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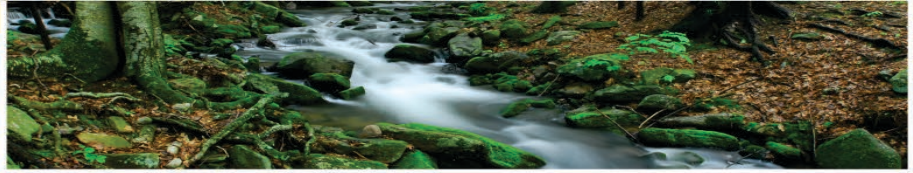
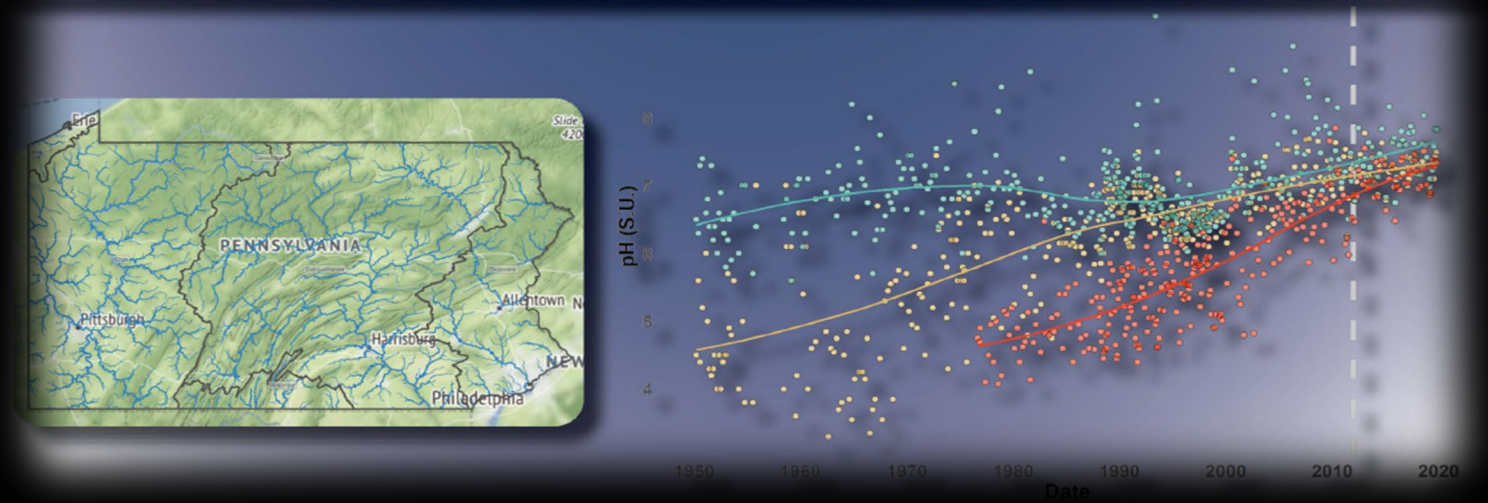


Bureau of Clean Water

Emerging contaminants and toxics: using narrative criteria in assessments and restoration plans



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Objectives

- Topic: Per- and Polyfluoroalkyl Substances (PFAS) in fish tissue
- Monitoring efforts
- Assessment methods
- Next steps

