nebra Recycled organics: Tools for sustainability.

State & EPA Policy & Regulation Update

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October 15, 2018

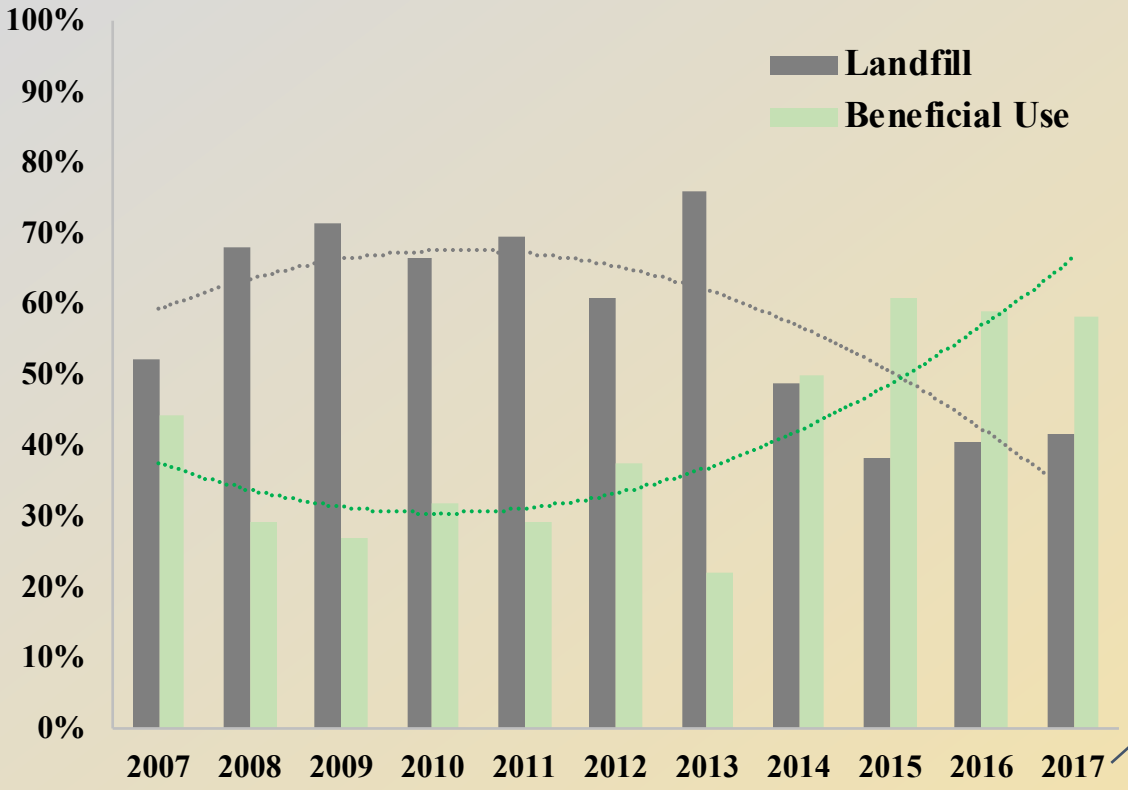
NEWEA Microconstituents & Residuals PFAS Conference
Univ. of Massachusetts - Lowell

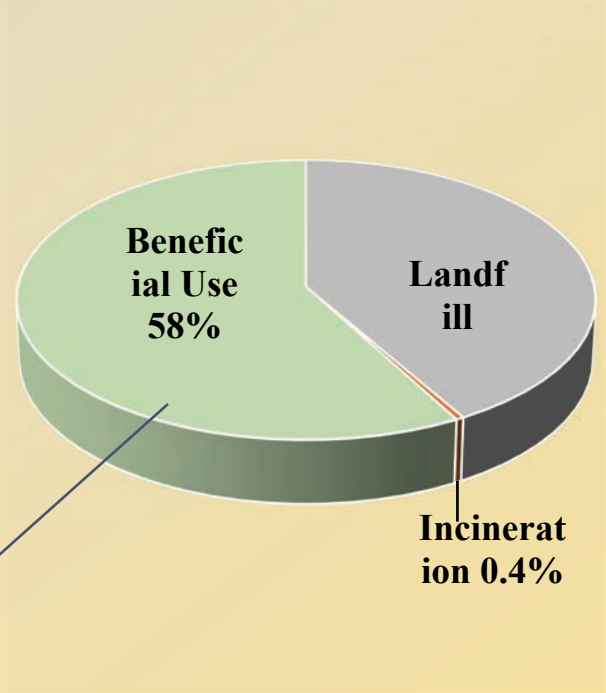
Residuals Management
&
Emerging Contaminants

Eamon Twohig

October 15, 2018

Sludge Management Trends





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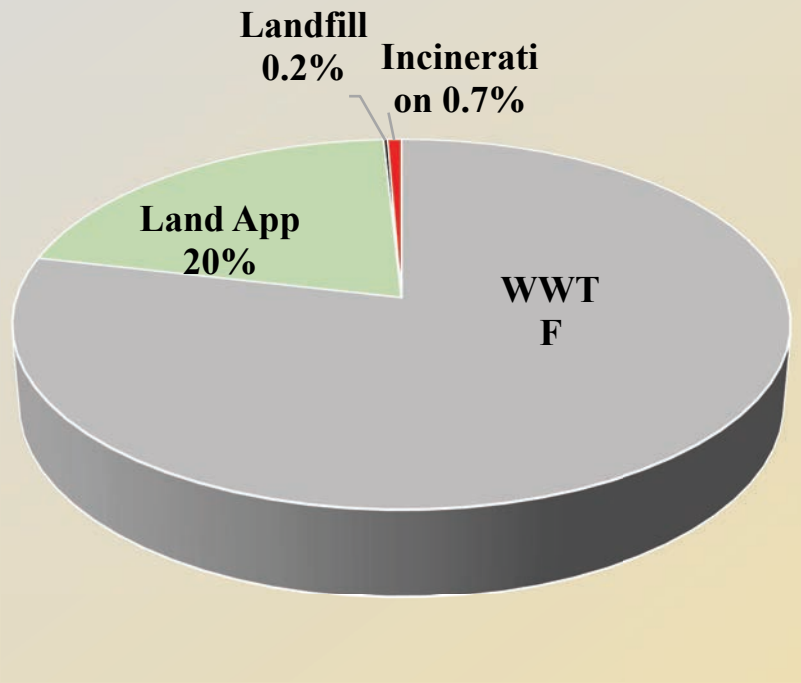
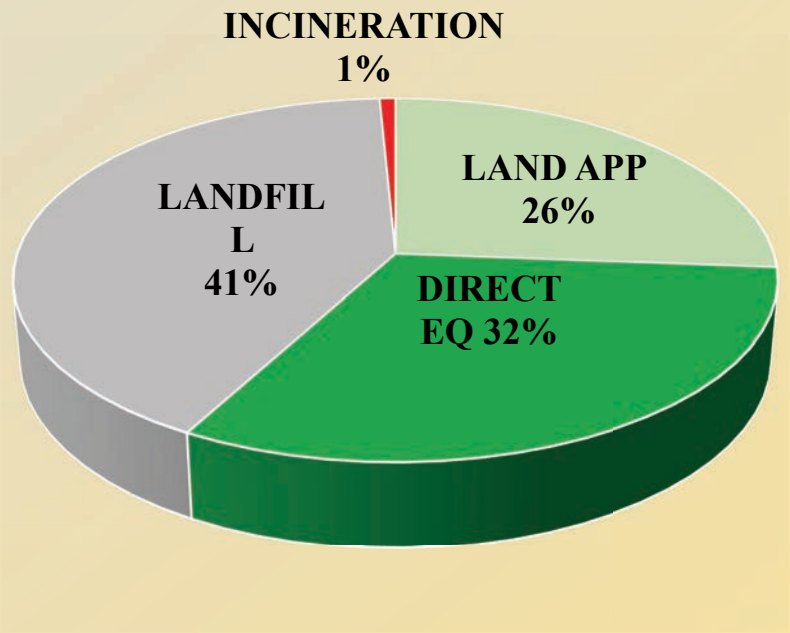
Septage Management in 2017
~38 M Gal





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The Beecher Report

- **SOV Multi-Agency/Division/Department Effort**:
  - ANR-DEC Waste Management & Prevention Division (includes Residuals Management) – **LEAD**
  - ANR-DEC Watershed Management Division (includes Wastewater-NPDES)
  - ANR-DEC Drinking Water & Groundwater Protection Division
  - ANR-DEC Air Quality Division
  - ANR-DEC Geological Survey
  - Department of Health
  - Agency of Agriculture, Food & Markets
  - Department of Public Safety – Division of Fire Safety
  - Attorney General's Office
  - https://dec.vermont.gov/commissioners-office/pfoa
  - http://www.healthvermont.gov/environment/drinking-water/perfluoroalkyl-and-polyfluoroalkyl-substances-pfas-drinking-water

- **Significant actions by SOV in 2018 related to PFAS concern**:
  - Bennington, VT: water line extension to North Bennington, sampling >600 wells, ~ 800 soil samples, POETs installed
  - Pownal, VT: public water supply contaminated, sampled >150 wells, large-scale GAC treatment system installed
  - Clarendon, VT: Rutland-Southern VT Regional Airport, sampled 55 wells, GAC system installed for business park
  - Shatfsbury, VT Landfill: sampling ongoing
  - School drinking water sampling: 10 schools, PFAS in 5 wells, 2 above GW Std

The Beecher Report (cont)

- **Action focused on WWTFs, and/or biosolids and residuals:**
  - Sampled wastewater influent, effluent, sludge – Bennington WWTP and septage from homes in Bennington, VT
  - Sampled influent/effluent and sludge from six (6) WWTPs that receive LF Leachate – January 2018
  - Sampled biosolids compost from Williamstown, MA (Bennington WWTP exports sludge to facility)
  - Sampled landfill leachate from six (6) landfills

