DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER

March 15, 2016

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SUBJECT: Final 3rd/4th Quarter 2015 Operations and Maintenance and Rebound Evaluation Report for the Soil Vapor Extraction System at ST006 Building 101 AOC
Former Griffiss Air Force Base (AFB) Rome, New York
Contract Number FA8903-10-D-8595
Delivery Order 0014
March 2016

Accompanying this letter please find the "Final 3rd/4th Quarter/ 2015 Operations and Maintenance and Report for the Soil Vapor Extraction System at ST006 Building 101 AOC", for your review and comment. This version of the report incorporates data through December 2015. Please note that sample results from the rebound evaluation showed rebound in TCE concentrations and the system was re-started on December 15, 2015.

Should you have any questions or concerns please contact me at 518-563-2871.

David S. Farnsworth
Program Manager/BRAC Environment Coordinator
BRAC Program Execution Branch

FINAL

3RD/4TH QUARTER 2015 OPERATION AND MAINTENANCE AND REBOUND EVALUATION REPORT

SOIL VAPOR EXTRACTION SYSTEM ST006 (BUILDING 101 AOC)

FORMER GRIFFISS AIR FORCE BASE SITE ROME, NEW YORK

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Contract Number FA8903-10-D-8595
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LIST OF ACRONYMS AND ABBREVIATIONS

acfm	actual cubic feet per minute
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AOC	Area of Concern
BADP	Battery Acid Disposal Pit
BADrP	Battery Acid Drainage Pit
bgs	below grade surface
FPM	FPM Remediations, Inc.
GAC	Granular Activated Carbon
HWSSA	Hazardous Waste Storage Satellite Accumulation Area
inch w.g.	inches of water column
J	The analyte was positively identified; the quantitation is an estimation
µg/m^3	microgram per cubic meter
O&M	Operations and Maintenance
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TCE	trichloroethene
USEPA	Unites States Environmental Protection Agency
VMP	Vapor Monitoring Point
VOCs	volatile organic compounds

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1 INTRODUCTION

FPM Remediations, Inc. (FPM), in association with CAPE, Inc., has been contracted by the Air Force Civil Engineer Center (AFCEC) to conduct Operation and Maintenance (O&M) on the Soil Vapor Extraction (SVE) system associated with ST006 Building 101 Area of Concern (AOC) at the former Griffiss Air Force Base (AFB), Rome, New York. The work at this site is conducted in accordance with provisions of the Basic Contract FA8903-10-D-8595 and Delivery Order #0014.

1.1 Purpose

The SVE system was installed in 2013 based on the 2013 Site Closure Evaluation (CAPE/FPM, September 2013). The objective of the system is to eliminate the potential Soil Vapor Intrusion (SVI) and to achieve site closure with unrestricted use at the ST006 (Building 101 AOC). This O&M report is prepared to document the O&M activities for the 3rd and 4th Quarters of 2015 (July 2015 through December 2015). All activities were performed in accordance with the O&M Manual provided as Attachment 1 in the SVE System Installation and Start-up Completion Report (CAPE/FPM, March 2014). The Updated 2015 Uniform Federal Policy Quality Assurance Project Plan for Performance Based-Remediation at the Former Griffiss AFB (CAPE/FPM, May 2015) and Health and Safety Plan for Performance Based-Remediation at the Former Griffiss AFB (CAPE/FPM, June 2015) were also adhered to.

2 SITE INFORMATION

2.1 Site Location and History

The former Griffiss AFB, located in Oneida County in central New York State, covered approximately 3,552 contiguous acres in the lowlands of the Mohawk River Valley in the city of Rome. Topography within the valley is relatively flat, with elevations on the former Griffiss AFB ranging from 435 to 595 feet above mean sea level. Three Mile Creek, Six Mile Creek (both of which drain into the New York State Barge Canal, located to the south of the base), and several state-designated wetlands are located on the former Griffiss AFB, which is bordered by the Mohawk River on the west.

The ST006 (Building 101 AOC) is located south of Apron 3 in the central portion of the base along the northern margin of the industrial complex (Figure 1). It is bounded by Hangar Road to the south, Building 100 to the east, and Apron 4 parking area to the west. Building 101 operates as an aircraft maintenance hangar.

The ST006 (Building 101 AOC) consists of a former Battery Acid Disposal Pit (BADP) and a former Battery Acid Drainage Pit (BADrP) (Figure 2 and Figure 3). The former BADP was located in the central portion of the building in an area designated as the Lead Battery Room. The BADP was in use from the early 1940s until 1985, when it was excavated. The BADP consisted of a pit beneath the concrete floor measuring approximately 2 feet long by 2 feet wide by 10 feet deep and was covered with a steel grate. 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.

2.2 2006 and 2007 Soil Vapor Intrusion Evaluation

SVI sampling was conducted at the ST006 (Building 101 AOC) in fall 2006 and winter 2007. Soil vapor (exterior) and sub-slab vapor (interior) samples were collected in October 2006. The samples were collected and analyzed for volatile organic compounds (VOCs) using the United States Environmental Protection Agency (USEPA) Method TO-15. The second round of SVI sampling occurred in February 2007. Indoor and outdoor air samples were collected and also analyzed for VOCs using the USEPA Method TO-15. Results indicated that all soil vapor, indoor air, and outdoor air detections were below screening levels for industrial/commercial use (FPM, November 2007).

2.3 Record of Decision

The Final Record of Decision (Air Force, September 2012) identified that the majority of soil and groundwater contamination has been removed from the ST006 (Building 101 AOC). The selected remedy is Land use Control/Institutional Controls in the form of land use restrictions limiting future use to industrial/commercial purposes and re-evaluation for SVI if new construction is performed in the SVI restriction area. The SVI restriction area is shown in Figure 3, as the former battery room (including BADP) and the former BADrP.

2.4 2013 Site Closure Evaluation and TCE Delineation Sampling

The 2013 site closure evaluation, performed in February and April 2013, included SVI sampling and identification of risk-based screening levels for a residential scenario (Table 1). A total of ten sub-slab vapor samples, two indoor air samples and one outdoor air sample were collected and analyzed for VOCs according to the USEPA Method TO-15. Sub-slab trichloroethene (TCE) concentrations in the BADP (101SS-09, -10, -11, -12, and -13) ranged from non-detect to 200 micrograms per cubic meter ($\mu g/m^3$). Sub-slab TCE concentrations in the BADrP (101SS-04, -05, -06, -07, and -08) ranged from 950 $\mu g/m^3$ to 1,800 $\mu g/m^3$. The residential sub-slab screening level for TCE is 70 $\mu g/m^3$. This level is part of the site-specific sub-slab vapor screening levels that were derived from the risk-based indoor air concentrations (RSLs) using a sub-slab vapor-to-indoor air attenuation factor. The development of the sub-slab vapor screening levels is detailed in the Final ST006 (Building 101 AOC) Site Closure Evaluation Report (CAPE/FPM, September 2013). The risk-based screening levels for a residential scenario are provided in Table 1.

Four additional sub-slab samples west and northwest of the area were collected in July 2013 to delineate the TCE contamination and to ensure that the source emanates from the former BADrP.

All samples were analyzed for VOCs using the USEPA Method TO-15. The results confirmed that the TCE source is at the former BADrP (CAPE/FPM, March 2014).

2.5 SVE System Installation

Results from the 2013 site closure evaluation showed a potential for unacceptable risk, primarily due to TCE, existing for indoor air inhalation resulting from SVI under a residential scenario (CAPE/FPM, September 2013). To remediate this unacceptable risk, an SVE system was installed on October 7, 2013. The SVE system is composed of one vertical well with a total combined screen length of 5 feet (3 to 8 feet below grade surface [bgs]), one vacuum pump capable of a flow rate of 20 actual cubic feet per minute (acfm), a vapor treatment system, and three vapor monitoring points (VMPs). Extracted soil vapor is treated using two 200-pound granular activated carbon (GAC) drums. The calculated lifespan of the GAC system is approximately 132 days (FPM, September 2013). GAC lifespan was based on expected influent concentrations (the sum of sub-slab vapor samples collected in February 2013), flow rate of the SVE system, and GAC adsorption capacity. The GAC lifespan calculation is provided in Appendix A. The VMPs were also installed on October 7, 2013 and are positioned 10 feet, 20 feet, and 30 feet away from the extraction well to collect performance monitoring data. The SVE system layout is illustrated in Figure 3. Figure 4 provides an illustration of the SVE system schematic and extraction well cross section.

The baseline sampling event was conducted on October 17, 2013 and October 22, 2013 and consisted of sub-slab vapor, indoor air, and outdoor air sampling. All samples were analyzed for VOCs using the USEPA Method TO-15. An influent sample was also collected following system start-up on October 22, 2013. That sample was collected from a sampling port on the exhaust stack prior to the vapor treatment system. Results showed TCE concentrations above the sub-slab vapor screening level of 70 µg/m^3 at all three VMPs. The concentrations ranged from 76 µg/m^3 to 540 µg/m^3. Exceedances reported in the indoor air or outdoor air samples are attributed to chemicals currently used in the building to perform maintenance, including repair and overhaul of airplanes. Sub-slab vapor results are presented in Table 2, Indoor and Outdoor Air results are presented in Table 3, and the Influent sample results are presented in Table 4.

2.6 SVE System Operation and Maintenance

O&M includes weekly system component readings (system temperature, flow, vacuum and motor status), knock-out tank inspections, quarterly VMP vacuum measurements, and GAC disposal and replacement every four months. In addition, indoor and outdoor air sampling, sub-slab vapor sampling, and influent sampling are conducted quarterly at locations illustrated in Figure 3. Table 5 includes the SVE System O&M schedule and rationale. The following section describes the O&M activities performed post SVE system installation. All O&M sub-slab vapor, indoor and outdoor air, and influent air results discussed below are presented in Table 2, Table 3, and Table 4, respectively.

2.6.1 4th Quarter / Calendar Year 2013 (October - December)

The SVE System was installed at ST006 (Building 101 AOC) during this quarter followed by approximately two months of operation. System flow rates ranged from 16 acfm to 17.83 acfm and the vacuum readings ranged from 8 to 10 inches of water column (inch w.g.) during this quarter. An influent sample was collected during system startup. The TCE concentration in the influent sample was 100 µg/m^3.

2.6.2 1st Quarter / Calendar Year 2014 (January - March)

System flow rates ranged from 14.8 acfm to 18.73 acfm and the vacuum readings ranged from 8 to 10 inch w.g. during this quarter. Sub-slab VMP vacuum readings ranged from 0.075 to 0.09 inch w.g. at 101VMP-2 and from 0.005 to 0.01 inch w.g. at 101VMP-3.

The system was found not to be operating upon arrival for a system check in January 2014. The shutdown was a result of a facility employee tampering with the system shutdown button (unknown individual). Therefore, a lock was placed on the system shutdown button the following day. In addition to the weekly inspections (conducted every Thursday), a weekly system check on Tuesdays has been implemented starting January 2014. Field notes are only recorded during the Tuesday system checks if operation issues are observed. No additional system shut downs or O&M activities were conducted during this quarter. Also, no water was observed in the knock-out tank.

The two 200-pound GAC drums for the vapor treatment system were replaced on March 4, 2014. The waste inventory tracking sheet is provided in Appendix A.

2.6.2.1 Soil Vapor Monitoring

Sub-slab vapor, indoor and outdoor air sampling occurred on January 29, 2014. TCE was not detected in the indoor air samples. The outdoor air sample had a detection of 1.1 µg/m^3. The sub-slab TCE concentrations were as follows:

- 101VMP-1 – 17 µg/m^3
- 101VMP-2 – 18 J µg/m^3 (J - The analyte was positively identified; the quantitation is an estimation).
- 101VMP-3 – 36 µg/m^3

All of the sub-slab results were below vapor screening levels for a residential use scenario.

Influent sampling occurred on January 28, 2014, prior to sub-slab vapor sampling to determine effective SVE. The influent sampling location was installed on the SVE system's exhaust stack before carbon treatment. The TCE concentration detected in the influent sample was 32 µg/m^3.

2.6.3 2nd Quarter / Calendar Year 2014 (April - June)

System flow rates ranged from 16.88 acfm to 18.72 acfm and the vacuum readings ranged from 9 to 10 inch w.g. during this quarter. Additional sub-slab vacuum readings were collected at 101VMP-2 and -3 nine times. Readings were collected once at 101VMP-1 as it is located in a

restricted access area. The vacuum reading was 0.015 inch w.g at 101VMP-1, and the vacuum readings ranged from 0.075 to 0.15 inch w.g. at 101VMP-2 and from 0.01 to 0.02 inch w.g. at 101VMP-3.

The two 200-pound GAC drums for the vapor treatment system were not replaced this quarter based on a 4-month replacement schedule.

2.6.3.1 Soil Vapor Monitoring

Sub-slab vapor, indoor and outdoor air sampling occurred on April 16, 2014. TCE was not detected in the indoor or outdoor air samples. The sub-slab TCE concentrations were as follows:

- 101VMP-1 – 18 µg/m^3
- 101VMP-2 – 130 µg/m^3
- 101VMP-3 – 50 µg/m^3

The sub-slab TCE concentration in 101VMP-2 was above vapor screening levels for a residential use scenario. All other sub-slab vapor results were below vapor screening levels for a residential use scenario.

Influent sampling occurred on April 15, 2014 prior to sub-slab vapor sampling to determine effective SVE. The influent sampling location was installed on the SVE system's exhaust stack before carbon treatment. The TCE concentration detected in the influent sample was 45 µg/m^3.

2.6.4 3rd Quarter / Calendar Year 2014 (July - September)

System flow rates ranged from 12.42 acfm to 19.32 acfm and the vacuum readings ranged from 9 to 10 inch w.g. during this quarter. Additional sub-slab vacuum readings were collected at all three VMPs. The vacuum reading was measured at 0.02 inch w.g at 101VMP-1, and the readings ranged from 0.08 to 0.10 inch w.g. at 101VMP-2 and from 0 to 0.02 inch w.g. at 101VMP-3.

The two 200-pound GAC drums for the vapor treatment system were replaced on July 3, 2014.

2.6.4.1 Soil Vapor Monitoring

Sub-slab vapor, indoor and outdoor air sampling occurred on July 16, 2014. TCE was not detected in the indoor or outdoor air samples. The sub-slab TCE concentrations were as follows:

- 101VMP-1 – 8.4 µg/m^3
- 101VMP-2 – 180 µg/m^3
- 101VMP-3 – 54 µg/m^3

The sub-slab TCE concentration in 101VMP-2 was above vapor screening levels for a residential use scenario. All other sub-slab vapor results were below vapor screening levels for a residential use scenario.

