February 9, 2016

Ms. Jamie Verrigni
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C
625 Broadway – 11th Floor
Albany, New York 12233-7014

Re: Soil Vapor Intrusion Investigation Summary
Orangetown Shopping Center
1-45 Orangetown Shopping Center
Orangeburg, New York
NYSDEC Site Number C344066

Dear Ms. Verrigni:

On behalf of UB Orangeburg, LLC, Groundwater & Environmental Services, Inc. (GES) has prepared this *Soil Vapor Intrusion Investigation Summary* which outlines the investigation activities completed at three of the tenant spaces (the New China House Restaurant and two vacant spaces which were formerly occupied by Sparkle Cleaners and the Deli Spot) located within building #2 of the Orangetown Shopping Center (the "site").

In a letter dated July 29, 2015, the New York State Department of Environmental Conservation (NYSDEC) granted approval to temporarily shut down the Sub Slab Depressurization Systems (SSDSs) based on results of the initial SVI investigation completed in April 2015. The letter also requested that a second SVI investigation be completed during the 2015-2016 heating season to assess whether permanent shutdown is feasible. In accordance with the NYSDEC letter, GES temporarily shut down the SSDSs on August 17, 2015 and completed the second SVI investigation on December 16, 2015.

Based on the results of this SVI investigation, GES recommends permanent shut-down and removal of the idled SSDSs currently located at the site. Shutdown would be completed in accordance with the *Workplan for Permanent SSDS Shutdown* that was submitted to the NYSDEC on July 8, 2015. Upon completion of SSDS shut-down, GES will conduct four quarters of groundwater monitoring and sampling, to evaluate whether additional remediation is necessary.

If you have any questions and/or comments regarding this submittal, please contact the undersigned at 866-839-5195, extensions 3862 and 3833, respectively.

Sincerely,

Christina Andreotto
Staff Geologist

Karen Bourque
Senior Project Manager

cc: Monica Roth, UB Orangeburg, LLC
Stephan Rapaglia, UB Orangeburg, LLC (e-copy)
Tom Myers, UB Orangeburg, LLC (e-copy)
Renata Ockerby, New York State Department of Health
Amen Omorogbe, New York State Department of Environmental Conservation
Hilton Soniker, Esq., JLJ Management

Attachment

Soil Vapor Intrusion Investigation Summary
February 2016

Orangetown Shopping Center

NYSDEC Site #C344066
1-45 Orangetown Shopping Center
Orangeburg, New York

Prepared for:

UB Orangeburg, LLC
321 Railroad Avenue
Greenwich, CT 06830

Prepared by:

Groundwater & Environmental Services, Inc.
16 Mount Ebo Road South, Suite 21
Brewster, New York 10509

1.0 OBJECTIVE

The objective of this report is to summarize the soil vapor intrusion investigation completed on December 16, 2015 at three of the tenant spaces (the New China House Restaurant and two vacant spaces which were formerly occupied by Sparkle Cleaners and the Deli Spot) located within building #2 of the Orangetown Shopping Center (the "site"). All work was completed in accordance with the *Revised Soil Vapor Intrusion Investigation Work Plan* (Work Plan) submitted to the New York State Department of Environmental Conservation (NYSDEC) on March 26, 2015 and approved on March 27, 2015. Work was also completed in accordance with the *Soil Vapor Intrusion Study* letter submitted to the NYSDEC on November 18, 2015 and approved on November 30, 2015. In addition, any proposed modifications to the Work Plan were communicated to the NYSDEC via email and approved prior to commencement of field activities. All correspondences with the NYSDEC are included as **Appendix A**.

This investigation was conducted for the purpose of evaluating the potential of soil vapor intrusion in the tenant spaces located within Building #2 at the site in support of permanent shutdown and removal of the idled subsurface depressurization systems (SSDSs) currently located at the site. A site location map and a site map indicating pertinent site features are presented as **Figures 1** and **2**.

1.1 Background Information

The subject site is a 1.2-acre portion of the shopping plaza, located near the southeast corner of the parcel. The shopping plaza is located at the southeast corner of Orangeburg and Dutch Hill Roads in Orangeburg, New York, and is comprised of an 11-acre parcel that contains several commercial buildings. The site has been utilized as farmland, a camp, an amphitheater, and the current retail shopping center. The plaza is situated in a suburban area of mixed land use, and is surrounded predominantly by commercial and residential properties. It is served by a public water supply system. There had previously been a dry cleaner operating at the shopping center since approximately 1966. The Sparkle Cleaners, which operated as a dry cleaning facility within building #2, is currently inactive and the tenant space remains vacant to date. Investigations performed to date have confirmed the presence of contamination caused by the release of dry cleaning fluids.

In January 2007, JLJ Management Company entered into Brownfield Cleanup Agreement (BCA) #A3-0563-0906BCA with the NYSDEC to remediate a 1.2-acre portion of the 11-acre property. This BCA required the Remedial Party, JLJ Management Group, to investigate and remediate contaminated media at the site.

An environmental easement (EE) for the site was executed by the NYSDEC on September 16, 2011. The site is being managed by GES with the approved Site Management Plan (SMP), Remedial Action Work Plan (RAWP) and Final Engineering Report (FER) completed by Kleinfelder, Inc. and approved by the NYSDEC in December of 2011.

A property transfer of the shopping center was completed on March 28, 2012. UB Orangeburg, LLC acquired the property from JLJ Management Company, Inc.

2.0 SCOPE OF WORK

All activities described in this report were completed in accordance with published NYSDOH guidance for indoor air and vapor intrusion evaluation of the Property. Field activities included a pre-sampling inspection, a chemical inventory, and collection samples over an 8-hour period from previously installed sub-slab vapor points. Laboratory analysis and reporting followed these field activities.

3.0 PRE-SAMPLING REQUIREMENTS

3.1 Pre-sampling Inspection and Preparation of Property

On December 16, 2015, Groundwater & Environmental Services, Inc. (GES) conducted a pre-sampling inspection within the three tenant spaces (the New China House Restaurant and two vacant spaces which were formerly occupied by Sparkle Cleaners and the Deli Spot) to determine the type of structure, floor layout and physical conditions of the buildings being studied and to identify conditions that may affect or interfere with the planned testing. This information along with information on sources of potential indoor contamination are identified on the NYSDOH Indoor Air Quality Questionnaire and Building Inventory forms, which are provided as **Appendix B**. GES also utilized a photo-ionization detector (PID) to evaluate and determine any potential interference. Items that were evaluated during the building inventory included but were not limited to the use or storage of chemical products. Potential interferences are noted on the NYSDOH Indoor Air Quality Questionnaire and Building Inventory forms.

3.2 Product Inventories

Because some consumer products contain ingredients which can contribute to levels of VOCs in the air, a product inventory was completed prior to completion of the air sampling activities on December 16, 2015 to provide an accurate assessment of the potential contribution of noted products. Each room in the three tenant spaces (the New China House Restaurant and two vacant spaces which were formerly occupied by Sparkle Cleaners and the Deli Spot) was inspected and the products containing or potentially containing VOCs were listed on the Products Inventory Form (attached) along with PID readings obtained near such products. In addition, the known volatile ingredients were also recorded for each product. The product inventory is included on the attached NYSDOH Indoor Air Quality Questionnaire and Building Inventory forms (**Appendix B**).

4.0 SOIL VAPOR INTRUSION INVESTIGATION

In a letter dated July 29, 2015, the NYSDEC granted approval to temporarily shut down the SSDSs based on results of the initial SVI investigation completed in April 2015. The letter also requested that a second SVI investigation be completed during the 2015-2016 heating season to assess whether permanent shutdown is feasible. In accordance with the NYSDEC letter, GES temporarily shut down the SSDSs on August 17, 2015 and completed the second SVI investigation on December 16, 2015.

All work was completed in accordance with the Work Plan submitted to the NYSDEC on March 26, 2015 and approved on March 27, 2015. Work was also completed in accordance with the *Soil Vapor Intrusion Study* letter submitted to the NYSDEC on November 18, 2015 and approved on November 30, 2015. All correspondences with the NYSDEC are included as **Appendix A**.

4.1 Work Plan Deviations

In the Work Plan submitted to the NYSDEC on March 26, 2015, GES proposed the installation of six temporary vapor points which would be utilized in collection of the sub-slab air samples. However, as the three tenant spaces scheduled to be sampled already contained multiple permanent sub-slab monitoring and vapor extraction points, it was determined that these existing points could be utilized to complete the sub-slab sampling without further disturbance to the property. The NYSDEC approved this deviation via email on April 21 and 23, 2015. The approximate locations of the points utilized for sub-slab sampling are shown on **Figure 3** and a copy of the email correspondence is provided in **Appendix A**.

4.2 Quality Assurance/Quality Control

Care was taken during all aspects of the sample collection to ensure that high quality data was obtained. Sub-slab samples were collected from the previously installed sub-slab vapor points at the approximate locations shown on **Figure 3**. To verify the integrity of the sample vapor points, a tracer gas was used to test the seal. On December 16, 2015, prior to sampling, the sub-slab vapor points were first purged of three times the volume of the sampling point using a GILIAN personal air sampling system and a flow module (vacuum pump) set at a maximum flow rate of 0.2 liters per minute. Helium tracer gas was then used to confirm an adequate seal was in place at all locations prior to collection of the soil gas samples.

4.3 Sub-Slab and Ambient Air Sample Collection

Once the helium tracer tests were complete and it was confirmed that each point was adequately sealed, sub-slab vapor and ambient air samples were collected using SUMMA canisters equipped with 8-hour regulators. Upon completion of the 8-hour sampling period, each sample collection apparatus was stored according to the sample collection method protocol and delivered to Accutest Laboratories of Dayton, New Jersey under proper chain of custody for analysis of VOCs via Environmental Protection Agency (EPA) Methods VTO15NYLL or VTO15NYSVLL.

To characterize contaminant concentration trends and potential exposures, ambient air and sub-slab vapor samples were collected from the approximate locations shown on the attached **Figure 3** and as summarized below in text and table format:

Former Deli Spot: Vapor extraction well VP-1 and sub-slab monitoring point SSD-MP-2.

Former Sparkle Cleaners: Vapor extraction wells VP-5 and VP-6.

New China House (Restaurant): Sub-slab monitoring point SSD-MP-5 and vapor extraction well VP-9.

Ambient Outdoor Sample: Sample taken outside the building to the east of the three tenant spaces.

MONITORING LOCATIONS

Sample Location	Sample Identification	Sample Description
Former Deli Spot	Deli VP-1	Sub-slab
Former Deli Spot	Deli VP-1 Ambient	Ambient
Former Deli Spot	Deli SSD-MP-2	Sub-slab
Former Deli Spot	Deli SSD-MP-2 Ambient	Ambient
Former Sparkle Cleaners	Sparkle VP-5	Sub-slab
Former Sparkle Cleaners	Sparkle VP-5 Ambient	Ambient
Former Sparkle Cleaners	Sparkle VP-6	Sub-slab
Former Sparkle Cleaners	Sparkle VP-6 Ambient	Ambient
New China House (Restaurant)	China SSD-MP-5	Sub-slab
New China House (Restaurant)	China SSD-MP-5 Ambient	Ambient
New China House (Restaurant)	China VP-9	Sub-slab
New China House (Restaurant)	China VP-9 Ambient	Ambient
Outside (east of building)	Outside Ambient	Ambient

4.4 Sample Analysis

Laboratory analytical results indicated detections of individual VOCs above laboratory detection limits in all of the sub-slab and ambient air samples collected. The analytical data is summarized on **Tables 1** and **2** and the laboratory analytical report is included as **Appendix C**. In addition, a data usability summary report (DUSR) for all samples was completed by RemVer of Colchester, Connecticut and is provided as **Appendix D**.

Laboratory analytical results for the constituents of concern (COCs), carbon tetrachloride, tetrachloroethene (PCE), 1,1,1-trichloroethane (1,1,1-TCA), and trichloroethene (TCE), were then compared to the NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, section 3.4.2, Indoor Air Matrices 1 and 2 (attached as **Appendix E**). Based on the comparison of the analytical results to the matrices, GES determined that no further action was required at each of the sampled locations as detailed in the table below:

CONSTITUENTS OF CONCERN TABLE

Samples		**Chemical Compound**				**Action Required**
Sample Location	Sample Type	Carbon Tetrachloride	1,1,1-TCA	PCE	TCE	
Deli VP-1	Ambient	ND	ND	ND	ND	No Further Action
	Sub-slab	ND	ND	3.3	ND	
Deli SSD-MP-2	Ambient	ND	ND	ND	ND	No Further Action
	Sub-slab	ND	ND	ND	ND	
China SSD-MP-5	Ambient	ND	ND	ND	ND	No Further Action
	Sub-slab	ND	ND	ND	ND	
China VP-9	Ambient	ND	ND	2.0	ND	No Further Action
	Sub-slab	ND	ND	1.1	ND	
Sparkle VP-6	Ambient	ND	ND	ND	ND	No Further Action
	Sub-slab	ND	ND	2.9	0.35	
Sparkle VP-5	Ambient	ND	ND	ND	ND	No Further Action
	Sub-slab	ND	ND	ND	ND	

Notes:
1. All compounds reported in ug/m^3.
2. Refer to **Tables 1** and **2** for a complete list of sampled locations and analytical compounds.
3. Refer to **Appendix E** for detailed descriptions of the required monitoring or remedial actions.

