

The Bradford (Former Cushing Village) Update

Presented Virtually
February 25, 2021



Introduction

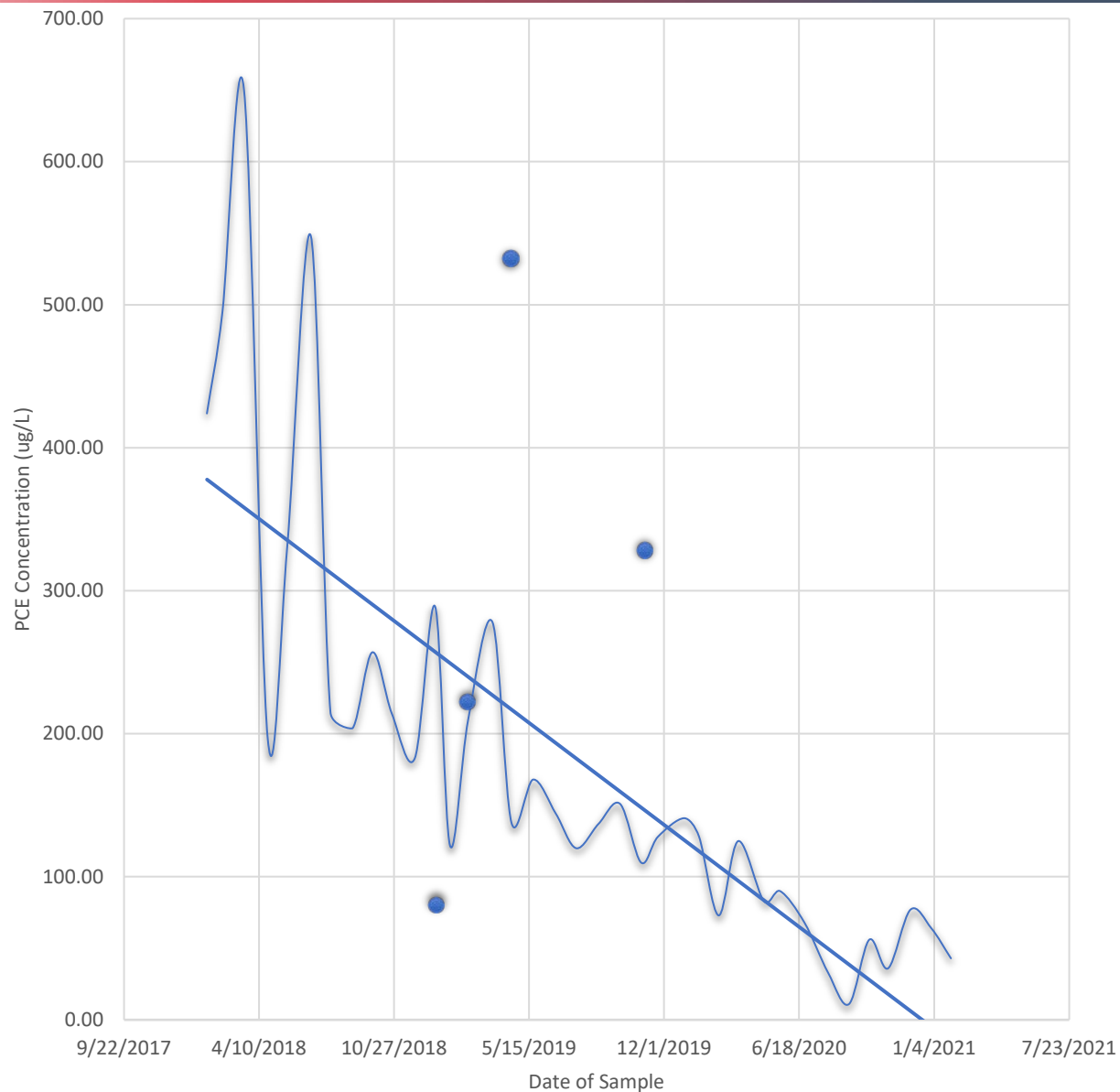
- Project is currently in Remedy Operation Status (ROS):
 - Conducting monthly site visits to inspect and sample the permanent sub-slab dewatering system;
 - Sample semi-annually groundwater monitoring wells; and
 - Sample semi-annually indoor air and soil gas.
- Recent Sampling Results Summarized in ROS Status Report #2:
 - NPDES Discharge Analytical;
 - Groundwater Sampling Results; and
 - Indoor Air Sampling Results.
- Finding of New Condition at the Pomona Building:
 - Review Subsequent Activities and Corrective Actions being Conducted.