Influent sampling occurred on July 1, 2014 prior to sub-slab vapor sampling to determine effective SVE. The influent sampling location was installed on the SVE system's exhaust stack before carbon treatment. The TCE concentration detected in the influent sample was 49 µg/m^3. In addition, an effluent sample was also collected on July 1, 2014 to verify the previously calculated GAC system lifespan. The TCE concentration was 4.9 µg/m^3. This detection indicates a slight TCE breakthrough due to decreased adsorption capacity in the GAC after four months.

2.6.5 4th Quarter / Calendar Year 2014 (October - December)

System flow rates ranged from 16.77 acfm to 17.66 acfm and the vacuum readings ranged from 9 to 10 inch w.g. during this quarter. The vacuum readings and system flow rates collected in previous three quarters and this quarter are illustrated on Figure 5 and Figure 6, respectively. Additional sub-slab vacuum readings were collected at all three VMPs. The vacuum reading was measured at 0.01 inch w.g at 101VMP-1, and the readings ranged from 0.08 to 0.095 inch w.g. at 101VMP-2 and from 0.005 to 0.01 inch w.g. at 101VMP-3. The vacuum readings are provided in Table 6.

The two 200-pound GAC drums for the vapor treatment system were replaced on December 18, 2014. The waste inventory tracking sheet is provided in Appendix A.

2.6.5.1 Soil Vapor Monitoring

Sub-slab vapor, indoor and outdoor air sampling occurred on October 15, 2014. All Daily Chemical Quality Controls Reports completed during this event are provided in Appendix C. TCE was not detected in the indoor or outdoor air samples. The sub-slab TCE concentrations were as follows:

- 101VMP-1 – 20 µg/m^3
- 101VMP-2 – 130 µg/m^3
- 101VMP-3 – 39 µg/m^3

The sub-slab TCE concentration in 101VMP-2 was above vapor screening levels for a residential use scenario. All other sub-slab vapor results were below vapor screening levels for a residential use scenario.

Influent sampling occurred on October 15, 2014 prior to sub-slab vapor sampling to determine effective SVE. The influent sampling location was installed on the SVE system's exhaust stack before carbon treatment. The TCE concentration detected in the influent sample was 53 µg/m^3.

2.6.6 1st Quarter / Calendar Year 2015 (January - March)

System flow rates ranged from 14.75 acfm to 17.62 acfm and the vacuum readings ranged from 8 to 10 inch w.g. during this quarter. Additional sub-slab vacuum readings were collected at 101VMP-2 and -3. The vacuum readings were all 0.08 inch w.g. at 101VMP-2 and ranged from

0.01 to 0.02 inch w.g. at 101VMP-3. No vacuum readings were collected at 101VMP-1 due to restricted access to the location.

The GAC drums were not replaced during this quarter.

2.6.6.1 Soil Vapor Monitoring

Sub-slab vapor, indoor and outdoor air sampling occurred on January 21, 2015. TCE was not detected in the indoor or outdoor air samples. The sub-slab TCE concentrations were as follows:

- 101VMP-1 – 60 µg/m^3
- 101VMP-2 – 87 J µg/m^3 (J - The analyte was positively identified; the quantitation is an estimation).
- 101VMP-3 – 20 µg/m^3

The sub-slab TCE concentration in 101VMP-2 was above vapor screening levels for a residential use scenario. All other sub-slab vapor results were below vapor screening levels for a residential use scenario. Benzene and ethylbenzene were detected in exceedance of the indoor air screening levels during this quarter's sampling event. However, these chemicals are used throughout the building as confirmed in the product inventory conducted for the 2013 SVI Evaluation and were eliminated as COCs that did not originate from the sub-surface (CAPE/FPM, September 2013).

Influent sampling occurred on January 20, 2015 prior to sub-slab vapor sampling to determine effective SVE. The influent sampling location was installed on the SVE system's exhaust stack before carbon treatment. The TCE concentration detected in the influent sample was 48 µg/m^3.

2.6.7 2nd Quarter / Calendar Year 2015 (April - June)

System flow rates ranged from 12.48 acfm to 17.59 acfm and the vacuum readings were 10 inch w.g. during this quarter. Additional sub-slab vacuum readings were collected at 101VMP-1, -2, and -3. The vacuum readings ranged from 0.01 to 0.02 inch w.g at 101VMP-1, were all 0.08 inch w.g. at 101VMP-2, and were all 0.01 inch w.g. at 101VMP-3.

The two 200-pound GAC drums for the vapor treatment system were replaced on June 22, 2015. The waste inventory tracking sheet is provided in Appendix A.

2.6.7.1 Soil Vapor Monitoring

Sub-slab vapor, indoor and outdoor air sampling occurred on April 23, 2015. TCE was not detected in the indoor or outdoor air samples. The sub-slab TCE concentrations were as follows:

- 101VMP-1 – 42 µg/m^3
- 101VMP-2 – 120 µg/m^3
- 101VMP-3 – 34 µg/m^3

The sub-slab TCE concentration in 101VMP-2 was above vapor screening levels for a residential use scenario. Ethylbenzene was also detected above the vapor screening level at 101VMP-2. The concentration was 390 µg/m^3 (the vapor screening level is 323 µg/m^3). All other sub-slab vapor results were below vapor screening levels for a residential use scenario. Based on the evaluation of all information in the analytical data groups, the results have been verified to be 100% usable. Benzene and ethylbenzene were detected in exceedance of the indoor air screening levels during this quarter's sampling event. These chemicals are used throughout the building as confirmed in the product inventory conducted for the 2013 SVI Evaluation and were eliminated as COCs that did not originate from the sub-surface (CAPE/FPM, September 2013).

Influent sampling occurred on April 22, 2014 prior to sub-slab vapor sampling to determine effective SVE. The influent sampling location was installed on the SVE system's exhaust stack before carbon treatment. The TCE concentration detected in the influent sample was 46 µg/m^3.

2.6.8 3rd Quarter / Calendar Year 2015 (July - September)

System flow rates ranged from 16.20 acfm to 17.79 acfm and the vacuum readings ranged from 8 to 10 inch w.g. during this quarter. The vacuum readings and system flow rates collected in previous quarters and this quarter are illustrated on Figure 5 and Figure 6, respectively. Additional sub-slab vacuum readings were collected at 101VMP-1, -2, and -3. The vacuum readings ranged from 0.005 to 0.1 inch w.g at 101VMP-1, from 0.075 to 0.6 inch w.g. at 101VMP-2, and from 0.01 to 0.2 inch w.g. at 101VMP-3. The vacuum readings are provided in Table 6. The O&M field forms are presented in Appendix B.

The GAC drums were not replaced during this quarter.

2.6.8.1 Soil Vapor Monitoring

Sub-slab vapor, indoor and outdoor air sampling occurred on July 15, 2015. All Daily Chemical Quality Controls Reports completed during this event are provided in Appendix C. TCE was not detected in the indoor or outdoor air samples. The sub-slab TCE concentrations were as follows:

- 101VMP-1 – 34 J µg/m^3 (J - The analyte was positively identified; the quantitation is an estimation).
- 101VMP-2 – 71 µg/m^3
- 101VMP-3 – 14 µg/m^3

The sub-slab TCE concentration in 101VMP-2 was slightly above vapor screening levels for a residential use scenario. All other sub-slab vapor results were below vapor screening levels for a residential use scenario. Figure 7 shows the sub-slab TCE vapor trend chart. Figure 8 illustrates the TCE concentrations and associated VMPs. All raw lab data and validated lab data are provided in Appendix D and Appendix E, respectively. Based on the evaluation of all information in the analytical data groups, the results have been verified to be 100% usable. Sub-

slab vapor sample results are presented in Table 2 and Indoor and Outdoor Air sample results are presented in Table 3. Benzene, ethylbenzene, naphthalene, and carbon tetrachloride were detected in exceedance of the indoor air screening levels during this quarter's sampling event. These chemicals are used throughout the building as confirmed in the product inventory conducted for the 2013 SVI Evaluation and were eliminated as COCs that did not originate from the sub-surface (CAPE/FPM, September 2013). TCE is not detected in indoor air screening which further reinforces the assumption that the indoor air exceedances did not originate from sub-slab vapor intrusion.

Influent sampling occurred on July 13, 2015 prior to sub-slab vapor sampling to determine effective SVE. The influent sampling location was installed on the SVE system's exhaust stack before carbon treatment. The TCE concentration was non-detect in the influent sample. The influent sampling results are also presented in Table 4.

2.6.9 4th Quarter / Calendar Year 2015 (October - December)

The system was operated from October 1st through 28th and from December 15th through the end of the quarter. System flow rates ranged from 16.08 acfm to 17.74 acfm and the vacuum readings ranged from 8 to 10 inch w.g. during this quarter. The vacuum readings and system flow rates collected in previous quarters and this quarter are illustrated on Figure 5 and Figure 6, respectively. Additional sub-slab vacuum readings were collected at 101VMP-1, -2, and -3. The vacuum readings ranged from 0.005 to 0.02 inch w.g at 101VMP-1, from 0.075 to 0.08 inch w.g. at 101VMP-2, and from 0.001 to 0.01 inch w.g. at 101VMP-3. The vacuum readings are provided in Table 6. The O&M field forms are presented in Appendix B.

The two 200-pound GAC drums for the vapor treatment system were replaced on November 20, 2015. The waste inventory tracking sheet is provided in Appendix A.

2.6.9.1 Soil Vapor Monitoring

Sub-slab vapor, indoor and outdoor air sampling occurred on October 6, 2015. The sampling conducted on October 6, 2015. All Daily Chemical Quality Controls Reports completed during this event are provided in Appendix C.

TCE was not detected in the indoor or outdoor air samples. The sub-slab TCE concentrations were as follows:

- 101VMP-1 – 29 µg/m^3
- 101VMP-2 – 72 µg/m^3
- 101VMP-3 – 25 µg/m^3

The sub-slab TCE concentration in 101VMP-2 was above vapor screening level for a residential use scenario. All other sub-slab vapor results were below vapor screening levels for a residential use scenario. Figure 7 shows the sub-slab TCE vapor trend chart. Figure 8 illustrates the TCE concentrations and associated VMPs. All raw lab data and validated lab data are provided in Appendix D and Appendix E, respectively. Based on the evaluation of all information in the

analytical data groups, the results have been verified to be 100% usable. Sub-slab vapor sample results are presented in Table 2 and Indoor and Outdoor Air sample results are presented in Table 3. Benzene and ethylbenzene were detected in exceedance of the indoor air screening levels during this quarter's sampling event. These chemicals are used throughout the building as confirmed in the product inventory conducted for the 2013 SVI Evaluation and were eliminated as COCs that did not originate from the sub-surface (CAPE/FPM, September 2013).

Influent sampling occurred on October 5, 2015 prior to sub-slab vapor sampling to determine effective SVE. The influent sampling location was installed on the SVE system's exhaust stack before carbon treatment. The TCE concentration was non-detect in the influent sample. The influent sampling results are also presented in Table 4.

2.6.9.2 Rebound Evaluation

A rebound evaluation was conducted during this quarter to evaluate current sub-slab conditions following two years of system operation. The rebound evaluation was initiated on October 28, 2015 with system shutdown followed by two rebound evaluation sampling events, conducted on October 29, 2015 and December 1, 2015.

Rebound Evaluation Sampling

A sub-slab sample was collected at 101VMP-2 one day following system shutdown on October 29, 2015 and sub-slab vapor, indoor air, and outdoor air samples were collected on December 1, 2015 following one month of system shutdown. All Daily Chemical Quality Controls Reports completed during this event are provided in Appendix C.

TCE was not detected in the indoor or outdoor air samples. The sub-slab TCE concentrations were as follows:

October 29, 2015

- 101VMP-2 – 88 µg/m^3

December 1, 2015

- 101VMP-1 – 350 µg/m^3
- 101VMP-2 – 110 µg/m^3
- 101VMP-3 – 28 µg/m^3

The sub-slab TCE concentration in 101VMP-1 and-2 were above vapor screening levels for a residential use scenario. All other sub-slab vapor results were below vapor screening levels for a residential use scenario. Figure 8 illustrates the TCE concentrations and associated VMPs. All raw lab data and validated lab data are provided in Appendix D and Appendix E, respectively. Based on the evaluation of all information in the analytical data groups, the results have been verified to be 100% usable. Sub-slab vapor sample results are presented in Table 2 and Indoor and Outdoor Air sample results are presented in Table 3. Benzene and ethylbenzene were detected in exceedance of the indoor air screening levels during this quarter's sampling event. These chemicals are used throughout the building as confirmed in the product inventory

conducted for the 2013 SVI Evaluation and were eliminated as COCs that did not originate from the sub-surface (CAPE/FPM, September 2013).

3 CONCLUSIONS

The SVE system has been in operation since October 2013. O&M activities conducted during these two quarters included weekly system component readings (system temperature, flow, vacuum, motor status, and knock-out tank inspection), quarterly sub-slab vapor vacuum readings and sub-slab vapor, indoor air, outdoor air, and influent sampling, and a rebound evaluation. Vacuum readings collected during this quarter show that influence from the system is still present up to 30-ft from the extraction well. The highest vacuum readings collected during O&M activities for each quarter, together with the analytical results, are shown on Figure 8. Contaminant mass removal has been estimated using the baseline and O&M influent air sampling results. As of October 5, 2015, an estimated 231 grams of VOCs have been extracted and treated from the sub-slab at ST006 (Building 101 AOC). The table including the influent concentrations, average flow rate and influent mass removal on a per day basis is provided in Appendix F.

The 3Q/2015 and 4Q/2015 sub-slab vapor sampling results indicate that the TCE concentrations at location 101VMP-2 were within 1 µg/m^3 and 2 µg/m^3, respectively, above the vapor screening level. Based on the original delineation of the site, this location is next to the highest concentrations of residual sub-slab vapor. TCE concentrations at 101VMP-1 were below screening levels for both 3Q/2015 and 4Q/2015. TCE concentrations at 101VMP-3 were below screening levels for all sampling during 3Q/2015 and 4Q/2015. TCE was not detected in the indoor or outdoor air samples.

