Over 20 years of data show that the Delaware River Basin is a hotspot for PFAS pollution

PFAS in Watersheds: Distribution, Fate, Transport, and Emerging Research Priorities

University of Delaware
October 21st, 2026

Jeremy Conkle, Ph.D., Senior Chemist/Toxicologist
Delaware River Basin Commission

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA



PFAS is a *CENTURIAL* Problem

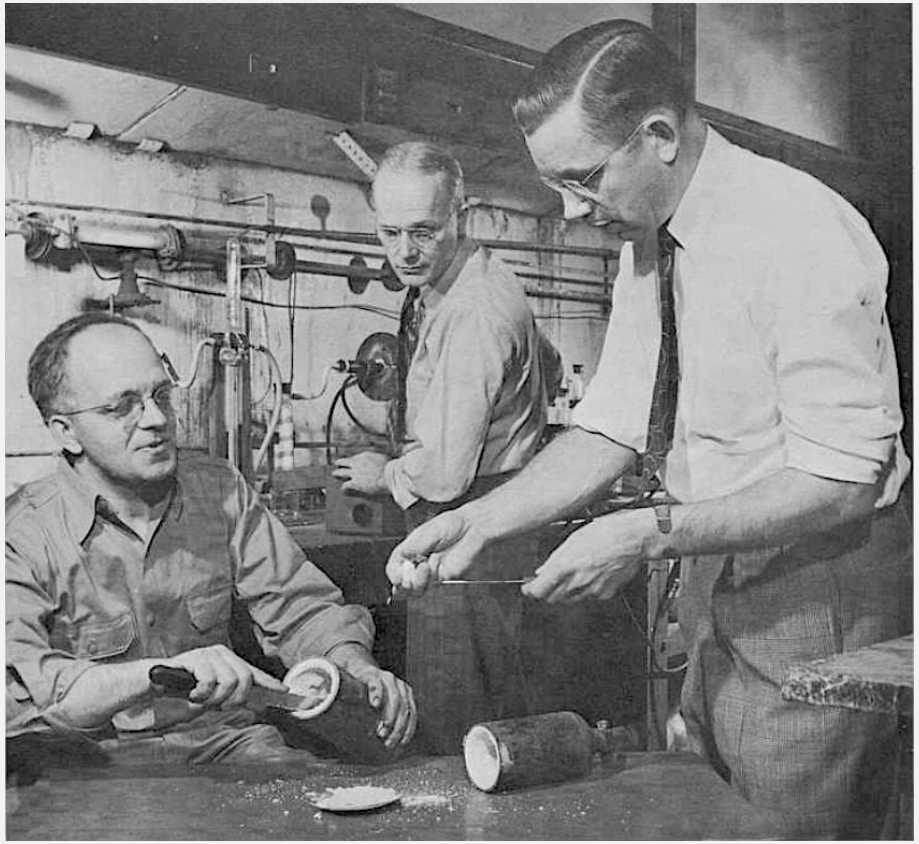


Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

PFAS Started in the Delaware River Basin

THE DISCOVERY

An "Accident" Derived from Solid Research



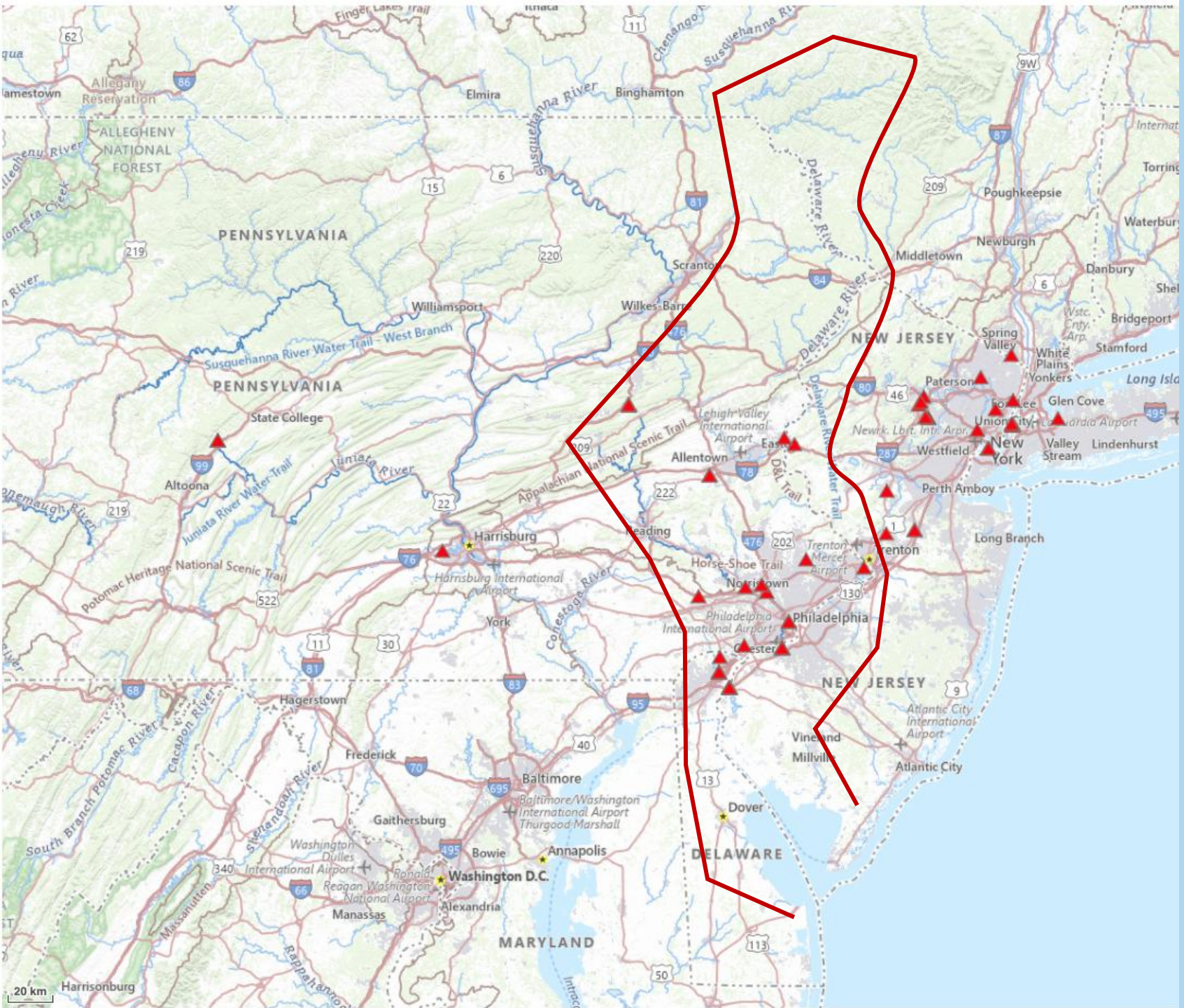
DISCOVERY of fluorocarbon polymers in 1938 was made by Dr. Roy Plunkett (*right*),who holds the original patent. Technician Jack Rebok (*left*) helped. Chemist Robert McHarness did early fluorocarbon research. In photograph, Plunkett and Rebok re-enact the discovery at the Jackson Laboratory.

