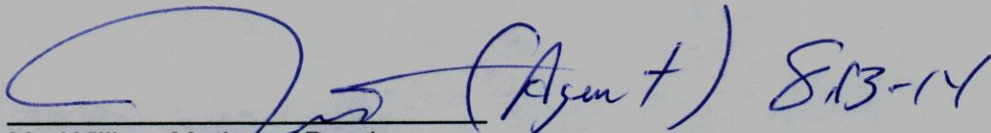


PERJURY STATEMENT

Subject: 1395 MacArthur Boulevard, San Leandro, California
Risk Characterization and Uncertainty Analysis Report

I certify, under penalty of law, that I have personally examined and am familiar with the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



(Agent) 8.13-14

Mr. William Mathews Brooks
4725 Thornton Avenue
Fremont, CA, 94536

Advanced GeoEnvironmental, Inc.



05 August 2014
AGE Project No. 12-2461

RECEIVED

By Alameda County Environmental Health at 12:08 pm, Aug 19, 2014

Mr. Mark Detterman
Alameda County Environmental Health Department
1131 Harbor Bay Parkway Suite 250
Alameda, California, 94502-6577

**Subject: Risk Characterization and Uncertainty Analysis Report
SWISS VALLEY CLEANERS
1395 MacArthur Boulevard, San Leandro, California**

Mr. Detterman:

At the request of Mr. William Matthew Brooks, *Advanced GeoEnvironmental, Inc.*(AGE) has prepared this, *Risk Characterization and Uncertainty Analysis Report*, for the site located at 1395 MacArthur Boulevard, San Leandro, California. This report documents the performance of a preliminary Human Health Risk Assessment (HHRA) for the above referenced site using indoor air sample data collected at the site on 08 May 2014 (Table 1).

This report was prepared in accordance with the Department of Toxic Substances Control, *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)*, dated October 2011 and Alameda County Environmental Health Department directives by letter dating, 18 July 2014.

A map illustrating the site location and surrounding areas is included as Figure 1. Plot plans showing boring locations and a regional view of the site are included as Figures 2 and 3, respectively.

BACKGROUND/INTRODUCTION

The Swiss Valley Cleaners site is currently situated within a commercial area of San Leandro, CA, just west of interstate 580 on the corner of MacArthur Boulevard and Joaquin Avenue. The subject site is located in the Estudillo Shopping Center on a 1.76-acre lot with several operating businesses occupying the suites of the shopping center. The subject site was a small retail dry-cleaner for 30 years or more, prior to initial investigations. The site currently houses a 55-gallon capacity closed-loop, chemical dry cleaning machine, which is bolted to the floor. Prior to 2001, the dry cleaning operation utilized tetrachloroethylene (PCE) as the chlorinated solvent cleaning agent, until the

machine was replaced with the current machine, which utilizes green cleaning chemicals for dry cleaning.

Investigations performed at the site have identified that volatile organic compounds (VOCs), specifically PCE, were released into the subsurface beneath the subject property building likely as a result of former dry cleaning operations. PCE concentrations reported in selected soil-vapor and indoor air samples exceeded applicable regulatory agency screening levels.

The data collected at the site to date (Tables 1 and 2), indicates that the highest concentrations of PCE in soil-vapor and indoor air are located within and beneath the subject property building and the adjacent unit located at 1383 MacArthur Boulevard (Solthea Salon & Beauty Supply). Concentrations of PCE have also been detected in indoor air samples collected in the Estudillo Plaza Optometry facility located at 1377 MacArthur Boulevard. Additionally, concentrations of PCE have been detected in soil-vapor samples collected in the parking lot and surrounding the perimeter of the Estudillo Plaza shopping center.

UNCERTAINTY ANALYSIS

As part of the risk analysis, AGE has compiled a list of major assumptions for risk analysis and has evaluated several uncertainties as it relates to PCE soil-vapor impact to indoor air. The assumptions and uncertainties are described below:

List of Major Assumptions:

- *Receptors:* For risk evaluation, AGE selected to evaluate the upper percentile worker. In general, it's assumed that the upper percentile worker is exposed to concentrations of PCE in indoor air for an 8-hour period during a typical work day. For the above risk analysis AGE used a 10-hour period to evaluate risk.
- *Exposure Routes and Chemicals of Concern:* For the risk analysis the single exposure route evaluated was inhalation of the indoor air. PCE was the only chemical of concern used for risk analysis evaluation.
- *Exposure Parameters:* For risk evaluation six exposure parameters were established for potential receptors, which include: 1) body weight (70 kilograms), 2) average exposure time for carcinogen intake (70 years), 3) the duration of exposure (25 years), 4) exposure frequency (250 event per year), 5) average time indoors (10 hours) and 6) the inhalation rate (0.83 cubic meters of air per hour). It is understood that outliers are present in any model and that receptors and time durations can be variable and ever changing.

