FINAL
LETTER WORK PLAN
SITE ST006 (BUILDING 101 AOC) SUPPLEMENTAL INVESTIGATION
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Document Control No. 096-NEBECOS-0009-GRI

PREPARED FOR:	Mr. David Farnsworth/Former Griffiss Air Force Base, Base Realignment and Closure (BRAC) Environmental Coordinator and Contracting Officer's Representative
PREPARED BY:	Bhate Environmental Associates, Inc (Bhate)
COPIES:	Mr. Robert Morse, United States Environmental Protection Agency (USEPA) Heather Bishop, New York State Department of Environmental Conservation
DATE:	13 February 2024

Environmental Chemical Corporation (ECC) and team member Bhate Environmental Associates, Inc. (Bhate) are conducting environmental investigation and remedial activities at the former Griffiss Air Force Base (AFB) under Air Force Civil Engineer Center (AFCEC) Contract Number FA8903-20-D-0001. This Supplemental Investigation (SI) Letter Work Plan (Work Plan) for Site ST006 (Area of Concern [AOC] 101) has been prepared to delineate the extent of the vapor source at Site ST006.

Site Background

Building 101, south of Apron 3 in the central portion of the base along the northern margin of the industrial complex, contains Site ST006 (AOC 101) (**Figure 1**). Site ST006 (AOC 101) consists of a former Battery Acid Disposal Pit (BADP) and a former Battery Acid Drainage Pit (BADrP) within the central portion of the building in an area identified as the Lead Battery Room. (**Figure 2**). The BADP measured approximately 2 feet long by 2 feet wide by 10 feet deep and was covered by a steel grate. It was used from the early 1940s until 1985, when it was excavated. Acids from spent batteries were neutralized with baking soda and poured into the BADP where the neutralized liquid was allowed to percolate into the underlying soil. A 4-inch floor drain and overflow piping from the BADP ran west to the BADrP located beyond the west wall of the Lead Battery Room. The BADrP was approximately 17.5 feet long by 5.5 feet wide. Following removal of the BADP, a new 4-inch floor drain was installed at the former BADP location and piped to the BADrP. The BADrP was removed along with underlying soils in 1997. The former BADrP location was backfilled and sealed with concrete.

The Final ROD (Air Force Real Property Agency, September 2012) stated that the majority of the soil and groundwater contamination has been removed from the Building 101 AOC. A potential

inhalation risk exists to residential activity, primarily due to TCE emanating from the sub-slab in the former BADrP and BADP inside of the Building 101 AOC.

The selected remedy identified in the ROD is Land Use Controls restricting future use to industrial/commercial/non-residential purposes and re-evaluation for soil vapor intrusion (SVI) if new construction is performed in the SVI restriction area. The SVI restricted area is defined as the former battery room, including the former BADP and BADrP (**Figure 2**). Although the selected remedy does not specify active remediation or vapor mitigation, a soil vapor extraction system was installed inside Building 101 and operated from October 2013 through September 2017 to remove volatile organic compounds from the soil matrix beneath the concrete floor slab and eliminate the need for a sub-slab vapor mitigation system.

Significant remedial and investigation activities at ST006 are summarized below, as discussed in the *Final Pilot Test Work Plan, Site (Building 101 AOC), Sub-slab Vapor Mitigation System* (Bhate, August 2020). These data are being compared to current screening levels (USEPA, May 2023) to understand how this data has changed over time in relation to the current goal of reducing these concentrations below residential screening values.

- 2013: a soil vapor intrusion evaluation determined that, in the sub-slab vapor, benzene, chloroform, carbon tetrachloride, ethylbenzene, naphthalene, and trichloroethene (TCE) exceeded the residential sub-slab vapor screening levels (**Table 1**, **Figure 3**). Indoor air (**Table 2**) concentrations exceeded the current USEPA Residential Air screening levels for 1,3-butadiene, benzene, carbon tetrachloride, chloroform, ethylbenzene, and naphthalene (USEPA, May 2023). The outdoor air sample was below all residential indoor air screening level values (there are no outdoor air screening levels).
- 2017: sub-slab, indoor, and outdoor air samples were collected and the results indicated that samples from the sub-slab were above the residential sub-slab vapor screening level for TCE, chloroform, and ethylbenzene (**Table 1**). The indoor air samples (**Table 2**) exceeded the current USEPA Residential Air screening levels for benzene, TCE, and carbon tetrachloride (USEPA, May 2023). The outdoor air sample was below the residential indoor air screening level values (there are no outdoor air screening levels).
- 2021: Three sub-slab samples were collected. The 101VMP-01R (BADrP) sample exceeding current sub-slab vapor screening levels for chloroform and TCE and the 101VMP-03 (BADP) sample exceeding for chloroform only. The third sample did not exceed residential sub-slab screening levels for any analyte. Two indoor air samples showed that the BADP area exceeded residential indoor screening levels for benzene and carbon tetrachloride. Indoor air concentrations were similar in the BADrP with benzene and carbon tetrachloride exceeding screening levels. Concentrations of TCE in indoor air were below the residential screening level. One outdoor air sample did not show any analyte concentrations above indoor screening levels (**Table 2**).

2022 Sub-Slab Vapor Sampling Results

On 21 December 2022, a sub-slab vapor sample was collected from each of three sampling locations: 101VMP-01R, 101VMP-02, and 101VMP-03 (**Figure 4**). All concentrations of all analytes were below industrial standards provided in the *Final Basewide Uniform Federal Policy – Quality*

Assurance Project Plan, Long Term Monitoring (Bhate, April 2022), which apply to this facility as it complies with the land use controls for the site to be an industrial only location. The intention of future mitigation is to bring the site into compliance with residential requirements to remove the need for land use controls. The residential sub-slab vapor screening levels (RSLs) are calculated by multiplying the USEPA Regional Screening Level for residential indoor air (for target hazard quotient [THQ]=1.0 or target cancer risk [TR]=1E-06) by 33 (**Table 1**). Where available, the screening level value for carcinogenic target risk was chosen over the screening level for noncarcinogenic hazard index. This method of deriving a sub-slab vapor screening level is prescribed by Section 6.3.5, Page 82, Footnote 134 of the *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (USEPA, June 2015). This method produces similar, slightly more conservative screening values compared to using the Vapor Intrusion Screening Level (VISL) calculator with THQ=1.0, TR=1E-06, and otherwise default parameters (**Attachment A**) and is based on the same database of toxicity values, chemical parameters, and inhalation exposure equations used to calculate the general RSLs.

Results of the sub-slab vapor sampling were as follows:

- TCE was reported at 101VMP-01R (22.1 µg/m^3 primary / 23.7 µg/m^3 field duplicate) above the residential sub-slab vapor screening level of 15.8 µg/m^3. Location 101VMP-01R was installed in 2021, replacing 101VMP-01. The highest reported concentration of TCE at 101VMP-01 was 540 µg/m^3 in October 2013. The December 2022 101VMP-01R concentration decreased from the May 2021 concentration of 420 µg/m^3 (82 µg/m^3 field duplicate).
- Chloroform at 101VMP-01R during the 2022 event also exceeded its residential screening level of 4.0 µg/m^3 at 39.7 µg/m^3 (41.8 µg/m^3 field duplicate). This concentration is down from the maximum recorded concentration of 270 µg/m^3 (260 µg/m^3 field duplicate) in October 2017. The December 2022 chloroform concentration was also less than the May 2021 concentration of 130 µg/m^3 (21 µg/m^3 field duplicate).
- Chloroform at 101VMP-02, north-west of the BADrP, exceeded the residential sub-slab vapor screening level of 4.0 µg/m^3 at 12.6 µg/m^3 in December 2022. The maximum recorded concentration of chloroform at this location was 24 µg/m^3 in December 2015. The concentration has increased since the May 2021, where chloroform was reported at 5.2 J µg/m^3.
- The sample from location 101VMP-03, on the northeast side of the BADP, did not contain any analytes over their respective residential screening limits.

The 2022 results indicated that concentrations of TCE may persist in the BADrP and that future mitigation efforts in this area may be needed if this facility is to become acceptable for residential use and without restriction in the future. Further analysis is necessary to delineate the current extent and level of contamination across the site.

Investigative Approach

Sub-slab vapor samples were collected from 14 locations in 2013; no additional samples have been collected from those 14 locations since that investigation. The highest TCE concentrations

were reported from locations 101SS-04 (1,800 µg/m^3) and 101SS-05 (1,400 µg/m^3) at the northern end of the BADrP area (**Figure 3**). Samples have been collected from locations 101VMP-01 between 2013 and 2017, from 101VMP-01R between 2021 and 2022, and from 101VMP-02 and 101VMP-03 in the time period between 2013 and 2023. Most recently in 2022, sub-slab sample collected from 101VMP-01R in this area identified TCE at concentrations (22.1 µg/m^3 primary / 23.7 µg/m^3 duplicate sample) above residential screening values.

To further delineate and confirm that the BADrP area is the source of the TCE contamination to support development of optimization recommendations, the activities presented below and summarized on **Table 3** will be performed:

- Install VAPOR PIN® devices at or near the nine proposed monitoring points (101VMP-04 through 101VMP-12) identified in **Figure 5**. Manufacturer's installation and sampling recommendations are in **Attachment B.**
- Collect soil gas samples, including appropriate quality assurance and quality control samples, from the nine newly installed monitoring points utilizing summa cannisters over an eight-hour period, ensuring representative samples.
- Analyze air samples by USEPA Method TO-15.

The placement and number of recommended sub-slab samples are intended to represent areas sampled in 2013 with higher TCE concentrations; to supplement the December 2022 results from 101VMP-01R, 101VMP-02, and 101VMP-03; and to delineate current sub-slab vapor concentrations outside the Lead Battery Room. Following completion of the field efforts, a summary report will be prepared documenting the field effort, data assessment, and updated conceptual site model. The summary will also present the recommended path forward to achieve a no further action closure without restriction and any data gaps and/or system optimizations that were discovered during this assessment.

References

Air Force Real Property Agency. September 2012. *Record of Decision – Building 101 (Site ST-06), Former Griffiss Air Force Base, Rome, New York.*

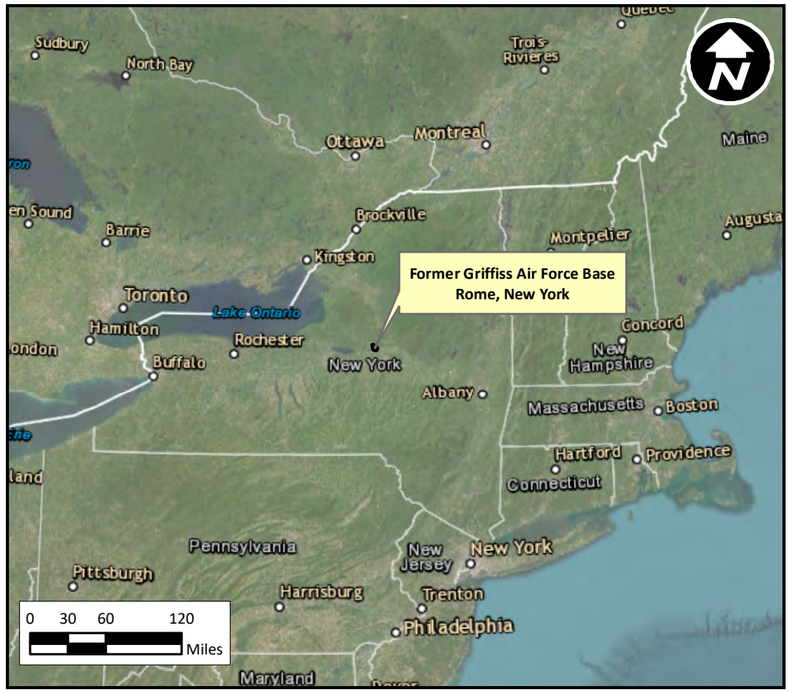
Bhate. August 2020. *Final Pilot Test Work Plan, Site (Building 101 AOC), Sub-Slab Vapor Mitigation System, Former Griffiss Air Force Base Site Rome, New York*.