Permanent Sub-Slab Dewatering System Monitoring

- Each month samples of influent groundwater and treated effluent are collected and analyzed.
- Screening of the collection pit ventilation and treatment room ventilation exhausts also occurs.
 - Take negative pressure readings, velocity pressure, and screen with a photo-ionization detector; and
 - Telemetry also exists on these fans and have been registered with MassDEP.
- Results of the monitoring over the ROS Status Report #2 showed a slight pH exceedance in November.
 - Corrective actions taken and resample was within limits; and
 - No other exceedances detected during the sampling.

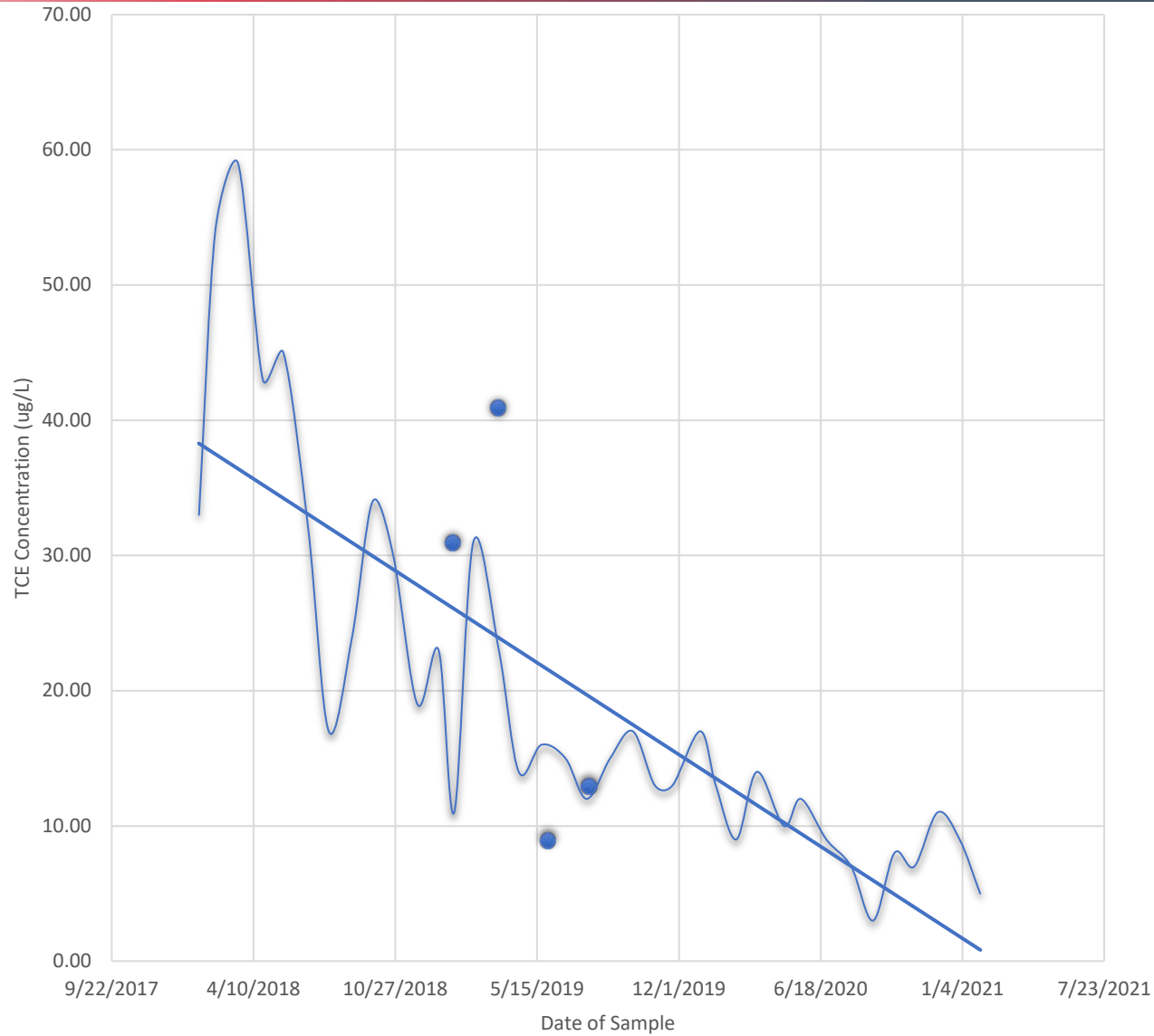
Permanent Sub-Slab Dewatering System Influent Concentration Trend