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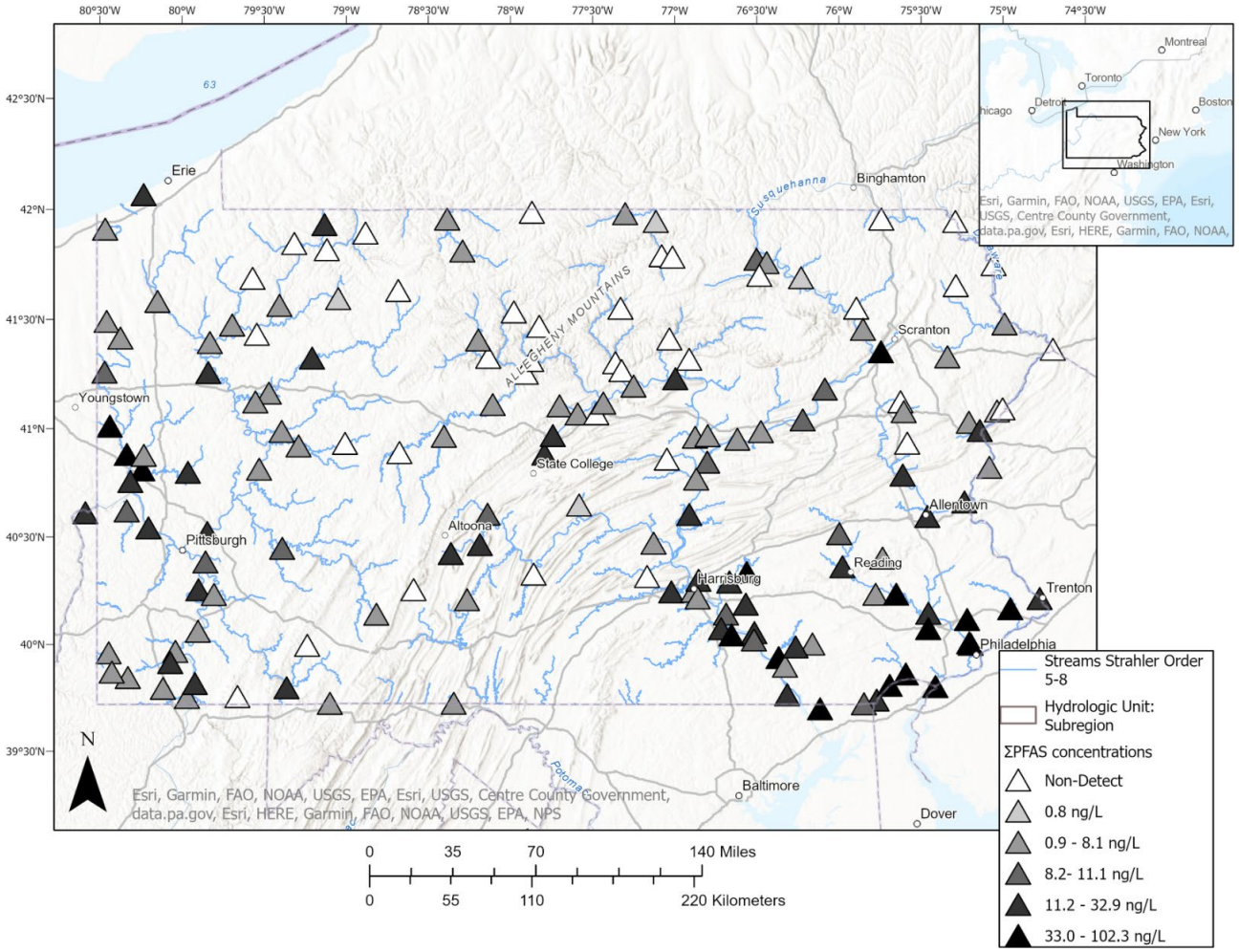
Monitoring Efforts

- **Surface Water**
  - In 2019, DEP leveraged Pennsylvania's Water Quality Network to begin understanding the occurrence and distribution of PFAS chemicals in surface waters
    - Data Summary: https://files.dep.state.pa.us/Water/Drinking%20Water%20and%20Facility%20Regulation/WaterQualityPortalFiles/CECs/Surface_Water_PFAS_Summary_2019-2023.html
  - Worked with USGS to publish data results and a source tracking journal article
    - Journal Article: https://www.sciencedirect.com/science/article/pii/S0048969723027821