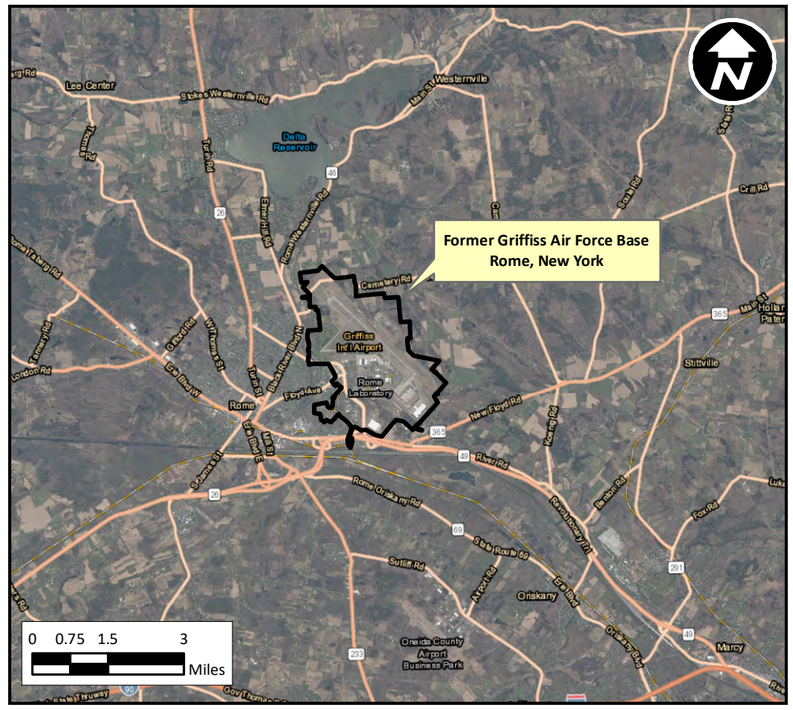
Bhate. April 2022. *Final Basewide Uniform Federal Policy – Quality Assurance Project Plan, Long Term Monitoring, Former Griffiss Air Force Base, Rome, New York.*

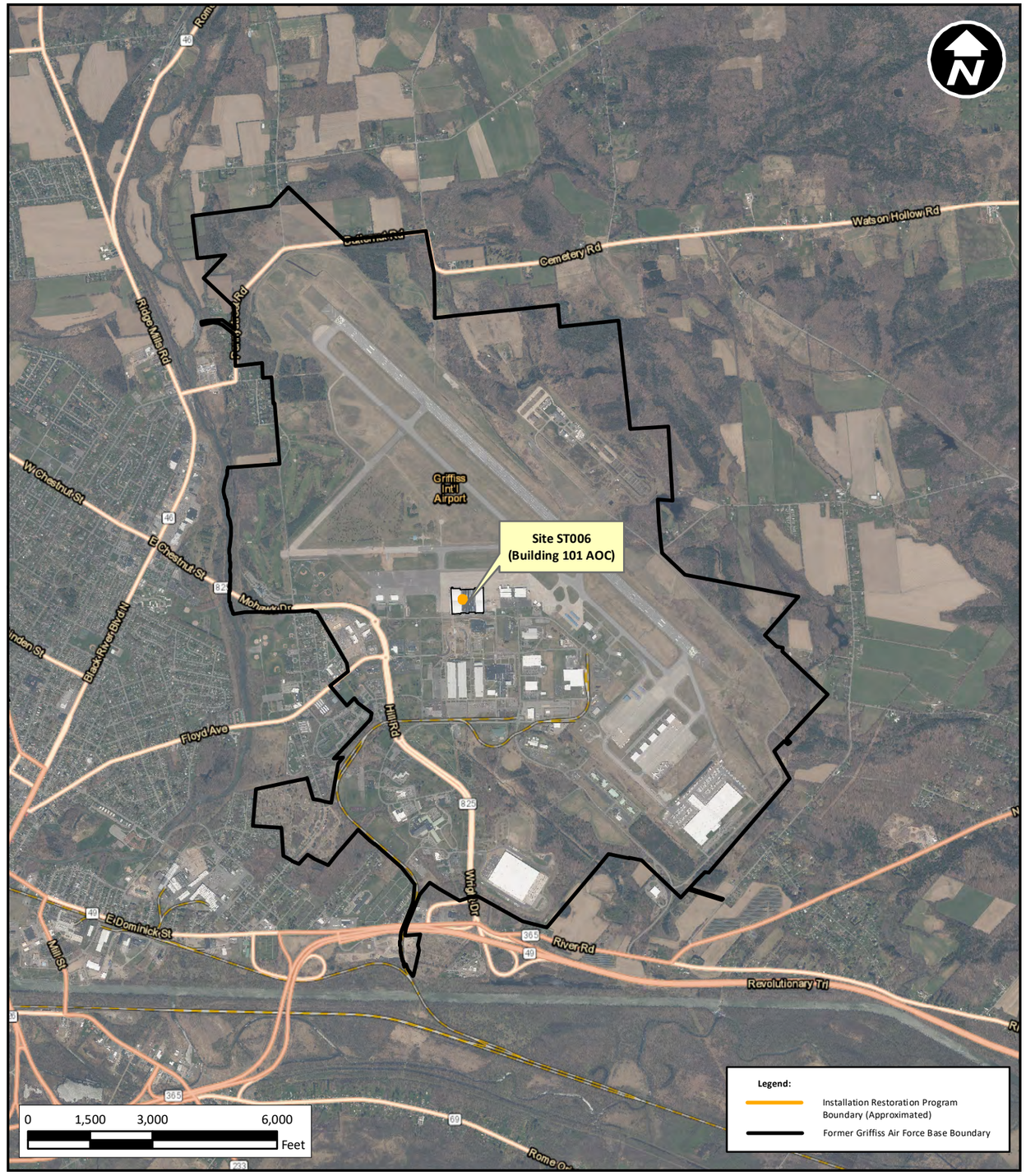
USEPA. May 2023. Regional Screening Levels (RSLs) – Generic Tables as of May 2023. (TR=1E-06 THQ=1.0). Accessed: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables .

USEPA. June 2015. *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air.* Publication number 9200.2-154. Section 6.3.5, Page 82, Footnote 134.

FIGURES







Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
NYS ITS Geospatial Services, Westchester County GIS

Former Griffiss AFB Site Location Map

Figure 1

Letter Work Plan, Site ST006 Supplemental Investigation
Site ST006 (Building 101 AOC)
Former Griffiss Air Force Base, Rome, New York

DRAWN BY: MRM

DATE: 9/25/2023

SCALE: As Shown

PROJECT NO: MSC2021.0012.0070.0002

bhate

www.bhate.com



Notes:
This information is depicted to provide visual aid within the context of this document and should not be used as a sole reference in precise dimensioning of features indicated. Please verify the location of all features including underground and aboveground utilities prior to conducting any subsurface exploration or site assessment.

0 40 80 160
Feet

Legend:

- Installation Restoration Program Boundary (Approximated)
- BADP — Battery Acid Disposal Pit
- BADrP — Battery Acid Drainage Pit

ST006 Building 101 AOC
Site Features

Figure 2

Letter Work Plan, Site ST006 Supplemental Investigation
Site ST006 (Building 101 AOC)
Former Griffiss Air Force Base, Rome, New York

DRAWN BY: MRM

DATE: 9/25/2023

SCALE: As Shown

PROJECT NO: MSC2021.0012.0070.0002

bhate

www.bhate.com

ST006 Building 101 AOC
2013 Sub-Slab Sampling Locations

Figure 3

Letter Work Plan, Site ST006 Supplemental Investigation
Site ST006 (Building 101 AOC)
Former Griffiss Air Force Base, Rome, New York

DRAWN BY: MRM

DATE: 9/25/2023

SCALE: As Shown

PROJECT NO: MSC2021.0012.0070.0002

Sample Location	Sample Date	Trichloroethene (TCE) Concentrations (µg/m^3)
101SS-04	2/20/2013	**1,800**
101SS-05	2/20/2013	**1,400**
101SS-06	2/20/2013	**1,100**
101SS-07	2/20/2013	**960**
101SS-08	2/20/2013	**950**
101SS-09	2/20/2013	**200**
101SS-10	2/20/2013	**180**
101SS-11	2/20/2013	**120**
101SS-12	2/20/2013	**110**
101SS-13	2/20/2013	U
101SS-14	7/10/2013	**11**
101SS-15	7/10/2013	**250**
101SS-16	7/10/2013	**29**
101SS-17	7/10/2013	**84**

Notes:

µg/m^3 = micrograms per cubic meter

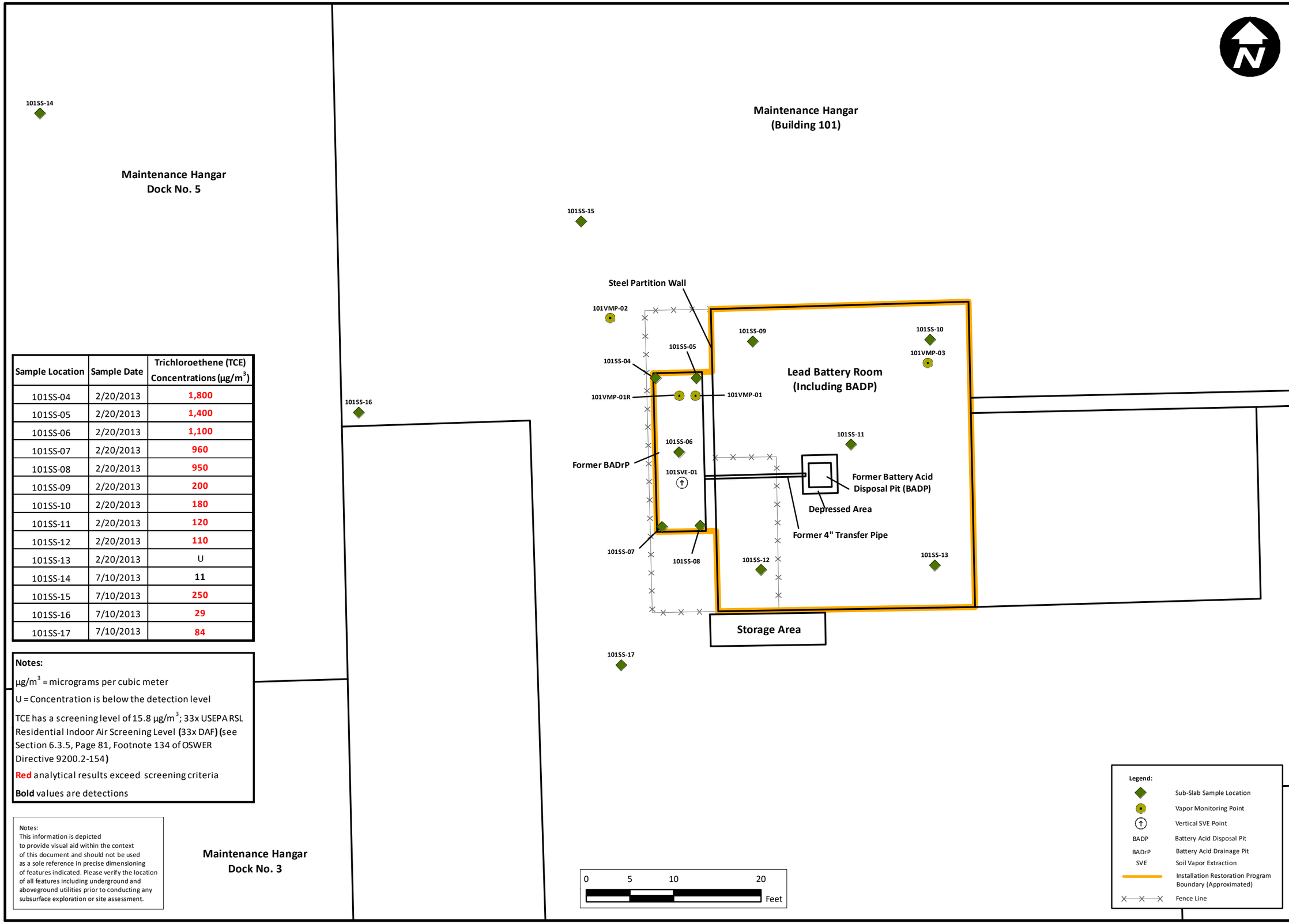
U = Concentration is below the detection level

TCE has a screening level of 15.8 µg/m^3; 33x USEPA RSL Residential Indoor Air Screening Level **(**33x DAF**) (**see Section 6.3.5, Page 81, Footnote 134 of OSWER Directive 9200.2-154**)**

Red analytical results exceed screening criteria

Bold values are detections

Notes:
This information is depicted to provide visual aid within the context of this document and should not be used as a sole reference in precise dimensioning of features indicated. Please verify the location of all features including underground and aboveground utilities prior to conducting any subsurface exploration or site assessment.



www.bhate.com

ST006 Building 101 AOC
Vapor Monitoring Point Locations

Figure 4

Date	Trichloroethene (TCE) Concentrations (µg/m^3)			
	101VMP-01	101VMP-01R	101VMP-02	101VMP-03
10/22/2013	540	---	82	76
1/29/2014	17	---	18 J	36
4/16/2014	18	---	130	50
7/16/2014	8.4	---	180	54
10/15/2014	20	---	130	39
1/21/2015	60	---	87 J	20 J
4/23/2015	42	---	120	34
7/15/2015	34 J	---	71	14
10/6/2015	29	---	72	25
10/29/2015	---	---	88	---
12/1/2015	350	---	110	28
2/3/2016	74	---	100	24
1/4/2017	5.0 J	---	57	---
1/30/2017	300	---	99	18
10/25/2017	500/430	---	U	9.5 J
5/27/2021	---	420/82	24	68
12/21/2022	---	22.1/23.7	2.27	0.804 U

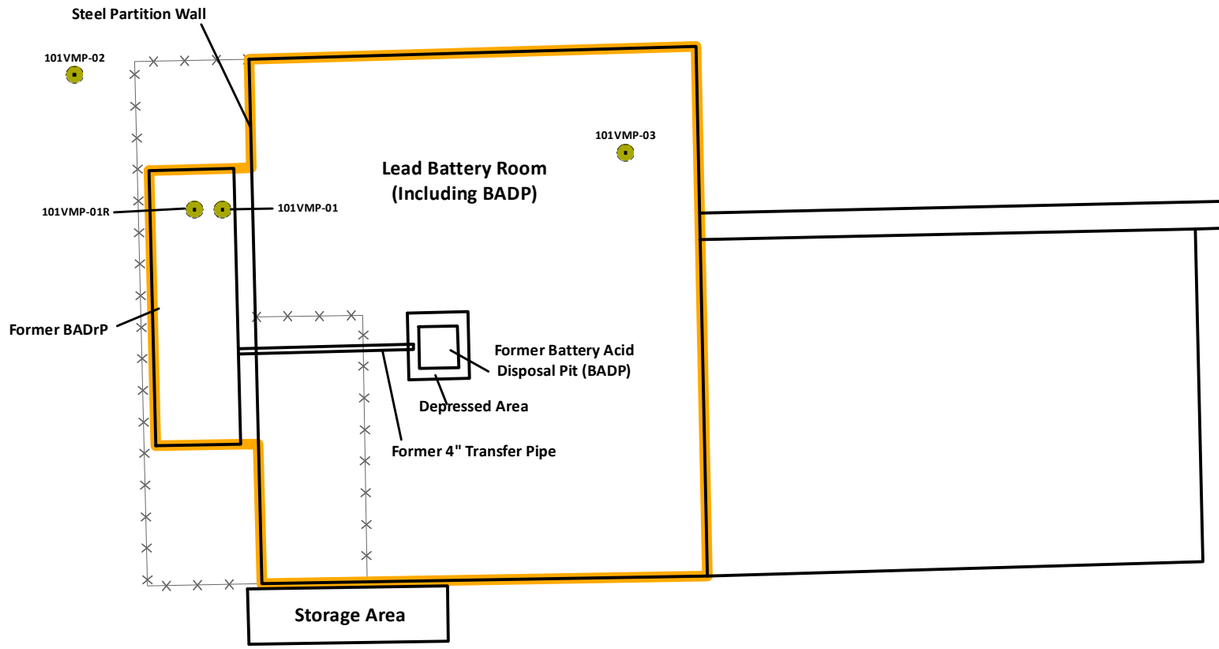
Notes:
µg/m^3 = micrograms per cubic meter
J = The reported result is an estimate
U = Concentration is below the detection level
TCE has a screening level of 15.8 µg/m^3; 33x USEPA RSL Residential Indoor Air Screening Level (33x DAF) (see Section 6.3.5, Page 81, Footnote 134 of OSWER Directive 9200.2-154)
format is result/duplicate result
Red analytical results exceed applicable screening criteria
Bold values are detections

Notes:
This information is depicted to provide visual aid within the context of this document and should not be used as a sole reference in precise dimensioning of features indicated. Please verify the location of all features including underground and aboveground utilities prior to conducting any subsurface exploration or site assessment.

