	3.7/4.1
VW/MW-2	04/18/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	18.28	NA	NA	NA
VW/MW-2	09/21/2000	NA	NA	NA	NA	NA	NA	NA	18.28	12.75	5.53	6.2
VW/MW-2	10/17/2000	4,070	763	589	214	501	<50.0	NA	18.28	12.21	6.07	0.8/0.7
VW/MW-2	01/09/2001	NA	NA	NA	NA	NA	NA	NA	18.28	12.51	5.77	0.7
VW/MW-2	04/27/2001	80	5.7	<0.50	2.7	4.9	NA	<0.50	18.28	10.21	8.07	2.3/2.8
VW/MW-2	07/03/2001	NA	NA	NA	NA	NA	NA	NA	18.28	11.60	6.68	0.6
VW/MW-2	12/06/2001	160	1.7	1.0	1.8	4.6	NA	<5.0	18.28	11.15	7.13	3.7/2.3
VW/MW-2	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.28**	**9.07**	**9.21**	**0.5**
VW/MW-4	03/25/1996	83,000	6,500	7,000	2,000	11,000	<250	NA	18.14	8.45	9.69	NA
VW/MW-4 (D)	03/25/1996	84,000	6,400	7,000	2,100	12,000	<250	NA	18.14	8.45	9.69	NA
VW/MW-4	06/21/1996	110,000	14,000	15,000	3,700	17,000	1,700	NA	18.14	10.38	7.76	NA
VW/MW-4 (D)	06/21/1996	100,000	12,000	12,000	2,900	13,000	<1,000	NA	18.14	10.38	7.76	NA
VW/MW-4	09/26/1996	52,000	13,000	2,700	2,100	3,200	<500	NA	18.14	12.43	5.71	NA
VW/MW-4	12/19/1996	75,000	15,000	6,600	3,000	7,600	<1,250	NA	18.14	11.87	6.27	NA
VW/MW-4	03/25/1997	56,000	4,700	1,500	2,500	6,300	580	NA	18.14	9.60	8.54	2.4
VW/MW-4	06/26/1997	NA	NA	NA	NA	NA	NA	NA	18.14	12.36	5.78	NA
VW/MW-4	09/26/1997	NA	NA	NA	NA	NA	NA	NA	18.14	12.82	5.32	0.4