Influent PCE (ug/L)



Permanent
Sub-Slab
Dewatering
System
Influent
Concentration
Trend

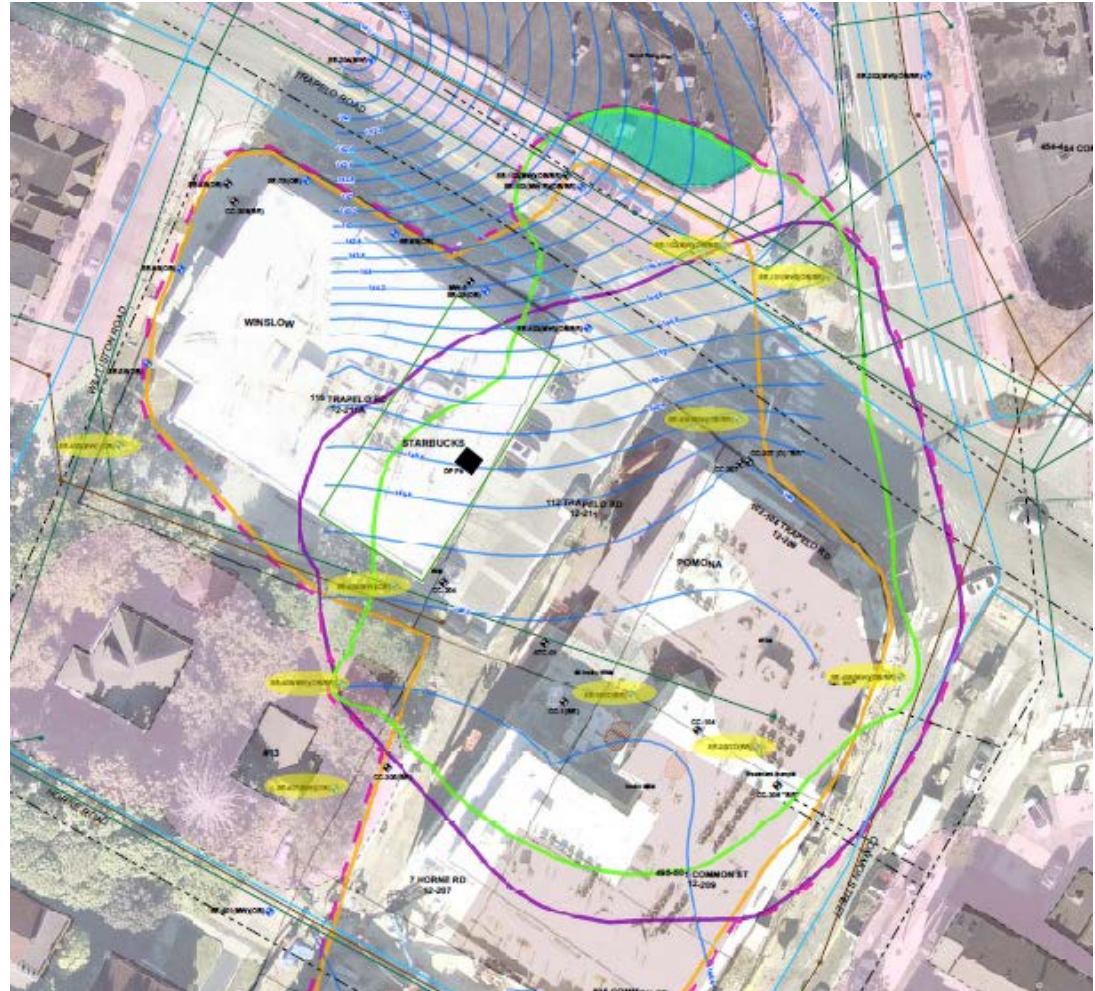
Influent TCE (ug/L)



