

The background of the slide is an abstract, textured composition of brushstrokes. The top half is dominated by various shades of blue, ranging from light sky blue to deep, dark navy. Below this, there are broad, sweeping strokes of vibrant green and teal. The bottom portion of the image features darker, more muted tones, including brown, black, and dark blue, suggesting a rocky or earthy surface. The overall effect is dynamic and organic, with visible texture and color blending.

Remediation Roundtable

June 27, 2023

Remediation Roundtable Agenda

- ❖ **Announcements**
- ❖ **Website Updates**
- ❖ **Update: Release-Based Clean Up Program Regulation
Development Updates**
- ❖ **Roundtable Tips**
- ❖ **Update: PFAS Action Plan**
- ❖ **Presentation: Water Pollution Control Facility PFAS
Sampling Study**



Announcements



Happy to announce
Ray Frigon has been
promoted to
Remediation
Division Director



Announcements



-New Staff member Meghan Lally, PFAS lead within the Technical and Compliance Support Group

-Additional Openings will be posted in the future



Webpage Updates

- Release-Based Clean Up Program Regulation Development Stakeholder Engagement Advice and Recommendations
- Quality Assurance and Quality Control
- Voluntary Remediation Program 133x Fact Sheet
 - **NEW!** Voluntary Remediation Program 133x Fee Payment Form
- Permits that May Be Needed for Remediation Activities
- RCRA Corrective Action, Closure, and Stewardship Remediation Stewardship Permit Fact Sheet



Webpage Updates

Guidance: [Guidance Document for Exemptions for Incidental Sources](#)

Forms: [Property Transfer Program Fee Payment Form](#)

[Environmental Condition Assessment Form](#) and [Instructions](#) - revised

[Request Form for Approval of Criteria for APS Form](#)

[Request for Approval for Use of EPH/VPH/APH Analytical Methods and Associated Criteria Form](#)

[LEP Verifications](#) – **NEW!** Form IV Verification Forms Supporting and Final – old forms accepted before July 17



Scanning Update

- **All** Remediation Division Files from the public file room have been boxed and sent off for scanning.
- Currently working on older files that were located at our offsite warehouse, UST Petroleum Clean Up Account Applications, Well Completion Reports and any remaining files that may be in staff offices.
- We have packed over 4000 banker boxes!!! Equals over 60,000 pdfs
- Still waiting for the ability to upload ALL documents on the public portal. While we wait for all documents to be uploaded you can send an email to me Joanna.Burnham@ct.gov for files to be expedited.



Reminders

Guidance for Requesting a Schedule Extension under the Property Transfer Act

1. A schedule extension can be requested for Certifying Parties under the Property Transfer Act [CGS Sections 22a-134a through -134e]...
2. Include the Remediation identification number ("REM ID") applicable to the Certifying Party's Transfer Act Form filing.
3. Requests should be submitted prior to the expiration of the schedule deadline for which the extension is requested.
4. Requests should be signed and sent either directly from the Certifying Party or from the LEP of record. If from the LEP, the letter should clearly indicate that the Certifying Party is copied on the letter. If requests are not submitted directly from the Certifying Party, the request is required to include the primary contact person on behalf of the Certifying Party and their email address.



Reminders

INSTRUCTIONS FOR COMPLETION OF INVESTIGATION (DEEP-REM-COI) AND REMEDIAL ACTION PLAN (DEEP-REM-RAP) TRANSMITTAL FORMS

- **The Completion of Investigation (COI-TF) and Remedial Action Plan (RAP-TF) transmittal forms are summary documents to transmit applicable reports and/or plans to the Remediation Division of the Department of Energy and Environmental Protection (the Department). Upload to the Connecticut Secure File Transfer (SFT) website (<https://sft.ct.gov>) with the Electronic Transmittal Form (page 1), the RAP or COI Transmittal Form, and all supporting documents. Pursuant to Section 22a-134a [Property Transfer Law] of the Connecticut General Statutes (CGS), administrative orders, and other laws and regulations, milestone documents related to the investigation and remediation of a property are required to be submitted to the Commissioner “on a form prescribed by the Commissioner”. **These transmittal forms, with the applicable attachments, are the prescribed forms.****



Questions or Comments?

Please type your Questions into CHAT

If we need further clarification, we may take you
off mute to speak

www.ct.gov/deep/remediationroundtable





Update: Working Group on Release-Based Cleanup Regulations

**Presented by: Brendan Schain, Legal Director
Environmental Quality Branch**

BY THE NUMBERS

❖ 31 Working Group Meetings

❖ 10 Subcommittees

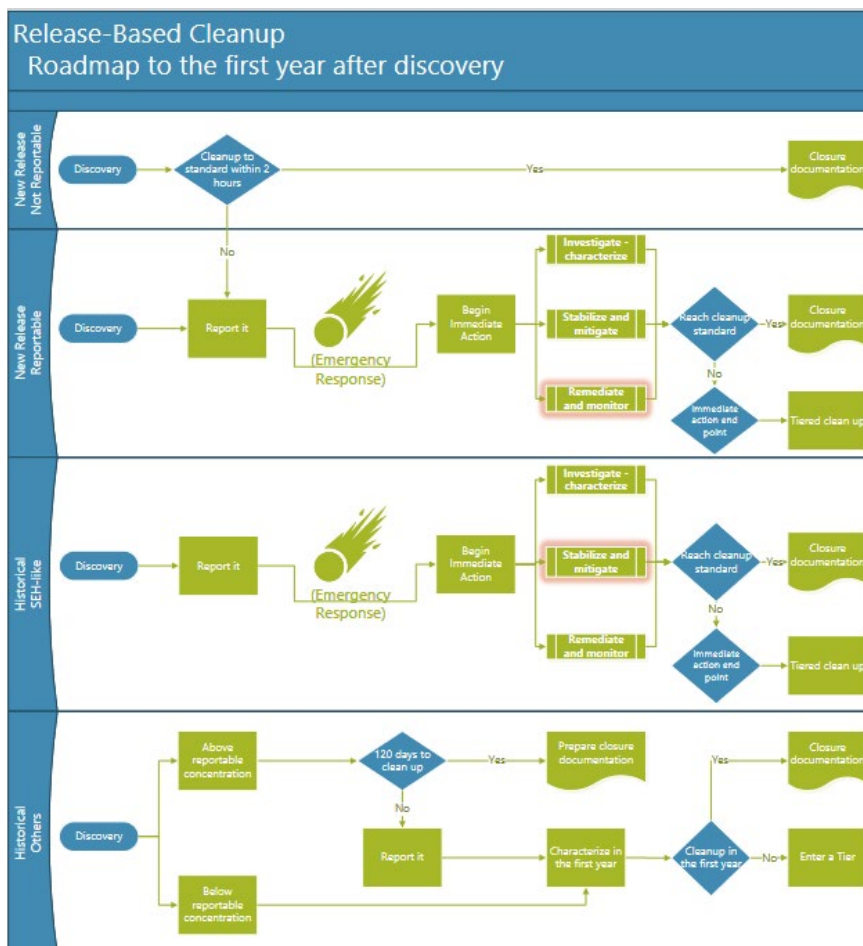
❖ 9 “substantive conversations” on topics including:

- “SERs” (SEH-like regulatory framework)
- Reportable concentrations for newly discovered historical releases
- First year roadmap
- Tiers Checklist

KEY DOCUMENTS

First Year Roadmap

Tiers Checklist



Tier Checklist

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
 BUREAU OF WATER PROTECTION AND LAND REUSE
 REMEDIATION DIVISION www.ct.gov/deep/remediation
 79 Elm St., Hartford, CT 06106-5127

Please fill out this form from the beginning each time tiering is conducted. If this is a re-tiering, please include a copy of the last approved Tier Checklist. If the release complies with the cleanup standards, tiering may not be necessary, and closure documentation should be submitted. Refer to the Tiering Checklist Instructions for more information on how to fill out and submit this form properly. The address in the headers will automatically update upon printing (including printing to pdf) or print-previewing.

Part I: General Information

Placeholder for Site address, contact information, and date of release discovery.

Part II: Certifications

Placeholder for signatories/certifications.

Part III: Tier Determination

Tier 1A. DEEP Oversight

Answer the following questions. Any box checked in the Tier 1A Indicator column at right designates the release as Tier 1A.

1. Does the release qualify as a Significant Existing Release requiring Immediate Action under [ref. TBD]

- No (Skip to line 2)
 Yes (Proceed to 1a)

1a. Immediate Action requirements have been met

Yes

No

2. Receptors are known and documented

Yes

No

3. Release characterization is complete (soil and groundwater)

Yes

No

Tier 1A Indicator
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

If any boxes in this column are checked, stop here. This release is Tier 1A. Otherwise proceed to Tier 1B determination.

WHAT'S HAPPENING NOW?

❖ Tiers “ad hoc” Team

- 7 working group members, DEEP staff resources and leadership team
- First meeting this week (open to public to observe)
- Working to provide feedback on Tiers checklist, including considering public comments
- Will report out at the August 8th Working Group meeting

❖ Parcel-Wide Cleanup Option

- Parcel-wide cleanup option may be required to use new cumulative risk-based cleanup approaches
- May be needed for those who wish to do a parcel-wide cleanup
- Discussions ongoing with “TAG Team” about this option
- To be presented to the working group this fall

WHAT'S COMING?

❖ Substantive conversations to continue. Future topics include:

- “PEP” cleanup standards provisions (specifying when a non-LEP environmental professional can certify completion of a cleanup)
- Immediate Actions: required actions, timelines, and endpoints
- Parcel-wide cleanup option

❖ Pace to Pickup:

- Broad agreement on the big pieces
- Department working hard to fill in the details
- Substantive topics will be even more “substantive”

HOW CAN YOU HELP?

- ❖ Bring your questions to the working group
- ❖ Provide written feedback on the substantive presentations
- ❖ Volunteer when opportunities present themselves
 - Additional ad hoc teams likely needed (short timeframes, specific questions)

Questions or Comments?

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ROUNDTABLE TIP: VERIFICATION FORM

**Kevin Vanderveer: Environmental Analyst,
Remediation Division**

Roundtable Tip – Verification Form

The correct Form Filing Date must be entered on the Verification Form or the Verification will be Administratively Rejected.

