



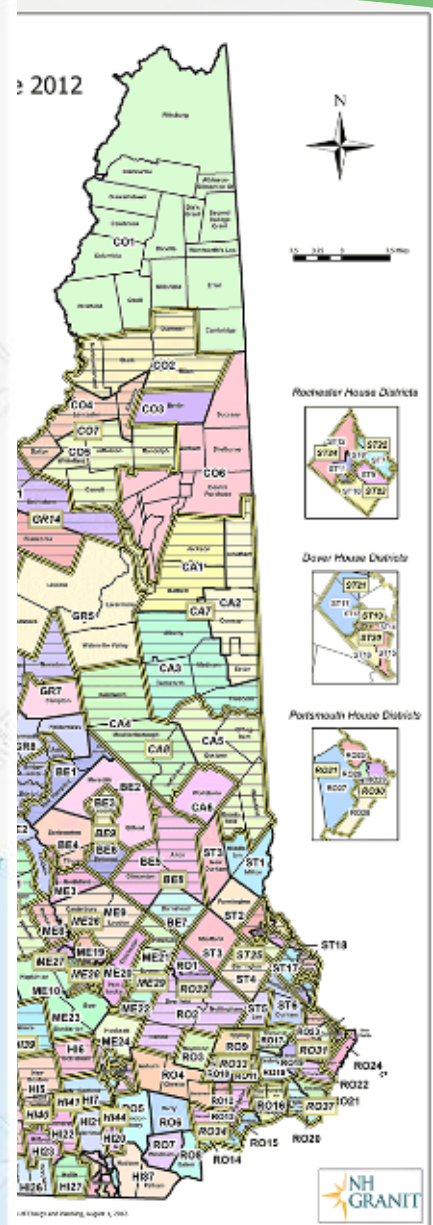
PFAS

Emerging Contaminant Impacts on New Hampshire DOT

New Hampshire Department of Transportation
Bureau of Environment
(603) 271-3226

AGENDA

- **History of PFAS regulation & data gathering in NH**
- **How PFAS impacts Transportation Agencies**
 - **Projects (example project)**
 - **Maintenance (example project)**
 - **Legacy sites**
- **Challenges & lessons learned so far...**



History of PFAS in New Hampshire

2009

- USEPA Provisional Health Advisory
 - PFOA – 400 ppt PFOS - 200 ppt

2013- 2015

- UCMR3 sampling

April 2014

- PFOS at PEASE AFB
 - PFOS ~2,500 ng/L

February 2016

- Saint-Gobain Performance Plastics - Merrimack

April 2016

- Former Textiles Coated International – Amherst

May 19-31, 2016

- USEPA Lifetime Health Advisory
 - PFOA 70 ppt/PFOA 70 ppt or combined

2016-Present

- NHDES requires fast and furious sampling

Continually Decreasing Standards

2014

EPA Provisional Health Advisory

PFOA – 400 ppt
PFOS – 200 ppt

2016

NHDES Ambient Groundwater Quality Standards (AGQS)

PFOA - 70 ppt
PFOS - 70 ppt
Combined
PFOA+ PFOS 70
ppt

2019

NHDES Proposed AGQS

PFHxS, total 85
ppt
PFNA - 23 ppt
PFOA - 38 ppt
PFOS - 70 ppt
Combined
PFOA+PFOS 70
ppt

20XX?

EPA Action Plan MCLs

Data Collection

PFAS INVESTIGATION Updated: February 4, 2019

SAMPLES WITH PFAS DETECTS TOTAL PFAS (ppt)