Groundwater Sampling Results Review

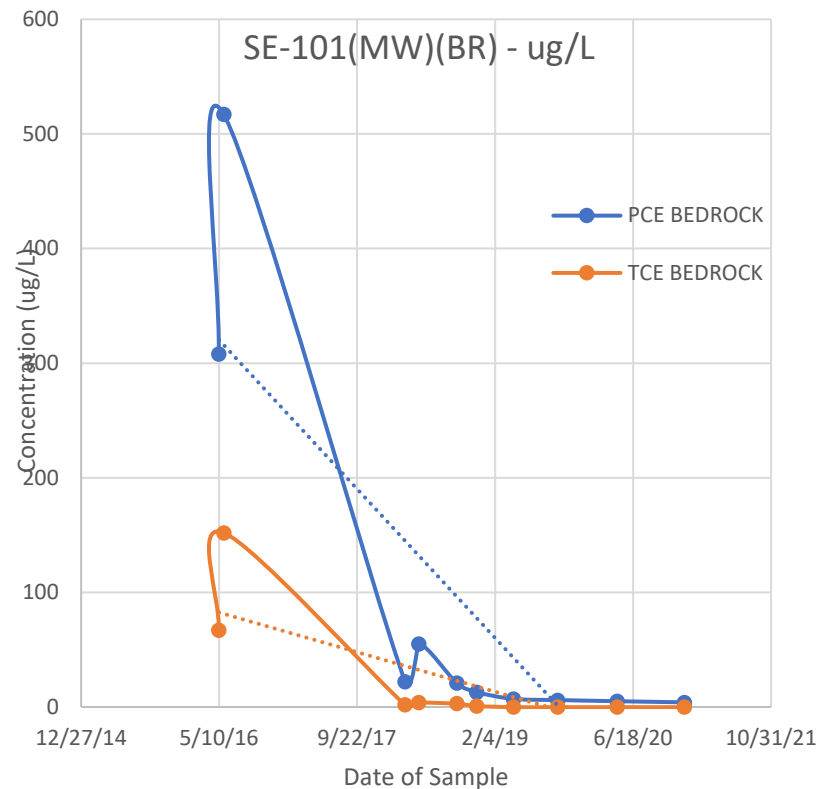
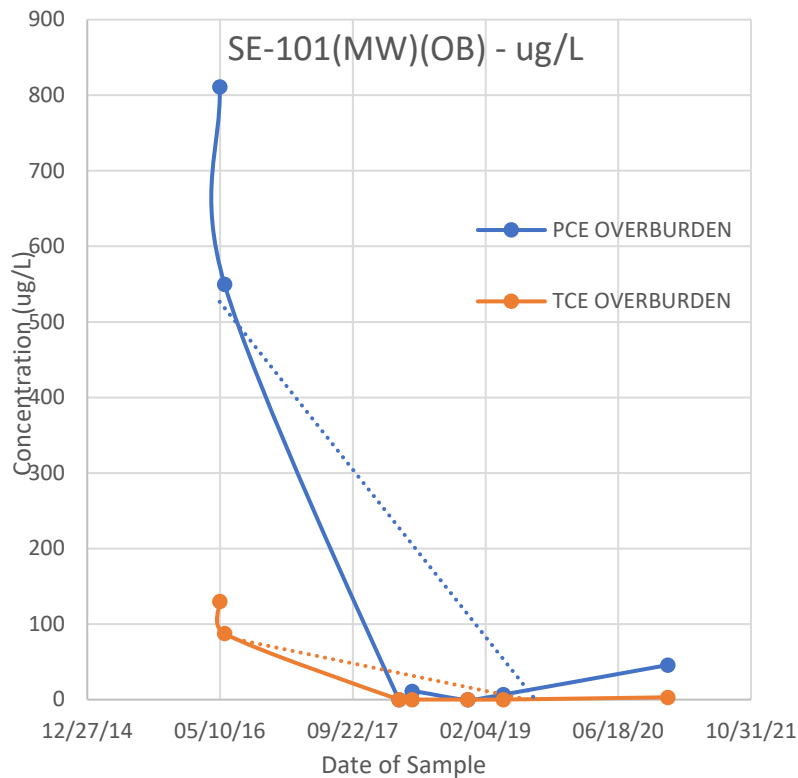
Sampled Monitoring Wells

General Location	Well ID	Sampling Zone
On-Property	SE-1S(MW)(BR)	Bedrock
	SE-1D(MW)(BR)	Bedrock
	SE-2S(MW)(BR)	Bedrock
	SE-2D(MW)(BR)	Bedrock
	SE-402(MW)	Overburden
	SE-409(MW)	Overburden
13 Home Road	SE-407(MW)	Overburden
	SE-408(MW)(OB)	Overburden
	SE-408(MW)(BR)	Bedrock
Common Street	SE-406(MW)(OB)	Overburden
	SE-406(MW)(BR)	Bedrock
Trapelo Road	SE-101(MW)(OB)	Overburden
	SE-101(MW)(BR)	Bedrock
	SE-102(MW)(OB)	Overburden
	SE-102(MW)(BR)	Bedrock
	SE-404(MW)(OB)	Overburden
	SE-404(MW)(BR)	Bedrock