- *Exposure Point Concentrations:* For the risk analysis, the indoor air concentration reported in the subject property unit ($14 \mu\text{g}/\text{m}^3$) was used to characterize the risk present from PCE vapor intrusion. It is assumed that concentrations can change based on a number of factors, which include but are not limited to: 1) operation of an active sub-grade remediation system, 2) infrastructure changes (i.e. sealing of floor, remodeling, etc.) and 3) alteration of the current fresh air intake rates.

Uncertainty Analysis:

- *Existence of Unidentified Preferential Pathways:* For risk analysis it is assumed that the preferential pathways are through pores existing in the slab at the site. Additional pathways may consist of building footings. No additional preferential pathways are assumed for this analysis.
- *Future Building Changes or Capping:* For this analysis it is assumed that the existing building at the site will not be modified from its current configuration. The site is currently a strip mall and it is unlikely that major changes will be completed during the remaining investigation and remediation phases.
- *Ventilation Rate Changes:* Currently fresh air intake fans and exhaust fans are being installed in each of the three impacted units. For the risk analysis it is assumed that a greater ventilation rate change will occur as a result of the installation of the above infrastructure. Therefore, there is little uncertainty that increased constituent impact will occur as a result of the modifications.
- *Constituent Biotransformation:* For this risk analysis there is some uncertainty that the natural breakdown of PCE to vinyl chloride or other breakdown constituents may naturally occur. However, based on indoor air samples collected at the site to date, vinyl chloride has not been reported over laboratory detection limits. Further evaluation of indoor air samples will occur after active remediation of soil and soil-vapor has been completed for the site.
- *Exposure Scenario Changes:* For this evaluation it is assumed that current low excursion business activities conducted at the site and in adjacent units will not be modified. However, if business activities were modified to include additional vigorous breathing activities, such as an exercise facility, the risk analysis should be modified to include such new activities.

HUMAN HEALTH RISK ASSESSMENT

Using RISC5 software (human health and ecological risk assessment tool for contaminated sites), an HHRA was performed for inhalation of indoor air by an average worker at 1395 MacArthur Boulevard, San Leandro, California. The HHRA was performed to assess the cancer risk and hazard index of inhalation of indoor air from

PCE concentrations detected in indoor air samples at the site. The maximum PCE concentration (in the subject unit) detected ($14 \mu\text{g}/\text{m}^3$, IA-1395 MacArthur) in indoor air samples collected on 08 May 2014 was used for the assessment. The assessment calculated the cancer risk at 0.0000084 (8.4×10^{-6}) and the hazard index at 0.015. HHRA input and output data is presented in Appendix A.

CONCLUSTIONS/RECOMMENDAITONS

Based on the data collected and the results of the HHRA there is minimal or diminimis risk to human health from soil vapor intrusion. Furthermore, the proposed increased ventilation in the subject and adjacent units, and future site remediation should further reduce the human health risk as it relates to contaminant vapor intrusion to indoor air.

AGE recommends that the proposed pilot test be conducted without delay to evaluate soil vapor extraction as a remedial technology to mitigate the residual chlorinated hydrocarbon impact at the site.

LIMITATIONS

Our professional services were performed using that degree of care and skill ordinarily exercised by environmental consultants practicing in this or similar localities. Findings are based upon analytical results provided by an independent laboratory. Evaluations of the geologic/hydrogeologic conditions at the site for the purpose of this investigation were made from a limited number of available data points (i.e. air, soil vapor, soil and grab ground water samples) and subsurface conditions may vary away from these data points. No other warranty, expressed or implied, is made as to the professional recommendations contained in this report.

If you have any questions or require further information, please contact our office at (209) 467-1006.

Sincerely,

Advanced GeoEnvironmental, Inc.