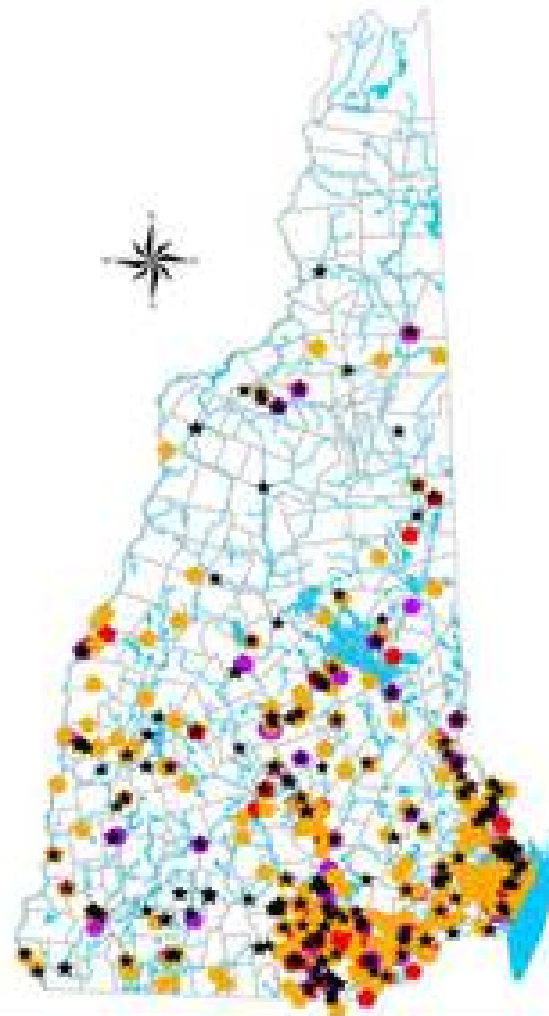
- 70+
- 45 - <70
- Detect - <45

★ Existing Remedial Site
with PFAS Detections

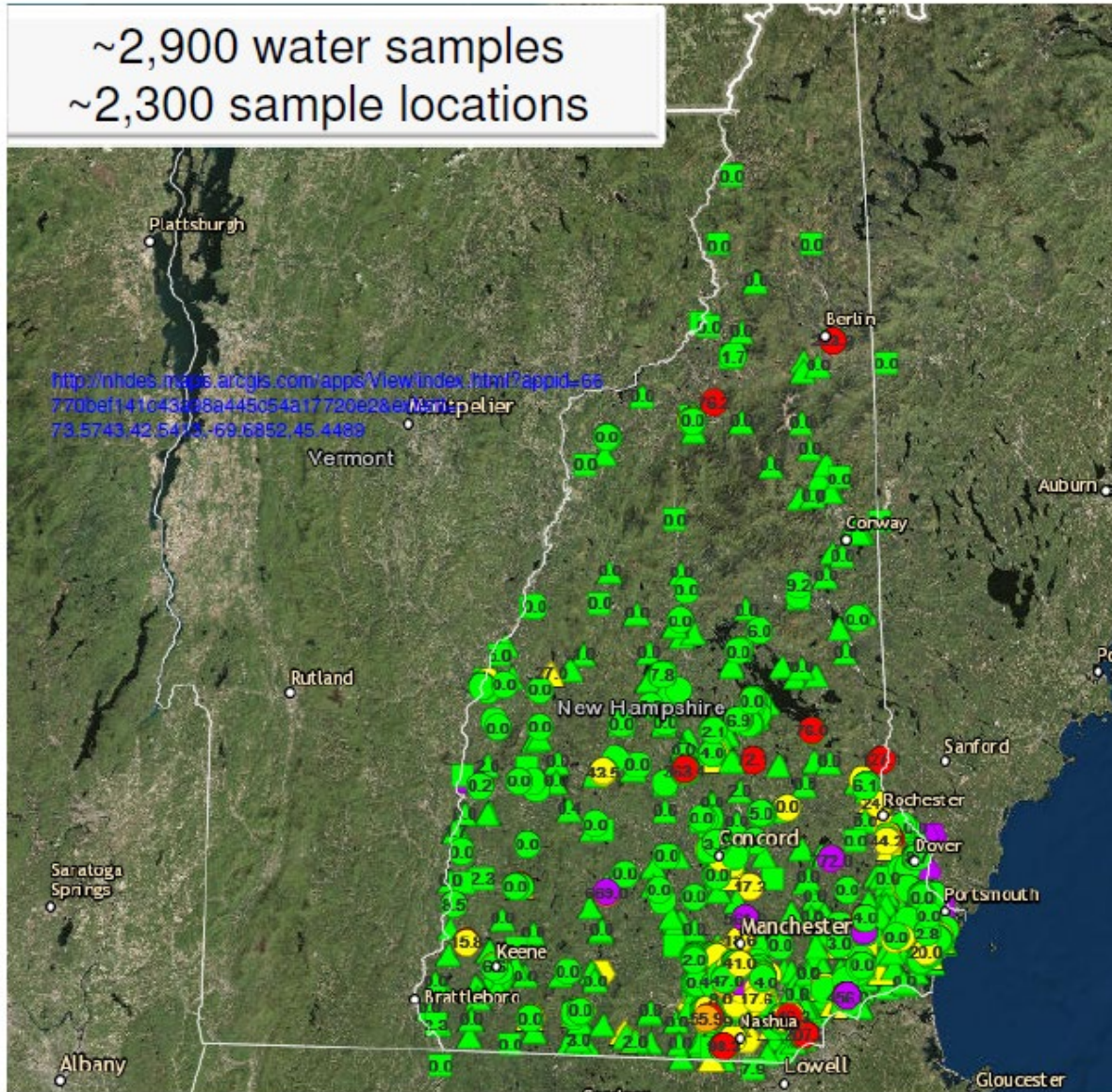
Political Boundary

Major Waterbody

0 12.5 25 50 Miles



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



Legend

PFASResults_GroundWater

PFOA+PFOS (ppt)