5.0 CONCLUSIONS / RECOMMENDATIONS

On December 16, 2015, a soil vapor intrusion investigation was completed at three of the tenant spaces (the New China House Restaurant and two vacant spaces which were formerly occupied by Sparkle Cleaners and the Deli Spot) located within building #2 of the Orangetown Shopping Center (the "site"). This investigation was conducted for the purpose of evaluating the potential of soil vapor intrusion in the tenant spaces in support of permanent shutdown and removal of the idled SSDSs currently located at the site.

Laboratory analytical results indicated detections of individual VOCs above laboratory detection limits in the sub-slab and ambient air samples collected; however, results for the COCs, carbon tetrachloride, PCE, 1,1,1-TCA, and TCE, were then compared to the NYSDOH *Guidance for Evaluating Soil Vapor*

Intrusion in the State of New York, section 3.4.2, Indoor Air Matrices 1 and 2. Based on the comparison of the analytical results to the matrices, GES determined that no further action was required at each of the sampled locations.

Based on the results of this SVI investigation, GES recommends permanent shut-down and removal of the idled SSDSs currently located at the site. Shutdown would be completed in accordance with the *Workplan for Permanent SSDS Shutdown* that was submitted to the NYSDEC on July 8, 2015. Upon completion of SSDS shut-down, GES will conduct four quarters of groundwater monitoring and sampling, to evaluate whether additional remediation is necessary.

Prepared By:

Christina Andreotto 2/9/16

Christina Andreotto Date
Staff Geologist

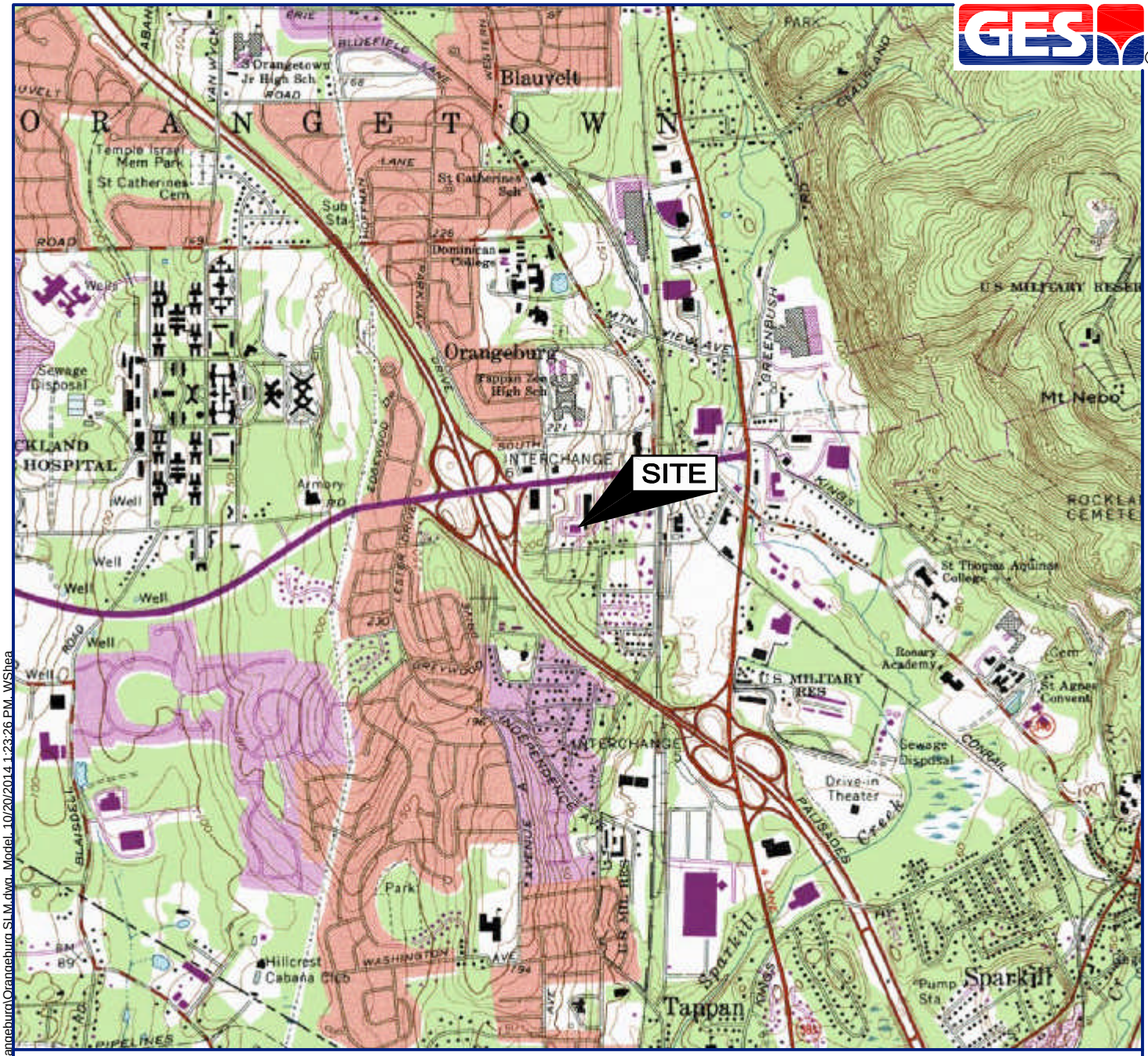
Reviewed By:

Karen Bourque 2/9/16

Karen Bourque Date
Senior Project Manager

FIGURES

Site Location Map
Site Map
Sub-Slab and Ambient Air Sampling Locations



SOURCE: USGS 7.5 MINUTE SERIES
TOPOGRAPHIC QUADRANGLE 1979
NYACK, NEW YORK
CONTOUR INTERVAL = 10'

QUADRANGLE LOCATION

DRAFTED BY: W.G.S. (N.J.)	SITE LOCATION MAP
CHECKED BY: CA	UB ORANGEBURG, LLC 1-45 ORANGETOWN SHOPPING CENTER ORANGEBURG, NEW YORK
REVIEWED BY: KB	Groundwater & Environmental Services, Inc. 16 MT. EBO ROAD SOUTH, SUITE 21, BREWSTER, NEW YORK 10509
NORTH	SCALE IN FEET: 0 — 2000 / DATE: 10-20-14 / FIGURE: 1

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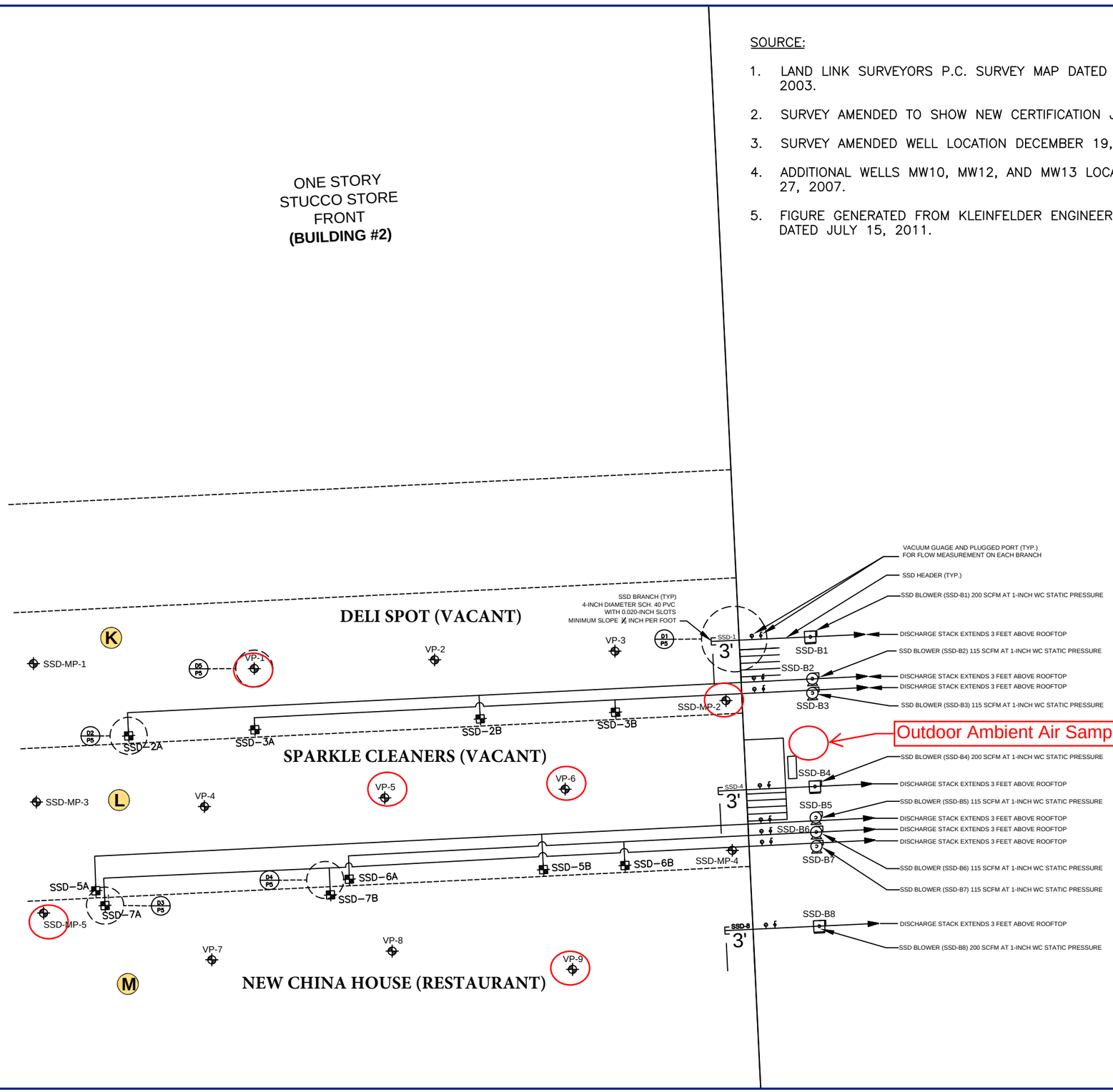
LEGEND

- PROPERTY BOUNDARY
- CHAIN LINK FENCE
- CATCH BASIN
- UTILITY MANHOLE
- UTILITY POLE
- LIGHT POLE
- FIRE HYDRANT
- MONITORING WELL
- INJECTION WELL
- DESTROYED MONITORING WELL
- PIEZOMETER
- SOIL VAPOR EXTRACTION WELL
- UNDERGROUND SANITARY SEWER LINE
- OVERHEAD UTILITIES

DRAFTED BY: W.G.S. (N.J.)	SITE MAP
CHECKED BY: CA	UB ORANGEBURG, LLC 1-45 ORANGETOWN SHOPPING CENTER ORANGEBURG, NEW YORK
REVIEWED BY: KB	Groundwater & Environmental Services, Inc. 16 MT. EBO ROAD SOUTH, SUITE 21, BREWSTER, NEW YORK 10509
NORTH	SCALE IN FEET: 0 APPROXIMATE 50 / DATE: 10-20-14 / FIGURE: 2

M:\Graphics\11100-Patterson-LHV\Misc\Urstadt Biddle Properties\Orangeburg\Orangeburg SM.dwg, B-50, 10/20/2014 2:19:57 PM, WShea



SOURCE:

1. LAND LINK SURVEYORS P.C. SURVEY MAP DATED NOVEMBER 4, 2003.
2. SURVEY AMENDED TO SHOW NEW CERTIFICATION JUNE 1, 2005.
3. SURVEY AMENDED WELL LOCATION DECEMBER 19, 2007.
4. ADDITIONAL WELLS MW10, MW12, AND MW13 LOCATED DECEMBER 27, 2007.
5. FIGURE GENERATED FROM KLEINFELDER ENGINEERING FIGURE DATED JULY 15, 2011.

LEGEND

- SSD-MP-6 — SUB-SLAB MONITORING PORT
- SUB-SLAB VAPOR EXTRACTION WELL
- D1 / P5 — DETAIL NUMBER / PLATE NUMBER
- SSD BLOWER (115 SCFM)
- SSD BLOWER (200 SCFM)
- VACUUM GAUGE
- PLUGGED PORT

COMMERCIAL STORE ID TABLE (BUILDING #2)

- (K) FORMER THE DELI SPOT
- (L) FORMER SPARKLE CLEANERS
- (M) NEW CHINA HOUSE

Sub-slab and/or ambient air sampling locations

NOTES:

1. THE EXTRACTION PIPING INSIDE THE BUILDING IS ROUTED ABOVE THE SUB-CEILING OR ALONG THE EXTERIOR WALL.
2. DISCHARGE STACKS EXTEND 3 FEET ABOVE THE ROOFTOP (TYP.).

