

From: [Brian Gwinn](#)
To: [Wickham, Jerry, Env. Health](#)
Cc: ["Markus Niebanck"; Sara May](#)
Subject: CASE #: RO0003001, Terradev Jefferson LLC, 645 4th St., Oakland, CA
Date: Friday, January 30, 2015 3:22:31 PM
Attachments: [Terradev Data 2015-01-30.pdf](#)

Hi Jerry,

This email provides a brief update regarding ongoing work at the subject site. As you may recall, your office approved the drilling of two borings in 4th Street, upgradient of tank, to evaluate the possibility of an off-site source contributing to the gasoline detected in the subsurface in the area of the tank, and performance of passive soil gas survey within the building to assess the general distribution of gasoline in the subsurface downgradient of the tank. We recently completed the two borings in the street, and the indoor work is scheduled for February 7th and 14th.

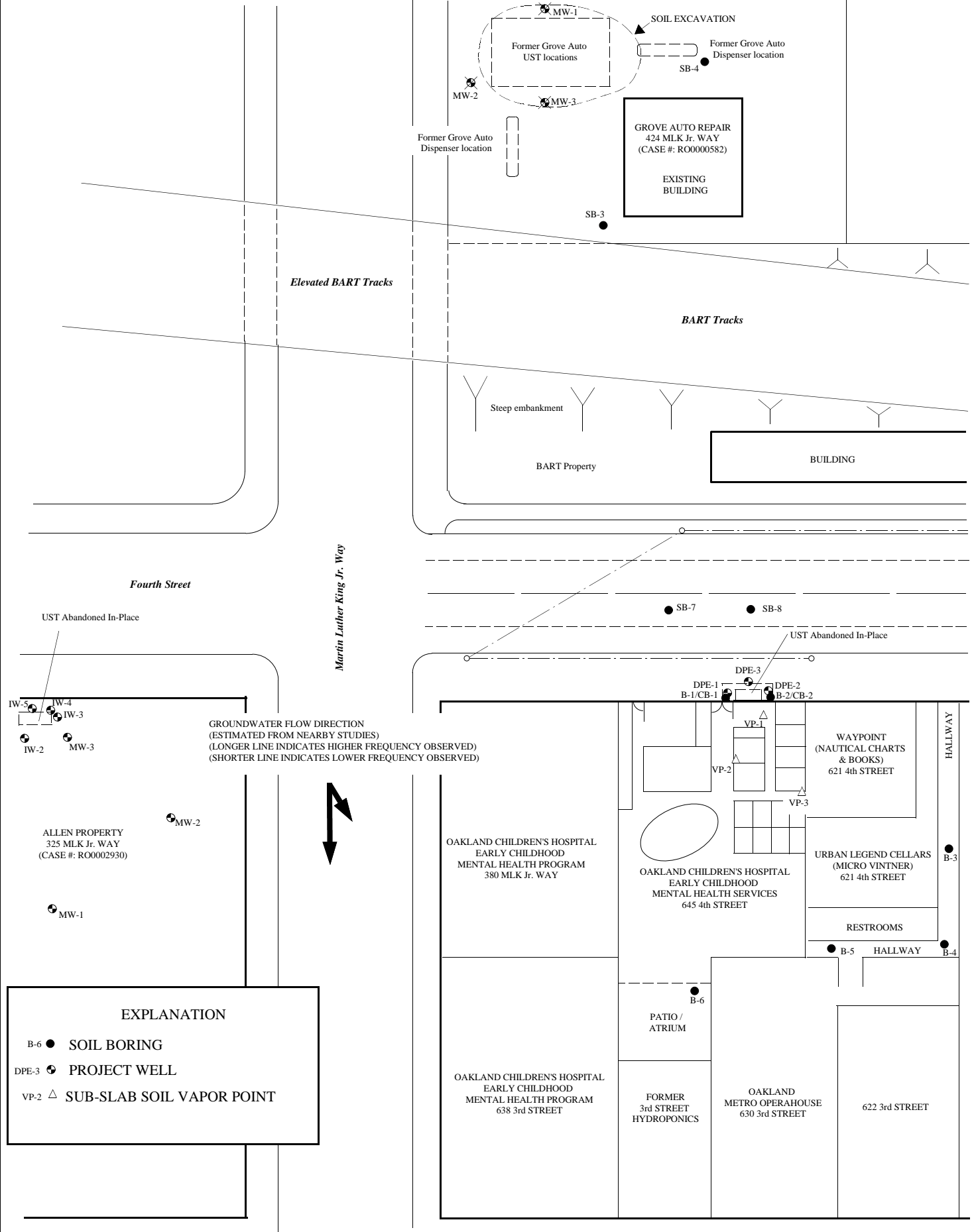
The results of the two borings in 4th Street suggest the presence of an off-site source upgradient of the subject tank. Borings SB-7 and SB-8 are located approximately 30 to 35 feet upgradient of the Terradev Jefferson tank. Elevated concentrations of gasoline range hydrocarbons were measured in soil and groundwater samples from both borings, which was consistent with strong petroleum odors observed at both locations. For example, the groundwater samples from SB-7 and SB-8 contained TPHg concentrations of 250,000 ppb and 180,000 ppb, respectively. I attached updated maps and tabulated data for your information (the new data were also uploaded to GeoTracker).