"The Wide World of Teflon"

E.I. du Pont de Nemours & Company, 1963

Hagley Museum & Library
Digital Archives

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA



PFAS are produced in and imported to the Delaware River Basin

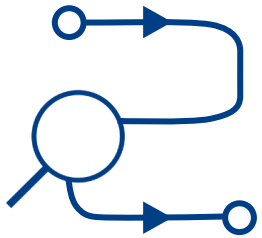
Delaware River Basin Commission

DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Long-term Goal: Reduce PFAS Loading to the Delaware River Basin



Consolidate and look at the existing data



Source Identification



Work with state and federal partners to reduce loading from point and non-point sources

Existing PFAS Data in the Delaware River Basin

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

	Samples (%)				Below Detection (%)	
	All	Estuary	>2019		All	Estuary
Surface Water	1,393	931 (67)	1,353 (97)		95 (7)	19 (1)
Groundwater	296	186 (63)	233 (79)		108 (36)	68 (29)
Sediment	131	101 (77)	115 (88)		38 (29)	26 (23)
Tissues	221	194 (88)	150 (68)		20 (9)	8 (5)
Total	2,041	1,412 (69)	1,851 (91)		261 (13)	121 (7)

PFAS in the Delaware River Basin

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Media:

Surface Water

PFAS Data Type:

- (•) **ΣPFAS**
- ( ) **Compounds**
- ( ) **Groups**

Agency:

All

Years:

2007 — 2025

2007 2009 2011 2013 2015 2017 2019 2021 2023 2025

Value displayed at sampling locations with multiple sampling years:

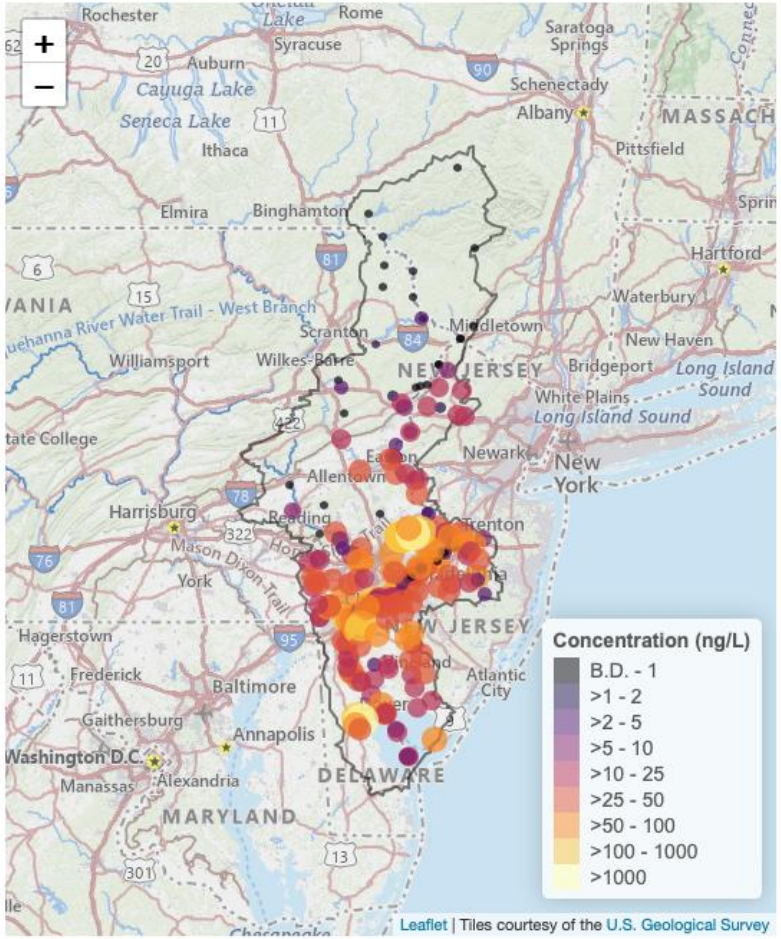
Most Recent Sample

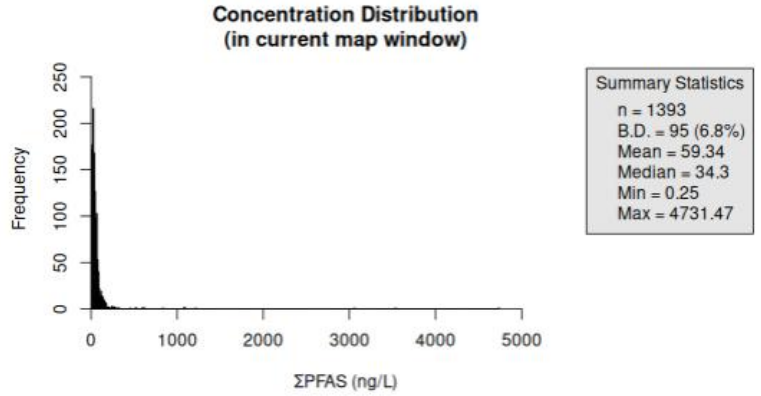
- [ ] **HUC12 Averages (based on values displayed at each sampling location)**
- [ ] **River Miles**
- [ ] **Hide Map Legend**
- [ ] **Samples with known Quality Assurance Project Plans**

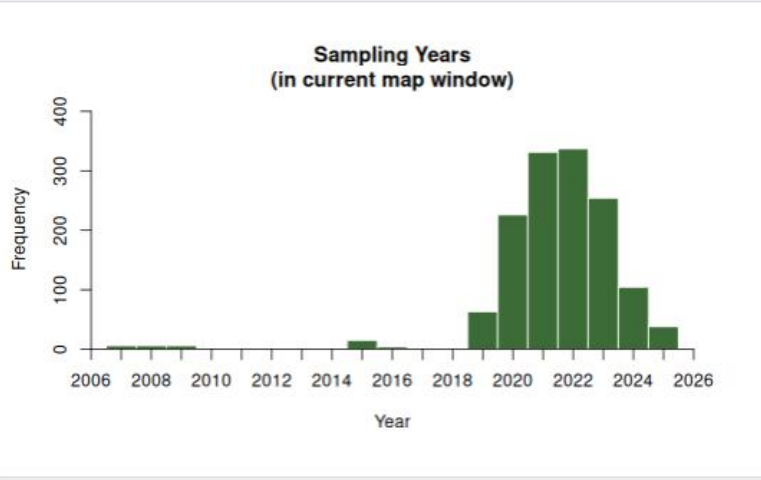
ΣPFAS = Sum of detected PFAS compounds in a sample; not all samples were analyzed for the same compounds.

B.D. = Below analytical detection limits; varies by sample.

