Oscoda Area and Former Wurtsmith Air Force Base PFAS Update Meeting

January 19, 2021

The webinar will begin at 6:00 pm

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Agenda	
6:05 pm	Zoom Instructions
6:10 pm	EGLE Update
6:40 pm	MDHHS Update
6:50 pm	Question and Answer Session
8:00 pm	Meeting Conclusion

Webinar Housekeeping

All lines are muted during the webinar.

We are recording this webinar

How to ask a question in Zoom

Submit your questions using the “**Q/A**” box in at the bottom of your screen.

Click the “hand” icon at the bottom of your screen.

Type *9 to raise your hand.

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MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Former Wurtsmith Air Force Base Update

Beth Place |517-899-7524

EGLE Remediation and Redevelopment Division

PlaceB1@Michigan.gov

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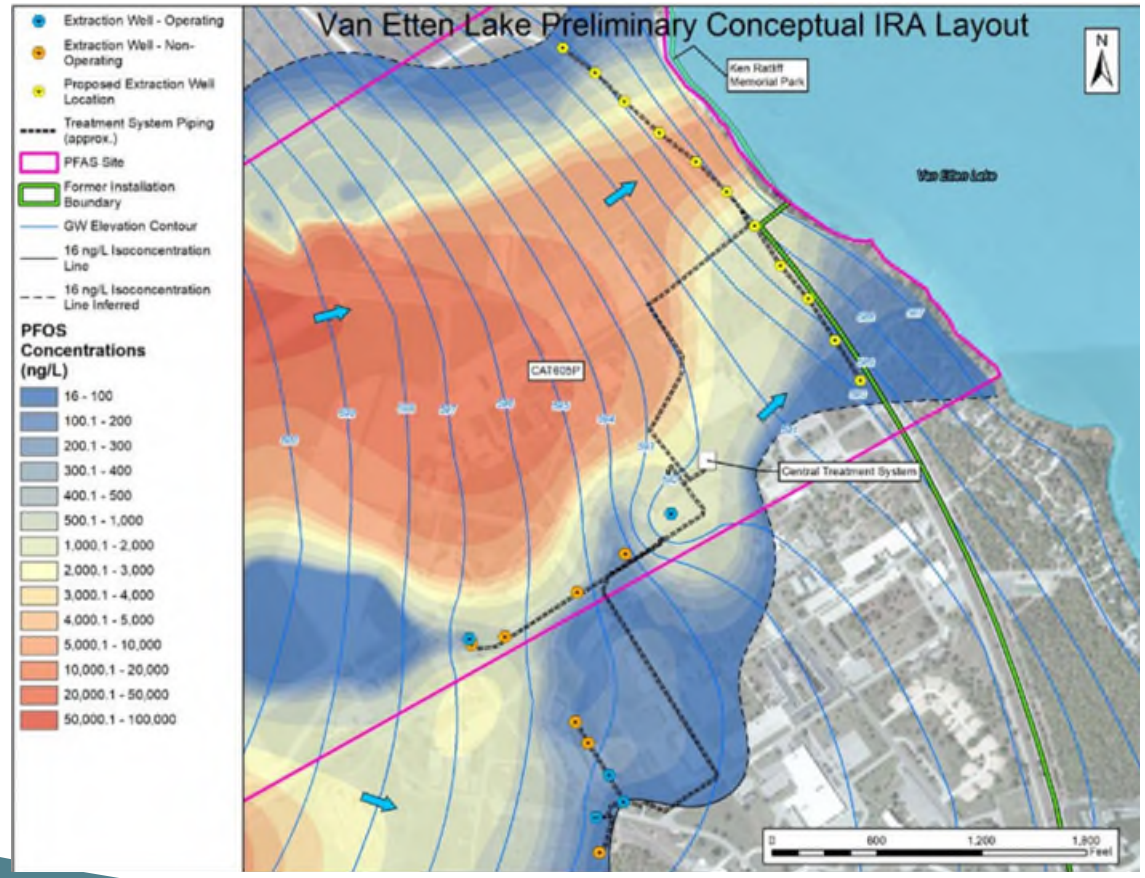
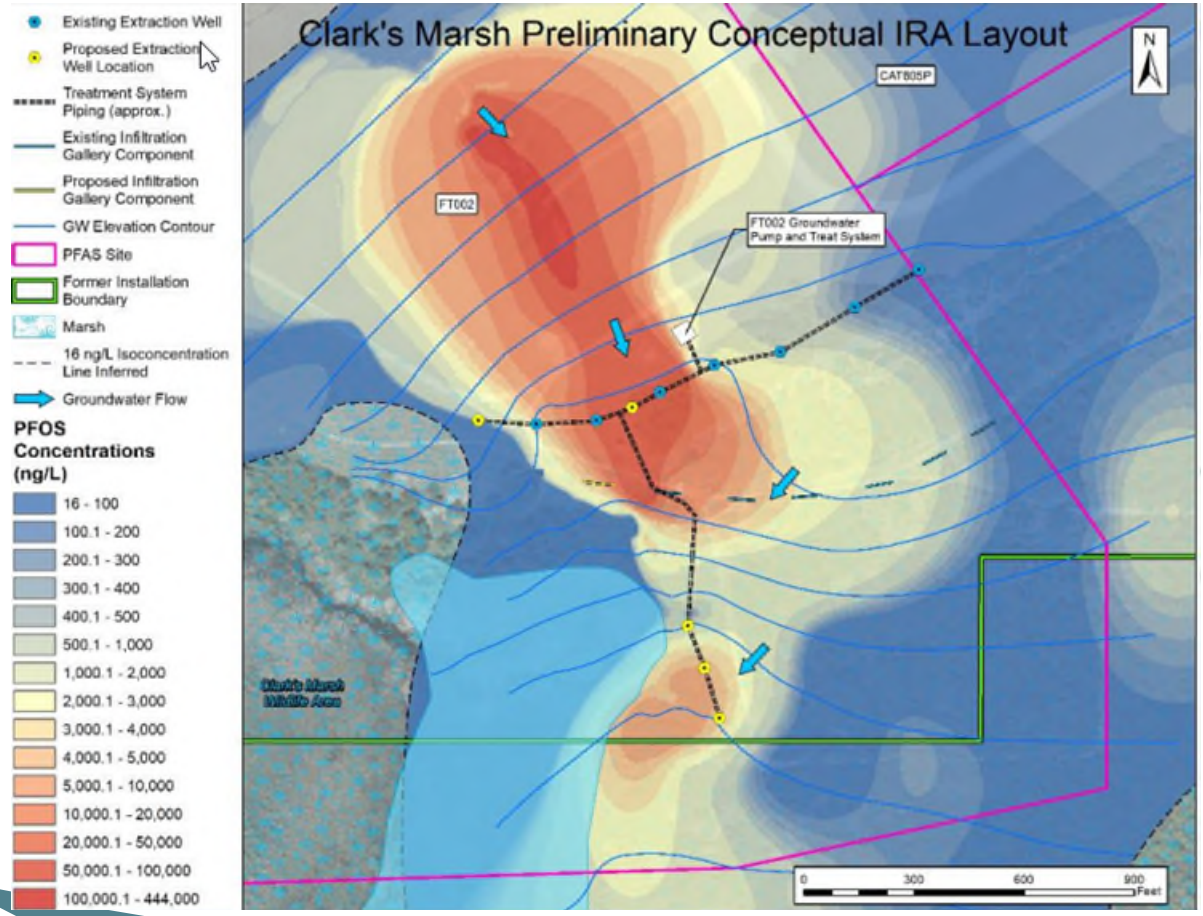
Van Etten Lake Interim Remedial Action



