CONESTOGA-ROVERS & ASSOCIATES

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www.CRAworld.com

TRANSMITTAL

DATE: November 11, 2009

REFERENCE NO.: 060119

PROJECT NAME: 2350 (2368) Harrison Street, Oakland

TO: Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

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1:33 pm, Nov 13, 2009
Alameda County
Environmental Health

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QUANTITY	DESCRIPTION
1	Survey of Potential Off-Site Sources and Subsurface Investigation Work Plan Addendum

- ☐ As Requested
- ☐ For Your Use
- ☒ For Review and Comment
- ☐
- ☐

COMMENTS:
If you have any questions regarding the contents of this document, please call Peter Schaefer at (510) 420-3319.

Copy to: Denis Brown, Shell Oil Products US, 20945 S. Wilmington Avenue, Carson, CA 90810
Richard Burge, 490 Grand Avenue, Suite 100, Oakland, CA 94610

Completed by: Peter Schaefer Signed:

Filing: **Correspondence File**

Denis L. Brown
Shell Oil Products US
HSE - Environmental Services
20945 S. Wilmington Ave.
Carson, CA 90810-1039
Tel (707) 865 0251
Fax (707) 865 2542
Email denis.l.brown@shell.com

Mr. Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Former Shell Service Station
2350 (2368) Harrison Street
Oakland, California
SAP Code. 173318
Incident No. 97743969
ACEH No. RO0000505

Dear Mr. Wickham:

The attached document is provided for your review and comment. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

As always, please feel free to contact me directly at (707) 865-0251 with any questions or concerns.

Sincerely,

Denis L. Brown
Project Manager

SURVEY OF POTENTIAL OFF-SITE SOURCES AND SUBSURFACE INVESTIGATION WORK PLAN ADDENDUM

FORMER SHELL SERVICE STATION
2350 (2368) HARRISON STREET
OAKLAND, CALIFORNIA

SAP CODE	173318
INCIDENT NO.	97743969
AGENCY NO.	RO0000505

Prepared by:
Conestoga-Rovers & Associates

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NOVEMBER 11, 2009
REF. NO. 060119 (11)
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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this report and work plan addendum on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell). Alameda County Environmental Health's (ACEH's) August 12, 2009 letter requested additional investigation total petroleum hydrocarbons as motor oil (TPHmo) and oil and grease (O&G) in soil in the vicinity of the former hydraulic lifts and additional groundwater investigation in the area south of the site. This document includes a review of potential off-site sources of groundwater impacts, which was used to develop the scope of the additional investigation proposed herein as an addendum to CRA's November 12, 2008 work plan. In addition, CRA recapitulates our proposal for additional soil vapor investigation presented in our August 12, 2009 *Soil Vapor Probe Sampling Report* and presents a proposal for alternative site-specific soil vapor screening levels below.

The subject property is a former Shell service station located on the southern corner of the Harrison Street and Bay Place intersection in Oakland, California (Figure 1). The former station, whose address was 2368 Harrison Street, included underground fuel storage tanks (USTs), a waste oil tank, three dispenser islands, and a station building (Figure 2). The site is currently occupied by a 7-Eleven Store, whose address is 2350 Harrison Street, and the area surrounding the station is predominantly a mix of commercial and residential use (Figures 2 and 3). Glen Echo Creek runs in an underground culvert along Harrison Street and flows into a concrete-lined channel approximately 280 feet south of the site. The creek then flows into Lake Merritt which is approximately 650 feet south of the site.

Site history and other background information was presented in CRA's June 26, 2009 *Subsurface Investigation Report* and is not repeated herein.

2.0 SURVEY OF POTENTIAL OFF-SITE SOURCES

ACEH's August 12, 2009 letter requested additional groundwater investigation in the area south of the site. Due to initial investigation results which showed groundwater concentrations of total petroleum hydrocarbons as diesel (TPHd) and O&G increasing with distance south of the site, CRA believes that a more extensive investigation of off-site conditions is warranted. CRA conducted a survey of ACEH files to determine if there were other potential off-site sources of these impacts and requested a report from Environmental Data Resources, Inc. (EDR) to help identify potential sources not included in ACEH's records. Due to the size of the EDR report, it is not included herein. CRA will provide a copy of the EDR report to ACEH upon request. The review

identified three sites with current or former leaking underground storage tank (LUST) cases and three historical gasoline stations within 500 feet of the site. The locations of these sites are shown on Figure 3. In addition, ACEH files indicate that hydrocarbon residues are present below and around the Glen Echo Creek culvert approximately 1,500 feet upstream from the site, so the creek is likely impacted before it reaches the site.

2.1 UST LEAK CASES

A review of ACEH files located six current or former LUST cases within 1/8 mile of the subject site. The following three current or former LUST cases are located within 500 feet of the site.

