



January 26, 2015

1098.007.01.001

A Report Prepared for:

Regis Homes Bay Area, LLC
Attention: Mr. Dave Hopkins
901 Mariners Island Boulevard, #700
San Mateo, California 94404

For Submittal to Oversight Agency:

Alameda County Water District
43885 South Grimmer Blvd.
P.O. Box 5110
Fremont, California 94537-5110

Received by: _____

Date: _____

**Subject: Work Plan for Supplemental Soil Vapor Investigation
39155 and 39183 State Street
Fremont, California**

Dear Mr. Hopkins:

This *Work Plan for Supplemental Soil Vapor Investigation* (Work Plan) has been prepared by PES Environmental, Inc. (PES) on behalf of Regis Homes Bay Area, LLC (REGIS) for the currently vacant properties at 39155 and 39183 State Street in Fremont, California (the site or subject property). The site location is shown on Plate 1, and the subject property and vicinity are shown on Plate 2. PES understands that REGIS is considering acquisition of the site from the current owner, the City of Fremont, and plans to redevelop the property with commercial buildings with subsurface parking along the northwestern portion of the site, and slab-on-grade residential buildings to the southeast.

PES recently completed two phases of site investigations at the subject property in October and December 2014. A corresponding work plan for each phase of site investigation was submitted to the Alameda County Water District (ACWD) on September 26, 2014¹ and December 2, 2014². The objective of the investigations was to evaluate the chemical characteristics of the soil and soil vapor beneath the site to assess if they have been impacted by prior site usage or potential offsite sources of contamination. The approximate soil and soil vapor boring locations for these investigation phases are shown on Plate 2. A summary of the

¹ PES, 2014a. *Work Plan for Limited Site Investigation, 39155 and 39183 State Street, Fremont, California.* September 26.

² PES, 2014b. *Work Plan for Supplemental Site Investigation, 39155 and 39183 State Street, Fremont, California.* December 2.

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analytical results for the soil vapor and soil samples are summarized in Tables 1-3, attached. Laboratory analytical reports and chain-of-custody forms are included in the attachments.

The soil vapor results on Table 1 were compared to the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) environmental screening levels (ESLs) for soil gas in a residential/commercial setting.

As described in the work plan submitted on December 2, 2014, shallow soil vapor samples collected in the first investigation phase (October 2014) have identified elevated concentrations of tetrachloroethylene (PCE) and benzene above their respective ESLs. As shown on Table 1, benzene was not detected at or above the laboratory reporting limit in any of the samples collected in the second investigation phase (December 2014). In the second phase, elevated PCE concentrations were observed in several borings located on the northeastern portion of the subject property. The highest PCE concentration (8,500 micrograms per meter cubed [$\mu\text{g}/\text{m}^3$]) was identified in boring B21 at a depth of 5 feet below ground surface (bgs).

PROPOSED SCOPE OF WORK

The scope of work for the investigation includes the following activities: (1) field preparation tasks; (2) collection and analysis of soil vapor samples in the vicinity of boring B21 and the along the sewer line located within State Street; and (3) submittal of laboratory analytical reports.

Field Preparation Activities

The following activities will be performed prior to the commencement of field sampling activities:

- Update as necessary the Site-specific Health and Safety Plan in accordance with applicable occupational safety and health requirements;
- Obtain drilling permits from Alameda County Water District (ACWD);
- Contact Underground Services Alert for public utility clearance;
- Obtain an encroachment permit from the City of Fremont for the work within State Street;

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- Retain and schedule a traffic control subcontractor to perform flagging and lane closure services during sampling conducted within State Street;
- Retain and schedule drilling and laboratory subcontractors; and
- Perform utility clearances at sampling locations.

Field Investigation

Borehole drilling and sampling services will be provided by a licensed contractor possessing a valid C-57 water well contractor's license issued by the State of California, and in accordance with California Department of Water Resource Water Well Standards (Bulletin 74-90). All subsurface investigation work will be conducted under the supervision of a California-registered geologist or engineer.

