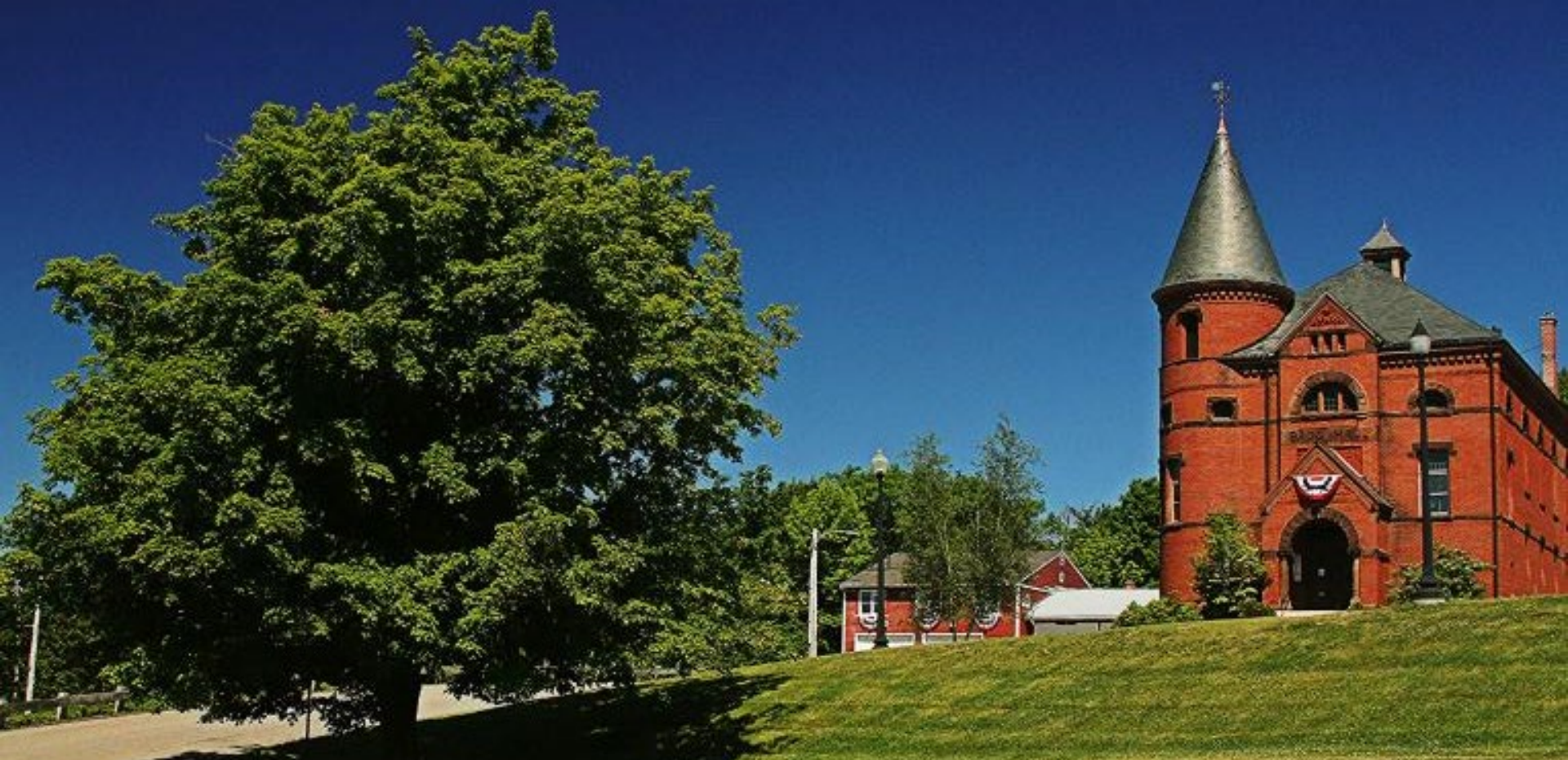




PRINCETON PFAS UPDATE – WINTER 2024

Jeffrey Arps, LSP

CURRENT PROJECT STATUS

- Phase II Report submitted in November 2023
 - Extent of impacts in all media: Soil, Groundwater and Surface Water
 - Risk Assessment
- Phase III/IV – report due November 2024
- IRA – regular monitoring of wells and POETs
- Runoff Treatment below 30 Mtn. Rd. – in operation

