NEW YORK STATE | Department of Environmental Conservation

Poestenkill PFAS Investigation

NEARBY PROPERTY INVESTIGATIONS WORK PLAN

(SPILL NO. 2105197)

POESTENKILL, NY

MAY 2022

Kathy Hochul, Governor | Basil Seggos, Commissioner

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Acronyms and Abbreviations

AMS	Algonquin Middle School
ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
CAMP	Community Air Monitoring Plan
DEC/NYSDEC	New York State Department of Environmental Conservation
DER	Division of Environmental Remediation
DO	Dissolved Oxygen
DOH	Department of Health
DUSR	Data Usability Summary reports
EPA	Environmental Protection Agency
GPR	Ground Penetrating Radar
MCL	Maximum Contaminant Level
NTU	Nephelometric Turbidity Units
NYCRR	New York Codes, Rules and Regulations
NYSDOH	New York State Department of Health
ORP	Oxidation-Reduction Potential
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesuflonic Acid
PID	Photo-Ionization Detector
POET	Point of Entry Treatment System
ppt	Parts Per Trillion
PVC	Polyvinyl Chloride
SPLP	Synthetic Precipitation Leaching Procedure
TOC	Total Organic Carbon
QA	Quality Assurance
QC	Quality Control
WMNY	Waste Management of New York

1.0 BACKGROUND AND PROJECT OBJECTIVES

1.1 PREVIOUS AND ONGOING INVESTIGATIONS

In accordance with public water supply regulations enacted in August 2020, water supply wells at the Algonquin Middle School (AMS) in Rensselaer County were sampled for Perfluorooctanoic Acid (PFOA), Perfluorooctanesuflonic Acid (PFOS), and 1,4-dioxane. The Averill Park School District conducted the sampling on January 7, 2021. Results showed 13 parts per trillion (ppt) for PFOA in both wells. These levels exceeded the maximum contaminant level (MCL) for PFOA of 10 ppt, prompting County and State Department of Health (DOH) and the Department of Environmental Conservation (DEC) to assess other water supplies in the area, including private drinking water wells.

Results of supply well and private well sampling in the area have indicated low levels of PFAS detections, and exceedances of public water supply MCLs in 14 of 95 wells sampled as of the date of this work plan. New York State does not regulate PFAS in private wells, however the State's drinking water standards for PFOA and PFOS in public water supplies are used as guidelines to recommend actions to reduce exposures in private wells. Point of Entry Treatment Systems (POETs) have been installed at locations of MCL exceedances. POETs are maintained and monitored by DEC and data is continually evaluated by State and County DOH. Private well sampling efforts are ongoing in the area.

In August 2021, DEC designated the apparent release at the AMS as Spill No. 2105197 and subsequently completed a preliminary investigation at the Middle School in the fall of 2021 where contamination was initially identified. This workplan is an extension of the ongoing assessment being performed by DEC in conjunction with DOH and Rensselaer County DOH.

Field work for the preliminary investigation at the AMS was completed from November-December 2021, with a Final Report released in February 2022. The investigation identified PFOA and PFOS at relatively low concentrations in sampled media and did not indicate an obvious source on the school property or from an off-site source. The report concluded that additional data is needed both on and off the school property to determine the origin of PFAS concentrations in the Poestenkill area.

A work plan for investigation activities focused on the school property was released in April 2022. DEC is working to install several permanent overburden wells and bedrock wells on the school property to evaluate groundwater quality and flow direction. The work plan includes specific techniques (open borehole geophysics and packer testing

activities) to assess bedrock quality, composition, and to evaluate the interaction between overburden and bedrock groundwater. The work plan also outlines collection of additional surface water and sediment samples to improve the understanding of PFAS fate and transport in the vicinity of the school.

The Poestenkill investigations are aimed at determining if a discrete source of PFAS is present in the area, or if the PFAS are derived from a non-discrete, potentially anthropogenic source.