Part II: Verification Information ¶

This verification pertains to the following Property Transfer Filing:

Rem # ¶ Rem #	Date of Form III Filing mm/dd/yyyy
	Date of Phase II Completion mm/dd/yyyy



Roundtable Tip

The Form Filing date is the date the form was *received*, as indicated in the Acknowledgement Letter:

RE: Acknowledgement of Receipt
of complete Form III and ECAF

Dear _____:

I am writing to acknowledge receipt of a Form III, fee payment in the amount of \$3,000.00 and Environmental Condition Assessment Form (ECAF) **received on _____**. These documents were submitted pursuant to Connecticut General Statutes (CGS) §22a-134(a-e) regarding the transfer of _____ located at _____ in _____, Connecticut from _____ to _____. This filing has been assigned REM ID No. _____.



Questions or Comments?

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ROUNDTABLE TIP: ADDRESSING RECEPTORS FROM AN UPGRADIENT PLUME

Carl Gruszczak: Supervising Environmental Analyst, Remediation Division

Upgradient Plumes

2. Releases to Groundwater

- Releases to groundwater were identified. The verification report documents and explains how the Groundwater Remediation Standards were achieved at each release area.

The seasonal and 3-dimensional distribution of all plumes associated with all releases as of the applicable date of this verification have been characterized in accordance with prevailing standards and guidelines, including the SCGD (Phase III Investigation) or equal alternative approach.

If applicable, complete the following:

- An upgradient groundwater plume has impacted the Site.

§22a-133k-3(h)(4)

- *No-comingled plumes* – Concentrations of substances in GW at the downgradient parcel may be \leq concentrations in the GW plume at the boundary between the upgradient and downgradient parcels.

→ Soil on downgradient parcel complies with the soil standards in 22a-133k-2 of the RSRs.

→ All exposure pathways associated with drinking water and vapor intrusion have been eliminated or mitigated at the downgradient parcel.

→ Such substances are not already present in a GW plume at the downgradient parcel.

22a-133k-3 (h)(4)

(A)(ii) - At the downgradient parcel, all **exposure pathways** to drinking water supply wells and from volatilization of volatile organic substances into buildings **have been eliminated or mitigated** to the extent necessary to protect human health



Pathway Mitigation Examples

Drinking Water

Public water supply

Treatment system

Vapor Intrusion

Vapor mitigation system




Compliance Options for Upgradient Plumes



B. Application of Groundwater Remediation Standards

The following box must be checked for all groundwater monitoring relevant to this verification:

- The groundwater monitoring was capable of determining all of the following: §22a-133k-3(h)(1)
 - Validity of conceptual model for the release area.
 - Background conditions.
 - Whether substances were present and \leq applicable GW criteria.
- If applicable, check the following:*
- Remediation was conducted. GW monitoring demonstrated the effectiveness of remediation to eliminate or minimize risks to human health and the environment.
- MNA was implemented. GW monitoring demonstrated the effectiveness of MNA to achieve compliance with GW criteria in a reasonable timeframe.
- Site in GB area. GW monitoring determined whether a GW plume interferes with existing GW uses.
- Upgradient plume(s) present:
 - Compliance monitoring demonstrated that exposure pathway mitigation was not necessary (complete the applicable portions of this section).
 - No compliance monitoring necessary because receptor exposure pathways are not present or have been mitigated. If there are no other on-site plumes, skip to [Part VII](#).



Difference Between Upgradient Plume Compliance Options

Compliance Monitoring:

“Compliance monitoring demonstrated that exposure pathway mitigation was not necessary”

This means that the upgradient plume does potentially interact with a receptor, and compliance monitoring will be required to demonstrate mitigation not necessary:

- All compliance monitoring rules apply (e.g., 4 seasonal quarters over two years)

Mitigation or Characterization:

“No compliance monitoring necessary because receptor exposure pathways are not present or have been mitigated”

This means that mitigation measures are in place or characterization has demonstrated that the upgradient plume does not interact with a receptor on the downgradient property:

- Compliance monitoring not required
- Characterization sampling will likely need to be more than one round

Compliance Options for Upgradient Plumes



B. Application of Groundwater Remediation Standards

The following box must be checked for all groundwater monitoring relevant to this verification:

- The groundwater monitoring was capable of determining all of the following: §22a-133k-3(h)(1)
 - Validity of conceptual model for the release area.
 - Background conditions.
 - Whether substances were present and \leq applicable GW criteria.
- If applicable, check the following:*
- Remediation was conducted. GW monitoring demonstrated the effectiveness of remediation to eliminate or minimize risks to human health and the environment.
- MNA was implemented. GW monitoring demonstrated the effectiveness of MNA to achieve compliance with GW criteria in a reasonable timeframe.
- Site in GB area. GW monitoring determined whether a GW plume interferes with existing GW uses.
- Upgradient plume(s) present:
 - Compliance monitoring demonstrated that exposure pathway mitigation was not necessary (complete the applicable portions of this section).
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CT DEEP PFAS UPDATE REMEDIATION ROUNDTABLE

Presented by:
Shannon Pociu, Supervising Environmental Analyst, Remediation Division
Meghan Lally, PFAS Lead/Environmental Analyst III, Remediation Division
June 27, 2023

TODAY'S PFAS AGENDA

2023 Legislative Session Recap

- AFFF Take-Back Program
- Private Well Sampling Update

DPH Updates

- Revised PFOS consumption guidelines – New fish consumption advisories

Remediation Division Updates

- Website Updates
- APS Criteria Development
- PFAS as a COC
- ECAF Form Revision – Site History CEC Screening

Special Presentation

- CT POTW PFAS Study Results - Carlos Esguerra and Jueda Shytko, DEEP Municipal Wastewater Program

REPORT
June 2023

Water Pollution Control Facility PFAS Sampling Study

PREPARED FOR:
CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
BUREAU OF WATER PROTECTION & LAND USE

Part IV: Site History (continued)

6. Emerging Contaminant Consideration

Sampling for emerging contaminants must be considered at sites or near areas where the following activities may have occurred or where related wastes have come to be located. Check any of the following historical business operations, land uses, or known releases that occurred at the site. Indicate if other emerging contaminants not listed were used onsite and provide the contaminant name and associated site use.

Chemical manufacturing (PFAS & 1,4-Dioxane) Sites where chlorinated solvents and/or degreasers were used (1,4-Dioxane)

Firefighting foams (AFFF) used, such as firefighting training facilities, rail tank cars, fuel storage systems, fuel spill containment systems, or former DoD motor vehicle crash sites.

Landfills (PFAS & 1,4-Dioxane)

Paper and cardboard manufacturing (PFAS & 1,4-Dioxane)

Textiles (PFAS & 1,4-Dioxane)

Explosives, munitions, and fireworks (PFAS & 1,4-Dioxane)

Fertilizer applications (PFAS)

Other (PFAS & 1,4-Dioxane)

 **News Release**

FOR IMMEDIATE RELEASE: June 15, 2023
CONTACT: Chris Boyle—Director of Communications
(800) 706-9654 – christopher.boyle@ct.gov

Connecticut Department of Public Health issues consumption advisories for certain fish species in 11 waterbodies in Connecticut

HARTFORD, Conn.—The Connecticut Department of Public Health (DPH) today is issuing new or modified consumption advisories for certain fish species caught in several waterbodies in Connecticut. DPH is taking this action in close coordination with the Department of Energy and Environmental Protection (DEEP).

Upon evaluating perfluorooctane sulfonic acid (PFOS) concentrations in fish tissue sampled in 2017-2022 from 14 waterbodies using DPH's recently derived PFOS health risk values, DPH has updated or issued new consumption advisories in 11 waterbodies as shown in the table below. These updated consumption advisories are for the general population and are also protective of sensitive populations.

New or modified consumption advisories are issued for the following rivers: Connecticut, Lower Farmington, Housatonic (near O'Sullivan's Island in Derby), Natchaug, Willimantic, Shetucket, Naugatuck, Pequabuck, Still (Winchester), Scantic, and Quinnipiac.

"These consumption advisories are necessary to protect public health while allowing for community members to benefit from the nutritional benefits of eating fish," said DPH Commissioner Manisha Juthani, MD. "PFOS is one of a group of related chemicals known as per- and polyfluoroalkyl substances (PFAS). This group of chemicals is commonly used in a wide range of industrial processes and is found in many consumer products. Long-term exposure to PFAS may be associated with increased levels of cholesterol and liver enzymes, a change in immune response, developmental effects, increased chance of high blood pressure and/or increased chance of pre-eclampsia during pregnancy, and an increased chance of thyroid disease."

Commissioner Juthani added that it was not necessary to modify the current advisories for the Hockanum, Tankerhoosen, and the Upper Housatonic Rivers. Additionally, there are no new or existing advisories in place for the Quinebaug River other than the statewide freshwater advisory described below. Working closely with DEEP—whose fisheries staff have expertise and knowledge of the rivers and fisheries habitat—both state agencies have determined the locations where the fish advisories will apply.

(more)



2023 Legislative Session Recap

2023 LEGISLATIVE SESSION RECAP

PFAS-Bills Tracked

- [SB 100](#): An Act Establishing an Account in the General Fund to Provide Grants to Towns that Need PFAS Testing and Remediation
- [HB 5250](#): An Act Establishing a Grant Program to Reimburse Municipalities for Costs Related to Removal of PFAS From Fire Apparatus

Additional Funding Request:

- Background Soil Study (EPOC)



AFFF BAN & TAKE-BACK PROGRAM

CGS Section 22a-903a (PA 21-191) – AFFF Use Ban

- ✓ Phase 1 – Container Collection & Disposal of AFFF concentrate from state/municipal fire departments
 - 35,300 gal.+ collected from >250 town fire departments
 - ✓ Phase 2 – PFAS Decontamination Study / Regional Foam Trailer Cleaning – NOW PURCHASING NEW TRAILERS
 - ❑ Phase 3 – Dispose of AFFF from municipal fire trucks – PENDING – DESPP to lead
-
- ❖ Granted AFFF Use Extensions to ~23 terminals & chemical plants that are actively transitioning