Map | **Estuary Analyzer** | **Criteria** | **History** | **About**



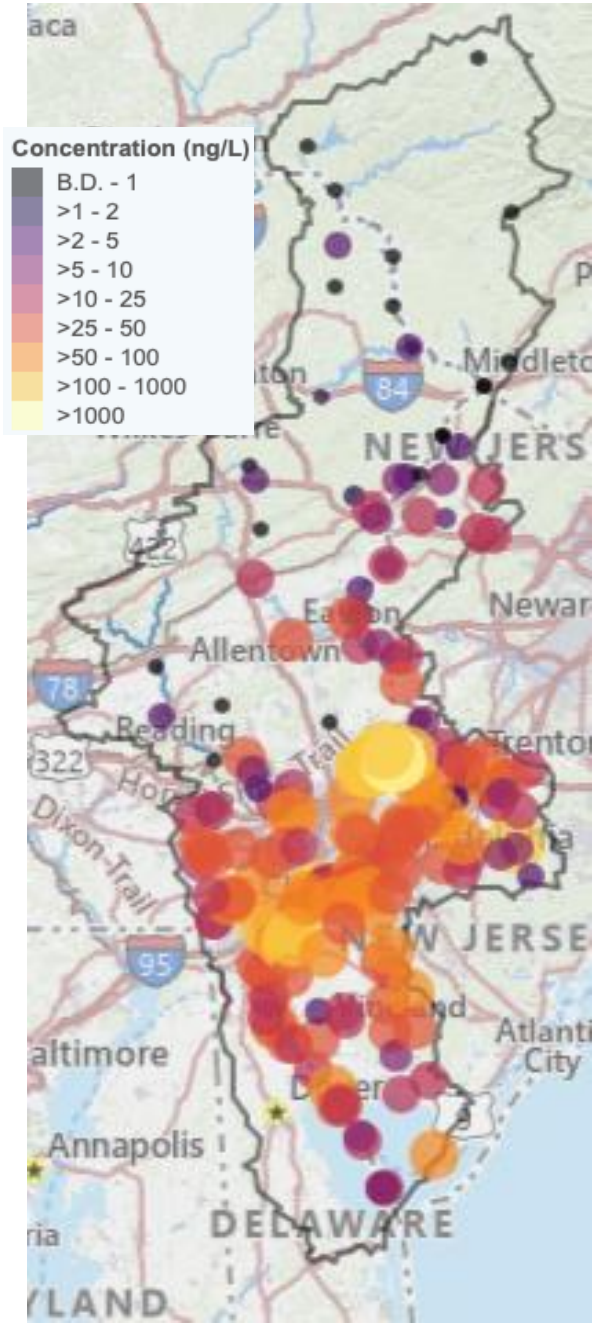




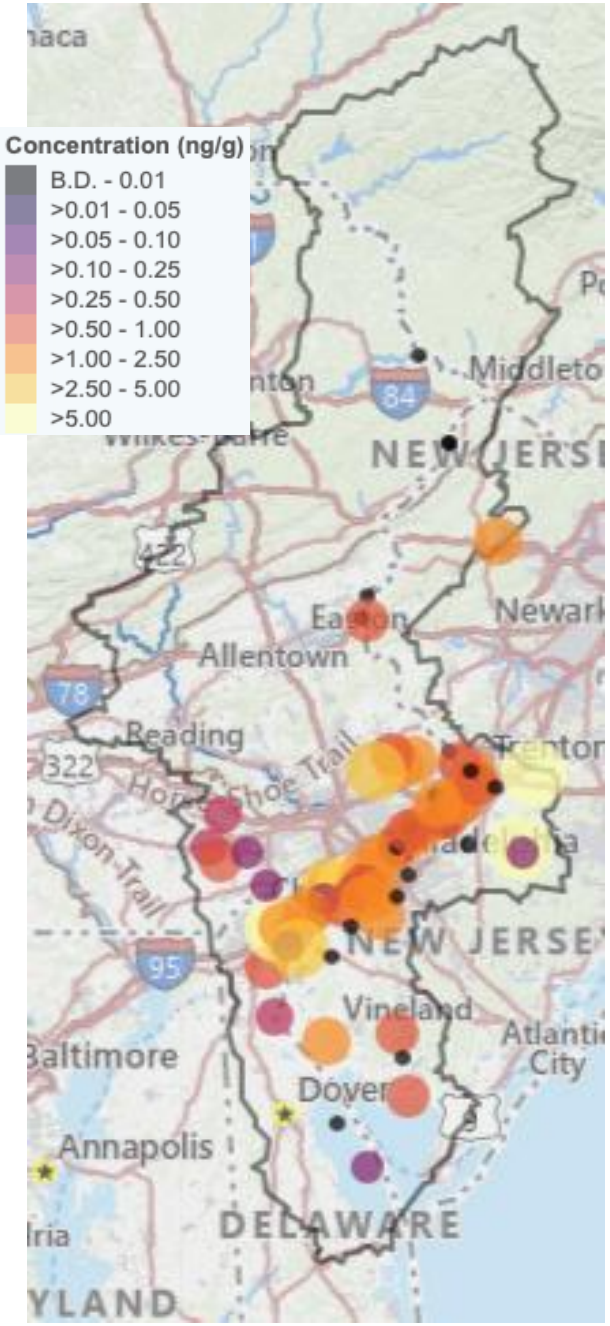
The Estuary is a Hot Spot

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

