SUBSURFACE DEPRESSURIZATION SYSTEMS
BASIS OF DESIGN REPORT

109 MARBLEDALE ROAD, TUCKAHOE, NY
BCP SITE NO. C360143

January 2018

Project Number 223060P

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Revised March 2019 to include
updated Restaurant Design Plans

DuBois & King inc.

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ATTACHMENTS

1.0 BACKGROUND

The 109 Marbledale Road Site in Tuckahoe, Westchester County, New York is enrolled in the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) as BCP Site No. C360143. Volunteer Bilwin Development Affiliates, LLC is remediating the Former Marble Quarry Landfill (Site) and redeveloping the Site into a multi-story hotel and restaurant with associated parking areas. The Site has a long history of commercial and industrial operations including a marble quarry, a municipal landfill, auto repair and car storage, and surface parking.

1.1 Purpose

A July 2016 Remedial Action Work Plan (RAWP) for the Site was approved by the NYSDEC Division of Environmental Remediation, and accepted as the approved remedy as indicated in the July 2016 Decision Document for the Site.

Subsurface depressurization systems (SSDSs) are a component of the approved remedy for the Site, for the protection of the proposed hotel and restaurant buildings from intrusion of contaminated soil vapors that are present in the subsurface. The remedial plan also includes:

1. Soil excavation and removal from shallow contaminant source areas;
2. Soil vapor extraction (SVE) systems to remove volatile organic compounds (VOCs) from the subsurface;
3. A low permeability capping system in areas of the Site not covered by pavement, concrete, or buildings; and
4. Groundwater monitoring.

This report provides the basis of design for proposed SSDSs for the hotel and restaurant buildings at the Site.

1.2 Site Documents and Data

Site-specific data and documents that were reviewed to develop the basis of the SSDS design included:

- The March 1, 2016 Remedial Investigation Report for the Site;
- The February 21, 2017 Draft Supplemental Environmental Investigation Report for the Site;
- Pre- and Post-Rapid Impact Compaction (RIC) and micropile installation vapor sampling results from May 2017, June 2017, and October 2017; and
- Foundation Plan – S-100, by Michael Macri, P.E. of MSCE, dated February 3, 2017 and last revised on July 31, 2017.

1.3 Contaminants of Concern

VOCs that have been detected in soil vapor samples at the site are summarized in the tables included in **Attachment 1**. Based on the magnitudes of concentrations detected, contaminant toxicity, and the contaminant distribution relative to the proposed building locations, the primary contaminants of concern for potential vapor intrusion into the proposed buildings were determined to be:

- Freons;
- Chlorinated solvents (primarily tetrachloroethylene [PCE], trichloroethylene [TCE], and vinyl chloride); and
- Benzene.

The soil vapor contaminant distribution for these contaminants based on the most recent sampling result from each vapor point is shown on Drawing SV 1 in **Attachment 2**.

Flame ionization detector (FID) readings and 4-gas meter readings from soil vapor monitoring points at the site have also indicated the presence of methane and hydrogen sulfide. Soil vapor monitoring graphs of photoionization detector (PID) and FID results are included in **Attachment 3**. The differential between filtered and unfiltered FID readings is used as an approximation of the methane concentration in soil gas at each location. Based on the 4-gas meter and FID filtered vs. unfiltered differential readings, the methane and hydrogen sulfide concentrations are summarized as follows:

- Hydrogen sulfide readings have only been collected from monitoring points in the vicinity of the hotel (MW-5, OW-2, SVE-1, VW-2, VW-3, VW-4, and VW-6), and ranged from non-detect to 90 parts per million (ppm);
- Hydrogen sulfide readings were highest near the north end of the hotel, where concentrations ranged from 7.3 to 90 ppm in SVE-1, from 1.2 to 8.5 ppm in VW-6, and from 1.5 to 41 ppm in VW-4, while ranging from non-detect to 4.1 ppm in the other four monitoring points;
- Estimated methane concentrations based on FID differential readings were highest in wells on the southern portion of the site (in the vicinity of the proposed hotel), in wells SVE-1, OW-2, MW-1, MW-4, and MW-5, where average high concentrations ranged from 2,000 to 7,000 ppm and peaks during compaction reached up to 22,000 ppm; and
- Estimated methane concentrations in the vicinity of the proposed restaurant were substantially lower, generally ranging from non-detect to 1,000 ppm.

Based on the available data, the hotel SSDSs need to be designed for protection of indoor air quality from potential intrusion of vapors including hydrogen sulfide, methane, freons, benzene, and chlorinated solvents. The restaurant SSDS primarily needs to be designed for protection of indoor air quality from potential intrusion of vapors including chlorinated solvents.

2.0 SYSTEM COMPONENTS

The components of the SSDSs include a vapor barrier, a permeable layer of stone with sub-slab ventilation piping, vapor phase carbon treatment system, a ventilation blower, exhaust piping, and sub-slab monitoring points.

2.1 Vapor Barrier

A vapor barrier will serve as the first layer of protection against vapor intrusion. The proposed vapor barrier is Stego® Wrap Vapor Barrier, 15-Mil. The vapor barrier is designed for use as a below-slab vapor barrier for the control of soil gases. Manufacturer information on the proposed vapor barrier product and installation procedures is included in **Attachment 4**. It has a permeance of less than 0.01 Perms and ASTM E1745 Class A strength. Installation plans, details, and specifications for the proposed vapor barrier are included on the plan sheets in **Attachment 2**. The vapor barrier is designed to overlay the entire crushed stone venting layer (see **Section 2.2**), forming a barrier between the stone and the hotel slab. Penetrations of the vapor barrier will be sealed according to the manufacturer's instructions as shown on the details on the plan sheets in **Attachment 2**.

2.2 Crushed Stone and Sub-Slab Vent Piping

The basis of design calculations for the SSDS piping are included in **Attachment 5**. A minimum of 6 inches of highly permeable coarse aggregate, AASHTO #57 washed crushed stone, will be provided beneath the vapor barrier to facilitate the creation of a depressurized zone underneath the building slab. Ventilation piping will be installed in the sub-slab stone to allow for the active depressurization of the permeable stone layer, removing vapors from beneath the slab. A blower (see **Section 2.4**) will be used to draw air into the sub-slab ventilation piping from the crushed stone layer, creating a depressurized zone in the stone. The system is not designed to actively extract vapor from soils beneath or outside the stone layer.

2.2.1 Hotel

The sub-slab piping layout for the hotel slab provides three separate zones to draw air from: Hotel System #1 is in the southern portion, Hotel System #2 is in the central portion, and Hotel System #3 is in the northern portion. The hotel foundation layout was overlaid with the soil vapor contaminant distribution mapping, and the piping layouts were designed to provide screened vent openings within each sub-slab space created by the building's grade beams.

Because of the north-south oriented grade beams beneath the hallway walls in the northern portions of the hotel, Systems 2 and 3 were laid out with two main venting pipes centered beneath the eastern and western rooms, with laterals into the sub-hallway sections to draw air from the central sections.

With a more open layout beneath the southern portion of the hotel (no central hallway grade beams), the venting system was designed with a main venting pipe along the center, and three laterals to draw air from perimeter locations near the entrance, the elevator, and the pool.

2.2.2 Restaurant

The restaurant sub-slab piping layout is conceptual, and will be updated if needed when the foundation design for the restaurant is available. The current layout assumes no sub-slab obstructions within the foundation interior that would block air flow. Two sub-slab vent pipe laterals are proposed, approximately centered within the footprint of the restaurant, with 4-inch diameter Schedule 40 PVC 0.040-inch continuous wound screen. A single 6-inch Schedule 40 PVC riser from the center of the vent piping is proposed.

2.3 Vapor Phase Carbon Treatment Systems

A vapor phase treatment system is required to remove VOCs from the air extracted from beneath the slab to comply with the discharge limits included in 6 NYCRR Part 212 and the DAR-1 Guidelines for the Evaluation and Control of Ambient Air Contaminants Under Part 212. The goal of the treatment system is to comply with the applicable Short-term Guideline Concentrations (SGCs) at the location of the system exhaust to the ambient air, and to comply with the applicable Annual Guideline Concentrations (AGCs) at the property lines.

Vapor monitoring wells in the vicinity of the proposed hotel and restaurant have been sampled periodically during the implementation of the Remedial Action Work Plan. The most recent round of soil vapor sampling analytical results was conducted in October 2017, and the results are summarized in the tables in **Attachment 1**.

2.3.1 Hotel

The proposed hotel SSDS vapor treatment systems include two vapor phase carbon drums plumbed in series as shown on the attached plans. As described in **Section 1.3**, field readings have shown the following:

- Hydrogen sulfide readings readings ranging from non-detect to 90 ppm; and
- Estimated methane concentrations with average high concentrations ranging from 2,000 to 7,000 ppm and peaks during compaction that reached up to 22,000 ppm.

The analytical results from vapor monitoring wells in the vicinity of the hotel (VW-1, VW-2, VW-3, VW-4, VW-5, VW-6, VP-4, and VP-5) show the following average soil gas VOC concentrations:

Average Concentrations of Results from VW-1, VW-2, VW-3, VW-4, VW-5, VW-6 (2017) VP-4, VP-5 (2015) [Outlier Freon Conc In VW-4 Excluded from Averages]	Hotel SSDS Treatment Design Basis
Compound	Average Concentration* (µg/m^3)
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	19
1,2,4-Trimethylbenzene	2.4
1,2-Dichlorotetrafluoroethane	40,529
1,3-Dichlorobenzene	0.58
2-Butanone	1.8
4-Ethyltoluene	0.20
4-Isopropyltoluene	0.15

4-Methyl-2-pentanone	0.24
Acetone	54
Benzene	77
Carbon disulfide	0.93
Carbon tetrachloride	0.11
Chloroform	89
cis-1,2-Dichloroethylene	6.0
Cyclohexane	147
Dichlorodifluoromethane	21,400
Ethanol	11
Ethyl acetate	43
Ethyl Benzene	12
Isopropanol	146
Isopropylbenzene	0.73
Methylene chloride	0.48
n-Butylbenzne	0.15
n-Heptane	281
n-Hexane	507
o-Xylene	39
p- & m- Xylenes	70
p-Ethyltoluene	1.6
Propylene	67
Styrene	0.53
Tetrachloroethylene	40
Tetrahydrofuran	0.89
Toluene	164
Trichloroethylene	11
Trichlorofluoromethane (Freon 11)	94
Trichlorotrifluoroethane	0.14
Vinyl Chloride	13
TOTAL	63,830

**Non-detects averaged as "0" results.*

Some dilution effects are expected to occur as these concentrations in the soil gas volatilize and migrate into the sub-slab stone layer and air is drawn through the SSDS system, so the in-situ soil gas concentrations are considered conservatively high estimates of the concentrations to be treated in the vapor phase carbon drum treatment systems that are used for the hotel SSDS.

Using the above-estimated concentrations and an assumed flow rate of 100 cubic feet per minute (cfm), the estimated mass removal rate of VOCs at these conservatively high concentrations is 0.6 pounds per day (lb/day) of total VOCs. Based on experience, carbon may be expected to adsorb approximately 10 to 15% of its weight in VOCs prior to observing breakthrough of contaminants. Under this assumption, using a conservatively high efficiency rate of 100% removal of the VOCs, carbon changeouts may initially be required every 30 to 47 days.

Vapor phase contaminant removal rates from the SVE Pilot Testing conducted in November 2016 are summarized in the table in **Attachment 6**. During the first three tests, total VOC removal efficiencies ranged from 98.0% to 99.4% using two vapor phase carbon drums plumbed in series. During the fourth and final SVE pilot test, lower influent concentrations were detected and the carbon drums may have been exhibiting breakthrough and/or off-gassing, as the removal efficiency declined to 68.4%. Based on the estimated average contaminant concentrations for the hotel SSDS, the percent reductions required for each contaminant to comply with the SGC and AGC concentrations are calculated on the tables included in **Attachment 7**. The estimated reductions needed to comply with the applicable SGCs and AGCs range from 43.92% to 99.83%.

The proposed hotel SSDS vapor phase carbon treatment systems are shown on the plans included in **Attachment 2**. The preliminary carbon drum selections will be updated if needed based on sampling results collected during the startup of the SSDSs (see **Section 3.0**).

2.3.2 Restaurant

The proposed restaurant SSDS vapor treatment system includes two vapor phase carbon drums plumbed in series as shown on the attached plans. As described in **Section 1.3**, field readings have shown estimated methane concentrations in the vicinity of the proposed restaurant generally ranged from non-detect to 1,000 ppm. No hydrogen sulfide readings have been collected in the vicinity of the restaurant. Since the restaurant will be located further from the bulk landfill waste mass than the hotel, hydrogen sulfide concentrations are likely to be lower than in the area of the hotel.

The analytical results from vapor monitoring wells in the vicinity of the hotel (VW-7, VW-8, VW-12, VW-19, and VP-8) show the following average soil gas VOC concentrations:

Average Concentrations of Results from VW-7, VW-8, VW-12, VW-19 (2017) and VP-8 (2015)	Restaurant SSDS Treatment System Design Basis
Compound	Average Concentration* ($\mu g/m^3$)
1,2,4-Trichlorobenzene	17
1,2-Dichlorotetrafluoroethane	476
1,3-Dichlorobenzene	0.72
2-Butanone	14
2-Hexanone	9.2
4-Methyl-2-pentanone	0.32
Acetone	67
Benzene	0.77
Chloroform	11
Dichlorodifluoromethane	1,337
Ethanol	1.1
Isopropanol	177
Methyl tert-butyl ether (MTBE)	1.5
Methylene chloride	3.4
n-Heptane	0.41
n-Hexane	0.26
o-Xylene	0.23
p- & m- Xylenes	0.68
Propylene	2.7
Tetrachloroethylene	1,967
Tetrahydrofuran	0.33
Toluene	2.9
Trichloroethylene	181
Trichlorofluoromethane (Freon 11)	92
TOTAL	4,363

**Non-detects averaged as "0" results.*

Some dilution effects are expected to occur as these concentrations in the soil gas volatilize and migrate into the sub-slab stone layer and air is drawn through the SSDS system, so the in-situ soil gas concentrations should be considered conservatively high estimates of the concentrations to be treated in the vapor phase carbon drum treatment systems that are used for the restaurant SSDS.

Using the above-estimated concentrations and an assumed flow rate of 100 cfm, the estimated mass removal rate of VOCs at these conservatively high concentrations is 0.039 lb/day of total VOCs. Based on experience, carbon may be expected to adsorb approximately 10 to 15% of its weight in VOCs prior to observing breakthrough of contaminants. Under this assumption, using a conservatively high efficiency rate of 100% removal of the VOCs, carbon changeouts may initially be required every 460 to 690 days.

The proposed restaurant SSDS vapor phase carbon treatment system is shown on the plans included in **Attachment 2**. The preliminary carbon drum selections will be updated if needed based on sampling results collected during the startup of the SSDSs (see **Section 3.0**).

Based on the estimated average contaminant concentrations for the restaurant SSDS, the percent reductions required for each contaminant to comply with the SGC and AGC concentrations are calculated on the tables included in **Attachment 7**. The estimated reductions needed to comply with the applicable SGCs and AGCs range from 65.52% to 99.89%.

2.4 Ventilation Blowers

Final determination of the blower size required for each SSDS system will be determined by the pilot testing described in **Section 3.0**. Preliminary design calculations for the blower sizing are included in **Attachment 5**. Based on the preliminary calculations, blowers meeting the following performance requirements are anticipated to be needed:

- Hotel System #1: 75 cfm of air flow at 4.7 inches of water column (”H_2O) vacuum.
- Hotel Systems #2 and #3: 106 cfm of air flow at 4.9 ”H_2O.
- Restaurant System: 78 cfm of air flow at 4.5 ”H_2O.

If startup/pilot testing of the SSDS systems indicates that higher or lower flow rates and vacuums are needed to depressurize the sub-slab stone layer, appropriate operating conditions will be determined, and the blower for the SSDS system will be selected based on the proposed operating conditions.

2.5 Exhaust Piping

The exhaust piping from each SSDS will be 6-inch Schedule 40 PVC. The exhaust piping layout will be planned with input from the Construction Manager and building designers. The exhaust piping will vent through the roof, and the discharge shall not be less than 25 feet from the property line, and from any door, window or other opening of the building, including heating, ventilating, and air intake points. The vent will be fitted with a rain cap. Normally closed condensate drain ball valves will be provided at the bottom of vertical riser pipes.

2.6 SSDS Monitoring Points

Proposed sub-slab monitoring point locations are shown on the plans included in **Attachment 2**. The monitoring point locations were planned based on the following criteria:

- Locating points near the perimeter of the building to provide a means to measure whether the SSDS has sufficient vacuum influence beneath the slab;
- Providing sufficient monitoring points to monitor each separate SSDS (3 systems within the hotel and 1 system in the restaurant);
- Locating points within areas where higher concentrations of benzene, freons, and chlorinated solvents have been detected in soil gas samples to measure whether the SSDS has sufficient vacuum influence in these areas; and,
- Locating the points in areas that won't interfere with hotel and restaurant operations.

The points are stainless steel well screens, 304SS 1-inch diameter, screened vertically through the washed crushed stone venting layer beneath the slab. Flush-mounted bolt-down roadboxes will be provided for access to monitor the points for induced vacuum, either in the hotel floor or outside the hotel, as shown on the plans included in **Attachment 2**.

2.7 Remote Monitoring/Alert System

The SSDSs will be provided with telemetry for web-based monitoring. The remote monitoring/alert system will be setup to monitor vacuum gauge readings from each SSDS riser pipe, low vacuum alarms, and power failure notifications.

3.0 PILOT TESTING

Detailed procedures for pilot testing the SSDSs are included on Sheet SD 5 of the plans included in **Attachment 2**. A temporary blower capable of 200 cfm of air flow at 10 ”H_2O vacuum, and two Carbtrol G-3S carbon drums plumbed in series will be used to complete the pilot test.

The primary objectives of the pilot testing include:

- Determining the minimum operating vacuum and air flow requirements to achieve a sub-slab vacuum of 6 to 9 Pascals (0.024 to 0.036 ”H_2O), as measured in the sub-slab vapor monitoring points; and
- Using field readings and air sampling laboratory analytical results to evaluate the effectiveness of the proposed vapor phase carbon drums at removal of the contaminants of concern, particularly at the minimum vacuum and flow conditions. Summa canisters will be used to collect influent, mid-point, and effluent air samples from the vapor treatment systems and the TO-15 analytical results will be compared to the applicable SGCs and AGCs.

The pilot testing data will be tabulated and evaluated. The final design conditions for the proposed SSDS blowers and vapor phase carbon treatment will be submitted to the NYSDEC for review and approval prior to final installation of the selected components.

4.0 INSTALLATION AND STARTUP PROCEDURES

The systems will be installed as shown on the plans included in **Attachment 2**. Regular review of the construction by the SSDS design engineer's on-site representative (Engineer) is required. All sub-slab components of the systems shall be observed by the Engineer during construction to verify that the components are installed according to the approved design plans. The Engineer shall observe the condition of the sub-slab vapor barrier and all penetrations of the barrier to verify that the vapor barrier appears to be airtight prior to pouring the concrete slab.

Electrical and interior plumbing associated with the systems shall be installed by licensed tradesman as required by any applicable building codes and project permits.

Startup testing of each SSDS will be performed after construction and installation is complete. The blower will be used to extract air from each individual riser at the design flow rate and vacuum. The following data will be measured at startup:

- Prior to startup, readings will be collected from each sub-slab vapor monitoring point, including PID, FID, and 4-Gas Meter;
- After startup, readings will be collected from each sub-slab vapor monitoring point, including PID, FID, and 4-Gas Meter, and Induced Vacuum;
- Induced vacuum readings in the sub-slab monitoring points will be checked to verify that 0.024 to 0.036 "H_2O induced vacuum is being maintained, and the blower flow rate/vacuum will be adjusted if necessary to achieve the design sub-slab vacuum levels; and
- After setting the blower operating conditions, the air flow rate, temperature, and applied vacuum will be recorded, and PID and FID readings shall be collected at the carbon influent, mid, and effluent sampling locations.

A system startup letter report will be prepared, summarizing the above data, and providing photographs of the constructed systems.

5.0 OPERATION, MAINTENANCE, AND MONITORING

For the first six months following startup, routine operation, maintenance, and monitoring of the SSDSs will initially include the following:

- On a monthly basis, readings will be collected from each sub-slab vapor monitoring point, including PID, FID, and 4-Gas Meter, and Induced Vacuum;
- Monthly adjustments, if needed, to the blower flow rate/vacuum to achieve the design sub-slab vacuum levels;
- On a monthly basis, the air flow rate, temperature, and applied vacuum will be recorded, and PID and FID readings shall be collected at the carbon influent, midpoint, and effluent sampling locations;
- Once every three months, Summa canister air samples will be collected from the carbon influent, midpoint, and effluent sampling locations, and submitted to a laboratory to be analyzed for volatile organic compounds by EPA Method TO-15 including Freons;
- When field readings and/or laboratory analytical results indicate breakthrough of VOCs from the first carbon drum in series is starting to occur, the first carbon drum shall be taken off-line, the second carbon drum shall be rotated to the first position, and a new carbon drum shall be placed in the second position;
- Spent carbon drums shall be labeled, stored, and shipped off-site for proper disposal by a licensed hauler and disposal or regeneration facility according to applicable State and Federal rules; and
- Any maintenance activities recommended by the blower manufacturer at the frequency recommended by the manufacturer.

After the six months of operation, the frequency of site visits may be adjusted if warranted based on the site conditions. The frequency of monitoring and maintenance shall be sufficient to maintain the vapor phase carbon treatment system before breakthrough to the effluent occurs. The revised operation, maintenance, and monitoring plan shall be submitted by the Engineer to NYSDEC for review and approval.

6.0 REFERENCES

Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings, ASTM E 2121-03, Appendix X3.3.1

USACE Soil Vapor Extraction and Bioventing EM_1110-1-4001

A Practical Approach to the Design, Operation, and Monitoring of In Situ Soil Venting Systems, P.C. Johnson, et. Al., 1990

Indoor Air Vapor Intrusion Mitigation Approaches, USEPA, Engineering Issue, October 2008

Designing Efficient Sub Slab Venting and Vapor Barrier Systems for Schools and Large Buildings, Thomas E. Hatton, International Radon Symposium, 2010

Vapor Intrusion Mitigation in Construction of New Buildings Fact Sheet, Navy Facilities Engineering Command

ATTACHMENT 1

MAY 2015
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
REMEDIAL INVESTIGATION
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE # C360143

	Sample Designation and Result																											
																					Blind Dup of VP-5 (QA/QC)							
	VP-1				VP-2				VP-3				VP-4				VP-5				VP-105				VP-6			
	5/18/2015				5/18/2015				5/18/2015				5/27/2015				5/18/2015				5/18/2015				5/18/2015			
Volatile Organic Compounds	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
	Result in ppbv																											
1,1,1,2-Tetrachloroethane	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146
1,1,1-Trichloroethane	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183
1,1,2,2-Tetrachloroethane	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146
1,1,2-Trichloroethane	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183
1,1-Dichloroethane	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247
1,1-Dichloroethene	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252
1,2,4-Trichlorobenzene	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135
1,2,4-Trimethylbenzene	0.966	0.204		0.204	0.87	0.204		0.204	0.941	0.204		0.204	1.36	0.204		0.204	1.06	0.204		0.204	1.02	0.204		0.204	0.901	0.204		0.204
1,2-Dibromoethane(EDB)	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130
1,2-Dichlorobenzene	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166
1,2-Dichloroethane	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247
1,2-dichloropropane	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217
1,2-Dichlorotetrafluoroethane	4.89	0.143		0.143	15.5	0.143		0.143	2,160	57.3		57.3	19.2	4.29		4.29	1,250	28.6		28.6	171	1.43		1.43	20,300	137		137
1,3,5-Trimethylbenzene	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	0.423	0.204		0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204
1,3-Butadiene	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452
1,3-Dichlorobenzene	0.704	0.166		0.166	0.724	0.166		0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	0.772	0.166		0.166	0.783	0.166		0.166	0.612	0.166		0.166
1,4-Dichlorobenzene	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166
1,4-Dioxane	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278
2-Hexanone(MBK)	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244
4-Ethyltoluene	< 0.204	0.204	U	0.204	0.305	0.204		0.204	< 0.204	0.204	U	0.204	0.327	0.204		0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	0.421	0.204		0.204
4-Isopropyltoluene	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	0.218	0.182		0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182
4-Methyl-2-pentanone(MIBK)	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	0.477	0.244		0.244	0.403	0.244		0.244	< 0.244	0.244	U	0.244
Acetone	< 0.421	0.421	U	0.421	< 0.421	0.421	U	0.421	< 0.421	0.421	U	0.421	< 0.421	0.421	U	0.421	< 0.421	0.421	U	0.421	< 0.421	0.421	U	0.421	108	4.21		4.21
Acrylonitrile	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461
Benzene	0.898	0.313		0.313	3.14	0.313		0.313	73.8	12.5		12.5	1.17	0.313		0.313	1.18	0.313		0.313	0.564	0.313		0.313	15.7	0.313		0.313
Benzyl chloride	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193
Bromodichloromethane	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149
Bromoform	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097
Bromomethane	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258
Carbon Disulfide	0.566	0.321		0.321	0.739	0.321		0.321	0.582	0.321		0.321	2.4	0.321		0.321	< 0.321	0.321	U	0.321	< 0.321	0.321	U	0.321	3.38	0.321		0.321
Carbon Tetrachloride	< 0.040	0.040	U	0.040	< 0.040	0.040	U	0.040	< 0.040	0.040	U	0.040	0.068	0.040		0.040	0.072	0.040		0.040	0.085	0.040		0.040	< 0.040	0.040	U	0.040
Chlorobenzene	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217
Chloroethane	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379
Chloroform	< 0.205	0.205	U	0.205	< 0.205	0.205	U	0.205	< 0.205	0.205	U	0.205	0.435	0.205		0.205	< 0.205	0.205	U	0.205	< 0.205	0.205	U	0.205	30.9	0.205		0.205
Chloromethane	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485
Cis-1,2-Dichloroethene	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	2.51	0.252		0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	2.26	0.252		0.252
cis-1,3-Dichloropropene	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221
Cyclohexane	112	2.91		2.91	16.8	0.291		0.291	385	11.6		11.6	18.4	0.291		0.291	7.1	0.291		0.291	2.85	0.291		0.291	18	0.291		0.291
Dibromochloromethane	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118
Dichlorodifluoromethane	9.01	0.202		0.202	57.6	1.01		1.01	2,650	80.9		80.9	36.1	6.07		6.07	1,320	40.5		40.5	171	2.02		2.02	21,600	194		194
Ethanol	4.05	0.531		0.531	9.54	0.531	S	0.531	12.8	0.531	S	0.531	42.3	15.9		15.9	5.26	0.531	S	0.531	4.92	0.531		0.531	1,140	127		127
Ethyl acetate	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278
Ethylbenzene	< 0.230	0.230	U	0.230	0.344	0.230		0.230	0.37	0.230		0.230	17.6	0.230		0.230	0.245	0.230		0.230	< 0.230	0.230	U	0.230	2.57	0.230		0.230
Heptane	3	0.244		0.244	2.92	0.244		0.244	268	9.77		9.77	2.38	0.244		0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	39.9	0.244		0.244
Hexachlorobutadiene	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094
Hexane	145	2.84		2.84	16.8	0.284	S	0.284	1,480	11.4	S	11.4	8.34	0.284		0.284	46	2.84	S	2.84	18.7	0.284		0.284	83.1	2.84		2.84
Isopropylalcohol	556	4.07	E	4.07	225	6.11	S	6.11	415	16.3	S	16.3	27.7	0.407		0.407	444	4.07	SE	4.07	433	0.407	E	0.407	319	4.07		4.07
Isopropylbenzene	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	1.18	0.204		0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204

	Sample Designation and Result																											
																					Blind Dup of VP-5 (QA/QC)							
	VP-1				VP-2				VP-3				VP-4				VP-5				VP-105				VP-6			
	5/18/2015				5/18/2015				5/18/2015				5/27/2015				5/18/2015				5/18/2015				5/18/2015			
Volatile Organic Compounds	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
m,p-Xylene	0.808	0.230		0.230	1.07	0.230		0.230	1.03	0.230		0.230	89.9	6.91		6.91	0.846	0.230		0.230	0.811	0.230		0.230	1.71	0.230		0.230
Methyl Ethyl Ketone	< 0.339	0.339	U	0.339	2.7	0.339		0.339	34.2	0.339		0.339	< 0.339	0.339	U	0.339	< 0.339	0.339	U	0.339	< 0.339	0.339	U	0.339	6.42	0.339		0.339
Methyl tert-butyl ether (MTBE)	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278
Methylene Chloride	1.01	0.288		0.288	2.16	0.288	S	0.288	< 0.288	0.288	U	0.288	1.1	0.288		0.288	< 0.288	0.288	U	0.288	< 0.288	0.288	U	0.288	7.02	0.288		0.288
n-Butylbenzene	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	0.211	0.182		0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182
o-Xylene	0.319	0.230		0.230	0.567	0.230		0.230	0.502	0.230		0.230	54.9	6.91		6.91	0.286	0.230		0.230	0.29	0.230		0.230	0.714	0.230		0.230
Propylene	< 0.581	0.581	U	0.581	< 0.581	0.581	U	0.581	< 23.3	23.3	U	23.3	< 0.581	0.581	U	0.581	< 0.581	0.581	U	0.581	< 0.581	0.581	U	0.581	< 0.581	0.581	U	0.581
sec-Butylbenzene	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182
Styrene	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235	1	0.235		0.235	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235
Tetrachloroethene	0.075	0.037		0.037	0.144	0.037		0.037	0.34	0.037		0.037	0.212	0.037		0.037	0.213	0.037		0.037	0.217	0.037		0.037	1.25	0.037		0.037
Tetrahydrofuran	0.35	0.339		0.339	0.956	0.339		0.339	< 0.339	0.339	U	0.339	2.42	0.339		0.339	< 0.339	0.339	U	0.339	< 0.339	0.339	U	0.339	5.02	0.339		0.339
Toluene	3.56	0.266		0.266	5.31	0.266		0.266	4.96	0.266		0.266	6.58	0.266		0.266	1.6	0.266		0.266	1.31	0.266		0.266	315	2.66		2.66
Trans-1,2-Dichloroethene	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	2.94	0.252		0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252
trans-1,3-Dichloropropene	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221
Trichloroethene	0.095	0.047		0.047	0.191	0.047		0.047	0.88	0.047		0.047	0.1	0.047		0.047	0.21	0.047		0.047	0.194	0.047		0.047	1.25	0.047		0.047
Trichlorofluoromethane	< 0.178	0.178	U	0.178	< 0.178	0.178	U	0.178	0.232	0.178		0.178	< 0.178	0.178	U	0.178	0.291	0.178		0.178	0.279	0.178		0.178	1,100	42.7		42.7
Trichlorotrifluoroethane	< 0.131	0.131	U	0.131	< 0.131	0.131	U	0.131	0.18	0.131		0.131	< 0.131	0.131	U	0.131	0.142	0.131		0.131	< 0.131	0.131	U	0.131	0.928	0.131		0.131
Vinyl Chloride	0.131	0.098		0.098	0.549	0.098		0.098	36.7	0.098		0.098	< 0.098	0.098	U	0.098	8.16	0.098		0.098	3.06	0.098		0.098	5.49	0.098		0.098
	Result in ug/m^3																											
1,1,1,2-Tetrachloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1,1-Trichloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1,2,2-Tetrachloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1,2-Trichloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1-Dichloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1-Dichloroethene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2,4-Trichlorobenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2,4-Trimethylbenzene	4.75	1.00		1.00	4.27	1.00		1.00	4.62	1.00		1.00	6.68	1.00		1.00	5.21	1.00		1.00	5.01	1.00		1.00	4.43	1.00		1.00
1,2-Dibromoethane(EDB)	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2-Dichlorobenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2-Dichloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2-dichloropropane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2-Dichlorotetrafluoroethane	34.2	1.00		1.00	108	1.00		1.00	15,100	400		400	134	30.0		30.0	8,730	200		200	1,190	9.99		9.99	142,000	957		957
1,3,5-Trimethylbenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	2.08	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,3-Butadiene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,3-Dichlorobenzene	4.23	1.00		1.00	4.35	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	4.64	1.00		1.00	4.7	1.00		1.00	3.68	1.00		1.00
1,4-Dichlorobenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,4-Dioxane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
2-Hexanone(MBK)	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
4-Ethyltoluene	< 1.00	1.00	U	1.00	1.5	1.00		1.00	< 1.00	1.00	U	1.00	1.61	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	2.07	1.00		1.00
4-Isopropyltoluene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	1.2	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
4-Methyl-2-pentanone (MIBK)	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	1.95	1.00		1.00	1.65	1.00		1.00	< 1.00	1.00	U	1.00
Acetone	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	256	9.99		9.99
Acrylonitrile	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Benzene	2.87	1.00		1.00	10	1.00		1.00	236	39.9		39.9	3.74	1.00		1.00	3.77	1.00		1.00	1.8	1.00		1.00	50.1	1.00		1.00
Benzyl chloride	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Bromodichloromethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Bromoform	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Bromomethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Carbon Disulfide	1.76	1.00		1.00	2.3	1.00		1.00	1.81	1.00		1.00	7.47	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	10.5	1.00		1.00
Carbon Tetrachloride	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25	0.43	0.25		0.25	0.45	0.25		0.25	0.53	0.25		0.25	< 0.25	0.25	U	0.25
Chlorobenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Chloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Chloroform	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	2.12	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	151	1.00		1.00
Chloromethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Cis-1,2-Dichloroethene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	9.95	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	8.96	1.00		1.00
cis-1,3-Dichloropropene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00

Volatile Organic Compounds	Sample Designation and Result																											
																							Blind Dup of VP-5 (QA/QC)							
	VP-1				VP-2				VP-3				VP-4				VP-5				VP-105				VP-6			
	5/18/2015				5/18/2015				5/18/2015				5/27/2015				5/18/2015				5/18/2015				5/18/2015			
	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Cyclohexane	385	10.0		10.0	57.8	1.00		1.00	1,320	39.9		39.9	63.3	1.00		1.00	24.4	1.00		1.00	9.8	1.00		1.00	61.9	1.00		1.00
Dibromochloromethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Dichlorodifluoromethane	44.5	1.00		1.00	285	4.99		4.99	13,100	400		400	178	30.0		30.0	6,520	200		200	845	9.98		9.98	107,000	959		959
Ethanol	7.63	1.00		1.00	18	1.00	S	1.00	24.1	1.00	S	1.00	79.7	29.9		29.9	9.9	1.00	S	1.00	9.26	1.00		1.00	2,150	239		239
Ethyl acetate	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Ethylbenzene	< 1.00	1.00	U	1.00	1.49	1.00		1.00	1.61	1.00		1.00	76.4	1.00		1.00	1.06	1.00		1.00	< 1.00	1.00	U	1.00	11.2	1.00		1.00
Heptane	12.3	1.00		1.00	12	1.00		1.00	1,100	40.0		40.0	9.75	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	163	1.00		1.00
Hexachlorobutadiene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Hexane	511	10.0		10.0	59.2	1.00	S	1.00	5,210	40.2	S	40.2	29.4	1.00		1.00	162	10.0	S	10.0	65.9	1.00		1.00	293	10.0		10.0
Isopropylalcohol	1,370	10.0	E	10.0	553	15.0	S	15.0	1,020	40.0	S	40.0	68	1.00		1.00	1,090	10.0	SE	10.0	1,060	1.00	E	1.00	784	10.0		10.0
Isopropylbenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	5.8	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
m,p-Xylene	3.51	1.00		1.00	4.64	1.00		1.00	4.47	1.00		1.00	390	30.0		30.0	3.67	1.00		1.00	3.52	1.00		1.00	7.42	1.00		1.00
Methyl Ethyl Ketone	< 1.00	1.00	U	1.00	7.96	1.00		1.00	101	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	18.9	1.00		1.00
Methyl tert-butyl ether(MTBE)	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Methylene Chloride	3.51	1.00		1.00	7.5	1.00	S	1.00	< 1.00	1.00	U	1.00	3.82	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	24.4	1.00		1.00
n-Butylbenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	1.16	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
o-Xylene	1.38	1.00		1.00	2.46	1.00		1.00	2.18	1.00		1.00	238	30.0		30.0	1.24	1.00		1.00	1.26	1.00		1.00	3.1	1.00		1.00
Propylene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 40.1	40.1	U	40.1	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
sec-Butylbenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Styrene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	4.26	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Tetrachloroethene	0.51	0.25		0.25	0.98	0.25		0.25	2.3	0.25		0.25	1.44	0.25		0.25	1.44	0.25		0.25	1.47	0.25		0.25	8.47	0.25		0.25
Tetrahydrofuran	1.03	1.00		1.00	2.82	1.00		1.00	< 1.00	1.00	U	1.00	7.13	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	14.8	1.00		1.00
Toluene	13.4	1.00		1.00	20	1.00		1.00	18.7	1.00		1.00	24.8	1.00		1.00	6.03	1.00		1.00	4.93	1.00		1.00	1,190	10.0		10.0
Trans-1,2-Dichloroethene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	11.6	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
trans-1,3-Dichloropropene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Trichloroethene	0.51	0.25		0.25	1.03	0.25		0.25	4.73	0.25		0.25	0.54	0.25		0.25	1.13	0.25		0.25	1.04	0.25		0.25	6.71	0.25		0.25
Trichlorofluoromethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	1.3	1.00		1.00	< 1.00	1.00	U	1.00	1.63	1.00		1.00	1.57	1.00		1.00	6,180	240		240
Trichlorotrifluoroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	1.38	1.00		1.00	< 1.00	1.00	U	1.00	1.09	1.00		1.00	< 1.00	1.00	U	1.00	7.11	1.00		1.00
Vinyl Chloride	0.33	0.25		0.25	1.4	0.25		0.25	93.8	0.25		0.25	< 0.25	0.25	U	0.25	20.8	0.25		0.25	7.82	0.25		0.25	14	0.25		0.25

Legend:

ppbv = Parts per billion volume/volume concentration

RL = Laboratory Reporting Limit — 0.549 = Compound detected and concentration (ppbv)

MDL = Method Detection Limit. The minimum reportable concentration that can be measured with 99% confidence, as defined in 40CFR part 136 (Appendix B).

Qual = Laboratory and/or Data Validation Qualifier:

U = Compound was not detected at or above the MDL.

E = The reported value is estimated because the concentration exceeded the calibration range.

S = This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

Notes:

1. The samples were collected from subsurface soil vapor probes installed by HydroEnvironmental Solutions, Inc. to a total depth of 6-feet below grade.
2. The samples were collected in 6-liter summa canisters with an installed flow regulator. The collected samples were analyzed by Phoenix Environmental Laboratories of Manchester, Connecticut.
3. Data validation performed by Premier Evironmental Services of Merrick, New York.

MAY 2015
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
REMEDIAL INVESTIGATION
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE # C360143

Volatile Organic Compounds	Sample Designation and Result																							
	VP-7				VP-8				VP-9				VP-10				VP-11				VP-12			
	5/18/2015				5/18/2015				5/18/2015				5/18/2015				5/18/2015				5/18/2015			
	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Result in ppbv																								
1,1,1,2-Tetrachloroethane	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146
1,1,1-Trichloroethane	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	19.4	0.183		0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183
1,1,2,2-Tetrachloroethane	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146	< 0.146	0.146	U	0.146
1,1,2-Trichloroethane	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183	< 0.183	0.183	U	0.183
1,1-Dichloroethane	0.644	0.247		0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	1.01	0.247		0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247
1,1-Dichloroethene	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252
1,2,4-Trichlorobenzene	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135	< 0.135	0.135	U	0.135
1,2,4-Trimethylbenzene	1.03	0.204		0.204	0.968	0.204		0.204	0.967	0.204		0.204	0.908	0.204		0.204	0.914	0.204		0.204	1.04	0.204		0.204
1,2-Dibromoethane(EDB)	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130	< 0.130	0.130	U	0.130
1,2-Dichlorobenzene	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166
1,2-Dichloroethane	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247	< 0.247	0.247	U	0.247
1,2-dichloropropane	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217
1,2-Dichlorotetrafluoroethane	4,330	30.1		30.1	74.8	2.15		2.15	100	4.29		4.29	< 0.143	0.143	U	0.143	5,280	57.3		57.3	76.4	5.73		5.73
1,3,5-Trimethylbenzene	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204
1,3-Butadiene	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452	< 0.452	0.452	U	0.452
1,3-Dichlorobenzene	0.901	0.166		0.166	0.596	0.166		0.166	0.587	0.166		0.166	0.363	0.166		0.166	1.06	0.166		0.166	0.631	0.166		0.166
1,4-Dichlorobenzene	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166	< 0.166	0.166	U	0.166
1,4-Dioxane	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278
2-Hexanone(MBK)	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244	< 0.244	0.244	U	0.244
4-Ethyltoluene	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204
4-Isopropyltoluene	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182
4-Methyl-2-pentanone(MIBK)	< 0.244	0.244	U	0.244	0.389	0.244		0.244	< 0.244	0.244	U	0.244	0.327	0.244		0.244	< 0.244	0.244	U	0.244	0.4	0.244		0.244
Acetone	< 88.5	88.5	U	88.5	42.2	6.32	S	6.32	133	12.6		12.6	35.4	4.21	S	4.21	41.1	16.8	S	16.8	64.6	16.8	S	16.8
Acrylonitrile	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461	< 0.461	0.461	U	0.461
Benzene	21.5	0.313		0.313	1.21	0.313		0.313	9.09	0.313		0.313	< 0.313	0.313	U	0.313	0.651	0.313		0.313	< 0.313	0.313	U	0.313
Benzyl chloride	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193	< 0.193	0.193	U	0.193
Bromodichloromethane	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149	< 0.149	0.149	U	0.149
Bromoform	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097	< 0.097	0.097	U	0.097
Bromomethane	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258	< 0.258	0.258	U	0.258
Carbon Disulfide	18.8	0.321		0.321	< 0.321	0.321	U	0.321	0.369	0.321		0.321	0.424	0.321		0.321	< 0.321	0.321	U	0.321	0.359	0.321		0.321
Carbon Tetrachloride	< 0.040	0.040	U	0.040	< 0.040	0.040	U	0.040	< 0.040	0.040	U	0.040	< 0.040	0.040	U	0.040	< 0.040	0.040	U	0.040	< 0.040	0.040	U	0.040
Chlorobenzene	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217	< 0.217	0.217	U	0.217
Chloroethane	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379	< 0.379	0.379	U	0.379
Chloroform	0.832	0.205		0.205	0.303	0.205		0.205	0.583	0.205		0.205	0.896	0.205		0.205	0.809	0.205		0.205	< 0.205	0.205	U	0.205
Chloromethane	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485	< 0.485	0.485	U	0.485
Cis-1,2-Dichloroethene	5.28	0.252		0.252	< 0.252	0.252	U	0.252	0.581	0.252		0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252
cis-1,3-Dichloropropene	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221
Cyclohexane	10.1	0.291		0.291	< 0.291	0.291	U	0.291	50.8	8.72		8.72	< 0.291	0.291	U	0.291	4.73	0.291		0.291	< 0.291	0.291	U	0.291
Dibromochloromethane	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118	< 0.118	0.118	U	0.118
Dichlorodifluoromethane	4,670	42.5		42.5	305	3.04		3.04	276	6.07		6.07	282	3.04		3.04	8,320	80.9		80.9	587	8.09		8.09

Volatile Organic Compounds	Sample Designation and Result																							
	VP-7				VP-8				VP-9				VP-10				VP-11				VP-12			
	5/18/2015				5/18/2015				5/18/2015				5/18/2015				5/18/2015				5/18/2015			
	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Ethanol	9.88	0.531	S	0.531	2.92	0.531	S	0.531	7.12	0.531		0.531	3.93	0.531	S	0.531	2.93	0.531	S	0.531	3.08	0.531	S	0.531
Ethyl acetate	< 0.278	0.278	U	0.278	0.297	0.278		0.278	< 0.278	0.278	U	0.278	0.347	0.278		0.278	< 0.278	0.278	U	0.278	< 0.278	0.278	U	0.278
Ethylbenzene	0.343	0.230		0.230	< 0.230	0.230	U	0.230	0.467	0.230		0.230	0.271	0.230		0.230	0.285	0.230		0.230	0.237	0.230		0.230
Heptane	3.57	0.244		0.244	0.502	0.244		0.244	15.6	0.244		0.244	0.438	0.244		0.244	0.738	0.244		0.244	0.463	0.244		0.244
Hexachlorobutadiene	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094	< 0.094	0.094	U	0.094
Hexane	10.5	0.284	S	0.284	0.369	0.284	S	0.284	37.6	0.284		0.284	0.785	0.284	S	0.284	8.62	0.284	S	0.284	0.453	0.284	S	0.284
Isopropylalcohol	413	0.407	SE	0.407	346	6.11	S	6.11	289	12.2		12.2	318	4.07	S	4.07	235	16.3	S	16.3	403	0.407	SE	0.407
Isopropylbenzene	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204	< 0.204	0.204	U	0.204
m,p-Xylene	0.931	0.230		0.230	0.782	0.230		0.230	1.29	0.230		0.230	0.929	0.230		0.230	0.947	0.230		0.230	0.818	0.230		0.230
Methyl Ethyl Ketone	6.8	0.339		0.339	1.22	0.339		0.339	2.5	0.339		0.339	1.03	0.339		0.339	1.64	0.339		0.339	1.34	0.339		0.339
Methyl tert-butyl ether (MTBE)	< 0.278	0.278	U	0.278	2.05	0.278		0.278	< 0.278	0.278	U	0.278	1.73	0.278		0.278	< 0.278	0.278	U	0.278	2.02	0.278		0.278
Methylene Chloride	12.9	0.288	S	0.288	< 0.288	0.288	U	0.288	0.612	0.288		0.288	6.01	0.288	S	0.288	1.23	0.288	S	0.288	< 0.288	0.288	U	0.288
n-Butylbenzene	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182
o-Xylene	0.401	0.230		0.230	0.267	0.230		0.230	0.514	0.230		0.230	0.323	0.230		0.230	0.335	0.230		0.230	0.275	0.230		0.230
Propylene	249	122		122	< 0.581	0.581	U	0.581	< 0.581	0.581	U	0.581	< 0.581	0.581	U	0.581	21	0.581		0.581	< 0.581	0.581	U	0.581
sec-Butylbenzene	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182	< 0.182	0.182	U	0.182
Styrene	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235	< 0.235	0.235	U	0.235
Tetrachloroethene	10.4	0.037		0.037	0.408	0.037		0.037	0.285	0.037		0.037	0.997	0.037		0.037	1.34	0.037		0.037	0.472	0.037		0.037
Tetrahydrofuran	4.82	0.339		0.339	0.559	0.339		0.339	2.34	0.339		0.339	< 0.339	0.339	U	0.339	< 0.339	0.339	U	0.339	0.579	0.339		0.339
Toluene	11.4	0.266		0.266	3.79	0.266		0.266	7.29	0.266		0.266	5.32	0.266		0.266	4.94	0.266		0.266	3.8	0.266		0.266
Trans-1,2-Dichloroethene	1.17	0.252		0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252	< 0.252	0.252	U	0.252
trans-1,3-Dichloropropene	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221	< 0.221	0.221	U	0.221
Trichloroethene	4.76	0.047		0.047	0.141	0.047		0.047	0.281	0.047		0.047	0.175	0.047		0.047	0.368	0.047		0.047	0.048	0.047		0.047
Trichlorofluoromethane	404	37.4		37.4	17.9	0.178		0.178	11.3	0.178		0.178	6.22	0.178		0.178	25.1	0.178		0.178	6.72	0.178		0.178
Trichlorotrifluoroethane	0.183	0.131		0.131	< 0.131	0.131	U	0.131	< 0.131	0.131	U	0.131	0.254	0.131		0.131	1.77	0.131		0.131	0.176	0.131		0.131
Vinyl Chloride	33.1	0.098		0.098	< 0.098	0.098	U	0.098	0.313	0.098		0.098	< 0.098	0.098	U	0.098	< 0.098	0.098	U	0.098	< 0.098	0.098	U	0.098
Result in ug/m^3																								
1,1,1,2-Tetrachloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1,1-Trichloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	106	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1,2,2-Tetrachloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1,2-Trichloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1-Dichloroethane	2.6	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	4.09	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,1-Dichloroethene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2,4-Trichlorobenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2,4-Trimethylbenzene	5.06	1.00		1.00	4.76	1.00		1.00	4.75	1.00		1.00	4.46	1.00		1.00	4.49	1.00		1.00	5.11	1.00		1.00
1,2-Dibromoethane(EDB)	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2-Dichlorobenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2-Dichloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2-dichloropropane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,2-Dichlorotetrafluoroethane	30,300	210		210	523	15.0		15.0	699	30.0		30.0	< 1.00	1.00	U	1.00	36,900	400		400	534	40.0		40.0
1,3,5-Trimethylbenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,3-Butadiene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,3-Dichlorobenzene	5.41	1.00		1.00	3.58	1.00		1.00	3.53	1.00		1.00	2.18	1.00		1.00	6.37	1.00		1.00	3.79	1.00		1.00
1,4-Dichlorobenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
1,4-Dioxane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
2-Hexanone(MBK)	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
4-Ethyltoluene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
4-Isopropyltoluene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00

Volatile Organic Compounds	Sample Designation and Result																							
	VP-7				VP-8				VP-9				VP-10				VP-11				VP-12			
	5/18/2015				5/18/2015				5/18/2015				5/18/2015				5/18/2015				5/18/2015			
	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
4-Methyl-2-pentanone (MIBK)	< 1.00	1.00	U	1.00	1.59	1.00		1.00	< 1.00	1.00	U	1.00	1.34	1.00		1.00	< 1.00	1.00	U	1.00	1.64	1.00		1.00
Acetone	< 210	210	U	210	100	15.0	S	15.0	316	29.9		29.9	84	9.99	S	9.99	97.6	39.9	S	39.9	153	39.9	S	39.9
Acrylonitrile	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Benzene	68.6	1.00		1.00	3.86	1.00		1.00	29	1.00		1.00	< 1.00	1.00	U	1.00	2.08	1.00		1.00	< 1.00	1.00	U	1.00
Benzyl chloride	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Bromodichloromethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Bromoform	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Bromomethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Carbon Disulfide	58.5	1.00		1.00	< 1.00	1.00	U	1.00	1.15	1.00		1.00	1.32	1.00		1.00	< 1.00	1.00	U	1.00	1.12	1.00		1.00
Carbon Tetrachloride	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25
Chlorobenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Chloroethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Chloroform	4.06	1.00		1.00	1.48	1.00		1.00	2.84	1.00		1.00	4.37	1.00		1.00	3.95	1.00		1.00	< 1.00	1.00	U	1.00
Chloromethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Cis-1,2-Dichloroethene	20.9	1.00		1.00	< 1.00	1.00	U	1.00	2.3	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
cis-1,3-Dichloropropene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Cyclohexane	34.7	1.00		1.00	< 1.00	1.00	U	1.00	175	30.0		30.0	< 1.00	1.00	U	1.00	16.3	1.00		1.00	< 1.00	1.00	U	1.00
Dibromochloromethane	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Dichlorodifluoromethane	23,100	210		210	1,510	15.0		15.0	1,360	30.0		30.0	1,390	15.0		15.0	41,100	400		400	2,900	40.0		40.0
Ethanol	18.6	1.00	S	1.00	5.5	1.00	S	1.00	13.4	1.00		1.00	7.4	1.00	S	1.00	5.52	1.00	S	1.00	5.8	1.00	S	1.00
Ethyl acetate	< 1.00	1.00	U	1.00	1.07	1.00		1.00	< 1.00	1.00	U	1.00	1.25	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Ethylbenzene	1.49	1.00		1.00	< 1.00	1.00	U	1.00	2.03	1.00		1.00	1.18	1.00		1.00	1.24	1.00		1.00	1.03	1.00		1.00
Heptane	14.6	1.00		1.00	2.06	1.00		1.00	63.9	1.00		1.00	1.79	1.00		1.00	3.02	1.00		1.00	1.9	1.00		1.00
Hexachlorobutadiene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Hexane	37	1.00	S	1.00	1.3	1.00	S	1.00	132	1.00		1.00	2.77	1.00	S	1.00	30.4	1.00	S	1.00	1.6	1.00	S	1.00
Isopropylalcohol	1,010	1.00	SE	1.00	850	15.0	S	15.0	710	30.0		30.0	781	10.0	S	10.0	577	40.0	S	40.0	990	1.00	SE	1.00
Isopropylbenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
m,p-Xylene	4.04	1.00		1.00	3.39	1.00		1.00	5.6	1.00		1.00	4.03	1.00		1.00	4.11	1.00		1.00	3.55	1.00		1.00
Methyl Ethyl Ketone	20	1.00		1.00	3.6	1.00		1.00	7.37	1.00		1.00	3.04	1.00		1.00	4.83	1.00		1.00	3.95	1.00		1.00
Methyl tert-butyl ether(MTBE)	< 1.00	1.00	U	1.00	7.39	1.00		1.00	< 1.00	1.00	U	1.00	6.23	1.00		1.00	< 1.00	1.00	U	1.00	7.28	1.00		1.00
Methylene Chloride	44.8	1.00	S	1.00	< 1.00	1.00	U	1.00	2.12	1.00		1.00	20.9	1.00	S	1.00	4.27	1.00	S	1.00	< 1.00	1.00	U	1.00
n-Butylbenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
o-Xylene	1.74	1.00		1.00	1.16	1.00		1.00	2.23	1.00		1.00	1.4	1.00		1.00	1.45	1.00		1.00	1.19	1.00		1.00
Propylene	428	210		210	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	36.1	1.00		1.00	< 1.00	1.00	U	1.00
sec-Butylbenzene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Styrene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Tetrachloroethene	70.5	0.25		0.25	2.77	0.25		0.25	1.93	0.25		0.25	6.76	0.25		0.25	9.08	0.25		0.25	3.2	0.25		0.25
Tetrahydrofuran	14.2	1.00		1.00	1.65	1.00		1.00	6.9	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	1.71	1.00		1.00
Toluene	42.9	1.00		1.00	14.3	1.00		1.00	27.5	1.00		1.00	20	1.00		1.00	18.6	1.00		1.00	14.3	1.00		1.00
Trans-1,2-Dichloroethene	4.64	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
trans-1,3-Dichloropropene	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00
Trichloroethene	25.6	0.25		0.25	0.76	0.25		0.25	1.51	0.25		0.25	0.94	0.25		0.25	1.98	0.25		0.25	0.26	0.25		0.25

Volatile Organic Compounds	Sample Designation and Result																							
	VP-7				VP-8				VP-9				VP-10				VP-11				VP-12			
	5/18/2015				5/18/2015				5/18/2015				5/18/2015				5/18/2015				5/18/2015			
	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Trichlorofluoromethane	2,270	210		210	101	1.00		1.00	63.4	1.00		1.00	34.9	1.00		1.00	141	1.00		1.00	37.7	1.00		1.00
Trichlorotrifluoroethane	1.4	1.00		1.00	< 1.00	1.00	U	1.00	< 1.00	1.00	U	1.00	1.95	1.00		1.00	13.6	1.00		1.00	1.35	1.00		1.00
Vinyl Chloride	84.6	0.25		0.25	< 0.25	0.25	U	0.25	0.8	0.25		0.25	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25	< 0.25	0.25	U	0.25

Legend:

ppbv = Parts per billion volume/volume concentration

RL = Laboratory Reporting Limit

0.549 = Compound detected and concentration (ppbv)

MDL = Method Detection Limit. The minimum reportable concentration that can be measured with 99% confidence, as defined in 40CFR part 136 (Appendix B).

Qual = Laboratory and/or Data Validation Qualifier:

U = Compound was not detected at or above the MDL.

E = The reported value is estimated because the concentration exceeded the calibration range.

S = This compound is a solvent that is used in the laboratory. Laboratory contamination is suspected if concentration is less than five times the reporting level.

Notes:

1. The samples were collected from subsurface soil vapor probes installed by HydroEnvironmental Solutions, Inc. to a total depth of 6-feet below grade.
2. The samples were collected in 6-liter summa canisters with an installed flow regulator. The collected samples were analyzed by Phoenix Environmental Laboratories of Manchester, Connecticut.
3. Data validation performed by Premier Evironmental Services of Merrick, New York.

VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	VW-1		VW-2		VW-3		VW-4		VW-5		VW-6	
York ID	17E0579-01		17E0579-02		17E0579-03		17E0579-04		17E0579-05		17E0579-06	
Sampling Date	5/12/2017		5/12/2017		5/12/2017		5/12/2017		5/12/2017		5/12/2017	
Client Matrix	Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor	17.75		17.03		16.97		1358		18		191	
1,1,1,2-Tetrachloroethane	12	U	12	U	12	U	12	U	12	U	13	U
1,1,1-Trichloroethane	9.700	U	9.300	U	9.300	U	9.300	U	9.800	U	10	U
1,1,2,2-Tetrachloroethane	12	U	12	U	12	U	12	U	12	U	13	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	14	U	13	U	13	U	670	D	14	U	15	U
1,1,2-Trichloroethane	9.700	U	9.300	U	9.300	U	9.300	U	9.800	U	10	U
1,1-Dichloroethane	7.200	U	6.900	U	6.900	U	6.900	U	7.300	U	7.700	U
1,1-Dichloroethylene	7	U	6.800	U	6.700	U	6.700	U	7.100	U	7.600	U
1,2,4-Trichlorobenzene	13	U	13	U	13	U	13	U	13	U	14	U
1,2,4-Trimethylbenzene	8.700	U	8.400	U	18	D	98	D	8.800	U	320	D
1,2-Dibromoethane	14	U	13	U	13	U	13	U	14	U	15	U
1,2-Dichlorobenzene	11	U	10	U	10	U	10	U	11	U	11	U
1,2-Dichloroethane	7.200	U	6.900	U	6.900	U	6.900	U	7.300	U	7.700	U
1,2-Dichloropropane	8.200	U	7.900	U	7.800	U	7.800	U	8.300	U	8.800	U
1,2-Dichlorotetrafluoroethane	260	D	56	D	4,100	D	230,000	D	2,500	D	35,000	D
1,3,5-Trimethylbenzene	8.700	U	8.400	U	11	D	62	D	8.800	U	260	D
1,3-Butadiene	12	U	31	D	140	D	11	U	12	U	85	D
1,3-Dichlorobenzene	11	U	10	U	10	U	10	U	11	U	11	U
1,3-Dichloropropane	8.200	U	7.900	U	7.800	U	7.800	U	8.300	U	8.800	U
1,4-Dichlorobenzene	11	U	10	U	10	U	10	U	11	U	11	U
1,4-Dioxane	13	U	12	U	12	U	12	U	13	U	14	U
2-Butanone	42	D	54	D	29	D	31	D	9	D	170	D
2-Hexanone	15	U	14	U	14	U	14	U	15	U	16	U
3-Chloropropene	28	U	27	U	27	U	27	U	28	U	30	U
4-Methyl-2-pentanone	7.300	U	7	U	7	U	7	U	7.400	U	7.800	U
Acetone	120	D	120	D	94	D	110	D	33	D	430	D
Acrylonitrile	3.900	U	3.700	U	3.700	U	3.700	U	3.900	U	4.100	U
Benzene	10	D	140	D	360	D	2,100	D	5.800	U	310	D
Benzyl chloride	9.200	U	8.800	U	8.800	U	8.800	U	9.300	U	9.900	U
Bromodichloromethane	12	U	11	U	11	U	11	U	12	U	13	U
Bromoform	18	U	18	U	18	U	18	U	19	U	20	U
Bromomethane	6.900	U	6.600	U	6.600	U	6.600	U	7	U	7.400	U
Carbon disulfide	17	D	29	D	97	D	55	D	5.600	U	26	D
Carbon tetrachloride	2.800	U	2.700	U	2.700	U	2.700	U	2.800	U	3	U
Chlorobenzene	8.200	U	7.800	U	7.800	U	7.800	U	8.300	U	8.800	U
Chloroethane	4.700	U	4.500	U	4.500	U	4.500	U	4.700	U	5	U
Chloroform	8.700	U	12	D	8.300	U	63	D	30	D	9.300	U
Chloromethane	3.700	U	4.900	D	6.300	D	3.500	U	3.700	U	30	D
cis-1,2-Dichloroethylene	7	U	6.800	U	6.700	U	51	D	7.100	U	23	D
cis-1,3-Dichloropropylene	8.100	U	7.700	U	7.700	U	7.700	U	8.200	U	8.700	U
Cyclohexane	23	D	5.900	U	500	D	880	D	6.200	U	320	D
Dibromochloromethane	15	U	15	U	14	U	14	U	15	U	16	U
Dichlorodifluoromethane	400	D	230	D	4,000	D	320,000	D	3,400	D	30,000	D
Ethyl acetate	13	U	12	U	12	U	12	U	13	U	14	U
Ethyl Benzene	7.700	U	7.400	D	9.600	D	120	D	7.800	U	170	D
Hexachlorobutadiene	19	U	18	U	18	U	18	U	19	U	20	U
Isopropanol	8.700	U	9.200	D	20	D	43	D	8.800	U	34	D
Methyl Methacrylate	7.300	U	7	U	6.900	U	6.900	U	7.400	U	7.800	U
Methyl tert-butyl ether (MTBE)	6.400	U	6.100	U	6.100	U	6.100	U	6.500	U	6.900	U
Methylene chloride	12	U	13	D	16	D	47	D	13	U	13	U
n-Heptane	160	D	190	D	460	D	1,000	D	7.400	U	690	D
n-Hexane	460	D	400	D	2,900	D	1,200	D	7.600	D	720	D
o-Xylene	7.700	U	7.400	U	19	D	120	D	7.800	U	190	D
p- & m- Xylenes	15	U	15	U	32	D	250	D	16	U	480	D
p-Ethyltoluene	8.700	U	8.400	U	10	D	75	D	8.800	U	230	D
Propylene	390	D	630	D	930	DE	290	D	9.600	D	320	D
Styrene	7.600	U	7.300	U	7.200	U	7.200	U	7.700	U	8.100	U
Tetrachloroethylene	13	D	28	D	15	D	83	D	67	D	63	D
Tetrahydrofuran	10	U	81	D	10	U	10	U	11	U	11	U
Toluene	8.700	D	33	D	67	D	1,000	D	10	D	220	D
trans-1,2-Dichloroethylene	7	U	6.800	U	6.700	U	18	D	7.100	U	7.600	U
trans-1,3-Dichloropropylene	8.100	U	7.700	U	7.700	U	7.700	U	8.200	U	8.700	U
Trichloroethylene	2.900	D	2.300	U	2.300	U	45	D	14	D	52	D
Trichlorofluoromethane (Freon 11)	790	D	9.600	D	58	D	110,000	D	130	D	60	D
Vinyl acetate	6.200	U	6	U	6	U	6	U	6.300	U	6.700	U
Vinyl bromide	7.800	U	7.400	U	7.400	U	7.400	U	7.900	U	8.400	U
Vinyl Chloride	4.500	U	4.400	U	15	D	80	D	4.600	U	7.800	D

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

MAY 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-7**		**VW-8**		**VW-9**		**VW-10**		**VW-11**	
York ID	**17E0429-01**		**17E0429-02**		**17E0429-03**		**17E0429-04**		**17E0429-05**	
Sampling Date	**5/10/2017**		**5/10/2017**		**5/10/2017**		**5/10/2017**		**5/10/2017**	
Client Matrix	**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor	16.8		67.2		67.2		16.8		16.8	
1,1,1,2-Tetrachloroethane	12	U	12	U	12	U	12	U	12	U
1,1,1-Trichloroethane	170	D	9.200	U	9.200	U	9.200	U	9.200	U
1,1,2,2-Tetrachloroethane	12	U	12	U	12	U	12	U	12	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	13	U	13	U	13	U	13	U	13	U
1,1,2-Trichloroethane	9.200	U	9.200	U	9.200	U	9.200	U	9.200	U
1,1-Dichloroethane	6.800	U	6.800	U	6.800	U	6.800	U	6.800	U
1,1-Dichloroethylene	6.700	U	6.700	U	6.700	U	6.700	U	6.700	U
1,2,4-Trichlorobenzene	12	U	12	U	12	U	12	U	12	U
1,2,4-Trimethylbenzene	73	D	17	D	8.300	U	8.300	U	8.300	U
1,2-Dibromoethane	13	U	13	U	13	U	13	U	13	U
1,2-Dichlorobenzene	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethane	6.800	U	6.800	U	6.800	U	6.800	U	6.800	U
1,2-Dichloropropane	7.800	U	7.800	U	7.800	U	7.800	U	7.800	U
1,2-Dichlorotetrafluoroethane	3,800	D	8,500	D	820	D	43	D	12	U
1,3,5-Trimethylbenzene	31	D	12	D	8.300	U	8.300	U	8.300	U
1,3-Butadiene	5,000	DE	45	D	12	D	11	U	25	D
1,3-Dichlorobenzene	10	U	10	U	10	U	10	U	10	U
1,3-Dichloropropane	7.800	U	7.800	U	7.800	U	7.800	U	7.800	U
1,4-Dichlorobenzene	10	U	10	U	10	U	10	U	10	U
1,4-Dioxane	12	U	12	U	12	U	12	U	12	U
2-Butanone	1,000	D	78	D	39	D	12	D	80	D
2-Hexanone	14	U	14	U	14	U	14	U	14	U
3-Chloropropene	26	U	26	U	26	U	26	U	26	U
4-Methyl-2-pentanone	6.900	U	6.900	U	6.900	U	6.900	U	14	D
Acetone	3,400	DE	240	D	110	D	23	D	210	D
Acrylonitrile	3.600	U	3.600	U	3.600	U	3.600	U	3.600	U
Benzene	7,100	DE	310	D	78	D	6.400	D	110	D
Benzyl chloride	8.700	U	8.700	U	8.700	U	8.700	U	8.700	U
Bromodichloromethane	11	U	11	U	11	U	11	U	11	U
Bromoform	17	U	17	U	17	U	17	U	17	U
Bromomethane	6.500	U	6.500	U	6.500	U	6.500	U	6.500	U
Carbon disulfide	480	D	74	D	21	D	17	D	36	D
Carbon tetrachloride	2.600	U	2.600	U	2.600	U	4.200	D	2.600	U
Chlorobenzene	7.700	U	7.700	U	7.700	U	7.700	U	7.700	U
Chloroethane	4.400	U	4.400	U	4.400	U	4.400	U	4.400	U
Chloroform	210	D	15	D	37	D	64	D	1,000	D
Chloromethane	88	D	3.500	U	3.500	U	3.500	U	4.200	D
cis-1,2-Dichloroethylene	6.700	U	15	D	6.700	U	6.700	U	6.700	U
cis-1,3-Dichloropropylene	7.600	U	7.600	U	7.600	U	7.600	U	7.600	U
Cyclohexane	560	D	69	D	5.800	U	5.800	U	5.800	D
Dibromochloromethane	14	U	14	U	14	U	14	U	14	U
Dichlorodifluoromethane	3,200	D	3,800	D	12,000	D	160	D	1,100	D
Ethyl acetate	12	U	12	U	12	U	12	U	12	U
Ethyl Benzene	430	D	17	D	7.300	U	7.300	U	7.300	U
Hexachlorobutadiene	18	U	18	U	18	U	18	U	18	U
Isopropanol	41	D	15	D	8.300	U	8.300	U	9.900	D
Methyl Methacrylate	6.900	U	6.900	U	6.900	U	6.900	U	6.900	U
Methyl tert-butyl ether (MTBE)	6.100	U	6.100	U	6.100	U	6.100	U	6.100	U
Methylene chloride	12	U	12	U	12	U	12	U	23	D
n-Heptane	1,000	D	160	D	9	D	6.900	U	23	D
n-Hexane	2,500	D	88	D	15	D	5.900	U	34	D
o-Xylene	230	D	26	D	7.300	U	7.300	U	7.300	U
p- & m- Xylenes	670	D	45	D	16	D	15	U	19	D
p-Ethyltoluene	110	D	16	D	8.300	U	8.300	U	8.300	U
Propylene	12,000	DE	620	D	130	D	60	D	180	D

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VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-7**		**VW-8**		**VW-9**		**VW-10**		**VW-11**	
York ID	**17E0429-01**		**17E0429-02**		**17E0429-03**		**17E0429-04**		**17E0429-05**	
Sampling Date	**5/10/2017**		**5/10/2017**		**5/10/2017**		**5/10/2017**		**5/10/2017**	
Client Matrix	**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Styrene	140	D	7.200	U	7.200	U	7.200	U	7.200	U
Tetrachloroethylene	430	D	22	D	50	D	680	D	41	D
Tetrahydrofuran	9.900	U	9.900	U	17	D	9.900	U	15	D
Toluene	3,200	DE	120	D	53	D	11	D	55	D
trans-1,2-Dichloroethylene	6.700	U	6.700	U	6.700	U	6.700	U	6.700	U
trans-1,3-Dichloropropylene	7.600	U	7.600	U	7.600	U	7.600	U	7.600	U
Trichloroethylene	100	D	15	D	7.200	D	280	D	60	D
Trichlorofluoromethane (Freon 11)	2,800	D	45	D	1,100	D	9.400	U	29	D
Vinyl acetate	5.900	U	5.900	U	5.900	U	5.900	U	5.900	U
Vinyl bromide	7.300	U	7.300	U	7.300	U	7.300	U	7.300	U
Vinyl Chloride	4.300	D	35	D	4.300	U	4.300	U	4.300	U

NOTES:

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J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

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VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES

109-125 MARBLEDALE ROAD

TUCKAHOE, NEW YORK

BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-12**	
York ID	**17E0630-01**	
Sampling Date	**5/15/2017**	
Client Matrix	**Soil Vapor**	
Compound	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3	
Dilution Factor	17.03	
1,1,1,2-Tetrachloroethane	12	U
1,1,1-Trichloroethane	9.300	U
1,1,2,2-Tetrachloroethane	12	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	13	U
1,1,2-Trichloroethane	9.300	U
1,1-Dichloroethane	6.900	U
1,1-Dichloroethylene	6.800	U
1,2,4-Trichlorobenzene	13	U
1,2,4-Trimethylbenzene	26	D
1,2-Dibromoethane	13	U
1,2-Dichlorobenzene	10	U
1,2-Dichloroethane	6.900	U
1,2-Dichloropropane	7.900	U
1,2-Dichlorotetrafluoroethane	46	D
1,3,5-Trimethylbenzene	8.400	U
1,3-Butadiene	11	U
1,3-Dichlorobenzene	10	U
1,3-Dichloropropane	7.900	U
1,4-Dichlorobenzene	10	U
1,4-Dioxane	12	U
2-Butanone	5	U
2-Hexanone	14	U
3-Chloropropene	27	U
4-Methyl-2-pentanone	7	U
Acetone	8.100	U

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VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES

109-125 MARBLEDALE ROAD

TUCKAHOE, NEW YORK

BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-12**	
York ID	**17E0630-01**	
Sampling Date	**5/15/2017**	
Client Matrix	**Soil Vapor**	
Compound	Result	Q
Acrylonitrile	3.700	U
Benzene	7.600	D
Benzyl chloride	8.800	U
Bromodichloromethane	11	U
Bromoform	18	U
Bromomethane	6.600	U
Carbon disulfide	5.300	U
Carbon tetrachloride	2.700	U
Chlorobenzene	7.800	U
Chloroethane	4.500	U
Chloroform	42	D
Chloromethane	3.500	U
cis-1,2-Dichloroethylene	6.800	U
cis-1,3-Dichloropropylene	7.700	U
Cyclohexane	5.900	U
Dibromochloromethane	15	U
Dichlorodifluoromethane	140	D
Ethyl acetate	12	U
Ethyl Benzene	16	D
Hexachlorobutadiene	18	U
Isopropanol	8.400	U
Methyl Methacrylate	7	U
Methyl tert-butyl ether (MTBE)	6.100	U
Methylene chloride	12	U
n-Heptane	7	U
n-Hexane	6	U
o-Xylene	23	D

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VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-12**	
York ID	**17E0630-01**	
Sampling Date	**5/15/2017**	
Client Matrix	**Soil Vapor**	
Compound	Result	Q
p- & m- Xylenes	60	D
p-Ethyltoluene	23	D
Propylene	22	D
Styrene	7.300	U
Tetrachloroethylene	1,600	D
Tetrahydrofuran	10	U
Toluene	38	D
trans-1,2-Dichloroethylene	6.800	U
trans-1,3-Dichloropropylene	7.700	U
Trichloroethylene	100	D
Trichlorofluoromethane (Freon 11)	31	D
Vinyl acetate	6	U
Vinyl bromide	7.400	U
Vinyl Chloride	4.400	U

NOTES:

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VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	VW-1		VW-2		VW-3		VW-4		VW-5		VW-6	
York ID	17F1126-01		17F1126-02		17F1126-03		17F1126-04		17F1126-05		17F1126-06	
Sampling Date	6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Client Matrix	Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor	15.23		15.180		15		14.78		14.52		1377	
1,1,1,2-Tetrachloroethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-Trichloroethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2,2-Tetrachloroethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Fr	ND	U	ND	U	ND	U	170	D	ND	U	ND	U
1,1,2-Trichloroethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-Dichloroethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-Dichloroethylene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-Trichlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-Trimethylbenzene	ND	U	ND	U	36	D	78	D	ND	U	210	D
1,2-Dibromoethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichloroethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichloropropane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichlorotetrafluoroethane	ND	U	ND	D	3,300	D	760,000	D	2,200	D	110,000	D
1,3,5-Trimethylbenzene	ND	U	ND	U	27	D	43	D	ND	U	150	D
1,3-Butadiene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-Dichlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-Dichloropropane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-Dichlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-Dioxane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2-Butanone	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
2-Hexanone	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
3-Chloropropene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
4-Methyl-2-pentanone	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Acetone	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Acrylonitrile	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Benzene	ND	U	ND	U	450	D	160	D	ND	U	260	D
Benzyl chloride	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromodichloromethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromoform	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Bromomethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

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VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	VW-1		VW-2		VW-3		VW-4		VW-5		VW-6	
York ID	17F1126-01		17F1126-02		17F1126-03		17F1126-04		17F1126-05		17F1126-06	
Sampling Date	6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Client Matrix	Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Carbon disulfide	ND	U	7.100	D	ND	U	20	D	ND	U	ND	U
Carbon tetrachloride	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Chlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Chloroethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Chloroform	ND	U	16	D	ND	U	43	D	170	D	ND	U
Chloromethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
cis-1,2-Dichloroethylene	ND	U	ND	U	ND	U	27	D	ND	U	36	D
cis-1,3-Dichloropropylene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Cyclohexane	ND	U	ND	U	530	D	220	D	ND	U	290	D
Dibromochloromethane	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Dichlorodifluoromethane	21	D	250	D	4,500	D	1,100,000	D	2,100	D	160,000	D
Ethyl acetate	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Ethyl Benzene	ND	U	ND	U	13	D	89	D	ND	U	63	D
Hexachlorobutadiene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Isopropanol	ND	U	ND	U	34	D	ND	U	ND	U	ND	U
Methyl Methacrylate	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Methyl tert-butyl ether (MTBE)	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Methylene chloride	ND	U	ND	U	ND	U	16	D	ND	U	ND	U
n-Heptane	ND	U	ND	U	550	D	180	D	ND	U	1,100	D
n-Hexane	19	D	ND	U	3,500	D	490	D	ND	U	1,000	D
o-Xylene	ND	U	ND	U	30	D	92	D	ND	U	75	D
p- & m- Xylenes	ND	U	ND	U	43	D	130	D	ND	U	180	D
p-Ethyltoluene	ND	U	ND	U	16	D	65	D	ND	U	130	D
Propylene	19	D	ND	U	180	D	ND	U	ND	U	100	D
Styrene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Tetrachloroethylene	17	D	41	D	10	D	110	D	110	D	70	D
Tetrahydrofuran	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Toluene	ND	U	ND	U	52	D	410	D	ND	U	42	D
trans-1,2-Dichloroethylene	ND	U	ND	U	ND	U	ND	U	ND	U	9.800	D
trans-1,3-Dichloropropylene	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

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VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	VW-1		VW-2		VW-3		VW-4		VW-5		VW-6	
York ID	17F1126-01		17F1126-02		17F1126-03		17F1126-04		17F1126-05		17F1126-06	
Sampling Date	6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017		6/28/2017	
Client Matrix	Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Trichloroethylene	ND	U	ND	U	ND	U	33	D	17	D	30	D
Trichlorofluoromethane (Freon 11)	4,500	D	9.400	D	77	D	230,000	D	130	D	60	D
Vinyl acetate	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Vinyl bromide	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Vinyl Chloride	ND	U	ND	U	19	D	ND	U	ND	U	42	D

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JUNE 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-7**		**VW-9**		**VW-12**		**VW-8**		**VP-19**	
York ID	**17F1126-07**		**17F1126-08**		**17F1126-09**		**17F1252-01**		**17F1252-02**	
Sampling Date	**6/28/2017**		**6/28/2017**		**6/28/2017**		**6/29/2017**		**6/29/2017**	
Client Matrix	**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full l	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor	14.61		5027		14.41		15.11		15.23	
1,1,1,2-Tetrachloroethane	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,1-Trichloroethane	ND	U	ND	U	11	D	ND	U	ND	U
1,1,2,2-Tetrachloroethane	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-Trichloro-1,2,2-trifluoroetha	ND	U	ND	U	ND	U	ND	U	ND	U
1,1,2-Trichloroethane	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-Dichloroethane	ND	U	ND	U	ND	U	ND	U	ND	U
1,1-Dichloroethylene	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-Trichlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U
1,2,4-Trimethylbenzene	ND	U	ND	U	ND	U	21	D	ND	U
1,2-Dibromoethane	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichloroethane	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichloropropane	ND	U	ND	U	ND	U	ND	U	ND	U
1,2-Dichlorotetrafluoroethane	560	D	470,000	D	1,700	D	4,200	D	540	D
1,3,5-Trimethylbenzene	ND	U	ND	U	ND	U	19	D	ND	U
1,3-Butadiene	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-Dichlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U
1,3-Dichloropropane	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-Dichlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U
1,4-Dioxane	ND	U	ND	U	ND	U	ND	U	ND	U
2-Butanone	8.600	D	ND	U	ND	U	6.200	D	ND	U
2-Hexanone	ND	U	ND	U	ND	U	ND	U	ND	U
3-Chloropropene	ND	U	ND	U	ND	U	ND	U	ND	U
4-Methyl-2-pentanone	ND	U	ND	U	ND	U	ND	U	ND	U
Acetone	32	D	ND	U	ND	U	16	D	ND	U
Acrylonitrile	ND	U	ND	U	ND	U	ND	U	ND	U
Benzene	9.300	D	19	D	ND	U	33	D	ND	U
Benzyl chloride	ND	U	ND	U	ND	U	ND	U	ND	U
Bromodichloromethane	ND	U	ND	U	ND	U	ND	U	ND	U
Bromoform	ND	U	ND	U	ND	U	ND	U	ND	U
Bromomethane	ND	U	ND	U	ND	U	ND	U	ND	U

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VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	VW-7		VW-9		VW-12		VW-8		VP-19	
York ID	17F1126-07		17F1126-08		17F1126-09		17F1252-01		17F1252-02	
Sampling Date	6/28/2017		6/28/2017		6/28/2017		6/29/2017		6/29/2017	
Client Matrix	Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor		Soil Vapor	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Carbon disulfide	ND	U	6.800	D	ND	U	54	D	ND	U
Carbon tetrachloride	ND	U	ND	U	2.700	D	ND	U	ND	U
Chlorobenzene	ND	U	ND	U	ND	U	ND	U	ND	U
Chloroethane	ND	U	ND	U	ND	U	ND	U	ND	U
Chloroform	7.100	D	ND	U	55	D	ND	U	32	D
Chloromethane	3.300	D	ND	U	ND	U	ND	U	ND	U
cis-1,2-Dichloroethylene	ND	U	ND	U	ND	U	12	D	ND	U
cis-1,3-Dichloropropylene	ND	U	ND	U	ND	U	ND	U	ND	U
Cyclohexane	7	D	9.700	D	ND	U	49	D	ND	U
Dibromochloromethane	ND	U	ND	U	ND	U	ND	U	ND	U
Dichlorodifluoromethane	870	D	440,000	D	2,300	D	2,200	D	900	D
Ethyl acetate	ND	U	ND	U	ND	U	ND	U	ND	U
Ethyl Benzene	ND	U	ND	U	ND	U	9.200	D	ND	U
Hexachlorobutadiene	ND	U	ND	U	ND	U	ND	U	ND	U
Isopropanol	ND	U	ND	U	ND	U	ND	U	ND	U
Methyl Methacrylate	ND	U	ND	U	ND	U	ND	U	ND	U
Methyl tert-butyl ether (MTBE)	ND	U	ND	U	ND	U	ND	U	ND	U
Methylene chloride	ND	U	ND	U	ND	U	ND	U	ND	U
n-Heptane	14	D	21	D	ND	U	120	D	ND	U
n-Hexane	34	D	65	D	ND	U	37	D	ND	U
o-Xylene	ND	U	ND	U	ND	U	26	D	ND	U
p- & m- Xylenes	ND	U	ND	U	ND	U	39	D	ND	U
p-Ethyltoluene	ND	U	ND	U	ND	U	18	D	ND	U
Propylene	22	D	410	D	ND	U	240	D	3.700	D
Styrene	ND	U	ND	U	ND	U	ND	U	ND	U
Tetrachloroethylene	38	D	48	D	2,700	D	7.200	D	500	D
Tetrahydrofuran	ND	U	ND	U	ND	U	ND	U	ND	U
Toluene	ND	U	6.500	D	ND	U	18	D	ND	U
trans-1,2-Dichloroethylene	ND	U	ND	U	ND	U	ND	U	ND	U
trans-1,3-Dichloropropylene	ND	U	ND	U	ND	U	ND	U	ND	U

JUNE 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-7**		**VW-9**		**VW-12**		**VW-8**		**VP-19**	
York ID	**17F1126-07**		**17F1126-08**		**17F1126-09**		**17F1252-01**		**17F1252-02**	
Sampling Date	**6/28/2017**		**6/28/2017**		**6/28/2017**		**6/29/2017**		**6/29/2017**	
Client Matrix	**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Trichloroethylene	3.900	D	2.500	D	350	D	13	D	550	D
Trichlorofluoromethane (Freon 11	320	D	170,000	D	370	D	12	D	130	D
Vinyl acetate	ND	U	ND	U	ND	U	ND	U	ND	U
Vinyl bromide	ND	U	ND	U	ND	U	ND	U	ND	U
Vinyl Chloride	ND	U	ND	U	ND	U	32	D	ND	U

NOTES:

Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:

D=result is from an analysis that required a dilution

J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated

U=analyte not detected at or above the level indicated

B=analyte found in the analysis batch blank

E=result is estimated and cannot be accurately reported due to levels encountered or interferences

P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis

NT=this indicates the analyte was not a target for this sample

JUNE 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID York ID Sampling Date Client Matrix	SVE-2, VM-2 17F0150-01 6/2/2017 Soil Vapor		SVE-3 17F0150-02 6/2/2017 Soil Vapor	
Compound	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3		ug/m3	
Dilution Factor	672		685.6	
1,1,1,2-Tetrachloroethane	12	U	12	U
1,1,1-Trichloroethane	9.200	U	9.400	U
1,1,2,2-Tetrachloroethane	12	U	12	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	14	D	370	D
1,1,2-Trichloroethane	9.200	U	9.400	U
1,1-Dichloroethane	6.800	U	6.900	U
1,1-Dichloroethylene	6.700	U	6.800	U
1,2,4-Trichlorobenzene	12	U	13	U
1,2,4-Trimethylbenzene	48	D	8.400	U
1,2-Dibromoethane	13	U	13	U
1,2-Dichlorobenzene	10	U	10	U
1,2-Dichloroethane	6.800	U	6.900	U
1,2-Dichloropropane	7.800	U	7.900	U
1,2-Dichlorotetrafluoroethane	130,000	D	170,000	D
1,3,5-Trimethylbenzene	34	D	8.400	U
1,3-Butadiene	11	U	11	U
1,3-Dichlorobenzene	10	U	10	U
1,3-Dichloropropane	7.800	U	7.900	U
1,4-Dichlorobenzene	10	U	10	U
1,4-Dioxane	12	U	12	U
2-Butanone	8.400	D	6.600	D
2-Hexanone	14	U	14	U
3-Chloropropene	26	U	27	U
4-Methyl-2-pentanone	6.900	U	7	U

JUNE 2017

VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES

109-125 MARBLEDALE ROAD

TUCKAHOE, NEW YORK

BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID **York ID** **Sampling Date** **Client Matrix**	**SVE-2, VM-2** **17F0150-01** **6/2/2017** **Soil Vapor**		**SVE-3** **17F0150-02** **6/2/2017** **Soil Vapor**	
Compound	Result	Q	Result	Q
Acetone	180	D	45	D
Acrylonitrile	3.600	U	3.700	U
Benzene	110	D	5.500	U
Benzyl chloride	8.700	U	8.900	U
Bromodichloromethane	11	U	11	U
Bromoform	17	U	18	U
Bromomethane	6.500	U	6.700	U
Carbon disulfide	13	D	5.300	U
Carbon tetrachloride	2.600	U	2.700	U
Chlorobenzene	7.700	U	7.900	U
Chloroethane	4.400	U	4.500	U
Chloroform	8.200	U	8.400	U
Chloromethane	3.500	U	3.500	U
cis-1,2-Dichloroethylene	19	D	6.800	U
cis-1,3-Dichloropropylene	7.600	U	7.800	U
Cyclohexane	300	D	77	D
Dibromochloromethane	14	U	15	U
Dichlorodifluoromethane	97,000	D	170,000	D
Ethyl acetate	12	U	12	U
Ethyl Benzene	8.800	D	7.400	U
Hexachlorobutadiene	18	U	18	U
Isopropanol	12	D	8.400	U
Methyl Methacrylate	6.900	U	7	U
Methyl tert-butyl ether (MTBE)	6.100	U	6.200	U

JUNE 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**SVE-2, VM-2**		**SVE-3**	
York ID	**17F0150-01**		**17F0150-02**	
Sampling Date	**6/2/2017**		**6/2/2017**	
Client Matrix	**Soil Vapor**		**Soil Vapor**	
Compound	Result	Q	Result	Q
Methylene chloride	12	U	12	U
n-Heptane	510	D	7	U
n-Hexane	830	D	170	D
o-Xylene	20	D	7.400	U
p- & m- Xylenes	31	D	15	U
p-Ethyltoluene	30	D	8.400	U
Propylene	250	D	92	D
Styrene	7.200	U	7.300	U
Tetrachloroethylene	24	D	5.800	D
Tetrahydrofuran	9.900	U	30	D
Toluene	8.900	D	6.500	U
trans-1,2-Dichloroethylene	6.700	U	6.800	U
trans-1,3-Dichloropropylene	7.600	U	7.800	U
Trichloroethylene	11	D	2.800	D
Trichlorofluoromethane (Freon 11)	100	D	890	D

JUNE 2017

VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES

109-125 MARBLEDALE ROAD

TUCKAHOE, NEW YORK

BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID **York ID** **Sampling Date** **Client Matrix**	**SVE-2, VM-2** **17F0150-01** **6/2/2017** **Soil Vapor**		**SVE-3** **17F0150-02** **6/2/2017** **Soil Vapor**	
Compound	Result	Q	Result	Q
Vinyl acetate	5.900	U	6	U
Vinyl bromide	7.300	U	7.500	U
Vinyl Chloride	86	D	4.400	D

NOTES:

Any detections are highlighted.

Q is the Qualifier Column with definitions as follows:

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J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated

U=analyte not detected at or above the level indicated

B=analyte found in the analysis batch blank

E=result is estimated and cannot be accurately reported due to levels encountered or interferences

P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis

NT=this indicates the analyte was not a target for this sample

~=this indicates that no regulatory limit has been established for this analyte

OCTOBER 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-1**		**VW-2**		**VW-3**		**VW-4**		**VW-5**		**VW-6**	
York ID	**17J0914-11**		**17J0914-06**		**17J0914-08**		**17J0914-09**		**17J0914-07**		**17J0914-10**	
Sampling Date	**10/20/2017**		**10/20/2017**		**10/20/2017**		**10/20/2017**		**10/20/2017**		**10/20/2017**	
Client Matrix	**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor	14.52		66.76		549		70750		14.89		1086	
1,1,1,2-Tetrachloroethane	10	U	46	U	76	U	78	U	10	U	75	U
1,1,1-Trichloroethane	7.900	U	36	U	60	U	62	U	8.100	U	59	U
1,1,2,2-Tetrachloroethane	10	U	46	U	76	U	78	U	10	U	75	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	11	U	51	U	84	U	150	D	11	U	84	U
1,1,2-Trichloroethane	7.900	U	36	U	60	U	62	U	8.100	U	59	U
1,1-Dichloroethane	5.900	U	27	U	45	U	46	U	6	U	44	U
1,1-Dichloroethylene	5.800	U	26	U	44	U	45	U	5.900	U	43	U
1,2,4-Trichlorobenzene	11	U	50	U	82	U	84	U	11	U	81	U
1,2,4-Trimethylbenzene	7.100	D	33	U	54	U	56	U	7.300	U	54	U
1,2-Dibromoethane	11	U	51	U	85	U	87	U	11	U	84	U
1,2-Dichlorobenzene	8.700	U	40	U	66	U	68	U	9	U	66	U
1,2-Dichloroethane	5.900	U	27	U	45	U	46	U	6	U	44	U
1,2-Dichloropropane	6.700	U	31	U	51	U	52	U	6.900	U	50	U
1,2-Dichlorotetrafluoroethane	920	D	3,100	D	110,000	D	10,000,000	D	820	D	160,000	D
1,3,5-Trimethylbenzene	7.100	U	33	U	54	U	56	U	7.300	U	54	U
1,3-Butadiene	9.600	U	44	U	73	U	75	U	9.900	U	72	U
1,3-Dichlorobenzene	8.700	U	40	U	66	U	68	U	9	U	66	U
1,3-Dichloropropane	6.700	U	31	U	51	U	52	U	6.900	U	50	U
1,4-Dichlorobenzene	8.700	U	40	U	66	U	68	U	9	U	66	U
1,4-Dioxane	10	U	48	U	79	U	81	U	11	U	79	U
2-Butanone	14	D	20	U	32	U	33	U	4.400	U	32	U
2-Hexanone	12	U	55	U	90	U	93	U	12	U	89	U
3-Chloropropene	23	U	100	U	170	U	180	U	23	U	170	U
4-Methyl-2-pentanone	5.900	U	27	U	45	U	46	U	6.100	U	45	U
Acetone	390	D	35	D	52	U	54	U	9.600	D	52	U
Acrylonitrile	3.200	U	14	U	24	U	25	U	3.200	U	24	U
Benzene	4.600	U	34	D	53	D	160	D	4.800	U	360	D
Benzyl chloride	7.500	U	35	U	57	U	59	U	7.700	U	56	U
Bromodichloromethane	9.700	U	45	U	74	U	76	U	10	U	73	U
Bromoform	15	U	69	U	110	U	120	U	15	U	110	U
Bromomethane	5.600	U	26	U	43	U	44	U	5.800	U	42	U
Carbon disulfide	4.500	U	21	U	34	U	35	U	4.600	U	34	U
Carbon tetrachloride	2.300	U	11	U	17	U	18	U	2.300	U	17	U
Chlorobenzene	6.700	U	31	U	51	U	52	U	6.900	U	50	U
Chloroethane	3.800	U	18	U	29	U	30	U	3.900	U	29	U
Chloroform	7.100	U	33	U	54	U	55	U	710	D	53	U
Chloromethane	3	U	14	U	23	U	23	U	3.100	U	23	U
cis-1,2-Dichloroethylene	5.800	U	26	U	44	U	45	U	5.900	U	48	D
cis-1,3-Dichloropropylene	6.600	U	30	U	50	U	51	U	6.800	U	49	U
Cyclohexane	5	U	23	U	120	D	190	D	5.100	U	780	D
Dibromochloromethane	12	U	57	U	94	U	96	U	13	U	93	U
Dichlorodifluoromethane	700	D	4,200	D	25,000	D	6,700,000	D	3,200	D	110,000	D
Ethyl acetate	15	D	48	U	79	U	81	U	11	U	330	D
Ethyl Benzene	18	D	29	U	48	U	49	U	6.500	U	47	U
Hexachlorobutadiene	15	U	71	U	120	U	120	U	16	U	120	U
Isopropanol	12	D	33	U	54	U	56	U	7.300	U	54	U
Methyl Methacrylate	5.900	U	27	U	45	U	46	U	6.100	U	45	U
Methyl tert-butyl ether (MTBE)	5.200	U	24	U	40	U	41	U	5.400	U	39	U

OCTOBER 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-1**		**VW-2**		**VW-3**		**VW-4**		**VW-5**		**VW-6**	
York ID	**17J0914-11**		**17J0914-06**		**17J0914-08**		**17J0914-09**		**17J0914-07**		**17J0914-10**	
Sampling Date	**10/20/2017**		**10/20/2017**		**10/20/2017**		**10/20/2017**		**10/20/2017**		**10/20/2017**	
Client Matrix	**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Methylene chloride	10	U	46	U	76	U	79	U	10	U	76	U
n-Heptane	6	U	27	U	160	D	180	D	6.100	U	1,900	D
n-Hexane	8.200	D	24	U	790	D	870	D	5.200	U	2,200	D
o-Xylene	19	D	29	U	48	U	49	U	6.500	U	52	D
p- & m- Xylenes	67	D	58	U	96	U	98	U	13	U	99	D
p-Ethyltoluene	9.300	D	33	U	54	U	56	U	7.300	U	54	U
Propylene	9.700	D	130	D	400	D	19	U	2.600	U	19	U
Styrene	6.200	U	28	U	47	U	48	U	6.300	U	46	U
Tetrachloroethylene	3.900	D	11	U	19	U	170	D	120	D	22	D
Tetrahydrofuran	8.600	U	39	U	65	U	67	U	8.800	U	64	U
Toluene	11	D	25	U	41	U	980	D	5.600	U	290	D
trans-1,2-Dichloroethylene	5.800	U	26	U	44	U	45	U	5.900	U	43	U
trans-1,3-Dichloropropylene	6.600	U	30	U	50	U	51	U	6.800	U	49	U
Trichloroethylene	2	U	9	U	15	U	18	D	21	D	47	D
Trichlorofluoromethane (Freon 11)	15	D	38	U	62	U	50,000	D	540	D	98	D
Vinyl acetate	5.100	U	24	U	39	U	40	U	5.200	U	38	U
Vinyl bromide	6.400	U	29	U	48	U	49	U	6.500	U	48	U
Vinyl Chloride	3.700	U	17	U	28	U	29	U	3.800	U	100	D

NOTES:
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~=this indicates that no regulatory limit has been established for this analyte

OCTOBER 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID York ID Sampling Date Client Matrix	VW-7 17J0914-03 10/20/2017 Soil Vapor		VW-8 17J0914-02 10/20/2017 Soil Vapor		VW-9 17J0914-01 10/20/2017 Soil Vapor		VW-12 17J0914-04 10/20/2017 Soil Vapor		VW-19 17J0914-05 10/20/2017 Soil Vapor	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List	ug/m3		ug/m3		ug/m3		ug/m3		ug/m3	
Dilution Factor	15.53		14.89		3434		57.64		14.15	
1,1,1,2-Tetrachloroethane	11	U	10	U	94	U	40	U	9.700	U
1,1,1-Trichloroethane	8.500	U	8.100	U	75	U	31	U	7.700	U
1,1,2,2-Tetrachloroethane	11	U	10	U	94	U	40	U	9.700	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	12	U	11	U	100	U	44	U	11	U
1,1,2-Trichloroethane	8.500	U	8.100	U	75	U	31	U	7.700	U
1,1-Dichloroethane	6.300	U	6	U	55	U	23	U	5.700	U
1,1-Dichloroethylene	6.200	U	5.900	U	54	U	23	U	5.600	U
1,2,4-Trichlorobenzene	12	U	87	D	100	U	43	U	11	U
1,2,4-Trimethylbenzene	7.600	U	7.300	U	67	U	28	U	7	U
1,2-Dibromoethane	12	U	11	U	110	U	44	U	11	U
1,2-Dichlorobenzene	9.300	U	9	U	82	U	35	U	8.500	U
1,2-Dichloroethane	6.300	U	6	U	55	U	23	U	5.700	U
1,2-Dichloropropane	7.200	U	6.900	U	63	U	27	U	6.500	U
1,2-Dichlorotetrafluoroethane	560	D	86	D	90,000	D	1,100	D	110	D
1,3,5-Trimethylbenzene	7.600	U	7.300	U	67	U	28	U	7	U
1,3-Butadiene	10	U	9.900	U	91	U	38	U	9.400	U
1,3-Dichlorobenzene	9.300	U	9	U	82	U	35	U	8.500	U
1,3-Dichloropropane	7.200	U	6.900	U	63	U	27	U	6.500	U
1,4-Dichlorobenzene	9.300	U	9	U	82	U	35	U	8.500	U
1,4-Dioxane	11	U	11	U	99	U	42	U	10	U
2-Butanone	4.600	D	4.400	U	40	U	17	U	64	D
2-Hexanone	13	U	12	U	110	U	47	U	46	D
3-Chloropropene	24	U	23	U	210	U	90	U	22	U
4-Methyl-2-pentanone	6.400	U	6.100	U	56	U	24	U	5.800	U
Acetone	16	D	31	D	68	D	36	D	150	D
Acrylonitrile	3.400	U	3.200	U	30	U	13	U	3.100	U
Benzene	5	U	4.800	U	66	D	18	U	4.500	U
Benzyl chloride	8	U	7.700	U	71	U	30	U	7.300	U
Bromodichloromethane	10	U	10	U	92	U	39	U	9.500	U
Bromoform	16	U	15	U	140	U	60	U	15	U
Bromomethane	6	U	5.800	U	53	U	22	U	5.500	U
Carbon disulfide	4.800	U	4.600	U	43	U	18	U	4.400	U
Carbon tetrachloride	2.400	U	2.300	U	22	U	9.100	U	2.200	U
Chlorobenzene	7.100	U	6.900	U	63	U	27	U	6.500	U
Chloroethane	4.100	U	3.900	U	36	U	15	U	3.700	U
Chloroform	7.600	U	7.300	U	67	U	45	D	9.700	D
Chloromethane	3.200	U	3.100	U	28	U	12	U	2.900	U
cis-1,2-Dichloroethylene	6.200	U	5.900	U	54	U	23	U	5.600	U
cis-1,3-Dichloropropylene	7	U	6.800	U	62	U	26	U	6.400	U

OCTOBER 2017
VOLATILE ORGANIC COMPOUND ANALYSIS OF SOIL VAPOR SAMPLES
109-125 MARBLEDALE ROAD
TUCKAHOE, NEW YORK
BROWNFIELD CLEANUP PROGRAM SITE #C360143

Sample ID	**VW-7**		**VW-8**		**VW-9**		**VW-12**		**VW-19**	
York ID	**17J0914-03**		**17J0914-02**		**17J0914-01**		**17J0914-04**		**17J0914-05**	
Sampling Date	**10/20/2017**		**10/20/2017**		**10/20/2017**		**10/20/2017**		**10/20/2017**	
Client Matrix	**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**		**Soil Vapor**	
Compound	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Cyclohexane	5.300	U	5.100	U	52	D	20	U	4.900	U
Dibromochloromethane	13	U	13	U	120	U	49	U	12	U
Dichlorodifluoromethane	1,500	D	84	D	180,000	D	3,300	D	290	D
Ethyl acetate	11	U	11	U	99	U	42	U	10	U
Ethyl Benzene	6.700	U	6.500	U	59	U	25	U	6.100	U
Hexachlorobutadiene	17	U	16	U	150	U	61	U	15	U
Isopropanol	7.600	U	26	D	67	U	28	U	9	D
Methyl Methacrylate	6.400	U	6.100	U	56	U	24	U	5.800	U
Methyl tert-butyl ether (MTBE)	5.600	U	5.400	U	49	U	21	U	5.100	U
Methylene chloride	17	D	10	U	95	U	40	U	9.800	U
n-Heptane	6.400	U	6.100	U	100	D	24	U	5.800	U
n-Hexane	5.500	U	5.200	U	110	D	20	U	5	U
o-Xylene	6.700	U	6.500	U	59	U	25	U	6.100	U
p- & m- Xylenes	13	U	13	U	120	U	50	U	12	U
p-Ethyltoluene	7.600	U	7.300	U	67	U	28	U	7	U
Propylene	2.700	U	3.600	D	900	D	9.900	U	10	D
Styrene	6.600	U	6.300	U	58	U	25	U	6	U
Tetrachloroethylene	360	D	2.500	U	46	D	9,100	D	370	D
Tetrahydrofuran	9.200	U	8.800	U	81	U	34	U	8.300	U
Toluene	5.900	U	5.600	U	52	U	22	U	5.300	U
trans-1,2-Dichloroethylene	6.200	U	5.900	U	54	U	23	U	5.600	U
trans-1,3-Dichloropropylene	7	U	6.800	U	62	U	26	U	6.400	U
Trichloroethylene	35	D	2	U	29	D	250	D	620	D
Trichlorofluoromethane (Freon 11)	160	D	8.400	U	11,000	D	180	D	18	D
Vinyl acetate	5.500	U	5.200	U	48	U	20	U	5	U
Vinyl bromide	6.800	U	6.500	U	60	U	25	U	6.200	U
Vinyl Chloride	4	U	3.800	U	35	U	15	U	3.600	U

NOTES:
Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:
D=result is from an analysis that required a dilution
J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
U=analyte not detected at or above the level indicated
B=analyte found in the analysis batch blank
E=result is estimated and cannot be accurately reported due to levels encountered or interferences
P=this flag is used for pesticide and PCB (Aroclor) target compounds when there is a % difference for detected concentrations that exceed method dictated limits between the two GC columns used for analysis
NT=this indicates the analyte was not a target for this sample
~=this indicates that no regulatory limit has been established for this analyte

ATTACHMENT 2

MARBLEDALE ROAD
TUCKAHOE, NEW YORK

SUB-SLAB DEPRESSURIZATION SYSTEM

NOVEMBER 2018

DuBois & King inc.

PROJECT LOCATION PLAN
SCALE: 1" = 250 FEET ±

INDEX OF DRAWINGS

△1
NOTES:
PROPOSED SSDS DESIGN IS BASED ON THE APPROVED RAWP, NYSDEC DECISION DOCUMENT, AND THE VILLAGE PLANNING BOARD RESOLUTION. THE SSDS SHALL BE OPERATED, MONITORED, AND MAINTAINED AS PER THE FUTURE SITE MANAGEMENT PLAN (SMP).

I:\2\223060 hes 109 marbledale road\DWG\SSDS Design 11–17–2017.dwg 3/7/2019 12:03 PM

DuBois & King inc.
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SPRINGFIELD, VT
BEDFORD, NH
LACONIA, NH

PROFESSIONAL SEAL

STATE OF NEW YORK · JONATHAN B. ASHLEY · NO. 079818 · LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY	CK'D
1	8–29–17	ADDED NOTES	AJS	JBA

HYDRO-ENVIRONMENTAL SOLUTIONS, INC.

ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

109 MARBLEDALE ROAD

TUCKAHOE, NY

SHEET TITLE

TITLE SHEET

DRAWN BY	DATE
TJD	NOV. 2018
CHECKED BY	D&K PROJECT #
WAC(HES)	223060
PROJ. ENG.	D&K ARCHIVE #
JBA	

SHEET NUMBER

G 1

SHEET 1 OF 9

LEGEND

- PROPOSED CURB
- EXISTING EDGE OF PAVEMENT
- PROPERTY LINE
- EXISTING CONTOUR
- 132 PROPOSED CONTOUR
- + 127.29 EXISTING SPOT ELEVATION
- + 133.00 PROPOSED SPOT ELEVATION
- EXISTING STORM LINE
- ST PROPOSED STORM LINE
- EXISTING SANITARY LINE
- SAN PROPOSED SANITARY LINE
- x x PROPOSED DECORATIVE FENCE
- W PROPOSED WATER SERVICE
- W EXISTING WATER MAIN
- GAS GAS PROPOSED GAS SERVICE
- PROPOSED E INLET
- PROPOSED MANHOLE
- EXISTING MANHOLE
- PROPOSED CONC. FLATWORK
- INDICATED DROP CURB
- SSDS MONITORING POINT
- CONVEYANCE PIPE
- DESIGN AREA OF INFLUENCE FOR SSDS
- SSDS MONITORING OUTSIDE ACCESS POINT

40 0 20 40 80 160
SCALE IN FEET

NOTES:
TOPOGRAPHIC AND SITE LAYOUT INFORMATION IN THIS PLAN ARE FROM "OVERALL GRADING & UTILITY PLAN – G1" BY ANTHONY CASTILLO, P.E. OF SESI CONSULTING ENGINEERS, PC ON 11/21/2014, LAST REVISED ON 4/15/2016

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PROFESSIONAL SEAL

STATE OF NEW YORK · JONATHAN B. ASHLEY · LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY	CK'D
2	8-29-17	ADDED NOTE	AJS	JBA
1	8-22-17	REVISED NOTES	JBA	JBA

HYDRO-ENVIRONMENTAL SOLUTIONS, INC.

ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

109 MARBLEDALE ROAD

TUCKAHOE, NY

SHEET TITLE

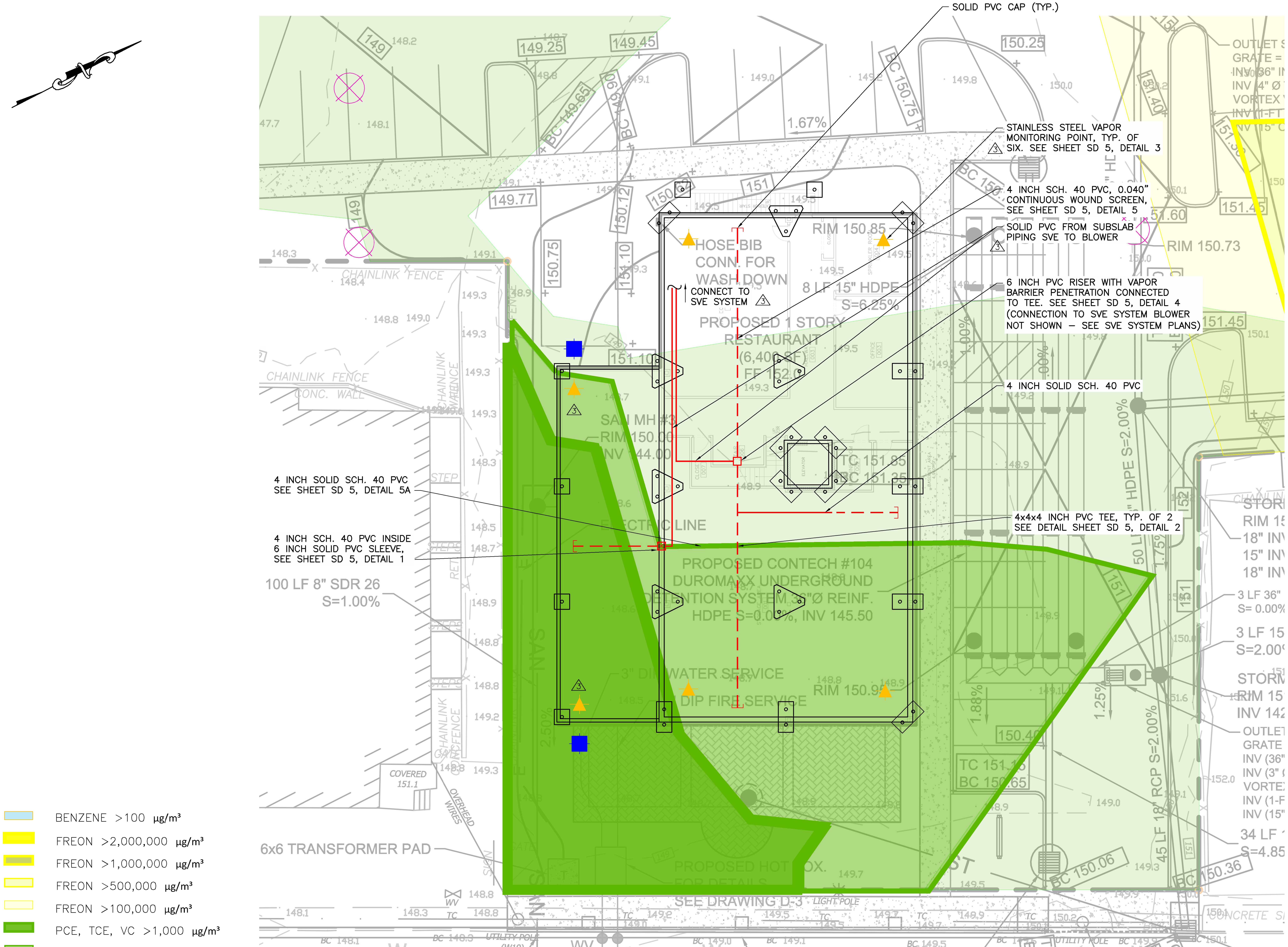
SUB-SLAB DEPRESSURIZATION SYSTEM OVERALL PLAN

DRAWN BY	DATE
TJD	NOV. 2018
CHECKED BY	D&K PROJECT #
WAC(HES)	223060
PROJ. ENG.	D&K ARCHIVE #
JBA	

SHEET NUMBER

SD 1

SHEET 2 OF 9



	BENZENE >100 µg/m³
	FREON >2,000,000 µg/m³
	FREON >1,000,000 µg/m³
	FREON >500,000 µg/m³
	FREON >100,000 µg/m³
	PCE, TCE, VC >1,000 µg/m³
	PCE, TCE, VC >500 µg/m³
	PCE, TCE, VC >100 µg/m³

NOTES:
FOUNDATION PLAN DEVELOPED FROM DRAWING SET TITLED "PROPOSED RESTAURANT SHELL – 151 MARBLEDALE ROAD – TUCKAHOE, NEW YORK 10707" BY studio T3, ENGINEERING, PLLC DATED 07-17-18, SHEETS S-1.0 AND S-3.1.

10 0 5 10 20 40
SCALE IN FEET

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PROFESSIONAL SEAL

STATE OF NEW YORK – JONATHAN B. ASHLEY – LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY	CK'D
3	3-7-19	ADDED PIPING & VAPOR MONITORING POINTS	TJD	JBA

HYDRO-ENVIRONMENTAL SOLUTIONS, INC.

ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

109 MARBLEDALE ROAD

TUCKAHOE, NY

SHEET TITLE

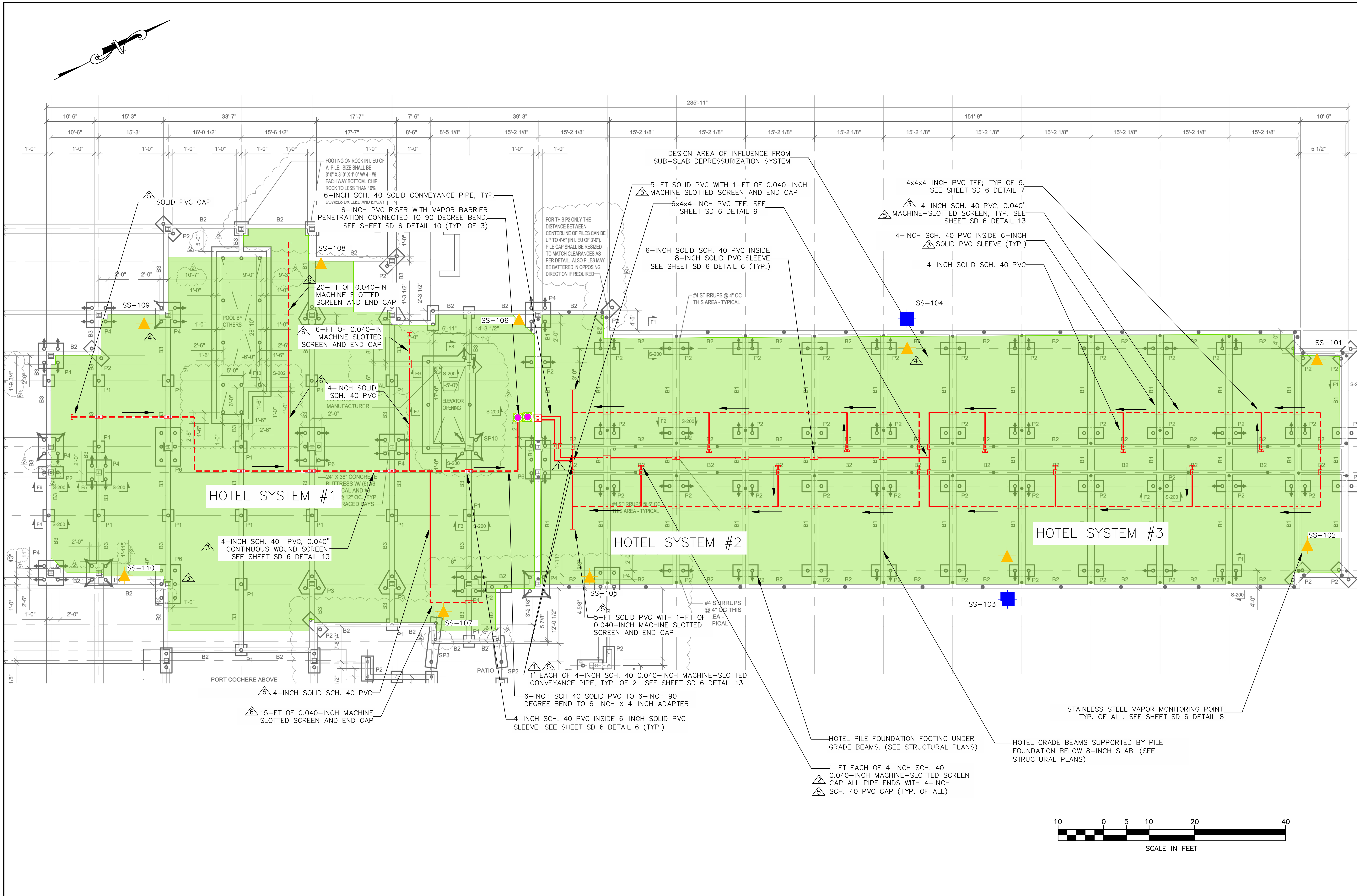
SUB-SLAB DEPRESSURIZATION SYSTEM RESTAURANT LAYOUT PLAN

DRAWN BY: TJD	DATE: NOV. 2018
CHECKED BY: WAC(HES)	D&K PROJECT #: 223060
PROJ. ENG.: JBA	D&K ARCHIVE #:

SHEET NUMBER

SD 2

SHEET 3 OF 9



NOTES:
SITE LAYOUT INFORMATION IN THIS PLAN ARE FROM "FOUNDATION PLAN – S-100" BY MICHAEL MACRI, P.E. OF MCSE, PC ON 02/03/2017, LAST REVISED ON 07/31/2017

I:\2\223060 hes 109 marbledale road\DWG\SSDS Design 11-17-2017.dwg 3/7/2019 12:05 PM

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PROFESSIONAL SEAL

STATE OF NEW YORK · JONATHAN B. ASHLEY · LICENSED PROFESSIONAL ENGINEER · NO. 079818

NO.	DATE	DESCRIPTION	BY	CK'D
6	12-14-2017	ADD LEGS TO HOTEL SYSTEM #1	CWJ	JBA
5	12-4-2017	REVISE SYSTEM-MACHINE-SLOTTED SCREEN	CWJ	JBA
4	9-6-2017	ADDED TWO VAPOR MONITORING POINTS	CWJ	JBA
3	8-29-17	REVISED NOTES	AJS	JBA
2	8-22-17	ADDED CAPS AT ALL PIPE ENDS	JBA	JBA
1	8-19-17	ADDED SLOTTED PIPING TO HOTEL SYST. #2	CWJ	JBA

HYDRO-ENVIRONMENTAL SOLUTIONS, INC.

ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

109 MARBLEDALE ROAD

TUCKAHOE, NY

SHEET TITLE

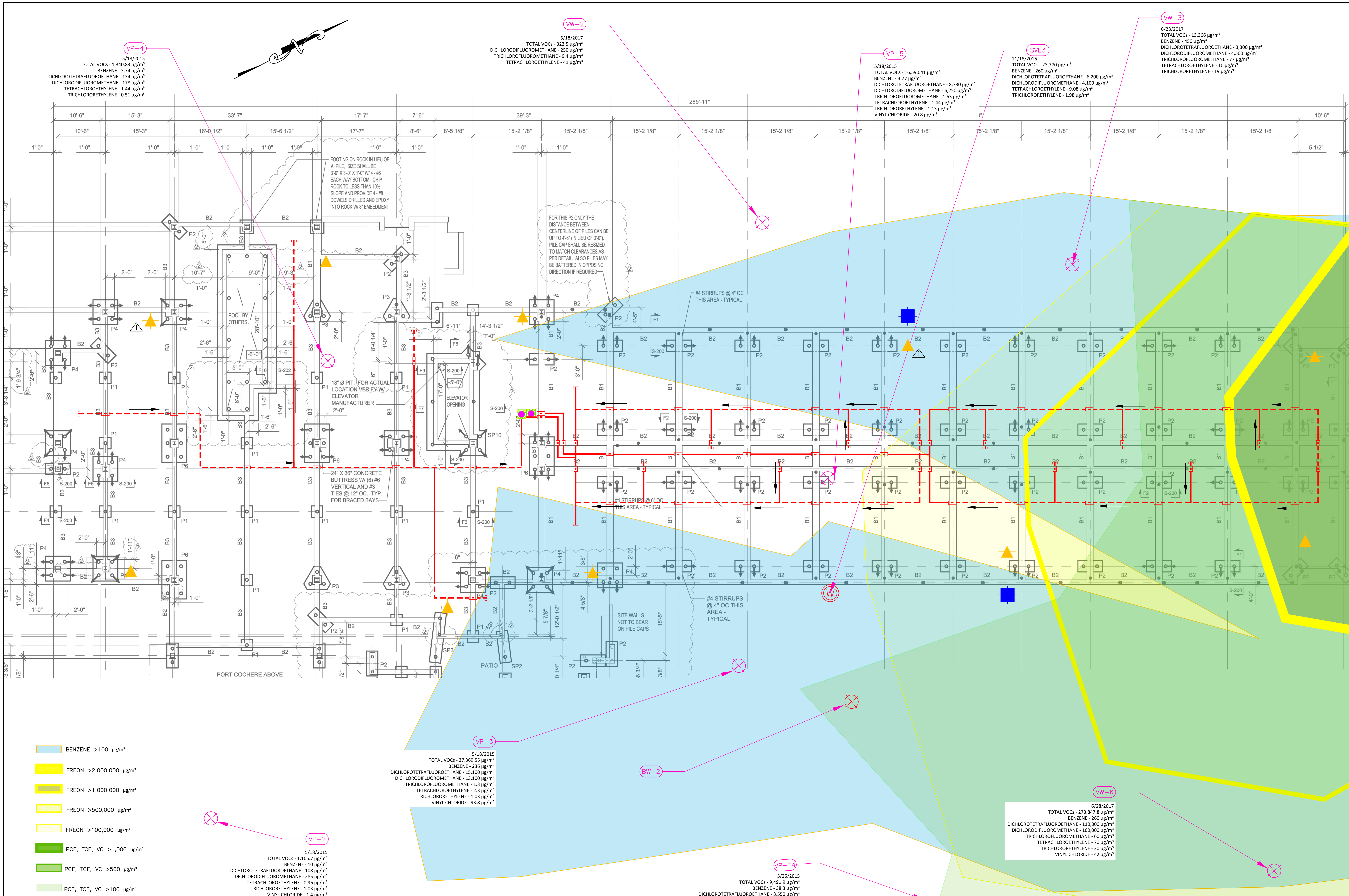
SUB-SLAB DEPRESSURIZATION SYSTEM HOTEL FOUNDATION LAYOUT PLAN

DRAWN BY	DATE
TJD	NOV. 2018
CHECKED BY	D&K PROJECT #
WAC(HES)	223060
PROJ. ENG.	D&K ARCHIVE #
JBA	

SHEET NUMBER

SD 3

SHEET 4 OF 9



NOTES:
SITE LAYOUT INFORMATION IN THIS PLAN ARE FROM "FOUNDATION PLAN – S-100" BY MICHAEL MACRI, P.E. OF MCSE, PC ON 02/03/2017, LAST REVISED ON 07/31/2017

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NO.	DATE	DESCRIPTION	BY	CK'D
1	9-6-2017	ADDED TWO VAPOR MONITORING POINTS	CWJ	JBA

HYDRO-ENVIRONMENTAL SOLUTIONS, INC.

ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

109 MARBLEDALE ROAD

TUCKAHOE, NY

SHEET TITLE

HOTEL SUB-SLAB DEPRESSURIZATION SYSTEM PLAN WITH VAPOR PHASE CONTAMINANT DISTRIBUTION

DRAWN BY	DATE
TJD	NOV. 2018
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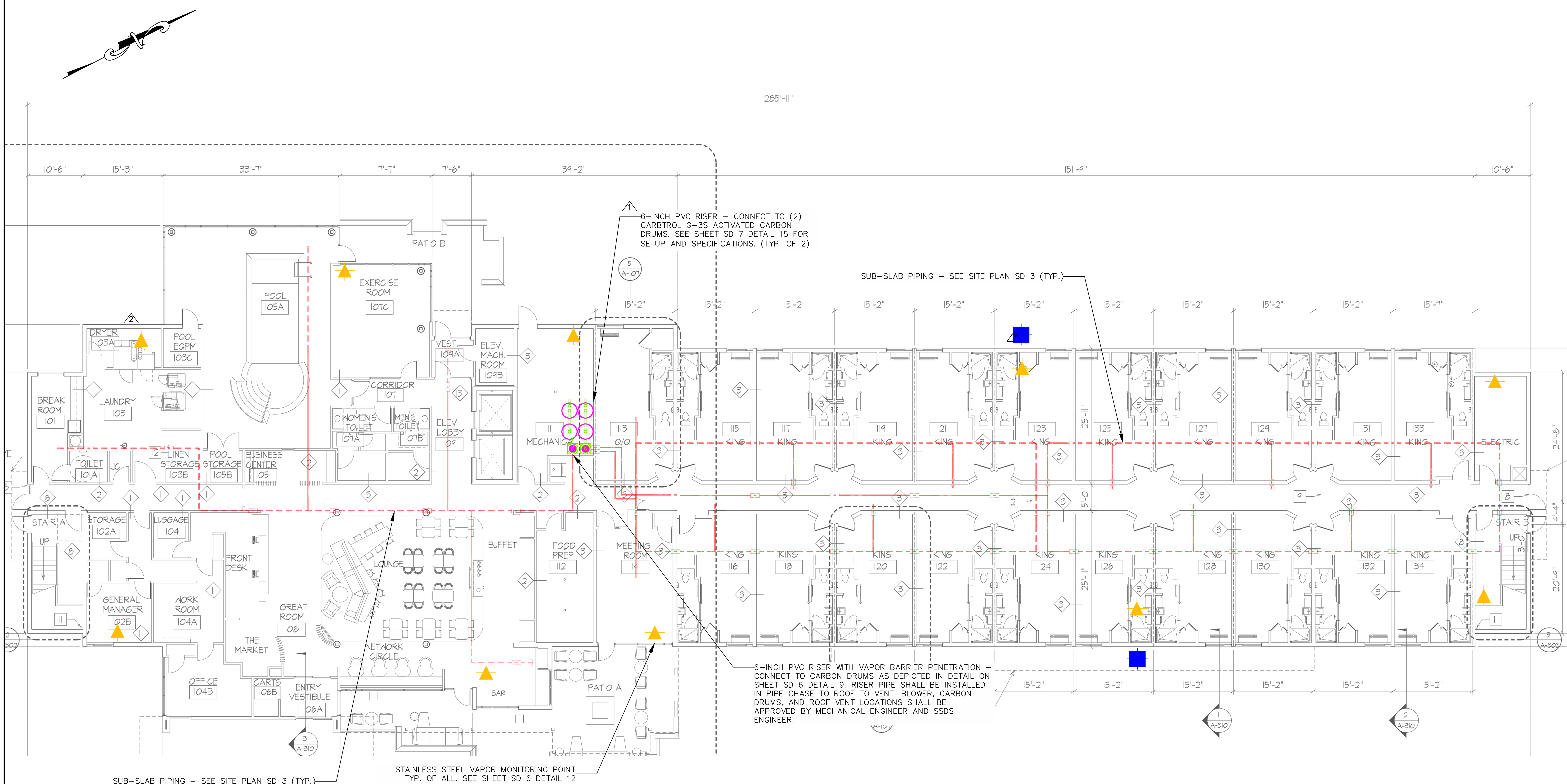
WAC(HES)	223060
PROJ. ENG.	D&K ARCHIVE #
JBA	

SHEET NUMBER

SD 3A

SHEET 5 OF 9



LEGEND

- SSDS MONITORING POINT
- SLOTTED CONVEYANCE PIPE
- SOLID CONVEYANCE PIPE
- RISER PENETRATION
- CARBON DRUM
- SSDS MONITORING ACCESS POINT

10 0 5 10 20 40

SCALE IN FEET

NOTES:
SITE LAYOUT INFORMATION IN THIS PLAN ARE FROM "FIRST FLOOR PLAN – A-101" BY WARSHAUER MELLUSI WARSHAUER ARCHITECTS, PC ON 04/26/2013

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STATE OF NEW YORK · JONATHAN B. ASHLEY · LICENSED PROFESSIONAL ENGINEER

NO.	DATE	DESCRIPTION	BY	CK'D
2	9-6-2017	ADDED TWO VAPOR MONITORING POINTS	CWJ	JBA
1	8-29-17	REVISED CARBON SPEC.	AJS	JBA

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ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

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TUCKAHOE, NY

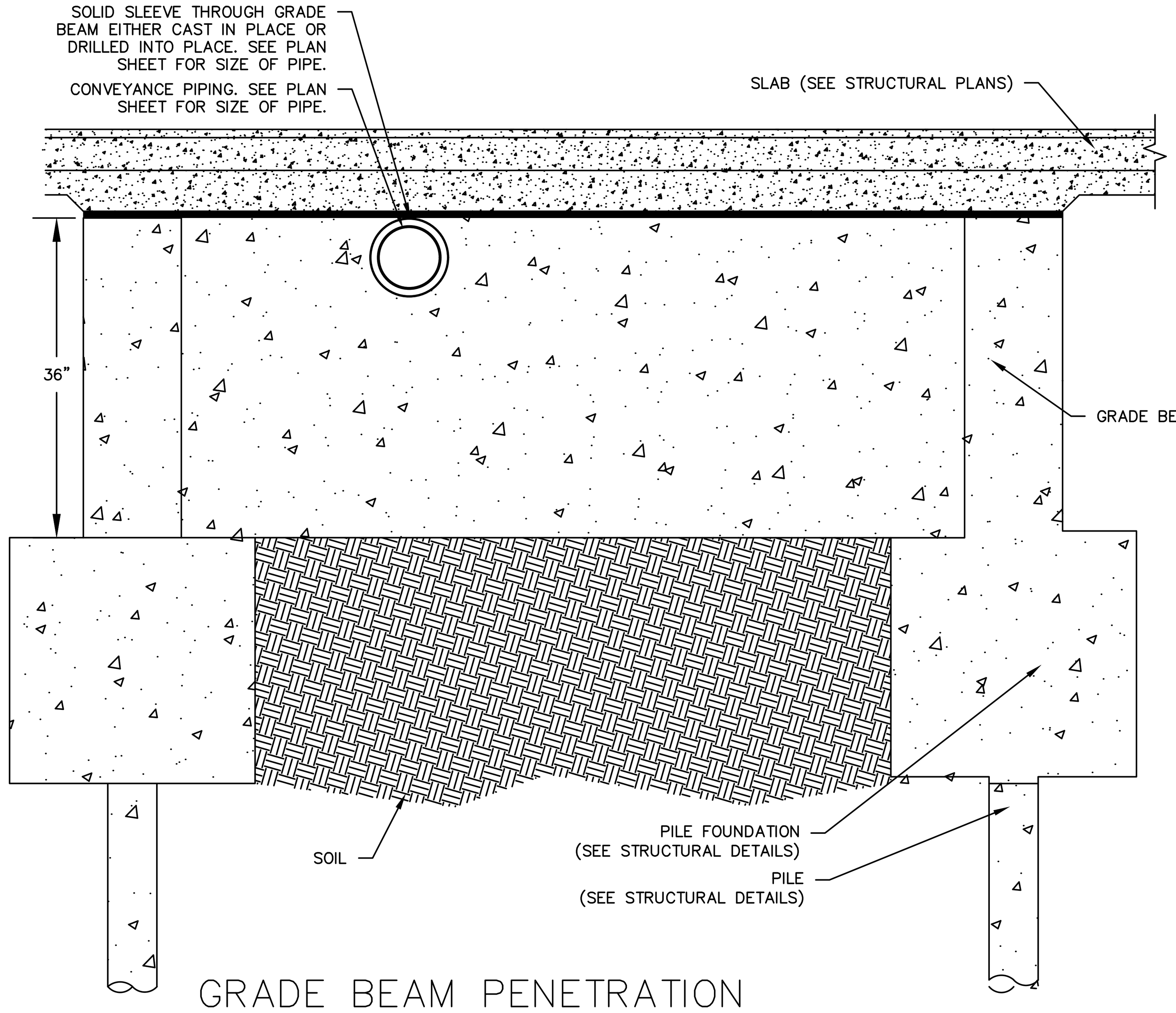
SHEET TITLE

SUB-SLAB DEPRESSURIZATION SYSTEM HOTEL FLOOR PLAN SITE PLAN

DRAWN BY	DATE
TJD	NOV. 2018
CHECKED BY	D&K PROJECT #
WAC(HES)	223060
PROJ. ENG.	D&K ARCHIVE #
JBA	

SHEET NUMBER

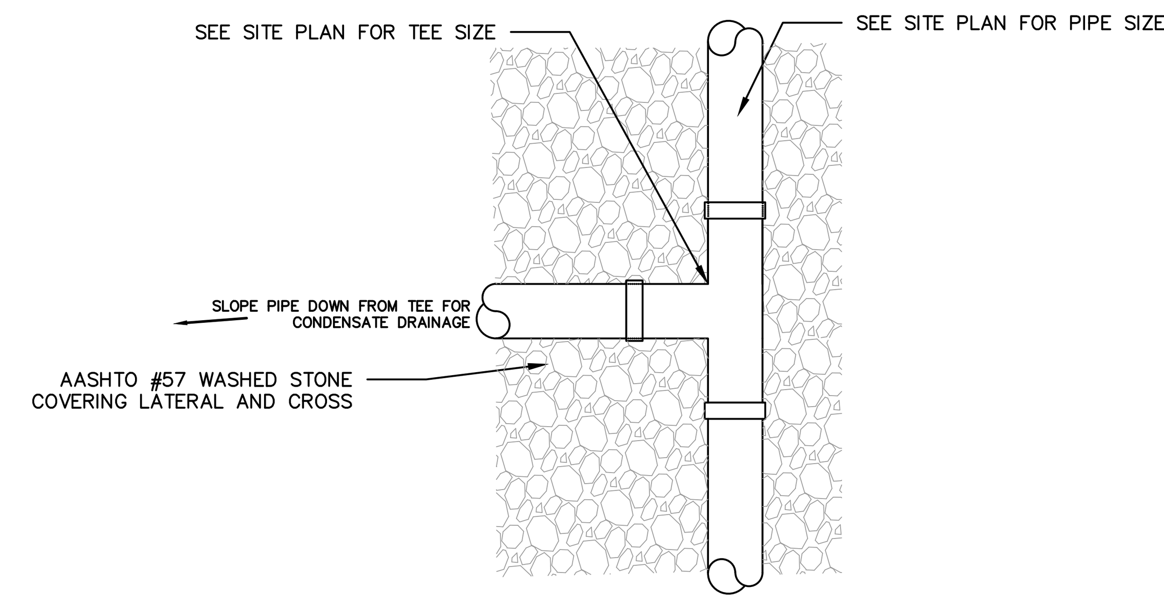
SD 4



GRADE BEAM PENETRATION CROSS SECTION (IF NECESSARY)

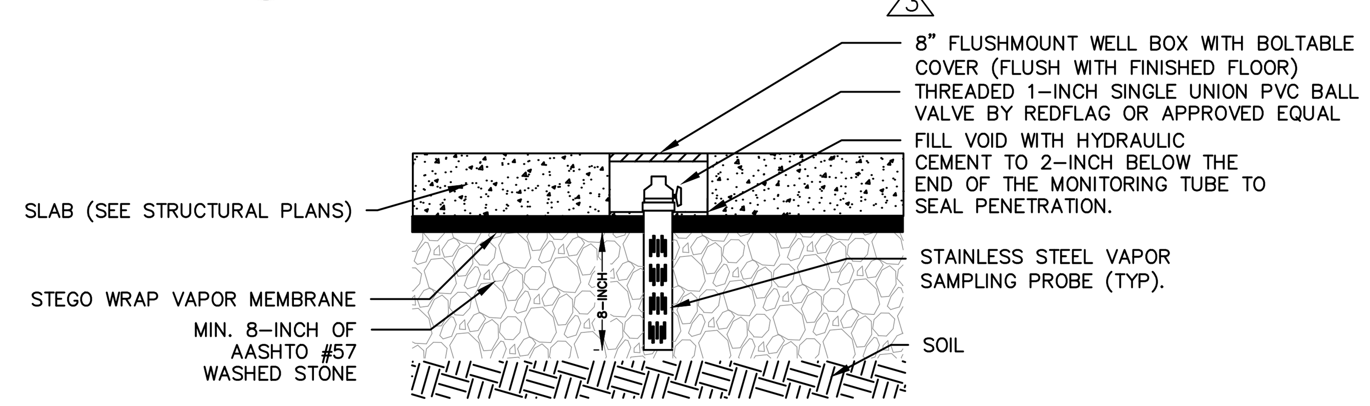
1 NOT TO SCALE

NOTES:
SLEEVES FOR CONVEYANCE PIPE SHALL BE EITHER POURED INTO OR DRILLED INTO GRADE BEAM.