- 230 Bay Place: Former Bill Cox Cadillac dealership. This site is now Whole Foods Market. The former dealership layout included a fuel UST complex and a mineral spirits UST. The fuel UST complex had documented releases and is currently an open LUST case. During the first quarter of 2009, up to 7,900 micrograms per liter (µg/l) of methyl tertiary-butyl ether (MTBE) and 1,200 µg/l TPHd were detected in groundwater samples. Groundwater flow direction was generally southerly to southwesterly during this event.
- 2332 Harrison Street: Lake Merritt Lodge (currently the Merritt Hotel). A 1,500-gallon heating oil tank with numerous holes was removed from the site on August 11, 1993. An initial water sample collected from the tank excavation contained a concentration of 6,640 µg/l TPHd with no benzene, toluene, ethylbenzene, or xylenes (BTEX). Approximately 14,000 gallons of groundwater and 45 cubic yards of soil were removed from the tank excavation. A subsequent groundwater sample contained 4,118 µg/l TPHd and 11 µg/l xylenes. Sidewall soil samples contained concentrations up to 9.11 milligrams per kilogram (mg/kg) TPHd. The LUST case is closed.
- 255 27th Street: Oakland Acura dealership. A leaking 100-gallon waste oil UST impacted an adjacent culvert. Approximately 7,000 gallons of groundwater and 40 cubic yards of soil were removed from the tank excavation and culvert. An initial water sample collected from the tank excavation contained 14,000 µg/l TPHd and 98,000 µg/l O&G. The LUST case is closed.

2.2 HISTORICAL GASOLINE STATIONS

EDR's October 7, 2009 report identified five former gasoline stations within 1/8 mile of the site. The following three former gasoline stations were located within 500 feet of the site.

- 140 Bay Place: L. B. Graham (1943) – Gasoline and oil service station.
- 250 24th Street: G. F. Lundgren (1943) – Gasoline and oil service station.
- 251 24th Street: Fancher-MacDonald (1925) – Auto repair, E. M. Carlson (1925) – Auto repair, Owl Super Service Station (1925 and 1928) – Gasoline and oil service station, and Dempsey & Sanders (1943) – Gasoline and oil service station.

3.0 TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL AND OIL AND GREASE IN SOIL

ACEH's August 12, 2009 letter stated that soil sampling results from boring B-4 did not eliminate the former hydraulic lifts as a source of TPHmo and O&G in soils and requested additional soil investigation in the area adjacent to the former lift locations. During CRA's May 2009 soil investigation, a proposed soil boring east of the 7-Eleven building could not be advanced because of safety concerns due to the encroachment of underground utilities in the entire area west of the 7-Eleven building and south of well S-5. Due to these safety concerns, no additional soil borings are proposed in this area. Based on the non-detect or near non-detect concentrations found in sample #3 (Figure 2 and Table 1) analyzed by GTEL environmental laboratories in 1993 and lower concentrations detected in soil samples from soil boring B-4 and well boring S-4, the extent of TPHmo and O&G appears to be adequately delineated to the north of the 7-Eleven building. With the building present and encroaching underground utilities to the east of the building, no further investigation is feasible in this area and no additional borings are proposed at this time.

4.0 WORK PLAN ADDENDUM

This addendum proposes the following additions to the off-site investigation proposed in CRA's November 12, 2008 work plan. Borings HP-1 and HP-2 were completed in May 2009 and the results were reported in CRA's June 26, 2009 *Subsurface Investigation Report.*

4.1 ACCESS AGREEMENTS

On behalf of Shell, CRA will obtain an access agreement from the City of Oakland for the Oakland Senior Center property and from the property owner of the parking lot located on Bay Place south of Rouse Tire and east of the Merritt Hotel.

4.2 SUBSURFACE INVESTIGATION

4.2.1 OFF-SITE SOIL BORINGS

CRA proposes to drill and sample nine borings (B-5 through B-13, Figure 3) using a Geoprobe rig to 15 feet below grade (fbg).

A CRA geologist will supervise the drilling and describe encountered soils using the Unified Soil Classification System and Munsell Soil Color Charts. After clearing each of the soil borings to a depth of 5 fbg with an air/water-knife, the borings will be continuously sampled from 5 to 7 fbg for soil description and petroleum vapor screening using a photoionization detector (PID). Soil samples selected for chemical analysis will be retained in 6-inch sections of plastic Geoprobe sample tubing, covered on both ends with Teflon sheets and plastic end caps, labeled, entered onto a Chain-of-Custody record (COC), and placed into a cooler with ice for transport to a State of California-certified laboratory for analysis. CRA will collect grab groundwater samples at first-encountered groundwater (7 to 10 fbg) using Hydropunch sampling equipment or a temporary casing and Teflon bailer. Samples will be transferred into vials containing hydrochloric acid preservative and unpreserved amber glass jars with no headspace. The samples will be labeled, entered onto a COC, and placed into a cooler with ice for transport to a California-certified laboratory for analysis. CRA will prepare a boring log for each boring, and PID measurements will be recorded on the boring log.

Soil and groundwater samples will be analyzed for O&G by EPA Method 418.1, TPHd by EPA Method 8015 (modified), and total petroleum hydrocarbons as gasoline (TPHg), BTEX, MTBE, di-isopropyl ether, ethyl tertiary-butyl ether, tertiary-amyl methyl ether, and tertiary-butyl alcohol by EPA Method 8260B.