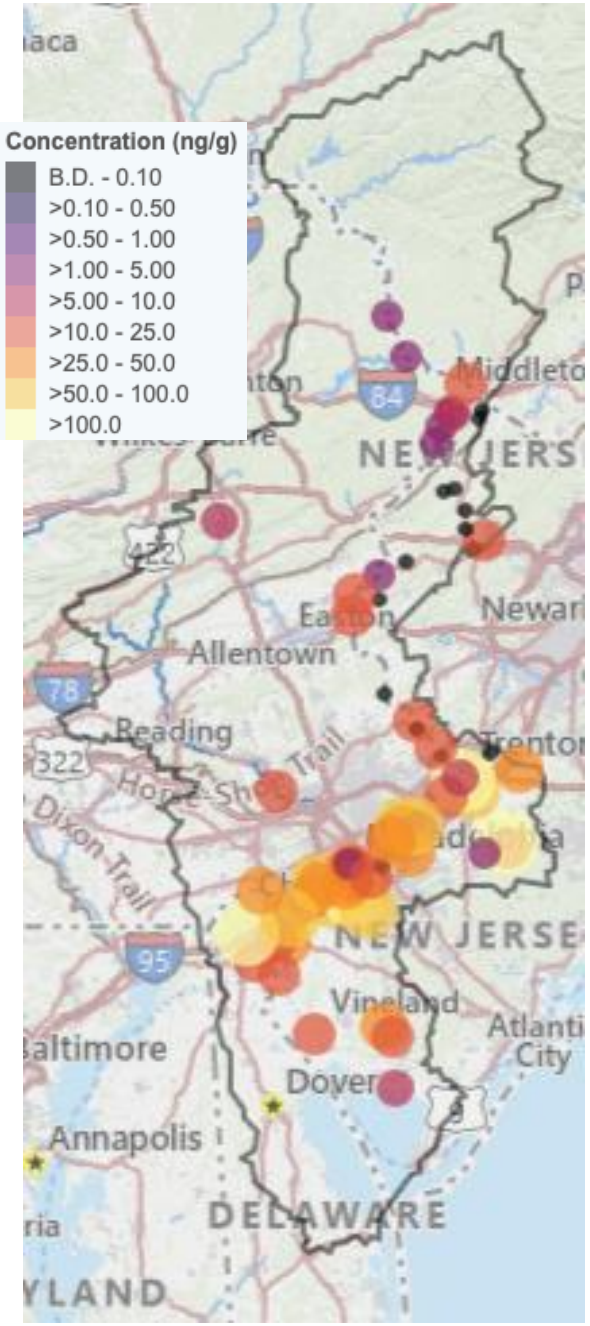
Surface Water



Sediment

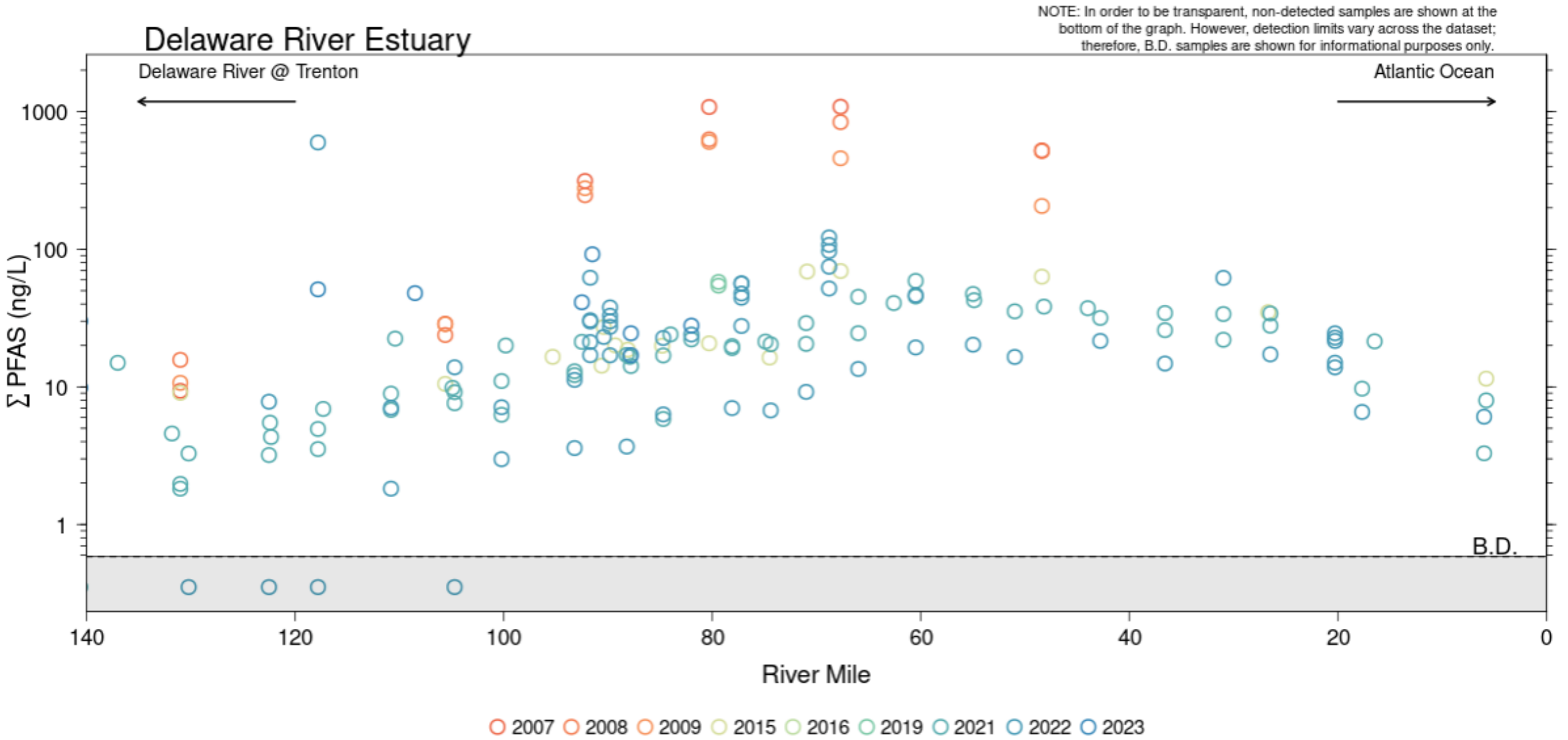


Tissue

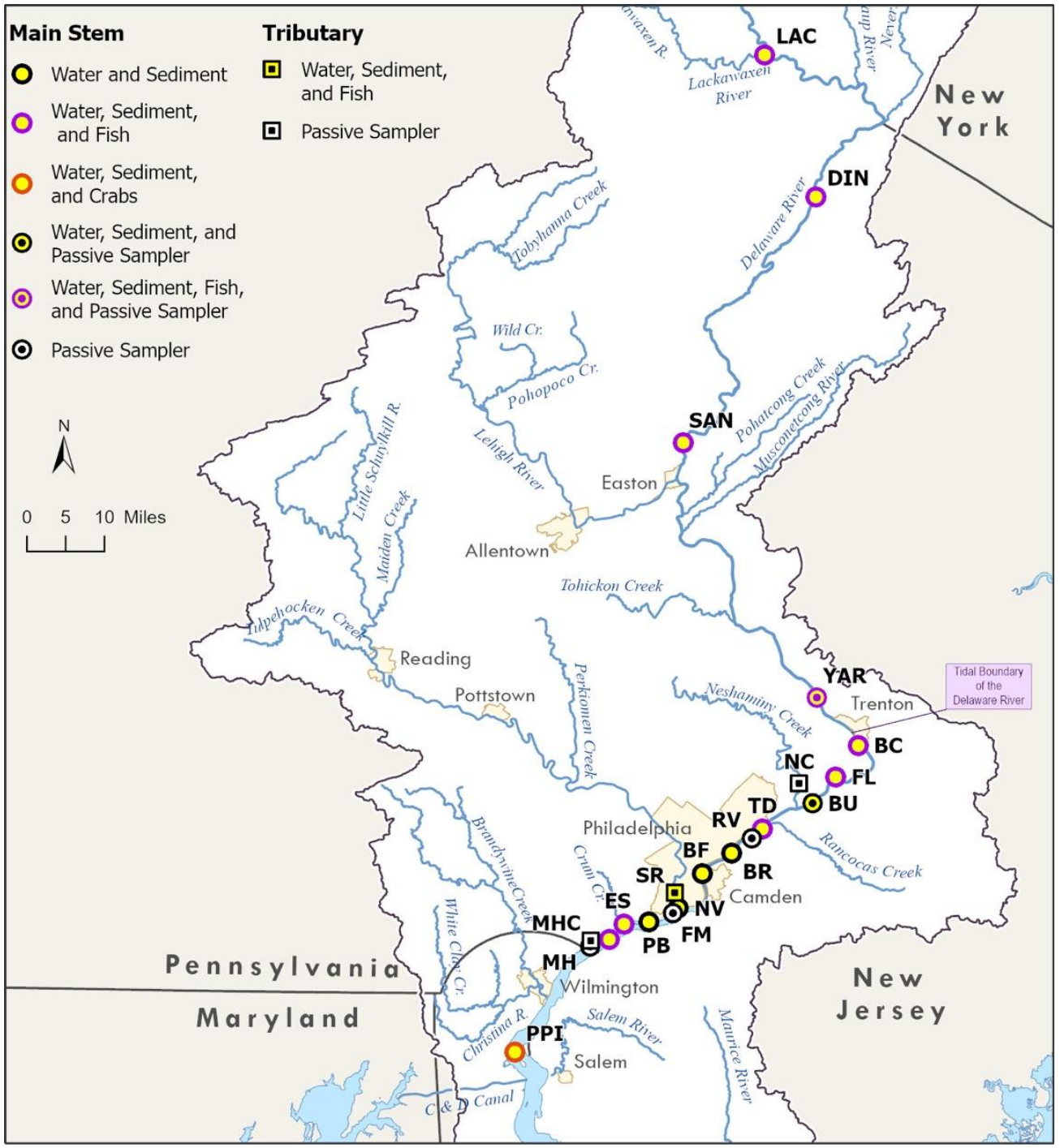


Surface Water Σ_{PFAS} Peaks near River Mile 65