The rebound evaluation was conducted to evaluate current sub-slab conditions and consisted of system shut-down on October 28, 2015, sub-slab sampling at 101VMP-2 on October 29, 2015, and sub-slab vapor, indoor air, and outdoor air sampling on December 1, 2015. The rebound evaluation sampling results showed an increase in TCE at two VMPs (101VMP-1 and -2) to concentrations above the sub-slab screening level. As a result of TCE rebound, the system was re-started on December 15th. TCE was not detected in the indoor or outdoor air samples.

4 RECOMMENDATIONS

The SVE system has been in operation since October 2013. A rebound evaluation was conducted during 4Q/2015. Sampling results from the rebound evaluation showed that TCE concentrations rebounded to levels above the vapor screening levels for a residential use scenario. Therefore, it is recommended to continue the operation of the SVE system in order to eliminate the potential SVI and to achieve site closure with unrestricted use at the ST006. During operation, weekly system inspections and quarterly performance monitoring is recommended.

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5 REFERENCES

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Tables

Table 1
ST006 (Building 101 AOC)
Sub-Slab Vapor Screening Levels

Contaminant of Concern	Residential Air RSL ($\mu g/m^3$)[a] TR = 1E-05	Residential Sub-Slab Vapor Screening Level ($\mu g/m^3$) EPA Recommended Value ($AF_{s/ia}$ = 0.03)
1,1,1-Trichloroethane	5,200 (n)	173,333
1,2,4-Trichlorobenzene	2.1 (n)	70
1,2,4-Trimethylbenzene	7.3 (n)	243.3
1,2-Dichlorobenzene	210 (n)	7,000
1,2-Dichloroethane	0.94 (c)	31.33
1,3,5-Trimethylbenzene	NA	NA
1,4-Dichlorobenzene	2.2 (c)	73.33
2,2,4-Trimethylpentane	NA	NA
4-Ethyltoluene	NA	NA
4-Isopropyltoluene	NA	NA
Acetone	32,000 (n)	1,066,667
Benzene	3.1 (c)	103.33
Carbon disulfide	730 (n)	24,333
Carbon tetrachloride	4.1 (c)	136.67
Chloroform	1.1 (c)	36.67
Chloromethane	94 (n)	3,133
Cis-1,2-Dichloroethene	NA	NA
Cumene (isopropylbenzene)	420 (n)	14,000
Cyclohexane	6,300 (n)	210,000
Dichlorodifluoromethane	100 (n)	3,333
Ethylbenzene	9.7 (c)	323.33
Freon 22 (Chlorodifluoromethane)	52,000 (n)	1,733,333
Freon TF (Trichlorotrifluoroethane)	31,000 (n)	1,033,333
Isopropyl alcohol (isopropanol)	7,300 (n)	243,333
m,p-Xylene	100 (n)	3,333
Methyl Butyl Ketone (2-Hexanone)	31 (n)	1,033
Methyl Ethyl Ketone	5,200 (n)	173,333
methyl isobutyl ketone	3,100 (n)	103,333
Methyl tert-butyl ether	110 (c)	3,666.67
Methylene Chloride	63 (n)	2,100
Naphthalene	0.72 (c)	24
n-Butane	NA	NA
n-Heptane	NA	NA
n-Hexane	730 (n)	24,333
n-Propylbenzene	1000 (n)	33,333
Styrene	1000 (n)	33,333
tert-Butyl alcohol	NA	NA
Tetrachloroethene	42 (n)	1,400
Tetrahydrofuran	2,100 (n)	70,000
Toluene	5,200 (n)	173,333
Trans-1,2-Dichloroethene	63 (n)	2,100
Trichloroethene	2.1 (n)	70
Trichlorofluoromethane	730 (n)	24,333
Xylene, o-	100 (n)	3,333

Notes:

Sub-slab vapor screening levels were derived from the EPA risk-based indoor air concentrations (EPA, November 2012) using a sub-slab vapor-to-indoor air attenuation factor ($AF_{s/ia}$). The development of the sub-slab vapor screening levels is detailed in the Final ST006 (Building 101 AOC) Site Closure Evaluation Report (CAPE/FPM, September 2013).

$AF_{s/ia}$- Sub-slab vapor to indoor air attenuation factor = Concentration in Indoor Air/Concentration in Sub-Slab Vapor

NA- not available

TR- Target Risk

a- Residential RSL is the smaller (most protective) of the values calculated for the cancer or non-cancer endpoint at a target cancer risk of 1E-05 and a target hazard quotient of 1. RSLs corresponding to the noted cancer risk are indicated by (c). RSLs corresponding to a hazard index of 1 are indicated by (n).

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

Table 2
ST006 (Building 101 AOC)
SVE System Performance Monitoring Sub-slab Vapor Results

Sample Location	Sub-Slab Vapor Screening Level (Residential) (µg/m³)	101VMP-01									
Sample ID		101VMP0101AA	101VMP0101BA	101VMP0101CA	101VMP0101DA	101VMP0101EA	101VMP0101FA	101VMP0101GA	101VMP0101HA	101VMP0101JA	101VMP0101KA
Sample Type		Sub-slab	Sub-slab	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	6-Oct-2015	1-Dec-2015
Sample Depth (ft bgs / ags)		1	1	1	1	1	1	1	1	1	1
Sample Collection Duration (hr)		0.5	0.5	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	173,333	3.9 J	U	U	U	1 J	1.1 J	0.79 J	0.92 J	0.69 J♦	3.4 D
1,1,2,2-Tetrachloroethane	16	U	U	U	6.8	U	U	U	U	U	U
1,1- Dichloroethane	600	U	U	U	U	U	U	0.13 J♦	0.18 J	U	0.58 JD
1,2,4-Trichlorobenzene	70	U	U	1.7 J	0.31 J♦	U	U	U	0.86 J	U	U
1,2,4-Trimethylbenzene	243.3	15	4.5 ♦	4.9	4.7 ♦	4.7	4.4	1.3 J	5.3 J	0.82 J	1.6 JD
1,2-Dichlorobenzene	NA	U	U	U	U	U	U	U	0.11 J	U	U
1,3,5-Trimethylbenzene	NA	4.3	1.3 J	1.5 J	1.4 ♦	1.5 J	1.3 J	0.38 J	1.4	0.26 J	0.57 JD
1,3-Dichlorobenzene	NA	280	38 ♦	27	16 ♦	6.7 ♦	U	1.1 J	1.4	U	U
1,4-Dichlorobenzene	NA	U	U	U	U	U	0.29 U	U	0.31♦	U	U
1,4-Dioxane	NA	U	U	U	U		1.2 U	U	4 J	U	U
2,2,4-Trimethylpentane	NA	7.6	U	2.5 J	1.2 ♦	0.7 J ♦	0.36 J	0.6 J♦	0.46 J	0.33 J	U
4-Ethyltoluene	NA	5.3	1.5 J	1.5 J♦	1.4 ♦	1.6 J	1.4 J	0.35 J	1.4	0.26 J	0.64 JD
4-Isopropyltoluene	NA	1.4 J	U	U	0.47 J♦	1.9 J	U	U	2.1	U	U
Acetone	1,066,667	350	320 ♦	280 ♦	22	150	88	49 ♦	62	60	18 JD
Benzene	103.33	15	1.3 J♦	1.2 J	1.2 ♦	0.89 J	0.84 J	1.2	0.7	0.47 J	1.6 D
Bromodichloromethane	NA	U	U	U	U	U	0.71 J	0.59 J	0.43 J	0.51 J	1.1 JD
Bromoform	NA	UQ	U	U	0.11 J♦	U	U	U	U	U	U
Carbon disulfide	24,333	23	U	1.3 J♦	2.2	2.9 J	2.0 J	4.5 ♦	4	1.2 J	1.6 JD
Carbon tetrachloride	136.67	1.2 J	U	0.68 J	0.67 J♦	0.74 J	0.83 J	0.76 J	0.77 J	0.76 J	0.86 JD
Chlorobenzene	NA	U	U	U	0.61 J♦	0.94 J	U	U	U	U	U
Chloroethane	NA	U	U	U	U	U	0.34 U	U	U	U	U
Chloroform	36.67	24	18♦	14	12 ♦	25	140	93	83	91	150 D
Chloromethane	3,133	0.78 J	U	U	0.42 J	U	0.97 J	U	1.1	0.66 J	U
cis-1,2-Dichloroethene	NA	U	U	U	U	U	0.51 U	U	U	U	0.44 J
Cumene (isopropylbenzene)	14,000	2.1 J	0.65J	0.81 J	0.65 J♦	0.61 J	0.38 J	U	0.87 J♦	U	0.87 J
Cyclohexane	210,000	39	3.1 ♦	U	2.5 ♦	1.5 J ♦	0.32 J	1.1	0.30 J	0.38 J	0.84 J
Dichlorodifluoromethane	3,333	3.6 J	3 J♦	3.7 J♦	2.5 ♦	2.3 J	2.8 J	2.5 J	2.4 J	2.1 J	2.1 J
Ethylbenzene	323.3	24	4.2 ♦	3.0 J	4.9 ♦	4.7	1.9	0.84 J	2.5	0.78 J♦	1.9 J
Freon 22 (chlorodifluoromethane)	1,733,333	4.5 J	U	1.9 JM	1.1 J♦	1.5 J ♦	2.2 J	1.6 J	3	1.7 J	1.2 JD
Freon TF (trichlorotrifluoroethane)	1,033,333	2.9 J	U	U	0.72 J♦	U	0.74 J	0.72 J♦	0.81 J	0.72 J♦	1.5 J
Hexachlorobutadiene	NA	U	U	U	0.35 J♦	U	U	U	1.3 J	U	U
Isopropyl alcohol	243,333	6,900 J	130 ♦	46 J	33	49 ♦	26	8.4 J♦	70♦	10 J	U
m,p-Xylene	3,333	94	13	9.3	16 ♦	1.5 J	7.6	2.6 ♦	9.2	2.8	7
Methyl Butyl Ketone (2-Hexanone)	1,033	U	U	U	0.95 J	U	U	0.74 J♦	2.4	0.48 J	U
Methyl Ethyl Ketone	173,333	700 J	39♦	48 ♦	16	22 ♦	68	49	10 J	13	3.4 J
methyl isobutyl ketone	103,333	U	2.2 J♦	5.2 J♦	1.5 J♦	U	2.3 J	U	2.2	2.3	U
Methyl methacrylate	NA	U	1 J	2.2 J	1.8 J♦	1.5 J	U	U	U	U	0.84 J
Methyl tert-butyl ether	NA	U	U	1.9 J	0.74 ♦	0.49 J ♦	U	U	U	U	U
Methylene Chloride	2,100	3.1 J	2 J♦	U	1.2 J	U	0.89 J	1.5 J	0.71 J	0.89 J	1.9 J
Naphthalene	24	U	U	U	1.4 J♦	U	0.56 J	U	2.5 J	0.87 J	U
n-Butane	NA	16	8.4 ♦	13	0.67 J♦	U	6.3	21 ♦	3.2	4.7 ♦	3.4
n-Butylbenzene	NA	U	U	U	U	U	0.26 U	U	0.64 J	U	U
n-Heptane	NA	16	3.3 M♦	U	U	U	0.56 J	1.5	2	U	2.2
n-Hexane	24,333	34	1.7 JM♦	2.7 J	1.0 ♦	1.7 J	0.81 J	2.6 ♦	0.72	1.5 ♦	2.9
n-Propylbenzene	33,333	3.4 J	U	U	1.0 ♦	0.99 J	0.97 J	0.25 J	1.1	U	U
Styrene	33,333	2.4 J	3.8	4.1	2.9 ♦	2 J	1.6	1.8	2.6	0.27 J	0.6 J
tert-Butyl alcohol	NA	U	9.7 J	21 J	7.3 J♦	5.2 J ♦	U	3.9 J♦	1.4 J	U	U
Tetrachloroethene	1,400	2.2 J	U	U	0.83 J♦	0.85 J	U	0.25 J♦	0.23 J	0.29 J♦	1.5 J
Tetrahydrofuran	70,000	3,100 J	43 J ♦	49 J♦	17 ♦	28 J ♦	140	160	9.5 J	19	U
Toluene	173,333	300	21	17	14 ♦	44	12	7.9 ♦	9.8	13	53
trans-1,2-Dichloroethene	2,100	1.4 J	U	U	U	U	U	U	U	U	0.92 J
Trichloroethene	70	540	17 ♦	18 ♦	8.4 ♦	20	60	42	34 J	29	350
Trichlorofluoromethane	24,333	9.9	5.2 ♦	3.6 J♦	2.0 ♦	2.4 J	5.1	4.6	2.6	3.9	8.7
Vinyl chloride	NA	U	U	U	U	U	U	U	U	U	U
Xylene, o-	3,333	27	4.5	3.4 J	4.7 ♦	4.9	3	0.96 ♦	3.8	1	2.2

Notes:

Exceedance of screening level.
♦-Denotes higher nominal value of duplicate sample result.
J- The analyte was positively identified; the quantitation is an estimation.
B- The result for the analyte was detected in the trip blank.
M - A matrix effect was present.
U- Undetected at the Limit of Detection.
NA- not available
µg/m³ - microgram per cubic meter.