Maintenance Hangar
Dock No. 5

Maintenance Hangar
(Building 101)

Maintenance Hangar
Dock No. 3



0 5 10 20 Feet

Legend:
- Vapor Monitoring Point
- BADP — Battery Acid Disposal Pit
- BADrP — Battery Acid Drainage Pit
- Installation Restoration Program Boundary (Approximated)
- Fence Line

Letter Work Plan, Site ST006 Supplemental Investigation
Site ST006 (Building 101 AOC)
Former Griffiss Air Force Base, Rome, New York

DRAWN BY: MRM

DATE: 9/25/2023

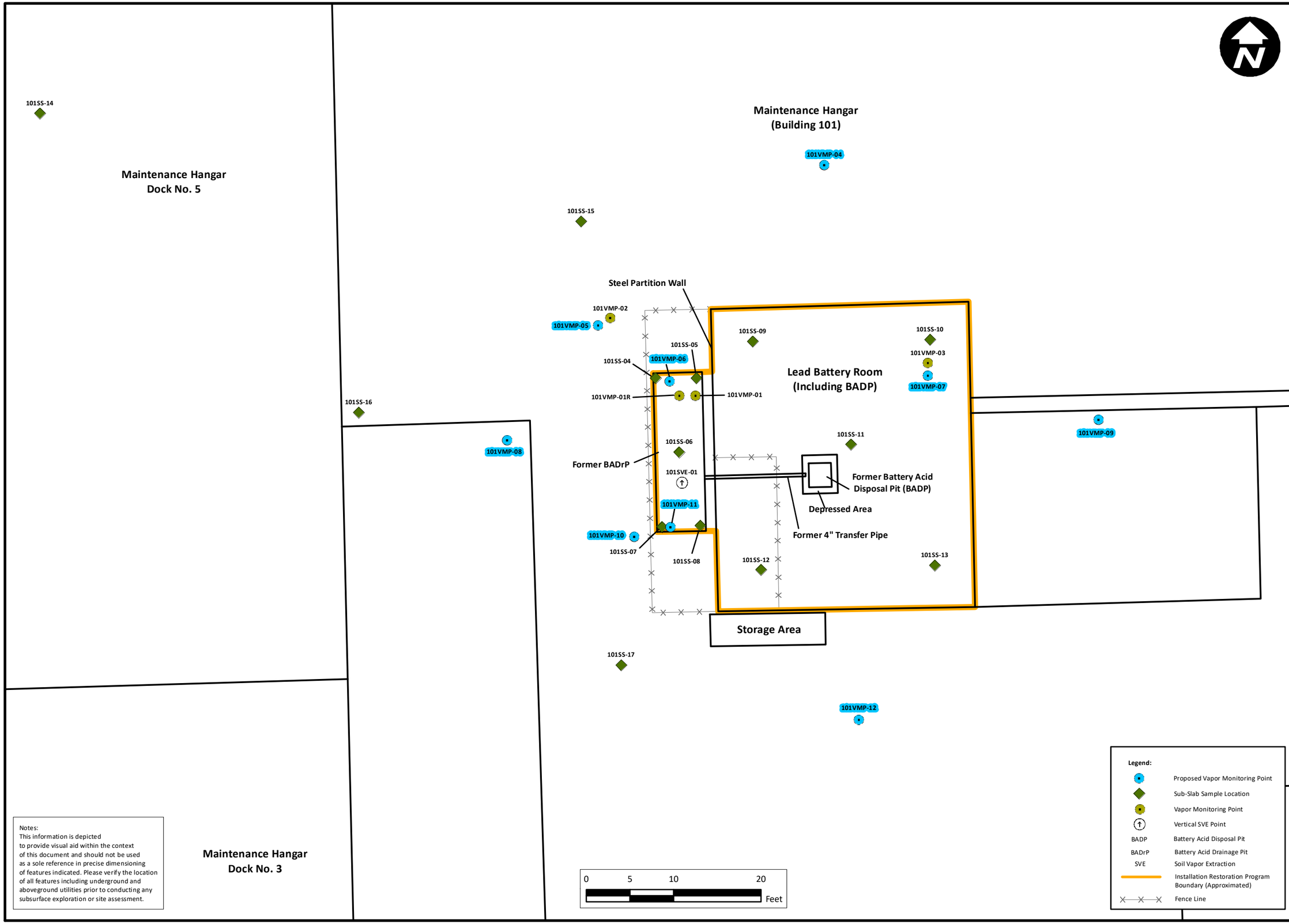
SCALE: As Shown

PROJECT NO: MSC2021.0012.0070.0002

bhate
www.bhate.com

Figure 5

ST006 Building 101 AOC
Proposed Vapor Monitoring Point Locations



Notes:
This information is depicted to provide visual aid within the context of this document and should not be used as a sole reference in precise dimensioning of features indicated. Please verify the location of all features including underground and aboveground utilities prior to conducting any subsurface exploration or site assessment.

Legend:

- Proposed Vapor Monitoring Point
- Sub-Slab Sample Location
- Vapor Monitoring Point
- Vertical SVE Point
- BADP — Battery Acid Disposal Pit
- BADrP — Battery Acid Drainage Pit
- SVE — Soil Vapor Extraction
- Installation Restoration Program Boundary (Approximated)
- Fence Line

Letter Work Plan, Site ST006 Supplemental Investigation
Site ST006 (Building 101 AOC)
Former Griffiss Air Force Base, Rome, New York

DRAWN BY: MRM

DATE: 9/25/2023

SCALE: As Shown

PROJECT NO: MSC2021.0012.0070.0002

bhate

www.bhate.com

TABLES

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m³)	101VMP-01							
Sample Identification		101VMP0101AA	101VMP0101BA	101VMP0101CA	101VMP0101DA	101VMP0101EA	101VMP0101FA	101VMP0101GA	101VMP0101HA
Sample Type		Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab
Sample Date		22-Oct-2013	29-Jan-2014	16-Apr-2014	16-Jul-2014	15-Oct-2014	21-Jan-2015	23-Apr-2015	15-Jul-2015
Sample Depth (ft bgs)		1	1	1	1	1	1	1	1
Sample Collection Duration (hour)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volatiles (TO-15) in µg/m³									
1,1,1-Trichloroethane	171,600	**3.9 J**	U	U	U	**1 J**	**1.1 J**	**0.79 J**	**0.92 J**
1,1,2,2-Tetrachloroethane	1.6	U	U	U	**6.8**	U	U	U	U
1,1-Dichloroethane	59.4	U	U	U	U	U	U	**0.13 J♦**	**0.18 J**
1,2,4-Trichlorobenzene	69.3	U	U	**1.7 J**	**0.31 J♦**	U	U	U	**0.86 J**
1,2,4-Trimethylbenzene	2,079	**15**	**4.5 ♦**	**4.9**	**4.7 ♦**	**4.7**	**4.4**	**1.3 J**	**5.3 J**
1,2-Dichlorobenzene	6,930	U	U	U	U	U	U	U	**0.11 J**
1,3,5-Trimethylbenzene	2,079	**4.3**	**1.3 J**	**1.5 J**	**1.4 ♦**	**1.5 J**	**1.3 J**	**0.38 J**	**1.4**
1,3-Dichlorobenzene	NV	**280**	**38 ♦**	**27**	**16 ♦**	**6.7 ♦**	U	**1.1 J**	**1.4**
1,4-Dichlorobenzene	8.6	U	U	U	U	U	**0.29 U**	U	**0.31♦**
4-Ethyltoluene	NV	**5.3**	**1.5 J**	**1.5 J♦**	**1.4 ♦**	**1.6 J**	**1.4 J**	**0.35 J**	**1.4**
Acetone	NV	**350**	**320 ♦**	**280 ♦**	**22**	**150**	**88**	**49 ♦**	**62**
Benzene	11.9	**15**	**1.3 J♦**	**1.2 J**	**1.2 ♦**	**0.89 J**	**0.84 J**	**1.2**	**0.7**
Bromodichloromethane	2.5	U	U	U	U	U	**0.71 J**	**0.59 J**	**0.43 J**
Bromoform	85.8	U	U	U	**0.11 J♦**	U	U	U	U
Carbon disulfide	24,090	**23**	U	**1.3 J♦**	**2.2**	**2.9 J**	**2.0 J**	**4.5 ♦**	**4**
Carbon tetrachloride	15.5	**1.2 J**	U	**0.68 J**	**0.67 J♦**	**0.74 J**	**0.83 J**	**0.76 J**	**0.77 J**
Chlorobenzene	1,716	U	U	U	**0.61 J♦**	**0.94 J**	U	U	U
Chloroethane	4	U	U	U	U	U	**0.34 U**	U	U
Chloroform	4.0	**24**	**18♦**	**14**	12 ♦	**25**	**140**	**93**	**83**
Chloromethane	3,102	**0.78 J**	U	U	**0.42 J**	U	**0.97 J**	U	**1.1**
cis-1,2-Dichloroethene	1,386	U	U	U	U	U	0.51 U	U	U
Dichlorodifluoromethane	3,300	**3.6 J**	**3 J♦**	**3.7 J♦**	**2.5 ♦**	**2.3 J**	**2.8 J**	**2.5 J**	**2.4 J**
Ethylbenzene	36.3	**24**	**4.2 ♦**	**3.0 J**	**4.9 ♦**	**4.7**	**1.9**	**0.84 J**	**2.5**
Hexachlorobutadiene	4.3	U	U	U	**0.35 J♦**	U	U	U	**1.3 J**
m,p-Xylene	3,300	**94**	**13**	**9.3**	**16 ♦**	**1.5 J**	**7.6**	**2.6 ♦**	**9.2**
Methyl Butyl Ketone (2-Hexanone)	1,023	U	U	U	**0.95 J**	U	U	**0.74 J♦**	**2.4**
Methyl Ethyl Ketone	171,600	**700 J**	**39♦**	**48 ♦**	**16**	**22 ♦**	**68**	**49**	**10 J**
Methyl isobutyl ketone	102,300	U	**2.2 J♦**	**5.2 J♦**	**1.5 J♦**	U	**2.3 J**	U	**2.2**
Methyl tert-butyl ether	363	U	U	**1.9 J**	**0.74 ♦**	**0.49 J ♦**	U	U	U
Methylene Chloride	3,300	**3.1 J**	**2 J♦**	U	**1.2 J**	U	**0.89 J**	**1.5 J**	**0.71 J**
Naphthalene	2.7	U	U	U	**1.4 J♦**	U	**0.56 J**	U	**2.5 J**
Styrene	33,000	**2.4 J**	**3.8**	**4.1**	**2.9 ♦**	**2 J**	**1.6**	**1.8**	**2.6**
Tetrachloroethene	363	**2.2 J**	U	U	**0.83 J♦**	**0.85 J**	U	**0.25 J♦**	**0.23 J**
Toluene	171,600	**300**	**21**	**17**	**14 ♦**	**44**	**12**	**7.9 ♦**	**9.8**
trans-1,2-Dichloroethene	1,386	**1.4 J**	U	U	U	U	U	U	U
Trichloroethene	15.8	**540**	**17 ♦**	**18 ♦**	**8.4 ♦**	**20**	**60**	**42**	**34 J**
Trichlorofluoromethane	NV	**9.9**	**5.2 ♦**	**3.6 J♦**	**2.0 ♦**	**2.4 J**	**5.1**	**4.6**	**2.6**
Vinyl chloride	5.6	U	U	U	U	U	U	U	U
Xylene, o-	3,300	**27**	**4.5**	**3.4 J**	**4.7 ♦**	**4.9**	**3**	**0.96 ♦**	**3.8**