- **What regulatory standards does Vermont have now and to what matrices and to which PFAS do they apply:**
  - VT DOH Health advisory for PFOA, PFOS, PFNA, PFHxS, PFHpA ("VT 5") at **20 ppt, combined**
  - Groundwater Protection Rule & Strategy Standard = **20 ppt, combined**
  - Investigation and Remediation of Contaminated Properties Rule – "VT 5" listed as hazardous materials (no limits)

- **Is there any consideration of evaluation of PFAS soil levels, soil screening standards, and material (e.g. biosolids/residuals) screening levels or standards?**
  - Soil (residential) screening standard PFOA = 300 ppb. Dermal contact.
  - Landfill leachate to WWTPs – recommended screening level of 0.120 and 0.001 mg/L PFOA and PFOS, respectively
  - Required PFAS analysis of biosolids and SPF utilized for superfund land reclamation site, leaching model used

PFAS Results - Bennington WWTF - 2016 vs 2018

Analyte	Matrix	Influent	Influent	Influent	Effluent	Sludge-SPLP
	Collected by:	CT Male	Weston & Sampson	Weston & Sampson	Weston & Sampson	Weston & Sampson
	Method:	Method 537	MLA 110	Method 537	MLA 110	MLA 110
	Date:	3/22/2016	2/6/2018	2/6/2018	2/6/2018	2/6/2018
	Units					
PFBA	ng/l	-	6.79	ND/< 11.0	6.09	9.7
PFPeA	ng/l	-	ND/< 2.74	ND/< 11.0	2.86	ND/< 2.69
PFHxA	ng/l	ND/< 4	4.42	ND/< 11.0	7.5	7.33
PFHpA	ng/l	33	1.68	ND/< 11.0	2.58	ND/< 1.31
PFOA	ng/l	350	39.7	48.4	41.4	62.6
PFNA	ng/l	12	ND/< 0.27	ND/< 5.6	ND/< 0.26	1.75
PFDA	ng/l	ND/< 4	ND/< 0.27	ND/< 11.0	ND/< 0.26	0.635
PFUnA	ng/l	ND/< 8	ND/< 0.20	ND/< 11.0	ND/< 0.20	ND/< 0.20
PFDoA	ng/l	ND/< 10	ND/< 0.28	ND/< 11.0	ND/< 0.27	ND/< 0.28
PFTrDA	ng/l	ND/< 8	ND/< 0.20	ND/< 11.0	ND/< 0.20	0.401
PFTeDA	ng/l	ND/< 10	3.85	ND/< 11.0	ND/< 0.26	ND/< 0.26
PFBS	ng/l	ND/< 20	1.91	ND/< 11.0	ND/< 1.31	ND/< 1.31
PFPeS	ng/l	-	ND/< 1.27	ND/< 11.0	ND/< 1.24	ND/< 1.25
PFHxS	ng/l	ND/< 20	ND/< 1.34	ND/< 11.0	ND/< 1.31	ND/< 1.31
PFHpS	ng/l	-	ND/< 1.27	ND/< 11.0	ND/< 1.24	ND/< 1.25
PFOS	ng/l	ND/< 20	ND/< 1.07	7.08 J	1.8	5.6
PFNS	ng/l	-	ND/< 1.27	ND/< 11.0	ND/< 1.24	ND/< 1.25

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PFAS Results - Bennington WWTF - 2016 vs 2018

Analyte	Matrix	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge	Sludge
	Collected by:	CT Male	CT Male	CT Male	CT Male	CT Male	Weston & Sampson	Weston & Sampson	Weston & Sampson
	Method:	Method 537	Method 537	Method 537	Method 537	Method 537	Method 537	Method 537	MLA 110
	Date:	4/14/16	4/14/16	4/14/16	4/14/16	4/14/16	4/14/16	4/14/16	2/6/2018
	Units								
PFBA	ug/kg	-	-	-	-	-	-	-	ND/< 1.56
PFPeA	ug/kg	-	-	-	-	-	-	-	ND/< 0.778
PFHxA	ug/kg	-	-	-	-	-	-	-	0.405
PFHpA	ug/kg	ND/<1.6	ND/<1.6	ND/<1.6	ND/<1.5	ND/<1.5	ND/<1.7	ND/<1.7	2.02
PFOA	ug/kg	7.6	8.2	7.7	6.9	8.0	7.5	6.9	9.13
PFNA	ug/kg	ND/<2.7	ND/<3.2	3.1	3.3	3.2	2.7	3.2	0.823
PFDA	ug/kg	-	-	-	-	-	-	-	1.43
PFUnA	ug/kg	-	-	-	-	-	-	-	1.27
PFDoA	ug/kg	-	-	-	-	-	-	-	2.19
PFTrDA	ug/kg	-	-	-	-	-	-	-	1.3
PFTeDA	ug/kg	-	-	-	-	-	-	-	1.25
PFBS	ug/kg	ND/<2.6	ND/<2.7	ND/<2.6	ND/<2.5	ND/<2.5	ND/<2.8	ND/<2.8	ND/< 0.379
PFPeS	ug/kg	-	-	-	-	-	-	-	0.792
PFHxS	ug/kg	ND/<2.6	ND/<2.7	ND/<2.6	ND/<2.5	ND/<2.5	ND/<2.8	ND/<2.8	ND/< 0.625
PFHpS	ug/kg	-	-	-	-	-	-	-	ND/< 0.823
PFOS	ug/kg	ND/<3.7	10	ND/<3.7	ND/<3.5	ND/<3.4	6.1	7.1	4.06
PFNS	ug/kg	-	-	-	-	-	-	-	ND/< 0.360

2016 = 7.5 ppt PFOA; 5.4 ppt PFOS vs. 2018 = 9.1 ppt PFOA; 4.06 ppt PFO

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PFAS Results - Bennington WWTF - 2016 vs 2018

Analyte	Matrix	Sludge-SPLP	Sludge-SPLP	Sludge-SPLP
	Collected by:	Weston & Sampson	Weston & Sampson	Weston & Sampson
	Method:	SPLP - 537	SPLP - 537	SPLP - MLA 110
	Date:	4/14/16	4/14/16	2/6/2018
	Units			
PFBA	ng/l	-	-	9.7
PFPeA	ng/l	-	-	ND/< 2.69
PFHxA	ng/l	-	-	7.33
PFHpA	ng/l	5	7	ND/< 1.31
PFOA	ng/l	66	69	62.6
PFNA	ng/l	10	7	1.75
PFDA	ng/l	-	-	0.635
PFUnA	ng/l	-	-	ND/< 0.20
PFDoA	ng/l	-	-	ND/< 0.28
PFTrDA	ng/l	-	-	0.401
PFTeDA	ng/l	-	-	ND/< 0.26
PFBS	ng/l	ND/<4.0	ND/<4.0	ND/< 1.31
PFPeS	ng/l	-	-	ND/< 1.25
PFHxS	ng/l	ND/<4.0	ND/<4.0	ND/< 1.31
PFHpS	ng/l	-	-	ND/< 1.25
PFOS	ng/l	ND/<5.0	ND/<5.0	5.6
PFNS	ng/l	-	-	ND/< 1.25

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PFAS Analysis of Landfill Leachate (March 2018)

MLA 110 Method

ng/l	Recommended Guidelines: Concentration requiring no restrictions	South Burlington	Randolph	Randolph (duplicate)	Rathe (Burlington)	Chittenden Solid Waste District (CSWD)	New England Waste Services of Vermont (NEWSVT)
PFOA	120,000	79.5	2,110	2,030	110	379	1,850
PFOS	1,000	29.6	278	217	99.1	22.5	244

Modified EPA Method 537

ng/l	Recommended Guidelines: Concentration requiring no restrictions	Moretown: Cell 1 *	Moretown: Cell 2 *	Moretown: Cell 3 *	Chittenden Solid Waste District (CSWD) *	New England Waste Services of Vermont (NEWSVT)
PFOA	120,000	1,400	2,800	1,900	418	1,050
PFOS	1,000	250	300	270	ND	110

* denotes a sample that was taken and analyzed independently by the landfill owner and reported to the SWMP

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PFAS Analysis of WWTP Influent and Effluent (January 2018)

METHOD COMPARISON

Sample	MLA 110 PFOA INF	EPA 537 PFOA INF	RPD PFOA INF	MLA 110 PFOA EFF	EPA 537 PFOA EFF	RPD PFOA EFF	MLA 110 PFOS INF	EPA 537 PFOS INF	RPD PFOS INF	MLA 110 PFOS EFF	EPA 537 PFOS EFF	RPD PFOS EFF
C	**4.89**	170	188.8	**7.39**	**7.75**	4.8	**3.52**	170	191.9	**3.92**	**4.88**	21.8
D	**5.99**	15	85.9	**3.14**	16	134.4	**5.99**	15	85.9	**2.57**	16	144.6
F	**93.9**	**76.5**	20.4	**44.1**	**48.2**	8.9	**16**	83	135.4	**4.92**	15	101.2

Bolded values indicate result above detection level
RPD = Relative Percentage Difference

RESULTS FROM 6 WWTPs

Sample Location	PFOA Min (ppt)	PFOA Max (ppt)	PFOA Avg (ppt)	PFOS Min (ppt)	PFOS Max (ppt)	PFOS Avg (ppt)
INFLUENT	ND	94	19	ND	16	7
EFFLUENT	3.1	50	22	1.2	10	4

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PFAS Analysis of Sludges by MLA 110