- **Interim Proposed Plan**
  - January 20, 2021 - EGLE Review
  - Comment Resolution
  - Followed by 30-day public comment & Public meeting
- **Interim Remedial Action Work Plan**
- **Interim Record of Decision**
- **Begin Install – Late June 2021**

Source: Figure, Aerostar for Air Force, October 2020

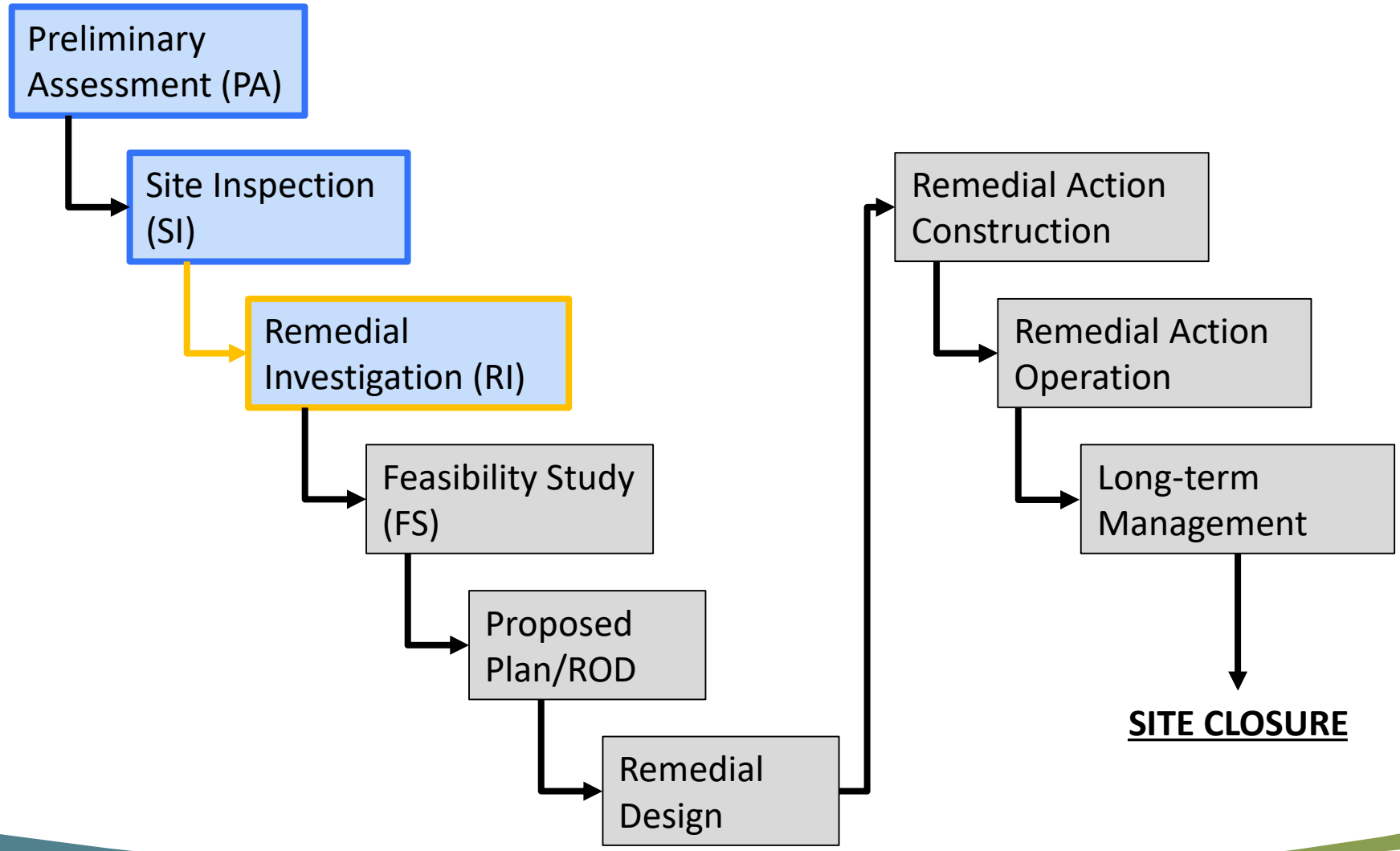
Clarks Marsh Interim Remedial Action



- **Interim Proposed Plan**
  - Jan 6 2021 - EGLE Comments to Air Force
  - Comment Resolution
  - Followed by 30-day public comment & Public meeting
- **Interim Remedial Action Work**
- **Interim Record of Decision**
- **Begin Install – July 2021**

Source: Figure, Aerostar for Air Force, October 2020

CERCLA Process



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Remedial Investigation (RI)

- **Planning/Scoping Meeting**
  - Week of Jan 25th 2021
- **RI Work Plan**
  - Air Force sends EGLE RI Work Plan – Mid- Feb, 2021
  - Final Work Plan Late Spring 2021
- **Risk Assessment Work Plan**
  - Final - Late Spring 2021
- **Field Work**
  - Late Spring 2021