DRAFTED BY: W.G.S. (N.J.)	Sub-Slab and Ambient Air Sampling Locations
CHECKED BY: CA	UB ORANGEBURG, LLC 1-45 ORANGETOWN SHOPPING CENTER ORANGEBURG, NEW YORK
REVIEWED BY: KB	Groundwater & Environmental Services, Inc. 16 MT. EBO ROAD SOUTH, SUITE 21, BREWSTER, NEW YORK 10509
	NOT TO SCALE / DATE 10-24-14 / FIGURE 3

M:\Graphics\1100-Patterson-LHV\Misc\Urstadt Biddle Properties\Orangeburg\Engineering\Orangeburg (KLF-details).dwg, B- (3), 10/24/2014 10:14:39 AM, WShea

TABLES

GC/MS Volatiles (TO-15)
Constituents of Concern

Table 1
GC/MS Volatiles (TO-15) - ug/m3

UB Orangeburg
1-45 Orangetown Shopping Center
Orangeburg, New York

Client Sample ID:	DELI MP-2	DELI MP-2 AMB	DELI VP-1	DELI VP-1 AMB	SPARKLE VP-6	SPARKLE VP-6 AMB	SPARKLE VP-5	SPARKLE VP-5 AMB	CHINA MP-5	CHINA MP-5 AMB	CHINA VP-9	CHINA VP-9 AMB	OUTSIDE AMB	REGULATORY GUIDANCE		
Lab Sample ID:	JC10996-1	JC10996-2	JC10996-3	JC10996-4	JC10996-5	JC10996-6	JC10996-7	JC10996-8	JC10996-10	JC10996-11	JC10996-12	JC10996-13	JC10996-9	NYSDOH 2003 Soil Vapor Indoor 95th Percentile (1)	NYSDOH 2003 Soil Vapor Intrusion Air Guidance Value (2)	EPA 2001 BASE 90th Percentile (3)
Date Sampled:	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015			
Matrix:	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Ambient Air Comp.			
Acetone	37.1	57	30.9	48	31.6	24.9	20	34.4	155	463	159	461	4.5	140	NS	98.9
1,3-Butadiene	ND (0.80)	ND (0.75)	ND (0.84)	ND (0.71)	ND (0.44)	ND (0.71)	ND (0.80)	ND (0.64)	ND (0.84)	ND (0.80)	ND (0.80)	ND (0.80)	ND (0.80)	NS	NS	<3.0
Benzene	ND (1.2)	ND (1.1)	ND (1.2)	ND (1.0)	4.5	ND (1.0)	ND (1.2)	1.6	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	29	NS	9.4
Bromodichloromethane	ND (1.2)	ND (1.1)	ND (1.3)	ND (1.1)	ND (0.67)	ND (1.1)	ND (1.2)	ND (1.0)	ND (1.3)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	NS	NS	NS
Bromoform	ND (0.74)	ND (0.70)	ND (0.79)	ND (0.66)	ND (0.41)	ND (0.66)	ND (0.74)	ND (0.61)	ND (0.79)	ND (0.74)	ND (0.74)	ND (0.74)	ND (0.74)	NS	NS	NS
Bromomethane	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.2)	ND (0.78)	ND (1.2)	ND (1.4)	ND (1.1)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	0.9	NS	<1.7
Bromoethene	ND (1.6)	ND (1.5)	ND (1.7)	ND (1.4)	ND (0.87)	ND (1.4)	ND (1.6)	ND (1.3)	ND (1.7)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	NS	NS	NS
Benzyl Chloride	ND (1.9)	ND (1.8)	ND (2.0)	ND (1.6)	ND (1.0)	ND (1.6)	ND (1.9)	ND (1.5)	ND (2.0)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	NS	NS	<6.8
Carbon disulfide	ND (1.1)	ND (1.1)	ND (1.2)	ND (1.0)	ND (0.62)	ND (1.0)	ND (1.1)	ND (0.90)	ND (1.2)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	NS	NS	4.2
Chlorobenzene	ND (1.7)	ND (1.6)	ND (1.8)	ND (1.5)	ND (0.92)	ND (1.5)	ND (1.7)	ND (1.3)	ND (1.8)	ND (1.7)	ND (1.7)	ND (1.7)	ND (1.7)	<0.25	NS	<0.9
Chloroethane	ND (0.95)	ND (0.90)	ND (1.0)	ND (0.84)	ND (0.53)	ND (0.84)	ND (0.95)	ND (0.77)	ND (1.0)	ND (0.95)	ND (0.95)	ND (0.95)	ND (0.95)	0.6	NS	<1.1
Chloroform	ND (1.8)	ND (1.7)	ND (1.9)	ND (1.6)	ND (0.98)	ND (1.6)	ND (1.8)	ND (1.4)	ND (1.9)	ND (1.8)	ND (1.8)	ND (1.8)	ND (1.8)	4.6	NS	1.1
Chloromethane	0.87	ND (0.70)	ND (0.78)	0.68	0.66	0.87	ND (0.74)	0.93	ND (0.78)	0.76	ND (0.74)	0.91	ND (0.74)	5.2	NS	3.7
3-Chloropropene	ND (1.1)	ND (1.1)	ND (1.2)	ND (1.0)	ND (0.63)	ND (1.0)	ND (1.1)	ND (0.91)	ND (1.2)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	NS	NS	NS
2-Chlorotoluene	ND (1.9)	ND (1.8)	ND (2.0)	ND (1.7)	ND (1.0)	ND (1.7)	ND (1.9)	ND (1.5)	ND (2.0)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	NS	NS	NS
Carbon tetrachloride	ND (0.45)	ND (0.43)	ND (0.48)	ND (0.40)	ND (0.25)	ND (0.40)	ND (0.45)	ND (0.37)	ND (0.48)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	1.1	NS	<1.3
Cyclohexane	ND (1.2)	ND (1.2)	ND (1.3)	ND (1.1)	ND (0.69)	ND (1.1)	ND (1.2)	ND (1.0)	ND (1.3)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	19	NS	NS
1,1-Dichloroethane	ND (1.5)	ND (1.4)	ND (1.5)	ND (1.3)	ND (0.81)	ND (1.3)	ND (1.5)	ND (1.2)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	<0.25	NS	<0.7
1,1-Dichloroethylene	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.3)	ND (0.79)	ND (1.3)	ND (1.4)	ND (1.1)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	<0.25	NS	<1.4
1,2-Dibromoethane	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.2)	ND (0.77)	ND (1.2)	ND (1.4)	ND (1.2)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	<0.25	NS	<1.5
1,2-Dichloroethane	ND (1.5)	ND (1.4)	ND (1.5)	ND (1.3)	ND (0.81)	ND (1.3)	ND (1.5)	ND (1.2)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	<0.25	NS	<0.9
1,2-Dichloropropane	ND (1.7)	ND (1.6)	ND (1.8)	ND (1.5)	ND (0.92)	ND (1.5)	ND (1.7)	ND (1.3)	ND (1.8)	ND (1.7)	ND (1.7)	ND (1.7)	ND (1.7)	<0.25	NS	<1.6
1,4-Dioxane	ND (1.3)	ND (1.2)	ND (1.4)	ND (1.2)	ND (0.72)	ND (1.2)	ND (1.3)	ND (1.0)	ND (1.4)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	NS	NS	NS
Dichlorodifluoromethane	2.1	2	ND (1.9)	1.9	3.7	2.3	2	2.6	2.1	2.1	2	2.3	2	26	NS	16.5
Dibromochloromethane	ND (1.5)	ND (1.4)	ND (1.6)	ND (1.4)	ND (0.85)	ND (1.4)	ND (1.5)	ND (1.3)	ND (1.6)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	NS	NS	NS
trans-1,2-Dichloroethylene	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.3)	ND (0.79)	ND (1.3)	ND (1.4)	ND (1.1)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	NS	NS	NS
cis-1,2-Dichloroethylene	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.3)	ND (0.79)	ND (1.3)	ND (1.4)	ND (1.1)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	1.2	NS	<1.9
cis-1,3-Dichloropropene	ND (1.6)	ND (1.5)	ND (1.7)	ND (1.5)	ND (0.91)	ND (1.5)	ND (1.6)	ND (1.3)	ND (1.7)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	<0.25	NS	<2.3
m-Dichlorobenzene	ND (1.1)	ND (1.0)	ND (1.1)	ND (0.96)	ND (0.60)	ND (0.96)	ND (1.1)	ND (0.90)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	1	NS	<2.4
o-Dichlorobenzene	ND (0.43)	ND (0.41)	ND (0.46)	ND (0.38)	ND (0.24)	ND (0.38)	ND (0.43)	ND (0.35)	ND (0.46)	ND (0.43)	ND (0.43)	ND (0.43)	ND (0.43)	0.9	NS	<1.2
p-Dichlorobenzene	ND (1.1)	ND (1.0)	ND (1.1)	ND (0.96)	ND (0.60)	ND (0.96)	ND (1.1)	ND (0.90)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	2.6	NS	5.5
trans-1,3-Dichloropropene	ND (1.6)	ND (1.5)	ND (1.7)	ND (1.5)	ND (0.91)	ND (1.5)	ND (1.6)	ND (1.3)	ND (1.7)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	<0.25	NS	<1.3
Ethanol	38.4	43.3	37.7	41.6	56.7	55.8	51.1	39.4	112	142	109	127	3.4	NS	NS	210
Ethylbenzene	ND (1.6)	ND (1.5)	ND (1.7)	ND (1.4)	ND (0.87)	ND (1.4)	ND (1.6)	ND (1.3)	ND (1.7)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	13.0	NS	5.7
Ethyl Acetate	8.6	32	18	47.5	120	41	7.6	149	11	21	11	24	4	NS	NS	5.4
4-Ethyltoluene	ND (1.8)	ND (1.7)	ND (1.9)	ND (1.6)	3	ND (1.6)	ND (1.8)	ND (1.4)	ND (1.9)	ND (1.8)	ND (1.8)	ND (1.8)	ND (1.8)	NS	NS	NS
Freon 113	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.2)	ND (0.77)	ND (1.2)	ND (1.4)	ND (1.1)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	NS	NS	3.5
Freon 114	ND (1.3)	ND (1.2)	ND (1.3)	ND (1.1)	ND (0.70)	ND (1.1)	ND (1.3)	ND (1.0)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	NS	NS	NS
Heptane	ND (1.5)	ND (1.4)	ND (1.6)	ND (1.3)	2.1	ND (1.3)	ND (1.5)	ND (1.2)	ND (1.6)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	NS	NS	NS
Hexachlorobutadiene	ND (1.7)	ND (1.6)	ND (1.8)	ND (1.5)	ND (0.96)	ND (1.5)	ND (1.7)	ND (1.4)	ND (1.8)	ND (1.7)	ND (1.7)	ND (1.7)	ND (1.7)	11.0	NS	<6.8
Hexane	2.3	3.3	4.2	3	7	3.5	2.7	9.5	4.2	1.5	3.3	1.7	ND (1.3)	NS	NS	NS
2-Hexanone	ND (1.5)	ND (1.4)	ND (1.6)	ND (1.3)	ND (0.82)	ND (1.3)	ND (1.5)	ND (1.2)	2	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	NS	NS	NS
Isopropyl Alcohol	5.4	9.8	8.1	9.3	18	6.9	5.2	9.8	ND (0.93)	121	19	121	ND (0.88)	NS	NS	250
Methylene chloride	2.4	3.1	3.4	2.2	1.4	1.8	ND (1.3)	2.5	2	ND (1.3)	1.6	ND (1.3)	ND (1.3)	45.0	60	10
Methyl ethyl ketone	2.8	ND (1.0)	2.8	ND (0.94)	4.4	ND (0.94)	5.3	1.1	7.4	ND (1.1)	2.5	ND (1.1)	ND (1.1)	39.0	NS	NS
Methyl Isobutyl Ketone	ND (1.5)	ND (1.4)	ND (1.6)	ND (1.3)	ND (0.82)	ND (1.3)	ND (1.5)	ND (1.2)	ND (1.6)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	5.3	NS	NS
Methyl Tert Butyl Ether	ND (1.3)	ND (1.2)	ND (1.4)	ND (1.2)	ND (0.72)	ND (1.2)	ND (1.3)	ND (1.0)	ND (1.4)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	71.0	NS	11.5
Methylmethacrylate	ND (1.5)	ND (1.4)	ND (1.6)	ND (1.3)	ND (0.82)	ND (1.3)	ND (1.5)	ND (1.2)	ND (1.6)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	1.1	NS	NS
Propylene	1.7	ND (1.5)	ND (1.6)	ND (1.4)	ND (0.86)	ND (1.4)	ND (1.5)	1.4	ND (1.6)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	NS	NS	NS
Styrene	ND (1.5)	ND (1.4)	ND (1.6)	ND (1.4)	ND (0.85)	ND (1.4)	ND (1.5)	ND (1.2)	ND (1.6)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	2.3	NS	1.9
1,1,1-Trichloroethane	ND (0.98)	ND (0.93)	ND (1.0)	ND (0.87)	ND (0.55)	ND (0.87)	ND (0.98)	ND (0.82)	ND (1.0)	ND (0.98)	ND (0.98)	ND (0.98)	ND (0.98)	6.9	NS	20.6
1,1,2,2-Tetrachloroethane	ND (1.2)	ND (1.2)	ND (1.3)	ND (1.1)	ND (0.69)	ND (1.1)	ND (1.2)	ND (1.0)	ND (1.3)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	<0.25	NS	NS
1,1,2-Trichloroethane	ND (0.98)	ND (0.93)	ND (1.0)	ND (0.87)	ND (0.55)	ND (0.87)	ND (0.98)	ND (0.82)	ND (1.0)	ND (0.98)	ND (0.98)	ND (0.98)	ND (0.98)	<0.25	NS	<1.5
1,2,4-Trichlorobenzene	ND (1.3)	ND (1.3)	ND (1.4)	ND (1.2)	ND (0.74)	ND (1.2)	ND (1.3)	ND (1.1)	ND (1.4)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	6.3	NS	<6.8