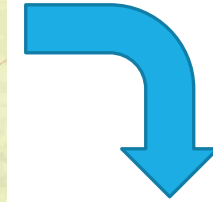
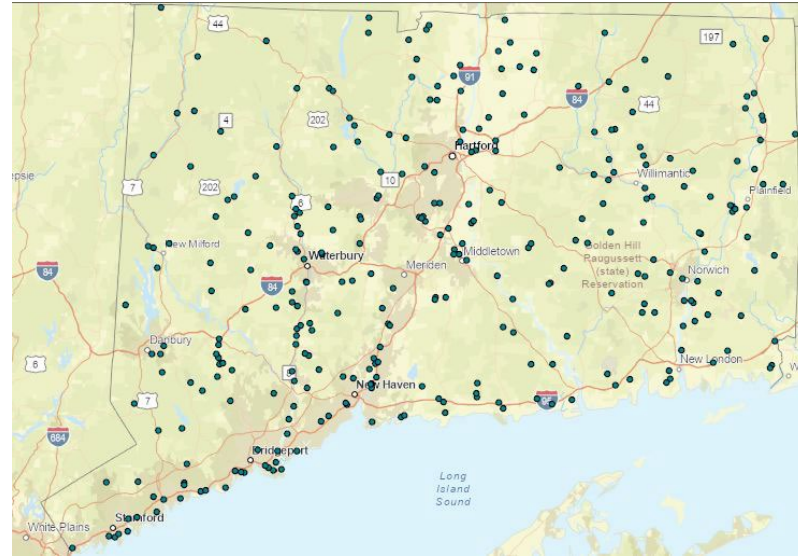


PRIVATE WELL TESTING UPDATE

- FY23 \$1.15M Bond Commission funding request is pending.
- Prioritizing sampling areas within vulnerable communities and/or that are at highest risk of PFAS pollution.
- New investigation areas:
 - Chester
 - Suffield
 - Thompson



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DPH PFAS Update

DPH PFOS-BASED FISH CONSUMPTION ADVISORIES

 **News Release**

FOR IMMEDIATE RELEASE: June 15, 2023
CONTACT: Chris Boyle—Director of Communications
(860) 708-9854 – christopher.boyle@ct.gov

Connecticut Department of Public Health issues consumption advisories for certain fish species in 11 waterbodies in Connecticut

HARTFORD, Conn.—The Connecticut Department of Public Health (DPH) today is issuing new or modified consumption advisories for certain fish species caught in several waterbodies in Connecticut. DPH is taking this action in close coordination with the Department of Environmental Protection (DEP).

Upon evaluation of waterbodies with advisories in population areas, new or modified advisories for the Housatonic River (Winchester) and the Quinnipiac River (Meriden) were issued. These consumption advisories benefit from the group of related advisories commonly used to PFAS may development pregnancy, a Commission Tankerhoose Quinebaug River fisheries staff the locations



- Lowered the PFOS in fish consumption limits in March 2023.
- Updated or added new PFOS-based fish consumption advisories for 11 waterbodies:
 1. Housatonic River (lower)
 2. Naugatuck River
 3. Still River (Winsted)
 4. Pequabuck River
 5. Quinnipiac River (lower)
 6. Farmington River (lower)
 7. Scantic River
 8. Connecticut River
 9. Natchaug River (lower)
 10. Willimantic River (lower)
 11. Shetucket River (upper)

Existing advisories for Hockanum & Tankerhoosen Rivers remain in place.

A stylized graphic background featuring a yellow sun in the top right, a green hill in the middle, and a blue wavy area at the bottom representing water. The elements are separated by thick dark blue outlines.

DEEP Remediation Division PFAS Updates

DEEP PFAS WEBSITE UPDATES

NEW WEB CONTENT:

- [New PFAS Landing Page](#)
- [PFAS in Municipal Wastewater Treatment Facilities](#)
- [Minimizing Environmental Exposure to PFAS](#)
- [Minimizing Future Releases of PFAS to the Environment](#)

ADDITIONAL WEBSITE UPDATES:

- [PFAS Information for Environmental Professionals:](#)
 - Sampling Guidance: Presentation "*CT DEEP Expectations for PFAS Investigations*" added

Per- and Polyfluoroalkyl Substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a large group of man-made chemicals that include perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). PFAS have been used globally during the past century in manufacturing, firefighting and thousands of common household and other consumer products.

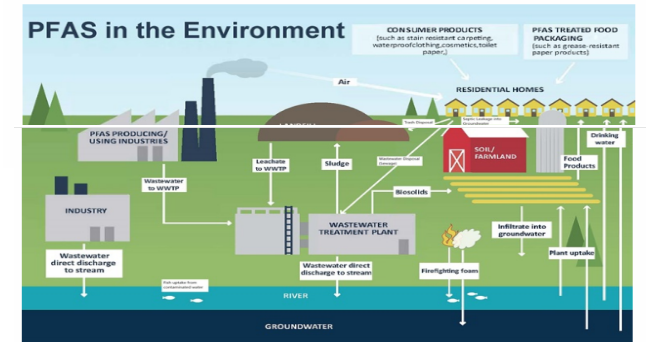
Learn More About PFAS

To learn more about PFAS in Connecticut, please visit the webpages below.

Residents	Municipalities	Environmental Professionals
Introduction to PFAS	Information for Municipalities	Information for Environmental Professionals
Private Drinking Water Well Testing	PFAS in Biosolids Guidance	Additional Polluting Substances (APS) Release Reporting Regulations
Fish Testing and Advisories	PFAS in Class B Firefighting Foam	Significant Environmental Hazards Reporting
Shellfish Testing	School Composting Program Guidance	Disposal of PFAS-Containing Waste
PFAS in Consumer Products	PFAS-Free Purchasing	DPH Environmental Lab Certification Program
PFAS in Food Packaging	PFAS in Wastewater Treatment Facilities	
Artificial Turf and PFAS		

Why PFAS Are An Environmental Problem

PFAS are chemicals that are persistent in the environment (and in the human body) – meaning they don't break down and they can accumulate over time.



Because PFAS do not fully break down, once in the environment, PFAS will continue to move or 'cycle' through a variety of media including soil, groundwater, surface water and air. PFAS enter surface waters when PFAS containing wastewater is discharged (intentionally or accidentally) from industrial facilities, landfills, and wastewater treatment plants. Soil and groundwater contamination can occur in areas that have leaking septic systems or where PFAS-containing fertilizers, such as biosolids, have been applied to gardens and farm lands. The release of PFAS-containing fire fighting foam is also a significant source of soil and groundwater PFAS contamination. Industrial emissions and solid waste incineration may release PFAS to the air, which can then travel long distances before eventually settling back down onto land through a process called 'atmospheric deposition' or through contaminated snow and rainwater. Fish, wildlife, and plants exposed to contaminated water and soil may themselves become contaminated with PFAS.

DEEP's Strategy to Address PFAS in the Environment

Given the magnitude of this problem, DEEP is actively working to address PFAS in Connecticut utilizing the multi-pronged approach outlined in the [Connecticut PFAS Action Plan](#) :

1. Minimize Environmental Exposures to Protect Human Health
2. Prevent PFAS Pollution by Minimizing Future Releases
3. Identify, Assess and Cleanup of Historical PFAS Releases
4. Enhance Education, Outreach, and Communication on PFAS

Contact Information

Questions regarding PFAS can be emailed to DEEP.PFAS@ct.gov.

Content last updated June 23, 2023.

RSR ADDITIONAL POLLUTING SUBSTANCE CRITERIA


Applies to Σ PFOA, PFOS, PFNA, PFHxS & PFHpA

Remediation Standard	Criterion
Residential Direct Exposure Criterion	1.35 mg/kg
Industrial/Commercial Direct Exposure Criterion	41 mg/kg
GA Pollutant Mobility Criterion	1.4 μ g/kg
GB Pollutant Mobility Criterion	14 μ g/kg
Groundwater Protection Criterion (adopts DPH's 2016 Drinking Water Action Level for Σ PFOA, PFOS, PFNA, PFHxS, PFHpA)	70 ng/L
Surface Water Protection Criterion	In Development

- Existing summed PFAS APS criteria will be updated to individual criteria for PFOA, PFOS, PFNA, and PFHxS using the 2022 DPH DWALs and Reference Doses.
- Toxicity information for additional PFAS requested from DPH for use in deriving APS criteria for future inclusion on the Fast Track form.

[Requesting APS and Alternative Criteria \(ct.gov\)](https://www.ct.gov/dep/sectors/contaminated-sites/contaminated-sites-remediation/contaminated-sites-remediation-standards/contaminated-sites-remediation-standards-criteria)

PFAS AS CONTAMINANTS OF CONCERN: FLASHBACK TO JUNE 20, 2017 REMEDIATION ROUNDTABLE MEETING



Remediation Standard Regulations

- ★ If PFASs are COCs based on site history/operations, they should be included in site characterization.
- PFASs must be addressed as Additional Polluting Substances at Remediation Sites.
 - Utilize EPA's RfD of 0.00002 mg/kg/day
 - Soil Direct Exposure Criteria – use equations in RSR Section 22a-133k-2(b)(5)
 - Groundwater – Adopting CT DPH's DWAL of 70 ppt for Σ PFOA, PFOS, PFHxS, PFNA, and PFHpA
- OR Calculate Site-Specific Criteria for DEEP review and approval

Connecticut Department of Energy and Environmental Protection: Remediation Division

Shannon Pociu

PFAS AS CONTAMINANTS OF CONCERN

From the [PFAS Information for Environmental Professionals](#) webpage:

- **If PFAS are contaminants of concern based on site history/ operations, they must be included in site characterization.**
- Environmental professionals should consider whether [emerging contaminants](#), including PFAS, are constituents of concern when evaluating Phase I information and test for those emerging contaminants where warranted.
- Phase 1 evaluation of PFAS will help avoid uncertainty, audits, and unanticipated work in the future.
- **Reliance on Safety Data Sheets or anecdotal reports is not sufficient to preclude testing for PFAS.**
 - Safety Data Sheets will not identify PFAS as ingredients if they comprise less than 1% of the product or if they are considered a “trade secret.”
- Now rejecting verifications where PFAS is an obvious COC and was not addressed

RESOURCES TO HELP IDENTIFY PFAS SOURCES AND USES

- [Historical and current usage of per- and polyfluoroalkyl substances \(PFAS\): A literature review](#) by Linda Gaines, PhD, PE, May 2022. Am J Ind Med. 2022;1-26.
- [An overview of the uses of per- and polyfluoroalkyl substances](#) by Glüge, et. al. Environ. Sci.: Processes Impacts, 2020, 22, 2345-2373.
- [ITRC – PFAS Technical & Regulatory Guidance Document](#)