Oscoda Area PFAS Sites

Amanda Armbruster, Project Manager/Geologist

EGLE - Bay City District Office

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Oscoda Area Site Locations

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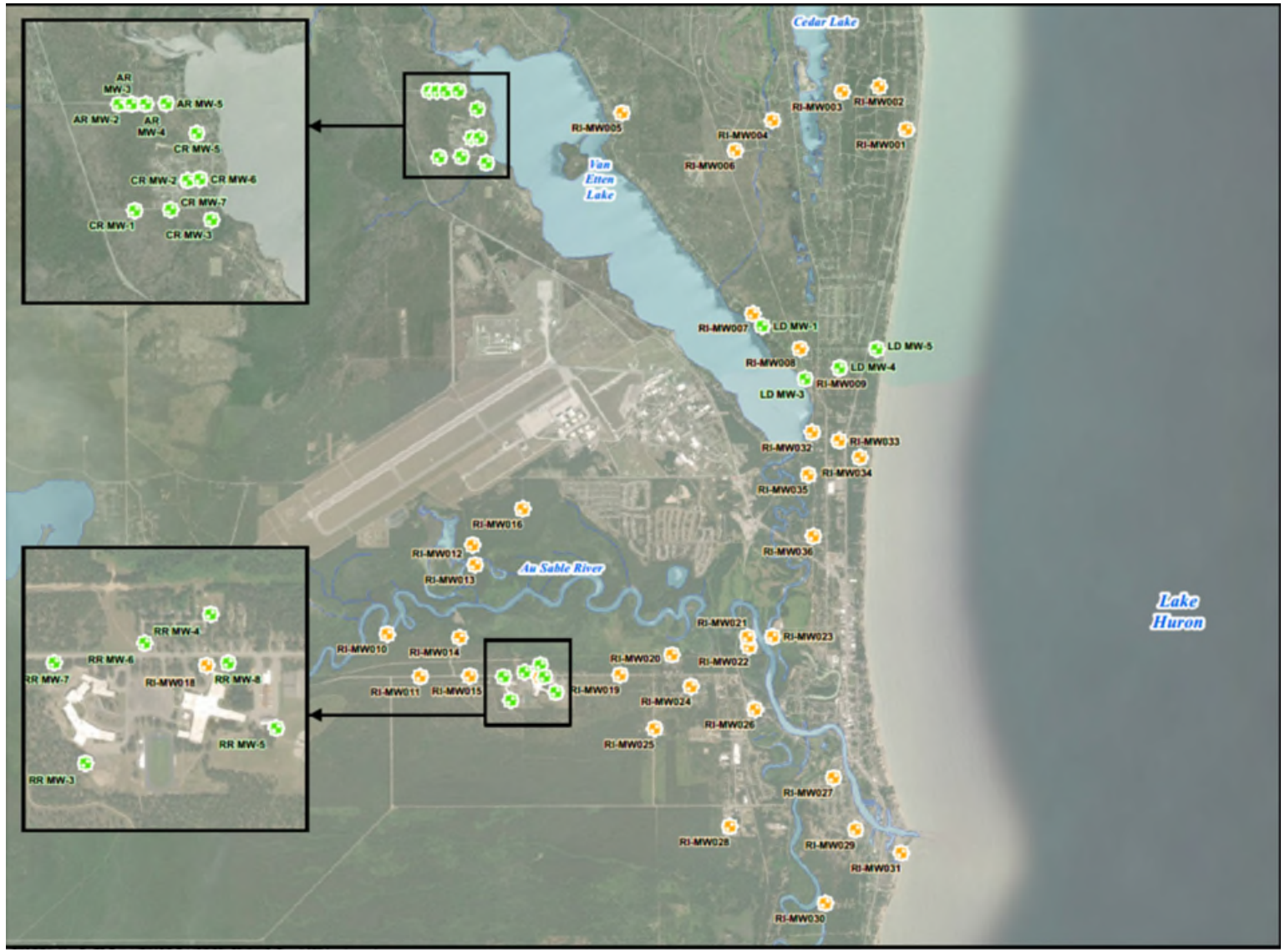
EGLE Monitoring Well Locations



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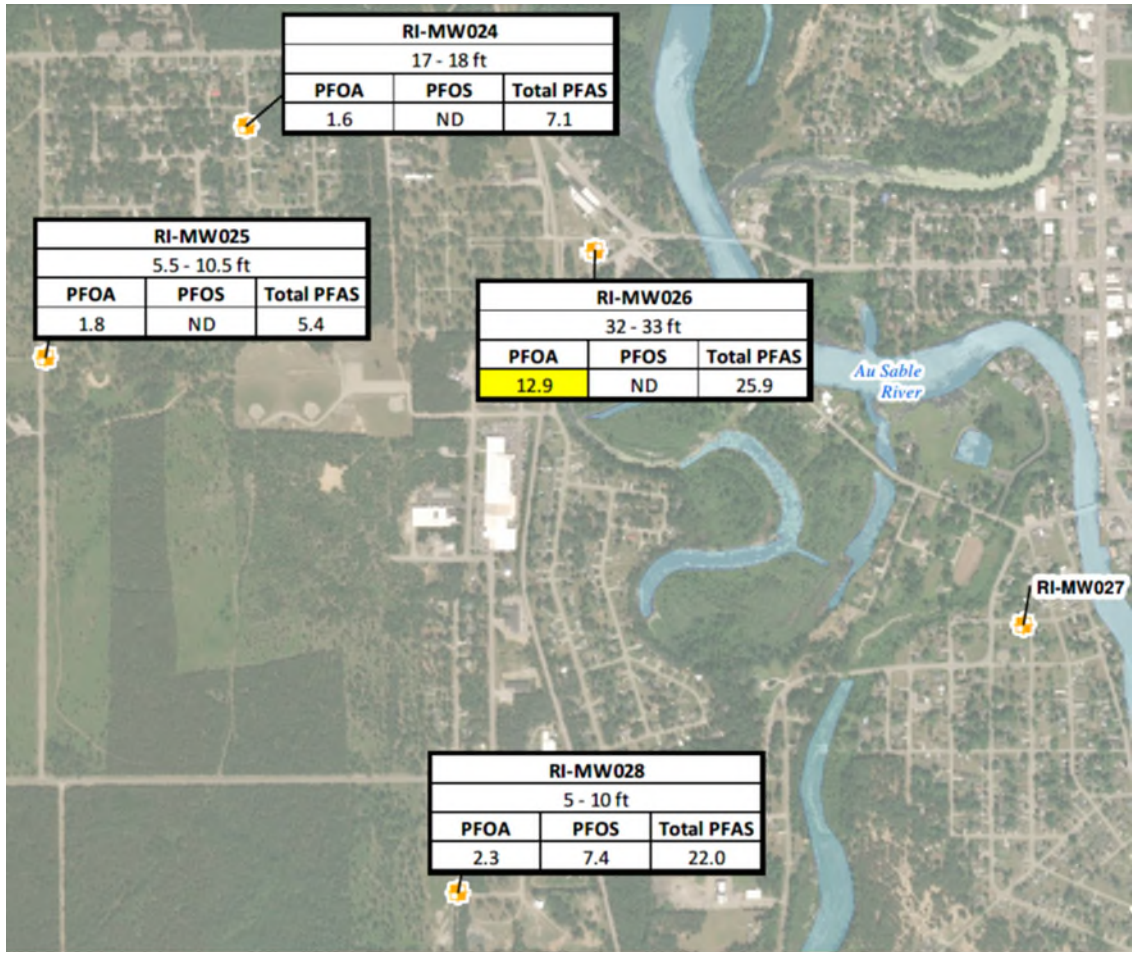
RI-MW-026



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Surface Water Foam Study Results (2019-2020)

State-Wide Study Including Van Etten & Cedar Lakes, Oscoda, Michigan

Barry J. Harding, CPG, Technical Leader, AECOM

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Surface Water Foams ("SWFs")

- Can be natural or of human origin
- Globally widespread and form in marine and freshwater habitats
- Compositionally are made of air and gases, water, and mineral fractions, with traces of natural and synthetic chemicals, and biotics (bacteria, viruses, and fungi)

