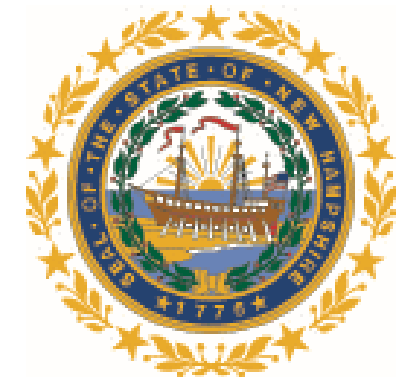


The Implementation of State PFAS MCLs in New Hampshire

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New Hampshire Department of Environmental Services
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August 31, 2022



Water Systems & PFAS

- Thank you to water system professionals
- Addressing PFAS has required you to rise to the occasion and:
 - Work extended hours
 - Expand dialogue with the community
 - Expend substantial resources
 - Manage increased stress due to health concerns, public communications, costs and uncertainty
 - Increase your knowledge and skills (technical, public relations, legal, financial, public health)
- Our work addressing PFAS is unfortunately still just getting started:
 - Revised standards
 - Source water protection
 - Mitigating exposure



Water Systems & PFAS (continued)

- Difficulty of our work is compounded by:
 - Substantial PFAS contamination in NH
 - Lack of resources despite 500% increase in funding
 - Arsenic and manganese regulations
 - Lead and copper rule
 - Inflation
 - Supply chain breakdown
 - Lack of qualified workers
 - COVID
 - Concerned citizens
 - Diversity of opinions



PFAS Exceedance

Perfluorochemical	Maximum Contaminant Level (MCL) / Ambient Groundwater Quality Standards (AGQS) (parts per trillion – ppt)
Perfluorooctanoic Acid (PFOA)	12
Perfluorooctanesulfonic Acid (PFOS)	15
Perfluorohexanesulfonic Acid (PFHxS)	18
Perfluorononanoic Acid (PFNA)	11

* Enforced beginning September 30,2019. Passed into law July 28, 2020




State MCLs for PFAS

Specific PFAS	NHDES	NJDEP	VT DEP	MI DHHS	MA DEP	NY DOH	RIDEM	WI DNR
PFOA	12	13	20* combined	8	20* combined	10	20* combined	70 combined
PFOS	15	14	*	16	*	10	*	*
PFHxS	18		*	51	*		*	
PFNA	11	13	*	6	*		*	
PFHpA			*		*		*	
PFDA					*		*	
GenX				370				
PFBS				420				
PFHxA				400,000				


All units are in part-per-trillion

Public water systems
(PWS)
≥ 25 people served

 Community (C)
Primary water source

Non-Community
Secondary water source

Transient
(TNC)
Transient population, < 6 months
(hotels, restaurants)


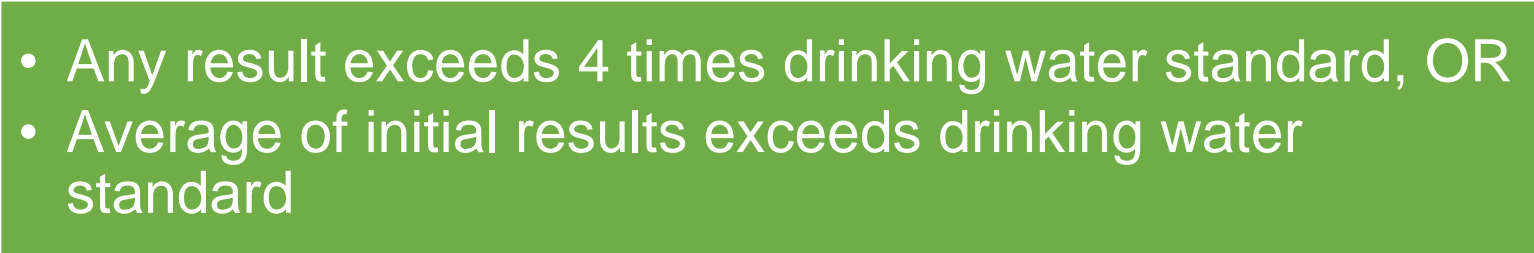
 Non-Transient
(NTNC)
Same population, ≥ 6 months
(**schools**, office buildings)

 Required to sample for PFAS

PFAS sampling requirements for Public Water Systems

A. Beginning in 2019, all Community (C) and Non-Transient Non-Community (NTNC) Public Water Systems must sample for PFAS **quarterly for one year.**


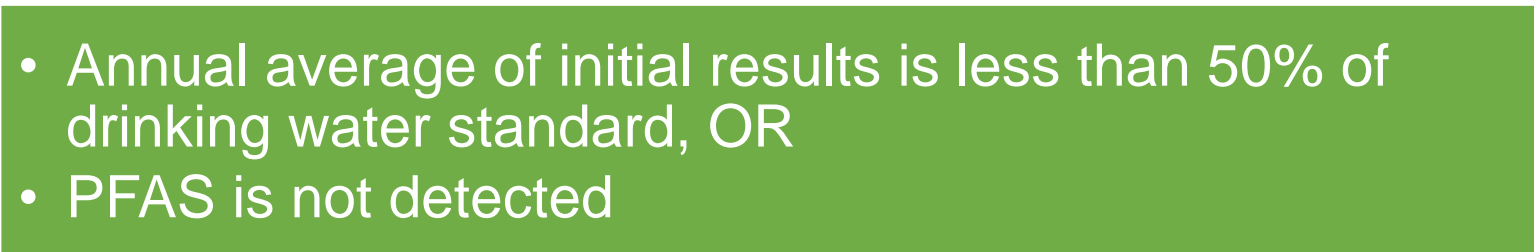
B. Subsequent sampling frequency is determined by results from (A)

Quarterly  if 

- Any result exceeds 4 times drinking water standard, OR
- Average of initial results exceeds drinking water standard

Annually  if 

- Annual average of initial results is greater than 50% of drinking water standard without exceeding

Every 3 years  if 

- Annual average of initial results is less than 50% of drinking water standard, OR
- PFAS is not detected