4.2.2 SOIL VAPOR INVESTIGATION

CRA's August 12, 2009 *Soil Vapor Probe Sampling Report* recommended installing and sampling additional soil vapor probes at depths of 1 and 2.5 fbg adjacent to SVP-2 to

evaluate vertical attenuation of benzene and ethylbenzene in soil vapor. Due to Alameda County Public Works Agency's minimum requirements for surface seals in soil vapor probe installation, CRA proposes to modify this plan and install a single probe at 1.75 fbg. In addition, CRA proposes to re-sample the three existing soil vapor probes (SVP-1, SVP-2, and SVP-3). At least 1 week following probe installation, soil vapor samples will be collected in Tedlar® bags and analyzed for BTEX by EPA Method 8260B and for helium by ASTM D Method 1946 (M).

4.3 PROPOSAL OF ALTERNATIVE SCREENING LEVELS FOR SOIL VAPOR INTRUSION TO INDOOR AIR

CRA proposes alternative site-specific soil vapor screening levels based on San Francisco Bay Regional Water Quality Control Board's (RWQCB's) *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, Interim Final November 2007 (Revised May 2008). The RWQCB document provides Tier 1 environmental screening levels (ESLs) and states that alternative screening levels may be appropriate for some sites. Alternative screening levels may be calculated by replacing targeted components of the Tier 1 ESLs as appropriate to reflect site conditions or alternative risk assumptions (Section 3.1 of the ESL document referenced above). The following equation is used to derive appropriate alternative screening levels using the Tier 1 residential indoor air ESL as a starting point.

$$ESL_{res} \times \frac{TR_{com}}{TR_{res}} \times \frac{Exposure_{res}}{Exposure_{com}} \times 1/\alpha_{soil\ vapor\ to\ commercial\ indoor\ air} = SG_{alt}$$

where:

- ESL_{res} = ESL for indoor air in a residential setting (Table E).
- TR_{com} = Target risk for commercial/industrial settings of one cancer per 100,000 workers (RWQCB used a default target risk of 10^{-6} in calculating Tier 1 soil gas ESLs, however a 10^{-5} target risk is used by RWQCB in calculating commercial and construction worker soil ESLs [Section 6.2]) = 10^{-5}.

- TR_{res} = Target risk for residential settings of one cancer per 1,000,000 residents (default value per the ESL document and the United States Environmental Protection Agency [USEPA][1]) = 10^{-6}.
- $Exposure_{com}$ = Commercial worker exposure, assumes 250 days per year x 10 hours/day x 25 years = 62,500 exposure hours (per ESL document, Section 6.2 with the exception of 10 hours/day, which is chosen as a conservative site-specific estimate for exposure of workers).
- $Exposure_{res}$ = Residential exposure, assumes 350 days per year x 24 hours/day x 30 years = 252,000 exposure hours (per ESL document, Section 6.1.1).
- $\alpha_{soil\ vapor\ to\ commercial\ indoor\ air}$ = Attenuation factor = 0.0005 (per ESL document, Section 7.2 and Table E-1).
- SG_{alt} = Alternative site-specific soil gas screening level for vapor intrusion to indoor air.

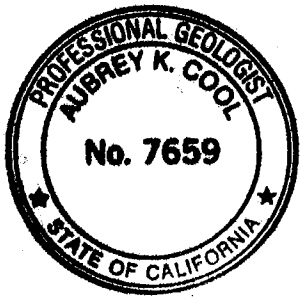
Constituent of Concern	*RWQCB Residential Indoor Air ESL: Table E ($\mu g/m^3$)*	*Proposed Alternative Site-Specific Soil Vapor Screening Level ($\mu g/m^3$)*
Benzene	8.4E-02	6.8E+03
Ethylbenzene	9.8E-01	7.9E+04
Toluene	6.3E+01	5.1E+06
Xylenes	2.1E+01	1.7E+06
TPHg/TPHd	1.0E+01	8.1E+05

1 Default value per ESL document footnotes to Tables E-1 through E-4, and per USEPA, *Users Guide for Evaluating Subsurface Vapor Intrusion into Buildings*, revised February 2004, page 56.