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
VW/MW-4	12/05/1997	NA	NA	NA	NA	NA	NA	NA	18.14	12.15	5.99	0.3
VW/MW-4	02/19/1998	4,100	320	40	44	520	<50	NA	18.14	5.85	12.29	1.8
VW/MW-4 (D)	02/19/98	4,300	340	44	47	540	<50	NA	18.14	5.85	12.29	1.8
VW/MW-4	06/08/1998	NA	NA	NA	NA	NA	NA	NA	18.14	5.87	12.27	1.8
VW/MW-4	08/25/1998	NA	NA	NA	NA	NA	NA	NA	18.14	10.96	7.18	2.5
VW/MW-4	12/28/1998	NA	NA	NA	NA	NA	NA	NA	18.14	11.28	6.86	0.9
VW/MW-4	03/26/1999	NA	NA	NA	NA	NA	NA	NA	18.14	8.45	9.69	1.9
VW/MW-4	06/30/1999	NA	NA	NA	NA	NA	NA	NA	18.14	9.70	8.44	3.6
VW/MW-4	09/30/1999	NA	NA	NA	NA	NA	NA	NA	18.14	11.78	6.36	2.6
VW/MW-4	12/27/1999	33,900	3,740	2,000	1,130	5,090	587	NA	18.14	12.63	5.51	0.4/0.2
VW/MW-4	01/21/200	13,900	1,560	568	227	1,990	<500	21.0a	18.14	13.07	5.07	1.0
VW/MW-4	03/07/2000	NA	NA	NA	NA	NA	NA	NA	18.13	7.82	10.31	0.9
VW/MW-4	04/17/2000	NA	NA	NA	NA	NA	NA	NA	18.13	9.18	8.95	1.4/1.9
VW/MW-4	04/18/2000	757	103	8.59	30.8	84.2	<25.0	NA	18.13	NA	NA	NA
VW/MW-4	09/21/2000	NA	NA	NA	NA	NA	NA	NA	18.13	12.18	5.95	5.0
VW/MW-4	10/17/2000	8,360	2,060	391	468	1,170	147	NA	18.13	12.03	6.10	0.7/0.8
VW/MW-4	01/09/2001	NA	NA	NA	NA	NA	NA	NA	18.13	12.42	5.71	0.9
VW/MW-4	04/27/2001	7,100	2,300	50	460	250	NA	<10	18.13	10.13	8.00	1.0/1.4
VW/MW-4	07/03/2001	NA	NA	NA	NA	NA	NA	NA	18.13	11.42	6.71	1.2
VW/MW-4	12/06/2001	7,700	750	90	300	350	NA	<25	18.13	11.02	7.11	2.5/1.9
VW/MW-4	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.13**	**8.89**	**9.24**	**0.4**
VW/AS-1	03/25/1996	NA	NA	NA	NA	NA	NA	NA	18.60	8.98	9.62	NA
VW/AS-1	06/21/1996	NA	NA	NA	NA	NA	NA	NA	18.60	10.95	7.65	NA
VW/AS-1	09/26/1996	NA	NA	NA	NA	NA	NA	NA	18.60	12.98	5.62	NA
VW/AS-1	12/19/1996	NA	NA	NA	NA	NA	NA	NA	18.60	12.67	5.93	NA
VW/AS-1	03/25/1997	NA	NA	NA	NA	NA	NA	NA	18.60	10.12	8.48	NA

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
VW/AS-1	06/26/1997	NA	NA	NA	NA	NA	NA	NA	18.60	12.34	6.26	NA
VW/AS-1	09/26/1997	NA	NA	NA	NA	NA	NA	NA	18.60	13.40	5.20	NA
VW/AS-1	12/05/1997	NA	NA	NA	NA	NA	NA	NA	18.60	11.96	6.64	5.2
VW/AS-1	02/19/1998	NA	NA	NA	NA	NA	NA	NA	18.60	6.22	12.38	1.3
VW/AS-1	06/08/1998	NA	NA	NA	NA	NA	NA	NA	18.60	6.20	12.40	1.0
VW/AS-1	08/25/1998	NA	NA	NA	NA	NA	NA	NA	18.60	11.59	7.01	1.6
VW/AS-1	12/28/1998	NA	NA	NA	NA	NA	NA	NA	18.60	11.74	6.86	1.3
VW/AS-1	03/26/1999	NA	NA	NA	NA	NA	NA	NA	18.60	9.20	9.40	1.3
VW/AS-1	06/30/1999	NA	NA	NA	NA	NA	NA	NA	18.60	11.08	7.52	2.1
VW/AS-1	09/30/1999	NA	NA	NA	NA	NA	NA	NA	18.60	11.94	6.66	1.9
VW/AS-1	12/27/1999	8,940	2,000	95.7	1,200	570	606	NA	18.60	11.01	7.59	1.6/1.8
VW/AS-1	03/07/2000	NA	NA	NA	NA	NA	NA	NA	18.59	7.35	11.24	NA
VW/AS-1	04/17/2000	NA	NA	NA	NA	NA	NA	NA	18.59	9.08	9.51	1.9/2.0
VW/AS-1	04/18/2000	20,800	6,550	1,220	2,270	1,720	<250	NA	18.59	NA	NA	NA
VW/AS-1	09/21/2000	NA	NA	NA	NA	NA	NA	NA	18.59	11.98	6.61	2.1
VW/AS-1	10/17/2000	38,400	7,240	5,980	1,960	5,730	534	72.4	18.59	12.62	5.97	2.5/1.0
VW/AS-1	01/09/2001	NA	NA	NA	NA	NA	NA	NA	18.59	13.03	5.56	1.9
VW/AS-1	04/27/2001	34,000	8,000	2,100	2,500	2,000	NA	<25	18.59	10.71	7.88	2.9/2.1
VW/AS-1	07/03/2001	NA	NA	NA	NA	NA	NA	NA	18.59	12.03	6.56	2.0
VW/AS-1	12/06/2001	6,000	990	35	820	59	NA	<25	18.59	11.63	6.96	1.2/0.8
VW/AS-1	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.59**	**9.34**	**9.25**	**0.9**
VW/AS-3	03/25/1996	NA	NA	NA	NA	NA	NA	NA	18.17	8.50	9.67	NA
VW/AS-3	06/21/1996	NA	NA	NA	NA	NA	NA	NA	18.17	10.42	7.75	NA
VW/AS-3	09/26/1996	NA	NA	NA	NA	NA	NA	NA	18.17	12.49	5.68	NA
VW/AS-3	12/19/1996	NA	NA	NA	NA	NA	NA	NA	18.17	12.28	5.89	NA
VW/AS-3	03/25/1997	NA	NA	NA	NA	NA	NA	NA	18.17	9.61	8.56	NA