2 TEE CONNECTION IN CONVEYANCE PIPE

NOT TO SCALE

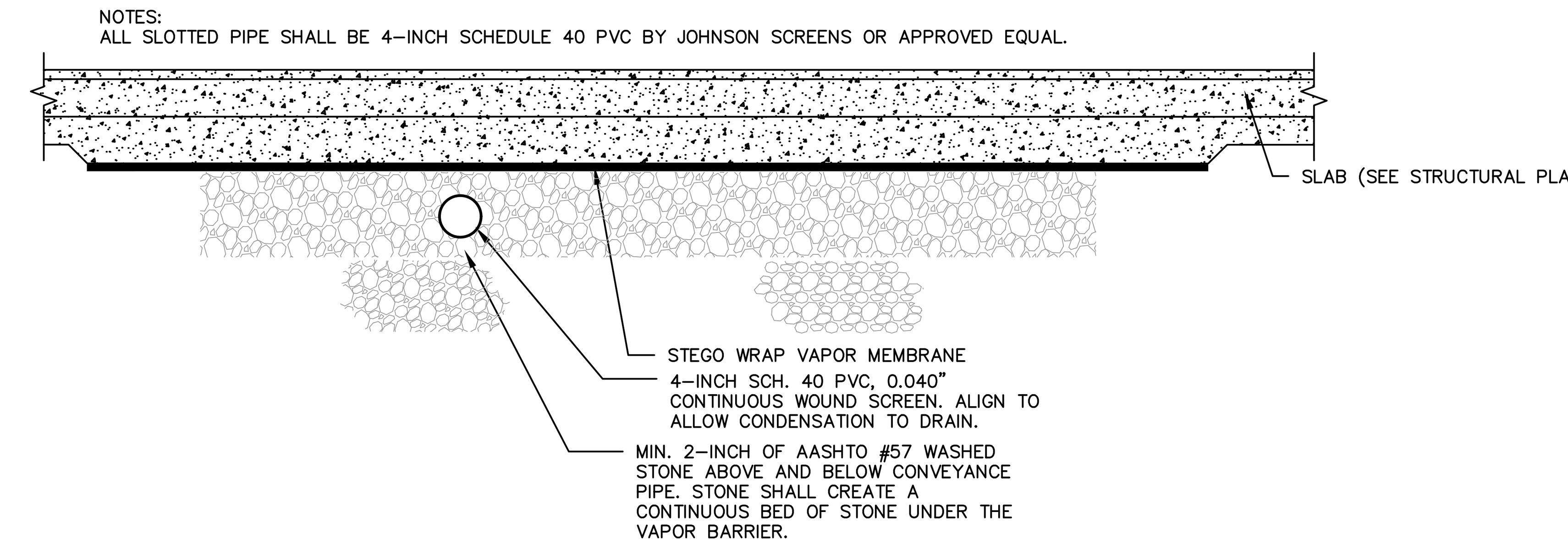


3 SUB-SLAB VAPOR MONITORING POINT

NOT TO SCALE

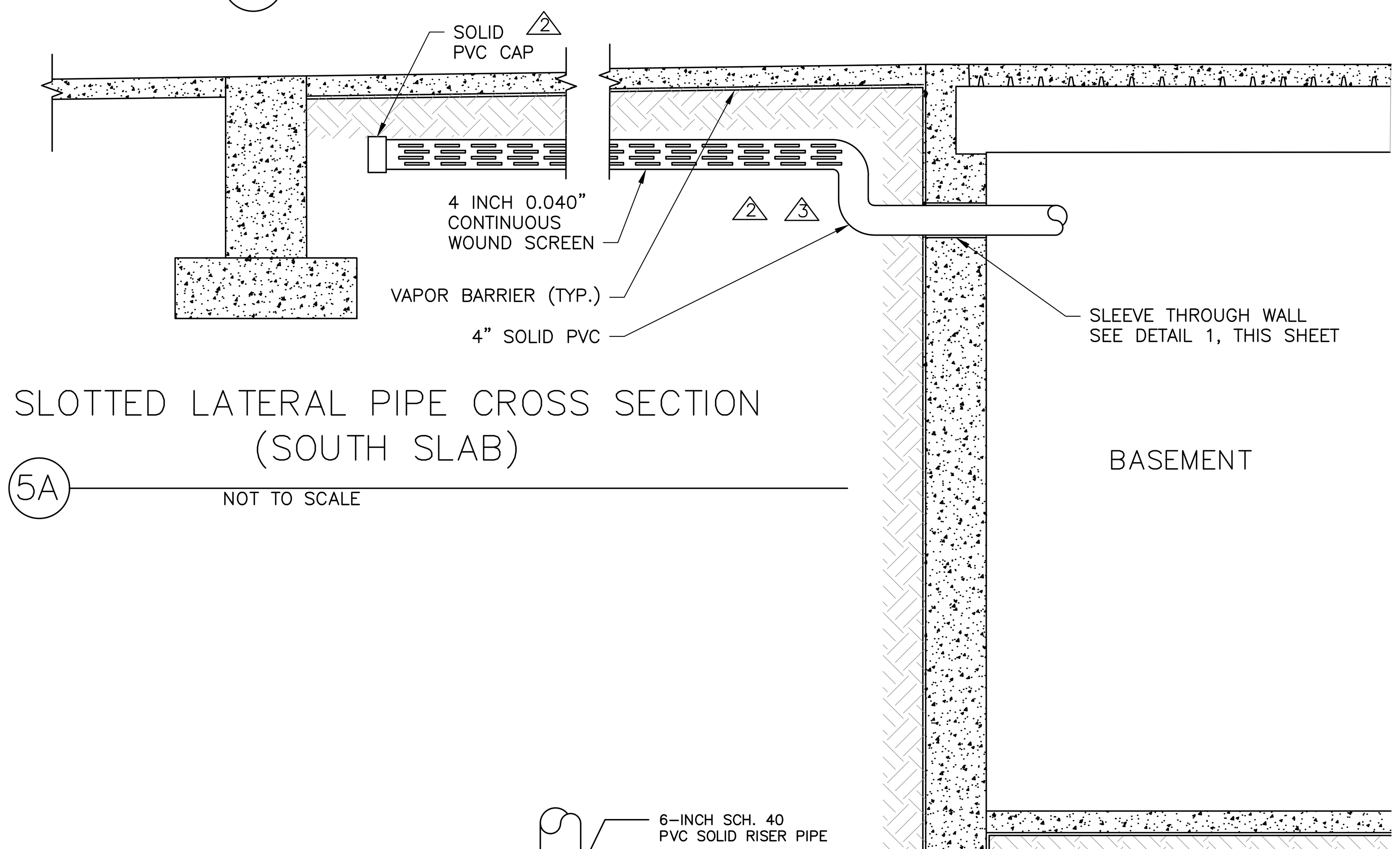
NOTES:
1. VAPOR MONITORING POINTS THAT ARE INSTALLED THROUGH THE SLAB AND INTO THE CRUSHED STONE AS SHOWN. THE STAINLESS STEEL VAPOR SAMPLING CASING SHALL BE 304SS SMALL DIAMETER ENVIRONMENTAL SCREEN W60 1-IN DIAMETER BY ATLANTIC SCREEN OR APPROVED EQUAL.
2. MONITOR FOR INDUCED VACUUM USING A MICROMANOMETER CAPABLE OF MEASURING TO A SENSITIVITY OF -.001 IN. W.C.

NOTES:
ALL SLOTTED PIPE SHALL BE 4-INCH SCHEDULE 40 PVC BY JOHNSON SCREENS OR APPROVED EQUAL.



5 SLOTTED LATERAL PIPE CROSS SECTION

NOT TO SCALE



SLOTTED LATERAL PIPE CROSS SECTION (SOUTH SLAB)

5A NOT TO SCALE

SSDS PILOT TESTING REQUIREMENTS

CONTRACTOR, IN COORDINATION WITH THE SSDS ENGINEER AND MECHANICAL ENGINEER, SHALL CONDUCT PILOT TESTING OF THE SSDS AFTER THE SUB-SLAB SYSTEM AND VAPOR MONITORING POINTS ARE CONSTRUCTED AND THE NEW CONCRETE SLAB IS POURED, AND THE SLAB HAS PASSED ALL REQUIRED PERFORMANCE TESTING. A TEMPORARY BLOWER OR SVE BLOWER CAPABLE OF PROVIDING 200 CFM OF AIR FLOW AT A VACUUM OF 10 INCHES W.C. SHALL BE USED TO EXTRACT AIR FROM THE RISER. THE TESTING BLOWER SHALL BE FITTED WITH:

1. A DILUTION AIR INLET VALVE.
2. A SAMPLING PORT OR PITOT TUBE FOR A FLOWMETER TO MEASURE AIR FLOW FROM THE SUB-SLAB RISER.
3. A VACUUM GAUGE ON THE SUB-SLAB RISER.
4. AN AIR SAMPLING PORT ON THE SUB-SLAB RISER.

PRIOR TO INITIATING PILOT TEST, THE ENGINEER SHALL COLLECT A BASELINE SET OF READINGS FROM ALL SUB-SLAB VAPOR MONITORING POINTS INCLUDING: PID, FID, 4-GAS METER, AND MICROMANOMETER.

THE EXTRACTION RATE (IN CFM) FROM THE RISER SHALL BE MONITORED TO INCREASE THE EXTRACTED AIR FLOW FROM THE SUB-SLAB IN 50 TO 100 CFM INCREMENTAL STEPS. INDUCED VACUUM IN THE SUB-SLAB VAPOR MONITORING POINTS SHALL BE MONITORED DURING THE INCREMENTAL STEP TESTS USING A MICRO-MANOMETER. EACH INCREMENTAL STEP TEST SHALL BE CONDUCTED FOR AT LEAST 15 MINUTES UNTIL INDUCED VACUUM READINGS HAVE STABILIZED. THE TESTS WILL BE USED TO SELECT A DESIGN FLOW RATE AND VACUUM THAT PRODUCES AN INDUCED VACUUM OF 6 TO 9 PASCALS (0.024 TO 0.036 INCHES W.C.) IN THE SUB-SLAB VAPOR MONITORING POINTS ASSOCIATED WITH THE INDIVIDUAL RISER BEING TESTED.

THE DESIGN FLOW RATE AND VACUUM WILL BE USED TO SELECT PROPOSED OPERATING CONDITIONS, WITH THE FINAL PLUMBING DESIGN FRICTION LOSSES ALSO ACCOUNTED FOR.

AIR TREATMENT DURING THE SSDS PILOT TESTING SHALL INCLUDE:

1. TWO CARBTROL G-3S OR APPROVED EQUAL CARBON DRUMS PLUMBED IN SERIES, LOCATED ON THE VACUUM SIDE OF THE BLOWER.
2. AIR SAMPLING PORTS AT THE CARBON INFLUENT (UNTREATED), MID (BETWEEN THE DRUMS), AND EFFLUENT (POST-CARBON, BUT PRIOR TO DILUTION AIR).

THE AIR TREATMENT SYSTEM SHALL BE MONITORED AND SAMPLED AS FOLLOWS DURING THE SSDS PILOT TEST:

1. PHOTOIONIZATION DETECTOR (PID), FLAME IONIZATION DETECTOR (FID), AND 4-GAS METER (METHANE, H_2S) READINGS SHALL BE COLLECTED AT THE CARBON INFLUENT, MID, AND EFFLUENT SAMPLING LOCATIONS AT LEAST ONCE EVERY 15 MINUTES, INCLUDING AT THE TIME OF SUMMA CANISTER SAMPLING (SEE BELOW).
2. AFTER THE DESIGN FLOW RATE AND VACUUM HAS BEEN DETERMINED, SUMMA CANISTER GRAB SAMPLES SHALL BE COLLECTED FROM THE CARBON INFLUENT, MID, AND EFFLUENT AFTER CONTINUOUS OPERATION AT THE DESIGN FLOW RATE AND VACUUM FOR AT LEAST 30 MINUTES.
3. SUMMA CANISTER AIR SAMPLES COLLECTED DURING THE PILOT TEST SHALL BE ANALYZED FOR VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15 INCLUDING FREONS.
4. A "DURING PILOT TEST" SET OF READINGS SHALL BE COLLECTED FROM ALL SUB-SLAB VAPOR MONITORING POINTS INCLUDING PID, FID, 4-GAS METER, AND INDUCED VACUUM.

THE AIR TREATMENT PID AND FID MONITORING RESULTS AND LABORATORY ANALYTICAL RESULTS WILL BE REVIEWED WITH VAPOR PHASE CARBON TREATMENT VENDORS FOR THE SELECTION OF A PROPOSED LONG-TERM VAPOR PHASE TREATMENT SYSTEM.

FINAL DESIGN INFORMATION FROM THE PILOT TEST WILL BE SUBMITTED TO THE NYSDEC FOR FINAL REVIEW AND APPROVAL PRIOR TO INSTALLATION INCLUDING:

1. PROPOSED BLOWER OPERATING CONDITIONS.
2. PROPOSED ALARM SELECTION AND DETAILS/NOTES.
3. AIR TREATMENT SPECIFICATIONS.

UNDER-SLAB VAPOR BARRIER

PART 1 - GENERAL

1.1 SUMMARY
- A. PRODUCTS SUPPLIED UNDER THIS SECTION:
  1. VAPOR BARRIER AND INSTALLATION ACCESSORIES FOR INSTALLATION UNDER CONCRETE SLABS.
- B. RELATED SECTIONS:
  1. SECTION 03 30 00 CAST-IN-PLACE CONCRETE
  2. SECTION 07 26 00 VAPOR RETARDERS

1.2 REFERENCES
- A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
  1. ASTM E1745- 11STANDARD SPECIFICATION FOR PLASTIC WATER VAPOR RETARDERS USED IN CONTACT WITH SOIL OR GRANULAR FILL UNDER CONCRETE SLABS.
  2. ASTM E1643- 11SELECTION, DESIGN, INSTALLATION, AND INSPECTION OF WATER VAPOR RETARDERS USED IN CONTACT WITH EARTH OR GRANULAR FILL UNDER CONCRETE SLABS.
- B. TECHNICAL REFERENCE - AMERICAN CONCRETE INSTITUTE (ACI):
  1. ACI 302.2R-06 GUIDE FOR CONCRETE SLABS THAT RECEIVE MOISTURE-SENSITIVE FLOORING MATERIALS.
  2. ACI 302.1R-15 GUIDE TO CONCRETE FLOOR AND SLAB CONSTRUCTION.

1.3 SUBMITTALS
- A. QUALITY CONTROL/ASSURANCE:
  1. SUMMARY OF TEST RESULTS PER PARAGRAPH 9.3 OF ASTM E1745.
  2. MANUFACTURER'S SAMPLES AND LITERATURE.
  3. MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR PLACEMENT, SEAMING, PENETRATION PREVENTION AND REPAIR, AND PERIMETER SEAL PER ASTM E1643.
  4. ALL MANDATORY ASTM E1745 TESTING MUST BE PERFORMED ON A SINGLE PRODUCTION ROLL PER ASTM E1745 SECTION 8.1.

PART 2 - PRODUCTS

2.1 MATERIALS
- A. VAPOR BARRIER SHALL HAVE ALL OF THE FOLLOWING QUALITIES:
  1. MAINTAIN PERMEANCE OF LESS THAN 0.01 PERMS [GRAINS/(FT2 · HR · INHG)] AS TESTED IN ACCORDANCE WITH MANDATORY CONDITIONING TESTS PER ASTM E1745 SECTION 7.1 (7.1.1-7.1.5).
  2. OTHER PERFORMANCE CRITERIA:
     a. STRENGTH: ASTM E1745 CLASS A.
     b. THICKNESS: 15 MILS MINIMUM
  3. PROVIDE THIRD PARTY DOCUMENTATION THAT ALL TESTING WAS PERFORMED ON A SINGLE PRODUCTION ROLL PER ASTM E1745
- B. VAPOR BARRIER PRODUCTS:
  1. BASIS OF DESIGN: STEGO WRAP VAPOR BARRIER (15-MIL) BY STEGO INDUSTRIES LLC., (877) 464-7834 WWW.STEGOINDUSTRIES.COM.
  2. NO SUBSTITUTIONS.

2.2 ACCESSORIES
- A. SEAMS:
  1. STEGO TAPE BY STEGO INDUSTRIES LLC, (877) 464-7834 WWW.STEGOINDUSTRIES.COM.
- B. SEALING PENETRATIONS OF VAPOR BARRIER:
  1. STEGO MASTIC BY STEGO INDUSTRIES LLC, (877) 464-7834 WWW.STEGOINDUSTRIES.COM.
  2. STEGO TAPE BY STEGO INDUSTRIES LLC, (877) 464-7834 WWW.STEGOINDUSTRIES.COM.
- C. PERIMETER/EDGE SEAL:
  1. STEGO CRETE CLAW BY STEGO INDUSTRIES LLC, (877) 464-7834 WWW.STEGOINDUSTRIES.COM.
  2. STEGO TERM BAR BY STEGO INDUSTRIES LLC, (877) 464-7834 WWW.STEGOINDUSTRIES.COM.
  3. STEGOTACK TAPE (DOUBLE-SIDED SEALANT TAPE) BY STEGO INDUSTRIES LLC, (877) 464-7834 WWW.STEGOINDUSTRIES.COM.
- D. PENETRATION PREVENTION:
  1. BEAST FOOT BY STEGO INDUSTRIES LLC, (877) 464-7834 WWW.STEGOINDUSTRIES.COM.
- E. VAPOR BARRIER-SAFE SCREED SYSTEM
  1. BEAST SCREED BY STEGO INDUSTRIES, LLC, (877) 464-7834 WWW.STEGOINDUSTRIES.COM.

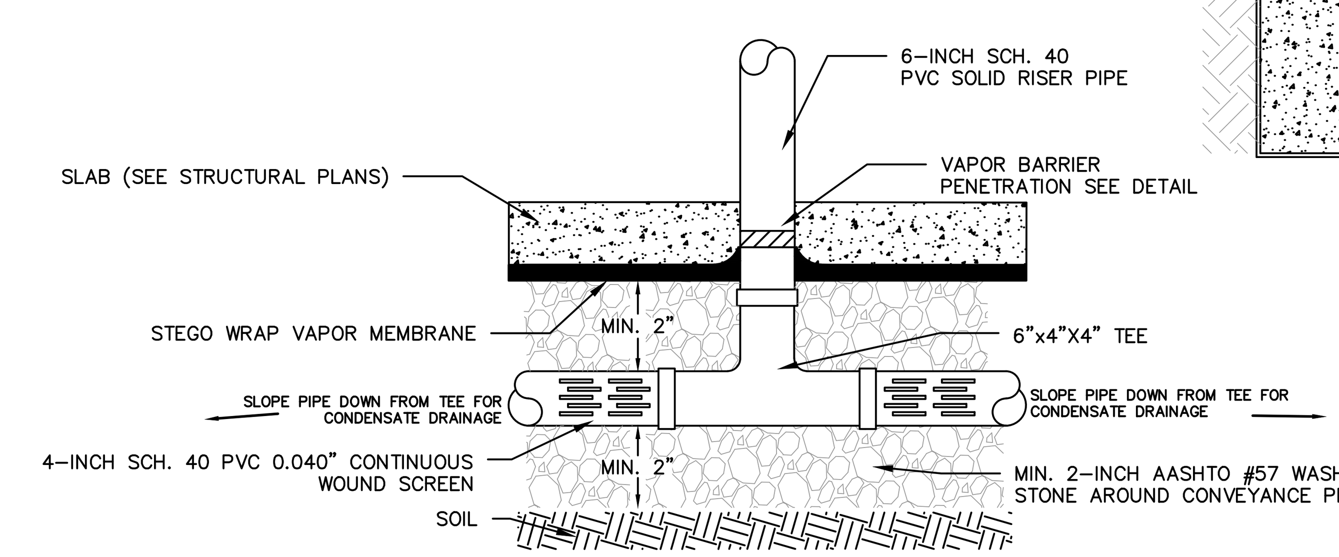
PART 3 - EXECUTION

3.1 PREPARATION
- A. ENSURE THAT SUBSOIL IS APPROVED BY ARCHITECT OR GEOTECHNICAL ENGINEER.
  1. LEVEL AND COMPACT BASE MATERIAL.

3.2 INSTALLATION
- A. INSTALL VAPOR BARRIER IN ACCORDANCE ASTM E1643.
  1. UNROLL VAPOR BARRIER WITH THE LONGEST DIMENSION PARALLEL WITH THE DIRECTION OF THE CONCRETE PLACEMENT AND FACE LAPS AWAY FROM THE EXPECTED DIRECTION OF THE PLACEMENT WHENEVER POSSIBLE.
  2. EXTEND VAPOR BARRIER TO THE PERIMETER OF THE SLAB. IF PRACTICABLE, TERMINATE IT AT THE TOP OF THE SLAB, OTHERWISE (A) AT A POINT ACCEPTABLE TO THE STRUCTURAL ENGINEER OR (B) WHERE OBSTRUCTED BY IMPEDIMENTS, SUCH AS DOWELS, WATERSTOPS, OR ANY OTHER SITE CONDITION REQUIRING EARLY TERMINATION OF THE VAPOR BARRIER. AT THE POINT OF TERMINATION, SEAL VAPOR BARRIER TO THE FOUNDATION WALL, GRADE BEAM OR SLAB ITSELF.
     a. SEAL VAPOR BARRIER TO THE ENTIRE SLAB PERIMETER USING STEGO CRETE CLAW, PER MANUFACTURER'S INSTRUCTIONS.
     OR
     b. SEAL VAPOR BARRIER TO THE ENTIRE PERIMETER WALL OR FOOTING/GRADE BEAM WITH DOUBLE SIDED STEGOTACK TAPE, OR BOTH STEGO TERM BAR AND STEGOTACK TAPE, PER MANUFACTURER'S INSTRUCTIONS. ENSURE THE CONCRETE IS CLEAN AND DRY PRIOR TO ADHERING TAPE.
  2. OVERLAP JOINTS 6 INCHES AND SEAL WITH MANUFACTURER'S SEAM TAPE.
  3. APPLY SEAM TAPE/CRETE CLAW TO A CLEAN AND DRY VAPOR BARRIER.
  4. SEAL ALL PENETRATIONS (INCLUDING PIPES) PER MANUFACTURER'S INSTRUCTIONS.
  5. FOR INTERIOR FORMING APPLICATIONS, AVOID THE USE OF NON-PERMANENT STAKES DRIVEN THROUGH VAPOR BARRIER. USE BLUNT-END AND/OR THREADED NAIL STAKES (SCREED PAD POSTS) AND INSERT THEM INTO BEAST FOOT. ENSURE BEAST FOOT'S PEEL-AND-STICK ADHESIVE BASE IS FULLY ADHERED TO THE VAPOR BARRIER
  6. IF NON-PERMANENT STAKES MUST BE DRIVEN THROUGH VAPOR RETARDER, REPAIR AS RECOMMENDED BY VAPOR RETARDER MANUFACTURER.
  7. USE REINFORCING BAR SUPPORTS WITH BASE SECTIONS THAT ELIMINATE OR MINIMIZE THE POTENTIAL FOR PUNCTURE OF THE VAPOR BARRIER.
  8. REPAIR DAMAGED AREAS WITH VAPOR BARRIER MATERIAL OF SIMILAR (OR BETTER) PERMEANCE, PUNCTURE AND TENSILE.
  9. FOR VAPOR BARRIER-SAFE CONCRETE SCREEDING APPLICATIONS, INSTALL BEAST SCREED (VAPOR BARRIER-SAFE SCREED SYSTEM) PER MANUFACTURER'S INSTRUCTIONS PRIOR TO PLACING CONCRETE.

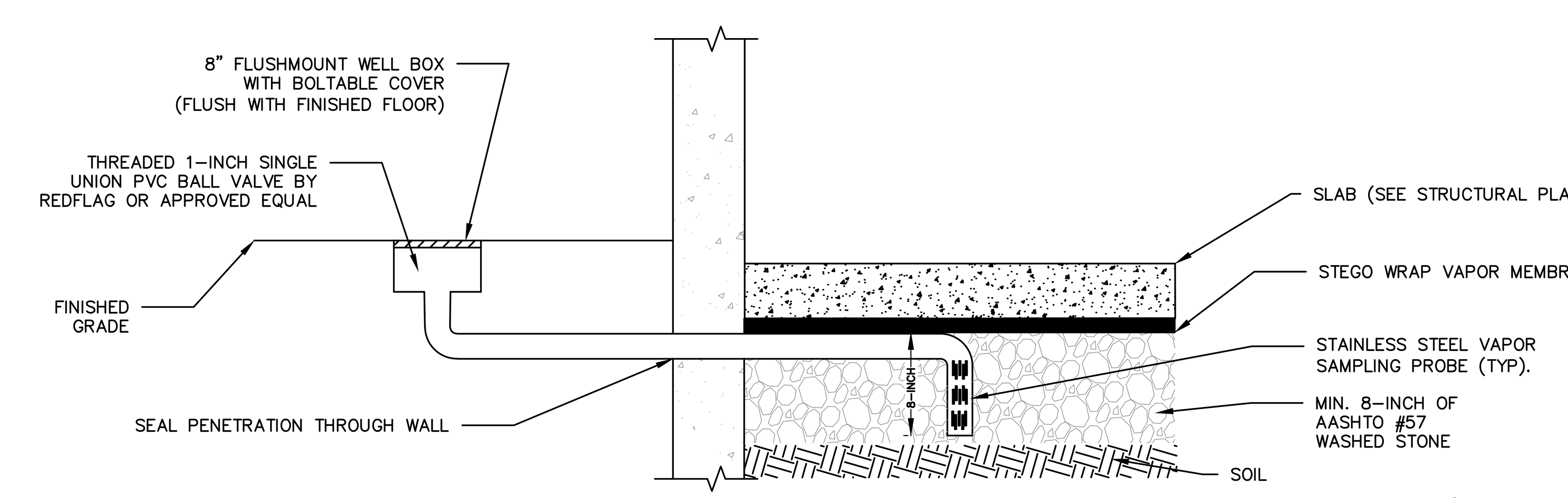
STEGO WRAP PIPE PENETRATION SEALING REQUIREMENTS

1. Install Stego Wrap around pipe penetrations by slitting/cutting material as needed. Try to minimize the void space created.
2. If Stego Wrap is close to pipe and void space is minimized then seal pipe penetration with Stego Tape and/or Stego Mastic (see manufacturer instructions).
3. If detail patch is needed to minimize the void space around the penetration, then cut a detail patch to a size and shape that creates six inch overlap on all edges around the void space at the base of the pipe. Stego Pre-Cut Pipe Boots are also available to speed up the installation.
4. Cut an "X" the size of the pipe diameter in the center of the pipe boot and slide tightly over the pipe.
5. Tape down all the sides of the pipe boot with Stego Tape.
6. Seal around the base of the pipe using Stego Tape.
7. Seal around the base of the pipe using Stego Tape and/or Stego Mastic (see manufacturer instructions).



4 TEE RISER CONNECTION

NOT TO SCALE



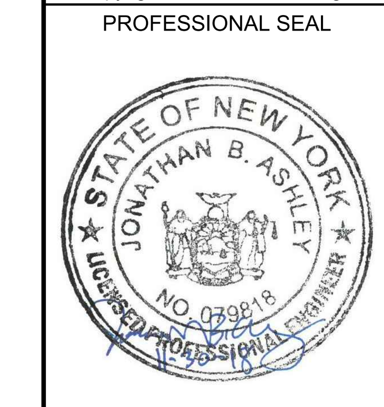
6 SUB-SLAB VAPOR MONITORING POINT

NOT TO SCALE

NOTES:
1. VAPOR MONITORING POINTS THAT ARE INSTALLED THROUGH THE SLAB AND INTO THE CRUSHED STONE AS SHOWN. THE STAINLESS STEEL VAPOR SAMPLING CASING SHALL BE 304SS SMALL DIAMETER ENVIRONMENTAL SCREEN W60 1-IN DIAMETER BY ATLANTIC SCREEN OR APPROVED EQUAL.
2. MONITOR FOR INDUCED VACUUM USING A MICROMANOMETER CAPABLE OF MEASURING TO A SENSITIVITY OF -.001 IN. W.C.

DuBois & King inc.
25 UNION STREET
BRANDON, VT 05733
TEL: (802) 465-8406
www.dubois-king.com
RANDOLPH, VT
SO. BURLINGTON, VT
SPRINGFIELD, VT
BEDFORD, NH
LACONIA, NH

PROFESSIONAL SEAL



NO.	DATE	DESCRIPTION	BY	CK'D
3	3-7-19	UPDATED DETAILS & ADDED DETAIL 6	TJD	JBA

HYDRO-ENVIRONMENTAL SOLUTIONS, INC.

ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

109 MARBLEDALE ROAD

TUCKAHOE, NY

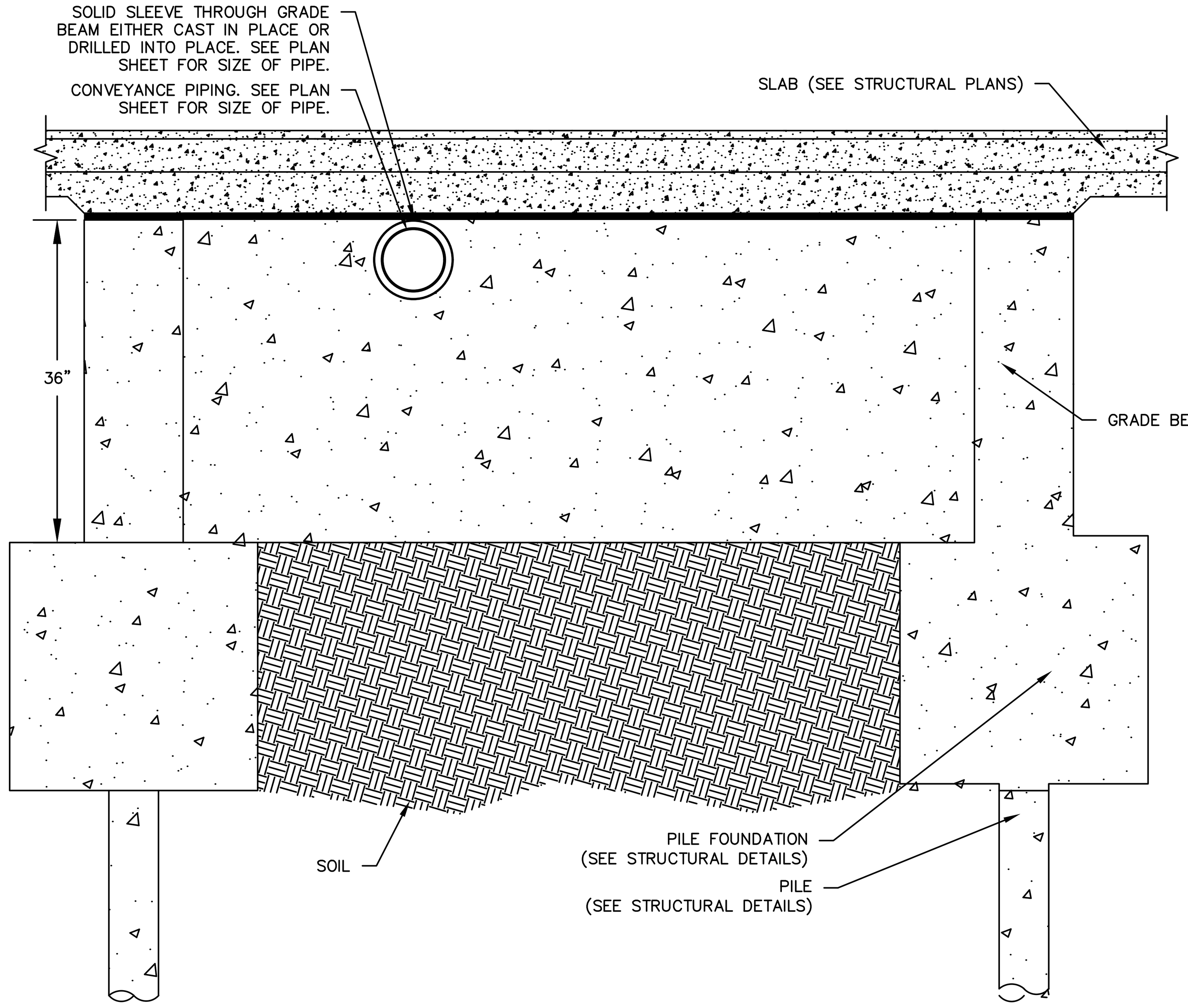
SHEET TITLE

RESTAURANT SUB-SLAB DEPRESSURIZATION SYSTEM DETAILS

DRAWN BY	DATE
TJD	NOV. 2018
CHECKED BY	D&K PROJECT #
WAC(HES)	223060
PROJ. ENG.	D&K ARCHIVE #
JBA	

SHEET NUMBER

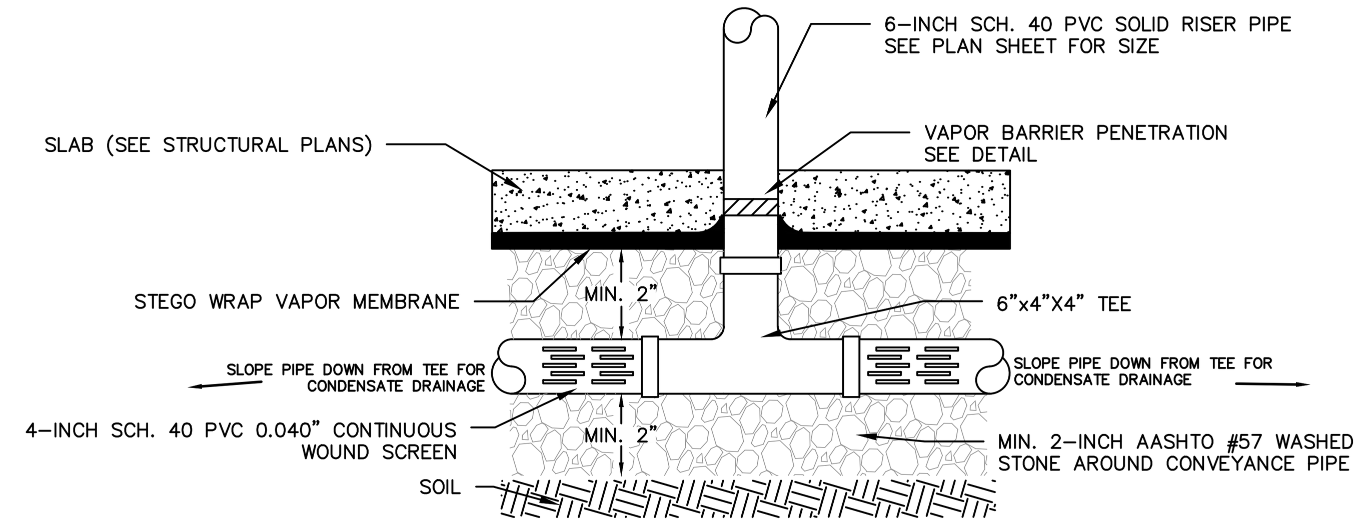
SD 5



6 GRADE BEAM PENETRATION CROSS SECTION

NOT TO SCALE

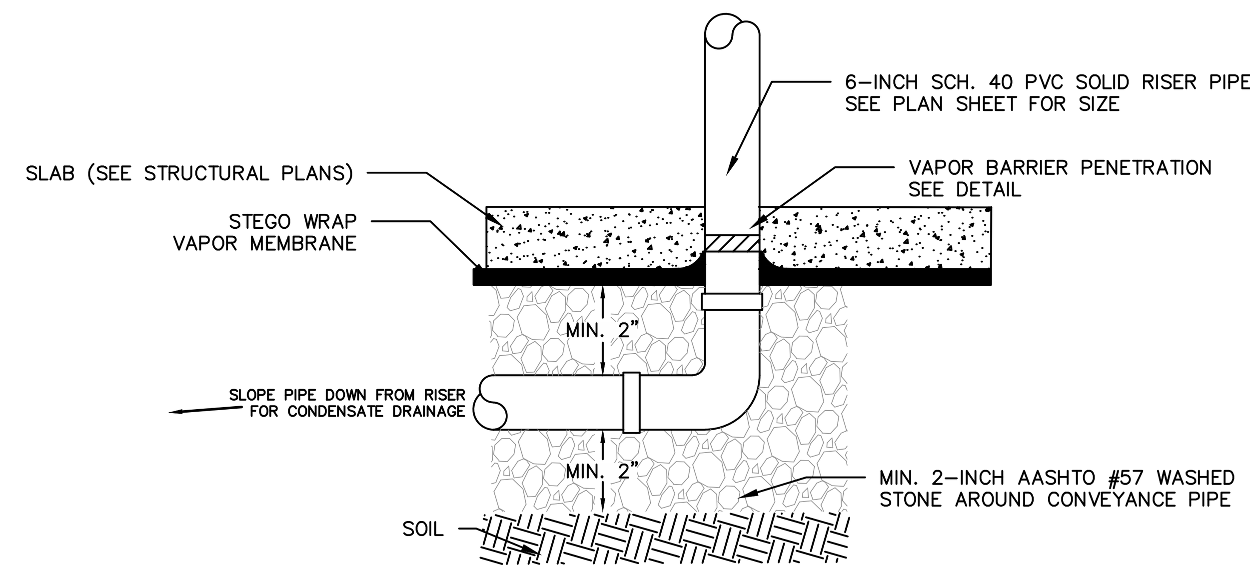
NOTES:
SLEEVES FOR CONVEYANCE PIPE SHALL BE EITHER POURED INTO OR DRILLED INTO GRADE BEAM.



9 TEE RISER CONNECTION

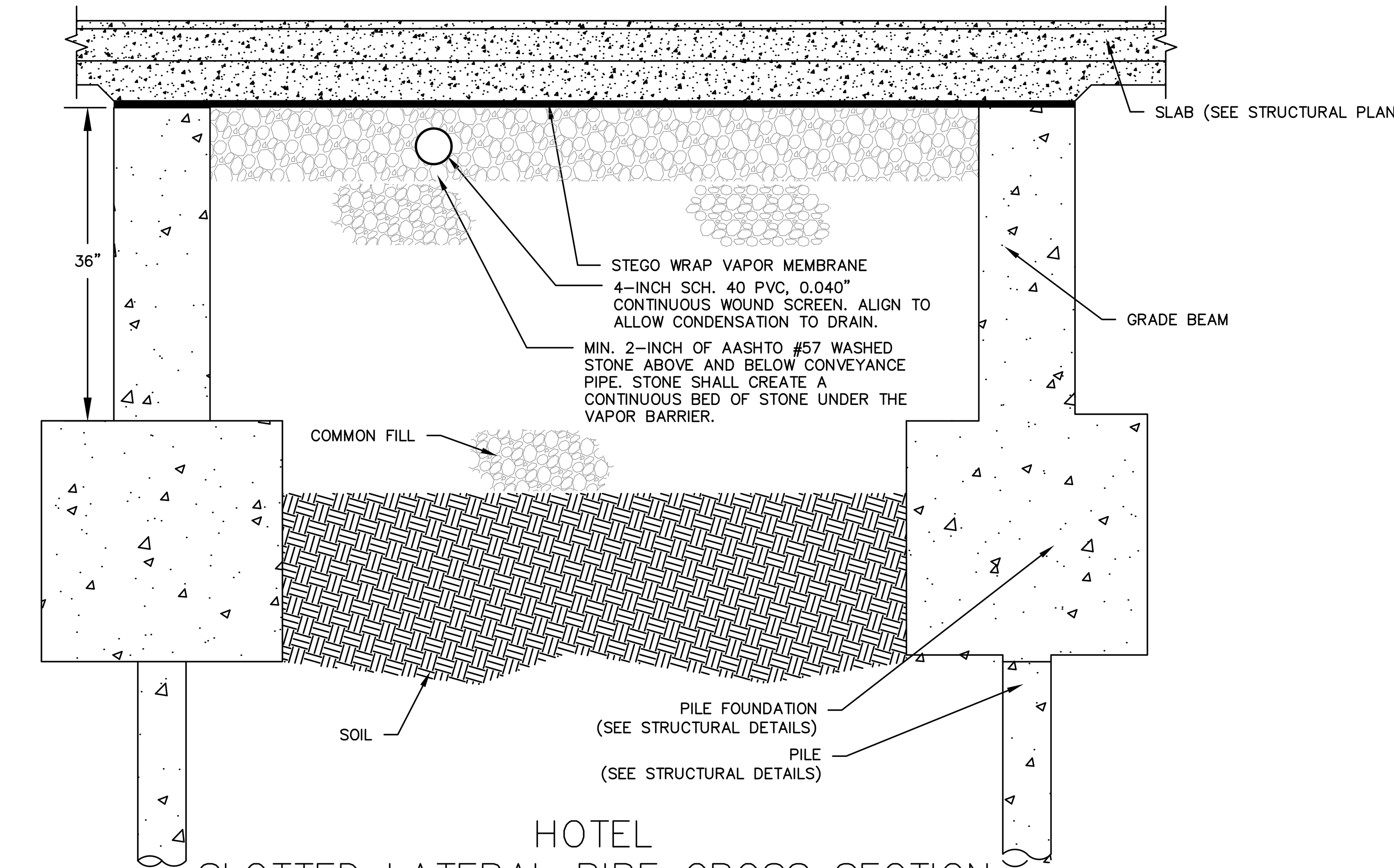
NOT TO SCALE

DRAFT - SUBJECT TO CHANGE PENDING STRUCTURAL PLANS FOR RESTAURANT.



10 HOTEL RISER 90° BEND CONNECTION

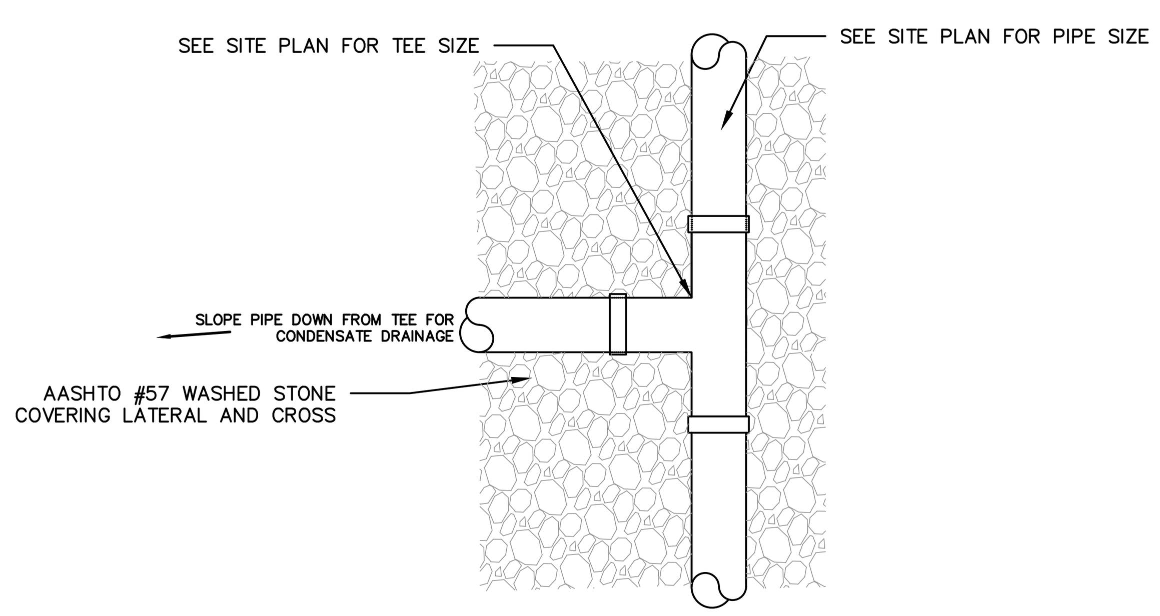
NOT TO SCALE



13 HOTEL SLOTTED LATERAL PIPE CROSS SECTION

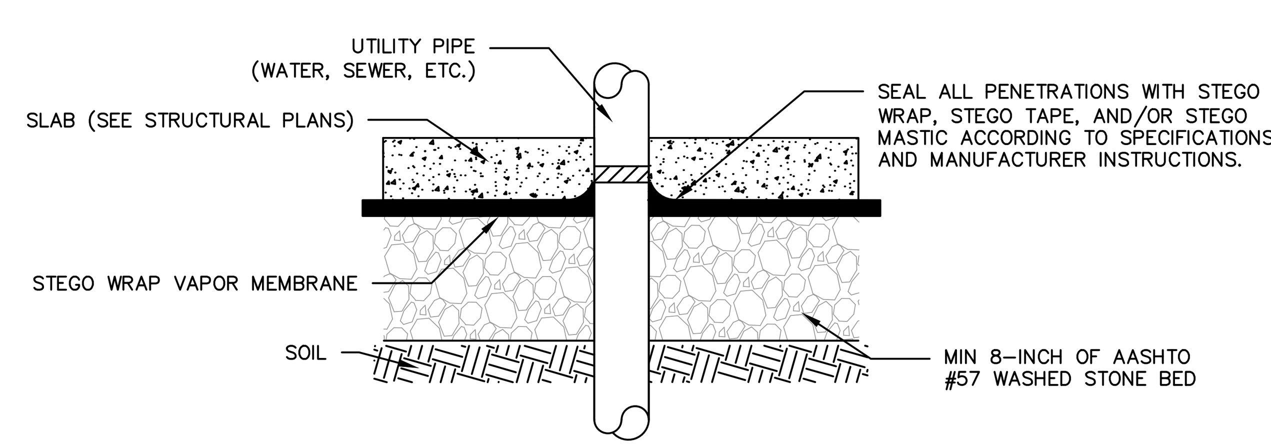
NOT TO SCALE

NOTES:
ALL SLOTTED PIPE SHALL BE 4-INCH SCHEDULE 40 PVC BY JOHNSON SCREENS OR APPROVED EQUAL.



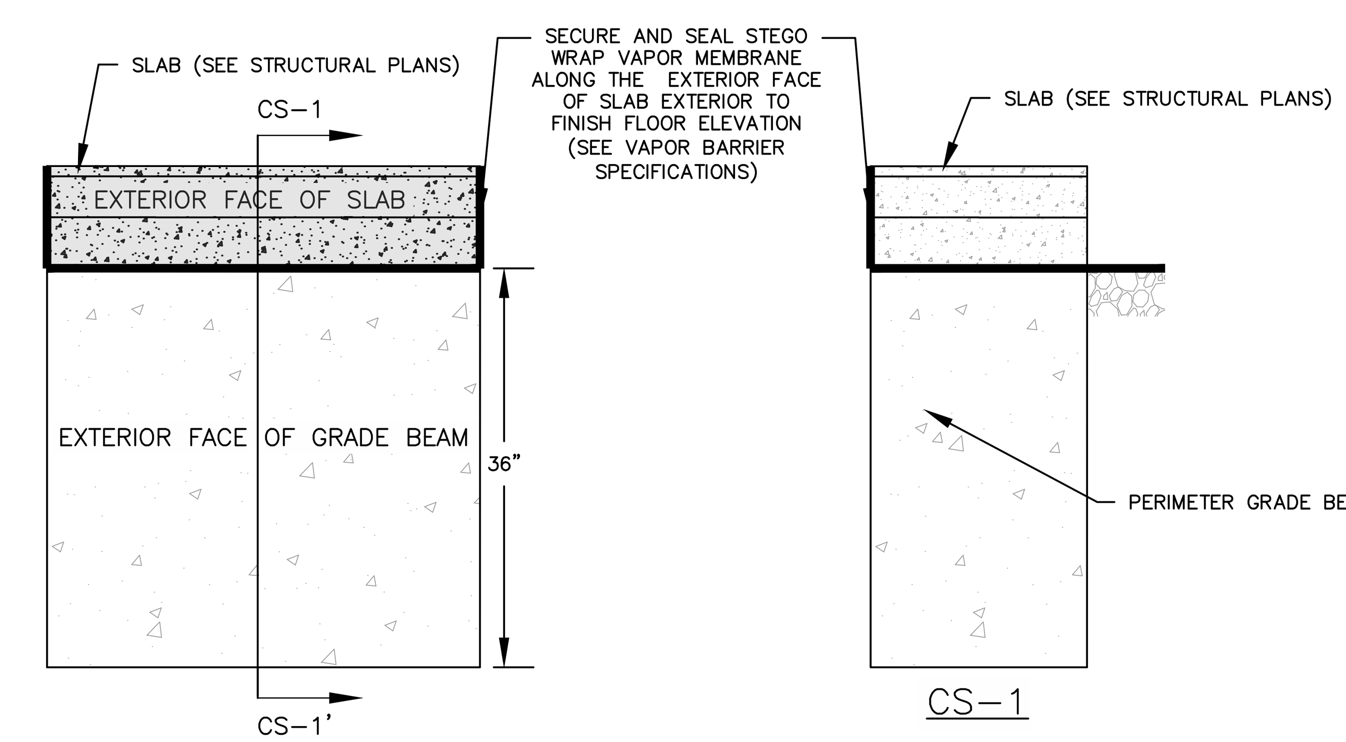
7 TEE CONNECTION IN CONVEYANCE PIPE

NOT TO SCALE

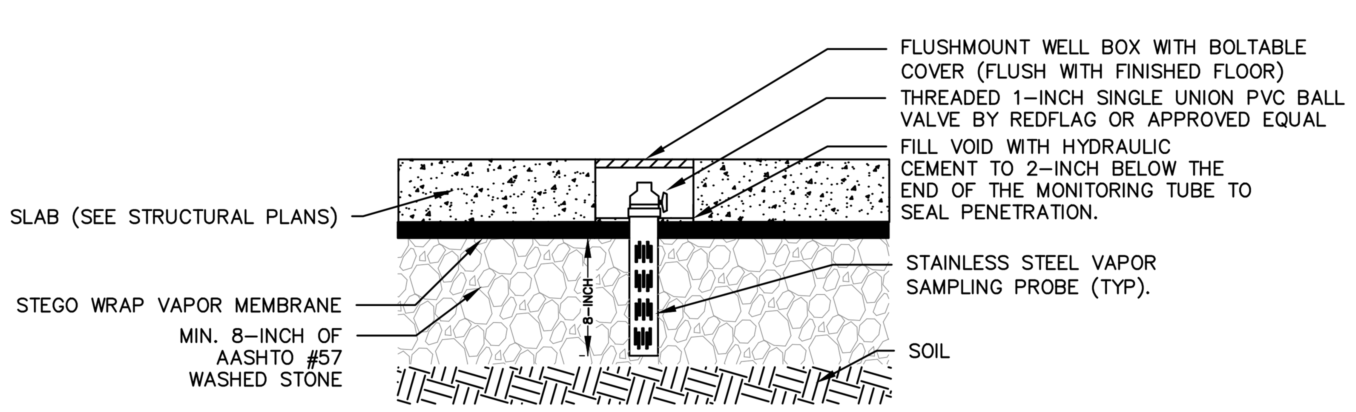


11 VAPOR BARRIER PENETRATION

NOT TO SCALE



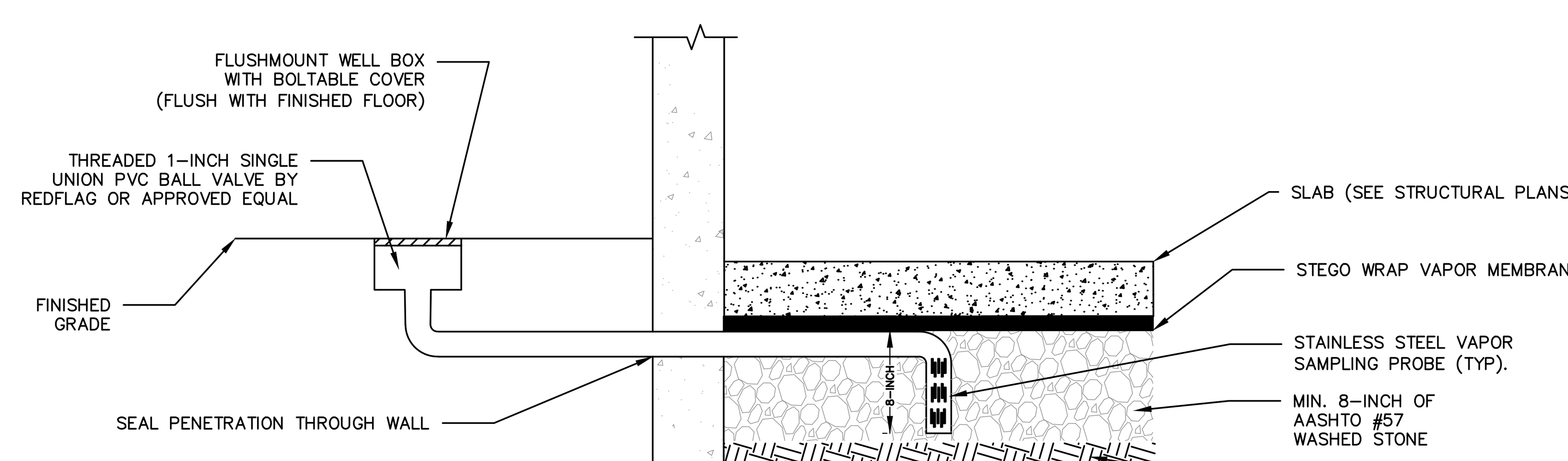
14 STEGO WRAP SEALED TO GRADE BEAMS



8 SUB-SLAB VAPOR MONITORING POINT

NOT TO SCALE

NOTES:
1. VAPOR MONITORING POINTS THAT ARE INSTALLED THROUGH THE SLAB AND INTO THE CRUSHED STONE AS SHOWN. THE STAINLESS STEEL VAPOR SAMPLING CASING SHALL BE 304SS SMALL DIAMETER ENVIRONMENTAL SCREEN W60 1-IN DIAMETER BY ATLANTIC SCREEN OR APPROVED EQUAL.
2. MONITOR FOR INDUCED VACUUM USING A MICROMANOMETER CAPABLE OF MEASURING TO A SENSITIVITY OF -.001 IN. W.C.



12 SUB-SLAB VAPOR MONITORING POINT WITH OUTSIDE ACCESS

NOT TO SCALE

NOTES:
1. VAPOR MONITORING POINTS THAT ARE INSTALLED THROUGH THE SLAB AND INTO THE CRUSHED STONE AS SHOWN. THE STAINLESS STEEL VAPOR SAMPLING CASING SHALL BE 304SS SMALL DIAMETER ENVIRONMENTAL SCREEN W60 1-IN DIAMETER BY ATLANTIC SCREEN OR APPROVED EQUAL.
2. MONITOR FOR INDUCED VACUUM USING A MICROMANOMETER CAPABLE OF MEASURING TO A SENSITIVITY OF -.001 IN. W.C.

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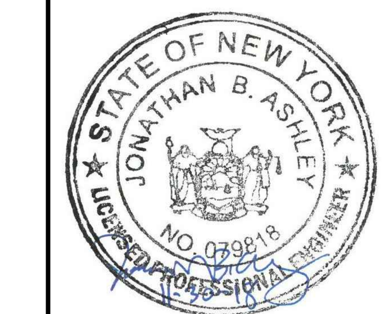
PROFESSIONAL SEAL



NO.	DATE	DESCRIPTION	BY	CK'D
1	8-29-17	REVISED NOTES	AJS	JBA
3	3-7-19	UPDATED DETAIL	TJD	JBA

HYDRO-ENVIRONMENTAL SOLUTIONS, INC.

ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

109 MARBLEDALE ROAD

TUCKAHOE, NY

SHEET TITLE

HOTEL SUB-SLAB DEPRESSURIZATION SYSTEMS DETAILS

DRAWN BY: TJD	DATE: NOV. 2018
CHECKED BY: WAC(HES)	D&K PROJECT #: 223060
PROJ. ENG.: JBA	D&K ARCHIVE #:

SHEET NUMBER

SD 6

SSDS PILOT TESTING REQUIREMENTS

CONTRACTOR, IN COORDINATION WITH THE SSDS ENGINEER AND MECHANICAL ENGINEER, SHALL CONDUCT PILOT TESTING OF THE SSDS AFTER THE SUB–SLAB SYSTEM AND VAPOR MONITORING POINTS ARE CONSTRUCTED AND THE NEW CONCRETE SLAB IS POURED, AND THE SLAB HAS PASSED ALL REQUIRED PERFORMANCE TESTING. A TEMPORARY BLOWER CAPABLE OF PROVIDING 200 CFM OF AIR FLOW AT A VACUUM OF 10 INCHES W.C. SHALL BE USED TO EXTRACT AIR FROM EACH INDIVIDUAL RISER, ONE AT A TIME. THE TESTING BLOWER SHALL BE FITTED WITH:

1. A DILUTION AIR INLET VALVE.
2. A SAMPLING PORT OR PITOT TUBE FOR A FLOWMETER TO MEASURE AIR FLOW FROM THE SUB–SLAB RISER.
3. A VACUUM GAUGE ON THE SUB–SLAB RISER.
4. AN AIR SAMPLING PORT ON THE SUB–SLAB RISER.

PRIOR TO INITIATING PILOT TEST, THE ENGINEER SHALL COLLECT A BASELINE SET OF READINGS FROM ALL SUB–SLAB VAPOR MONITORING POINTS INCLUDING: PID, FID, 4–GAS METER, AND MICROMANOMETER.

THE EXTRACTION RATE (IN CFM) FROM THE RISER SHALL BE MONITORED DURING EACH TEST TO INCREASE THE EXTRACTED AIR FLOW FROM THE SUB–SLAB IN 50 TO 100 CFM INCREMENTAL STEPS. INDUCED VACUUM IN THE SUB–SLAB VAPOR MONITORING POINTS SHALL BE MONITORED DURING THE INCREMENTAL STEP TESTS USING A MICRO–MANOMETER. EACH INCREMENTAL STEP TEST SHALL BE CONDUCTED FOR AT LEAST 15 MINUTES UNTIL INDUCED VACUUM READINGS HAVE STABILIZED. THE TESTS WILL BE USED TO SELECT A DESIGN FLOW RATE AND VACUUM FOR EACH RISER THAT PRODUCES AN INDUCED VACUUM OF 6 TO 9 PASCALS (0.024 TO 0.036 INCHES W.C.) IN THE SUB–SLAB VAPOR MONITORING POINTS ASSOCIATED WITH THE INDIVIDUAL RISER BEING TESTED.

THE DESIGN FLOW RATE AND VACUUM FOR EACH RISER WILL BE USED TO SELECT A PROPOSED BLOWER FOR EACH RISER THAT IS CAPABLE OF MEETING THE AIR FLOW AND VACUUM PERFORMANCE REQUIREMENTS, WITH THE FINAL PLUMBING DESIGN FRICTION LOSSES ALSO ACCOUNTED FOR IN THE BLOWER SELECTION. SELECTION OF THE PROPOSED BLOWER FOR EACH RISER WILL INCLUDE CALCULATION OF ANTICIPATED ENERGY USAGE TO EVALUATE THE MOST ENERGY EFFICIENT BLOWER OPTION TO ACHIEVE THE PERFORMANCE REQUIREMENTS, PRODUCING THE DESIGN INDUCED VACUUM BENEATH THE SLAB.

