

# PFAS and Sediment Session Workshop Sediment Management Annual Review Meeting

May 6, 2026

# Goals

**1**

**Communication:** Discuss our findings on PFAS in sediment and aquatic tissue

**2**

**Feedback:** Help Ecology as we determine policy for the Sediment Cleanup User's Manual

# Agenda

**1**

**Geosyntec presentation:** PFAS 101 & cool science

**2**

**TCP presentation:** Regulatory structure & what we know

**3**

**Discussion:** Hear your thoughts and advice on how Ecology should address PFAS for sediment sites



**Pete Adolphson**  
Senior Toxicologist



**Chance Asher**  
Senior Toxicologist  
Sediment Policy  
Program Lead



**Rachel  
McDermott**  
Natural Resource  
Scientist



**Kevin Kalefern**  
Toxicologist  
Aquatic Lands  
Cleanup Unit  
Supervisor



**Corey King**  
Sediment Specialist



**Chase Williams**  
Toxicologist



# Ecology Toxics Cleanup Program PFAS and Sediment Policy Team



**Dr. Jason Conder**

- Senior Principal Scientist
- 20+ years as environmental consultant
- 18+ years on PFAS
  - Product- and site-specific fate and risk assessments
  - Author – PFAS use, fate, terminology, and bioaccumulation



**Dr. Zach Pandelides**

- Scientist
- 4+ years as environmental consultant
- Research focus:
  - Effects of emerging contaminants
  - PFAS effects on freshwater and marine organisms
  - Ecological risk assessment

# Geosyntec Team

# Ecology Toxics Cleanup Program

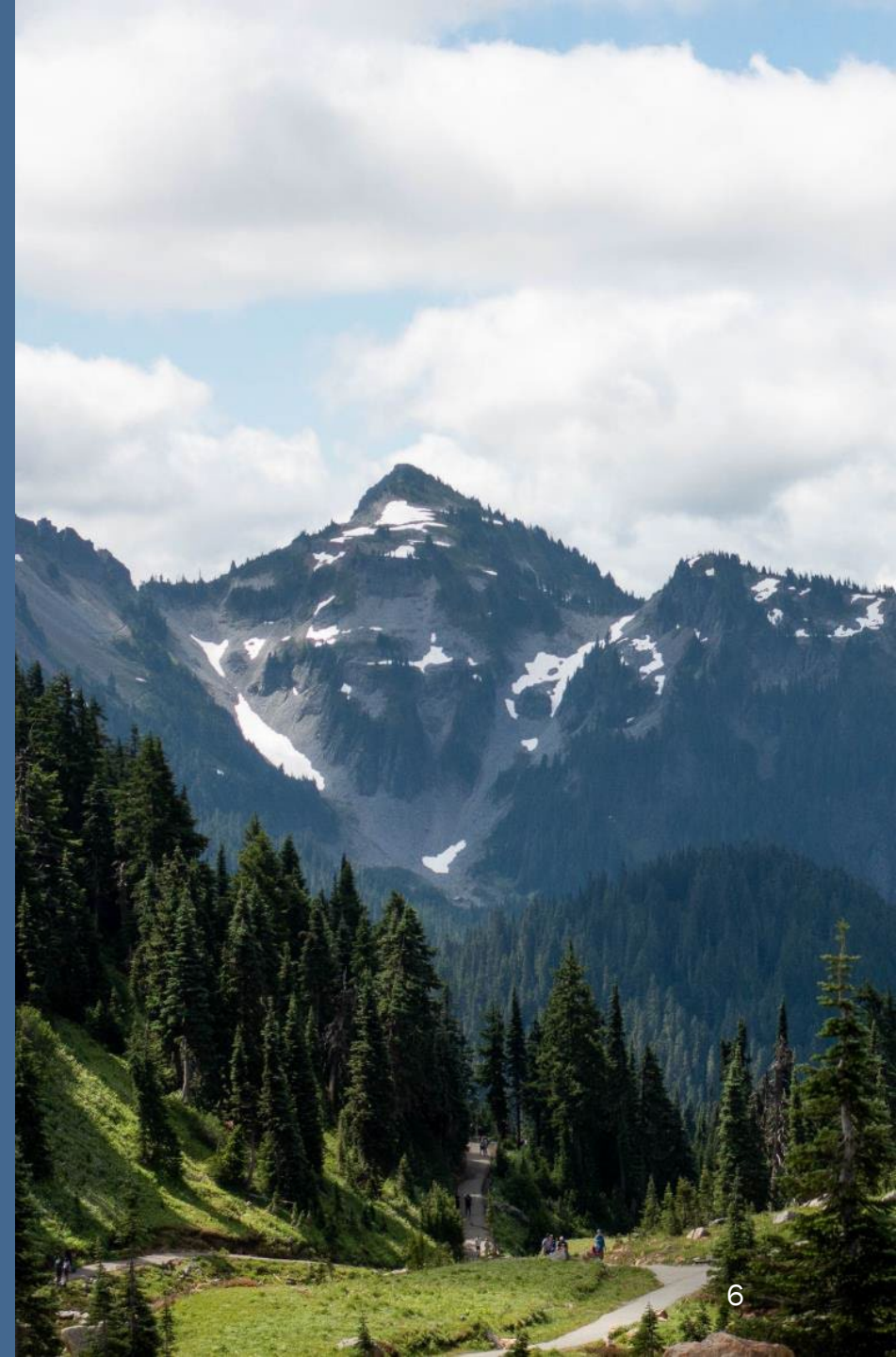
## Agenda

- 1** PFAS and Sediment Policy Project overview
- 2** What we know so far
- 3** What to do with sites now?
- 4** Ecology's next steps
- 5** Guided discussion



# Ecology Toxics Cleanup Program

## PFAS and Sediment Policy Project Overview



# Ecology PFAS Guidance

- 2021. Ecology established PFAS as a hazardous substance.
- 2023. Phase 1 (Upland Media). Completed. PFAS guidance for groundwater, surface water and soil.
- 2024. EPA established PFAS as a hazardous substance.
- 2025 – 2027. Phase 2 (Sediment Media). Update Sediment Cleanup User's Manual to address PFAS for sediment.

# Goals

1. Understand presence and concentrations of PFAS in sediment and aquatic tissue.
2. Evaluate potential toxicity of PFAS to humans and critters.
3. Establish a process to address PFAS in sediment.
4. Determine sufficiency of data for sediment natural background.

Goals 1 and 2 complete. Goals 3 and 4 in progress.