Table 2
ST006 (Building 101 AOC)
SVE System Performance Monitoring Sub-slab Vapor Results

Sample Location	Sub-Slab Vapor Screening Level (Residential) (µg/m^3)	101VMP-02										
Sample ID		**101VMP0201AA**	**101VMP0201BA**	**101VMP0201CA**	**101VMP0201DA**	**101VMP0201EA**	**101VMP0201FA**	**101VMP0201GA**	**101VMP0201HA**	**101VMP0201JA**	**101VMP0201JB**	**101VMP0201KA**
Sample Type		**Sub-slab**	**Sub-slab**	**Sub-slab**	**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**	**6-Oct-2015**	**29-Oct-2015**	**1-Dec-2015**
Sample Depth (ft bgs / ags)		**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Sample Collection Duration (hr)		**0.5**	**0.5**	**0.5**	**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	173,333	U	U	U	U	U	U	U	U	U	U	0.58 J
1,1,2,2-Tetrachloroethane	16	U	U	U	U	U	U	U	U	1.2 J	U	U
1,1- Dichloroethane	600	U	U	U	U	U	U	U	U	U	U	U
1,2,4-Trichlorobenzene	70	U	U	U	U	U	0.51 J	U	U	U	U	U
1,2,4-Trimethylbenzene	243.3	12	5.1 J	24	11	68	2.7 J♦	36	5.1	9.3	19	2.3
1,2-Dichlorobenzene	NA	U	U	8	U	U	U	U	U	U	U	U
1,3,5-Trimethylbenzene	NA	3.6 J	12 J	11	6.9 J	39	1.5 J♦	20	1.3	4.6	11	0.81 J
1,3-Dichlorobenzene	NA	130	26	U	U	U	U	U	1.5	U	U	0.58 J
1,4-Dichlorobenzene	NA	U	U	U	U	U	0.36 U	U	U	U	U	U
1,4-Dioxane	NA	U	U	U	U		1.6 J D	U	U	U	U	U
2,2,4-Trimethylpentane	NA	10	U	2.7 M	U	U	0.70 J	U	U	U	U	U
4-Ethyltoluene	NA	4.3 J	4.1 J	8.8	6.2 J	26	1.3 J	15	1.5	3	8.2	0.85 J
4-Isopropyltoluene	NA	U	U	2.3 J	U	U	U	2.6 J	U	1 J	1.4 J	0.48 J
Acetone	1,066,667	3,100 J	760	98	58 J	51 J	45 ♦	41 J	19	8.6 J	U	39
Benzene	103.33	22	7.3 J	2.7	2.9 J	8.2	8.6 ♦	3.3	0.71	0.75	3.4 J	1.5
Bromodichloromethane	NA	U	U	U	U	U	U	U	U	U	U	U
Bromoform	NA	UQ	U	U	U	U	U	U	U	U	U	U
Carbon disulfide	24,333	110	28	20	9.6 J	14 J	11 ♦	5.7 J	3.2	2.3	11	3.3
Carbon tetrachloride	136.67	U	U	0.51	U	U	1.0 J♦	U	0.55 J	0.36 J	U	0.75 J
Chlorobenzene	NA	U	U	U	U	U	U	U	U	U	U	0.26 J
Chloroethane	NA	U	U	U	U	U	0.42 U	U	U	U	U	0.25 J
Chloroform	36.67	21	U	0.65 JM	U	U	0.63 J♦	U	0.48 J	U	U	24
Chloromethane	3,133	2.1 J	U	U	U	U	U	U	0.84 J	0.35 J	U	1.8
cis-1,2-Dichloroethene	NA	U	U	U	U	U	0.63 U	U	U	U	U	U
Cumene (isopropylbenzene)	14,000	U	U	U	U	U	1.3 J♦	U	0.39 J	U	5.3 J	0.64 J
Cyclohexane	210,000	54	U	U	U	U	U	U	U	U	U	0.57 J♦
Dichlorodifluoromethane	3,333	3.9 J	U	3.1 J	3.2 J	U	3.1 J♦	2.3 J	2.6	2 J	2.4 J	2.2 J♦
Ethylbenzene	323.3	19	140	190	210	910	170 J♦	390	2.5	69	340	6.2 ♦
Freon 22 (chlorodifluoromethane)	1,733,333	3.6 J	U	2.2 J	3.5 J	3.4 J	2.4 J♦	1.4 J	4	1.8	2.7 J	1.3 J
Freon TF (trichlorotrifluoroethane)	1,033,333	U	U	U	U	U	0.85 J	U	U	U	U	0.78 J♦
Hexachlorobutadiene	NA	U	U	U	U	U	U	U	U	U	U	U
Isopropyl alcohol	243,333	14,000 J	160 J	38	U	8.8 J	22 J	7.9 J	51	U	U	11 J
m,p-Xylene	3,333	73	470	640	720	2,800	560 J♦	1600	9.4	300	1,300	23
Methyl Butyl Ketone (2-Hexanone)	1,033	U	U	U	U	U	U	U	U	U	U	1.1 J
Methyl Ethyl Ketone	173,333	2,400 J	1,200	140	160	U	13 ♦	33	7.2	2.2	U	7
methyl isobutyl ketone	103,333	U	5.4 J	7.4	3.2 J	U	U	4.3 J	1.5 J	1.1 J	U	1.6 J
Methyl methacrylate	NA	U	U	0.55 J	U	U	U	U	U	U	U	0.77 J
Methyl tert-butyl ether	NA	U	U	U	U	U	U	U	U	U	U	U
Methylene Chloride	2,100	4.1 J	7.9 J	U	U	U	1.5 J♦	3.7 J	0.44 J	U	U	U
Naphthalene	24	U	U	U	U	U	U	U	0.8 J	0.34 J	U	1 J
n-Butane	NA	22	U	U	U	U	2.2 J	U	0.44 J	0.3 J	U	0.8 J♦
n-Butylbenzene	NA	U	U	U	U	U	0.33 U		U	U	U	U
n-Heptane	NA	19	U	U	U	U	1.9 J♦	U	1.5	0.43 J	U	U
n-Hexane	24,333	53	U	U	U	U	1.1 J	U	0.23 J	0.26 J	U	2.1 ♦
n-Propylbenzene	33,333	2.7 J	U	U	U	U	U	U	0.98	U	6.2	0.58 J
Styrene	33,333	1.8 J	5.2 J	U	5.5 J	22	U	6.4	2.4	1.2	U	0.85
tert-Butyl alcohol	NA	U	U	U	U	U	2.8 J♦	U	0.69 J	U	U	4.1 J
Tetrachloroethene	1,400	U	U	4.0 M	12	10 J	3.5 J♦	10	3.9	6.4	8.7	9.6
Tetrahydrofuran	70,000	10,000 J	2,000	210	660	700	290 J♦	140	7.6 J	29	190	5.9 J♦
Toluene	173,333	240	170	140	120	540	220 J♦	170	8.3	24	140	42
trans-1,2-Dichloroethene	2,100	U	U	U	U	U	U	U	U	U	U	U
Trichloroethene	70	82	18 J	130	180	130	87 J♦	120	71	72	88	110
Trichlorofluoromethane	24,333	7.7 J	4.8 J	3.4	4.9 J	6 J	5.9 ♦	3.4 J	3.7	4.5	8.2	7.7
Vinyl chloride	NA	U	U	U	U	U	U	U	U	U	U	U
Xylene, o-	3,333	20	130	220	200	1,100	120 J♦	460	3.9	85	350	6.8

Notes:

Exceedance of screening level.
♦-Denotes higher nominal value of duplicate sample result.
J- The analyte was positively identified; the quantitation is an estimation.
B- The result for the analyte was detected in the trip blank.
M - A matrix effect was present.
U- Undetected at the Limit of Detection.
NA- not available
µg/m˙- microgram per cubic meter.

Table 2
ST006 (Building 101 AOC)
SVE System Performance Monitoring Sub-slab Vapor Results

Sample Location	Sub-Slab Vapor Screening Level (Residential) (µg/m³)	101VMP-03									
Sample ID		101VMP0301AA	101VMP0301BA	101VMP0301CA	101VMP0301DA	101VMP0301EA	101VMP0301FA	101VMP0301GA	101VMP0301HA	101VMP0301JA	101VMP0301KA
Sample Type		Sub-slab	Sub-slab	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	6-Oct-2015	1-Dec-2015
Sample Depth (ft bgs / ags)		1	1	1	1	1	1	1	1	1	1
Sample Collection Duration (hr)		0.5	0.5	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	173,333	U	U	U	U	U	U	U	0.37 J	U	U
1,1,2,2-Tetrachloroethane	16	U	U	U	U	U	U	U	U	U	U
1,1- Dichloroethane	600	U	U	U	U	U	U	U	U	U	U
1,2,4-Trichlorobenzene	70	U	U	U	U	U	U	U	U	U	U
1,2,4-Trimethylbenzene	243.3	11 J♦	8.5 J	1.1 J	6.4 J	5 J	U	U	4.4	2.1 J	3.8 J
1,2-Dichlorobenzene	NA	U	U	U	U	U	U	U	U	U	U
1,3,5-Trimethylbenzene	NA	U	U	U	U	U	U	U	1.2	U	2 J
1,3-Dichlorobenzene	NA	170 ♦	15 J	1.9 J	2.1 J	U	U	U	0.92 J	U	U
1,4-Dichlorobenzene	NA	U	U	U	U	U	U	U	U	U	1.4 J
1,4-Dioxane	NA	U	U	U	U	U	U	U	U	U	U
2,2,4-Trimethylpentane	NA	U	U	U	U	U	U	U	0.89 J	U	U
4-Ethyltoluene	NA	U	U	U	U	U	U	U	1.2	U	1.4 J
4-Isopropyltoluene	NA	U	U	U	U	U	U	U	U	2.6 J	1.6 J
Acetone	1,066,667	640 ♦	700	310	490	330	450 J	370	33	40 J	82
Benzene	103.33	23 J♦	U	U	2.4 J	U	U	U	2.9	U	2.4 J
Bromodichloromethane	NA	U	U	U	U	U	U	U	U	U	U
Bromoform	NA	UQ	U	U	U	U	U	U	U	U	U
Carbon disulfide	24,333	110	7 J	U	32 J	7.1 J	14 J	U	1.4 J	5.9 J	21
Carbon tetrachloride	136.67	U	U	U	U	U	U	U	1.3	U	5
Chlorobenzene	NA	U	U	U	U	U	U	U	U	U	U
Chloroethane	NA	U	U	U	U	U	U	U	U	U	1.5 J
Chloroform	36.67	U	U	U	U	U	U	U	0.36 J	U	U
Chloromethane	3,133	U	U	U	U	U	U	U	0.36 J	U	5.9
cis-1,2-Dichloroethene	NA	U	U	U	U	U	U	U	0.28 J	U	1.1 J
Cumene (isopropylbenzene)	14,000	U	U	U	U	U	U	U	0.41 J	U	1.9 J
Cyclohexane	210,000	29 ♦	U	U	U	U	U	U	U	U	U
Dichlorodifluoromethane	3,333	U	U	U	U	U	U	U	2.3 J	U	2.1 J
Ethylbenzene	323.3	29 J♦	24 J	9.9 J	31	31	19 J	21 J	2.3	14	27
Freon 22 (chlorodifluoromethane)	1,733,333	U	U	U	4.1 J	U	U	U	3.6	1.6 J	0.87 J
Freon TF (trichlorotrifluoroethane)	1,033,333	U	U	U	U	U	U	U	0.70 J	U	U
Hexachlorobutadiene	NA	U	U	U	U	U	U	U	U	U	U
Isopropyl alcohol	243,333	13,000 J♦	U	22 J	U	21 J	40 J	U	78	U	31 J
m,p-Xylene	3,333	95 ♦	92	33 J	130	130	68 J	80	8.3	56	73
Methyl Butyl Ketone (2-Hexanone)	1,033	U	U	U	U	U	U	U	0.86 J	U	U
Methyl Ethyl Ketone	173,333	1,100 ♦	1,300	540	770	540	620	590	10	39	100
methyl isobutyl ketone	103,333	U	400	230	660	500	300	330	1.7 J	240	150
Methyl methacrylate	NA	U	U	U	U	U	U	U	U	U	U
Methyl tert-butyl ether	NA	U	U	U	U	U	U	U	U	U	U
Methylene Chloride	2,100	36 J♦	U	U	U	U	U	U	0.94 J	U	U
Naphthalene	24	U	U	U	U	U	U	U	0.56 J	U	U
n-Butane	NA	11 J♦	U	U	U	U	U	U	0.50 J	U	U
n-Butylbenzene	NA	U	U	U	U	U	U		U	U	U
n-Heptane	NA	12 J♦	U	U	U	U	U	U	1.7	U	U
n-Hexane	24,333	24 J♦	U	U	U	U	U	U	0.32 J	U	U
n-Propylbenzene	33,333	U	U	U	U	U	U	U	0.90 J	U	1.2 J
Styrene	33,333	U	8.7 J	U	13 J	19 J	8.1 J	12 J	2.2	9.0	2.4 J
tert-Butyl alcohol	NA	13 J♦	U	U	U	U	U	U	0.97 J	U	U
Tetrachloroethene	1,400	32 J♦	23 J	29	31 J	27 J	11 J	20 J	3.0	15	20
Tetrahydrofuran	70,000	25,000 J	3,500 J	1,300	2,300	1,900	2400	2200	8.6 J	450	270
Toluene	173,333	3,900 ♦	1,100	500	1,400	1,500	1100	920	11	540	450
trans-1,2-Dichloroethene	2,100	U	U	U	U	U	U	U	U	U	U
Trichloroethene	70	76 ♦	36	50	54	39	20 J	34	14	25	28
Trichlorofluoromethane	24,333	U	U	3.4 J	U	U	U	U	3.5	4.5 J	3.3 J
Vinyl chloride	NA	U	U	U	U	U	U	U	U	U	U
Xylene, o-	3,333	27 J♦	37	10 J	44	48	21 J	30	3.6	21	21

Notes:

Exceedance of screening level.
♦-Denotes higher nominal value of duplicate sample result.
J- The analyte was positively identified; the quantitation is an estimation.
B- The result for the analyte was detected in the trip blank.
M - A matrix effect was present.
U- Undetected at the Limit of Detection.
NA- not available
µg/m³ - microgram per cubic meter.

