231st Technical Committee Meeting

Scott Mandirola, Chair
Presiding
February 7-8, 2023

The meeting will begin at 1:00 P.M. (Eastern) on Feb. 7. Below are a few tips to effectively navigate the meeting:

- ***Confirm that your first and last name is entered correctly in the GoToMeeting software.***
- ***Mute your microphone at all times unless speaking.***
- ***Disable your camera unless you are a Technical Committee member.***
- ***The presenter will prompt participants for verbal questions, or use the Chat feature.***
- ***Detailed GoToMeeting instructions and important information can be found in the previously emailed document, "ORSANCO Virtual Technical Committee and Commission Meeting Instructions."***
- ***If you need assistance during the meeting, please call our office at 513-231-7719 ext. 100.***

Chair’s Welcome & Roll Call

Scott Mandirola

Chair, Technical Committee

TEC Members Roll Call

- IL – Scott Twait *
- IN – Brad Gavin *
- KY – Katie McKone *
- NY – Melanie Wright *
- OH – Melinda Harris *
- PA – Kevin Halloran *
- VA – Jeffrey Hurst *
- WV – Scott Mandirola*
- USACE – Erich Emery *
- USCG – Dana Fleming*
- USEPA – David Pfeifer *
- USGS – Jeff Frey *
- CIAC – Vacant
- PIAC – Cheri Budzynski
- PIACO – Betsy Bialosky
- POTW – Vacant
- WOAC – Chris Tavenor
- WUAC – Chris Bobay
- Chair – Scott Mandirola *
- Executive Director – Richard Harrison *

* Voting member

Agenda for the 231th Meeting of the Technical Committee

CHAIR'S WELCOME AND ROLL CALL (February 7, 1:00 P.M.)

ACTION ITEMS AND REPORTS

1. Action on Minutes of 230th Technical Committee Meeting – Chair Mandirola *
2. Chief Engineer's Report – Director Harrison
3. Dispelling Myths and Misunderstandings about the Water Quality of the Ohio River: 50 years of Aquatic Research at the Thomas More University Biology Field Station – Dr. Chris Lorenz, Thomas More University
4. Biological Programs Update – Ryan Argo
5. Source Water Protection Programs Update – Sam Dinkins
6. Review of Monitoring Programs – Jason Heath
7. CSO Abatement Report/Bacteria Trends Analysis – Stacey Cochran

Adjourn/Reconvene Wednesday Morning

8. PFAS Issues
   a. Kentucky PFAS Fish Tissue Monitoring – Melanie Arnold, KYDOW
   b. Evaluation of Passive Sampler Technologies for PFAS Collection – Marc Mills, USEPA
   c. Potential Project with WV Water Research Institute and USGS Evaluating PFAS Sampling Methods – Jason Heath
9. TEC Member Roundtable Reports

OTHER BUSINESS

- Comments by Guests
- Announcement of Upcoming Meetings

ADJOURNMENT (NOON)

Agenda Item 1:

Request for action on minutes of the 230th Technical Committee Meeting

Chair Mandirola

The minutes were emailed with the agenda package on January 19, 2023

Agenda Item 2:
Chief Engineer's Report

Executive Director Richard Harrison

Agenda Item 3:

Dispelling myths and misunderstandings about the water quality of the Ohio River: 50 yrs of aquatic research at the Thomas More University Biology Field Station

Dr. Chris Lorenz

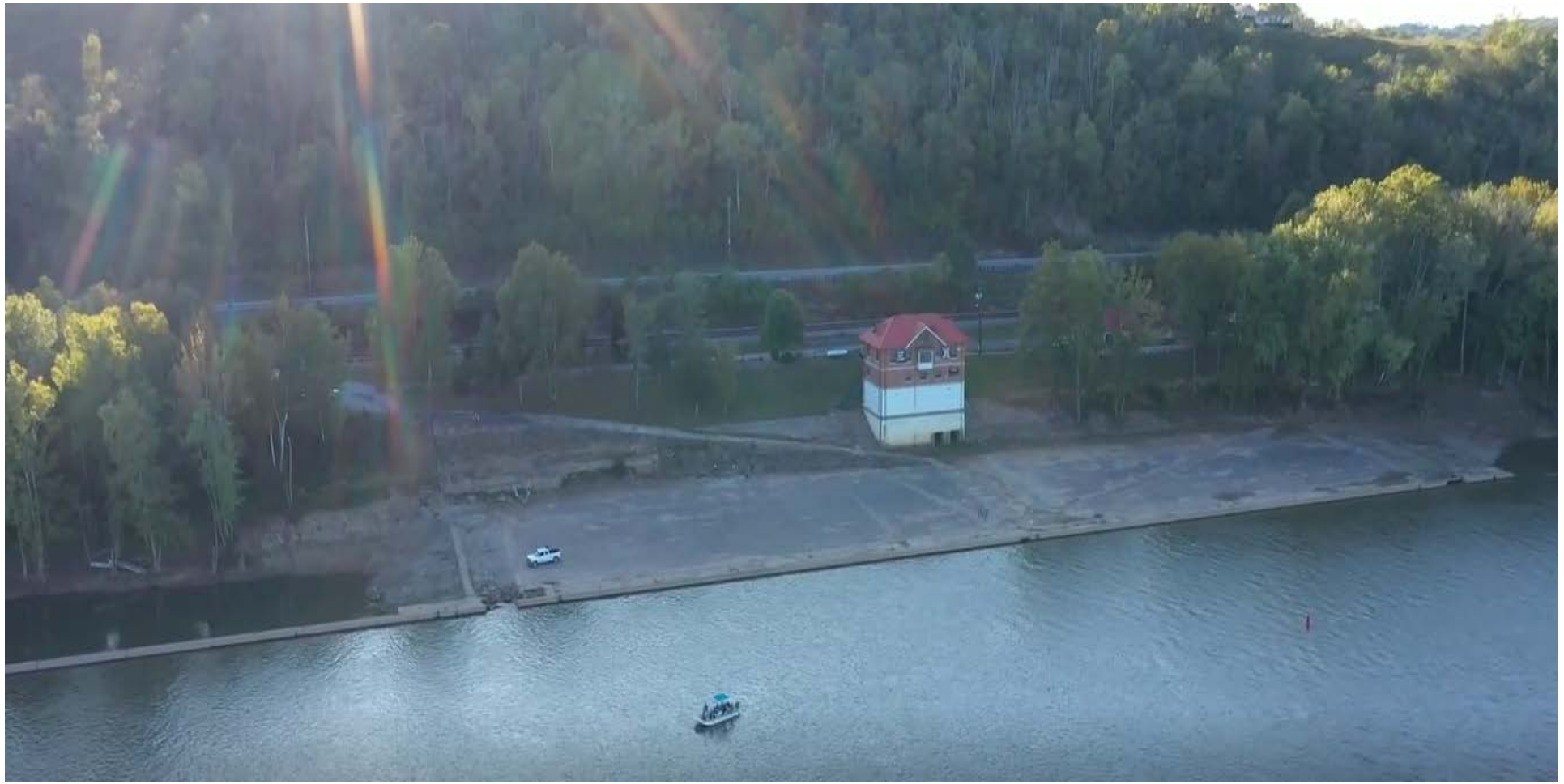
Thomas More University

231st Technical Committee Meeting
Embassy Suites RiverCenter,
Covington, KY
February 7-8, 2023

"Dispelling myths and misunderstandings about the water quality of the Ohio River: 50 years of aquatic research at the Thomas More University Biology Field Station "