C. Any exceedance or treatment system installation resets sampling frequency to quarterly



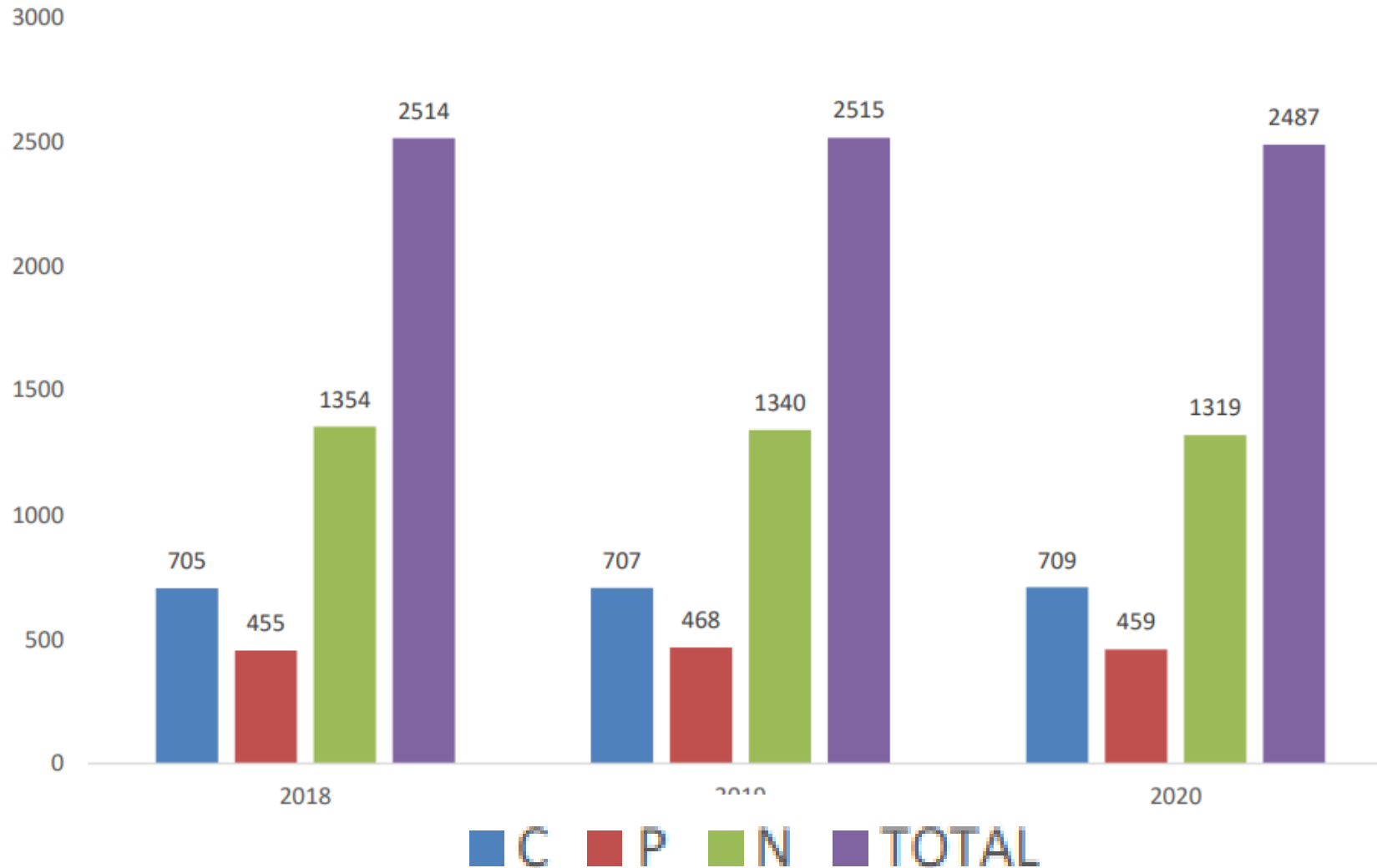
Other Points About NH's MCLs

- Allow water systems to use Method 533 or 537
- Treat PFAS as a chronic contaminant. Vermont handles it as an acute
- Bottled water sold in NH must test for PFAS and demonstrate compliance with the MCL



As of December 31, 2020, the PWS inventory consists of 2,487 active systems, of which 709 are CWS serving a total population of 916,236. There are 459 NTNC systems and 1,319 TNC systems. Most (82% or 581) of New Hampshire's CWS systems are very small, serving a population of less than 500.

Figure 2- Active Public Water Systems in NH
(by Calendar Year)

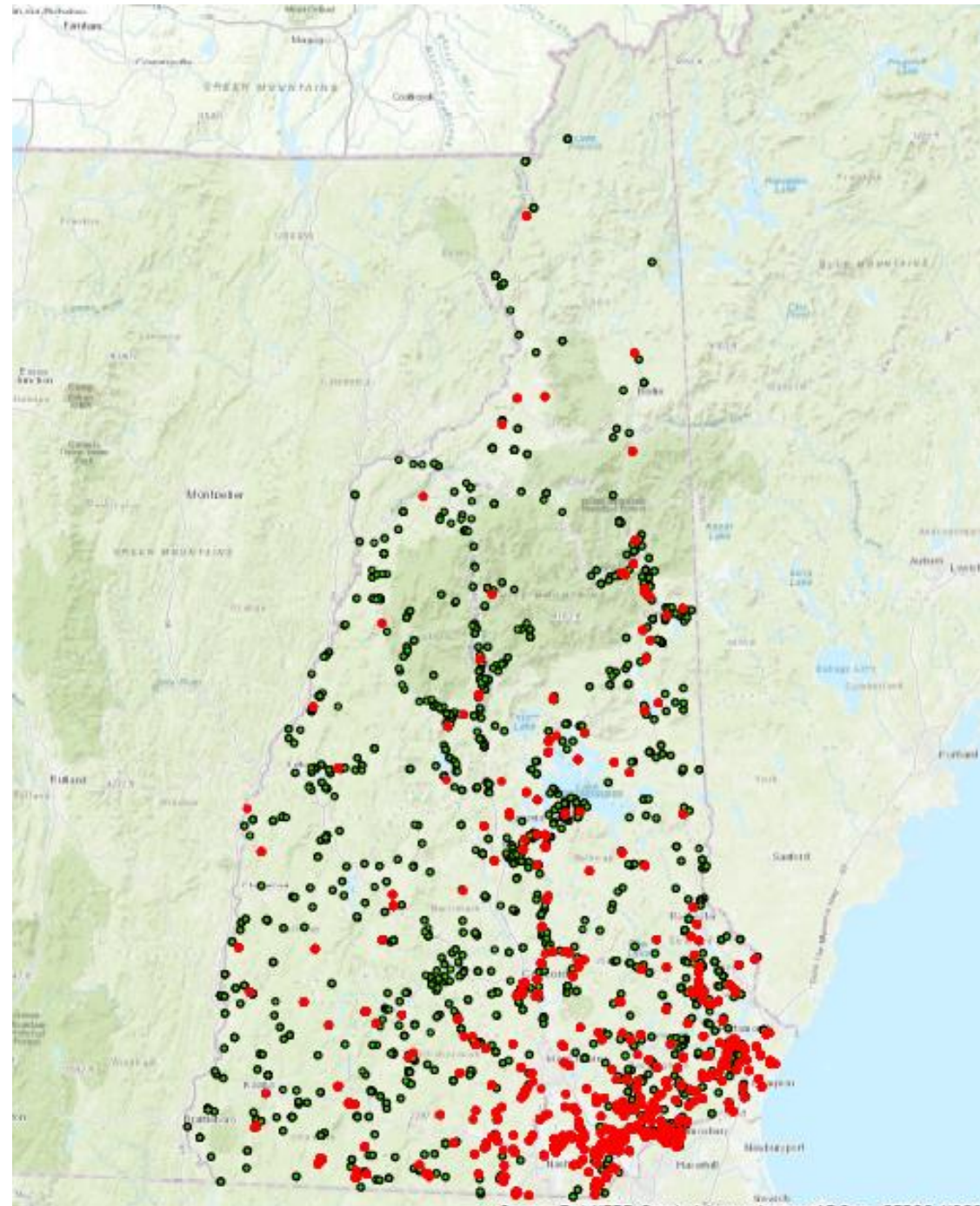


Community Systems by Population Ranges

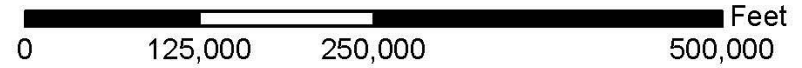
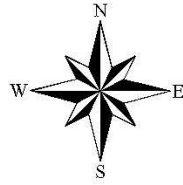
Population Categories	Population Ranges	# of Community Systems	Total Population Served
Large Systems	>50,000	2	220,932
Medium Systems	10,001 – 50,000	16	338,610
	3,301 – 10,000	25	144,259
Small Systems	1,001 – 3,300	50	97,213
	501 – 1,000	36	26,066
	251 - 500	62	21,026
	101 – 250	193	31,227
	25 – 100	306	18,367
	<25	19	455

PFOA & PFOS in NH

- Unprecedented challenge & response by water systems & NHDES
- 1/3 of all sources of water for public water systems detect PFOA or PFOS – likely higher because NHDES gets mostly data over the reporting limit instead of detection limit
- Water systems and NHDES have worked tirelessly since 2016 to reduce/eliminate exposure to these compounds