AIR TREATMENT DURING THE SSDS PILOT TESTING SHALL INCLUDE:

1. TWO CARBTROL G–3S OR APPROVED EQUAL CARBON DRUMS PLUMBED IN SERIES, LOCATED ON THE VACUUM SIDE OF THE BLOWER.
2. AIR SAMPLING PORTS AT THE CARBON INFLUENT (UNTREATED), MID (BETWEEN THE DRUMS), AND EFFLUENT (POST–CARBON, BUT PRIOR TO DILUTION AIR).

THE AIR TREATMENT SYSTEM SHALL BE MONITORED AND SAMPLED AS FOLLOWS DURING EACH SSDS RISER PILOT TEST:

1. PHOTOIONIZATION DETECTOR (PID), FLAME IONIZATION DETECTOR (FID), AND 4–GAS METER (METHANE, H_2S) READINGS SHALL BE COLLECTED AT THE CARBON INFLUENT, MID, AND EFFLUENT SAMPLING LOCATIONS AT LEAST ONCE EVERY 15 MINUTES, INCLUDING AT THE TIME OF SUMMA CANISTER SAMPLING (SEE BELOW).
2. AFTER THE DESIGN FLOW RATE AND VACUUM HAS BEEN DETERMINED FOR A GIVEN RISER, SUMMA CANISTER GRAB SAMPLES SHALL BE COLLECTED FROM THE CARBON INFLUENT, MID, AND EFFLUENT AFTER CONTINUOUS OPERATION AT THE DESIGN FLOW RATE AND VACUUM FOR AT LEAST 30 MINUTES.
3. SUMMA CANISTER AIR SAMPLES COLLECTED DURING THE PILOT TEST SHALL BE ANALYZED FOR VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO–15 INCLUDING FREONS.
4. A "DURING PILOT TEST" SET OF READINGS SHALL BE COLLECTED FROM ALL SUB–SLAB VAPOR MONITORING POINTS INCLUDING PID, FID, 4–GAS METER, AND INDUCED VACUUM.

THE AIR TREATMENT PID AND FID MONITORING RESULTS AND LABORATORY ANALYTICAL RESULTS WILL BE REVIEWED WITH VAPOR PHASE CARBON TREATMENT VENDORS FOR THE SELECTION OF A PROPOSED LONG–TERM VAPOR PHASE TREATMENT SYSTEM FOR EACH SSDS RISER.

FINAL DESIGN INFORMATION FROM THE PILOT TEST WILL BE SUBMITTED TO THE NYSDEC FOR FINAL REVIEW AND APPROVAL PRIOR TO INSTALLATION INCLUDING:

1. PROPOSED BLOWER SELECTION FOR EACH RISER.
2. PROPOSED ALARM SELECTION AND DETAILS/NOTES.
3. AIR TREATMENT SPECIFICATIONS.

△1 UNDER–SLAB VAPOR BARRIER

PART 1 – GENERAL

△2 1.1 SUMMARY
- A. PRODUCTS SUPPLIED UNDER THIS SECTION:
  1. VAPOR BARRIER AND INSTALLATION ACCESSORIES FOR INSTALLATION UNDER CONCRETE SLABS.
- B. RELATED SECTIONS:
  1. SECTION 03 30 00 CAST–IN–PLACE CONCRETE
  2. SECTION 07 26 00 VAPOR RETARDERS

1.2 REFERENCES
- A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):
  1. ASTM E1745– 11STANDARD SPECIFICATION FOR PLASTIC WATER VAPOR RETARDERS USED IN CONTACT WITH SOIL OR GRANULAR FILL UNDER CONCRETE SLABS.
  2. ASTM E1643– 11SELECTION, DESIGN, INSTALLATION, AND INSPECTION OF WATER VAPOR RETARDERS USED IN CONTACT WITH EARTH OR GRANULAR FILL UNDER CONCRETE SLABS.
- B. TECHNICAL REFERENCE – AMERICAN CONCRETE INSTITUTE (ACI):
  1. ACI 302.2R–06 GUIDE FOR CONCRETE SLABS THAT RECEIVE MOISTURE–SENSITIVE FLOORING MATERIALS.
  2. ACI 302.1R–15 GUIDE TO CONCRETE FLOOR AND SLAB CONSTRUCTION.

1.3 SUBMITTALS
- A. QUALITY CONTROL/ASSURANCE:
  1. SUMMARY OF TEST RESULTS PER PARAGRAPH 9.3 OF ASTM E1745.
  2. MANUFACTURER'S SAMPLES AND LITERATURE.
  3. MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR PLACEMENT, SEAMING, PENETRATION PREVENTION AND REPAIR, AND PERIMETER SEAL PER ASTM E1643.
  4. ALL MANDATORY ASTM E1745 TESTING MUST BE PERFORMED ON A SINGLE PRODUCTION ROLL PER ASTM E1745 SECTION 8.1.

PART 2 – PRODUCTS

2.1 MATERIALS
- A. VAPOR BARRIER SHALL HAVE ALL OF THE FOLLOWING QUALITIES:
  1. MAINTAIN PERMEANCE OF LESS THAN 0.01 PERMS [GRAINS/(FT2 · HR · INHG)] AS TESTED IN ACCORDANCE WITH MANDATORY CONDITIONING TESTS PER ASTM E1745 SECTION 7.1 (7.1.1–7.1.5).
  2. OTHER PERFORMANCE CRITERIA:
     a. STRENGTH: ASTM E1745 CLASS A.
     b. THICKNESS: 15 MILS MINIMUM
  3. PROVIDE THIRD PARTY DOCUMENTATION THAT ALL TESTING WAS PERFORMED ON A SINGLE PRODUCTION ROLL PER ASTM E1745 SECTION 8.1
- B. VAPOR BARRIER PRODUCTS:
  1. BASIS OF DESIGN: STEGO WRAP VAPOR BARRIER (15–MIL) BY STEGO INDUSTRIES LLC., (877) 464–7834 WWW.STEGOINDUSTRIES.COM.
  2. NO SUBSTITUTIONS.

2.2 ACCESSORIES
- A. SEAMS:
  1. STEGO TAPE BY STEGO INDUSTRIES LLC, (877) 464–7834 WWW.STEGOINDUSTRIES.COM.
- B. SEALING PENETRATIONS OF VAPOR BARRIER:
  1. STEGO MASTIC BY STEGO INDUSTRIES LLC, (877) 464–7834 WWW.STEGOINDUSTRIES.COM.
  2. STEGO TAPE BY STEGO INDUSTRIES LLC, (877) 464–7834 WWW.STEGOINDUSTRIES.COM.
- C. PERIMETER/EDGE SEAL:
  1. STEGO CRETE CLAW BY STEGO INDUSTRIES LLC, (877) 464–7834 WWW.STEGOINDUSTRIES.COM.
  2. STEGO TERM BAR BY STEGO INDUSTRIES LLC, (877) 464–7834 WWW.STEGOINDUSTRIES.COM.
  3. STEGOTACK TAPE (DOUBLE–SIDED SEALANT TAPE) BY STEGO INDUSTRIES LLC, (877) 464–7834 WWW.STEGOINDUSTRIES.COM.
- D. PENETRATION PREVENTION:
  1. BEAST FOOT BY STEGO INDUSTRIES LLC, (877) 464–7834 WWW.STEGOINDUSTRIES.COM.
- E. VAPOR BARRIER–SAFE SCREED SYSTEM
  1. BEAST SCREED BY STEGO INDUSTRIES, LLC, (877) 464–7834 WWW.STEGOINDUSTRIES.COM.

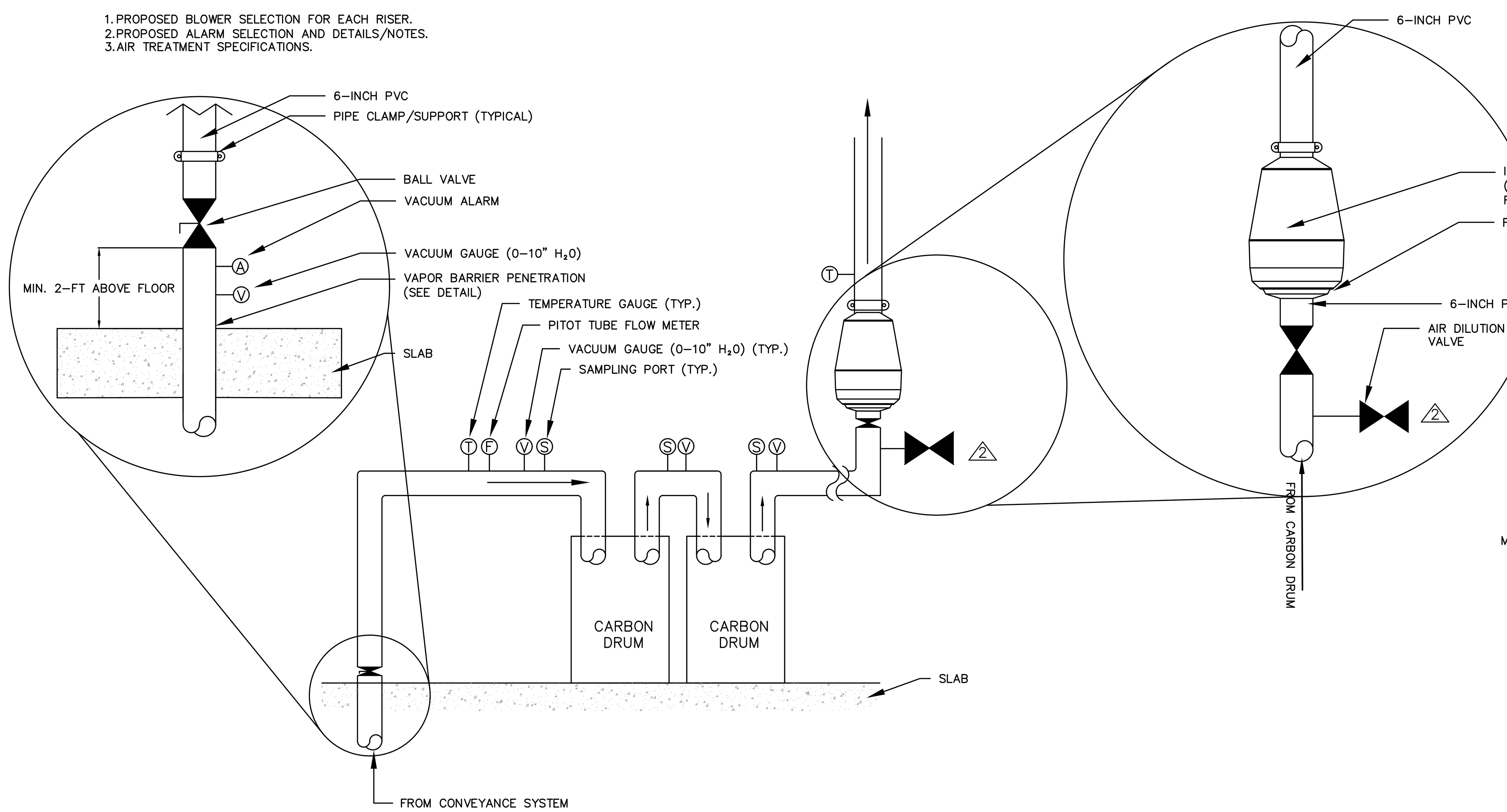
PART 3 – EXECUTION

3.1 PREPARATION
- A. ENSURE THAT SUBSOIL IS APPROVED BY ARCHITECT OR GEOTECHNICAL ENGINEER.
  1. LEVEL AND COMPACT BASE MATERIAL.

3.2 INSTALLATION
- A. INSTALL VAPOR BARRIER IN ACCORDANCE ASTM E1643.
  1. UNROLL VAPOR BARRIER WITH THE LONGEST DIMENSION PARALLEL WITH THE DIRECTION OF THE CONCRETE PLACEMENT AND FACE LAPS AWAY FROM THE EXPECTED DIRECTION OF THE PLACEMENT WHENEVER POSSIBLE.
  2. EXTEND VAPOR BARRIER TO THE PERIMETER OF THE SLAB. IF PRACTICABLE, TERMINATE IT AT THE TOP OF THE SLAB, OTHERWISE (A) AT A POINT ACCEPTABLE TO THE STRUCTURAL ENGINEER OR (B) WHERE OBSTRUCTED BY IMPEDIMENTS, SUCH AS DOWELS, WATERSTOPS, OR ANY OTHER SITE CONDITION REQUIRING EARLY TERMINATION OF THE VAPOR BARRIER. AT THE POINT OF TERMINATION, SEAL VAPOR BARRIER TO THE FOUNDATION WALL, GRADE BEAM OR SLAB ITSELF.
     a. SEAL VAPOR BARRIER TO THE ENTIRE SLAB PERIMETER USING STEGO CRETE CLAW, PER MANUFACTURER'S INSTRUCTIONS.
     OR
     b. SEAL VAPOR BARRIER TO THE ENTIRE PERIMETER WALL OR FOOTING/GRADE BEAM WITH DOUBLE SIDED STEGOTACK TAPE, OR BOTH STEGO TERM BAR AND STEGOTACK TAPE, PER MANUFACTURER'S INSTRUCTIONS. ENSURE THE CONCRETE IS CLEAN AND DRY PRIOR TO ADHERING TAPE.
  3. OVERLAP JOINTS 6 INCHES AND SEAL WITH MANUFACTURER'S SEAM TAPE.
  4. APPLY SEAM TAPE/CRETE CLAW TO A CLEAN AND DRY VAPOR BARRIER.
  5. SEAL ALL PENETRATIONS (INCLUDING PIPES) PER MANUFACTURER'S INSTRUCTIONS.
  6. FOR INTERIOR FORMING APPLICATIONS, AVOID THE USE OF NON–PERMANENT STAKES DRIVEN THROUGH VAPOR BARRIER. USE BLUNT–END AND/OR THREADED NAIL STAKES (SCREED PAD POSTS) AND INSERT THEM INTO BEAST FOOT. ENSURE BEAST FOOT'S PEEL–AND–STICK ADHESIVE BASE IS FULLY ADHERED TO THE VAPOR BARRIER
  7. IF NON–PERMANENT STAKES MUST BE DRIVEN THROUGH VAPOR RETARDER, REPAIR AS RECOMMENDED BY VAPOR RETARDER MANUFACTURER.
  8. USE REINFORCING BAR SUPPORTS WITH BASE SECTIONS THAT ELIMINATE OR MINIMIZE THE POTENTIAL FOR PUNCTURE OF THE VAPOR BARRIER.
  9. REPAIR DAMAGED AREAS WITH VAPOR BARRIER MATERIAL OF SIMILAR (OR BETTER) PERMEANCE, PUNCTURE AND TENSILE.
  10. FOR VAPOR BARRIER–SAFE CONCRETE SCREEDING APPLICATIONS, INSTALL BEAST SCREED (VAPOR BARRIER–SAFE SCREED SYSTEM) PER MANUFACTURER'S INSTRUCTIONS PRIOR TO PLACING CONCRETE.

STEGO WRAP PIPE PENETRATION SEALING REQUIREMENTS

1. INSTALL STEGO WRAP AROUND PIPE PENETRATIONS BY SLITTING/CUTTING MATERIAL AS NEEDED. TRY TO MINIMIZE THE VOID SPACE CREATED.
2. IF STEGO WRAP IS CLOSE TO PIPE AND VOID SPACE IS MINIMIZED THEN SEAL PIPE PENETRATION WITH STEGO TAPE AND/OR STEGO MASTIC (SEE MANUFACTURER INSTRUCTIONS).
3. IF DETAIL PATCH IS NEEDED TO MINIMIZE THE VOID SPACE AROUND THE PENETRATION, THEN CUT A DETAIL PATCH TO A SIZE AND SHAPE THAT CREATES SIX INCH OVERLAP ON ALL EDGES AROUND THE VOID SPACE AT THE BASE OF THE PIPE. STEGO PRE–CUT PIPE BOOTS ARE ALSO AVAILABLE TO SPEED UP THE INSTALLATION.
4. CUT AN "X" THE SIZE OF THE PIPE DIAMETER IN THE CENTER OF THE PIPE BOOT AND SLIDE TIGHTLY OVER THE PIPE.
5. TAPE DOWN ALL THE SIDES OF THE PIPE BOOT WITH STEGO TAPE.
6. SEAL AROUND THE BASE OF THE PIPE USING STEGO TAPE.
7. SEAL AROUND THE BASE OF THE PIPE USING STEGO TAPE AND/OR STEGO MASTIC (SEE MANUFACTURER INSTRUCTIONS).

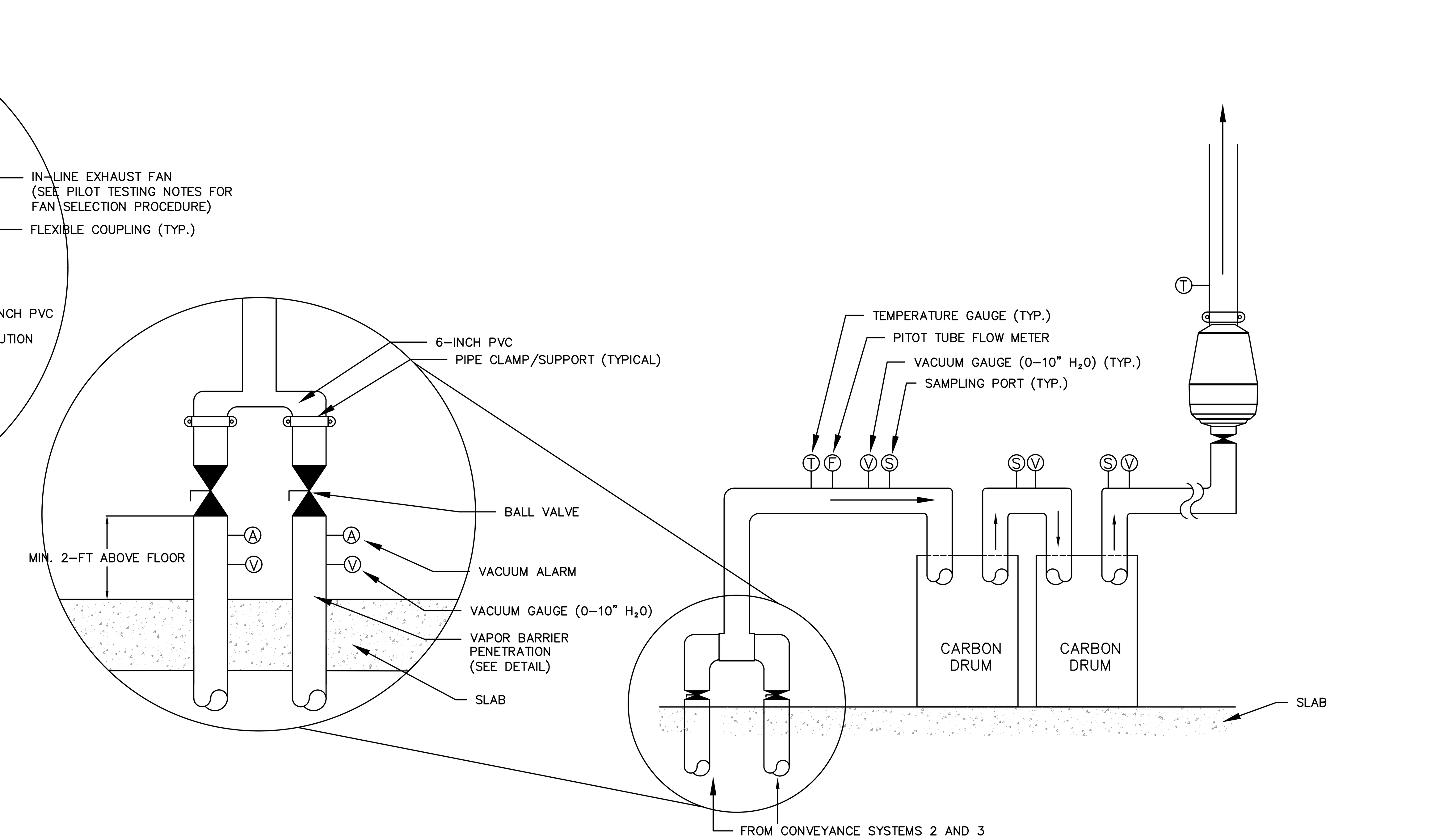


(15) SSDS TREATMENT SYSTEM 1 △1

NOT TO SCALE

(TYP. OF HOTEL SYSTEM 1)

NOTES:
1. FINAL LOCATION OF FAN TO BE APPROVED BY ARCHITECT/MECHANICAL AND SSDS ENGINEER.
2. FINAL LOCATION OF ROOF STACK TO BE APPROVED BY ARCHITECT/ENGINEER.
3. DISCHARGE SHALL NOT BE LESS THAN 25–FT FROM THE PROPERTY LINE, ANY WINDOW, DOOR, OR OTHER OPENING OF THE BUILDING, INCLUDING HEATING, VENTILATING AND AIR CONDITIONING INTAKE POINTS.
4. PROVIDE ADEQUATE PIPE SUPPORTS AS NEEDED.
5. PROVIDE RAIN CAP FOR DISCHARGE PIPE.
6. PROVIDE CONDENSATE DRAINS (WITH N/C BALL VALVE) AT THE BOTTOM OF VERTICAL RISER PIPES (NOT DEPICTED)
7. CARBON DRUMS SHALL BE CARBTROL G–3P OR APPROVED EQUAL FOR PURPOSES OF SSDS PILOT TESTING (SEE REQUIREMENTS, THIS PAGE).
8. ELECTRICAL BY OTHERS.
9. △2 PROVIDE WEB–BASED REMOTE MONITORING/ALERT SYSTEM FOR RISER VACUUM GAUGE READINGS, LOW VACUUM ALARM NOTIFICATIONS, AND POWER FAILURE NOTIFICATION.



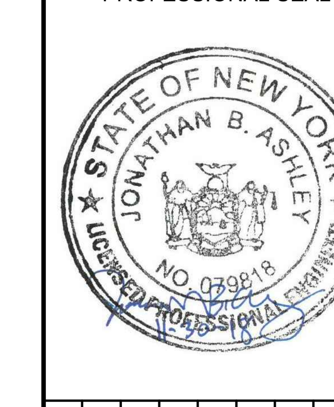
(16) SSDS TREATMENT SYSTEM 2 & 3 SCHEMATIC △1

NOT TO SCALE

NOTES:
1. FINAL LOCATION OF FAN TO BE APPROVED BY ARCHITECT/MECHANICAL AND SSDS ENGINEER.
2. FINAL LOCATION OF ROOF STACK TO BE APPROVED BY ARCHITECT/ENGINEER.
3. DISCHARGE SHALL NOT BE LESS THAN 25–FT FROM THE PROPERTY LINE, ANY WINDOW, DOOR, OR OTHER OPENING OF THE BUILDING, INCLUDING HEATING, VENTILATING AND AIR CONDITIONING INTAKE POINTS.
4. PROVIDE ADEQUATE PIPE SUPPORTS AS NEEDED.
5. PROVIDE RAIN CAP FOR DISCHARGE PIPE.
6. PROVIDE CONDENSATE DRAINS (WITH N/C BALL VALVE) AT THE BOTTOM OF VERTICAL RISER PIPES (NOT DEPICTED)
7. CARBON DRUMS SHALL BE CARBTROL G–3P OR APPROVED EQUAL FOR PURPOSES OF SSDS PILOT TESTING (SEE REQUIREMENTS, THIS PAGE).
8. ELECTRICAL BY OTHERS.
9. △2 PROVIDE WEB–BASED REMOTE MONITORING/ALERT SYSTEM FOR RISER VACUUM GAUGE READINGS, LOW VACUUM ALARM NOTIFICATIONS, AND POWER FAILURE NOTIFICATION.

DuBois & King inc.
25 UNION STREET
BRANDON, VT 05733
TEL: (802) 465-8406
www.dubois-king.com
RANDOLPH, VT
SO. BURLINGTON, VT
SPRINGFIELD, VT
BEDFORD, NH
LACONIA, NH

PROFESSIONAL SEAL



NO.	DATE	DESCRIPTION	BY	CK'D
2	1–19–18	REV. TELEMETRY & PILOT TEST BLOWER CFM	AJS	JBA
1	8–29–17	REVISED NOTES	AJS	JBA

HYDRO-ENVIRONMENTAL SOLUTIONS, INC.

ONE DEANS BRIDGE ROAD
SOMERS, NY 10589

109 MARBLEDALE ROAD

TUCKAHOE, NY

SHEET TITLE

SUB-SLAB DEPRESSURIZATION SYSTEM DETAILS AND NOTES

DRAWN BY	DATE
TJD	NOV. 2018
CHECKED BY	D&K PROJECT #
WAC(HES)	223060
PROJ. ENG.	D&K ARCHIVE #
JBA	

SHEET NUMBER

SD 7

SHEET 9 OF 9

ATTACHMENT 3

Soil Vapor Monitoring Data
May – October 2017

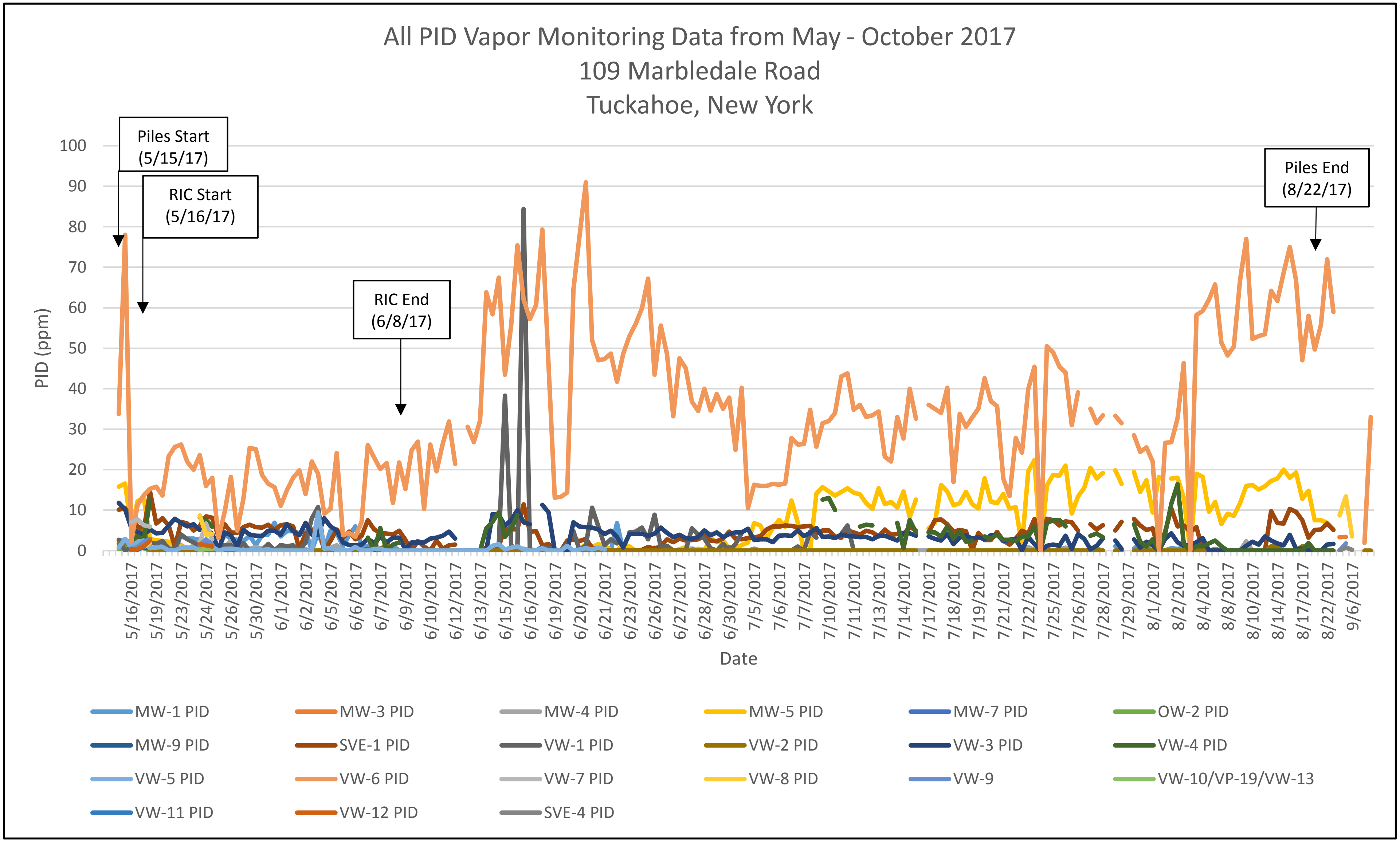
109 Marbledale Road
Tuckahoe, New York

Brownfield Cleanup Program No. C360143

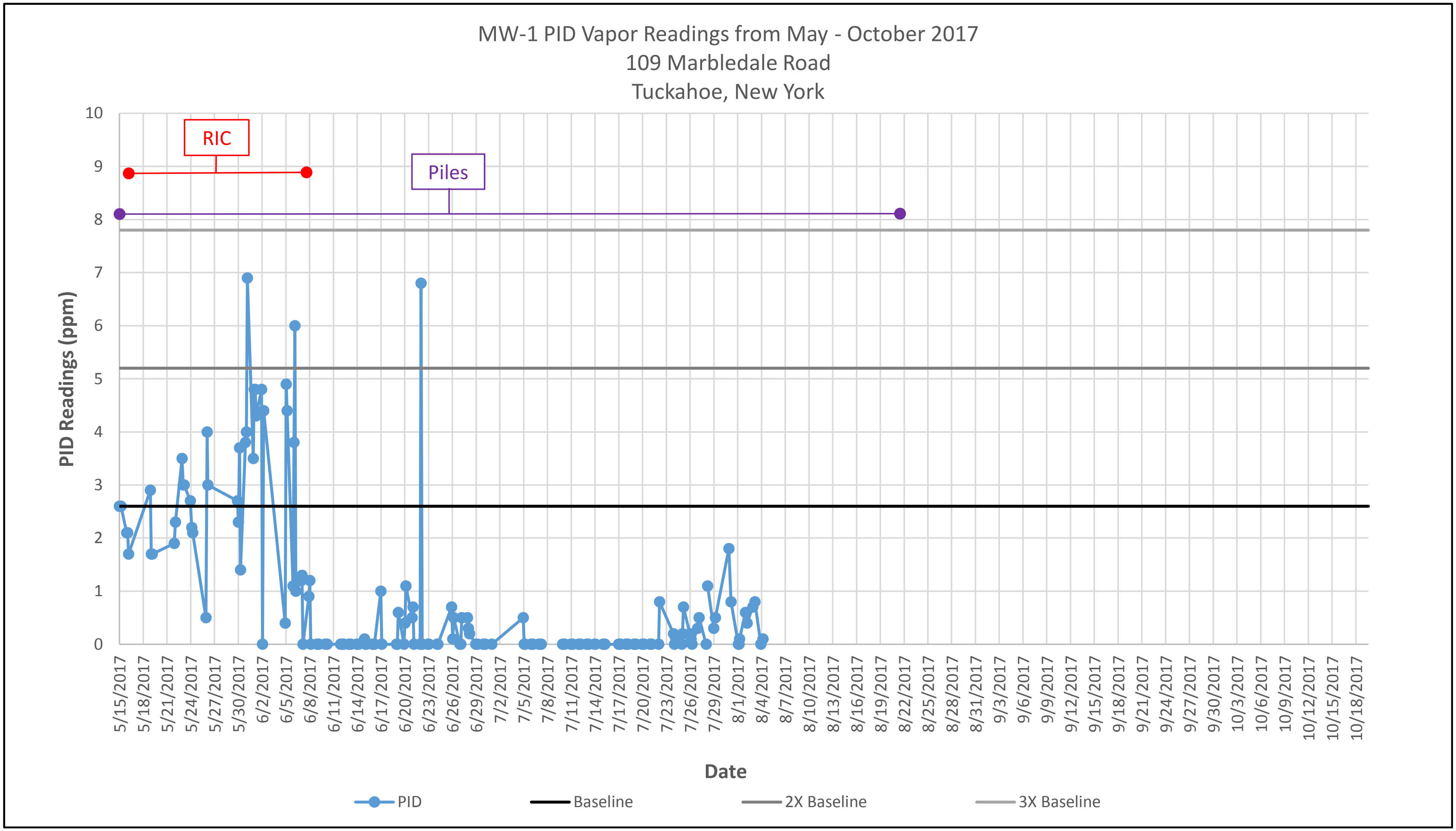
Compiled on December 7, 2017

HydroEnvironmental Solutions, Inc.

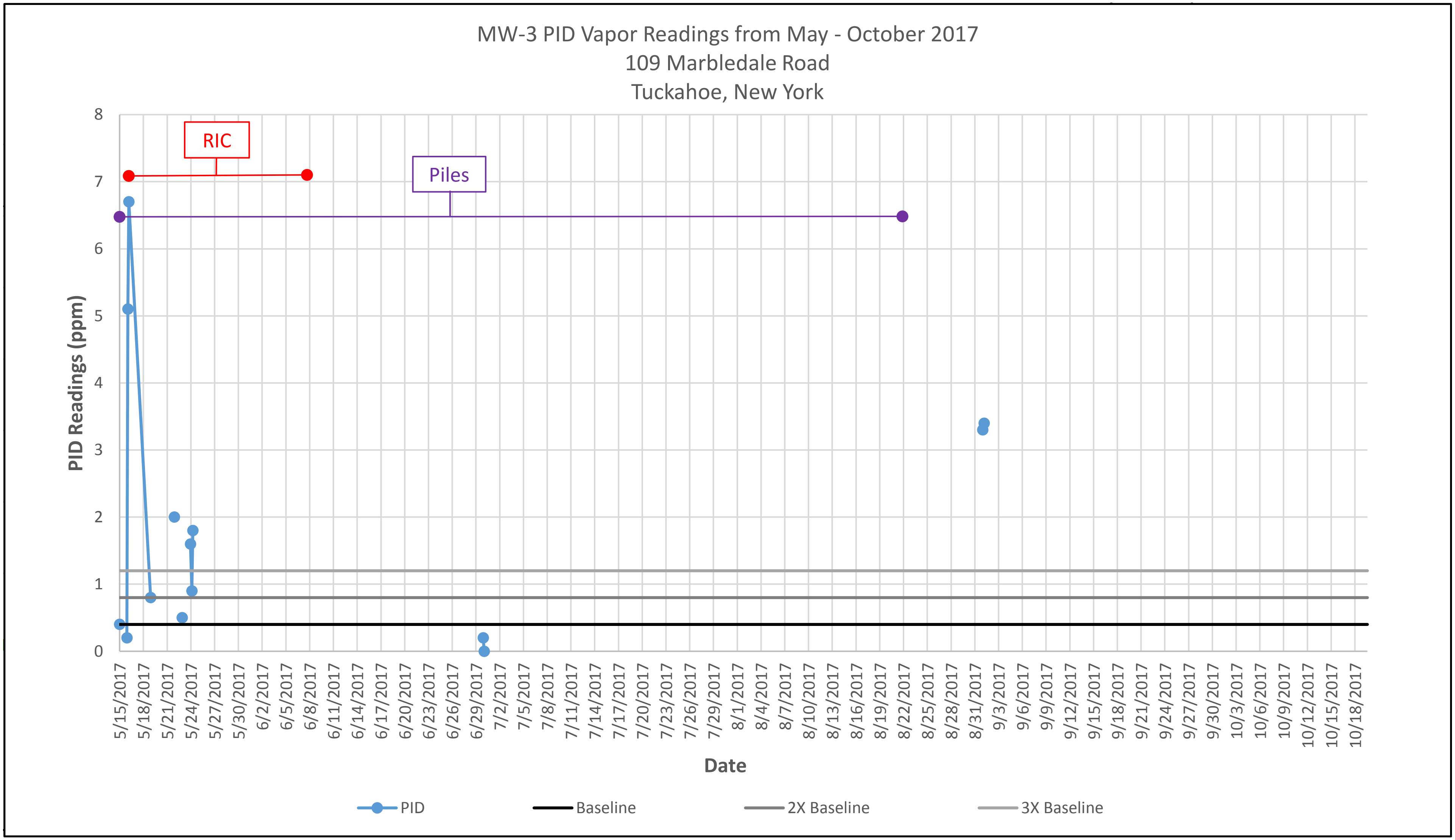
PID Monitoring Data



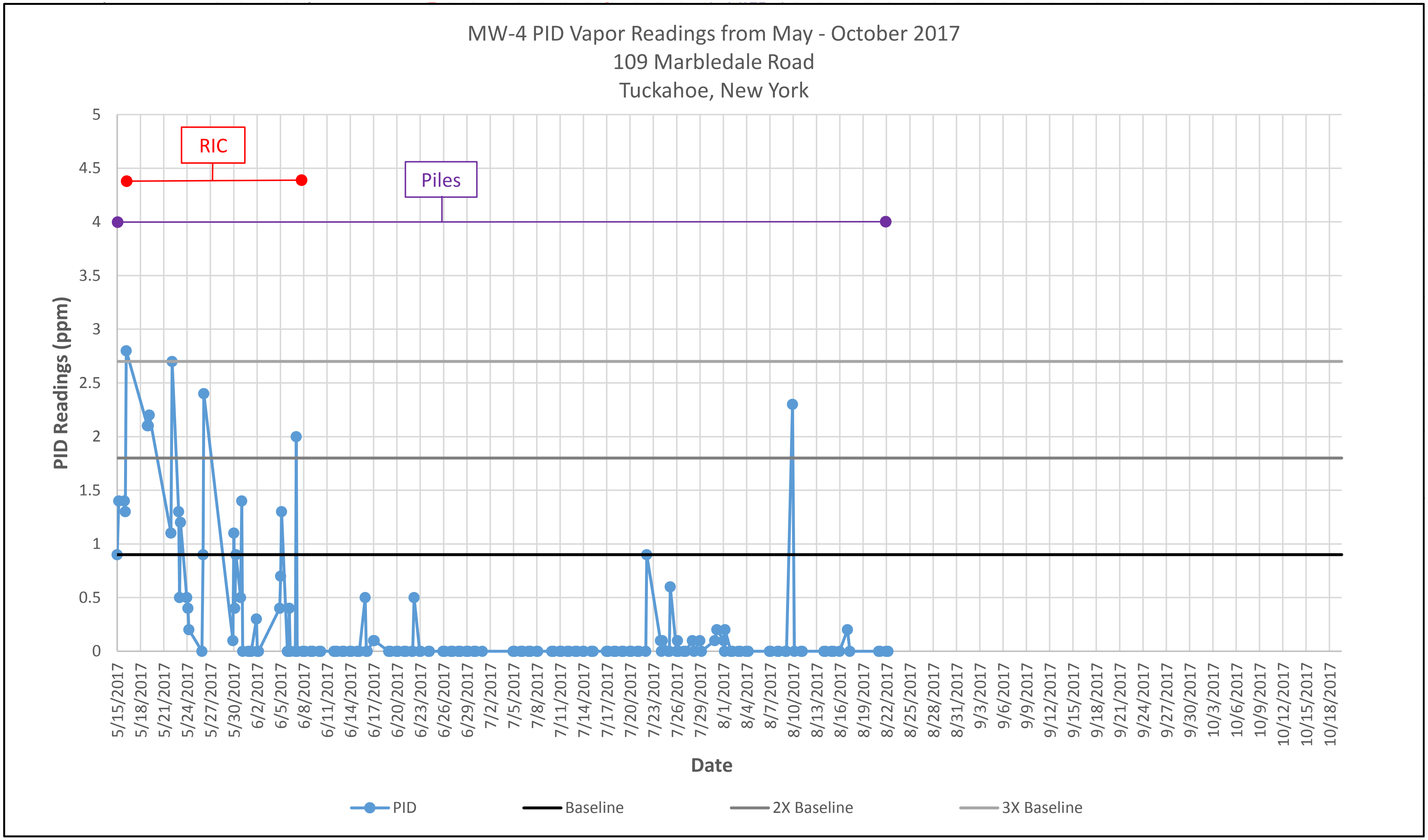
All PID Vapor Monitoring Data from May - October 2017
109 Marbledale Road
Tuckahoe, New York
Piles Start (5/15/17)
RIC Start (5/16/17)
RIC End (6/8/17)
Piles End (8/22/17)
PID (ppm)
100
90
80
70
60
50
40
30
20
10
0
5/16/2017
5/19/2017
5/23/2017
5/24/2017
5/26/2017
5/30/2017
6/1/2017
6/2/2017
6/5/2017
6/6/2017
6/7/2017
6/9/2017
6/10/2017
6/12/2017
6/13/2017
6/15/2017
6/16/2017
6/19/2017
6/20/2017
6/21/2017
6/23/2017
6/26/2017
6/27/2017
6/28/2017
6/30/2017
7/5/2017
7/6/2017
7/7/2017
7/10/2017
7/11/2017
7/13/2017
7/14/2017
7/17/2017
7/18/2017
7/19/2017
7/21/2017
7/22/2017
7/25/2017
7/26/2017
7/28/2017
7/29/2017
8/1/2017
8/2/2017
8/4/2017
8/8/2017
8/10/2017
8/14/2017
8/17/2017
8/22/2017
9/6/2017
Date
MW-1 PID
MW-3 PID
MW-4 PID
MW-5 PID
MW-7 PID
OW-2 PID
MW-9 PID
SVE-1 PID
VW-1 PID
VW-2 PID
VW-3 PID
VW-4 PID
VW-5 PID
VW-6 PID
VW-7 PID
VW-8 PID
VW-9
VW-10/VP-19/VW-13
VW-11 PID
VW-12 PID
SVE-4 PID



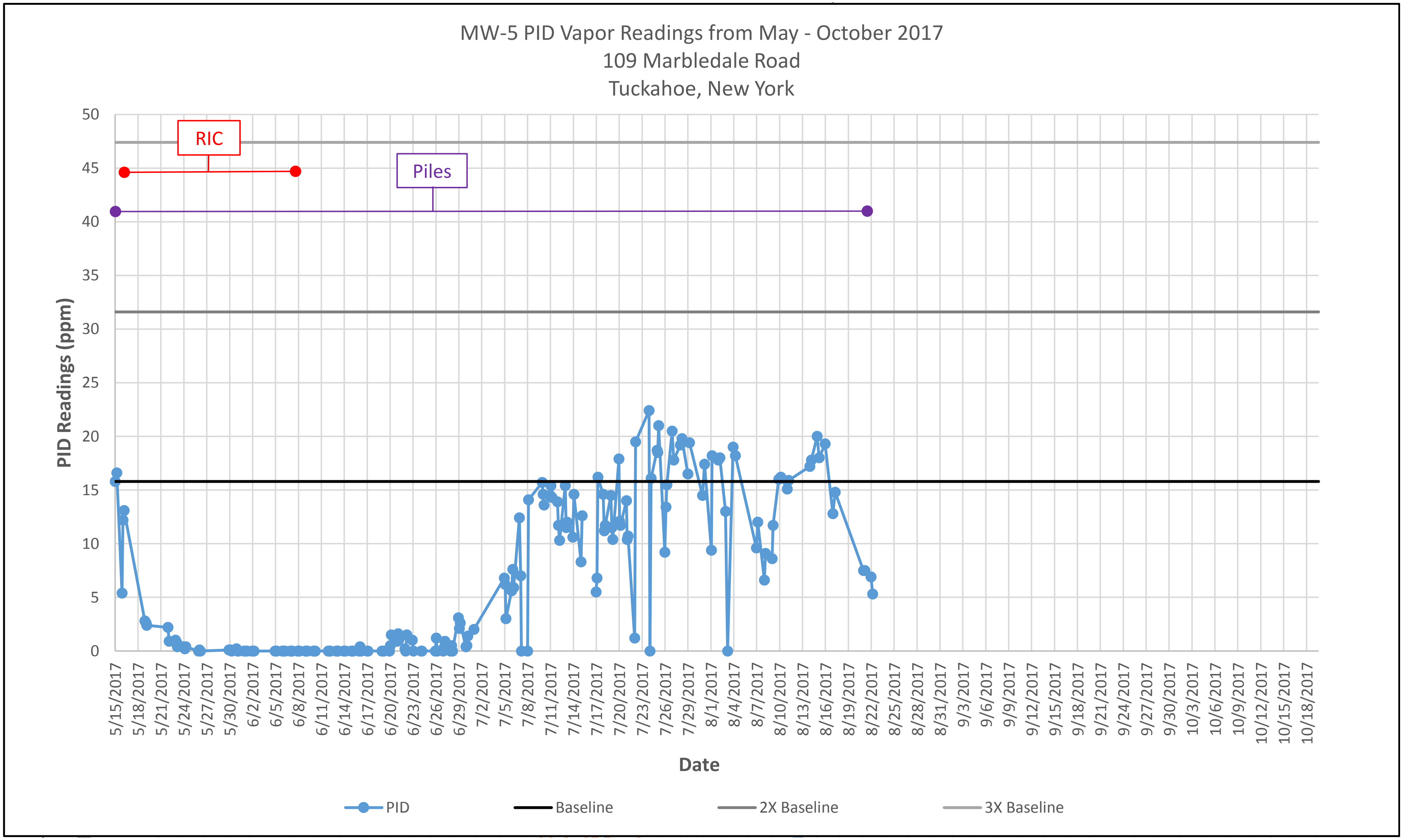
MW-1 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
10
9
8
7
6
5
4
3
2
1
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

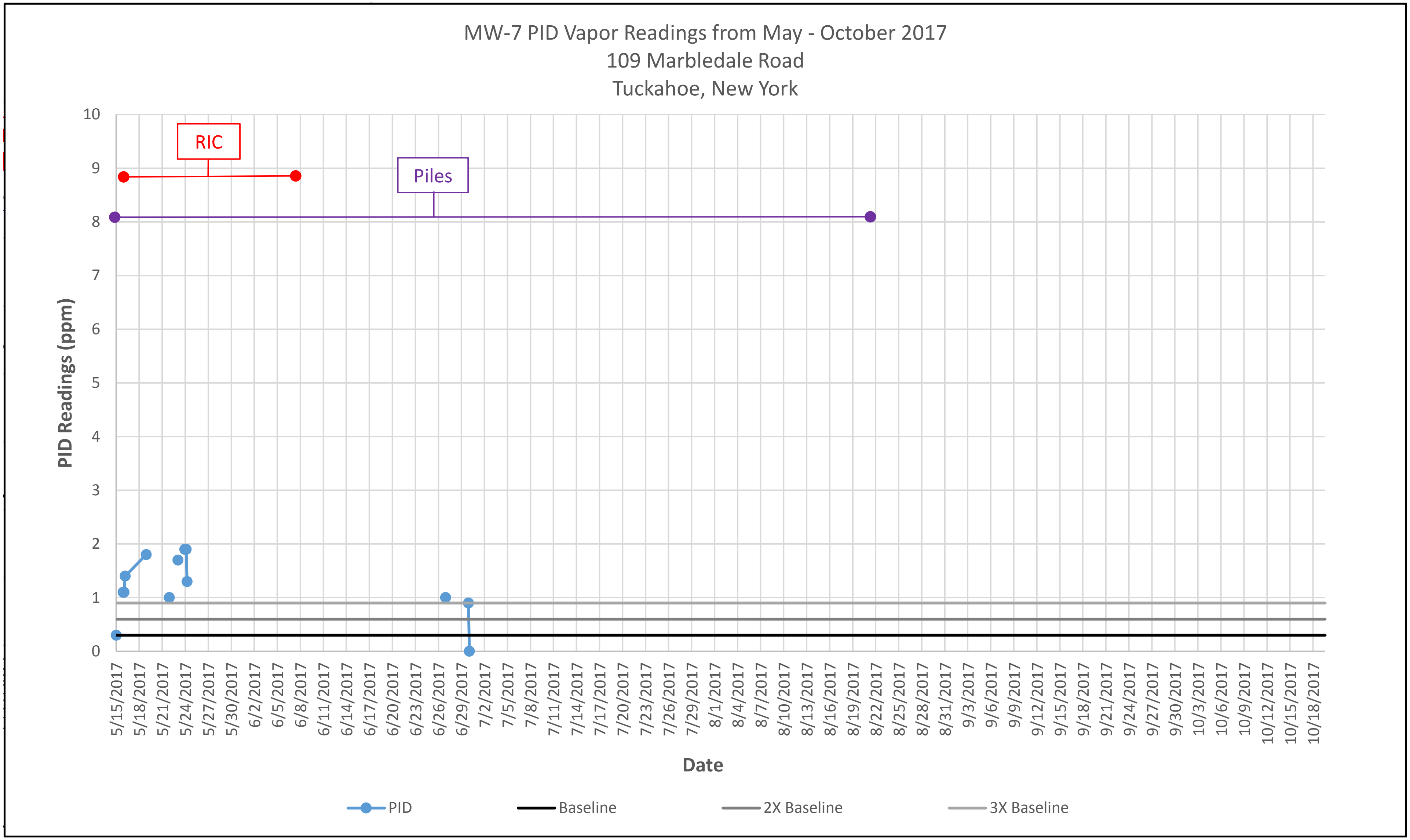


MW-3 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
8
7
6
5
4
3
2
1
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

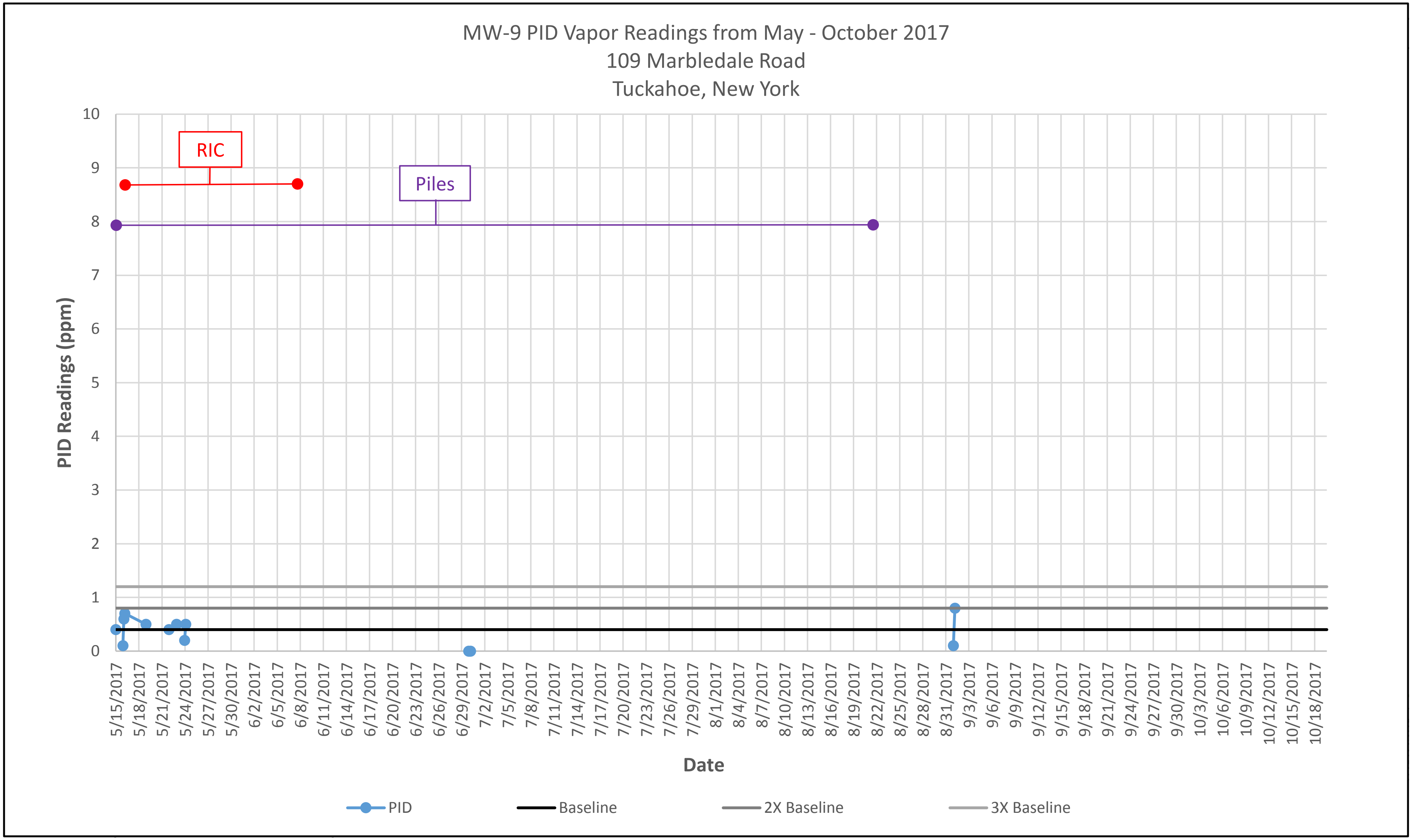


MW-4 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline

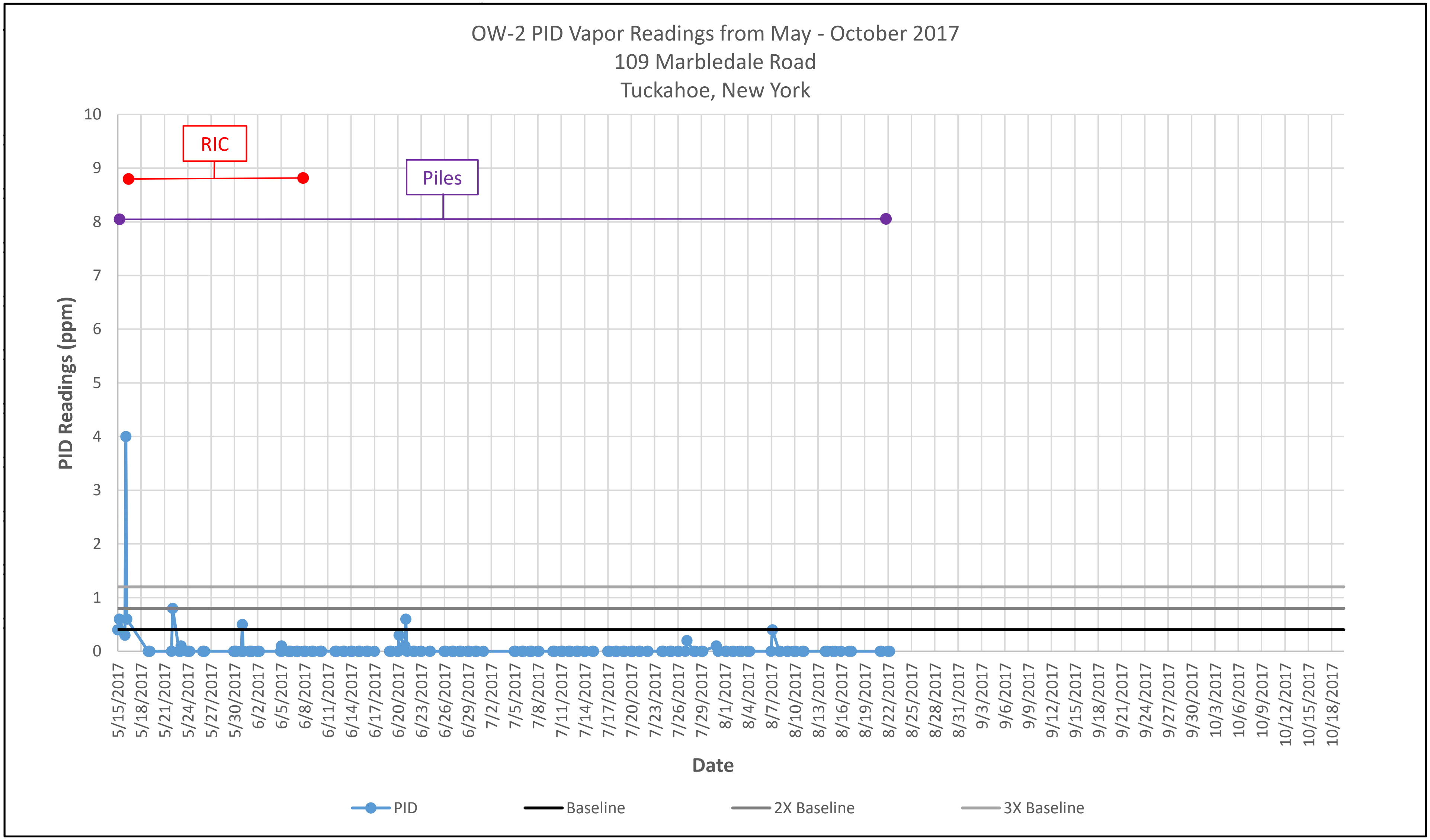

MW-5 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline



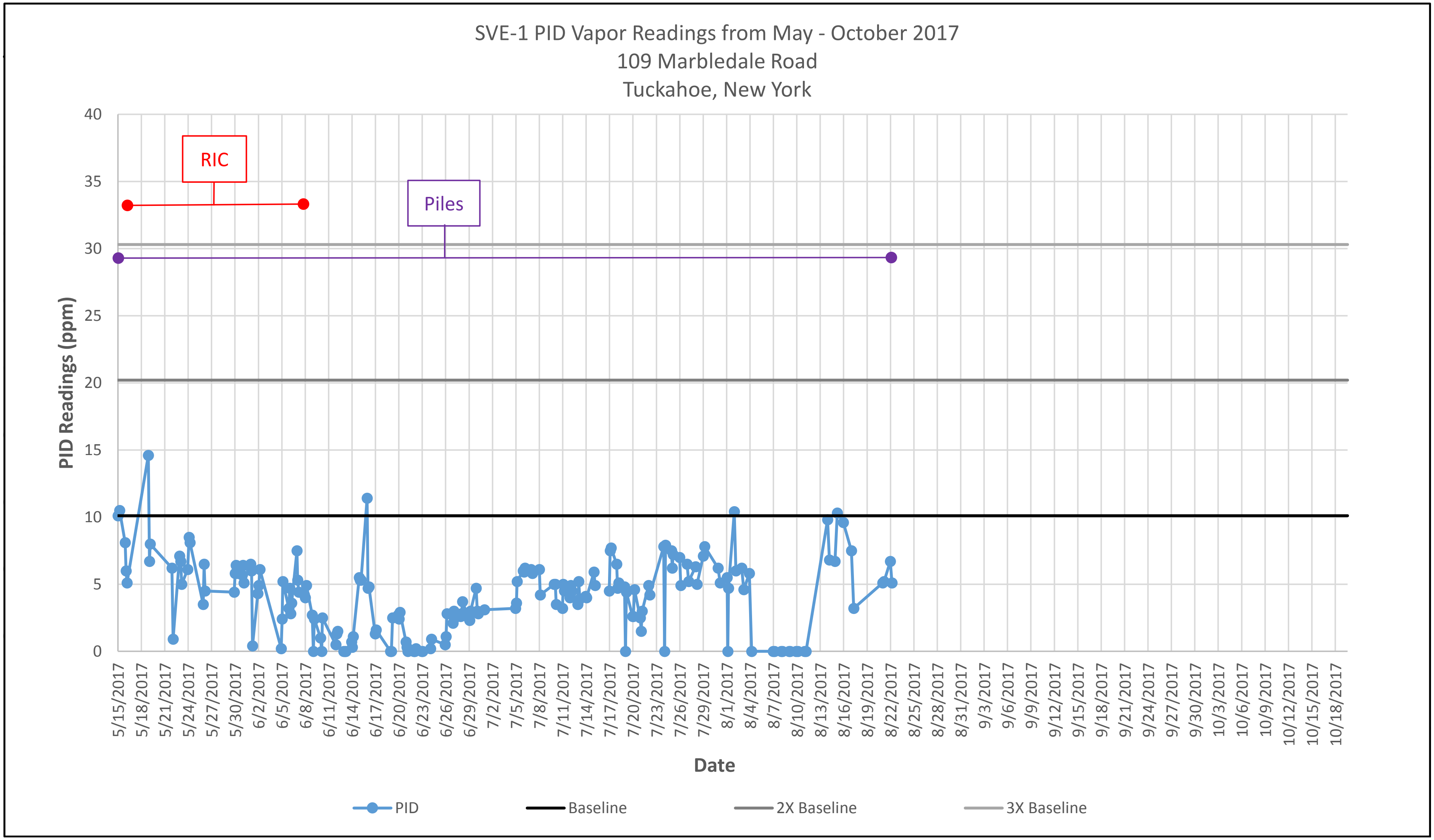
MW-7 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline



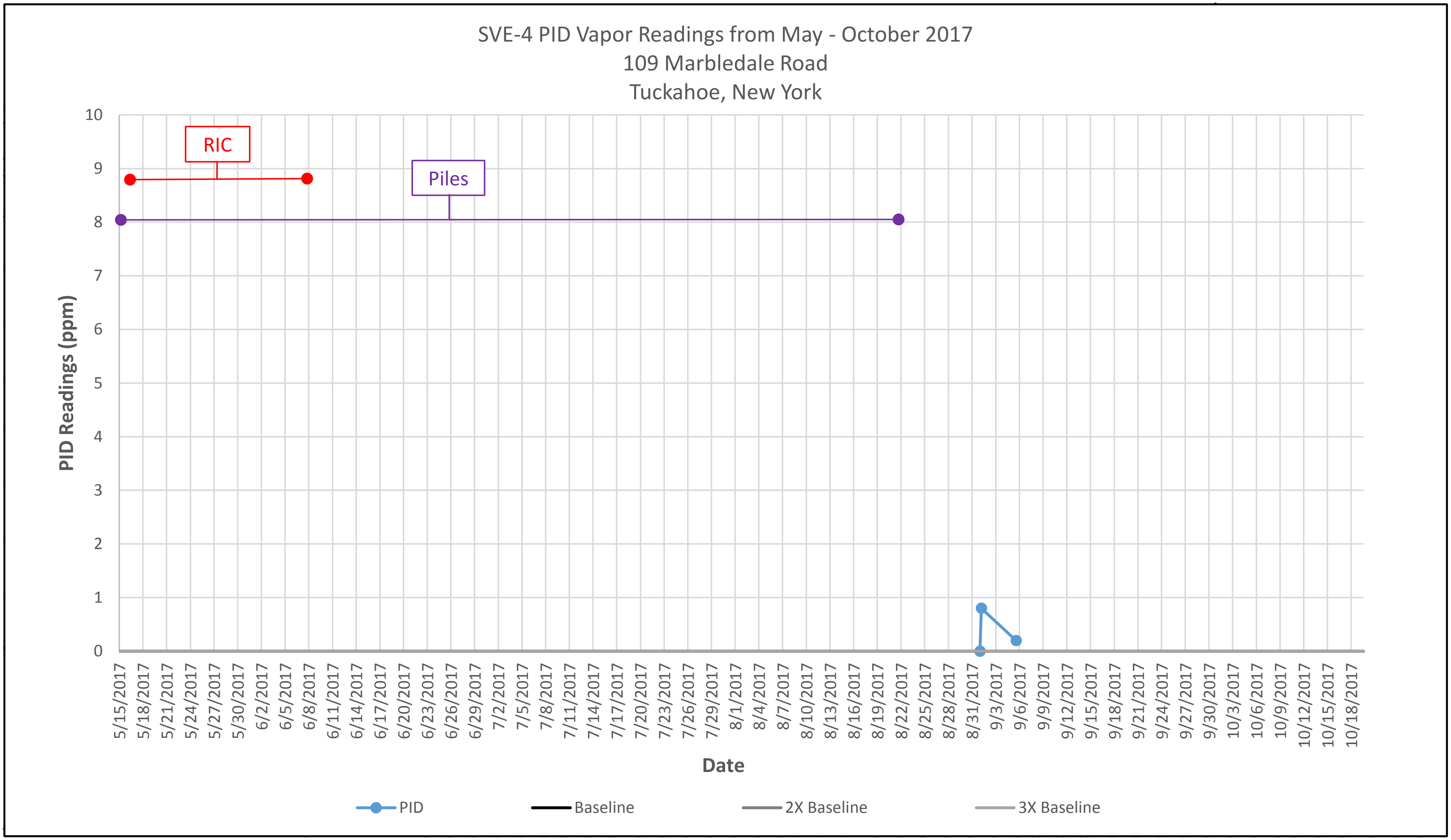
MW-9 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
10
9
8
7
6
5
4
3
2
1
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

