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# RISEP PFAS Regulatory Update



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*Rhode Island*

*Department of Environmental Management*

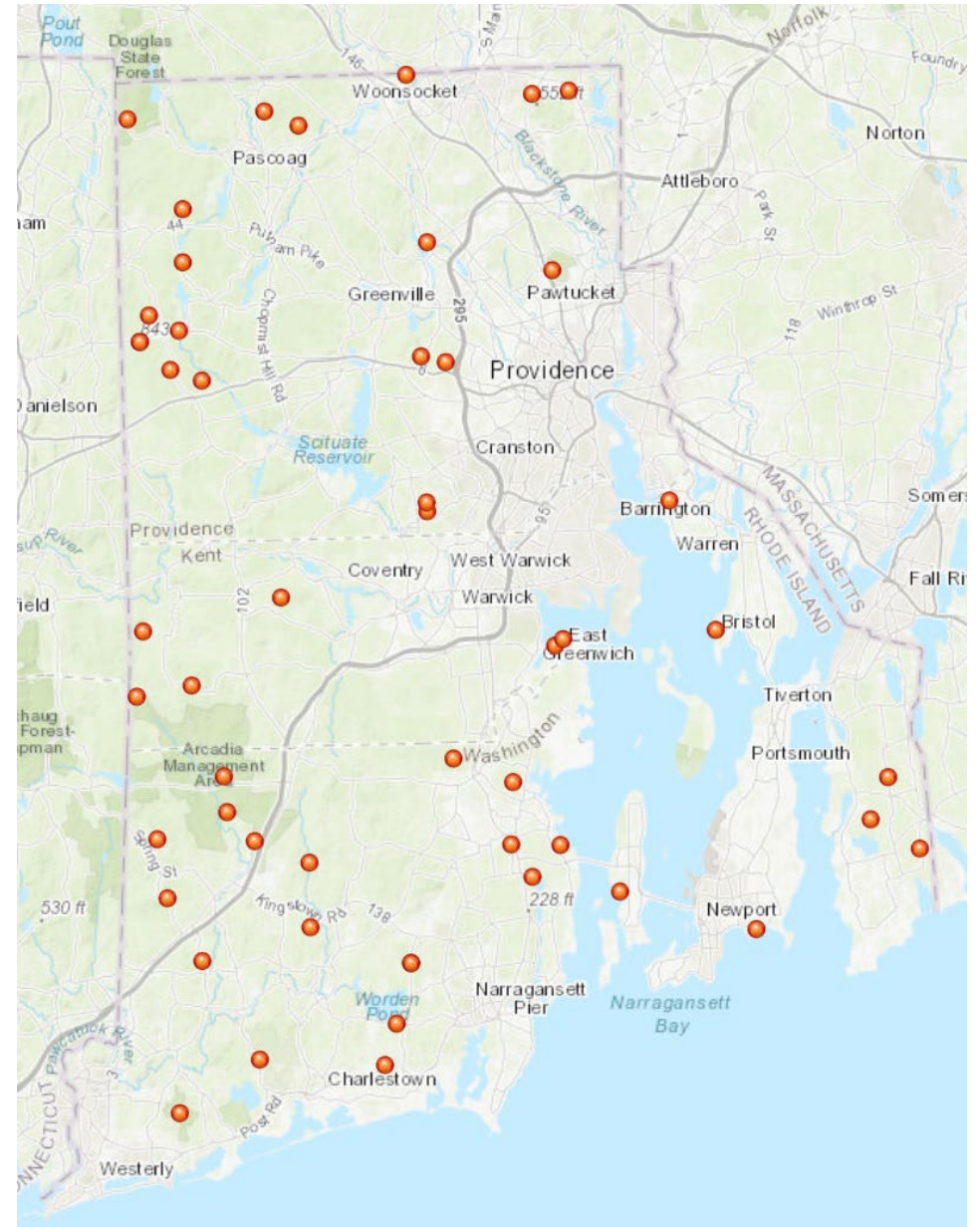
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# Background Soil Study

- Why conduct a background study for PFAS?
    - Due to very low (ppt) standards for GA Groundwater, derived leachability criteria may be lower than anthropogenic ambient background.
    - Potential regional differences: Other New England States have documented aerial deposition from manufacturing facilities, such as Bennington, VT and Merrimack, NH.
  - Definition of “Background” in the *Remediation Regulations* (250-RICR-140-30-1)
    - "Background" means the ambient concentrations of Hazardous Substances present in the environment that have not been influenced by human activities, **or** the ambient concentrations of Hazardous Substances consistently present in the environment in the vicinity of the Contaminated-Site which are the result of human activities unrelated to Releases at the Contaminated-Site.
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# Background Soil Study

- 50 sample locations selected on State-owned property throughout RI.
  - Targeted undisturbed areas based on historic aerial imagery.
  - Screened for known or potential PFAS sources:
    - Airports, fire stations, landfills, etc.
- Sample collection completed November - December 2022 by Department personnel.
- Samples were analyzed for 24 individual PFAS by Alpha Analytical.