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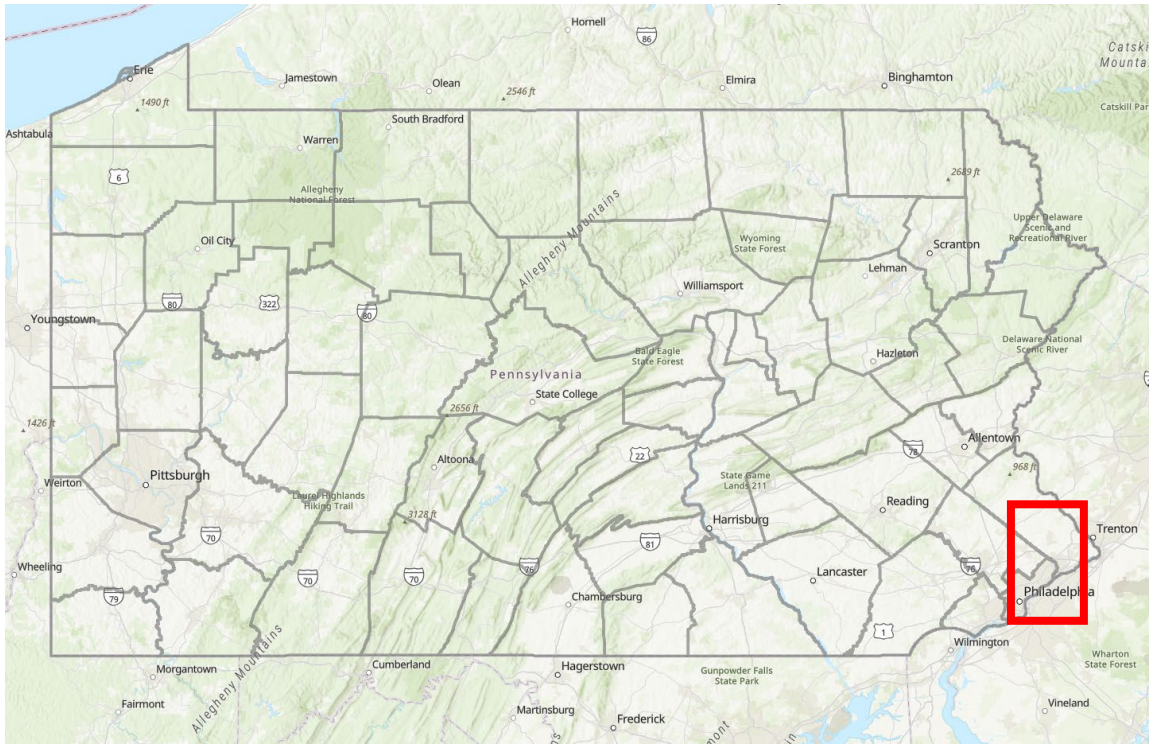
Monitoring Efforts

- **Fish Tissue**
  - Many of the PFAS compounds bio-accumulate, with long-chain substances – perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) – tending to bio-accumulate more than short-chain PFAS substances
  - Pennsylvania implemented fish tissue sample analysis where elevated concentrations existed in surface water
  - Archived fish tissue samples from 2015 were analyzed for PFAS in 2021
    - Advantageous monitoring strategy for emerging contaminant monitoring (archived samples analysis)
    - Results indicated elevated levels of PFOS in tissue at Neshaminy Creek



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Assessment Method

- **Pennsylvania's Narrative Criteria:**

  "Water may not contain substances attributable to point or nonpoint source discharges in concentration or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life."

- **Fish Consumption Assessment Method**
  - Leverages a multiagency advisory technical workgroup to list consumption advisories
  - Pennsylvania has statewide advice of 1 meal/week, but contaminant concentrations above 1 meal/week would result in specific advisories and are considered impairments

Group	Meal Advice	PCB	Chlordane	Mercury
1	UNRESTRICTED	0-0.05	0-0.15	0-0.12
2	1 MEAL/WEEK, (*52 MEALS/YEAR*)	0.06-0.2	0.16-0.65	0.13-0.25
3	**2 MEALS/MONTH, (24 *MEALS/YEAR*)**			**0.26-0.50**
4	**1 MEAL/MONTH, (*12 MEALS/YEAR*)**	**0.21-1.0**	**0.66-2.82**	**0.51-1.0**
5	**6 MEALS/YEAR**	**1.1-1.9**	**2.83-5.62**	**1.1-1.9**
6	**DO NOT EAT**	**>1.9**	**>5.62**	**>1.9**

* Concentration values are in ppm.

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Assessment Method

- **PFOS Threshold**
  - Advisory technical workgroup worked with the Great Lakes Consortium for Fish Consumption
  - The Great Lakes Consortium for Fish Consumption PFOS-Best Practice recommends meal frequencies for PFOS based on a drinking water reference dose
  - The advisory technical workgroup voted to adopt the PFOS-Best Practice meal frequency advisory on March 23, 2021
  - The adopted advisory was then publicly participated as part of Pennsylvania's 2021 Assessment Methodology

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6	**DO NOT EAT**	**>1.9**	**>5.62**	**>1.9**	**>0.2**