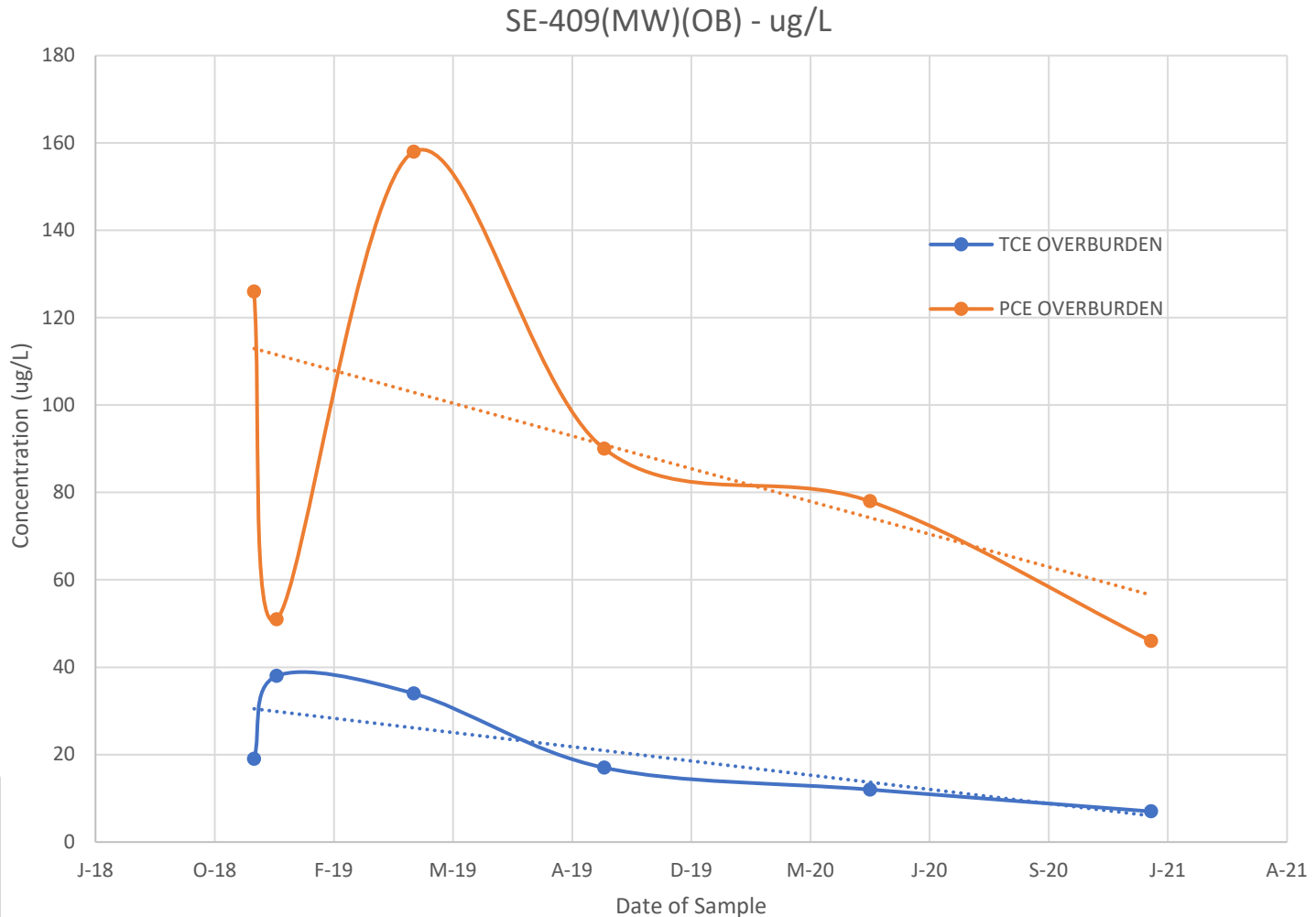


Groundwater Sampling Results Review

➤ Overall results continue to show a stable to decreasing trend



Groundwater Sampling Results Review Continued



Indoor Air Sampling

- Comprehensive round of indoor air sampling conducted in December 2020
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- Areas Sampled:
 - Parking Garage;
 - Winslow (ground, 2nd, and 3rd floors);
 - Pomona (ground, 2nd, 3rd, and 4th floors); and
 - Hyland (ground, 2nd, 3rd, and 4th floors).
 - No COCs detected in the Parking Garage, Winslow, or Hyland.
 - COCs detected in the Pomona above MassDEP Residential Threshold Values (RTVs).