2019. Sea foam on beach in the Bay of Bengal, Chennai, India.

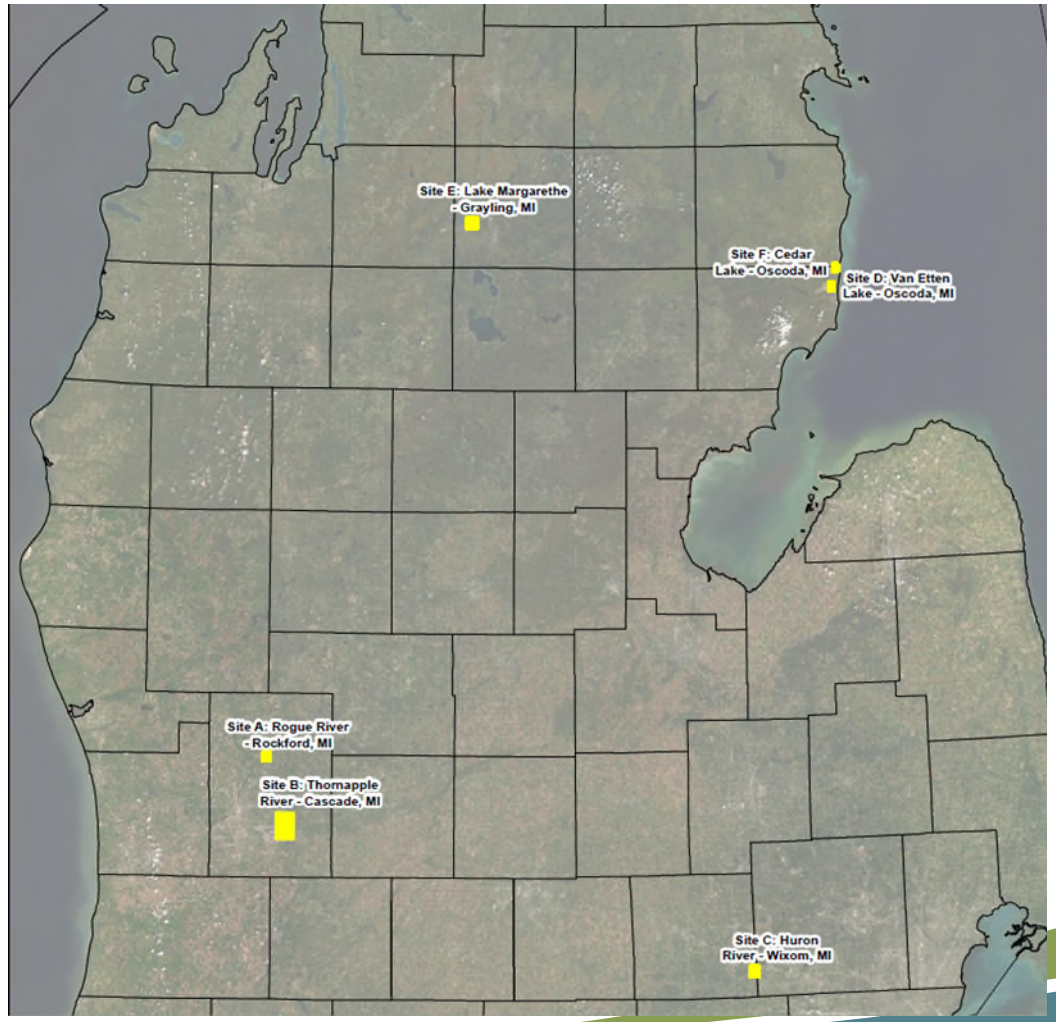
Purpose of Study

- Establish effective means to sample SWFs
- Refine SWF sampling protocols
- Evaluate behavior and PFAS concentrations in SWFs and surface water
- Develop conceptual models for SWF transport in surface waters

Foam accumulation on Van Etten Lake Beach [3/31/20].

Approach & Design

- 6 Locations
  - Rogue, Thornapple and Huron Rivers
  - Van Etten Lake, Oscoda
  - Cedar Lake, Oscoda
  - Lake Margarethe, Grayling
- SWF and Surface Water Samples
- PFAS, extended list 41 chemicals
- Analysis for Bacteria and Fungi (microbiota)



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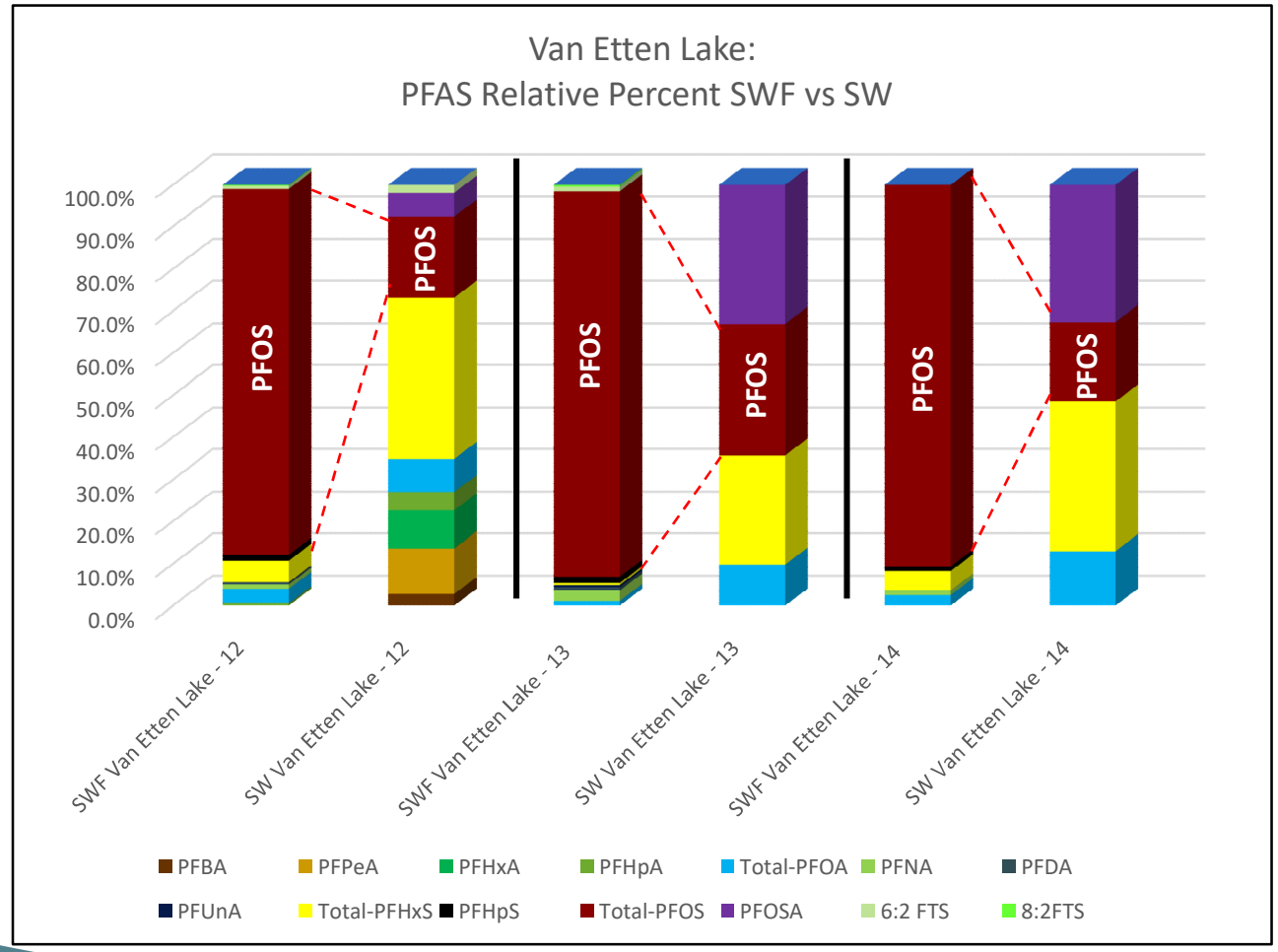
SWF Sampling Approach