Daniel J. Villanueva
Project Geologist



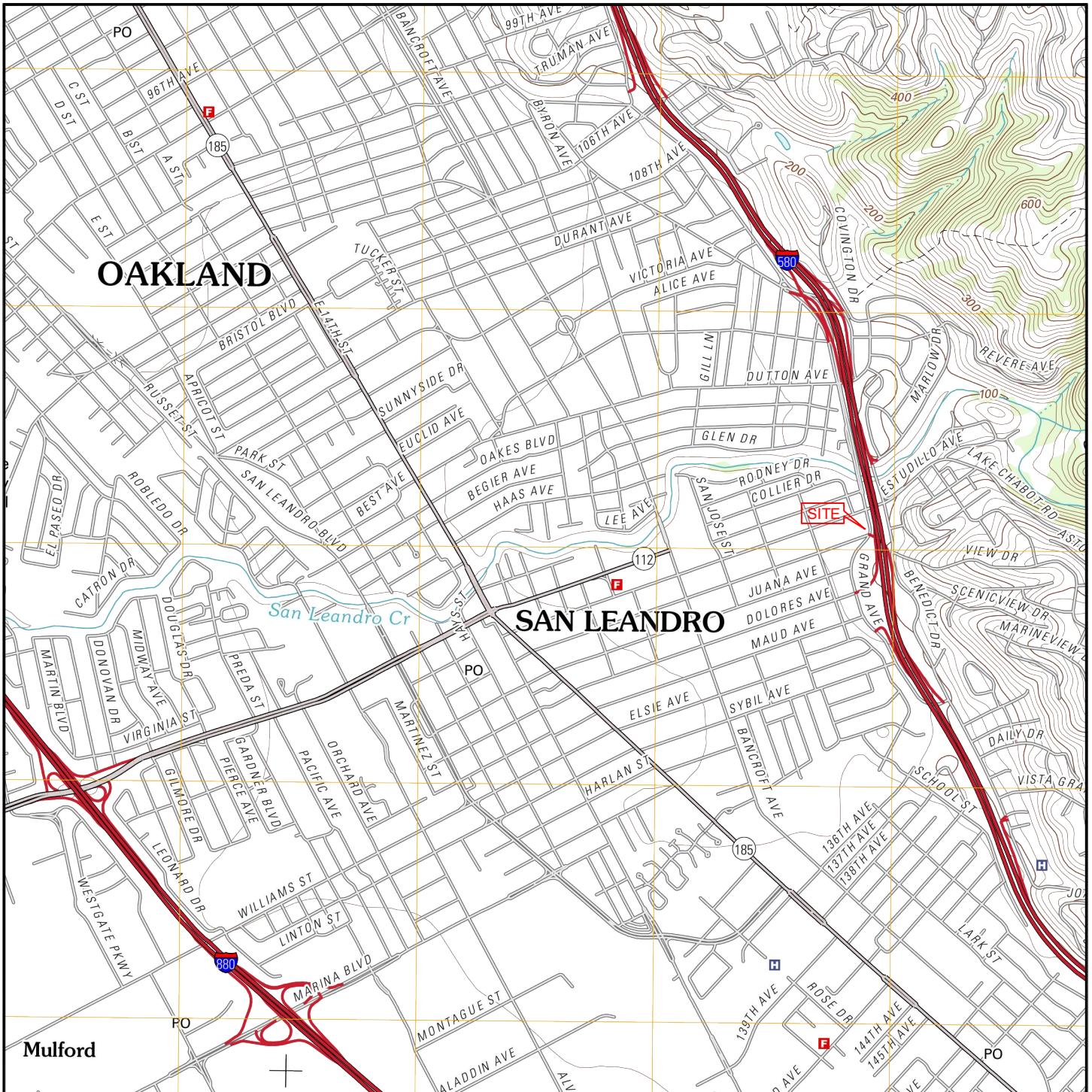
Brian W. Millman
Senior Project Geologist
California Professional Geologist No. 8574



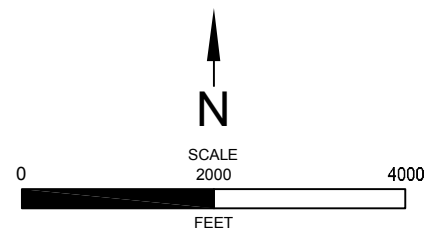
Enclosure

cc: Mr. William Matthew Brooks, Ardenbrook, Inc.