Table 3
ST006 (Building 101 AOC)
SVE System Performance Monitoring Indoor and Outdoor Air Results

Sample Location	Indoor Air Screening Level (Residential) ($\mu g/m^3$)	101IA-03									
Sample ID		**101IA0305AA**	**101IA0305AA**	**101IA0305CA**	**101IA0305DA**	**101IA0305EA**	**101IA0305FA**	**101IA0305GA**	**101IA0305HA**	**101IA0305JA**	**101IA0305KA**
Sample Type		**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**
Sample Depth (ft bgs / ags)		**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Sample Collection Duration (hr)		**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
Volatiles (TO-15) in $\mu g/m^3$											
1,2,4-Trimethylbenzene	7.3	23	3.6 J	3.5 J	0.48 J	2.1	4.3 J	2.2 J	1.6 J	1.2	U
1,3,5-Trimethylbenzene	NA	6.9	U	1.3 J	0.15 J	0.34 J	U	U	U	0.39 J	U
1,3-Butadiene	NA	0.26 J	U	U	U	U	U	U	U	U	U
1,4-Dichlorobenzene	NA	U	U	U	U	U	U	U	U	U	U
1,4-Dioxane	NA	U	U	U	U	3.7 J	U	U	U	U	U
2,2,4-Trimethylpentane	NA	2.3	U	5.9	0.78 J	0.85 J	U	U	1.2 J	1.1	U
4-Ethyltoluene	NA	6.1	U	0.80 J	1.2	0.5 J	U	U	U	0.37 J	U
4-Isopropyltoluene	NA	0.61 J	U	U	U	U	U	U	U	U	U
Acetone	32,000	470 J	570	300	34	19	970	510	210	160	270 D
Benzene	0.31	1.9	1.6 J	1.2 J	1.1	0.31 J	2.0 J	1.7 J	1 J	1.2	U
Bromoethene(Vinyl Bromide)	NA	U	U	U	U	U	U	U	U	U	U
Carbon disulfide	730	2.7	U	U	4.6	1.9 J	U	U	U	U	U
Carbon tetrachloride	0.41	0.6 J	U	U	0.45 J	0.47 J	U	U	0.40 J	0.4 J	U
Chlorobenzene	NA	U	U	U	U	U	U	U	U	U	U
Chloroform	0.11	0.38 J	U	U	U	U	U	U	U	U	U
Chloromethane	94	1.1	2.2 J	U	1.2	1.3 J	U	U	1.4 J	0.86 J	U
Cumene (isopropylbenzene)	420	0.56 J	U	U	0.41 J	0.32 J	U	U	U	U	U
Cyclohexane	6,300	1.8	U	U	1.7	U	U	U	U	0.84	U
Dichlorodifluoromethane	100	2.9	3 J	3.5 J	2.5	2.4 J	U	U	2.6 J	2 J	U
Ethylbenzene	0.97	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 JD
Freon 22 (chlorodifluoromethane)	52,000	3.6	U	1.5 J	1.3 J	0.89 J	U	U	2.6 J	1.6 J	U
Freon TF (trichlorotrifluoroethane)	31,000	0.67 J	U	U	0.65 J	0.64 J	U	U	U	U	U
Isopropyl alcohol	7,300	80	91	180	30	U	350	230	54	65	450 D
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 JD
Methyl Butyl Ketone (2-Hexanone)	31	0.37 J	U	U	U	1.1 J	U	U	U	U	U
Methyl Ethyl Ketone	5,200	23	12	18	3.4	4.4	U	15	5.7 J	5	8.4 JD
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
Methyl tert-butyl ether	NA	U	U	U	U	U	U	U	U	U	U
Methylene Chloride	96	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
Naphthalene	0.072	1 J	U	U	U	1.8 J	U	U	1.3 J	U	4 J
n-Butane	NA	11	15	20	3.2	U	28	29	9.6	10	5.6 J
n-Butylbenzene	NA	U	U	U	U	U	U	U	U	U	U
n-Heptane	NA	2.4	U	U	6.8	U	U	4 J	1 J	1.3	U
n-Hexane	730	3.5	2.4 J	2.8 J	2.5	0.42 J	U	5.1 J	1.9 J	3	2.2 J
n-Propylbenzene	1,000	3.6	U	U	0.83 J	0.93 J	U	U	U	0.26 J	U
sec-Butylbenzene	NA	0.56 J	U	U	U	U	U	U	U	U	U
Styrene	1,000	0.51 J	U	U	U	0.11 J	U	U	U	0.2 J	U
tert-Butyl alcohol	NA	1.3 J	U	U	U	U	U	U	U	U	U
Tetrachloroethene	9.4	U	U	U	1.3 J	0.33 J	U	U	U	U	U
Tetrahydrofuran	2,100	6.4 J	U	U	U	U	U	U	U	U	U
Toluene	5,200	34	19	36	7	6.5	48	33	18	26	10
Trichloroethene	0.43	0.37 J	U	U	U	U	U	U	U	U	U
Trichlorofluoromethane	730	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
Vinyl chloride	NA	U	U	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

Notes:
Exceedance of screening level.
♦-Denotes higher nominal value of duplicate sample result.
J- The analyte was positively identified; the quantitation is an estimation.
B- The result for the analyte was detected in the trip blank.
M - A matrix effect was present.
U- Undetected at the Limit of Detection.
NA- not available
µg/m˙- microgram per cubic meter.

Table 3
ST006 (Building 101 AOC)
SVE System Performance Monitoring Indoor and Outdoor Air Results

Sample Location	Indoor Air Screening Level (Residential) ($\mu g/m^3$)	101IA-04									
Sample ID		**101IA0405AA**	**101IA0405AA**	**101IA0405CA**	**101IA0405DA**	**101IA0405EA**	**101IA0405FA**	**101IA0405GA**	**101IA0405HA**	**101IA0405JA**	**101IA0405KA**
Sample Type		**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**
Sample Depth (ft bgs / ags)		**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Sample Collection Duration (hr)		**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
Volatiles (TO-15) in $\mu g/m^3$											
1,2,4-Trimethylbenzene	7.3	6.4	2 J	3.9 J	3.1	1.7 J	0.66 J	0.87 J	1	0.89 J	U
1,3,5-Trimethylbenzene	NA	2	U	1.6 J	1	0.51 J	U	U	0.37	0.31 J	U
1,3-Butadiene	NA	0.15 J	U	U	0.12 J	U	U	U	U	U	U
1,4-Dichlorobenzene	NA	U	U	U	0.11 J	U	U	U	0.32 J	U	U
1,4-Dioxane	NA	U	U	U	U	U	U	U	U	2.7 J	U
2,2,4-Trimethylpentane	NA	0.9 J	U	6.9	1.2	0.87 J	U	U	0.64 J	0.84 J	U
4-Ethyltoluene	NA	1.6	U	1.4 J	2.2	0.52 J	U	U	0.32 J	0.29 J	U
4-Isopropyltoluene	NA	U	U	U	0.45 J	U	U	U	0.3 J	U	U
Acetone	32,000	260 J	330	320	39	100	140	260	130	120	110 D
Benzene	0.31	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 JD
Bromoethene(Vinyl Bromide)	NA	U	U	U	0.12 J	U	U	U	U	U	U
Carbon disulfide	730	U	U	U	U	13	U	U	0.79 J	1.1 J	3 JD
Carbon tetrachloride	0.41	0.52 J	U	U	0.57 J	0.36 J	0.47 J	U	0.44 J	0.39 J	0.41 JDM
Chlorobenzene	NA	U	U	U	U	1.1 J	U	U	U	U	U
Chloroform	0.11	0.22 J	U	U	U	U	U	U	U	U	U
Chloromethane	94	1.1	2 J	U	1.3	1.2 J	U	U	1.3 J	1.1	1 JD
Cumene (isopropylbenzene)	420	0.2 J	U	U	0.8 J	U	U	U	U	U	U
Cyclohexane	6,300	0.7	U	U	3	0.84 J	U	U	U	0.57 J	U
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 JD
Ethylbenzene	0.97	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 JDM
Freon 22 (chlorodifluoromethane)	52,000	2.2	U	2.0 J	1.3 J	0.96 J	1.1 J	U	2.1 J	1.4 J	0.86 JD
Freon TF (trichlorotrifluoroethane)	31,000	0.6 J	U	U	0.7 J	0.61 J	U	U	U	U	U
Isopropyl alcohol	7,300	50	58	190	49	37	44	120	24 J	46	88 D
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 JD
Methyl Butyl Ketone (2-Hexanone)	31	0.26 J	U	U	U	U	U	U	U	U	0.89 JD
Methyl Ethyl Ketone	5,200	16	7.9	20	2.9	3.3	5.2	7.9	5.7	3.8	5.2 D
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
Methyl tert-butyl ether	NA	U	U	U	U	U	U	U	U	U	U
Methylene Chloride	96	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
Naphthalene	0.072	U	U	U	U	U	U	U	0.65 J	U	U
n-Butane	NA	5.1	10	22	4.3	1.5	4.7	12	4.8	7.5	1.9 J
n-Butylbenzene	NA	U	U	U	0.79 J	U	U	U	U	U	U
n-Heptane	NA	0.96	1.2 J	U	11	U	U	U	0.61 J	1.2	U
n-Hexane	730	1.4	1.5 J	3.0 J	3.5	0.76	U	2.5 J	0.99 J	2.3	0.66 J
n-Propylbenzene	1,000	1	U	U	1.7	U	U	U	U	U	U
sec-Butylbenzene	NA	U	U	U	0.54 J	U	U	U	U	U	U
Styrene	1,000	0.23 J	U	U	U	U	U	U	0.25 J	U	U
tert-Butyl alcohol	NA	1.2 J	U	U	U	U	U	U	U	U	U
Tetrachloroethene	9.4	U	U	U	U	U	U	U	U	U	U
Tetrahydrofuran	2,100	11 J	U	U	U	1 J	U	U	U	U	U
Toluene	5,200	19	12	42	13	24	6.7	17	11	19	3
Trichloroethene	0.43	U	U	U	U	U	U	U	U	U	U
Trichlorofluoromethane	730	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
Vinyl chloride	NA	U	U	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

Notes:
Exceedance of screening level.
♦-Denotes higher nominal value of duplicate sample result.
J- The analyte was positively identified; the quantitation is an estimation.
B- The result for the analyte was detected in the trip blank.
M - A matrix effect was present.
U- Undetected at the Limit of Detection.
NA- not available
µg/m˙- microgram per cubic meter.

Table 3
ST006 (Building 101 AOC)
SVE System Performance Monitoring Indoor and Outdoor Air Results

Sample Location	Indoor Air Screening Level (Residential) ($\mu g/m^3$)	101OA-03									
Sample ID		**101OA0305AA**	**101OA0305AA**	**101OA0305CA**	**101OA0305DA**	**101OA0305EA**	**101OA0305FA**	**101OA0305GA**	**101OA0305HA**	**101OA0305JA**	**101OA0305KA**
Sample Type		**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**
Sample Depth (ft bgs / ags)		**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Sample Collection Duration (hr)		**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**
Volatiles (TO-15) in $\mu g/m^3$											
1,2,4-Trimethylbenzene	7.3	U	U	0.43 J	6.8	2.1	U	U	U	U	U
1,3,5-Trimethylbenzene	NA	U	U	0.20 J	2.2	0.31 J	U	U	U	U	U
1,3-Butadiene	NA	U	U	U	U	U	U	U	U	U	U
1,4-Dichlorobenzene	NA	U	U	U	U	U	U	U	U	U	U
1,4-Dioxane	NA	U	U	U	U	3.7 J	U	U	U	U	U
2,2,4-Trimethylpentane	NA	U	U	0.23 J	U	0.85 J	U	U	U	U	0.2 J
4-Ethyltoluene	NA	U	U	0.18 J	0.17 J	0.5 J	U	U	U	U	U
4-Isopropyltoluene	NA	U	U	U	U	U	U	U	U	U	U
Acetone	32,000	8.3 J	6.7 J	9.3 J	15	19	12	U	7.4 J	4.4 J	3.9 J
Benzene	0.31	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
Bromoethene(Vinyl Bromide)	NA	U	U	U	U	U	U	U	U	U	U
Carbon disulfide	730	U	U	U	U	1.9 J	U	U	U	0.23 J	U
Carbon tetrachloride	0.41	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
Chlorobenzene	NA	U	U	U	U	U	U	U	U	U	U
Chloroform	0.11	U	U	U	0.13 J	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
Cumene (isopropylbenzene)	420	U	U	U	U	0.32 J	U	U	U	U	U
Cyclohexane	6,300	U	U	U	U	U	U	U	U	U	U
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
Ethylbenzene	0.97	U	U	U	0.29 J	0.48 J	0.14 J	U	U	U	U
Freon 22 (chlorodifluoromethane)	52,000	0.89 J	1.3 J	0.93 J	1.2 J	0.89 J	0.87 J	0.88 J	0.75 J	0.78 J	0.75 J
Freon TF (trichlorotrifluoroethane)	31,000	0.58 J	0.68 J	0.54 J	0.7 J	0.64 J	0.46 J	0.6 J	0.48 J	U	U
Isopropyl alcohol	7,300	U	U	1.5 J	4.9 J	U	1.2 J	U	1.3 J	3.3 J	U
m,p-Xylene	100	0.21 J	U	U	0.85 J	2 J	0.39 J	U	0.24 J	U	U
Methyl Butyl Ketone (2-Hexanone)	31	U	U	U	U	1.1 J	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
methyl isobutyl ketone	3,100	U	U	U	0.17 J	U	U	U	U	U	0.31 J
Methyl tert-butyl ether	NA	U	U	U	U	0.63 J	U	U	U	U	U
Methylene Chloride	96	0.45 J	0.92 J	U	0.5 J	U	0.99 J	0.88 J	0.51 J	U	0.78 J
Naphthalene	0.072	U	U	U	U	1.8 J	U	U	U	U	U
n-Butane	NA	1.1 J	2.9	3.6	U	U	1.8	U	U	0.66 J	1 J
n-Butylbenzene	NA	U	U	U	U	U	U	U	U	U	U
n-Heptane	NA	U	U	2	0.48 J	U	U	U	U	U	U
n-Hexane	730	0.28 J	0.35 J	2.2	U	0.42 J	U	U	U	U	0.23 J
n-Propylbenzene	1,000	U	U	U	U	0.93 J	U	U	U	U	U
sec-Butylbenzene	NA	U	U	U	U	U	U	U	U	U	U
Styrene	1,000	U	U	U	U	0.11 J	U	U	U	U	U
tert-Butyl alcohol	NA	U	U	U	U	U	U	U	U	U	U
Tetrachloroethene	9.4	U	2	U	0.38 J	0.33 J	U	U	U	U	U
Tetrahydrofuran	2,100	0.25 J	U	U	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
Trichloroethene	0.43	U	1.1	U	U	U	U	U	U	U	U
Trichlorofluoromethane	730	1.3	1.5	1.3	1.5	1.4 J	1.3	1.2	1 J	1.1	1.1 J
Vinyl chloride	NA	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

Notes:
Exceedance of screening level.
♦-Denotes higher nominal value of duplicate sample result.
J- The analyte was positively identified; the quantitation is an estimation.
B- The result for the analyte was detected in the trip blank.
M - A matrix effect was present.
U- Undetected at the Limit of Detection.
NA- not available
µg/m˙- microgram per cubic meter.