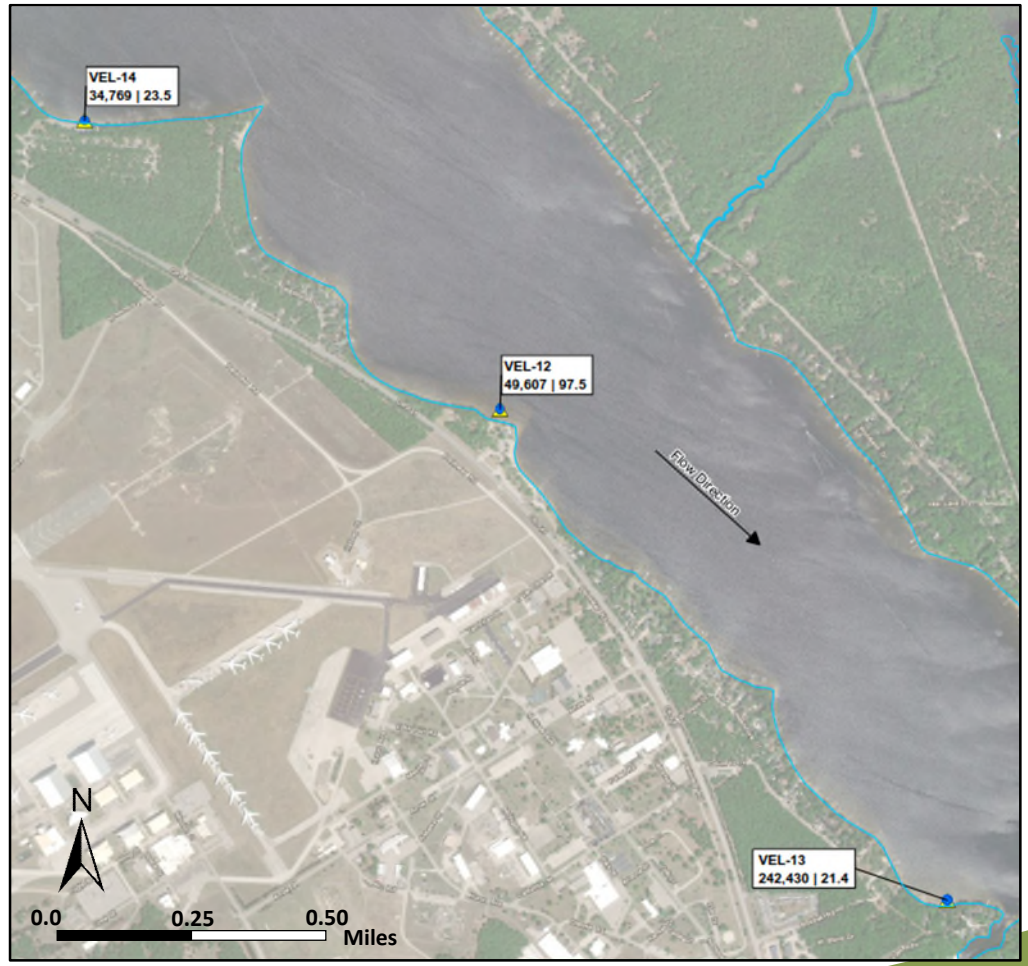
- Entire column of SWF collected with pool skimmer net.
- SWF transferred into 2-gal Ziploc® bags.

- SWF refrigerated and allowed to condense for 24hrs.
- Slowly poured through cheese cloth into sample bottles to strain out large debris.

- 20mL condensed SWF preserved for genetic analysis.
- ≥20mL condensed foam prepared for 41 PFAS analysis.

SWF vs SW at Van Etten Lake





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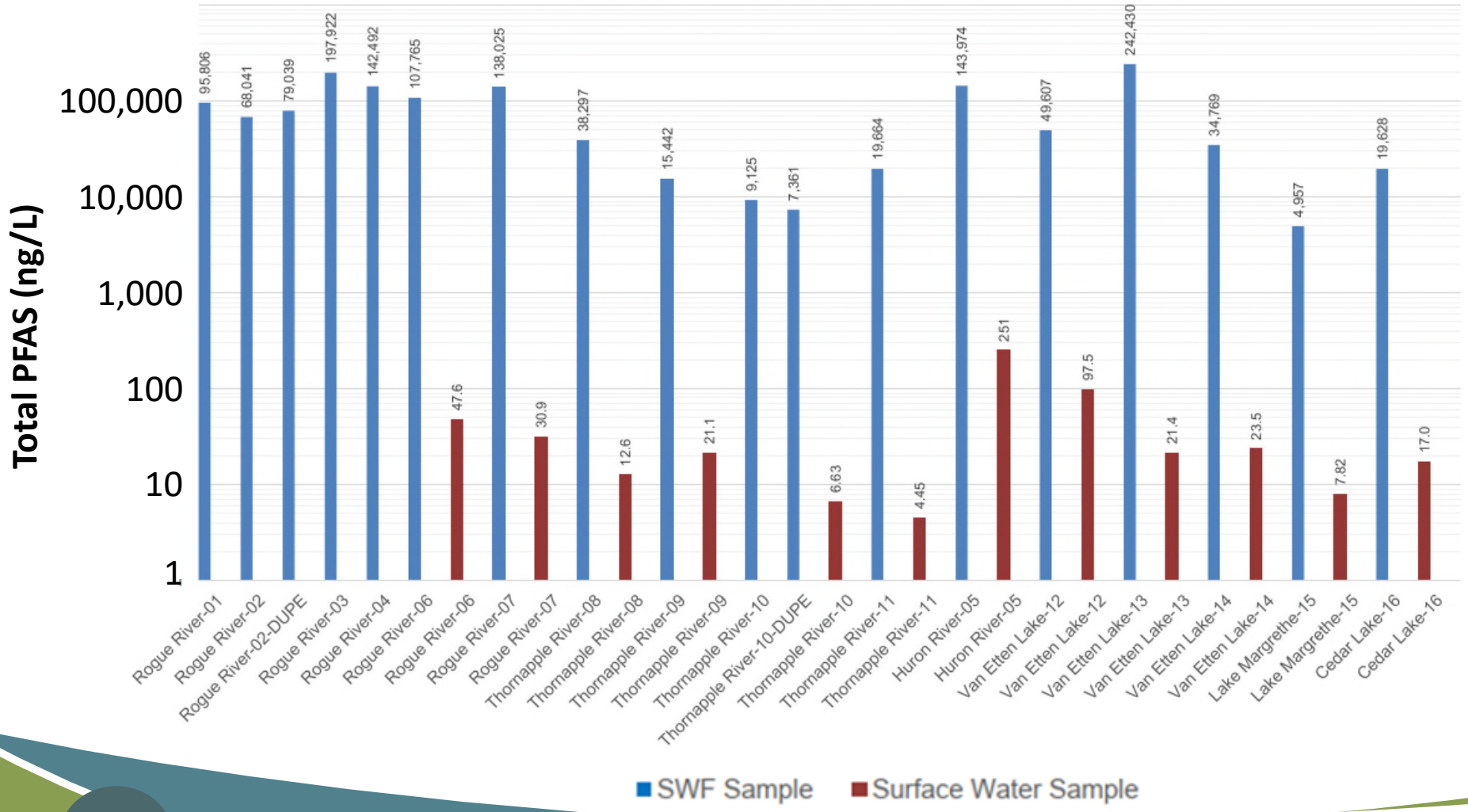
Key Findings PFAS: SWF vs Surface Water