Pomona SRM Reporting

- The detections of COCs in the Pomona triggered a 72-hour Substantial Release Migration (SRM) condition and Critical Exposure Pathway (CEP) which was reported to MassDEP on January 8, 2021.
 - In the Pomona, the following COCs were detected:
 - Tetrachloroethene (PCE) – Max 20.5 ug/m³ (4th Floor North);
 - Trichloroethene (TCE) – Max 2.0 ug/m³ (2nd Floor North); and
 - Cis-1,2-Dichloroethene – Max 1.48 ug/m³ (2nd Floor North).
- Initial evaluation did not show an Imminent Hazard (IH) as TCE <6 ug/m³ and other cumulative risk not exceeding IH risk threshold.

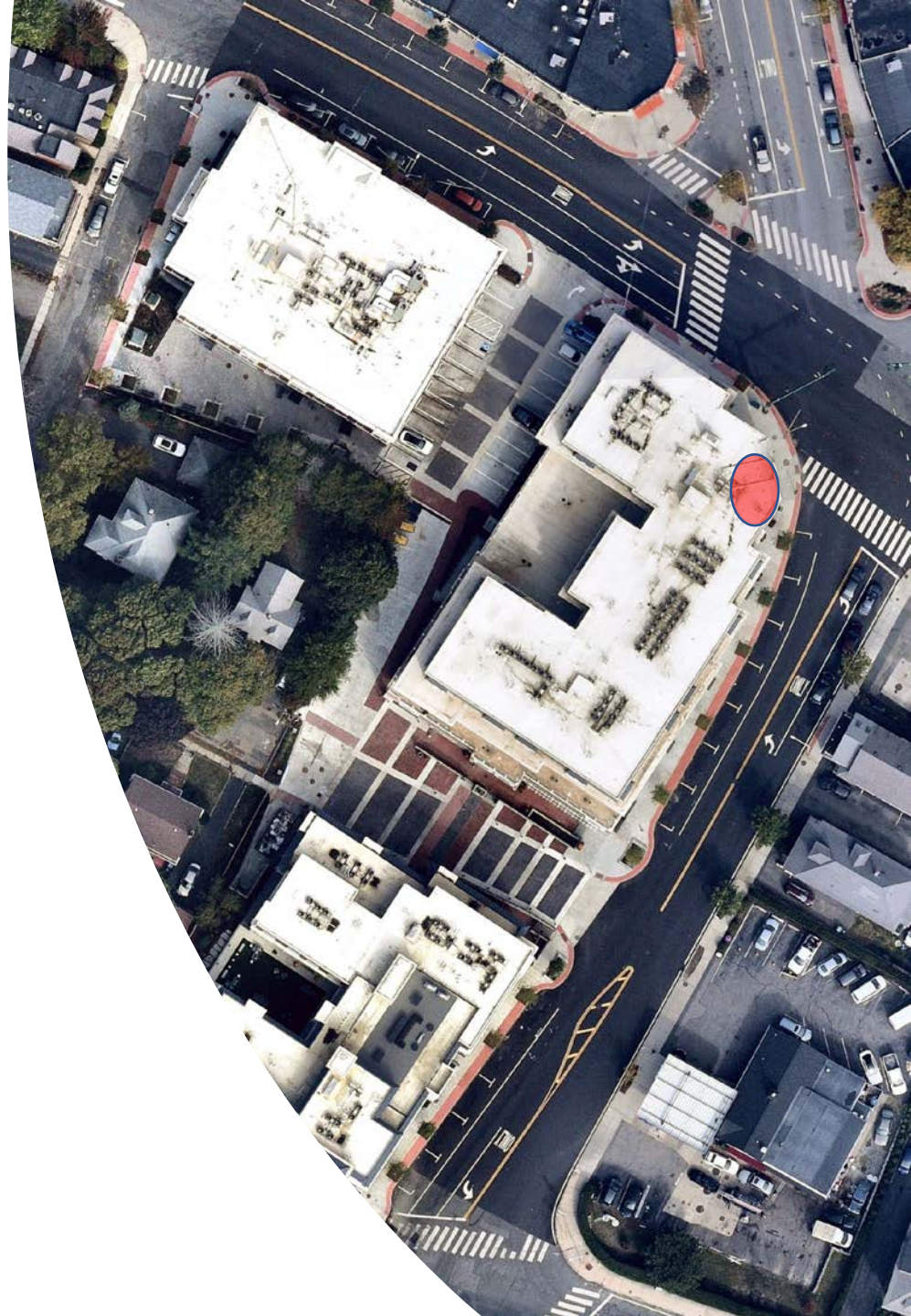
Actions Currently Being Conducted

- Upon finding and reporting the SRM, SAGE began investigating possible sources for the detections.
 - During these assessments, the HAPSITE (Field GS/MS) was used to screen air samples for the presence of PCE/TCE (primary COCs).
- On the evening of January 11, 2021, an IH condition relative to the detection of PCE and TCE was detected upon the fourth floor of the Pomona:
 - TCE at 11.13 ug/m³; and