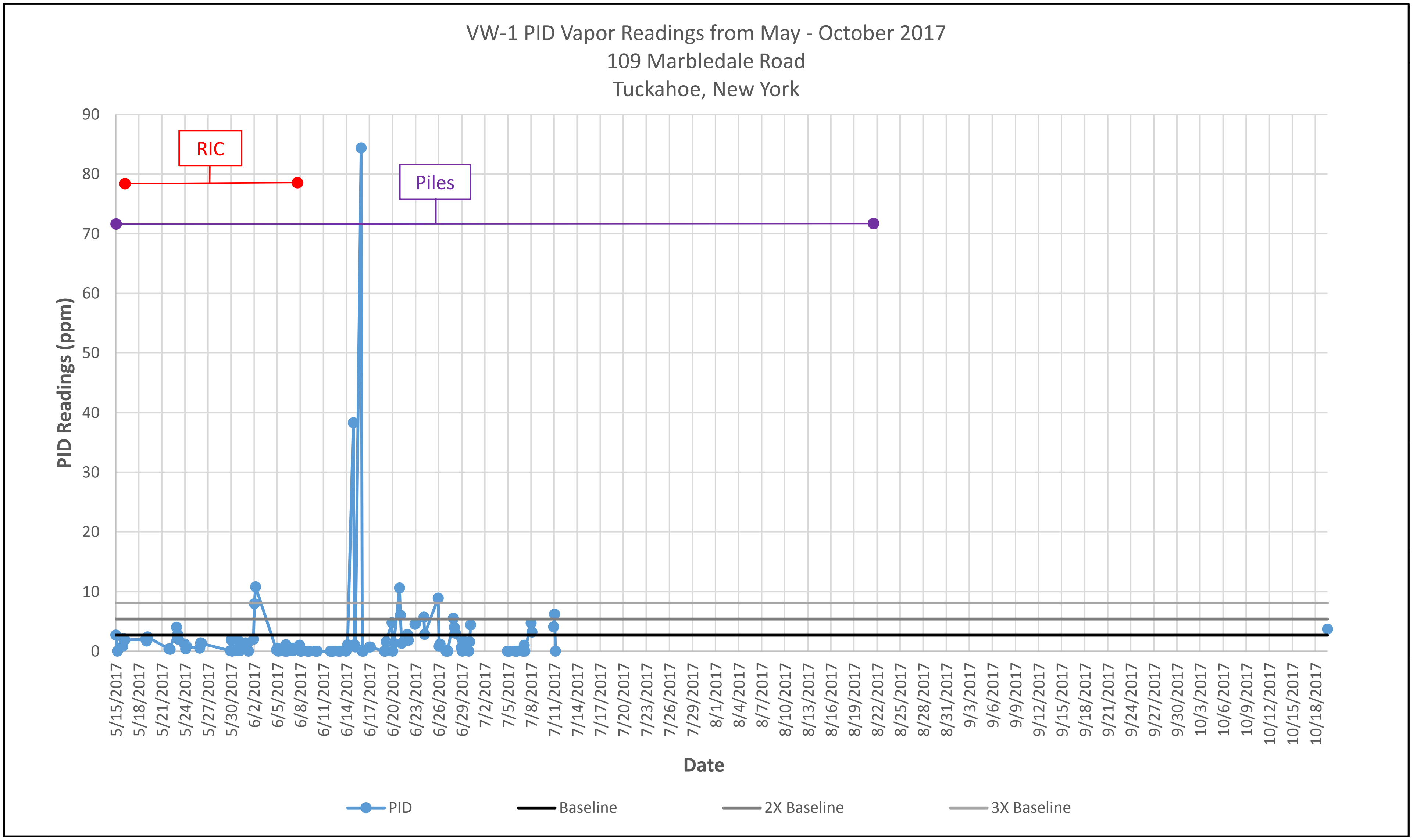


OW-2 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
10
9
8
7
6
5
4
3
2
1
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

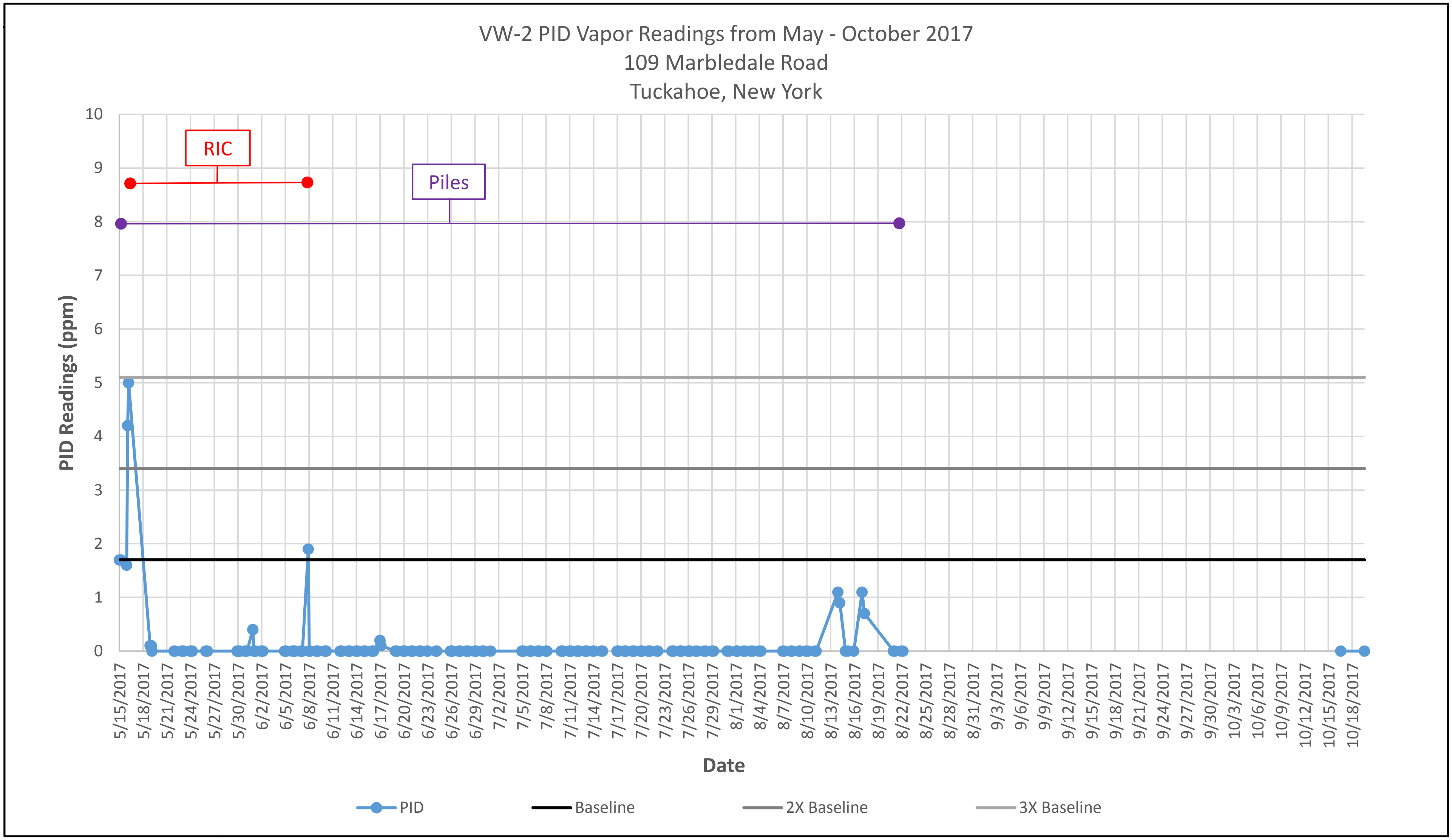


SVE-1 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
40
35
30
25
20
15
10
5
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

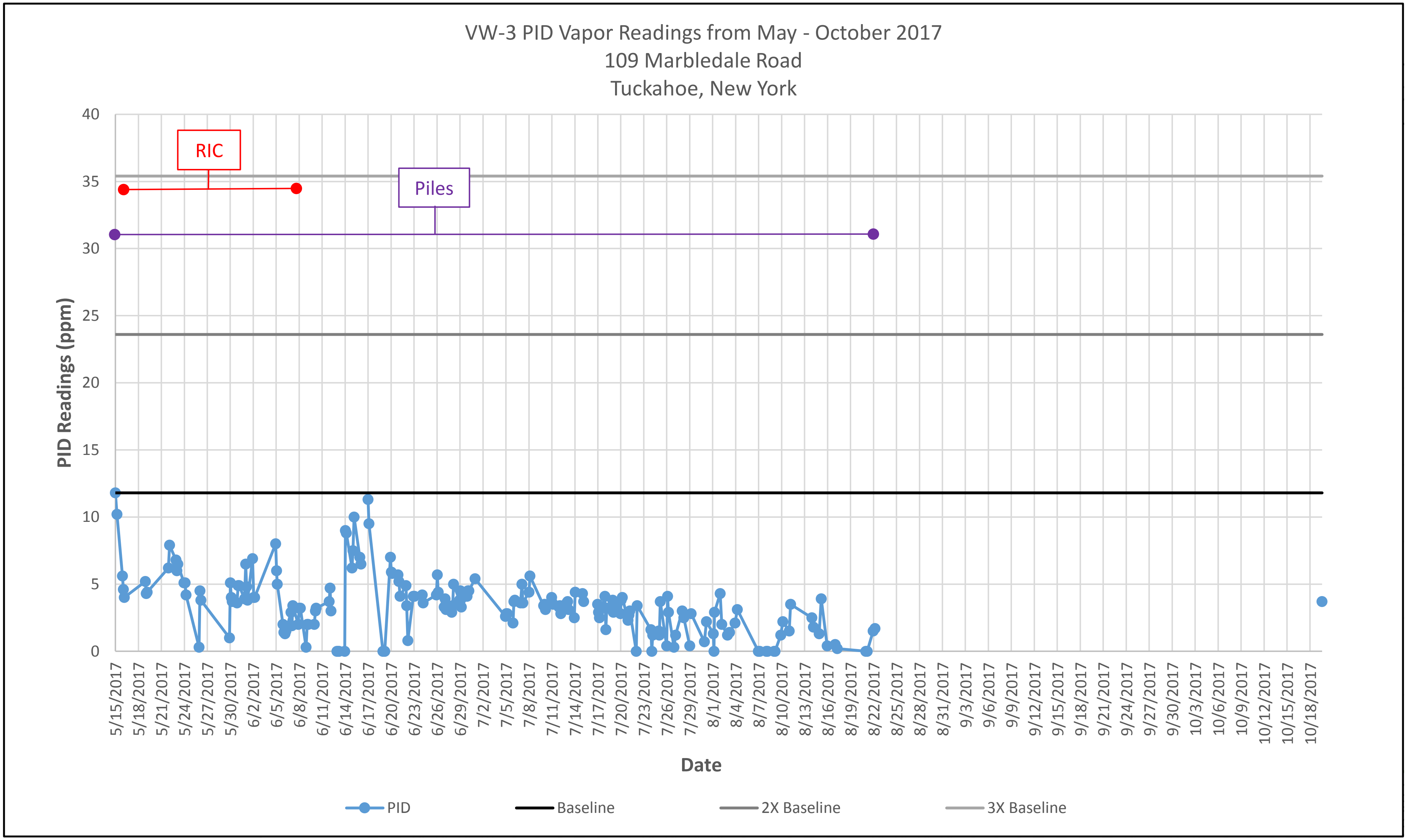

SVE-4 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline

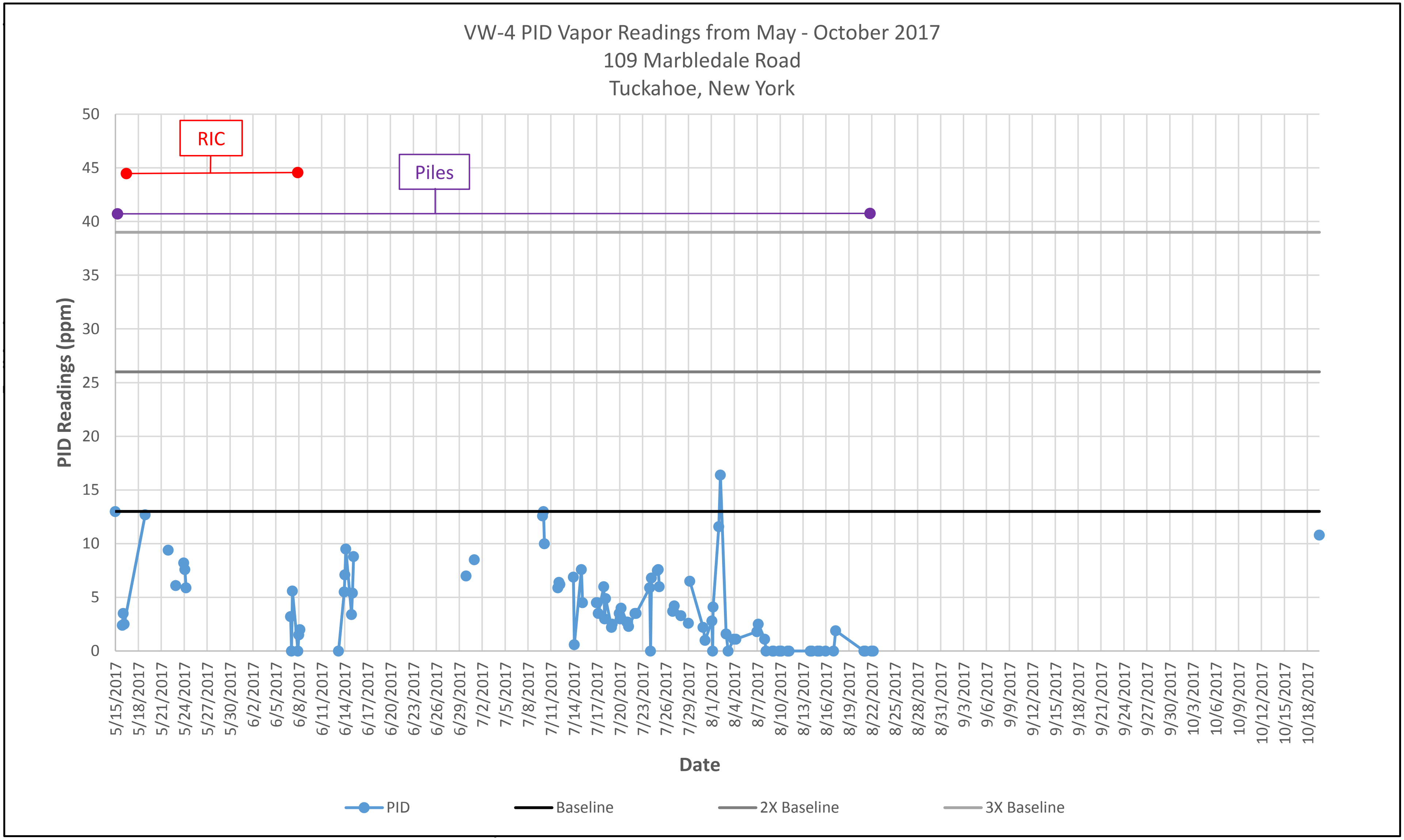


VW-1 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
90
80
70
60
50
40
30
20
10
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

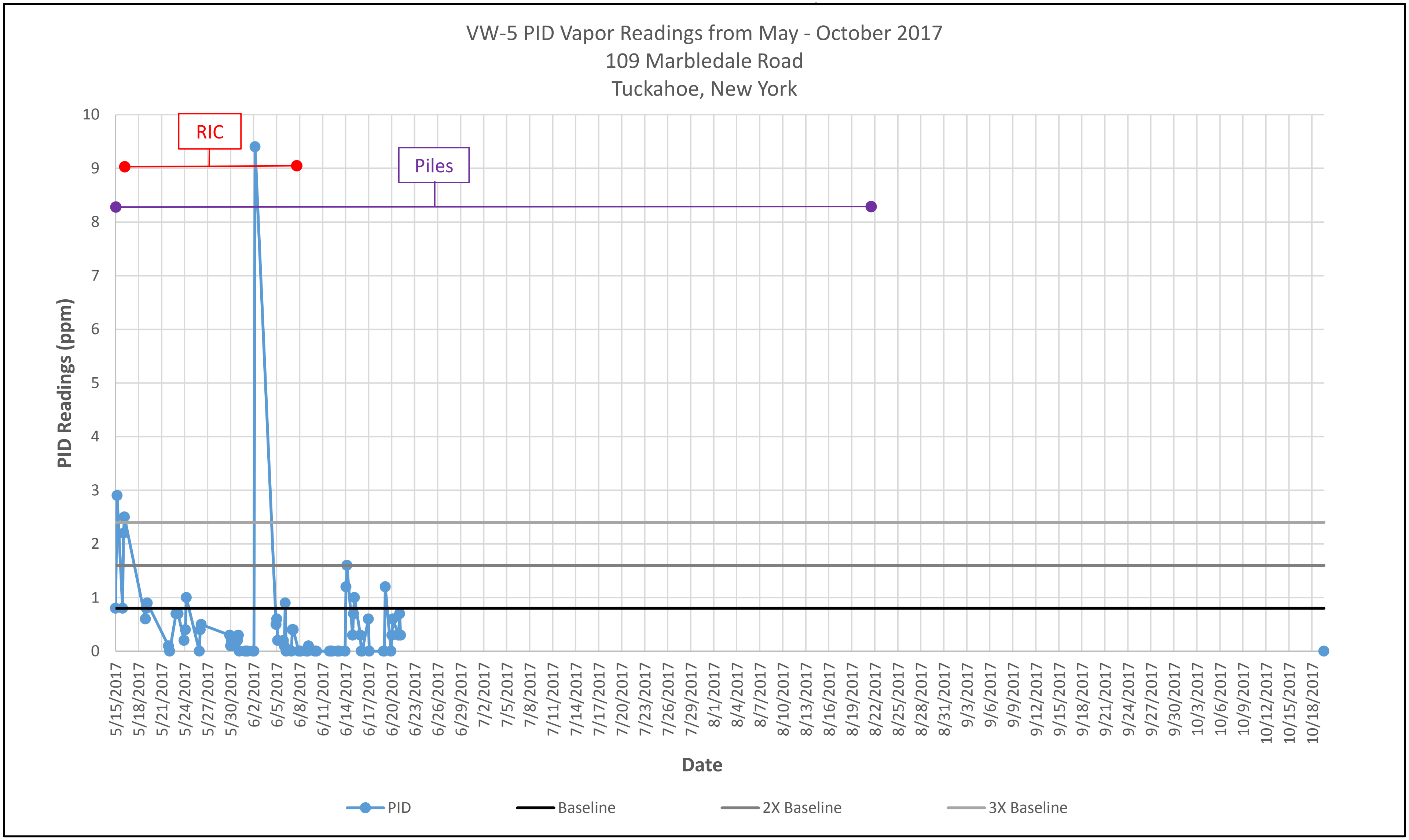


VW-2 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline

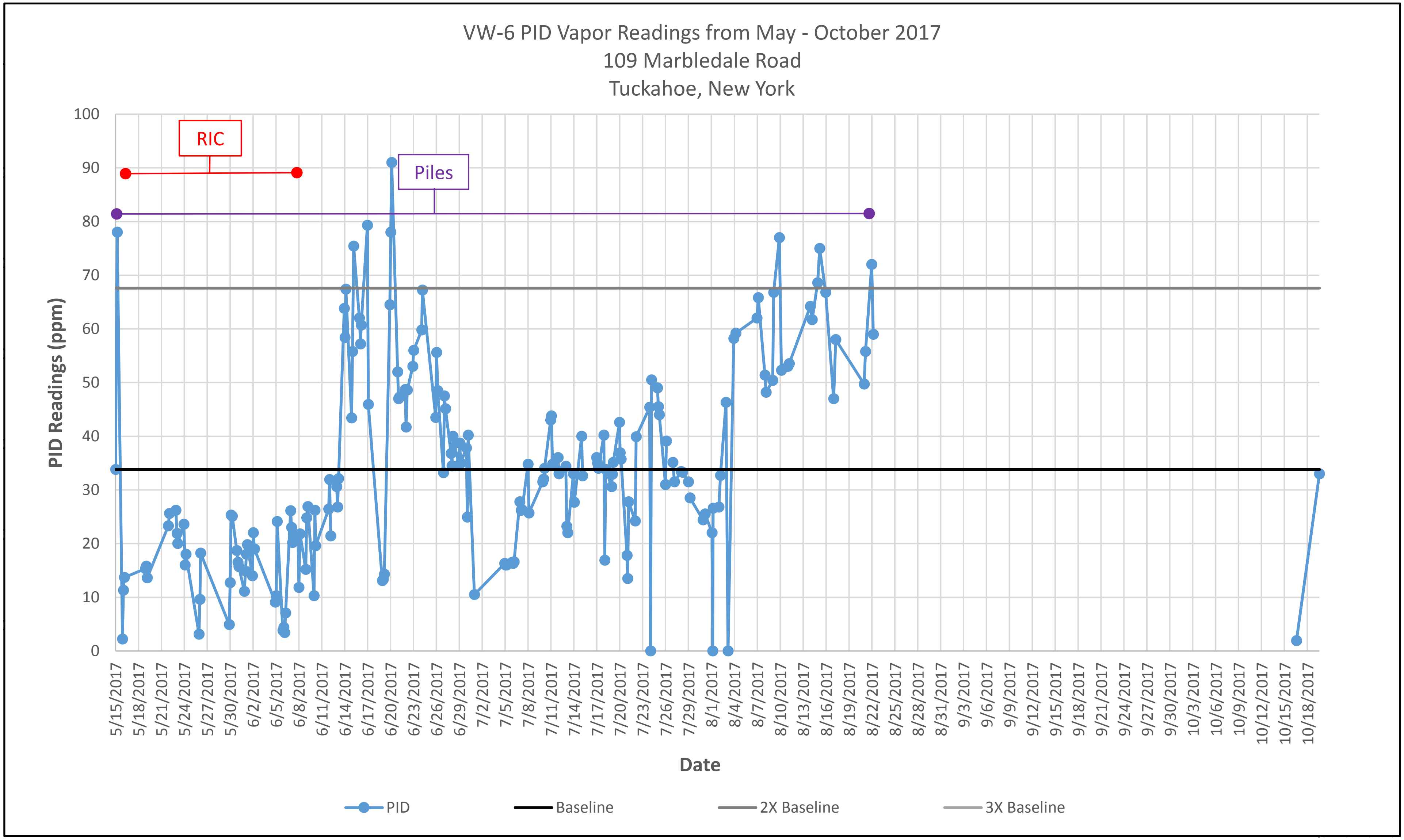

VW-3 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
40
35
30
25
20
15
10
5
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

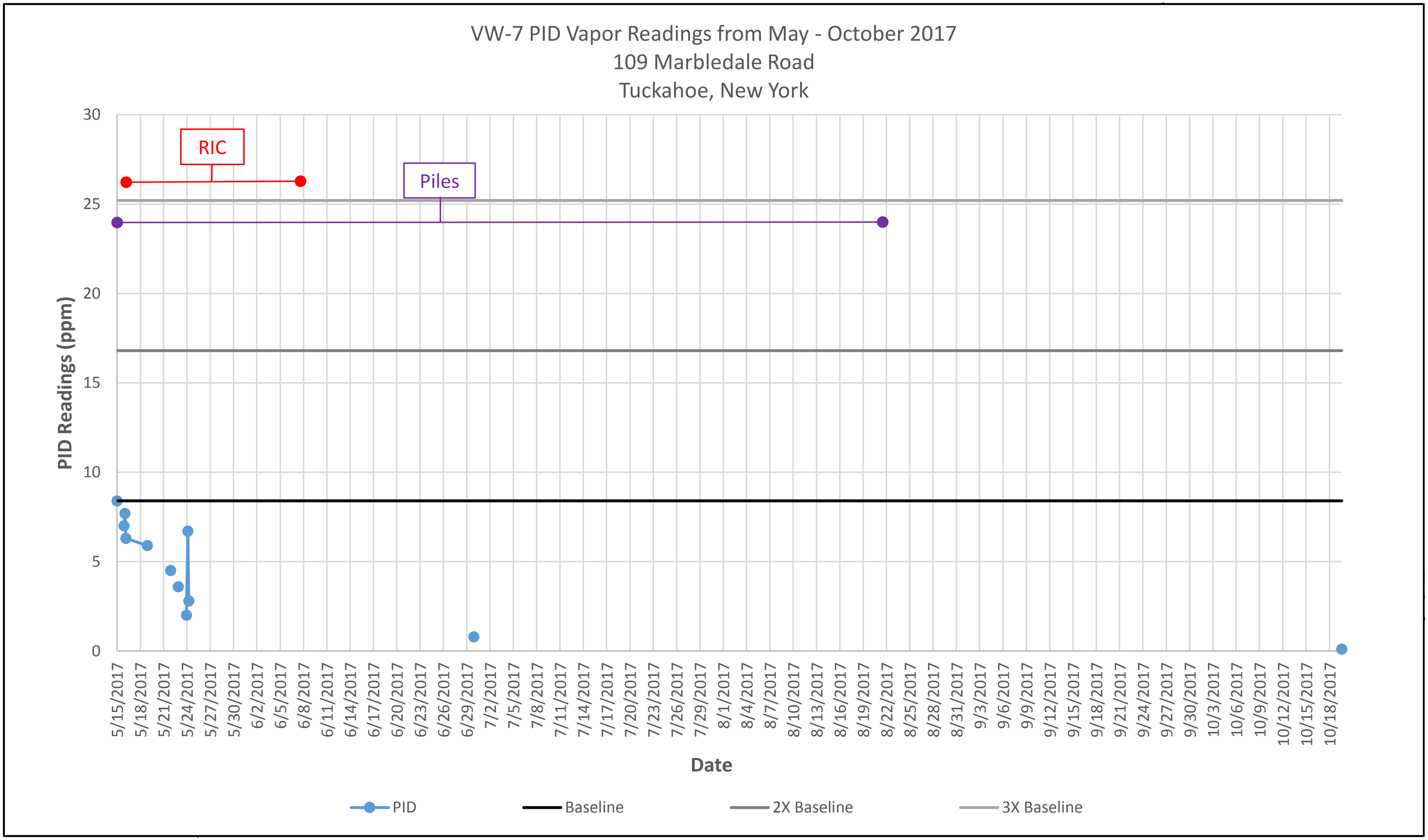


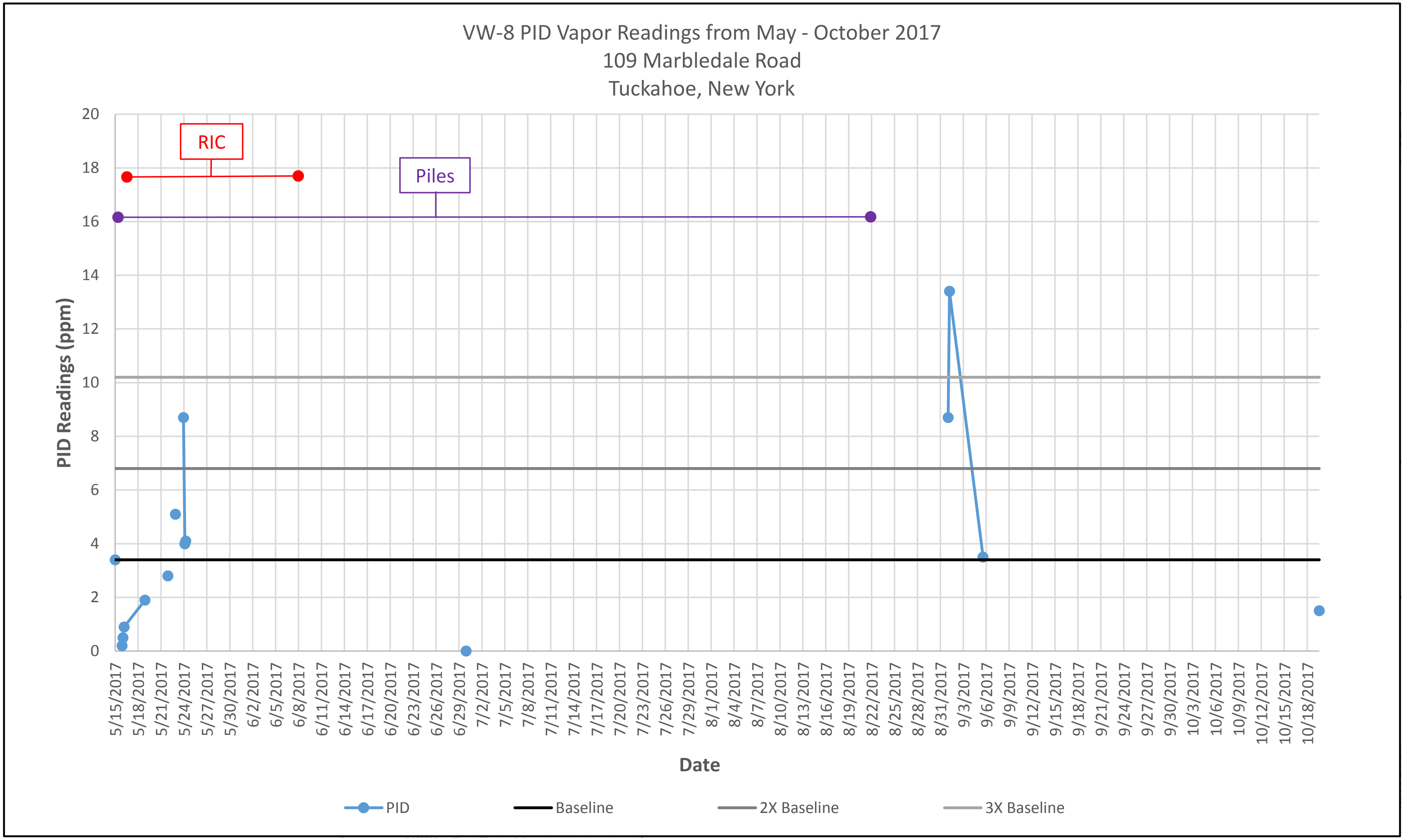
VW-4 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline



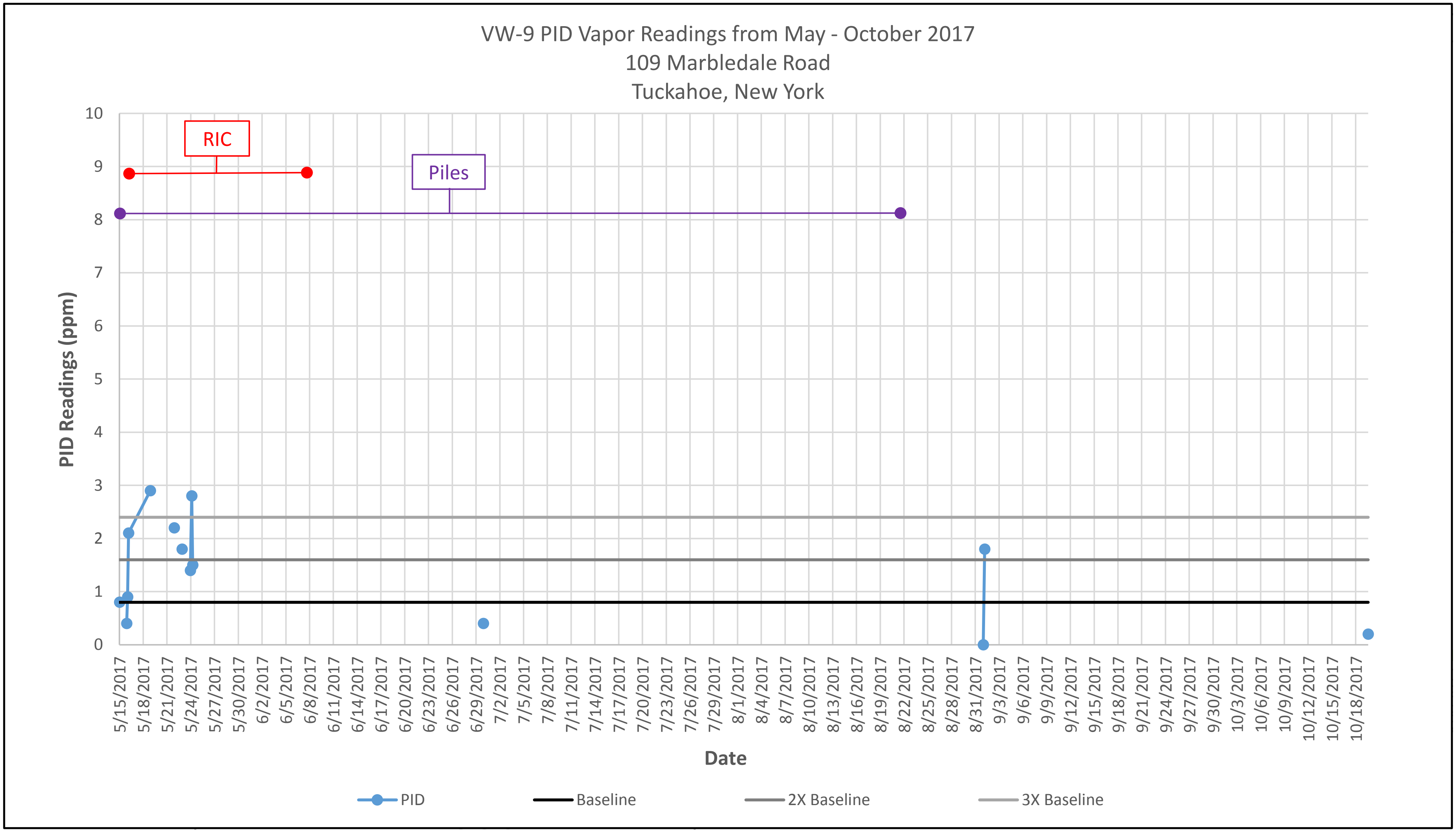
VW-5 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
10
9
8
7
6
5
4
3
2
1
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline


VW-6 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
100
90
80
70
60
50
40
30
20
10
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

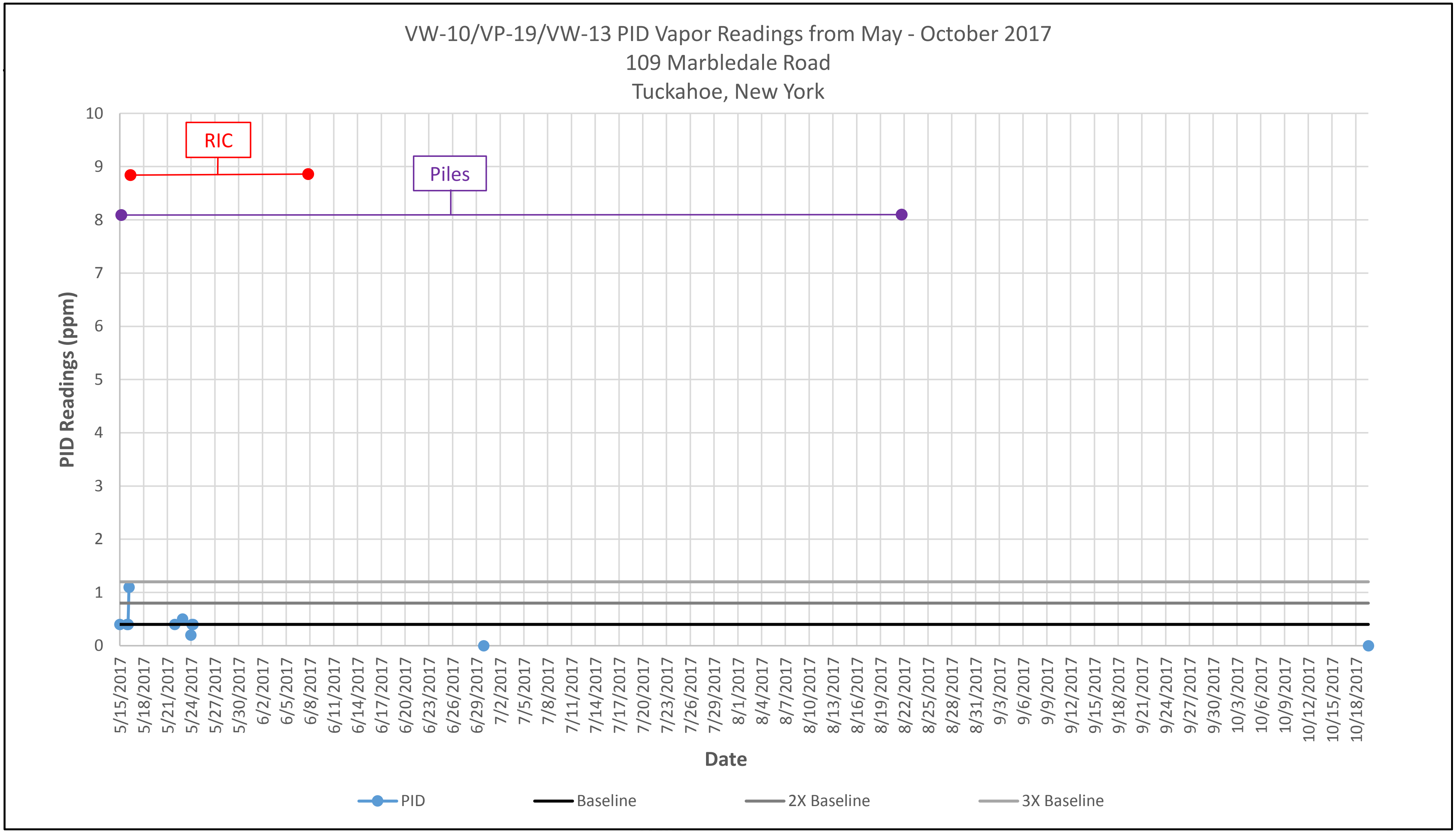

VW-7 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline

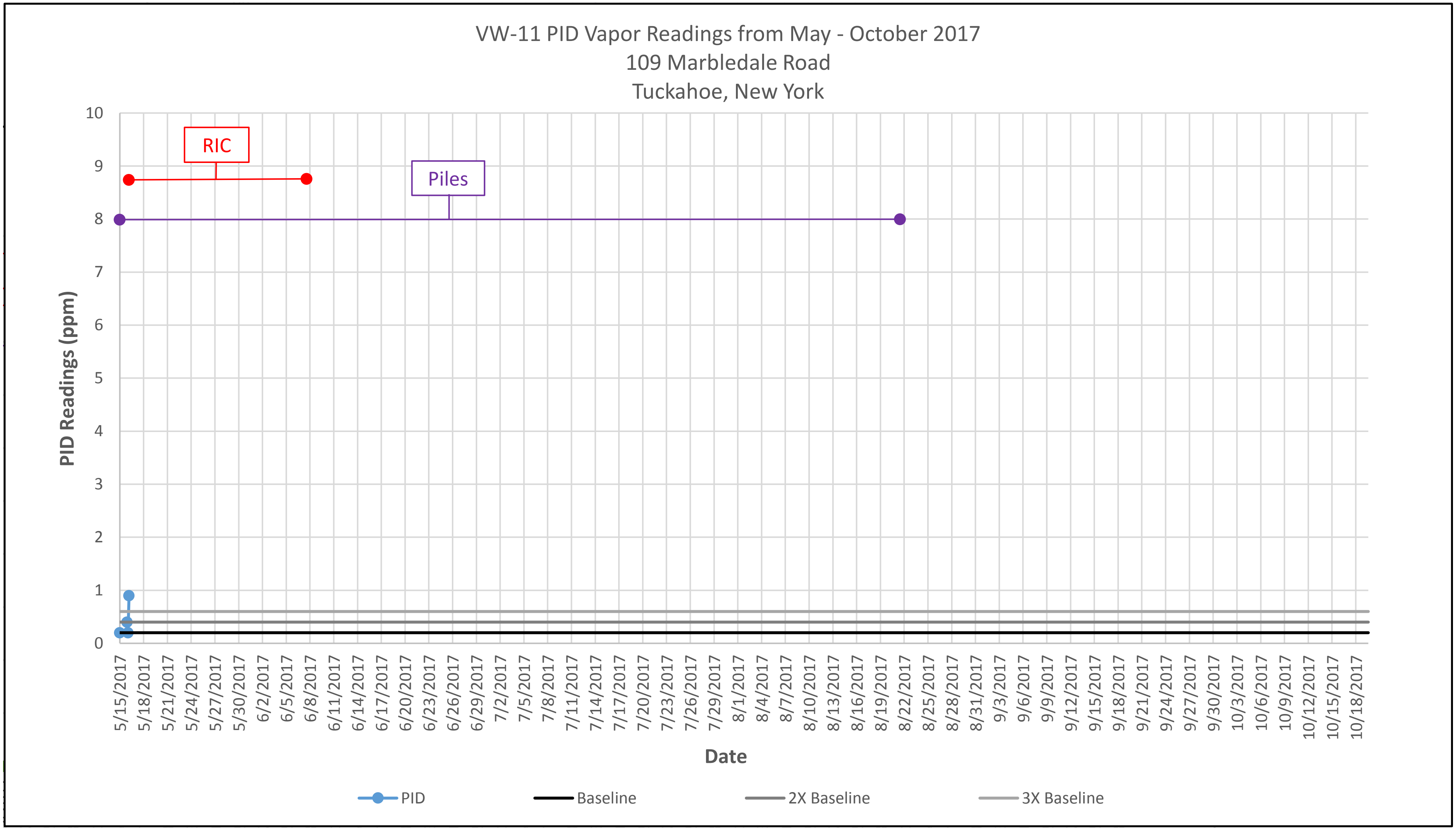


VW-8 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
20
18
16
14
12
10
8
6
4
2
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

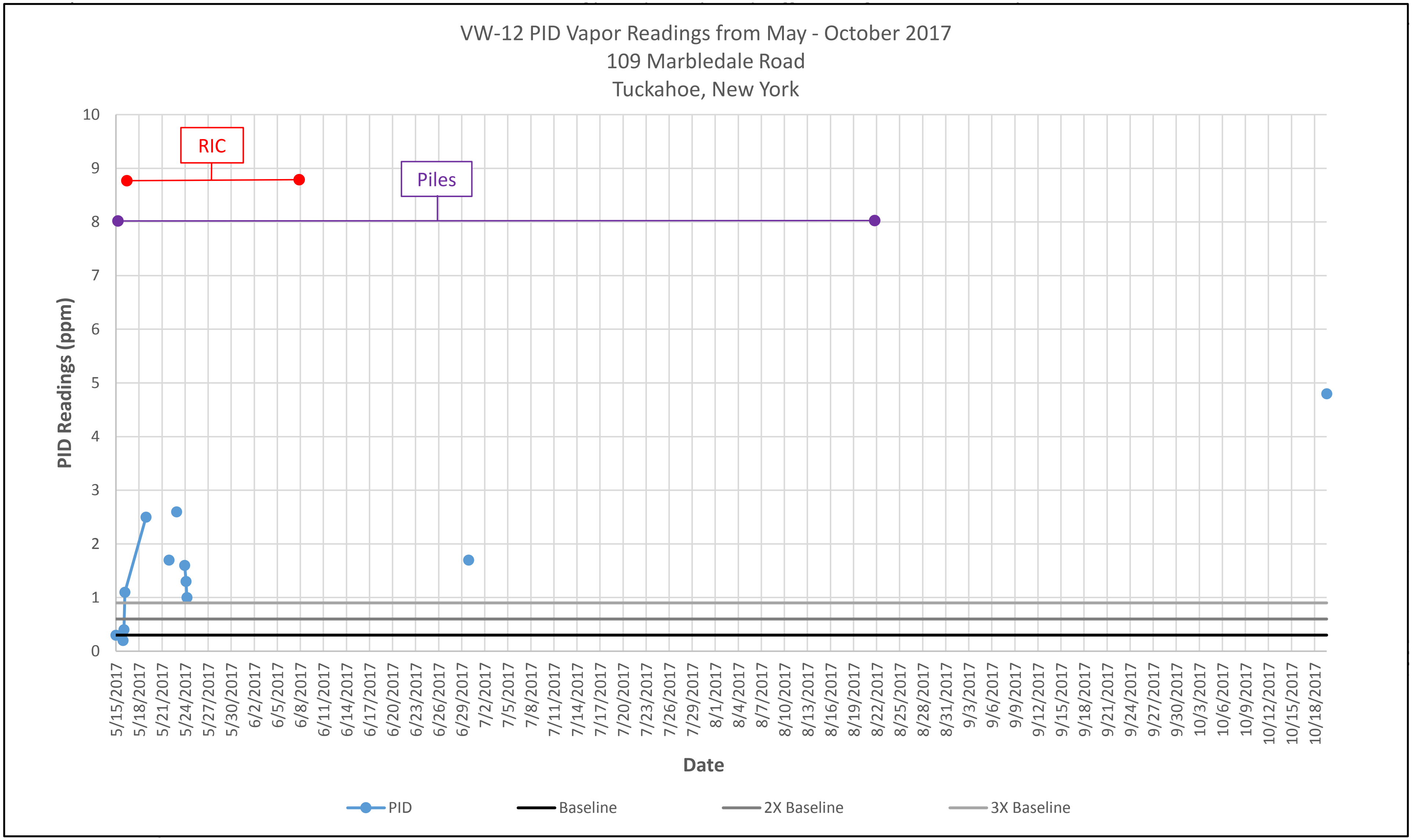


VW-9 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline


VW-10/VP-19/VW-13 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
10
9
8
7
6
5
4
3
2
1
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
PID
Baseline
2X Baseline
3X Baseline

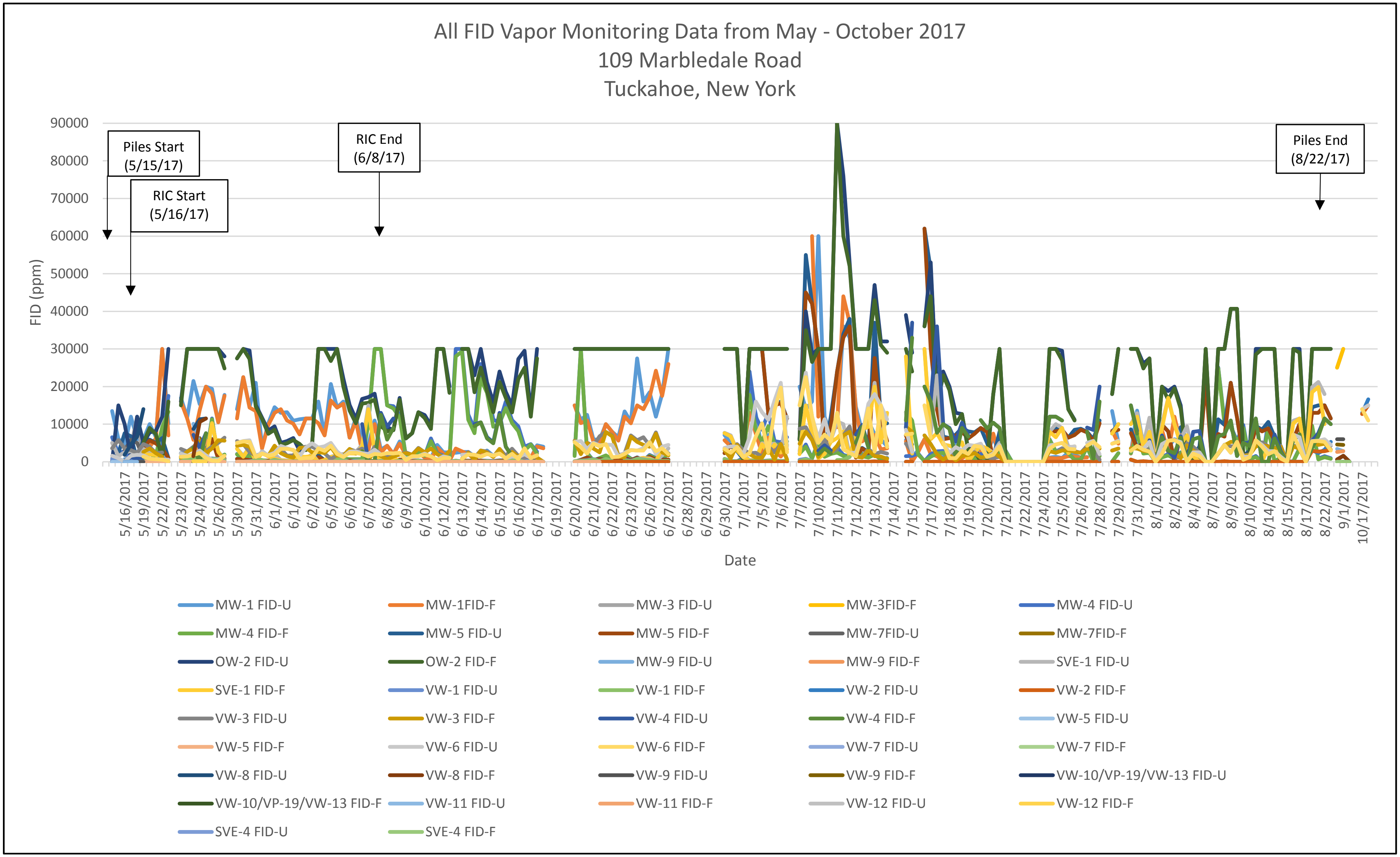


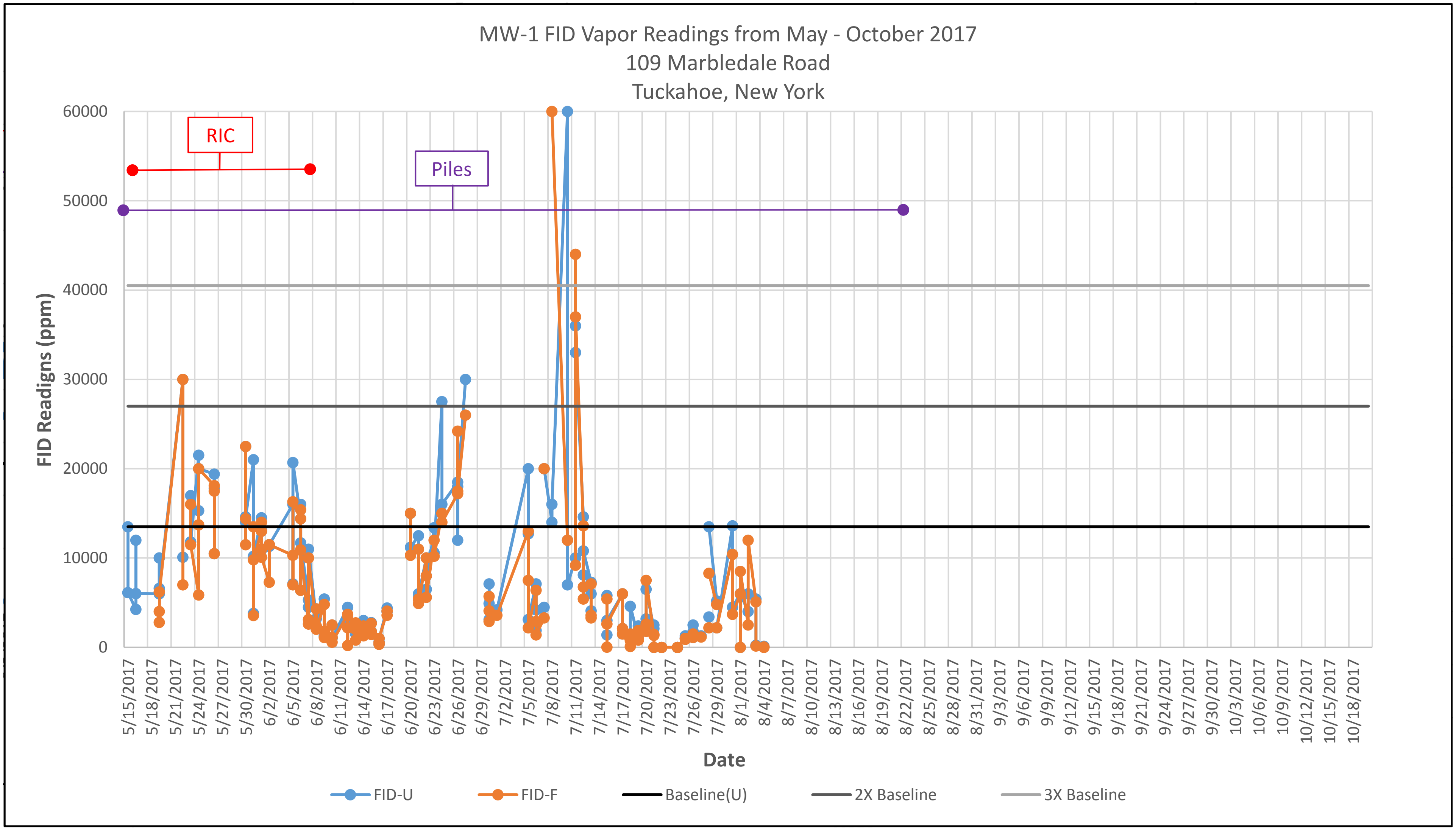
VW-11 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline



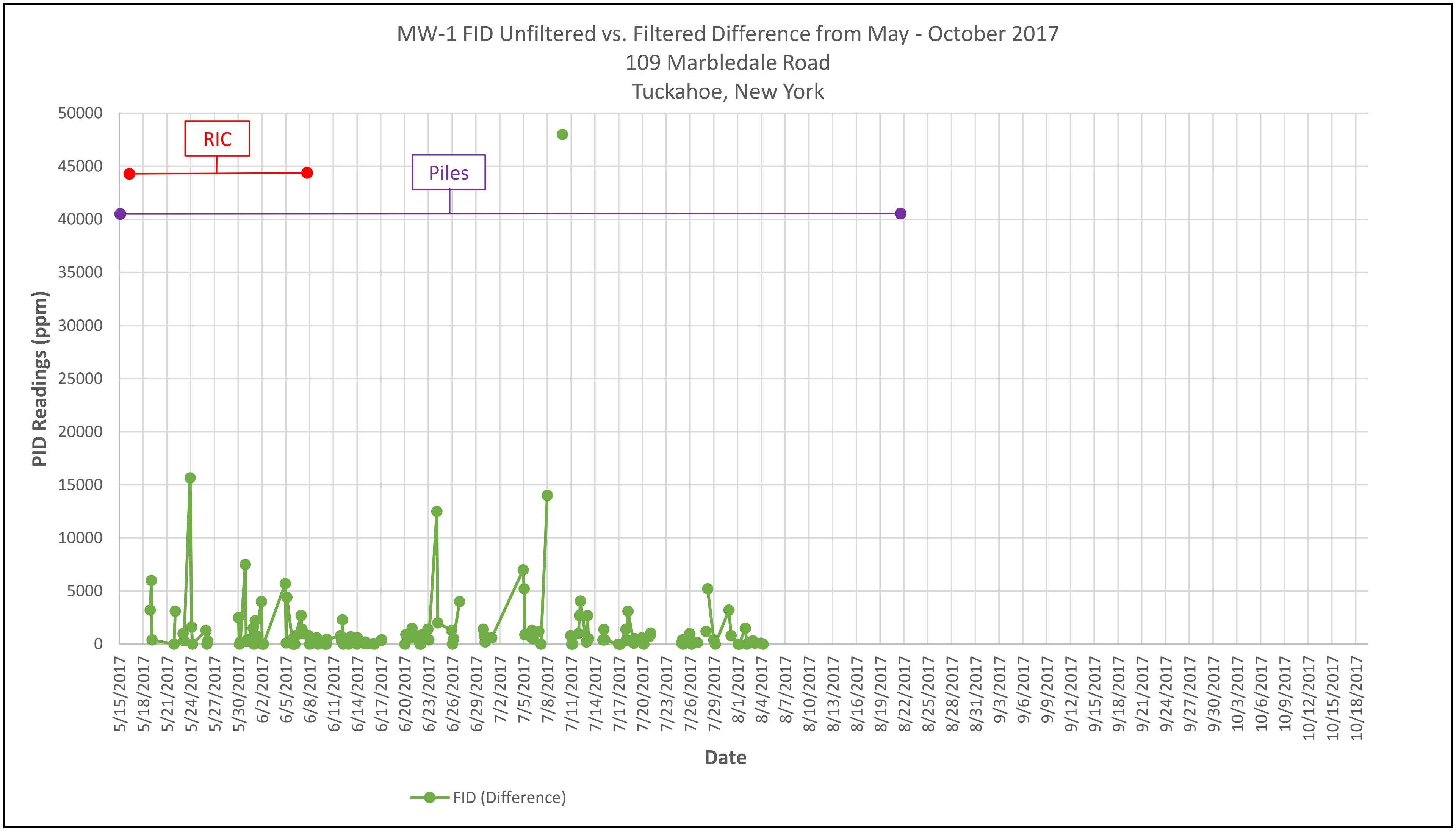
VW-12 PID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
PID
Baseline
2X Baseline
3X Baseline

FID Monitoring Data

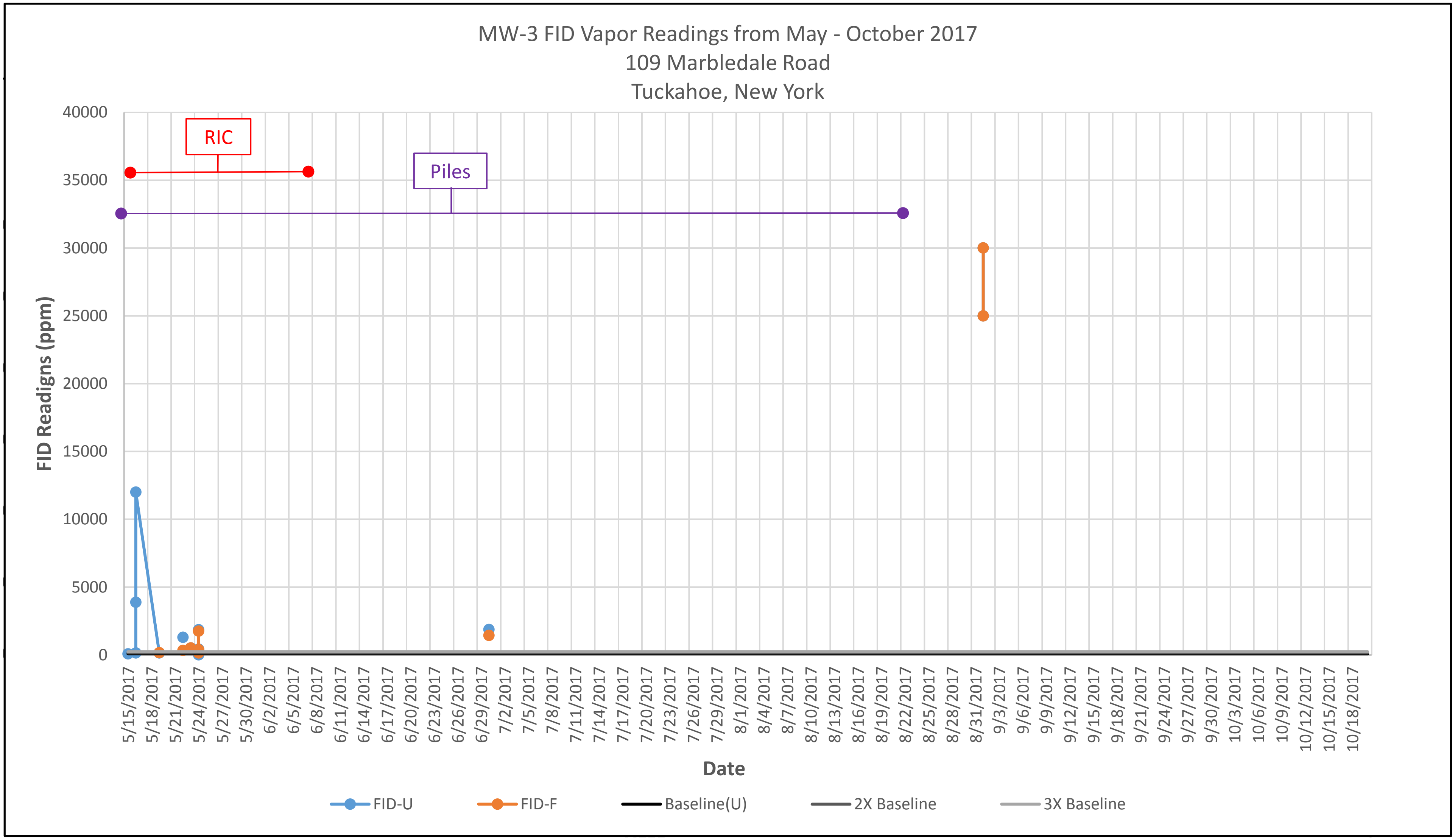

All FID Vapor Monitoring Data from May - October 2017
109 Marbledale Road
Tuckahoe, New York
Piles Start (5/15/17)
RIC Start (5/16/17)
RIC End (6/8/17)
Piles End (8/22/17)
FID (ppm)
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Date
MW-1 FID-U
MW-1FID-F
MW-3 FID-U
MW-3FID-F
MW-4 FID-U
MW-4 FID-F
MW-5 FID-U
MW-5 FID-F
MW-7FID-U
MW-7FID-F
OW-2 FID-U
OW-2 FID-F
MW-9 FID-U
MW-9 FID-F
SVE-1 FID-U
SVE-1 FID-F
VW-1 FID-U
VW-1 FID-F
VW-2 FID-U
VW-2 FID-F
VW-3 FID-U
VW-3 FID-F
VW-4 FID-U
VW-4 FID-F
VW-5 FID-U
VW-5 FID-F
VW-6 FID-U
VW-6 FID-F
VW-7 FID-U
VW-7 FID-F
VW-8 FID-U
VW-8 FID-F
VW-9 FID-U
VW-9 FID-F
VW-10/VP-19/VW-13 FID-U
VW-10/VP-19/VW-13 FID-F
VW-11 FID-U
VW-11 FID-F
VW-12 FID-U
VW-12 FID-F
SVE-4 FID-U
SVE-4 FID-F

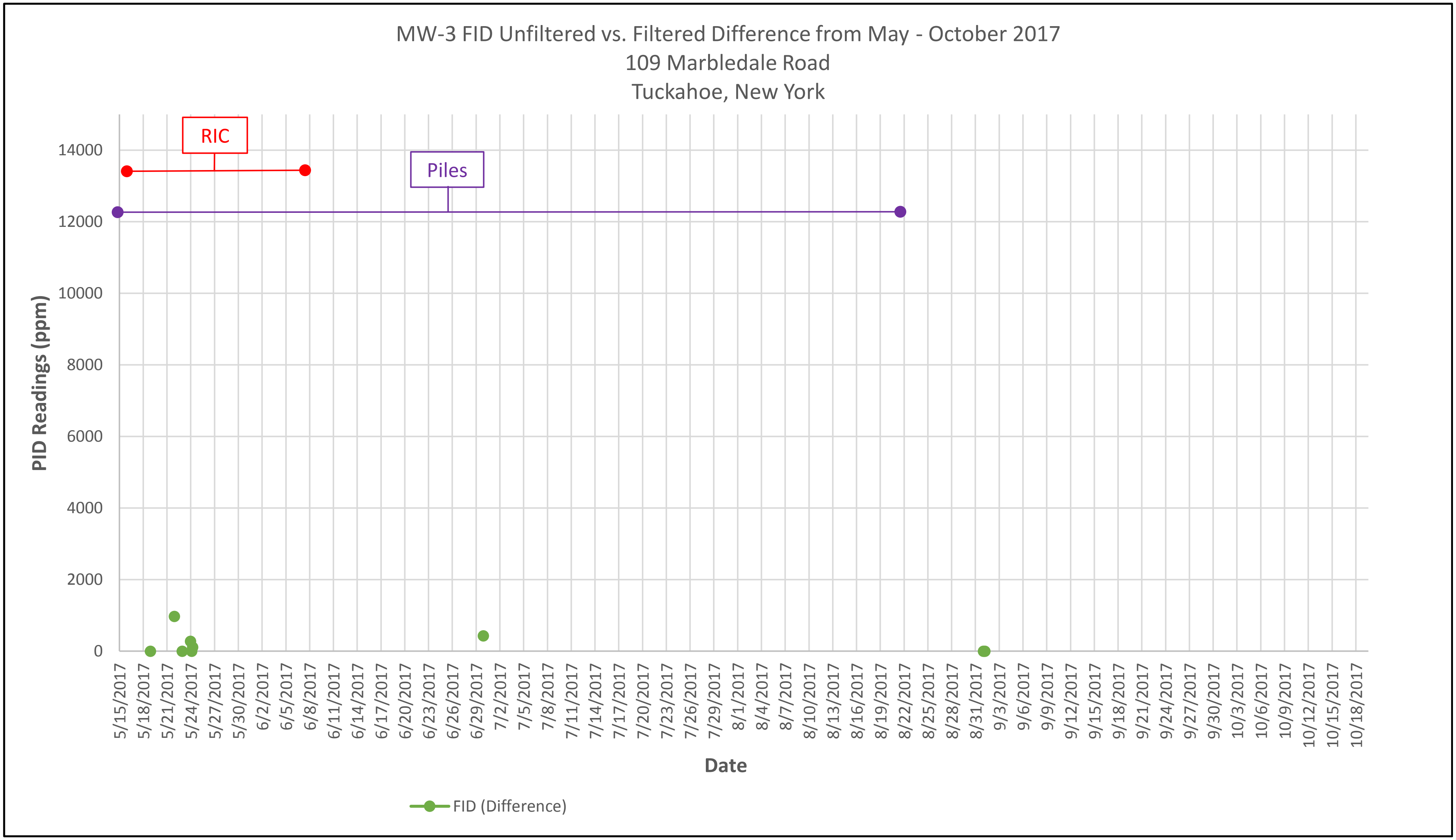


MW-1 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
60000
50000
40000
30000
20000
10000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline(U)
2X Baseline
3X Baseline