Table 1
GC/MS Volatiles (TO-15) - ug/m3

UB Orangeburg
1-45 Orangetown Shopping Center
Orangeburg, New York

Client Sample ID:	DELI MP-2	DELI MP-2 AMB	DELI VP-1	DELI VP-1 AMB	SPARKLE VP-6	SPARKLE VP-6 AMB	SPARKLE VP-5	SPARKLE VP-5 AMB	CHINA MP-5	CHINA MP-5 AMB	CHINA VP-9	CHINA VP-9 AMB	OUTSIDE AMB	REGULATORY GUIDANCE		
Lab Sample ID:	JC10996-1	JC10996-2	JC10996-3	JC10996-4	JC10996-5	JC10996-6	JC10996-7	JC10996-8	JC10996-10	JC10996-11	JC10996-12	JC10996-13	JC10996-9	NYSDOH 2003 Soil Vapor Indoor 95th Percentile (1)	NYSDOH 2003 Soil Vapor Intrusion Air Guidance Value (2)	EPA 2001 BASE 90th Percentile (3)
Date Sampled:	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015			
Matrix:	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Ambient Air Comp.			
1,2,4-Trimethylbenzene	2.4	ND (1.7)	2.9	ND (1.6)	4.6	ND (1.6)	2.9	ND (1.4)	2.2	ND (1.8)	2	ND (1.8)	ND (1.8)	18	NS	9.5
1,3,5-Trimethylbenzene	ND (1.8)	ND (1.7)	ND (1.9)	ND (1.6)	2.8	ND (1.6)	ND (1.8)	ND (1.4)	ND (1.9)	ND (1.8)	ND (1.8)	ND (1.8)	ND (1.8)	6.5	NS	NS
2,2,4-Trimethylpentane	ND (1.7)	ND (1.6)	ND (1.8)	ND (1.5)	2.1	ND (1.5)	ND (1.7)	ND (1.4)	ND (1.8)	ND (1.7)	ND (1.7)	ND (1.7)	ND (1.7)	NS	NS	NS
Tertiary Butyl Alcohol	ND (1.1)	ND (1.0)	ND (1.2)	ND (0.97)	ND (0.61)	ND (0.97)	ND (1.1)	ND (0.88)	ND (1.2)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	NS	NS	NS
Tetrachloroethylene	ND (0.49)	ND (0.46)	3.3	ND (0.43)	2.9	ND (0.43)	ND (0.49)	ND (0.40)	ND (0.52)	ND (0.49)	1.1	2	ND (0.49)	4.1	30	15.9
Tetrahydrofuran	9.7	ND (1.0)	12	ND (0.94)	12	ND (0.94)	60.8	ND (0.86)	17	ND (1.1)	13	ND (1.1)	ND (1.1)	9.4	NS	NS
Toluene	2.2	1.9	3.3	2.2	9.4	1.8	2.1	4.9	3.6	3.2	4.1	3.5	ND (1.4)	110	NS	43
Trichloroethylene	ND (0.39)	ND (0.37)	ND (0.41)	ND (0.34)	0.35	ND (0.34)	ND (0.39)	ND (0.32)	ND (0.41)	ND (0.39)	ND (0.39)	ND (0.39)	ND (0.39)	0.8	5	4.2
Trichlorofluoromethane	1.5	1.4	1.3	1.3	1.6	1.4	1.5	1.6	1.6	1.5	1.6	1.6	1.3	30	NS	18.1
Vinyl chloride	ND (0.18)	ND (0.17)	ND (0.19)	ND (0.16)	ND (0.10)	ND (0.16)	ND (0.18)	ND (0.15)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	<0.25	NS	<1.9
Vinyl Acetate	ND (1.3)	ND (1.2)	ND (1.3)	ND (1.1)	ND (0.70)	ND (1.1)	ND (1.3)	ND (1.0)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	NS	NS	NS
m,p-Xylene	ND (1.6)	ND (1.5)	ND (1.7)	ND (1.4)	2.2	ND (1.4)	1.9	ND (1.3)	ND (1.7)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	21.0	NS	22.2
o-Xylene	ND (1.6)	ND (1.5)	ND (1.7)	ND (1.4)	1.1	ND (1.4)	ND (1.6)	ND (1.3)	ND (1.7)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	13.0	NS	7.9
Xylenes (total)	ND (1.6)	ND (1.5)	ND (1.7)	ND (1.4)	3.3	ND (1.4)	1.9	ND (1.3)	ND (1.7)	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.6)	NS	NS	NS

Results and Standards expressed in micrograms per cubic meter (µg/m3)
NS = No Standard
ND = Not detected above laboratory reporting limits
E = The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
B = Analyte is found in the associated analysis batch blank. For volatiles, methylene chloride and acetone are common lab contaminants. Data users should consider anything <10x the blank value as artifact.
(1) 95th percentile indoor air values from "Table C1. NYSDOH 2003: Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes', published in the NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C" (October 2006)
(2) NYSDOH Air Guidance Values (AGVs) presented in the Final Guidance for evaluating Soil Vapor Intrusion in the State of New York, dated October 2006 ("NYSDOH Vapor Intrusion Guidance Document"); however, Tetrachloroethene (PCE) guidance was revised to 30 ug/m3 in September of 2013
(3) 90th percentile indoor air values from "Table C-2. EPA 2001: Building Assessment and Survey Evaluation (BASE) Database, SUMMA canister method" published in the NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C" (October 2006)

Table 2
Constituents of Concern - ug/m3

UB Orangeburg
1-45 Orangetown Shopping Center
Orangeburg, New York

Client Sample ID:	DELI MP-2	DELI MP-2 AMB	DELI VP-1	DELI VP-1 AMB	SPARKLE VP-6	SPARKLE VP-6 AMB	SPARKLE VP-5	SPARKLE VP-5 AMB	CHINA MP-5	CHINA MP-5 AMB	CHINA VP-9	CHINA VP-9 AMB	OUTSIDE AMB	REGULATORY GUIDANCE		
Lab Sample ID:	JC10996-1	JC10996-2	JC10996-3	JC10996-4	JC10996-5	JC10996-6	JC10996-7	JC10996-8	JC10996-10	JC10996-11	JC10996-12	JC10996-13	JC10996-9	NYSDOH 2003 Soil Vapor Indoor 95th Percentile (1)	NYSDOH 2003 Soil Vapor Intrusion Air Guidance Value (2)	EPA 2001 BASE 90th Percentile (3)
Date Sampled:	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015	12/16/2015			
Matrix:	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Soil Vapor Comp.	Ambient Air Comp.	Ambient Air Comp.			
Carbon tetrachloride	ND (0.45)	ND (0.43)	ND (0.48)	ND (0.40)	ND (0.25)	ND (0.40)	ND (0.45)	ND (0.37)	ND (0.48)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	1.1	NS	<1.3
1,1-Dichloroethylene	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.3)	ND (0.79)	ND (1.3)	ND (1.4)	ND (1.1)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	<0.25	NS	<1.4
trans-1,2-Dichloroethylene	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.3)	ND (0.79)	ND (1.3)	ND (1.4)	ND (1.1)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	NS	NS	NS
cis-1,2-Dichloroethylene	ND (1.4)	ND (1.3)	ND (1.5)	ND (1.3)	ND (0.79)	ND (1.3)	ND (1.4)	ND (1.1)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)	1.2	NS	<1.9
1,1,1-Trichloroethane	ND (0.98)	ND (0.93)	ND (1.0)	ND (0.87)	ND (0.55)	ND (0.87)	ND (0.98)	ND (0.82)	ND (1.0)	ND (0.98)	ND (0.98)	ND (0.98)	ND (0.98)	6.9	NS	20.6
Tetrachloroethylene	ND (0.49)	ND (0.46)	3.3	ND (0.43)	2.9	ND (0.43)	ND (0.49)	ND (0.40)	ND (0.52)	ND (0.49)	1.1	2	ND (0.49)	4.1	30	15.9
Trichloroethylene	ND (0.39)	ND (0.37)	ND (0.41)	ND (0.34)	0.35	ND (0.34)	ND (0.39)	ND (0.32)	ND (0.41)	ND (0.39)	ND (0.39)	ND (0.39)	ND (0.39)	0.8	5	4.2
Vinyl chloride	ND (0.18)	ND (0.17)	ND (0.19)	ND (0.16)	ND (0.10)	ND (0.16)	ND (0.18)	ND (0.15)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	<0.25	NS	<1.9

Results and Standards expressed in micrograms per cubic meter (µg/m3)
NS = No Standard
ND = Not detected above laboratory reporting limits
E = The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
B = Analyte is found in the associated analysis batch blank. For volatiles, methylene chloride and acetone are common lab contaminants. Data users should consider anything <10x the blank value as artifact.
(1) 95th percentile indoor air values from "Table C1. NYSDOH 2003: Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes', published in the NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C" (October 2006)
(2) NYSDOH Air Guidance Values (AGVs) presented in the Final Guidance for evaluating Soil Vapor Intrusion in the State of New York, dated October 2006 ("NYSDOH Vapor Intrusion Guidance Document"); however, Tetrachloroethene (PCE) guidance was revised to 30 ug/m3 in September of 2013
(3) 90th percentile indoor air values from "Table C-2. EPA 2001: Building Assessment and Survey Evaluation (BASE) Database, SUMMA canister method" published in the NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C" (October 2006)

APPENDIX A

NYSDEC Correspondences

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau C
625 Broadway, 11th Floor, Albany, NY 12233-7014
P: (518) 402-9662 I F: (518) 402-9679
www.dec.ny.gov

March 27, 2015

Karen Bourque
Groundwater & Environmental Services, Inc.
16 Mt. Ebo South, Suite 21
Brewster, NY 10509

Re: Orangetown Shopping Center
Site ID No. C344066
Orangetown, Rockland County
Revised Soil Vapor Intrusion Work Plan

Dear Ms. Bourque:

The New York State Department of Environmental Conservation (Department) and the New York State Department of health (NYSDOH) have reviewed the revised soil vapor intrusion (SVI) work plan for the Orangetown Shopping Center site, dated March 26, 2015, which was prepared by Groundwater & Environmental Services, Inc. (GES) on behalf of UB Orangeburg, LLC. The SVI work plan is hereby approved.

If you have any questions or comments please feel free to contact me at (518)402-9662 or jamie.verrigni@dec.ny.gov.

Sincerely,

Jamie Verrigni
Project Manager
Remedial Bureau C
Division of Environmental Remediation

ec: Jamie Verrigni
James Candiloro
Maureen Schuck – NYSDOH
Renata Ockerby – NYSDOH
Karen Bourque – GES – Kbourque@gesonline.com
Monica Roth – UB Orangeburg, LLC – mroth@ubproperties.com
Stephan Rapaglia – UB Orangeburg, LLC – srapaglia@ubproperties.com
Tom Myers – UB Orangeburg, LLC – tmyers@ubproperties.com

Christina Andreotto

From: Verrigni, Jamie L (DEC) <jamie.verrigni@dec.ny.gov>
Sent: Thursday, April 23, 2015 11:43 AM
To: Karen Bourque
Cc: Christina Andreotto; Ockerby, Renata E (HEALTH); Candiloro, James (DEC)
Subject: RE: For Your Approval: Orangeburg Soil Vapor Intrusion Investigation Work Plan - Deviation Request

Karen,

After reviewing the Figure, the Department and NYSDOH recommend that you utilize VP-5 or VP-6, which are more centrally located in the tenant unit.