# 2025 Sediment Cleanup User's Manual (SCUM)

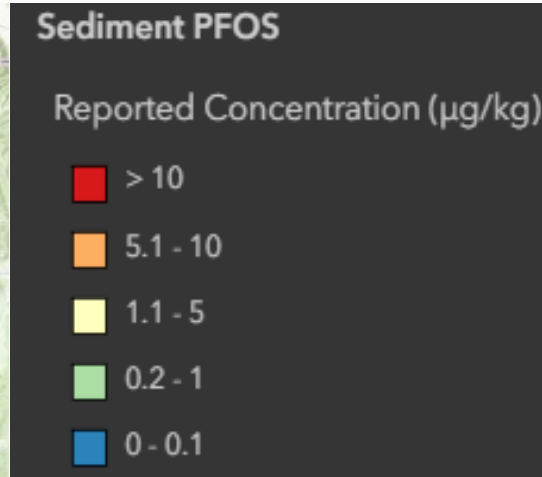
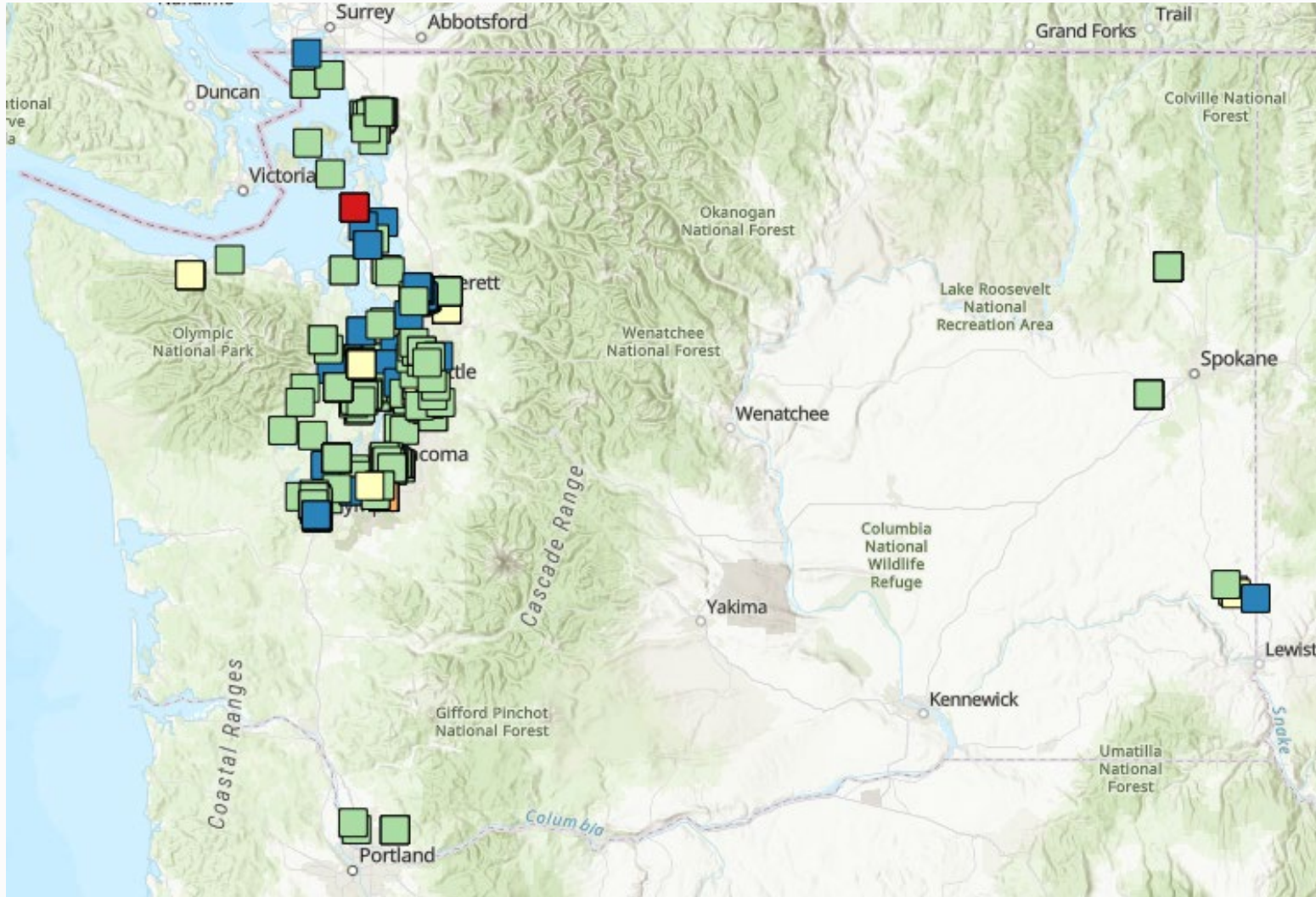
- Chapter 4 (Field Sampling and Testing).
  - Table 4-1 Potential PFAS sources to sediment
  - Table 4-7 PFOS/PFOA sample storage and holding times
- Chapter 5 (QA/QC Chemistry and Bioassays).
  - Table 5-1 Sediment preparation & analytical method for PFOS/PFOA
  - Table 5-2 Tissue preparation & analytical method for PFOS/PFOA
- Chapter 11 (Practical Quantitation Limits).
  - Table 11-1 sediment and tissue
  - Appendix D laboratory survey