Figure 2: Total PFAS in SWF vs. Surface Water



- Surface water samples were not collected with the first four SWF samples from The Rogue River.
- Enrichment process likely occurring during development of SWF.

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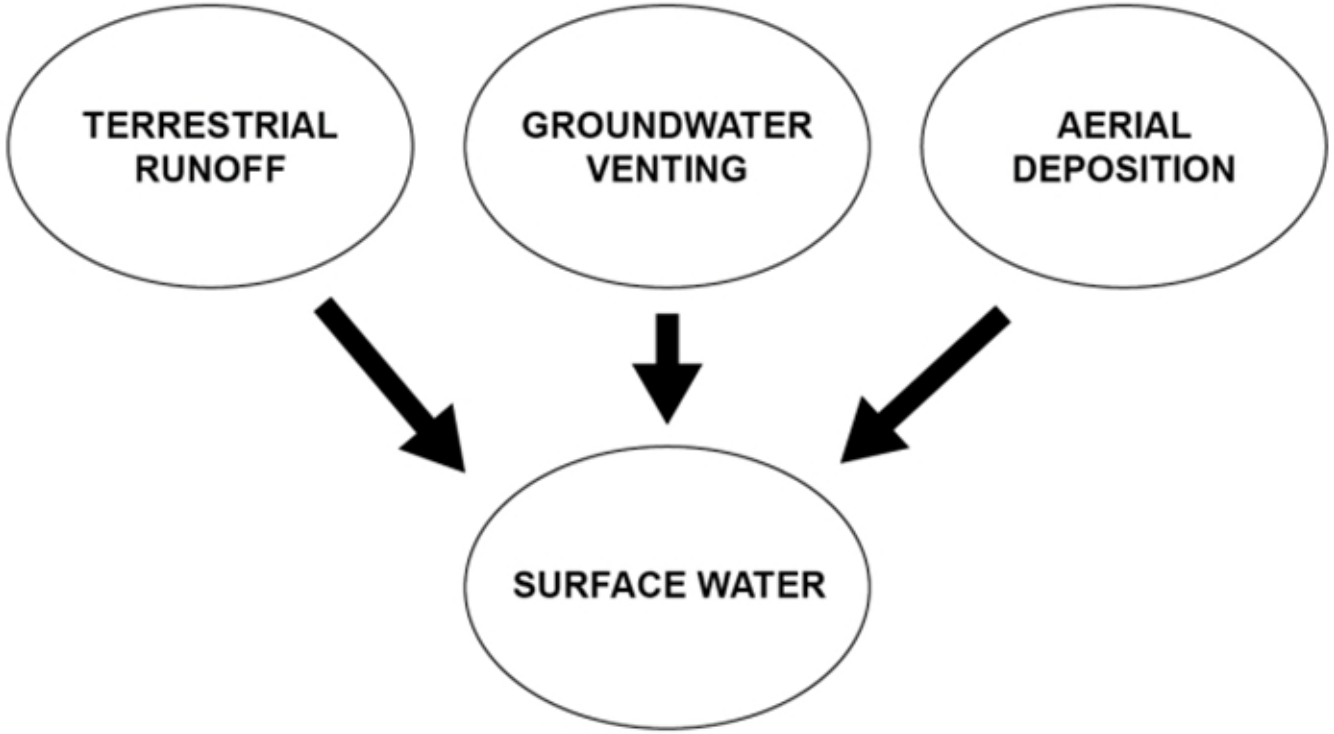
Why Analyze for Bacteria and Fungi?

- SWFs can be of natural origin (proteinaceous foams, biosurfactants, natural-occurring soap-like compounds)
- Provides information on the origins of SWFs

Stable SWF collected from Rogue River [11/4/19]

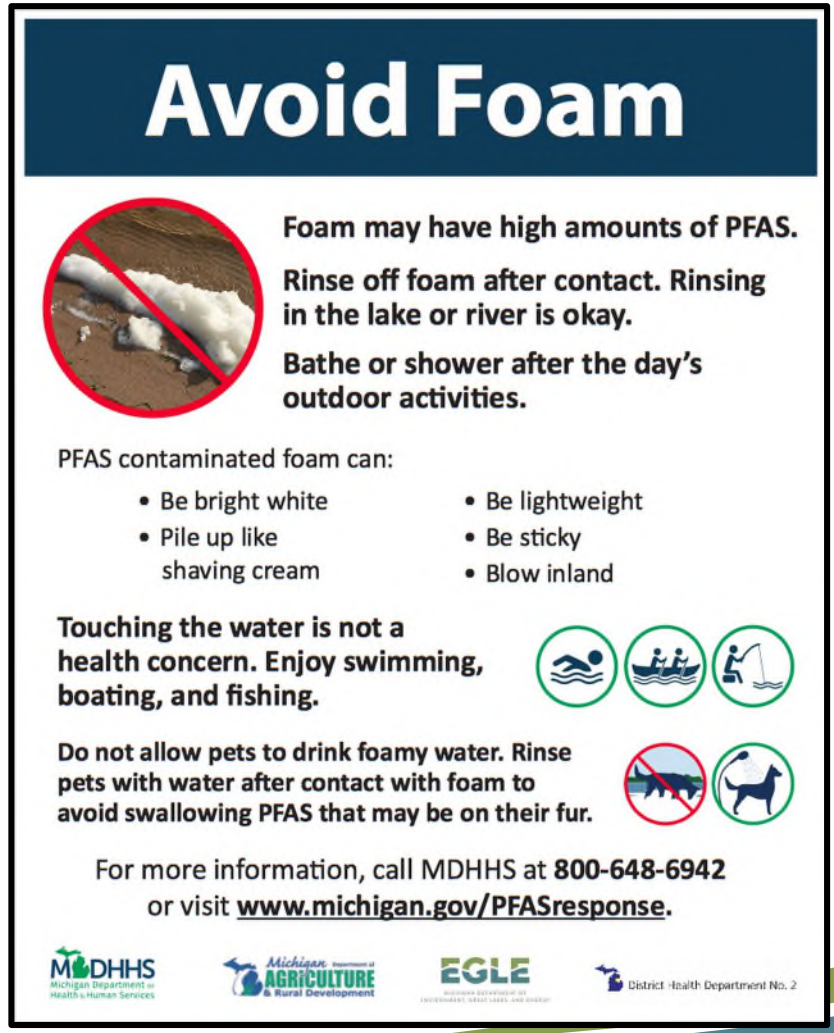
Why is Fungi and Bacteria DNA in SWF?