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

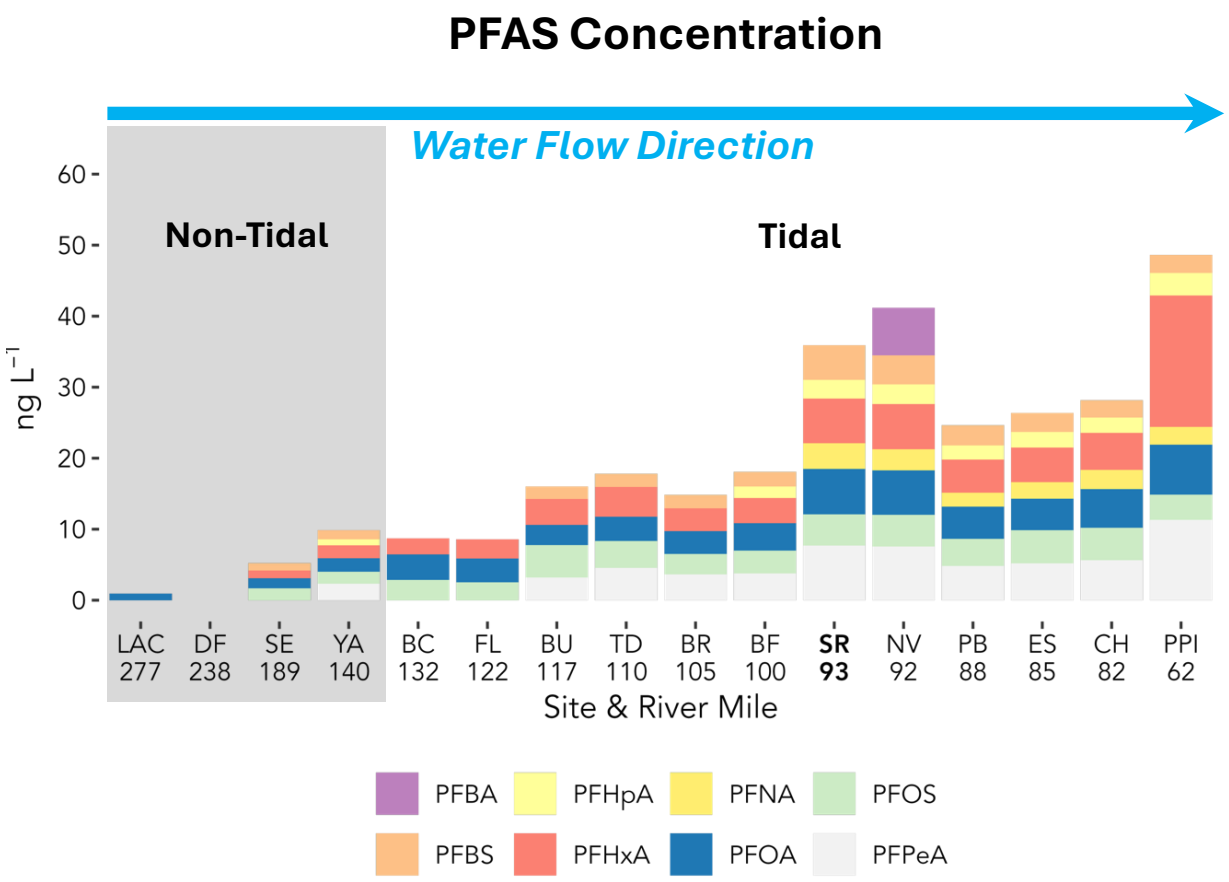


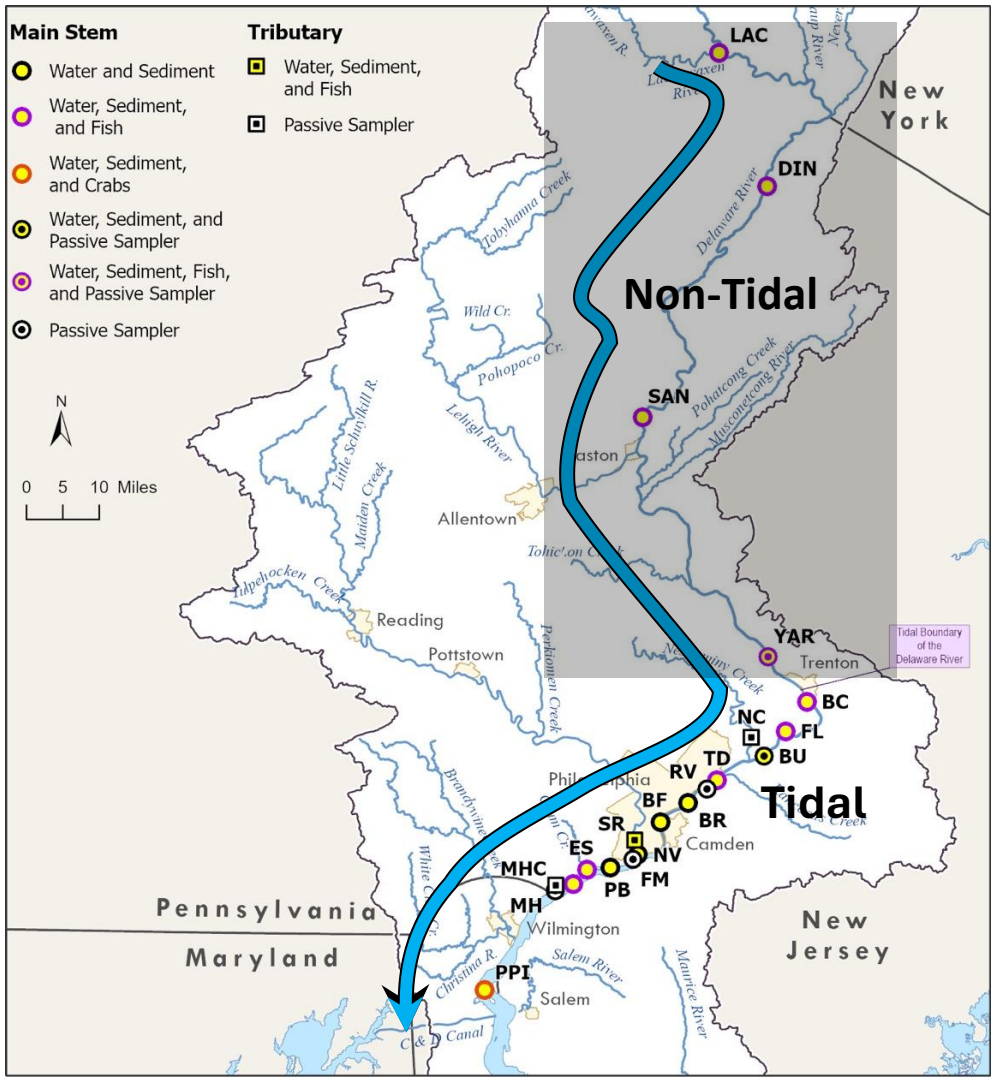
NFWF Yr 3 Study: Multi-Matrix Sampling from Lackawaxen to Pea Patch Island