	Analyte	A MLA 110 (ppb)	B MLA 110 (ppb)	C MLA 110 (ppb)	D MLA 110 (ppb)	E MLA 110 (ppb)	F MLA 110 (ppb)	AVG (ppb)	Max (ppb)
	Perfluorobutanoic acid	5.78	1.42	1.46	1.49	1.48	1.32	2.16	5.78
	Perfluoropentanoic acid	2.32	2.09	0.729	0.747	1.56	0.697	1.36	
	Perfluorohexanoic acid	10.7	1.86	2.19	1.34	2.8	1.5	3.40	
PFHpA	Perfluoroheptanoic acid	1.03	0.345	0.356	2.04	0.929	0.423	0.854	
PFOA	Perfluorooctanoic acid	13.1	2.99	0.811	0.671	5.24	3.16	4.33	13.1
PFNA	Perfluorononanoic acid	2.92	1.91	1.31	1.71	3.64	1.2	2.12	
	Perfluorodecanoic acid	4.01	8.94	4.73	1.45	53.3	6.83	13.21	
	Perfluoroundecanoic acid	1.01	0.978	1.87	1.16	4.15	1.25	1.74	
	Perfluorododecanoic acid	0.792	1.64	2.53	0.882	12.8	1.54	3.36	
	Perfluorotridecanoic acid	0.417	0.61	0.629	0.756	1.59	0.447	0.74	
	Perfluorotetradecanoic acid	0.443	0.693	1.43	0.81	2.35	0.648	1.06	
	Perfluorobutanesulfonic acid	0.434	0.384	0.356	0.364	1.21	0.539	0.548	
	Perfluoropentanesulfonic acid	0.545	0.488	1.18	1.71	0.937	8.39	2.21	
PFHS	Perfluorohexanesulfonic acid	0.744	0.396	0.782	0.637	0.603	0.941	0.68	
	Perfluoroheptanesulfonic acid	0.338	0.635	0.517	0.39	0.62	0.305	0.47	
PFOS	Perfluorooctanesulfonic acid	5.56	8.5	13.9	6.02	7.23	6.85	8.01	13.9
	Perfluorononanesulfonic acid	0.442	0.328	0.499	0.637	0.341	0.509	0.46	
	Perfluorodecanesulfonic acid	2.06	5.3	14.1	10.6	14.9	8.85	9.30	
	Perfluorododecanesulfonic acid	0.325	13	17.6	60.3	13.7	33.2	23.02	
	4:2 FTS	0.12	0.121	0.125	0.228	0.125	0.144	0.144	
	6:2 FTS	1.14	0.85	0.21	0.684	1.76	1.7	1.06	
	8:2 FTS	1.3	2.28	1.37	0.994	1.21	2.2	1.56	
	PFOSA	1.68	3.5	4.78	0.833	5.4	1.76	2.99	
	N-MeFOSA	0.411	0.672	0.647	1.66	0.493	0.807	0.782	
	N-EtFOSA	2.77	1	1.03	1.06	2.88	0.991	1.62	
	MeFOSAA	12.5	13.3	20.1	4.91	48.3	11.1	18.37	
	EtFOSAA	19.8	10.8	4.98	3.45	26.5	7.54	12.18	
	N-MeFOSE	5	6.75	11.8	5.71	13.8	10.3	8.89	
	N-EtFOSE	6.99	5.08	3.65	4.02	9.19	7.11	6.01	

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Analysis of WWTP Residuals by SPLP + MLA 110 and/or + 537

SPLP = synthetic precipitation leaching procedure
(how much leaches from exposure to slightly ac

Analyte	C SPLP 110 (ppt)	C SPLP 537 (ppt)	D SPLP 110 (ppt)	D SPLP 537 (ppt)
Perfluorobutanoic acid	8.09	15	16.6	15
Perfluoropentanoic acid	4.05	15	8.32	15
Perfluorohexanoic acid	**8.24**	15	**4.93**	15
Perfluoroheptanoic acid	1.97	15	4.06	15
Perfluorooctanoic acid	**4.99**	15	**4.25**	15
Perfluorononanoic acid	**4.01**	15	**3.96**	15
Perfluorodecanoic acid	**5.92**	77	0.812	150
Perfluoroundecanoic acid	0.296	77	**0.64**	150
Perfluorododecanoic acid	0.414	77	0.852	150
Perfluorotridecanoic acid	0.296	77	0.609	150
Perfluorotetradecanoic acid	0.395	15	0.812	15
Perfluorobutanesulfonic acid	1.97	15	4.06	15
Perfluoropentanesulfonic acid	**2.97**	15	3.86	15
Perfluorohexanesulfonic acid	1.97	15	4.06	15
Perfluoroheptanesulfonic acid	1.87	15	3.86	15
Perfluorooctanesulfonic acid	**22.7**	**16.8**	**3.34**	15
Perfluorononanesulfonic acid	1.87	15	3.86	15
Perfluorodecanesulfonic acid	**5.48**	15	4.06	15
Perfluorododecanesulfonic acid	**1.9**	#N/A	3.86	#N/A
4:2 FTS	0.691	38	1.42	38
6:2 FTS	**5.4**	38	**4.61**	38
8:2 FTS	**3.69**	38	1.64	38
PFOSA	**3.83**	15	4.06	15
N-MeFOSA	#N/A	#N/A	#N/A	#N/A
N-EtFOSA	#N/A	#N/A	#N/A	#N/A
MeFOSAA	**5.35**	38	4.06	38
EtFOSAA	1.97	38	4.06	38
N-MeFOSE	#N/A	#N/A	#N/A	#N/A
N-EtFOSE	#N/A	#N/A	#N/A	#N/A
Solids, Percent (%)	#N/A	#N/A	#N/A	#N/A

PFHA
PFOA
PFNA

PFHS
PFOS

	Sludge C (ppt)	Sludge D (ppt)	Biosolids Compost (ppt)
PFHA	<1.97	<4.06	-
PFOA	4.99	4.25	61
PFNA	4.01	3.96	-
PFHS	<1.97	<4.06	-
PFOS	22.7	3.34	11
VT-5 total	**35.6**	**19.7**	**72**

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Thank you!

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Vermont Department of Environmental Conservation
Waste Management & Prevention Division
Residual Management & Emerging Contaminants Program

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Status of PFAS Regulation in New Hampshire

October 15, 2018

Residuals and Microconstiuents Conference

New England Environment & Water Association

Brandon Kernen, PG

New Hampshire Department of Environmental Services

PFAS
Just Not Another New Contaminant

- Two sites in NH Contaminated by Air Emissions
  - Undermines traditional waste site investigation/source water protection
  - Has caused contamination over standard over 64 sq. miles
- PPT in drinking water is measurable in our residents' blood at PPB levels
- Currently have standards for two out of thousands PFAS
- Short-term exposure is considered a health risk
- Public in NH is demanding "0"
- Other states contemplating standards 1/3-1/5 lower than EPA's recommended concentration

Magnitude of the Issue

- Over 40 million dollars has been allocated for addressing PFAS at a couple of sites in NH. A full state-wide assessment is just beginning……
- In the southern region of NH, groundwater/drinking water has been contaminated over a 64 square mile area
- Five significant water supply sources in NH contaminated over health standards
- Since March 2016 – NH has sampled over 3,000 sources of drinking water for PFAS
  - 600+ homes on private wells are being provided bottled water
  - Public water systems are being extended to these homes (30+ miles of pipe)

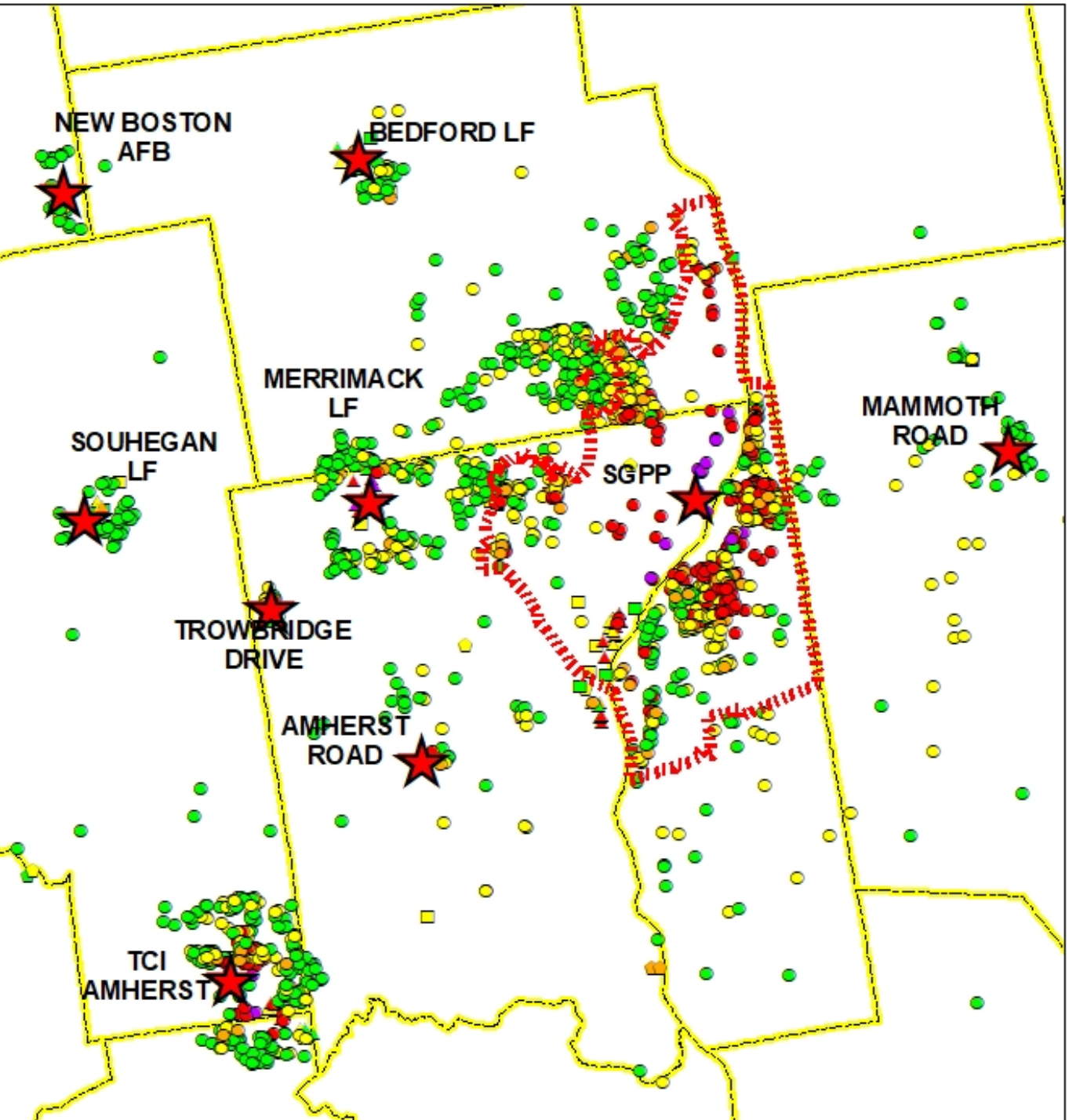
PFAS Regulation in NH

- Ambient Groundwater Quality Standard (clean-up and enforceable drinking water standard of 70 ppt for PFOA/PFOS combined (based on health criteria only)
- Per state law, must initiate rulemaking for MCLs by 1/1/19 for PFOA, PFOS, PFNA and PFHxS (considers health benefits, costs and technical feasibility)
- Per state law, must develop a plan and budget for developing surface water quality standards by 1/1/20
- Per state law, has clear authority to regulate air emissions to ensure compliance with water quality standards
- Need to address the widespread use of potentially toxic, persistent, bioaccumulative & mobile contaminants