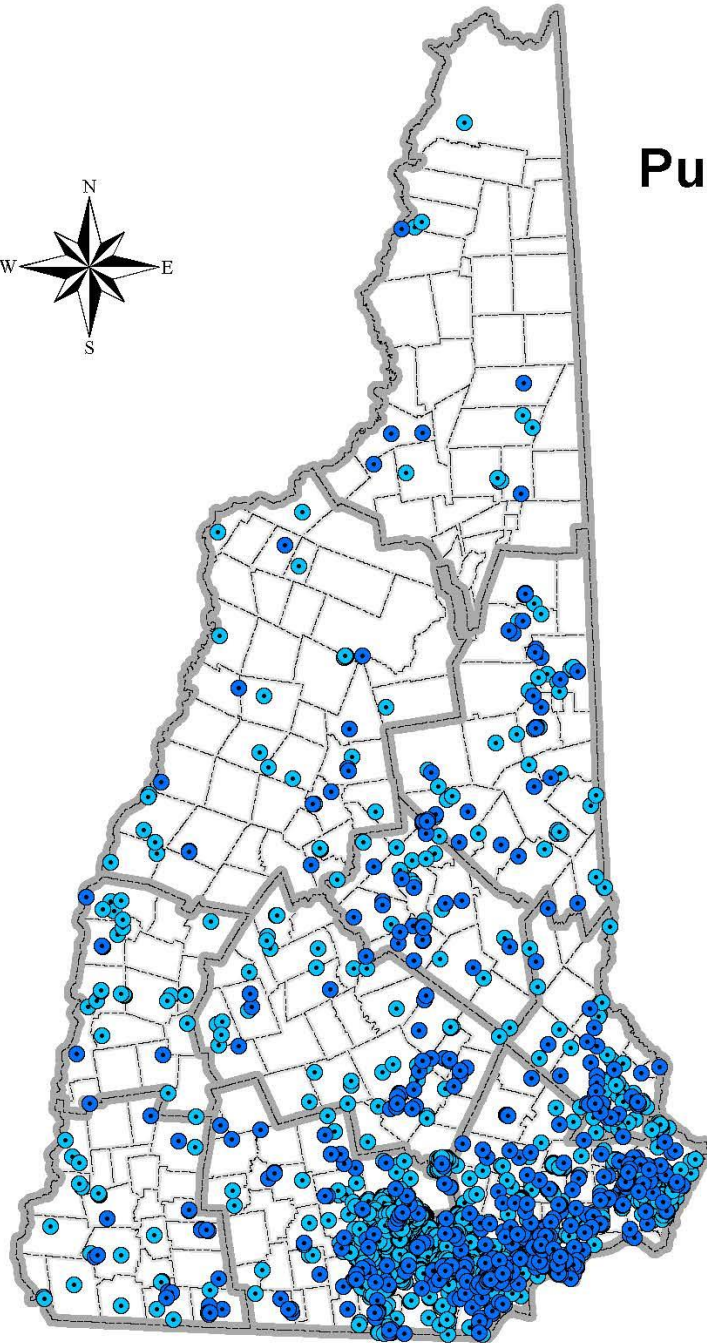
Detections of PFOA or PFOS in Public Water Supplies & Private Wells



1 in = 125,000 feet

Legend

- PWS Detections of PFOA / PFOS
- Private Well Detections of PFOA / PFOS
- County Boundaries
- Town Boundaries



The data presented is under constant revision as new sites or facilities are added. The data may not contain all of the potential or existing sites or facilities. NHDES is not responsible for the use or interpretation of this information. Not intended for legal purposes.

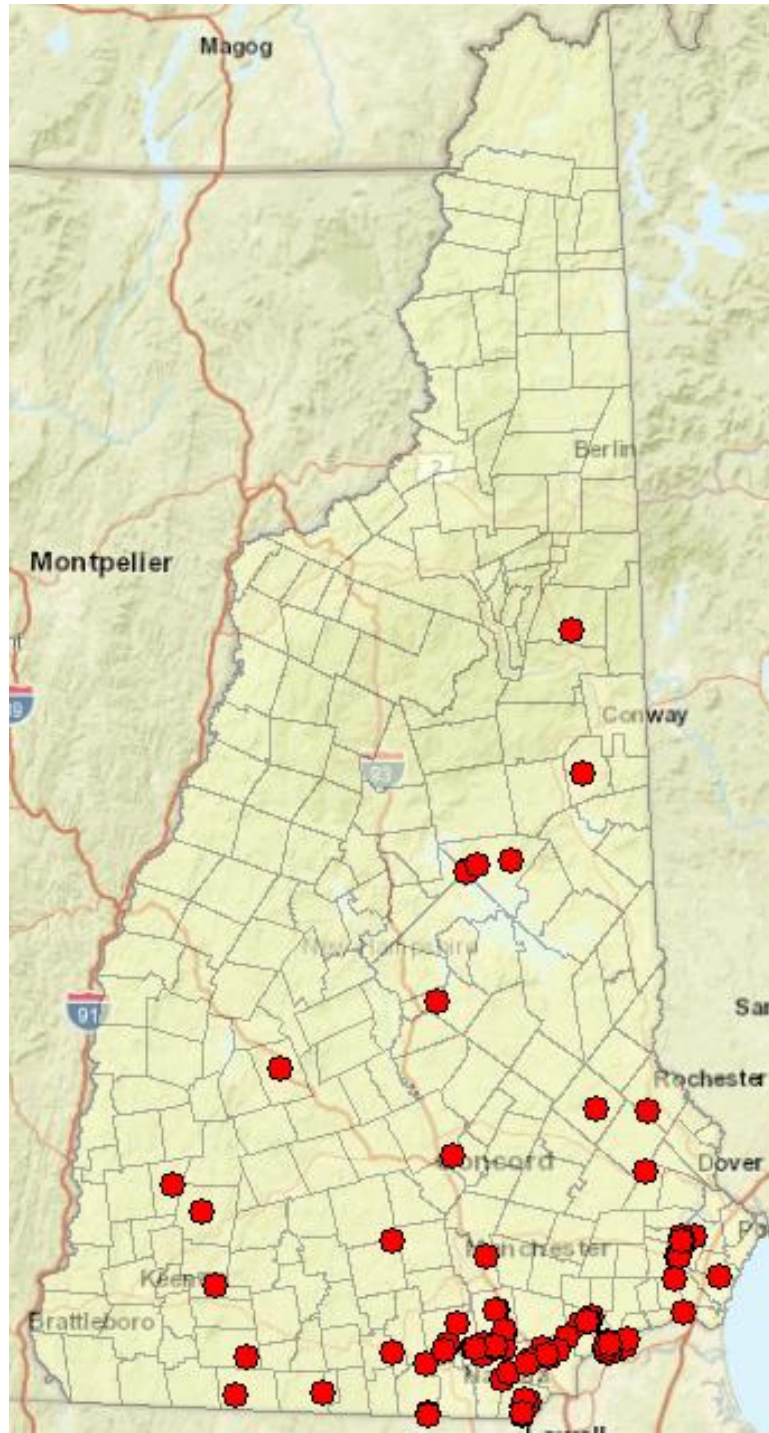


PFAS Public Water Systems

SOURCES SAMPLED	SOURCES WITH PFAS DETECTIONS	SOURCES EXCEEDING NH PFAS MCL
1500	511	Approx. 150
	30%	10%

NHDES MCLs for PFAS

- PFOA – 12 ppt;
- PFOS – 15 ppt;
- PFNA – 11 ppt;
- PFHxS – 18 ppt



PFAS Treatment Systems

ACTIVATED CARBON, GRANULAR

37

RESIN PFAS ADSORPTION

8

REVERSE OSMOSIS (POU)