- 400+ ppt
- 70 ppt - <399 ppt
- 45 ppt - <70 ppt
- 10 ppt - <45 ppt
- <10 ppt

PFASResults_SurfaceWater

PFOA+PFOS (ppt)

- 400+ ppt
- 70 ppt - <399 ppt
- 45 ppt - <70 ppt
- 10 ppt - <45 ppt

Layers

- PFASResults GroundWater
- PFASResults SurfaceWater
- PFASResults PublicSupply
- PFASResults OtherSamples

February 2019



Sampling for 1,4-Dioxane and Per- and Polyfluoroalkyl Substances (PFAS) Under DEC's Part 375 Remedial Programs

Objective

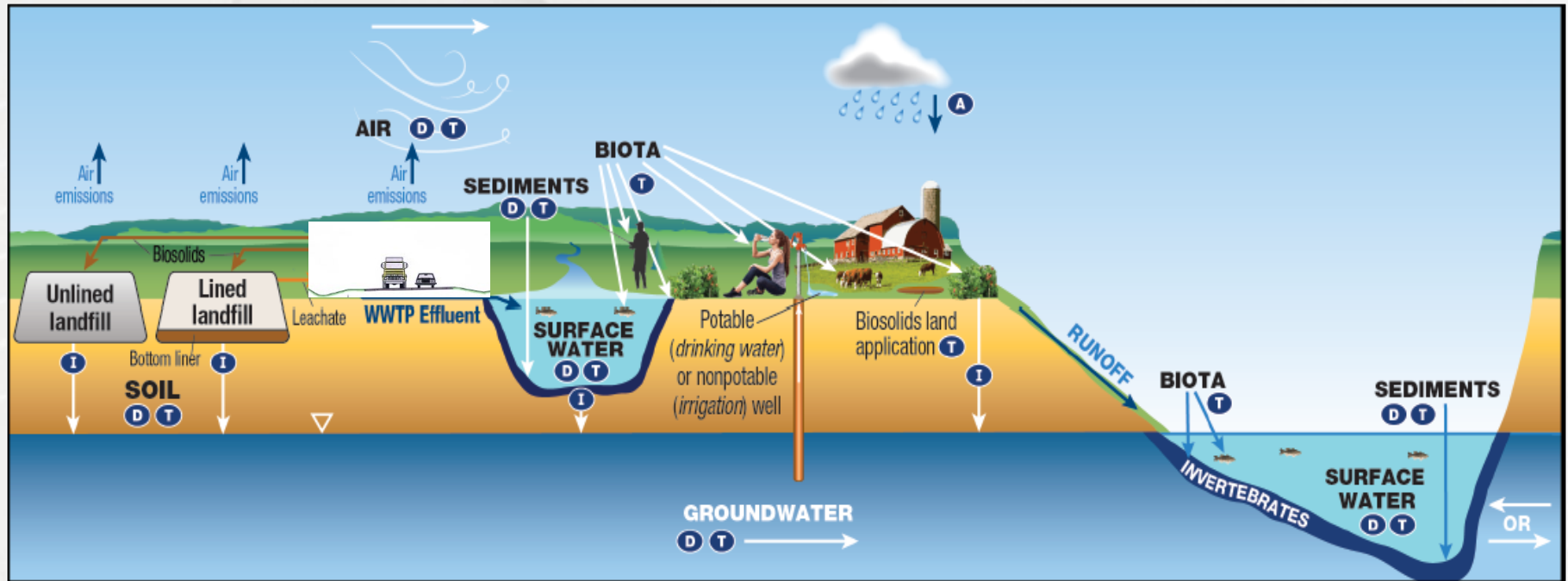
The Department of Environmental Conservation (DEC) is requiring sampling of all environmental media and subsequent analysis for the emerging contaminants 1,4-Dioxane and PFAS as part of all remedial programs implemented under 6 NYCRR Part 375, as further described in the guidance below.

Sample Planning

The number of samples required for emerging contaminant analyses is to be the same number of samples where "full TAL/TCL sampling" would typically be required in an investigation or remedial action compliance program.