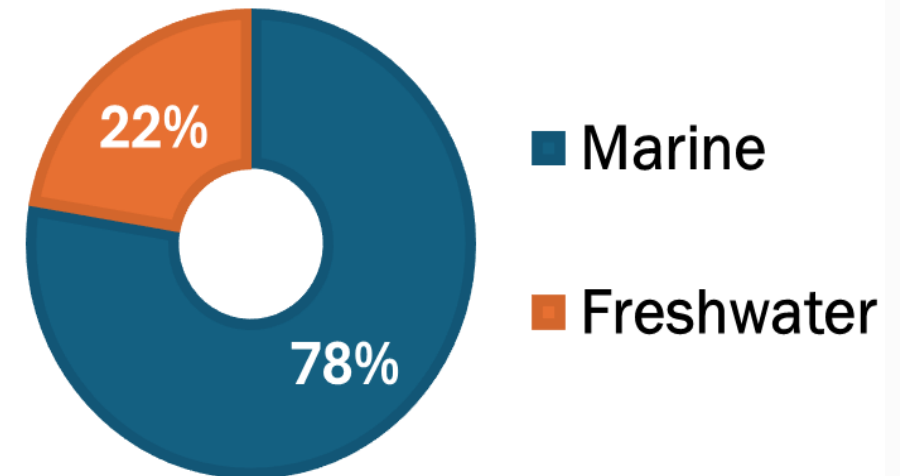
# What we know so far



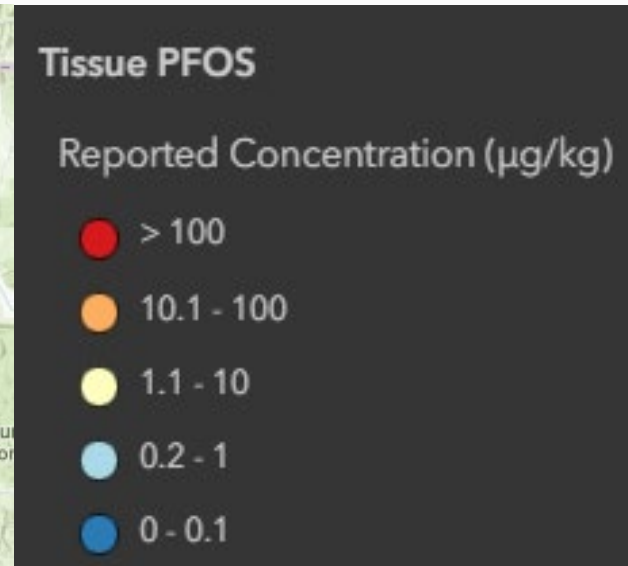
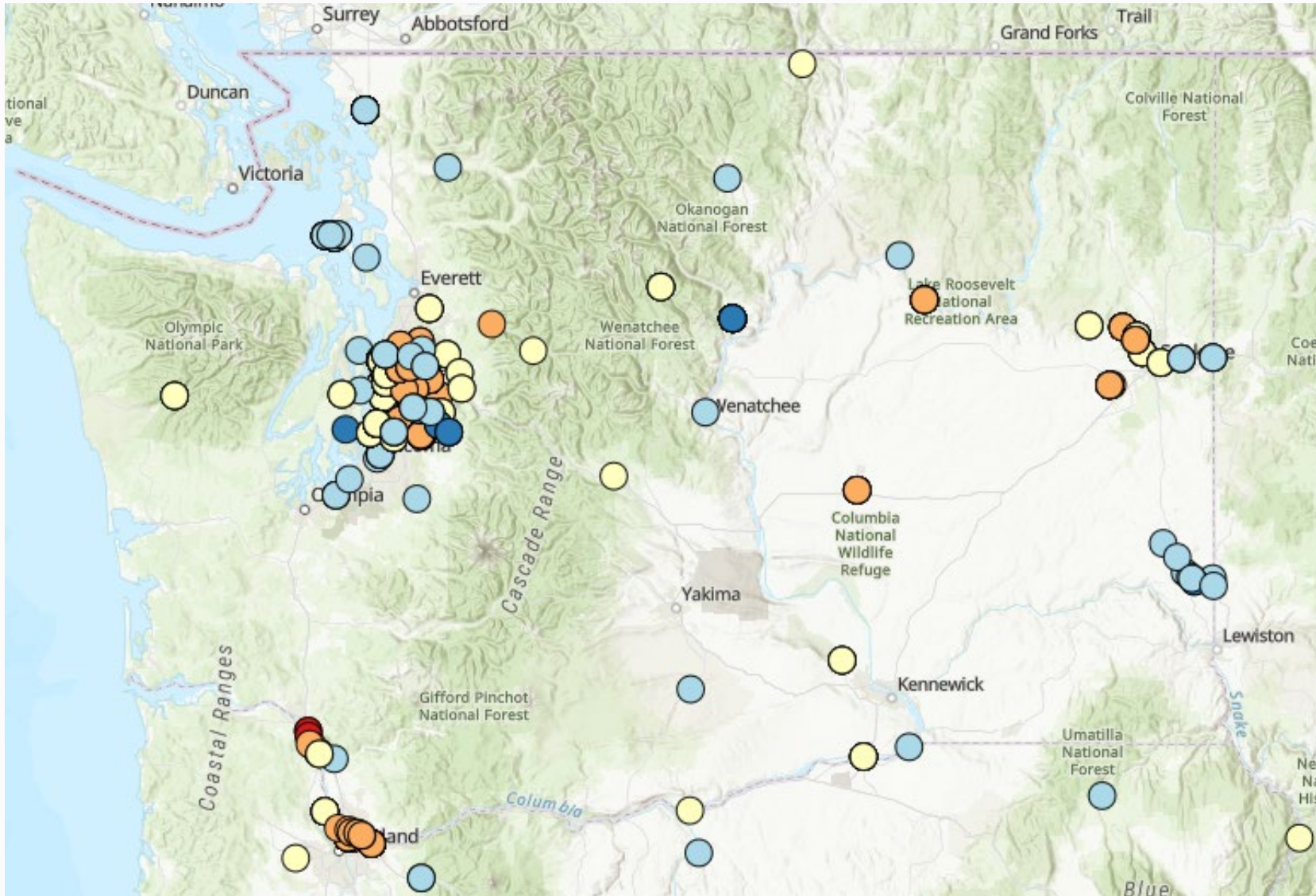
# Goal 1- Presence in Sediment