6

FLOW MIX

2

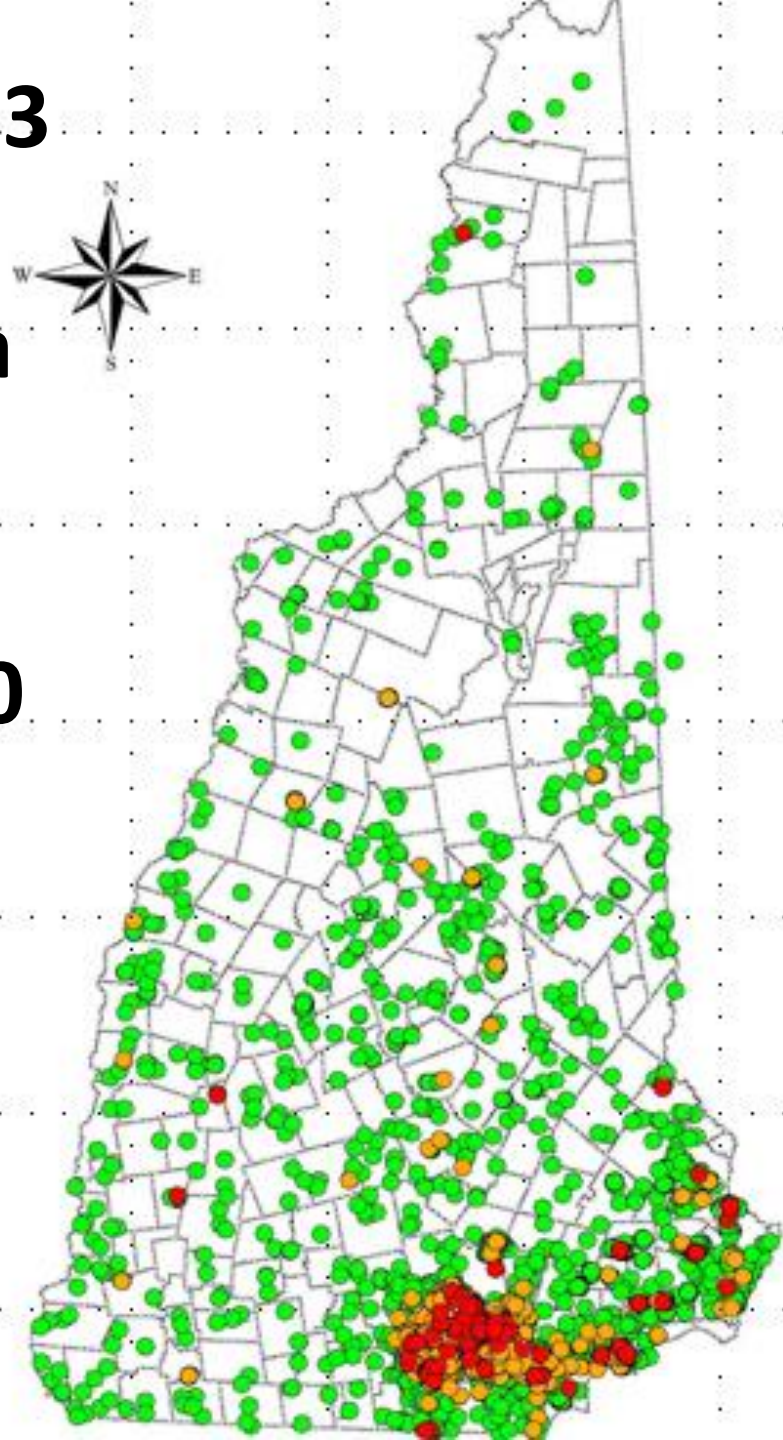
INTERCONNECTIONS

DOZENS

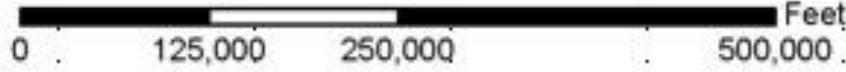


2,785 out of 9,173 private wells sampled exceed a NH MCL

There are 275,000 private wells in NH



PFAS MCL Exceedances In Private Wells



1 in = 125,000 feet

Legend

- PFOA+PFOS > 70 ppt
- PFAS > MCL/AGQS
- PFAS ≤ MCL/AGQS
- Town Boundaries

The data presented is under constant revision as new sites or facilities are added. The data may not contain all of the potential or existing sites or facilities. NHDES is not responsible for the use or interpretation of this information. Not intended for legal purposes.



USEPA's Advice - PFOA/PFOS and Public Water Systems

- 1) Sample public waters systems
- 2) Assess data
- 3) Notify public
- 4) Reduce PFOS/PFOA levels in drinking water
- 5) Identify and eliminate sources sources of PFAS

NHDES and Water Systems have been implementing the recommendations USEPA issued today for the past 6-8 years

USEPA's Advice - PFOA/PFOS and Public Water Systems

- 1) Sample public waters systems
 - a) NH has sampled thousands of public and private wells using low reporting limits and an extended list of analytes since 2016
 - b) Mandatory sampling required beginning in 2019
- 2) Assess data
 - a) NH PFAS data viewer
 - b) NH Legislative summaries
 - c) NHDES Onestop & other summaries
- 3) Notify public
 - a) PFOA, PFOS, PFNA and PFHxS NH MCL exceedance notification regulations
 - b) Annual Consumer Confidence Report
- 4) Reduce PFOS/PFOA levels in drinking water
 - a) Financial Resources – NH DW Trust Fund, ARPA, SRF, Budget Surplus, PFAS WIIN Grant
 - b) Systems have installed treatment, changed sources or interconnected (exposure reduced for hundreds of thousands of NH residents).
- 5) Identify and eliminate sources sources of PFAS
 - a) Elevated detections of PFAS in public water systems are investigated
 - b) Active waste sites now have to sample and address PFAS exceedances



PFAS Impacts are Present Throughout New Hampshire

Updated: April 11, 2022

PFAS SAMPLES

Data in NHDES' Environmental Monitoring Database (EMD) ~ 18,651 samples

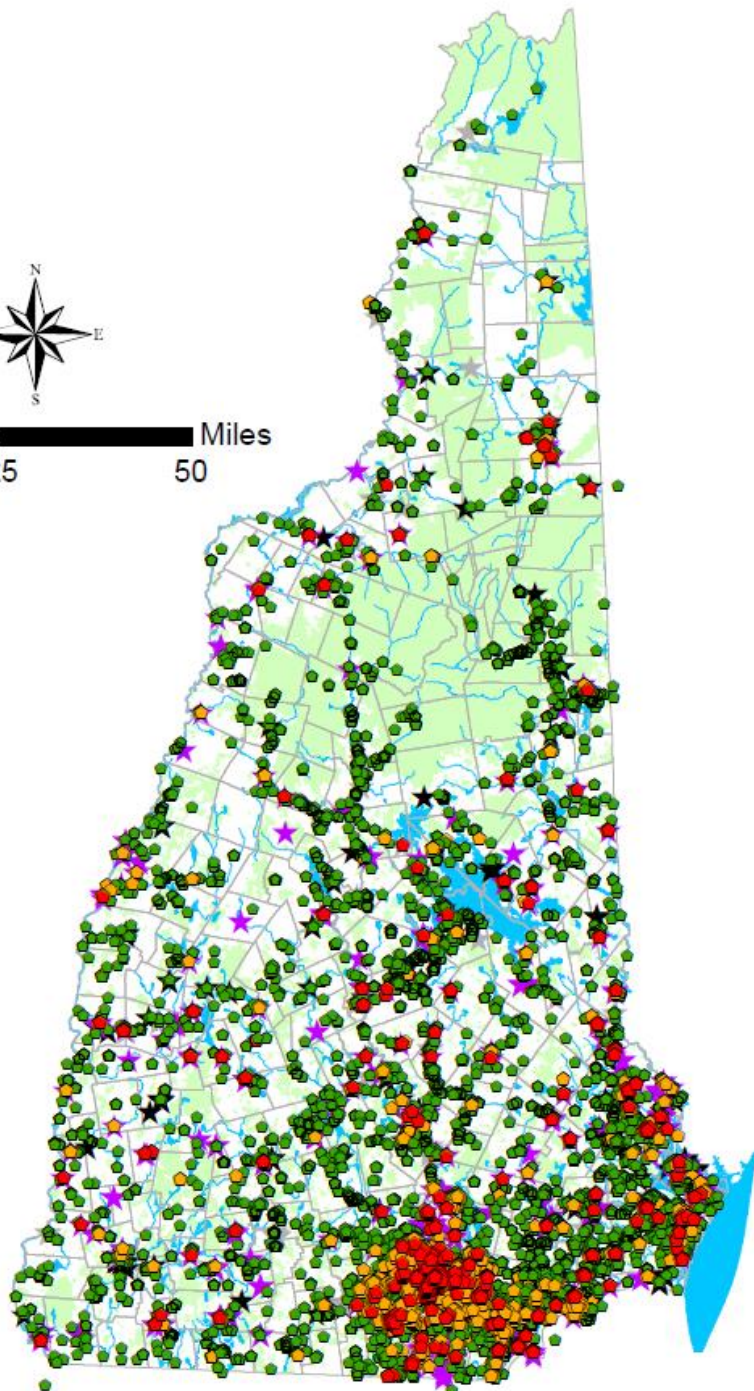
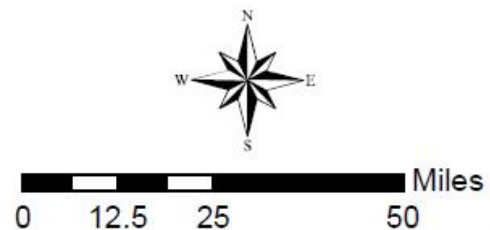
- ◆ PFOA+PFOS > 70 ppt
- ◆ PFAS > AGQS / MCL
- ◆ PFAS ≤ AGQS / MCL