Upon a new site being brought into any program (e.g., SSF, BCP), PFAS and 1,4-dioxane will be incorporated into the investigation of potentially affected media, including soil, groundwater, surface water, and sediment as an addition to the standard "full TAL/TCL sampling." Biota sampling may be necessary based upon the potential for biota to be affected as determined pursuant to a Fish and Wildlife Impact analysis. Soil vapor sampling for PFAS and 1,4-dioxane is not required.

PFAS Landfill/WWTP Distribution

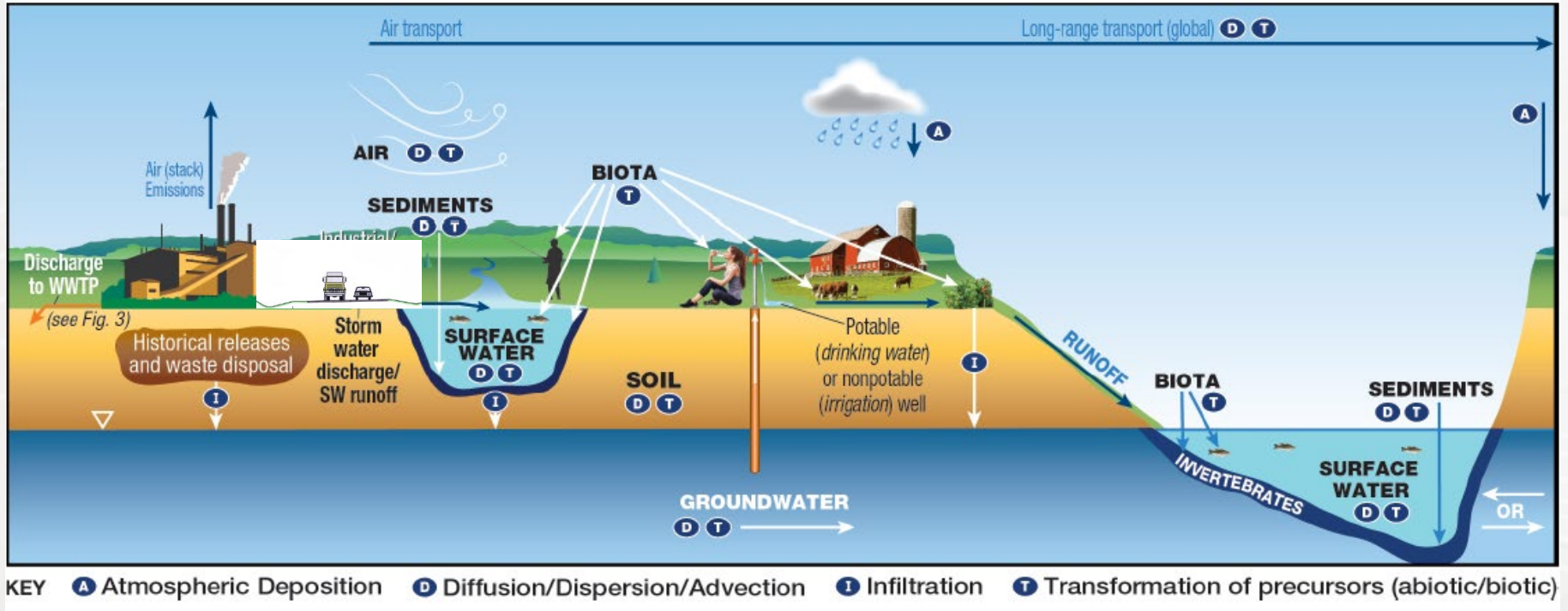


KEY **A** Atmospheric Deposition **D** Diffusion/Dispersion/Advection **I** Infiltration **T** Transformation of precursors (abiotic/biotic)

ITRC (Interstate Technology & Regulatory Council). 2018. *PFAS Fact Sheets* PFAS-1. Washington, D.C.: Interstate Technology & Regulatory Council, PFAS Team.