Thanks,
Jamie

Jamie Verrigni
Environmental Engineer, Division of Environmental Remediation

New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233
P: (518) 402-9662 | F: (518) 402-9679 | jamie.verrigni@dec.ny.gov

www.dec.ny.gov | |

From: Karen Bourque [mailto:KBourque@gesonline.com]
Sent: Thursday, April 23, 2015 10:13 AM
To: Verrigni, Jamie L (DEC)
Cc: Christina Andreotto; Ockerby, Renata E (HEALTH); Candiloro, James (DEC)
Subject: RE: For Your Approval: Orangeburg Soil Vapor Intrusion Investigation Work Plan - Deviation Request

Jamie

Thank you. Please confirm that we can utilize the VP points as well as the SSD-MP in lieu of installing new temporary points. I have attached the figure for your reference. We are specifically looking to utilize VP-4, VP-5 or VP-6 located near the center of the Sparkle Cleaners.

Thanks
Karen

Karen A. Bourque
Sr. Project Manager
Groundwater & Environmental Services, Inc.
16 Mt. Ebo South, Suite 21

Brewster, New York 10509
Phone - (866) 839-5195 ext. 3833
Cell - (203)731-9329
866-902-2187 *please use a cover page with my name included for incoming faxes!
kbourque@gesonline.com

Please consider the environment before printing

From: Verrigni, Jamie L (DEC) [mailto:jamie.verrigni@dec.ny.gov]
Sent: Tuesday, April 21, 2015 2:53 PM
To: Karen Bourque
Cc: Christina Andreotto; Ockerby, Renata E (HEALTH); Candiloro, James (DEC)
Subject: RE: For Your Approval: Orangeburg Soil Vapor Intrusion Investigaton Work Plan - Deviation Request

Karen,

The Department and NYSDOH have reviewed your request for modification to the SVI investigation Work Plan and are ok with using five out of the six permanent sub-slab monitoring points, the exception being SSD-MP4. The Sparkle Cleaners Unit should have a sub-slab point towards the center of the Unit.

If you have any questions, please feel free to contact me.

Jamie

Jamie Verrigni
Environmental Engineer, Division of Environmental Remediation

New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233
P: (518) 402-9662 | F: (518) 402-9679 | jamie.verrigni@dec.ny.gov

www.dec.ny.gov |

From: Karen Bourque [mailto:KBourque@gesonline.com]
Sent: Monday, April 20, 2015 10:31 AM
To: Verrigni, Jamie L (DEC)
Cc: Christina Andreotto
Subject: For Your Approval: Orangeburg Soil Vapor Intrusion Investigaton Work Plan - Deviation Request

Jamie –

GES is in the process of planning the completion of the SVI activities at the Orangetown Shopping Center in Orangeburg New York. As you are aware, GES maintains a sub-slab depressurization system (SSDS) at the site. There are currently sub-slab monitoring points associated with the system located in all three of the tenant spaces where the soil vapor intrusion work is scheduled to be completed. GES, on behalf of UB Orangeburg LLC, would like to utilize the existing points rather than install 6 temporary points in the tenant spaces. Each permanent monitoring point has been installed

beneath the building slab and will be tested with a helium trace test per the approved work plan. Upon completion of helium tracer testing, GES will complete the 8-hour soil vapor intrusion investigation per the approved Work Plan. Upon completion of work, the points will remain in place as they will continue to be utilized as monitoring points for the SSDS.

Please let me know if we have approval to modify the approved Workplan to include the changes noted above. I have attached a figure showing the location of the possible SDS points that can be used. Note that only 2 points within each store front will be used.

Thank you in advance,
Karen

Karen Bourque
GES, Inc.
16 Mt. Ebo Road South, Ste. 21
Brewster, New York
Phone - 866-839-5195 ext. 3833
Cell - 203-731-9329

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau C
625 Broadway, 11th Floor, Albany, NY 12233-7014
P: (518) 402-9662 I F: (518) 402-9679
www.dec.ny.gov

July 29, 2015

Karen Bourque
Groundwater & Environmental Services, Inc
16 Mt. Ebo South, Suite 21
Brewster, NY 10509

Re: Orangetown Shopping Center
Site ID No. C344066
Orangetown, Rockland County
Work Plan for Permanent SSDS Shutdown

Dear Ms. Bourque:

The New York State Department of Environmental Conservation and Health (Departments) have reviewed the July 8, 2015 work plan for permanent shutdown of the sub-slab depressurization systems (SSDSs) currently in operation at the Orangetown Shopping Center Site. While the proposal to discontinue and decommission the SSDSs at the Site seems appropriate, the Departments have some concerns about a potential rebound effect occurring due to remaining contamination at the site. Therefore, it is recommended that the SSDSs be shut down for several months and then at least one additional round of soil vapor intrusion (SVI) sampling be conducted post-shutdown during the 2015-2016 Heating season to verify that a rebound effect is not occurring. The SVI sampling should consist of the collection of sub-slab soil vapor; co-located indoor air and an ambient (outdoor) air samples. The SVI samples should be collected from all three tenant spaces.

If you have any questions or comments please feel free to contact me at (518) 402-9662 or jamie.verrigni@dec.ny.gov.

Sincerely,

Jamie Verrigni, P.E.
Project Manager
Remedial Bureau C
Division of Environmental Remediation

ec: Jamie Verrigni
Amen Omorogbe
Maureen Schuck – NYSDOH
Renata Ockerby – NYSDOH
Karen Bourque – GES – kbourque@gesonline.com
Monica Roth – UB Orangeburg, LLC – mroth@ubproperties.com
Stephan Rapaglia – UB Orangeburg, LLC – srapaglia@ubproperties.com
Tom Myers – UB Orangeburg, LLC – tmyers@ubproperties.com

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau C
625 Broadway, 11th Floor, Albany, NY 12233-7014
P: (518) 402-9662 | F: (518) 402-9679
www.dec.ny.gov

November 30, 2015

Karen Bourque
Groundwater & Environmental Services, Inc.
16 Mt. Ebo South, Suite 21
Brewster, NY 10509

Re: Orangetown Shopping Center
Site ID No. C344066
Orangetown, Rockland County
Soil Vapor Intrusion Study

Dear Ms. Bourque:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) have reviewed the November 18, 2015 letter work plan regarding the second soil vapor intrusion (SVI) study to be conducted in the three tenant spaces at the Orangetown Shopping Center site. The soil vapor intrusion letter work plan is hereby approved.

If you have any questions or comments please feel free to contact me at (518) 402-9662 or jamie.verrigni@dec.ny.gov.

Sincerely,

Jamie Verrigni, P.E.
Project Manager
Remedial Bureau C
Division of Environmental Remediation

ec: Jamie Verrigni
Ed Moore
Maureen Schuck – NYSDOH
Renata Ockerby – NYSDOH
Karen Bourque – GES – kbourque@gesonline.com
Monica Roth – UB Orangeburg, LLC – mroth@ubproperties.com
Stephan Rapaglia – UB Orangeburg, LLC – srapaglia@ubproperties.com

APPENDIX B

NYSDOH Indoor Air Quality Questionnaire and Building Inventory Form

Appendix B
Indoor air quality questionnaire and building inventory

As discussed in Section 2.11, products in buildings should be inventoried every time indoor air is sampled to provide an accurate assessment of the potential contribution of volatile chemicals. In addition, the type of structure, floor layout and physical conditions of the building being studied should be noted to identify (and minimize) conditions that may interfere with the proposed testing.

Toward this end, a blank copy of the NYSDOH Center for Environmental Health's Indoor Air Quality Questionnaire and Building Inventory is provided in this appendix. Also provided is an example that demonstrates how the form should be completed properly.

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NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Rich Brown Date/Time Prepared 12/16/2015

Preparer's Affiliation GES/Consultant Phone No. 866-839-5195

Purpose of Investigation SVI Investigation

1. OCCUPANT:

Interviewed: Y / (N)

Last Name: _____ First Name: New China Restaurant & Two Vacant Spaces

Address: 13 Orangetown Shopping Center, Orangeburg, NY

County: Rockland

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location 3-4 Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant____)

Interviewed: Y / (N)

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	(Commercial/Multi-use)
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other: Strip mall on slab

If multiple units, how many? 3

If the property is commercial, type?

Business Type(s) 2 vacant spaces and 1 Chinese restaurant

Does it include residences (i.e., multi-use)? Y / (N) If yes, how many? _____

Other characteristics:

Number of floors 1 Building age 1966

Is the building insulated? (Y) / N How air tight? Tight / (Average) / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

Air flow directions indicated on the site Floor Plans (page 6).

Airflow near source

Outdoor air infiltration

Infiltration into air ducts

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type: NA	full	crawlspace	slab	other N/A
c. Basement floor: NA	concrete	dirt	stone	other N/A
d. Basement floor: NA	uncovered	covered	covered with N/A	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	Poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with Paint	
h. The basement is: NA	wet	damp	dry	moldy
i. The basement is: NA	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: N/A (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

None apparent.

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: Electric

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other None
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

Air ducts visible in the vacant spaces, however, nothing was running at the time of the inspection.

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never – **N/A**

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	N/A
1st Floor	Retail spaces (Chinese Restaurant) and vacant spaces
2nd Floor	N/A
3rd Floor	N/A
4th Floor	N/A

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA Please specify Gasoline & generator

d. Has the building ever had a fire? Y / N When?

e. Is a kerosene or unvented gas space heater present? Y / N Where?

f. Is there a workshop or hobby/craft area? Y / N Where & Type? Vacant space used as work area

g. Is there smoking in the building? Y / N How frequently? All-day

h. Have cleaning products been used recently? Y / N When & Type?

i. Have cosmetic products been used recently? Y / N When & Type?

j. Has painting/staining been done in the last 6 months? Y / N Where & When?
Front of buildings (within last few weeks)

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented? Outside

n. Is there a bathroom exhaust fan? Y / N If yes, where vented? Outside

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type? _____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive
Note- SVE system inactive at the time of testing

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: _____

Sewage Disposal: Public sewer Septic Tank Leach Field Dry Well Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

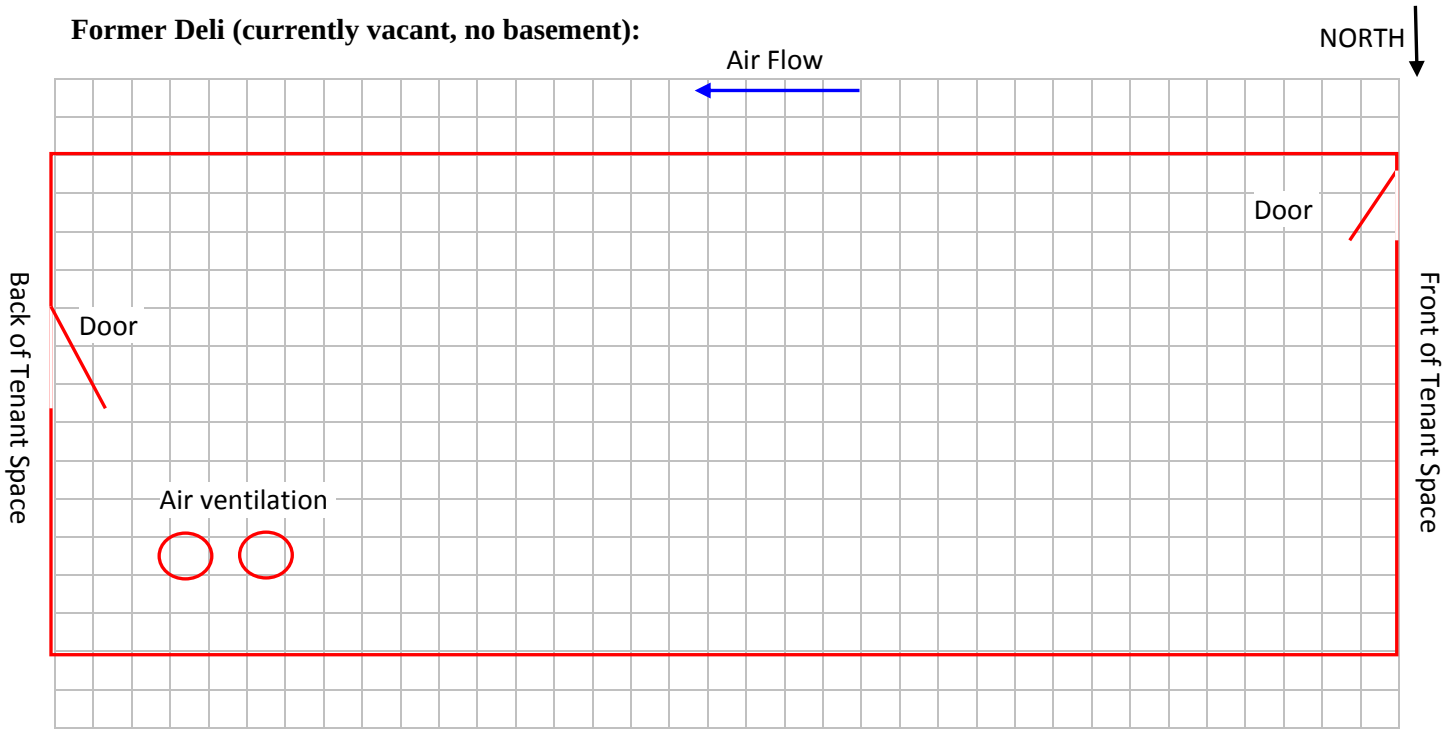
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