PHASE II COMPREHENSIVE SITE ASSESSMENT

- Soil Sampling – Summer 2023 soil sampling completed at 18, 19, 21 and 22 Mountain Road
- EPA sampling conducted at 30 Mountain Road
 - No direct exposure risk from detected levels in soil
 - EPA determined they will not conduct soil removal
 - Only one sample above the “direct contact” standard and EPA Removal Management Level (RML)
 - Sample EPA SS-07 had 490 ppb PFOS
 - Remainder of results consistent with our prior results

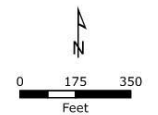
PHASE II COMPREHENSIVE SITE ASSESSMENT

- Surface water sampling - completed at four locations in downgradient streams in July 2023
 - PFAS6 ranged from 5 to 66 ppt (SW-1)
 - SW-4 most downstream sample collected, PFAS6 = 26 ppt
 - Confirmed that between SW-4 and Wachusett Reservoir there is significant distance (>5.5 miles) and numerous downstream wetlands, ponds and streams adding flow
- Surface water sampling will be performed annually (July) to monitor surface water concentrations over time
- Planning to add one additional point (SW-5) along Hubbardston Road upstream of SW-1 and Schoolhouse Pond

SURFACE WATER SAMPLING MAP

**FIGURE 5
PRIORITY RESOURCE
SURFACE WATER SAMPLES**

- LEGEND**
- ✦ Surface Water Sample
 - 🌿 NHESP Potential Vernal Pools
 - Non-Community Transient Public Water Supply
 - Hydrologic Connections
 - Stream/Intermittent Stream
 - ▭ Major Drainage Basin
 - ▭ Sub Drainage Basin
 - ▭ Water Bodies
 - ▭ MassDEP Open Water
 - ▭ MassDEP Inland Wetlands
 - ▭ County Boundary
 - ▭ Town Boundary