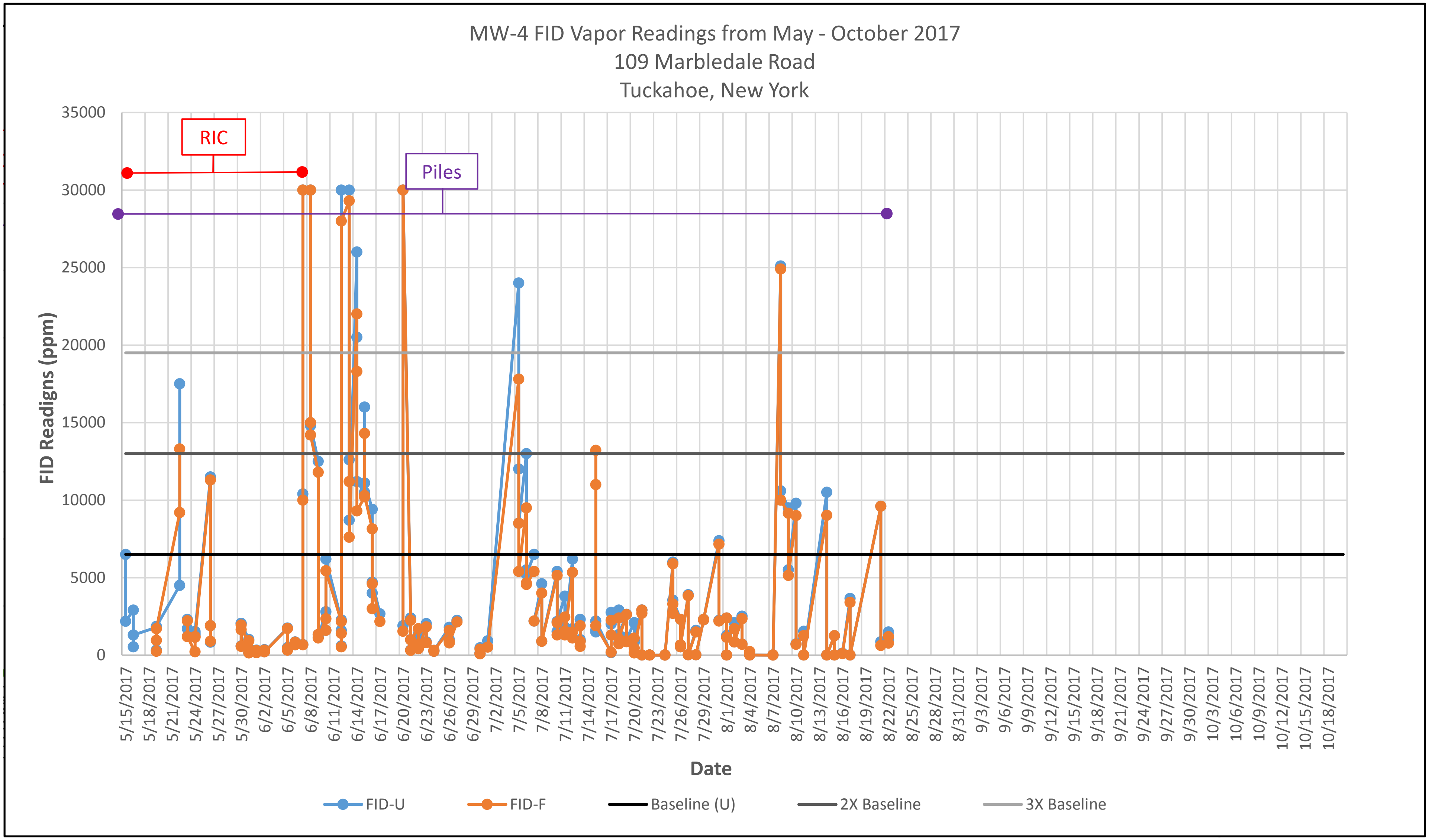


MW-1 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
PID Readings (ppm)
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
RIC
Piles
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)

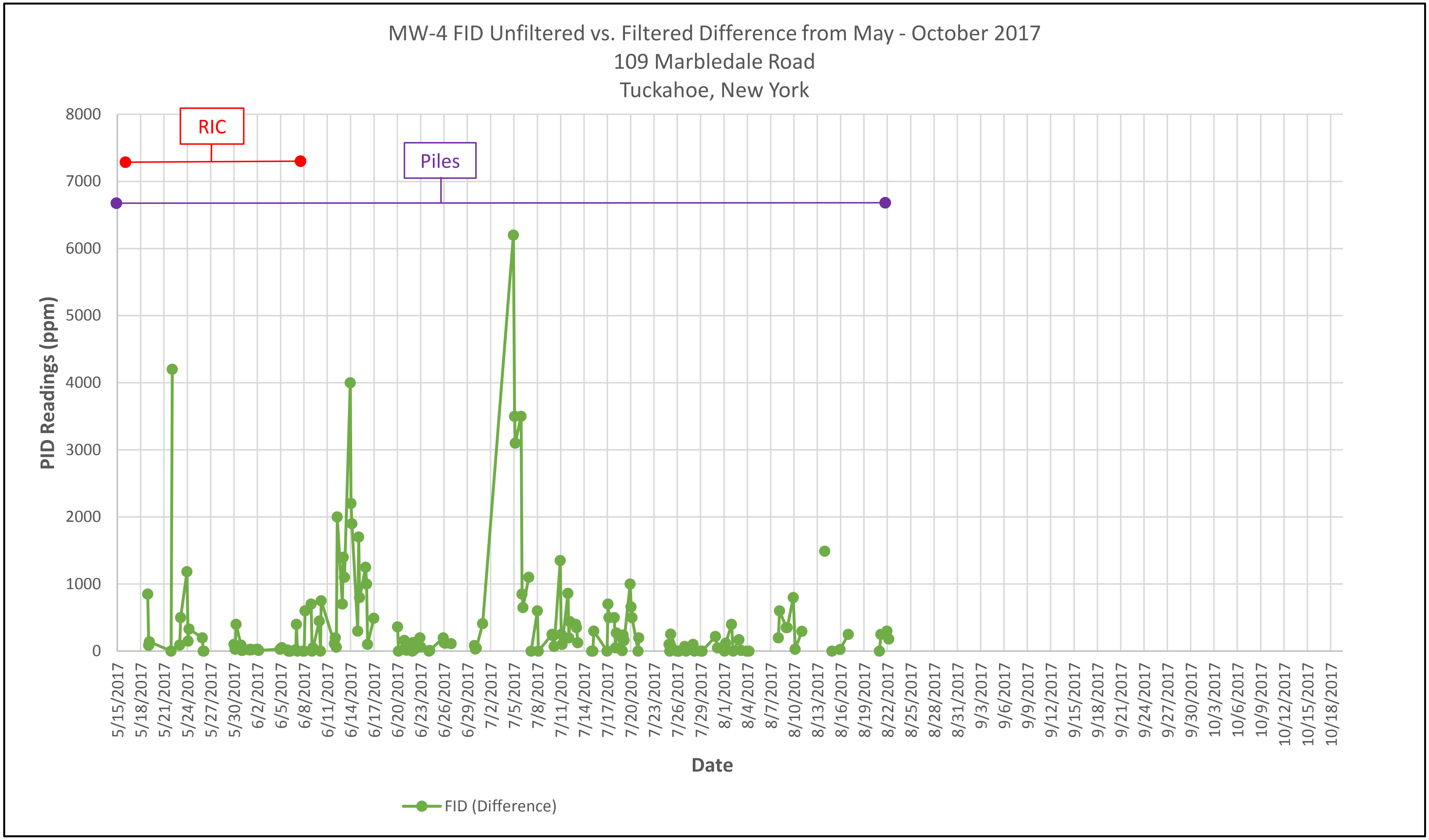

MW-3 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
40000
35000
30000
25000
20000
15000
10000
5000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline(U)
2X Baseline
3X Baseline



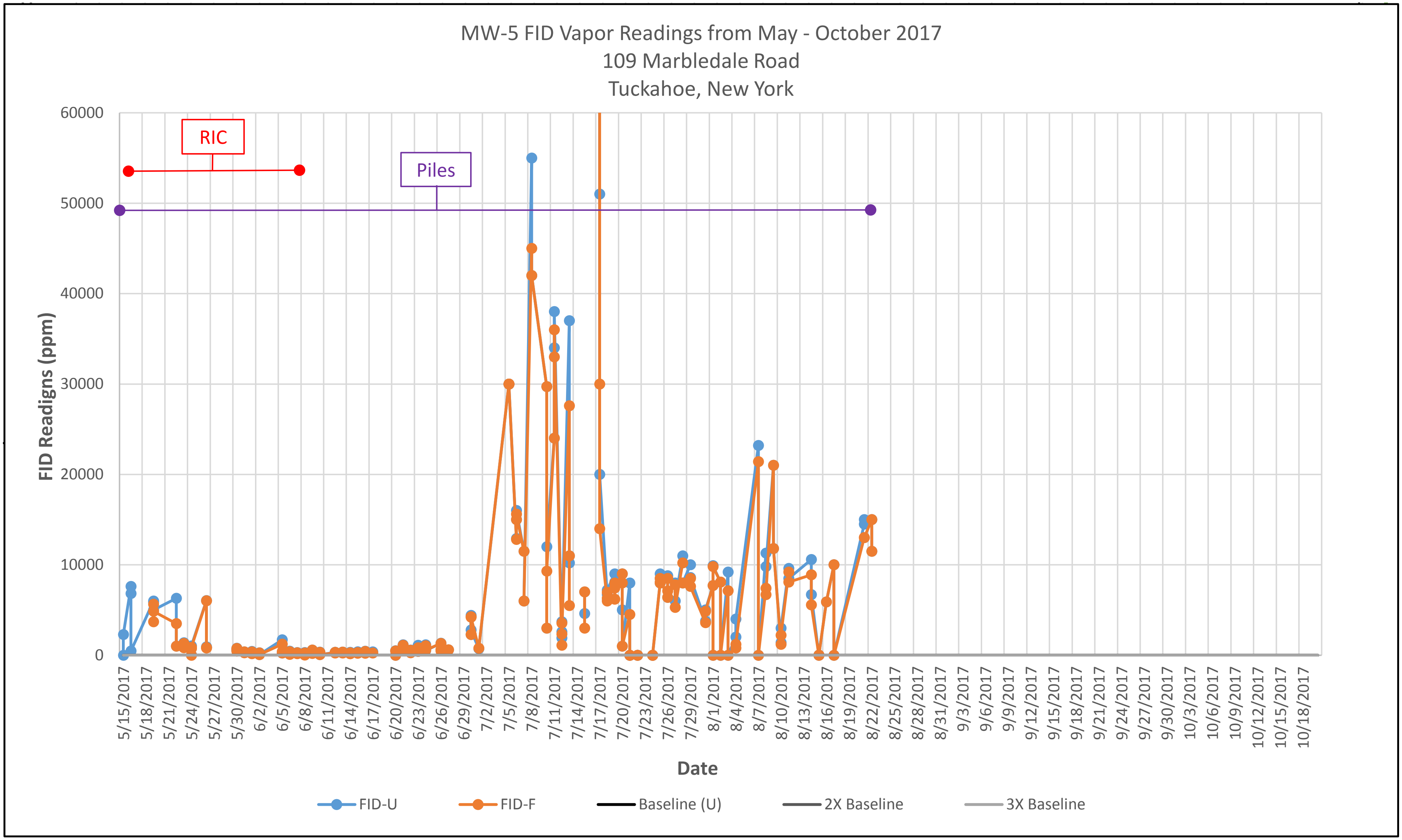
MW-3 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
14000
12000
10000
8000
6000
4000
2000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)



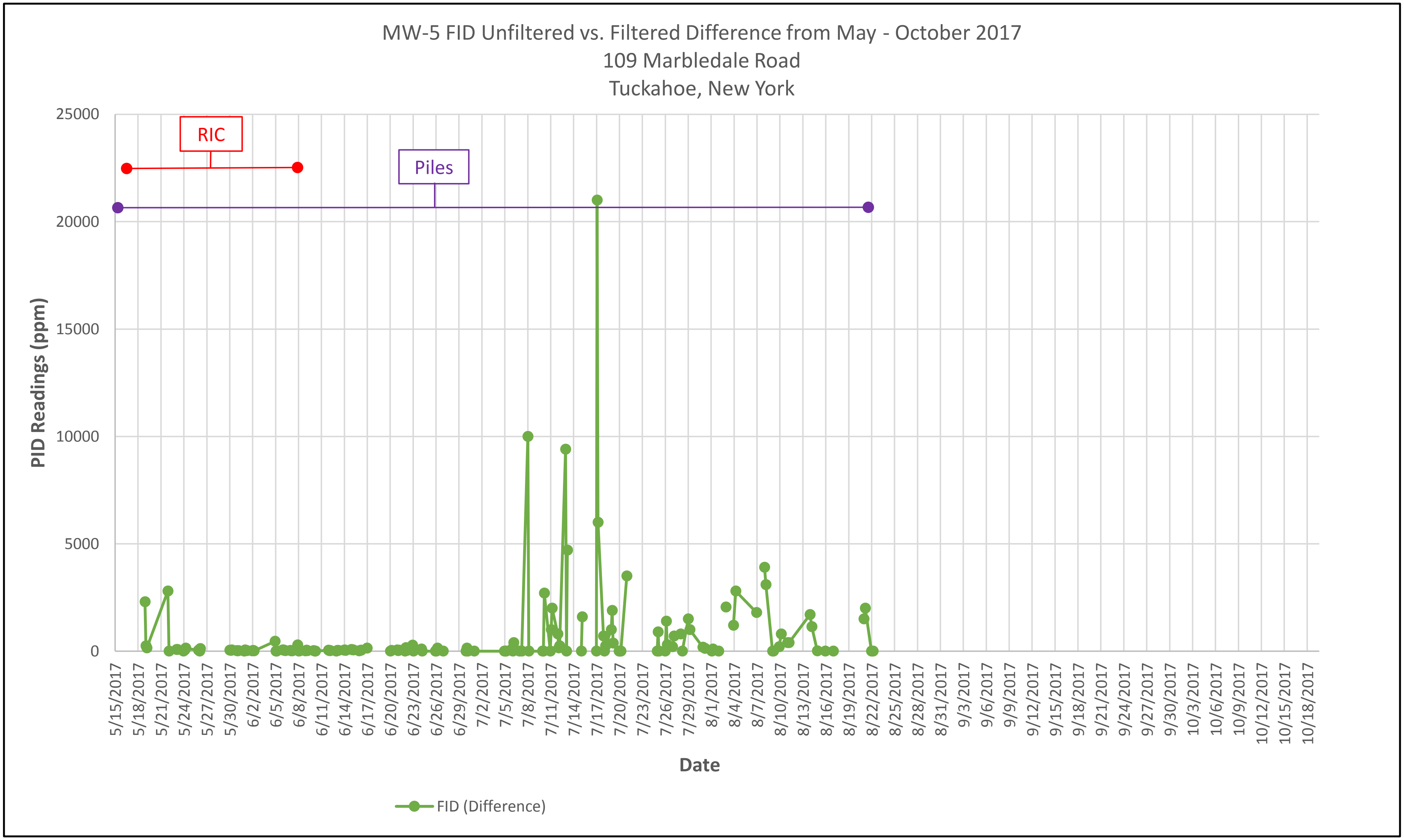
MW-4 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
35000
30000
25000
20000
15000
10000
5000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline

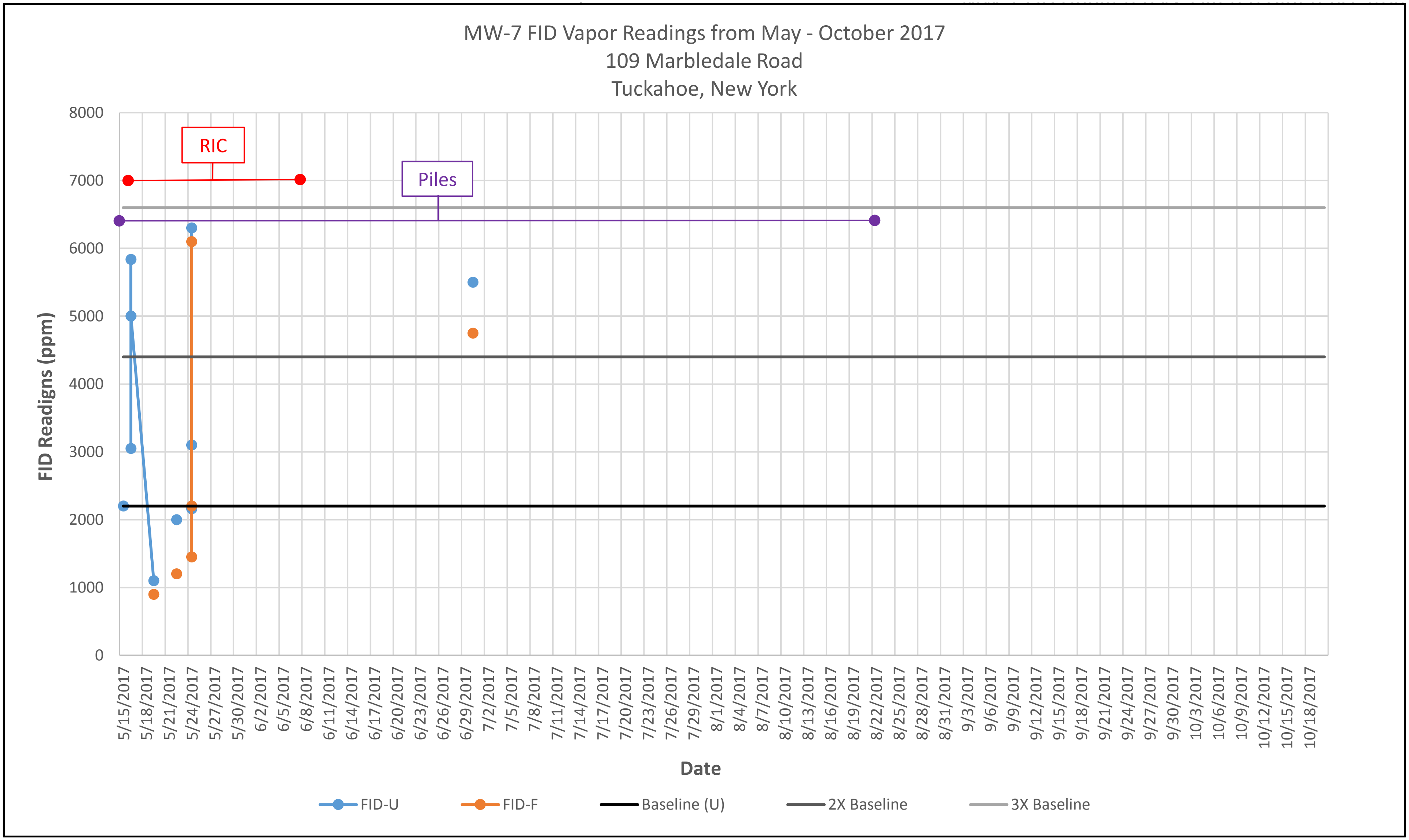


MW-4 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
8000
7000
6000
5000
4000
3000
2000
1000
0
Date
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
FID (Difference)

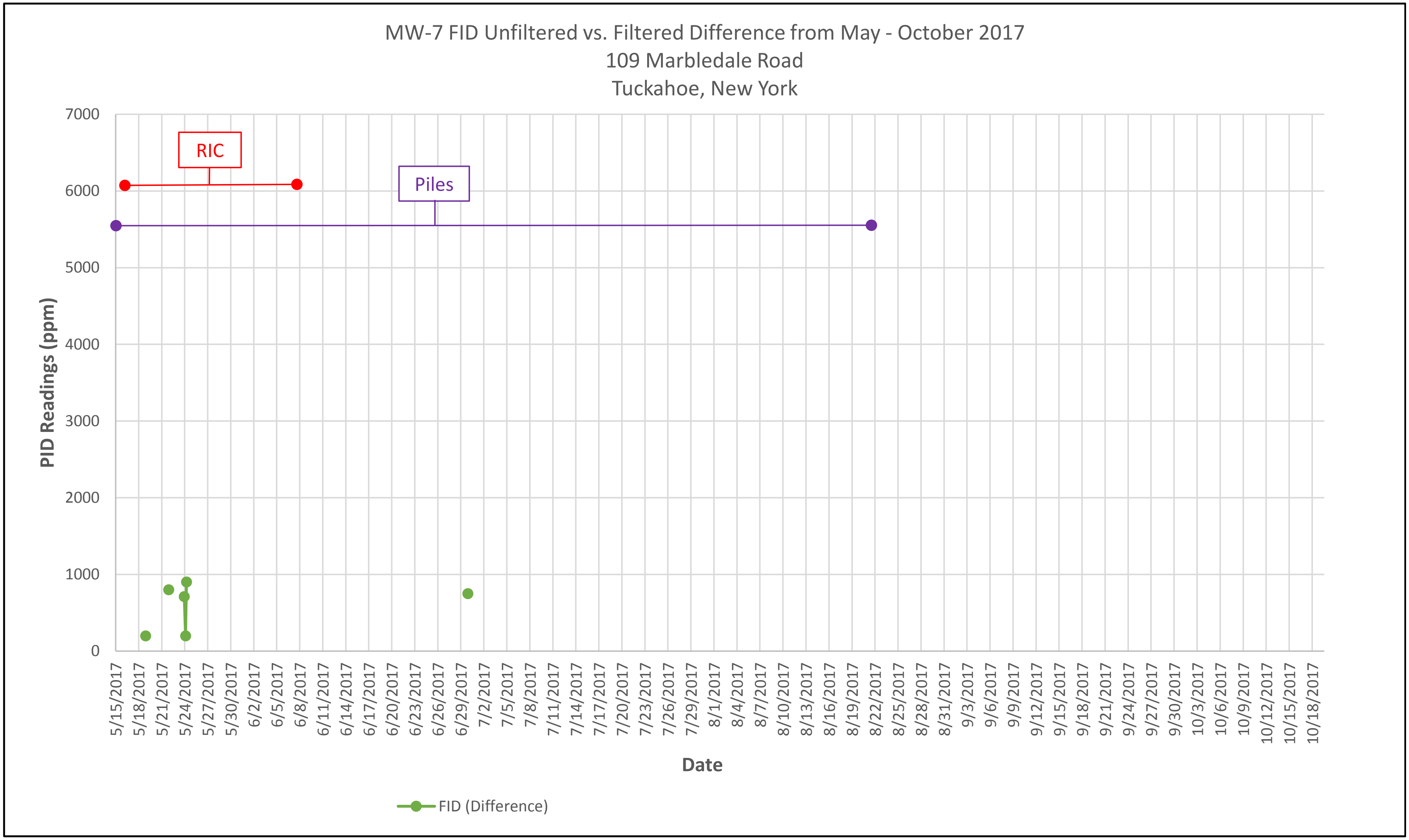


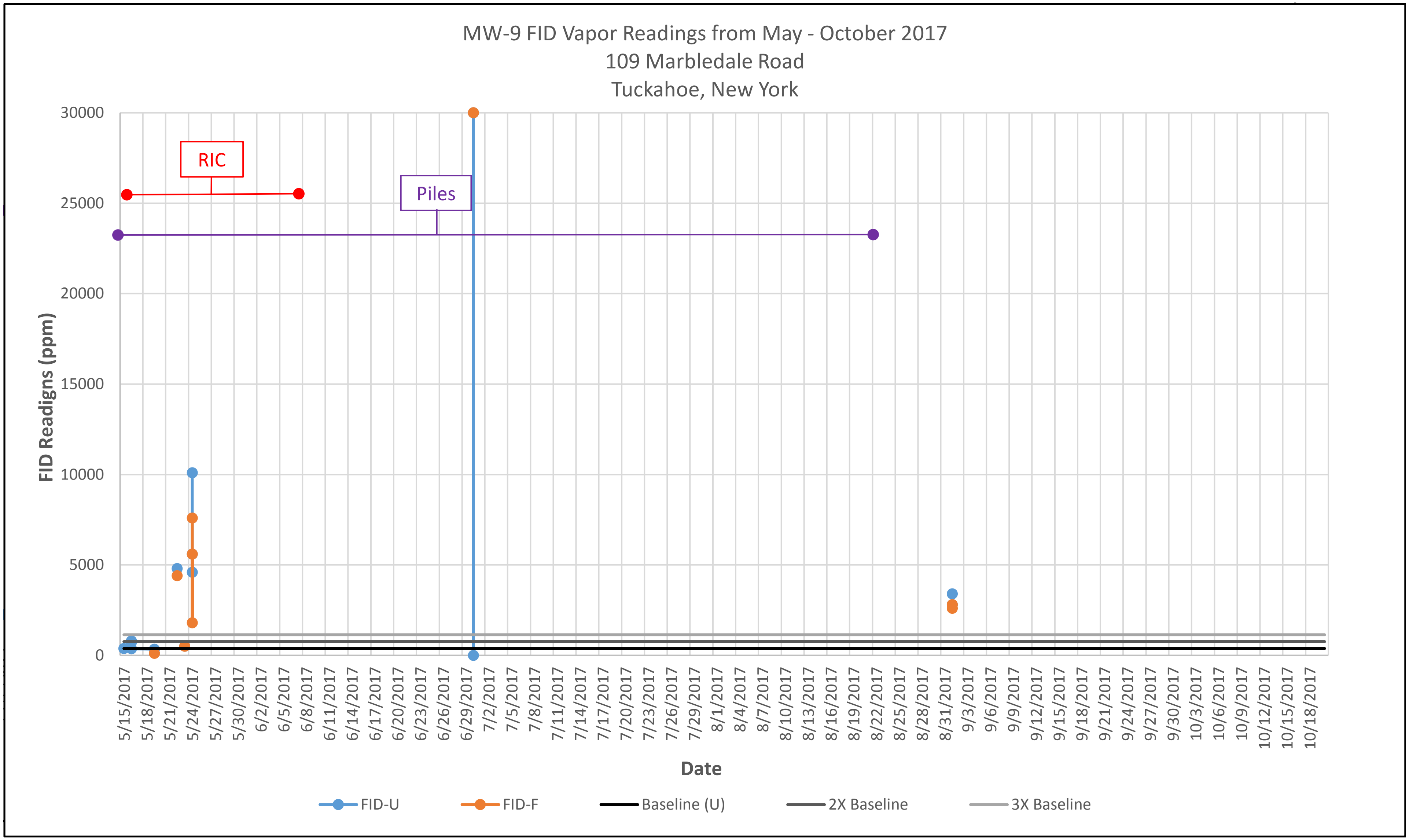
MW-5 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline

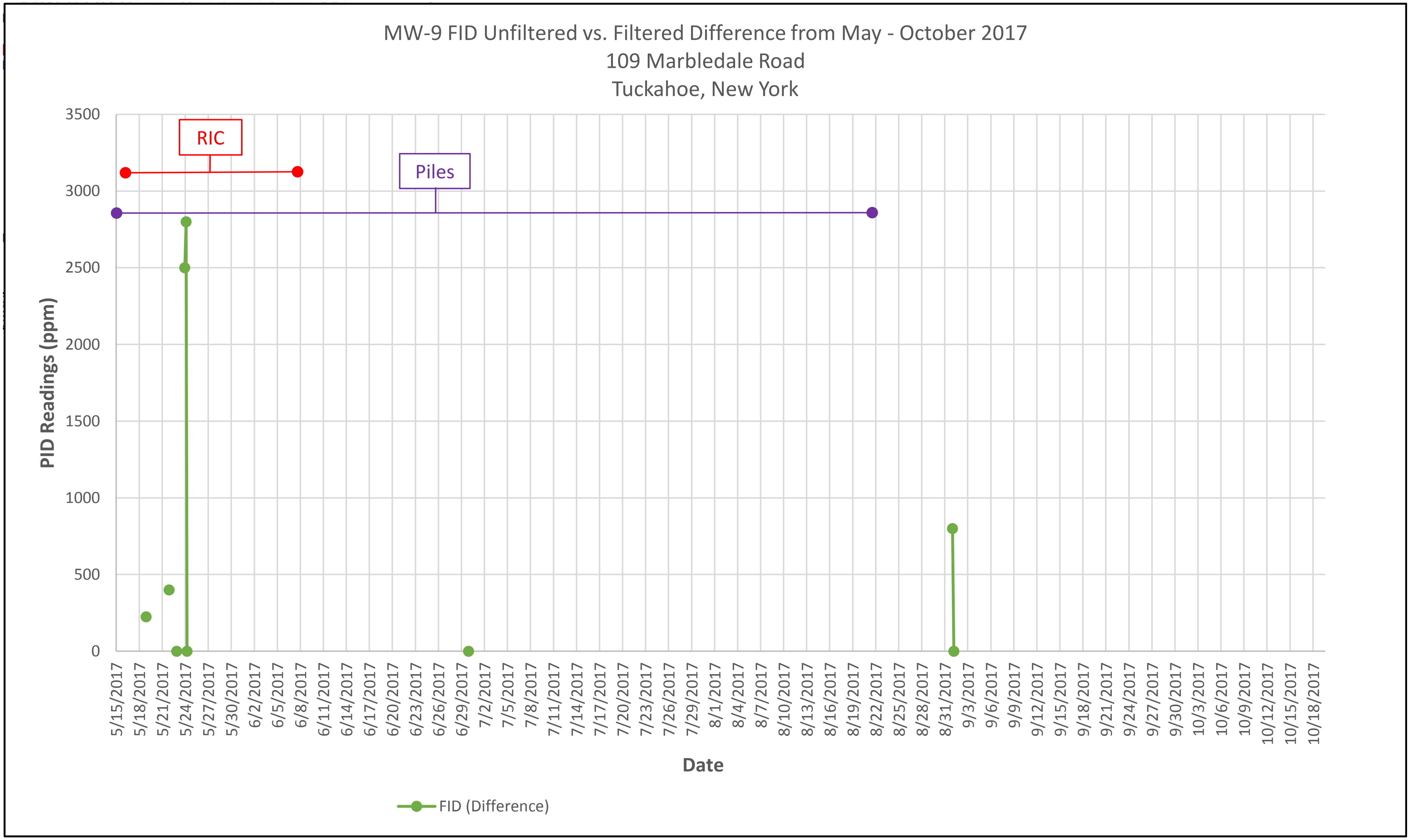

MW-5 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
25000
20000
15000
10000
5000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)



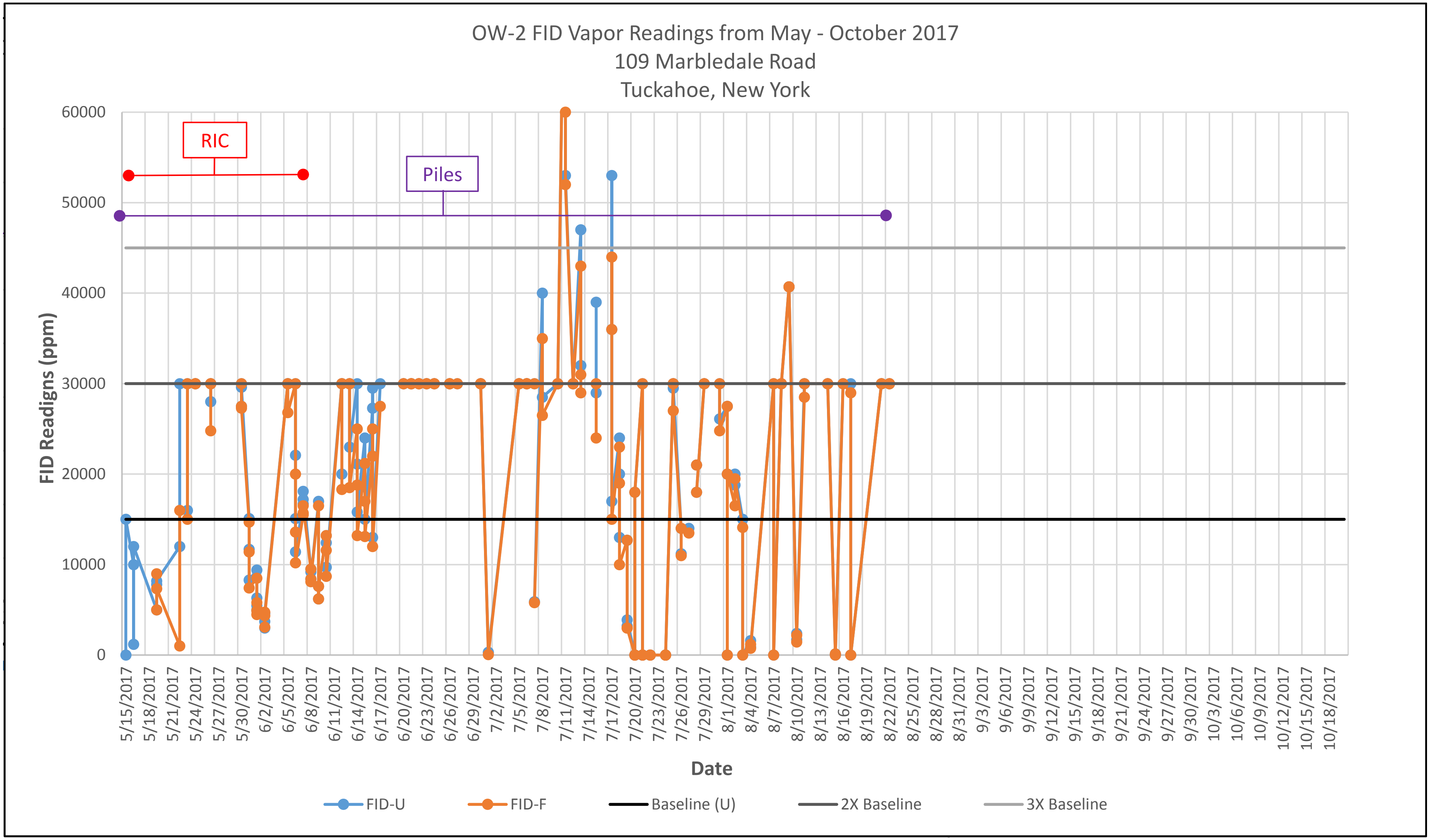
MW-7 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline

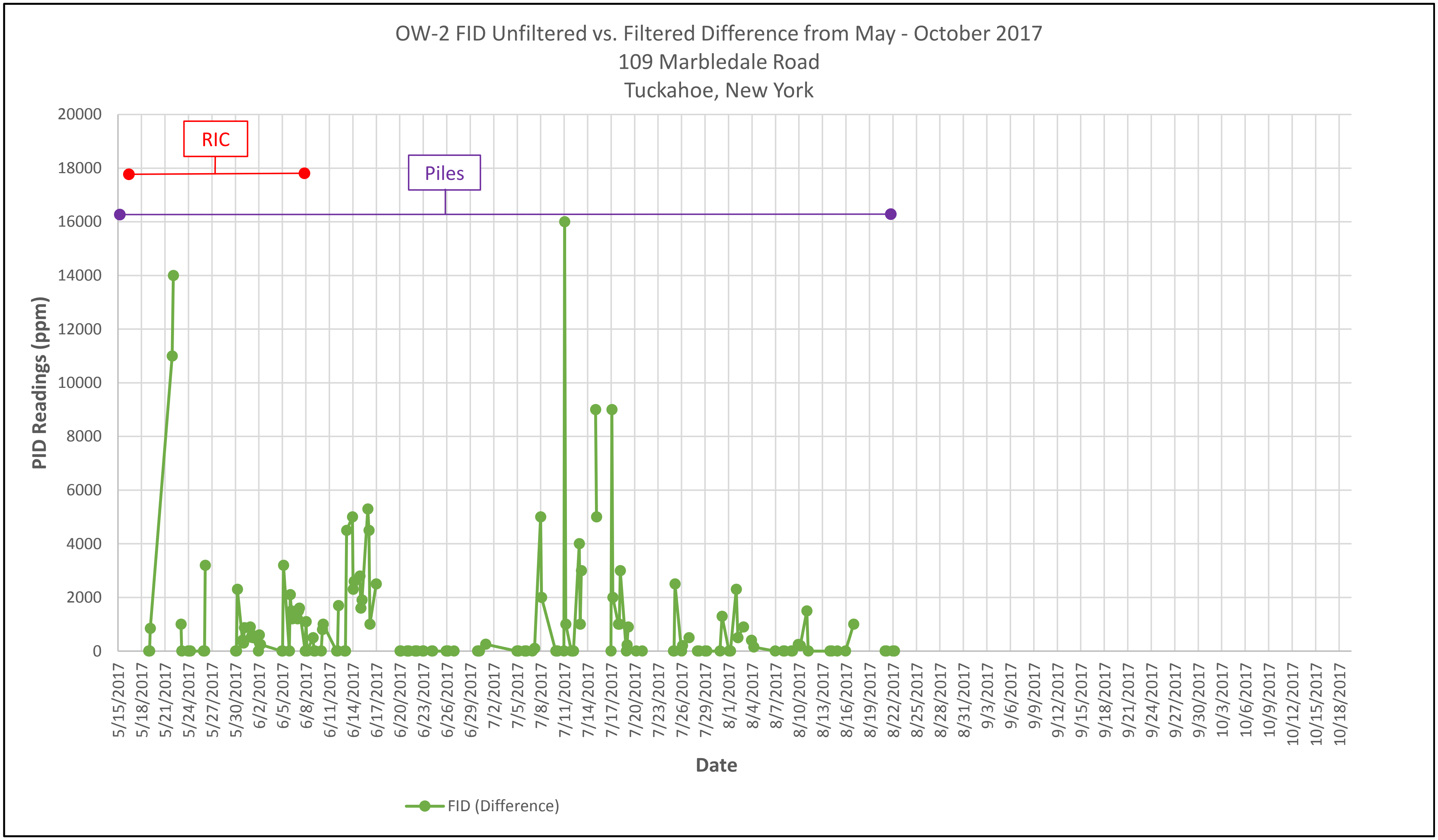

MW-7 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
FID (Difference)
7000
6000
5000
4000
3000
2000
1000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017

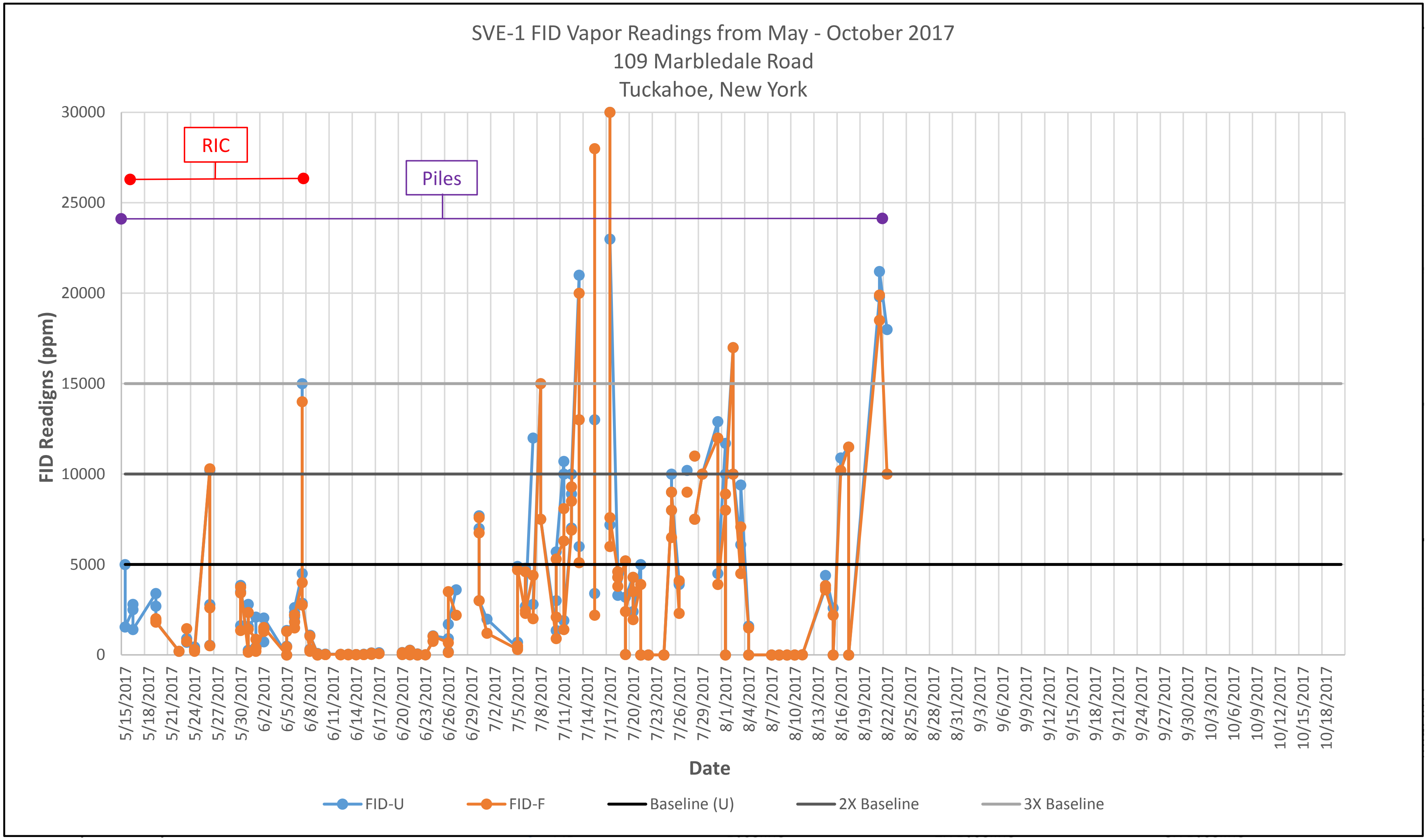

MW-9 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
30000
25000
20000
15000
10000
5000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline

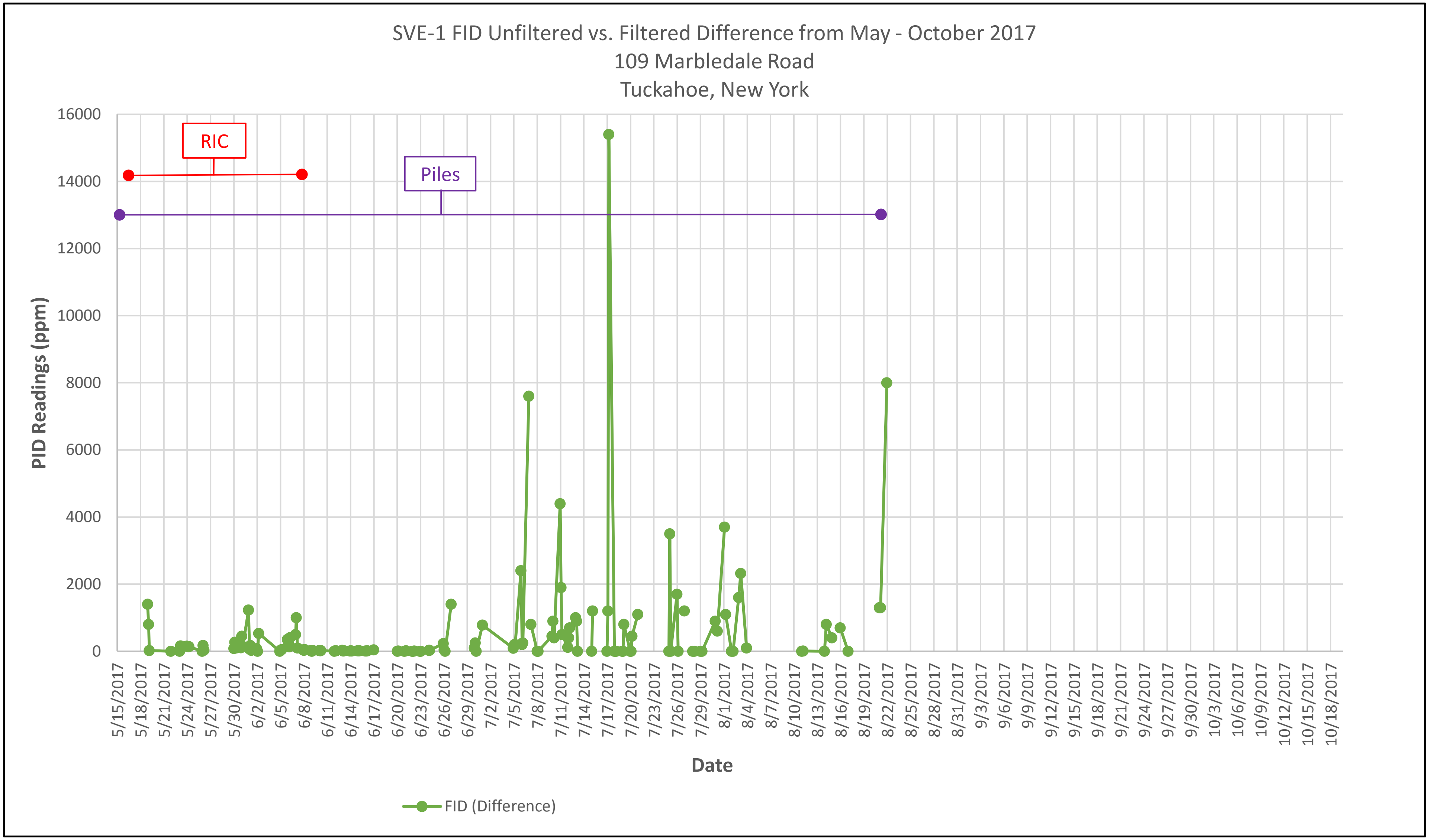


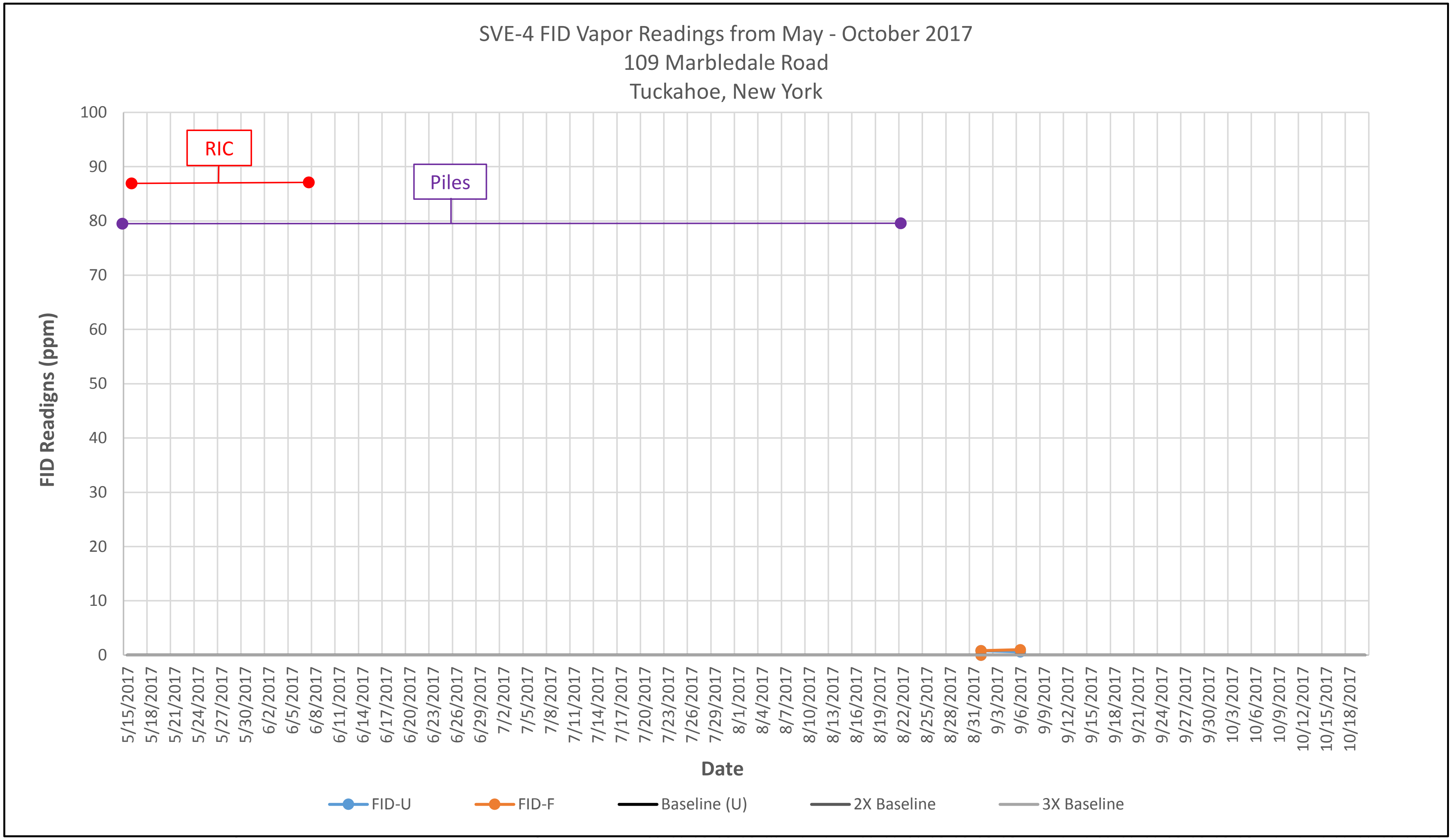
MW-9 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
3500
3000
2500
2000
1500
1000
500
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)

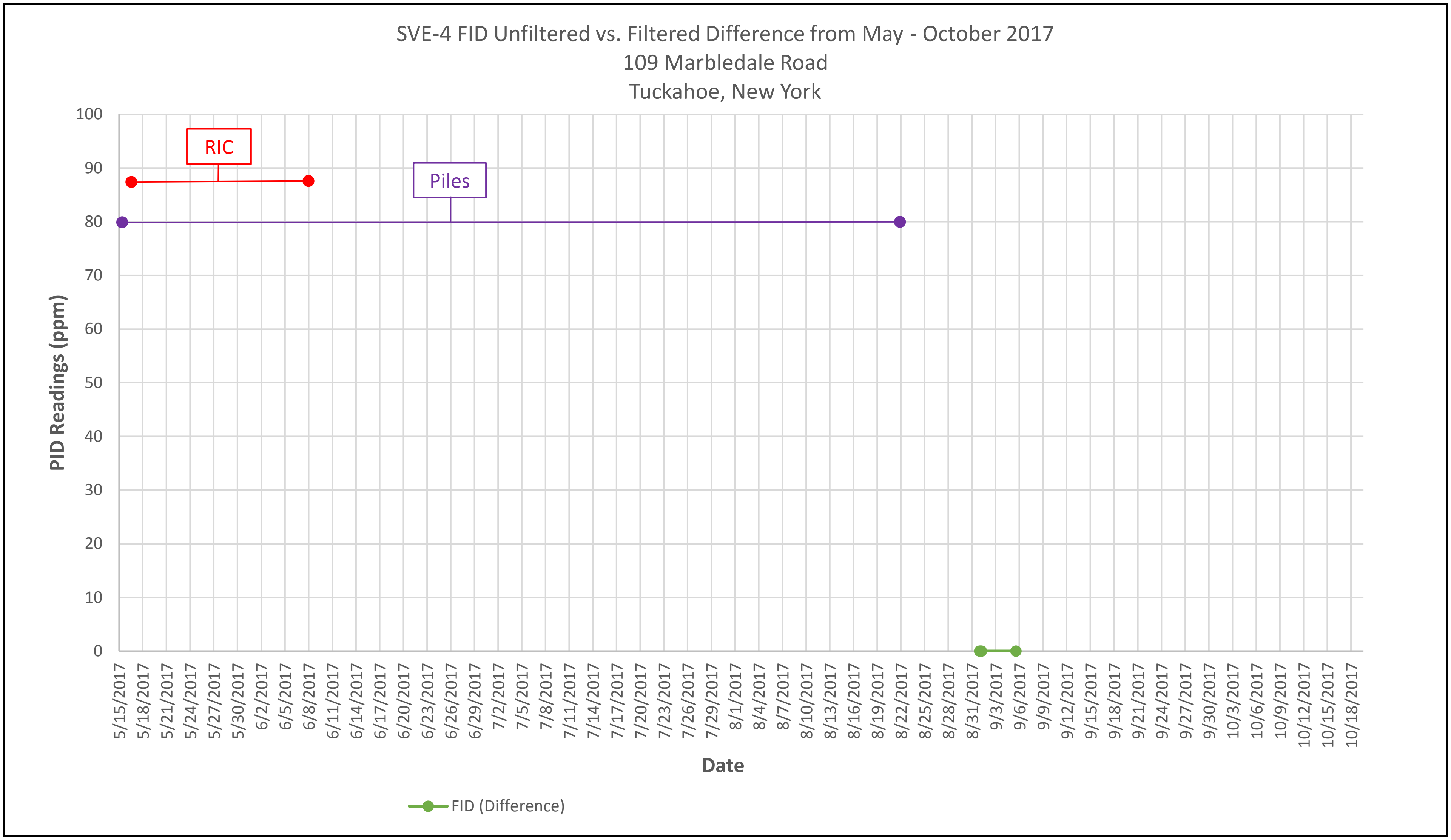

OW-2 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
60000
50000
40000
30000
20000
10000
0
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline


OW-2 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
20000
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)

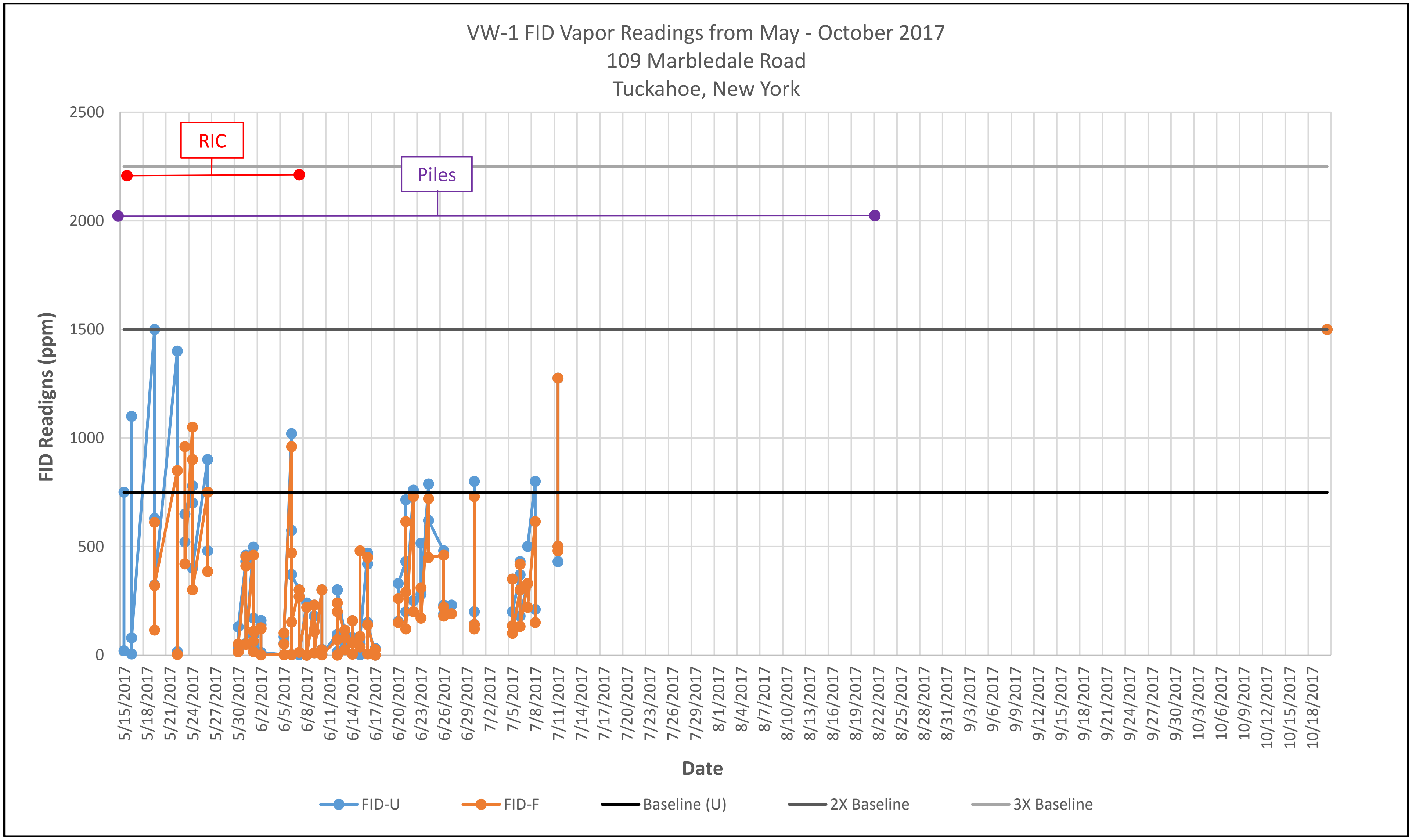

SVE-1 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
30000
25000
20000
15000
10000
5000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline

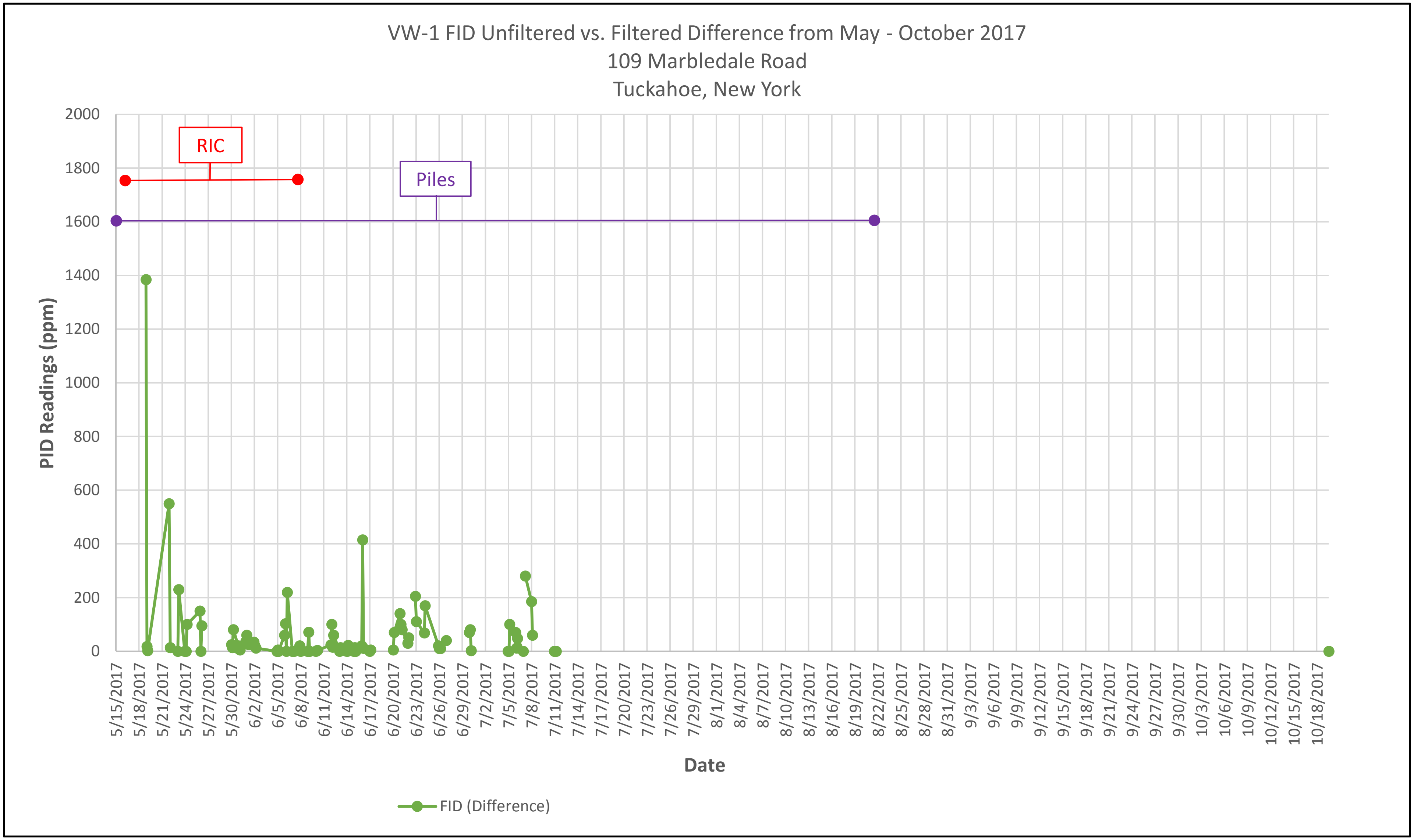

SVE-1 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
16000
14000
12000
10000
8000
6000
4000
2000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)


SVE-4 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
FID Readigns (ppm)
100
90
80
70
60
50
40
30
20
10
0
RIC
Piles
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline

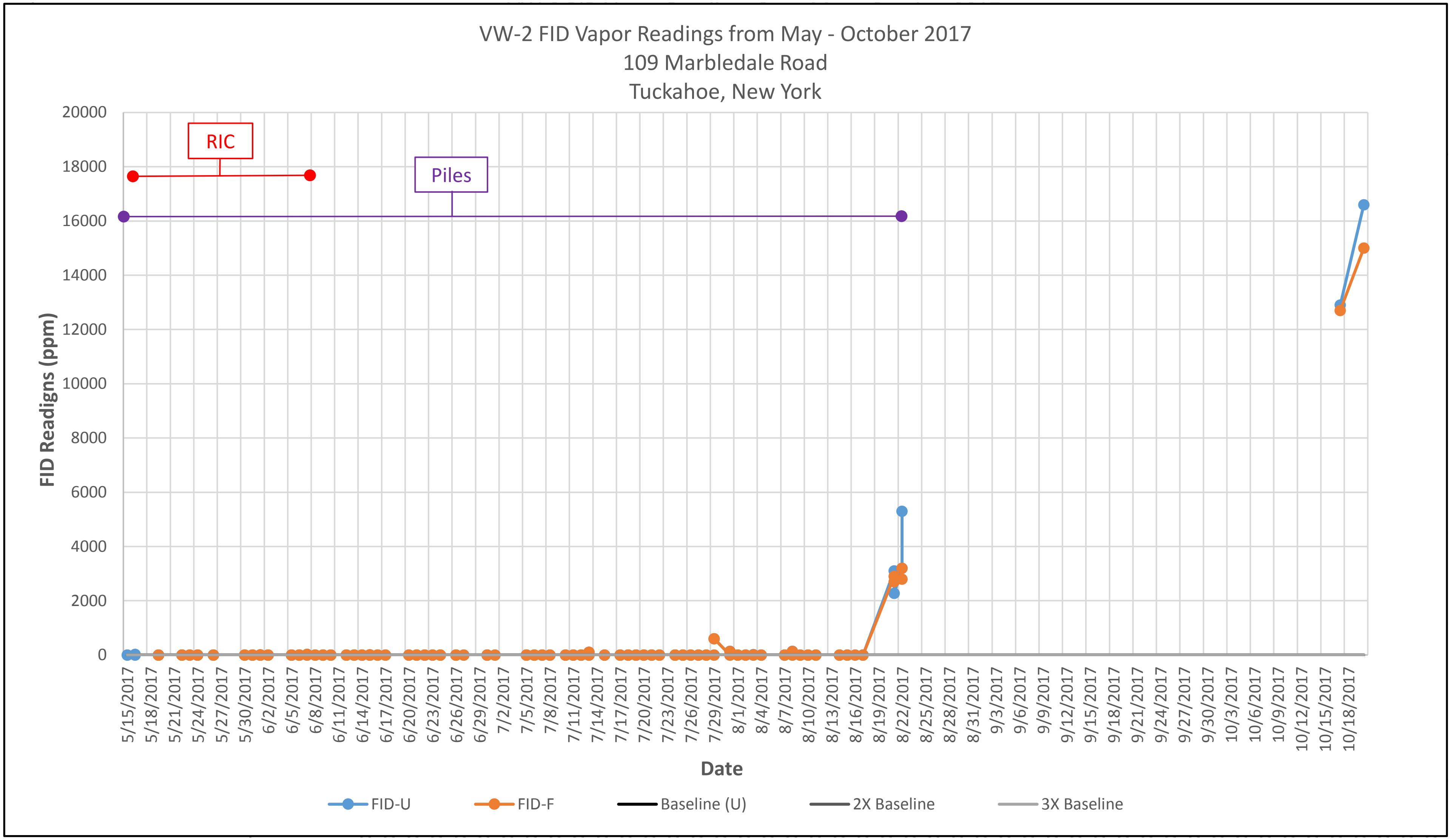


SVE-4 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
PID Readings (ppm)
100
90
80
70
60
50
40
30
20
10
0
RIC
Piles
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)