1.2 PROJECT OBJECTIVES

The primary objectives of this work plan are to:

1. Identify potential areas of concern on properties nearby and adjacent to the Middle School in order to focus sampling efforts;
2. Collect soil samples at multiple depths and analyze for PFAS;
3. Install and develop permanent monitoring wells and collect groundwater samples for PFAS analysis;
4. Utilize permanent monitoring wells to evaluate groundwater flow direction in the overburden;
5. If surface water is present, collect surface water and sediment samples for PFAS analysis;
6. Determine if PFAS are present at nearby properties at source levels; and
7. In tandem with bedrock well installations outlined in the April 2022 Work Plan, install additional bedrock wells on nearby properties, or in right of way locations in the vicinity of Mohawk Drive, Weatherwax Road/Liberty Lane, and Ford Road.
    a. Bedrock wells will be sampled to assess PFAS levels in bedrock groundwater;
    b. Groundwater depths will be evaluated over time to assess aquifer recharge, and hydraulic connectivity

1.3 PROJECT AREA

The Algonquin Middle School property is located in the Town of Poestenkill at the intersection of NYS Route 351 and NYS Route 66. The school property is bounded by

NYS Route 66 to the north, NYS Route 351 to the east, and by a tributary of Newfoundland Creek to the south and west.

The properties surrounding the Middle School are primarily residential with a few commercial/industrial operations. Residential properties and one industrial property are located directly north. The industrial property contains a control valve manufacturer known as Hass Manufacturing. The Poestenkill Transfer Station is located directly northeast of the Middle School on the corner of New York State Route 66 and New York State Route 351. The historic Route 66 Speedway is also located on the same parcel occupied by the Transfer Station. Additional residential properties are located directly east of the Middle School, including one parcel that reportedly operated as a car wash in the past. The Valente Lumber yard/sawmill is also located east of the school property and Ford Road. The remaining adjacent properties to east and south of the school property are all residential or vacant wooded properties. The Cooper's Tire disposal area is also located approximately ¼ mile south of the school property.

As outlined in the May 2022 Community Update; DEC requested Waste Management of New York (WMNY), the operator of the Poestenkill Transfer Station, to collect and analyze samples for PFAS from the underground leachate collection vault, the small pond, two former drinking water supply wells, and from any existing groundwater monitoring wells (if present). WMNY agreed to this request and those samples were collected and are now being analyzed. DEC also requested that WMNY provide documentation of leachate discharged to the Schenectady wastewater treatment plant over the past five years and results of any tests for leaks related to the leachate collection system. WMNY agreed and completed the sampling tasks. Once a final report is received, DEC will review and determine if additional sampling is warranted. If it is warranted, the sampling methodology will be performed as outlined in this workplan.

DEC is currently focused on collecting samples as outlined in this work plan on or near the Hass Manufacturing property, the Historic Car Wash location, the Coopers Tire Disposal area, and the Valente Lumber property. Additionally, DEC will be installing two additional bedrock wells sets (up to two at each location) in the vicinity of Mohawk Drive and Weatherwax Road/Liberty Lane.

Topographic and aerial maps outlining the approximate area of the proposed nearby property investigations and additional bedrock well locations are provided on **Figures 1 and 2** respectively.

2.0 INVESTIGATION

All field activities will be completed by NYSDEC's standby contractors in general conformance with Department policies, programs, and procedures, as applicable, including, but not limited to the following: 6 NYCRR Part 375, DER-10, NYSDEC's *Sampling, Analysis, and Assessment of PFAS* guidance document, and US EPA Design and Installation of Monitoring Wells Guidance and ASTM D5092.

All environmental samples will be submitted to NYSDEC's standby laboratory for PFAS analysis by modified EPA Method 537.1. A select set of soil samples will also be analyzed for pH by EPA Method 9045, total organic carbon (TOC) by Lloyd Kahn, and PFAS in leachate generated from the Synthetic Precipitation Leaching Procedure (SPLP) by EPA Method 1312.

Standard chain-of-custody procedures will be followed for all samples collected. Quality assurance/quality control (QA/QC) samples will be collected at the following frequencies: equipment blanks will be collected for PFAS analysis at a minimum frequency of 1 sample per day per media sampled; and field duplicates, matrix spike, and matrix spike duplicates will be collected at a frequency of 1 per 20 field samples. **Table 1** presents the sampling and analytical plan.

The sampling at the individual properties may occur concurrently on a single mobilization over several days or may be implemented in separate mobilizations. Scheduling will be dependent on both site access and driller availability.