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
VW/AS-3	06/26/1997	NA	NA	NA	NA	NA	NA	NA	18.17	11.80	6.37	NA
VW/AS-3	09/26/1997	NA	NA	NA	NA	NA	NA	NA	18.17	12.89	5.28	NA
VW/AS-3	12/05/1997	NA	NA	NA	NA	NA	NA	NA	18.17	11.38	6.79	1.8
VW/AS-3	02/19/1998	NA	NA	NA	NA	NA	NA	NA	18.17	6.24	11.93	1.3
VW/AS-3	06/08/1998	NA	NA	NA	NA	NA	NA	NA	18.17	6.25	11.92	1.2
VW/AS-3	08/25/1998	NA	NA	NA	NA	NA	NA	NA	18.17	11.43	6.74	1.3
VW/AS-3	12/28/1998	NA	NA	NA	NA	NA	NA	NA	18.17	11.63	6.54	1.7
VW/AS-3	03/26/1999	NA	NA	NA	NA	NA	NA	NA	18.17	8.92	9.25	1.5
VW/AS-3	06/30/1999	NA	NA	NA	NA	NA	NA	NA	18.17	10.71	7.46	2.5
VW/AS-3	09/30/1999	NA	NA	NA	NA	NA	NA	NA	18.17	11.78	6.39	1.5
VW/AS-3	12/27/1999	488	47.9	2.60	16.9	8.50	35.4	NA	18.17	12.57	5.60	1.5/2.1
VW/AS-3	03/07/2000	NA	NA	NA	NA	NA	NA	NA	18.14	4.82	13.32	NA
VW/AS-3	04/17/2000	NA	NA	NA	NA	NA	NA	NA	18.14	8.69	9.45	2.0/2.4
VW/AS-3	04/18/2000	3,110	871	<5.00	141	56.8	78.2	NA	18.14	NA	NA	NA
VW/AS-3	09/21/2000	NA	NA	NA	NA	NA	NA	NA	18.14	11.65	6.49	2.5
VW/AS-3	10/17/2000	7,730	2,700	<50.0	542	344	<250	42.1	18.14	12.13	6.01	1.6/1.0
VW/AS-3	01/09/2001	NA	NA	NA	NA	NA	NA	NA	18.14	12.51	5.63	2.2
VW/AS-3	04/27/2001	14,000	3,900	62	690	560	NA	46	18.14	10.20	7.94	2.8/1.6
VW/AS-3	07/03/2001	NA	NA	NA	NA	NA	NA	NA	18.14	11.55	6.59	2.6
VW/AS-3	12/06/2001	5,000	1,200	19	380	320	NA	<50	18.14	11.10	7.04	0.9/1.1
VW/AS-3	**01/23/2002**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**18.14**	**8.93**	**9.21**	**1.1**