Potential transport pathways of Fungal and Bacterial DNA to Surface Water and Surface Water Foams.

Relevance of Microbiota in SWF

- Many fungi produce natural surfactants or foaming agents
- Exposure concerns due to bacterial content of SWFs



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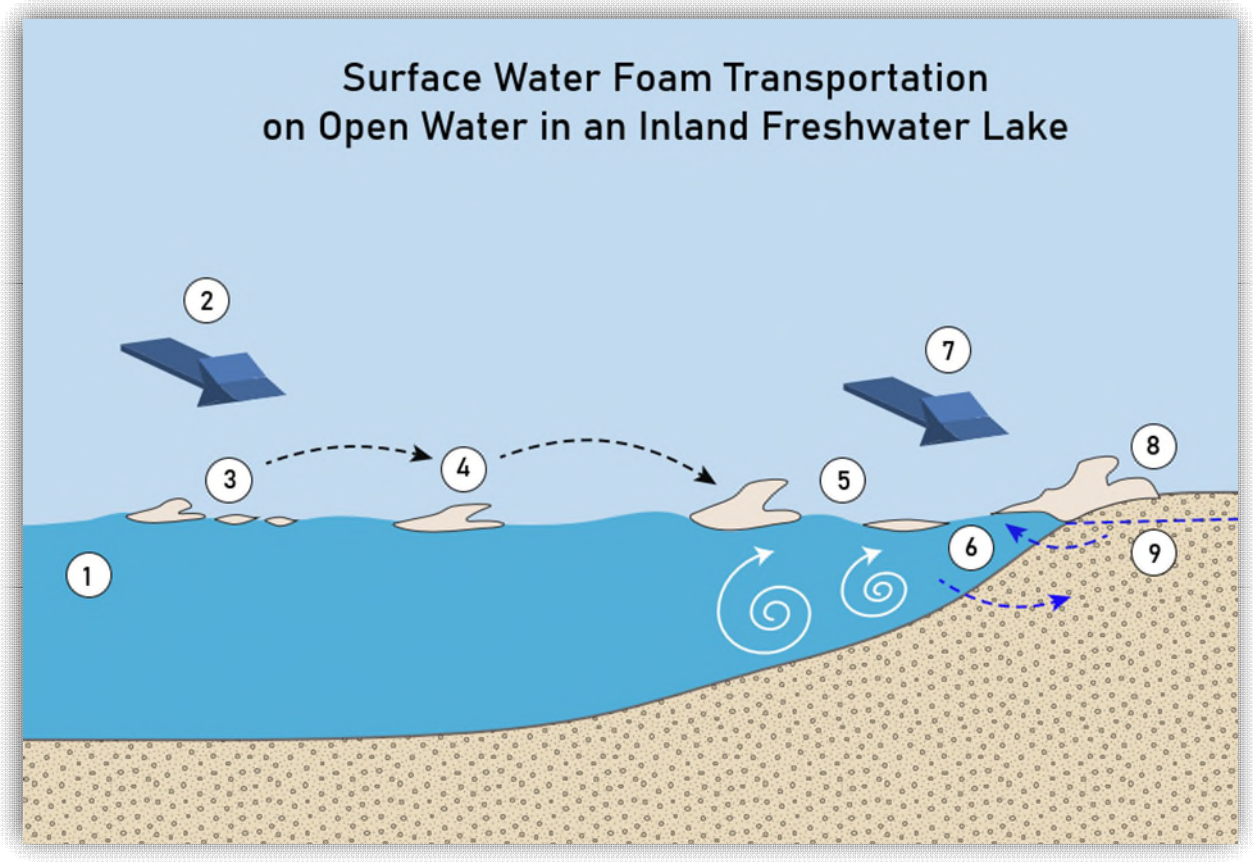
SWF Transport - Inland Lake



1. Dissolved PFAS in surface water
2. Wind creates surface turbulence
3. SWF nuclei develop
4. Larger SWF bodies develop “sails”
5. SWF transported via wind to near-shore littoral zone
6. Near-shore currents carry SWF to beach
7. Wind also transports SWF to terrestrial environment
8. SWF accumulates
9. Groundwater and surface water interact; PFAS may be mobilized into groundwater

Key Points

- Hand-held dipper (pool skimmer) method is the best method.
- PFAS profiles suggest that there is a site-specific nature of SWF chemical composition.
- PFAS concentrations detected in SWF and surface water indicates an enrichment process is occurring during the development of SWF.

Key Points (Continued)

- On inland lakes, SWF are apt to accumulate down-wind near and along the shorelines. Windspeed and wind direction have been identified as driving factors for foam transport and accumulation.
- In rivers, SWF transport is largely driven by movement of water downstream.
- SWF generation is difficult to predict and persistence is short and typically measured in terms of hours.

Michigan Department of Health and Human Services (MDHHS)

Puneet Vij, Ph.D.
Toxicologist

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The Role of MDHHS

- Understand the health concerns facing your community
- Develop a plan to investigate and address health risks
  - EGLE leads the site investigation
  - MDHHS and the Local Health Department lead the public health planning and response
- Evaluate PFAS exposures to residents in the community
  - Recommend public health actions as needed

Association with Increased Risk of Health Effects PFOA and/or PFOS

- Reduced fertility
- High blood pressure or pre-eclampsia in pregnant women
- Small decreases in infant birth weight
- Higher cholesterol
  - Especially total cholesterol and LDL cholesterol

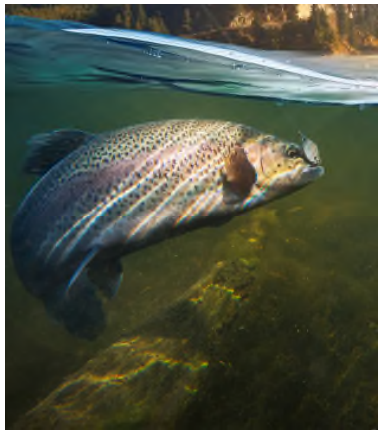
Association with Increased Risk of Health Effects PFOA and/or PFOS