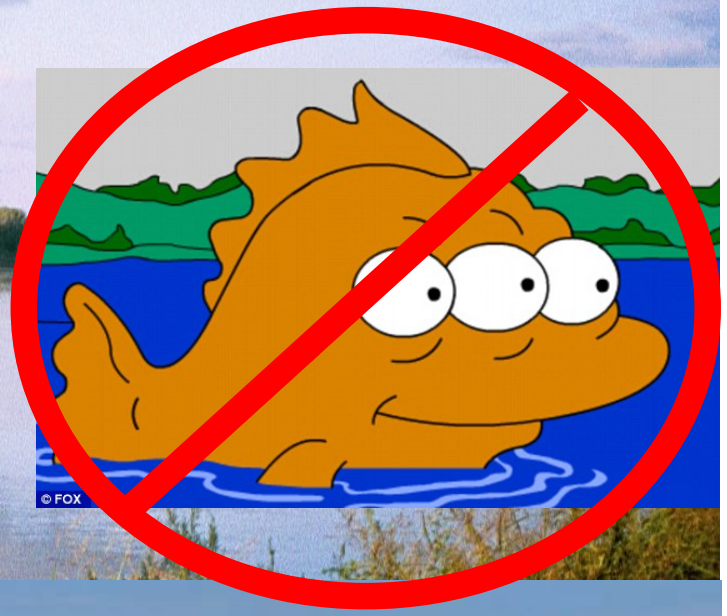
Chris Lorentz, Professor of Biological Sciences
Director, Biology Field Station and Environmental Science Program
Thomas More University

Thomas More University
Ohio River Biology Field Station



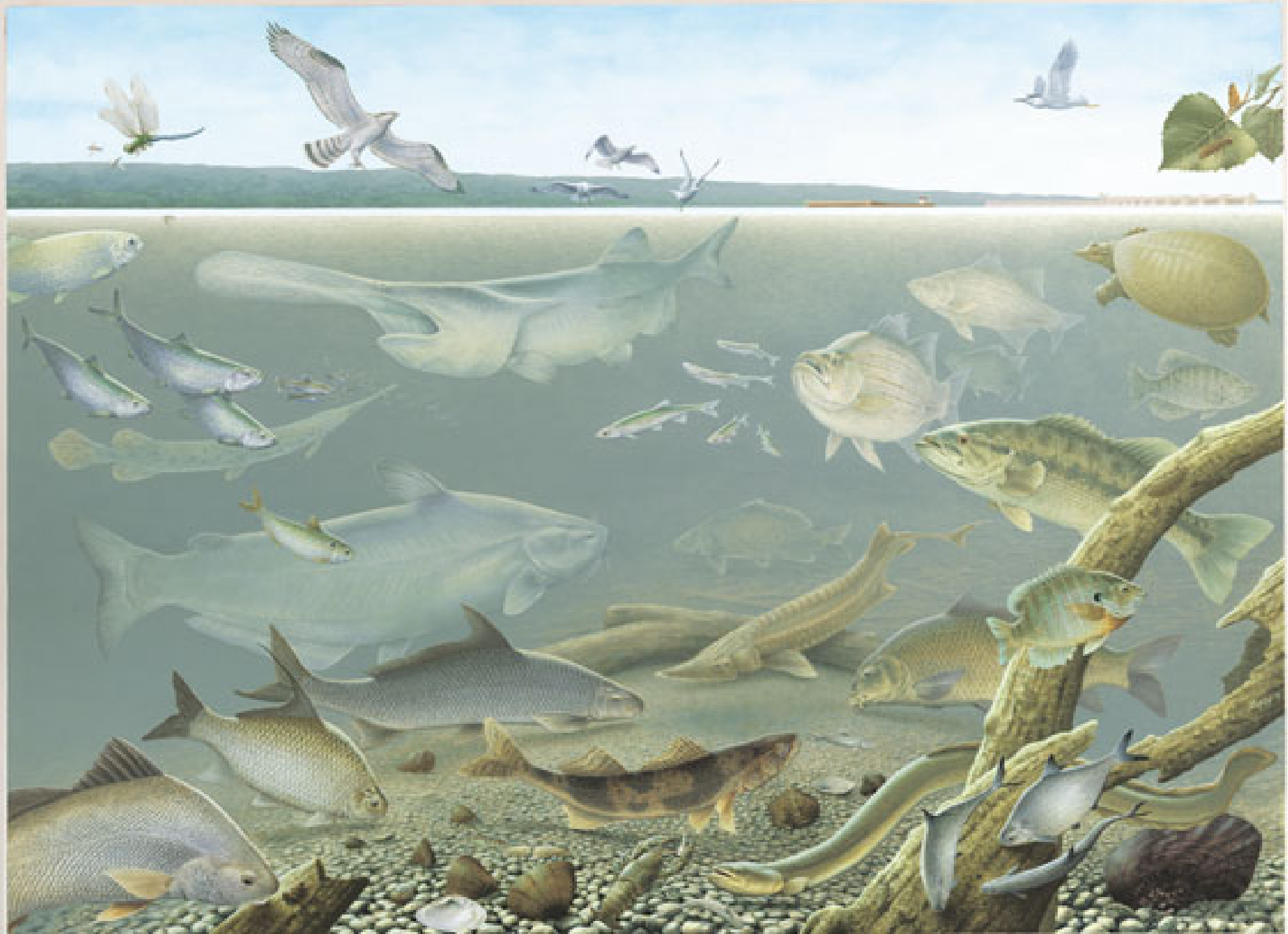
River Mile 451, Campbell County, KY, across from New Richmond, OH

The Ohio River is one of the most diverse rivers in the country from an ecological perspective, and arguably one of the most resilient.



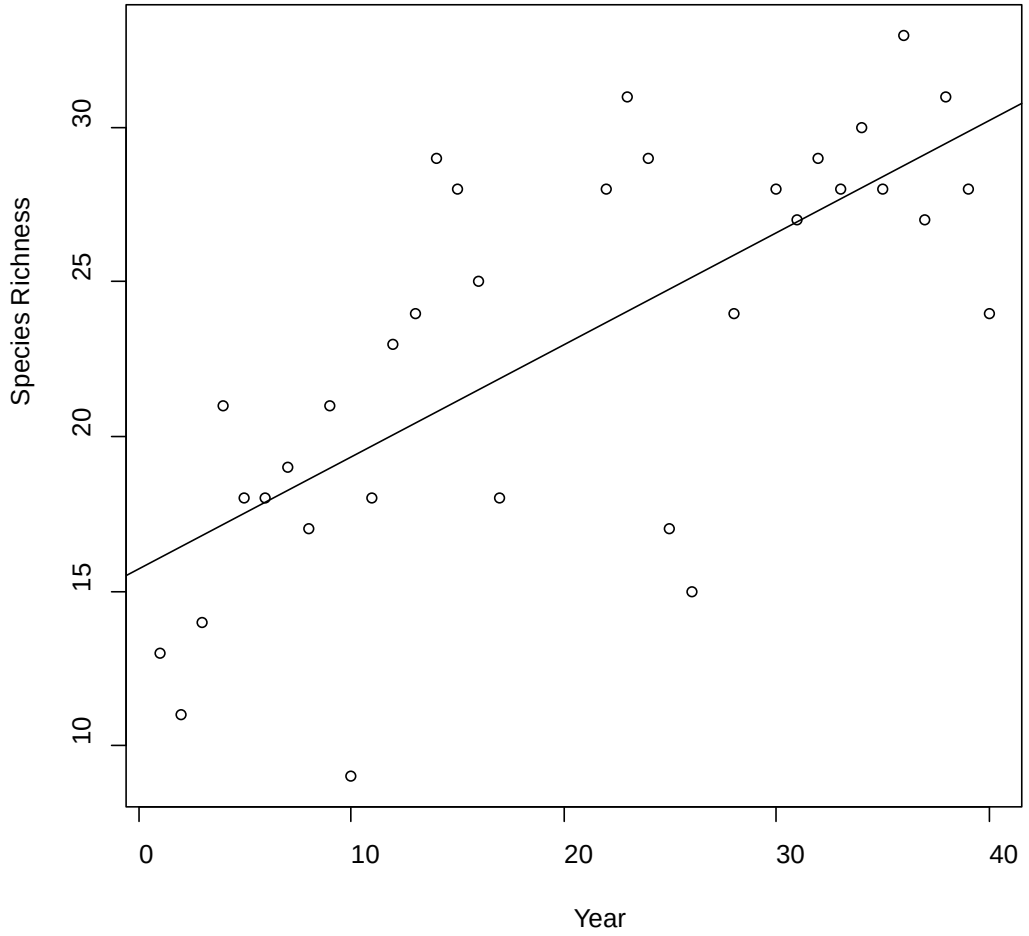
The Ohio River Supports Over 160 Species of Fish and Other Wildlife