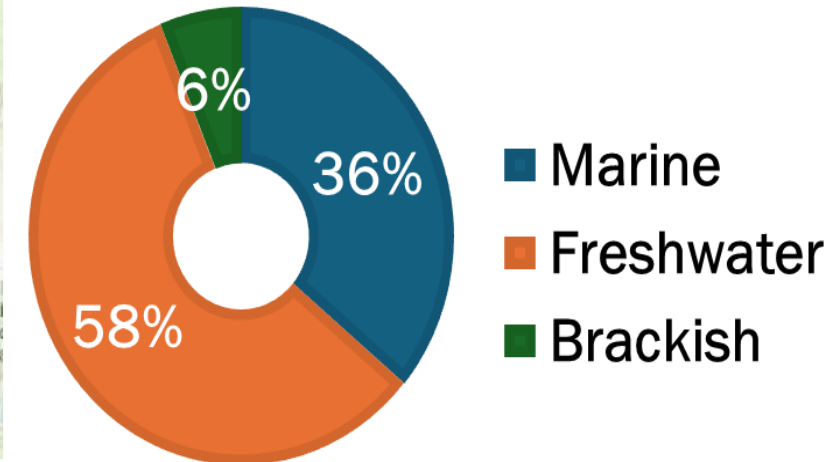
309 SAMPLE LOCATIONS



# Goal 1- Presence in Tissue

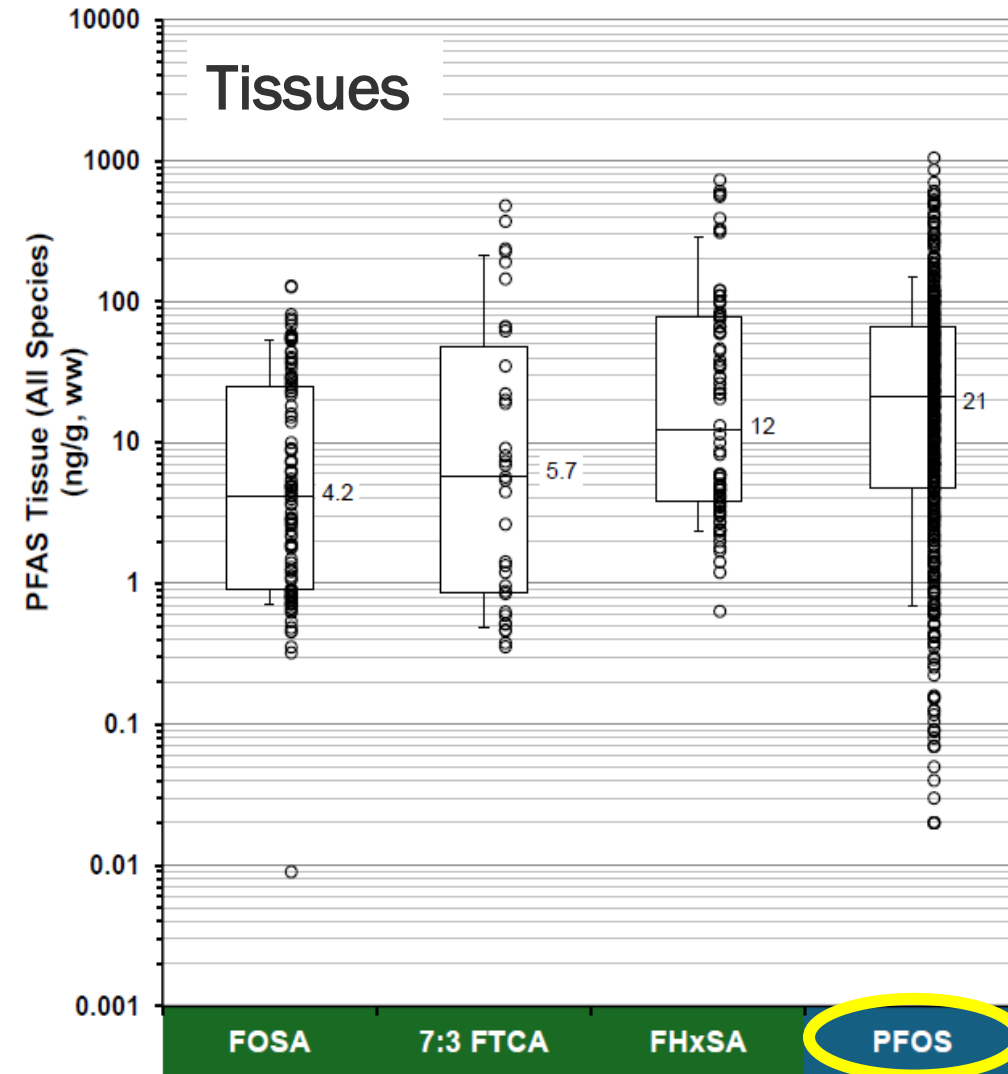
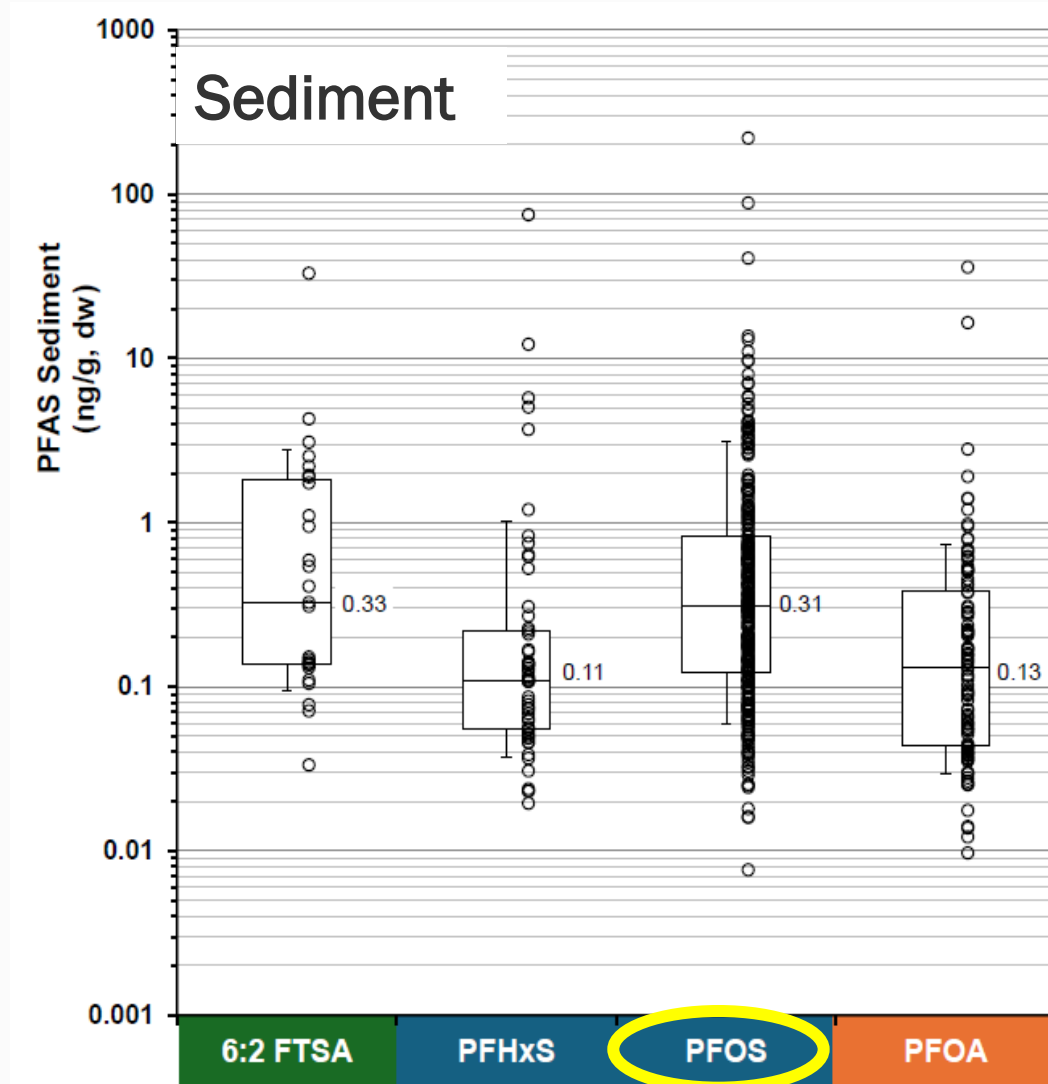


## 196 SAMPLE LOCATIONS



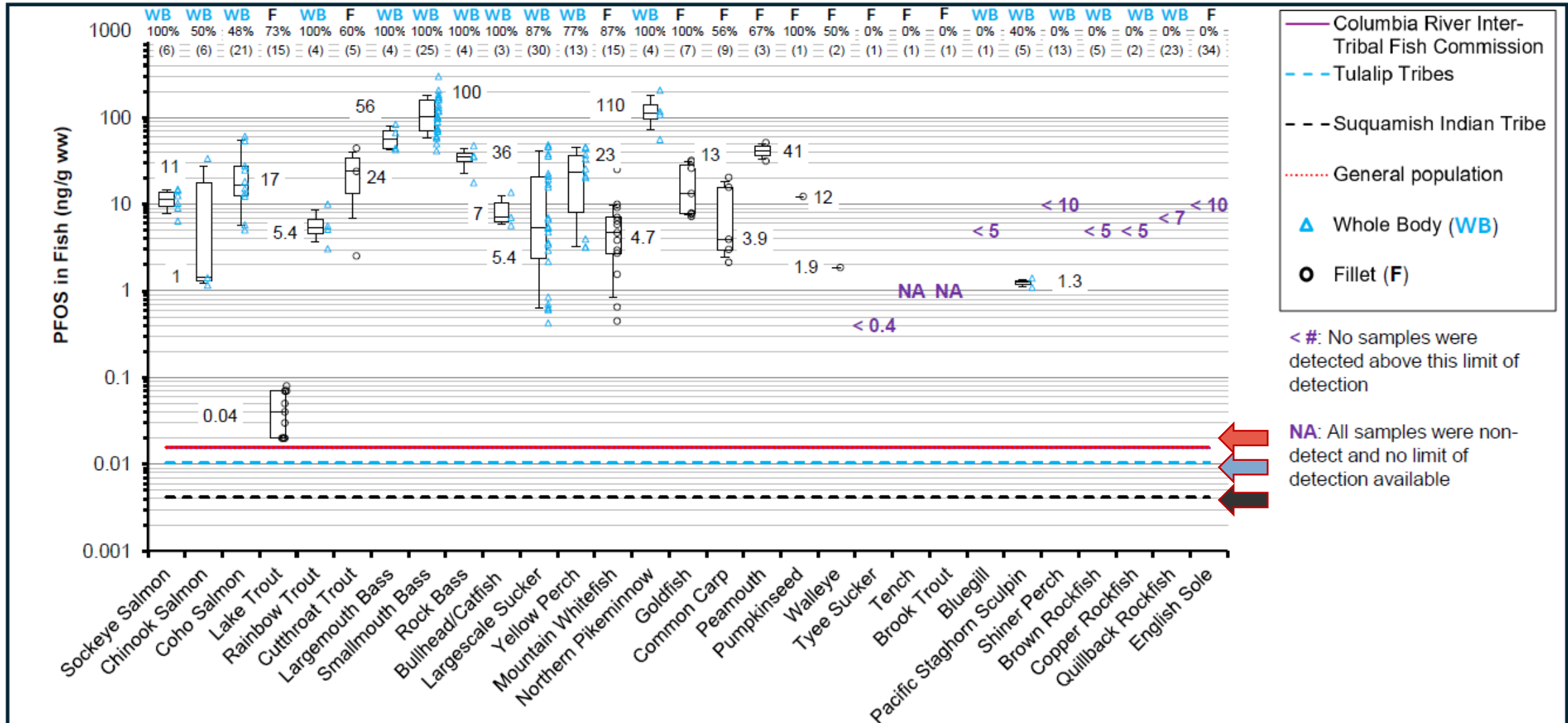
# Goal 1 – Presence

Predominant PFAS compounds found in sediment and tissue data.