Soil cuttings and decontamination fluids will be temporarily stored on-site pending characterization and proper off-site disposal. Upon completion of sampling activities, each borehole will be grouted to the surface using neat cement under the oversight of ACWD staff. A tremmie pipe will be utilized, as needed in deeper borings.

Soil vapor sampling procedures will be consistent with the most current guidance document: *Advisory - Active Soil Gas Investigations*, published by the California Environmental Protection Agency (Department of Toxic Substances Control (DTSC), California Regional Water Quality Control Board – Los Angeles Region, and RWQCB – San Francisco Region), dated April 2012. (Cal EPA, 2012). Prior to sampling, PES will verify that no significant rainfall event (of greater than 0.5 inches, as described in the *Advisory*) had occurred within a five-day period of the soil vapor sampling event.

The proposed soil vapor sampling locations are shown on Plate 2. Five (5) soil gas samples will be collected alongside the sanitary sewer utility that runs from northwest to southeast along the approximate centerline of State Street. Two (2) soil gas samples will be collected in the sidewalk adjacent to and northeast of the subject property, adjacent to a sanitary sewer lateral and a storm drain lateral that formerly serviced the site. Lastly, four locations will be collected in the vicinity of boring B21 on the northeastern portion of the site. The depths of all samples will be approximately 5 to 8 feet bgs, and will attempt to coincide with the depth of the sanitary sewer at the respective locations. Sampling and handling procedures will be conducted in accordance with the prior work plans.

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Soil vapor will be obtained using a Geoprobe-type sampling device outfitted for soil vapor sample collection. Soil vapor samples will be collected by installing a 1-inch diameter, hollow, stainless-steel soil vapor probe to the required sampling depth. The probes will be equipped with a hardened, reverse-threaded steel tip. The probe will be driven using the hydraulic direct-push rig. A hydrated bentonite seal will be placed around the rods to minimize the potential for ambient air entering the sample. Upon reaching the desired depth, a continuous length of inert 1/4-inch outer diameter polypropylene Nylaflow® tubing will be inserted down the center of the probe and threaded onto the sampling port. The probe will be then raised approximately 4 inches to expose the soil vapor sampling ports.

To allow for the subsurface to equilibrate to representative conditions following probe placement with the direct-push method, a two-hour equilibration period will be allowed prior to conducting the respective purge volume test and soil vapor sampling.

Leak testing will be conducted during the collection of soil vapor samples to evaluate the integrity of the sample and the potential for atmospheric leakage of ambient air. Leak testing will be performed using 2-propanol applied to a towel which will be fitted around the probe at the surface while purging.

After reaching the specified sampling depth and installing the soil gas sampling equipment as described above, soil vapor will be withdrawn from the inert tubing using a syringe connected via a three-way valve. The purge volumes of the sampling tubing and void within the bottom of the exposed portion of the soil gas probes will be calculated. Samples will be collected with the same purge volume established during the prior soil vapor analysis.

Soil Vapor Analyses

Soil vapor samples will be analyzed by an on-site mobile laboratory (California-certified for the specified analyses) for VOCs by U.S. Environmental Protection Agency (U.S. EPA) Test Method 8260B.

REPORTING AND SCHEDULE

As required by ACWD, copies of the final laboratory analytical reports will be transmitted to ACWD within 30 days of receipt.

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We trust that this is the information you require at this time. Please call either of the undersigned if you have any questions.

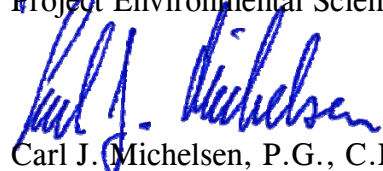
Yours very truly,

PES ENVIRONMENTAL, INC.