# Sampling Methodology



(Left to right) Patty Burke and Michelle Furbeck log a soil sample collected at High Rocks Gorge in North Smithfield.

- Samples were collected using a hand auger to a depth of 2 feet below grade.
  - Minimum depth to which Direct Exposure Criteria are applied per the *Remediation Regulations*.
- 1 Duplicate per 20 samples (3 total for 50 samples)
- 1 Field blank for each sampling event
- 1 Equipment blank for each piece of equipment per 20 samples (3 blanks for each piece of equipment for 50 samples)
- Auger bucket, mixing bowl, and scoop (all stainless steel) were decontaminated after each sample with certified PFAS-free water and Alconox®.

# Overall Results

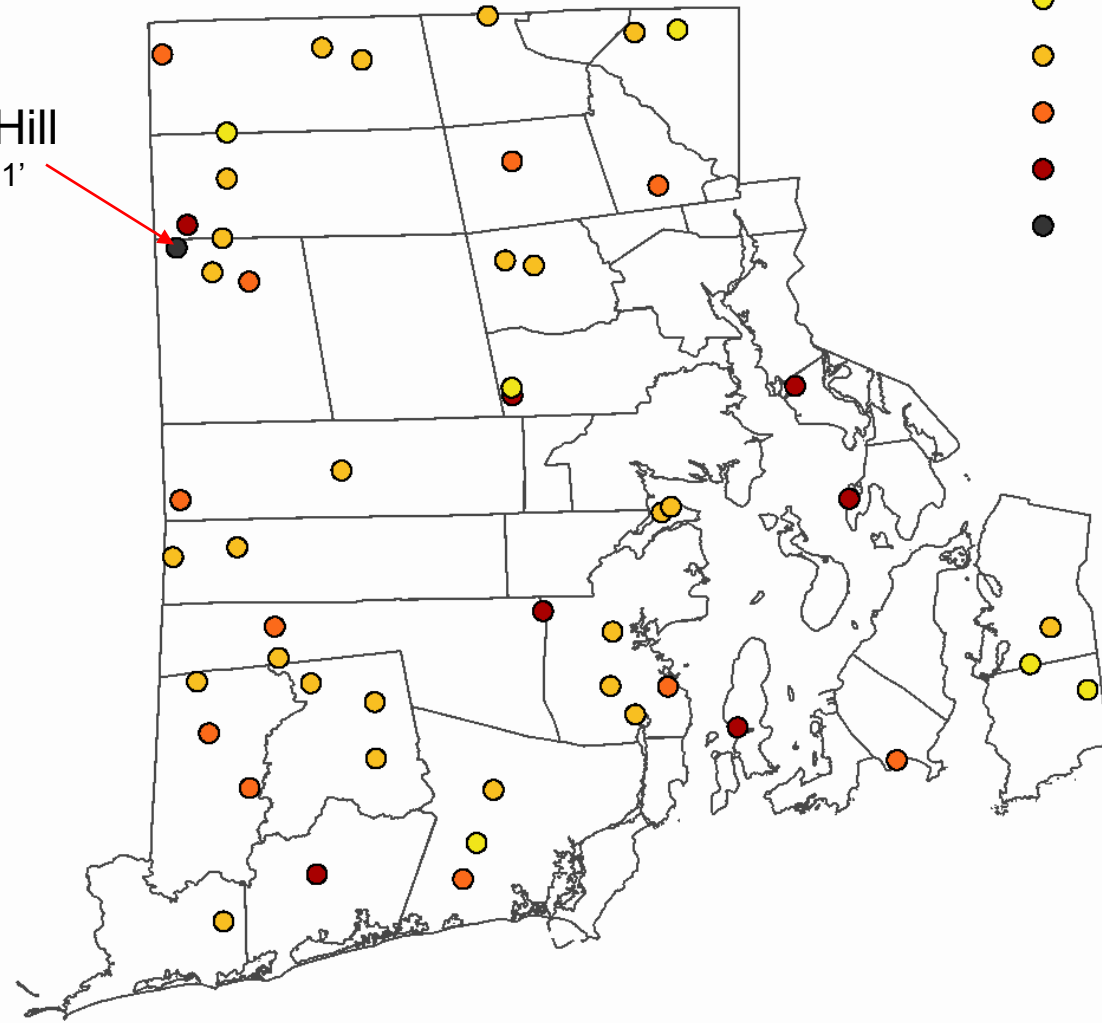
Compound	% Detection*	Mean (ng/kg)	Median (ng/kg)	Maximum (ng/kg)
PFHpA	92	113	105	312
PFOA	100	376	347	1,735
PFNA	52	127	121	209
PFDA	14	112	99	149
PFHxS	0	–	–	–
PFOS	100	406	354	899