The report due-date for the currently approved scope of work is February 17, 2015. I would like to request a due-date extension to March 27, 2015 based on our aforementioned schedule.

Thanks in advance – Brian

PLEASE NOTE OUR NEW ADDRESS BELOW

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GROUNDWATER FLOW DIRECTION
 (ESTIMATED FROM NEARBY STUDIES)
 (LONGER LINE INDICATES HIGHER FREQUENCY OBSERVED)
 (SHORTER LINE INDICATES LOWER FREQUENCY OBSERVED)

EXPLANATION	
B-6 ●	SOIL BORING
DPE-3 ⊕	PROJECT WELL
VP-2 △	SUB-SLAB SOIL VAPOR POINT

SITE PLAN
 Terredev Jefferson LLC Property
 645 Fourth St.
 Oakland, CA

Project No. ASE-1	Figure Date 1/15	Figure 1

Third Street

APPROXIMATE SCALE IN FEET

TABLE 1
Well Construction Data
 Terradev Jefferson, LLC Property
 645 Fourth Street
 Oakland, CA

Extraction Wells

Well ID	Date Installed	Total Boring Depth (ft bgs)	Casing Diameter (inches)	Screen Depth (ft bgs)	Sandpack Depth (ft bgs)	Bentonite Depth (ft bgs)	Cement Grout Depth (ft bgs)
DPE-1	9/20/10	15	2	8 - 15	7 - 15	5 - 7	0 - 5
DPE-2	9/20/10	15	2	8 - 15	7 - 15	5 - 7	0 - 5
DPE-3	9/20/10	10	2	6 - 10	5 - 10	3 - 5	0 - 3

Vapor Probes

Well ID	Date Installed	Total Probe Depth (in bgs)	Tubing Diameter (inches)	Slab Thickness (in bgs)	Screen Depth (in bgs)	Rubber Plug (in bgs)	Cement Depth (in bgs)
VP-1	6/16/12	9	0.25	6.0	~ 6 - 9	~5.0 - 6.0	0 - 5
VP-2	6/16/12	9	0.25	4.5	~ 6 - 9	~3.5 - 4.5	0 - 3.5
VP-3	6/16/12	9	0.25	4.0	~ 6 - 9	~3.0 - 4.0	0 - 3

Notes:

ft bgs Feet below ground surface.
 in bgs Inches below ground surface.

