



Update on NHDES Investigations and Program Approach for Waste Sites in New Hampshire

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NEWMOA PFAS Workshop
May 2017





PFAS in New Hampshire

2013-2015

- UCMR3
- 80 samples 18 systems
- 3 systems with detections

April 2014

- Pease Tradeport Water System
- Haven Well - 2,500 ppt PFOS

February 2016

- SGPP facility – Merrimack
- Sink (public water source) – 30 ppt PFOA

April 2016

- Former TCI Amherst

April 2016 to
present

- Southern NH investigations and statewide assessment



NH Regulatory Framework

- ▶ AGQS - Ambient Groundwater Quality Standards (Env-Or 600)
 - PFOA, total of all isomers – 70 ng/L or ppt
 - PFOS, total of all isomers – 70 ng/L or ppt
 - Combined total PFOA + PFOS – 70 ng/L or ppt

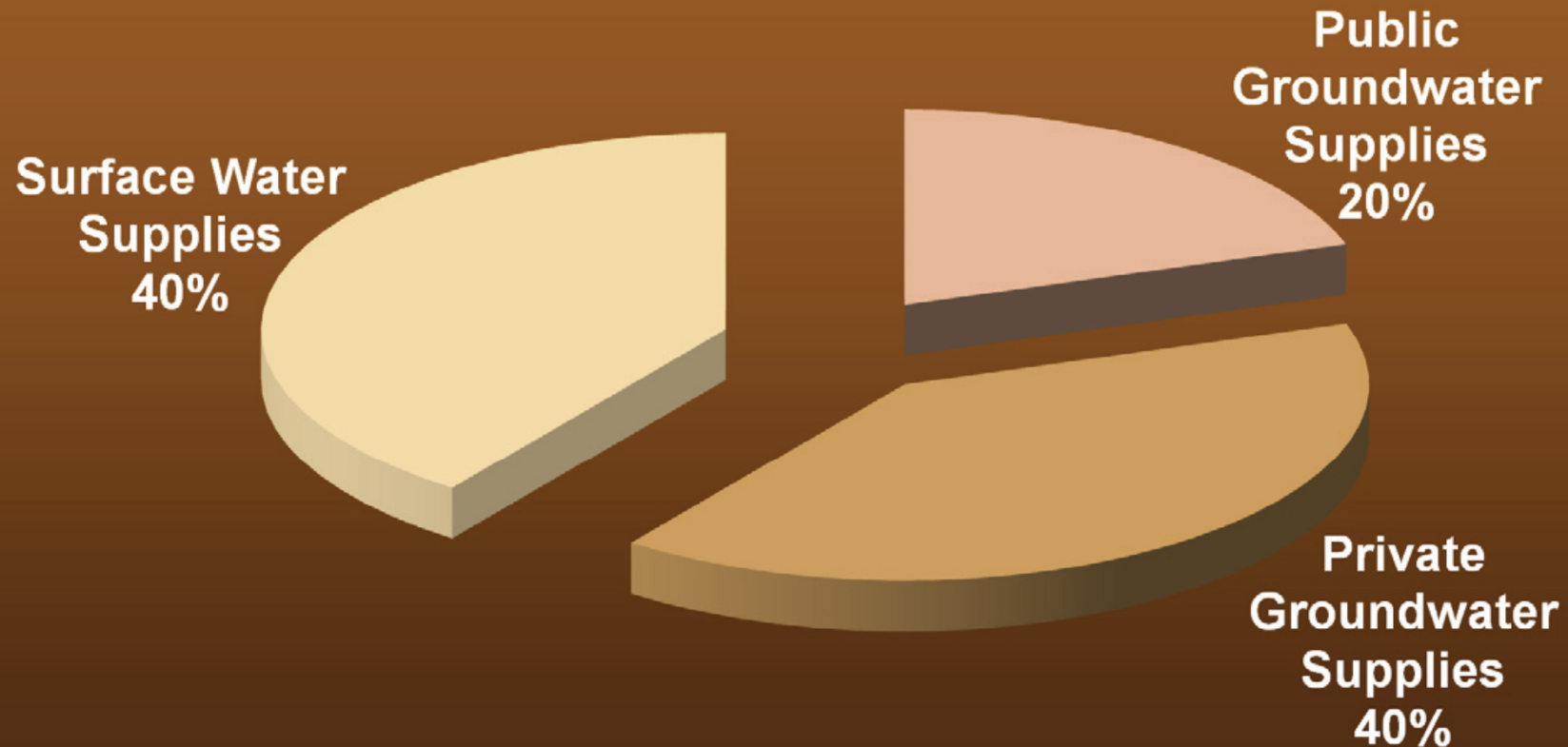
- ▶ Soil guidance - direct contact
 - PFOA – 0.5 mg/kg (500 ppb)
 - PFOS – 0.5 mg/kg (500 ppb)
 - No leaching based standard