FIGURES



SAN LEANDRO QUADRANGLE, CALIFORNIA
 7.5 MINUTE SERIES (U.S. GEOLOGICAL SURVEY)



LOCATION MAP
 SWISS VALLEY CLEANERS
 1395 MacArthur Boulevard
 SAN LEANDRO, CALIFORNIA



Advanced
GeoEnvironmental, Inc.
 www.advgeoenv.com

PROJECT NO. AGE-NC-12-2461	FILE: LOCATION	FIGURE:
DATE: 21 MAY, 2013	DRAWN BY: MAC	1

LEGEND

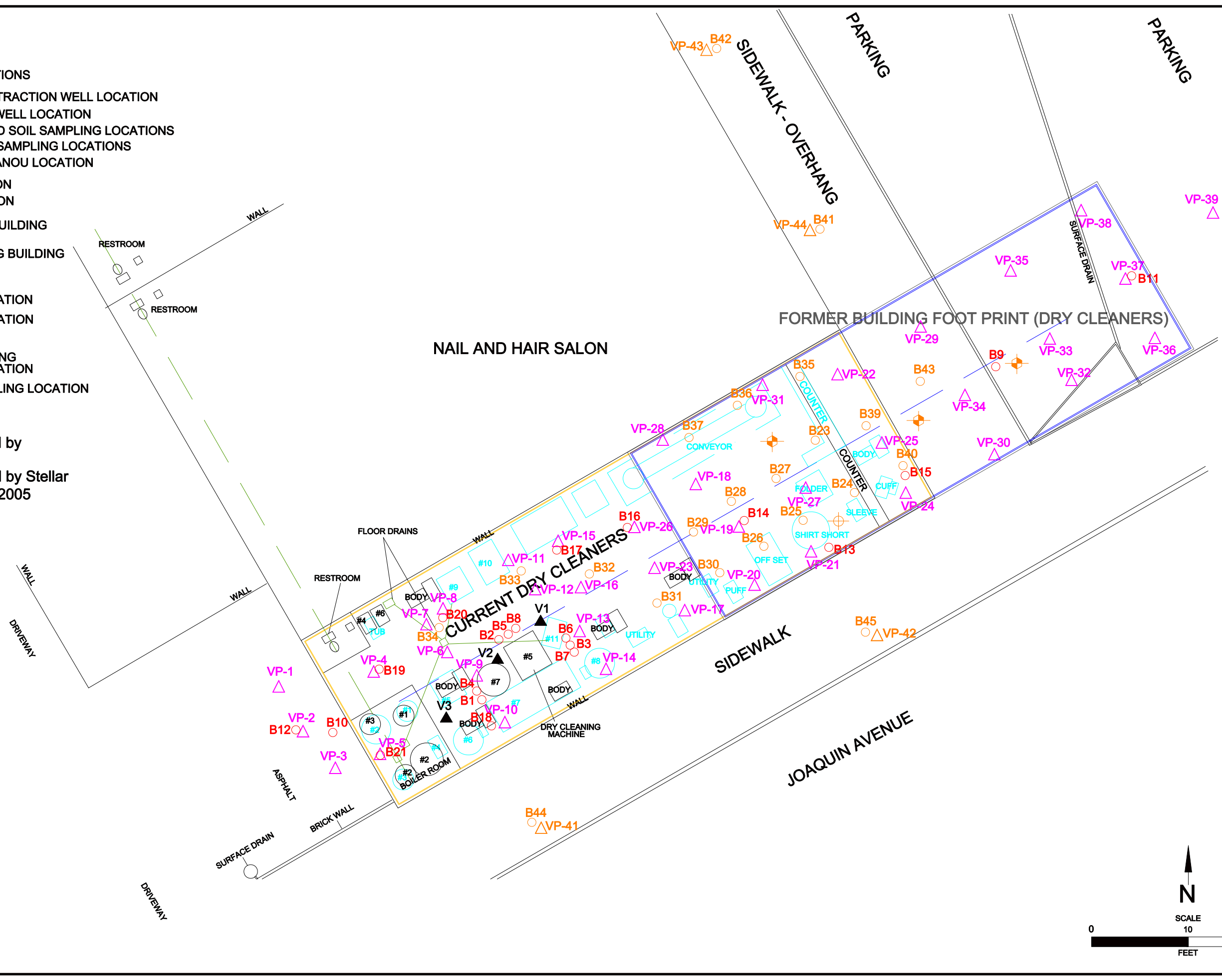
- B9 ○ SOIL BORING LOCATION
- V1 ▲ SOIL VAPOR LOCATIONS
- △ SOIL VAPOR SURVEY LOCATIONS
- ⊕ PROPOSED SOIL VAPOR EXTRACTION WELL LOCATION
- ⊙ PROPOSED OBSERVATION WELL LOCATION
- ⊕ PROPOSED SOIL-VAPOR AND SOIL SAMPLING LOCATIONS
- ⊙ PROPOSED SHALLOW SOIL SAMPLING LOCATIONS
- ◇ SURFACE DRAIN/SEWER CLEANOUT LOCATION
- SEWER LINE LOCATION
- WATER LINE LOCATION
- CURRENT DRY CLEANING BUILDING
- HISTORICAL DRY CLEANING BUILDING
- #8 GARMET CLEANING CHEMICAL RECOVERY LOCATION
- CUFF GARMET HANDELING LOCATION
- #8 FORMER GARMET CLEANING CHEMICAL RECOVERY LOCATION
- CUFF FORMER GARMET HANDELING LOCATION