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

PFAS Increase Downstream

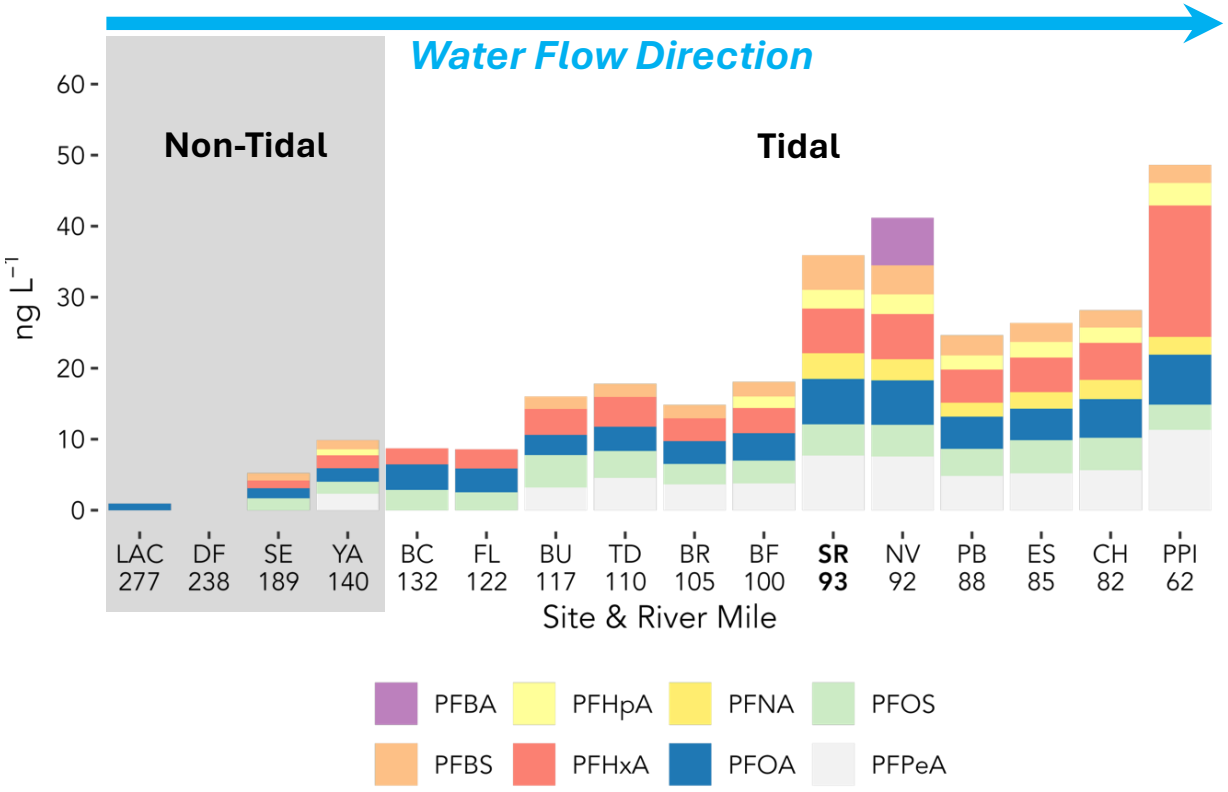




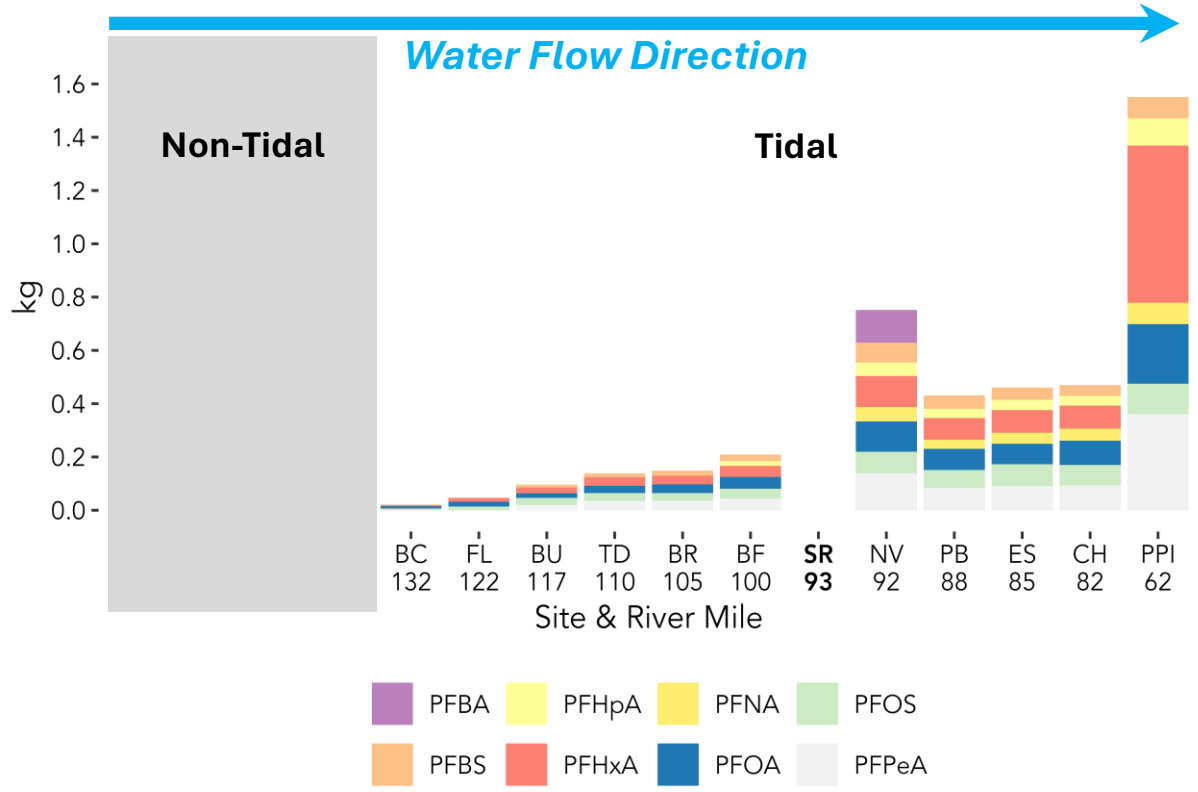
PFAS Mass Downstream

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

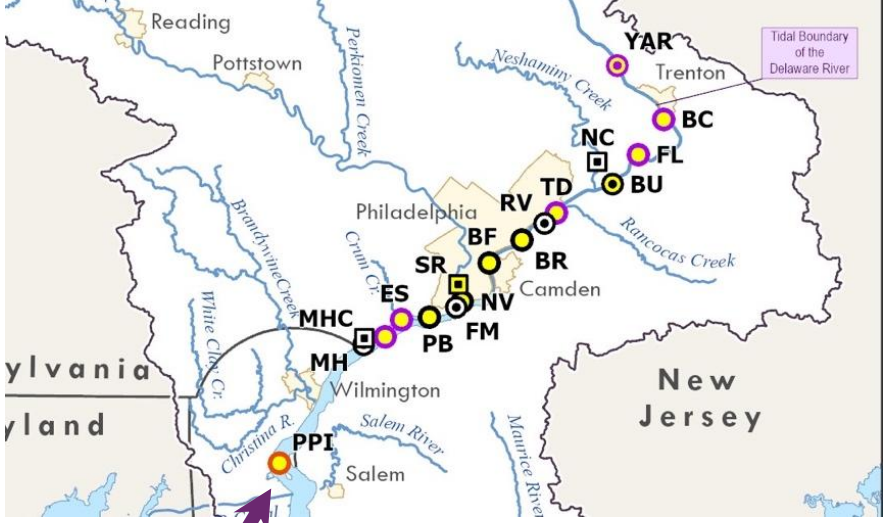
PFAS Concentration