- ▶ No surface water standard

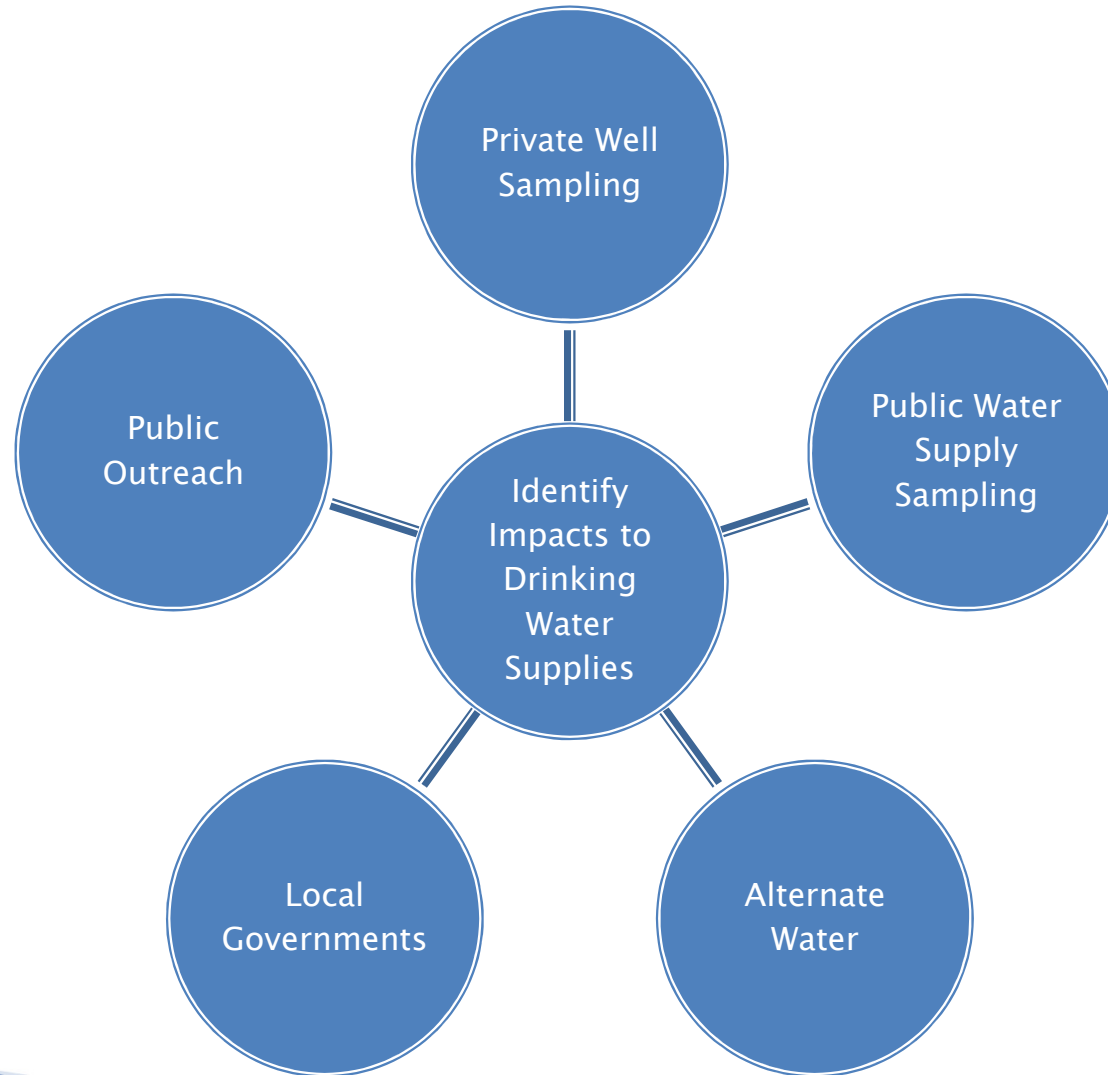


Drinking Water Exposure

Sources of Drinking Water in New Hampshire