PFAS Regulation in NH – Soil Leaching Standards

- NH needs criteria to address PFAS
- Following research, policies in other states & may seek the assistance of external experts

SOUTHERN NH PFAS INVESTIGATION
May 3, 2018



PFOA + PFOS (PPT)

Supply Well	Monitoring Well	Surface Water	Other Sample	
●	▲	■	⬟	≥400
●	▲	■	⬟	70 - <400
●	▲	■	⬟	45 - <70
●	▲	■	⬟	10 - <45
●	▲	■	⬟	< 10

Preliminary GMZ

Political Boundary

Investigation Area

1 inch = 10,000 feet

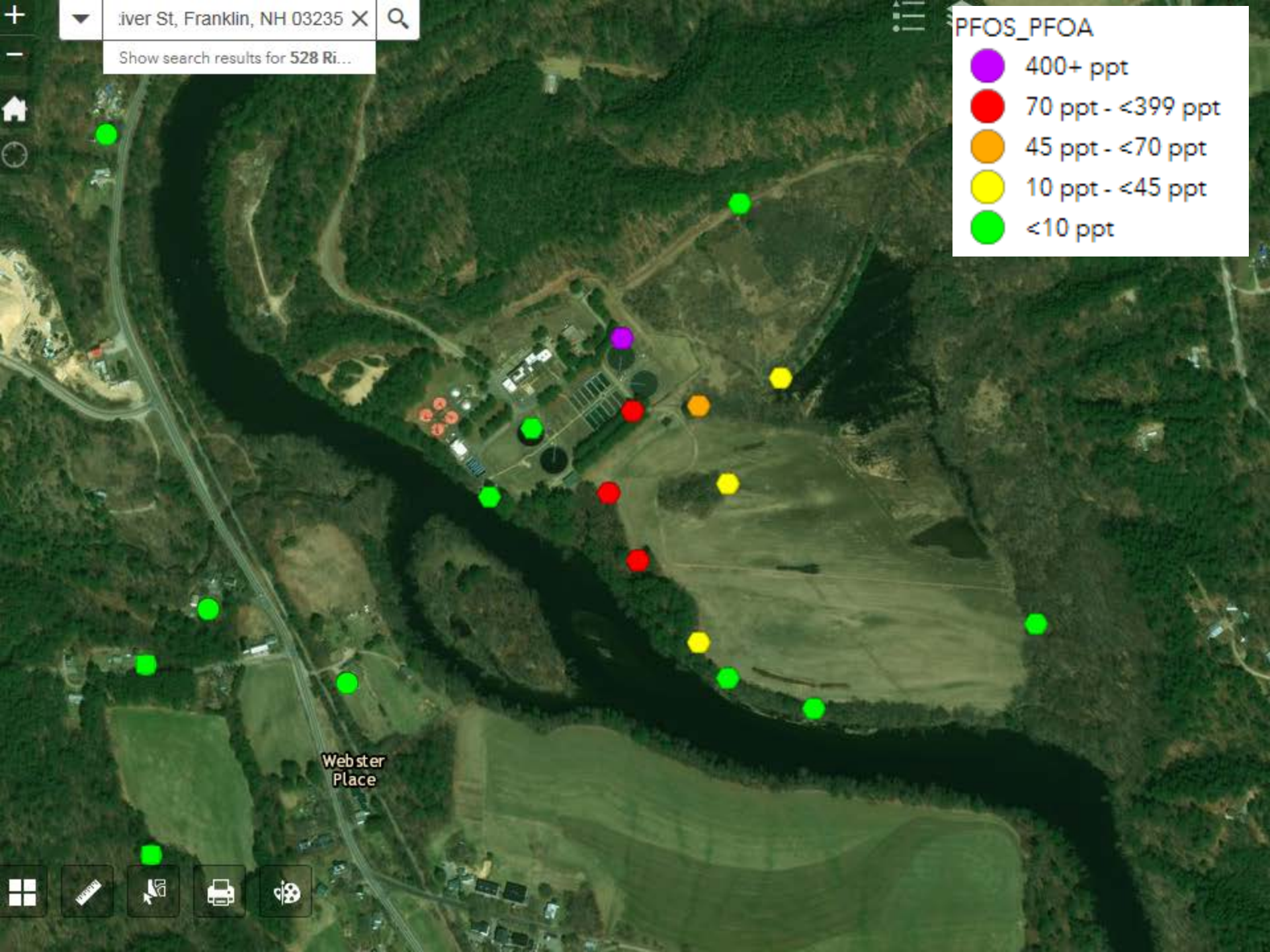
NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Address Groundwater Regulations for PFAS Similar to New Regulations for 1,4-Dioxane??

- NHDES adopted a new standard for 1,4-dioxane (0.32 ppb)
- Lowest standard in the nation
- Like PFAS, 1,4-dioxane is present in many consumer products
- Present in municipal wastewater at 1-2 ppb
- No practical way to remove 1,4-dioxane from wastewater
- NHDES' new rules allow 1,4-dioxane exceedances at permitted groundwater discharge sites
  - Must implement source control (industrial pretreatment) if effluent has unusually high levels
  - Must sample any nearby drinking water sources and provide treatment if concentrations exceed standards