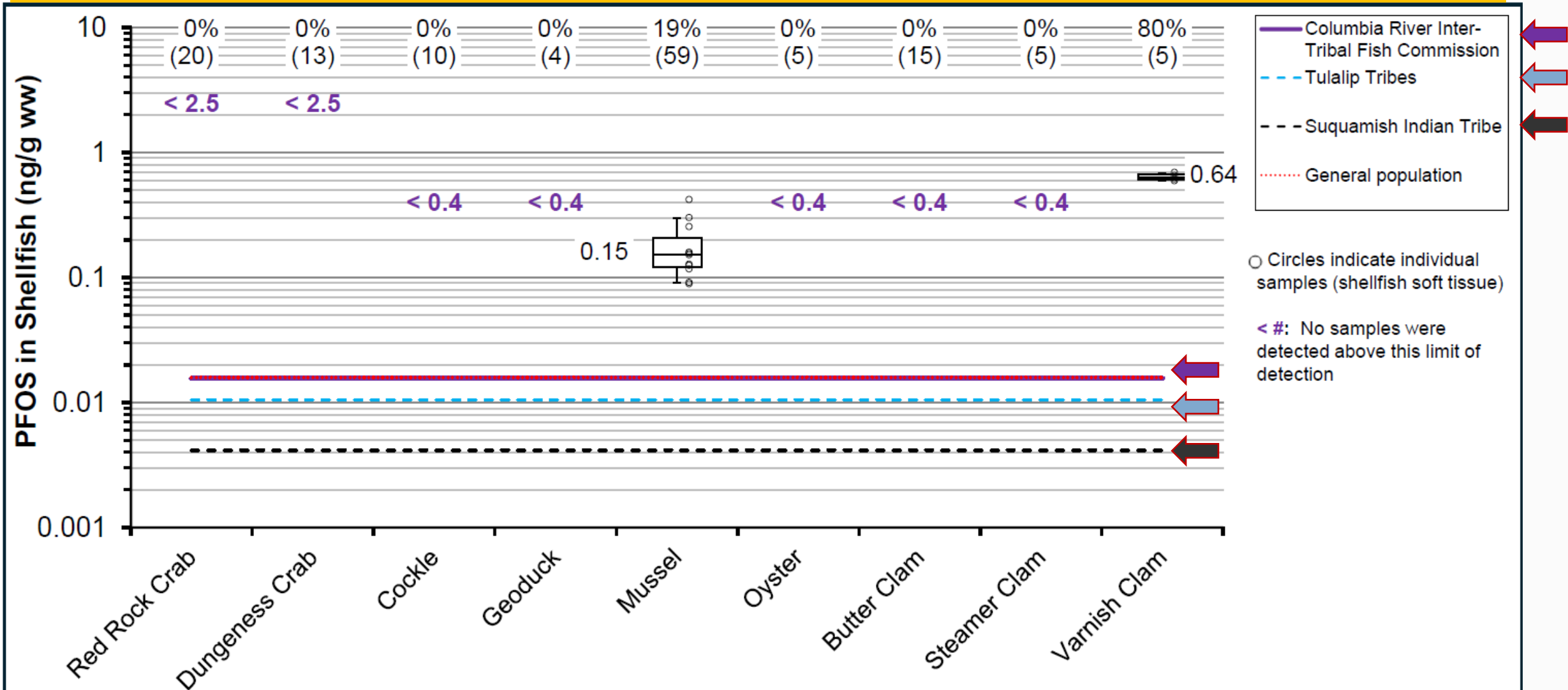
# Goal 2 - Toxicity and Risk - Humans

Observed fish tissue concentrations are above calculated risk-based tissue concentrations.



# Goal 2 – Toxicity and Risk – Humans

Observed shellfish tissue concentrations are above calculated risk-based tissue concentrations.



# Trends

- PFAS is widely detected in Washington sediment and aquatic tissues
- Sediment can act as sink for PFAS,  $\geq 8$  perfluorinated carbons
- Low toxicity to assessed benthic species but bioaccumulate PFAS
- Tissue concentrations can exceed risk-based screening levels for humans
- Human Health appears to be the likely risk driver for sediment sites with PFAS

# How we've addressed bioaccumulatives:

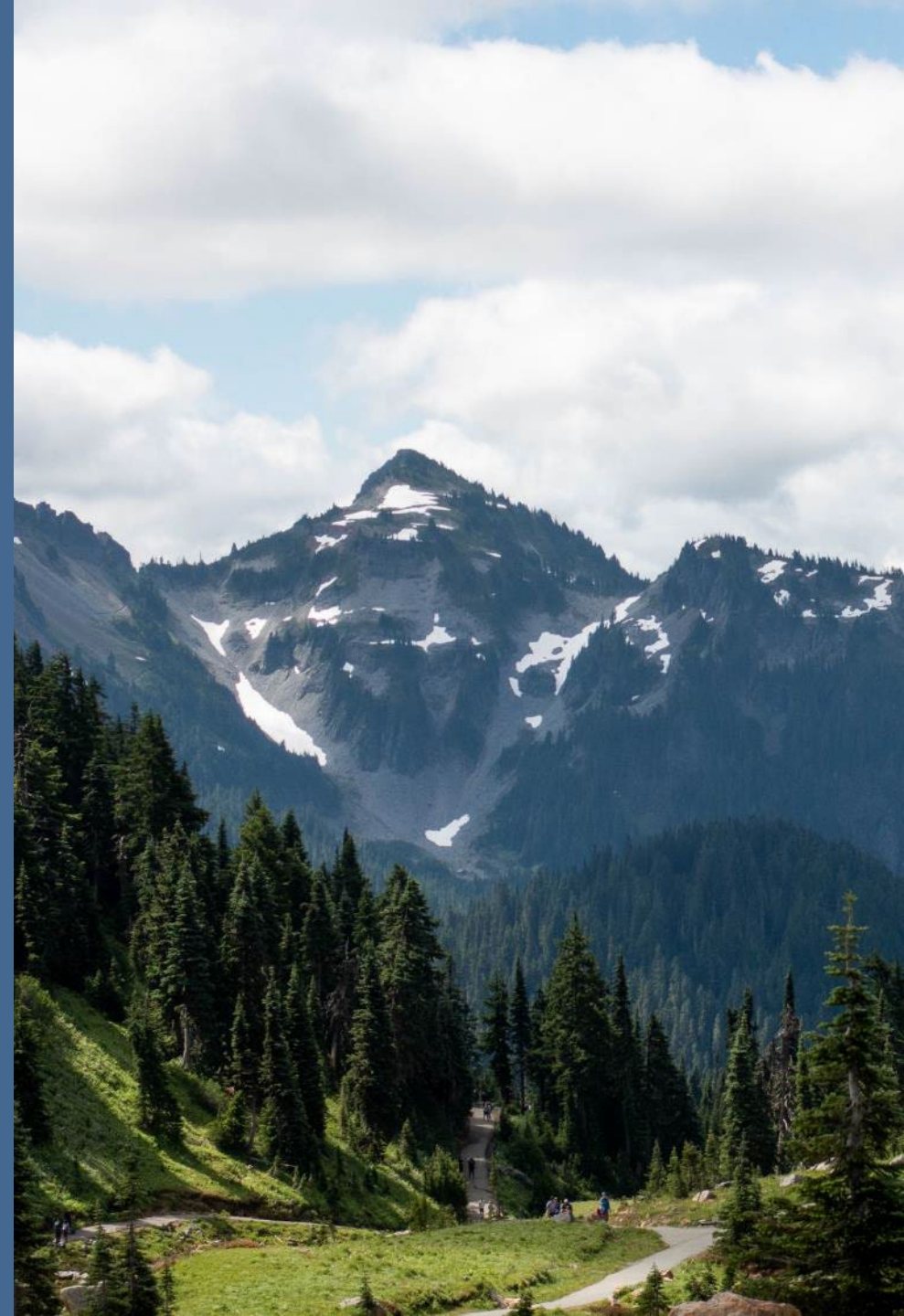
- **Upper trophic levels & Human health Criteria**
  - Risk-based values tend to be below sediment background
  - Default to sediment background values
  - No background? Use practical quantitation limit or calculate risk-based value using SCUM
- **Benthic community Criteria**
  - Use SMS chemical and biological benthic criteria
  - No chemical criteria? Use biological criteria (e.g., bioassays) or calculate risk-based value using SCUM