- Thyroid disease
- Liver damage
- Decreased immune system response to vaccines
- Developing certain types of cancer
  - In particular kidney and testicular cancers*

* PFOA only

Exposure to PFAS Chemicals

- Drinking contaminated water
- Eating fish/wild game caught from areas contaminated by PFAS
- Incidental swallowing of contaminated soil or dust
- Eating food packaged in materials containing PFAS
- Using some consumer products
- PFAS absorption through skin is typically not a concern



MDHHS PFAS Comparison Values

Specific PFAS	MDHHS Screening Levels	Approved MCLs	MDHHS Comparison Values
PFOA	9 ppt	8 ppt	8 ppt
PFOS	8 ppt	16 ppt	8 ppt
PFNA	9 ppt	6 ppt	6 ppt
PFHxS	84 ppt	51 ppt	51 ppt
PFBS	1,000 ppt	420 ppt	420 ppt
PFHxA		400,000 ppt	400,000 ppt

MDHHS Resampling Effort

Round 1 Resampling Summary

- Total number of wells sampled: 277
  - Number of non-detects: 136
  - Number of Detections: 141
  - Of the detections, 20 exceeded MDHHS Comparison Values

- Range PFOA + PFOS: 2.05 – 263.62 ppt
- Range Total PFAS: 2.01 – 2514.02 ppt

Fish sampling/results updates

- **Clark's Marsh**
  - Bluegill/Pumpkinseed
  - Lower PFOS levels in 2020 than in 2011
  - Still elevated well above the Do Not Eat advisory screening value.
  - First time sampling yellow perch from Clark's Marsh
    - Concentrations similar to those of Bluegill/Pumpkinseed

Deer sampling/results updates

- Should not eat any deer harvested from within five miles of Clark's Marsh
- MDHHS continues to recommend not eating kidneys or liver from any deer
- March 2020: Muscle and liver samples were collected from 44 deer (14 male, 30 female)
  - We are currently in the process of evaluating the results

MDHHS Exposure Assessment

- Beginning stages of planning
  - Have formed a project team
  - Forming a community advisory team
- MDHHS would ask for a blood sample and test it for PFAS
- Participants would take a short survey about ways they could potentially be exposed to PFAS
- We will keep the community informed as we make progress

How to ask a question in Zoom

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***9**

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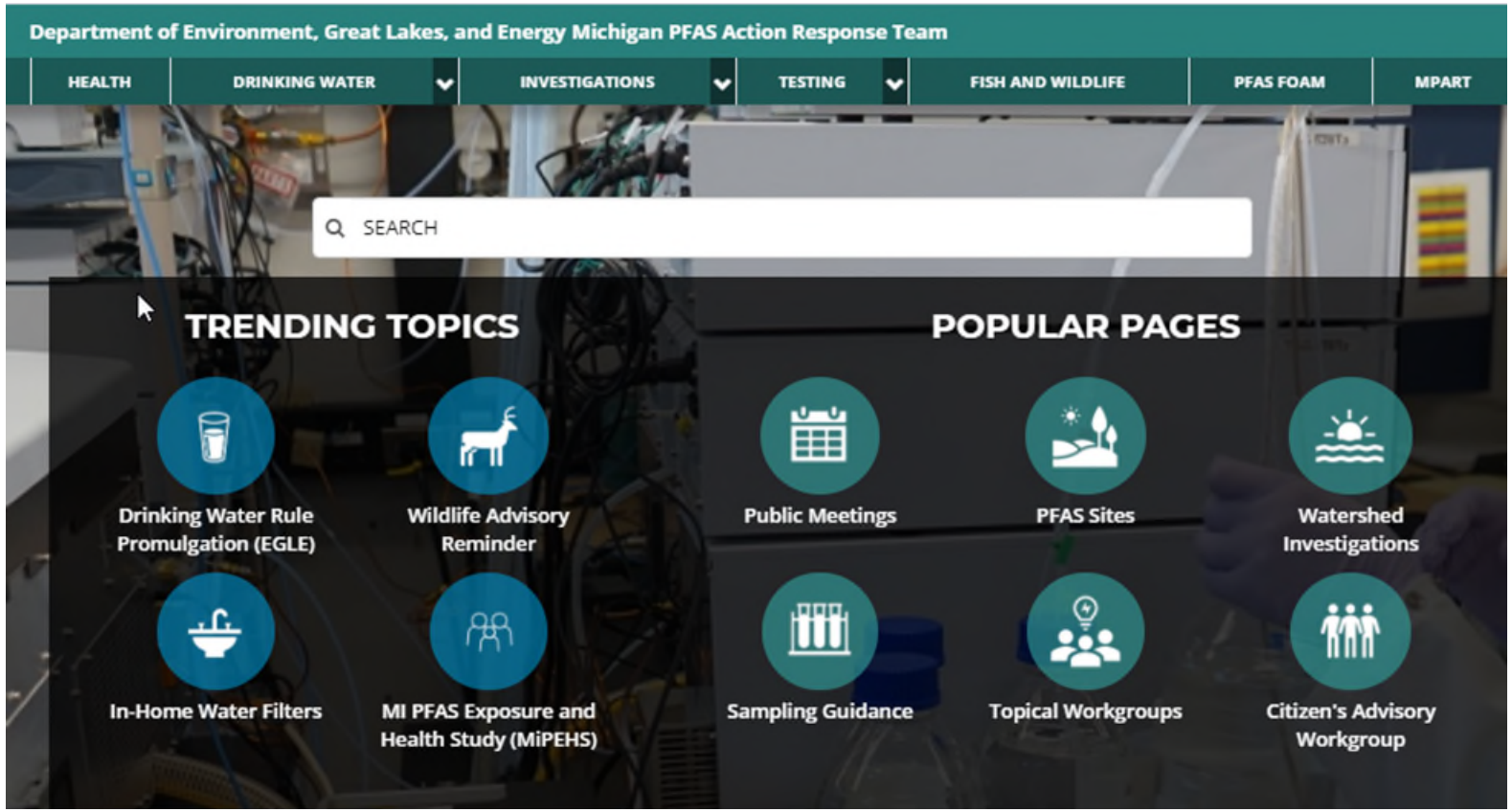
Question and Answer Session

- **Ask one question at a time so everyone can ask their question/make a comment.**

Restoration Advisory Board (RAB) Meeting

- Wednesday, January 20, 5:00 – 8:00 pm



Additional Resources

- Wurtsmith investigation page → michigan.gov/wurtsmith
- Michigan PFAS Action Response Team (MPART) → michigan.gov/pfasresponse
- More info about ESF guidelines → michigan.gov/EatSafeFish
- Agency for Toxic Substances and Disease Registry (ATSDR) → https://www.atsdr.cdc.gov/pfas/

Feedback

- **Did you receive the information you needed?**
- **What would have made this meeting better for you?**
- **Contact us at manentes@michigan.gov**

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Thank you!

We will share the slides and a recording and closed-captioned copy of today's conversation via email and on our website in the next few days.