Biosolids and Residuals

- Residuals in unlined lagoons at WWTF are contaminating groundwater above NHDES current standard
- Biosolids Land Application
  - Limited PFAS groundwater data
  - Contamination of shallow groundwater immediately downgradient of application sites possible
  - A preliminary assessment shows most application sites do not have nearby downgradient receptors
- Without regulations, proactive measures can be taken
  - WWTF can work with facilities using fluoropolymers
  - Leachate
  - Test sludge/biosolids/short paper fiber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45 ppt - <70 ppt
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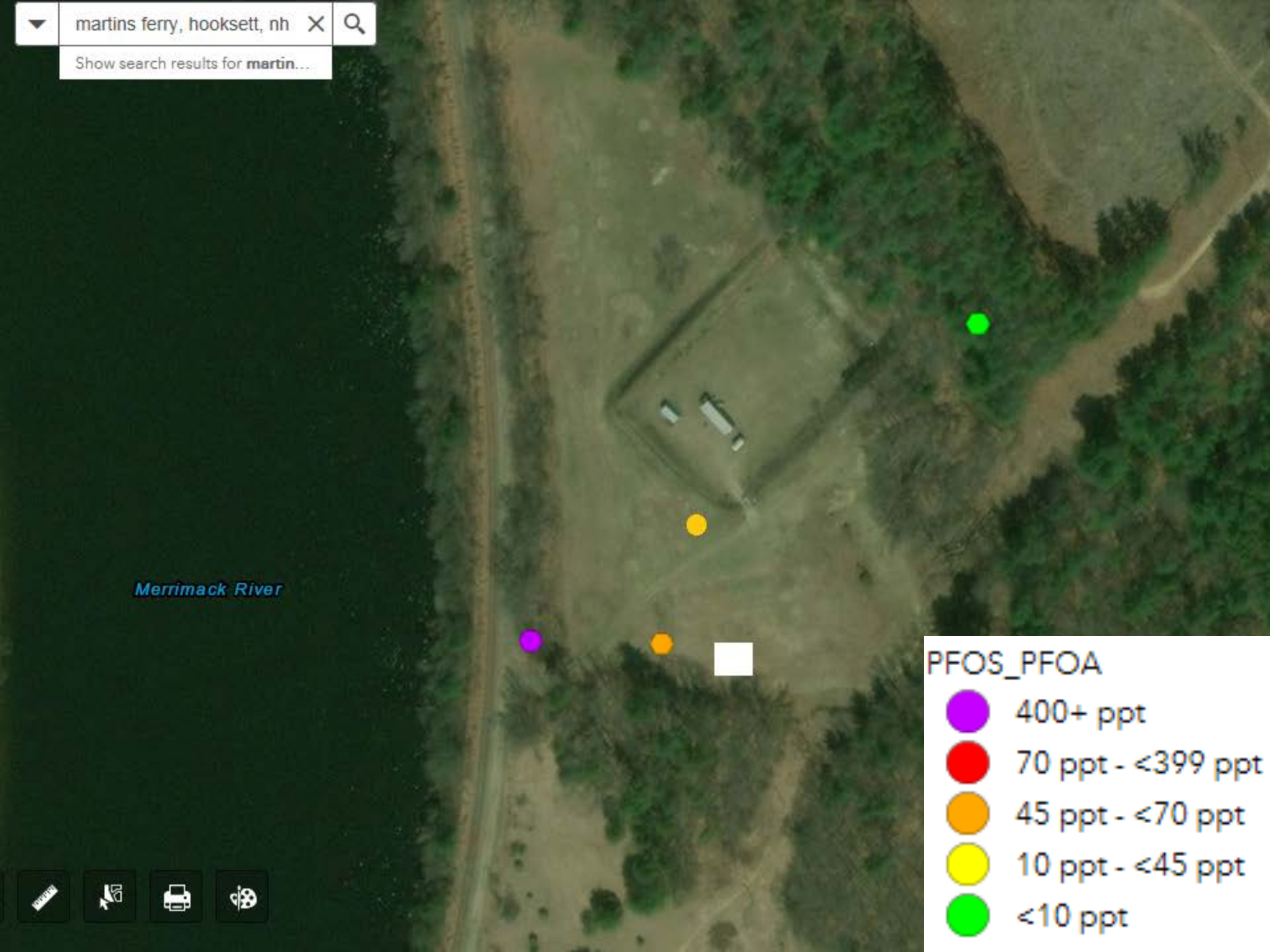
<10 ppt
Webster Place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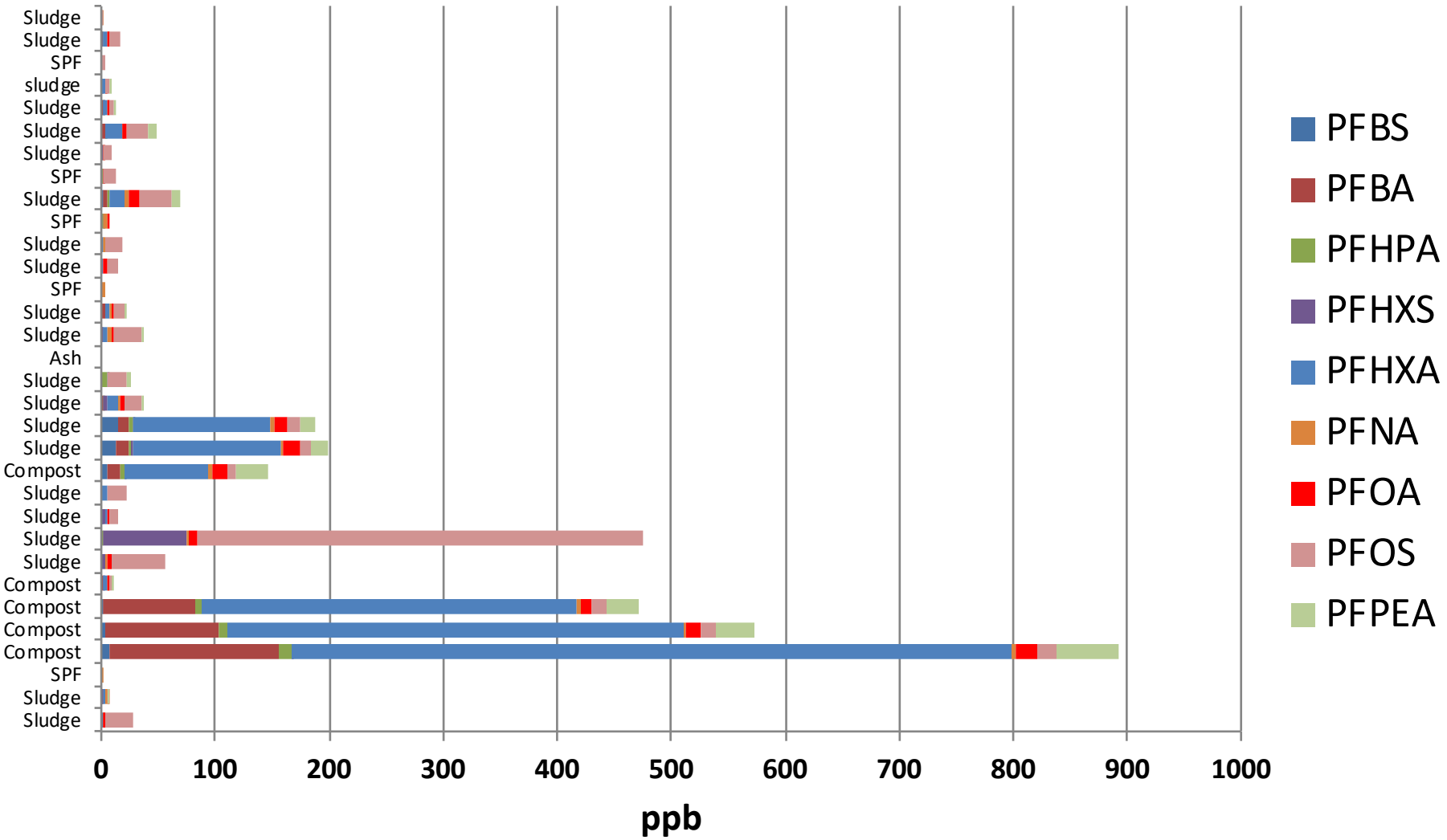
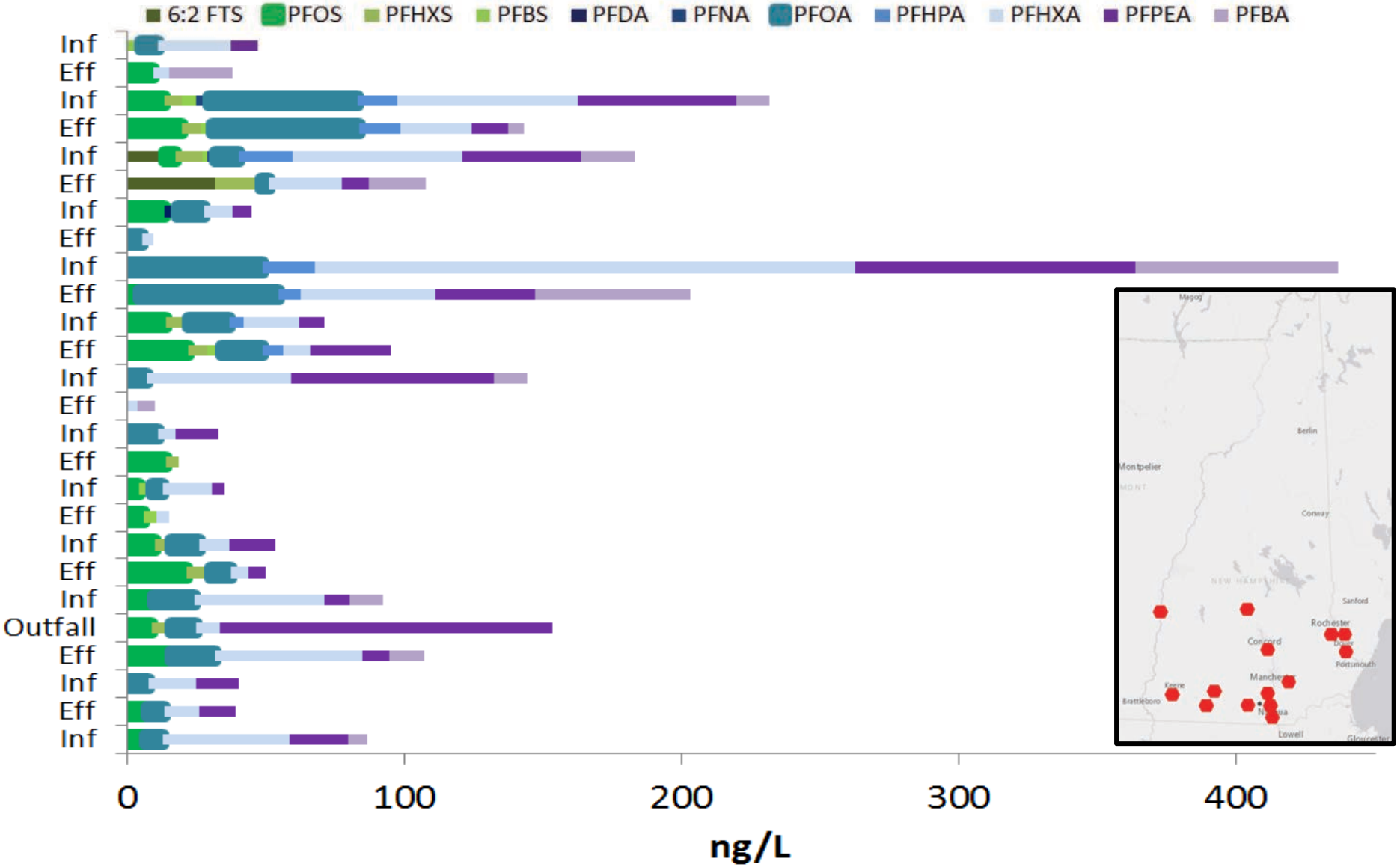
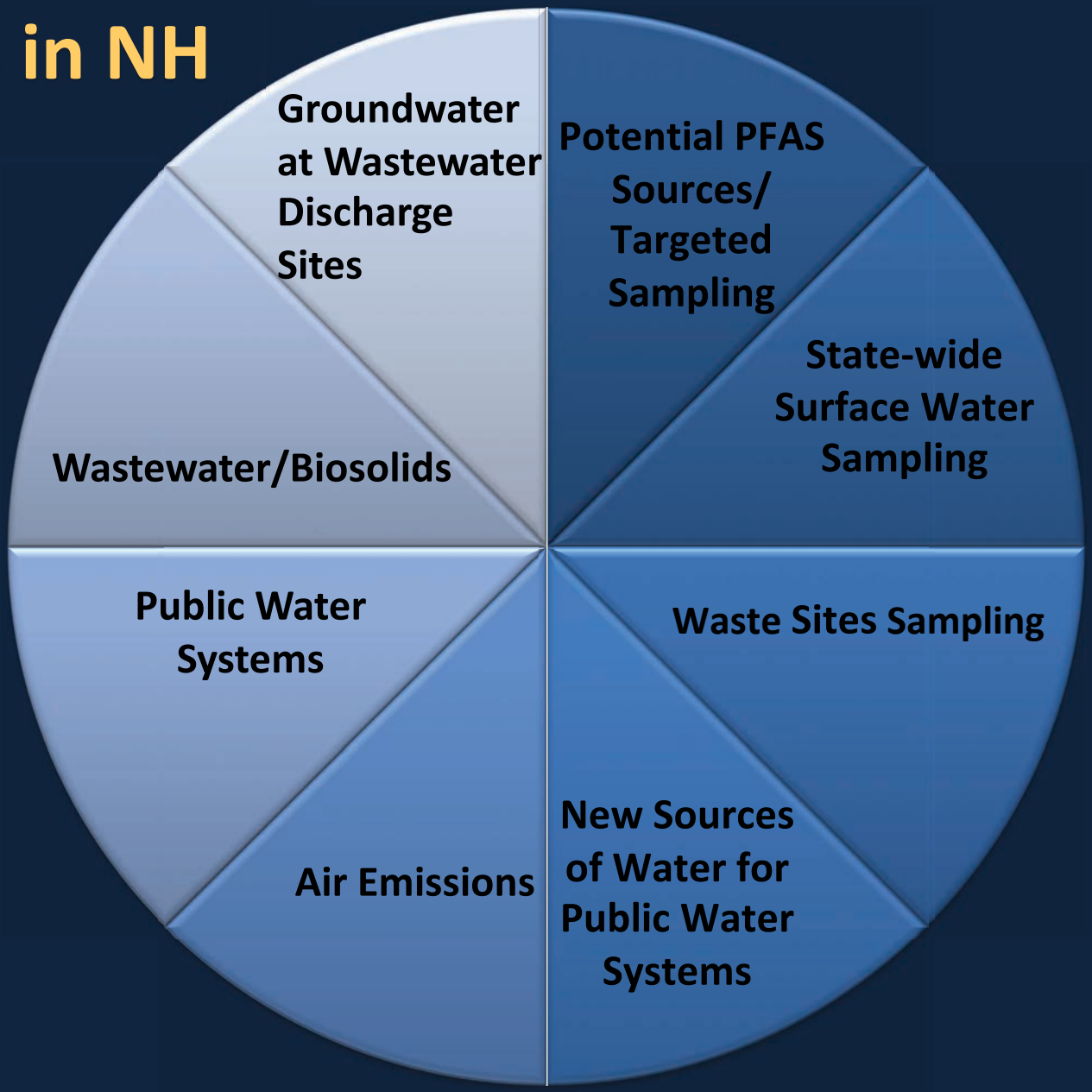
Residuals Assessments