ORSANCO
OHIO RIVER VALLEY WATER SANITATION COMMISSION
AN INTERSTATE AGENCY
ESTABLISHED JUNE 30, 1948



Species Richness

(significant increases over the last 50 years)

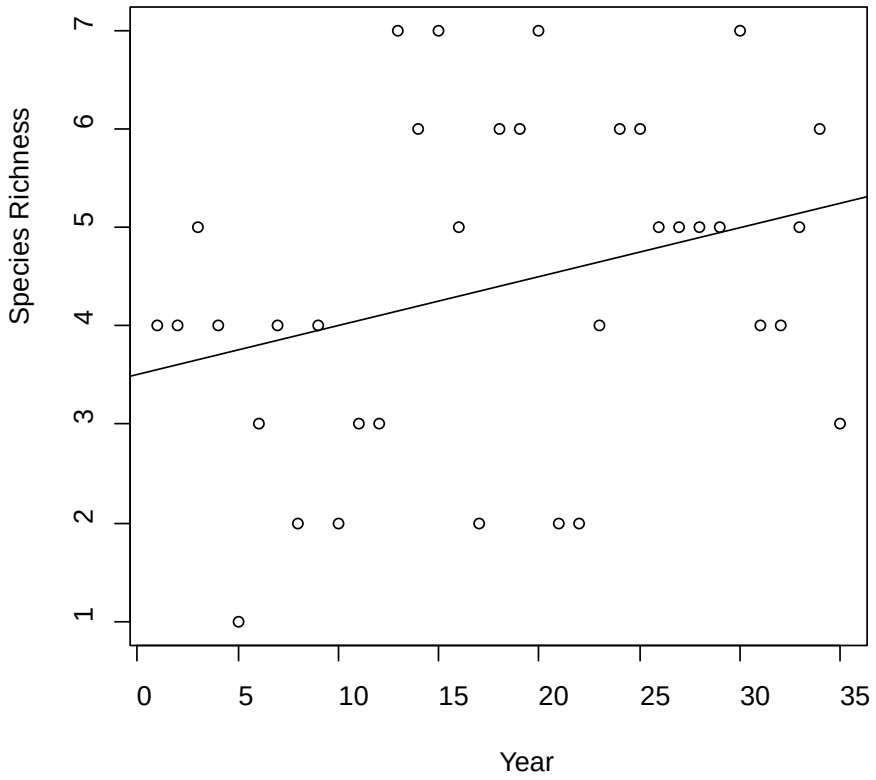


Fish Population Studies on the Ohio River from 1971-2022

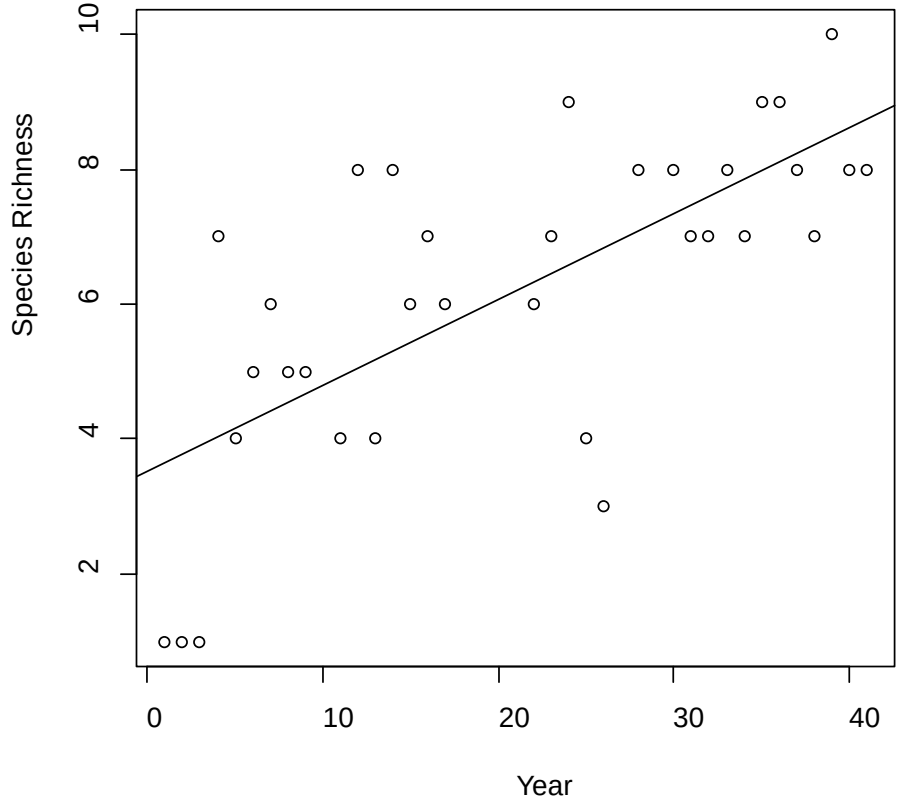
Thomas More University Biology Field Station

Sensitive Species Rebounding

Centrarchids



Catostomids



But what about articles and headlines like this?