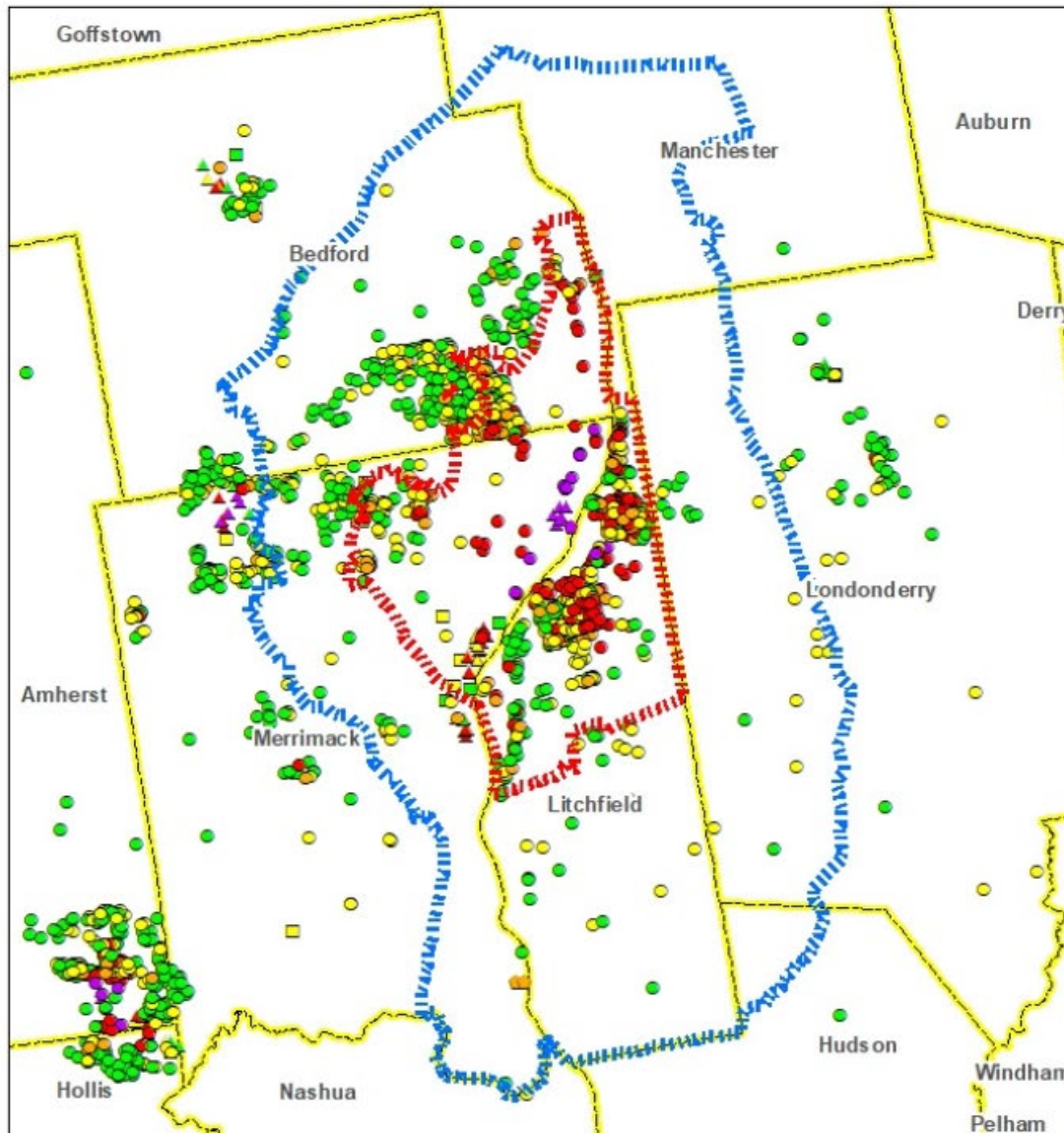
www.itrcweb.org

PFAS Aerial Distribution

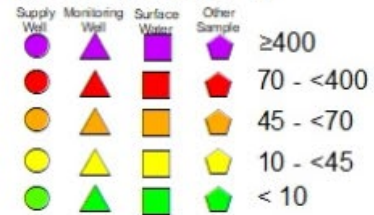


ITRC (Interstate Technology & Regulatory Council). 2018. *PFAS Fact Sheets* PFAS-1. Washington, D.C.: Interstate Technology & Regulatory Council, PFAS Team. www.itrcweb.org.