Wastewater Assessments



Sampling for PFAS in NH



PFAS INVESTIGATION
Updated: September 24, 2018

SAMPLES WITH PFAS DETECTS
TOTAL PFAS (ppt)

- 70+
- 45 - <70
- Detect - <45

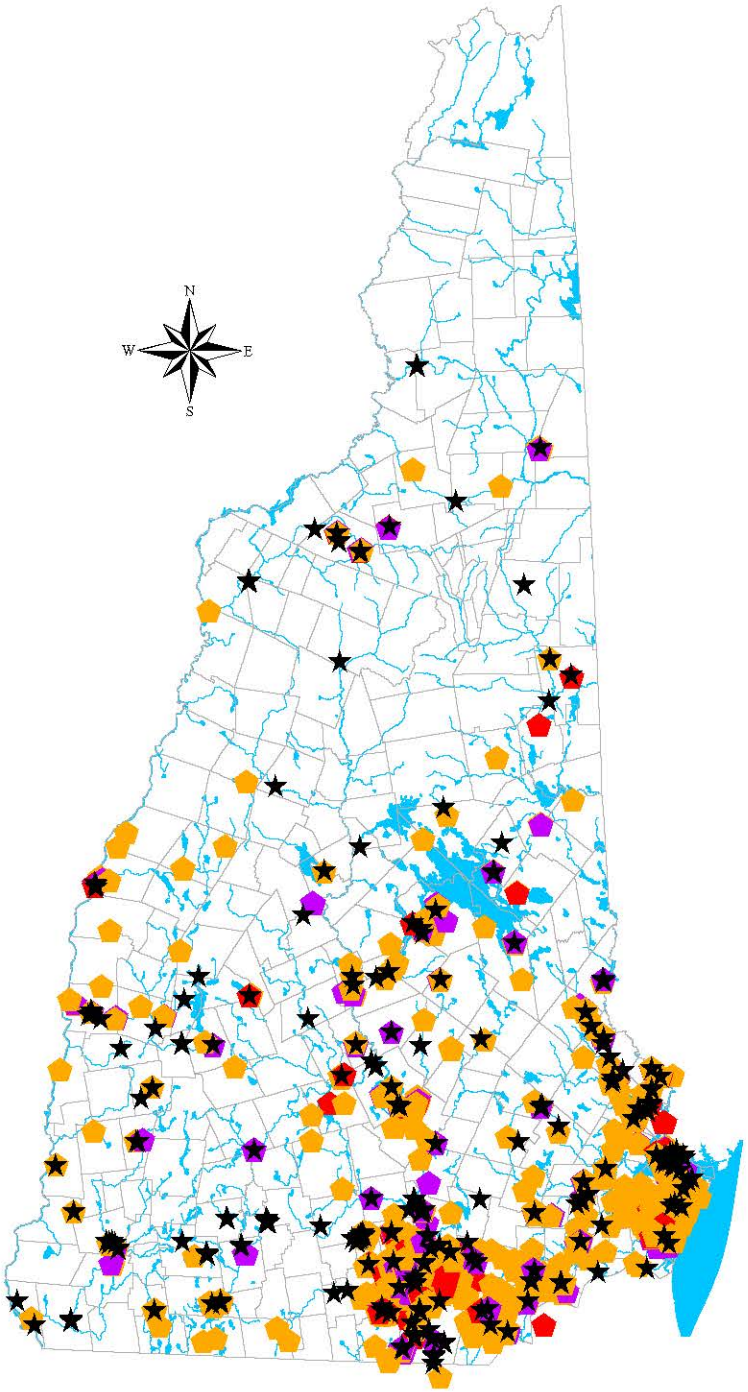
★ Existing Remedial Site with PFAS Detections