2.1 SURVEYS

2.1.1 UTLIITY SURVEY

Prior to the commencement of ground-intrusive activities, a ground-penetrating radar (GPR)/electromagnetic (EM) survey will be conducted. Dig Safely New York will also be contacted to pre-clear all soil boring and monitoring well locations of subsurface utilities and anomalies.

2.1.2 LAND SURVEY

At the conclusion of field activities, a New York State licensed land surveyor will complete a survey of all sample locations including coordinates, ground surface elevations, and monitoring well casing elevations (as applicable).

2.2 COMMUNITY AIR MONITORING PLAN

In accordance with the NYS Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP), air monitoring for fugitive dust and organic vapors will be conducted during all ground intrusive activities. Two CAMP stations will be utilized: one upwind and one downwind of the work zone.

2.3 OVERBURDEN INVESTIGATION

2.3.1 SOIL BORING SAMPLING AND MONITORING WELL LOCATIONS

Up to 5 soil borings and 5 permanent overburden monitoring wells will be installed on each of the targeted properties via direct-push technology and hollow-stem auger drilling methods, respectively. Each location will be hand-cleared to a depth of 5-feet below ground surface (bgs). Soil cores will be continuously collected, characterized, and screened with a handheld photo-ionization detector (PID) until terminal depth is reached. Terminal depth is defined as refusal due to bedrock or at least 10-feet into the upper groundwater bearing unit, unless otherwise specified by field personnel. Soil samples will be collected at 3 locations from each soil boring and analyzed for PFAS: 0”-2” below vegetative cover, 2”-12”, and a sample from approximately 1 foot above the groundwater table. Soil samples collected from the 2”-12” interval will also be analyzed for pH, TOC, and SPLP. Additional samples may be collected if evidence of contamination is identified (i.e. elevated PID readings, odors, staining, etc). Sample locations on each property will be determined following site reconnaissance visits. Sample locations will be focused in any identified areas of concern and will be distributed across the site to allow for groundwater flow direction to be calculated.

2.3.2 MONITORING WELL CONSTRUCTION

Overburden monitoring wells are anticipated to be constructed of 2-inch Schedule 40 Polyvinyl Chloride (PVC) casings with 5-10 feet sections of 0.010-inch slotted screen. A #00 morie sand filter pack will be placed in the annulus to approximately 1 foot above the screen, followed by 2 feet of hydrated bentonite, and then grouted to the surface. Final screen length and slot-size will be dependent on field observations and depth of water encountered. Each monitoring well will be completed as a flush-mounted well with a concrete pad. Monitoring wells will be constructed in general accordance with US EPA Design and Installation of Monitoring Wells Guidance and American Society for Testing and Materials (ASTM) D5092, as applicable.

2.3.3 MONITORING WELL DEVELOPMENT

No earlier than 24 hours after installation, each monitoring well will be developed using over-pumping and surging techniques to help remove fines from the well screen and to establish a hydraulic connection with the aquifer. Groundwater quality parameters will be collected prior to development, after the removal of each well volume, and at the conclusion of development. Development will be considered complete once turbidity is measured at or below 50 nephelometric turbidity units (NTU), after 1 hour of development, or after the removal of three well volumes, whichever comes first.

2.3.4 GROUNDWATER SAMPLING

At least one round of synoptic water levels will be collected from the newly installed monitoring wells. Groundwater samples will be collected using either low-flow or standard three volume purge sampling techniques in accordance with the most current NYSDEC PFAS sampling guidelines. Groundwater parameters including pH, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), temperature, and turbidity will be recorded on groundwater sampling logs. All samples will be analyzed for PFAS using modified EPA Method 537.1.

2.4 BEDROCK CHARACTERIZATION

In addition to the bedrock well installations outlined in the April 2022 Work Plan, two additional 6-inch bedrock boreholes will be advanced using air rotary drilling methods to depths necessary to encounter transmissive fractures identified in the preliminary boreholes. Standard borehole geophysics will be used to characterize the bedrock including: mechanical caliper, fluid conductivity/temperature, optical televiewer, acoustic televiewer, electrical logs, and heat pulse flow meter. Packer testing may be applied at up to four transmissive zones, as identified through the borehole geophysics, to determine water quality and permeability of the selected zone. Discrete samples will be collected at transmissive fractures and will be analyzed for PFAS using modified EPA Method 537.1

Based on the results of the borehole geophysics and sampling data, the existing boreholes will be converted to bedrock monitoring wells using 2-inch Schedule 40 PVC casings and PVC screens. Appropriate slot size will be dependent on rock type and screen length will be dependent on packer testing results and interpretation of borehole geophysics. Monitoring wells will be constructed in general accordance with US EPA Design and Installation of Monitoring Wells Guidance and ASTM D5092, as applicable.