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m³)	101VMP-01						
Sample Identification		101VMP0101JA	101VMP0101KA	101VMP0101LA	101VMP0101MA	101VMP0101NA	101VMP-01_1025	101VMP-01_1025-A
Sample Type		Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-Slab	Sub-Slab	Sub-Slab
Sample Date		6-Oct-2015	1-Dec-2015	3-Feb-2016	4-Jan-2017	30-Jan-2017	25-Oct-2017	25-Oct-2017
Sample Depth (ft bgs)		1	1	1	1	1	1	1
Sample Collection Duration (hour)		0.5	0.5	0.5	0.5	0.5	8	8
Volatiles (TO-15) in µg/m³								
1,1,1-Trichloroethane	171,600	0.69 J♦	3.4	U	U	2.3 J	4.8	4.7 J
1,1,2,2-Tetrachloroethane	1.6	U	U	U	U	U	U	U
1,1-Dichloroethane	59.4	U	0.58 J	U	U	0.41 J	U	U
1,2,4-Trichlorobenzene	69.3	U	U	U	U	U	U	U
1,2,4-Trimethylbenzene	2,079	0.82 J	1.6 J	1.4 JD	2.3 JD	U	14	U
1,2-Dichlorobenzene	6,930	U	U	U	U	U	U	U
1,3,5-Trimethylbenzene	2,079	0.26 J	0.57 J	U	U	U	8.1 J	U
1,3-Dichlorobenzene	NV	U	U	U	U	U	U	U
1,4-Dichlorobenzene	8.6	U	U	U	U	U	U	U
4-Ethyltoluene	NV	0.26 J	0.64 J	U	U	U	6.5 J	U
Acetone	NV	60	18 J	55 D	370 D	22 J	180	190
Benzene	11.9	0.47 J	1.6	0.77 JD	2.2 JD	0.73 J	1.3 J	1.0 J
Bromodichloromethane	2.5	0.51 J	1.1 J	1.3 JD	U	1.9 J	2.4 J	1.8 J
Bromoform	85.8	U	U	U	U	U	U	U
Carbon disulfide	24,090	1.2 J	1.6 J	8.3 D	U	15	6.9 J	27 J
Carbon tetrachloride	15.5	0.76 J	0.86 J	0.77 JD	U	0.61 J	U	U
Chlorobenzene	1,716	U	U	U	U	U	U	U
Chloroethane	4	U	U	U	U	U	U	U
Chloroform	4.0	91	150	150 D	10 D	140	270	260
Chloromethane	3,102	0.66 J	U	U	U	U	1.1 J	2.1 J
cis-1,2-Dichloroethene	1,386	U	0.44 J	U	U	U	U	U
Dichlorodifluoromethane	3,300	2.1 J	2.1 J	2.3 JD	2.1 JD	1.9 J	2.8 J	3.2 J
Ethylbenzene	36.3	0.78 J♦	1.9 J	1 JD	6.9 D	0.81 J	94 J	7.6 J
Hexachlorobutadiene	4.3	U	U	U	U	U	U	U
m,p-Xylene	3,300	2.8	7	3.4 J	13	2.5 J	350 J	14 J
Methyl Butyl Ketone (2-Hexanone)	1,023	0.48 J	U	U	U	U	U	U
Methyl Ethyl Ketone	171,600	13	3.4 J	58	33	23	11	13
Methyl isobutyl ketone	102,300	2.3	U	U	2.7 J	U	8.2 J	3.0 J
Methyl tert-butyl ether	363	U	U	U	U	U	U	U
Methylene Chloride	3,300	0.89 J	1.9 J	U	3.9 J	0.97 J	1.7 J	1.7 J
Naphthalene	2.7	0.87 J	U	U	U	U	U	U
Styrene	33,000	0.27 J	0.6 J	2.6	2.2 J	1.2 J	U	U
Tetrachloroethene	363	0.29 J♦	1.5 J	0.61 J	U	2.4 J	2.0 J	U
Toluene	171,600	13	53	6.2	70	3.6	64 J	13 J
trans-1,2-Dichloroethene	1,386	U	0.92 J	U	U	U	1.1 J	U
Trichloroethene	15.8	29	350	74	5.0 J	300	500	430
Trichlorofluoromethane	NV	3.9	8.7	4.4	2.8 J	4.0 J	5.2 J	5.3 J
Vinyl chloride	5.6	U	U	U	U	U	U	U
Xylene, o-	3,300	1	2.2	1.3 J	4.6	0.88 J	120 J	3.8 J

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m^3)	101VMP-01R			
Sample Identification		101VMP-01R_0521	101VMP-01R_0521-a	101VMP-01R_1222	01VMP-01R_1222-A (FD
Sample Type		Sub-Slab	Sub-Slab	Sub-slab	Sub-slab
Sample Date		27-May-2021	27-May-2021	21-Dec-2022	21-Dec-2022
Sample Depth (ft bgs)		1	1	NA	NA
Sample Collection Duration (hour)		8	8	NA	NA
Volatiles (TO-15) in µg/m^3					
1,1,1-Trichloroethane	171,600	**3.1 J**	U	0.816 U	0.816 U
1,1,2,2-Tetrachloroethane	1.6	U	U	1.03 U	1.03 U
1,1-Dichloroethane	59.4	U	U	NA	NA
1,2,4-Trichlorobenzene	69.3	U	U	2.29 U	2.29 U
1,2,4-Trimethylbenzene	2,079	**0.70 UB**	**12**	**1.58 J**	**1.77 J**
1,2-Dichlorobenzene	6,930	U	U	1.80 U	1.80 U
1,3,5-Trimethylbenzene	2,079	U	**3.6 J**	**0.471 J**	**0.520 J**
1,3-Dichlorobenzene	NV	U	**130**	2.40 U	2.40 U
1,4-Dichlorobenzene	8.6	U	U	0.782 U	0.782 U
4-Ethyltoluene	NV	U	**4.3 J**	0.982 U	**1.51 J**
Acetone	NV	**22**	**3,100 J**	**44.4**	**40.6**
Benzene	11.9	**0.75 J**	**22**	**0.760 J**	**0.821 J**
Bromodichloromethane	2.5	**1.9 J**	U	1.01 U	1.01 U
Bromoform	85.8	U	U	3.21 U	3.21 U
Carbon disulfide	24,090	**1.4 J**	**110**	**0.613 J**	0.778 U
Carbon tetrachloride	15.5	**1.7 J**	U	0.945 U	**0.649 J**
Chlorobenzene	1,716	U	U	0.924 U	0.924 U
Chloroethane	4	U	U	0.528 U	0.528 U
Chloroform	4.0	**130**	**21**	**39.7**	**41.8**
Chloromethane	3,102	U	**2.1 J**	**0.483 J**	**0.394 J**
cis-1,2-Dichloroethene	1,386	U	U	0.793 U	0.793 U
Dichlorodifluoromethane	3,300	**2.7 J**	**3.9 J**	**2.14 J**	**2.32 J**
Ethylbenzene	36.3	**2.0 J**	**19**	**2.03**	**2.14**
Hexachlorobutadiene	4.3	U	U	2.67 U	2.67 U
m,p-Xylene	3,300	**6.7**	**73**	**8.76**	**9.32**
Methyl Butyl Ketone (2-Hexanone)	1,023	U	U	NA	NA
Methyl Ethyl Ketone	171,600	**4.0 J**	**2,400 J**	NA	NA
Methyl isobutyl ketone	102,300	U	U	NA	NA
Methyl tert-butyl ether	363	U	U	0.468 U	0.468 U
Methylene Chloride	3,300	**1.1 J**	**4.1 J**	**0.837 J**	0.694 U
Naphthalene	2.7	**0.48 J**	U	3.66 U	3.66 U
Styrene	33,000	**0.89 J**	**1.8 J**	0.851 U	0.851 U
Tetrachloroethene	363	**2.7 J**	U	1.36 U	1.36 U
Toluene	171,600	**5.4**	**240**	**47.5**	**50.1**
trans-1,2-Dichloroethene	1,386	U	U	0.594 U	0.594 U
Trichloroethene	15.8	**420**	**82**	**22.1**	**23.7**
Trichlorofluoromethane	NV	**4.8**	**7.7 J**	**4.41**	**4.18**
Vinyl chloride	5.6	U	U	0.511 U	0.511 U
Xylene, o-	3,300	**1.6 J**	**20**	NA	NA

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m^3)	101VMP-02							
Sample Identification		101VMP0201AA	101VMP0201BA	101VMP0201CA	101VMP0201DA	101VMP0201EA	101VMP0201FA	101VMP0201GA	101VMP0201HA
Sample Type		Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab
Sample Date		22-Oct-2013	29-Jan-2014	16-Apr-2014	16-Jul-2014	15-Oct-2014	21-Jan-2015	23-Apr-2015	15-Jul-2015
Sample Depth (ft bgs)		1	1	1	1	1	1	1	1
Sample Collection Duration (hour)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volatiles (TO-15) in µg/m^3									
1,1,1-Trichloroethane	171,600	U	U	U	U	U	U	U	U
1,1,2,2-Tetrachloroethane	1.6	U	U	U	U	U	U	U	U
1,1-Dichloroethane	59.4	U	U	U	U	U	U	U	U
1,2,4-Trichlorobenzene	69.3	U	U	U	U	U	**0.51 J**	U	U
1,2,4-Trimethylbenzene	2,079	**12**	**5.1 J**	**24**	**11**	**68**	**2.7 J♦**	**36**	**5.1**
1,2-Dichlorobenzene	6,930	U	U	**8**	U	U	U	U	U
1,3,5-Trimethylbenzene	2,079	**3.6 J**	**12 J**	**11**	**6.9 J**	**39**	**1.5 J♦**	**20**	**1.3**
1,3-Dichlorobenzene	NV	**130**	**26**	U	U	U	U	U	**1.5**
1,4-Dichlorobenzene	8.6	U	U	U	U	U	0.36 U	U	U
4-Ethyltoluene	NV	**4.3 J**	**4.1 J**	**8.8**	**6.2 J**	**26**	**1.3 J**	**15**	**1.5**
Acetone	NV	**3,100 J**	**760**	**98**	**58 J**	**51 J**	**45 ♦**	**41 J**	**19**
Benzene	11.9	**22**	**7.3 J**	**2.7**	**2.9 J**	**8.2**	**8.6 ♦**	**3.3**	**0.71**
Bromodichloromethane	2.5	U	U	U	U	U	U	U	U
Bromoform	85.8	U	U	U	U	U	U	U	U
Carbon disulfide	24,090	**110**	**28**	**20**	**9.6 J**	**14 J**	**11 ♦**	**5.7 J**	**3.2**
Carbon tetrachloride	15.5	U	U	**0.51**	U	U	**1.0 J♦**	U	**0.55 J**
Chlorobenzene	1,716	U	U	U	U	U	U	U	U
Chloroethane	4	U	U	U	U	U	0.42 U	U	U
Chloroform	4.0	**21**	U	**0.65 JM**	U	U	**0.63 J♦**	U	**0.48 J**
Chloromethane	3,102	**2.1 J**	U	U	U	U	U	U	**0.84 J**
cis-1,2-Dichloroethene	1,386	U	U	U	U	U	0.63 U	U	U
Dichlorodifluoromethane	3,300	**3.9 J**	U	**3.1 J**	**3.2 J**	U	**3.1 J♦**	**2.3 J**	**2.6**
Ethylbenzene	36.3	**19**	**140**	**190**	**210**	**910**	**170 J♦**	**390**	**2.5**
Hexachlorobutadiene	4.3	U	U	U	U	U	U	U	U
m,p-Xylene	3,300	**73**	**470**	**640**	**720**	**2,800**	**560 J♦**	**1,600**	**9.4**
Methyl Butyl Ketone (2-Hexanone)	1,023	U	U	U	U	U	U	U	U
Methyl Ethyl Ketone	171,600	**2,400 J**	**1,200**	**140**	**160**	U	**13 ♦**	**33**	**7.2**
Methyl isobutyl ketone	102,300	U	**5.4 J**	**7.4**	**3.2 J**	U	U	**4.3 J**	**1.5 J**
Methyl tert-butyl ether	363	U	U	U	U	U	U	U	U
Methylene Chloride	3,300	**4.1 J**	**7.9 J**	U	U	U	**1.5 J♦**	**3.7 J**	**0.44 J**
Naphthalene	2.7	U	U	U	U	U	U	U	**0.8 J**
Styrene	33,000	**1.8 J**	**5.2 J**	U	**5.5 J**	**22**	U	**6.4**	**2.4**
Tetrachloroethene	363	U	U	**4.0 M**	**12**	**10 J**	**3.5 J♦**	**10**	**3.9**
Toluene	171,600	**240**	**170**	**140**	**120**	**540**	**220 J♦**	**170**	**8.3**
trans-1,2-Dichloroethene	1,386	U	U	U	U	U	U	U	U
Trichloroethene	15.8	**82**	**18 J**	**130**	**180**	**130**	**87 J♦**	**120**	**71**
Trichlorofluoromethane	NV	**7.7 J**	**4.8 J**	**3.4**	**4.9 J**	**6 J**	**5.9 ♦**	**3.4 J**	**3.7**
Vinyl chloride	5.6	U	U	U	U	U	U	U	U
Xylene, o-	3,300	**20**	**130**	**220**	**200**	**1,100**	**120 J♦**	**460**	**3.9**