Notes:

Borings B1 through B3 advanced by Hageman-Aguiar in August 1998
 Borings B4 through B6 advanced by Stellar Environmental Solutions in April 2005

- #1 - HOT WATER HEATER
- #2 - BOILER
- #3 - COMPRESSOR
- #4 - COMPT.
- #5 - RECLAIMER
- #6 - FILTER
- #7 - CLEANING UNIT
- #8 - SNIFF-O-MISER (RECOVERY)
- #9 - WX
- #10 - TUMBLER
- #11 - SPOT CLEANER
- #1 - HOT WATER HEATER
- #2 - BOILER
- #3 - COMPRESSOR
- #4 - SMALL DRY CLEANING UNIT
- #5 - LARGE DRY CLEANING UNIT
- #6 - SMALL DRYING UNIT
- #7 - RECLAIMER

VP-40
 B38



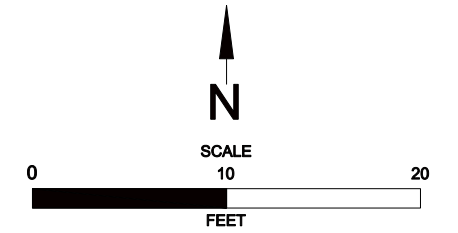
Advanced GeoEnvironmental, Inc.
 www.advgeoenv.com

PROJECT NO. AGE-12-2461
 DATE: OCTOBER 2013

FILE:
 DRAWN BY: MAC

FIGURE: 2

SITE PLAN
 SWISS VALLEY CLEANERS
 1395 MACARTHUR BOULEVARD
 SAN LEANDRO, CALIFORNIA



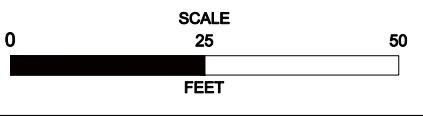


LEGEND

- V1 ▲ SOIL VAPOR LOCATIONS
- △ SOIL VAPOR SURVEY LOCATIONS
- ◇ SURFACE DRAIN/SEWER CLEANOUT LOCATION
- SEWER LINE LOCATION
- WATER LINE LOCATION
- CURRENT DRY CLEANING BUILDING
- HISTORICAL DRY CLEANING BUILDING

Notes:

Borings B1 through B3 advanced by Hageman-Aguilar in August 1998
 Borings B4 through B6 advanced by Stellar Environmental Solutions in April 2005



REGIONAL SITE PLAN
SWISS VALLEY CLEANERS
1395 MACARUTHER BOULEVARD
SAN LEANDRO, CALIFORNIA

Advanced GeoEnvironmental, Inc. www.advgeoenv.com	
PROJECT NO. AGE-NC-SC	FILE: FILE
DATE: MAY 2014	DRAWN BY: MAC
FIGURE: 3	