 - PCE at 151.9 ug/m³.
- This condition was called in under a 2-hour notification. This condition was short-lived and went away the same night and has not been observed since. Occupants of the Pomona have been provided notification along with local officials. Residents have been updated as progress has been made.

Assessment Activities and Conceptual Site Model for Pomona Condition

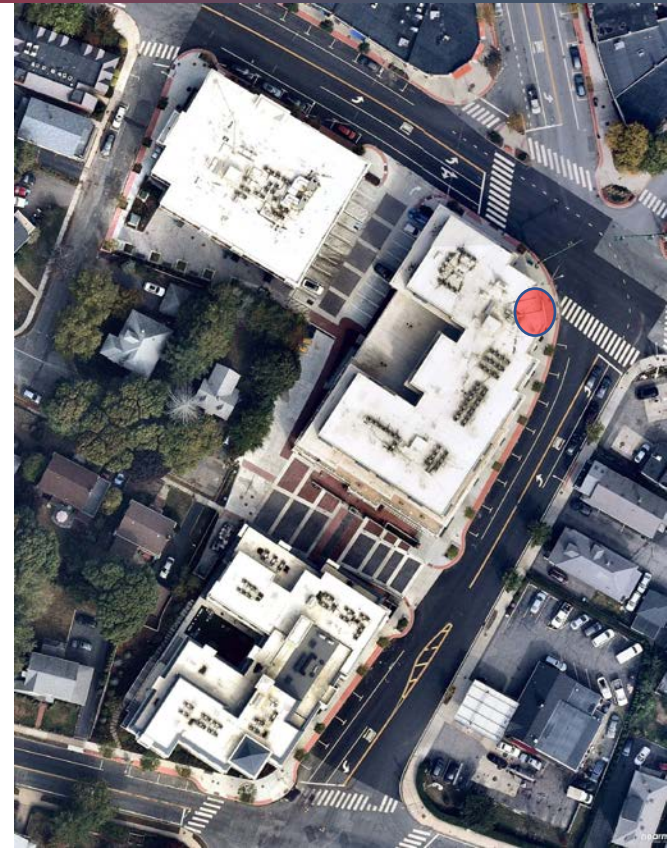
- SAGE has been conducting extensive investigation to identify and rectify the source.
- To date, we have collected over 350 HAPSITE samples and investigated multiple potential sources including:
 - Cleaning products;
 - Ventilation exhaust from the permanent sub-slab dewatering system;
 - Building products; and
 - Equipment.
- Additionally, extensive smoke testing has been performed to evaluate the flow of air throughout the building.
- Results of this testing and air flow evaluation have identified the source of vapors entering the building to be centered to a small mechanical room located within the garage.