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m^3)	101VMP-02								
Sample Identification		101VMP0201JA	101VMP0201JB	101VMP0201KA	101VMP0201LA	101VMP0201MA	101VMP0201NA	101VMP-02_1025	101VMP-02_0521	101VMP-02_1222
Sample Type		Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab
Sample Date		6-Oct-2015	29-Oct-2015	1-Dec-2015	3-Feb-2016	4-Jan-2017	30-Jan-2017	25-Oct-2017	27-May-2021	21-Dec-2022
Sample Depth (ft bgs)		1	1	1	1	1	1	1	1	
Sample Collection Duration (hour)		0.5	0.5	0.5	0.5	0.5	0.5	8	8	
Volatiles (TO-15) in µg/m^3										
1,1,1-Trichloroethane	171,600	U	U	**0.58 J**	U	U	U	U	U	0.816 U
1,1,2,2-Tetrachloroethane	1.6	**1.2 J**	U	U	U	U	U	U	U	1.03 U
1,1-Dichloroethane	59.4	U	U	U	U	U	U	U	U	
1,2,4-Trichlorobenzene	69.3	U	U	U	U	U	U	U	U	2.29 U
1,2,4-Trimethylbenzene	2,079	**9.3**	**19**	**2.3**	**4.1 D♦**	**16 D**	**21**	U	**14 J**	**1.62 J**
1,2-Dichlorobenzene	6,930	U	U	U	U	U	U	U	U	1.80 U
1,3,5-Trimethylbenzene	2,079	**4.6**	**11**	**0.81 J**	**2.4 DM♦**	**7.6 D**	**11**	U	**10 J**	**0.467 J**
1,3-Dichlorobenzene	NV	U	U	**0.58 J**	U	U	U	U	U	2.40 U
1,4-Dichlorobenzene	8.6	U	U	U	U	U	U	U	U	0.782 U
4-Ethyltoluene	NV	**3**	**8.2**	**0.85 J**	**2 DM♦**	**5.5 D**	**7.8**	U	**21**	0.982 U
Acetone	NV	**8.6 J**	U	**39**	**45 D♦**	**62 D**	**49**	**540**	**290**	**50.6**
Benzene	11.9	**0.75**	**3.4 J**	**1.5**	**1.4**	**1.1 JD**	**1.7 J**	**8.7 J**	**8.3**	**0.882 J**
Bromodichloromethane	2.5	U	U	U	U	U	U	U	**0.79 J**	1.01 U
Bromoform	85.8	U	U	U	U	U	U	U	U	3.21 U
Carbon disulfide	24,090	**2.3**	**11**	**3.3**	**17 D♦**	U	**2.8 J**	U	**2.1 J**	0.778 U
Carbon tetrachloride	15.5	**0.36 J**	U	**0.75 J**	**0.53 J**	**0.42 JD**	**0.64 J**	U	U	**0.620 J**
Chlorobenzene	1,716	U	U	**0.26 J**	U	U	U	U	U	0.924 U
Chloroethane	4	U	U	**0.25 J**	U	U	U	U	U	0.528 U
Chloroform	4.0	U	U	**24**	**0.92 J**	U	**11**	U	**5.2 J**	**12.6**
Chloromethane	3,102	**0.35 J**	U	**1.8**	U	U	U	U	U	**0.417 J**
cis-1,2-Dichloroethene	1,386	U	U	U	U	U	U	U	U	0.793 U
Dichlorodifluoromethane	3,300	**2 J**	**2.4 J**	**2.2 J♦**	**2.3 J**	**2.3 JD**	**2.6 J**	U	**2.7 J**	**2.30 J**
Ethylbenzene	36.3	**69**	**340**	**6.2 ♦**	**81 D♦**	**110 D**	**240**	**14 J**	**370**	**2.03**
Hexachlorobutadiene	4.3	U	U	U	U	U	U	U	U	2.67 U
m,p-Xylene	3,300	**300**	**1,300**	**23**	**300 ♦**	**440**	**960**	**52 J**	**1,600**	**8.76**
Methyl Butyl Ketone (2-Hexanone)	1,023	U	U	**1.1 J**	U	U	U	U	**3.6 J**	
Methyl Ethyl Ketone	171,600	**2.2**	U	**7 J**	**6.5 ♦**	**5.2**	**13**	**29 J**	**41**	
Methyl isobutyl ketone	102,300	**1.1 J**	U	**1.6 J**	**2.8 J♦**	**68**	**6.0**	U	**29**	
Methyl tert-butyl ether	363	U	U	U	U	U	U	U	**0.92 J**	0.468 U
Methylene Chloride	3,300	U	U	U	**0.7 J**	U	**2.1 J**	U	U	0.694 U
Naphthalene	2.7	**0.34 J**	U	**1 J**	U	U	U	U	**1.6 J**	3.66 U
Styrene	33,000	**1.2**	U	**0.85**	**3.5 ♦**	U	U	U	U	0.851 U
Tetrachloroethene	363	**6.4**	**8.7**	**9.6**	**6.9 ♦**	**5.1**	**8.4**	U	**1.4 J**	1.36 U
Toluene	171,600	**24**	**140**	**42**	**61 ♦**	**66**	**120**	**79**	**360**	**46.3**
trans-1,2-Dichloroethene	1,386	U	U	U	U	U	U	U	U	0.594 U
Trichloroethene	15.8	**72**	**88**	**110**	**100 ♦**	**57**	**99**	U	**24**	**2.27**
Trichlorofluoromethane	NV	**4.5**	**8.2**	**7.7**	**5.1**	**4.5**	**5.4**	U	**5.6 J**	**4.30**
Vinyl chloride	5.6	U	U	U	U	U	U	U	U	0.511 U
Xylene, o-	3,300	**85**	**350**	**6.8**	**80**	**130**	**250**	**20 J**	**420**	NA

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m^3)	101VMP-03							
Sample Identification		101VMP0301AA	101VMP0301BA	101VMP0301CA	101VMP0301DA	101VMP0301EA	101VMP0301FA	101VMP0301GA	101VMP0301HA
Sample Type		Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab	Sub-slab
Sample Date		22-Oct-2013	29-Jan-2014	16-Apr-2014	16-Jul-2014	15-Oct-2014	21-Jan-2015	23-Apr-2015	15-Jul-2015
Sample Depth (ft bgs)		1	1	1	1	1	1	1	1
Sample Collection Duration (hour)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volatiles (TO-15) in µg/m^3									
1,1,1-Trichloroethane	171,600	U	U	U	U	U	U	U	**0.37 J**
1,1,2,2-Tetrachloroethane	1.6	U	U	U	U	U	U	U	U
1,1-Dichloroethane	59.4	U	U	U	U	U	U	U	U
1,2,4-Trichlorobenzene	69.3	U	U	U	U	U	U	U	U
1,2,4-Trimethylbenzene	2,079	**11 J♦**	**8.5 J**	**1.1 J**	**6.4 J**	**5 J**	U	U	**4.4**
1,2-Dichlorobenzene	6,930	U	U	U	U	U	U	U	U
1,3,5-Trimethylbenzene	2,079	U	U	U	U	U	U	U	**1.2**
1,3-Dichlorobenzene	NV	**170 ♦**	**15 J**	**1.9 J**	**2.1 J**	U	U	U	**0.92 J**
1,4-Dichlorobenzene	8.6	U	U	U	U	U	U	U	U
4-Ethyltoluene	NV	U	U	U	U	U	U	U	**1.2**
Acetone	NV	**640 ♦**	**700**	**310**	**490**	**330**	**450 J**	**370**	**33**
Benzene	11.9	**23 J♦**	U	U	**2.4 J**	U	U	U	**2.9**
Bromodichloromethane	2.5	U	U	U	U	U	U	U	U
Bromoform	85.8	U	U	U	U	U	U	U	U
Carbon disulfide	24,090	**110**	**7 J**	U	**32 J**	**7.1 J**	**14 J**	U	**1.4 J**
Carbon tetrachloride	15.5	U	U	U	U	U	U	U	**1.3**
Chlorobenzene	1,716	U	U	U	U	U	U	U	U
Chloroethane	4	U	U	U	U	U	U	U	U
Chloroform	4.0	U	U	U	U	U	U	U	**0.36 J**
Chloromethane	3,102	U	U	U	U	U	U	U	**0.36 J**
cis-1,2-Dichloroethene	1,386	U	U	U	U	U	U	U	**0.28 J**
Dichlorodifluoromethane	3,300	U	U	U	U	U	U	U	**2.3 J**
Ethylbenzene	36.3	**29 J♦**	**24 J**	**9.9 J**	**31**	**31**	**19 J**	**21 J**	**2.3**
Hexachlorobutadiene	4.3	U	U	U	U	U	U	U	U
m,p-Xylene	3,300	**95 ♦**	**92**	**33 J**	**130**	**130**	**68 J**	**80**	**8.3**
Methyl Butyl Ketone (2-Hexanone)	1,023	U	U	U	U	U	U	U	**0.86 J**
Methyl Ethyl Ketone	171,600	**1,100 ♦**	**1,300**	**540**	**770**	**540**	**620**	**590**	**10**
Methyl isobutyl ketone	102,300	U	**400**	**230**	**660**	**500**	**300**	**330**	**1.7 J**
Methyl tert-butyl ether	363	U	U	U	U	U	U	U	U
Methylene Chloride	3,300	**36 J♦**	U	U	U	U	U	U	**0.94 J**
Naphthalene	2.7	U	U	U	U	U	U	U	**0.56 J**
Styrene	33,000	U	**8.7 J**	U	**13 J**	**19 J**	**8.1 J**	**12 J**	**2.2**
Tetrachloroethene	363	**32 J♦**	**23 J**	**29**	**31 J**	**27 J**	**11 J**	**20 J**	**3.0**
Toluene	171,600	**3,900 ♦**	**1,100**	**500**	**1,400**	**1,500**	**1100**	**920**	**11**
trans-1,2-Dichloroethene	1,386	U	U	U	U	U	U	U	U
Trichloroethene	15.8	**76 ♦**	**36**	**50**	**54**	**39**	**20 J**	**34**	**14**
Trichlorofluoromethane	NV	U	U	**3.4 J**	U	U	U	U	**3.5**
Vinyl chloride	5.6	U	U	U	U	U	U	U	U
Xylene, o-	3,300	**27 J♦**	**37**	**10 J**	**44**	**48**	**21 J**	**30**	**3.6**

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m^3)	101VMP-03						
Sample Identification		101VMP0301JA	101VMP0301KA	101VMP0301LA	101VMP0301NA	101VMP03_1117	101VMP-03_0521	101VMP-03_1222
Sample Type		Sub-slab	Sub-slab	Sub-slab	Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab
Sample Date		6-Oct-2015	1-Dec-2015	3-Feb-2016	30-Jan-2017	1-Nov-2017	27-May-2021	21-Dec-2022
Sample Depth (ft bgs)		1	1	1	1	1	1	
Sample Collection Duration (hour)		0.5	0.5	0.5	0.5	8	8	
Volatiles (TO-15) in µg/m^3								
1,1,1-Trichloroethane	171,600	U	U	U	U	U	**1.0 J**	0.816 U
1,1,2,2-Tetrachloroethane	1.6	U	U	U	U	U	U	1.03 U
1,1-Dichloroethane	59.4	U	U	U	U	U	U	
1,2,4-Trichlorobenzene	69.3	U	U	U	U	U	U	2.29 U
1,2,4-Trimethylbenzene	2,079	**2.1 J**	**3.8 J**	U	U	U	**0.57 UB**	**0.923 J**
1,2-Dichlorobenzene	6,930	U	U	U	U	U	U	1.80 U
1,3,5-Trimethylbenzene	2,079	U	**2 J**	U	U	U	U	0.982 U
1,3-Dichlorobenzene	NV	U	U	U	U	U	U	2.40 U
1,4-Dichlorobenzene	8.6	U	**1.4 J**	U	U	U	U	0.782 U
4-Ethyltoluene	NV	U	**1.4 J**	U	U	U	U	0.982 U
Acetone	NV	**40 J**	**82**	**90 JD**	**36 J**	**180**	**16**	**33.5**
Benzene	11.9	U	**2.4 J**	**1.8 JD**	**1.0 J**	**0.81 J**	**1.9 J**	**0.955 J**
Bromodichloromethane	2.5	U	U	U	U	U	U	1.01 U
Bromoform	85.8	U	U	U	U	U	U	3.21 U
Carbon disulfide	24,090	**5.9 J**	**21**	**8.4 JD**	**1.0 J**	**2.0 J**	**0.89 J**	0.778 U
Carbon tetrachloride	15.5	U	**5**	U	**2.4 J**	**4.3 J**	**3.7 J**	**1.00 J**
Chlorobenzene	1,716	U	U	U	U	U	U	0.924 U
Chloroethane	4	U	**1.5 J**	U	U	U	U	0.528 U
Chloroform	4.0	U	U	U	U	U	**14**	0.730 U
Chloromethane	3,102	U	**5.9**	U	U	U	U	**0.436 J**
cis-1,2-Dichloroethene	1,386	U	**1.1 J**	U	U	U	U	0.793 U
Dichlorodifluoromethane	3,300	U	**2.1 J**	U	**2.0 J**	**3.0 J**	**2.8 J**	**2.51 J**
Ethylbenzene	36.3	**14**	**27**	**4 JD**	**9.2**	**4.5 J**	**1.3 J**	**0.932 J**
Hexachlorobutadiene	4.3	U	U	U	U	U	U	2.67 U
m,p-Xylene	3,300	**56**	**73**	**8.7 J**	**36**	**17**	**4.2**	**3.72**
Methyl Butyl Ketone (2-Hexanone)	1,023	U	U	U	U	U	U	NA
Methyl Ethyl Ketone	171,600	**39**	**100**	**87**	**34**	**86**	**5.8 J**	NA
Methyl isobutyl ketone	102,300	**240**	**150**	**140**	**130**	**200**	**0.85 J**	NA
Methyl tert-butyl ether	363	U	U	U	U	U	U	0.468 U
Methylene Chloride	3,300	U	U	U	U	**0.91 J**	U	0.694 U
Naphthalene	2.7	U	U	U	U	U	**0.31 J**	3.66 U
Styrene	33,000	**9.0**	**2.4 J**	U	**5.6**	**2.8 J**	**0.60 J**	0.851 U
Tetrachloroethene	363	**15**	**20**	**11 J**	**9.5**	**2.6 J**	**1.7 J**	1.36 U
Toluene	171,600	**540**	**450**	**360**	**380**	**280**	**7.7**	0.942 U
trans-1,2-Dichloroethene	1,386	U	U	U	U	U	U	0.594 U
Trichloroethene	15.8	**25**	**28**	**24**	**18**	**9.5 J**	**68**	0.804 U
Trichlorofluoromethane	NV	**4.5 J**	**3.3 J**	**4.5 J**	**3.1 J**	**3.9 J**	**4.6**	**3.70**
Vinyl chloride	5.6	U	U	U	U	U	U	0.511 U
Xylene, o-	3,300	**21**	**21**	**2.4 J**	**14**	**6.5**	**1.7 J**	NA