Political Boundary

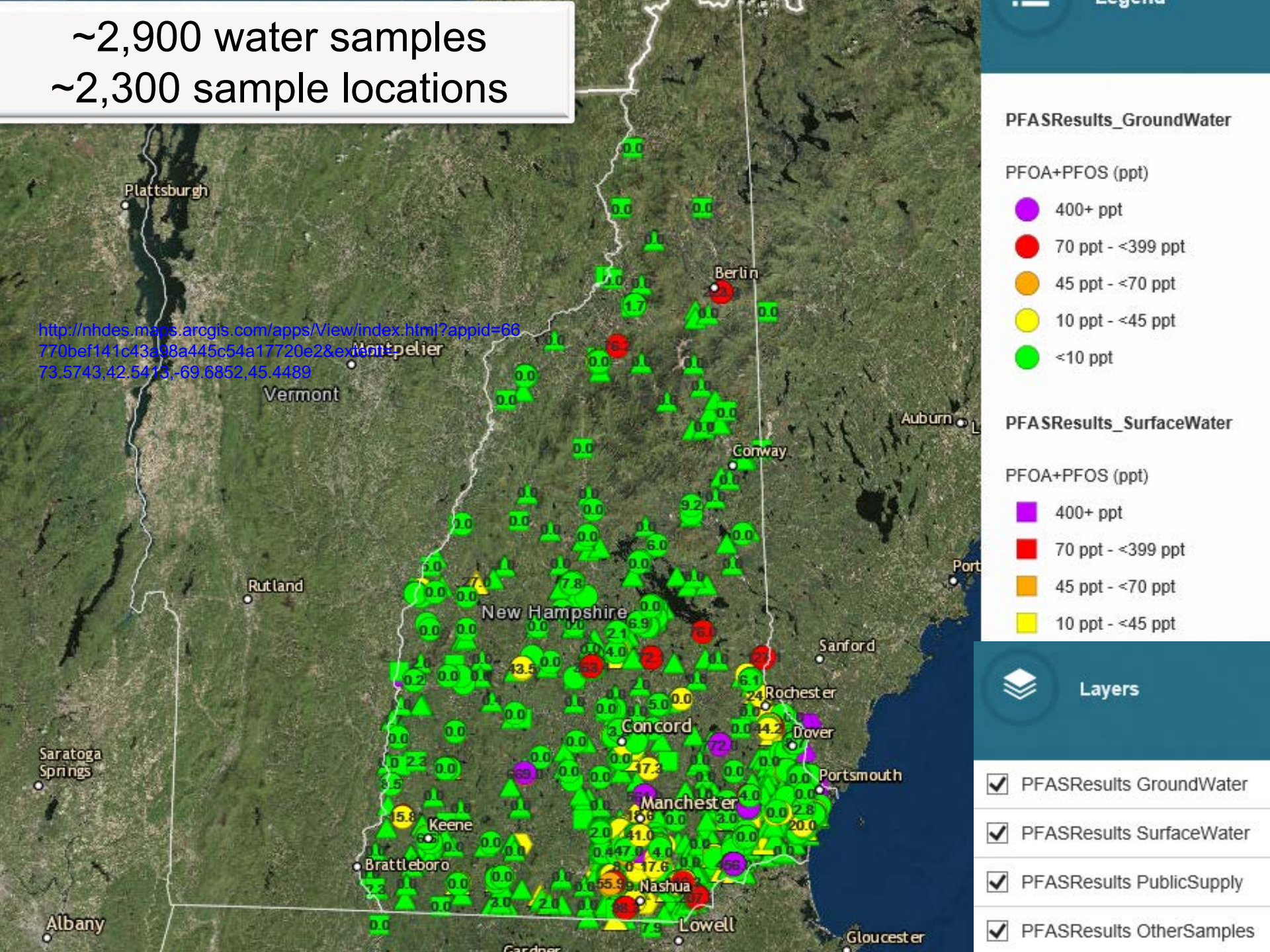
Major Waterbody

Miles
0 12.5 25 50

NEW HAMPSHIRE DEPARTMENT OF Environmental Services



~2,900 water samples
~2,300 sample locations

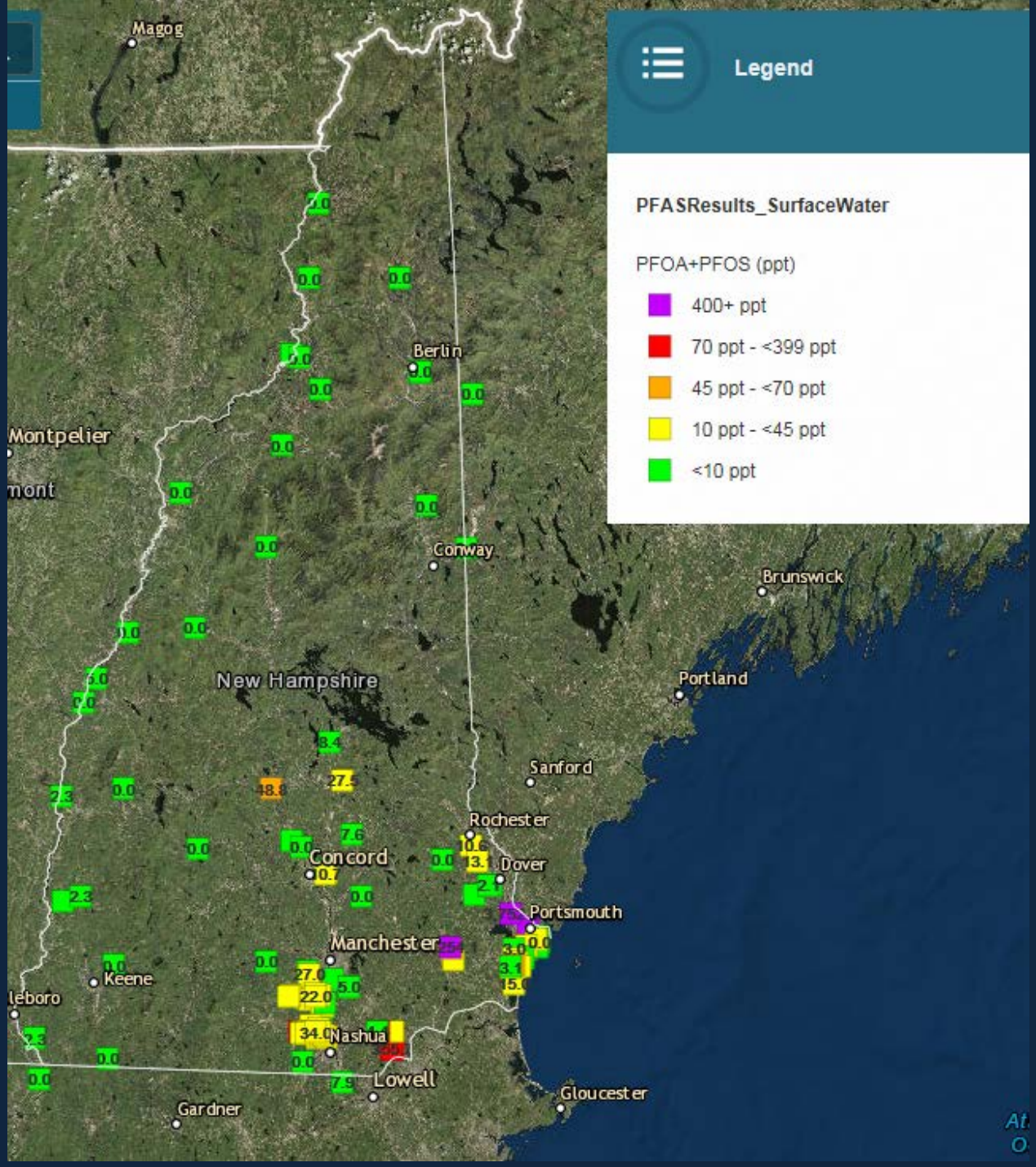


Public Water System Sampling in New Hampshire

Combined PFOA & PFOS Result	Number of Public Water System Sources	Percentage
Greater than 70 ppt	7	1.6%
Greater than 60 ppt	9	2.1%
Greater than 50 ppt	9	2.1%
Greater than 40 ppt	10	2.3%
Greater than 30 ppt	17	4.0%
Greater than 20 ppt	32	7.5%
Greater than 10 ppt	57	13.3%
Greater than 5 ppt	73	17.0%
Number of Sources Tested = 429		

Non Public Water System Samples

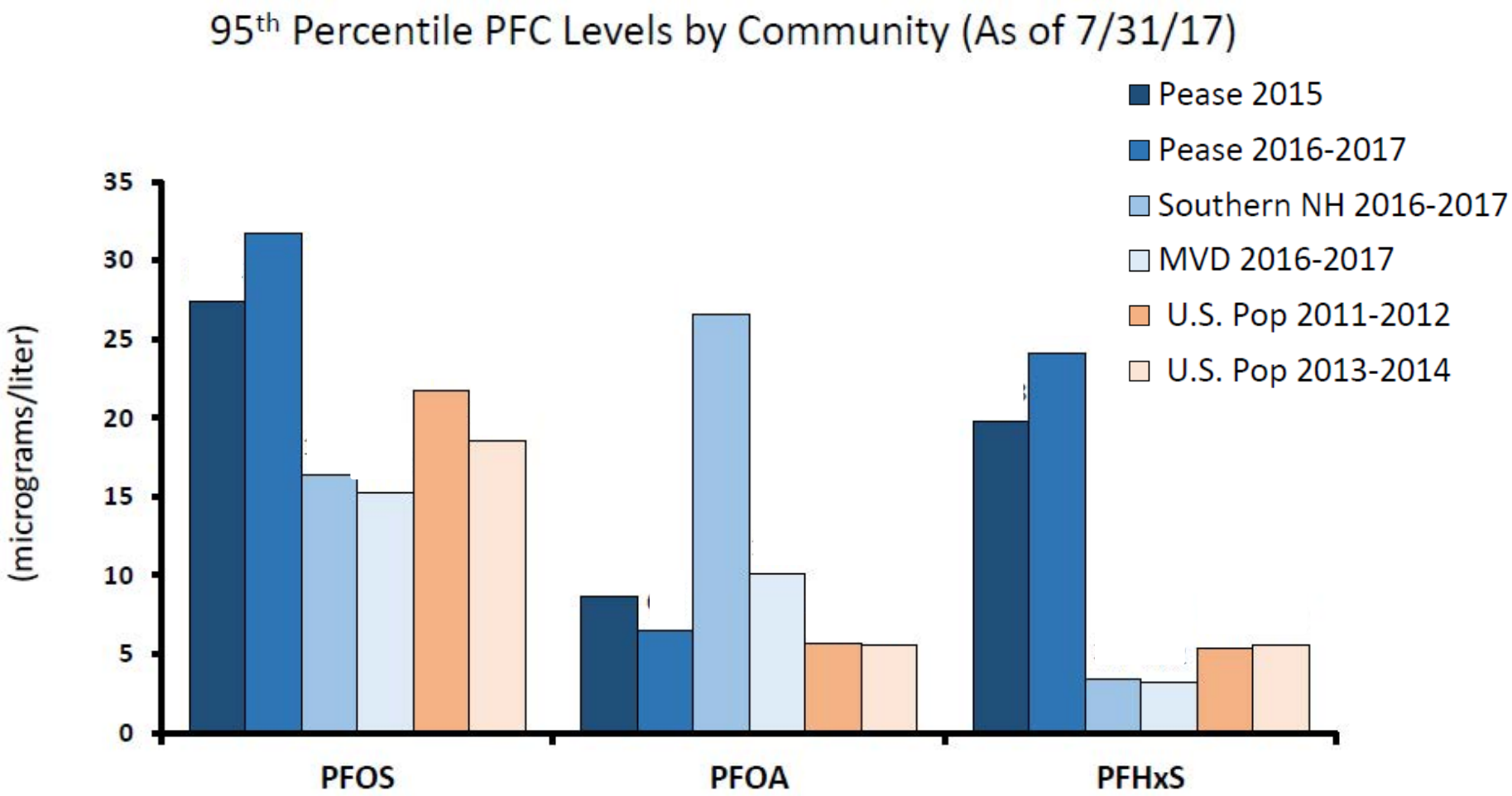
Site Type	# Sampled	Number of Detects	Combined PFOA & PFOS > 70 ppt	Percentage Exceeding 70 ppt
Existing Waste Sites (non-petroleum)	92	79	51	54%
Existing Petroleum Sites				
Auto Salvage Yards	4	4	3	75%
Fuel Oil Bulk Storage	1	1	1	100%
Used Motor Oil Sites	1	1	1	100%
Residential Home Heating Oil Spills	2		0	0%
Gas Stations	2	2	0	0%
Landfills				
Unlined	87	83	40	46%
Lined	10	9	2	17%
Wastewater Discharge to Groundwater Sites	47	39	8	17%
Fire Departments	17	12	7	41%


Legend
PFASResults_SurfaceWater
PFOA+PFOS (ppt)
400+ ppt
70 ppt - <399 ppt
45 ppt - <70 ppt
10 ppt - <45 ppt
<10 ppt
Magog
Berlin
Montpelier
Conway
Brunswick
New Hampshire
Portland
Sanford
Rochester
Concord
Dover
Portsmouth
Manchester
Keene
Nashua
Lowell
Gloucester
Gardner