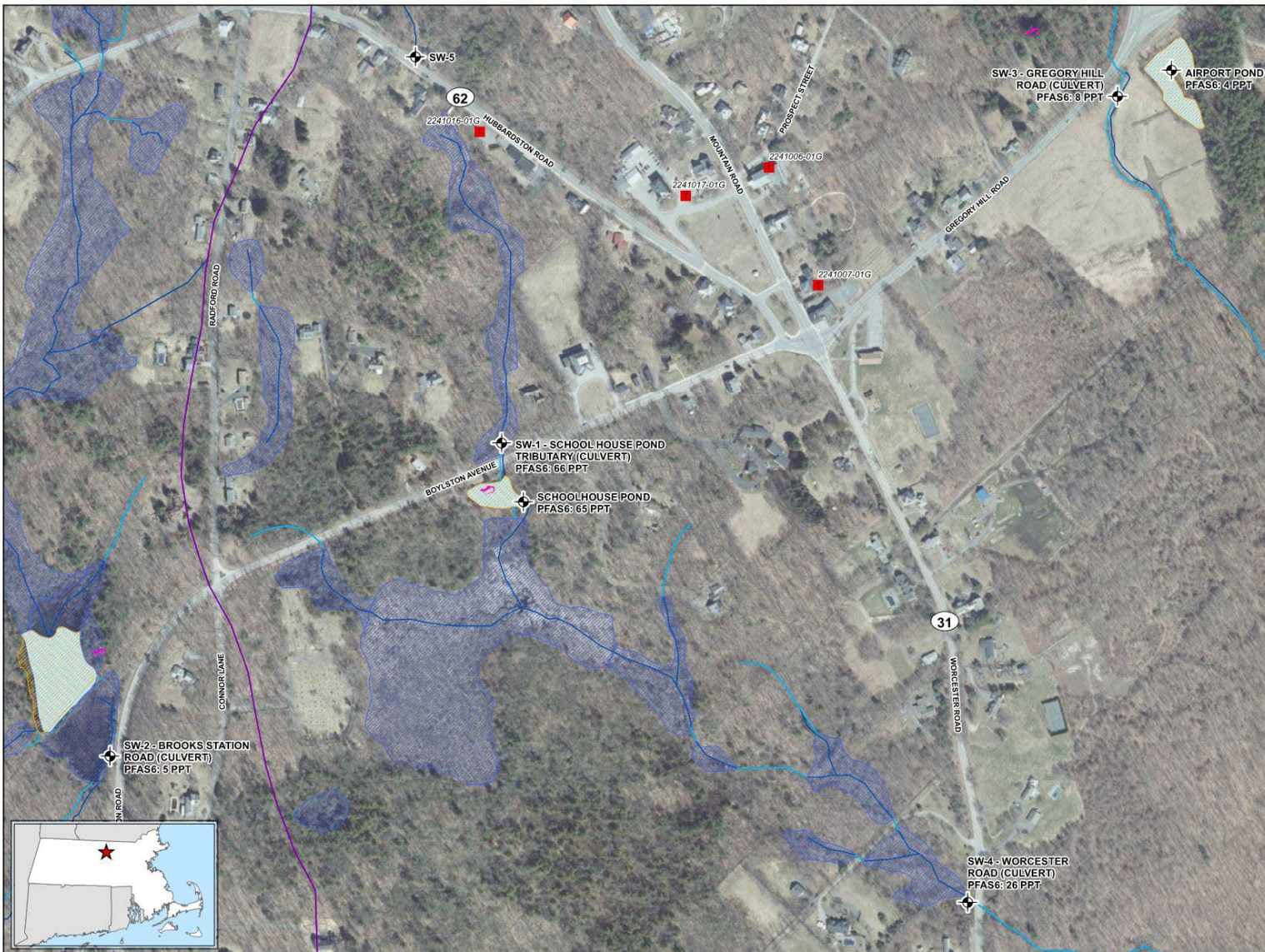


1. Data source: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Mass(T) Executive Office of Environmental Affairs. Data valid as of January 2024.
2. Based on MassGIS Color Orthophotography (2021)

**RTN 2-21072
Princeton, Massachusetts**