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m^3)	101SS-04	101SS-05	101SS-06	101SS-07	101SS-08	101SS-09	101SS-10
Sample Identification		101SS0401CA	101SS0501CA	101SS0601CA	101SS0701CA	101SS0801CA	101SS0901CA	101SS1001CA
Sample Type		Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab
Sample Date		20-Feb-2013	20-Feb-2013	20-Feb-2013	20-Feb-2013	20-Feb-2013	20-Feb-2013	20-Feb-2013
Sample Depth (ft bgs)		1	1	1	1	1	1	1
Sample Collection Duration (hour)		0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volatiles (TO-15) in µg/m^3								
1,1,1-Trichloroethane	171,600	**7.2 J**	**8.3 J**	**6.4**	**4.9 J**	**4.9 J**	U	U
1,1,2,2-Tetrachloroethane	1.6	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	59.4	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	69.3	U	U	U	U	U	**30 J**	U
1,2,4-Trimethylbenzene	2,079	U	U	U	U	U	U	U
1,2-Dichlorobenzene	6,930	U	U	U	U	U	U	U
1,3,5-Trimethylbenzene	2,079	U	U	U	U	U	U	U
1,3-Dichlorobenzene	NV	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	8.6	NA	NA	NA	NA	NA	NA	NA
4-Ethyltoluene	NV	U	U	U	U	U	U	U
Acetone	NV	**62 JB**	**40 JB**	**35 JB**	**280**	**220**	**6,600**	**4,200**
Benzene	11.9	**4.5 J**	**2.8 J**	**2.2 J**	**2.3 J**	**6**	U	**33 J**
Bromodichloromethane	2.5	NA	NA	NA	NA	NA	NA	NA
Bromoform	85.8	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	24,090	**18**	U	U	U	U	U	U
Carbon tetrachloride	15.5	U	U	**1.8 J**	**1.6 J**	**1.6 J**	U	U
Chlorobenzene	1,716	NA	NA	NA	NA	NA	NA	NA
Chloroethane	4	NA	NA	NA	NA	NA	NA	NA
Chloroform	4.0	**21**	**23**	**19**	**18**	**16**	**24 J**	U
Chloromethane	3,102	**1.7 J**	**1.6 J**	**1.1 J**	**0.88 J**	**1.1 J**	**13 J**	**16 J**
cis-1,2-Dichloroethene	1,386	U	U	**2.7 J**	U	**2.2 J**	U	U
Dichlorodifluoromethane	3,300	**4.1 J**	**3.8 J**	**3.8 J**	**3.6 J**	**3.8 J**	U	U
Ethylbenzene	36.3	**140**	**2.1 J**	U	U	**12**	**37 J**	**120**
Hexachlorobutadiene	4.3	NA	NA	NA	NA	**NA**	NA	NA
m,p-Xylene	3,300	**490**	**5.8 J**	**2 J**	U	**39**	**140 J**	**430**
Methyl Butyl Ketone (2-Hexanone)	1,023	**4.9 JB**	**2.3 JB**	**2.8 JB**	**2.7 JB**	U	U	U
Methyl Ethyl Ketone	171,600	U	U	U	U	U	**1,200**	**3,600**
Methyl isobutyl ketone	102,300	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	363	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	3,300	**6.2 J**	**5.6 J**	**4.5 J**	**3.2 J**	**5.9 J**	**40 J**	**95 J**
Naphthalene	2.7	U	U	U	U	U	**35 J**	U
Styrene	33,000	U	U	U	U	**0.77 J**	U	U
Tetrachloroethene	363	**8.1 J**	**6.8 J**	**6.2 J**	**4.7 J**	**7.3**	U	**78 J**
Toluene	171,600	**20**	**6.9 J**	**3.6 J**	**2 JB**	**13**	**5,600**	**12,000**
trans-1,2-Dichloroethene	1,386	U	**1.7 J**	U	U	U	U	U
Trichloroethene	15.8	**1,800**	**1,400**	**1,100**	**960**	**950**	**200**	**180**
Trichlorofluoromethane	NV	**7.7 J**	**7.3 J**	**8**	**7.6**	**7.2**	U	U
Vinyl chloride	5.6	NA	NA	NA	NA	NA	NA	NA
Xylene, o-	3,300	**210**	**1.1 J**	U	U	**7.4**	**62**	**180**

Table 1
Sub-Slab Vapor Sample Results (2013-2022)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Sub-Slab Vapor Screening Level[1] (Residential) (µg/m^3)	101SS-11	101SS-12	101SS-13	101SS-14	101SS-15	101SS-16	101SS-17
Sample Identification		101SS1101CA	101SS1201CA	101SS1301CA	101SS1401CA	101SS1501CA	101SS1601CA	101SS1701CA
Sample Type		Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab	Sub-Slab
Sample Date		20-Feb-2013	20-Feb-2013	20-Feb-2013	10-Jul-2013	10-Jul-2013	10-Jul-2013	10-Jul-2013
Sample Depth (ft bgs)		1	1	1	1	1	1	1
Sample Collection Duration (hour)		0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volatiles (TO-15) in µg/m^3								
1,1,1-Trichloroethane	171,600	**2.2 J**	**1.3 J**	U	**18**	U	**0.91 JM**	**2 J**
1,1,2,2-Tetrachloroethane	1.6	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	59.4	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	69.3	U	U	U	U	U	U	U
1,2,4-Trimethylbenzene	2,079	**4 ♦**	U	U	**3.8 J**	**8 J♦**	**5.8**	**5.4**
1,2-Dichlorobenzene	6,930	**1.1 J**	U	U	U	U	U	U
1,3,5-Trimethylbenzene	2,079	**2.2 J♦**	U	U	**3 J**	**5.9 J♦**	**3.7**	**3.3**
1,3-Dichlorobenzene	NV	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	8.6	NA	NA	NA	NA	NA	NA	NA
4-Ethyltoluene	NV	**3 ♦**	U	U	**1.3 J**	**4.6 J ♦**	**1.8 J**	**3.3**
Acetone	NV	**160**	**160**	**250 J**	**330**	**740**	**280**	**200**
Benzene	11.9	**2.8**	**1.4**	**21 J**	**6.6**	**14**	**6**	**9.8**
Bromodichloromethane	2.5	NA	NA	NA	NA	NA	NA	NA
Bromoform	85.8	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	24,090	**2.4 JB♦**	U	U	**7.5 J**	**25 J ♦**	**4.4 J**	**5.9**
Carbon tetrachloride	15.5	**24**	**1.7 J**	**19 J**	U	U	**1 J**	**1.8 J**
Chlorobenzene	1,716	NA	NA	NA	NA	NA	NA	NA
Chloroethane	4	NA	NA	NA	NA	NA	NA	NA
Chloroform	4.0	**28**	**9.2**	U	**30**	U	**48**	**5.3**
Chloromethane	3,102	**0.69 J**	**0.81 J**	**10 J**	**0.88 J**	**2 J**	**0.46 J**	**0.91 J**
cis-1,2-Dichloroethene	1,386	U	U	U	U	U	U	U
Dichlorodifluoromethane	3,300	**3.8 J**	**3.1 J**	U	**3.2 J**	U	**3.2 J**	**2.7 J**
Ethylbenzene	36.3	**15 J♦**	U	**46 J**	**15**	**220**	**49**	**15**
Hexachlorobutadiene	4.3	NA	NA	NA	NA	NA	NA	NA
m,p-Xylene	3,300	**55 ♦**	U	**150**	**21**	**740 ♦**	**220**	**41**
Methyl Butyl Ketone (2-Hexanone)	1,023	**8.5 ♦**	**6.3**	U	NA	NA	NA	NA
Methyl Ethyl Ketone	171,600	**190**	**12**	**210**	**7.7**	**43 ♦**	**12**	**12**
Methyl isobutyl ketone	102,300	NA	NA	NA	**2.1 J**	**90**	**10**	**3.7 J**
Methyl tert-butyl ether	363	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	3,300	**5.5**	**2.2 J**	**31**	**3.6 J**	**76**	**2.8 J**	**1.3 J**
Naphthalene	2.7	**3.3 J♦**	U	U	U	U	**2.9 J**	**2 J**
Styrene	33,000	U	U	U	U	U	U	U
Tetrachloroethene	363	**70**	**2.7 J**	**240**	**3.7 J**	**72**	U	**57.0**
Toluene	171,600	**310**	**4**	**6,400**	**53**	**390**	**58**	**15**
trans-1,2-Dichloroethene	1,386	U	U	U	U	U	U	U
Trichloroethene	15.8	**120**	**110**	U	**11**	**250**	**29**	**84**
Trichlorofluoromethane	NV	**6.9**	**5.8**	U	**6.5**	**6.3 J ♦**	**6.3**	**5.8**
Vinyl chloride	5.6	NA	NA	NA	NA	NA	NA	NA
Xylene, o-	3,300	**40 ♦**	U	**55 J**	**4.8**	**220 ♦**	**78**	**9.6**

Notes:

Exceedance of screening level

♦-Denotes higher nominal value of duplicate sample result

B- The result for the analyte was detected in the trip blank.

D - The sample was diluted

J- The analyte was positively identified; the quantitation is an estimation

M - A matrix effect was present

NA - Analyte was not analyzed

NV- no value

U- Undetected at the Limit of Detection

µg/m^3- micrograms per cubic meter

ft bgs - feet below ground surface

[1] - 33x USEPA Regional Screening Level Indoor Air Screening Level (33x Dilution Attenuation Factor) Hazard Quotient = 1 May 2023

Table 2
Air Sample Results (2013-2021)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Indoor Air Screening Level[1] (Residential) ($\mu g/m^3$)	101IA-03											
Sample Identification		**101IA0305AA**	**101IA0305AA**	**101IA0305CA**	**101IA0305DA**	**101IA0305EA**	**101IA0305FA**	**101IA0305GA**	**101IA0305HA**	**101IA0305JA**	**101IA0305KA**	**101IA0305LA**	**101IA-03_1025**
Sample Type		**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**
Sample Date		**22-Oct-2013**	**29-Jan-2014**	**15-Apr-2014**	**16-Jul-2014**	**15-Oct-2014**	**21-Jan-2015**	**23-Apr-2015**	**15-Jul-2015**	**6-Oct-2015**	**1-Dec-2015**	**3-Feb-2016**	**25-Oct-2017**
Sample Depth (ft ags)		**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Sample Collection Duration (hours)		**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**8**
Volatiles ($\mu g/m^3$)													
1,2,4-Trimethylbenzene	63	**23**	**3.6 J**	**3.5 J**	**0.48 J**	**2.1**	**4.3 J**	**2.2 J**	**1.6 J**	**1.2**	U	**3.8 JD**	NA
1,3,5-Trimethylbenzene	63	**6.9**	U	**1.3 J**	**0.15 J**	**0.34 J**	U	U	U	**0.39 J**	U	U	NA
1,3-Butadiene	0.094	**0.26 J**	U	U	U	U	U	U	U	U	U	U	NA
1,4-Dichlorobenzene	0.26	U	U	U	U	U	U	U	U	U	U	U	NA
4-Ethyltoluene	NV	**6.1**	U	**0.80 J**	**1.2**	**0.5 J**	U	U	U	**0.37 J**	U	U	NA
Acetone	NV	**470 J**	**570**	**300**	**34**	**19**	**970**	**510**	**210**	**160**	**270**	**470 D**	NA
Benzene	0.36	**1.9**	**1.6 J**	**1.2 J**	**1.1**	**0.31 J**	**2.0 J**	**1.7 J**	**1 J**	**1.2**	U	**2.2 JDM**	**1.2**
Carbon disulfide	730	**2.7**	U	U	4.6	**1.9 J**	U	U	U	U	U	U	NA
Carbon tetrachloride	0.47	**0.6 J**	U	U	**0.45 J**	**0.47 J**	U	U	**0.40 J**	**0.4 J**	U	U	**0.56**
Chlorobenzene	52	U	U	U	U	U	U	U	U	U	U	U	NA
Chloroform	0.12	**0.38 J**	U	U	U	U	U	U	U	U	U	U	NA
Chloromethane	94	**1.1**	**2.2 J**	U	**1.2**	**1.3 J**	U	U	**1.4 J**	**0.86 J**	U	U	NA
Dichlorodifluoromethane	100	**2.9**	**3 J**	**3.5 J**	**2.5**	**2.4 J**	U	U	**2.6 J**	**2 J**	U	U	NA
Ethylbenzene	1.1	**2.5**	**2.4 J**	**2.0 J**	**2.5**	**0.48 J**	**2.7 J**	**1.8 J**	**3.5**	**1.2**	**1.1 J**	**2.4 J**	NA
m,p-Xylene	100	**9.3**	**7.8 J**	**7.2 J**	**7.1**	**2 J**	**8.0 J**	**6.5 J**	**14**	**4.1**	**4.1 J**	**8.2 J**	NA
Methyl Butyl Ketone (2-Hexanone)	31	**0.37 J**	U	U	U	1.1 J	U	U	U	U	U	U	NA
Methyl Ethyl Ketone	5,200	**23**	**12**	**18**	**3.4**	**4.4**	U	**15**	**5.7 J**	**5**	**8.4 J**	**9.3 J**	NA
Methyl isobutyl ketone	3,100	**5.2**	**2.8 J**	**2.6 J**	**0.44 J**	U	U	**11 J**	U	**1.2 J**	**2.6 J**	**7.1 J**	NA
Methyl tert-butyl ether	11	U	U	U	U	U	U	U	U	U	U	U	NA
Methylene Chloride	100	**1.5 J**	**3.7 J**	U	**0.67 J**	**0.63 J**	**11 J**	**5.8 J**	**1.9 J**	**1.7 J**	U	U	**0.51 J**
Naphthalene	0.083	**1 J**	U	U	U	**1.8 J**	U	U	**1.3 J**	U	**4 J**	U	NA
Styrene	1,000	**0.51 J**	U	U	U	**0.11 J**	U	U	U	**0.2 J**	U	**2.9 J**	NA
tert-Butyl alcohol	5,200	**1.3 J**	U	U	U	U	U	U	U	U	U	U	NA
Tetrachloroethene	11.0	U	U	U	1.3 J	0.33 J	U	U	U	U	U	U	**0.15**
Toluene	5,200	**34**	**19**	**36**	**7**	**6.5**	**48**	**33**	**18**	**26**	**10**	**21**	NA
Trichloroethene	0.48	**0.37 J**	U	U	U	U	U	U	U	U	U	U	**0.8**
Trichlorofluoromethane	NV	**12.0**	**5.8 J**	**3.7 J**	**1.5**	**1.4 J**	**U**	**4.8 J**	**3.6 J**	**4.5**	**6.9 J**	**6.6 J**	NA
Vinyl chloride	0.17	U	U	U	U	NA	U	U	U	U	U	U	U
Xylene, o-	100	**3.2**	**2.6 J**	**2.5 J**	**2.5**	**0.7 J**	**2.6 J**	**2 J**	**2.8 J**	**1.4**	**1.3 J**	**2.9 J**	NA