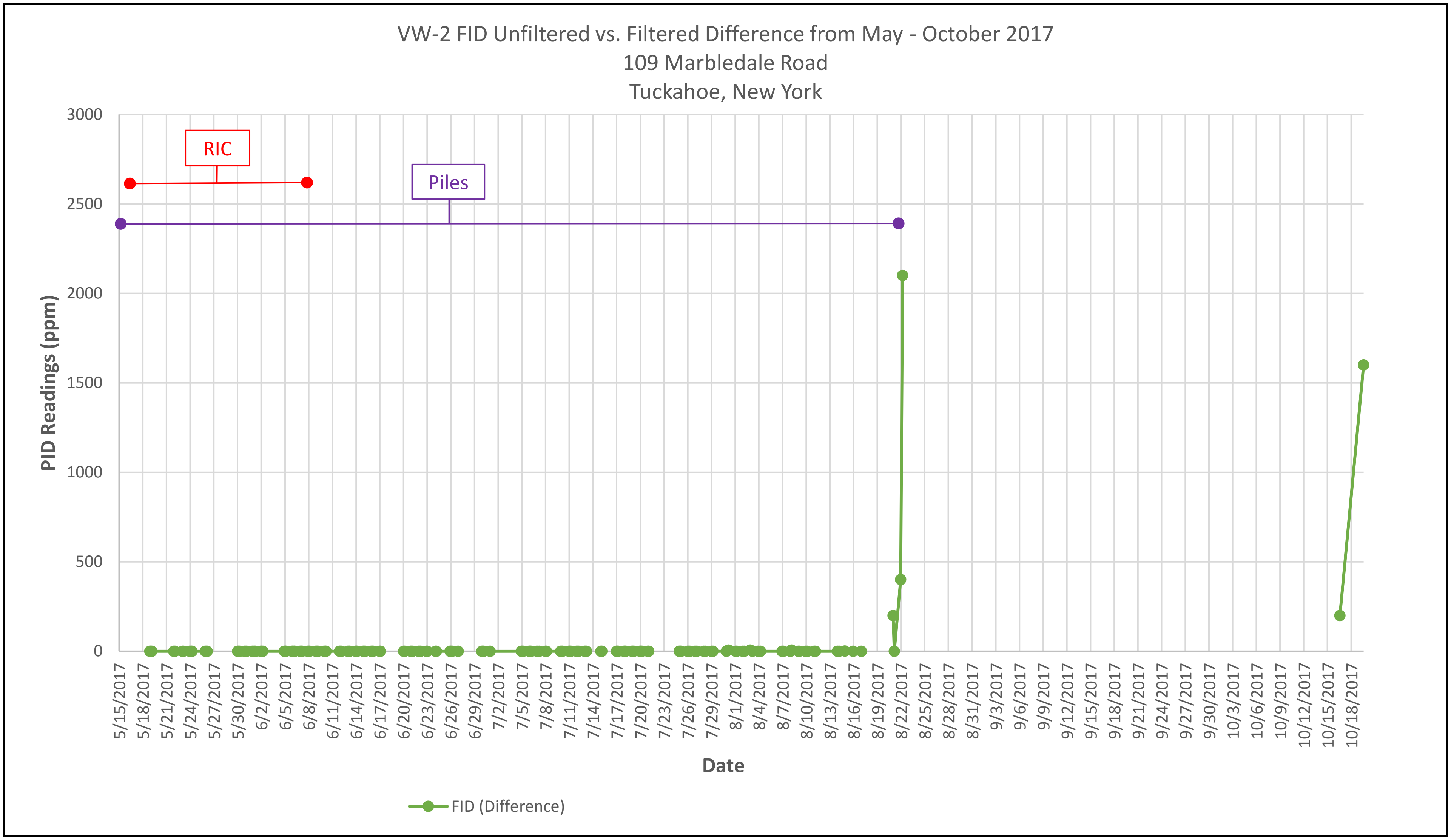

VW-1 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
2500
2000
1500
1000
500
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



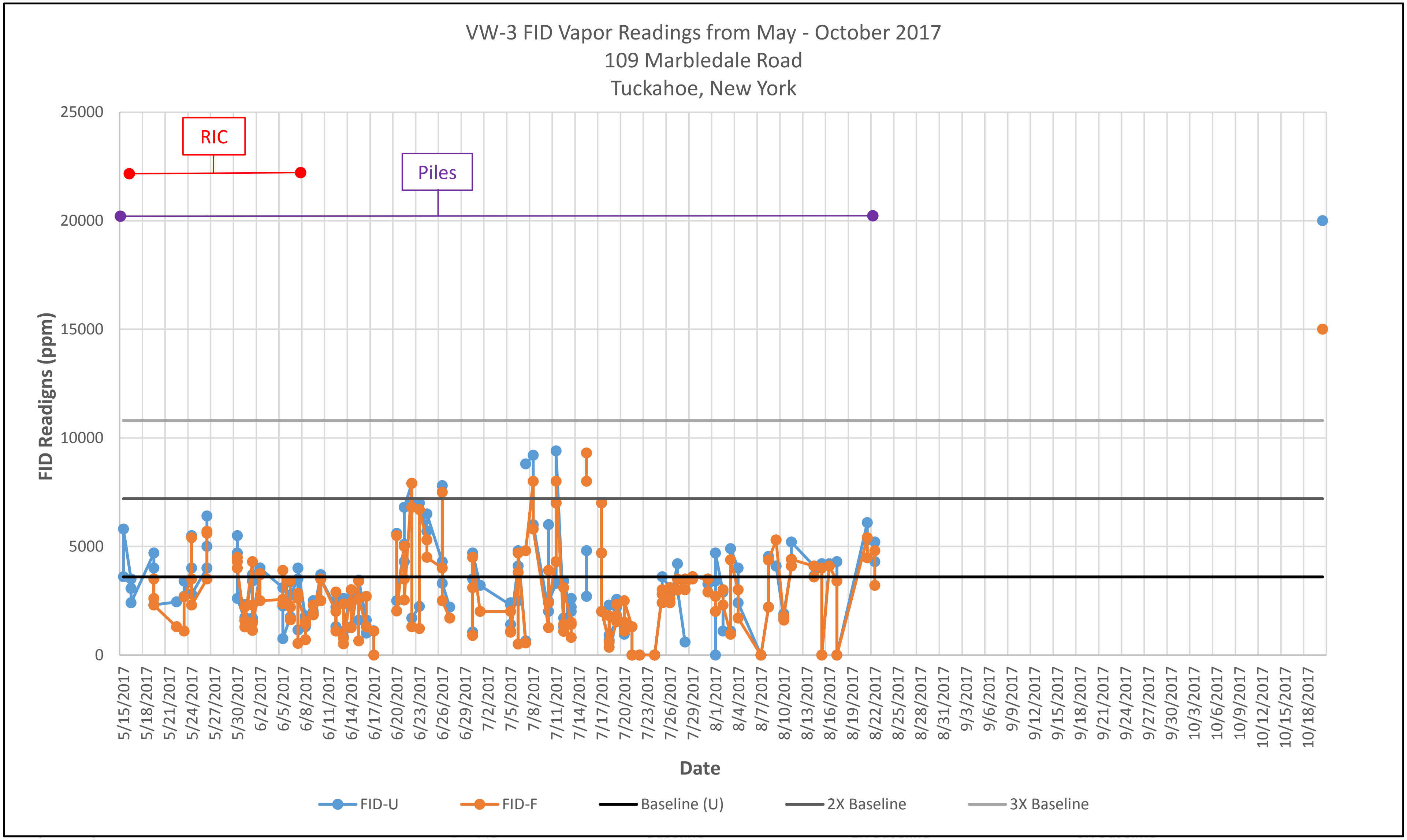
VW-1 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)



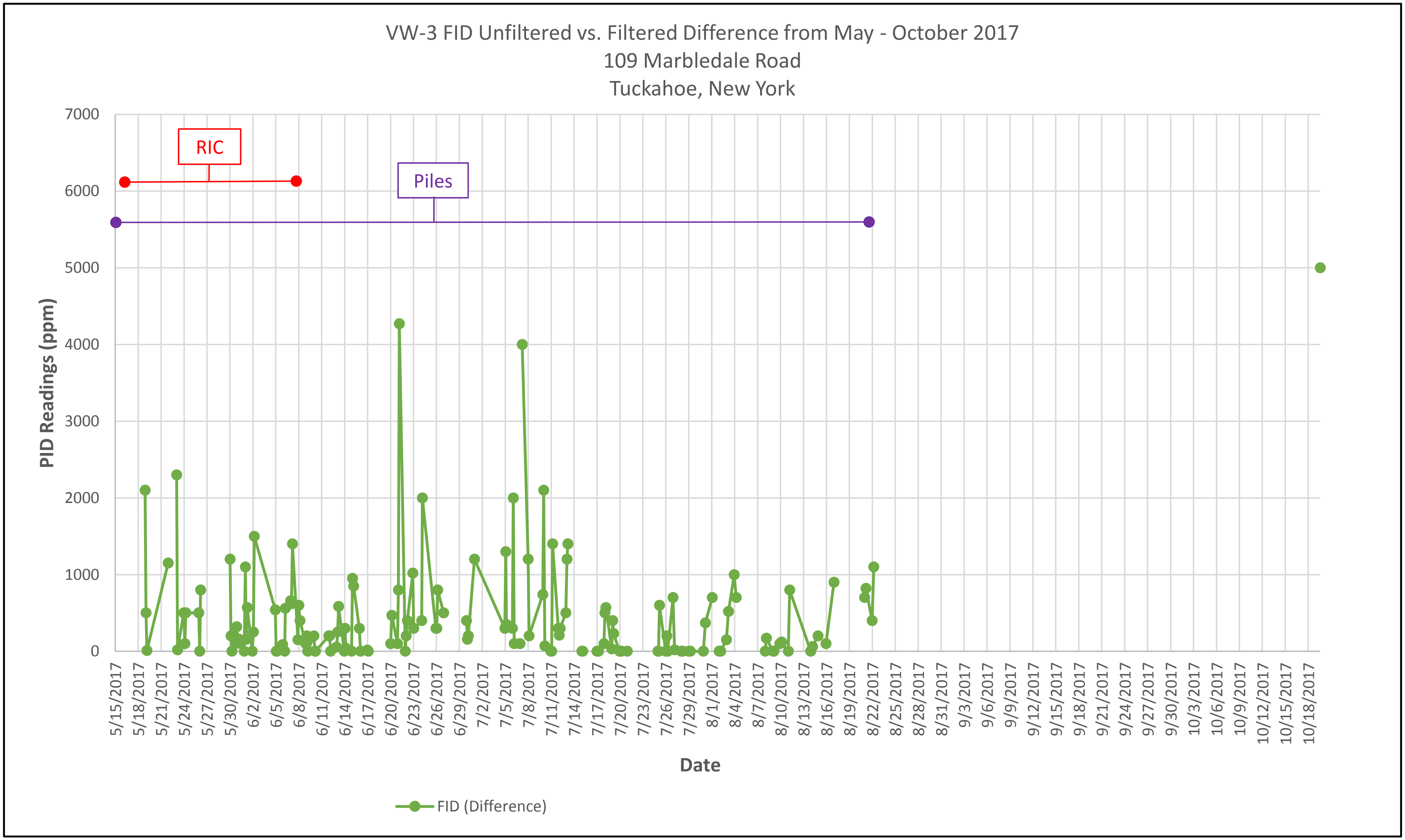
VW-2 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline

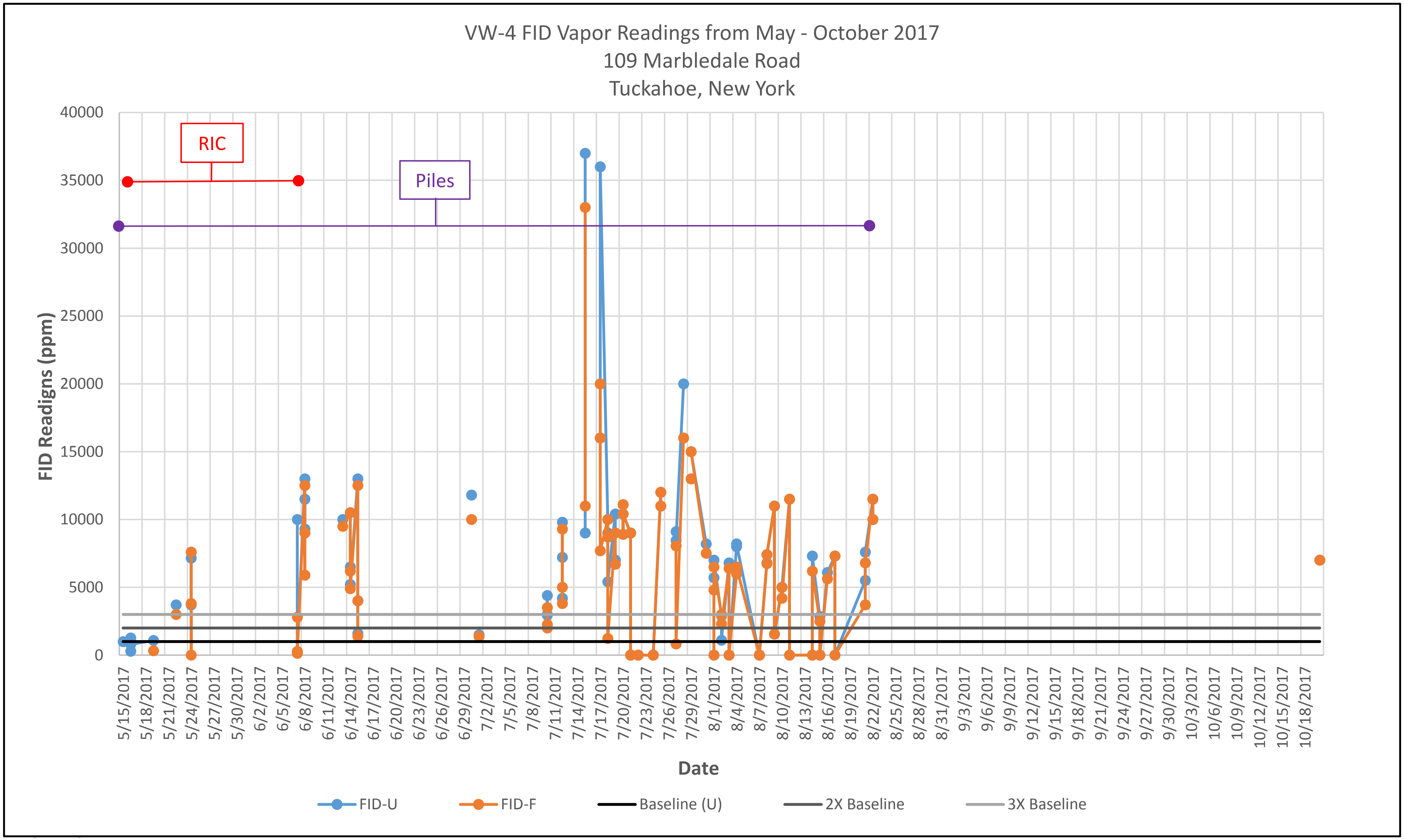


VW-2 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
PID Readings (ppm)
3000
2500
2000
1500
1000
500
0
RIC
Piles
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)

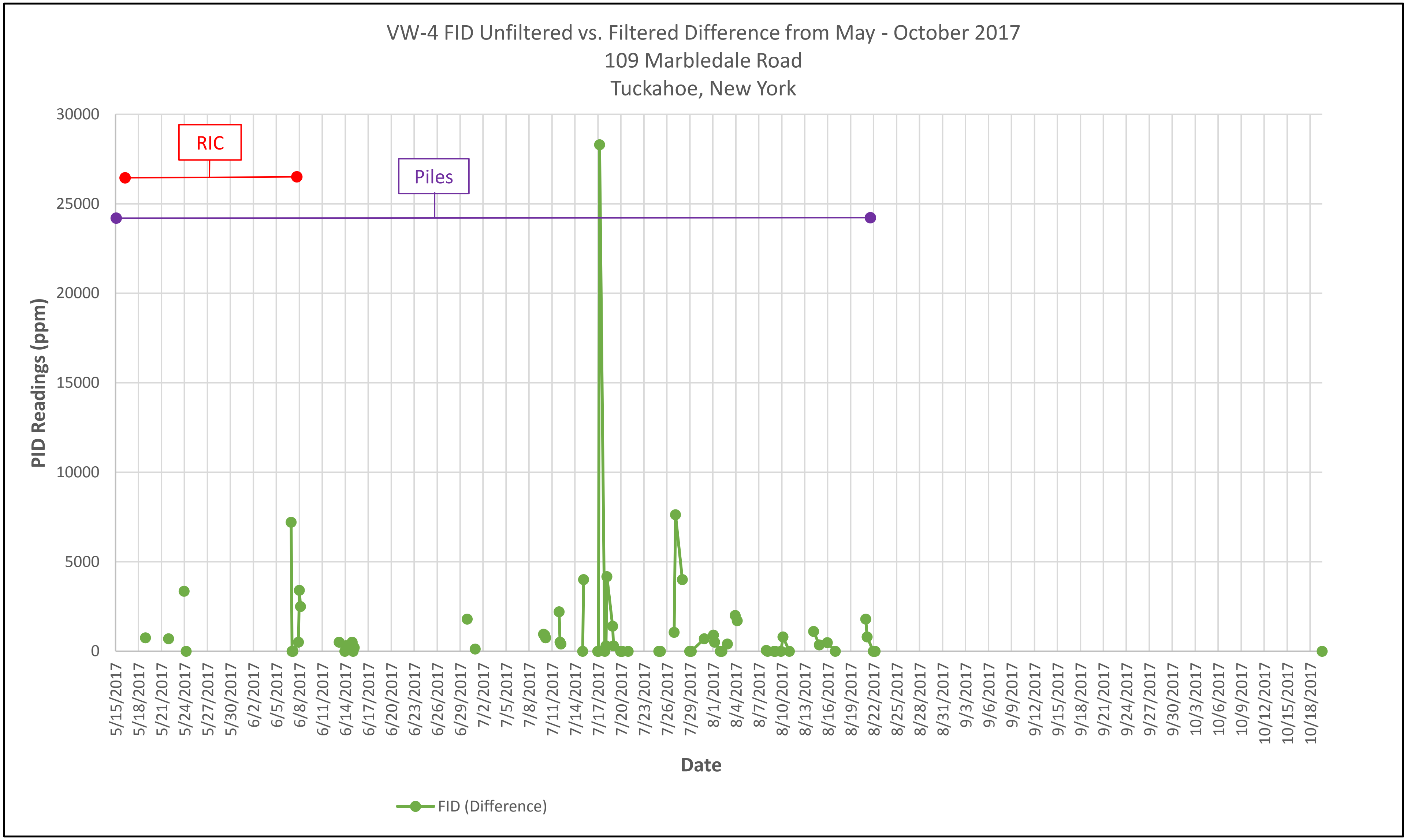


VW-3 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
FID Readigns (ppm)
Date
RIC
Piles
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline


VW-3 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
Date
FID (Difference)



VW-4 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



VW-4 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
30000
25000
20000
15000
10000
5000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
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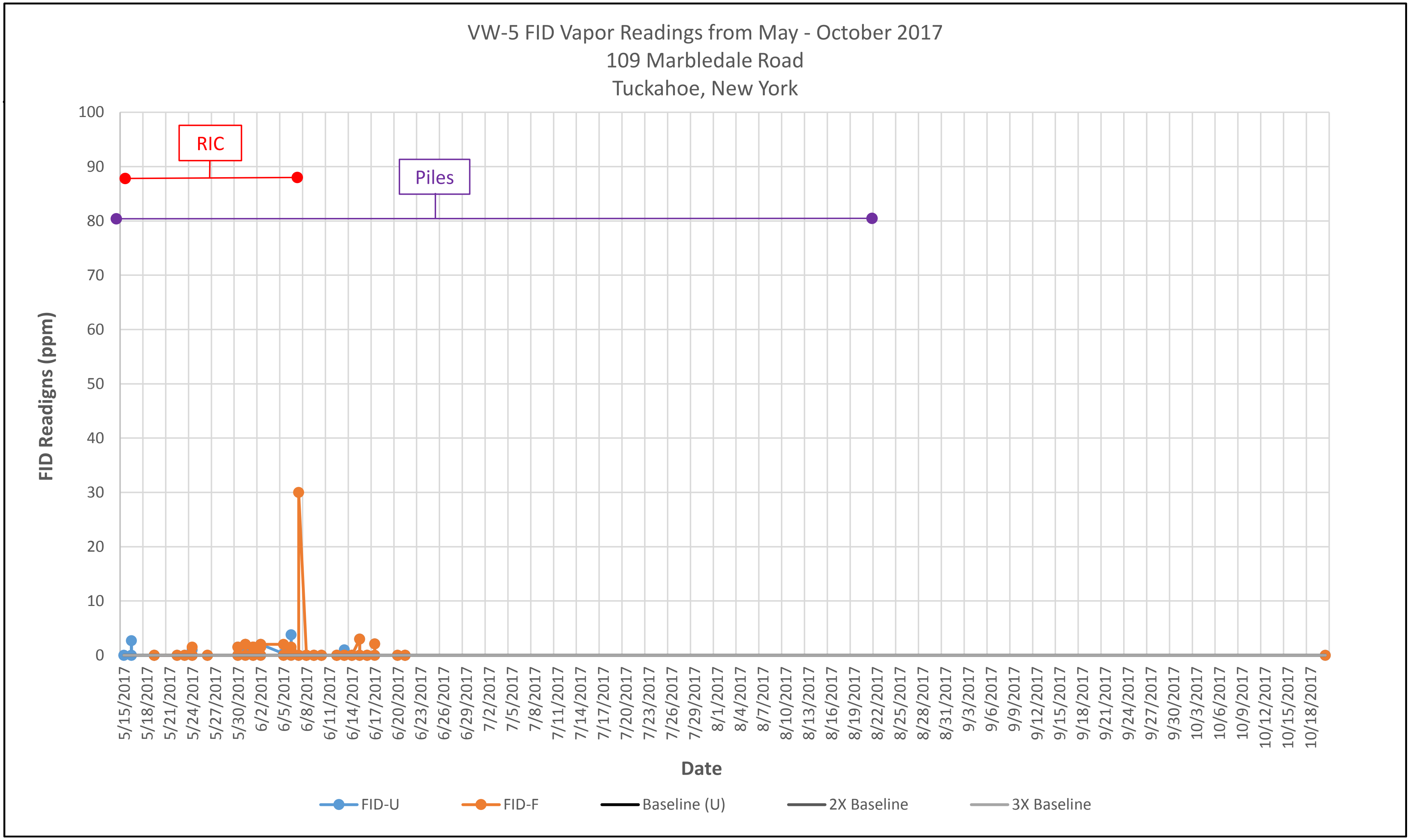
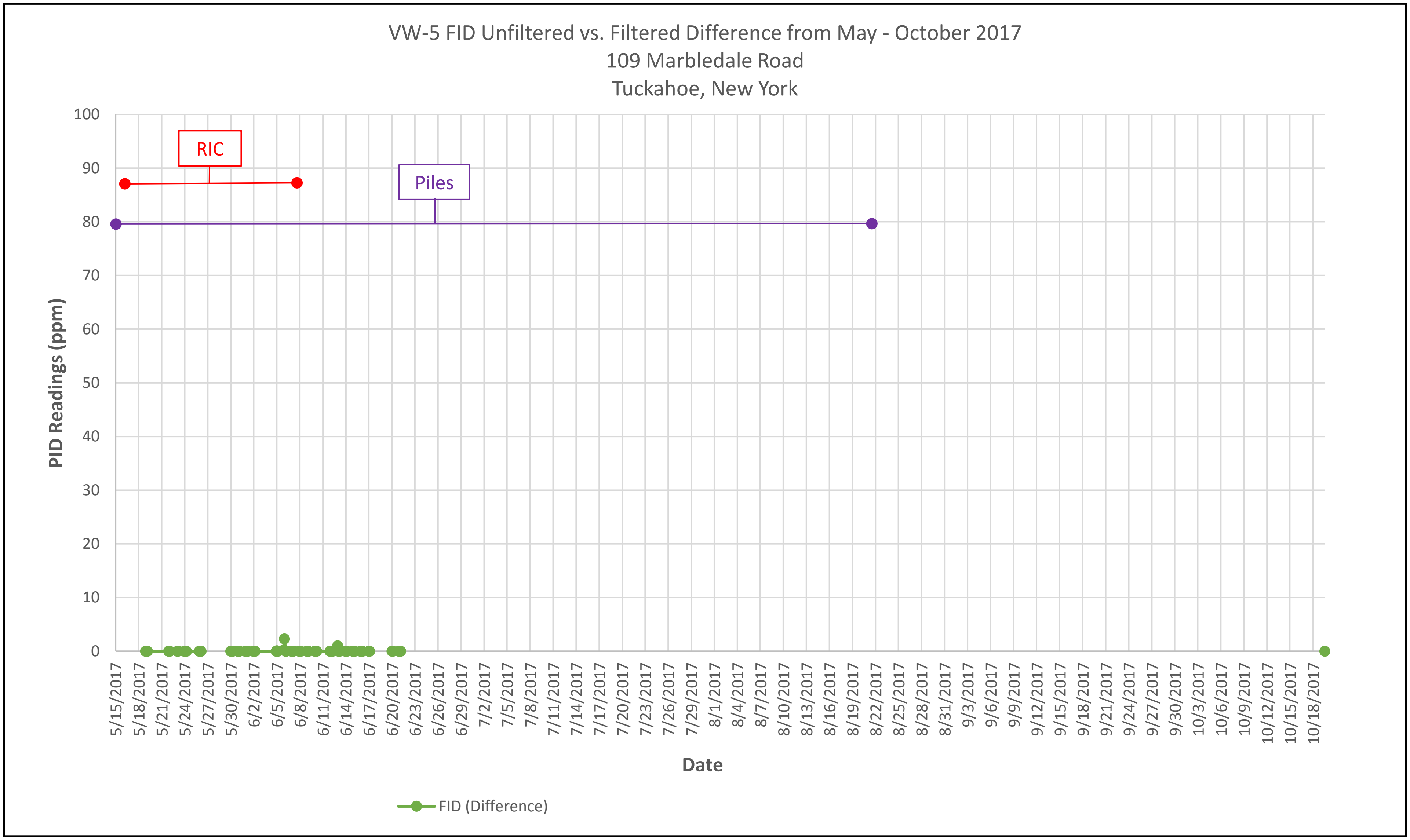
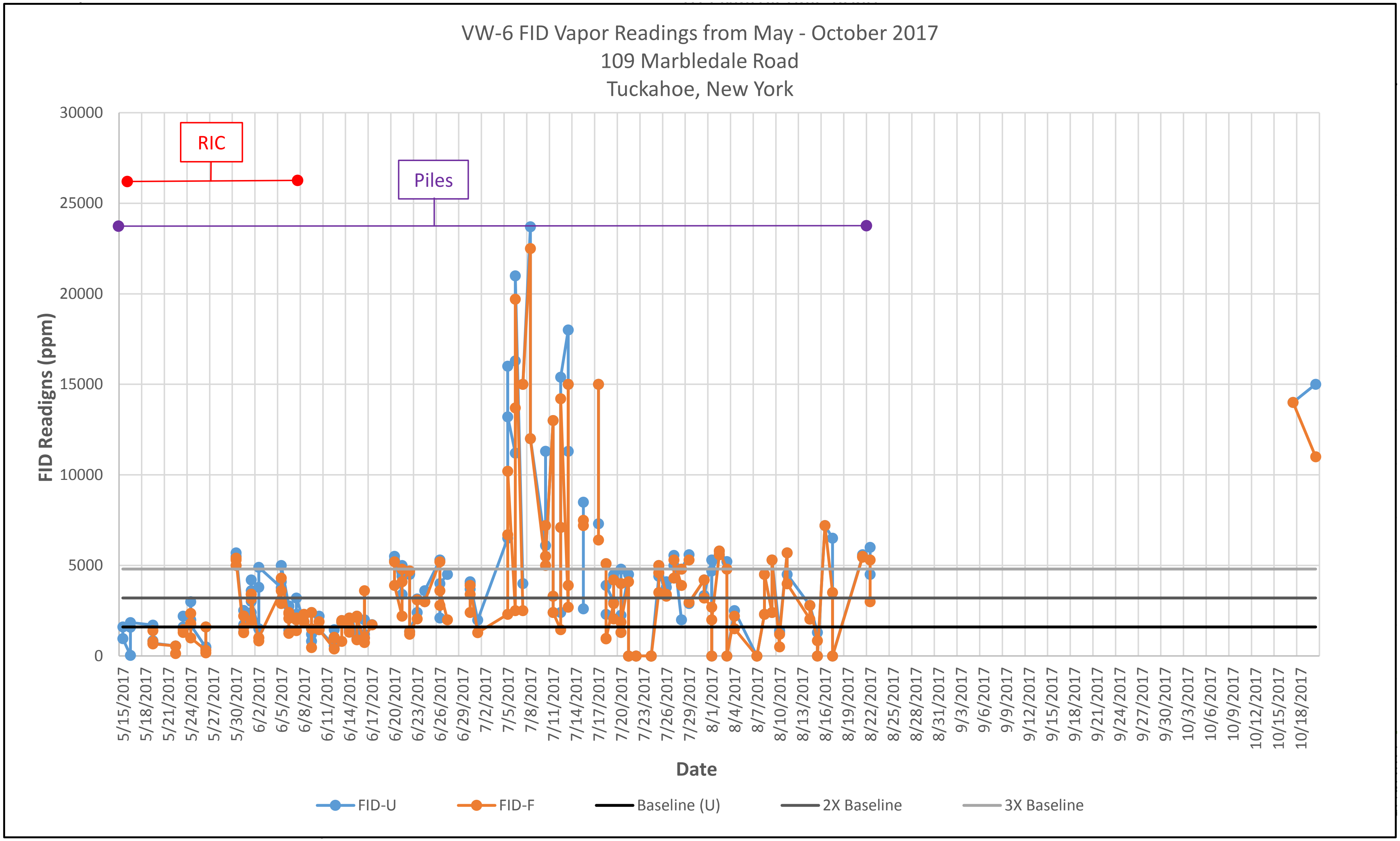
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)



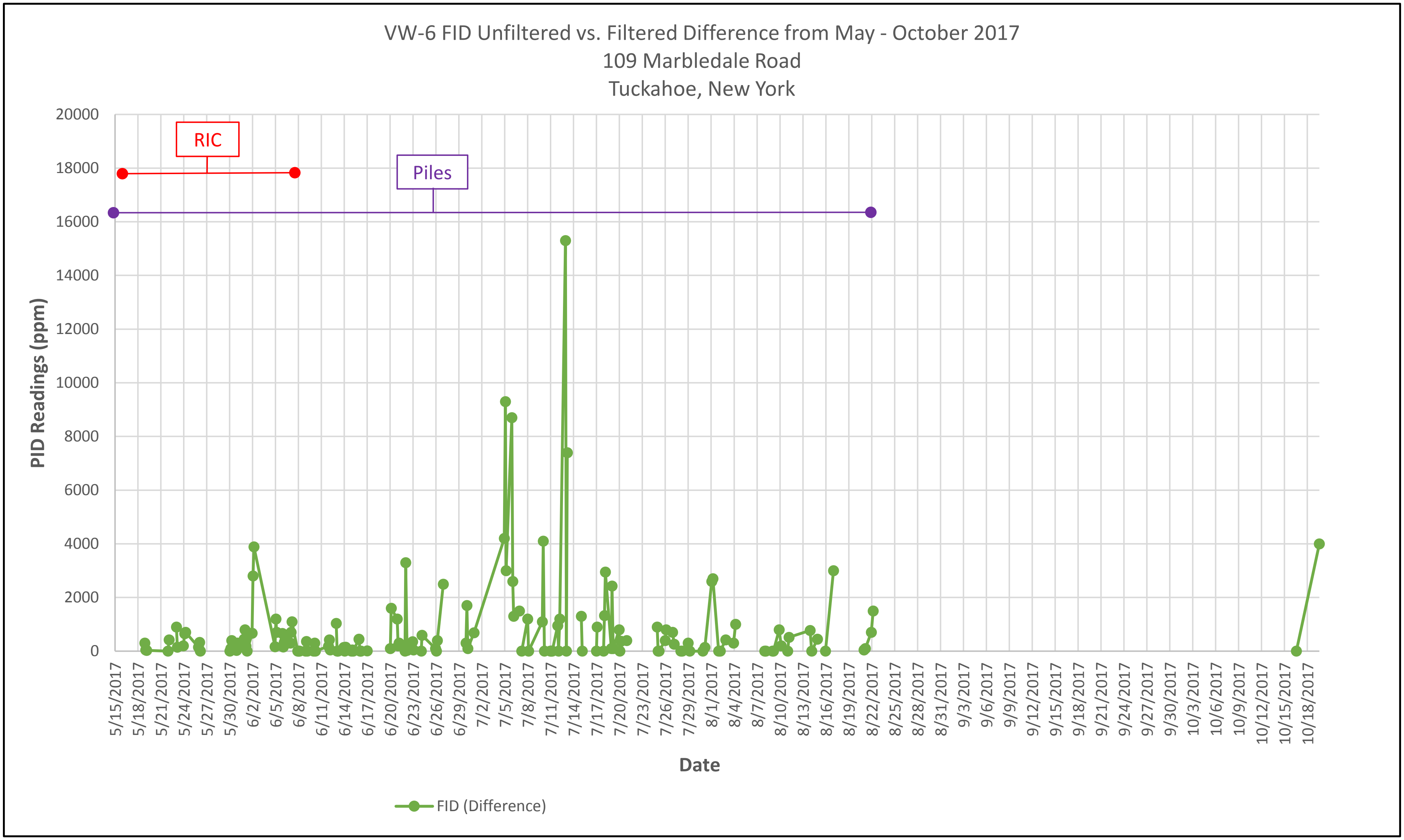
VW-5 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



VW-5 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
100
90
80
70
60
50
40
30
20
10
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)



VW-6 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



VW-6 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
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8/31/2017
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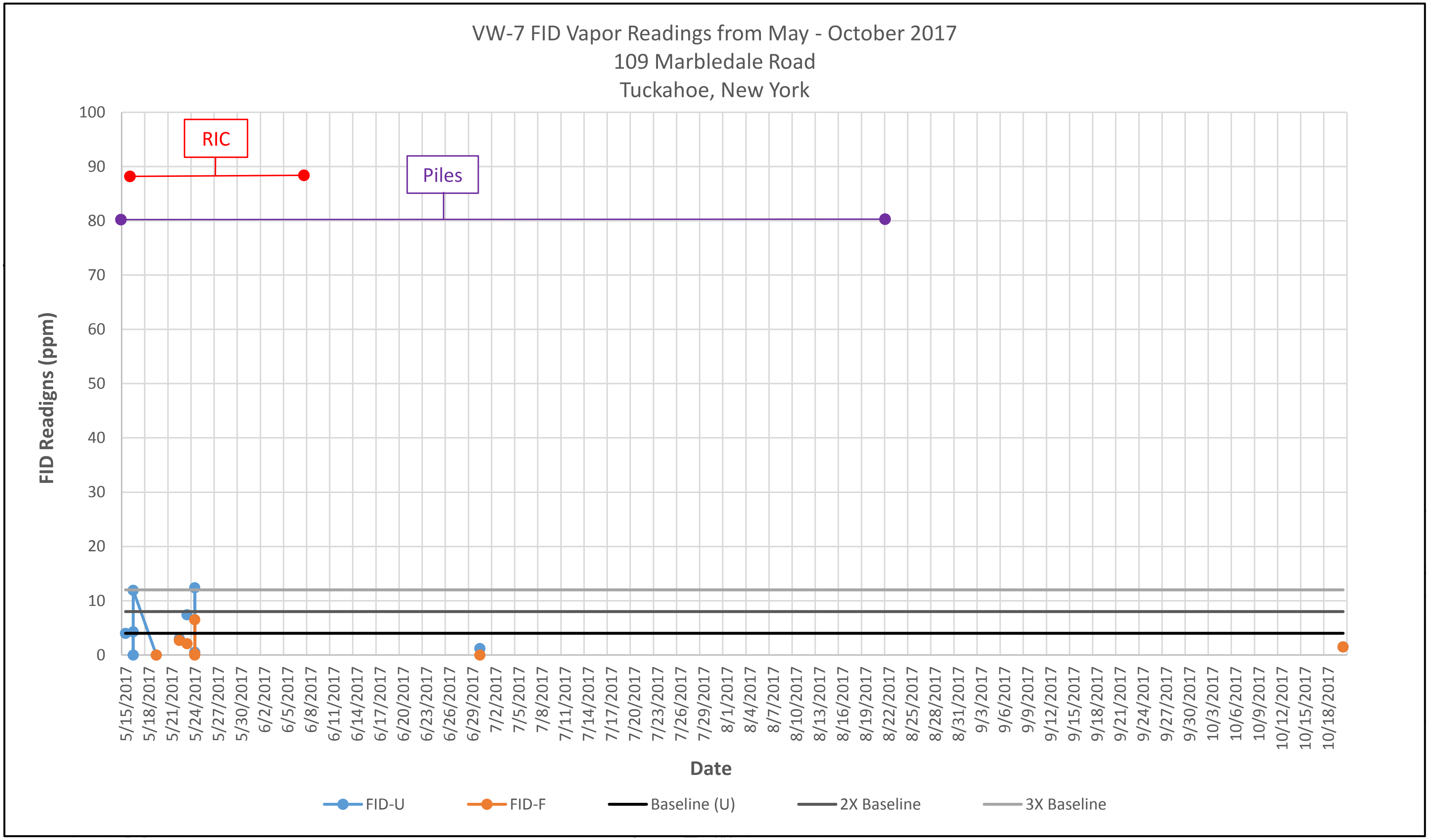
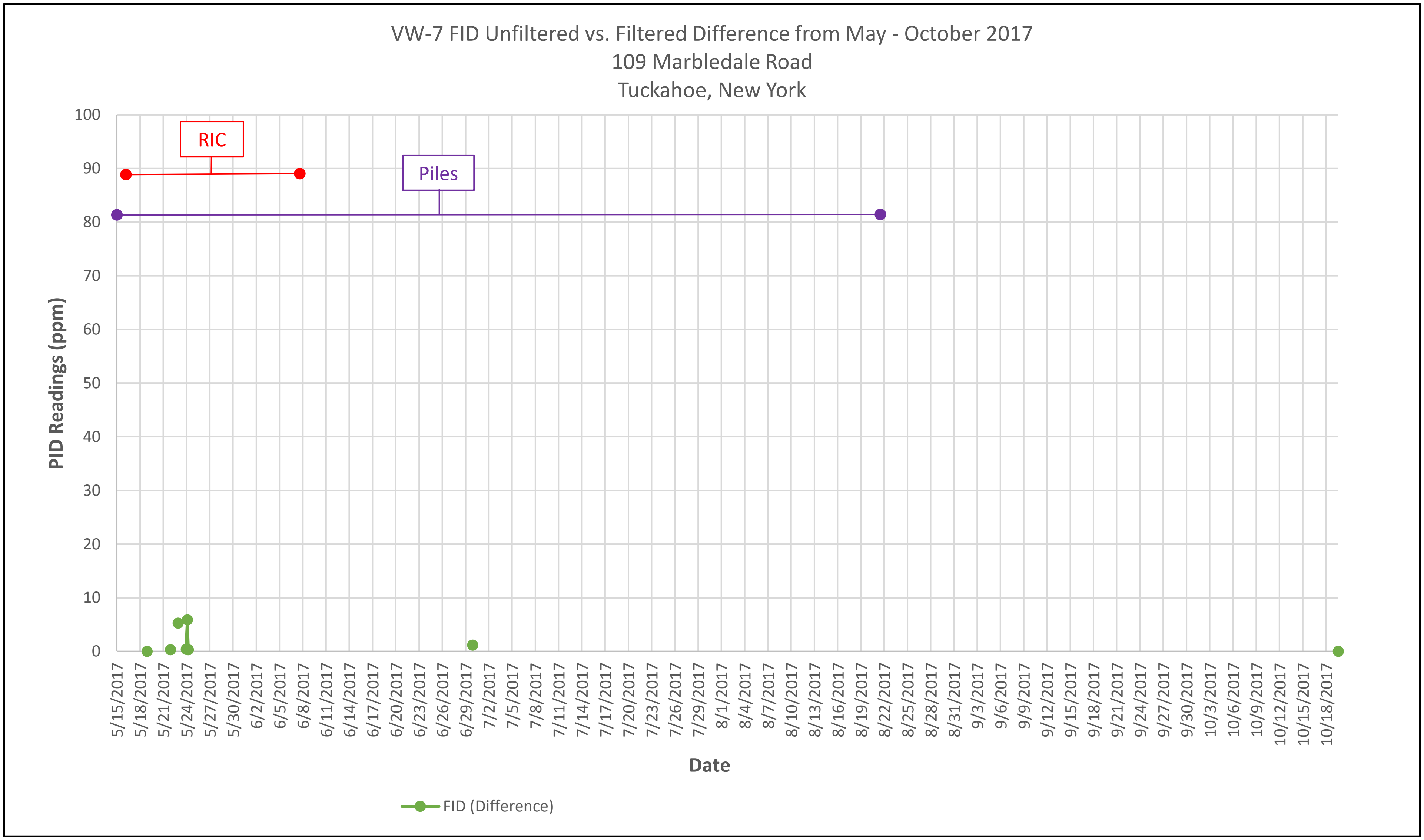
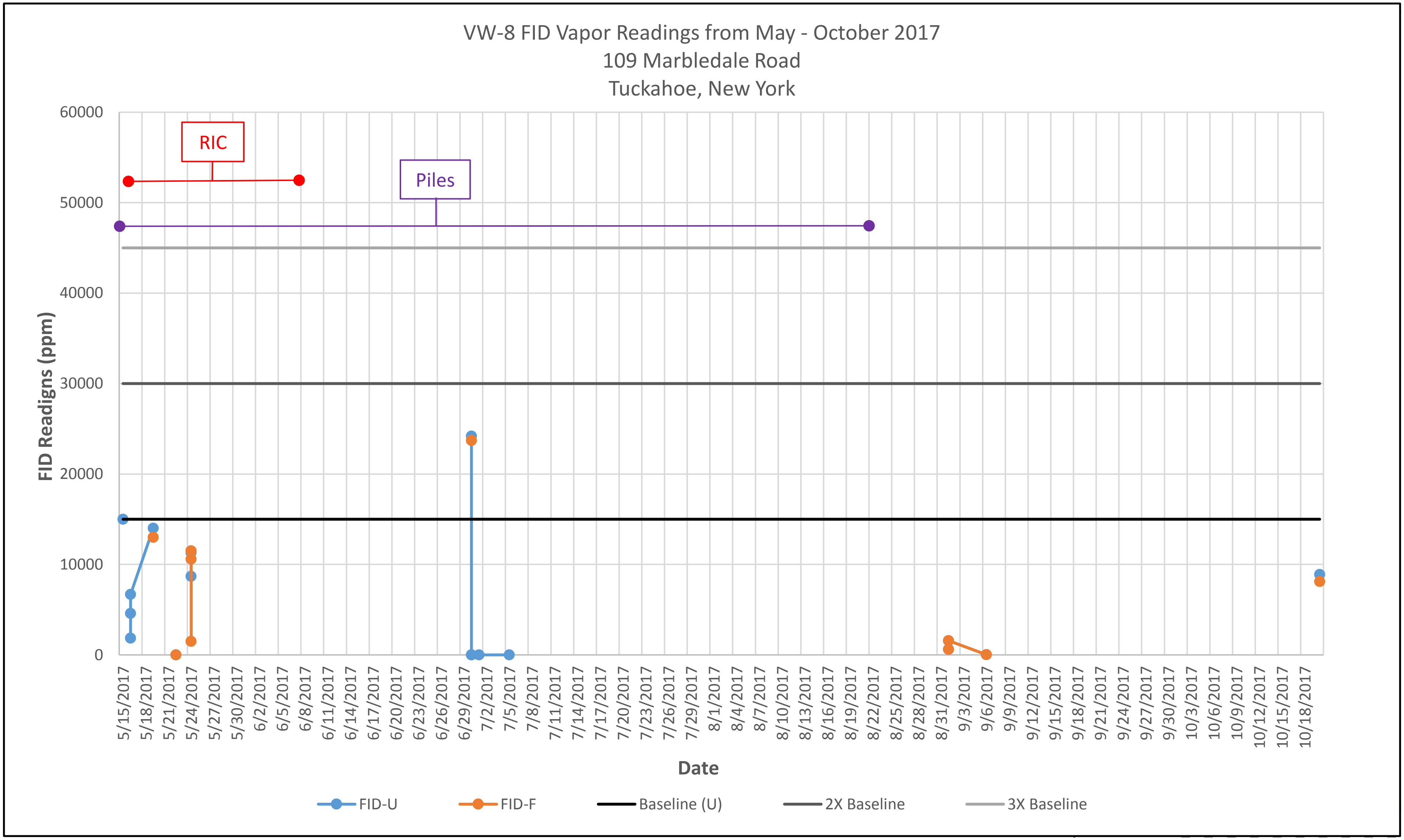
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)



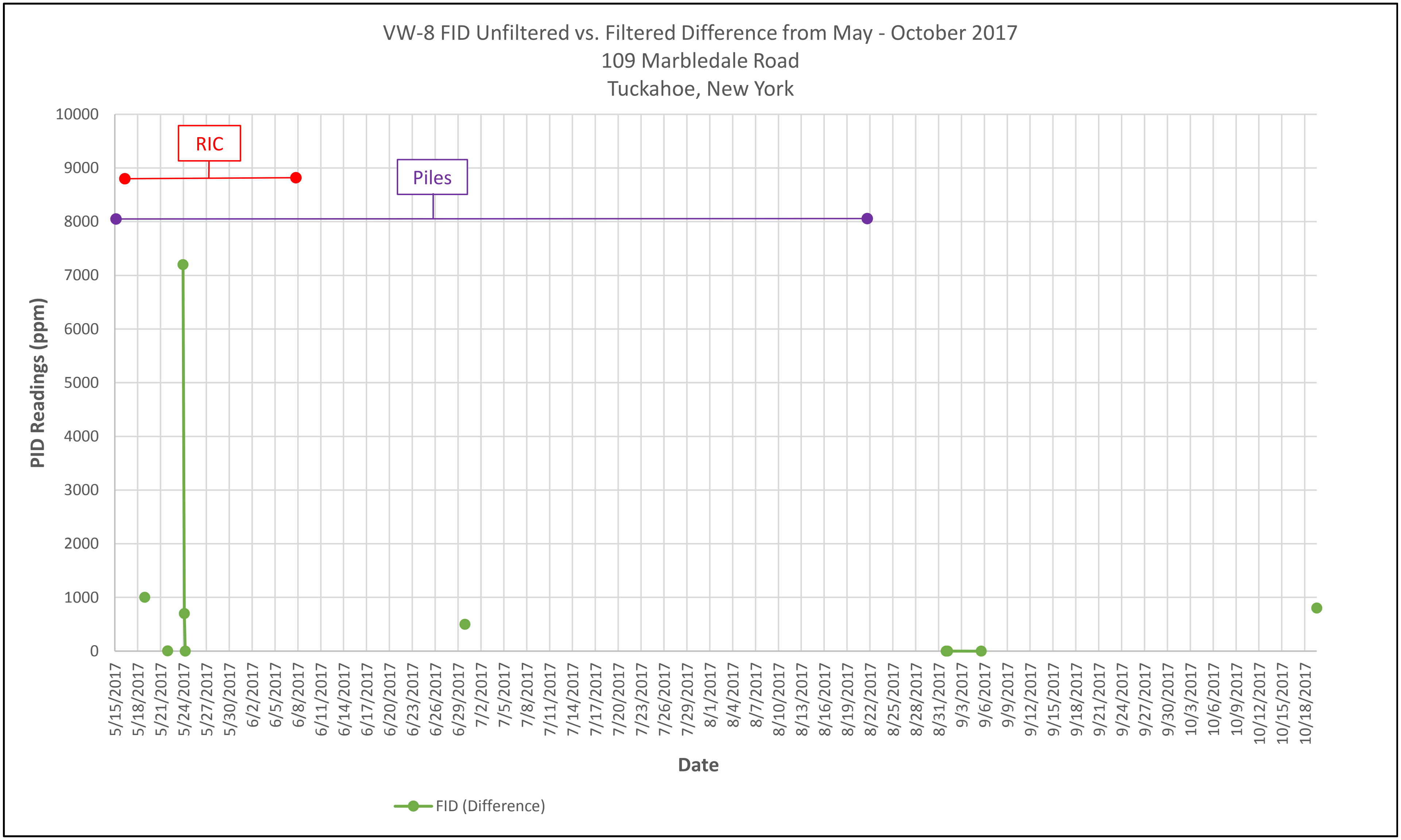
VW-7 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



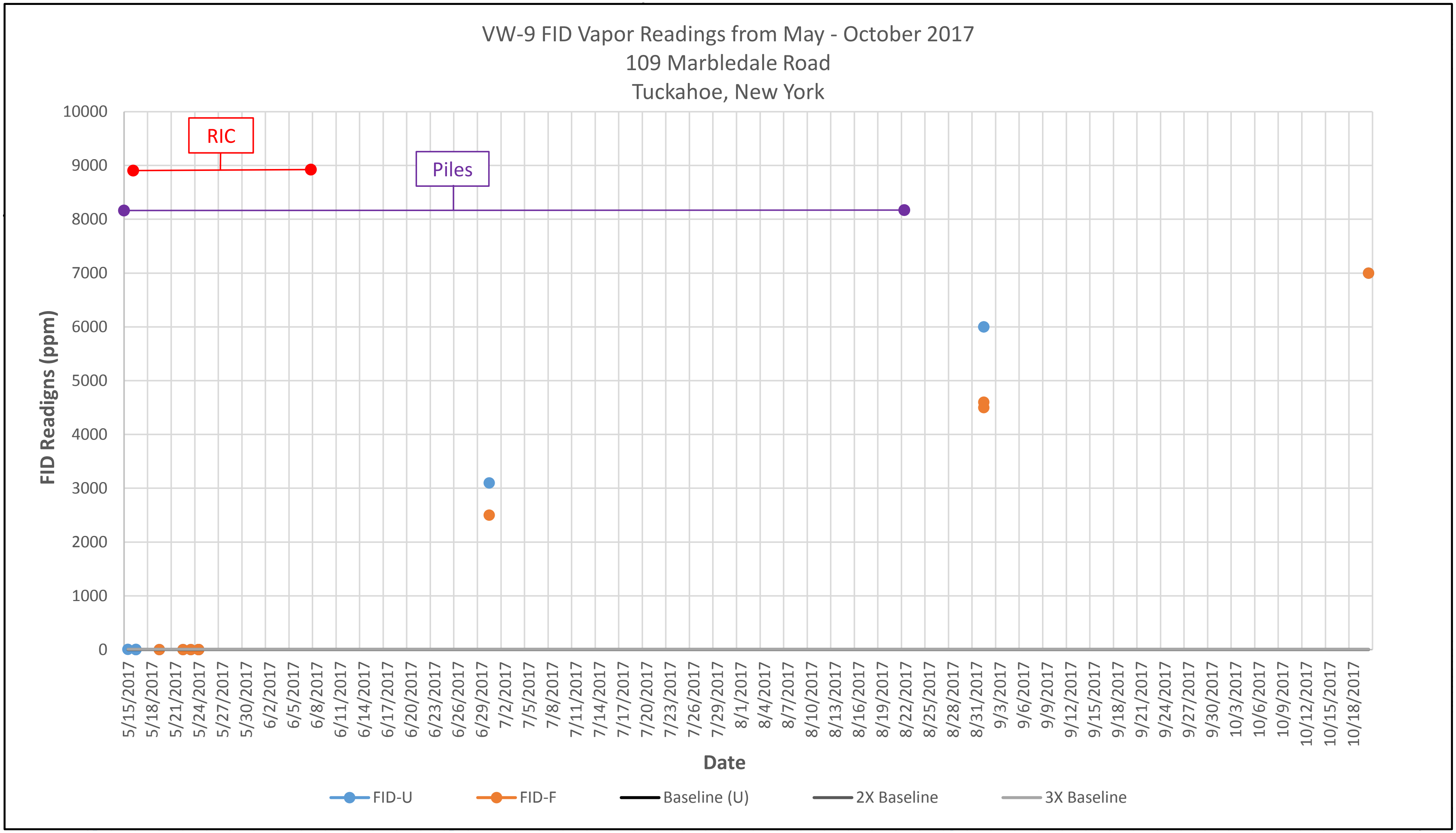
VW-7 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
PID Readings (ppm)
100
90
80
70
60
50
40
30
20
10
0
RIC
Piles
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)



VW-8 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
60000
50000
40000
30000
20000
10000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



VW-8 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
PID Readings (ppm)
Date
RIC
Piles
FID (Difference)



VW-9 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
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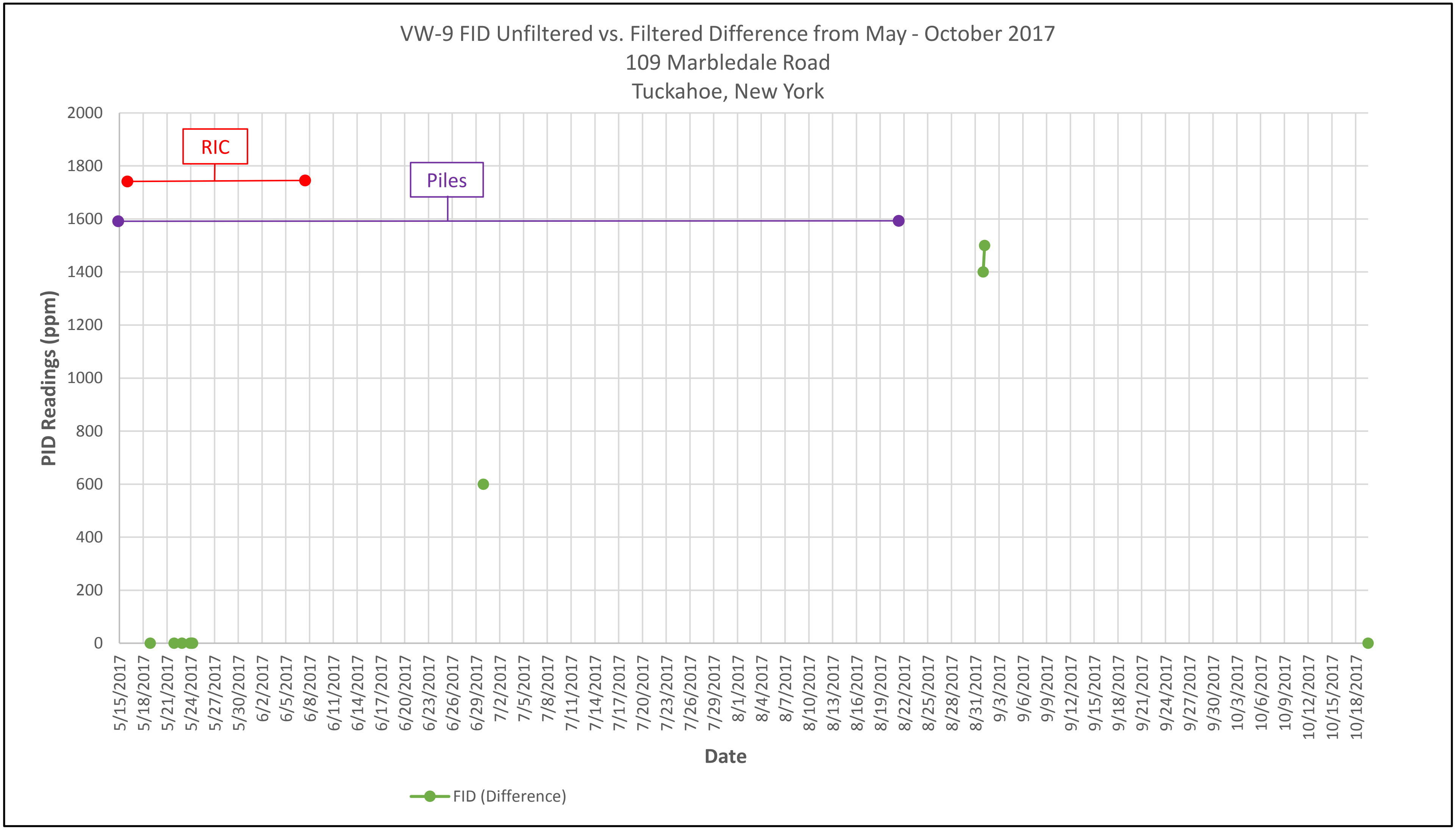
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline


VW-9 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
PID Readings (ppm)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
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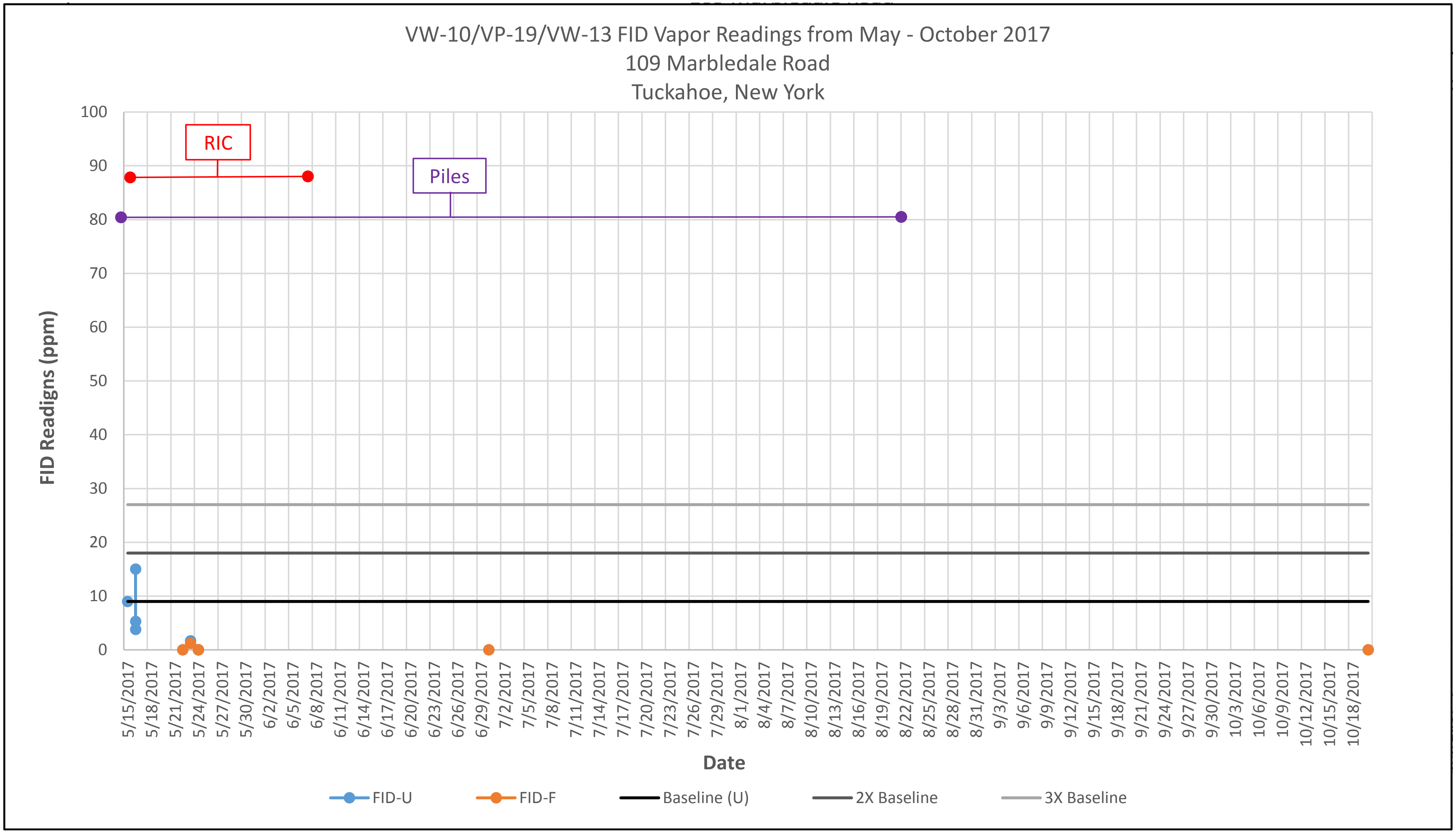
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)


VW-10/VP-19/VW-13 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
100
90
80
70
60
50
40
30
20
10
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
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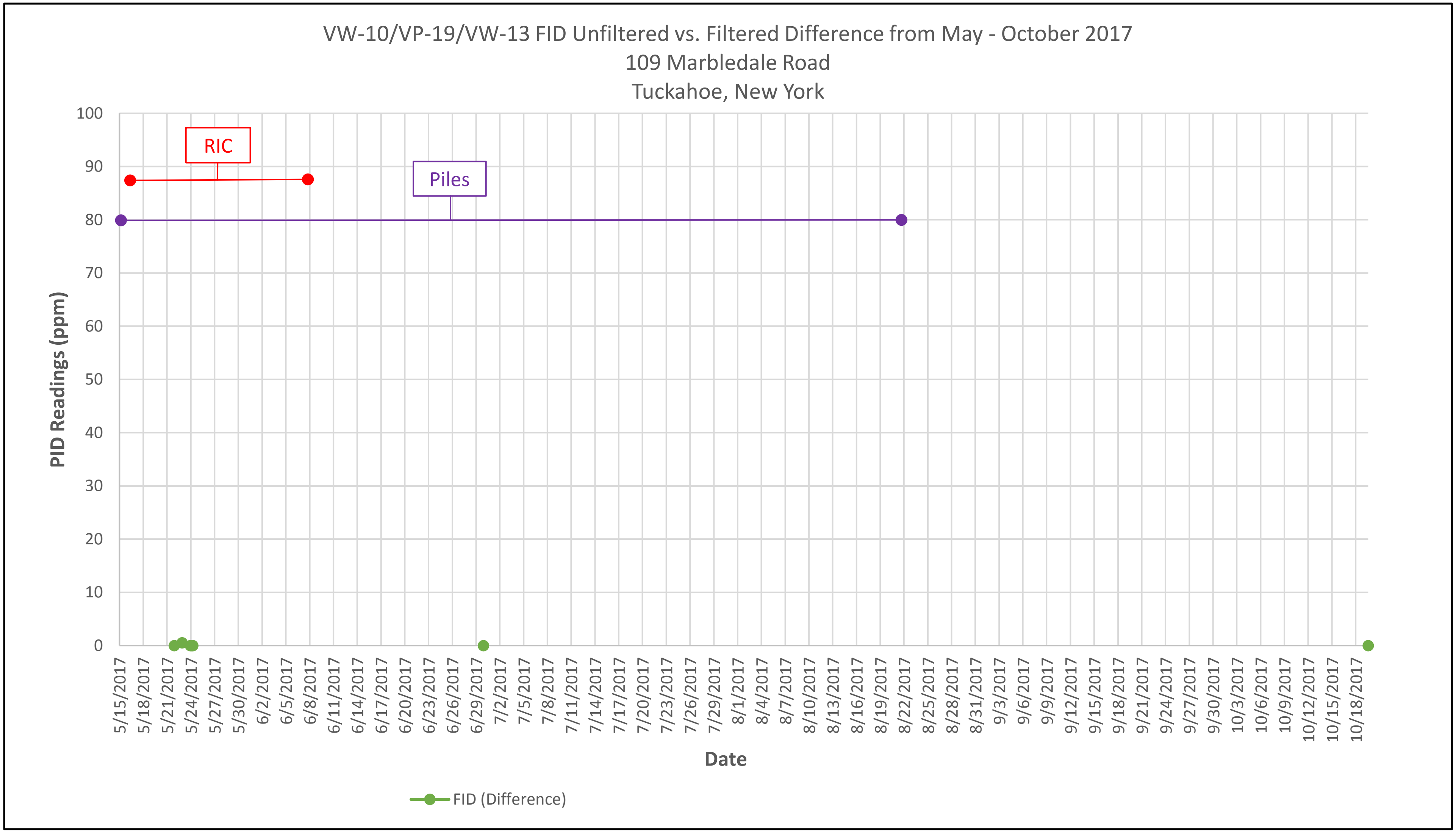
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