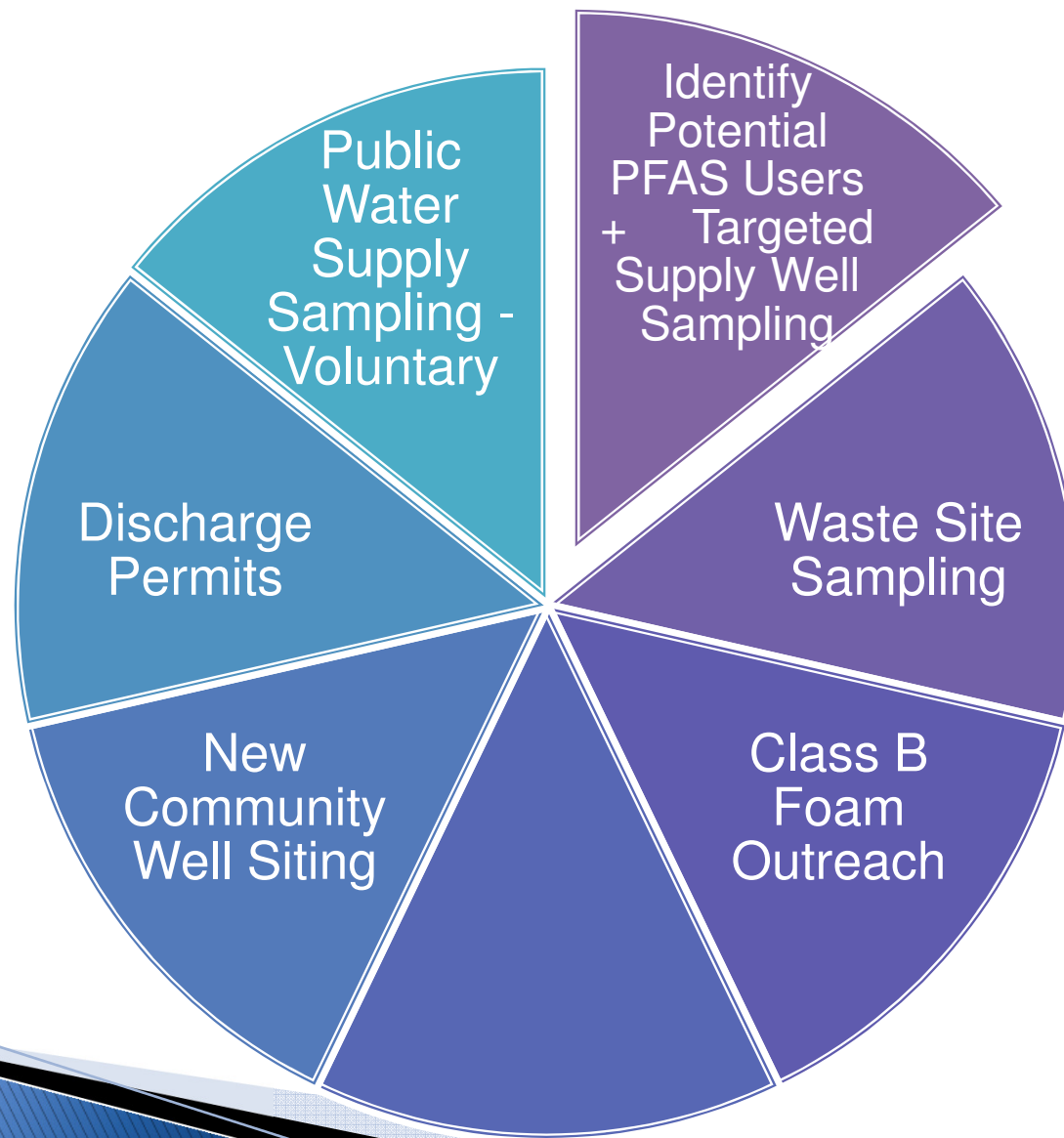


Incident Response Components

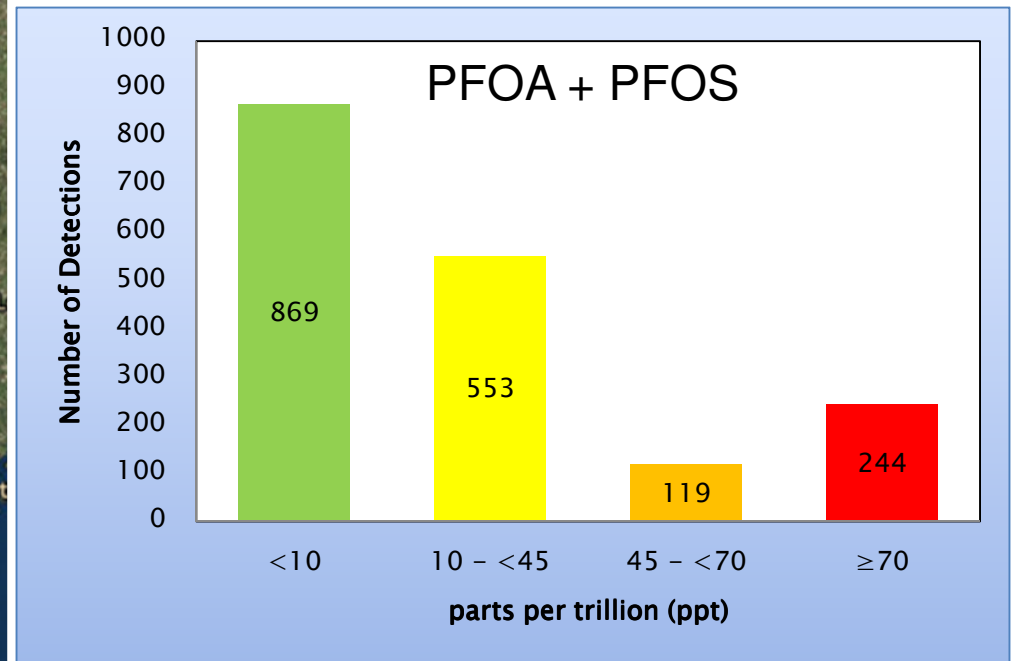
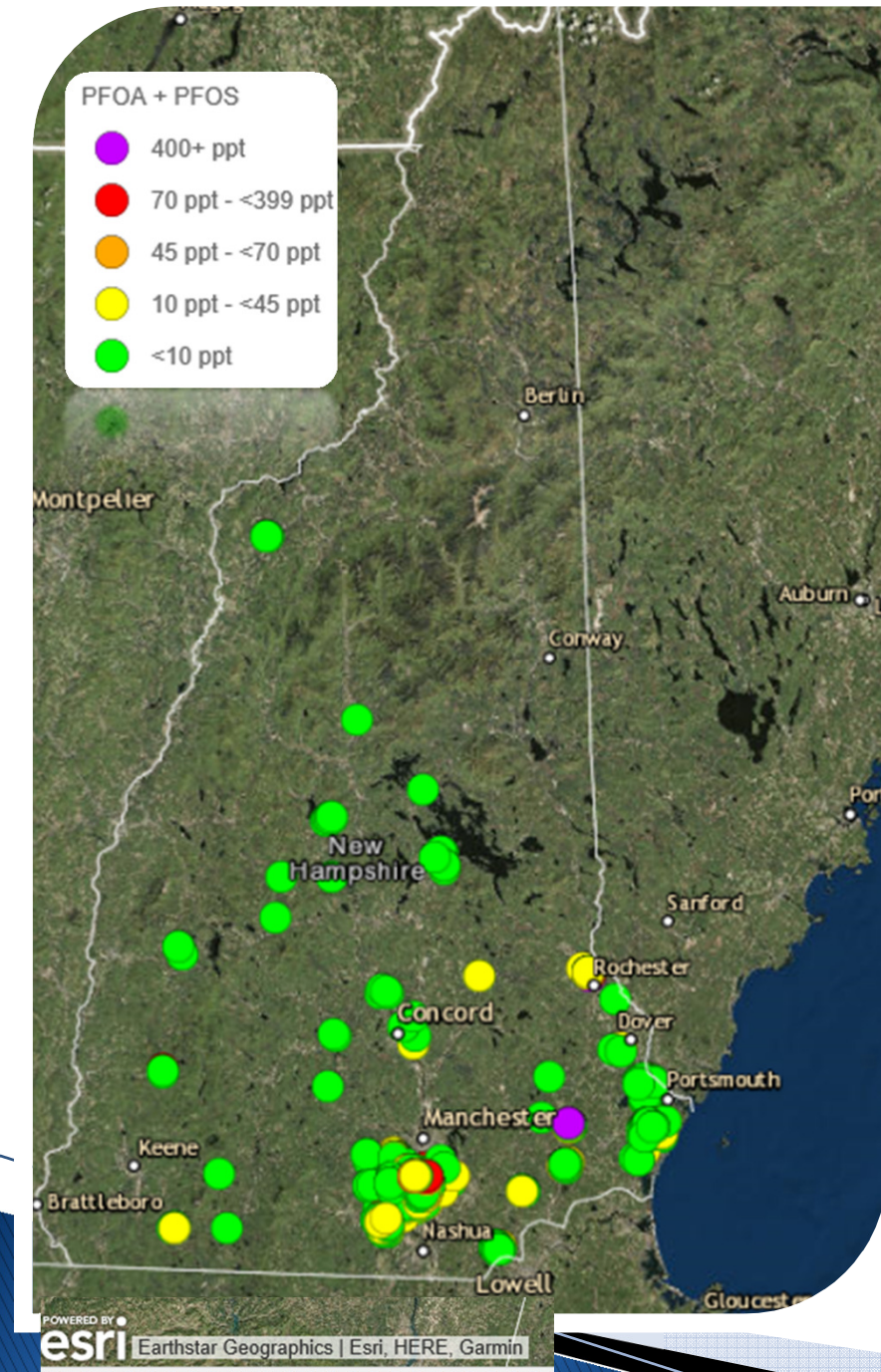