TABLE 2
Soil Sample Analytical Data
Terradev Jefferson, LLC Property
645 Fourth Street
Oakland, CA

Sample ID	Depth (ft bgs)	Sample Date	TPHd			B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE,		EDB (mg/kg)	Napht. (mg/kg)
			TPHd (mg/kg)	w/SGCU (mg/kg)	TPHg (mg/kg)							ETBE, TAME (mg/kg)	1,2-DCA (mg/kg)		
<i>UST Removal Samples</i>															
8795-EX-W-9'	9	8/23/06	<120	---	10,000	130	1,000	230	1,200	<12	<100	all<12	---	---	---
8795-EX-E-9'	9	8/23/06	<25	---	920	6.8	55	18	110	<1.2	<10	all<1.2	---	---	---
<i>Investigation Samples</i>															
DPE-1-7.5	7.5	9/20/10	810^	---	6,500	14	320	180	980	<0.50	<2.5	---	<0.50	0.50	---
DPE-1-12	12	9/20/10	260^	---	2,300	26	160	45	240	0.71	<1.5	---	<0.30	<0.30	---
DPE-1-15	15	9/20/10	92^	---	770	10	53	15	80	0.39	<0.50	---	0.11	<0.090	---
DPE-2-6	6	9/20/10	15	---	1.2	<0.0050	0.0054	<0.0050	0.021	<0.0050	<0.0050	---	<0.0050	<0.0050	---
DPE-2-11	11	9/20/10	1,200^	---	160,000	1,400	10,000	3,300	19,000	<0.25	<1.5	---	<0.25	1.8	---
DPE-2-15	15	9/20/10	66^	---	430	3.8	25	8.3	47	<0.50	<2.5	---	<0.050	<0.50	---
DPE-3-7	7	9/20/10	260^	---	860	2.1	37	19	100	<0.10	<0.50	---	<0.10	<0.10	---
DPE-3-10	10	9/20/10	800^	---	8,900	78	580	180	980	<0.25	<1.5	---	<0.25	0.82	---
CB-1-7.5	7.5	2/18/13	1.2*	---	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	---	---	<0.0050	<0.0050	---
CB-1-9	9	2/18/13	110^	---	1,200	2.8	55	27	150	<0.25	---	---	<0.25	<0.25	---
CB-1-12	12	2/18/13	880^	---	14,000	100	850	180	1,400	0.53	---	---	<0.25	0.86	---
CB-1-15	15	2/18/13	89^	---	1,000	8.4	62	15	100	<0.050	---	---	<0.050	<0.050	---
CB-2-9	9	2/18/13	120^	---	840	0.44	17	20	110	<0.15	---	---	<0.15	<0.15	---
CB-2-11	11	2/18/13	110^	---	2,700	23	160	48	260	<0.40	---	---	<0.40	<0.40	---
CB-2-15	15	2/18/13	45^	---	380	3.9	18	6.6	34	<0.050	---	---	<0.050	<0.050	---
B-6-6'	6.5	1/11/14	340^	350^	1,700	0.13	8.0	12	91	<0.050	<0.25	---	<0.050	<0.050	---
B-6-10.5'	10.5	1/11/14	280^	280^	1,500	4.1	48	26	130	<0.25	<1.5	---	<0.25	<0.25	---
SB7-8.5/9	8.5-9	12/29/14	1.2^	---	4.0	0.16	0.50	0.081	0.50	<0.0050	<0.0050	---	<0.0050	0.0070	0.043
SB7-10.5/11	10.5-11	12/29/14	1,400^	---	19,000	150	1,100	330	1,800	<0.25	<1.5	---	<0.25	2.5	99
SB7-12.5/13	12.5-13	12/29/14	310^	---	3,600	29	200	59	330	<0.090	<1.5	---	<0.090	0.46	23
SB-8-8.5/9	8.5-9	12/29/14	750^	---	6,600	30	290	120	580	<0.25	<1.5	---	<0.25	0.38	38
SB-8 11.5/12	11.5-12	12/29/14	170^	---	1,400	6.4	54	22	130	<0.25	<1.5	---	<0.25	<0.25	10
SB-8 14.5	14.5	12/29/14	<1.0	---	<1.0	0.026	0.060	0.011	0.065	<0.0050	<0.0050	---	<0.0050	<0.0050	<0.0050