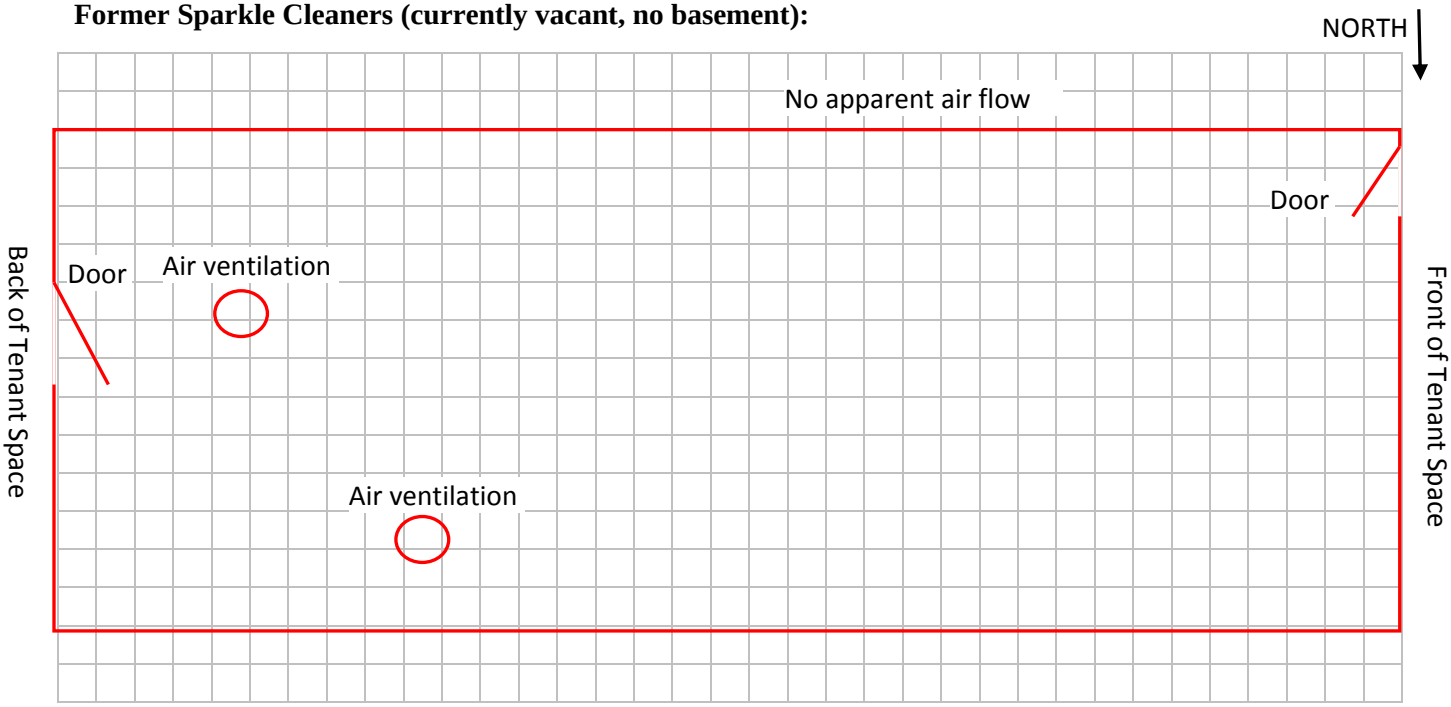
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

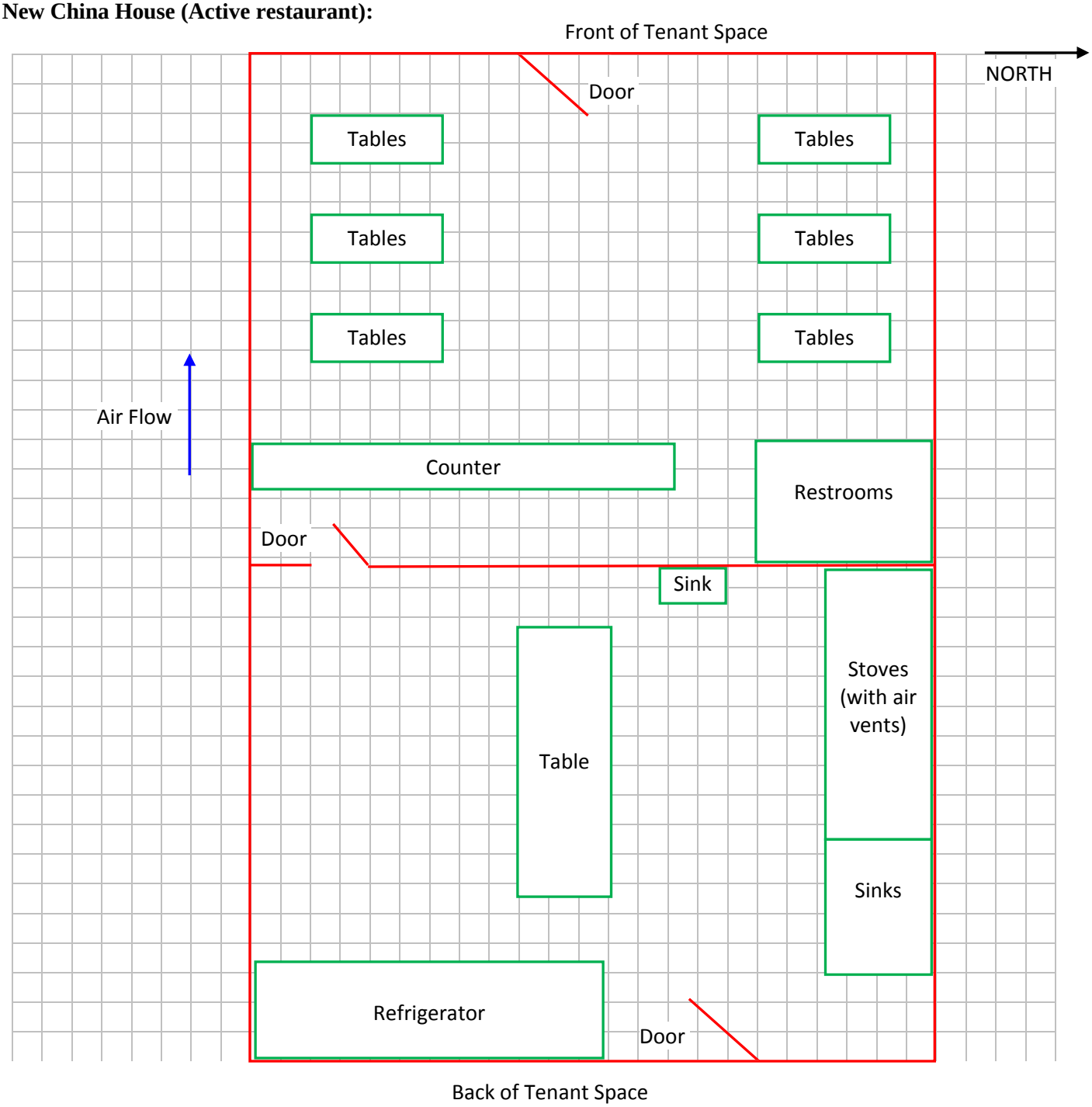
Former Deli (currently vacant, no basement):



Former Sparkle Cleaners (currently vacant, no basement):



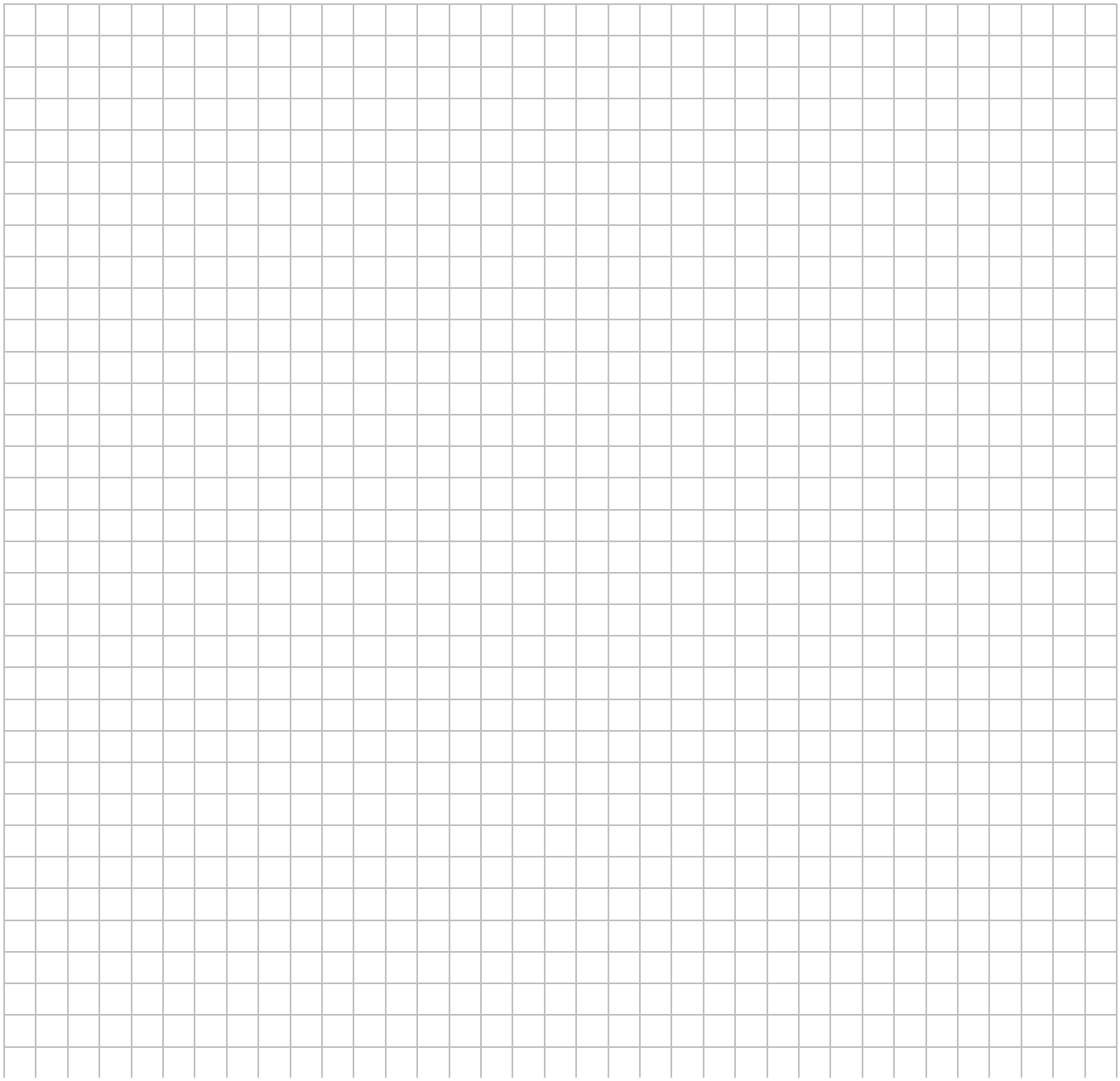
New China House (Active restaurant):



12. OUTDOOR PLOT (See Site Map)

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: Mini-Rae PID Meter

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo** Y/N
Former Deli Spot	Dryvit Paint (9)	5-gal	U	Quartz (SiO2)	0.0	Y
(Currently Vacant)	Dryvit Primus DM Dry Adhesive	50-lb	U	Quartz (SiO2)	0.0	Y
Former Sparkle Cleaners	Gas Can	1-gal	U	Gasoline/fuel	0.0	Y
(Currently Vacant)	Sterno Handy Fuel (2)	6.7 oz	U	Diethylene Glycol	0.0	Y
	Olympic Latex Paint	1-gal	U	Vinyl Acrylic Latex	0.0	Y
China House Restaurant	WD-40	1-can	U	Aliphatic hydrocarbon, petroleum base oil, LVP Aliphatic Hydrocarbon, Carbon Dioxide, other non-hazardous ingredients	0.0	Y
	King Pink Dishwashing Powder	5-gal	U	sodium carbonate, sodium silicate, sodium dichloro-S-triazinetrione dihydrate	0.0	Y

*Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**

Photographs of the **front and back of the containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Orangetown Shopping Center
Product Inventory Photographs

Former Deli Spot (Currently Vacant)

Dryvit Paint Buckets

Dryvit Dry Adhesive

Former Sparkle Cleaners (Currently Vacant)

Gasoline Can

Sterno Handy Fuel

Olympic Latex Paint

China House Restaurant (Currently Active)

Dishwashing Powder

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APPENDIX C

Laboratory Analytical Report

APPENDIX D

Data Usability Summary Report

RemVer

Quality Assessment
Data Usability Summary Report

			RemVer Project #2015GE01 Client Project # 11022323-05-206
Site:	Orangetown Shopping Center	**Site #:**	C344066
Client:	GES, Inc.	**Site Owner:**	UB Orangeburg, LLC (UBO)
Sample Delivery Group (SDG)	JC10996		
Sample Matrix:	☐ Drinking water ☐ Groundwater ☐ Surface water ☐ Soil ☐ Sediment ☒ Air ☐ Biota (tissue, type: _____) ☐ Other: _____		

Introduction

RemVer performed a data quality assessment (DQA) on the analytical data reported in Sample Delivery Groups (SDGs) #JC10996 for air samples. The DQA evaluated the performance of the analytical procedures and the quality of the resulting data. RemVer followed the requirements of the New York State Department of Environmental Conservation (NYSDEC) Data Usability Summary Report (DUSR) guidelines for an Analytical Services Protocol (ASP) Category B Data Deliverable. This report includes a narrative discussion of sample results qualified during the DQA. Table 1 describes qualification flags applied to the data either by Test America or during the DQA process.