Table ES-1. Top 10 Waterways for Total Toxic Discharges

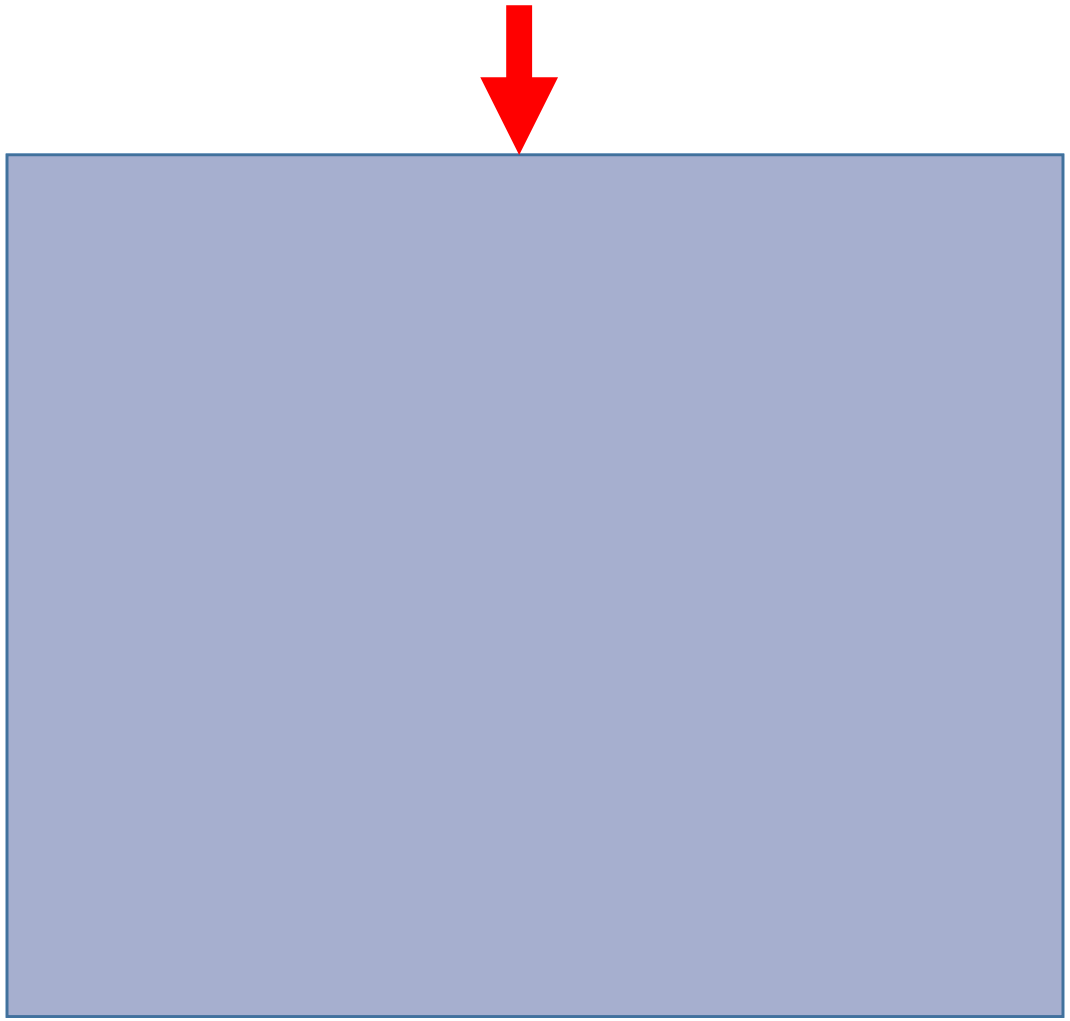
Waterway	Toxic discharges (lb)
Ohio River (IL, IN, KY, OH, PA, WV)	32,111,718
Mississippi River (AR, IA, IL, KY, LA, MN, MO, MS, TN, WI)	12,739,749
New River (NC, VA)	12,529,948
Savannah River (GA, SC)	9,624,090
Delaware River (DE, NJ, PA)	6,719,436
Muskingum River (OH)	5,754,118
Missouri River (IA, KS, MO, ND, NE)	4,887,971
Shonka Ditch (NE)	4,614,722
Tricounty Canal (NE)	3,386,162
Rock River (IL, WI)	3,370,39

https://www.motherjones.com/politics/2012/04/top-10-polluted-rivers-waterways/

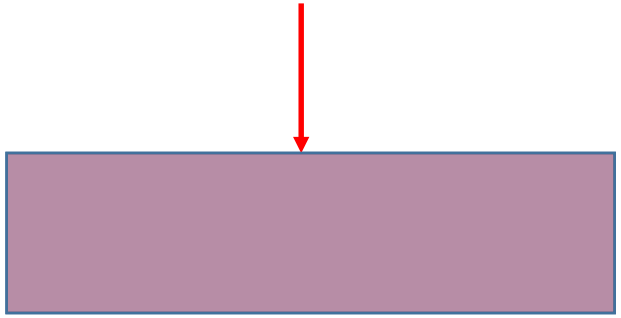
Over 70% of the compounds come from a single source:
nitrates in wastewater from the steelmaking process

Concentration and Density Matter

30,000 lbs. of chemicals

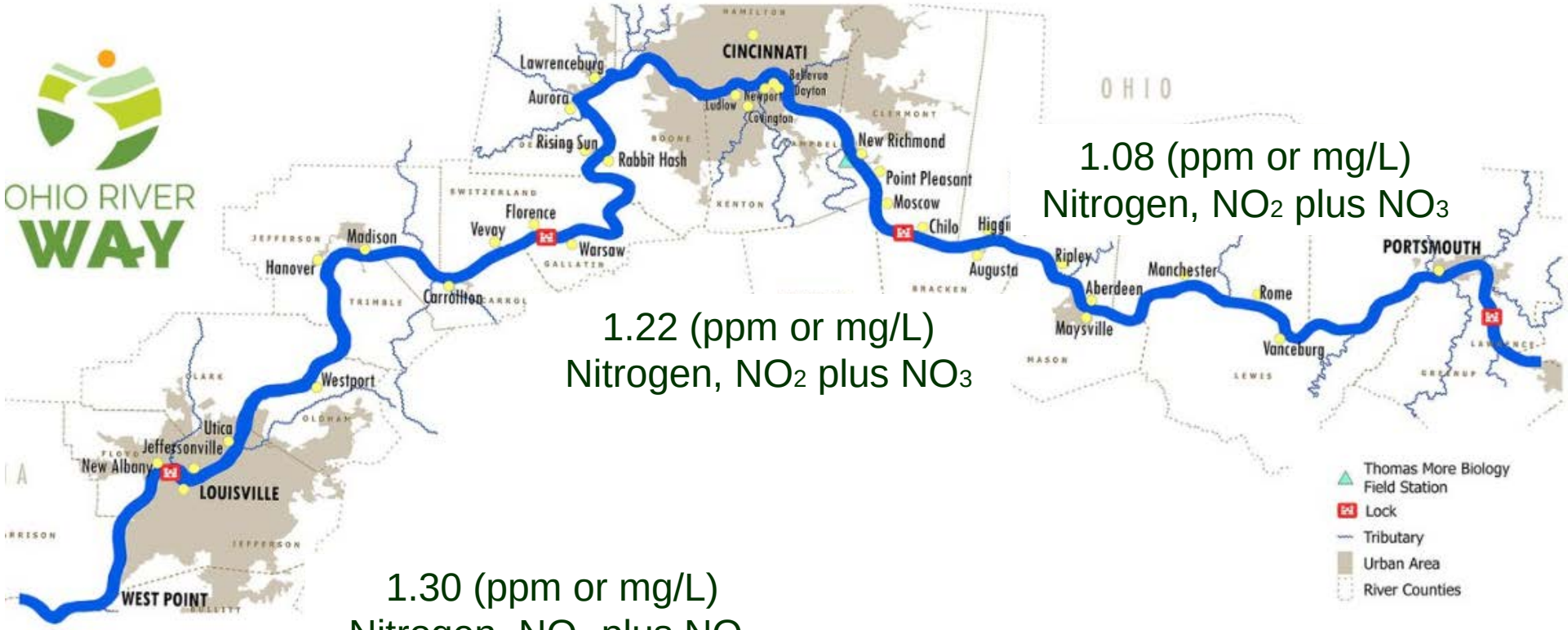


300 lbs. of chemicals



The large volume of water and discharge of the Ohio River does mitigate the impacts of chemicals.

The EPA Maximum Contaminant Level (MCL) nitrate is: **10 ppm** (parts per million) or mg/L (milligrams per liter) nitrate-nitrogen or, if expressed as **nitrate, 45 ppm.**



Discharges, particularly permitted discharges, do not necessarily equal violations or adverse impacts on water quality.

2020 GCWW WATER QUALITY REPORT

A Service of The City of Cincinnati

GREATER CINCINNATI WATER WORKS

Using the most advanced technology to bring you the cleanest, highest quality...

water

Our Most Essential Resource

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife;
- Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;
- Pesticides and herbicides, which may come from variety of sources such as agriculture, urban stormwater runoff and residential uses;
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and
- Radioactive contaminants, which can be naturally-occurring or the result of oil and gas production and mining activities.

2020 GCWW WATER QUALITY REPORT

GCWW Meets or Exceeds All State and Federal Health Standards

The Ohio River Resources

- Supports a rich, abundant diversity of aquatic life
- Provides an abundant source of drinking water
- What about contact recreation?
- Is it safe to boat, fish, and swim in the River?