WELL CONCENTRATIONS
Former Shell Service Station
1230 14th Street
Oakland, CA
Wic #204-5508-3103

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)

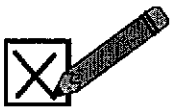
Abbreviations:
TPPH = Total petroleum hydrocarbons as gasoline by modified EPA Method 8260B; prior to April 27, 2001, analyzed by EPA Method 8015.
BTEX = benzene, toluene, ethylbenzene, xylenes by EPA Method 8260B; prior to April 27, 2001, analyzed by EPA Method 8020.
MTBE = Methyl-tertiary-butyl ether
TOC = Top of Casing Elevation
GW = Groundwater
DO = Dissolved Oxygen
NA = Not applicable
ug/L = Parts per billion
ppm = Parts per million
msl = Mean sea level
ft = Feet
<n = Below detection limit
D = Duplicate sample
n/n = Pre-purge/Post-purge DO Readings

Notes:
a = Sample was analyzed outside of the EPA recommended holding time.
Site surveyed November 1, 2001 by Virgil Chavez Land Surveying of Vallejo, California.

ATTACHMENT C

Oakland RBCA Eligibility Checklist

Oakland RBCA Eligibility Checklist



The Oakland Tier 1 RBSLs and Tier 2 SSTLs are intended to address human health and environmental concerns at the majority of small to medium-sized sites in Oakland where commonly-found contaminants are present. Large and/or complicated sites—especially those with continuing releases, special ecological concerns or unusual subsurface conditions—will likely require a Tier 3 analysis. The following checklist is designed to assist you in determining your site's eligibility for the Oakland RBCA levels.

CRITERIA	YES	NO
Source:		
Is there a continuing, *primary* source of a chemical of concern, such as a leaking container, tank or pipe? (This does *not* include secondary/residual sources.)	☐	☒
Is there any mobile or potentially-mobile free product?	☐	☒
Are there more than five chemicals of concern at the site, each of which is at a concentration greater than the lowest applicable Oakland RBCA level?	☐	☒
Pathways:		
Are there any preferential migration pathways—such as sand or gravel channels, or utility corridors—that are potential conduits for the migration, on-site or off-site, of a chemical of concern?	☐	☒
Is there a chemical of concern at the site within 20 feet of a surface water body?	☐	☒
If groundwater ingestion is *not* an exposure pathway of concern (i.e., MCLs will *not* figure in the risk analysis), does groundwater at the site both (a) exist at depths less than 10 feet *and* (b) contain volatile chemicals of concern? (If groundwater ingestion *is* an exposure pathway of concern, this criterion may be disregarded because the MCL-based Oakland RBCA levels will be protective for all potential groundwater-related exposure scenarios.)	☐	☒
Are there any existing structures, either on site or off site, that (a) are intended for future use *and* (b) are adjacent to volatile chemicals of concern *and* (c) have foundations or basement walls that are less than 15 cm (6 inches) thick (i.e., do not meet Uniform Building Code standards)?	☐	☒
Receptors:		
Are there any immediate health risks to humans (i.e., explosive levels of a chemical or vapor concentrations that could cause acute health effects) as a result of contamination at the site?	☐	☒
Are there any complete pathways to nearby ecological receptors, such as endangered species, wildlife refuge areas, wetlands or protected areas?	☐	☒

If you answer "no" to all questions, your site is eligible for the Oakland RBCA levels. If you answer "yes" to any of the questions, your site is *not* eligible for the Oakland Tier 1 or Tier 2 RBCA levels.