Reported Methods

- ☐ Method 1311 TCLP
- ☐ Method 1312 SPLP
- ☐ Method 6010A, B & C / 6020 Trace Metals
- ☐ Method 7000 Metals
- ☐ Method 7196 Hexavalent Chromium (other:_____)
- ☐ Method 7470A or 7471 Mercury
- ☐ Method 8021 Volatile Organic Compounds (VOCs) GC
- ☐ Method 8081B Pesticides
- ☐ Method 8082 PCBs
- ☐ Method 8151 Chlorinated Herbicides
- ☐ Method 8260C VOCs GC/MS
- ☐ Method 8270D Semi-VOCs (sVOCs) GC/MS
- ☐ Method 9010/9012/9014 Cyanides (_____)
- ☐ Method TO-13A PAHs (air)
- ☒ Method TO-14A / -15 VOCs (air, summa) (_____)
- ☐ Method TO-17 VOCs (air, sorbent)
- ☐ Extractable Petroleum Hydrocarbons (EPH)
- ☐ Volatile Petroleum Hydrocarbons (VPH) Method
- ☐ EPH-total
- ☐ Other Methods:
  - Method 9060A Total Organic Carbon
  - Method MCAWW 300.0 Anions (IC)
  - Method RSK-175 Dissolved Gases
  - Method SM4500 Nitrite
  - Method 353 Nitrite & Nitrate

Quality Control Requirements Summary

- ☒ Duplicate (internal)
- ☐ Matrix Spike [MS] / Matrix Spike Duplicate [MSD]
- ☐ Trip Blank(s)
- ☐ Equipment, Method, &/or Rinsate Blank
- ☒ Other Field QC: Field notes regarding sampling
- ☐ Special QAPP Requirements: _____

Intended Use of Data under Review

The client collected air samples during a one-day collection event: December 16, 2015 at the referenced New York State Brownfields site. The site is under a Site Management Plan (SMP) that requires several kinds of monitoring. The sampling event provided ambient and sub-slab/soil vapor monitoring (see §3.3 of Kleinfelder, 2011).

Significant Data Usability Issues Identified for SDG: #JC10996

Of the thirteen samples (six soil gas, six indoor ambient air, and one outdoor ambient) discussed herein, RemVer rejected no results, but flagged certain analytes as estimated due to the quality of the analysis and the results are acceptable for use. Some analytes had quality issues associated with results failing beyond the calibrated range requiring UJ/J flagging for certain analytes.

Please refer to the Lab Results and Data Usability Narrative section for further detail.

Detailed Quality Review

Field Notes Review

	Y	N	NA	COMMENTS
Sampling notes	☒	☐	☐	Field Notes & COC sheets
Field meteorological data	☐	☐	☒	No review required under QAPP
Associated sampling location and plan included	☒	☐	☐	See RAP/QAPP
Associated drilling logs available, reviewed	☐	☐	☒	No review required under QAPP
Identification of QC samples in notes	☒	☐	☐	
Sampling instrument decontamination records	☐	☐	☒	No review required under QAPP
Sampling instrument calibration logs	☐	☐	☒	No review required under QAPP
Chain of custody included	☒	☐	☐	With analytical report
Notes include communication logs	☐	☒	☐	
Any corrective action (CA) reports	☐	☒	☐	If so, CA documentation of results required.
Any deviation from methods noted? If so, explain	☐	☒	☐	None
Any electronic data deliverables	☒	☐	☐	See Attachment #4
Sampling Report (by Field Team Leader)	☒	☐	☐	

Lab Report Contents (Test America SDG Report: #JC10996)

☒ SDG Narrative
☒ Contract Lab Sample Information Sheets
☒ Data Package Summary Forms
☒ Chain-of-Custody (COC) Forms
☒ Test Results (no tentatively identified compounds [TICs])
☒ Calibration standards
☒ Surrogate recoveries
☒ Blank results
☒ Spike recoveries
☒ Duplicate results
☒ Confirmation (lab check/QC) samples
☒ Internal standard area & retention time summary
☒ Chromatograms
☒ Raw data files
☒ Other specific information

The SDG reported on the following samples:

Sample ID	SDG #JC10996– Sample #	Matrix	Sampled	Received
Deli MP-2	#-1	SG	12/16/15	12/18/15
Deli MP-1 Amb	#-2	IA	12/16/15	12/18/15
Deli UP-1	#-3	SG	12/16/15	12/18/15
Deli UP-1Amb	#-4	IA	12/16/15	12/18/15
Sparkle UP-6	#-5	SG	12/16/15	12/18/15
Sparkle UP-6 Amb	#-6	IA	12/16/15	12/18/15
Sparkle UP-5	#-7	SG	12/16/15	12/18/15
Sparkle UP-5 Amb	#-8	IA	12/16/15	12/18/15
Outside Ambient	#-9	OA	12/16/15	12/18/15
China MP-5	#-10	SG	12/16/15	12/18/15
China MP-5 Amb	#-11	IA	12/16/15	12/18/15
China MP-9	#-12	SG	12/16/15	12/18/15
China MP-9 Amb	#-13	IA	12/16/15	12/18/15

NOTES: SG = Soil Gas (Vapor) IA = Indoor Air OA = Outdoor Air

All samples associated with SDG #JC10996 were analyzed using USEPA Method TO-15.

Is the data package complete as defined under the requirements for the NYSDEC ASP Category B?		
Laboratory Report	**Complete (Y/N)**	**Comments**
JC10996	Y	Yes

Sample Preservation Requirements & Holding Times Met?			
Laboratory Report	**Hold Times (Y/N)**	**Preservation (Y/N)**	**Exception Comment**
JC10996	Y	Y	None

Do all QC data fall within the protocol required limits and specifications? *(1) blanks, (2) instrument tunings, (3) calibration standards, (4) calibration verifications, (5) surrogate recoveries, (6) spike recoveries, (7) replicate analyses, (8) laboratory controls, (9) and sample data*									
SDG	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
JC10996	☐	☐	☒	☐	☐	☐	☐	☐	☐
The narrative section, below, discusses these deficiencies in detail, see Attachment 2 as well.									

Have all of the data been generated using established and agreed upon analytical protocols?		
Laboratory Report	**Protocols (Y/N)**	**Exception Comment**
JC10996	Y	None

Do the raw data confirm the results provided in the data summary sheets and quality control verification forms?		
Laboratory Report	**Confirmation (Y/N)**	**Exception Comment**
JC10996	Y	None

Have the correct data qualifiers been used and are they consistent with the most current guidance?		
Laboratory Report	**Qualifiers (Y/N)**	**Comment**
JC10996	Y	The laboratory generally applied appropriate qualifiers. To prepare the DUSR, it was necessary to apply additional qualifications or adjust qualifications to certain results as shown in Attachments 3 and 4.

Have any quality control (QC) exceedances been specifically noted in this DUSR and the corresponding QC summary sheets from the data packages referenced?		
Laboratory Report	**QC Exceedances Documented (Y/N)**	**Comment**
JC10996	Y	Several data qualifications were applied as described below

Data Quality and Usability Narrative

Field Notes Inspection

The air samples came from a one-day collection event: December 16, 2015. There were no specific field notes beyond the COC.

Laboratory Report Inspection

The laboratory produced SDG report #JC10996 (dated 1 Jan 2016). The final reports contained the required data and information.

Chain of Custody (COC) Evaluation

GES produced one COC for the referenced fieldwork (#JC10996, single, two-page COC). There were no quality issues.

Sample Preservation & Holding Time Evaluation

Laboratory received the canister samples on 12/18/2015 @ 9:45 (designated as SDG-JC10996) in proper condition. All holding times and preservation requirements were met. There were no issues noted with the canisters nor the flow controllers.

Blank Evaluation

There were no associated blanks, other than the ambient indoor and outdoor air samples. All laboratory method blanks performed within acceptable parameters.

Laboratory Control Samples (LCS)

The various LCS' were within the acceptable range for their particular analyses in SDG JC10996.

Surrogates

Surrogates added to a sample allow testing of preparatory and instrument behavior resulting in recoveries within appropriate method ranges for all analytes.

Site-Specific Matrix Spikes and Matrix Spike Duplicates

No matrix spike/matrix spike duplicate (MS/MSD) runs were required for the analyses per TO-15 Method.

Duplicates

The laboratory used internal duplicates for these VOC analytes; all duplicates met the RPD performance criteria of <20% (see below Attachment #2), except for Hexane in Batch VW2122 where the RPDs were beyond control limits.

Tentatively Identified Compounds (TICs)

This SDG had no analysis of TICs.

Sample Result and Usability Evaluation

All samples were run as Batch: VW2122 (Samples #1, 2, 3, 4, 5[run-1], 6, 7, 8, 9, 10, 11[run-1], 12, & 13[run-1]). Second analytical runs were as Batch: V3w1963 (Samples #5[run-2], 11[run-2], 13[run-2]).

Some samples (JC10996-1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, & 13) had limited volume and required dilution for analytical Batch VW2122. Due to certain sample issues or laboratory performance (result beyond calibration range), some results were qualified; however, the data are usable. No data received an R (rejected) flag. If an analyte was above the MDL but below the RL, then it was flagged as "UJ".

RemVer modified Test America's laboratory electronic data reports by adding quality flags, highlighted in yellow (see Attachment #4 [separate file]: Orangetown_2015Q4air_DUSR.xlsx [EXCEL file]).

References

Kleinfelder, 2011, *Site Management Plan, Orangetown Shopping Center, 1-45 Orangetown Shopping Center, Orangeburg, NY, NYSDEC Site #C344066*, Final, 21-November, 250p

NYSDEC, 2010, *Technical Guidance for Site Investigation and Remediation*, "DER-10," Division of Environmental Remediation: Albany, NY, May, 232p

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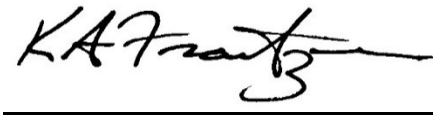
Tables

1. Qualifier Flags

Attachments

1. Data Usability Reviewer Qualifications
2. DQA Detail Worksheet
3. DQA Non-Conformance Summary Workheet
4. Separate EXCEL File: Orangetown_2015Q2air_DUSR.xls [NOTE: RemVer modified the Test America work products by adding quality flags, which are in yellow highlight.]



Prepared by: Kurt A. Frantzen, PhD, CHMM
January 25, 2016

GES PO#573003

Table 1
Qualifier Flags

Qualifier	Quality Implication
U	Analyte analyzed for, but not detected above the sample's reported quantitation limit
J	Analyte positively identified at a numerical value that is the approximate concentration of the analyte in the sample
J +	Sample likely to have a high bias
J –	Sample likely to have a low bias
UJ	Analyte not detected above the sample quantitation limit; the associated quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample
N	The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification."
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
R	Sample result rejected due to serious deficiency in ability to analyze sample and meet quality control criteria; the presence or absence of the analyte cannot be confirmed. This qualifier also may apply when more than one sample result is generated for a target analyte (*i.e.*, dilutions or re-analyses), the most technically acceptable result is considered acceptable.
B | EB **TB | BB**	An analyte identified in method blank (B), aqueous equipment (EB), trip (TB), or bottle blanks (BB) used to assess field contamination associated with soil or sediment samples mandates these qualifiers for only soil and sediment sample results.
P	Use professional judgment based on data use. It usually has an "M" with it, which indicates that a manual check should be made if the data that are qualified with the "P" are important to the data user. In addition, "PM" also means a decision is necessary from the Project Manager (or a delegate) concerning the need for further review of the data (*see below*).
PM	A manual review of the raw data is recommended to determine if the defect affects data use, as in "R" above. This review should include consideration of potential affects that could result from using the "P" qualified data. For example, in the case of holding-time exceedance, the Project Manager or delegate can decide to use the data with no qualification when analytes of interest are known not to be adversely affected by holding-time exceedances. Another example is the case where soil sample duplicate analyses for metals exceed the precision criteria; because this is likely due to sample non-homogeneity rather than contract laboratory error, then the manager or delegate must decide how to use the data.