January 2024

Tighe&Bond



PHASE II COMPREHENSIVE SITE ASSESSMENT

Results of most recent drinking water well sampling

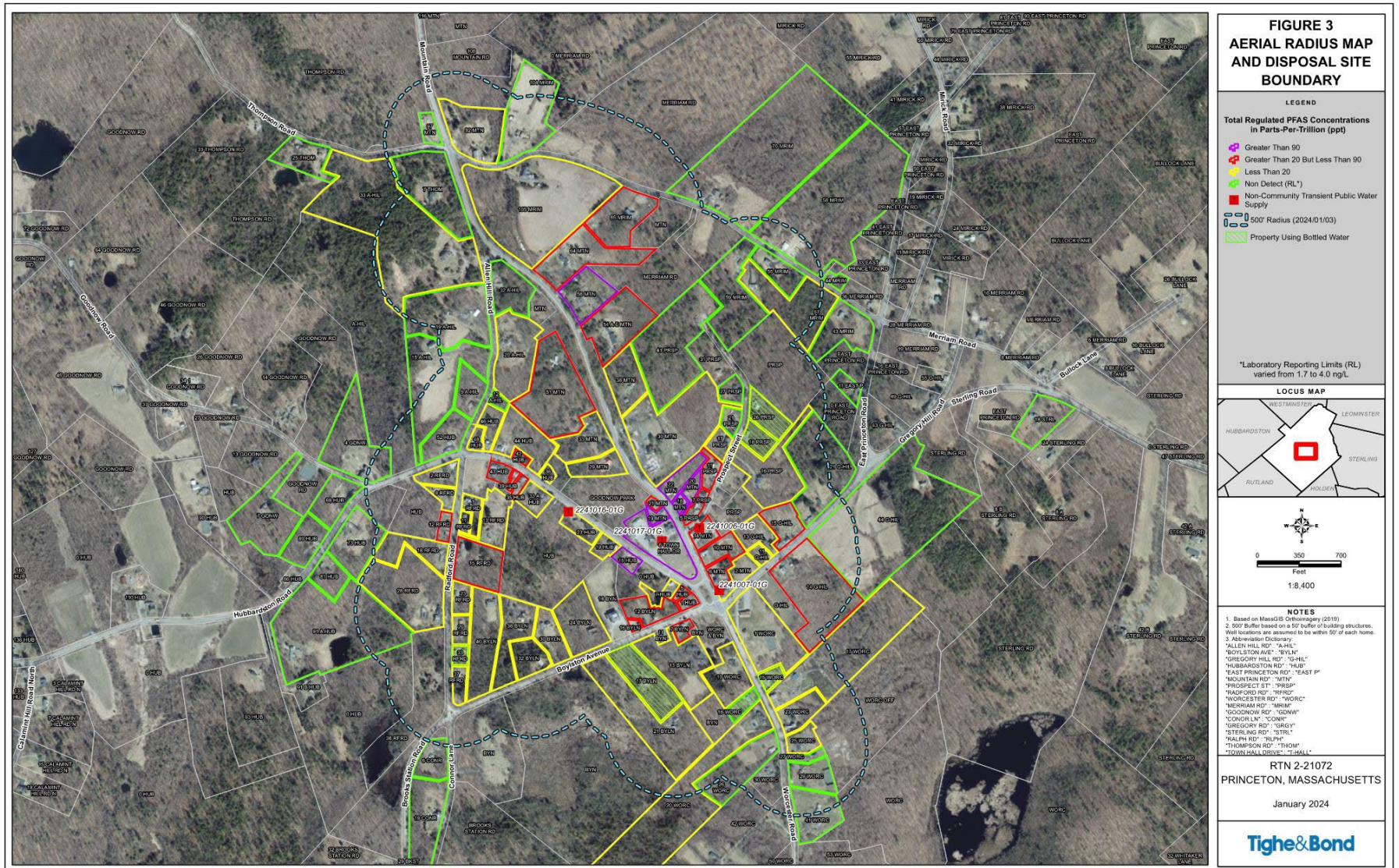
Two new locations inside existing radii with PFAS detections -16 Prospect Street and 13 Radford Road