PFAS – Per- and Polyfluoroalkyl Substances

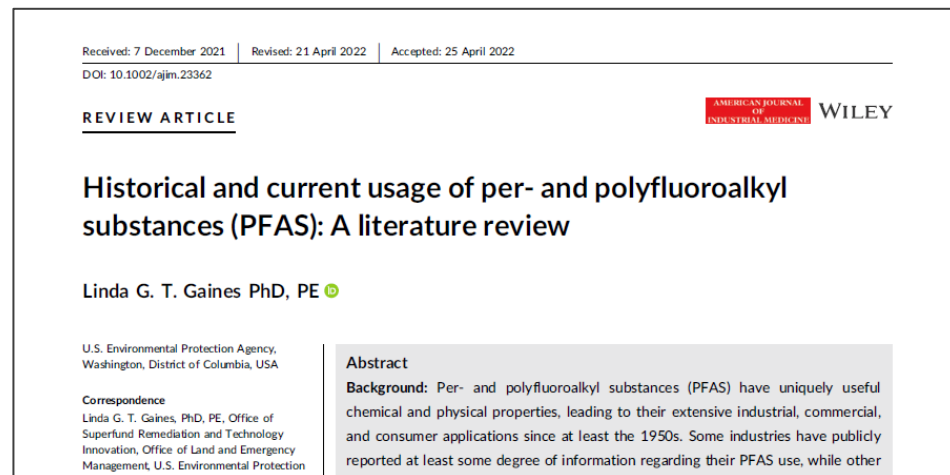
WELCOME

Technical Resources for Addressing Environmental Releases of Per- and Polyfluoroalkyl Substances (PFAS)

PFAS HOME

This Interstate Technology and Regulatory Council (ITRC) online document includes the resources that the ITRC PFAS Team has developed since it began work in 2017.

- [PFAS Fact Sheets](#)
- [PFAS Technical and Regulatory Guidance Document](#)



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REVIEW ARTICLE

AMERICAN JOURNAL OF INDUSTRIAL MEDICINE WILEY

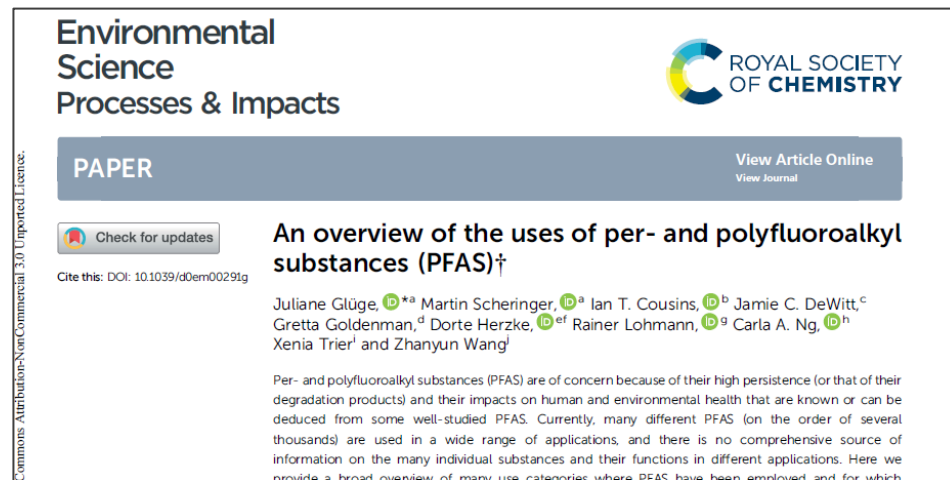
Historical and current usage of per- and polyfluoroalkyl substances (PFAS): A literature review

Linda G. T. Gaines PhD, PE

U.S. Environmental Protection Agency, Washington, District of Columbia, USA

Correspondence
Linda G. T. Gaines, PhD, PE, Office of Superfund Remediation and Technology Innovation, Office of Land and Emergency Management, U.S. Environmental Protection Agency, Washington, DC

Abstract
Background: Per- and polyfluoroalkyl substances (PFAS) have uniquely useful chemical and physical properties, leading to their extensive industrial, commercial, and consumer applications since at least the 1950s. Some industries have publicly reported at least some degree of information regarding their PFAS use, while other



Environmental Science Processes & Impacts

ROYAL SOCIETY OF CHEMISTRY

PAPER

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View Journal

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Cite this: DOI: 10.1039/d0em00291g

An overview of the uses of per- and polyfluoroalkyl substances (PFAS)†

Juliane Glüge,^a Martin Scheringer,^a Ian T. Cousins,^b Jamie C. DeWitt,^c Gretta Goldenman,^d Dorte Herzke,^{e,f} Rainer Lohmann,^g Carla A. Ng,^h Xenia Trierⁱ and Zhanyun Wang^j

Per- and polyfluoroalkyl substances (PFAS) are of concern because of their high persistence (or that of their degradation products) and their impacts on human and environmental health that are known or can be deduced from some well-studied PFAS. Currently, many different PFAS (on the order of several thousands) are used in a wide range of applications, and there is no comprehensive source of information on the many individual substances and their functions in different applications. Here we provide a broad overview of many use categories where PFAS have been employed, and for which

ECAF UPDATE: EMERGING CONTAMINANTS CONSIDERATION

- Part IV: Site History, #6, p. 6
- May 2023 – updates to provide clarification for some categories to focus on manufacturing
- Working on language to clarify pesticides and fertilizer use

Note: Completion of Investigation (COI) Transmittal Form – to be updated in the future to include PFAS

Site Address:

Part IV: Site History (continued)

6. Emerging Contaminant Consideration

Sampling for [emerging contaminants](#) must be considered at sites or near areas where the following activities may have occurred or where related wastes have come to be located. Check any of the following historical business operations, land uses, or known releases that occurred at the site. Indicate if other emerging contaminants not listed were used onsite and provide the contaminant name and associated site use.

<input type="checkbox"/> Chemical manufacturing (PFAS & 1,4-Dioxane) <input type="checkbox"/> Application of coatings, waxes, paints, varnishes, inks, dyes, sealants, lubricants, adhesives, resins, and oil and water repellent coatings and finishes (PFAS & 1,4-Dioxane) <input type="checkbox"/> Manufacturing of cleaning products and use of cleaning products in an industrial, commercial, or institutional setting (PFAS & 1,4-Dioxane) <input type="checkbox"/> Dry cleaning, especially non-PCE systems (PFAS) <input type="checkbox"/> Metal plating and finishing, especially mist suppression in plating (PFAS) <input type="checkbox"/> Etching (metal, glass, and plastic) (PFAS) <input type="checkbox"/> Application of wire coating (PFAS) <input type="checkbox"/> Plastics, polymer, or rubber production (PFAS & 1,4-Dioxane) <input type="checkbox"/> Manufacturing of medical devices, medical supplies, and fabrics (PFAS) <input type="checkbox"/> Photography, lithography, diagnostic imaging, X-ray film, film production and processing (PFAS & 1,4-Dioxane) <input type="checkbox"/> Antifreeze production and use, including aircraft deicing (1,4-Dioxane) <input type="checkbox"/> Vehicle washing and detailing (PFAS & 1,4-Dioxane) <input type="checkbox"/> Manufacturing of automotive and aviation parts, including auto interior textiles, gaskets, hoses, insulation, etc. (PFAS) <input type="checkbox"/> Use of automotive fluids including brake fluids, loosening fluids, & rust removers (1,4-Dioxane)	<input type="checkbox"/> Sites where chlorinated solvents and/or degreasers were used (1,4-Dioxane) <input type="checkbox"/> Locations where Class B firefighting foams (AFFF) may have been used or spilled, such as firefighting training areas, fire stations, aviation facilities, rail yards, building fire suppression systems, fuel terminals, chemical plants, current or former DoD sites, and aircraft, train, and motor vehicle crash sites (PFAS) <input type="checkbox"/> Electronics, semiconductors, and aerospace manufacturing (PFAS & 1,4-Dioxane) <input type="checkbox"/> Manufacturing of pharmaceuticals, cosmetics, and personal care products (PFAS & 1,4-Dioxane) <input type="checkbox"/> Landfills, wastewater treatment plants, recycling & material recovery, junkyards, paper/cardboard composting (PFAS & 1,4-Dioxane) <input type="checkbox"/> Manufacturing and processing of textiles, including upholstery, carpets, awnings firefighting protective gear, automotive, industrial, outdoor and medical textiles, (PFAS & 1,4-Dioxane) <input type="checkbox"/> Manufacturing of packaging, paper, and cardboard, especially coated (PFAS & 1,4-Dioxane) <input type="checkbox"/> Manufacturing and use of munitions, explosives, and propellants (PFAS & Perchlorate) <input type="checkbox"/> Biosolids or biosolid-based fertilizer applications (PFAS) <input type="checkbox"/> Manufacturing and use of pesticides and fertilizers (PFAS & 1,4-Dioxane) <input type="checkbox"/> Leather tanning and finishing (PFAS) <input type="checkbox"/> Unknown. Phase I ESA not completed <input type="checkbox"/> Other emerging contaminants/uses:
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Was the potential presence of emerging contaminants evaluated? Yes No

Were lab analyses for emerging contaminants done? Yes No

Provide explanation for "No" answers:

DEEP-REM-ECAF
6 of 11
Rev. 5/19/23

6/30/2023

NEXT STEPS

- Update **Remediation Standard APS Criteria** and establish **Water Quality Criteria**
- Continue focused **sampling of private wells** in high-risk areas
- Continue **outreach and aid** to municipalities and the regulated community
- Expand **landfill monitoring**; continue to add PFAS monitoring plans to stewardship permits upon renewal
- Implement the 1/1/24 Toxics in Packaging Law **ban on intentionally-added PFAS in food packaging**
- Seek/leverage **funding opportunities** to support PFAS initiatives

THANK YOU

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DEEP.PFAS@ct.gov

[DEEP PFAS Webpage](#)





WATER POLLUTION CONTROL FACILITY PFAS SAMPLING STUDY

Carlos Esguerra, Supervising Environmental Engineer and Jueda Shytco, EIT, Environmental Engineer, Water Planning and Management Division

PFAS ACTION PLAN



BY THE CONNECTICUT INTERAGENCY
PFAS TASK FORCE

NOVEMBER 1, 2019

Initiated by

GOVERNOR NED LAMONT

Led by the

DEPARTMENT of PUBLIC HEALTH &
DEPARTMENT of ENERGY AND ENVIRONMENTAL PROTECTION



WPCF PFAS SAMPLING STUDY (WESTON & SAMPSON, JUNE 2023)