Justin J. Patterson

Project Environmental Scientist

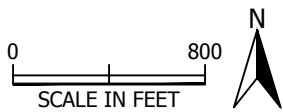
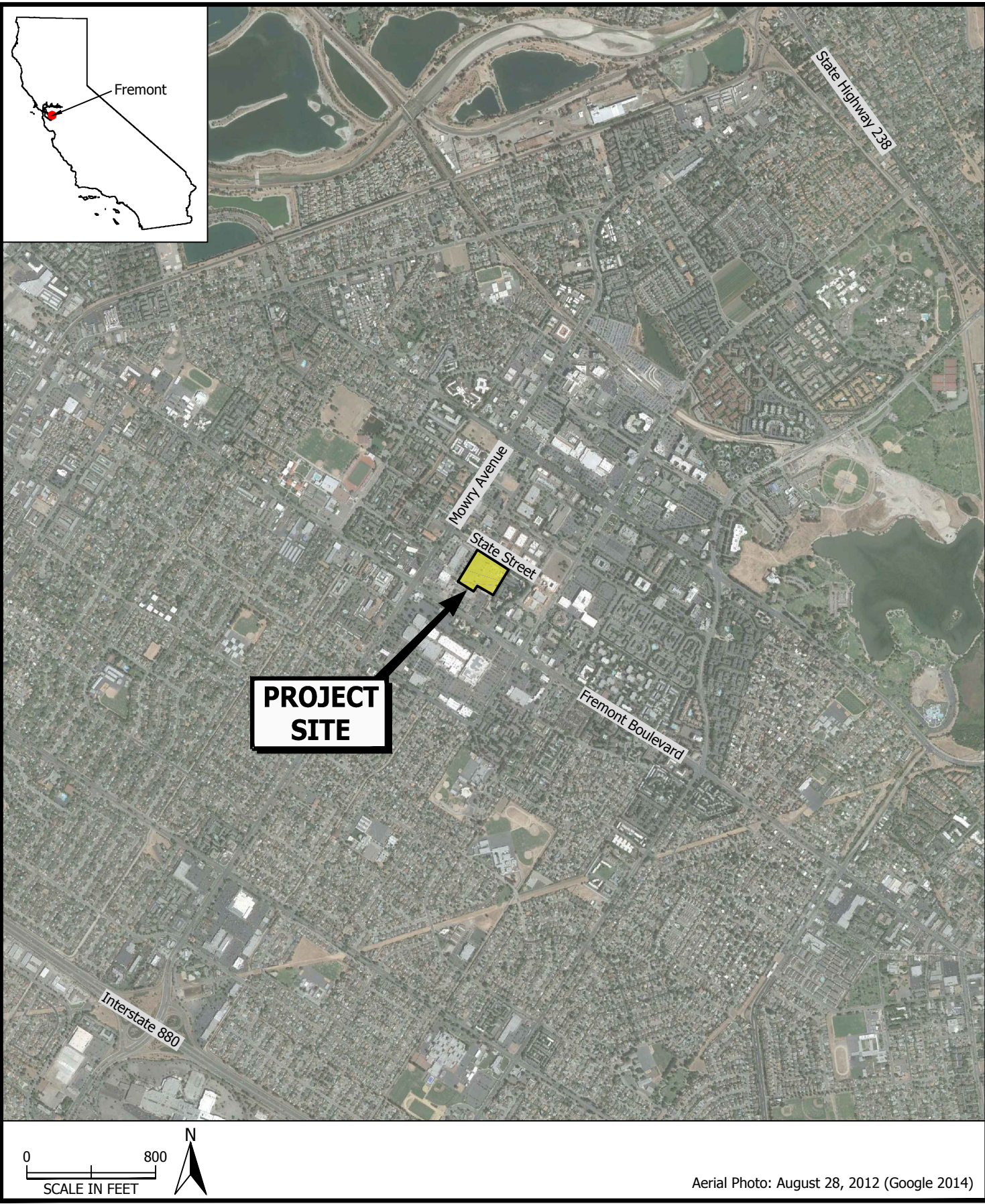


Carl J. Michelsen, P.G., C.HG.