Table 4
ST006 (Building 101 AOC)
SVE System Performance Monitoring
Influent and Effluent Results

Sample Location	101CA									
Sample ID	**101CA01AA**	**101CA01BA**	**101CA01CA**	**101CA01DA**	**101CA02AA**	**101CA01EA**	**101CA01FA**	**101CA01GA**	**101CA01HA**	**101CA01JA**
Sample Type	**Influent**	**Influent**	**Influent**	**Influent**	**Effluent**	**Influent**	**Influent**	**Influent**	**Influent**	**Influent**
Sample Date	**22-Oct-2013**	**28-Jan-2014**	**15-Apr-2014**	**1-Jul-2014**	**1-Jul-2014**	**15-Oct-2014**	**20-Jan-15**	**22-Apr-15**	**13-Jul-15**	**5-Oct-15**
Sample Collection Duration (hr)	**0.5**	**0.5**	**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	1.5 J	2.5	2.6	2.1	U	1.9	1.7	1.8	U	1.5
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	U
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	U
1,1-Dichloroethane	U	U	U	U	U	U	U	U	U	U
1,1-Dichloroethene	U	U	U	U	U	U	U	U	U	U
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	U
1,2,4-Trimethylbenzene	16	U	1.1	2	1.4	1.4	0.97	0.14 J	0.45 J	U
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	U
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	U
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	U
1,2-Dichloropropane	U	U	U	U	U	U	U	U	U	U
1,2-Dichlorotetrafluoroethane	U	U	U	U	U	U	U	U	U	U
1,3,5-Trimethylbenzene	4.4	0.59 J	0.37 J	0.67 J	0.46 J	0.41 J	U	U	0.14 J	U
1,3-Butadiene	U	U	U	U	U	U	U	U	U	U
1,3-Dichlorobenzene	270	U	U	U	U	2.8	U	U	0.26 J	U
1,4-Dichlorobenzene	U	U	U	U	U	0.3 J	U	U	U	U
1,4-Dioxane	U	U	U	U	U	U	U	U	6.4 J	U
2,2,4-Trimethylpentane	3.1	0.33 J	1.1	0.68 J	U	U	U	U	U	0.4 J
2-Chlorotoluene	U	U	U	U	U	U	U	U	U	U
3-Chloropropene	U	U	U	U	U	U	U	U	U	U
4-Ethyltoluene	5.5	0.68 J	0.35 J	0.62 J	0.46 J	0.41 J	U	U	U	U
4-Isopropyltoluene	0.54 J	U	U	U	U	0.95 J	0.58 J	U	U	U
Acetone	40	29 J	31	14	U	18	68	24	12	7.2 J
Benzene	4.9	0.43 J	0.38 J	0.93	5.7	0.31 J	0.41 J	0.17 J	1.3	U
Bromodichloromethane	U	0.42 J	0.63 J	0.85 J	U	2.4	1.2 J	0.89 J	U	2.2
Carbon disulfide	U	0.24 J	2.3	U	U	5.1	11	0.79 J	0.24 J	0.81 J
Carbon tetrachloride	2.4 J	3.5	3.4	2.7	0.56 J	2.9	2.6	2.5	U	2.4
Chlorobenzene	U	U	U	U	U	0.18 J	U	U	U	U
Chloroethane	U	U	U	U	U	U	0.17 J	U	U	U
Chloroform	34	58	73	77	3.6	110	95	92	U	120
Chloromethane	0.23 J	0.29 J	U	U	U	U	0.74 J	U	0.27 J	0.23 J
Cumene (isopropylbenzene)	1.2 J	U	0.09 J	U	0.26 J	0.25 J	U	U	0.15 J	U
Cyclohexane	13	U	U	U	U	0.38 J	U	U	U	U
Dichlorodifluoromethane	2.4 J	4	3.8	3.5	U	2.7	3.7	2.6	3	2.7
Ethylbenzene	18	0.81 J	0.45 J	2.2	1.5	0.8 J	0.37 J	0.16 J	0.25 J	U
Freon 22 (chlorodifluoromethane)	1.3 J	2	1.5 J	3.8	U	1.6 J	2	1.2 J	3.3	2
Freon TF (trichlorotrifluoroethane)	1.5 J	1.1 J	1.1 J	1.2 J	U	1.3 J	1.1 J	0.93 J	U	1.2 J
Isopropyl alcohol	2,300 J	18	6.2 J	10 J	U	2.7 J	16	5.2 J	1.2 J	U
m,p-Xylene	74	2.9	2.1 J	11	7.3	2.5	1.3 J	0.66 J	1.2 J	0.37 J
Methyl Ethyl Ketone	74	3.7	3.2	3	3.4	4.2	4	2.4	2	1.2 J
methyl isobutyl ketone	U	1.8 J	0.58 J	3	2.0 J	U	0.84 J	U	U	U
Methyl methacrylate	U	U	U	U	U	0.44 J	U	U	U	U
Methyl tert-butyl ether	U	U	U	U	U	0.13 J	U	U	U	U
Methylene Chloride	1.8 J	0.97 J	3.0	0.93 J	8.1	0.63 J	0.61 J	0.93 J	0.55 J	U
Naphthalene	U	U	U	U	U	1.8 J	1.1 J	U	U	U
n-Butane	0.52 J	1.3	1.8	1.4 D	U	0.68 J	3.2	1.3	0.5 J	0.48 J
n-Heptane	6.7	U	U	0.46 J	U	0.64 J	U	U	U	U
n-Hexane	6.1	0.35 J	0.28 J	0.47 J	0.36 J	0.38 J	0.31 J	U	U	U
n-Propylbenzene	3.3	0.41 J	U	U	U	U	U	U	U	U
Styrene	1.5 J	0.22 J	U	0.49 J	0.32 J	0.53 J	0.29 J	U	U	U
tert-Butyl alcohol	0.71 J	1.1 J	U	U	U	2.6 J	1.2 J	U	U	U
Tetrachloroethene	2.3 J	8.7	14	9.6	3.5	17	10	11	U	11
Tetrahydrofuran	740 J	3.5 J	U	U	U	3.2 J	0.73 J	0.77 J	U	U
Toluene	120	4.1	3.0	12.0	8.2	73.0	3.3	1	7.7	2.3
Trichloroethene	100	32	45	42	4.9	53	48	46	U	46
Trichlorofluoromethane	4.7	5.2	4.7	4.0	U	3.2	4.4	3.4	U	4.1
Vinyl chloride	U	U	U	U	U	U	U	U	U	U
Xylene, o-	22	1.1	0.77	3.8	2.7	0.93	0.51 J	0.25 J	0.41 J	U

Notes:

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

U- Undetected at the Limit of Detection.

µg/m^3- microgram per cubic meter.

Table 5
ST006 (Building 101 AOC) SVE System Operations and Maintenance Schedule

Field Activities	Rationale	Sample Frequency	Location
Basic System Operation			
VMP Vacuum Measurements	To determine the radius of influence.	Quarterly	Sub-Slab VMP
Field Gas Composition Measurements	To evaluate system effectiveness by measuring oxygen, carbon dioxide, and hexane.	Quarterly	Sub-Slab VMP
Sub-Slab Vapor Sampling	To evaluate system effectiveness.	Quarterly	Sub-Slab VMPs
Indoor Air, Outdoor Air, and Influent Air Sampling	To evaluate system effectiveness.	Quarterly	BADP, BADrP, outdoors, and system
Effluent Air Sampling	To verify GAC replacement schedule.	Periodically*	System
System Component Readings	System temperature, flow, vacuum and motor status to determine proper operation.	Weekly	Vacuum Blower
Granulated Activated Carbon Replacement	To replace spent carbon in vapor treatment system.	Every Four Months	System

*If influent air increases over one order of magnitude, then an effluent sample will be collected in the next quarterly performance monitoring event.

Table 6
ST006 (Building 101 AOC)
SVE System VMP Vacuum Readings

Date	101VMP-1	101VMP-2	101VMP-3
Vacuum (in w.g.)			
1Q/2014			
1/9/2014	NA	0.08	0.01
1/16/2014	NA	0.09	0.01
2/6/2014	NA	0.08	0.01
2/13/2014	NA	0.08	0.01
2/24/2014	NA	0.08	0.01
2/27/2014	NA	0.08	0.01
3/13/2014	NA	0.075	0.01
3/20/2014	NA	0.075	0.005
2Q/2014			
4/10/2014	NA	0.075	0.01
4/15/2014	0.015	0.095	0.02
4/24/2014	NA	0.15	0.02
5/1/2014	NA	0.1	0.02
5/8/2014	NA	0.09	0.01
5/15/2014	NA	0.09	0.01
5/21/2014	NA	0.085	0.01
6/20/2014	NA	0.11	0.01
6/26/2014	NA	0.08	0.01
3Q/2014			
7/10/2014	NA	0.09	0.01
7/24/2014	NA	0.08	0.02
7/31/2014	NA	0.09	0
8/7/2014	NA	0.1	0.05
8/15/2014	NA	0.09	0.01
8/20/2014	0.02	0.09	0.05
9/5/2014	NA	0.09	0.01
9/11/2014	NA	0.09	0.01
4Q/2014			
10/2/2014	NA	0.095	0.015
10/17/2014	0.01	0.09	0.005
10/23/2014	NA	0.08	0.005
10/29/2014	NA	0.08	0.01
11/7/2014	NA	0.09	0.01
11/13/2014	NA	0.08	0.01
12/11/2014	NA	0.08	0.01
12/19/2014	NA	0.09	0.01
12/29/2014	NA	0.08	0.01

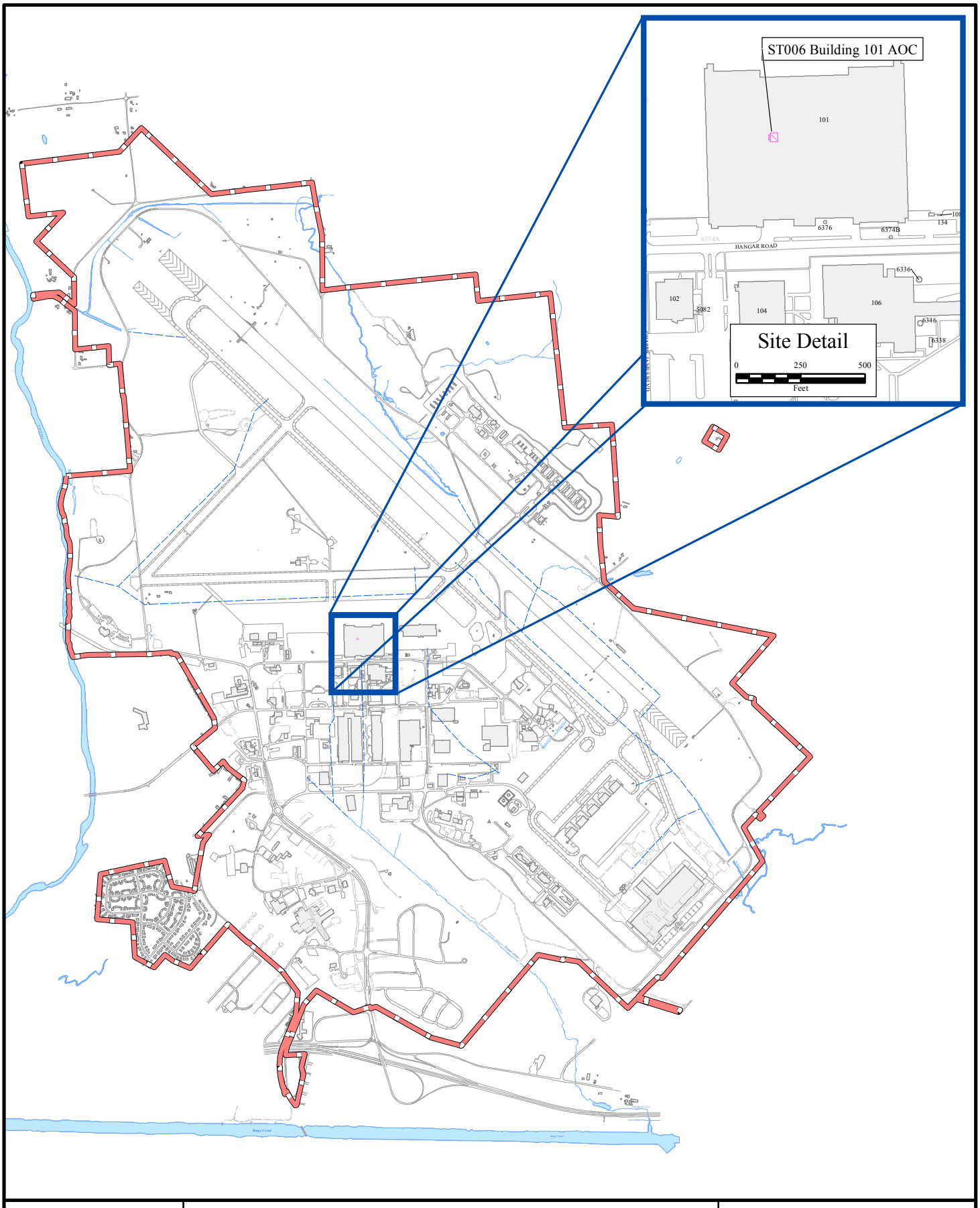
Table 6
ST006 (Building 101 AOC)
SVE System VMP Vacuum Readings

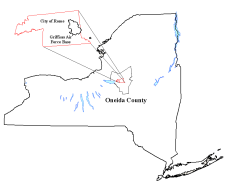
Date	101VMP-1	101VMP-2	101VMP-3
Vacuum (in w.g.)			
1Q/2015			
2/6/2015	NA*	0.08	0.01
2/13/2015	NA*	0.08	0.02
2/25/2015	NA*	0.08	0.01
3/26/2015	NA*	0.08	0.01
2Q/2015			
4/1/2015	NA	0.08	0.01
4/9/2015	NA	0.08	0.01
4/17/2015	NA	0.08	0.01
4/23/2015	NA	0.08	0.01
4/30/2015	NA	0.08	0.01
5/11/2015	NA	0.08	0.01
5/14/2015	0.01	0.08	0.01
5/21/2015	0.02	0.08	0.01
5/28/2015	0.02	0.08	0.01
6/4/2015	0.02	0.08	0.01
6/11/2015	0.02	0.08	0.01
6/18/2015	0.02	0.08	0.01
6/30/2015	0.02	0.08	0.01
3Q/2015			
7/9/2015	NA	NA	NA
7/13/2015	0.008	0.085	0.005
7/17/2015	NA	NA	NA
7/23/2015	0.005	0.075	0.01
7/30/2015	NA	NA	NA
8/6/2015	0.03	0.08	0.01
8/13/2015	NA	NA	NA
8/20/2015	0.02	0.08	0.01
8/28/2015	0.1	0.6	0.2
9/3/2015	0.02	0.08	0.01
9/11/2015	0.02	0.08	0.01
9/25/2015	0.02	0.08	0.01
4Q/2015			
10/1/2015	0.02	0.08	0.01
10/5/2015	0.008	0.075	0.001
10/9/2015	NA	NA	NA
10/16/2015	0.008	0.075	0.001
10/23/2015	0.008	0.075	0.001
10/29/2015	0.01	0.08	0.005
12/21/2015	0.005	0.075	0.005
12/28/2015	0.01	0.075	0.005

NA - not available

* - could not gain access VMP due to restricted access

Figures





Base Location

Key to Features

- Base Boundary
- Culvert / Ditch
- Surface Water
- Existing Road/Airfield
- Demolished Road/Airfield
- Existing Facility
- ST006 Building 101 AOC

Map is projected in accordance with the
State Plane New York Central - 3102 (NAD 83, Feet)

N

0 500 1000 2000
Feet

UNITED STATES AIR FORCE
FORMER GRIFFISS AIR FORCE BASE
ROME, NEW YORK

Figure 1
Building 101
Site Location

FPM Remediations, Inc.