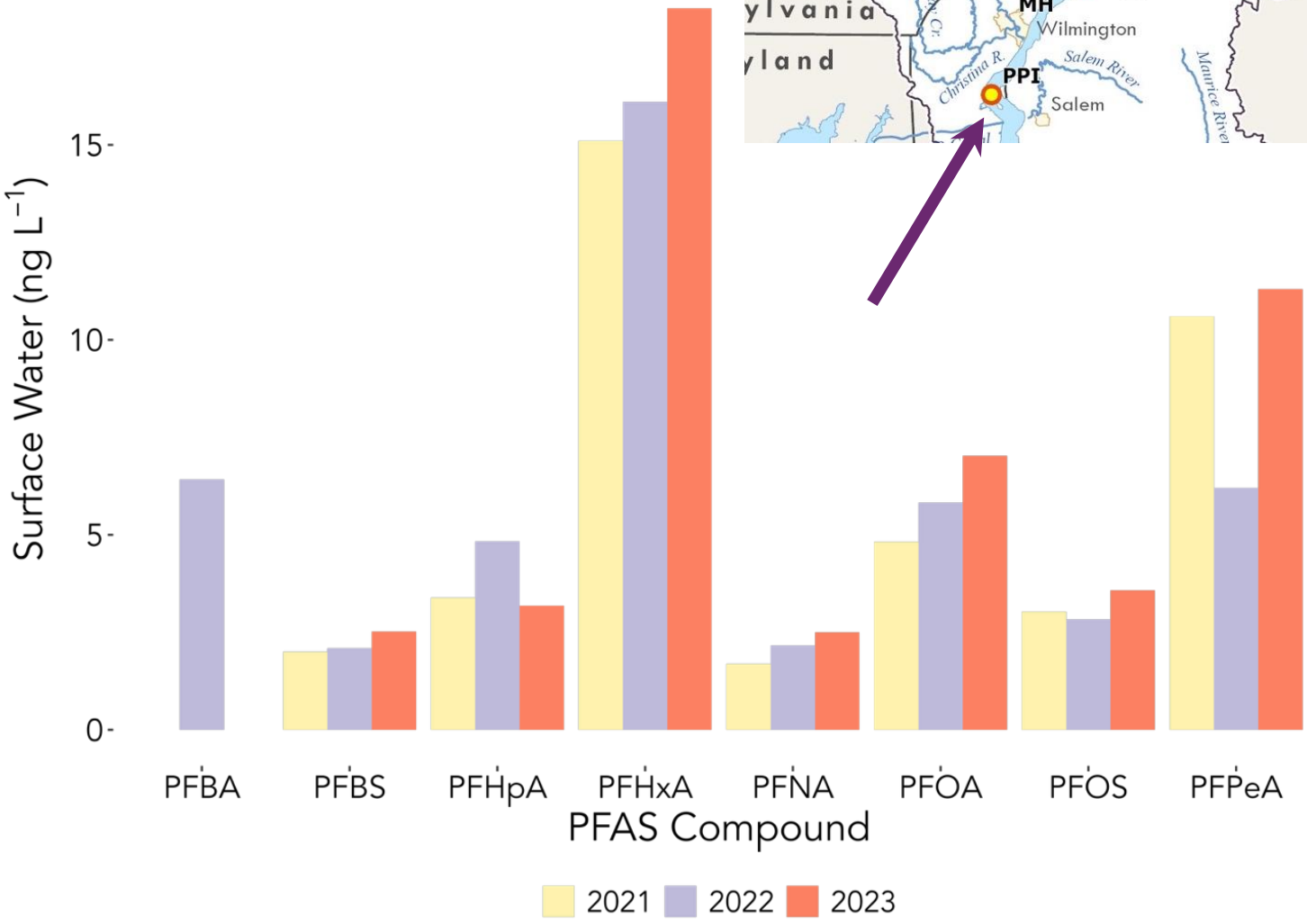


PFAS Mass



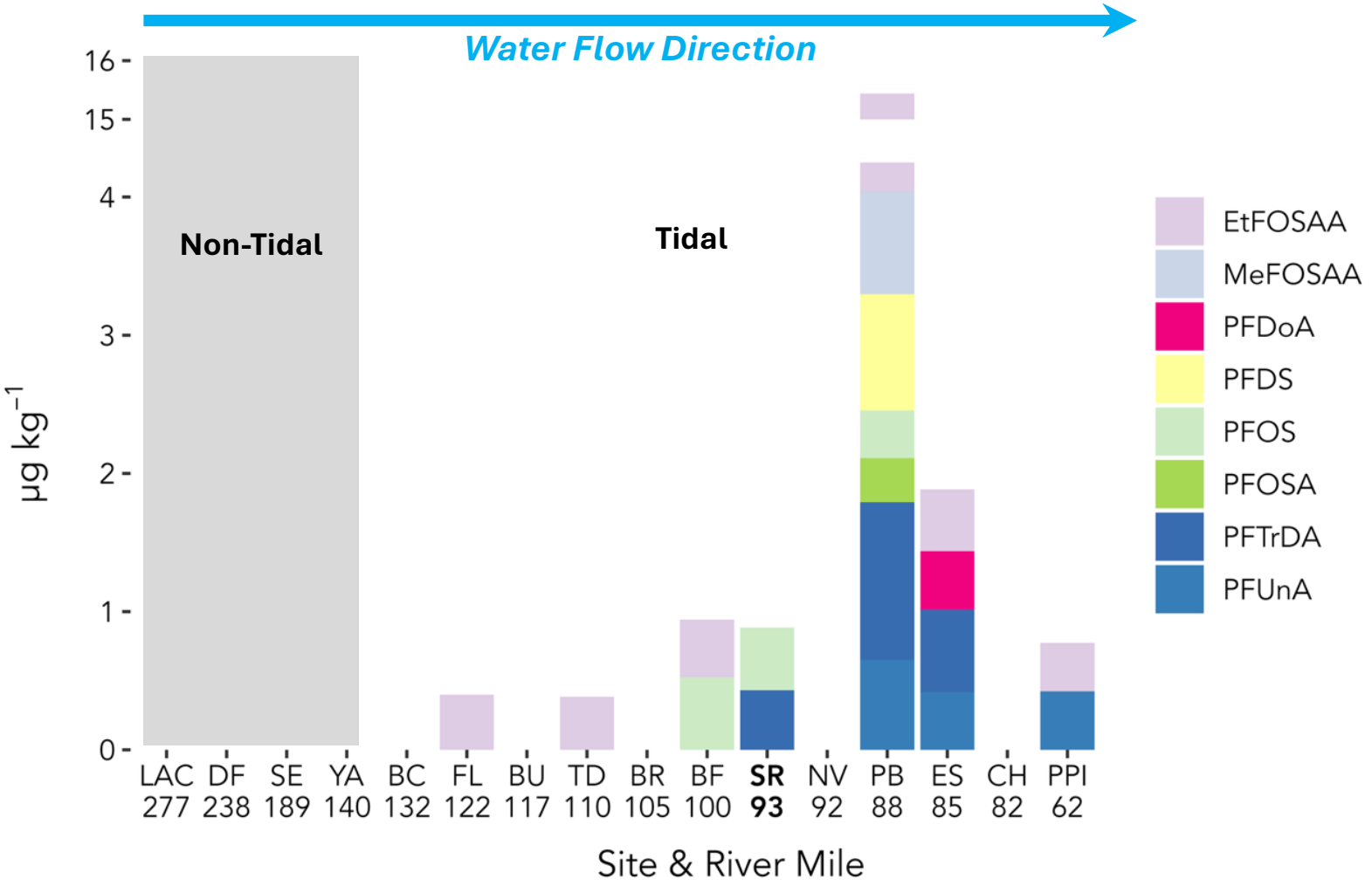
Surface Water PFAS Concentrations Were Consistent at Pea Patch Island





Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

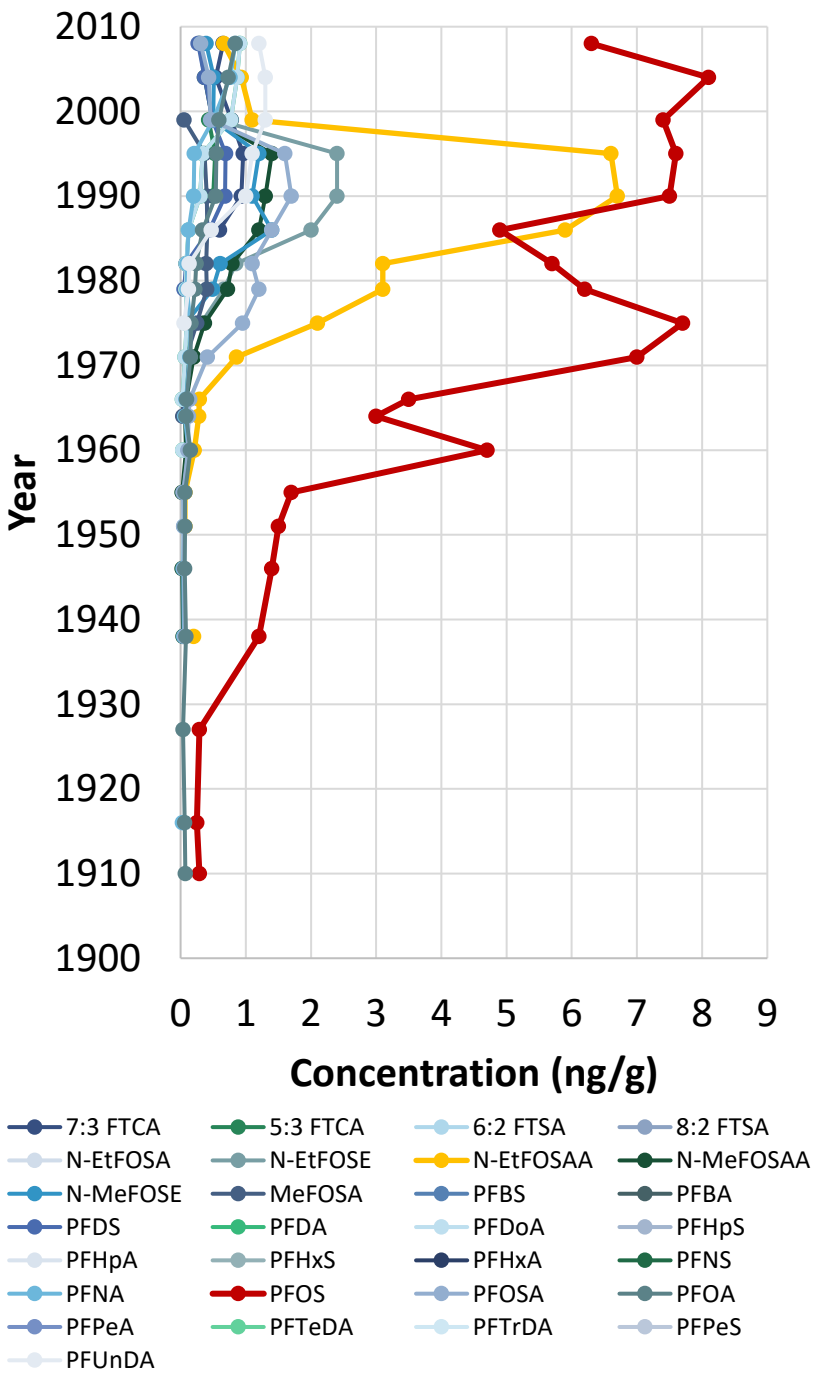
Sediment Concentrations Were Highly Variable and Inconsistent