Principal Geochemist

Attachments: Plate 1 – Site Location
Plate 2 – Site Plan and Proposed Boring Locations
Table 1 – Summary of Soil Vapor Analytical Results
Laboratory Analytical Reports (Provided on CD-ROM)

PLATES



Aerial Photo: August 28, 2012 (Google 2014)

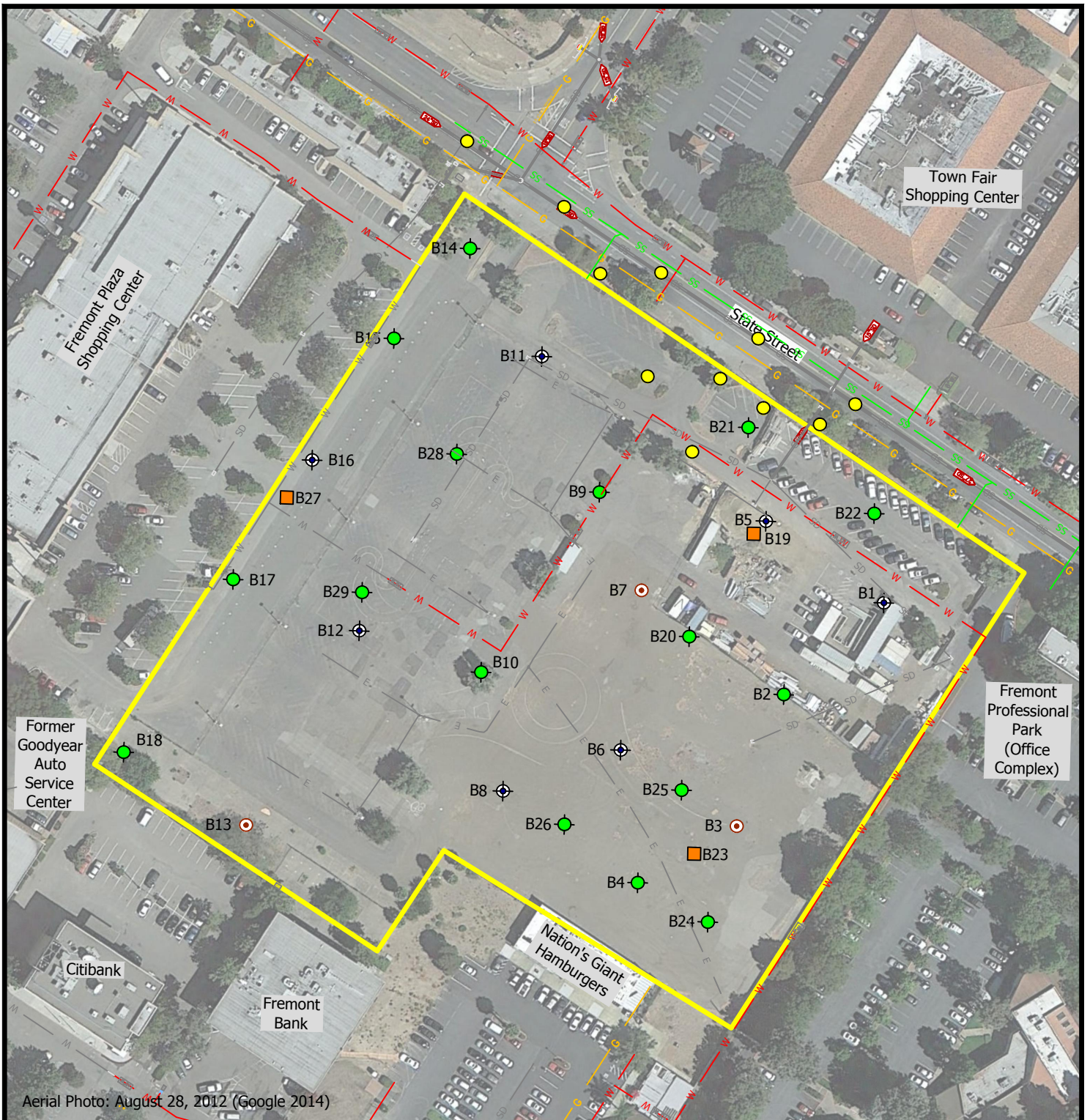


PES Environmental, Inc.
Engineering & Environmental Services







Site Location
39155 and 39183 State Street
Fremont, California

PLATE

1



Explanation

-  Approximate Property Boundary
-  B13 Soil Sampling Location
-  B17, B21, B22, B24, B25, B26, B27, B28, B29 Shallow Soil Vapor Sampling Location
-  B19 Deep Soil Vapor Sample Location
-  B6, B11, B12, B16, B20 Soil Vapor and Soil Sampling Location
-  Proposed Soil Vapor Sample Location



PES Environmental, Inc.
Engineering & Environmental Services

Site Plan and Sample Locations
39155 and 39183 State Street
Fremont, California

PLATE
2

TABLE

**Table 1
Summary of Soil Vapor Analytical Results
39155 and 39183 State Street
Fremont, California**

Sample Location	Date Sampled	Sample Number	Sample Depth (feet bgs)	Purge Volume	PCE (µg/m ³)	Benzene (µg/m ³)	Toluene (µg/m ³)	Ethylbenzene (µg/m ³)	m,p-Xylene (µg/m ³)	o-Xylene (µg/m ³)	Freon 11 (µg/m ³)	Freon 12 (µg/m ³)	Chloroform (µg/m ³)
B1	10/28/2014	B1-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	< 100	< 100	< 100
B2	10/28/2014	B2-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	120	1900	< 100
B4	10/27/2014	B4-SV	5.0	1	< 100	320	1800	< 100	360	140	< 100	1700	160
				3	< 100	480	1500	160	520	190	< 100	2300	160
				5	< 100	510	780	230	690	260	< 100	2100	< 100
B5	10/27/2014	B5-SV	5.0	3	300	< 80	< 200	< 100	< 200	< 100	< 100	1000	< 100
B6	10/28/2014	B6-SV	5.0	3	< 100	97	< 200	< 100	< 200	< 100	< 100	240	< 100
B8	10/27/2014	B8-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	1600	6400	< 100