SOUTHERN NH PFAS INVESTIGATION

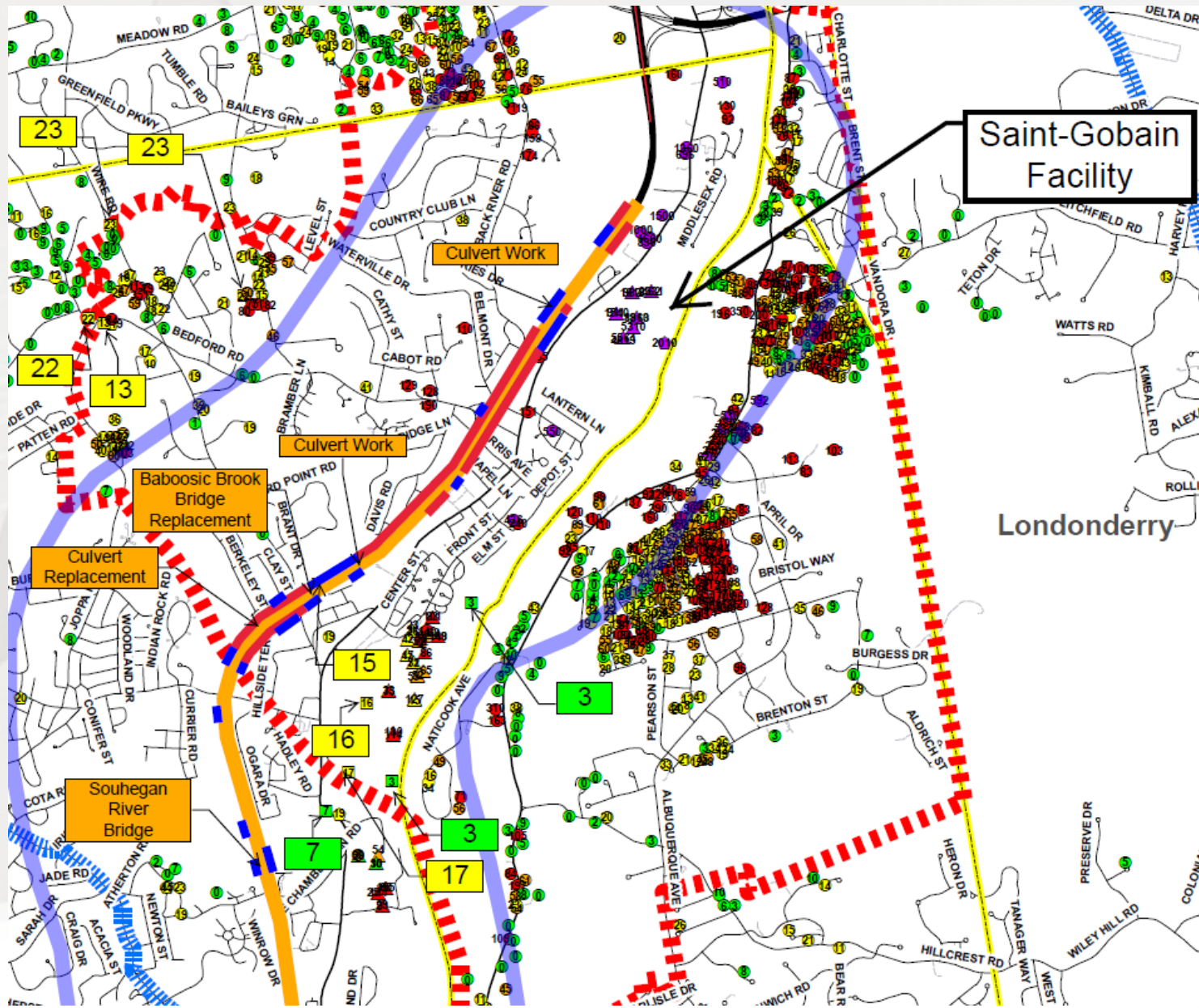


PFOA + PFOS (PPT)