ATTACHMENT D

Oakland RBCA RBSLs for Sandy Silt and

Representative Concentration Calculations

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration					
	in Groundwater		in Surface Soil		in Subsurface Soil	
	value (mg/L)	note	value (mg/kg)	note	value (mg/kg)	note
Benzene	9.5E-1	UCL	5.7E-1	mean	1.6E-1	UCL
Ethylbenzene	2.5E-1	UCL	4.9E-1	mean	2.4E-1	UCL
Toluene	5.9E-2	UCL	9.7E-3	mean	2.9E-1	UCL
Xylene (mixed isomers)	1.9E-1	UCL	3.1E+0	mean	1.2E+0	UCL

Site Name: Inactive Service Station
Site Location: 1230 14th Street, Oakland

Completed By: Melody Munz
Date Completed: 3/5/2002

Site Name: Inactive Service Station
Site Location: 1230 14th Street, Oakland

Completed By: Melody Munz
Date Completed: 3/5/2002

TIER 2 GROUNDWATER CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/L)	No. of Samples	No. of Detects	Maximum Conc. (mg/L)	Mean Conc. (mg/L)	UCL on Mean Conc. (mg/L)
71-43-2	Benzene	[illegible]	15	15	8.0E+00	3.6E-01	9.5E-01
100-41-4	Ethylbenzene	[illegible]	15	15	2.5E+00	1.0E-01	2.5E-01
108-88-3	Toluene	[illegible]	15	14	2.1E+00	2.3E-02	5.9E-02
1330-20-7	Xylene (mixed isomers)	[illegible]	15	14	3.0E+00	8.0E-02	1.9E-01

SCREEN 7.1
GROUNDWATER CONCENTRATION CALCULATOR

Choose UCL Percentile

[redacted]

Analytical Data (Up to 50 Data Points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Well Name	[redacted]	MW-5	MW-6	MW-7	VW/MW-2	VW/MW-4	VW/AS-1	VW/AS-2	EP-1	EP-3	MW-8	VW/MW-2	VW/MW-4	VW/AS-1	VW/AS-3
Date Sampled	[redacted]	12/6/01	12/6/01	12/6/01	12/6/01	12/6/01	12/6/01	12/6/01	12/6/01	12/6/01	[redacted]	12/27/01	12/27/01	12/27/01	12/27/01
B	[redacted]	[redacted]	0.0057	[redacted]	0.0017	0.75	[redacted]	[redacted]	[redacted]	[redacted]	0.65	0.0057	[redacted]	[redacted]	[redacted]
E	[redacted]	[redacted]	0.0015	0.0682	0.0018	[redacted]	0.62	[redacted]	0.060	0.66	0.058	0.0027	0.46	[redacted]	[redacted]
T	[redacted]	[redacted]	0.0038	0.020	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	0.028	0.0025	[redacted]	[redacted]	[redacted]
X	[redacted]	[redacted]	0.0072	[redacted]	0.0048	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Calculated Distribution of Data	Default Detection Limit (mg/L)
Lognormal	0.05
Lognormal	0.0005
Lognormal	0.0005
Lognormal	0.0005

Site Name: Inactive Service Station
Site Location: 1230 14th Street, Oakland

Completed By: Melody Munz
Date Completed: 3/5/2002

TIER 2 SURFACE SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
71-43-2	Benzene	[illegible]	2	2	3.0E+01	~~5.7E-01~~ 1.5 ~~E-1~~	N/A
100-41-4	Ethylbenzene	[illegible]	2	2	3.3E+01	4.9E-01	N/A
108-88-3	Toluene	[illegible]	2	1	3.8E-02	9.7E-03	N/A
1330-20-7	Xylene (mixed isomers)	[illegible]	2	2	2.3E+02	3.1E+00	N/A

SCREEN 7.2
SURFACE SOILS
CONCENTRATION
CALCULATOR

UCL Percentile

90%

Analytical Data (Up to 50 Data Points)

	1	2	3	4	5
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Sample Name					
Date Sampled					
B					
E					
T					
X					

Calculated Distribution of Data	Default Detection Limit (mg/kg)
Lognormal	0.005
Lognormal	0.005
Lognormal	0.005
Lognormal	0.005