Assessment of PFAS Occurrence

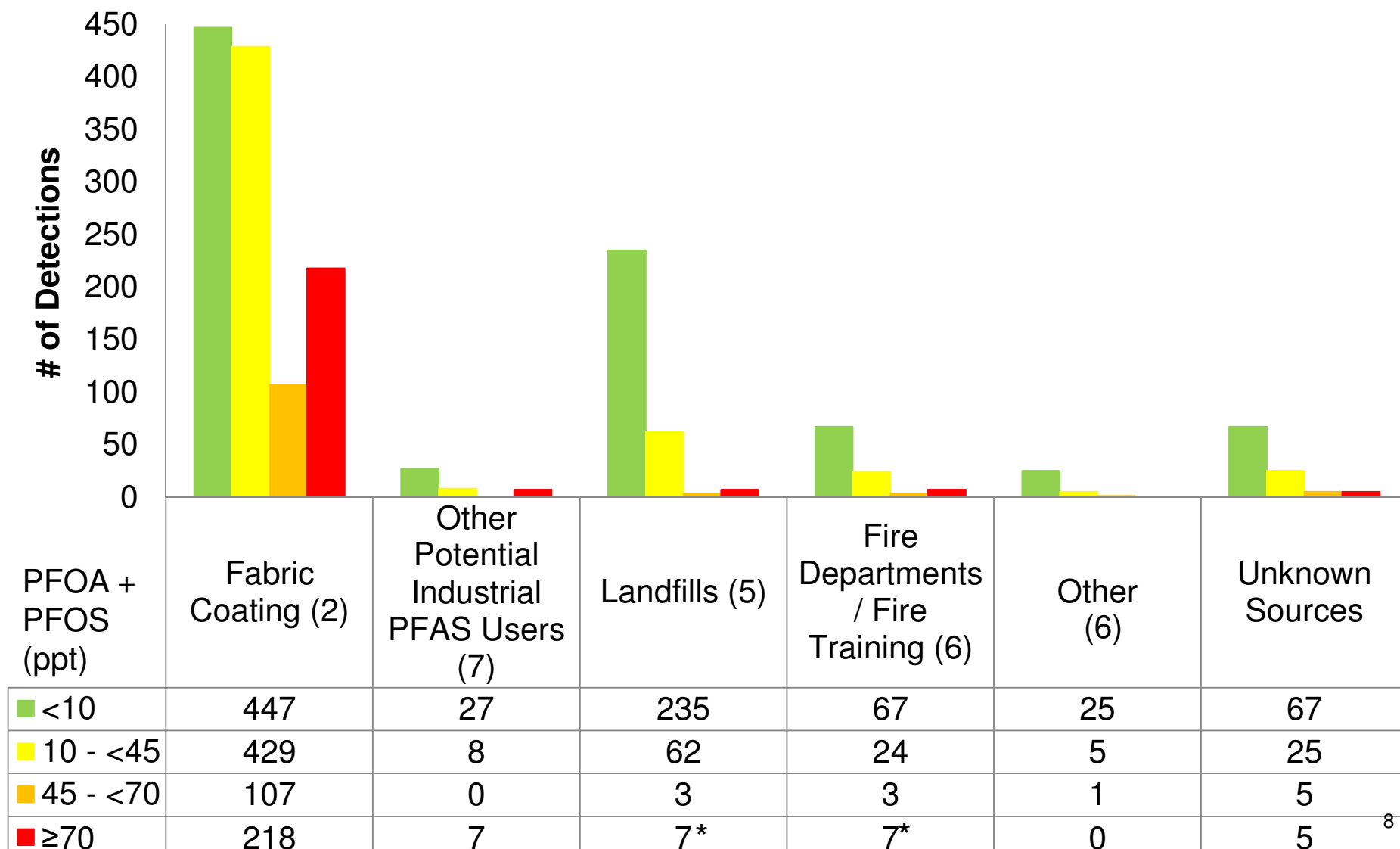


NHDES Sampling





NHDES Sample Results by Source

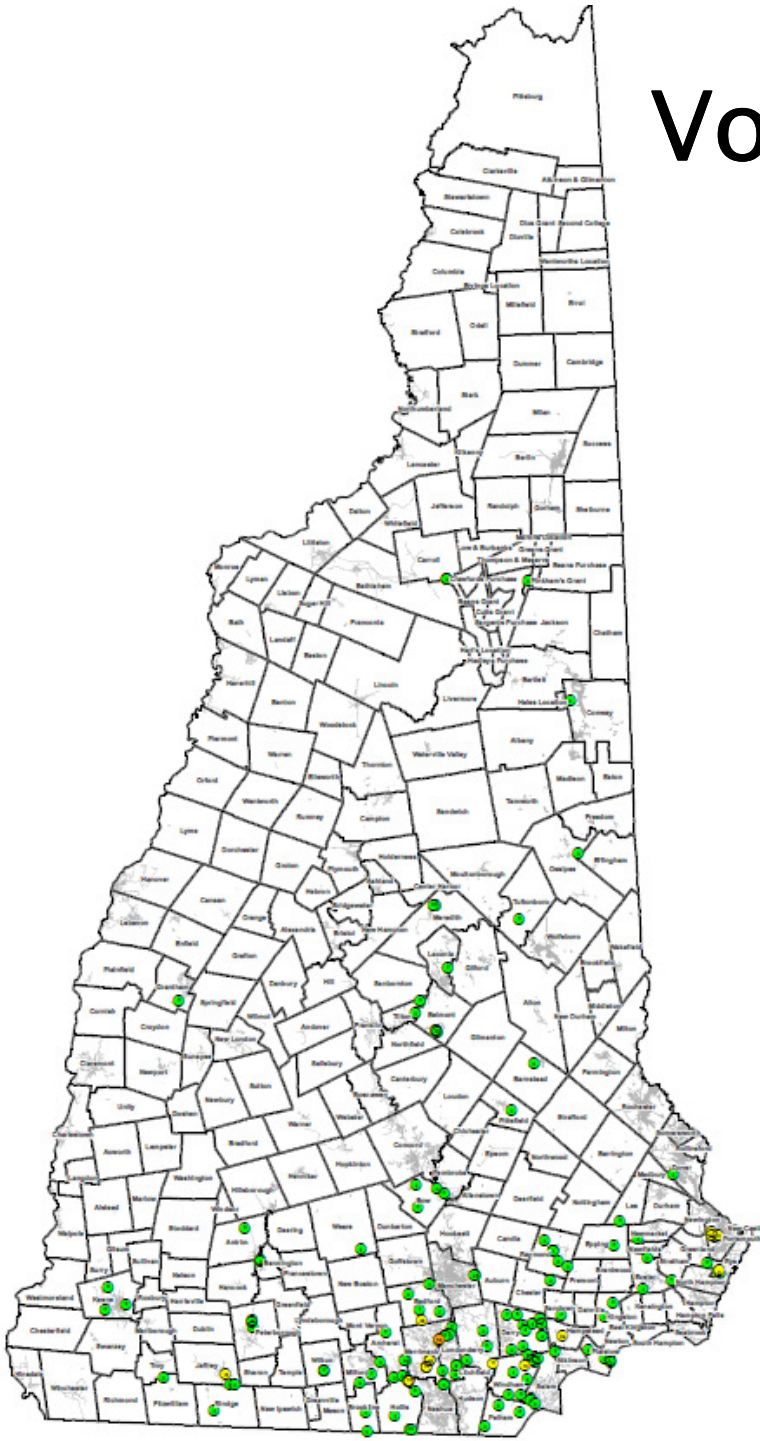
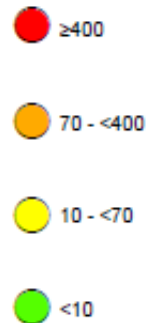


Voluntary PWS Sampling

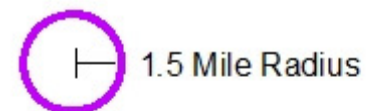
- ▶ Community water systems and non-transient PWS
- ▶ 121 (~10%) systems reported results
- ▶ 150 sources sampled

Updated: September 15, 2016

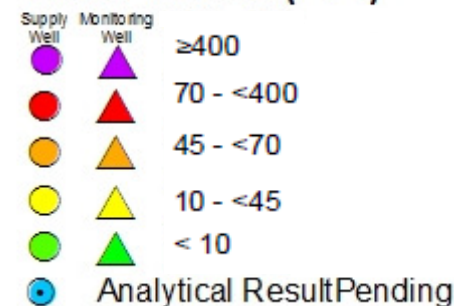
Public Supply Wells
PFOA + PFOS (PPT)



SOUTHERN NH PFAS INVESTIGATION May 4, 2017



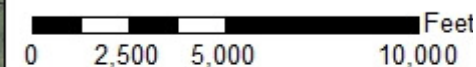
PFOA + PFOS (PPT)