1 inch = 10,000 feet





Project Impacts

TEN YEAR TRANSPORTATION IMPROVEMENT PLAN

2019 - 2028

Projects Only

APPROVED BY THE NH LEGISLATURE
AND SIGNED INTO LAW BY THE GOVERNOR

PURSUANT TO
RSA 228:99 AND RSA 240 OF THE LAWS OF NEW HAMPSHIRE



PROJECTS LISTED ALPHABETICALLY

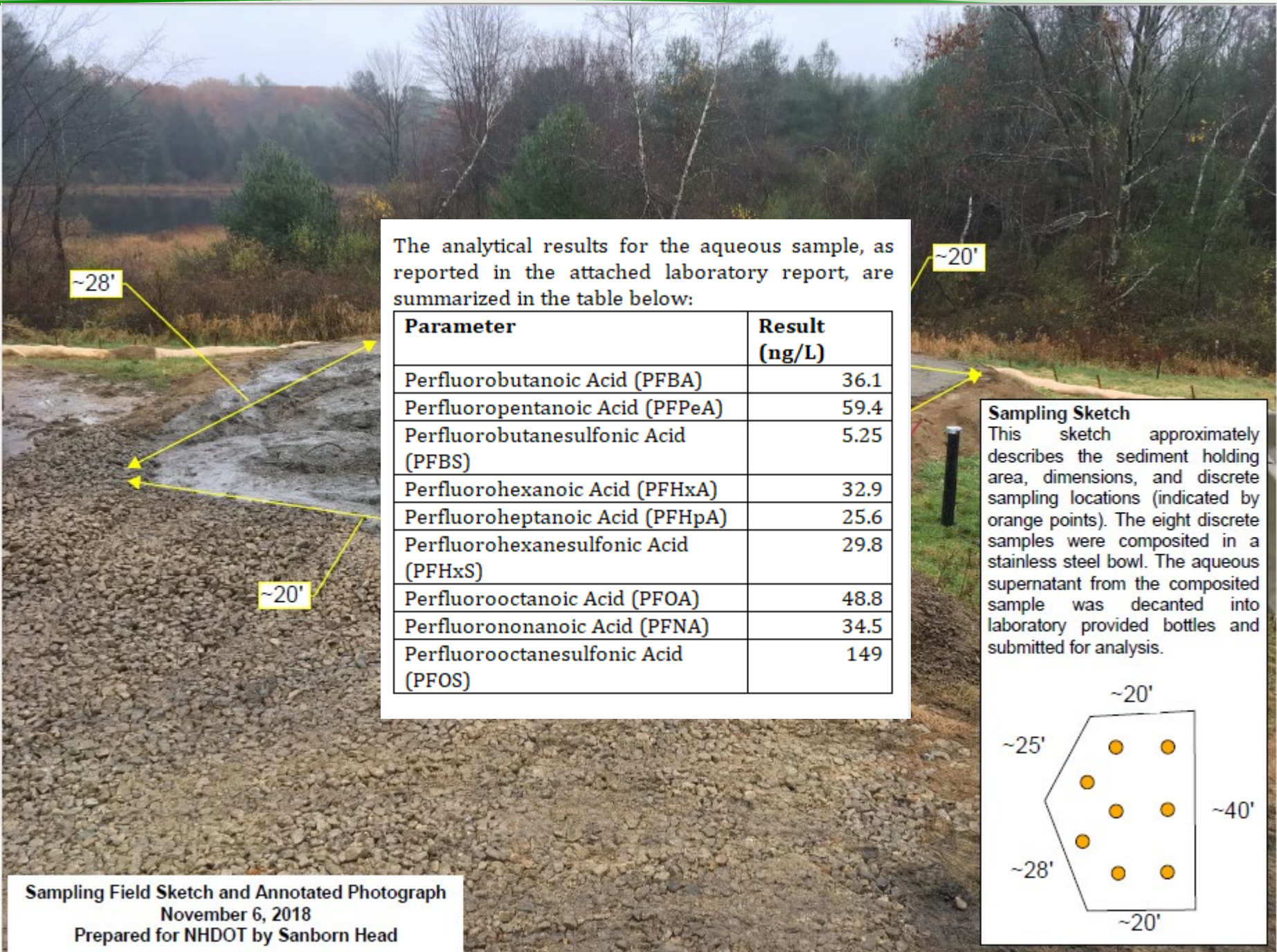


PREPARED BY THE NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

July 2, 2018

- **Data collection/site investigation**
- **Dewatering treatment**
- **Impacted Soil**
- **Increased ROW?**
- **Time & Money**

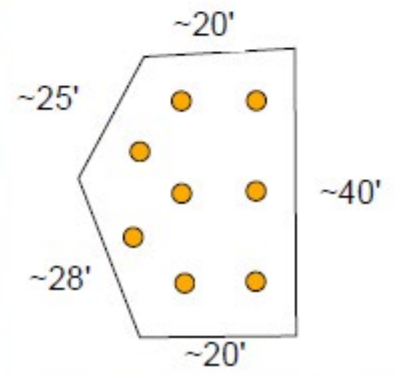




The analytical results for the aqueous sample, as reported in the attached laboratory report, are summarized in the table below:

Parameter	Result (ng/L)
Perfluorobutanoic Acid (PFBA)	36.1
Perfluoropentanoic Acid (PFPeA)	59.4
Perfluorobutanesulfonic Acid (PFBS)	5.25
Perfluorohexanoic Acid (PFHxA)	32.9
Perfluoroheptanoic Acid (PFHpA)	25.6
Perfluorohexanesulfonic Acid (PFHxS)	29.8
Perfluorooctanoic Acid (PFOA)	48.8
Perfluorononanoic Acid (PFNA)	34.5
Perfluorooctanesulfonic Acid (PFOS)	149

Sampling Sketch
 This sketch approximately describes the sediment holding area, dimensions, and discrete sampling locations (indicated by orange points). The eight discrete samples were composited in a stainless steel bowl. The aqueous supernatant from the composited sample was decanted into laboratory provided bottles and submitted for analysis.