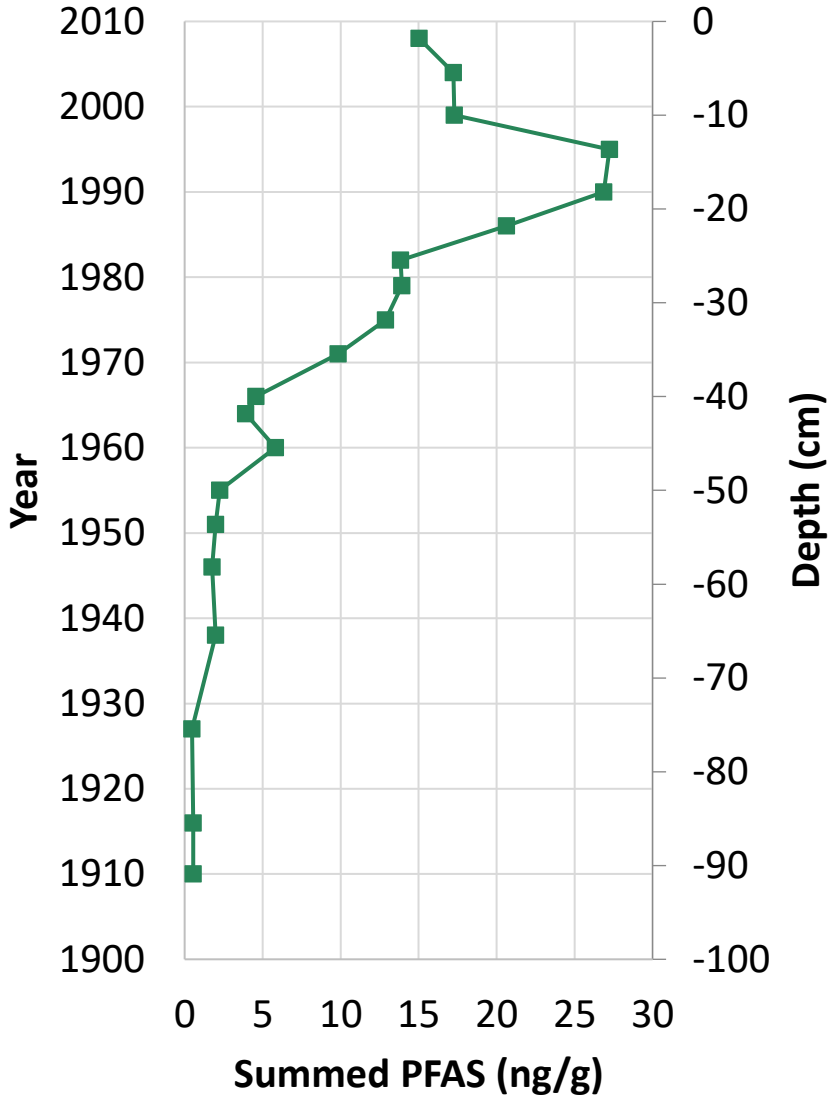


Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Crosswicks Creek: Sediment Core from 2008







Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA



PFAS concentrations and mass increase as water flows downstream



Surface sediment concentrations reflect nearby sources, while cores show historical accumulation



PFAS is regularly found in tissues sampled, with PFOS generally being the dominant compound

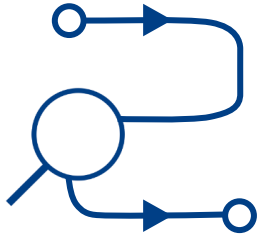
PFAS is pervasive in the Delaware River Basin –monitoring geared towards source Identification is needed

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

DRBC's Plans for PFAS



Continue collecting and assessing publicly available PFAS data for the Delaware River Basin



Begin tracking sources of PFAS



When sources are identified, work with state and federal partners to find ways to reduce loading

Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

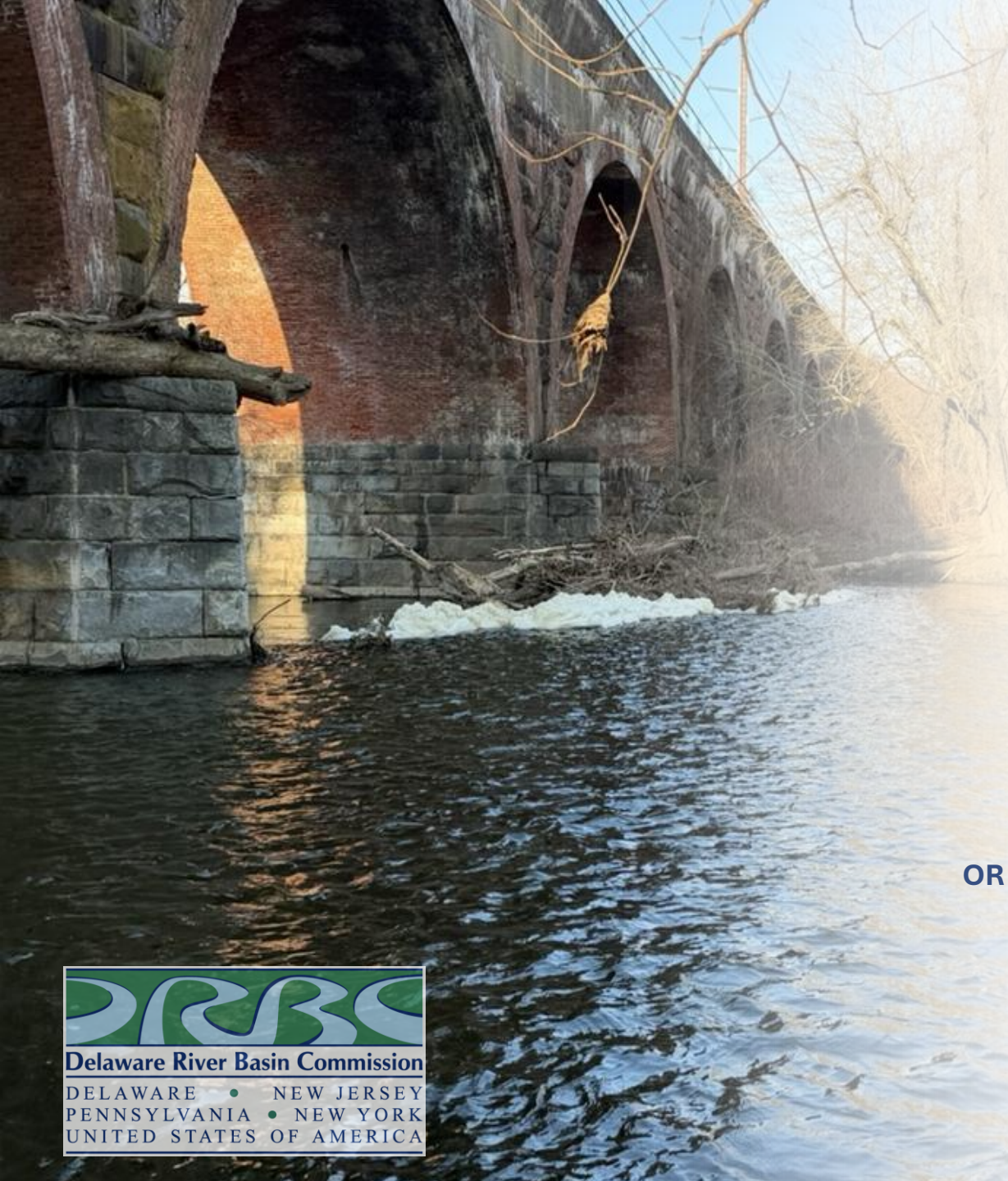
Delaware River Basin Commission

DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

DRBC knows that PFAS is a significant problem in the Delaware River Basin. While still assessing data, we are starting to look for ways to identify sources and reduce this pollution in our basin.



Jeremy L. Conkle, Ph.D.
jeremy.conkle@drbc.gov



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Thanks to the National Fish and Wildlife Foundation Delaware Watershed Conservation Fund for 3 consecutive years of funding to study PFAS in the Delaware River Basin and to the USEPA 106 Grants for funding our web app development.

DRBC PFAS Web App

OR search: "DRBC PFAS Web app"

DRBC PFAS Website

OR search: "DRBC PFAS"

Thank you for the support:
DRBC Staff: Ron MacGillivray, Elaine Panuccio, Jake Bransky, Bailey Adams, Kyle McAllister, Matt Amato