Notes:
Exceedance of screening level
♦-Denotes higher nominal value of duplicate sample result
D - dilution
B- The result for the analyte was detected in the trip blank.
J- The analyte was positively identified; the quantitation is an estimation
M - A matrix effect was present
U- Undetected at the Limit of Detection
NA - not analyzed
NV - no value
$\mu g/m^3$- microgram per cubic meter
ft ags - feet above ground surface
[1] - USEPA Residential Air Regional Screening Level, Hazard Quotient = 1, May 2023
*Outdoor samples do not have a screening level

Table 2
Air Sample Results (2013-2021)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Indoor Air Screening Level[1] (Residential) ($\mu g/m^3$)	101IA-04											
Sample Identification		**101IA0405AA**	**101IA0405AA**	**101IA0405CA**	**101IA0405DA**	**101IA0405EA**	**101IA0405FA**	**101IA0405GA**	**101IA0405HA**	**101IA0405JA**	**101IA0405KA**	**101IA0405LA**	**101IA-04_1025**
Sample Type		**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**	**Indoor**
Sample Date		**22-Oct-2013**	**29-Jan-2014**	**15-Apr-2014**	**16-Jul-2014**	**15-Oct-2014**	**21-Jan-2015**	**23-Apr-2015**	**15-Jul-2015**	**6-Oct-2015**	**1-Dec-2015**	**3-Feb-2016**	**25-Oct-2017**
Sample Depth (ft ags)		**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Sample Collection Duration (hours)		**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**8**
Volatiles ($\mu g/m^3$)													
1,2,4-Trimethylbenzene	63	**6.4**	**2 J**	**3.9 J**	**3.1**	**1.7 J**	**0.66 J**	**0.87 J**	**1**	**0.89 J**	U	U	NA
1,3,5-Trimethylbenzene	63	**2**	U	**1.6 J**	**1**	**0.51 J**	U	U	**0.37**	**0.31 J**	U	U	NA
1,3-Butadiene	0.094	**0.15 J**	U	U	0.12 J	U	U	U	U	U	U	U	NA
1,4-Dichlorobenzene	0.26	U	U	U	**0.11 J**	U	U	U	**0.32 J**	U	U	U	NA
4-Ethyltoluene	NV	**1.6**	U	**1.4 J**	**2.2**	**0.52 J**	U	U	**0.32 J**	**0.29 J**	U	U	NA
Acetone	NV	**260 J**	**330**	**320**	**39**	**100**	**140**	**260**	**130**	**120**	**110**	**130 DM**	NA
Benzene	0.36	**0.97**	**1.3 J**	**1.2 J**	**1.7**	**0.86 J**	**0.79 J**	**0.96 J**	**0.7 J**	**1**	**0.56 J**	**0.97 JD**	**1.3**
Carbon disulfide	730	U	U	U	U	**13**	U	U	**0.79 J**	**1.1 J**	**3 J**	U	NA
Carbon tetrachloride	0.47	**0.52 J**	U	U	**0.57 J**	**0.36 J**	**0.47 J**	U	**0.44 J**	**0.39 J**	**0.41 J**	U	**0.39**
Chlorobenzene	52	U	U	U	U	**1.1 J**	U	U	U	U	U	U	NA
Chloroform	0.12	**0.22 J**	U	U	U	U	U	U	U	U	U	U	NA
Chloromethane	94	**1.1**	**2 J**	U	**1.3**	**1.2 J**	U	U	**1.3 J**	**1.1**	**1 J**	U	NA
Dichlorodifluoromethane	100	**2.6**	**3.2 J**	**3.9 J**	**2.9**	**2.1 J**	**2.7 J**	**2.3 J**	**2.3 J**	**1.9 J**	**2.1 J**	U	NA
Ethylbenzene	1.1	**1.3**	**1.4 J**	**2.4 J**	**4.6**	**2.8**	**0.49 J**	**0.9 J**	**1.8 J**	**0.93**	**0.35 J**	U	NA
m,p-Xylene	100	**5.3**	**4.6 J**	**8.9 J**	**14**	**7.9**	**1.6 J**	**3.3 J**	**8.3**	**3.5**	**1.4 J**	**2.7 J**	NA
Methyl Butyl Ketone (2-Hexanone)	31	**0.26 J**	U	U	U	U	U	U	U	U	**0.89 J**	U	NA
Methyl Ethyl Ketone	5,200	**16**	**7.9**	**20**	**2.9**	**3.3**	**5.2**	**7.9**	**5.7**	**3.8**	**5.2**	**2.9 J**	NA
Methyl isobutyl ketone	3,100	**3.7**	**2.4 J**	**4.8 J**	**1.4 J**	**2.1**	U	**6.3 J**	**2.9 J**	**1.9 J**	**1.2 J**	U	NA
Methyl tert-butyl ether	11	U	U	U	U	U	U	U	U	U	U	U	NA
Methylene Chloride	100	**1.3 J**	**2.4 J**	U	**0.68 J**	**0.74 J**	**1.8 J**	**3.5 J**	**1.2 J**	**0.7 J**	**1.3 J**	U	**0.51 J**
Naphthalene	0.083	U	U	U	U	U	U	U	**0.65 J**	U	U	U	NA
Styrene	1,000	**0.23 J**	U	U	U	U	U	U	**0.25 J**	U	U	U	NA
tert-Butyl alcohol	5,200	**1.2 J**	U	U	U	U	U	U	U	U	U	U	NA
Tetrachloroethene	11.0	U	U	U	U	U	U	U	U	U	U	U	0.24
Toluene	5,200	**19**	**12**	**42**	**13**	**24**	**6.7**	**17**	**11**	**19**	**3**	**6.6**	NA
Trichloroethene	0.48	U	U	U	U	U	U	U	U	U	U	U	**1**
Trichlorofluoromethane	NV	**5.7**	**3.8 J**	**4.3 J**	**1.8**	**1.8**	**2.2 J**	**3.7 J**	**3.1**	**5.4**	**2.1 J**	**2.8 J**	NA
Vinyl chloride	0.17	U	U	U	U	NA	U	U	U	U	U	U	U
Xylene, o-	100	**2.1**	**1.6 J**	**3.1 J**	**5.2**	**2.2**	**0.64 J**	**1.2 J**	**2.7**	**1.3**	**0.54 J**	**1 J**	NA

Notes:

Exceedance of screening level

♦-Denotes higher nominal value of duplicate sample result

D - dilution

B- The result for the analyte was detected in the trip blank.

J- The analyte was positively identified; the quantitation is an estimation

M - A matrix effect was present

U- Undetected at the Limit of Detection

NA - not analyzed

NV - no value

$\mu g/m^3$- microgram per cubic meter

ft ags - feet above ground surface

[1] - USEPA Residential Air Regional Screening Level, Hazard Quotient = 1, May 2023

*Outdoor samples do not have a screening level

Table 2
Air Sample Results (2013-2021)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Indoor Air Screening Level[1] (Residential) ($\mu g/m^3$)	101OA-03*											
Sample Identification		**101OA0305AA**	**101OA0305AA**	**101OA0305CA**	**101OA0305DA**	**101OA0305EA**	**101OA0305FA**	**101OA0305GA**	**101OA0305HA**	**101OA0305JA**	**101OA0305KA**	**101OA0305LA**	**101OA-01_1025**
Sample Type		**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**	**Outdoor**
Sample Date		**22-Oct-2013**	**29-Jan-2014**	**17-Apr-2014**	**16-Jul-2014**	**15-Oct-2014**	**21-Jan-2015**	**23-Apr-2015**	**15-Jul-2015**	**6-Oct-2015**	**1-Dec-2015**	**3-Feb-2016**	**15-Oct-17**
Sample Depth (ft ags)		**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Sample Collection Duration (hours)		**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**8**
Volatiles ($\mu g/m^3$)													
1,2,4-Trimethylbenzene	63	U	U	**0.43 J**	**6.8**	**2.1**	U	U	U	U	U	**0.21 J**	U
1,3,5-Trimethylbenzene	63	U	U	**0.20 J**	**2.2**	**0.31 J**	U	U	U	U	U	U	U
1,3-Butadiene	0.094	U	U	U	U	U	U	U	U	U	U	U	U
1,4-Dichlorobenzene	0.26	U	U	U	U	U	U	U	U	U	U	U	U
4-Ethyltoluene	NV	U	U	**0.18 J**	**0.17 J**	**0.5 J**	U	U	U	U	U	U	U
Acetone	NV	**8.3 J**	**6.7 J**	**9.3 J**	**15**	**19**	**12**	U	**7.4 J**	**4.4 J**	**3.9 J**	**16**	**14**
Benzene	0.36	**0.25 J**	**0.67**	**0.3 J**	**0.17 J**	**0.31 J**	**0.66**	**0.29 J**	**0.20 J**	**0.22 J**	**0.45 J**	**0.47 J**	**0.5 J**
Carbon disulfide	730	U	U	U	U	**1.9 J**	U	U	U	**0.23 J**	U	**3.9**	**10**
Carbon tetrachloride	0.47	**0.49 J**	**0.49 J**	**0.44 J**	**0.47 J**	**0.47 J**	**0.44 J**	**0.47 J**	**0.4 J**	**0.41 J**	**0.41 J**	**0.39 J**	U
Chlorobenzene	52	U	U	U	U	U	U	U	U	U	U	U	U
Chloroform	0.12	U	U	U	**0.13 J**	U	U	U	U	U	U	U	U
Chloromethane	94	**1 J**	**1.8**	**1.1**	**1.3**	**1.3 J**	**1.1**	**1.2**	**1.1**	**0.83 J**	**0.9 J**	**1.2**	**1.6 J**
Dichlorodifluoromethane	100	**2.4 J**	**3.2**	**2.7**	**2.9**	**2.4 J**	**2.6**	**2.3 J**	**2.1 J**	**1.9 J**	**2.1 J**	**2.2 J**	**1.7 J**
Ethylbenzene	1.1	U	U	U	**0.29 J**	**0.48 J**	**0.14 J**	U	U	U	U	U	U
m,p-Xylene	100	**0.21 J**	U	U	**0.85 J**	**2 J**	**0.39 J**	U	**0.24 J**	U	U	**0.48 J**	**0.59 J**
Methyl Butyl Ketone (2-Hexanone)	31	U	U	U	U	**1.1 J**	U	U	U	U	U	U	U
Methyl Ethyl Ketone	5,200	**0.75 J**	**0.94 J**	**1.3 J**	**2.3**	**4.4**	U	U	**0.74 J**	**0.4 J**	**0.51 J**	**3.3**	**1.7 J**
Methyl isobutyl ketone	3,100	U	U	U	**0.17 J**	U	U	U	U	U	**0.31 J**	U	U
Methyl tert-butyl ether	11	U	U	U	U	**0.63 J**	U	U	U	U	U	U	U
Methylene Chloride	100	**0.45 J**	**0.92 J**	U	**0.5 J**	U	**0.99 J**	**0.88 J**	**0.51 J**	U	**0.78 J**	**1.1 J**	**0.39 J**
Naphthalene	0.083	U	U	U	U	**1.8 J**	U	U	U	U	U	U	**11**
Styrene	1,000	U	U	U	U	**0.11 J**	U	U	U	U	U	U	U
tert-Butyl alcohol	5,200	U	U	U	U	U	U	U	U	U	U	U	NA
Tetrachloroethene	11.0	U	2	U	**0.38 J**	**0.33 J**	U	U	U	U	U	U	U
Toluene	5,200	**0.68 J**	**0.54 J**	**1.4**	**1**	**6.5**	**1.2**	**0.13 J**	**0.64 J**	**0.62 J**	**0.61 J**	**0.91**	**0.84 J**
Trichloroethene	0.48	U	**1.1**	U	U	U	U	U	U	U	U	U	U
Trichlorofluoromethane	NV	**1.3**	**1.5**	**1.3**	**1.5**	**1.4 J**	**1.3**	**1.2**	**1 J**	**1.1**	**1.1 J**	**1.1**	**1.5 J**
Vinyl chloride	0.17	U	U	U	U	U	U	U	U	U	U	U	U
Xylene, o-	100	U	U	U	**0.3 J**	**0.7 J**	U	U	**0.083 J**	U	U	U	**0.25 J**