Environmental media tested for PFAS included:

- Influent, effluent, and sewage sludge from 35 WPCFs, sampled in summer 2021 and winter 2022
- Composite sewage sludge and incinerator scrubber water from 4 WPCFs that incinerate sewage sludge, sampled in summer 2021 and winter 2022
- Fish tissue collected downstream of 10 WPCF outfalls, as well as surface water both upstream and downstream of those outfalls, sampled in Fall 2021 only

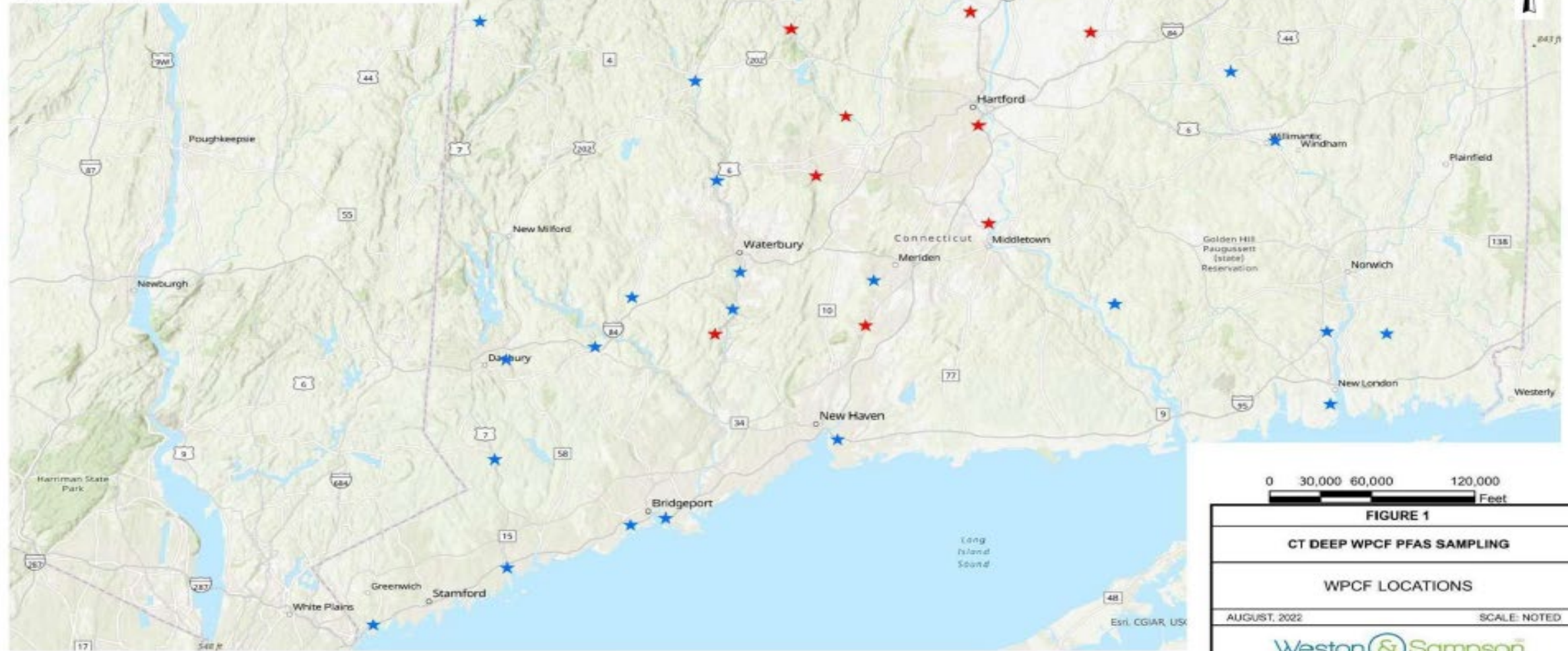


Legend

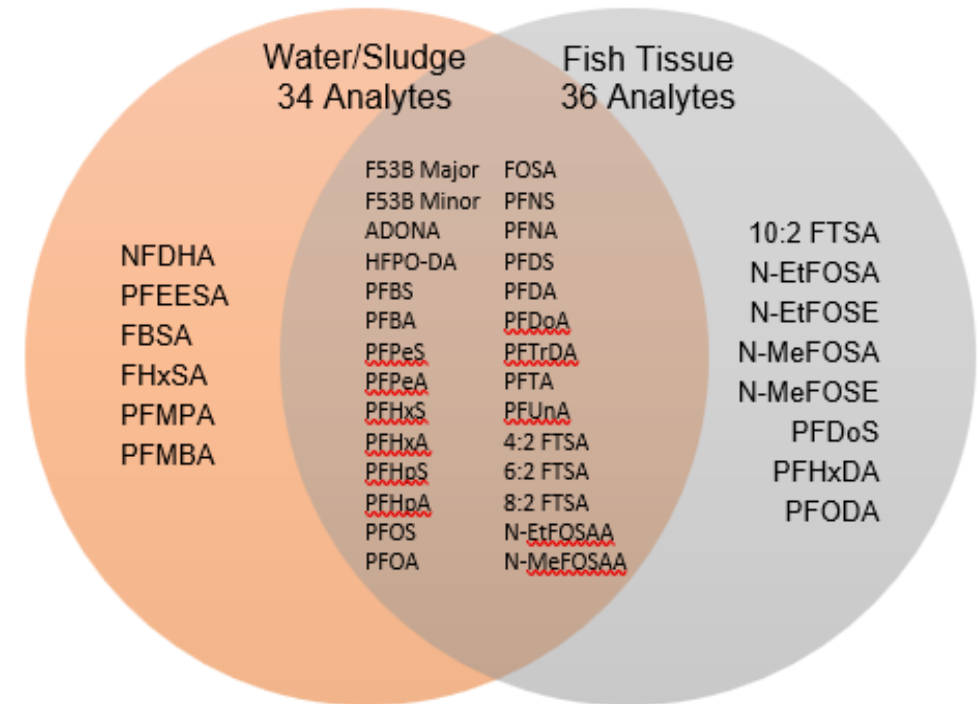
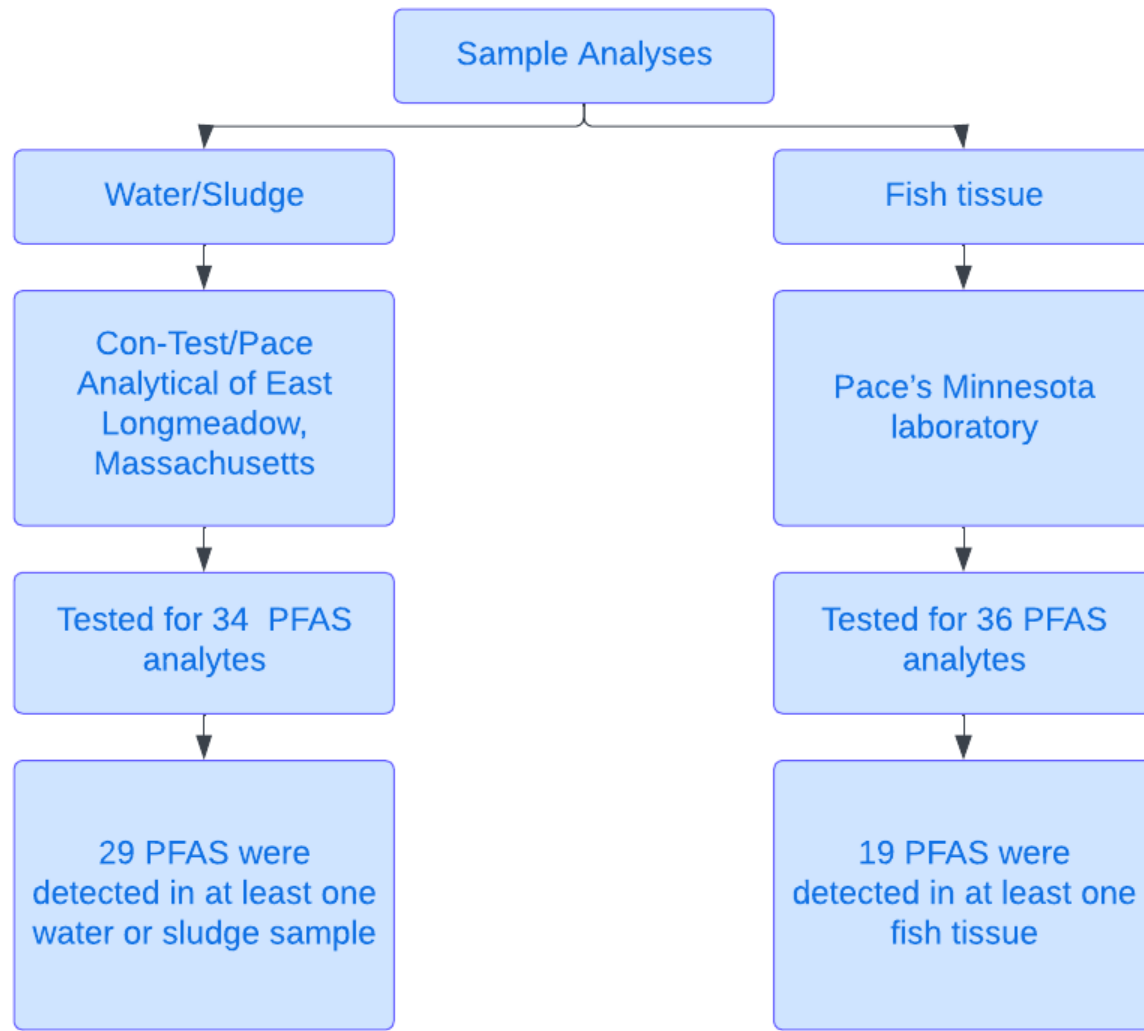
WPCF where influent, effluent, and sludge samples were collected



WPCF where influent, effluent, sludge, surface-water, and fish samples were collected