Following monitoring well installations, development, and sampling, submersible pressure transducers will be deployed in the installed bedrock wells. The transducers will be deployed for approximately one month and will continually gather groundwater depth data at predetermined time increments. Concurrent to these measurements, DEC will gather precipitation data in the area during rain events. The data can then be correlated to assess hydraulic connectivity between overburden and bedrock groundwater. Additionally, transducer data will be used to determine if cycling of residential well pumps control local groundwater depths, helping to inform the degree of hydraulic connectivity in the aquifer(s).

Proposed locations of all bedrock wells are shown on **Figure 2.** Sample locations are not precisely marked and will be adjusted based on identified areas of interest, field conditions, and access limitations.

Additional bedrock wells may be installed on commercial properties, under the same methodology descried herein, if environmental data collected in overburden soil or groundwater indicates potential sources of PFAS contamination.

Monitoring wells will be developed and sampled in accordance with **Sections 2.3.3 and 2.3.4**, as applicable.

2.5 SURFACE WATER AND SEDIMENT SAMPLING

Where surface water is present, up to 5 co-located surface water and sediment samples will be collected at each targeted property. Locations will be chosen based on presumed surface water gradient and proximity to identified areas of concern. Surface water samples will be collected prior to sediment samples at each location to avoid mobilizing sediment which may impact surface water results. Samples will be collected using stainless-steel dip cups, trowels, or other acceptable materials identified in NYSDEC's PFAS sampling guidance.

2.6 INVESTIGATION DERIVED WASTE & DECONTAMINATION

Soil cuttings, decontamination water, well development water, and purged water will be managed in accordance with DER-10 Section 3.3(e), as applicable. Any disposable personal protective equipment and sampling equipment will be placed in sealed garbage bags and disposed of as municipal solid waste.

Decontamination of any non-dedicated equipment (e.g., water level meters, drill rods, etc) will be performed using a standard non-phosphate detergent (e.g., Alconox®) wash

and potable water rinse between all sample locations. Equipment will be allowed to air dry before reuse.

3.0 REPORT

Category B laboratory reports and NYS electronic data deliverables will be submitted to an independent third-party data validator for validation and the completion of data usability summary reports (DUSRs). Upon receipt of the DUSRs, a final assessment report will be generated, summarizing field activities, local geology, groundwater flow evaluation, and PFAS results. Figures, tables, field logs, and DUSRs will be included as part of the report.

4.0 References

ASTM standard D5092, Design and Installation of Ground Water Monitoring Wells.

NYSDEC. 2021. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS).
https://www.dec.ny.gov/docs/remediation_hudson_pdf/pfassampanaly.pdf

NYSDEC. 2006. 6 NYCRR Part 375, Environmental Remediation Programs, Subparts 375-1 to 375-4 & 375-6.
https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375.pdf

USEPA. 2018. Design and Installation of Monitoring Wells.
https://www.epa.gov/sites/default/files/2016-01/documents/design_and_installation_of_monitoring_wells.pdf