Notes:

ft bgs feet below ground surface
mg/kg milligrams per kilogram
TPHd total petroleum hydrocarbons as diesel by EPA Method 8015M or 8015B, w/SCGCU = analysis performed after silica-gel clean-up.
TPHg total petroleum hydrocarbons as gasoline by EPA Method 8260B
BTEX benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B
MTBE, TBA, ETBE, methyl tert-butyl ether, tert-butanol, ethyl tert-butyl ether, di-isopropyl ether, tert-amyl methyl ether by EPA Method 8260B,
DIPE, TAME
1,2-DCA, EDB 1,2-dichloroethane, 1,2-dibromoethane by EPA Method 8260B.
µg/L Micrograms per liter.
<### Not detected at or above the indicated reporting limit.
^ Laboratory Flag: Hydrocarbons are lower-boiling than typical Diesel Fuel
* Laboratory Flag: Hydrocarbons are higher-boiling than typical Diesel Fuel
--- Data not available, not monitored, or not sampled

TABLE 3
Groundwater Analytical Data
TerraDev Jefferson, LLC Property
645 Fourth Street
Oakland, CA

Sample ID	Sample Date	TOC (ft MSL)	DTW (ft)	LNAPL (ft)	GWE (ft MSL)	TPHd (µg/L)	TPHd										
							w/SGCU (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Napht. (µg/L)
Grab Groundwater Samples																	
B-1-GW*	7/10/09	--	-9.5	--	--	5,300	--	78,000	15,000	13,000	1,700	10,500	570	--	--	--	--
B-2-GW*	7/10/09	--	-9.5	--	--	2,300	--	60,000	13,000	13,000	890	4,800	120	--	--	--	--
B-3	1/10/14	--	~12	--	--	58#	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	--
B-4	1/10/14	--	~12	--	--	67#	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	--
B-5	1/10/14	--	~12	--	--	110#	<50	110	1.2	1.4	0.65	4.5	2.7	200	43	<0.50	--
B-6 (2)	1/11/14	--	~11	--	--	5,200^	360^	84,000	1,800	7,600	2,400	12,000	5,100	180J	110	<20	--
SB-7	12/29/14	--	~9	--	--	60,000^	--	250,000	15,000	34,000	4,000	20,000	<40	<200	130	240	1,000
SB-8	12/29/14	--	~9	--	--	16,000^	--	180,000	9,100	22,000	3,000	16,000	<40	<200	130	140	1,200
Monitoring Well Data																	
DPE-1	9/22/10	15.81	9.21	0.00	6.60	<4,000 (1)	--	120,000	25,000	18,000	3,300	17,000	320	320	620	<40	--
Screen	9/28-10/3/10	15.81	--	--	--	5-day HVDPE Remedial Event											
~8' - 15'	10/18/10	15.81	9.26	sheen	6.55	<4,000 (1)	--	97,000	15,000	20,000	1,600	11,000	490	270	390	<40	--
	1/20/11	15.81	8.56	sheen	7.25	<3,000 (1)	--	83,000	12,000	16,000	2,000	11,000	270	<200	220	<40	--
	7/6/12	15.81	8.85	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/9-7/24/12	15.81	--	--	--	15-day HVDPE Remedial Event											
	8/12/12	15.81	9.03	0.00	6.78	<2,000 (1)	--	71,000	7,500	9,800	1,000	6,500	280	89	190	<15	--
	2/11/13	15.81	8.74	0.00	7.07	<3,000 (1)	--	81,000	9,400	14,000	1,800	10,000	240	110	210	<15	--
	1/10/14	15.81	9.84	0.00	5.97	1,600^	56^	98,000	14,000	13,000	2,100	12,000	270	200	270	<25	--
DPE-2	9/22/10	16.01	9.44	0.00	6.57	<4,000 (1)	--	110,000	21,000	18,000	3,100	14,000	200	260	540	110	--
Screen	9/28-10/3/10	16.01	--	--	--	5-day HVDPE Remedial Event											
~8' - 15'	10/18/10	16.01	9.48	sheen	6.53	<5,000 (1)	--	84,000	11,000	16,000	1,600	9,200	77	<200	220	77	--
	1/20/11	16.01	8.77	sheen	7.24	<5,000 (1)	--	94,000	12,000	19,000	2,500	13,000	64	<200	220	88	--
	7/6/12	16.01	9.06	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/9-7/24/12	16.01	--	--	--	15-day HVDPE Remedial Event											
	8/12/12	16.01	9.27	0.00	6.74	<2,000 (1)	--	70,000	9,900	16,000	1,700	9,600	54	<200	160	56	--
	2/11/13	16.01	8.95	0.00	7.06	<4,000 (1)	--	60,000	7,300	9,500	1,400	7,000	34	<90	120	<20	--
	1/10/14	16.01	10.08	0.00	5.93	2,800^	<50	100,000	17,000	15,000	2,400	11,000	120	100	220	27	--
DPE-3	9/22/10	15.87	9.43	0.00	6.44	insufficient water column for sampling (i.e. <0.5-ft)											
Screen	9/28-10/3/10	15.87	--	--	--	5-day HVDPE Remedial Event											
~6' - 10'	10/18/10	15.87	9.35	0.00	6.52	insufficient water column for sampling (i.e. <0.5-ft)											
	1/20/11	15.87	8.51	0.13	7.36	no groundwater sample collected, LNAPL present.											
	7/6/12	15.87	8.65	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/9-7/24/12	15.87	--	--	--	15-day HVDPE Remedial Event											
	8/12/12	15.87	9.02	sheen	6.85	<200,000 (1)	--	190,000	1,400	7,800	3,700	29,000	27	120	40	130	--
	2/11/13	15.87	8.34	sheen	7.53	<40,000 (1)	--	130,000	4,700	9,000	1,900	25,000	<40	<200	54	80	--
	1/10/14	15.87	Dry	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