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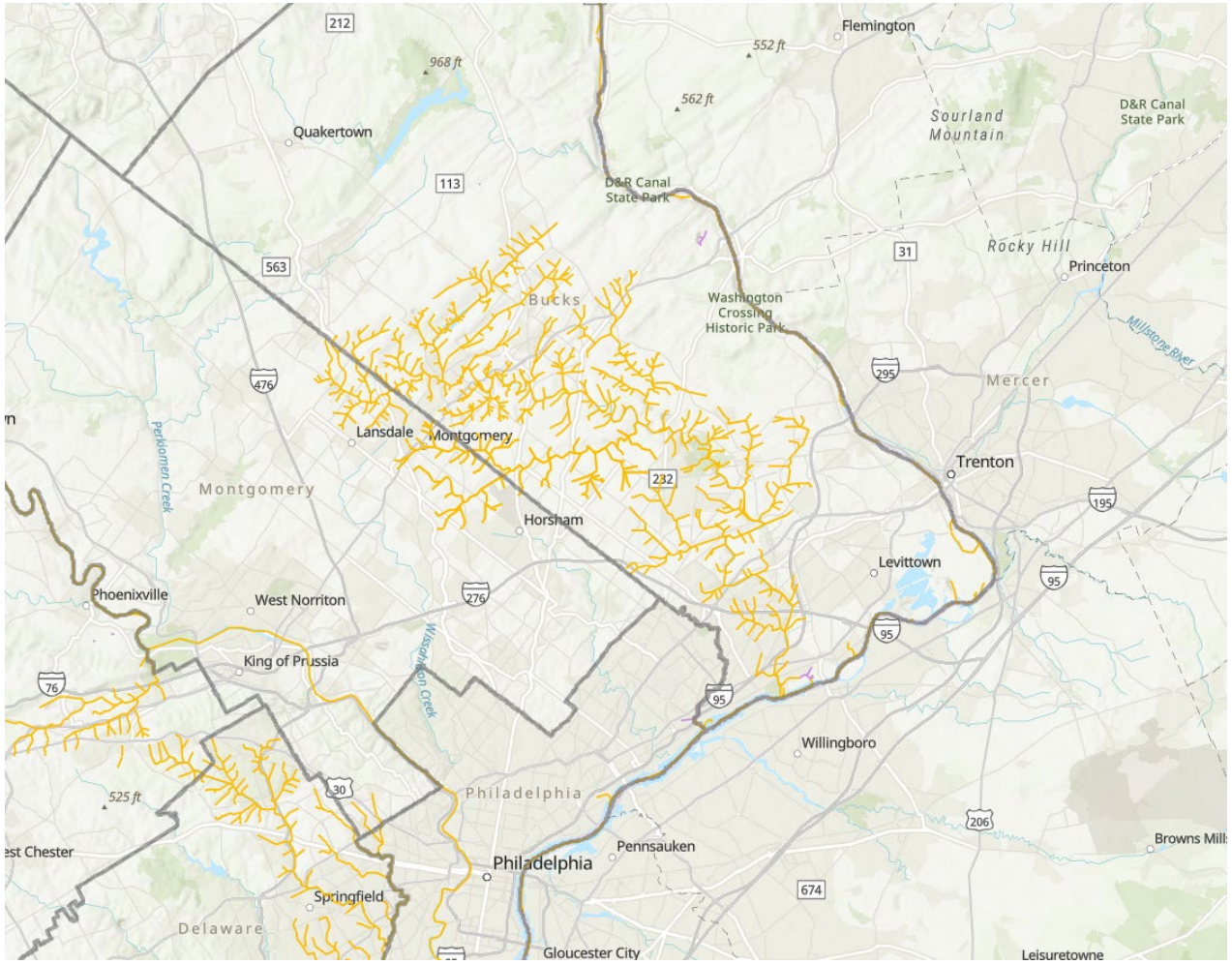
Next Steps

- **Circling Back to Neshaminy Creek**
  - Fish tissue results for multiple species exceeded “Do Not Eat” PFOS thresholds throughout the Neshaminy Creek basin
  - Assessment delineation extended to the entire Neshaminy Creek basin due to the mobility of these fish species
  - The Neshaminy Creek basin was impaired for PFOS in the 2022 Integrated Report



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Next Steps

- **Some Points**
  - From 2019 to 2022 (≈ 3 years)
    - Statewide monitoring was implemented
    - Archived tissue samples were analyzed
    - Assessment method that applied narrative criteria was developed for PFOS
    - Impairment decisions and consumption advisories were available to the public
  - No PFAS TMDL has been developed yet, but it would likely follow the same process Pennsylvania took for PCBs (apply bio-accumulation factors to arrive at an instream concentrations and loads) if no surface water criteria are developed

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Questions?

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