TABLES

TABLE 1
INDOOR AIR ANALYTICAL RESULTS
SWISS VALLEY CLEANERS
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Date	TO-15																
		PCE	TCE	1,2-DCA	EDB	Naphthalene	1,4-DCB	Acetone	CT	B	T	E	X	Chloromethane	DCDFM	Ethyl Acetate	TCFM	Chloroform
IA-1395 MacArthur	04-10-2014	12	0.038	0.085	<0.0078	0.34	0.099	46	0.41	0.52	1.4	<0.44	1.2	0.60	2.0	2.7	1.4	0.19
	05-08-2014	14	0.11	0.19	<0.0078	0.17	0.063	75	0.44	0.27	0.74	<0.44	<1.3	0.67	2.0	8.8	1.1	0.22
IA-1383 MacArthur	04-10-2014	11	0.057	0.43	0.011	0.26	0.096	3,600	0.38	0.65	11	0.49	2.0	<0.21	<0.50	260	<0.57	0.51
	05-08-2014	17	0.055	1.1	<0.0078	0.36	0.12	5,200	0.45	0.69	21	<0.44	1.5	<0.21	<0.50	1,600	<0.57	0.49
IA-1377 MacArthur	04-10-2014	2.1	0.027	0.76	<0.0078	0.22	0.10	110	0.39	0.54	2.8	0.69	3.0	0.54	1.8	7.4	0.78	0.18
	05-08-2014	5.1	0.033	1.1	<0.0078	0.38	0.37	38	0.45	0.37	6.9	1.1	4.4	0.67	2.1	4.9	1.0	0.20

TABLE 1
INDOOR AIR ANALYTICAL RESULTS
SWISS VALLEY CLEANERS
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Date	TO-15																
		PCE	TCE	1,2-DCA	EDB	Naphthalene	1,4-DCB	Acetone	CT	B	T	E	X	Chloromethane	DCDFM	Ethyl Acetate	TCFM	Chloroform
IA-1369 MacArthur	05-08-2014	0.045	0.020	2.2	<0.0078	0.26	0.17	18	0.47	0.60	2.1	<0.44	<1.3	0.68	2.0	2.2	1.3	0.25
Outside 1395 MacArthur	05-08-2014	0.042	0.014	0.067	<0.0078	0.12	0.023	13	0.47	0.20	0.41	<0.44	<1.3	0.64	2.0	2.1	1.1	0.24
SFBRWCB ESL (Commercial)		2.1	3.0	0.58	0.17	0.36	1.1	140,000	0.29	0.42	1,300	4.9	440	390	-	-	-	2.3

Notes:

SFBRWCB ESL: San Francisco Bay Regional Water Quality Control Board Environmental Screening Level for indoor Air.

<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.

PCE: Tetrachloroethene

TCE: Trichloroethene

1,2-DCA: 1,2-Dichloroethane

EDB: 1,2-Dibromoethane

1,4-DCB: 1,4-dichlorobenzene

VC: Vinyl Chloride

CT: Carbon Tetrachloride

DCDFM: Dichlorodifluoromethane

TCFM: Trichlorofluoromethane

IPA: Isopropyl Alcohol

B: Benzene; T: Toluene; E: Ethyl-benzene; X: Total Xylenes

*Concentrations denoted with orange fill are above ambient and indoor air screening levels for a commercial setting.