All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

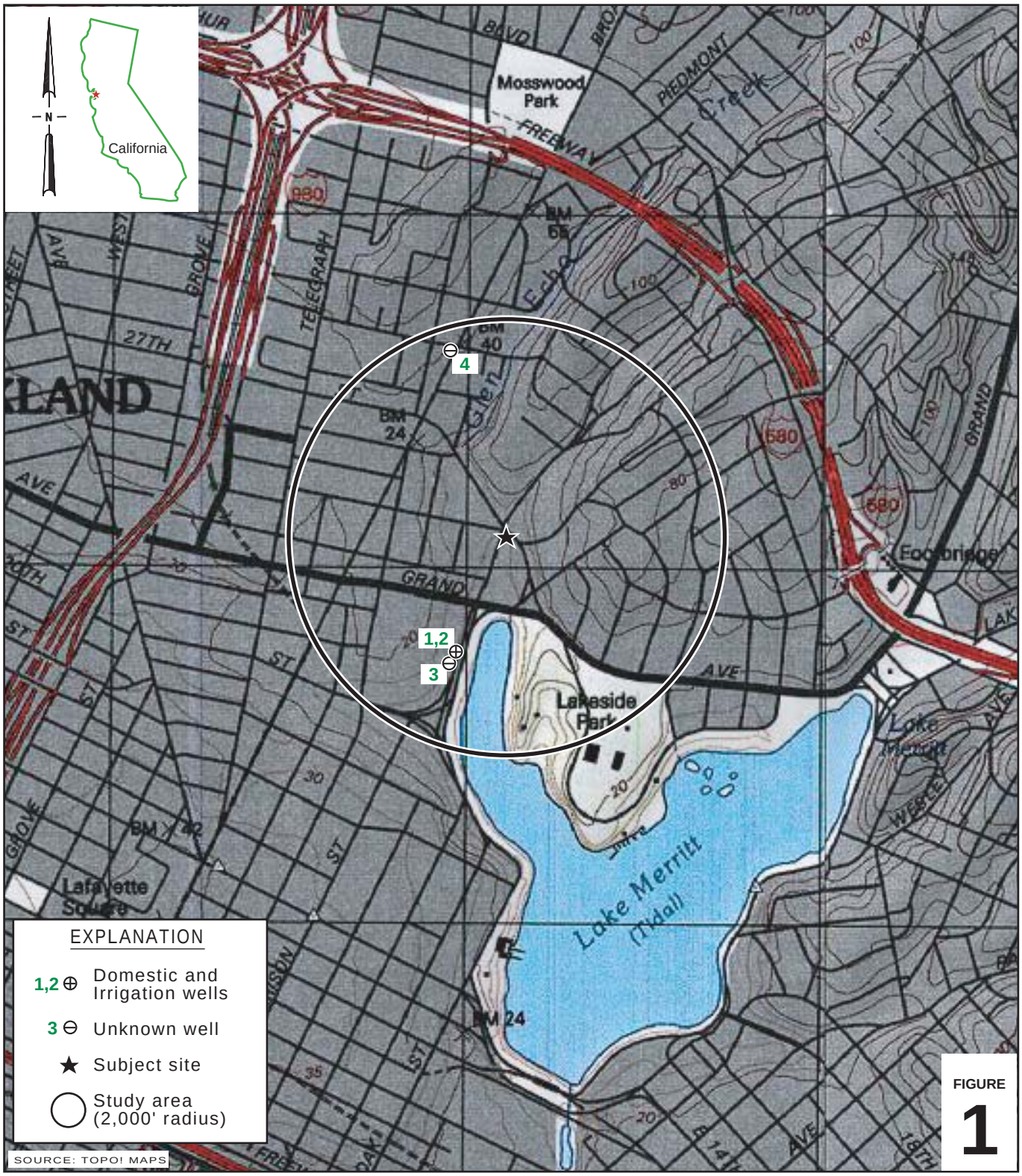
Peter Schaefer, CEG, CHG

Aubrey K. Cool, PG



FIGURES

10/31/08



I:\Shell\6-chars\0601-\060119-Oakland 2350 Harrison St\060119-FIGURES\060119 VICINITY.AI

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

FIGURE 1

Former Shell Service Station

2350 (2368) Harrison Street

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map

11/05/09

Soil Concentrations Map

EXPLANATION

- #1 — Soil sample location (GTE, 1993)
- B-1 — Soil boring location (CRA, 2009)
- Soil boring location, abandoned after 2' due to utility conflict (CRA, 2009)
- SVP-1 — Soil vapor probe location (CRA, 2009)
- HP-1 — Hydropunch location (CRA, 2009)
- S-1 — Monitoring well location
- Storm drain (STM)
- Sanitary sewer line (SAN)
- Water line (W)
- Electrical line (E)
- Gas line (G)
- Telecommunications line (T)
- Unknown utility line, indicated by private utility locator

Sample ID	Sample Date	Depth (fbg)	TPHd	TPHmo	O&G
B-4-5.5'	5/20/2009	5.5	**200**	230	190
B-4-10'	5/20/2009	10	170	140	68
B-4-15'	5/20/2009	15	10	<25	<10

Soil sample ID, date, and depth in feet below grade (fbg) and sample results, in milligrams per kilogram.