FIGURES

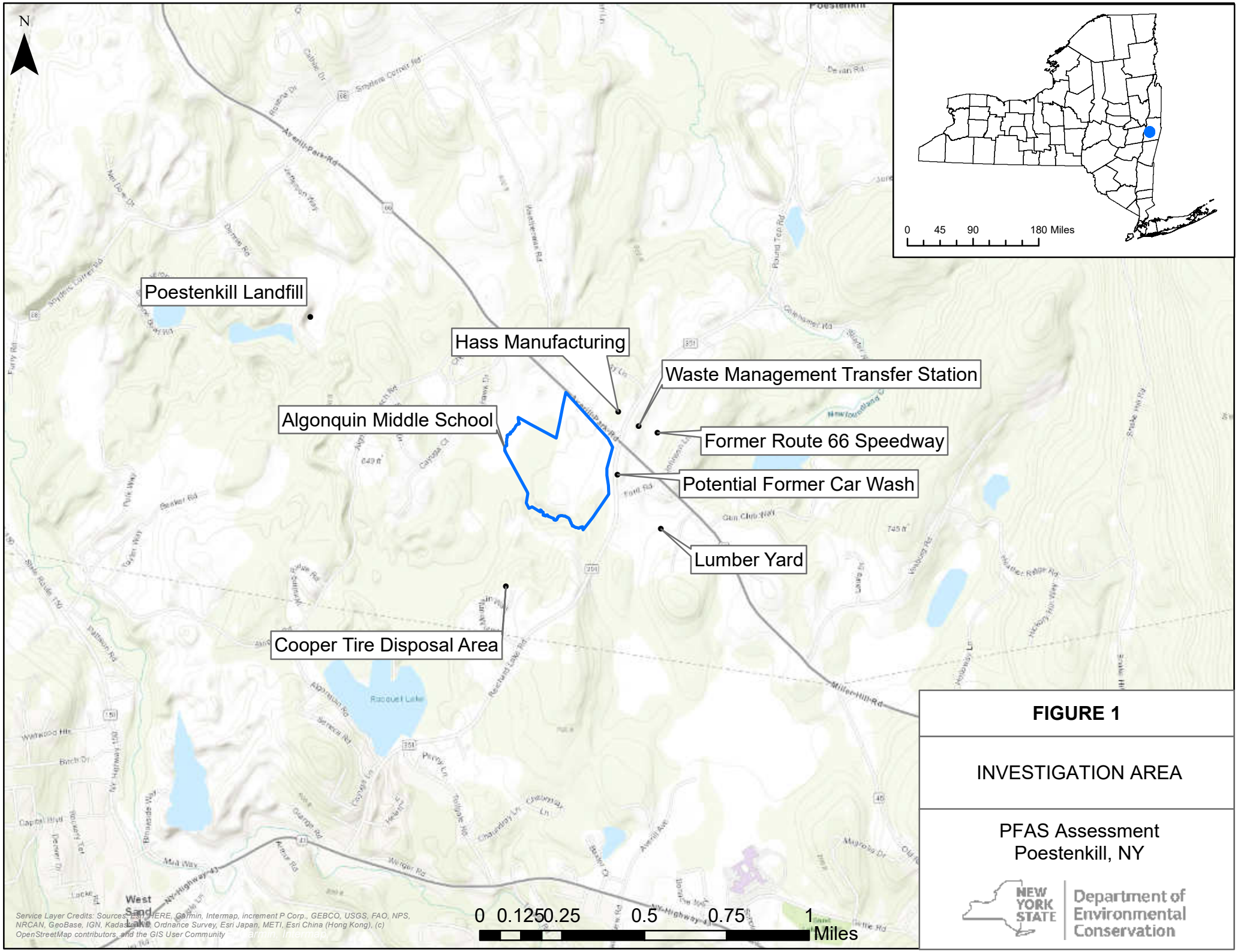

FIGURE 1

INVESTIGATION AREA

PFAS Assessment
Poestenkill, NY

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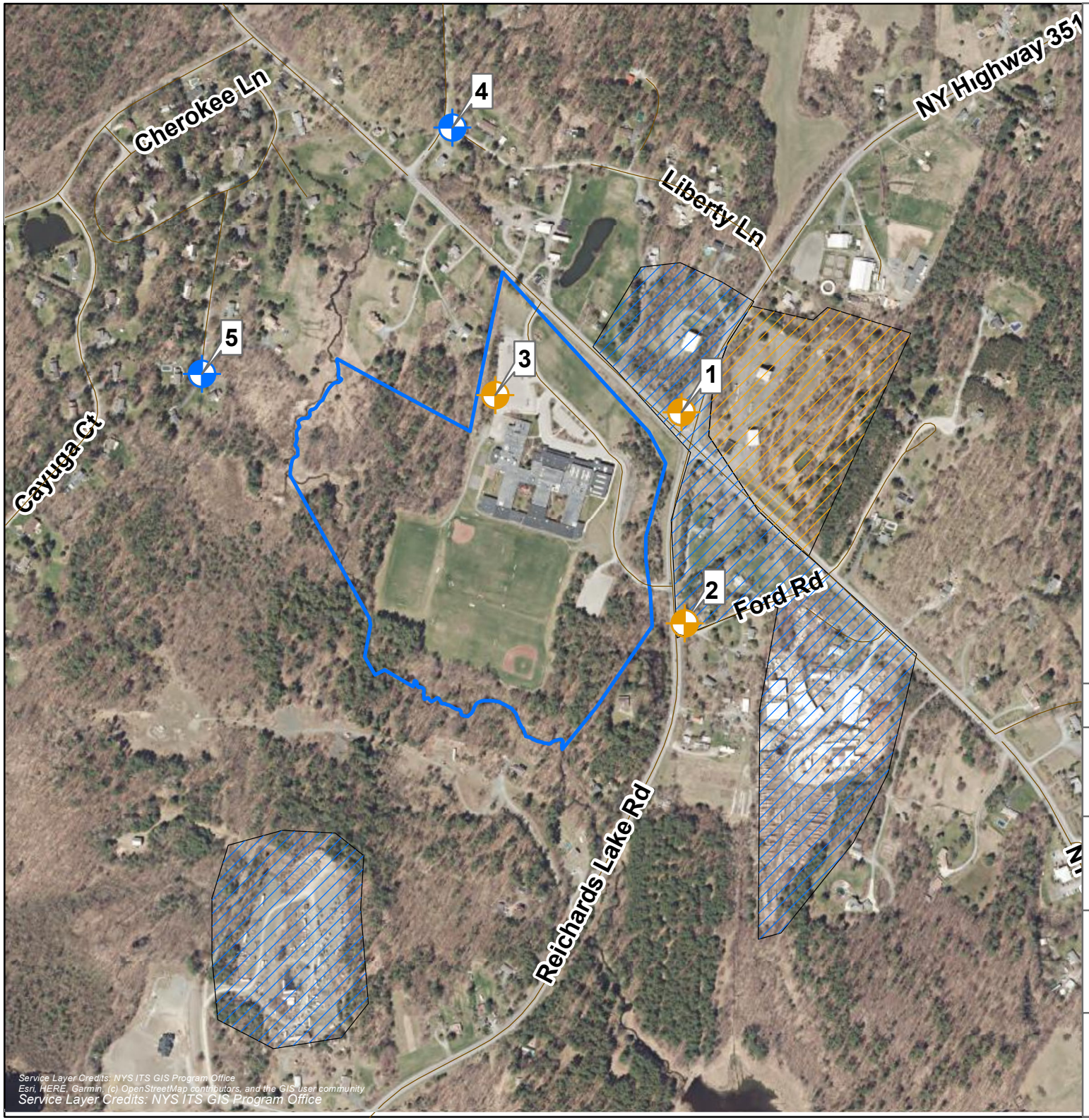

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Legend

Algonquin Middle School

Proposed Locations

April 2022 Proposed Bedrock Wells

May 2022 Proposed Bedrock Wells

Area

Sampling Ongoing

Proposed Sampling

0 300 600 1,200 Feet

Notes:

1. *Proposed monitoring well locations will be adjusted or added pending access and/or field conditions.*

2. *Sample areas are approximate.*

FIGURE 2

Proposed Sampling Areas

Rensselaer County
Town of Poestenkill

Poestenkill
PFAS Assessment
#2105197

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TABLES

Table 1
Sample Analysis and QA/QC Summary
Nearby Property Assessment

Sample Type	Analyses	Method	Number of Samples	Field Duplicate	Matrix Spike	Matrix Spike Duplicate	Equipment Bank	Estimated Total Number of Samples
Soil	PFAS	Modified Method 537.1 or 1633	15	2	2	2	3	24
	pH	EPA Method 9045	6	1			-	7
	TOC	Lloyd Kahn	6	1			-	7
	SPLP	EPA Method 1312	6	1			-	7
Groundwater	PFAS	Modified Method 537.1 or 1633	5	1	1	1	1	9
Surface Water	PFAS	Modified Method 537.1 or 1633	5	1	1	1	1	9
Sediment	PFAS	Modified Method 537.1 or 1633	5	1	1	1	1	9

Notes:
- SPLP = Synthetic Preciptiation Leaching Procedure
- Leachate from the SPLP Analysis will be subsequently analyzed for PFAS
- TOC = Total Organic Carbon
- Estimated number of samples are calculated for each individual property and may change based on field conditions