VW-10/VP-19/VW-13 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
PID Readings (ppm)
100
90
80
70
60
50
40
30
20
10
0
RIC
Piles
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
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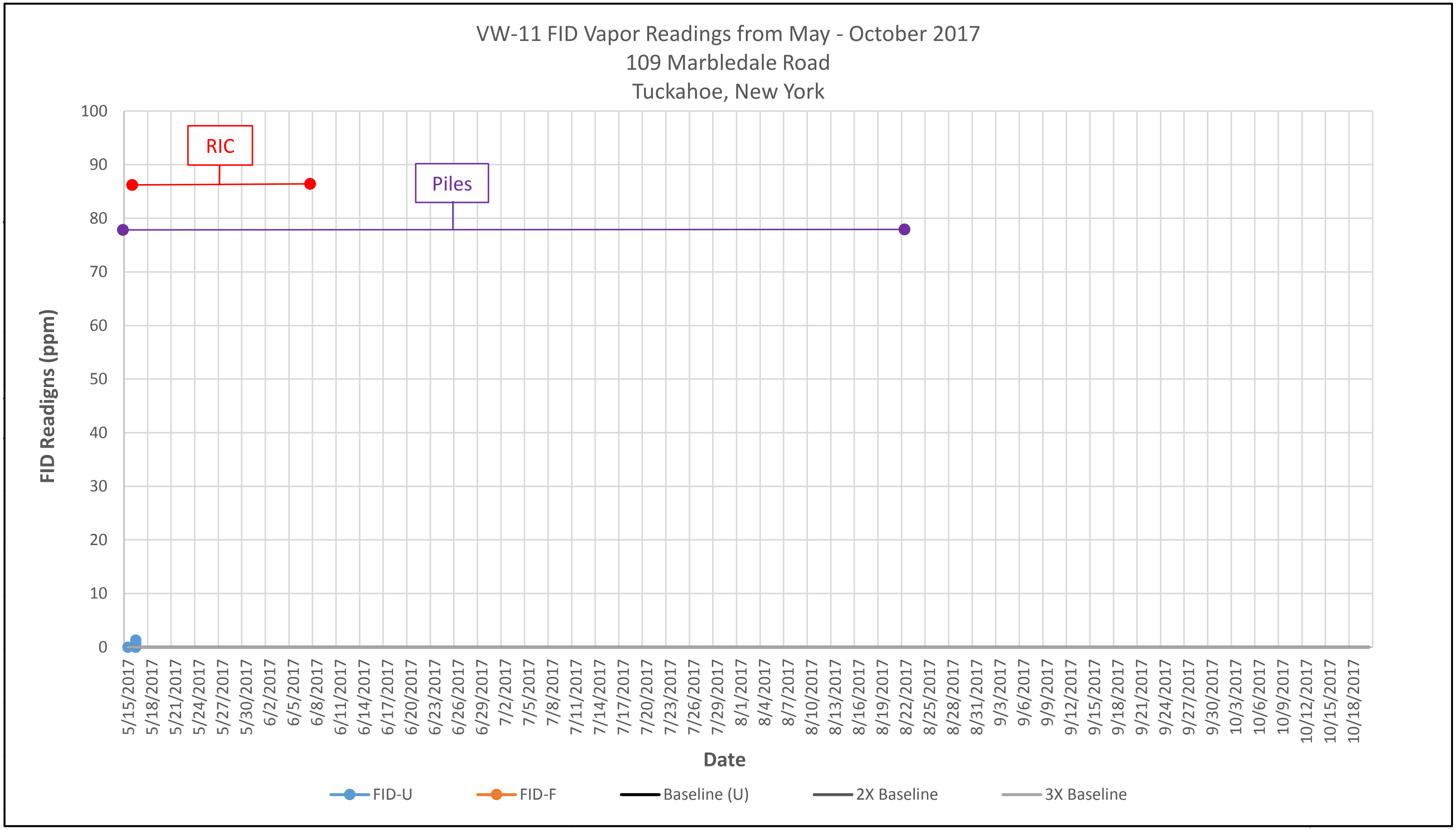
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)


VW-11 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
FID Readigns (ppm)
Date
RIC
Piles
100
90
80
70
60
50
40
30
20
10
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
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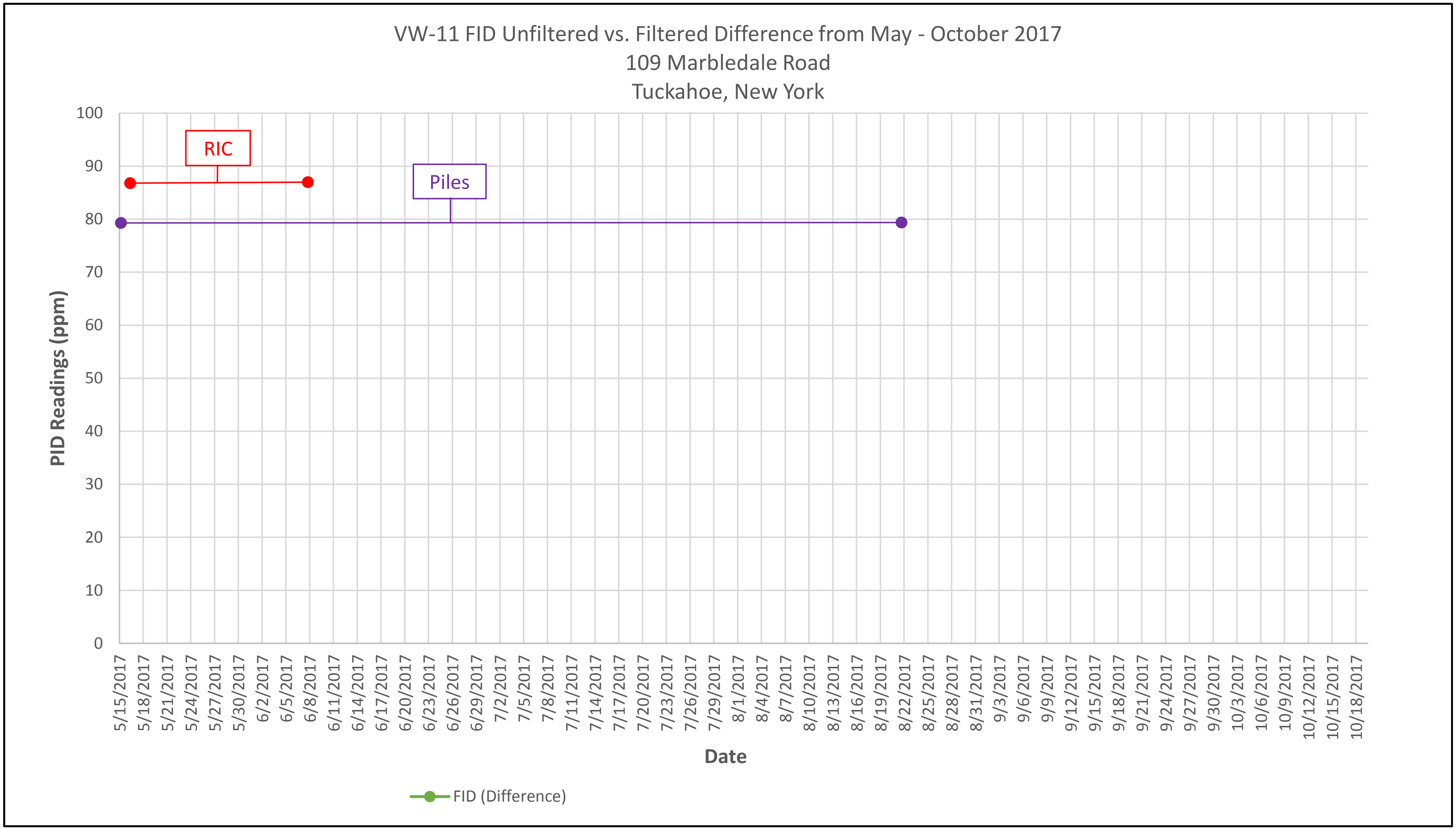
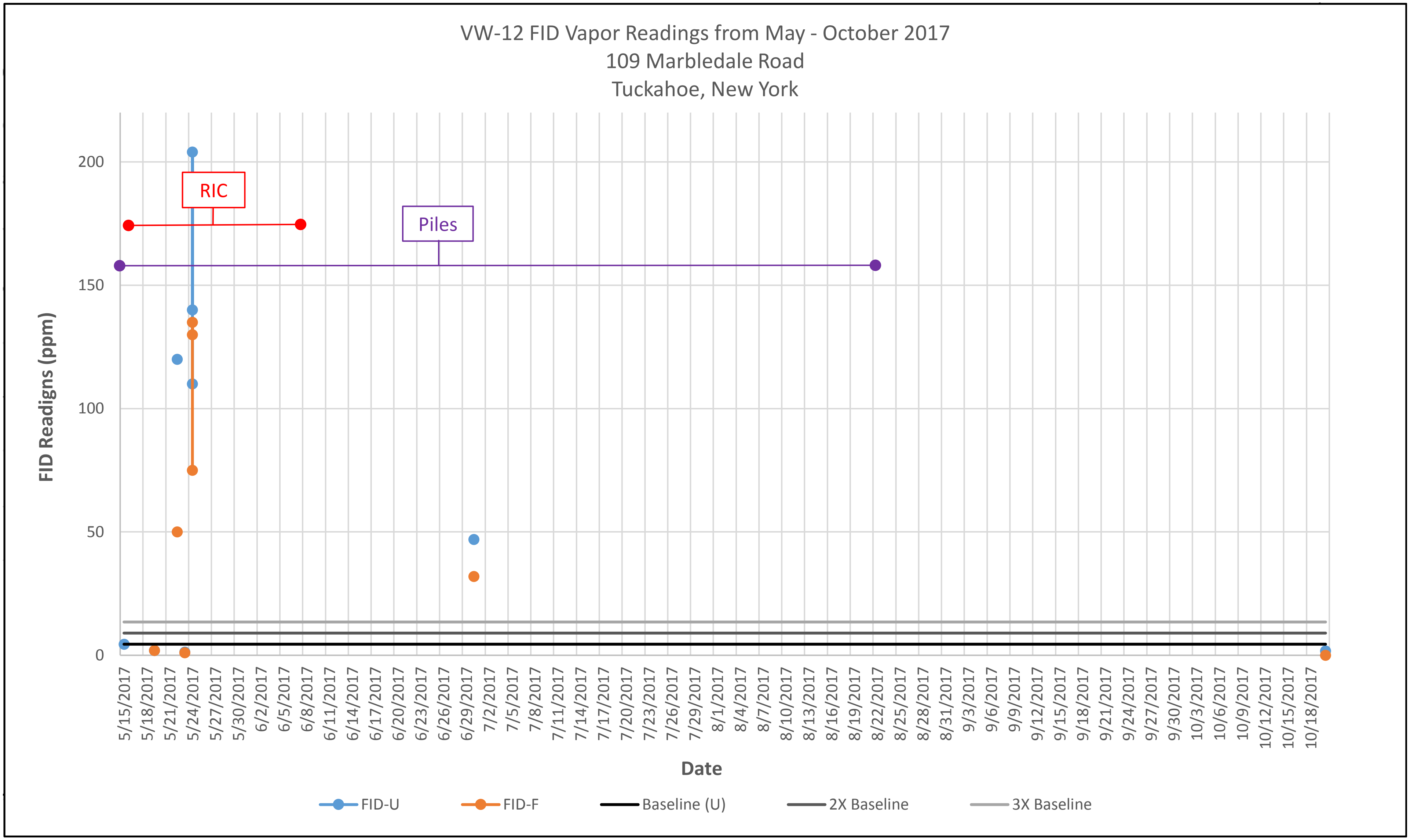
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



VW-11 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
PID Readings (ppm)
100
90
80
70
60
50
40
30
20
10
0
RIC
Piles
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
7/20/2017
7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
8/19/2017
8/22/2017
8/25/2017
8/28/2017
8/31/2017
9/3/2017
9/6/2017
9/9/2017
9/12/2017
9/15/2017
9/18/2017
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)



VW-12 FID Vapor Readings from May - October 2017
109 Marbledale Road
Tuckahoe, New York
RIC
Piles
FID Readigns (ppm)
200
150
100
50
0
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
6/11/2017
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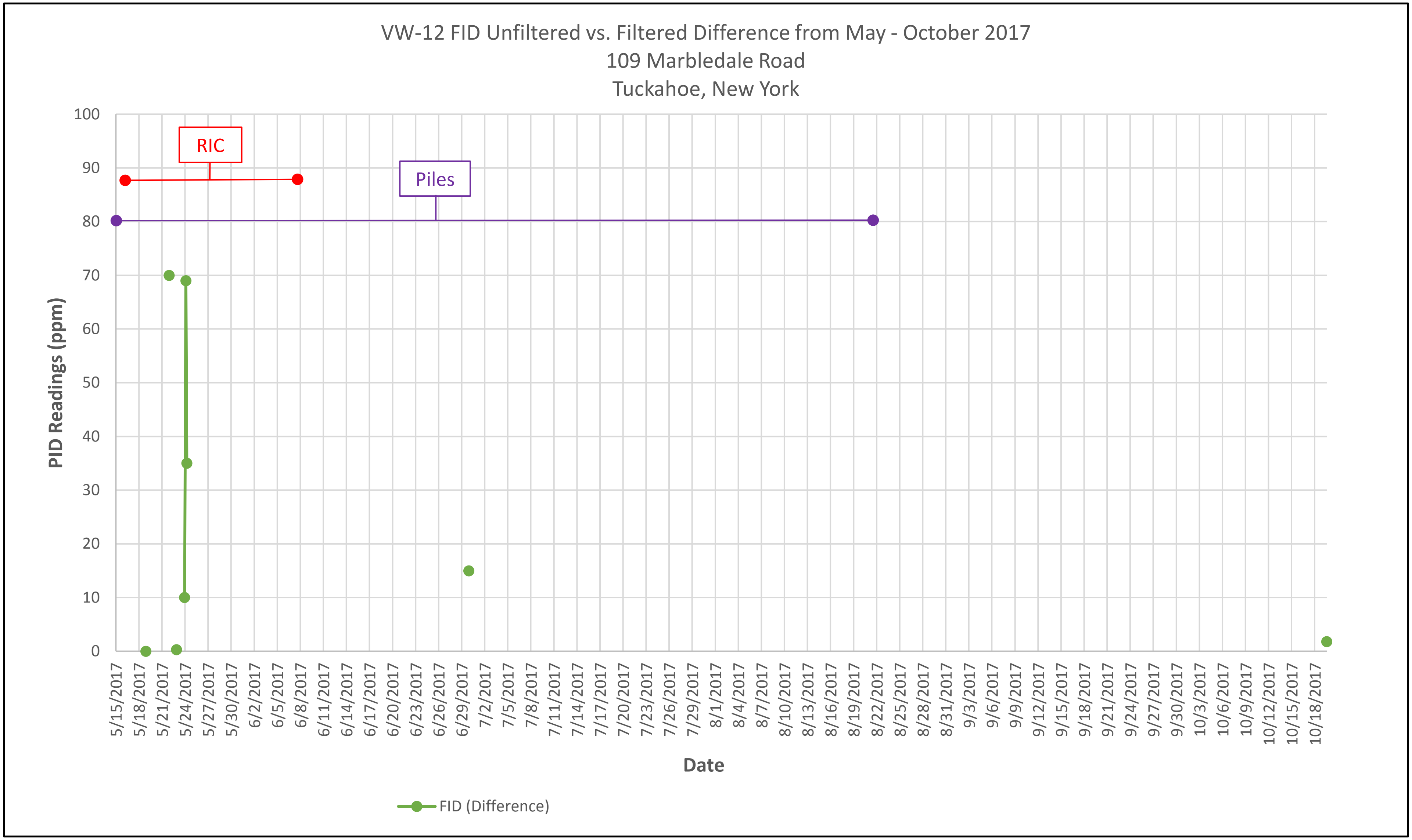
9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID-U
FID-F
Baseline (U)
2X Baseline
3X Baseline



VW-12 FID Unfiltered vs. Filtered Difference from May - October 2017
109 Marbledale Road
Tuckahoe, New York
PID Readings (ppm)
100
90
80
70
60
50
40
30
20
10
0
RIC
Piles
5/15/2017
5/18/2017
5/21/2017
5/24/2017
5/27/2017
5/30/2017
6/2/2017
6/5/2017
6/8/2017
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6/14/2017
6/17/2017
6/20/2017
6/23/2017
6/26/2017
6/29/2017
7/2/2017
7/5/2017
7/8/2017
7/11/2017
7/14/2017
7/17/2017
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7/23/2017
7/26/2017
7/29/2017
8/1/2017
8/4/2017
8/7/2017
8/10/2017
8/13/2017
8/16/2017
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9/6/2017
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9/15/2017
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9/21/2017
9/24/2017
9/27/2017
9/30/2017
10/3/2017
10/6/2017
10/9/2017
10/12/2017
10/15/2017
10/18/2017
Date
FID (Difference)

ATTACHMENT 4

STEGO DATA

Stego® Wrap Vapor Barrier

STEGO INDUSTRIES, LLC

Vapor Retarders
07 26 00, 03 30 00

1. Product Name

Stego Wrap Vapor Barrier

2. Manufacturer

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com

3. Product Description

USES: Stego Wrap Vapor Barrier is used as a below-slab vapor barrier.

COMPOSITION: Stego Wrap Vapor Barrier is a multi-layer plastic extrusion manufactured with only high grade prime, virgin, polyolefin resins.

ENVIRONMENTAL FACTORS:
Stego Wrap Vapor Barrier can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

5. Installation

UNDER SLAB: Unroll Stego Wrap Vapor Barrier over an aggregate, sand or tamped earth base. Overlap all seams a minimum of six inches and tape using Stego Tape or Crete Claw® Tape. All penetrations must be sealed using a combination of Stego Wrap and Stego accessories.

For additional information, please refer to Stego's complete installation instructions.

6. Availability & Cost

Stego Wrap Vapor Barrier is available nationally via building supply distributors. For current cost information, contact your local Stego Wrap distributor or Stego Industries' sales department.

7. Warranty

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. NO WARRANTY, EXPRESS, IMPLIED OR STATUTORY, IS GIVEN AS TO THE MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE WITH RESPECT TO THE PRODUCTS REFERRED TO. Please see www.stegoindustries.com/legal.

8. Maintenance

None required.

9. Technical Services

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries' technical assistance department or via the website.

10. Filing Systems

- Stego Industries' website
- Buildsite

4. Technical Data

TABLE 1: PHYSICAL PROPERTIES OF STEGO WRAP VAPOR BARRIER

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E1745 Class A, B & C – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0086 perms *0.0036 WVTR
Puncture Resistance	ASTM D1709 – Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method	2266 grams
Tensile Strength	ASTM D882 – Test Method for Tensile Properties of Thin Plastic Sheeting	70.6 lbf/in.
Permeance After Conditioning (ASTM E1745 Sections 7.1.2 - 7.1.5)	ASTM E154 Section 8, F1249 – Permeance after wetting, drying, and soaking ASTM E154 Section 11, F1249 – Permeance after heat conditioning ASTM E154 Section 12, F1249 – Permeance after low temperature conditioning ASTM E154 Section 13, F1249 – Permeance after soil organism exposure	0.0098 perms 0.0091 perms 0.0097 perms 0.0095 perms
Methane Transmission Rate	ASTM D1434 – Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting	**192.8 GTR mL(STP)/m²*day
Radon Diffusion Coefficient	K124/02/95	8.8 x 10^{-12}m²/second
Thickness		15 mils
Roll Dimensions		14 ft. wide x 140 ft. long or 1,960 ft²
Roll Weight		140 lbs.

Note: perm unit = grains/(ft² *hr* in.Hg) * WVTR = Water Vapor Transmission Rate ** GTR = Gas Transmission Rate

PART 1

STEGO® WRAP VAPOR BARRIER/RETARDER INSTALLATION INSTRUCTIONS

IMPORTANT: Please read these installation instructions completely, prior to beginning any Stego Wrap installation. The following installation instructions are based on ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs. If project specifications call for compliance with ASTM E1643, then be sure to review the specific installation sections outlined in the standard along with the techniques referenced in these instructions.

FIGURE 1: UNDER-SLAB INSTALLATION

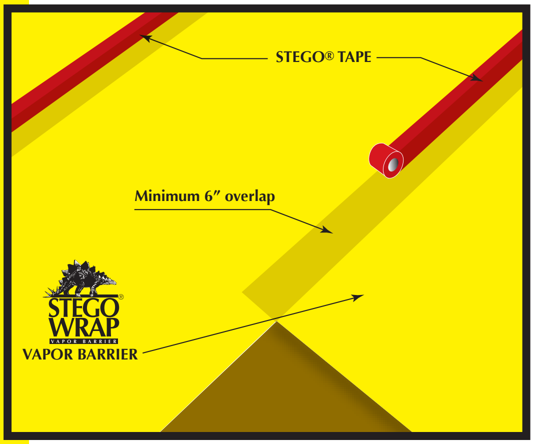


FIGURE 2a: SEAL TO SLAB AT PERIMETER

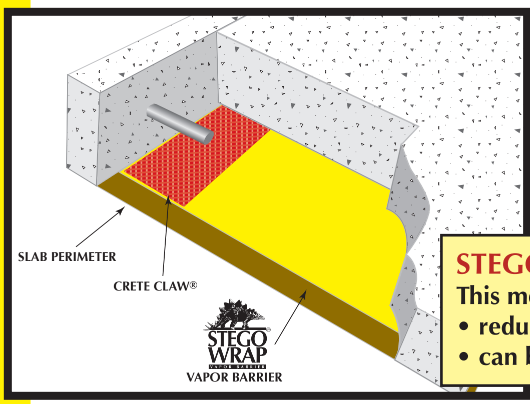
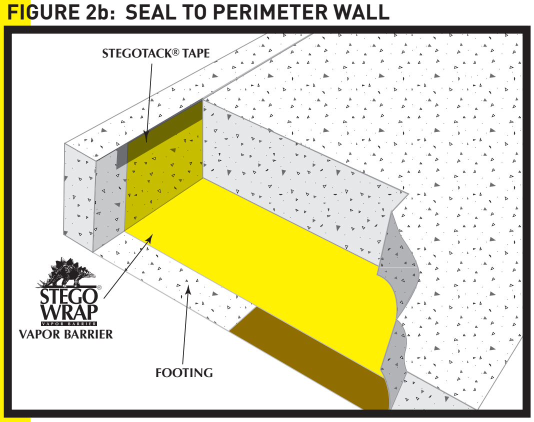


FIGURE 2b: SEAL TO PERIMETER WALL



UNDER-SLAB INSTRUCTIONS:

1. Stego Wrap can be installed over an aggregate, sand, or tamped earth base. It is not necessary to have a cushion layer or sand base, as Stego Wrap is tough enough to withstand rugged construction environments.
2. Unroll Stego Wrap over the area where the slab is to be placed. Stego Wrap should completely cover the concrete placement area. All joints/seams both lateral and butt should be overlapped a minimum of six inches and taped using Stego Tape.

NOTE: The area of adhesion should be free from dust, dirt, moisture, and frost to allow maximum adhesion of the pressure-sensitive tape.

3. ASTM E1643 requires sealing the perimeter of the slab. *Extend vapor retarder over footings and seal to foundation wall, grade beam, or slab at an elevation consistent with the top of the slab or terminate at impediments such as waterstops or dowels.* Consult the structural engineer of record before proceeding.

SEAL TO SLAB AT PERIMETER:*

NOTE: Clean the surface of Stego Wrap to ensure that the area of adhesion is free from dust, dirt, moisture, and frost to allow maximum adhesion of the pressure-sensitive adhesive.

a. Install Crete Claw® on the entire perimeter edge of Stego Wrap.
b. Prior to the placement of concrete, ensure that the top of Crete Claw is free of dirt, debris, or mud to maximize the bond to the concrete.

STEGO LABOR SAVER!
This method not only complies with ASTM E1643, but it also:
- **reduces labor compared to other perimeter sealing techniques.**
- **can be used even without an existing wall or footing, unlike alternatives.**

OR SEAL TO PERIMETER WALL WITH STEGOTACK® TAPE:*

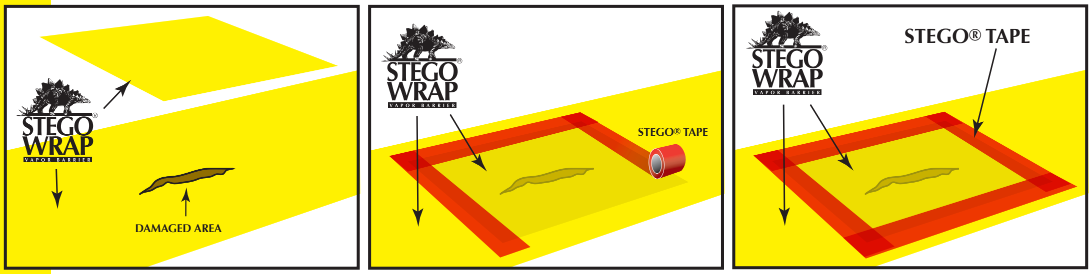
a. Make sure area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion.
b. Remove release liner on one side and stick to desired surface.
c. When ready to apply Stego Wrap, remove the exposed release liner and press Stego Wrap firmly against StegoTack Tape to secure.

* If ASTM E1643 is specified, consult with project architect and structural engineer to determine which perimeter seal technique should be employed for the project.

NOTE: Stego Industries, LLC's ("Stego") installation instructions are based on ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.* These instructions are meant to be used as a guide, and do not take into account specific job site situations. Consult local building codes and regulations along with the building owner or owner's representative before proceeding. If you have any questions regarding the above mentioned installation instructions or Stego products, please call us at 877-464-7834 for technical assistance. While Stego employees and representatives may provide technical assistance regarding the utility of a specific installation practice or Stego product, they are not authorized to make final design decisions.

4. In the event that Stego Wrap is damaged during or after installation, repairs must be made. For holes, cut a piece of Stego Wrap to a size and shape that covers any damage by a minimum overlap of six inches in all directions. Clean all adhesion areas of dust, dirt, moisture, and frost. Tape down all edges using Stego Tape (see figure 3, Sealing Damaged Areas).

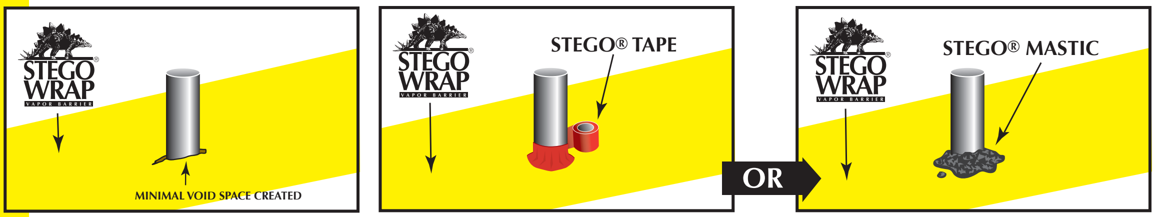
FIGURE 3: SEALING DAMAGED AREAS



NOTE: Stego Industries recommends the use of vapor barrier-safe concrete accessories, like Beast™ Screed, to help minimize the amount of penetrations in a Stego Wrap Installation.

5. **IMPORTANT: ALL PENETRATIONS MUST BE SEALED.** All pipe, ducting, rebar, wire penetrations and block outs should be sealed using Stego Wrap, Stego Tape and/or Stego Mastic (see figure 4a, Pipe Penetration Sealing).

FIGURE 4a: PIPE PENETRATION SEALING



STEGO WRAP PIPE PENETRATION REPAIR DETAIL:

1: Install Stego Wrap around pipe penetrations by slitting/cutting material as needed. Try to minimize the void space created.

2: If Stego Wrap is close to pipe and void space is minimized then seal around pipe penetration with Stego Tape and/or Stego Mastic.

(See Figure 4a)

3: If detail patch is needed to minimize void space around penetration, then cut a detail patch to a size and shape that creates a six inch overlap on all edges around the void space at the base of the pipe. Stego Pre-Cut Pipe Boots are also available to speed up the installation.
4: Cut an "X" the size of the pipe diameter in the center of the pipe boot and slide tightly over pipe.
5: Tape down all sides of the pipe boot with Stego Tape.
6: Seal around the base of the pipe using Stego Tape and/or Stego Mastic.
(See Figure 4b)

FIGURE 4b: DETAIL PATCH FOR PIPE PENETRATION SEALING

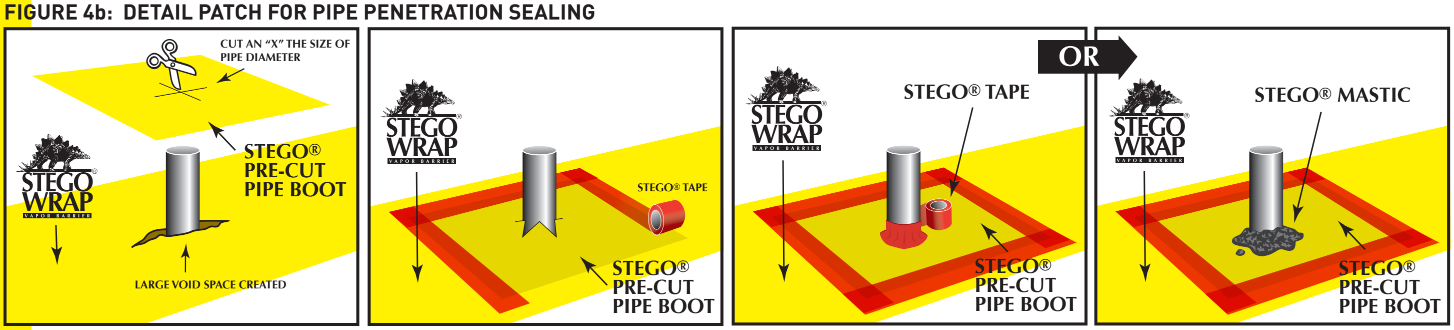
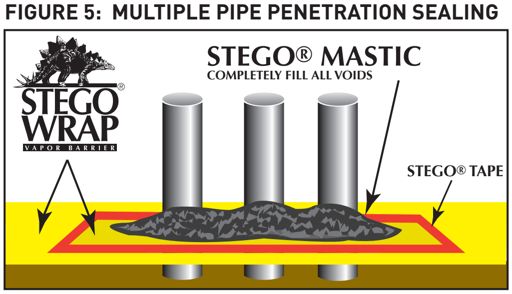


FIGURE 5: MULTIPLE PIPE PENETRATION SEALING



MULTIPLE PIPE PENETRATION SEALING:

Multiple pipe penetrations in close proximity and very small pipes may be sealed using Stego Wrap and Stego Mastic for ease of installation (see figure 5, Multiple Pipe Penetration Sealing).

NOTE: Stego Industries, LLC's ("Stego") installation instructions are based on ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.* These instructions are meant to be used as a guide, and do not take into account specific job site situations. Consult local building codes and regulations along with the building owner or owner's representative before proceeding. If you have any questions regarding the above mentioned installation instructions or Stego products, please call us at 877-464-7834 for technical assistance. While Stego employees and representatives may provide technical assistance regarding the utility of a specific installation practice or Stego product, they are not authorized to make final design decisions.

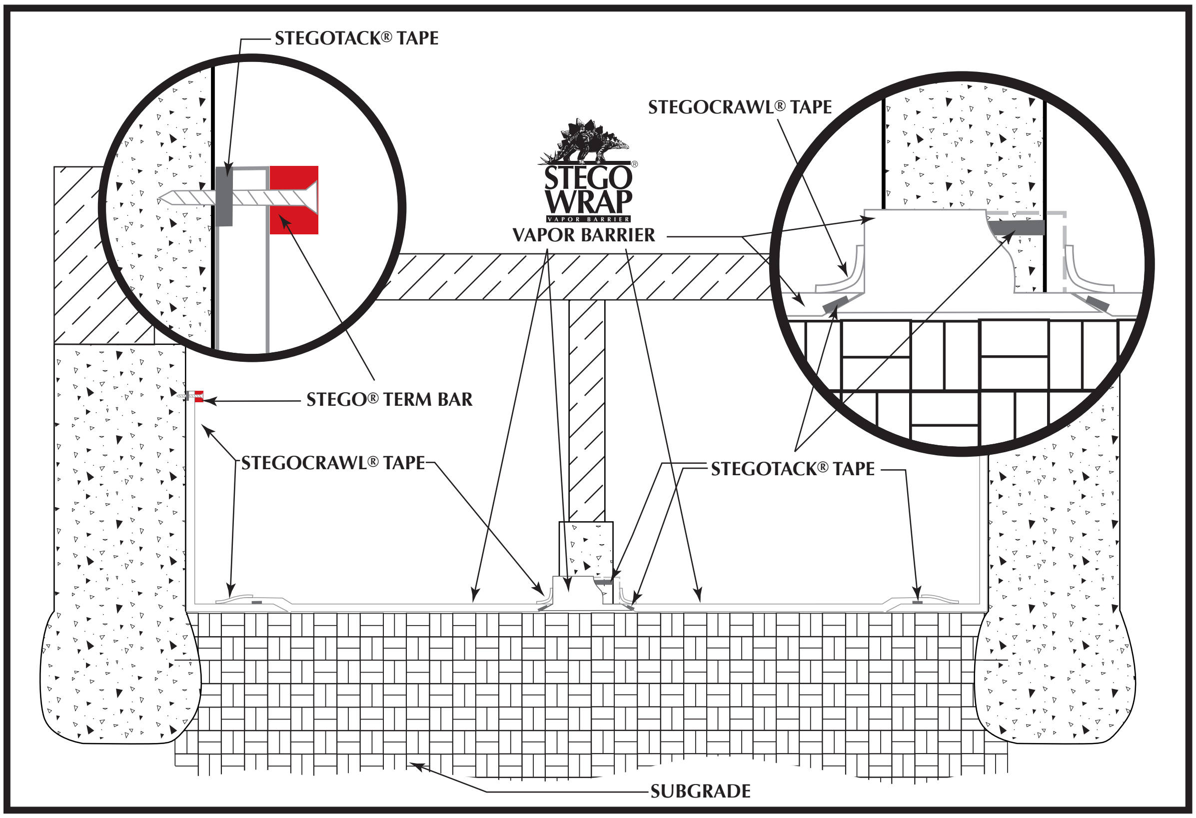
PART 2

STEGOCRAWL® WRAP VAPOR BARRIER/RETARDER
INSTALLATION INSTRUCTIONS

CRAWL SPACE INSTALLATION INSTRUCTIONS:

1. Turn StegoCrawl® Wrap up the foundation wall to a minimum height of six inches above the outside/exterior grade or in compliance with local building codes and terminate with Stego Term Bar. To form a complete seal, apply StegoTack Tape or a layer of Stego Mastic to the foundation wall prior to installing Stego Term Bar. Allow one hour for Stego Mastic to cure prior to installing Stego Term Bar.
2. Seal StegoCrawl® Wrap around all penetrations and columns using StegoCrawl® Tape, StegoTack Tape, and/or Stego Mastic.
3. Place StegoCrawl® Wrap directly over the crawl space floor. If rigid insulation is to be used, install StegoCrawl® Wrap prior to insulation (under insulation and between the foundation wall and insulation).
4. Overlap seams a minimum of six inches and seal with StegoCrawl® Tape. Some codes require a minimum of a twelve inch overlap. Check appropriate codes prior to installation.

FIGURE 6: CRAWL SPACE INSTALLATION



INSTALLATION TIP:

1. For a cleaner look and to prevent against tenting of StegoCrawl® Wrap at the foundation wall/foundation floor intersection, consider mechanically fastening StegoCrawl® Wrap to base of foundation wall in addition to the above mentioned wall termination.
2. Some contractors have found it more efficient to detail/seal the pipes, columns, utilities, and seal the vapor barrier at the slab perimeter prior to installing the remaining vapor barrier.

NOTE: Stego Industries, LLC's ("Stego") installation instructions are based on ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.* These instructions are meant to be used as a guide, and do not take into account specific job site situations. Consult local building codes and regulations along with the building owner or owner's representative before proceeding. If you have any questions regarding the above mentioned installation instructions or Stego products, please call us at 877-464-7834 for technical assistance. While Stego employees and representatives may provide technical assistance regarding the utility of a specific installation practice or Stego product, they are not authorized to make final design decisions.

ATTACHMENT 5

Sub-Slab Depressurization System
Basis of Design
109 Marbledale Road, Tuckahoe, NY

From the Site plan:

Hotel dimensions ~	300	feet long x	60	feet wide =	18,000	sq. ft.
Restaurant dimensions ~	100	feet long x	50	feet wide +		
	70	feet long x	20	feet wide =	6,400	sq. ft.

Sizing Risers

From Navy Facilities Engineering Command, "Vapor Intrusion Mitigation in Construction of New Buildings Fact Sheet":

Minimum 2 inches of crushed stone above and below any sub-slab conveyance pipe

3 inch riser pipe can service up to	*1,500*	*sq. ft.*
4 inch riser pipe can service up to	*4,000*	*sq. ft.*
6 inch riser pipe can service up to	*15,000*	*sq. ft.*

For the Hotel,	2	6-inch riser pipes can provide coverage up to	30,000	sq. ft.
For the Restaurant,	1	6-inch riser pipe can provide coverage up to	15,000	sq. ft.

Conveyance System

From "2010 Designing Efficient Sub Slab Venting and Vapor Barrier Systems for Schools and Large Buildings":

If there is clean crushed stone and 4-inch conveyance piping, a blower that can move 200 cfm at -1.0" W.C. or greater can create vacuum of -0.02" WC over a 4,000 sq. ft. area.

Both the restaurant and hotel will use 4 inch slotted PVC conveyance piping sub-slab.

For a 4,000 sq. ft. area, this is equivalent to a radius of 35 feet around the 4-inch slotted sub-slab piping

This anticipated area of influence is shown on the attached site plans.

Vent Piping Specification

According to "USACE Soil Vapor Extraction and Bioventing EM_1110-1-4001", continuous-wrap screen is preferred for horizontal venting systems, and slot size can be 0.040-inch or greater because the lower air velocities reduce the potential for entrainment of small particles. According to P.C. Johnson, et. Al., 1990, *The slot size and number of slots per inch should be chosen to maximize the open area of the pipe.*

Johnson Screens specifications show the following:

4-inch diameter Sch. 40 PVC =	4.5	inch O.D.	38.5	sq. in./foot of pipe for continuous wound screen
This equates to:	22.7%	open area		
4-inch diameter Sch. 40 PVC =	4.5	inch O.D.	11.2	sq. in./foot of pipe for std. machine-slotted scrn.
This equates to:	6.6%	open area		

Hotel Systems #1 and #2 are designed with two parallel main vent lines, requiring only approximately a 17-foot radius of influence.
Hotel System #3 is designed with a single main vent line, requiring approximately a 35-foot radius of influence.
» Use 0.040-inch continuous wound screen for Hotel System #1 to maximize open area.
» Use 0.040-inch machine-slotted screen for Hotel Systems #2 and #3.

Total open area of screen, Hotel System #1 =	41	feet of 0.040" machine-slotted screen +		
	110	feet of 0.040" continuous-wound screen =		
	4,694	sq. inches =	32.6	sq. ft. open area
Total open area of screen, Hotel System #2 =	172	feet of 0.040" machine-slotted screen =		
	1,926	sq. inches =	13.4	sq. ft. open area
Total open area of screen, Hotel System #3 =	180	feet of 0.040" machine-slotted screen =		
	2,016	sq. inches =	14.0	sq. ft. open area

Sub-Slab Depressurization System
Basis of Design
109 Marbledale Road, Tuckahoe, NY

Bed Volume and Air Volume

Calculate Bed Volume and Void Space:

Hotel bed will be AASHTO #57 stone, 6 inches thick; porosity = 45.4%

CAD Takeoffs:	Area of Stone Bed Hotel system 1:	7,300	s.f.				
	Area of Stone Bed Hotel system 2:	4,950	s.f.				
	Area of Stone Bed Hotel system 3:	4,600	s.f.				
	Hotel bed 1 volume =	3,650	cu. ft.; void space =		1,657	cu. ft.	
	Hotel bed 2 volume =	2,475	cu. ft.; void space =		1,124	cu. ft.	
	Hotel bed 3 volume =	2,300	cu. ft.; void space =		1,044	cu. ft.	
	Hotel trench 1 volume =	151	ln. ft. x	3.0	ft. wide x	1.0	ft. deep
	Hotel trench 2 volume =	172	ln. ft. x	3.0	ft. wide x	1.0	ft. deep
	Hotel trench 3 volume =	180	ln. ft. x	3.0	ft. wide x	1.0	ft. deep
	Hotel trench 1 void space =	206	cu. ft.; total stone void space; syst. 1=		1,863	cu. ft.	
	Hotel trench 2 void space =	234	cu. ft.; total stone void space; syst. 2=		1,358	cu. ft.	
	Hotel trench 3 void space =	245	cu. ft.; total stone void space; syst. 3 =		1,289	cu. ft.	

Restaurant bed will be AASHTO #57 stone, 8 inches thick; porosity = 45.4%

Restaurant bed volume = 4,267 cu. ft.; void space = 1,937 cu. ft.

Calculate Air Flow Rates to provide at least 2 air changes per hour in the sub-slab stone bedding.

	Hotel Blower 1	Hotel Blower 2 & 3	Restaurant	
Air Volume =	1,863 CF	2,647 CF	1,937 CF	
Air Flow Desired =	62 CFM	88 CFM	65 CFM	
No. of Vent Blowers =	1	1	1	
Flow Rate Per Blower =	75 CFM	106 CFM	78 CFM	
Total Blower Flow =	75 CFM	106 CFM	78 CFM	
Air Changes Per Hour =	2.4 air changes	2.4 air changes	2.4 air changes	» Okay

Sub-Slab Depressurization System
Basis of Design
109 Marbledale Road, Tuckahoe, NY

Anticipated Fan Selection (to be confirmed by pilot testing)

From "ASTM E 2121-03, Appendix X3.3.1":

The depressurization goal is to maintain *6* *to* *9* *Pascals*
negative pressure everywhere under the slab. *0.024* *to* *0.036* " WC

To provide at least 6 Pa negative pressure at the farthest edges of the slab, design vent system to provide at least 1.20 "WC at the farthest end of the slotted sub-slab piping.

From Ametek Rotron TMD Application Engineering Basics, Friction Loss Per Foot of Tubing Chart:

6 -inch pipe at 106 cfm has 0.0013 "WC loss per foot of pipe and
4 -inch pipe at 53 cfm has 0.0017 "WC loss per foot of pipe

	Quantity	**Hotel Blower 1**	Quantity	**Hotel Blower 2**
4-Inch PVC Piping	110	110 ft	105	105 ft
6-Inch PVC Piping	101	101 ft	205	205 ft
90 Degree Bend (6-in.)	7	105 ft	2	30 ft
90 Degree Bend (4-in.)	2	26 ft	8	104 ft
Tee Flow - Line (4-in)	0	0 ft	3	51 ft
Tee Flow - Branch (4-in)	0	0 ft	1	22 ft
Ball Valve (6-in)	1	6 ft	2	12 ft
Friction Loss in Riser/Sub-Slab/Exhaust Piping		0.50 " WC		0.74 " WC
Carbtrol G-3S Activated Carbon Drum[(1)]	2	3.00 " WC	2	3.00 " WC
Total Friction loss		3.50 " WC		3.74 " WC
Anticipated Design Condition for Blowers		4.7 " WC at 75 cfm		4.9 " WC at 106 cfm

	Quantity	**Restaurant**
4-Inch PVC Piping	42.5	43 ft
6-Inch PVC Piping	70	70 ft
90 Degree Bend (6-in.)	6	90 ft
Tee Flow - Branch	1	22 ft
Ball Valve	1	6 ft
Friction Loss in Riser/Sub-Slab/Exhaust Piping		0.33 " WC
Carbtrol G-3S Activated Carbon Drum[(1)]	2	3.00 " WC
Total Friction loss		3.33 " WC
Anticipated Design Condition for Blowers		4.5 " WC at 78 cfm

Notes:
1) Carbon design to be selected based on startup pilot testing results.

ATTACHMENT 6

109 Marbledale Road, Tuckahoe, New York

Pilot Test Results

Vapor Phase Carbon Treatment

SVE – 1	Influent Concentrations Target Analyte Detected	Concentration (µg/m³)	Mid-Carbon Concentrations Target Analyte Detected	Concentration (µg/m³)	Influent to Mid-Carbon	Effluent Concentrations Target Analyte Detected	Concentration (µg/m³)	Mid-Carbon to Effluent	Influent to Effluent
Air Flow Rate: 220 acfm	1,1,2-Trichloroethane	210	1,1,2-Trichloroethane	<11	94.8%	1,1,2-Trichloroethane	<10	9.1%	95.2%
PID Reading at time of Sampling: 19.5 ppm	1,2-Dichlorotetrafluoroethane	6,200	1,2-Dichlorotetrafluoroethane	<14	99.8%	1,2-Dichlorotetrafluoroethane	61	-335.7%	99.0%
FID Reading at time of Sampling: 18,200 ppm	2-Butanone (Methyl ethyl ketone)	71	2-Butanone (Methyl ethyl ketone)	12	83.1%	2-Butanone (Methyl ethyl ketone)	13	-8.3%	81.7%
	2-Hexanone	250	2-Hexanone	<16	93.6%	2-Hexanone	<16	0.0%	93.6%
	3-Chloropropene	4,500	3-Chloropropene	<31	99.3%	3-Chloropropene	<30	3.2%	99.3%
Pilot Test Sample collected	4-Methyl 2-pentanone (Methyl isobutyl ketone)	1,200	4-Methyl 2-pentanone (Methyl isobutyl ketone)	<8.0	99.3%	4-Methyl 2-pentanone (Methyl isobutyl ketone)	<7.8	2.5%	99.4%
November 18, 2016 @ 15:00	Acetone	270	Acetone	17	93.7%	Acetone	16	5.9%	94.1%
	Acrylonitrile	35	Acrylonitrile	<4.2	88.0%	Acrylonitrile	<4.1	2.4%	88.3%
	Benzene	260	Benzene	<6.2	97.6%	Benzene	<6.1	1.6%	97.7%
	Bromodichloromethane	110	Bromodichloromethane	<13	88.2%	Bromodichloromethane	<13	0.0%	88.2%
	Carbon disulfide	22	Carbon disulfide	19	13.6%	Carbon disulfide	<5.0	73.7%	77.3%
	Chloromethane (Methylene chloride)	15	Chloromethane (Methylene chloride)	44	-193.3%	Chloromethane (Methylene chloride)	180	-309.1%	-1100.0%
	Cyclohexane	560	Cyclohexane	<6.7	98.8%	Cyclohexane	<6.5	3.0%	98.8%
	Dichlorodifluoromethane	4,100	Dichlorodifluoromethane	150	96.3%	Dichlorodifluoromethane	43	71.3%	99.0%
	Ethyl acetate	320	Ethyl acetate	<14	95.6%	Ethyl acetate	16	-14.3%	95.0%
	Isopropanol	40	Isopropanol	<9.6	76.0%	Isopropanol	<9.3	3.1%	76.8%
	Methyl methacrylate	390	Methyl methacrylate	<8.0	97.9%	Methyl methacrylate	<7.8	2.5%	98.0%
	n-Heptane	1,200	n-Heptane	<8.0	99.3%	n-Heptane	<7.8	2.5%	99.4%
	n-Hexane	1,900	n-Hexane	14	99.3%	n-Hexane	<6.7	52.1%	99.6%
	Propylene	66	Propylene	8	87.3%	Propylene	4	50.0%	93.6%
	Tetrachloroethylene	33	Tetrachloroethylene	<3.3	90.0%	Tetrachloroethylene	<3.2	3.0%	90.3%
	Tetrahydrofuran	2,000	Tetrahydrofuran	<12	99.4%	Tetrahydrofuran	<11.0	8.3%	99.5%
	Vinyl chloride	18	Vinyl chloride	<5.0	72.2%	Vinyl chloride	<4.8	4.0%	73.3%
	Total COC	**23,770**	**Total COC**	**434**	**98.2%**	**Total COC**	**478**	**-9.9%**	**98.0%**

SVE – 2	Influent Concentrations Target Analyte Detected	Concentration (µg/m³)	Mid-Carbon Concentrations Target Analyte Detected	Concentration (µg/m³)	Influent to Mid-Carbon	Effluent Concentrations Target Analyte Detected	Concentration (µg/m³)	Mid-Carbon to Effluent	Influent to Effluent
Air Flow Rate: 240 acfm	1,2,4-Trimethylbenzene	76	1,2,4-Trimethylbenzene	<8.6	88.7%	1,2,4-Trimethylbenzene	<14.0	-62.8%	81.6%
PID Reading at time of Sampling: 39 ppm	1,2-Dichlorotetrafluoroethane	64,000	1,2-Dichlorotetrafluoroethane	<12.0	100.0%	1,2-Dichlorotetrafluoroethane	<13.0	-8.3%	100.0%
	2-Butanone (Methyl ethyl ketone)	<22.0	2-Butanone (Methyl ethyl ketone)	7.2	67.3%	2-Butanone (Methyl ethyl ketone)	12	-66.7%	45.5%
	Acetone	<35.0	Acetone	10	71.4%	Acetone	16	-60.0%	54.3%
	Benzene	170	Benzene	<5.6	96.7%	Benzene	<5.9	-5.4%	96.5%
FID Reading at time of Sampling: 12,700 ppm	Chloromethane (Methylene chloride)	<15.0	Chloromethane (Methylene chloride)	4.7	68.7%	Chloromethane (Methylene chloride)	16	-240.4%	-6.7%
	Cyclohexane	550	Cyclohexane	<6.0	98.9%	Cyclohexane	<6.3	-5.0%	98.9%
	Dichlorodifluoromethane	59,000	Dichlorodifluoromethane	3,600	93.9%	Dichlorodifluoromethane	670	81.4%	98.9%
Pilot Test Sample collected	Methylene chloride	<51.0	Methylene chloride	<12.0	76.5%	Methylene chloride	14	-16.7%	72.5%
November 21, 2016 @ 15:00	n-Heptane	3,500	n-Heptane	<7.2	99.8%	n-Heptane	<7.5	-4.2%	99.8%
	n-Hexane	2,700	n-Hexane	<6.2	99.8%	n-Hexane	<6.5	-4.8%	99.8%
	p- & m-Xylenes	74	p- & m-Xylenes	<15.0	79.7%	p- & m-Xylenes	<16.0	-6.7%	78.4%
	Propylene	230	Propylene	<3.0	98.7%	Propylene	<3.2	-6.7%	98.6%
	Tetrachloroethylene	45	Tetrachloroethylene	<3.0	93.3%	Tetrachloroethylene	<3.1	-3.3%	93.1%
	Trichlorofluoromethane (Freon 11)	1,600	Trichlorofluoromethane (Freon 11)	<9.8	99.4%	Trichlorofluoromethane (Freon 11)	<10.0	-2.0%	99.4%
	Vinyl chloride	55	Vinyl chloride	<4.5	91.8%	Vinyl chloride	<4.7	-4.4%	91.5%
	Total COC	**132,123**	**Total COC**	**3,715**	**97.2%**	**Total COC**	**818**	**78.0%**	**99.4%**

SVE – 3

Air Flow Rate: 190 acfm

PID Reading at time of Sampling: 2.2 ppm

FID Reading at time of Sampling: 3,749 ppm

Pilot Test Sample collected
November 22, 2016 @ 16:00

Influent Concentrations Target Analyte Detected	Concentration ($\mu g/m^3$)	Mid-Carbon Concentrations Target Analyte Detected	Concentration ($\mu g/m^3$)	Influent to Mid-Carbon	Effluent Concentrations Target Analyte Detected	Concentration ($\mu g/m^3$)	Mid-Carbon to Effluent	Influent to Effluent
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	13	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<13.0	0.0%	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<13.0	0.0%	0.0%
1,2,4-Trimethylbenzene	9.9	1,2,4-Trimethylbenzene	<8.3	16.2%	1,2,4-Trimethylbenzene	<8.4	-1.2%	15.2%
1,2-Dichlorotetrafluoroethane	14,000	1,2-Dichlorotetrafluoroethane	<12.0	99.9%	1,2-Dichlorotetrafluoroethane	<12.0	0.0%	99.9%
2-Butanone (Methyl ethyl ketone)	9.4	2-Butanone (Methyl ethyl ketone)	6	36.2%	2-Butanone (Methyl ethyl ketone)	9.6	-60.0%	-2.1%
Acetone	28	Acetone	8	71.4%	Acetone	8.9	-11.3%	68.2%
Benzene	8.1	Benzene	<5.4	33.3%	Benzene	<5.5	-1.9%	32.1%
Cyclohexane	21	Cyclohexane	<5.8	72.4%	Cyclohexane	<5.9	-1.7%	71.9%
Dichlorodifluoromethane	13,000	Dichlorodifluoromethane	11,000	15.4%	Dichlorodifluoromethane	440	96.0%	96.6%
Methylene chloride	19	Methylene chloride	<12.0	36.8%	Methylene chloride	<12.0	0.0%	36.8%
n-Heptane	25	n-Heptane	<6.9	72.4%	n-Heptane	<7.0	-1.4%	72.0%
n-Hexane	77	n-Hexane	<6.0	92.2%	n-Hexane	<6.0	0.0%	92.2%
Tetrachloroethylene	11	Tetrachloroethylene	<2.9	73.6%	Tetrachloroethylene	<2.9	0.0%	73.6%
Toluene	7.6	Toluene	<6.4	15.8%	Toluene	<6.4	0.0%	15.8%
Trichloroethylene	2.7	Trichloroethylene	<2.3	14.8%	Trichloroethylene	<2.3	0.0%	14.8%
Trichlorofluoromethane (Freon 11)	1,400	Trichlorofluoromethane (Freon 11)	<9.5	99.3%	Trichlorofluoromethane (Freon 11)	<9.6	-1.1%	99.3%
Vinyl chloride	4.3	Vinyl chloride	6.9	-60.5%	Vinyl chloride	<4.4	36.2%	-2.3%
Total COC	**28,636**	**Total COC**	**11,111**	61.2%	**Total COC**	**554**	**95.0%**	**98.1%**

SVE – 4

Air Flow Rate: 310 acfm

PID Reading at time of Sampling: 1.9 ppm

FID Reading at time of Sampling: 3.7 ppm

Pilot Test Sample collected
November 22, 2016 @ 13:30

Influent Concentrations Target Analyte Detected	Concentration ($\mu g/m^3$)	Mid-Carbon Concentrations Target Analyte Detected	Concentration ($\mu g/m^3$)	Influent to Mid-Carbon	Effluent Concentrations Target Analyte Detected	Concentration ($\mu g/m^3$)	Mid-Carbon to Effluent	Influent to Effluent
1,2-Dichlorotetrafluoroethane	460	1,2-Dichlorotetrafluoroethane	<12.0	97.4%	1,2-Dichlorotetrafluoroethane	<13.0	-8.3%	97.2%
2-Butanone (Methyl ethyl ketone)	10	2-Butanone (Methyl ethyl ketone)	5.1	47.4%	2-Butanone (Methyl ethyl ketone)	11	-115.7%	-13.4%
Acetone	37	Acetone	9.1	75.4%	Acetone	11	-20.9%	70.3%
Chloroform	52	Chloroform	<8.5	83.7%	Chloroform	<9.3	-9.4%	82.1%
Dichlorodifluoromethane	710	Dichlorodifluoromethane	7,700	-984.5%	Dichlorodifluoromethane	630	91.8%	11.3%
Methylene chloride	39	Methylene chloride	<12.0	69.2%	Methylene chloride	<13.0	-8.3%	66.7%
n-Hexane	37	n-Hexane	<7.1	80.8%	n-Hexane	<6.7	5.6%	81.9%
Tetrachloroethylene	690	Tetrachloroethylene	4.7	99.3%	Tetrachloroethylene	7	-38.3%	99.1%
Tetrahydrofuran	13	Tetrahydrofuran	<10.0	23.1%	Tetrahydrofuran	<11.0	-10.0%	15.4%
Trichloroethylene	210	Trichloroethylene	<2.3	98.9%	Trichloroethylene	<2.6	-13.0%	98.8%
Trichlorofluoromethane (Freon 11)	39	Trichlorofluoromethane (Freon 11)	<9.8	74.9%	Trichlorofluoromethane (Freon 11)	<11.0	-12.2%	71.8%
Total COC	**2,297**	**Total COC**	**7,781**	**-238.8%**	**Total COC**	**725**	**90.7%**	**68.4%**

ATTACHMENT 7

Average Concentrations of Results from VW-1, VW-2, VW-3, VW-4, VW-5, VW-6 (2017) VP-4, VP-5 (2015) [Outlier Freon Conc In VW-4 Excluded from Averages]	Hotel SSDS Treatment System Design Basis	DAR-1 AGC/SGC Tables		Percent Reduction Needed to Achieve SGC/AGC	Pounds Per Year at 100 cfm	Pounds Per Day at 100 cfm	Pounds Per Hour at 100 cfm
Compound	Average Concentration (µg/m³)	SGC (µg/m³)	AGC (µg/m³)		Pounds Per Year	Pounds Per Day	Pounds Per Hour
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	19	960,000.0	180,000.0	0.00%	0.061	0.00017	0.0000070
1,2,4-Trimethylbenzene	2.4	---	6.0	0.00%	0.0078	0.000021	0.00000089
1,2-Dichlorotetrafluoroethane (Freon 114)	40,529	---	17,000	58.05%	133	0.36	0.015
1,3-Dichlorobenzene	0.58	---	10.0	0.00%	0.0019	0.0000052	0.00000022
2-Butanone (Methyl Ethyl Ketone)	1.8	13,000.0	5,000.0	0.00%	0.0057	0.000016	0.00000065
4-Ethyltoluene	0.20	---	---	0.00%	0.00066	0.0000018	0.000000075
4-Isopropyltoluene	0.15	---	---	0.00%	0.00049	0.0000013	0.000000056
4-Methyl-2-pentanone (Methyl Isobutyl Ketone)	0.24	31,000.0	3,000.0	0.00%	0.00080	0.0000022	0.000000091
Acetone	54	180,000.0	30,000.0	0.00%	0.18	0.00049	0.000020
Benzene	77	1,300.0	0.13	99.83%	0.25	0.00069	0.000029
Carbon disulfide	0.93	150.0	14.7	0.00%	0.0031	0.0000084	0.00000035
Carbon tetrachloride	0.11	19,000.0	0.17	0.00%	0.00036	0.0000010	0.000000041
Chloroform	89	150.0	14.7	83.49%	0.29	0.00080	0.000033
cis-1,2-Dichloroethylene	6.0	---	63.0	0.00%	0.020	0.000054	0.0000022
Cyclohexane	147	---	6,000.0	0.00%	0.48	0.0013	0.000055
Dichlorodifluoromethane (Freon 12)	21,400	---	12,000.0	43.92%	70	0.19	0.0080
Ethanol	11	---	45,000.0	0.00%	0.037	0.00010	0.0000042
Ethyl acetate	43	---	3,400.0	0.00%	0.14	0.00039	0.000016
Ethyl Benzene	12	---	1,000.0	0.00%	0.039	0.00011	0.0000045
Isopropanol (Isopropyl Alcohol)	146	98,000.0	7,000.0	0.00%	0.48	0.0013	0.000055
Isopropylbenzene	0.73	---	---	0.00%	0.0024	0.0000065	0.00000027
Methylene chloride (Dichloromethane)	0.48	14,000.0	60.0	0.00%	0.0016	0.0000043	0.00000018
n-Butylbenzene	0.15	---	---	0.00%	0.00048	0.0000013	0.000000054
n-Heptane	281	210,000.0	3,900.0	0.00%	0.92	0.0025	0.00011
n-Hexane	507	---	700.0	0.00%	1.7	0.0046	0.00019
o-Xylene	39	22,000.0	100.0	0.00%	0.13	0.00035	0.000015
p- & m- Xylenes	70	22,000.0	100.0	0.00%	0.23	0.00063	0.000026
p-Ethyltoluene	1.6	---	---	0.00%	0.0051	0.000014	0.00000058
Propylene	67	---	3,000.0	0.00%	0.22	0.00061	0.000025
Styrene	0.53	17,000.0	1,000.00	0.00%	0.0017	0.0000048	0.00000020
Tetrachloroethylene	40	300.0	4.0	89.96%	0.13	0.00036	0.000015
Tetrahydrofuran	0.89	30,000.0	350.0	0.00%	0.0029	0.0000080	0.00000033
Toluene	164	37,000.0	5,000.0	0.00%	0.54	0.0015	0.000061
Trichloroethylene	11	20.0	0.20	98.17%	0.036	0.00010	0.0000041
Trichlorofluoromethane (Freon 11)	94	9,000.0	5,000.0	0.00%	0.31	0.00084	0.000035
Trichlorotrifluoroethane (Freon 113)	0.14	---	---	0.00%	0.00045	0.0000012	0.000000051
Vinyl Chloride	13	180,000.0	0.11	99.12%	0.041	0.00011	0.0000047
TOTAL	63,830						

NOTES:
Yellow highlighted results exceed the applicable AGC.
Orange highlighted results exceed the applicable SGC.

Average Concentrations of Results from VW-7, VW-8, VW-12, VW-19 (2017) and VP-8 (2015)	Restaurant SSDS Treatment System Design Basis	DAR-1 AGC/SGC Tables		Percent Reduction Needed to Achieve SGC/AGC	Pounds Per Year at 100 cfm	Pounds Per Day at 100 cfm	Pounds Per Hour at 100 cfm
Compound	Average Concentration ($\mu g/m^3$)	SGC ($\mu g/m^3$)	AGC ($\mu g/m^3$)		Pounds Per Year	Pounds Per Day	Pounds Per Hour
1,2,4-Trichlorobenzene	17	---	6.0	65.52%	0.057	0.00016	0.0000065
1,2-Dichlorotetrafluoroethane (Freon 114)	476	---	17,000	0.00%	1.6	0.0043	0.00018
1,3-Dichlorobenzene	0.72	---	10.0	0.00%	0.0023	0.0000064	0.00000027
2-Butanone (Methyl Ethyl Ketone)	14	13,000.0	5,000.0	0.00%	0.045	0.00012	0.0000051
2-Hexanone (Methyl Butyl Ketone)	9.2	4,000.0	30.0	0.00%	0.030	0.000083	0.0000034
4-Methyl-2-pentanone (Methyl Isobutyl Ketone)	0.32	31,000.0	3,000.0	0.00%	0.0010	0.0000029	0.00000012
Acetone	67	180,000.0	30,000.0	0.00%	0.22	0.00060	0.000025
Benzene	0.77	1,300.0	0.13	83.16%	0.0025	0.0000069	0.00000029
Chloroform	11	150.0	14.7	0.00%	0.037	0.00010	0.0000042
Dichlorodifluoromethane (Freon 12)	1,337	---	12,000.0	0.00%	4.4	0.012	0.00050
Ethanol	1.1	---	45,000.0	0.00%	0.0036	0.000010	0.00000041
Isopropanol (Isopropyl Alcohol)	177	98,000.0	7,000.0	0.00%	0.58	0.0016	0.000066
Methyl tert-butyl ether (MTBE)	1.5	---	3.8	0.00%	0.0048	0.000013	0.00000055
Methylene chloride (Dichloromethane)	3.4	14,000.0	60.0	0.00%	0.011	0.000031	0.0000013
n-Heptane	0.41	210,000.0	3,900.0	0.00%	0.0014	0.0000037	0.00000015
n-Hexane	0.26	---	700.0	0.00%	0.00085	0.0000023	0.00000010
o-Xylene	0.23	22,000.0	100.0	0.00%	0.00076	0.0000021	0.000000087
p- & m- Xylenes	0.68	22,000.0	100.0	0.00%	0.0022	0.0000061	0.00000025
Propylene	2.7	---	3,000.0	0.00%	0.0089	0.000024	0.0000010
Tetrachloroethylene	1,967	300.0	4.0	99.80%	6.4	0.018	0.00074
Tetrahydrofuran	0.33	30,000.0	350.0	0.00%	0.0011	0.0000030	0.00000012
Toluene	2.9	37,000.0	5,000.0	0.00%	0.0094	0.000026	0.0000011
Trichloroethylene	181	20.0	0.20	99.89%	0.59	0.0016	0.000068
Trichlorofluoromethane (Freon 11)	92	9,000.0	5,000.0	0.00%	0.30	0.00082	0.000034
TOTAL	4,363				14.3	0.039	0.0016

NOTES:

Yellow highlighted results exceed the applicable AGC.

Orange highlighted results exceed the applicable SGC.