TABLE 2
ANALYTICAL RESULTS OF SOIL-VAPOR SAMPLES
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Date	Depth (feet bsg)	EPA Method 8260B							
			PCE	TCE	1,1-DCE	Trans 1,2-DCE	Cis 1,2-DCE	VC	Chloroform	
V-1	05-08-2013	5	29,000	<2	<2	<2	<2	<2	<2	<1
V-2	05-08-2013	5	23,000	<2	<2	<2	<2	<2	<2	<1
V-3	05-08-2013	5	15,000	<2	<2	<2	<2	<2	<2	<1
VP-1 (1 purge volume)	10-15-2013	5	33,000	<100	<100	<100	<100	<100	<100	<100
VP-1 (3 purge volumes)	10-15-2013	5	33,000	<100	<100	<100	<100	<100	<100	<100
VP-1 (10 purge volumes)	10-15-2013	5	33,000	<100	<100	<100	<100	<100	<100	<100
VP-2	10-15-2013	5	27,000	<100	<100	<100	<100	<100	<100	<100
VP-3	10-15-2013	3	13,000	<100	<100	<100	<100	<100	<100	<100
VP-4	10-15-2013	5	43,000	<100	<100	<100	<100	<100	<100	<100
VP-5	10-15-2013	5	4,400	<100	<100	<100	<100	<100	<100	240
VP-6	10-15-2013	5	36,000	<100	<100	<100	<100	<100	<100	<100
VP-7	10-15-2013	5	39,000	<100	<100	<100	<100	<100	<100	<100
VP-7 (dup)	10-15-2013	5	37,000	<100	<100	<100	<100	<100	<100	<100
VP-8	10-15-2013	5	67,000*	<100	<100	<100	<100	<100	<100	<100
VP-9	10-16-2013	5	42,000	<100	<100	<100	<100	<100	<100	<100
VP-10	10-16-2013	5	54,000*	<100	<100	<100	<100	<100	<100	<100
VP-11	10-16-2013	5	110,000	<100	<100	<100	<100	<100	<100	<100
VP-12	10-16-2013	5	95,000	<100	<100	<100	<100	<100	<100	<100
VP-13	10-16-2013	5	80,000	<100	<100	<100	<100	<100	<100	<100

TABLE 2
ANALYTICAL RESULTS OF SOIL-VAPOR SAMPLES
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Date	Depth (feet bsg)	EPA Method 8260B						
			PCE	TCE	1,1-DCE	Trans 1,2-DCE	Cis 1,2-DCE	VC	Chloroform
VP-14	10-16-2013	5	55,000	<100	<100	<100	<100	<100	<100
VP-14 (dup)	10-16-2013	5	57,000	<100	<100	<100	<100	<100	<100
VP-15	10-16-2013	5	83,000	<100	<100	<100	<100	<100	<100
VP-16	10-16-2013	5	110,000	<100	<100	<100	<100	<100	<100
VP-17	10-16-2013	5	80,000	<100	<100	<100	<100	<100	<100
VP-18	10-16-2013	5	95,000	<100	<100	<100	<100	<100	<100
VP-19	10-16-2013	5	76,000	<100	<100	<100	<100	<100	<100
VP-20	not completed								
VP-21	10-17-2013	5	100,000	<100	<100	<100	<100	<100	<100
VP-22	10-17-2013	5	110,000	<100	<100	<100	<100	<100	<100
VP-23	10-17-2013	5	77,000	<100	<100	<100	<100	<100	<100
VP-24	10-17-2013	3	400,000	<100	<100	<100	<100	<100	<100
VP-25	10-17-2013	5	190,000	<100	<100	<100	<100	<100	<100
VP-26	10-17-2013	5	84,000	<100	<100	<100	<100	<100	<100
VP-27	10-17-2013	5	100,000	<100	<100	<100	<100	<100	<100
VP-28	10-17-2013	5	110,000	<100	<100	<100	<100	<100	<100
VP-29	10-17-2013	5	50,000	<100	<100	<100	<100	<100	<100

TABLE 2
ANALYTICAL RESULTS OF SOIL-VAPOR SAMPLES
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Date	Depth (feet bsg)	EPA Method 8260B						
			PCE	TCE	1,1-DCE	Trans 1,2-DCE	Cis 1,2-DCE	VC	Chloroform
VP-30	10-17-2013	5	1,200	<100	<100	<100	<100	<100	<100
VP-31	10-18-2013	5	100,000	<100	<100	<100	<100	<100	<100
VP-32	10-18-2013	5	2,500	<100	<100	<100	<100	<100	<100
VP-32 (dup)	10-18-2013	5	2,100	<100	<100	<100	<100	<100	<100
VP-33	10-18-2013	5	18,000	<100	<100	<100	<100	<100	<100
VP-34	10-18-2013	5	20,000	<100	<100	<100	<100	<100	<100
VP-35	10-18-2013	5	14,000	<100	<100	<100	<100	<100	<100
VP-36	10-18-2013	5	5,900	<100	<100	<100	<100	<100	<100
VP-37	10-18-2013	5	14,000	<100	<100	<100	<100	<100	<100
VP-38	10-18-2013	5	37,000	<100	<100	<100	<100	<100	<100
VP-39	10-18-2013	5	24,000	<100	<100	<100	<100	<100	<100
VP-40	10-18-2013	5	17,000	220	<100	<100	<100	<100	<100
VP-41	05-05-2014	5	7,300	<100	<100	<100	<100	<100	<100
VP-42	05-05-2014	5	14,000	<100	<100	<100	<100	<100	<100
VP-43	05-05-2014	5	32,000	<100	<100	<100	<100	<100	<100
VP-43 (dup)	05-05-2014	5	30,000	<100	<100	<100	<100	<100	<100
VP-44	05-05-2014	5	38,000	<100	<100	<100	<100	<100	<100
VP-45	05-06-2014	5	1,200	<100	<100	<100	<100	<100	<100
VP-46	05-06-2014	5	24,000	<100	<100	<100	<100	<100	<100