\*Detection above the Method Detection Limit (MDL)

PFBA, PFPeA, PFHxA, and PFUnA were detected in 100%, 88%, 78% and 18% of samples, respectively. No other individual PFAS were detected in more than one sample.

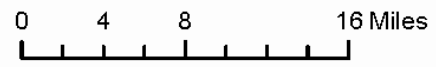
Background threshold values to be calculated using ProUCL Version 5.2 and associated Guidance

Jerimoth Hill  
Elevation 811'



**PFAS6 Total ( $\mu\text{g}/\text{kg}$ )**

- $\leq 0.5$
- $\leq 1$
- $\leq 1.5$
- $\leq 2$
- $= 3.119$



# PFAS Results by County

County	Total # Samples	Mean PFOA (ng/kg)	Mean PFOS (ng/kg)
Bristol	2	532	726
Kent	6	344	319
Newport	5	283	421
Providence	19	416	416
Washington	18	360	385

# Comparison with Other State Background Studies

State	% Detection	Max PFOA ( $\mu\text{g}/\text{kg}$ )	Mean PFOA ( $\mu\text{g}/\text{kg}$ )
Rhode Island	100	1.74	0.376
Maine	65	5.29	0.407
New Hampshire (0-6")	96	4.10	0.931
Vermont	91	4.90	0.500

State	% Detection	Max PFOS ( $\mu\text{g}/\text{kg}$ )	Mean PFOS ( $\mu\text{g}/\text{kg}$ )
Rhode Island	100	0.899	0.406
Maine	71	5.32	0.745
New Hampshire (0-6")	100	5.40	1.197
Vermont	100	4.40	0.970

Other State's results were calculated from publicly available background soil data and are shown for comparison purposes only



# Comparison with Other State Background Studies

State	# Samples	Max PFOA ( $\mu\text{g}/\text{kg}$ )	Mean PFOA ( $\mu\text{g}/\text{kg}$ )
New Hampshire (0-6")	100	4.10	0.931
New Hampshire (6-12")	51	4.10	0.809
New Hampshire (12-18")	6	0.630	0.338
New Hampshire (18-24")	5	0.270	0.161
Average (0-24") assuming equal contribution			0.560
Rhode Island	50	1.74	0.376

Other State's results were calculated from publicly available background soil data and are shown for comparison purposes only

# Comparison with Other State Background Studies

State	# Samples	Max PFOS ( $\mu\text{g}/\text{kg}$ )	Mean PFOS ( $\mu\text{g}/\text{kg}$ )
New Hampshire (0-6")	100	5.40	1.20
New Hampshire (6-12")	51	3.90	0.634
New Hampshire (12-18")	6	0.410	0.229
New Hampshire (18-24")	5	0.160	0.103
Average (0-24") assuming equal contribution			0.541
Rhode Island	50	0.899	0.406

Other State's results were calculated from publicly available background soil data and are shown for comparison purposes only

# Leachability Criteria

- Method 1 Leachability Criteria were historically derived utilizing SESOIL and AT123D models.
- In 2020, the OLRSMC contracted GZA GeoEnvironmental, Inc. to assist with updating GB Groundwater Objectives and associated GB Leachability Criteria (using SEVIEW).
  - As part of this effort, leachability criteria were derived for PFAS being considered by RIDOH for a State MCL.
  - Leachability criteria were derived for PFAS6 based on an MCL of 10, 20, and 70 ng/L (ppt) using a range of published Koc values.
  - Leachability criteria for the PFAS6 range from 0.7 to ~3 (µg/kg) depending on Koc value.
- Final GA Leachability Criteria will “likely” be higher than 95% Upper Tolerance Limit (UTL) for individual PFAS based on background study.

Thank You!  
Any Questions?

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