PFAS SITES

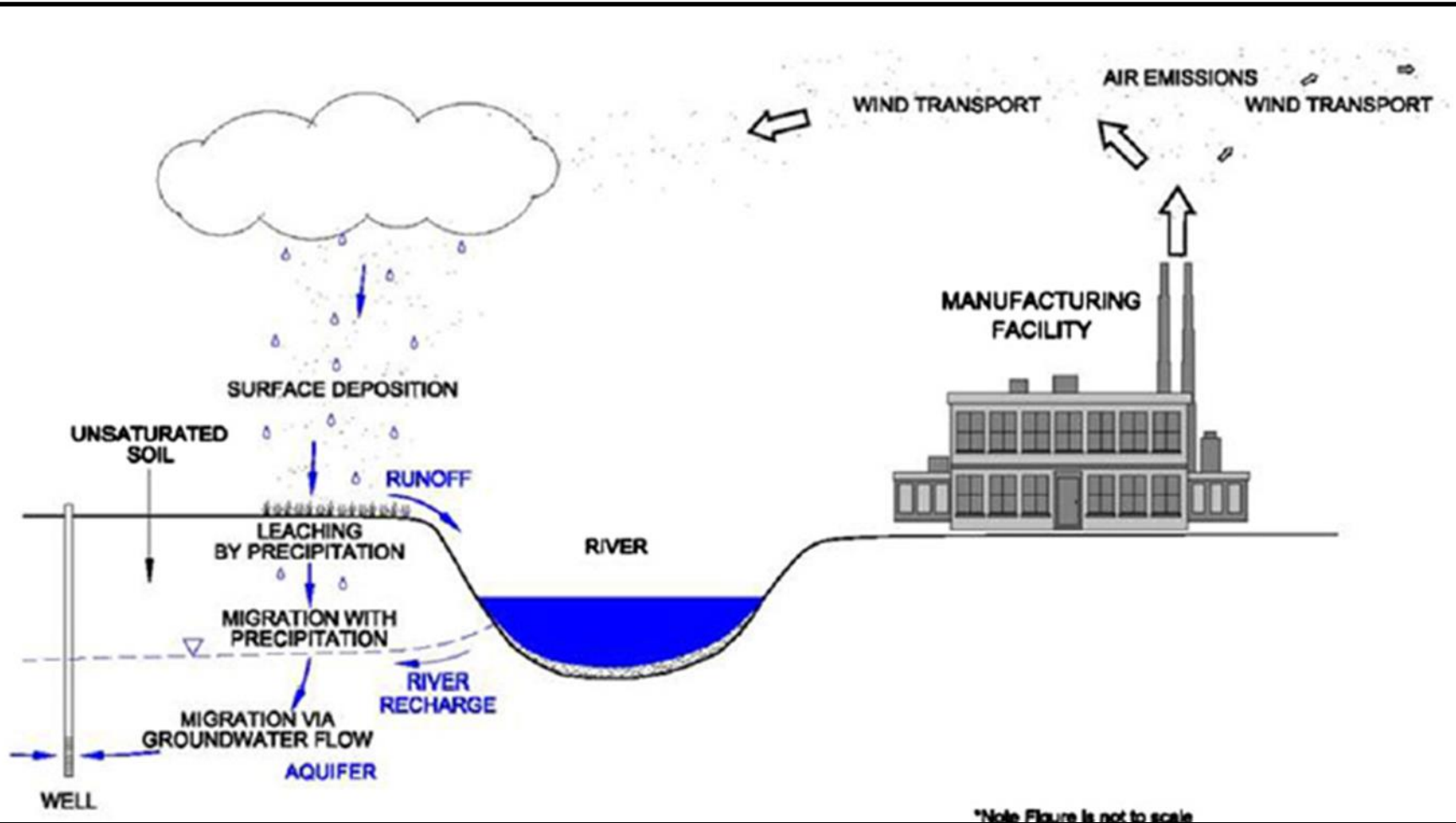
Data in NHDES' Onestop Database ~ 484 sites

- ★ Site with PFAS > AGQS
- ★ Site with PFAS Detections
- ★ Site with PFAS Screening No Detections

- Political Boundary
- Major Waterbody
- Conservation Land



A Few Air Emission Sites Have Contaminated Hundreds of Square Miles in Southern NH

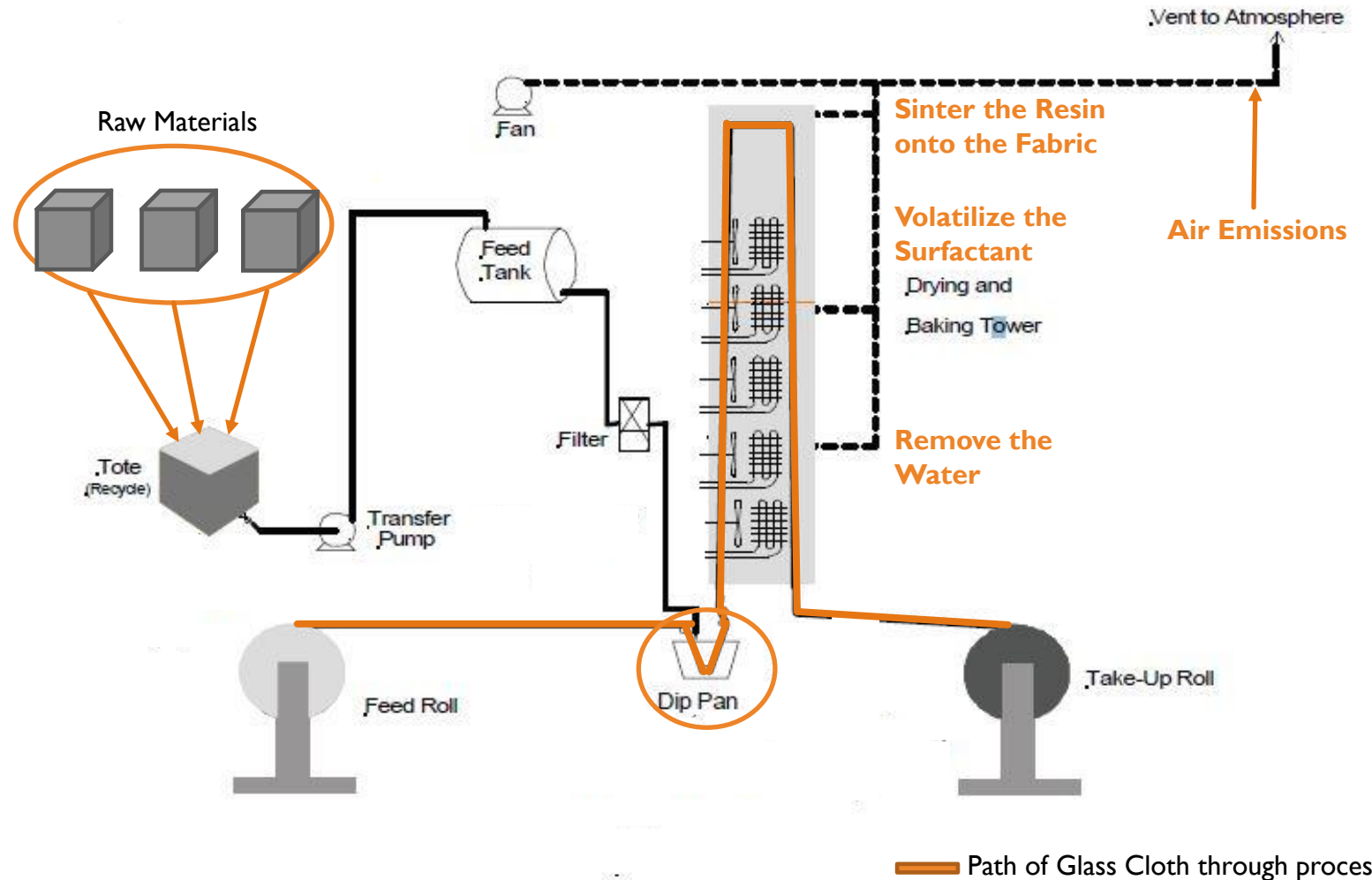




FACILITY
OVERVIEW

FABRIC COATERS

TYPICAL GLASS CLOTH PROCESS DIAGRAM



PFAS Financial Assistance Programs- Private Wells

- A one-time rebate of up to **\$5,000** for the installation of PFAS treatment or up to **\$10,000** for a service connection to a public water system
- \$20M available (approximately 3,500 wells)
 - Funding comes from State surplus funds & a NH Trust Fund established with awards from MtBE litigation

RESTRICTIONS

- The property may not already have an offer of alternate water from a third party.
- This program does not cover any expenses related to post installation operation and maintenance of the treatment system.
- Treatment or a service connection installed prior to September 30, 2019 are ***not*** eligible for the rebate program.

PFAS Financial Assistance Programs- Private Wells

WHO CAN APPLY?

- **Those living in a single-family or multi-unit residence (owner or tenant) on a private well**
- **Installation contractor**

This rebate can be applied only once per residential address.

PFAS TREATMENT DESIGN SERVICES REIMBURSEMENT

Eligibility	<ul style="list-style-type: none">- All schools & childcare centers- Transient PWS- Non-Transient PWS <1000 people
What can be Funded?	Design of a PFAS point of use or point of entry treatment solution to address PFAS AGQS/MCL exceedances
Terms	Up to 26% of the total cost of the project

PFAS CONSOLIDATION STUDY PROGRAM

Eligibility	<ul style="list-style-type: none">- Community PWS- Non-profit, Non-Transient PWS- Municipality
What can be Funded?	Engineering feasibility evaluation comparing interconnection to a larger community water system versus treating, maintaining, and operating a system's own water supply
Terms	100% Reimbursement program (\$10K mx)

PFAS Remediation Loan Fund & Grant Program

Eligibility

- Community PWS
- Non-profit, Non-Transient PWS
- Municipality

What can be Funded?