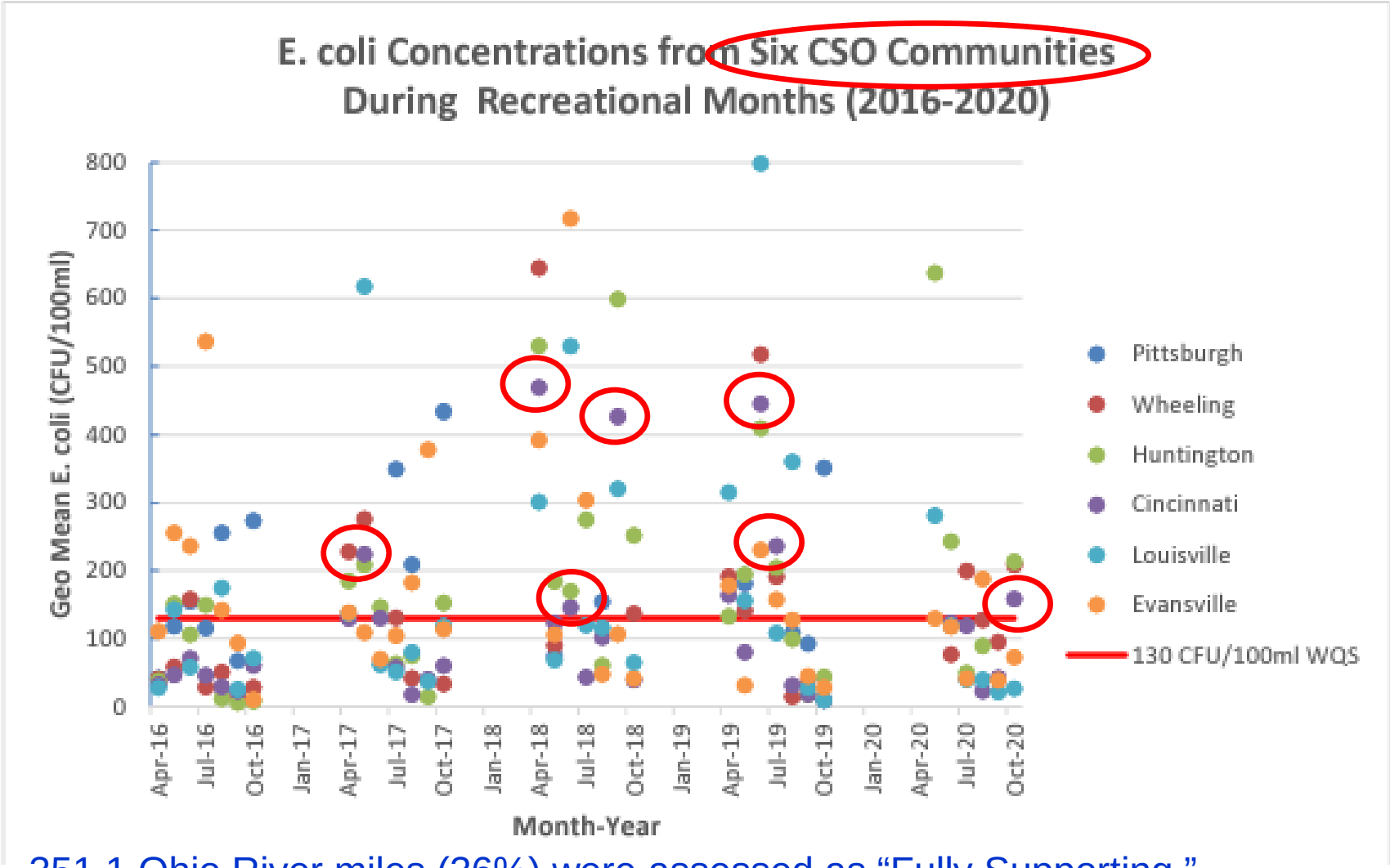
https://moversmakers.org/2016/07/18/paddlefest-canoes-kayaks-sups-and-and-party-ers-take-to-the-river/

https://www.greatohioriverswim.com/

Primary **Contact Recreation** Secondary

The standard for *E. coli* state that measurements should not exceed 130 colony forming units (CFU)/100mL as a 90-day geometric mean (at least five samples required per month).

Water Quality Conditions for Contact Recreation Standards are highly dynamic.



- 351.1 Ohio River miles (36%) were assessed as “Fully Supporting,”
- 391.6 river miles (40%) as “Partially Supporting,” and
- 238.3 river miles (24%) as “Not Supporting” the contact recreation use.

The Ohio River …

- Supports a rich, abundant diversity of aquatic life

- Provides an abundant source of drinking water, and

- Provides safe recreational opportunities, under suitable conditions.

Alongside these assets, there are several significant threats to the River, namely emerging contaminants, stormwater runoff, and habitat alteration.

Questions?

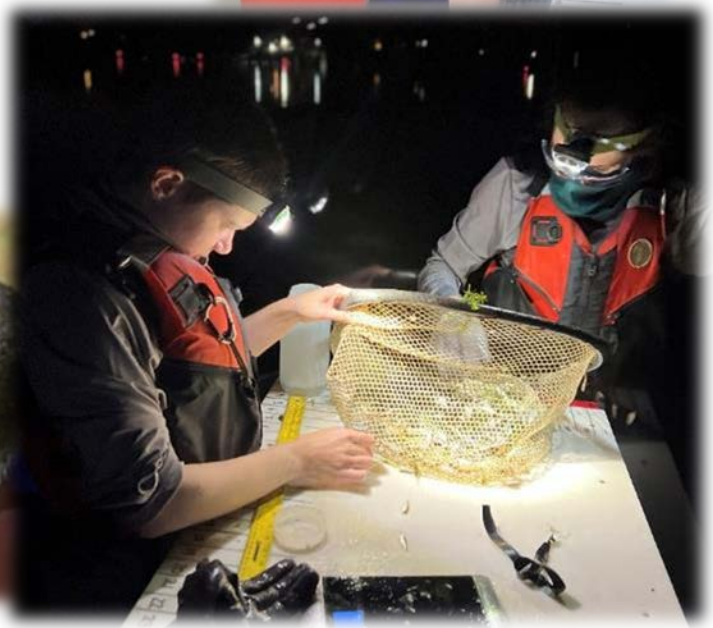
Agenda Item 4:
Biological Programs Update