Sampling Field Sketch and Annotated Photograph
 November 6, 2018
 Prepared for NHDOT by Sanborn Head

PFAS & Maintenance



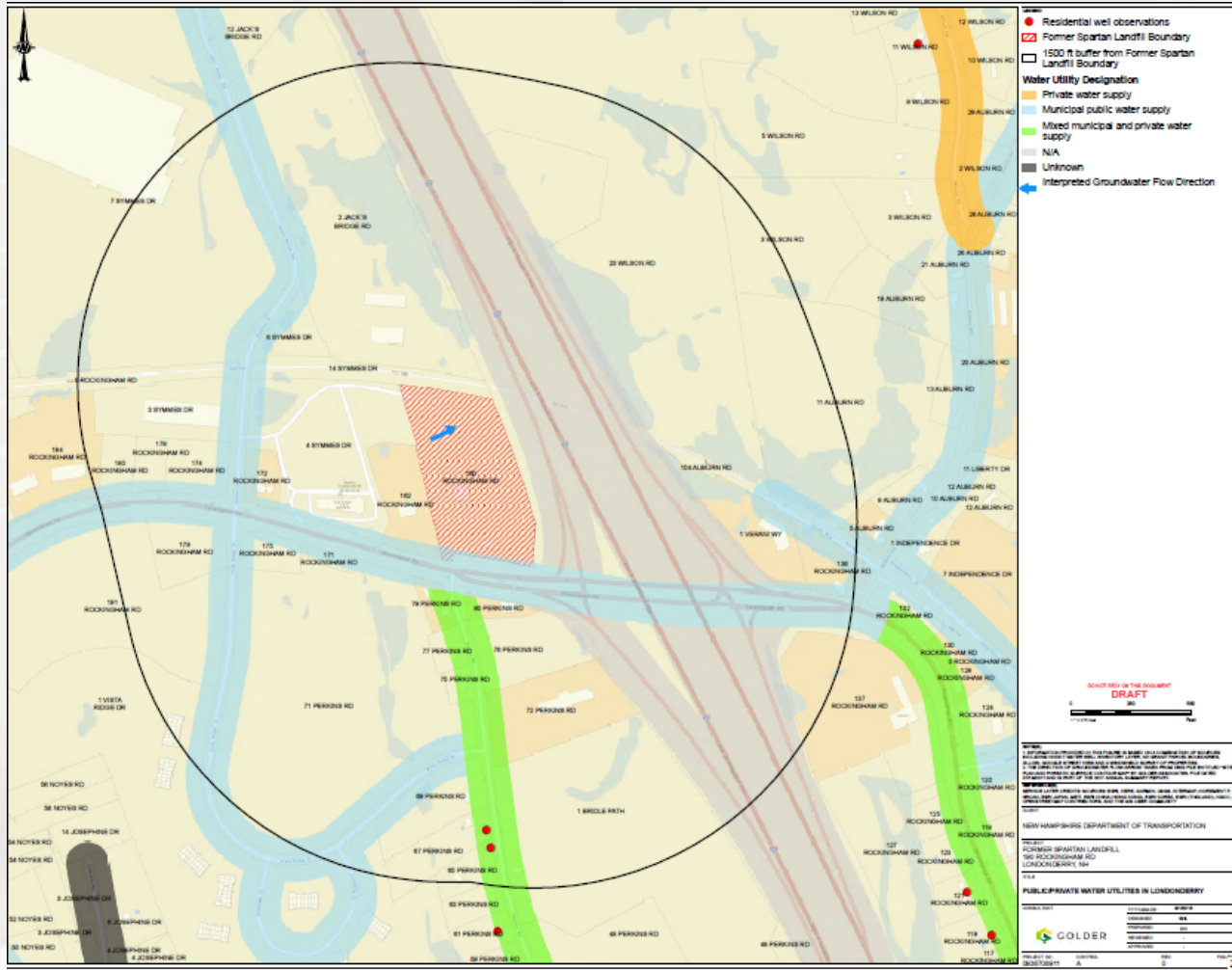
- **Street Sweeping**
- **Ditching**
- **Catch Basin Cleanout**
- **Management at District Facilities**
- **ROW excavation permits**



District Facility Drying Bins



Legacy Sites



- Increased sampling costs
 - Private wells
- Increased liability
- Disruption of on-going remediation
- Unknown future status

Free Takeaways!

- **Keep on top of changing PFAS regulations**
- **Evaluate impacts to projects in process**
- **Look for Maintenance BMPs**
- **Evaluate RISK**
- **Work with responsible parties – get creative**
- **Communicate with your Environmental entity – you are in this together!**



Thank You!

Questions:

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