B9	10/28/2014	B9-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	110	< 100	< 100
B10	10/28/2014	B10-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	370	1400	< 100
B11	10/28/2014	B11-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	< 100	410	< 100
B12	10/28/2014	B12-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	1100	4100	< 100
B14	10/28/2014	B14-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	< 100	390	< 100
B15	10/28/2014	B15-SV	5.0	3	< 100	< 80	< 200	< 100	420	150	< 100	1800	< 100
B16	10/28/2014	B16-SV	5.0	3	550	< 80	< 200	< 100	< 200	< 100	160	2300	< 100
B17	10/28/2014	B17-SV	5.0	3	< 100	< 80	< 200	220	1100	350	460	1900	< 100
B18	10/28/2014	B18-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	< 100	210	< 100
B19	12/10/2014	B19-SV	10.0	3	330	< 80	< 200	< 100	< 200	< 100	< 100	1500	< 100
B20	12/10/2014	B20-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	320	3200	< 100
B21	12/10/2014	B21-SV	5.0	3	8500	< 80	< 200	< 100	< 200	< 100	150	2000	< 100
B22	12/10/2014	B22-SV	5.0	3	110	< 80	210	< 100	< 200	< 100	< 100	400	< 100
B23	12/10/2014	B23-SV	10.0	3	< 100	< 80	< 200	< 100	< 200	< 100	590	2400	< 100
B24	12/10/2014	B24-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	730	1600	< 100
B25	12/10/2014	B25-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	480	2900	< 100
B26	12/10/2014	B26-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	2300	4800	< 100
B27	12/10/2014	B27-SV	10.0	3	430	< 80	< 200	< 100	< 200	< 100	230	3900	< 100
B28	12/10/2014	B28-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	220	4800	< 100
B29	12/10/2014	B29-SV	5.0	3	< 100	< 80	< 200	< 100	< 200	< 100	290	2300	< 100
Residential land use ESL ⁽¹⁾					210	42	160,000	490	52,000	52,000	NE	NE	230
Commercial/Industrial land use ESL ⁽²⁾					2,100	420	1,300,000	4,900	440,000	440,000	NE	NE	2,300