Informative Item – No Action Required

Ryan Argo
rargo@orsanco.org

ORSANCO Biological Sampling Overview

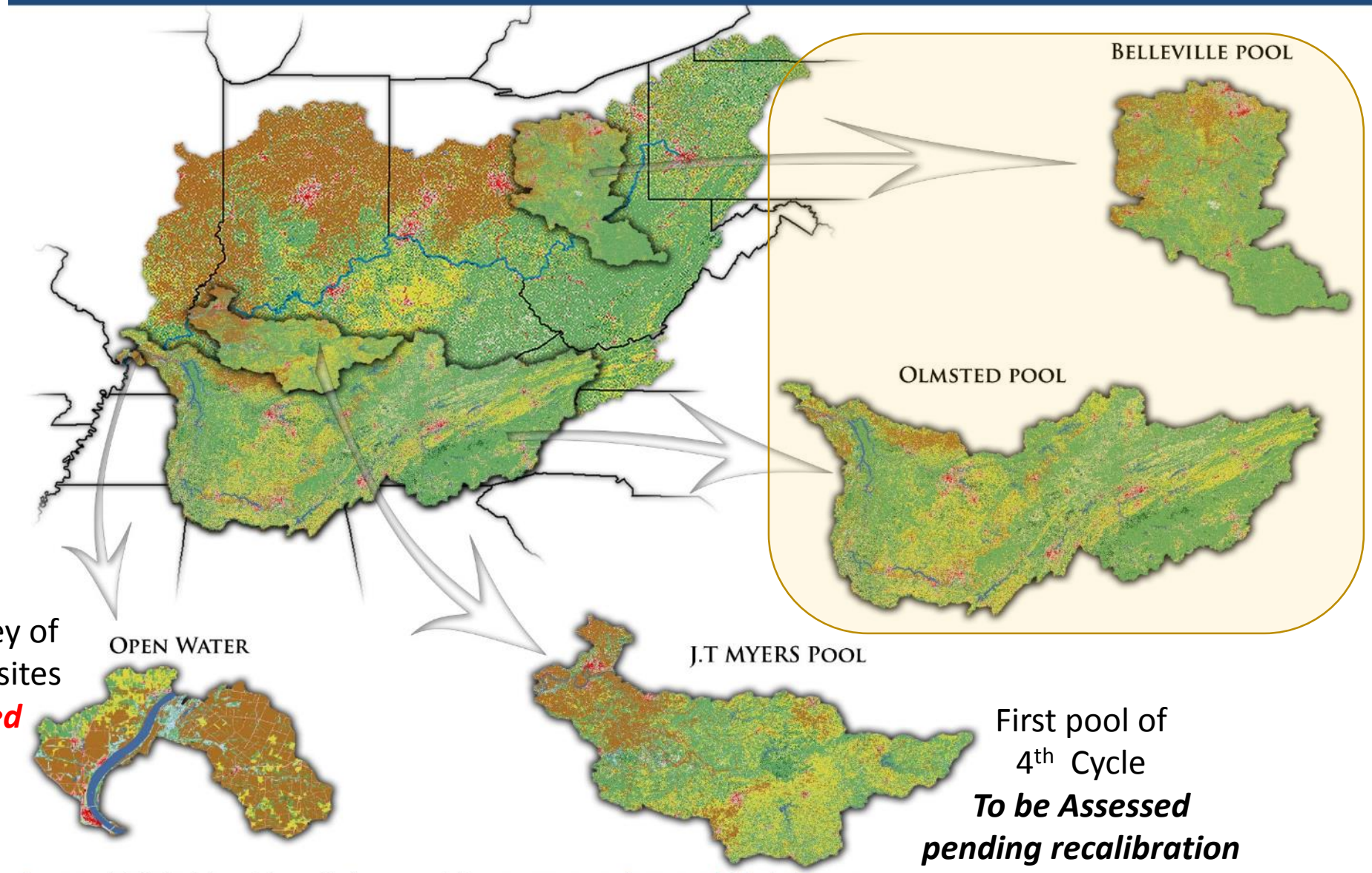
- Sample 3-4 pools per annually
  - Fish assemblages (night-time electrofishing)
  - Macroinvertebrate assemblages (Hester-Dendy, kick net)
  - Habitat assessment (benthic substrate, aquatic macrophytes)
- 15 random sites per pool (scores averaged)
  - Collectively represent the condition of pool
  - Scored using a fish (*m*ORFIn) and macro (ORMIn) indices
- 18 river-wide fixed stations (fish, macros, habitat); 2004-present
- River-wide fish tissue collection
  - Additional collections on behalf of IDEM
- Basin-wide mobile aquarium displays
  - Repairs to brakes, tires, and axles
  - Training new educational staff



Following Results reviewed with BWQSC during virtual meeting January 25th

2022 Pool Survey Results

The results of the 2022 biological surveys are detailed in the following pages (relative pool locations shown below). Included are brief descriptions of the land use & hydrology, site level mORFIn & ORMIn ratings, summaries of notible catches & instream habitat, and the overall biological condition of each pool.



Last pools of 3rd Cycle ***Assessed***

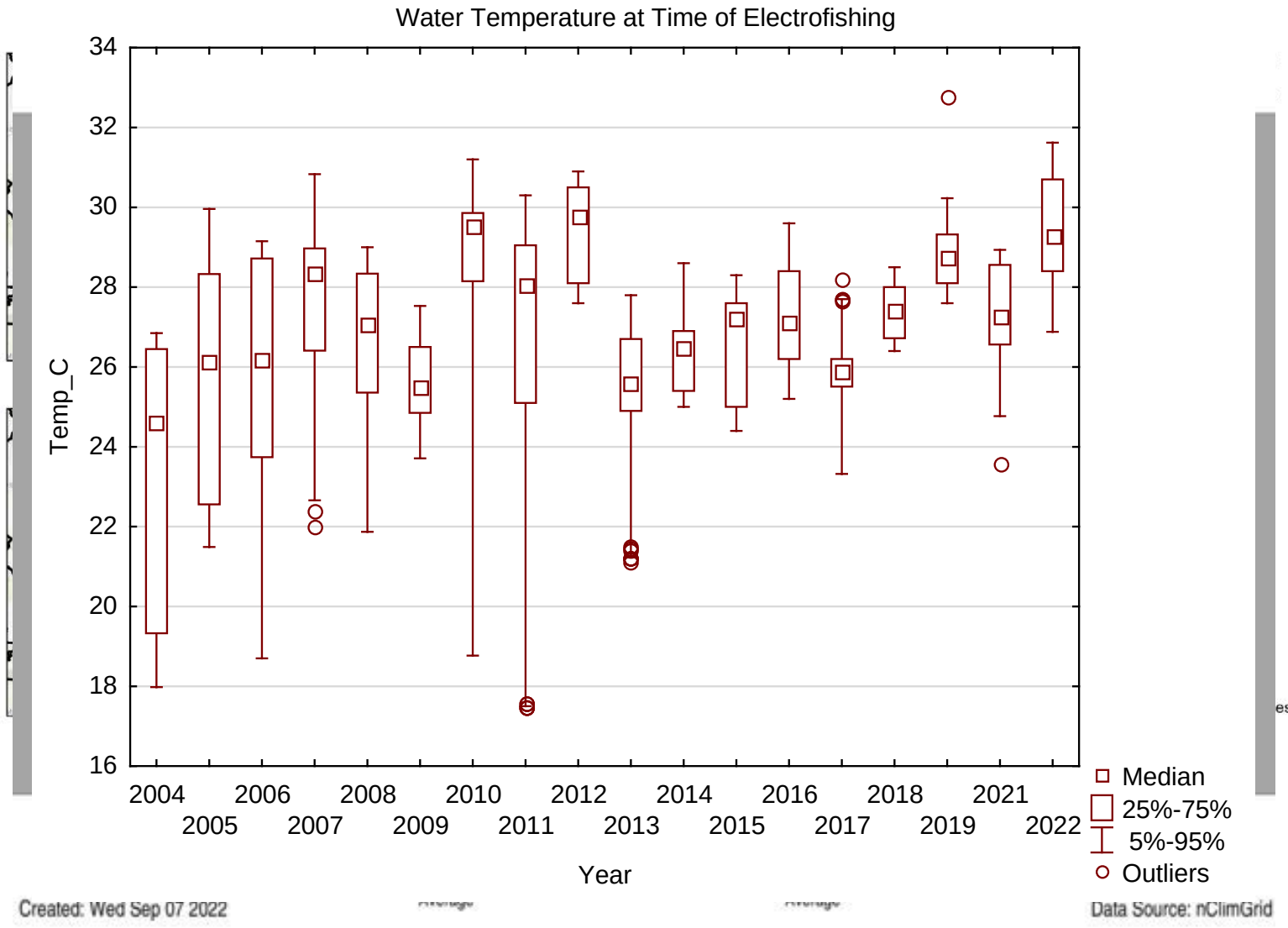
Special Survey of probabilistic sites ***Unassessed***

First pool of 4th Cycle ***To be Assessed pending recalibration***

For more detailed catch, metric, and index scores visit www.orsanco.org/programs/biological-programs

Sampling Conditions

- Minimal rain prior to EF completion
- Air Temps in High 80s – Mid 90s during EF
- Large Rain pulses in Late July- Early August
- Low flow, High Water temps during EF
  - Extreme low stage during Open Water



Belleville Pool

3rd Assessment Cycle

Fish Results – Approved by BWQSC

- ‘Fair’ Condition – 20.9
- Lower scores relative to prior survey
  - No. Species
  - % Invertivores
  - % Simple Lithophils