- These do not expand radii to new properties (i.e., outer radii perimeter did not change with this round)
- No additional POET carbon breakthroughs detected
- 36 Merriam Road remains to be sampled (last of the locations downgradient of 57 Merriam Road)

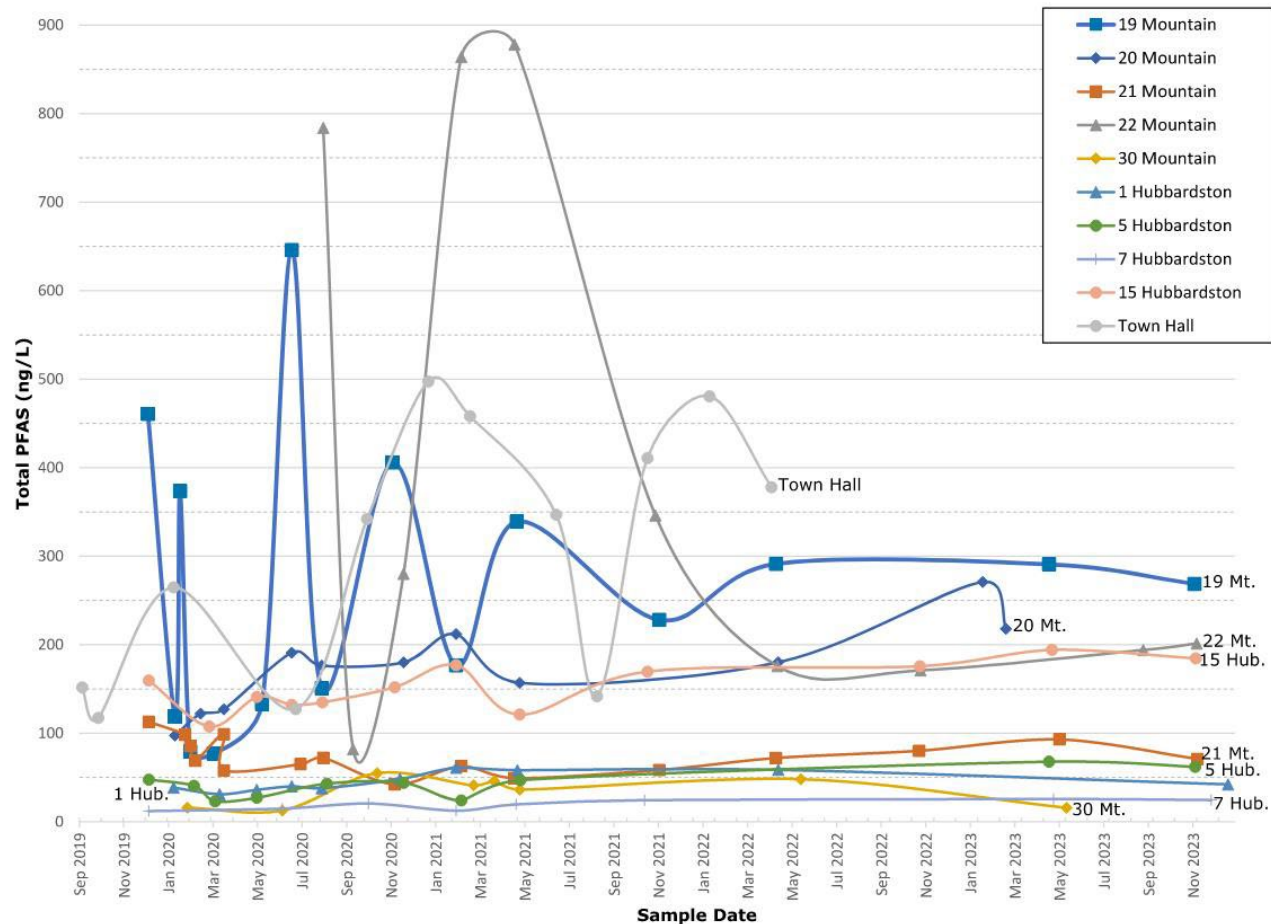
PHASE II - RISK CHARACTERIZATION

- Data for soil and groundwater evaluated using DEP's Method 1 Risk Characterization Standards
- Groundwater - risk is associated with drinking water, and is being addressed with POETs and bottled water
- Soil - "Exposure Point Concentration" (data averages) are below the "direct contact" standard
- Surface water - Stage I Environmental Screening
 - No Significant Risk of Harm to site biota and habitats