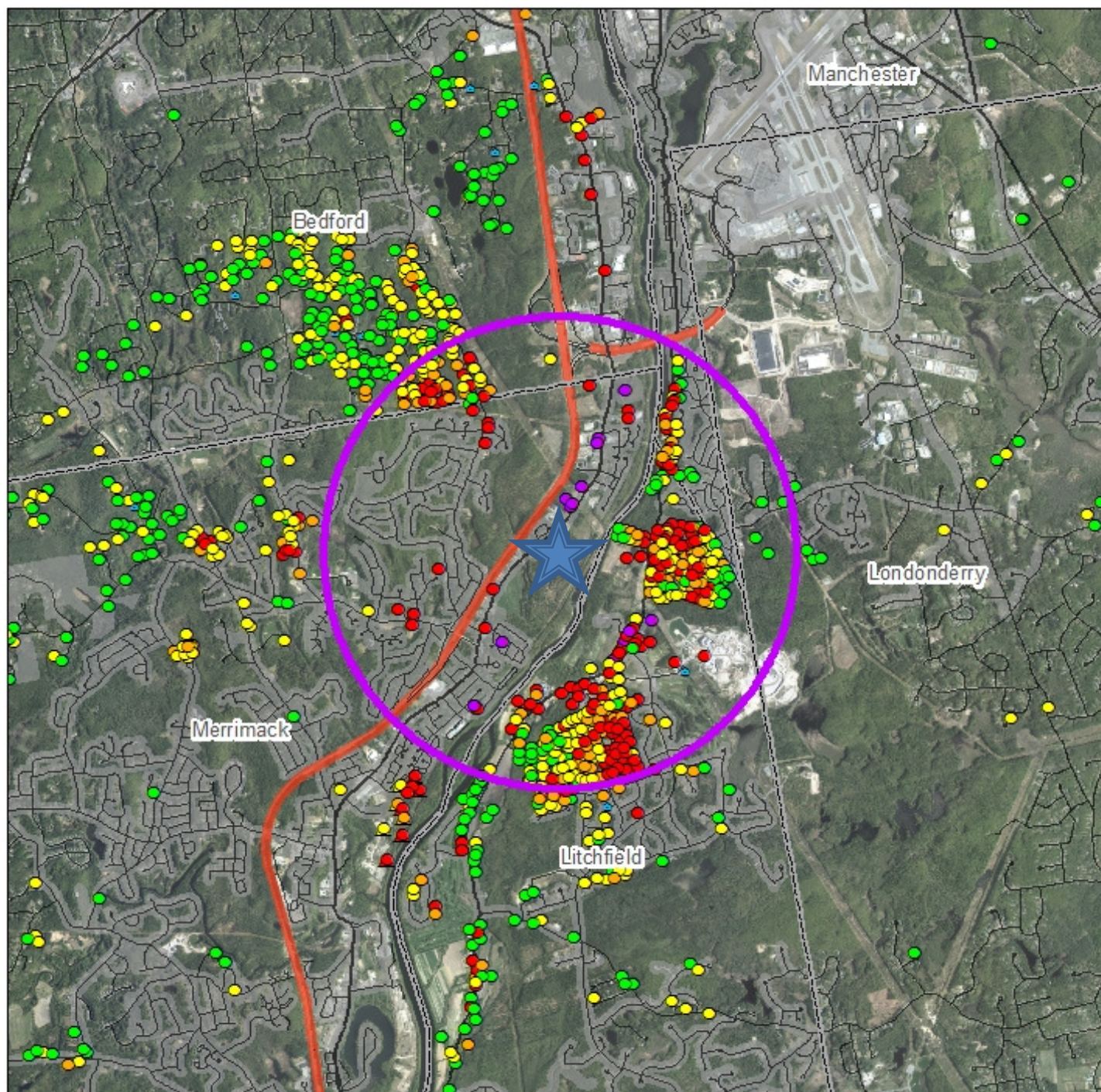
Public Water Supplies

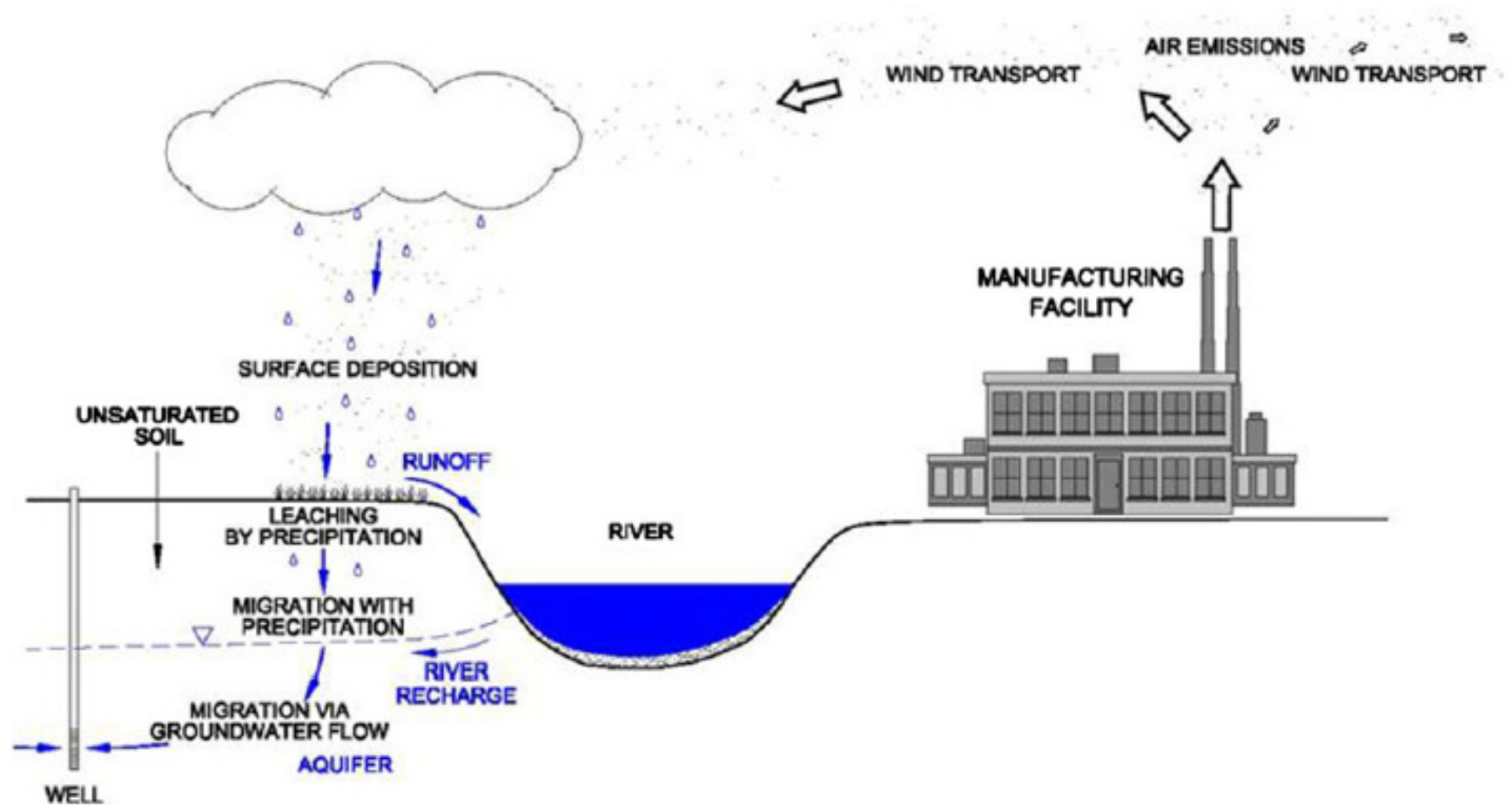
Water Distribution

Political Boundary



1 inch = 5,000 feet



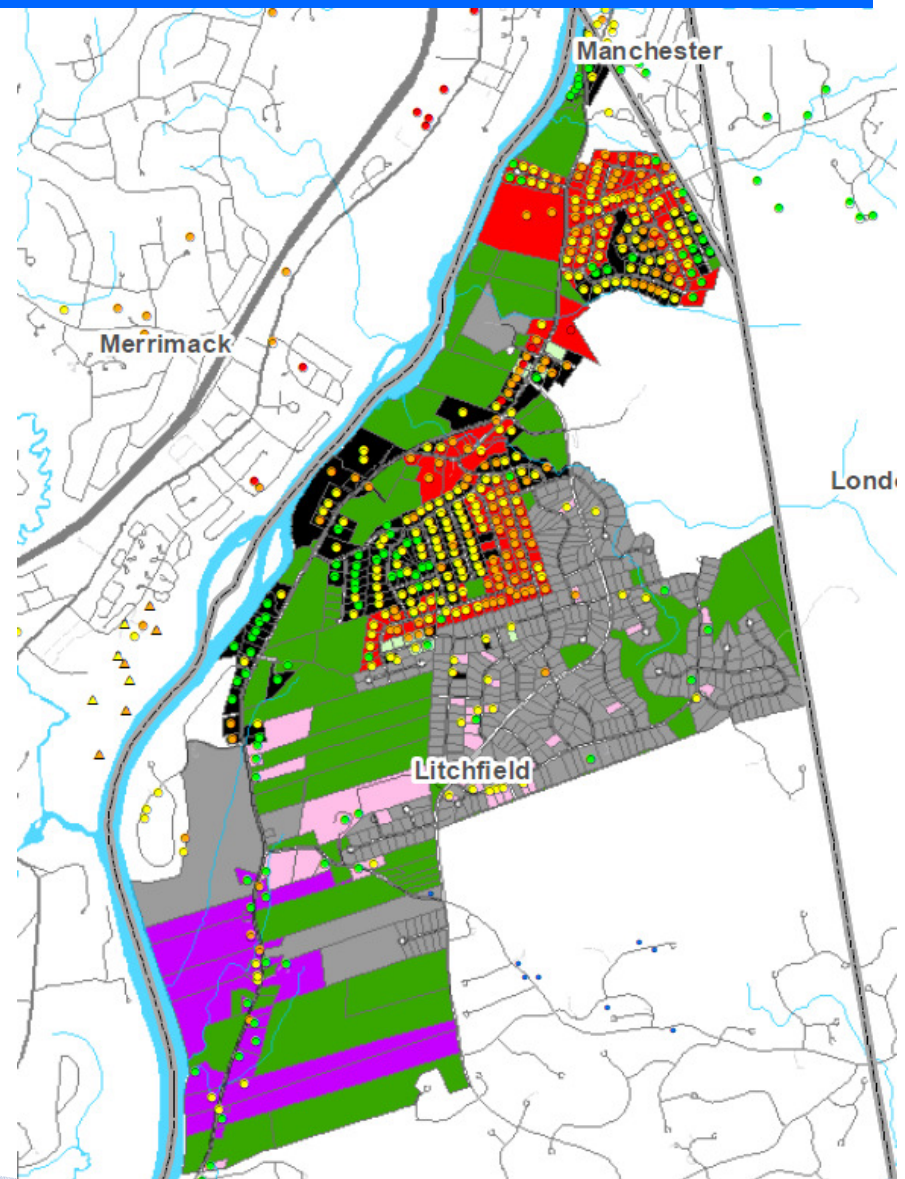


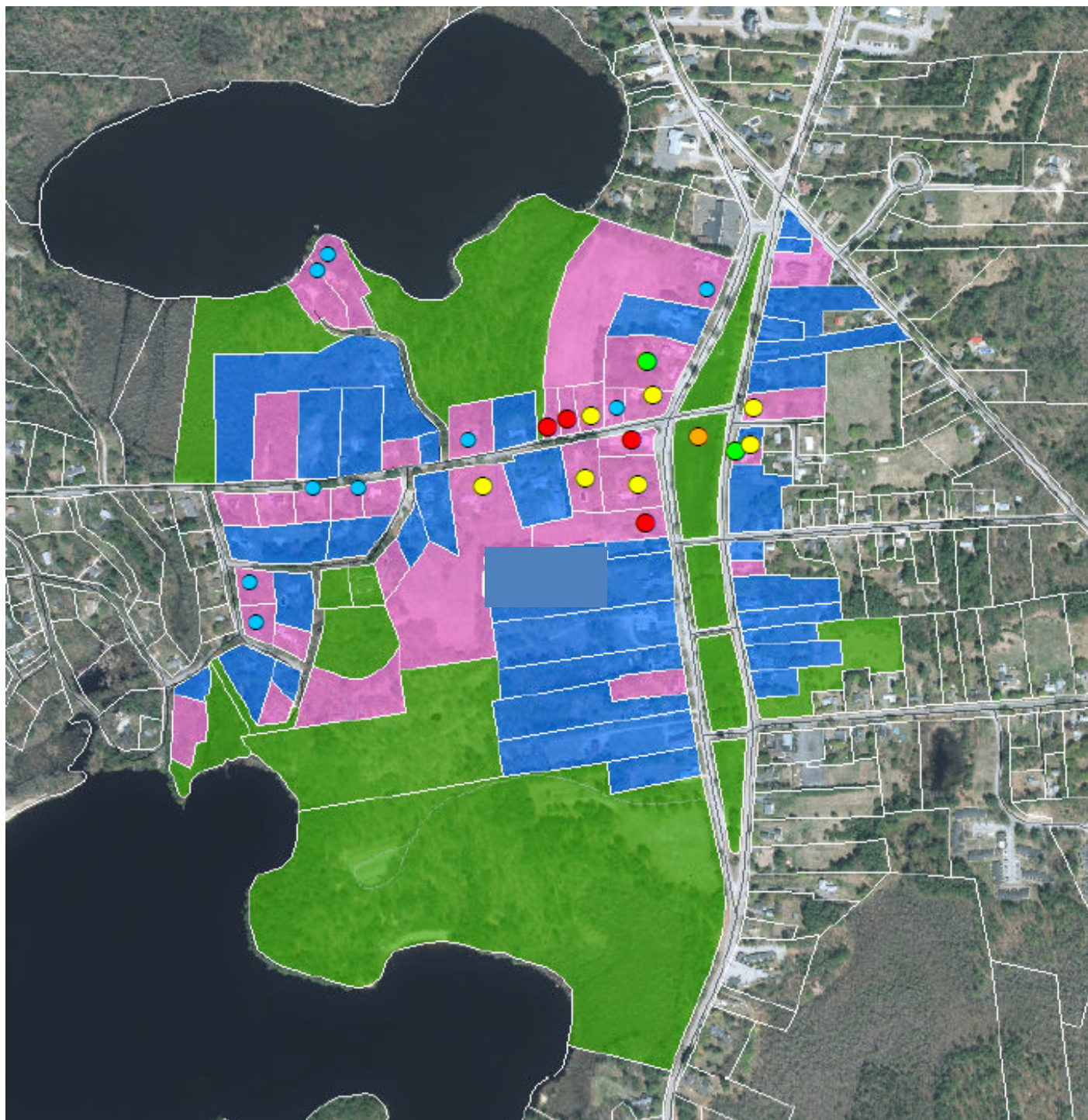
Davis et al., 2007, *Chemosphere*



Alternate Water – Southern NH Areas

- ▶ ~500 properties on bottled water
- ▶ POU systems ~60
- ▶ POE systems ~25
- ▶ Long-term solutions
 - Litchfield – 400 connections; ~100 complete
 - Manchester – 26 connections
 - Merrimack – 15 connections
 - Bedford – Design phase
 - Amherst – Design phase