Notes:

Detections are shown in bold.

Results equal to or exceeding regulatory screening level for residential land use are shaded.

feet bgs: feet below ground surface.

µg/m³: micrograms per cubic meter.

PCE: Tetrachloroethene.

Freon 11: Trichlorofluoromethane.

Freon 12: Dichlorodifluoromethane.

< 100: not detected at or above the indicated laboratory reporting limit.

1. ESL = December 2013 Regional Water Quality Control Board, San Francisco Bay Region (SFRWQCB) Environmental Screening Levels (ESLs), Table E-2 Soil Gas Screening Levels for Evaluation of Potential Vapor Intrusion, Residential Land Use.

2. ESL = December 2013 SFRWQCB ESLs, Table E-2 Soil Gas Screening Levels for Evaluation of Potential Vapor Intrusion, Commercial/Industrial Land Use.

NE: Not established.

**LABORATORY ANALYTICAL REPORTS
(PROVIDED ON CD-ROM)**



TEG Northern California Inc.

22 December 2014

Mr. Carl Michelsen
PES Environmental, Inc.
1682 Novato Blvd., Suite 100
Novato, CA 94947

**SUBJECT: DATA REPORT - PES Environmental, Inc. Project # 109800701001
39155 State Street, Fremont, California**

TEG Project # 41210F

Mr. Michelsen:

Please find enclosed a data report for the samples analyzed from the above referenced project for PES Environmental. The samples were analyzed on site in TEG's mobile laboratory. TEG conducted a total of 12 analyses on 12 soil vapor samples.

-- 12 analyses on soil vapors for selected volatile organic hydrocarbons by EPA method 8260B.

The results of the analyses are summarized in the enclosed tables. Applicable detection limits and calibration data are included in the tables.

TEG appreciates the opportunity to have provided analytical services to PES Environmental on this project. If you have any further questions relating to these data or report, please do not hesitate to contact us.

Sincerely,

Mark Jerpbak
Director, TEG-Northern California



PES Environmental, Inc.
 Project # 109800701001
 39155 State Street
 Fremont, California