Attachment 1
Data Usability Reviewer: Kurt A. Frantzen, PhD, CHMM

Experience

2014-Present	AECC	Senior EHS Consultant
2013-Present	d/b/a RemVer	Owner
2011-2012	RemVer, Inc.	President
2006-2011	Kleinfelder	Senior Principal Scientist
2005	Kleinfelder	Principal Scientist, Part-Time/On Call
2004-2006	d/b/a Environmental Risk Group	Owner
2004-2006	RemVer, Inc., Larchmont, NY	Founder, President
1999-2004	VHB, Inc.	ERM Director & Associate
1997-1998	GEI Consultants, Inc.	Senior Project Manager
1992-1997	Ecology and Environment, Inc.	Technical Chief
1991-1992	EA Engineering, Science, & Technology, Inc.	Project Manager III
1990-1991	Ecology and Environment, Inc.	Technical Group Manager
1986-1990	Ecology and Environment, Inc.	Senior Environmental Scientist

Education

Am Cancer Soc. Post-Doctoral Fellow, U Washington 1985-1986

PhD—Life Sci. / Biochem, NU—Lincoln	1985
MS—Plant Pathology, Kansas State Univ.	1980
BS—Biology, NU—Omaha	1978

Registrations

Certified Hazardous Materials Manager, since 2007, #14143

Professional Affiliations

Society Risk Analysis ('09 & '11 Chair, Eco-Risk Assessment)
Am. Chemistry Society
Am. Assoc. Advance Science
NY Academy of Science
Am. Institute of Biological Sciences
LSP Association

Other

- CERCLA & RCRA experience, as well as DOD (Air Force & Army) & DOE (INEL)
- NE Regional Experience—NY BCP; Mass MCP; & various sites in CT, RI & NH
- National Experience: NE, SE, Gulf & West Coast, Mid-west, Inter-mountain, California, Alaska
- International: Germany, Israel, Kuwait, Australia
- Selected Publications
    - *Using Risk Appraisals to Manage Environmentally Impaired Properties*, 2000, VHB Site Works, Report 108
    - *Risk-Based Analysis for Environmental Managers*, 2001, CRC/Lewis
    - Chapter 7 Risk Assessment, *Managing Hazardous Materials*, 2002 & 2009, IHMM
    - Chapter 22 Cleanup Goals, *Brownfields Law & Practice*, 2004-Present, Lexis/Nexis
    - *Use of Risk Assessment in Risk Management of Contaminated Sites*, 2008, ITRC
- 60 Conference Papers & Invited Professional Presentations
    - 1999-2014, Visiting Lecturer, Brownfields Program, Harvard Graduate School of Design
    - 2010-2013, Invited Lecturer, Pace University Law School

Attachment 2
DQA Detail Worksheet

BLANKS	>RL?	Compounds	Notes
Method Blank: VOCs	No	—	No Comment
—	—	—	—

LCS	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	Compound(s)	Notes
VOCs	—	—	—	VOCs	No Comment
—	—	—	—	—	—

SURROGATES	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	Compound(s)	Notes
VOCs	—	—	—	—	No Comment
—	—	—	—	—	—

MS/MSDs	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	QC Source	RPDs	Notes
VOCs	—	—	—	—	—	No Comment, none required
—	—	—	—	—	—	—

FIELD DUPLICATES RPDs	QC Source	Soil RPD > 50%	Water RPD > 20%	Compounds	Notes
N/A	N/A	N/A	N/A	N/A	N/A
N/A		N/A	N/A	N/A	N/A
LAB DUPLICATES					
Batch VW2122 for Samples #1–13	JC1093 5-1DUP	N/A	N/A	Hexane All other TO-15 VOCs	Flag as UJ/J No Comment
Batch V3w1963 Samples second runs of #5, 11, & 13	JC1086 0-3DUP	N/A	N/A	All TO-15 VOCs	No Comment

Reasonable Confidence Achieved	☐ Y	☐ N—Not Applicable
Significant QC Variances Noted	☒ Y	☐ N
Requested Reporting Limits Achieved	☒ Y	☐ N
Preservation Requirements Met	☒ Y	☐ N
Holding Time Requirements Met	☒ Y	☐ N

Abbreviations:
RL = Reporting Limit LCS = Laboratory Control Sample SV = Significant QC Variance
RPD = Relative Percent Difference LCL= RCP Lower Control Limit UCL= RCP Upper Control Limit
VOCs = Volatile Organic Compounds SVOCs = Semi-volatile Organic Compounds Pest = Pesticides
EPH = Extractable Petroleum Hydrocarbons VPH = Volatile Petroleum Hydrocarbons ETPH = EPH-Total
PCBs = Polychlorinated Biphenyls N/A = Not Applicable N/C = Not Collected -- = nothing to report
Notes: * Typical lab contaminants, not site-related

Attachment 3
DQA Non-Conformance Summary Worksheet

Only Flagged Results Shown Below

Sample Number(s)	Compound(s)	QC Non-Conformance	% Recovery	% RPD †	High or Low Bias ‡	Comments
#-1	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-2	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-3	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-4	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-5	All Other VOCs	—	—	—	—	No Flag
#-6	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-7	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-8	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-9	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-10	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-11	All Other VOCs	—	—	—	—	No Flag
#-12	Hexane	Dup. out of range	—	>UCL	high	Flag J
	All Other VOCs	—	—	—	—	No Flag
#-13	All Other VOCs	—	—	—	—	No Flag

Notes: † RPD—Relative Percent Difference
‡ Bias High—Reported result may be lower, Reporting Limit (RL) is acceptable as reported. Bias Low—Reported results may be higher, RL may be higher than reported.

APPENDIX E

NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York

Table 3.2 General format of a decision matrix

	Indoor Air Concentration of Volatile Chemical (mcg/m^3)		
Sub-slab Vapor Concentration of Volatile Chemical (mcg/m^3)	Concentration Range 1	Concentration Range 2	Concentration Range 3
Concentration Range 1	ACTION	ACTION	ACTION
Concentration Range 2	ACTION	ACTION	ACTION
Concentration Range 3	ACTION	ACTION	ACTION

Indoor air and sub-slab vapor concentration ranges in a matrix are selected based on a number of considerations in addition to health risks. For example, factors that are considered when selecting the ranges include, but are not limited to, the following:

a. human health risks (i.e., cancer and non-cancer health effects) associated with exposure to the volatile chemical in air;
b. the NYSDOH's guidelines for volatile chemicals in air [Table 3.1];
c. background concentrations of volatile chemicals in air [Section 3.2.4];
d. analytical capabilities currently available; and
e. attenuation factors (i.e., the ratio of indoor air to sub-slab vapor concentrations).

3.4.2 Matrices

The NYSDOH has developed two matrices, which are included at the end of Section 3.4, to use as tools in making decisions when soil vapor may be entering buildings. The first decision matrix was originally developed for TCE and the second for PCE. As summarized in Table 3.3, four chemicals have been assigned to the two matrices to date.

Table 3.3 Volatile chemicals and their decision matrices

Chemical	**Soil Vapor/Indoor Air Matrix***
Carbon tetrachloride	Matrix 1
Tetrachloroethene (PCE)	Matrix 2
1,1,1-Trichloroethane (1,1,1-TCA)	Matrix 2
Trichloroethene (TCE)	Matrix 1

*The decision matrices are available at the end of Section 3.4.

Soil Vapor/Indoor Air Matrix 1

October 2006

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)			
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 0.25	0.25 to < 1	1 to < 5.0	5.0 and above
< 5	1. No further action	2. Take reasonable and practical actions to identify source(s) and reduce exposures	3. Take reasonable and practical actions to identify source(s) and reduce exposures	4. Take reasonable and practical actions to identify source(s) and reduce exposures
5 to < 50	5. No further action	6. MONITOR	7. MONITOR	8. MITIGATE
50 to < 250	9. MONITOR	10. MONITOR / MITIGATE	11. MITIGATE	12. MITIGATE
250 and above	13. MITIGATE	14. MITIGATE	15. MITIGATE	16. MITIGATE

No further action:
Given that the compound was not detected in the indoor air sample and that the concentration detected in the sub-slab vapor sample is not expected to significantly affect indoor air quality, no additional actions are needed to address human exposures.

Take reasonable and practical actions to identify source(s) and reduce exposures:
The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers tightly capped or by storing volatile organic compound-containing products in places where people do not spend much time, such as a garage or outdoor shed). Resampling may be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MONITOR:
Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is needed to determine whether concentrations in the indoor air or sub-slab vapor have changed. Monitoring may also be needed to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined on a site-specific and building-specific basis, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MITIGATE:
Mitigation is needed to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system, and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MONITOR / MITIGATE:
Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building- and site-specific conditions.

See additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX 1

This matrix summarizes the minimum actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate building-specific conditions (e.g., dirt floor in basement, crawl spaces, etc.) and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, resampling may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Additionally, actions more protective of public health than those specified within the matrix may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action is usually undertaken for reasons other than public health (e.g., seeking community acceptance, reducing excessive costs, etc.).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of vapor contamination, nor does it preclude remediating contaminated soil vapors or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 0.25 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples, a minimum reporting limit of 5 micrograms per cubic meter is recommended for buildings with full slab foundations, and 1 microgram per cubic meter for buildings with less than a full slab foundation.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion to occur is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions may be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including the identified source of the volatile chemicals, the environmental remediation program, and site-specific and building-specific conditions. For example, to the extent that all site data and site conditions demonstrate that soil vapor intrusion is not occurring and that the potential for soil vapor intrusion to occur is not likely, the soil vapor intrusion investigation would be considered complete. In general, if indoor exposures represent a concern due to indoor sources, then the State will provide guidance to the property owner and/or tenant on ways to reduce their exposure. If indoor exposures represent a concern due to outdoor sources, then the NYSDEC will decide who is responsible for further investigation and any necessary remediation. Depending upon the outdoor source, this responsibility may or may not fall upon the party conducting the soil vapor intrusion investigation.

Soil Vapor/Indoor Air Matrix 2

October 2006

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)			
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 3	3 to < 30	30 to < 100	100 and above
< 100	1. No further action	2. Take reasonable and practical actions to identify source(s) and reduce exposures	3. Take reasonable and practical actions to identify source(s) and reduce exposures	4. Take reasonable and practical actions to identify source(s) and reduce exposures
100 to < 1,000	5. MONITOR	6. MONITOR / MITIGATE	7. MITIGATE	8. MITIGATE
1,000 and above	9. MITIGATE	10. MITIGATE	11. MITIGATE	12. MITIGATE

No further action:
Given that the compound was not detected in the indoor air sample and that the concentration detected in the sub-slab vapor sample is not expected to significantly affect indoor air quality, no additional actions are needed to address human exposures.

Take reasonable and practical actions to identify source(s) and reduce exposures:
The concentration detected in the indoor air sample is likely due to indoor and/or outdoor sources rather than soil vapor intrusion given the concentration detected in the sub-slab vapor sample. Therefore, steps should be taken to identify potential source(s) and to reduce exposures accordingly (e.g., by keeping containers tightly capped or by storing volatile organic compound-containing products in places where people do not spend much time, such as a garage or outdoor shed). Resampling may be recommended to demonstrate the effectiveness of actions taken to reduce exposures.

MONITOR:
Monitoring, including sub-slab vapor, basement air, lowest occupied living space air, and outdoor air sampling, is needed to determine whether concentrations in the indoor air or sub-slab vapor have changed. Monitoring may also be needed to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined on a site-specific and building-specific basis, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MITIGATE:
Mitigation is needed to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system, and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

MONITOR / MITIGATE:
Monitoring or mitigation may be recommended after considering the magnitude of sub-slab vapor and indoor air concentrations along with building- and site-specific conditions.

See additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX 2

This matrix summarizes the minimum actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate building-specific conditions (e.g., dirt floor in basement, crawl spaces, etc.) and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, resampling may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Additionally, actions more protective of public health than those specified within the matrix may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action is usually undertaken for reasons other than public health (e.g., seeking community acceptance, reducing excessive costs, etc.).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of vapor contamination, nor does it preclude remediating contaminated soil vapors or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 3 micrograms per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples, a minimum reporting limit of 5 micrograms per cubic meter is recommended.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion to occur is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions may be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including the identified source of the volatile chemicals, the environmental remediation program, and site-specific and building-specific conditions. For example, to the extent that all site data and site conditions demonstrate that soil vapor intrusion is not occurring and that the potential for soil vapor intrusion to occur is not likely, the soil vapor intrusion investigation would be considered complete. In general, if indoor exposures represent a concern due to indoor sources, then the State will provide guidance to the property owner and/or tenant on ways to reduce their exposure. If indoor exposures represent a concern due to outdoor sources, then the NYSDEC will decide who is responsible for further investigation and any necessary remediation. Depending upon the outdoor source, this responsibility may or may not fall upon the party conducting the soil vapor intrusion investigation.