FIRE DEPARTMENT

January 3, 2017

PFOA + PFOS (PPT)

Public/Private
Well

- ≥ 400
- 70 - <400
- 45 - <70
- 10 - <45
- < 10

Sampling Status

- Sampled/Scheduled
- Invited
- Distribution
- Undeveloped
- Sampling Candidates

Transportation

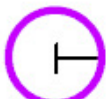
- US/ NH Route
- Road
- Driveway

- Political Boundary
















1 inch = 667 feet



CLOSED LANDFILL PFAS INVESTIGATION MAY 3, 2017

 0.5 Mile Radius


PFOA + PFOS (PPT)

Supply Well	Monitoring Well	Surface Water	
			≥ 400
			70 - <400
			45 - <70
			10 - <45
			< 10

Public Water Supplies

 Water Distribution

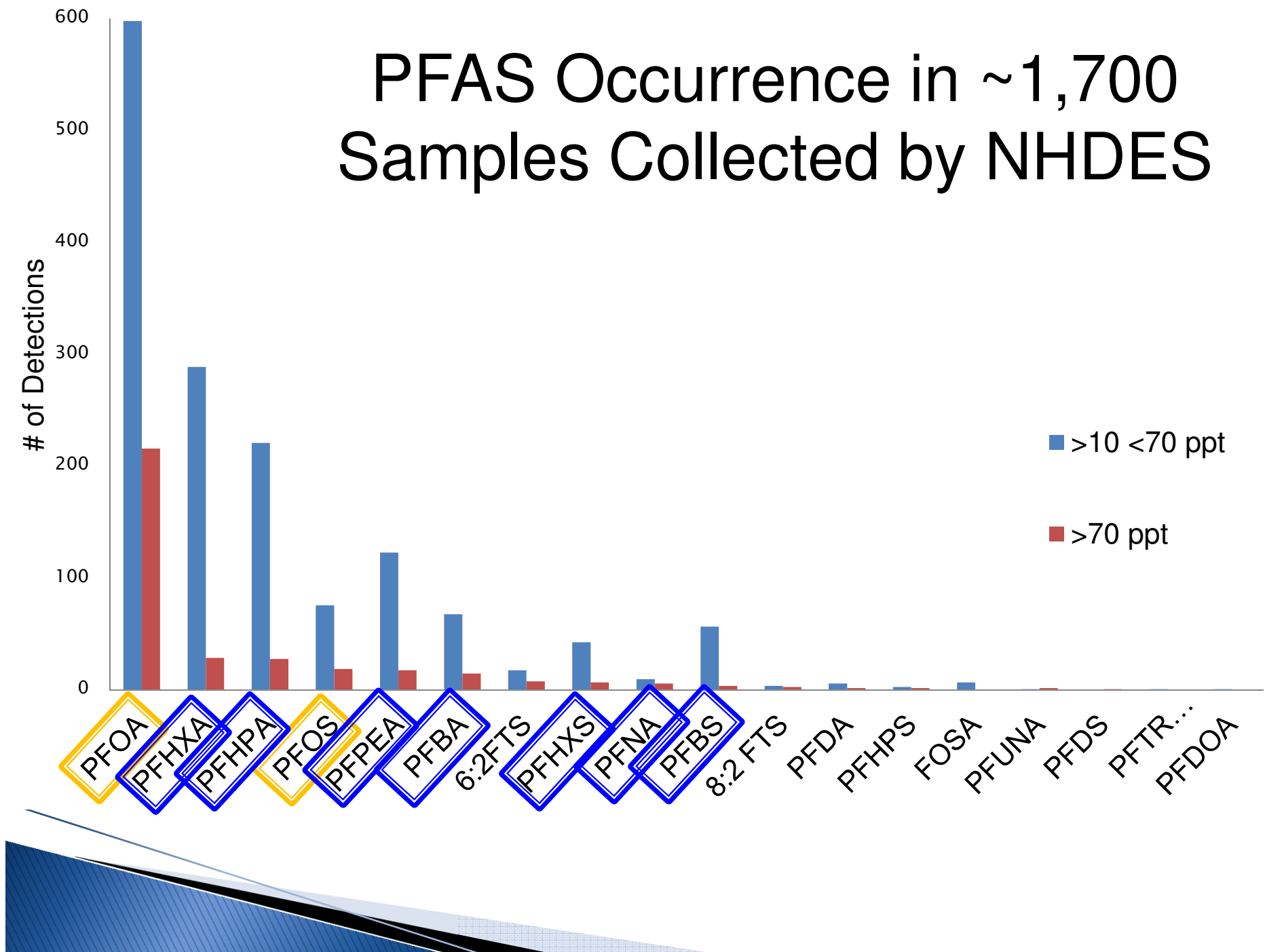
 Political Boundary

 Feet
0 750 1,500 3,000

1 inch equals 1,500 feet



PFAS Occurrence in ~1,700 Samples Collected by NHDES





Drinking Water Exposure

Sampling Date	PFOA (ppt)	PFOS (ppt)	Total PFOA + PFOS (ppt)
April 2016 (Lab 1)	60	9.3	69.3
November 2016 (Lab 1)	55	5.3	60.3
November 2016 (Lab 2)	42	<4	42
February 2017 (Lab 3)	40	<2	40



Waste Division Program Approach

- ▶ Initial letter – November 22, 2016
- ▶ Letters directly to Site owners soon!
- ▶ Active landfills – sample in July 2017
- ▶ Other sites – 2017 or 2018

Project Type	# of Sites
Hazwaste (e.g., GMP sites, remediation)	340
SiteEvalHW (e.g., Brownfields)	154
Landfill/Unlined	189
Lined Wastewater/Lagoon	23
Landfill/Lined	7
Total	713



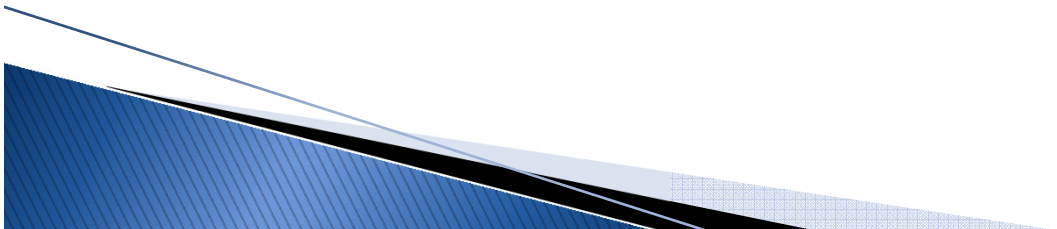


Initial Sampling

- ▶ Objectives
 - Has there been a release?
 - Are receptors at risk?