May 2014

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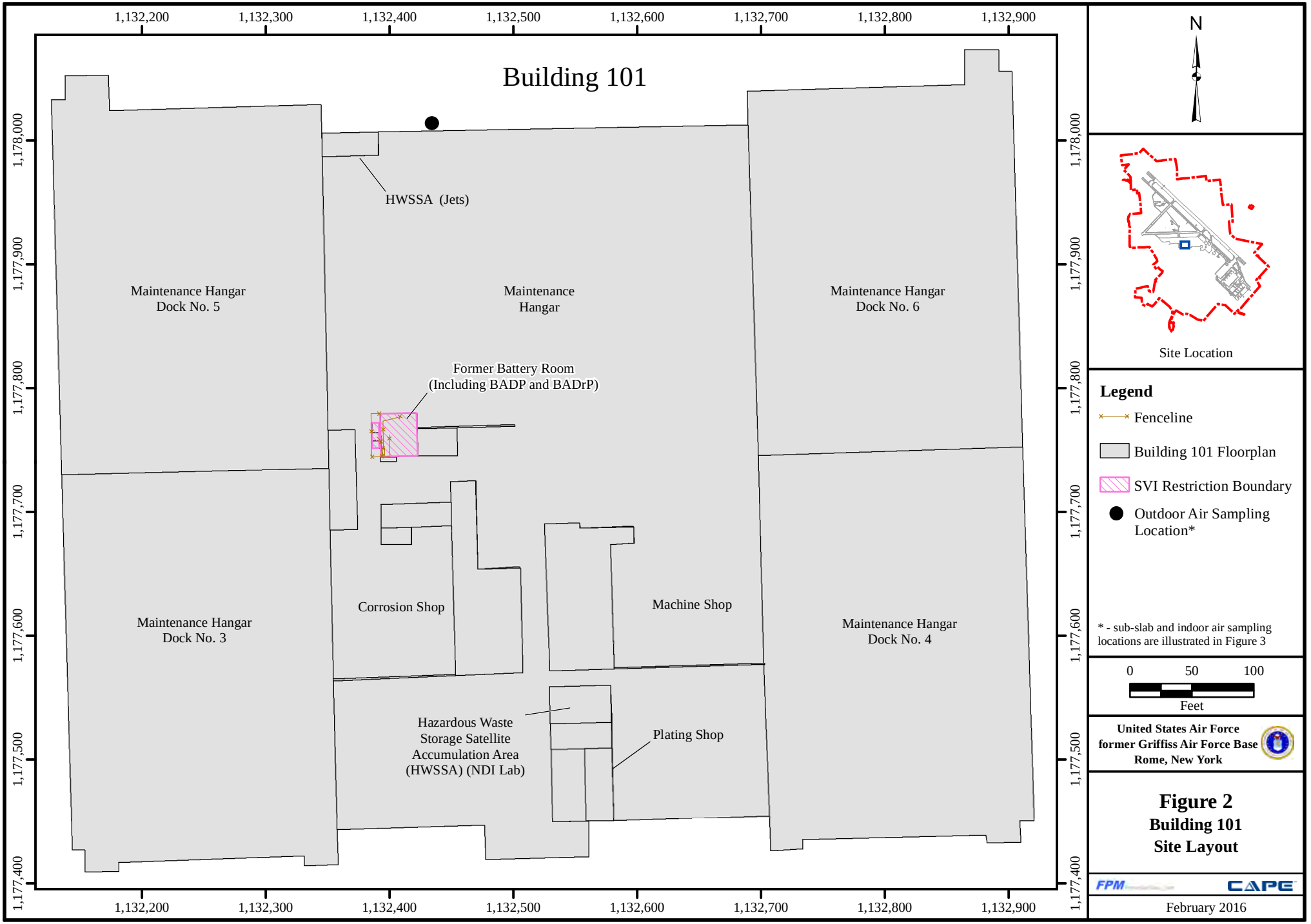

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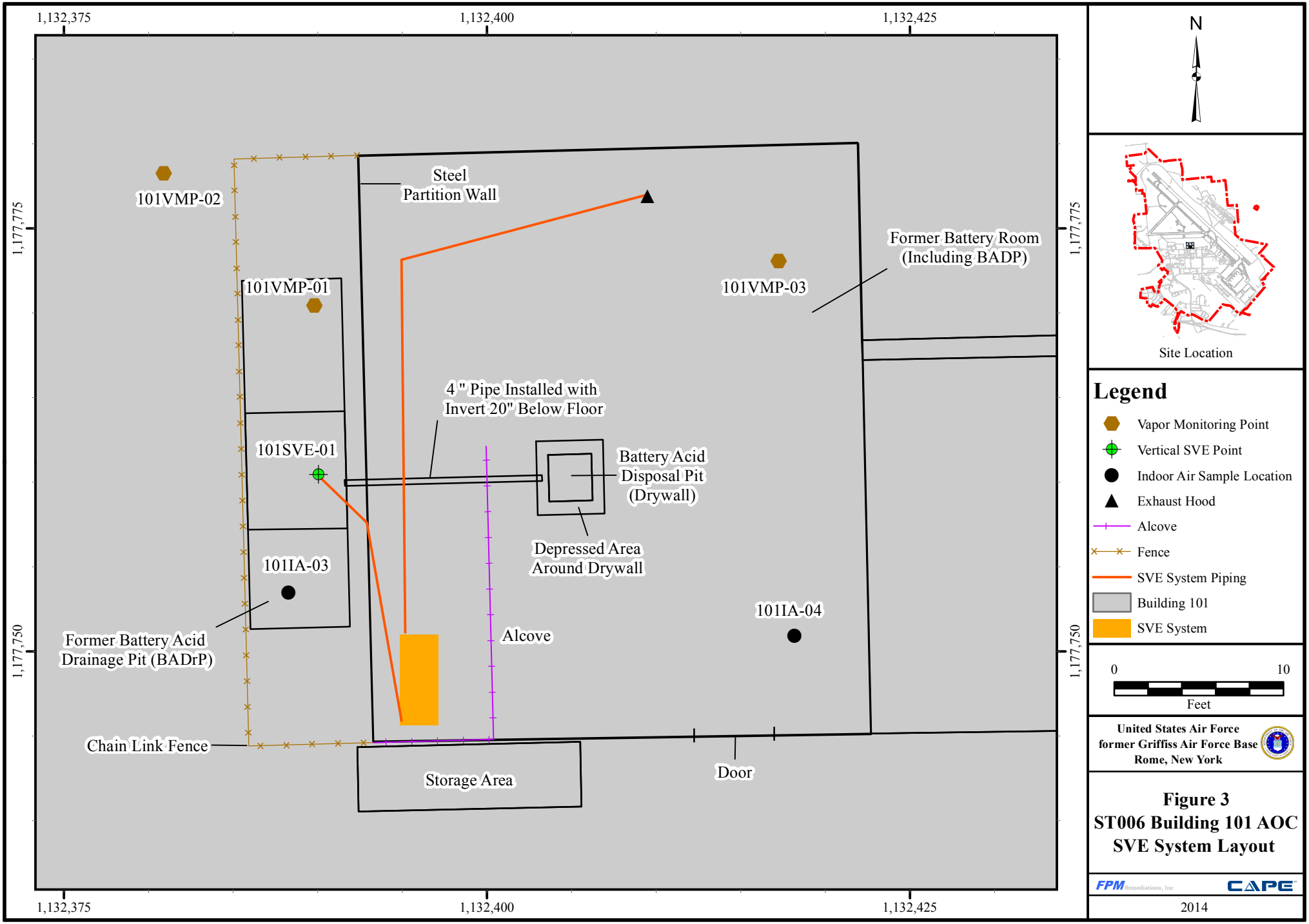


Y:\GIS_Projects\Griffiss\Projects\1015-11-01\B101_SVI\Figure 3 - System Layout.mxd

Figure 4
ST006 Building 101 AOC
Soil Vapor Extraction System
Schematic and Extraction Well Cross Section

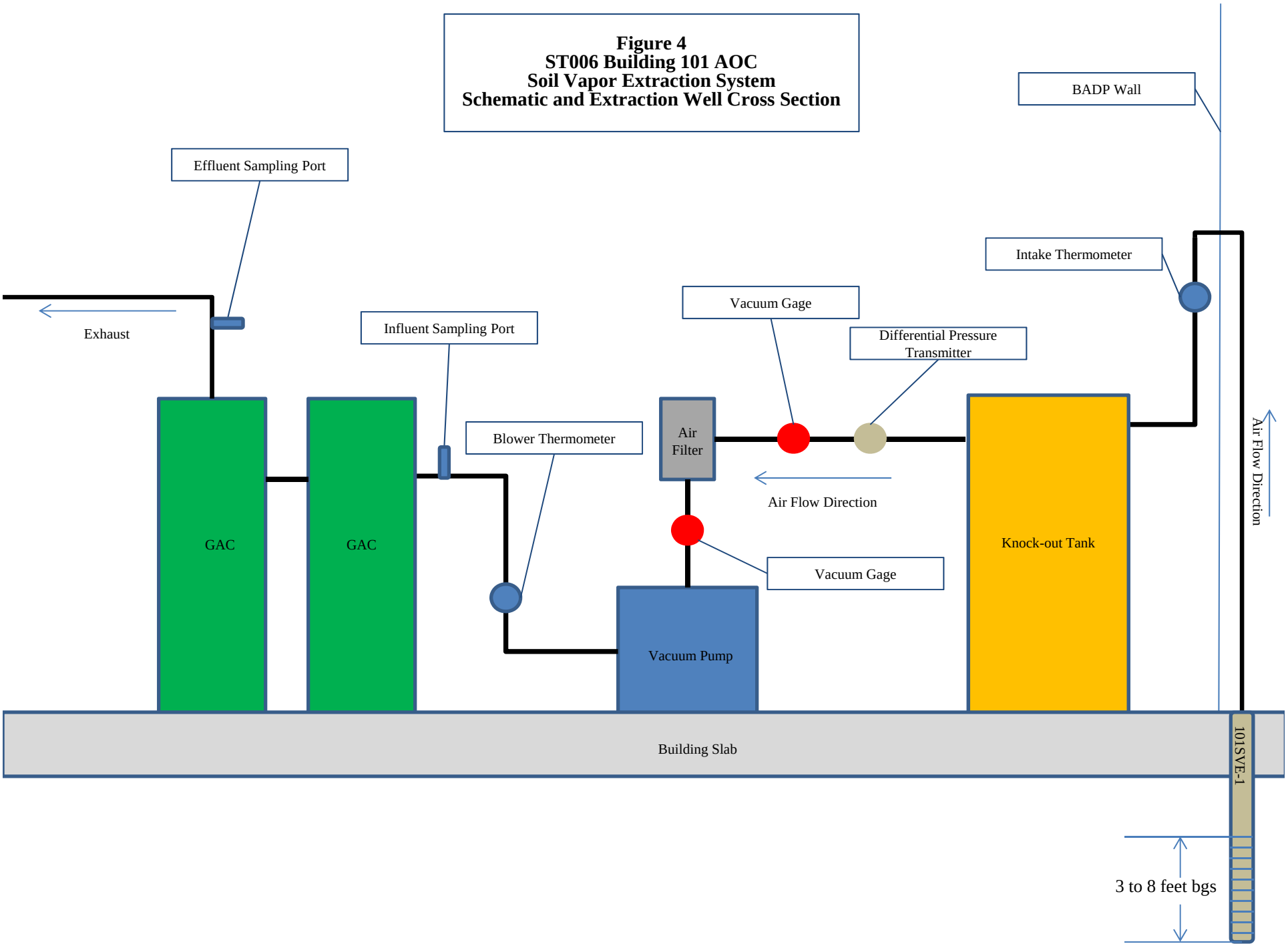


Figure 5
101SVE-1 Long Term Operation Vacuum Rate
(October 2013 through December 2015)