Notes:
Exceedance of screening level
♦-Denotes higher nominal value of duplicate sample result
D - dilution
B- The result for the analyte was detected in the trip blank.
J- The analyte was positively identified; the quantitation is an estimation
M - A matrix effect was present
U- Undetected at the Limit of Detection
NA - not analyzed
NV - no value
$\mu g/m^3$- microgram per cubic meter
ft ags - feet above ground surface
[1] - USEPA Residential Air Regional Screening Level, Hazard Quotient = 1, May 2023
*Outdoor samples do not have a screening level

Table 2
Air Sample Results (2013-2021)
Letter Work Plan for Site ST006
Supplemental Investigation
Former Griffiss Air Force Base, Rome, New York

Sample Location	Indoor Air Screening Level[1] (Residential) ($\mu g/m^3$)	ST006-IA1	ST006-IA2	ST006-OA
Sample Identification		ST006-IA1_0521	ST006-IA2_0521	ST006-OA_0521
Sample Type		Indoor	Indoor	Outdoor
Sample Date		27-May-2021	27-May-2021	27-May-2021
Sample Depth (ft ags)		5	5	5
Sample Collection Duration (hours)		8	8	8
Volatiles ($\mu g/m^3$)				
1,2,4-Trimethylbenzene	63	NA	NA	U
1,3,5-Trimethylbenzene	63	NA	NA	U
1,3-Butadiene	0.094	NA	NA	U
1,4-Dichlorobenzene	0.26	NA	NA	U
4-Ethyltoluene	NV	NA	NA	U
Acetone	NV	NA	NA	**6.2 J**
Benzene	0.36	**0.61**	**0.46**	**0.32 J**
Carbon disulfide	730	NA	NA	U
Carbon tetrachloride	0.47	**0.57**	**0.58**	**0.45 J**
Chlorobenzene	52	NA	NA	U
Chloroform	0.12	NA	NA	U
Chloromethane	94	NA	NA	U
Dichlorodifluoromethane	100	NA	NA	**2.8 J**
Ethylbenzene	1.1	NA	NA	U
m,p-Xylene	100	NA	NA	U
Methyl Butyl Ketone (2-Hexanone)	31	NA	NA	U
Methyl Ethyl Ketone	5,200	NA	NA	U
Methyl isobutyl ketone	3,100	NA	NA	U
Methyl tert-butyl ether	11	NA	NA	U
Methylene Chloride	100	**0.81 J**	**0.79 J**	U
Naphthalene	0.083	NA	NA	U
Styrene	1,000	NA	NA	U
tert-Butyl alcohol	5,200	NA	NA	U
Tetrachloroethene	11.0	**0.19**	**0.14 J**	**1.5 J**
Toluene	5,200	NA	NA	U
Trichloroethene	0.48	**0.036 J**	**0.038 J**	U
Trichlorofluoromethane	NV	NA	NA	U
Vinyl chloride	0.17	U	U	U
Xylene, o-	100	NA	NA	U

Notes:
Exceedance of screening level
♦-Denotes higher nominal value of duplicate sample result
D - dilution
B- The result for the analyte was detected in the trip blank.
J- The analyte was positively identified; the quantitation is an estimation
M - A matrix effect was present
U- Undetected at the Limit of Detection
NA - not analyzed
NV - no value
$\mu g/m^3$- microgram per cubic meter
ft ags - feet above ground surface
[1] - USEPA Residential Air Regional Screening Level, Hazard Quotient = 1, May 2023
*Outdoor samples do not have a screening level

Table 3 ST006 Building 101 AOC Proposed Monitoring Plan

Sample Location*	Sample Type	Sample Method	Required Analysis
101VMP-04	Air	Summa Cannister (6 liter) / 8-hour flow control regulator	Volatile organic compounds (USEPA Method TO-15)
101VMP-05			
101VMP-06			
101VMP-07			
101VMP-09			
101VMP-10			
101VMP-11			
101VMP-12			
101VMP-13			
101VMP-14			

*Locations to be installed during field activities per manufacturer's recommendations

ATTACHMENT A

Resident Air Inputs

Variable	Resident Air Default Value	Site-Specific Value
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03	0.03
ED_{res} (exposure duration) years	26	26
ED_{0-2} (mutagenic exposure duration first phase) years	2	2
ED_{2-6} (mutagenic exposure duration second phase) years	4	4
ED_{6-16} (mutagenic exposure duration third phase) years	10	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10	10
EF_{res} (exposure frequency) days/year	350	350
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350	350
ET_{res} (exposure time) hours/day	24	24
ET_{0-2} (mutagenic exposure time first phase) hours/day	24	24
ET_{2-6} (mutagenic exposure time second phase) hours/day	24	24
ET_{6-16} (mutagenic exposure time third phase) hours/day	24	24
ET_{16-26} (mutagenic exposure time fourth phase) hours/day	24	24
THQ (target hazard quotient) unitless	0.1	1
LT (lifetime) years	70	70
TR (target risk) unitless	1.0E-06	1.0E-06

Resident Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-06 or THQ=1) MIN($C_{ia,c}$,$C_{ia,nc}$) ($\mu g/m^3$)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=1) C_{sg},Target ($\mu g/m^3$)	Target Groundwater Concentration (TCR=1E-06 or THQ=1) C_{gw},Target ($\mu g/L$)
Benzene	71-43-2	Yes	Yes	Yes	Yes	3.60E-01	CA	1.20E+01	1.59E+00
Chloroform	67-66-3	Yes	Yes	Yes	Yes	1.22E-01	CA	4.07E+00	8.14E-01
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	1.12E+00	CA	3.74E+01	3.49E+00
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	Yes	Yes	5.21E+03	NC	1.74E+05	2.24E+06
Tetrachloroethane, 1,1,2,2-	79-34-5	Yes	Yes	Yes	Yes	4.84E-02	CA	1.61E+00	3.23E+00
Trichloroethane, 1,1,1-	71-55-6	Yes	Yes	Yes	Yes	5.21E+03	NC	1.74E+05	7.42E+03
Trichloroethylene	79-01-6	Yes	Yes	Yes	Yes	4.78E-01	CA	1.59E+01	1.19E+00
Xylene, m-	108-38-3	Yes	Yes	Yes	Yes	1.04E+02	NC	3.48E+03	3.55E+02

Resident Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)	Pure Phase Vapor Concentration C_{vp} \ (25 °C)\ (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc} \ (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)$^{-1}$	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-06 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=1 $C_{ia,nc}$ (µg/m³)
Yes (5)	3.98E+08	4.06E+08	25	1.20	U	7.80E-06	U	3.00E-02	U	No	3.60E-01	3.13E+01
Yes (80)	1.26E+09	1.19E+09	25	-		2.30E-05	U	9.77E-02	U	No	1.22E-01	1.02E+02
Yes (700)	5.48E+07	5.44E+07	25	0.80	U	2.50E-06	U	1.00E+00	U	No	1.12E+00	1.04E+03
--	3.51E+08	5.19E+08	25	1.40	U	-		5.00E+00	U	No	-	5.21E+03
--	4.17E+07	4.25E+07	25	-		5.80E-05	U	-		No	4.84E-02	-
No (200)	8.90E+08	9.07E+08	25	8.00	U	-		5.00E+00	U	No	-	5.21E+03
Yes (5)	4.88E+08	5.15E+08	25	8.00	U	4.10E-06	U	2.00E-03	U	Mut	4.78E-01	2.09E+00
--	4.73E+07	4.73E+07	25	1.10	U	-		1.00E-01	U	No	-	1.04E+02

Resident Vapor Intrusion Risk

Chemical	CAS Number	Site Indoor Air Concentration $C_{i,a}$\ ($\mu g/m^3$)	VI Carcinogenic Risk CDI ($\mu g/m^3$)	VI Carcinogenic Risk CR	VI Hazard CDI (mg/m^3)	VI Hazard HQ	IUR ($ug/m^3)^{-1}$	IUR Ref	Chronic RfC (mg/m^3)	RfC Ref	Temperature (℃)\ for Groundwater Vapor Concentration	Mutagen?
Benzene	71-43-2	-	-	-	-	-	7.80E-06	U	3.00E-02	U	25	No
Chloroform	67-66-3	-	-	-	-	-	2.30E-05	U	9.77E-02	U	25	No
Ethylbenzene	100-41-4	-	-	-	-	-	2.50E-06	U	1.00E+00	U	25	No
Methyl Ethyl Ketone (2-Butanone)	78-93-3	-	-	-	-	-	-		5.00E+00	U	25	No
Tetrachloroethane, 1,1,2,2-	79-34-5	-	-	-	-	-	5.80E-05	U	-		25	No
Trichloroethane, 1,1,1-	71-55-6	-	-	-	-	-	-		5.00E+00	U	25	No
Trichloroethylene	79-01-6	-	-	-	-	-	4.10E-06	U	2.00E-03	U	25	Mut
Xylene, m-	108-38-3	-	-	-	-	-	-		1.00E-01	U	25	No
*Sum		-	-	-	-	-	-		-		-	

Chemical Properties

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)
Benzene	71-43-2	Yes	Yes	78.12	U	9.48E+01	U	1.79E+03	U	5
Chloroform	67-66-3	Yes	Yes	119.38	U	1.97E+02	U	7.95E+03	U	80
Ethylbenzene	100-41-4	Yes	Yes	106.17	U	9.60E+00	U	1.69E+02	U	700
Methyl Ethyl Ketone (2-Butanone)	78-93-3	Yes	Yes	72.11	U	9.06E+01	U	2.23E+05	U	-
Tetrachloroethane, 1,1,2,2-	79-34-5	Yes	Yes	167.85	U	4.62E+00	U	2.83E+03	U	-
Trichloroethane, 1,1,1-	71-55-6	Yes	Yes	133.41	U	1.24E+02	U	1.29E+03	U	200
Trichloroethylene	79-01-6	Yes	Yes	131.39	U	6.90E+01	U	1.28E+03	U	5
Xylene, m-	108-38-3	Yes	Yes	106.17	U	8.29E+00	U	1.61E+02	U	-

HLC (atm-m ^{3}/mole)	Henry's Law Constant (unitless)	H` and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T_C\ (K)	T_C\ Ref	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$\ (cal/mol)	$\Delta H_{v,b}$\ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
5.55E-03	2.27E-01	U	2.27E-01	353.15	U	5.62E+02	U	7340.00	U	1.20	U
3.67E-03	1.50E-01	U	1.50E-01	334.25	U	5.36E+02	U	6990.00	U	-	
7.88E-03	3.22E-01	U	3.22E-01	409.15	U	6.17E+02	U	8500.00	U	0.80	U
5.69E-05	2.33E-03	U	2.33E-03	352.65	U	5.37E+02	U	7480.00	U	1.40	U
3.67E-04	1.50E-02	U	1.50E-02	419.15	U	6.45E+02	U	9000.00	U	-	
1.72E-02	7.03E-01	U	7.03E-01	347.15	U	5.45E+02	U	7140.00	U	8.00	U
9.85E-03	4.03E-01	U	4.03E-01	360.35	U	5.71E+02	U	7500.00	U	8.00	U
7.18E-03	2.94E-01	U	2.94E-01	412.15	U	6.17E+02	U	8520.00	U	1.10	U

ATTACHMENT B

Standard Operating Procedure Installation and Extraction of the Vapor Pin®

Updated March 16, 2018

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® [VAPOR PIN® and silicone sleeve(Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN®.



Figure 1. Assembled VAPOR PIN®

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

VAPOR PIN® protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other patents pending

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of VAPOR PIN® assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.



Figure 2. Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® shoulder. Place the protective cap on VAPOR PIN® to prevent vapor loss prior to sampling (Figure 3).



Figure 3. Installed VAPOR PIN®

7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).



Figure 4. Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN®. This connection can be made using a short piece of Tygon™ tubing to join the VAPOR PIN® with the

VAPOR PIN® protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other patents pending

Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the VAPOR PIN® as possible to minimize contact between soil gas and Tygon™ tubing.



Figure 5. VAPOR PIN® sample connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.



Figure 6. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN®.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.



Figure 7. Removing the VAPOR PIN®

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN® in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, **STAINLESS – ½ hour, BRASS 8 minutes**

VAPOR PIN® protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other patents pending

3) Replacement parts and supplies are available online.

VAPOR PIN® protected under US Patent # 8,220,347 B2, US 9,291,531 B2 and other patents pending