TABLE 2
ANALYTICAL RESULTS OF SOIL-VAPOR SAMPLES
Swiss Valley Cleaners
1395 MacArthur Boulevard, San Leandro, California
(micrograms per cubic meter)

Sample ID	Date	Depth (feet bsg)	EPA Method 8260B						
			PCE	TCE	1,1-DCE	Trans 1,2-DCE	Cis 1,2-DCE	VC	Chloroform
VP-46 (dup)	05-06-2014	5	21,000	<100	<100	<100	<100	<100	<100
VP-47	05-07-2014	5	1,400	<100	<100	<100	<100	<100	<100
VP-48	05-07-2014	5	3,400	<100	<100	<100	<100	<100	<100
VP-49	05-07-2014	5	3,000	<100	<100	<100	<100	<100	<100
VP-50	05-07-2014	5	570	<100	<100	<100	<100	<100	<100
VP-51	05-07-2014	5	2,100	<100	<100	<100	<100	<100	<100
VP-52	05-07-2014	5	1,300	<100	<100	<100	<100	<100	<100
VP-52 (dup)	05-07-2014	5	1,500	<100	<100	<100	<100	<100	<100
CHHSLs (Residential)			180	528	-	31,900	15,900	13.3	-
SFBRWCB ESL Shallow Soil Gas (Commercial)			2,100	3,000	100,000	260,000	-	16	230
SFBRWCB ESL Shallow Soil Gas (Residential)			210	300	880,000	31,000	-	160	2,300

Notes:

SFBRWCB ESL: San Francisco Bay Regional Water Quality Control Board Environmental Screening Level for shallow soil gas

<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.

CHHSLs: California Human Health Screening Levels

PCE: Tetrachloroethene

TCE: Trichloroethene

1,1-DCE: 1,1-Dichloroethene

Trans 1,2-DCE: Trans 1,2-Dichloroethene

Cis 1,2-DCE: Cis 1,2-Dichloroethene

VC: Vinyl Chloride

bsg: below surface grade

*: notation for detection above the liner range of calibration

APPENDIX A

Summary of Input Data for Risk Calculation

Description:

Date:

08-04-2014

10:22:27

Receptors:

Worker - Upper Percentile

Routes:

Inhalation of Indoor Air

Chemicals:

Tetrachloroethylene (PCE)

Exposure Parameters

Exposure Pathway	Units	Worker - Upper Percentile
Body weight	kg	70
Averaging time for carcinogens	yr	70
Exposure duration	yr	25

Inhalation of Indoor Air	Units	Worker - Upper Percentile
Exposure frequency for indoor air	events/yr	250
Time indoors	hr/d	10
Inhalation rate indoors	m3/hr	0.83

Slope Factors and Reference Doses

Chemical	Units	Tetrachloroethylene (PCE)
Unit risk factor	1/(ug/m3)	5.90E-06
Reference Concentration	mg/m3	0.27

Exposure Point Concentrations

--- Used to calculate risk and hazard index.

Concentrations in Indoor Air (mg/m3)	
Tetrachloroethylene (PCE)	1.40E-02

SUMMARY OF CARCINOGENIC RISK

Receptor 1:

Worker - Upper Percentile

Chemical	Inhalation of Indoor Air	TOTAL
Tetrachloroethylene (PCE)	8.4E-06	8.4E-06
TOTAL	8.4E-06	8.4E-06

SUMMARY OF HAZARD QUOTIENTS

Receptor 1:

Worker - Upper Percentile

Chemical	Inhalation of Indoor Air	TOTAL
Tetrachloroethylene (PCE)	1.5E-02	1.5E-02
TOTAL	1.5E-02	1.5E-02