Notes:
fbg = Feet below grade
LUST = Leaking Underground Storage Tank
UNK = Unknown
<X = Not detected at reporting limit X

Approximate location of underground culvert/storm drain based on "Creek & Watershed Map of Oakland & Berkeley" (Sowers, 2000)

0 10 20 40
Scale (ft)

Sample ID	Sample Date	Depth (fbg)	TPHg	TPHd	Benzene	O&G
B-3-5.5'	5/21/2009	5.5	56	6.4	**2.4**	38
B-3-10'	5/21/2009	10	**920**	44	<2.5	230
B-3-15'	5/21/2009	15	2.1	<5.0	<0.0050	<10

Sample ID	Sample Date	Depth (fbg)	TPHd	TPHmo	O&G
#1	3/4/1993	UNK	<10	<100	10

Sample ID	Sample Date	Depth (fbg)	TPHg	TPHd	TPHmo	O&G	Benzene
S-3-5	6/4/2008	5	5.9	22	<25	<10	<0.0050
S-3-10	6/4/2008	10	<0.50	11	<25	<10	<0.0050

Sample ID	Sample Date	Depth (fbg)	TPHg	TPHd	TPHmo	O&G	Benzene
S-2-5.5	6/5/2008	5.5	<0.50	13	<25	<10	<0.0050
S-2-7.0	6/5/2008	7	**2,700**	**270**	<25	26	<0.50
S-2-10.0	6/5/2008	10	**1,900**	150	<25	<10	<1.2
S-2-15.5	6/5/2008	15.5	18	14	<25	22	<0.0050

Sample ID	Sample Date	Depth (fbg)	TPHg	TPHd	TPHmo	O&G	Benzene
S-6-6.0	6/5/2008	6	9.2	53	85	140	<0.0050
S-6-7.5	6/5/2008	7.5	12	39	44	24	<0.0050

Sample ID	Sample Date	Depth (fbg)	TPHd	TPHmo	O&G
#2	3/4/1993	UNK	<10	<100	22

Sample ID	Sample Date	Depth (fbg)	TPHg	TPHd	TPHmo	O&G	Benzene
S-4-5	6/4/2008	5	6.8	**360**	660	600	0.012
S-4-10	6/4/2008	10	<0.50	41	54	28	<0.0050

Sample ID	Sample Date	Depth (fbg)	TPHd	TPHmo	O&G
#3	3/4/1993	UNK	<10	<100	64

Sample ID	Sample Date	Depth (fbg)	TPHd	TPHmo	O&G
#4	3/4/1993	UNK	<100	7,900	5,000

Sample ID	Sample Date	Depth (fbg)	TPHg	TPHd	TPHmo	O&G	Benzene
S-5-6.0	6/5/2008	6	**2,300**	**22,000**	23,000	8,600	0.016
S-5-9.0	6/5/2008	9	<0.50	42	49	<10	<0.0050
S-5-12.5	6/5/2008	12.5	<0.50	8.7	<25	<10	<0.0050
S-5-15.5	6/5/2008	15.5	<0.50	25	37	<10	<0.0050

Sample ID	Sample Date	Depth (fbg)	TPHd	TPHmo	O&G
B-1-5.5'	5/20/2009	5.5	100	**700**	<0.50	3,000
B-1-7'	5/20/2009	7	**230**	**510**	<10	290
B-1-10'	5/20/2009	10	170	81	<0.50	<10
B-1-13'	5/20/2009	13	160	89	<0.50	11
B-1-15'	5/20/2009	15	**180**	100	<0.50	<10

Sample ID	Sample Date	Depth (fbg)	TPHg	TPHd	Benzene	O&G
B-2-5.5'	5/21/2009	5.5	64	<5.0	**1.5**	40
B-2-7'	5/21/2009	7	2.8	**190**	<0.0050	600
B-2-10'	5/21/2009	10	**870**	39	<2.0	<10
B-2-15'	5/21/2009	15	**200**	5.2	<0.50	24

Sample ID	Sample Date	Depth (fbg)	TPHd	TPHmo	O&G
B-4-5.5'	5/20/2009	5.5	**200**	230	190
B-4-10'	5/20/2009	10	170	140	68
B-4-15'	5/20/2009	15	10	<25	<10

Sample ID	Sample Date	Depth (fbg)	TPHg	TPHd	TPHmo	O&G	Benzene
S-1-5.5	6/5/2008	5.5	5.4	21	26	<10	<0.0050
S-1-7.5	6/5/2008	7.5	860	120	99	130	<0.0050

HARRISON STREET
BAY PLACE
Median
Light (typ.)
Planter
Sign
Light Pole
Driveway
Former Dispenser Islands
Former Shell Station
2368 Harrison St.
Former Dispenser Island
Underground Culvert & Storm Drain (Approx.)
Former USTs
Sidewalk
Former Waste Oil UST
Former Station Building
7-11 Store Building
2350 Harrison St.
Former Tire/Wheel Hoist
Former Drive-on
Lamp Post
Fenced Enclosure
SAN
STM

#1 #2 #3 #4
S-1 S-2 S-3 S-4 S-5 S-6
B-1 B-2 B-3 B-4
SVP-1 SVP-2 SVP-3

I:\Shell\6-chars\0601--\060119-Oakland 2350 Harrison St\060119-FIGURES\060119 SITE PLAN (SOIL DATA, F2).DWG

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Former Shell Service Station
2350 (2368) Harrison Street
Oakland, California