PFAS REPORT SUMMARY OF KEY FINDINGS



PFAS REPORT SUMMARY OF KEY FINDINGS

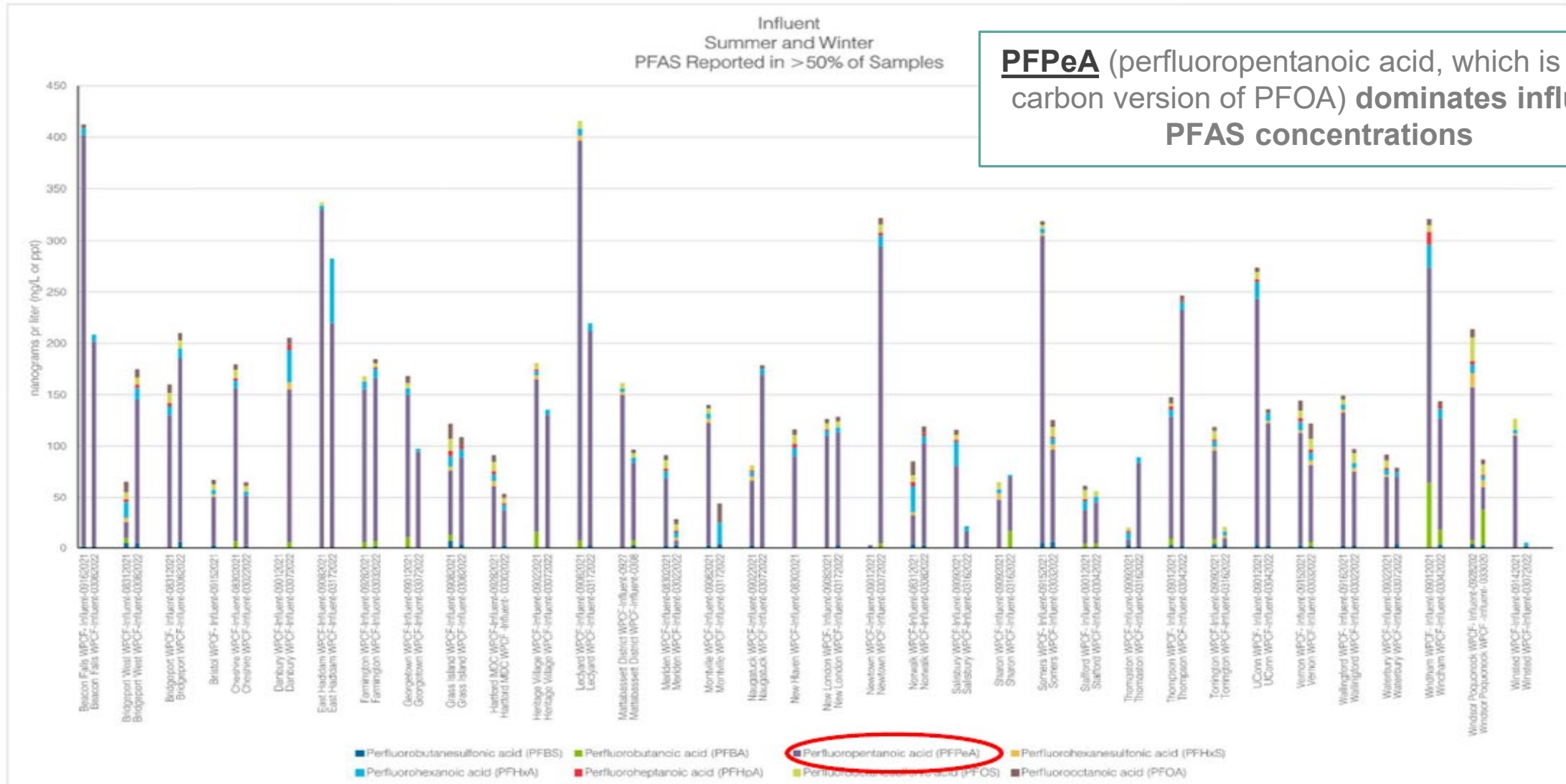
- PFAS were detected in all media analyzed
- Eight (8) PFAS compounds were most prevalent and were detected in greater than 50% of all samples analyzed across all media.
- 4 to 8 Chain Length Compounds Were Observed Most Frequently

Compound Name	Compound Acronym
Perfluorobutanesulfonic acid	PFBS
Perfluorobutanoic acid	PFBA
Perfluoropentanoic acid	PFPeA
Perfluorohexanesulfonic acid	PFHxS
Perfluorohexanoic acid	PFHxA
Perfluoroheptanoic acid	PFHpA
Perfluorooctanesulfonic acid	PFOS
Perfluorooctanoic acid	PFOA

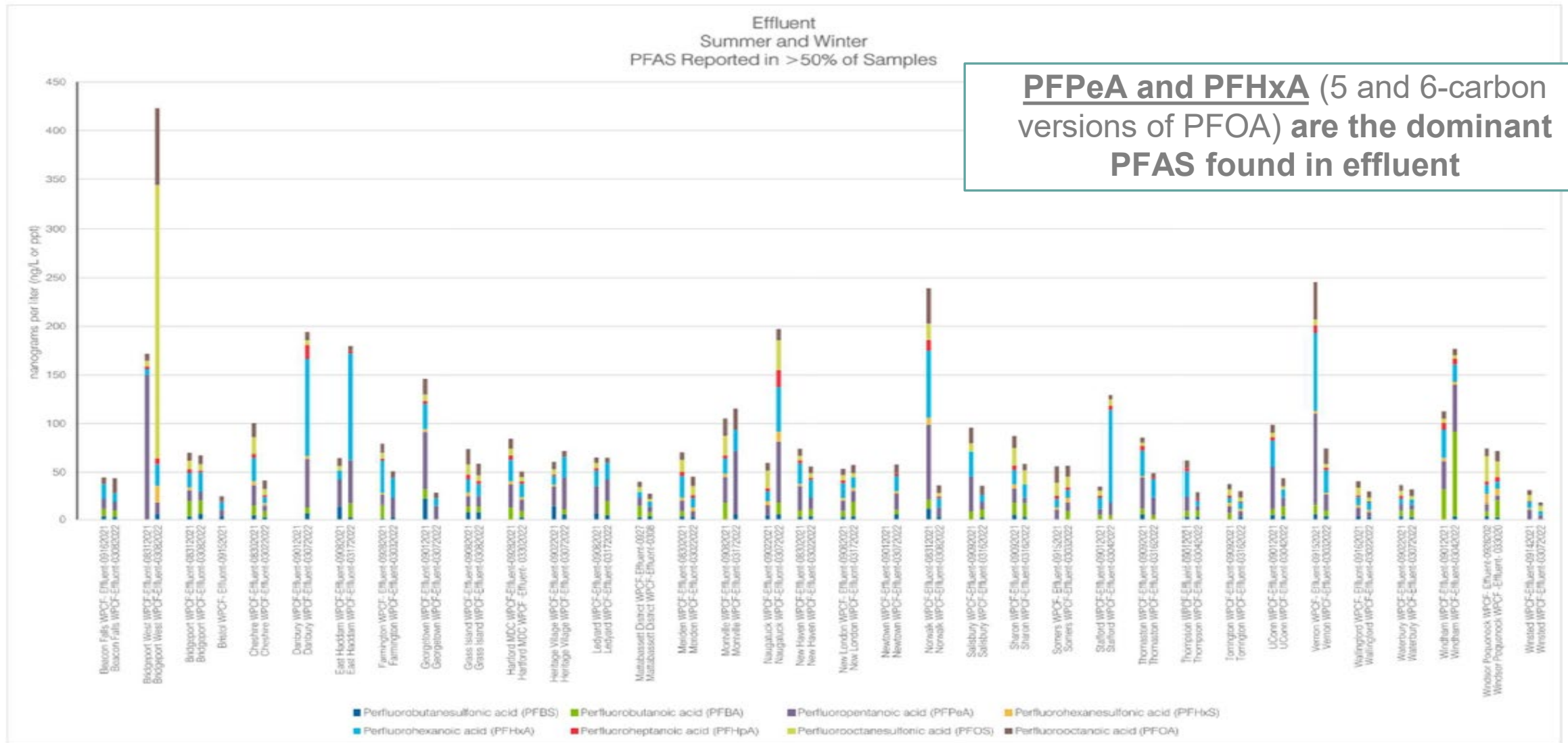
** PFOA and PFOS, the two most widely studied PFAS, are no longer manufactured or imported into the US, though there could be some imported goods that contain these substances*