Awaiting Macroinvertebrates

- 14/15 Hester-Dendy’s Retrieved

Olmsted Pool

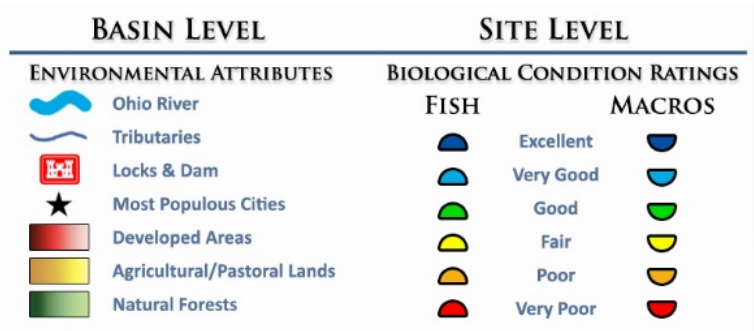
3rd Assessment Cycle

Fish Results – Approved by BWQSC

- 'Fair' Condition – 24.7
- Lower scores relative to prior survey
  - No. Species
  - Centrarchids
  - % Simple Lithophils

Awaiting Macroinvertebrates

- 13/15 Hester-Dendy's Retrieved



John T. Myers Pool

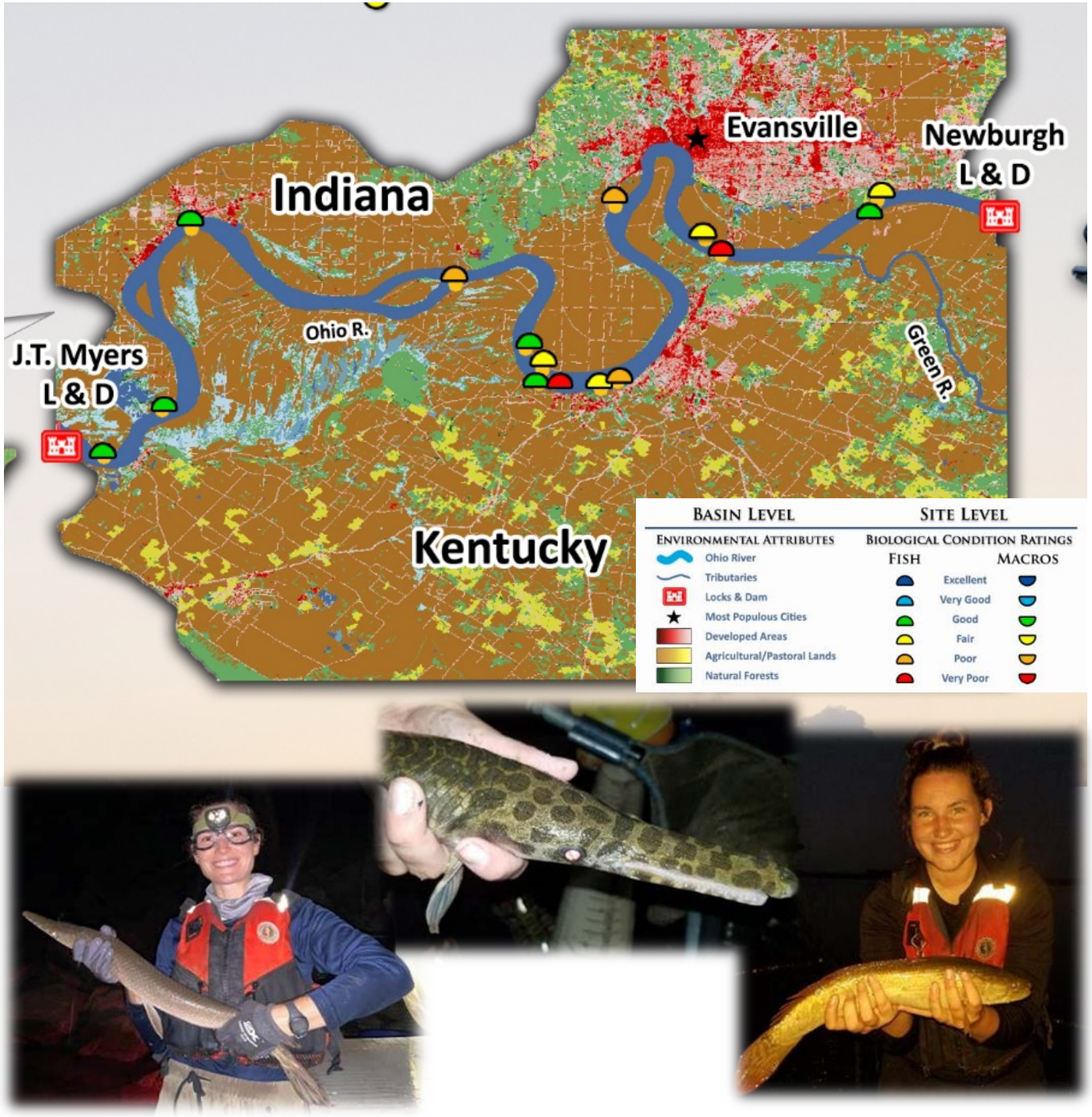
4th Assessment Cycle

Fish Results – Approved by BWQSC

- To be assessed with recalibrated indices
- Current *m*ORFIn: 'Fair' Condition – 22.1
- Lower scores relative to prior surveys
  - No. Species
  - Centrarchids
  - Round-bodied Suckers