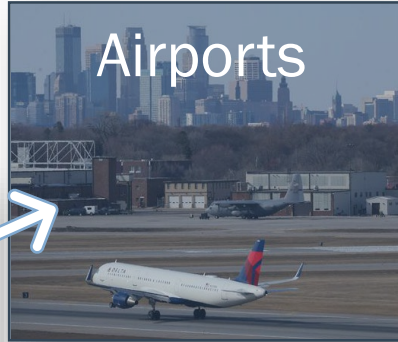


# What to do with sites now?

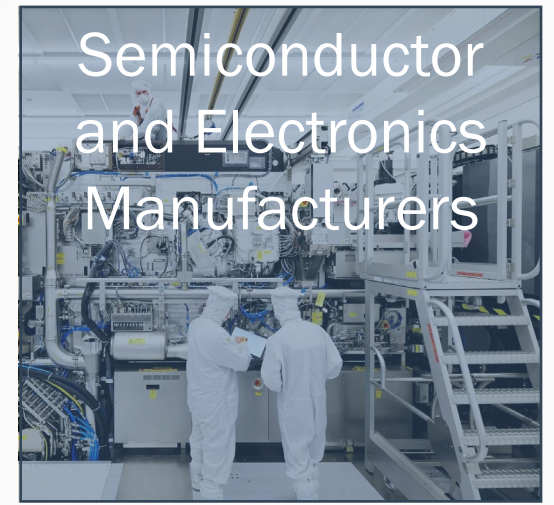
When to sample



# Industries that are Sources

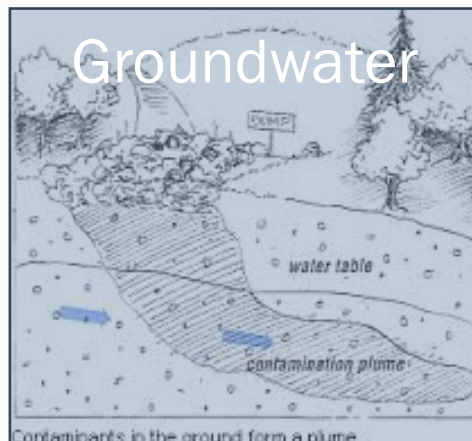


Facilities using Firefighting Foams

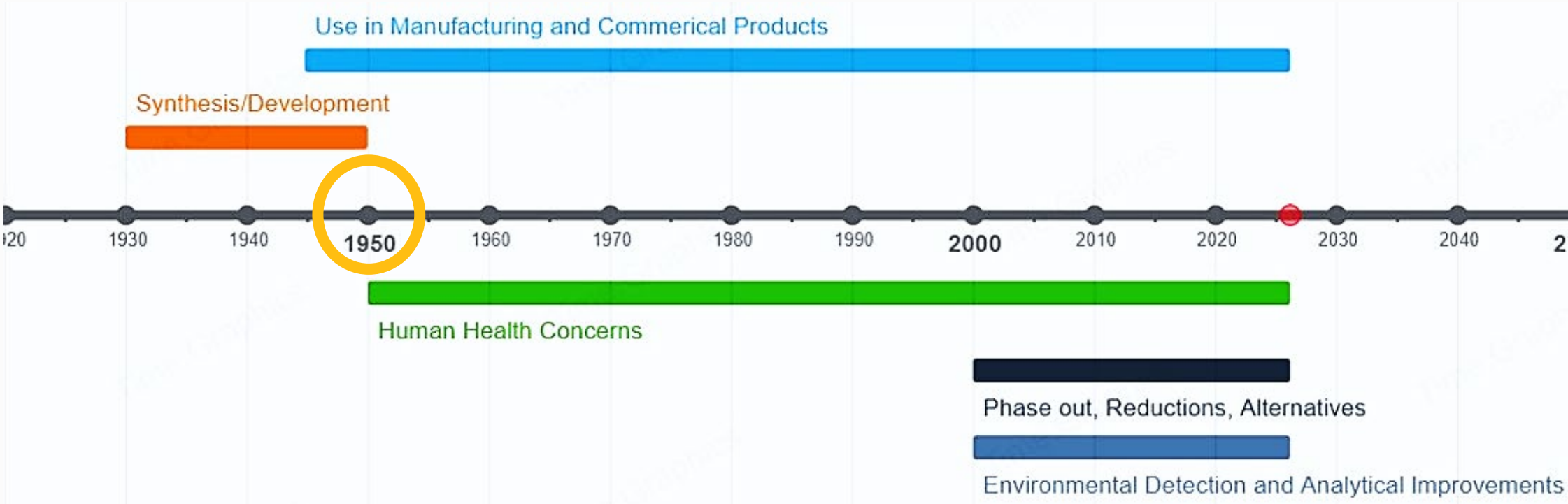


Industrial Manufacturing and Use

# Secondary Sources and Pathways to Sediment



# Timeline of PFAS



# Should sediment be analyzed for PFAS?

**YES**, if your site:

1. Is an upland site with a history of sources in SCUM Table 4-1 and:
  - a. Is located along a waterfront, and/or
  - b. Has a pathway (e.g., outfall) to surface water.
2. Is a sediment site located downstream of or near upland sources in SCUM Table 4-1.
3. Is a sediment site located near another sediment site with PFAS contamination.