- ▶ Groundwater sampling
 - Wells in source area(s)
 - Compliance monitoring points
 - Previously impacted off-site supply wells
 - Upgradient?

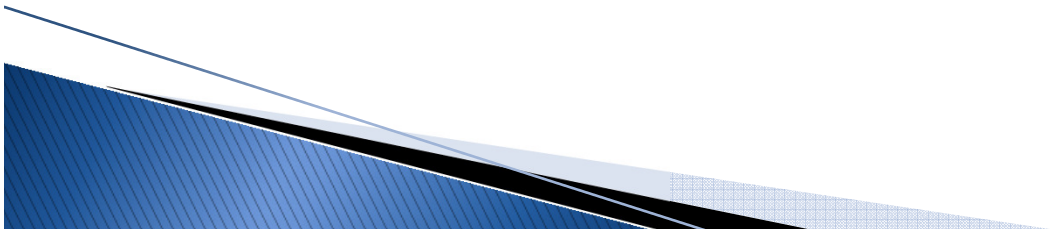
- ▶ PFAS results should be uploaded to NHDES database – Environmental Monitoring Database (EMD)





Initial Sampling Cont.

- ▶ When reporting the results, provide supporting information for the sampling plan
- ▶ Some sites require sampling plan be submitted beforehand for NHDES review and approval
 - Lined landfills (summer 2017)
 - Federal facilities: Superfund and DoD sites (confirm with Project Manager)



Lab Analyses

Perfluoroalkyl Carboxylic Acids	# of Carbons
Perfluorobutanoic acid (PFBA)	4
Perfluoropentanoic acid (PFPeA)	5
Perfluorohexanoic acid (PFHxA)	6
Perfluoroheptanoic acid (PFHpA)	7
Perfluorooctanoic acid (PFOA)	8
Perfluorononanoic acid (PFNA)	9

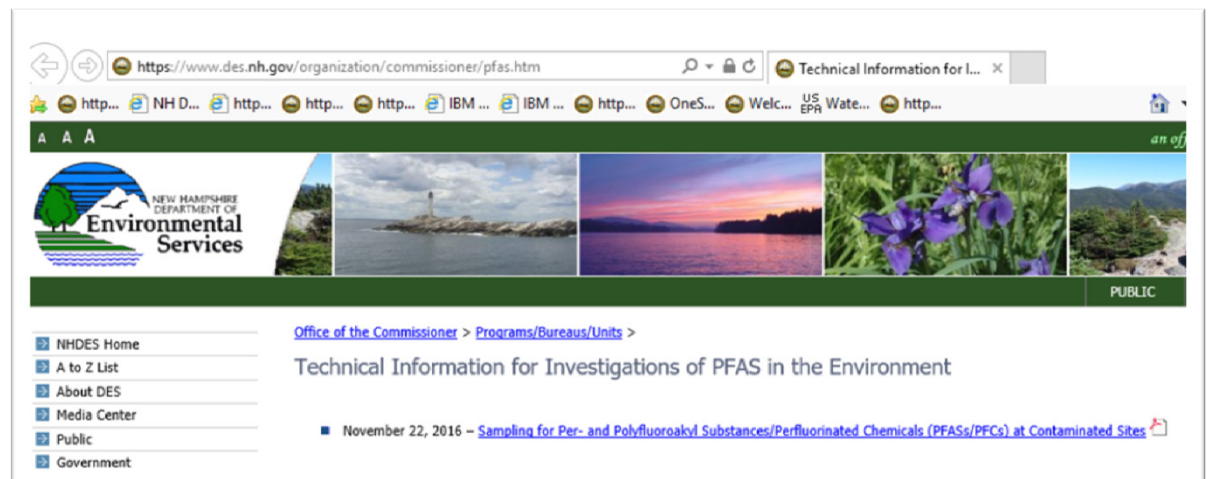
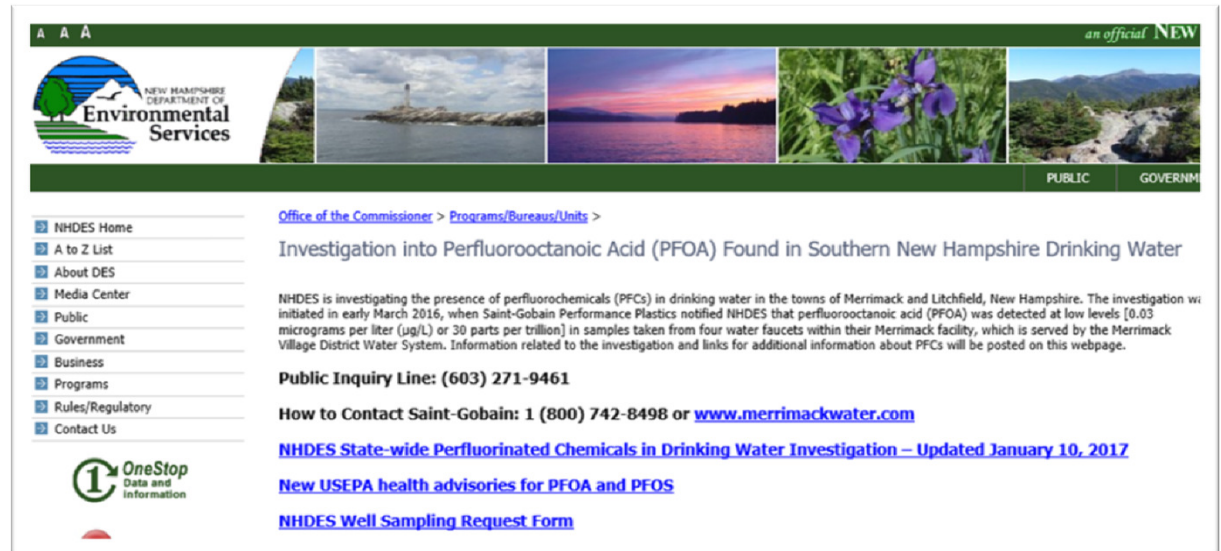
Perfluoroalkane Sulfonic Acids / Sulfonates	# of Carbons
Perfluorobutanesulfonic acid (PFBS)	4
Perfluorohexanesulfonic acid (PFHxS)	6
Perfluorooctanesulfonic acid (PFOS)	8

- ▶ Strongly recommend isotope dilution methods
- ▶ Strongly recommend DoD / NELAP accreditation
- ▶ RLs <5 ppt



Written Guidance

- [Updated lab list](#)
- [PFAS SOP in Master QAPP](#)
- [EMD Guidance](#) – Coming Soon
- [FAQs](#) – Coming Soon





Contact Information

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