TEG Project #41210F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:	Probe	B19-SV	B20-SV	B21-SV	B22-SV	B23-SV	B24-SV	
	Blank							
SAMPLE DEPTH (feet):		10.0	5.0	5.0	6.0	10.0	5.0	
PURGE VOLUME:		3	3	3	3	3	3	
COLLECTION DATE:	12/10/14	12/10/14	12/10/14	12/10/14	12/10/14	12/10/14	12/10/14	
COLLECTION TIME:	10:02	10:46	11:08	11:28	11:50	14:12	12:14	
DILUTION FACTOR:	1	1	1	1	1	1	1	
	RL							
Dichlorodifluoromethane	100	nd	1500	3200	2000	400	2400	1600
Vinyl Chloride	100	nd	nd	nd	nd	nd	nd	nd
Chloroethane	100	nd	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	100	nd	nd	320	150	nd	590	730
1,1-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	100	nd	nd	nd	nd	nd	nd	nd
Methylene Chloride	100	nd	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	100	nd	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd	nd
Chloroform	100	nd	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	100	nd	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	100	nd	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	100	nd	nd	nd	nd	nd	nd	nd
Benzene	80	nd	nd	nd	nd	nd	nd	nd
Trichloroethene	100	nd	nd	nd	nd	nd	nd	nd
Toluene	200	nd	nd	nd	nd	210	nd	nd
1,1,2-Trichloroethane	100	nd	nd	nd	nd	nd	nd	nd
Tetrachloroethene	100	nd	330	nd	8500	110	nd	nd
Ethylbenzene	100	nd	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd	nd
m,p-Xylene	200	nd	nd	nd	nd	nd	nd	nd
o-Xylene	100	nd	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd	nd
1,1 Difluoroethane (leak check)	10000	nd	nd	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM)		92%	94%	93%	95%	94%	93%	94%
Surrogate Recovery (1,2-DCA-d4)		82%	90%	81%	89%	84%	87%	83%
Surrogate Recovery (Toluene-d8)		90%	91%	88%	90%	92%	89%	91%

'RL' Indicates reporting limit at a dilution factor of 1
 'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab
 Analyses performed by: Mr. Leif Jonsson



PES Environmental, Inc.
 Project # 109800701001
 39155 State Street
 Fremont, California

TEG Project #41210F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:	B24-SV	B25-SV	B26-SV	B27-SV	B28-SV	B29-SV	
	dup						
SAMPLE DEPTH (feet):	5.0	5.0	5.0	10.0	5.0	5.0	
PURGE VOLUME:	3	3	3	3	3	3	
COLLECTION DATE:	12/10/14	12/10/14	12/10/14	12/10/14	12/10/14	12/10/14	
COLLECTION TIME:	12:14	13:06	13:26	16:01	16:28	16:42	
DILUTION FACTOR:	1	1	1	1	1	1	
	RL						
Dichlorodifluoromethane	100	1800	2900	4800	3900	4800	2300
Vinyl Chloride	100	nd	nd	nd	nd	nd	nd
Chloroethane	100	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	100	780	480	2300	230	220	290
1,1-Dichloroethene	100	nd	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	100	nd	nd	nd	nd	nd	nd
Methylene Chloride	100	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	100	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd
Chloroform	100	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	100	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	100	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	100	nd	nd	nd	nd	nd	nd
Benzene	80	nd	nd	nd	nd	nd	nd
Trichloroethene	100	nd	nd	nd	nd	nd	nd
Toluene	200	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	100	nd	nd	nd	nd	nd	nd
Tetrachloroethene	100	nd	nd	nd	430	nd	nd
Ethylbenzene	100	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd
m,p-Xylene	200	nd	nd	nd	nd	nd	nd
o-Xylene	100	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd
1,1 Difluoroethane (leak check)	10000	nd	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM)		90%	93%	101%	97%	92%	99%
Surrogate Recovery (1,2-DCA-d4)		87%	86%	88%	90%	86%	91%
Surrogate Recovery (Toluene-d8)		93%	91%	90%	92%	90%	90%

'RL' Indicates reporting limit at a dilution factor of 1
 'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab
 Analyses performed by: Mr. Leif Jonsson

page 2



PES Environmental, Inc.
Project # 109800701001
39155 State Street
Fremont, California

TEG Project #41210F

CALIBRATION DATA - Calibration Check Compounds

	<i>Vinyl Chloride</i>	<i>1,1 DCE</i>	<i>Chloroform</i>	<i>1,2 DCP</i>	<i>Toluene</i>	<i>Ethylbenzene</i>
<i>Midpoint</i>	10.0	10.0	10.0	10.0	10.0	10.0

Continuing Calibration - Midpoint

12/10/14	10.3	11.3	11.4	10.8	10.4	9.3
	103%	113%	114%	108%	104%	93%