Site Name: Inactive Service Station
Site Location: 1230 14th Street, Oakland

Completed By: Melody Munz
Date Completed: 3/5/2002

TIER 2 SUBSURFACE SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
71-43-2	Benzene	[illegible]	13	12	1.8E+01	5.9E-02	1.6E-01
100-41-4	Ethylbenzene	[illegible]	13	8	3.5E+01	6.1E-02	2.4E-01
108-88-3	Toluene	[illegible]	13	8	9.8E+01	6.7E-02	2.9E-01
1330-20-7	Xylene (mixed isomers)	[illegible]	13	11	1.9E+02	2.9E-01	1.2E+00

SCREEN 7.3 SUBSURFACE SOILS CONCENTRATION CALCULATOR

UCL Percentile

90%

Analytical Data (Up to 50 Data Points)

Calculated Distribution of Data	Default Detection Limit (mg/kg)
Lognormal	0.0025
Lognormal	0.0025
Lognormal	0.0025
Lognormal	0.0025

	1	2	3	4	5	6	7	8	9
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Sample Name	WAS-1	MW-2	WAS-4-4	SB-1-5	SB-1-10.5	SB-2-5	MW-4	SB-3-6	SB-3-10.5
Date Sampled	3/7/96	3/7/96	3/7/96	2/21/91	2/21/91	2/21/91	3/6/96	2/21/91	2/21/91
B	0.97	0.0032	0.016	0.014	[illegible]	<10	0.14	0.038	16
E	14	<.0025	<.0025	0.22	0.13	<10	[illegible]	0.015	35
T	12	<.0025	<.0025	0.67	65	<10	0.36	0.0054	[illegible]
X	8	<.0025	0.014	12	0.68	0.034	[illegible]	0.034	190

Oakland RBSLs
Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Benzene	Ethyl-benzene	Toluene	Xylenes
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.7E+01			
			Hazard	8.2E+01	5.1E+03	9.0E+03	5.6E+04
		Commercial/ Industrial	Carcinogenic	8.5E+01			
			Hazard	5.2E+02	3.3E+04	5.6E+04	3.1E+05
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	2.0E+01			
			Hazard	8.0E+01	SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic	7.7E+01			
			Hazard	4.7E+02	SAT	SAT	SAT
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.1E+00			
			Hazard	3.6E+00	SAT	5.7E+02	SAT
		Commercial/ Industrial	Carcinogenic	1.7E+01			
			Hazard	1.1E+02	SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*6.5E-03*	*2.4E+01*	*2.7E+00*	*4.0E+01*
			Hazard	*6.5E-03*	*2.4E+01*	*2.7E+00*	*4.0E+01*
		Commercial/ Industrial	Carcinogenic	6.5E-03	*2.4E+01*	*2.7E+00*	*4.0E+01*
			Hazard	*6.5E-03*	*2.4E+01*	*2.7E+00*	*4.0E+01*
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.5E-01*	*1.8E+00*
		Commercial/ Industrial	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.5E-01*	*1.8E+00*
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	3.4E+00			
			Hazard	1.1E+01	>Sol	>Sol	>Sol
		Commercial/ Industrial	Carcinogenic	5.3E+01			
			Hazard	3.2E+02	>Sol	>Sol	>Sol
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	1.0E+03			
			Hazard	>Sol	>Sol	>Sol	>Sol
		Commercial/ Industrial	Carcinogenic	>Sol			
			Hazard	>Sol	>Sol	>Sol	>Sol
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	6.3E-02			
			Hazard	1.8E-01	3.6E+00	1.1E+01	6.6E+01

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

Source: Excerpt from *Oakland RBCA Spreadsheet.xls,* based on **Oakland Risk-Based Corrective Action: Technical Background Document,** May 17, 1999: City of Oakland Environmental Services Division, 250 Frank H. Ogawa Plaza, Suite 5301, Oakland, CA 94612.