FIGURE
2

11/10/09

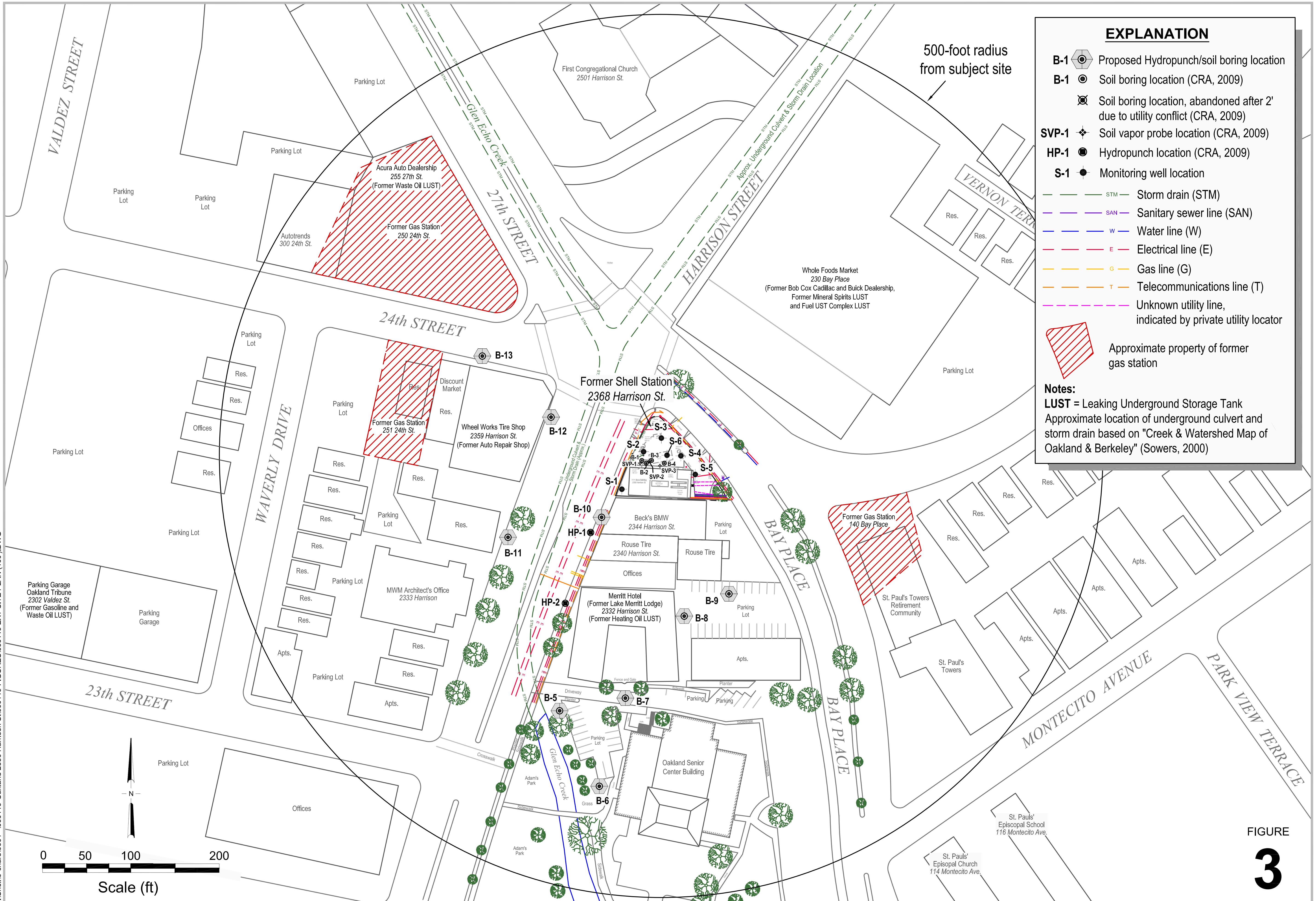
EXPLANATION
B-1 Proposed Hydropunch/soil boring location
B-1 Soil boring location (CRA, 2009)
Soil boring location, abandoned after 2' due to utility conflict (CRA, 2009)
SVP-1 Soil vapor probe location (CRA, 2009)
HP-1 Hydropunch location (CRA, 2009)
S-1 Monitoring well location
Storm drain (STM)
Sanitary sewer line (SAN)
Water line (W)
Electrical line (E)
Gas line (G)
Telecommunications line (T)
Unknown utility line, indicated by private utility locator
Approximate property of former gas station
Notes:
LUST = Leaking Underground Storage Tank
Approximate location of underground culvert and storm drain based on "Creek & Watershed Map of Oakland & Berkeley" (Sowers, 2000)
500-foot radius from subject site
Former Shell Station
2368 Harrison St.
VALDEZ STREET
27th STREET
24th STREET
23rd STREET
WAVERLY DRIVE
HARRISON STREET
BAY PLACE
VERNON TERR
MONTECITO AVENUE
PARK VIEW TERRACE
Glen Echo Creek
Approx. Underground Culvert & Storm Drain Location
First Congregational Church
2501 Harrison St.
Acura Auto Dealership
255 27th St.
(Former Waste Oil LUST)
Former Gas Station
250 24th St.
Autotrends
300 24th St.
Whole Foods Market
230 Bay Place
(Former Bob Cox Cadillac and Buick Dealership, Former Mineral Spirits LUST and Fuel UST Complex LUST
Former Gas Station
251 24th St.
Discount Market
Wheel Works Tire Shop
2359 Harrison St.
(Former Auto Repair Shop)
Beck's BMW
2344 Harrison St.
Rouse Tire
2340 Harrison St.
Rouse Tire
Offices
Merritt Hotel
(Former Lake Merritt Lodge)
2332 Harrison St.
(Former Heating Oil LUST)
MWM Architect's Office
2333 Harrison
Parking Garage
Oakland Tribune
2302 Valdez St.
(Former Gasoline and Waste Oil LUST)
Parking Garage
Former Gas Station
140 Bay Place
St. Paul's Towers Retirement Community
St. Paul's Towers
Oakland Senior Center Building
St. Pauls' Episcopal School
116 Montecito Ave.
St. Pauls' Episcopal Church
114 Montecito Ave.
Adam's Park
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
HP-1
HP-2
S-1
S-2
S-3
S-4
S-5
S-6
SVP-1
SVP-2
SVP-3
0
50
100
200
Scale (ft)
N