Drinking water infrastructure projects to address AGQS/MCL exceedances

Terms

- Low interest loan rates; Up to 30-year term for disadvantaged applicants; Up to 50% contingent reimbursement
- Grants at \$1.5M or 30% of the total cost of the project, whichever is greater

SUMMARY OF NHDES FUNDING PROGRAMS FOR DRINKING WATER				
TRADITIONAL FUNDING				
DWSRF	Annual (26% loan forgiveness)	\$20	M	Per Year
Drinking Water and Groundwater Trust Fund	Annual (grants and loans)	\$20	M	Per Year
TOTAL TRADITIONAL ANNUAL FUNDING		\$40	M	
NEW FUNDING				
ARPA	One-time (grant)	\$75	M	One-time
PFAS Remediation Grant	One-time (grant)	\$100	M	One-time
PFAS Remediation Loan	One-time (10%-50%?? Loan forgiveness)	\$50	M	One-time
2022 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2023 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2024 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2025 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2026 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2022 Lead Service Line	49% Loan Forgiveness	\$28	M	
2023 Lead Service Line	49% Loan Forgiveness	\$28	M	
2024 Lead Service Line	49% Loan Forgiveness	\$28	M	
2025 Lead Service Line	49% Loan Forgiveness	\$28	M	
2026 Lead Service Line	49% Loan Forgiveness	\$28	M	
2022 Supplemental SRF	49% Loan Forgiveness	\$18	M	
2023 Supplemental SRF	49% Loan Forgiveness	\$21	M	
2024 Supplemental SRF	49% Loan Forgiveness	\$23	M	
2025 Supplemental SRF	49% Loan Forgiveness	\$25	M	
2026 Supplemental SRF	49% Loan Forgiveness	\$25	M	
2022 Disadvantaged PFAS Grant	100% grant	\$10	M	
2023 Disadvantaged PFAS Grant	100% grant	\$10	M	
2024 Disadvantaged PFAS Grant	100% grant	\$10	M	
2025 Disadvantaged PFAS Grant	100% grant	\$10	M	
2026 Disadvantaged PFAS Grant	100% grant	\$10	M	
TOTAL INCREASE IN FUNDING(2022-2026) >>>>		\$567	M	

DEMAND FOR DRINKING WATER INFRASTRUCTURE FUNDING							
Aging Infrastructure			\$2,000 M	(probably higher)			
Lead Service Line Replacement			\$100 M				
PFAS Mitigation			\$200 M	(probably much higher)			
Manganese Treatment			\$60 M				
New Development			??				
TOTAL			\$2,360 M				

Additional Challenges

- New federal funding contains Buy America Build America provisions
- Supply will continue to be low and demand will continue to increase (ARPA and Infrastructure \$\$ have yet to hit the markets)
- Interest rates for loans are increasing
- Lack of water system staff
- Lack of government workers
- Lack of contractors
- Lack of engineers
- High interest rates, high inflation, high labor costs, product scarcity, labor scarcity and global conflicts will complicate projects for the foreseeable future
- PFAS – shortage in treatment system components and media already exists and nationally very few states have enforceable standards. USPEA will be releasing a draft national standard soon. Demand for PFAS treatment will skyrocket.



AGC
THE CONSTRUCTION
ASSOCIATION

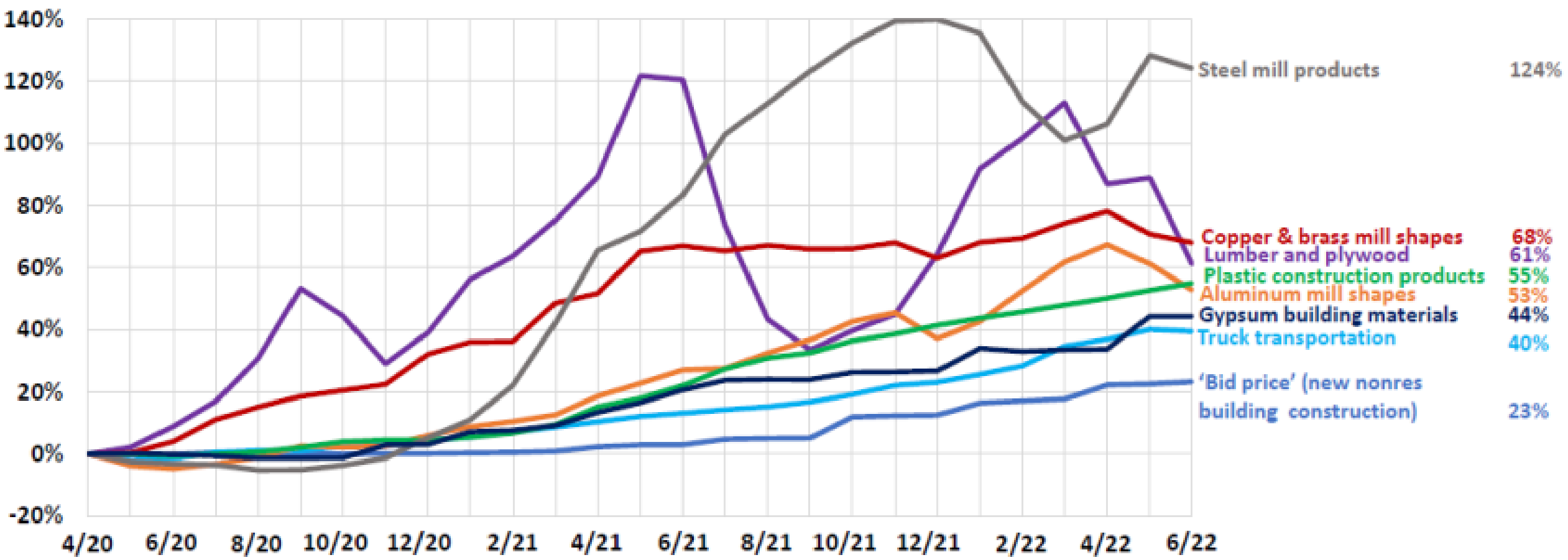
APR

2022

**CONSTRUCTION
INFLATION ALERT**

PPIs for construction bid prices and selected inputs

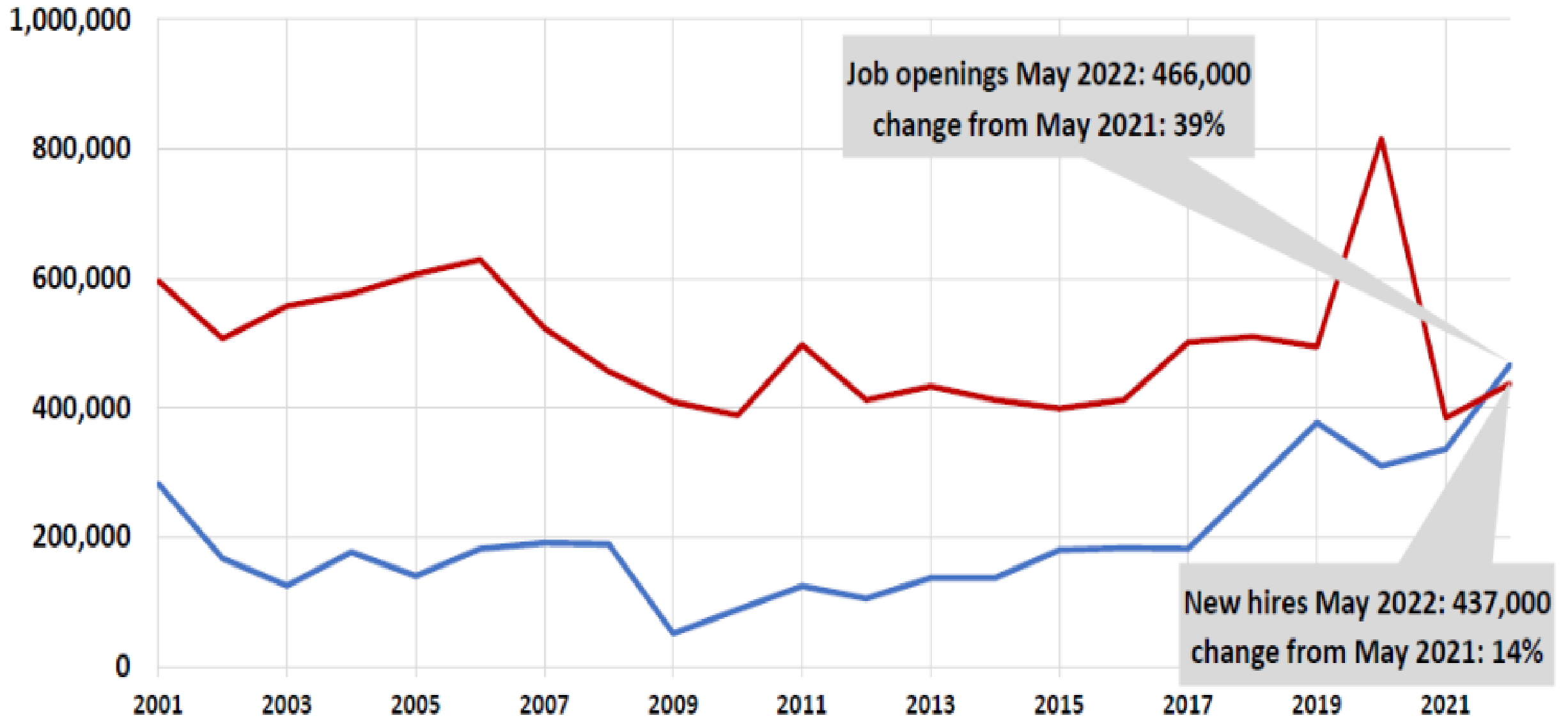
cumulative change in PPIs, April 2020-June 2022 (not seasonally adjusted)