- Screen Well screen depth interval.
- TOC Top of casing relative to feet above mean sea level (ft MSL) (ref NAVD88).
- DTW Depth to water (for borings DTW shows "depth to water" and "depth to bottom of boring")
- LNAPL Light non-aqueous phase liquid petroleum, "sheen" is an immeasurable thickness (i.e. <0.01-ft)
- GWE Groundwater Elevation (TOC-DTW) in ft MSL. (This does not account for LNAPL thickness, if present).
- TPHd Total petroleum hydrocarbons as diesel by EPA Method 8015M, *8015B. SGCU = Silica-gel cleanup prior to analysis.
- TPHg Total petroleum hydrocarbons as gasoline by EPA Method 8260B, *8015B.
- BTEX Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B, *8021B.
Note: total xylenes equal the sum of separate isomers reported for the 7/09 samples.
- MTBE Methyl tert-butyl ether by EPA Method 8260B, * 8021B.
- TBA Tert-butanol by EPA Method 8260B.
- 1,2-DCA, EDB 1,2-dichloroethane, 1,2-dibromoethane by EPA Method 8260B.
- µg/L Micrograms per liter.
- <### Not detected at or above the indicated reporting limit.
- Data not available, not monitored, or not sampled
- ^ Laboratory Flag: Hydrocarbons are lower-boiling than typical Diesel Fuel
- # Laboratory Flag: Discrete peaks in Diesel range, atypical for Diesel Fuel
- J Laboratory Flag: TBA concentration may be biased slightly high due to conversion of a small fraction of MTBE to TBA during water sample analysis.
- (1) Method detection limit increased due to interference from gasoline range hydrocarbons
- (2) Repeat analysis by Method 8260B yielded inconsistent results. The concentrations appear to vary between bottles. The highest valid result is reported.