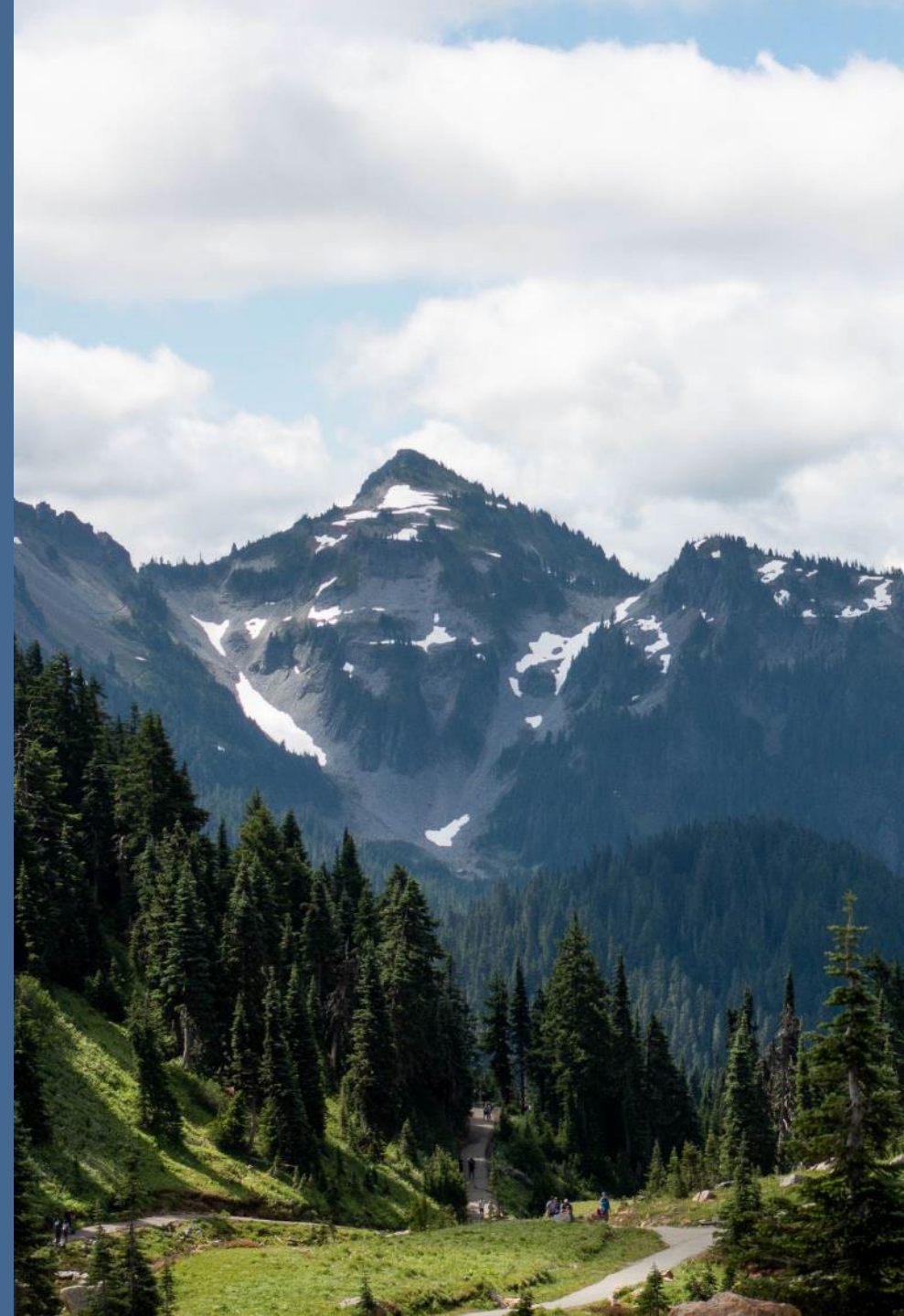


**NO**, if your site does not meet any of the above.



# What to do with sites now?

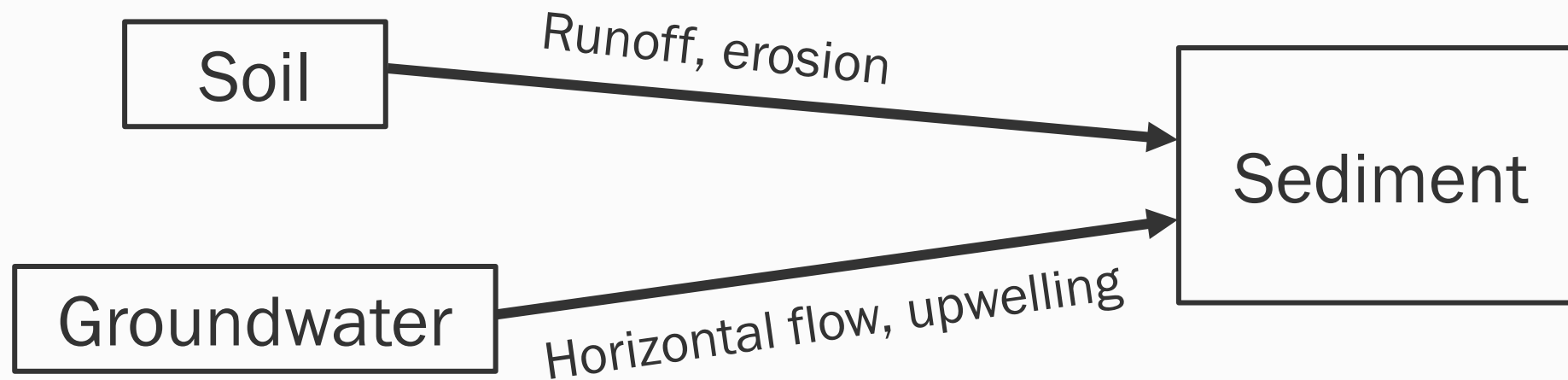
Remediation options



# Sediment Remediation Options

Similar to other COCs, focus first on source control:

- Uplands cleanup
  - *Guidance for Investigating and Remediating PFAS Contamination in Washington State* (Ecology Publication No. 22-09-058)
- Discharges
- Others



# Sediment Remediation Options

## Dredging and disposal

- Removes contamination
- High up-front costs, landfill must accept waste

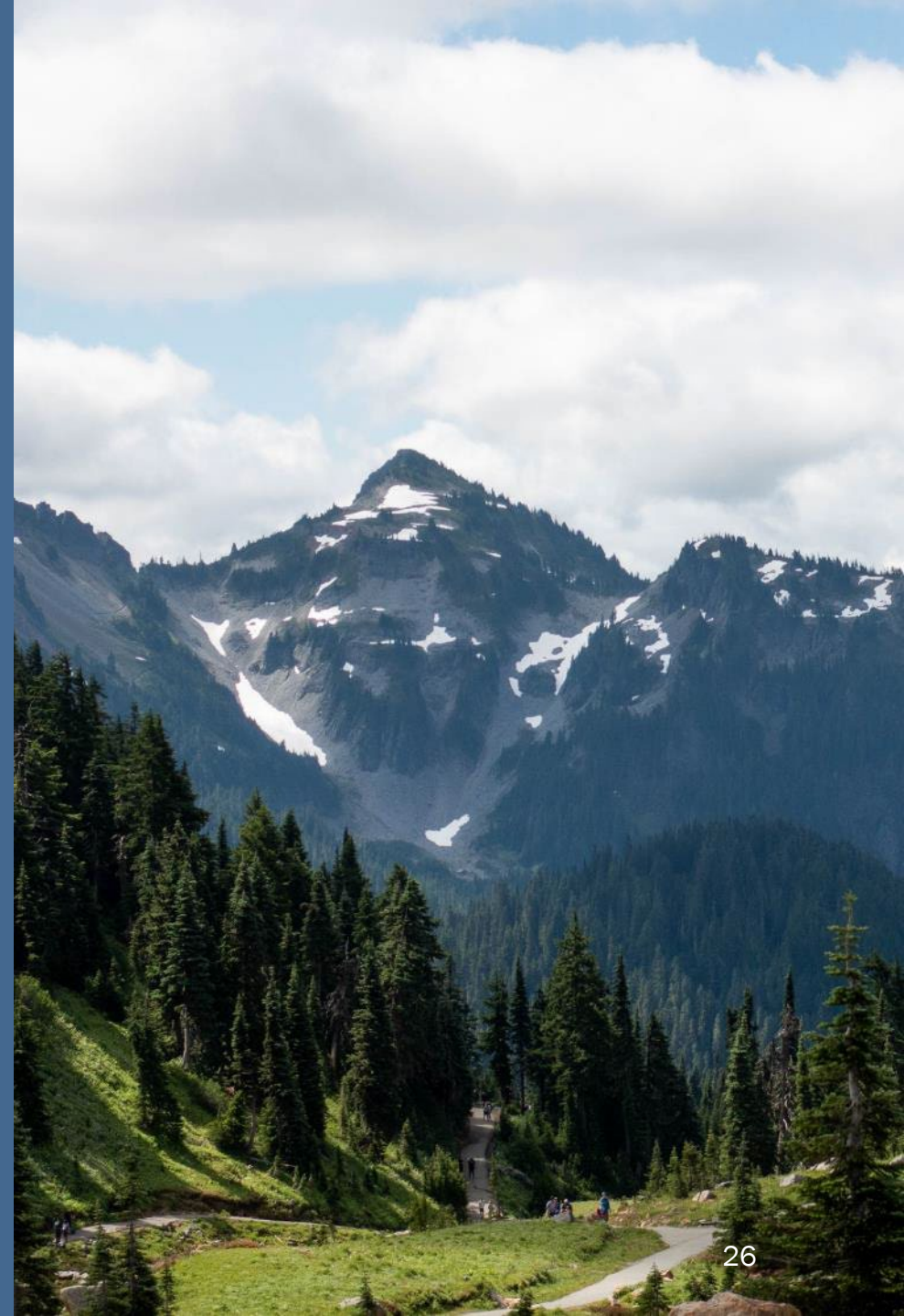
## Treatment/Engineered

- Activated carbon amendment
- Other treatment (engineered cap)
- Contingencies with contaminant left in place