INFLUENT SAMPLE RESULTS



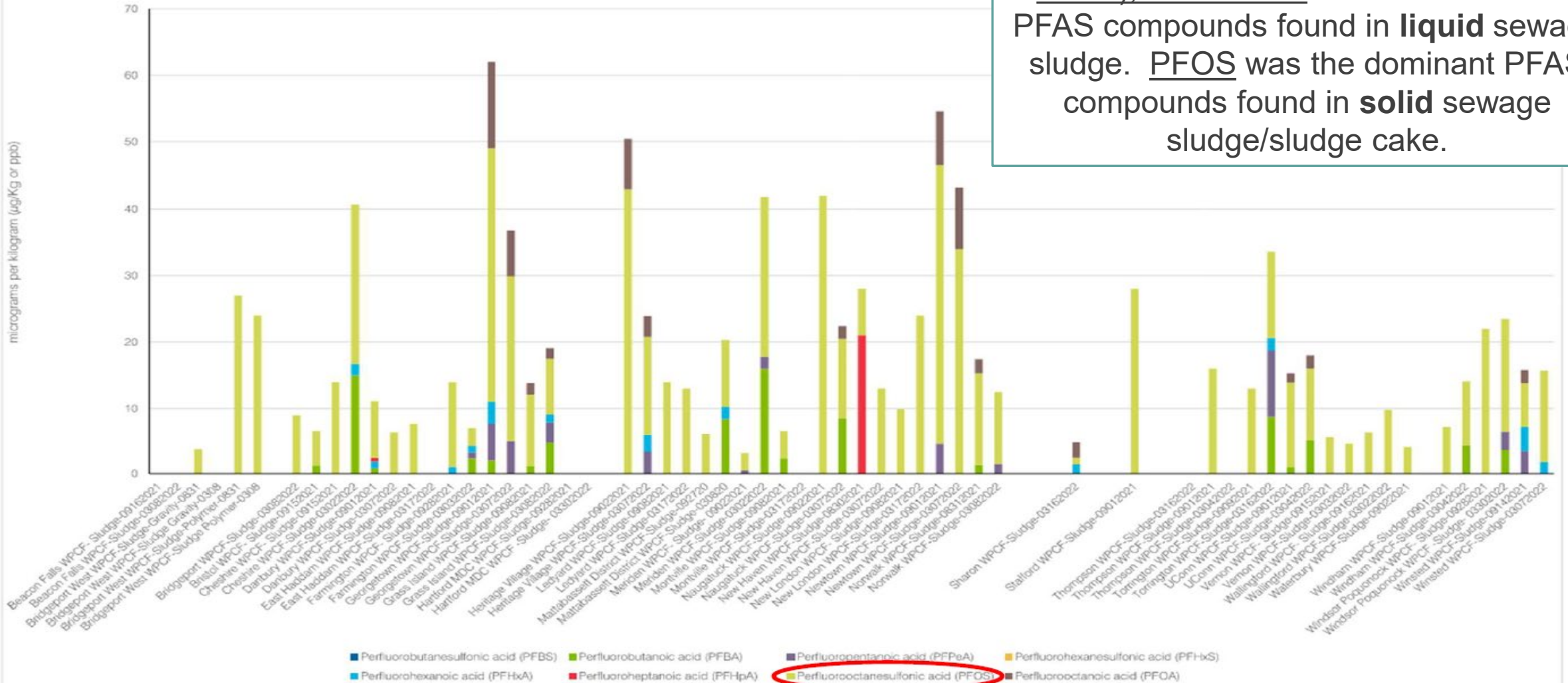
EFFLUENT SAMPLE RESULTS



SLUDGE AND SOLIDS SAMPLE RESULTS

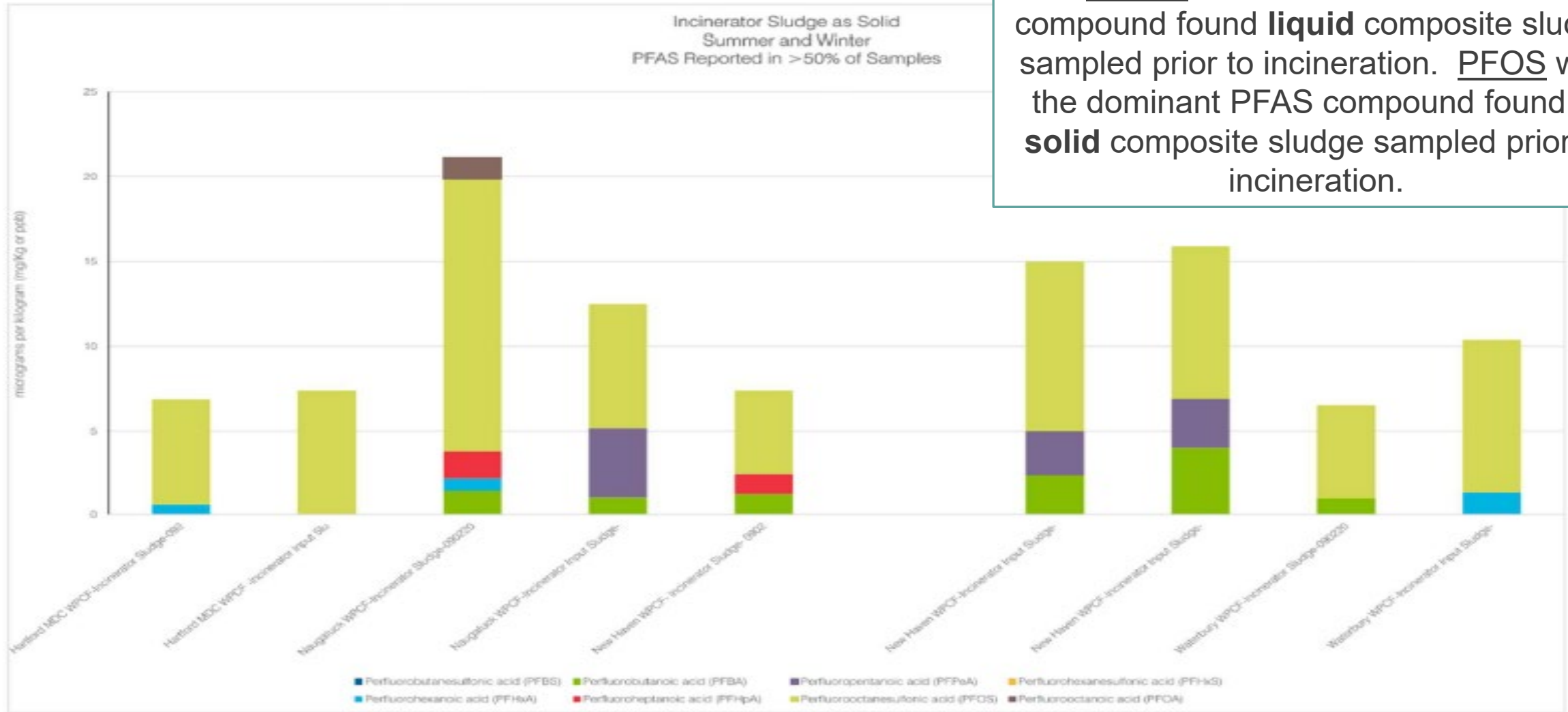
Sludge as Solid
Summer and Winter
PFAS Reported in >50% of Samples

PFPeA, 6:2 fluorotelomersulfonic acid (6:2 FTSA), and PFHxA were the dominant PFAS compounds found in **liquid** sewage sludge. PFOS was the dominant PFAS compounds found in **solid** sewage sludge/sludge cake.

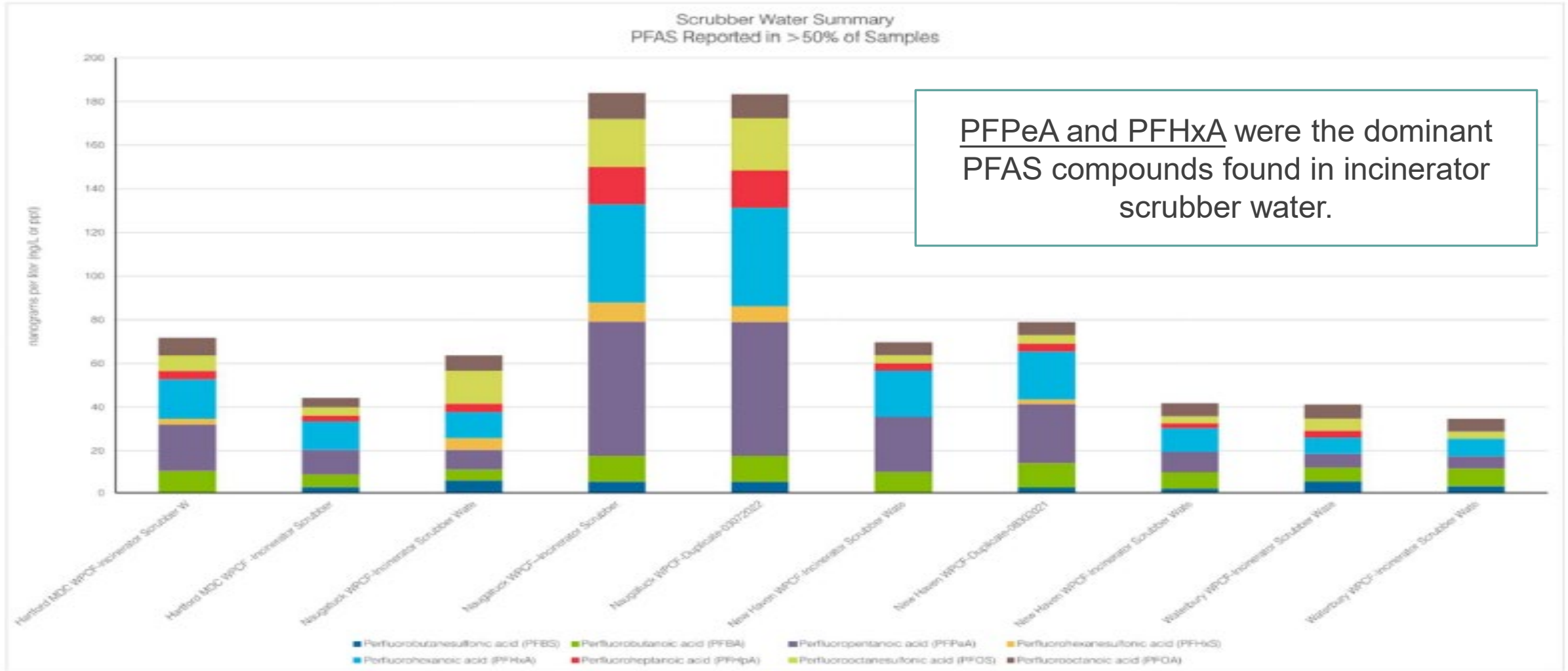


INCINERATOR COMPOSITE SLUDGE

PFPeA was the dominant PFAS compound found **liquid** composite sludge sampled prior to incineration. PFOS was the dominant PFAS compound found in **solid** composite sludge sampled prior to incineration.