Table 4
SUB-SLAB VAPOR SAMPLE ANALYTICAL DATA
 Terradev Jefferson LLC Property
 645 Fourth St.
 Oakland, CA

Sample I.D.	Sample Date	sample container	Constituent Concentrations									Soil Gas Concentrations			Tracer Gas			Sample Can Vacuum	
			TPHg (ug/m ³)	B (ug/m ³)	T (ug/m ³)	E (ug/m ³)	X (ug/m ³)	MTBE (ug/m ³)	Naphthalene (ug/m ³)	1,2-DCA (ug/m ³)	EDB (ug/m ³)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)	He - Avg (%)	He (%)	Leak Percent [^] (%)	End of Sampling ("Hg)	Arrival at Lab ("Hg)
VP-1	6/16/12	1-L	1,300	38	120	21	138	7.3	<0.09	<0.14	<0.050	15	0.096	<0.008	22.2	2.4	10.8%	~8	~6
VP-1	9/22/12	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	19	0.78	<0.008	20.0	0.19	1.0%	~5	~6
VP-1	1/25/14	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	14	4.7	<0.008	5.7	0.023	0.40%	~5	~5
VP-2	6/16/12	1-L	1,200	66	25	2.6	8.2	<6.3	<0.090	<0.14	<0.050	11	1.3	<0.009	13.8	<0.003	<0.02%	~8	~7
VP-2	9/22/12	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	14	4.0	<0.008	19.0	<0.003	<0.02%	~7	~6
VP-2	1/25/14	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	12	7.4	<0.008	6.6	<0.003	<0.05%	~5	~5
VP-3	6/16/12	1-L	960	16	19	2.9	20	<5.8	<0.08	<0.13	<0.050	16	0.029	<0.008	23.6	2.6	11%	~5	~5
VP-3	9/22/12	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	20	0.46	<0.008	15.7	0.036	0.23%	~5	~6
VP-3	1/25/14	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	19	1.5	<0.008	6.6	0.012	0.18%	~5	~5

<i>ESLs Comm/Indus Soil Gas</i>	3,100,000	420	1,300,000	4,900	440,000	47,000	360	580	170
<i>CHHSLs Comm /Indus Soil Gas</i>	NA	122	378,000	NA	879,000	13,400	106	167	NA

Notes:
 TPHg Total Petroleum Hydrocarbons as gasoline by EPA Method TO-15
 BTEX, MTBE Benzene, Toluene, Ethylbenzene, and Total Xylenes, Methyl tert-Butyl Ether by EPA Method TO-15(M) GC/MS (note: Xylene number shown in table is the sum of xylene isomers reported by lab)
 Naphthalene Naphthalene by EPA Method TO-15
 1,2-DCA, EDB 1,2-dichloroethane, 1,2-dibromoethane by EPA Method TO-15
 O₂, CO₂, CH₄, He Oxygen, Carbon Dioxide, Methane, and Helium by modified ASTM D-1946
 ug/m³ Micrograms per cubic meter
 <#.## Compound not detected at or above the reported laboratory detection limit
 ESLs Environmental Screening Levels for Soil Vapor in Commercial/Industrial or Residential setting (SFBRWQCB 2013)
 CHHSLs California Human Health Screening Levels for Soil Vapor in Commercial/Industrial or Residential setting (CalEPA/OEHHA2005)
 Tracer Gas in Shroud Concentration range of tracer gas in shroud recorded during sample collection. Average = (Max - Min) / 2
 Tracer Gas in Sample Concentration of tracer gas in sample as detected by lab analysis.
 Tracer Gas Leak into Sample If helium was detected in the sample, the concentration measured in the sample was divided by the average concentration in the shroud (and multiplied by 100 to convert to percent).
 ^ a leak of less than 5% is considered acceptable for data evaluation.
 Shaded samples indicate a tracer gas leak of more than 5%.