FIGURE
3

Extended Site Plan

Former Shell Service Station

2350 (2368) Harrison Street
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

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TABLE

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
FORMER SHELL SERVICE STATION
2350 (2368) HARRISON STREET, OAKLAND, CALIFORNIA

Sample ID	Date	Depth (fbg)	O&G	TPHg	TPHd	TPHmo	TPHms	TPHk	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Oxygenates	1,2-DCA	EDB	Cd	Cr	Pb	Ni	Zn	PCBs
#1	3/4/1993	UNK	10c	<10d	<10d	<100d	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
#2	3/4/1993	UNK	22c	220d	<10d	<100d	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
#3	3/4/1993	UNK	64c	110d	<10d	<100d	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
#4	3/4/1993	UNK	5000c	620d	<100d	7900d	<100	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-1-5.5	6/5/2008	5.5	<10	5.4	21 a	26	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-1-7.5	6/5/2008	7.5	130	860	120 a	99	NA	NA	<0.0050	<0.0050	<0.0050	0.0086	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-2-5.5	6/5/2008	5.5	<10	<0.50	13 a	<25	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	<0.500	28.9	5.40	27.2	21.7	<0.050
S-2-7.0	6/5/2008	7	26	2,700	270 a	<25	NA	NA	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	<0.500	20.2	4.80	19.8	25.1	<0.050
S-2-10.0	6/5/2008	10	<10	1,900	150 a	<25	NA	NA	<1.2	<1.2	<1.2	<1.2	ND	<1.2	<1.2	<0.500	33.0	10.8	51.5	38.6	<0.050
S-2-15.5	6/5/2008	15.5	22	18	14 a	<25	NA	NA	<0.0050	<0.0050	0.0067	0.0063	ND	<0.0050	<0.0050	<0.500	28.2	5.98	30.1	25.7	<0.050
S-3-5	6/4/2008	5	<10	5.9	22 a	<25	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-3-10	6/4/2008	10	<10	<0.50	11 a	<25	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-4-5	6/4/2008	5	600	6.8	630 a	660	NA	NA	0.012	<0.0050	<0.0050	0.012	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-4-10	6/4/2008	10	28	<0.50	41 a	54	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-5-6.0	6/5/2008	6	8,600	2,300	22,000 a	23,000	NA	NA	0.016	0.0063	0.0082	0.0485	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-5-9.0	6/5/2008	9	<10	<0.50	42 a	49	NA	NA	<0.0050	<0.0050	0.014	0.0094	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-5-12.5	6/5/2008	12.5	<10	<0.50	8.7 a	<25	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-5-15.5	6/5/2008	15.5	<10	<0.50	25 a	37	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-6-6.0	6/5/2008	6	140	9.2	53 a	85	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
S-6-7.5	6/5/2008	7.5	24	12	39 a	44	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
B-1-5.5'	5/20/2009	5.5	3,000	100	700 a	NA	NA	NA	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	NA	NA	NA	NA	NA	NA
B-1-7'	5/20/2009	7	290	230	510 a	NA	NA	NA	<10	<10	<10	<10	ND	<10	<10	NA	NA	NA	NA	NA	NA
B-1-10'	5/20/2009	10	<10	170	81 a	NA	NA	NA	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	NA	NA	NA	NA	NA	NA
B-1-13'	5/20/2009	13	11	160	89 a	NA	NA	NA	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	NA	NA	NA	NA	NA	NA

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
FORMER SHELL SERVICE STATION
2350 (2368) HARRISON STREET, OAKLAND, CALIFORNIA