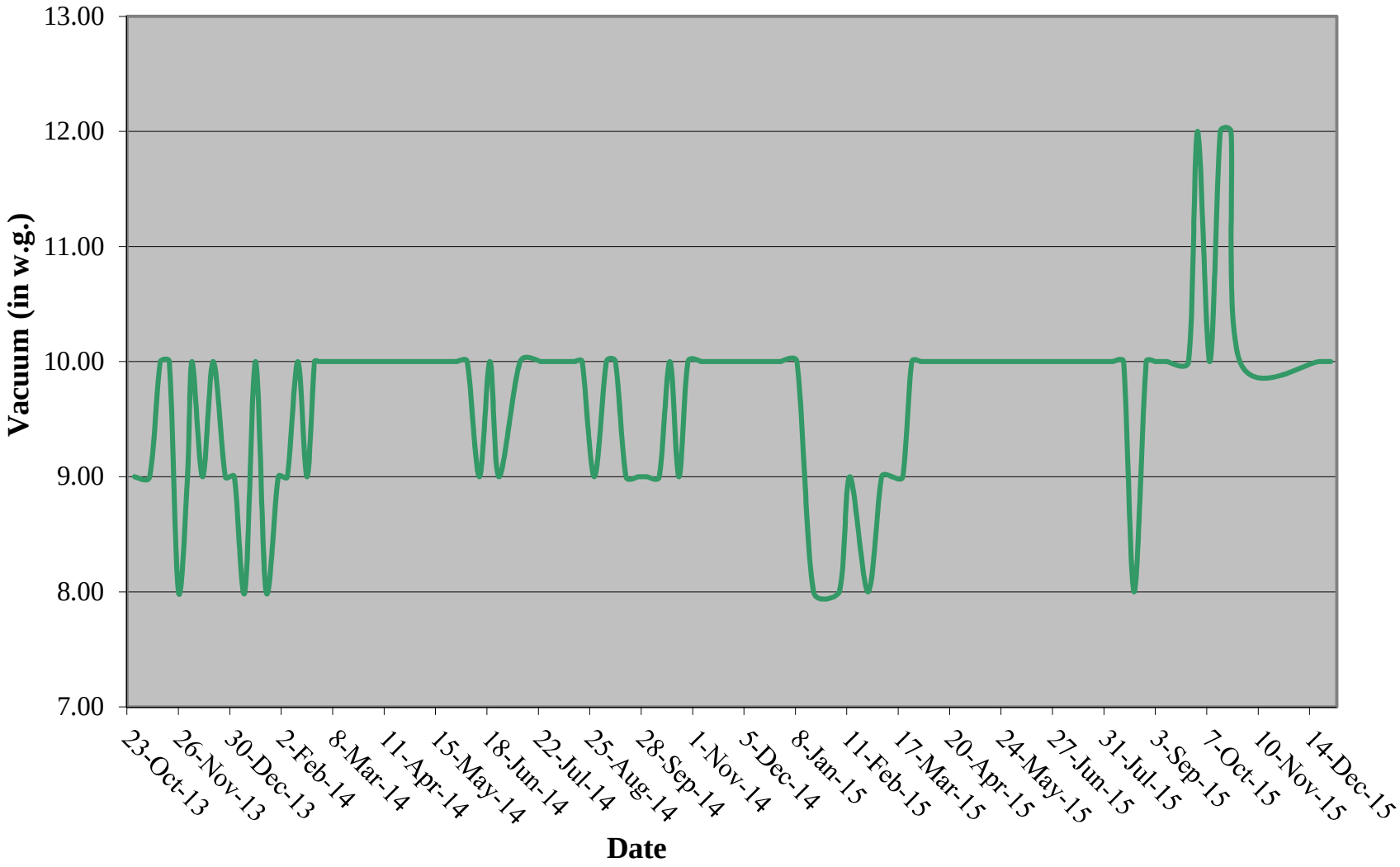


Figure 6
101SVE-1 Long Term Operation Flow Rate
(October 2013 through December 2015)

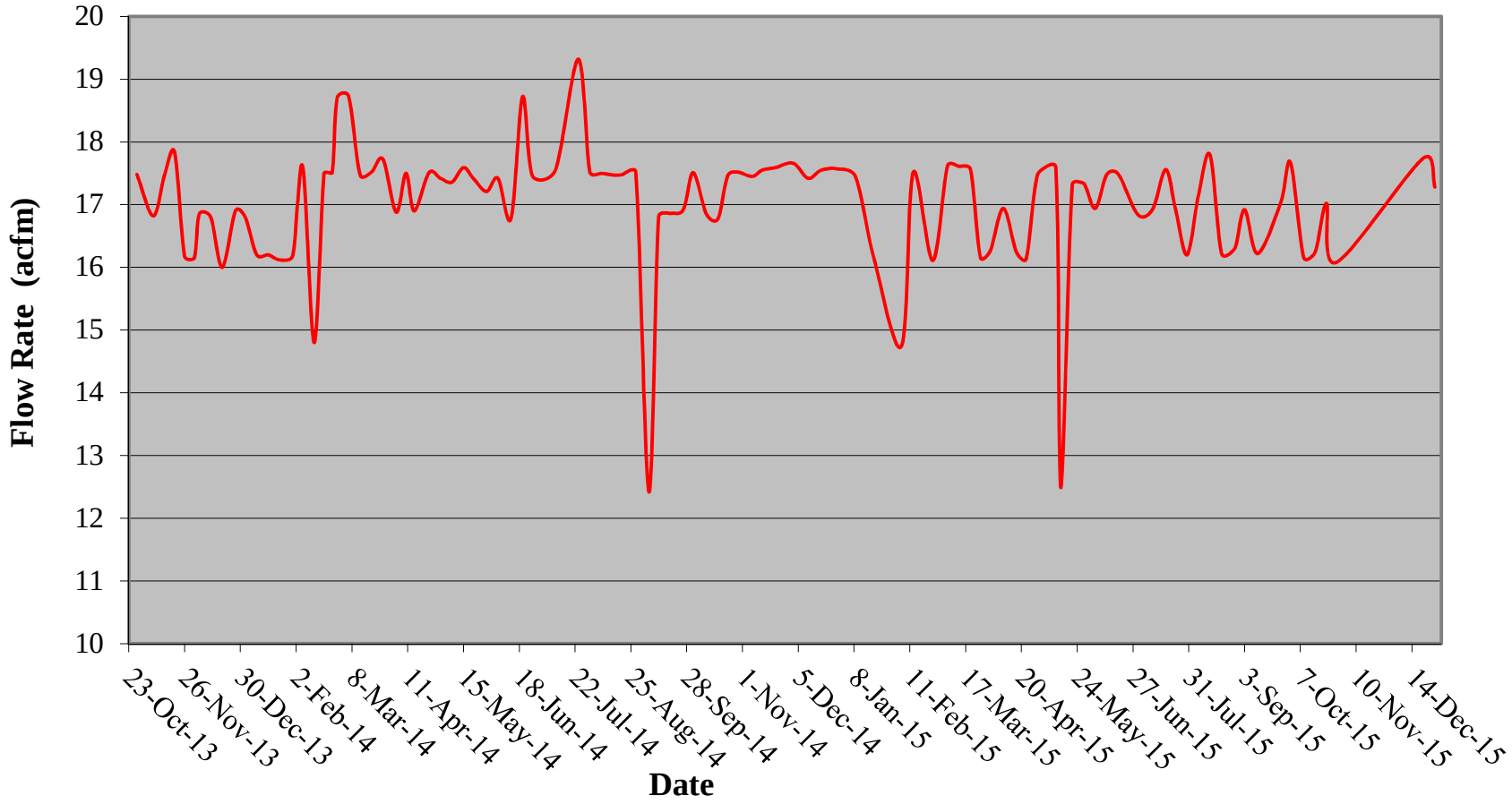
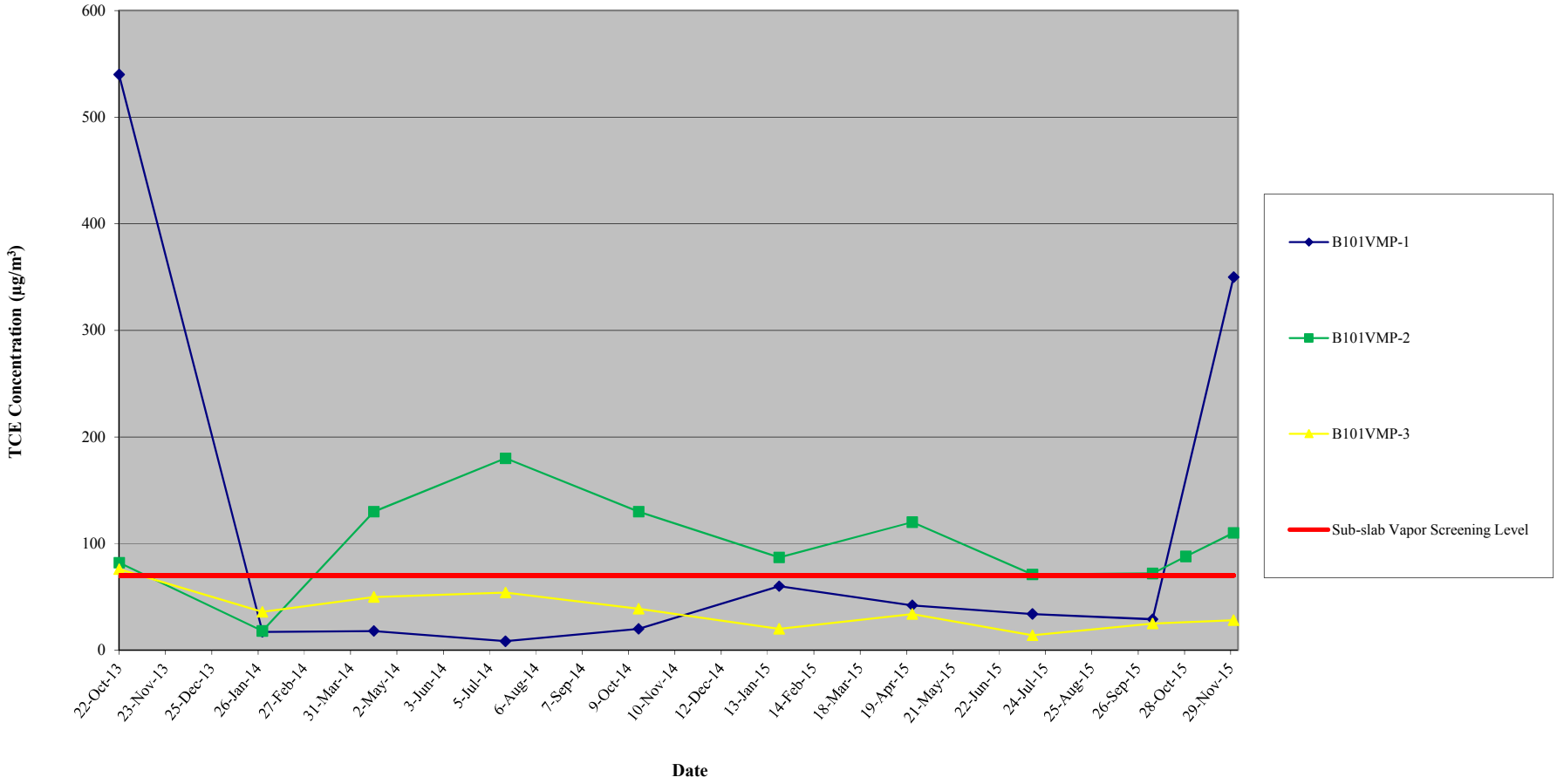
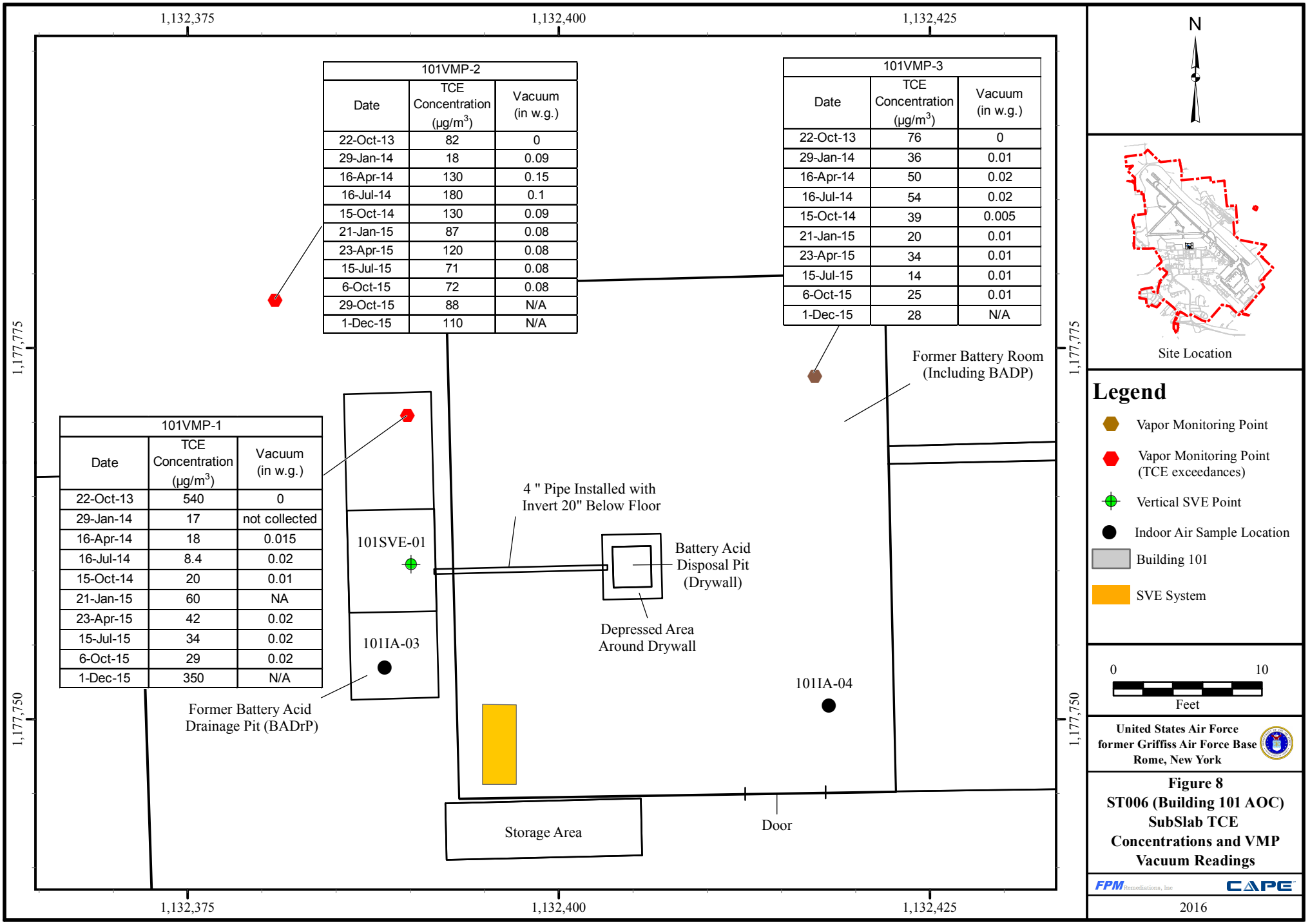


Figure 7
Sub-Slab TCE Trend Chart
(October 2013 through December 2015)



Note: Not detected results are plotted as 0.10 µg/m³.



Y:\GIS_Projects\Griffiss\Projects\1015-11-01\B101_SVI\ArcView10_1\Figure 8 - SubSlab TCE Concentrations_DB.mxd