Source: Bureau of Labor Statistics, producer price indexes, www.bls.gov/ppi

Construction job openings exceed hires, set record high for May

Job openings and hires, May 2001-May 2022, not seasonally adjusted



Source Water Protection

- Air emission sources of contamination requires a whole new way of addressing source water protection
- Most “pre-PFAS” contamination sites in NH exceed NH’s PFAS MCLs. Hundreds of sites have been closed without looking for PFAS
- Wastewater is a source of PFAS contamination. Many public water systems in NH have wells and septic systems on the same property.
- Water systems, states and USEPA cannot ensure source water protection alone.

PFAS Screening Compliance at Waste Sites

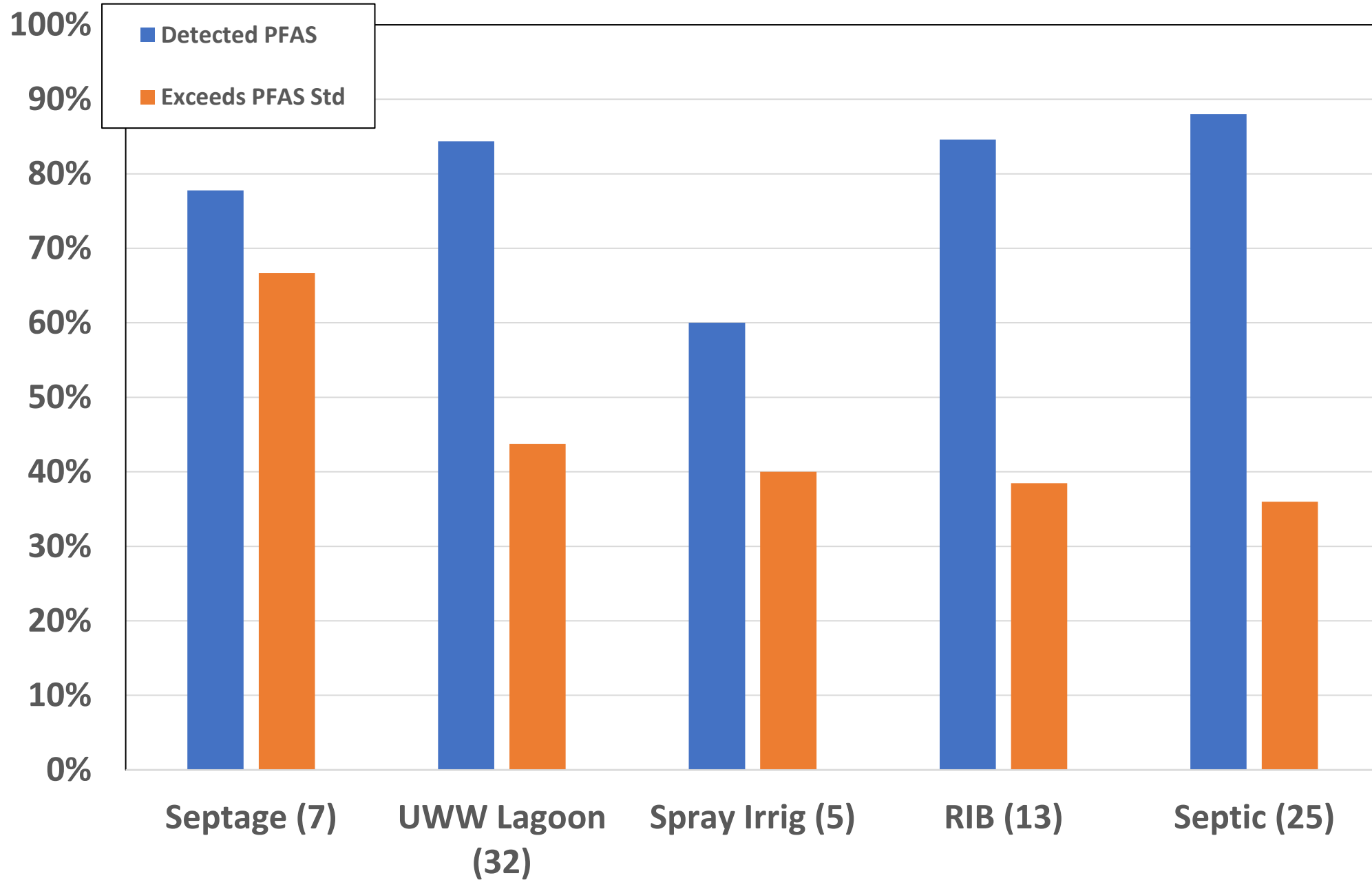


■ > NH MCL ■ < NH MCL ■ Non-Detect

Waste Sites/Sources	Sites Sampled	% Sites > AGQS (MCLs)	Max. PFOA (12 ppt)	Max. PFNA (11 ppt)	Max. PFHxS (18 ppt)	Max. PFOS (15 ppt)
AFFF	23	100%	130,000	25,000	31,000	490,000
Manufacturing - Coating (Paper, Textile, Tannery)	10	90%	69,500	2,960	2,400	2,560
Manufacturing - Other	20	65%	2,510	110	150	850
Commercial Products	4	100%	242	102	69	405
Waste Disposal	26	65%	3,200	161	89	4,750
Unlined Landfill	161	77%	3,700	828	663	1,700
Metal Working/ Plating/Machining	23	61%	1,070	31	806	7,080
Metal Recycling	12	67%	1,700	100	630	1,440
Mixed	24	79%	1,230	78	769	2,410
Drycleaning	24	78%	401	568	88	1,800
Unknown	64	50%	1,090	960	229	240
Lined Landfill	13	62%	350	30	88	79
WW/Biosolids	4	75%	560	13	81	230
Other	15	67%	129	9	24	470