Sample ID	Date	Depth (fbg)	O&G	TPHg	TPHd	TPHmo	TPHms	TPHk	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Oxygenates	1,2-DCA	EDB	Cd	Cr	Pb	Ni	Zn	PCBs
B-1-15'	5/20/2009	15	<10	180	100 a	NA	NA	NA	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	NA	NA	NA	NA	NA	NA
B-2-5.5'	5/21/2009	5.5	40	64	<5.0	NA	NA	NA	1.5	<0.50	<0.50	<0.50	ND	<0.50	<0.50	NA	NA	NA	NA	NA	NA
B-2-7'	5/21/2009	7	600	2.8	190 a	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
B-2-10'	5/21/2009	10	<10	870	39 a	NA	NA	NA	<2.0	<2.0	<2.0	<2.0	ND	<2.0	<2.0	NA	NA	NA	NA	NA	NA
B-2-15'	5/21/2009	15	24	200	5.2 a	NA	NA	NA	<0.50	<0.50	<0.50	<0.50	ND	<0.50	<0.50	NA	NA	NA	NA	NA	NA
B-3-5.5'	5/21/2009	5.5	38	56	6.4 a	NA	NA	NA	2.4	<0.50	0.87	<0.50	ND	<0.50	<0.50	NA	NA	NA	NA	NA	NA
B-3-10'	5/21/2009	10	230	920	44 a	NA	NA	NA	<2.5	<2.5	<2.5	<2.5	ND	<2.5	<2.5	NA	NA	NA	NA	NA	NA
B-3-15'	5/21/2009	15	<10	2.1	<5.0	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	ND	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA
B-4-5.5'	5/20/2009	5.5	190	NA	200 a	230	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B-4-10'	5/20/2009	10	68	NA	170 a	140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B-4-15'	5/20/2009	15	<10	NA	10	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Shallow Soil (≤10 fbg) ESL[b]:		–	180	180	–	–	–	0.27	9.3	4.7	11	Varies	0.48	0.044	7.4	–	750	150	600	0.74	
Deep Soil (>10 fbg) ESL[b]:		–	180	180	–	–	–	2.0	9.3	4.7	11	Varies	1.8	1.0	39	5,000	750	260	5,000	6.3	

Notes:

All results in milligrams per kilograms (mg/kg) unless otherwise indicated.
fbg = Feet below grade
O&G = Oil and grease as hexane extractable material analyzed by EPA Method 1664 A (Modified) unless otherwise indicated.
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8260B unless otherwise indicated.
TPHd = Total petroleum hydrocarbons as diesel analyzed by EPA Method 8015B unless otherwise indicated.
TPHmo = Total petroleum hydrocarbons as motor oil analyzed by EPA Method 8015B Modified unless otherwise indicated.
TPHms = Total petroleum hydrocarbons as mineral spirits analyzed by gas chromatograph - flame ionization detector per Test Methods for Evaluating Solid Waste, SW-846, Revision O, United States Environmental Protection Agency, November 1986
TPHk = Total petroleum hydrocarbons as kerosene analyzed by gas chromatograph - flame ionization detector per Test Methods for Evaluating Solid Waste, SW-846, Revision O, United States Environmental Protection Agency, November 1986
Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B.
Oxygenates = Methyl tertiary-butyl ether, di-isopropyl ether, ethyl tertiary-butyl ether, tertiary-amyl methyl ether, and tertiary-butanol analyzed by EPA Method 8260B
1,2-DCA = 1,2-Dichloroethane analyzed by EPA Method 8260B

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
FORMER SHELL SERVICE STATION
2350 (2368) HARRISON STREET, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*O&G*	*TPHg*	*TPHd*	*TPHmo*	*TPHms*	*TPHk*	*Benzene*	*Toluene*	*Ethyl-benzene*	*Total Xylenes*	*Oxygenates*	*1,2-DCA*	*EDB*	*Cd*	*Cr*	*Pb*	*Ni*	*Zn*	*PCBs*

EDB = 1,2-Dibromoethane analyzed by EPA Method 8260B
TRPH - Total recoverable petroleum hydrocarbons analyzed by EPA Method 418.1M
Cd = Cadmium analyzed by EPA Method 6010B
Cr = Chromium (total) analyzed by EPA Method 6010B
Pb = Lead analyzed by EPA Method 6010B
Ni = Nickel analyzed by EPA Method 6010B
Zn = Zinc analyzed by EPA Method 6010B
PCBs = Polychlorinated biphenyls analyzed by EPA Method 8082; see laboratory analytical report for a complete list of specific constituents
UNK = Unknown
<x = Not detected at reporting limit x
NA = Not analyzed
ND = Not detected; see laboratory analytical report for constituent-specific reporting limits
ESL = Environmental screening level
– = No applicable environmental screening level

a = The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based on the specified standard.
b = San Francisco Bay Regional Water Quality Control Board (RWQCB) commercial land use ESL for soil where groundwater is not a current or potential source of drinking water (Tables B and D of *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater* California Regional Water Quality Control Board, Interim Final - November 2007 [Revised May 2008]).
c = O&G analyzed by EPA Method 3550 (modified)/EPA Method 413.2
d = Analyzed by gas chromatograph - flame ionization detector per Test Methods for Evaluating Solid Waste, SW-846, Revision O, United States Environmental Protection Agency, November 1986.
Data in **BOLD** equals or exceeds applicable RWQCB ESL.