# Next Steps



# PFAS and Sediment Policy–Next Steps

## 2026

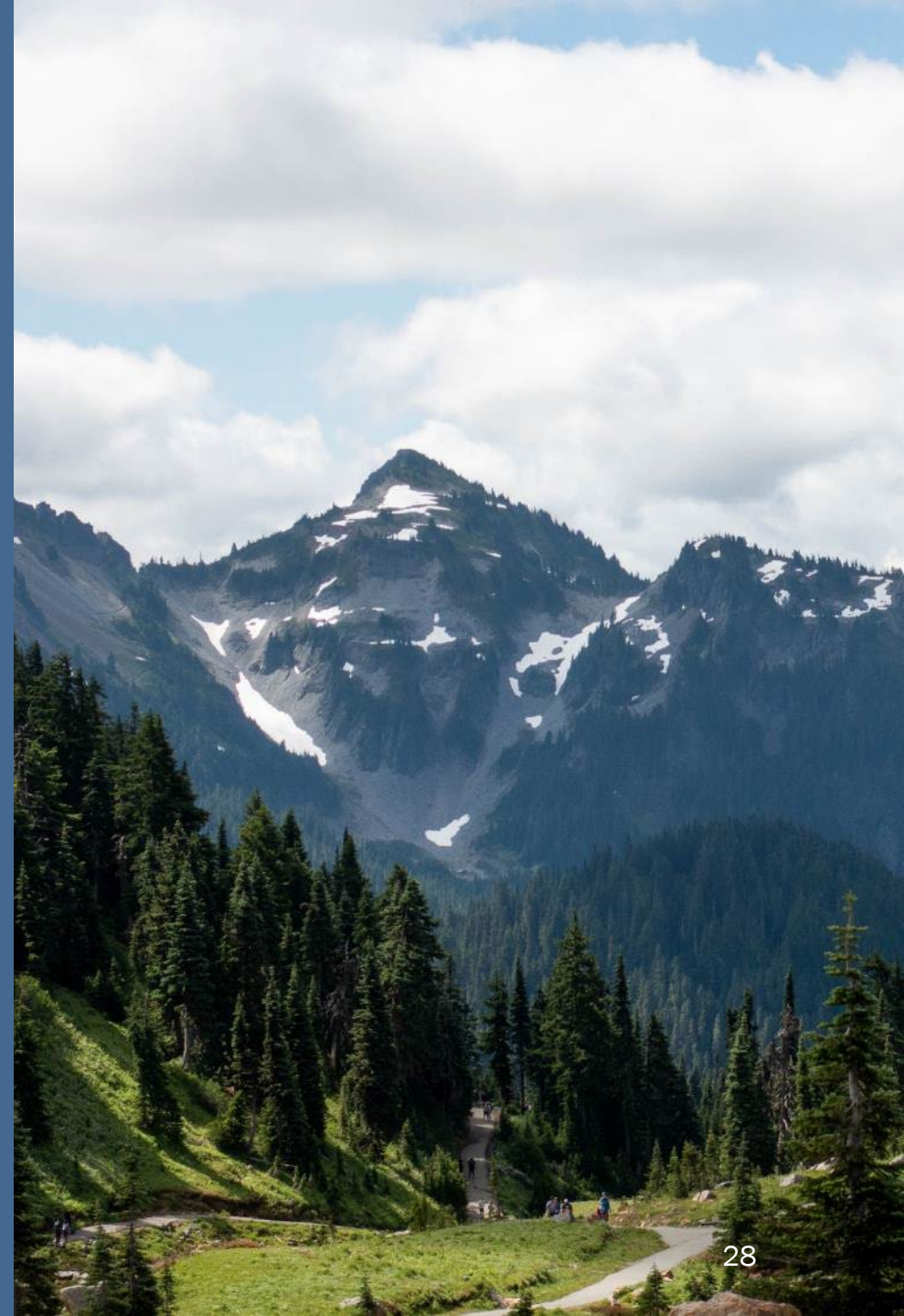
- SMARM Discussion (Today!)
- Consider and incorporate feedback
- Develop Sediment Cleanup User's Manual (SCUM) revisions

## 2027

- SMARM Discussion on Draft SCUM revisions (May)
- 60-day public comment period
- Consider and incorporate feedback
- Finalize Sediment Cleanup User's Manual (December)



# Discussion



# Help us name the SCUM Mascot!

1. SCUM-Head
2. SCUM-Y
3. SCUM-aLOT
4. SCUM-INA
5. SCUM-BELINA



# PFAS Discussion – Screening Levels:

**KEY POINT** – Current research shows greater risk for fish and shellfish consumers (subsistence fishers, higher trophic levels)

## 1. Should Ecology develop screening levels? For:

- A. Benthic community
- B. Human health
- C. Other higher trophic levels
- D. A, B, and C

# PFAS Discussion – Natural Background

**KEY POINT** - Risk based values for bioaccumulatives tend to be below natural background values.

## 2. Should Ecology establish sediment natural background?

- A. Marine sediment
- B. Freshwater sediment
- C. Both
- D. None

## 3. If "C", is A or B highest priority?

# PFAS Discussion – Risk and Sampling

Should Ecology:

**4. Identify process to assess risks from PFAS?**

- A. Human health
- B. Higher trophic levels
- C. Both
- D. None

**5. Further clarify when and how to analyze for PFAS?**

# PFAS Discussion – Rule Revisions

**KEY POINT** - Some changes may require rule revisions (i.e., numeric criteria).

## 6. Should Ecology revise:

- A. Sediment Management Standards?
- B. Model Toxics Control Act?

## 7. If so, to what key provisions?

# PFAS Discussion – Other Questions

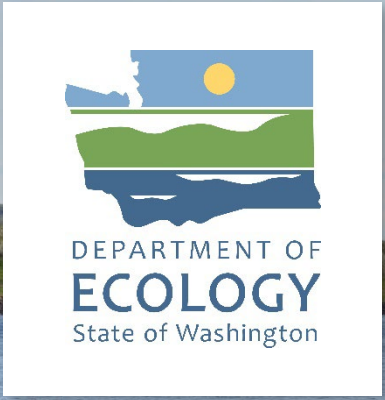
8. Are there other questions Ecology should be asking?
9. Do you have more questions or thoughts for Ecology or Geosyntec?



# How to provide additional thoughts

Submit by **Friday, June 5, 2026** to:

- Email: [kevin.kalefern@ecy.wa.gov](mailto:kevin.kalefern@ecy.wa.gov)
- Mail: Kevin Kalefern  
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Thank you