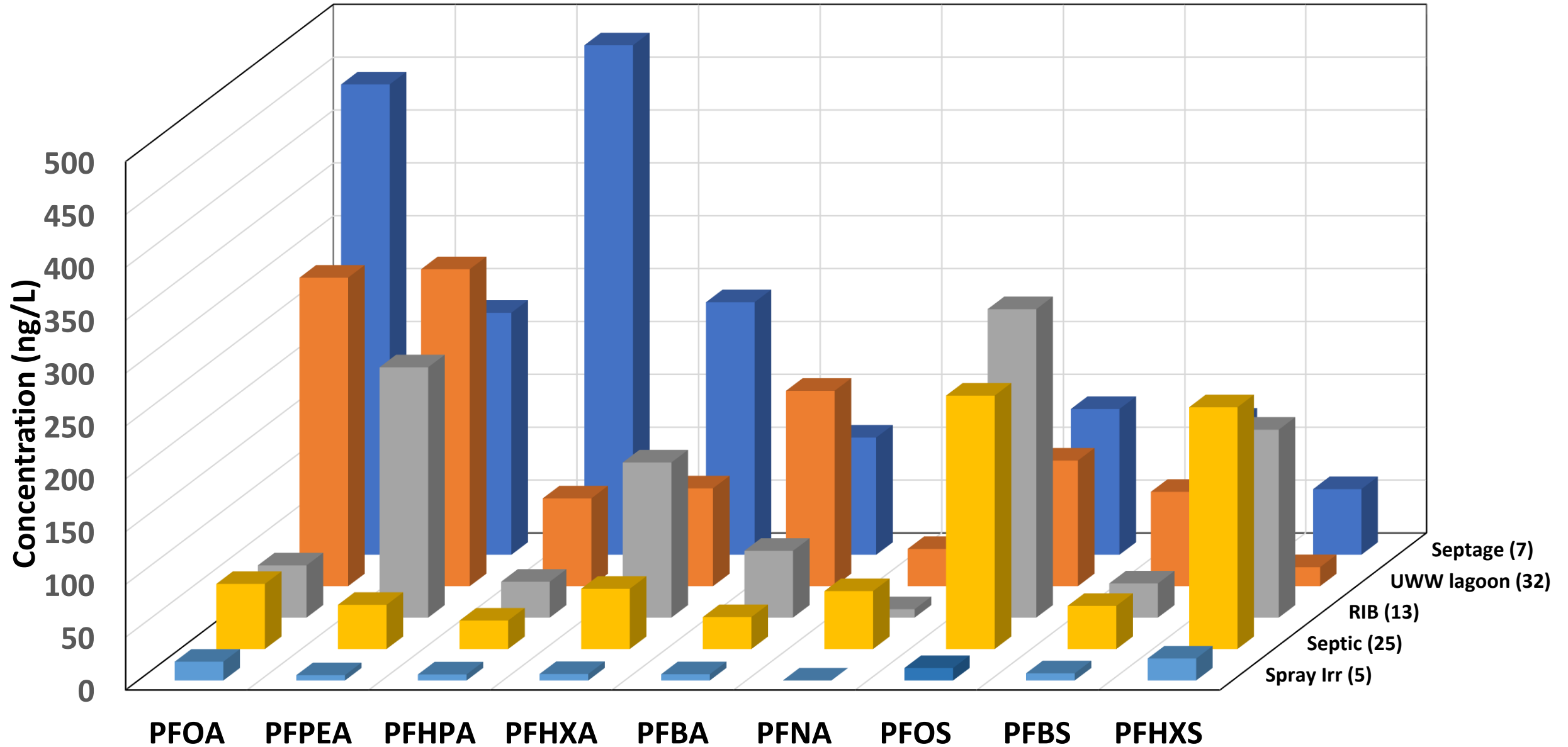
Approximate data through 6/1/2020

Groundwater Discharge Permit Program
PFAS Detections in Groundwater Monitoring Wells



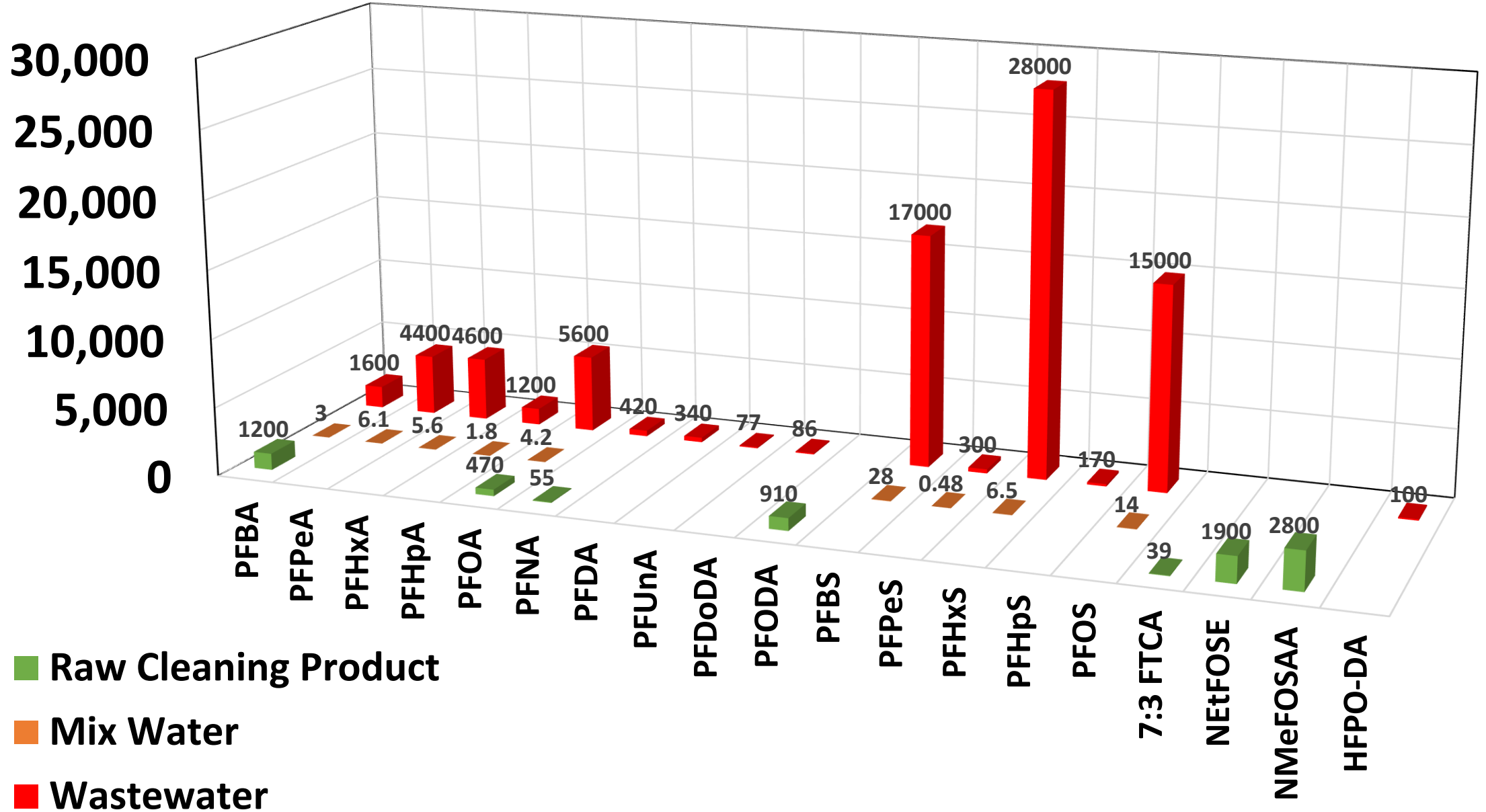
Groundwater Discharge Permit Program

Max PFAS Detections in Facility Monitoring Wells



Commercial Carpet Cleaning Wastewater

Concentration (ng/L)



Recommendations for PFAS/Class V Wells/Groundwater Discharges

- 1) Increase funding for states to administer the UIC programs.
 - Current funding for NH does not cover a full staff position
 - Funding has not changed for years
 - Funding does not facilitate the appropriate level of effort to adequately administer the UIC program – especially with new PFAS MCLs
- 2) Include other groundwater discharges other than just UICs
- 3) Consider revising federal UIC regulations to consider common sense provisions when regulating contaminants that are:
 - Regulated at the ppt or ppq levels
 - Widespread, mobile, persistent
 - Costly to remove from wastewater
- 4) Aggressive pollution prevention initiatives for PFAS – We cannot sample and regulate our way out of this problem.



5) Complete a Follow-up to USEPA's 1999 Class V Underground Injection Control Study to include PFAS and 1,4-dioxane

• Agricultural Drainage Wells	• Special Drainage Wells	• Food Processing Disposal Wells	• Geothermal Direct Heat Return Flow Wells
• Stormwater Drainage Wells	• Experimental Wells	• Sewage Treatment Effluent Wells	• Heat Pump/Air Conditioning Return Flow Wells
• Carwashes Without Undercarriage Washing or Engine Cleaning	• Aquifer Remediation Wells	• Laundromats Without Dry Cleaning Facilities	• Saline Intrusion Barrier Wells
• Large-Capacity Septic Systems	• Geothermal Electric Power Wells	• Spent Brine Return Flow Wells Mine Backfill Wells	• Aquifer Recharge/Recovery Wells
• In-Situ Fossil Fuel Recovery Wells	• Solution Mining Wells	• Aquaculture Wells	• Subsidence Control Wells
• Non-contact Cooling Wells			

Questions/Discussion?