INCINERATOR SCRUBBER WATER



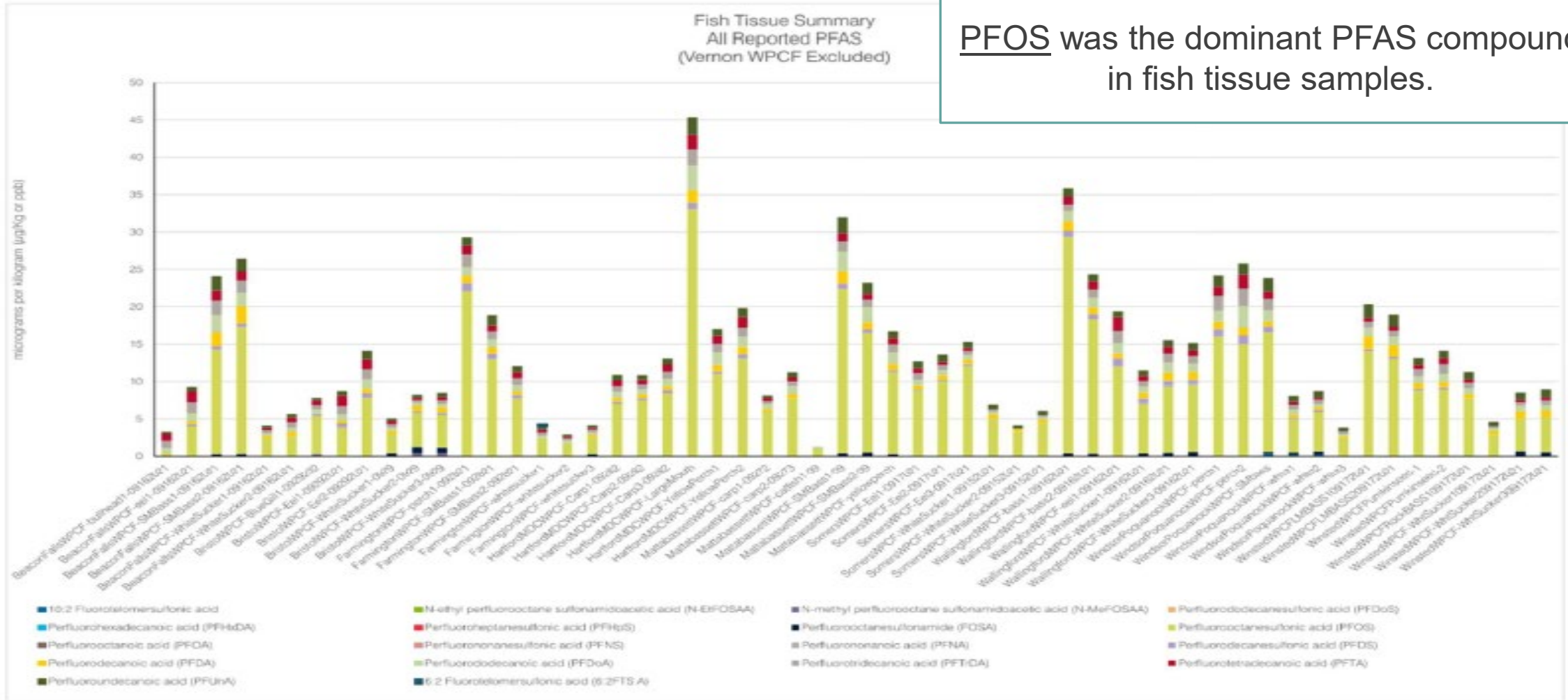
PFPeA and PFHxA were the dominant PFAS compounds found in incinerator scrubber water.



FISH TISSUE SAMPLE RESULTS

Fish Tissue Summary
All Reported PFAS
(Vernon WPCF Excluded)

PFOS was the dominant PFAS compound in fish tissue samples.



U.S. EPA'S COMMITMENTS TO ACTION



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

December 5, 2022

MEMORANDUM

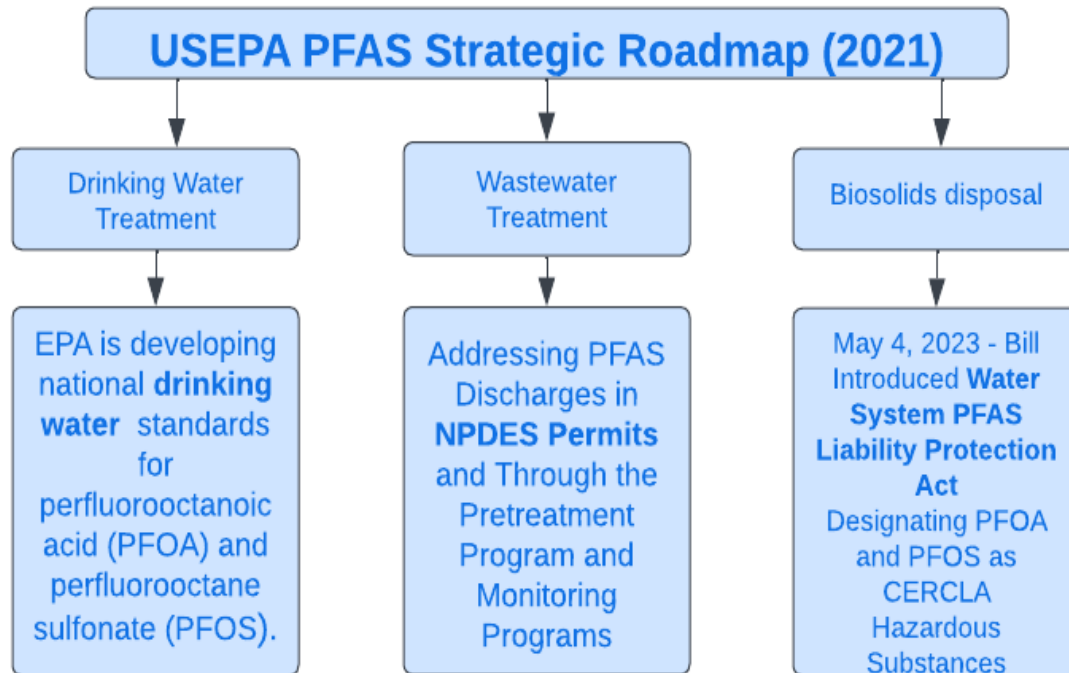
SUBJECT: Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs

FROM: Radhika Fox
Assistant Administrator

TO: EPA Regional Water Division Directors, Regions 1-10

December 5, 2022 – EPA released new guidance recommending the implementation of quarterly PFAS monitoring at all POTW's, including those that do not receive industrial discharges

- 40 PFAS parameters using Draft Method 1633
 - According to EPA, draft method 1633 is expected to be fully approved **by the end of 2023**
- Organic Fluorine Method 1621



PFAS – NEW EPA GUIDANCE FOR NPDES PERMITS

[Municipal PFAS \(ct.gov\)](#)

DEEP-WPLR currently in internal discussions regarding monitoring implementation pathways for municipal wastewater facilities:

- 84 publicly-owned wastewater treatment facilities (Incl. UConn POTW)
- Collaboration amongst key stakeholders (regulatory bodies and regulated community will be essential)
- Including PFAS monitoring requirements in NPDES after EPA approves draft analytical method 1633 and within a timeframe which allows WPCFs adequate time to plan and budget for PFAS sampling

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH



Deidre S. Gifford, MD, MPH
Acting Commissioner

Ned Lamont
Governor
Susan Bysiewicz
Lt. Governor

Environmental Health and Drinking Water Branch

Date: March 22, 2023

To: Graham J. Stevens, CT DEEP Chief of the Bureau of Water Protection and Land Reuse

From: Lori J. Mathieu, CT DPH Public Health Branch Chief

Re: Addition of Draft PFAS Method 1633 and 1621 to ELCP

CT DPH Environmental Laboratory Certification Program (ELCP), at the request of DEEP, will be adding PFAS by draft method 1633, organic fluorine by method 1621, and an option for a modified method to the non-potable water ELCP scope. ELCP plans to issue a circular to all environmental laboratories in April of 2023 and should have laboratories who apply for the additional methods certified by the end of 2nd quarter 2023.

The approval for the modified PFAS method will follow a similar criteria as specified in the EPA's Alternative testing protocol (ATP), which can be found in 40 CFR part 136.

Please feel free to reach out to Dawn Shaban dawn.shaban@ct.gov or Nicole Paradise nicole.paradise@ct.gov with any questions.

Sincerely,

Handwritten signature of Lori J. Mathieu in blue ink.

Lori Mathieu
Public Health Branch Chief

cc: Rachel Nowek, Public Health Services Manager



Municipal wastewater website update:

- 1) Weston & Sampson Report
- 2) Summary of key report findings
- 3) Other resources:

CT DEEP Resources

- [Introduction to PFAS](#)
- [PFAS Information for Municipalities](#)
- [Connecticut Interagency PFAS Task Force](#)
- [CT PFAS Action Plan, November 1, 2019](#)

EPA Resources

- [PFAS \(home page\)](#)
- [PFAS Explained](#)
- [CWA Analytical Methods for PFAS \(Draft Methods 1633 and 1621\)](#)
- [Interstate Technology and Regulatory \(ITRC\)-PFAS](#)

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by Keyword

Per- and Polyfluoroalkyl Substances (PFAS) in Municipal Wastewater Treatment Facilities

[Per- and polyfluoroalkyl substances](#), or PFAS, are a group of several thousand manmade chemicals that have been used widely in consumer products and industry since the 1940s. Due to their unique chemical structure, PFAS are extremely stable and repel oil, grease, water, and heat. Because of their long history of use, scientific studies have shown PFAS are ubiquitous and can have serious adverse impacts on human health and the environment, even at very low levels.

The same properties that make PFAS stable also make them extremely resistant to breaking down in the environment (persistent), giving them the nickname "Forever Chemicals." PFAS also migrate easily in water and air, and because of their persistence, can travel far from where they were used or released to the environment.

WPCF PFAS Report

The Connecticut Department of Energy and Environmental Protection (DEEP) contracted with Weston & Sampson Engineers, Inc. to perform a study assessing the potential presence of PFAS in various environmental media at select water pollution control facilities (WPCFs) within Connecticut, as well as in their receiving waters and in downstream aquatic species in such waters. Thirty-five (35) WPCFs were selected for participation by DEEP to provide geographic coverage of the State and cover a range of differing community sizes, inputs, and treatment processes.

Environmental media tested for PFAS included:

- Influent, effluent, and sewage sludge from 35 WPCFs, sampled in summer 2021 and winter 2022
- Composite sewage sludge and incinerator scrubber water from 4 WPCFs that incinerate sewage sludge, sampled in summer 2021 and winter 2022
- Fish tissue and surface water (upstream and downstream) near 10 WPCF outfalls, sampled in Fall 2021 only.

The Report

- [CT DEEP WPCF PFAS Study Final June 8, 2023](#)
- [Executive Summary, Results, Data Summary](#)
- [Cover Letter To WPCFs June 15, 2023](#)
- [PFAS Report - Summary of Findings](#)



Welcome
Technical Resources for Addressing Environmental Releases of Per- and Polyfluoroalkyl Substances (PFAS)

The banner features a circular graphic divided into four quadrants: top-left shows a deer in a field; top-right shows a person drinking from a water bottle; bottom-left shows a person in a hard hat working; bottom-right shows industrial buildings. The text 'PFAS' is centered in the circle.



THANK YOU!

Any questions?

Christopher.Falk@ct.gov

Jueda.Shytko@ct.gov



Remediation Roundtable



E-mail: DEEP.remediationroundtable@ct.gov

Web: www.ct.gov/deep/remediationroundtable



An abstract background composed of various brushstrokes in shades of blue, green, and brown. The colors are layered and blended, creating a textured, painterly effect. The blue is most prominent at the top, transitioning into greens in the middle, and darker browns and oranges at the bottom.

Remediation Roundtable
Next meeting October 17, 2023