Assessment Activities and Conceptual Site Model for Pomona Condition



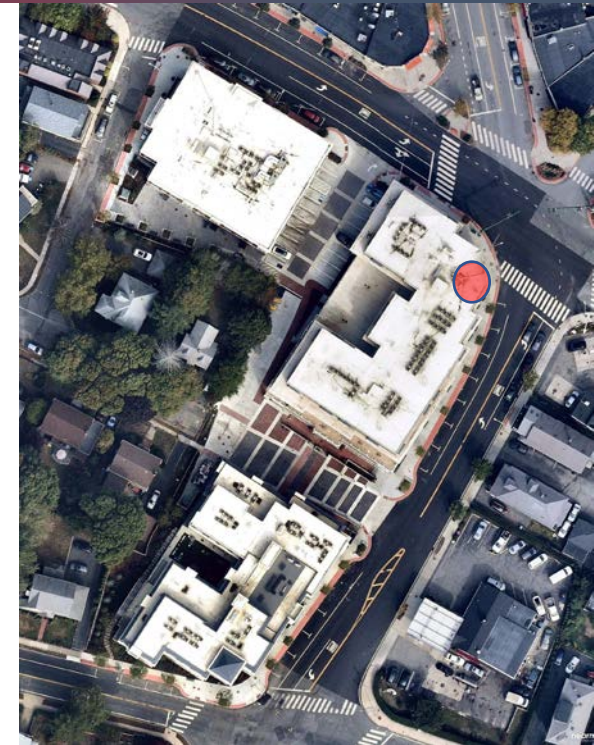
Assessment Results

- Source of VOCs found to be coming from a small room in the garage known as the mechanical room.
 - This was derived after an extensive investigation of possible other sources which lead to the room.
 - The room contains garage heating units and controls for floor drain collection pumping equipment.
 - VOCs found to be entering the room from a number of different sources:
 1. Floor drain;
 2. Electrical conduits from the floor drain collection sumps; and
 3. Floor seam between the foundation floor and wall.



Conceptual Site Model of the Vapor Findings

- Vapors are entering the mechanical room through a number of different paths/conduits which enter the room.
- From there, vapors appear to migrate up through the mechanical room into the plenum space of the lobby above by way of multiple utility penetrations.
- From there vapors are pulled through the plenum into the lobby by way of a dedicated HVAC system.
- Once in the lobby, they enter the upper floors through the elevator shaft and stairwell.
- Over the period of investigation, implementation of corrective actions in the mechanical room have had direct and immediate effect on indoor air levels.



Corrective Actions Taken to Date



- During the assessment activities, a broken drain line was found along with electrical and vent penetrations in basins not sealed:
 - Basin turned off, camera inspection performed to identify break and plans to repair it are underway; and
 - Additionally, sealing of all basin penetrations is to take place.
- Electrical conduits from the mechanical room to basins have been sealed and the floor drain in the room also filled with hydraulic cement.
- Ceiling penetrations in the mechanical room to the lobby have been sealed.
- The permanent dewatering system exhaust has been turned off and carbon added.
- Carbon-equipped Air Purification Units have been deployed in the mechanical room and lobby.

Current Status

- Following the implementation of corrective actions, TCE and PCE have not been detected in the lobby or upper residential levels of the Pomona (for approximately the last 2-3 weeks).
- Additionally, TCE nor PCE have been detected outside the mechanical room in the garage.
- PCE remains in the mechanical room around 2 ug/m³.
- Additional corrective actions underway include:
 - Permanent sealing of floor joints in and around the mechanical room; and
 - Repair of floor drain basins and drain line along with sealing of all penetrations.
- Once all actions have been made, suspension of air purifications units will take place and a round of indoor air sampling will take place using laboratory-provided Summa Canisters.

Summary & Conclusions

- Monitoring of groundwater and influent concentrations of contaminants has shown a steady decreasing trend.
- Sampling of indoor air on multiple occasions within the parking garage, Winslow, and Hyland have not detected COCs.
- During indoor air sampling of the Pomona in late December, COCs including PCE, TCE and cis-1,2-DCE were detected.
- Notification of these findings were reported to MassDEP under a 72-hour condition and assessment activities conducted after that notification showed a brief IH condition on January 11, 2021, which has not been seen since.

Summary & Conclusions Continued



- During its extensive investigation, SAGE was able to determine the source of vapors entering the Pomona to be centered from a small room (“Mechanical Room”) in the parking garage. Sources include:
 - Electrical conditions and floor drain from floor drain basins; and
 - Floor seam along the foundation wall
- Vapor migration from mechanical room through ceiling to upper floors (CSM).
- Corrective actions are underway and those taken to date have provided stability to indoor air. Neither PCE or TCE has been detected within the Lobby or upper residential floors for nearly 2-3 weeks.
- Once all actions have been made, suspension of air purifications units will take place and a round of indoor air sampling will take place using laboratory-provided Summa Canisters.

Next Submission

- SAGE is preparing the Immediate Response Action Plan and official Release Notification Form – Due March 9, 2021.
- Once submitted, SAGE will hold another Public Meeting to review the IRA Plan along with a 20-day comment period.