Other PFAS Initiatives in NH

- Non-targeted PFAS analyses
- Leachate assessment
- Laboratory assessments
- Sampling at daycares
- Fire department initiatives
- Re-evaluating registered groundwater discharge sites
- Loon eggs
- Fish tissue & shell fish
- Biomonitoring

Human Blood Testing in NH



https://www.dhhs.nh.gov/media/pr/2017/10102017-pfc-findings.htm

Maine

- Carla Hopkins
  Director of Residuals Management
  Maine Department of Environmental Protection

https://www.mass.gov/lists/contaminants-in-drinking-water#pfas-(per-and-polyfluoroalkyl-substances-including-pfos-and-pfoa)-

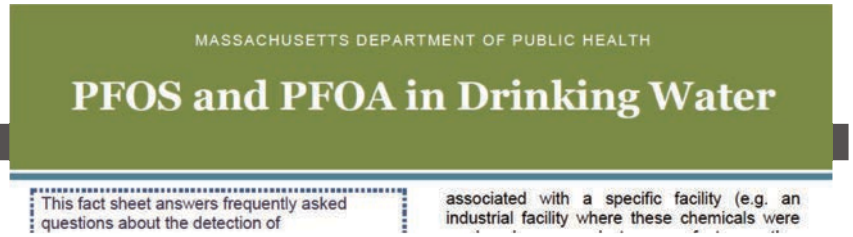
Massachusetts

"As a consequence of the widespread use of PFAS in consumer products, the effluent from residential septic systems and wastewater treatments plants can contribute to environmental concentrations at a site."

Office of Research and Standards Guideline = 70 ppt for drinking water for PFOA + PFOS + PFNA + PFHxS + PFHpA

"The reported presence of PFAS in soil or groundwater is not, by itself, a notifiable condition for those persons obligated to notify…. MassDEP recommends that the 14 analytes specified in EPA Method 537 Rev. 1.1 and listed in Table 3 should be the focus of MCP site investigations."

No activities re residuals management.


MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

PFOS and PFOA in Drinking Water

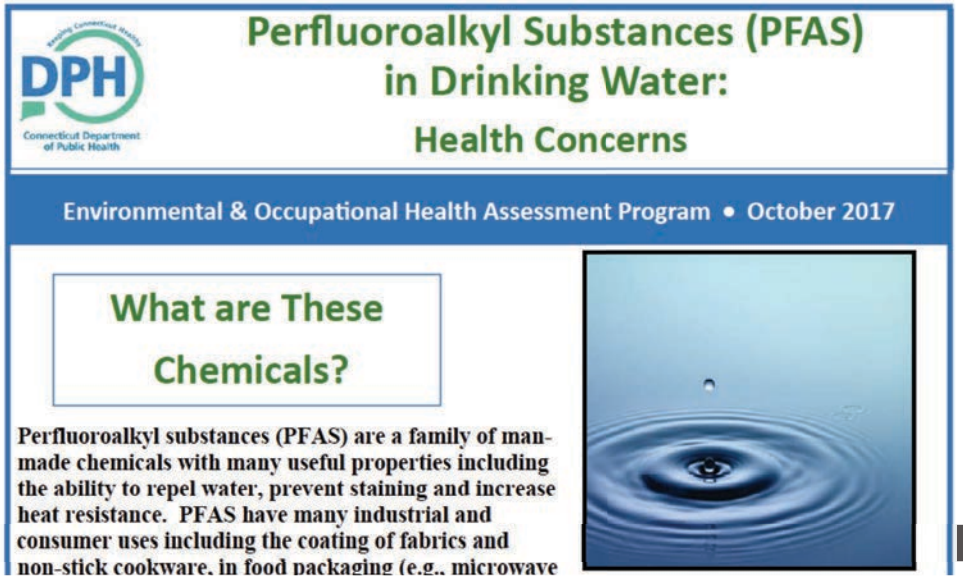
This fact sheet answers frequently asked questions about the detection of

associated with a specific facility (e.g. an industrial facility where these chemicals were

https://portal.ct.gov/DPH/Drinking-Water/DWS/Per--and-Polyfluoroalkyl-Substances

Connecticut

- Drinking water "action level" was set at 70 ppt for the sum of PFOA + PFOS + PFNA + PFHxS + PFHpA



DPH
Connecticut Department of Public Health

Perfluoroalkyl Substances (PFAS) in Drinking Water: Health Concerns

Environmental & Occupational Health Assessment Program • October 2017

What are These Chemicals?

Perfluoroalkyl substances (PFAS) are a family of man-made chemicals with many useful properties including the ability to repel water, prevent staining and increase heat resistance. PFAS have many industrial and consumer uses including the coating of fabrics and non-stick cookware, in food packaging (e.g., microwave

Rhode Island

- RI is using the EPA Health Advisory number of 70 ppt for PFOA and PFOS as a groundwater standard and as drinking water action level.
- PFAS activities are being managed by several sections in the RI Department of Environmental Management (Office of Waste Management is the lead) and the RI Department of Health (Office of Drinking Water Quality is the lead).
- There is no website. At present, the wastewater and biosolids programs have had limited involvement.
- RI Department of Health has sampled public wells within proximity to suspected sources of PFAS. RI Department of Environmental Management Office of Waste Management has coordinated and overseen the response to PFAS contamination at a fire station near a public well and at a former textile manufacturing plant.
- Wastewater activities: The use of fire-fighting foam by the RI Airport Corporation (T.F. Green Airport) to be addressed in their RIPDES discharge permit that will be reissued in 2019.

https://www.dec.ny.gov/chemical/108831.html

New York

- Hoosick Falls – plastics manufacturing contamination site
- "$2.5 billion Clean Water Infrastructure Act of 2017… will provide direct support to help communities to upgrade aging drinking water and wastewater infrastructure and protect drinking water sources by conserving open space and addressing contaminants, prioritizing regional collaboration at the watershed scale"
- AFFF foam collection from firefighting operations.
- Composting facility affected by DEC concerns & testing; residuals management negatively affected & business nearly shut down. One-time screening value of 72 ppb applied to one particular residual.

New Jersey

- "Hi Ned, the only thing I can report is that the Department recently adopted a drinking water MCL of 13 ppt for PFNA. (Effective date 9/4/2018)."

  Anthony Pilawski, Section Chief
  Bureau of Pretreatment and Residuals
  Division of Water Quality
  NJ Dept. of Environmental Protection

- Reportedly planning a wastewater survey. States that have done so already: MI, NH, & WA

Michigan

- **Biosolids – IPP initiative** – reached out to all WWTPs to have them identify potential sources and test sources and do effluent testing….
  - Results are back… There are three tiers of WTTPs…
  - 1. below effluent / river standard of 12 ppt – these are good to go
  - 2. Those between 12 & 50 ppt have to do more work to get sources reduced; then doing quarterly monitoring…
  - 3. 5 or 6 were over 50 ppt – have to do source reduction and ongoing monitoring, and also biosolids monitoring… results from the biosolids monitoring are coming back now… all these facilities landfill, so DEP does not have to decide what is appropriate for land application.
- **No criteria for biosolids,** and doesn't seem to be in the works… There was a soils number was in clean-up criteria draft… it has since been taken away.

Michigan (2)

- **One facility – LaPeer – had high levels in biosolids**. AECOM has done evaluation of land app sites – soil, groundwater, surface water. Report should be public soon. Success at this facility: they identified source, got it eliminated from that metal plater or finisher… supposedly the metal industry stopped using mist in 2015, but they had residue still; and their industrial wastewater is now going through an activated carbon filter before discharge to the WWTP.

- **State is looking everywhere**… all municipal and school water supplies. 70 ppt is the state standard. Working on landfills and military sites. Governor has central committee overseeing… biosolids has a sub-group under that effort.

- State biosolids coordinator spends 70% of his time on PFAS now.

Alaska

- Just proposed soil clean-up standards for several PFAS for migration to groundwater – all < 1 ppb.
- Those in the hazardous & site clean-up & groundwater protection programs at AK DEC apparently do not realize that pretty much all domestic-only wastewater and residuals are routinely above this very low number. A
- Analysis at this level is challenging!

https://www.epa.gov/pfas/epa-actions-address-pfas

U. S. EPA

- **National Leadership Summit and PFAS Management Plan**
  - May National Summit
  - Held ~6 community engagements across country over summer
- **PFAS Exposure and Occurrence – set PHA at 70 ppt in May 2016**
- **Human Health Impacts of PFAS**
  - Also: ATSDR Draft Tox. Profile in June
- **Reducing PFAS Exposures**
  - PFAS Stewardship program with industry
- **Stakeholder Support**
- **EPA's key action items**
  - Consider MCL for drinking water
  - Consider regulation under CERCLA?

U. S. EPA – Analytical Methods

Chris Impelliteri

1. **Direct injection (SW 846 Method 8327) for waters other than drinking water**
   - external lab validation – 6/7 data sets back… 5 look good… one lab had problem (precision all over the place)… trying to figure that out.
   - Optimistic for draft method out for public review by the end of 2018.
2. **Isotope Dilution Method (SW 846 8328) draft for waters other than drinking water and solids**
   - have done internal review
   - working with DOD on fast tracking external validation… DOD would rather see 8328 move ahead… EPA is working to include DOD concerns and options, so users can meet both DOD and EPA requirements. A lot of the DOD requirements will be optional.
   - will include GenX in this, but not Adona, because no radio-isotope available yet.
   - Looking at late winter, early spring release of draft. Validation will be a big effort.
3. **New report coming soon re PFAS data quality** – co-authored with DOD… tips on review of data packages for PFAS. Regardless of method used, it is essential to look at raw data – peak shapes should be same as the added standard, etc.

Sign up for free *NEBRAMail*: left side of nebiosolids.org

Still using biosolids compost on my home garden…

& I know it has PFOA + PFOS at ~25 ng/g (ppb)… I am living with that.

Ned Beecher

ned.beecher@nebiosolids.org

603-323-7654