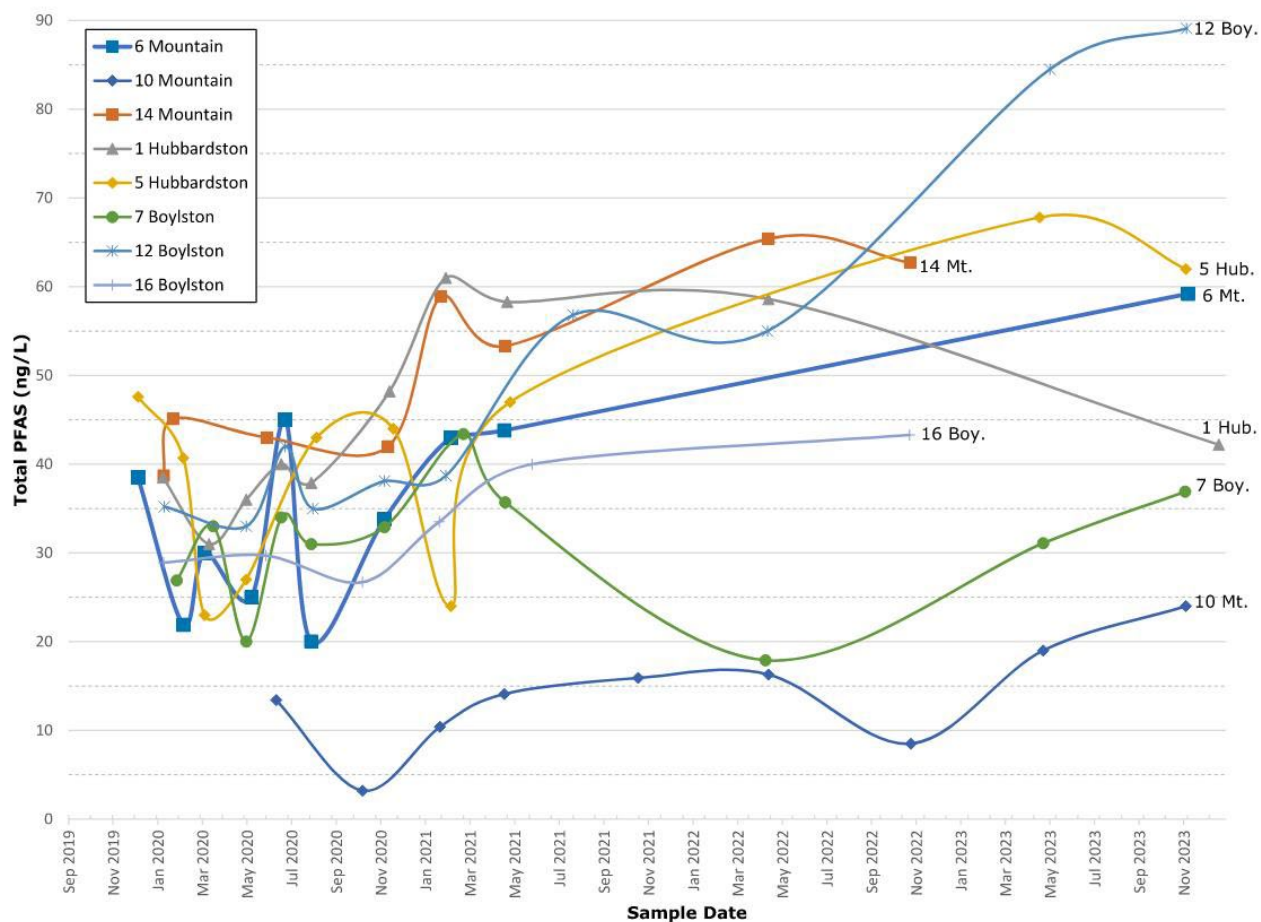
JANUARY 2024 RADIUS MAP



2019 TO 2023 PFAS6 CONCENTRATION TRENDS AT 10 PROPERTIES IN CENTRAL “SOURCE AREA”



2019 TO 2023 PFAS6 CONCENTRATION TRENDS AT 8 OTHER PROPERTIES DOWNGRADIENT OF “SOURCE AREA”



RUNOFF TREATMENT SYSTEM – 30 MOUNTAIN RD

- System began operating on September 11, 2023
 - Through 1/4/24, treated 70,349 gallons
 - Treated water is infiltrating subsurface near sidewalk
 - Carbon drums were ordered 10/13/23 based on detection in mid-point sample from 10/6/23
 - Results of effluent sample on 10/21/23 (flow meter at 39,805) received on 11/13/23 showed 5.1 ppt PFOS
 - New carbon drums were installed on 1/4/24
 - Carbon drums rated for 10 gpm; flow rate during rain events will be used to determine whether additional drums are necessary
 - Municipal Light Dept. ran power to shed to provide heat so system can remain in service during coldest weather

CONCEPTUAL SITE MODEL

- **Data Indicate Different PFAS in Two Areas**

- Southern area = AFFF in May 2017 at 30 Mountain Rd
 - Runoff of AFFF foam onto adjacent properties
 - Testing indicated Town Hall campus not a source
- Northern area = different PFAS at 54, 58, 64 Mnt. Rd.
 - Unconfirmed news report of 1967 fire at 54 Mnt. Rd.
 - Soil sampling at 54 Mountain Rd. showed low PFAS concentrations

[illegible]

PROJECT ACTIVITIES IN THE NEXT SIX MONTHS

- Continue IRA monitoring of well water and POETs
- Phase III Remedial Evaluation/Phase IV Remedy Implementation Plan reports due in November 2024
 - Evaluation based on criteria in 310 CMR 40.0860
 - No current remedial method is feasible
 - Developments in remedial options are being tracked
- Semi-annual IRA status report due in March 2024
- Next IRA public information session in April 2024

PHASE III REMEDIAL EVALUATION CRITERIA

- **310 CMR 40.0860 – Feasibility Evaluations**

- 40.0860(5): Remedial alternative is considered feasible unless: (a) the alternative is not technologically feasible, according to 40.0860(6), or (b) the costs are not justified by the benefits, considering factors such as long term O&M, etc., according to 40.0860(7).
- 40.0860(6): Remedial alternative is considered technologically feasible unless (a) existing technology cannot remediate the impacts to the extent necessary to achieve No Significant Risk.
- 40.0860(7): The benefits of implementing a remedial alternative to achieve a permanent or temporary solution shall justify the cost unless: (a) the incremental cost of conducting the alternative is substantial and disproportionate to the incremental benefit of risk reduction, environmental restoration, and monetary and non-pecuniary values

NEW USEPA DRINKING WATER STANDARDS

- USEPA expected “soon” to establish drinking water standards of 4 ppt for both PFOA and PFOS
- MassDEP will adopt this - will require addition of second vessel to single-vessel POETs where PFOA or PFOS exceed 4 ppt (regardless of PFAS6 concentration)
- Eighteen current locations with POETs would require addition of second vessel once the standard is in effect
- Select Board will be evaluating and discussing the costs to add a second vessel to, and to monitor, these POETs



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