Awaiting Macroinvertebrates

- Assessment pending recalibrations
- 11/15 Hester-Dendy's Retrieved



Open Water

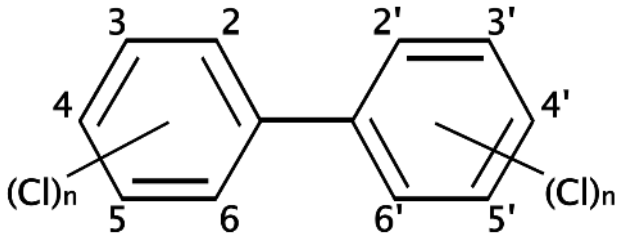
Special Survey

Fish Results – Reviewed by BWQSC

- To be used to evaluate other means of assessment

No Macroinvertebrates

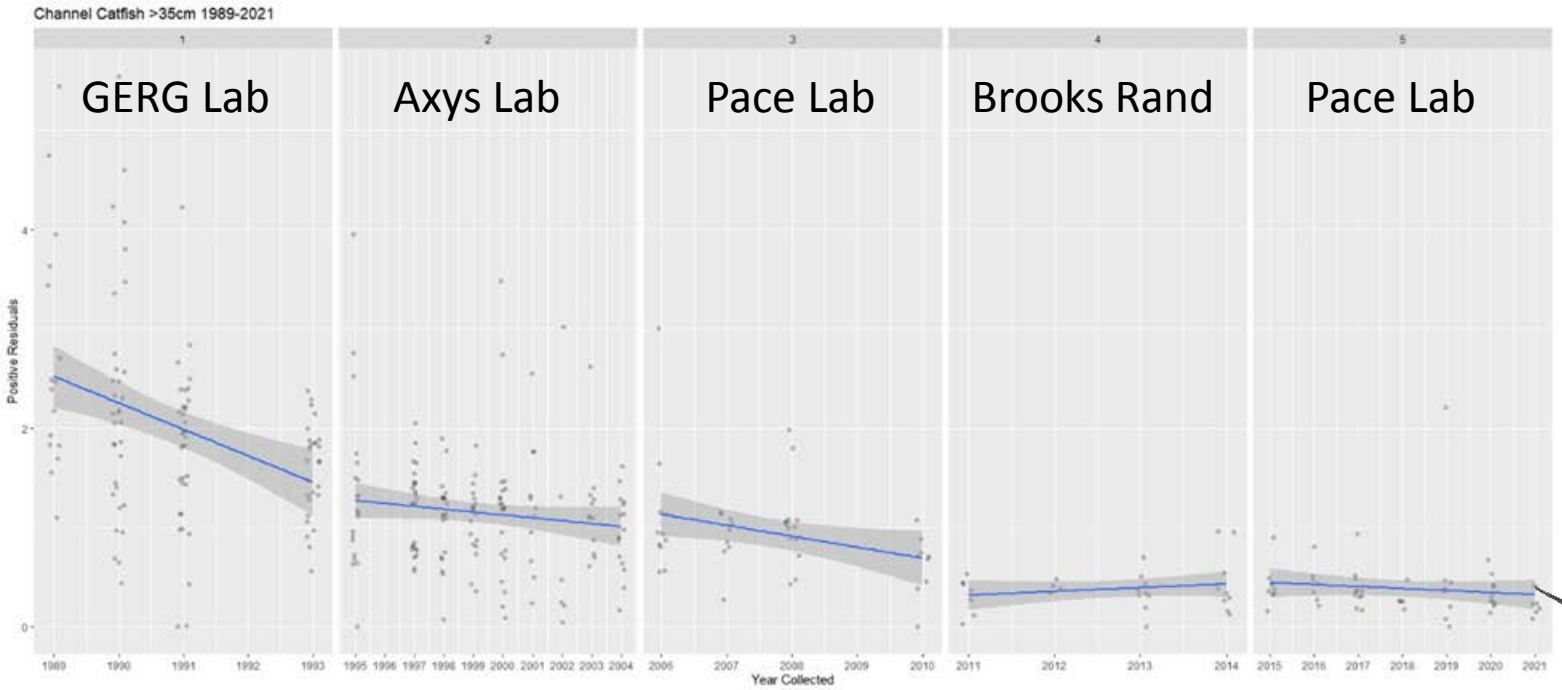
- HD retrieval success very low
- Water levels too low for kicks, low abundances



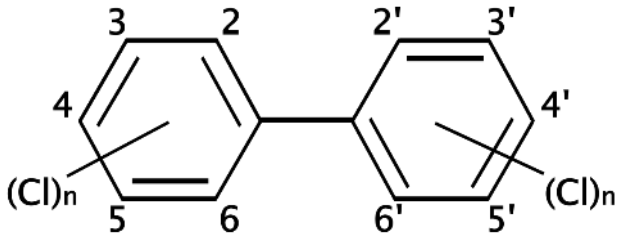
Polychlorinated Biphenyls in Channel Catfish Tissue

- Historic monitoring data was repurposed to examine long-term trends over time
- Inherent biases were identified and addressed through a variety of approaches
- Multiple ways of examining trends over time allowed for agreement across approaches bolstering confidence in observed trends

multiple regressions were used to simultaneously address multiple inherent biases



model outputs showed trends over time with the highest degree of removed biases



Polychlorinated Biphenyls in Channel Catfish Tissue

Select Results & Conclusions

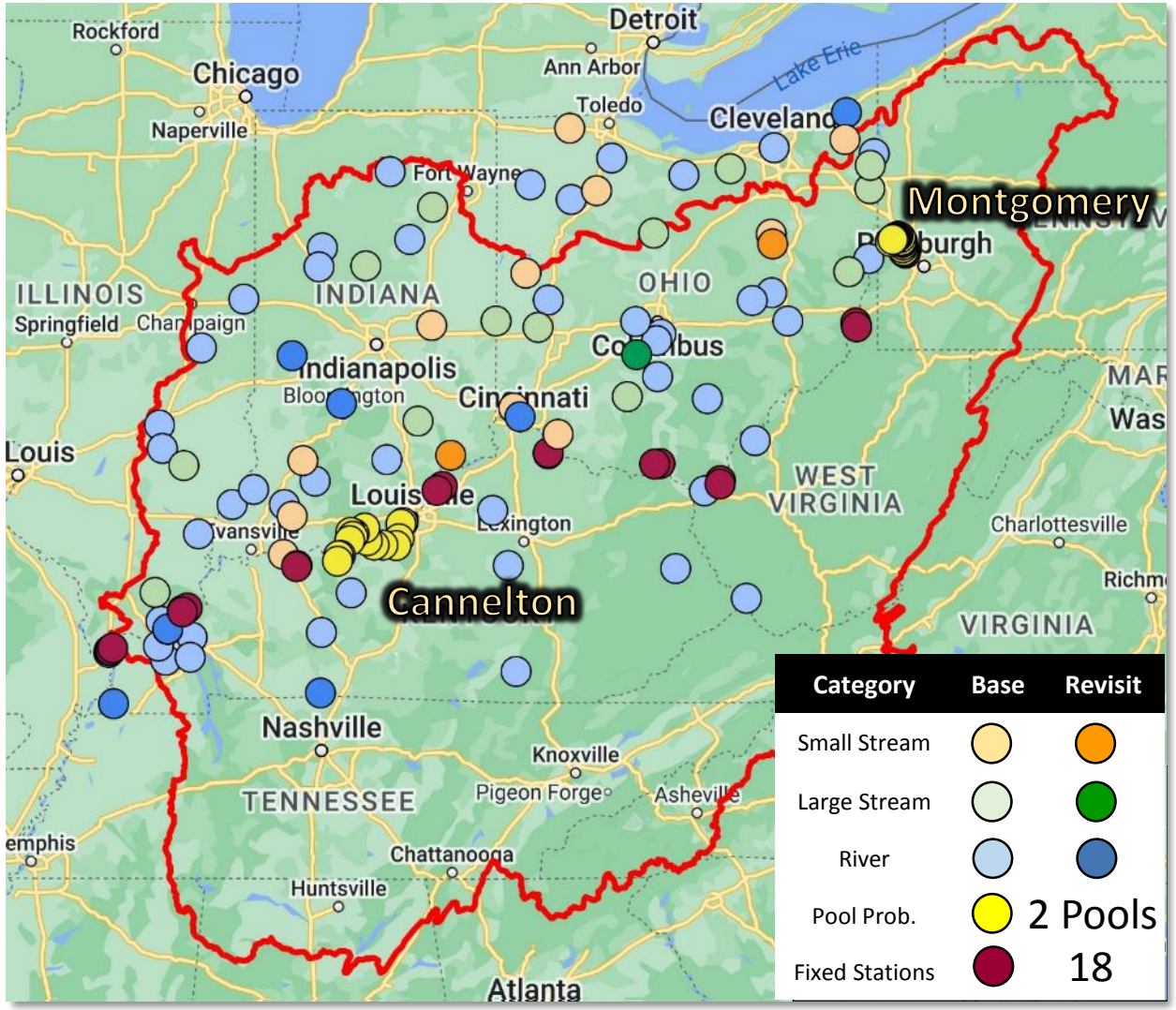
- PCBs decreased over time across all but the smallest data group
  - Compound mobility + natural degradation = decreased exposure
  - Lipid content also decreased over time
    - Observed across fresh and marine ecosystems possible climate change link
- Steepest rates of decline in older data groups, declining river mile trend
  - Tracks with historic sources & moratorium on PCB production

Report Timeline

- January 25th - Draft out for review by BWQSC members
- Staff will incorporate comments and distribute to TEC members
- Consideration for approval at June TEC meeting

NRSA and the 2023 Field Season

- 92 Events in 4 Ohio River Basin States
  - OH (40), KY (16), IN (23), IL (13)
- Funding Started in Oct. 2022
  - Contractual Fish Biologist (Ryan Hudson)
  - Began site recon and evaluation
    - Feasibility and Permission for access
    - In-person visits beginning in coming months
- Training in May with USEPA Reg. III
  - All crew leads must attend
- Equipment Repairs and Procurement



Biological Index Recalibration

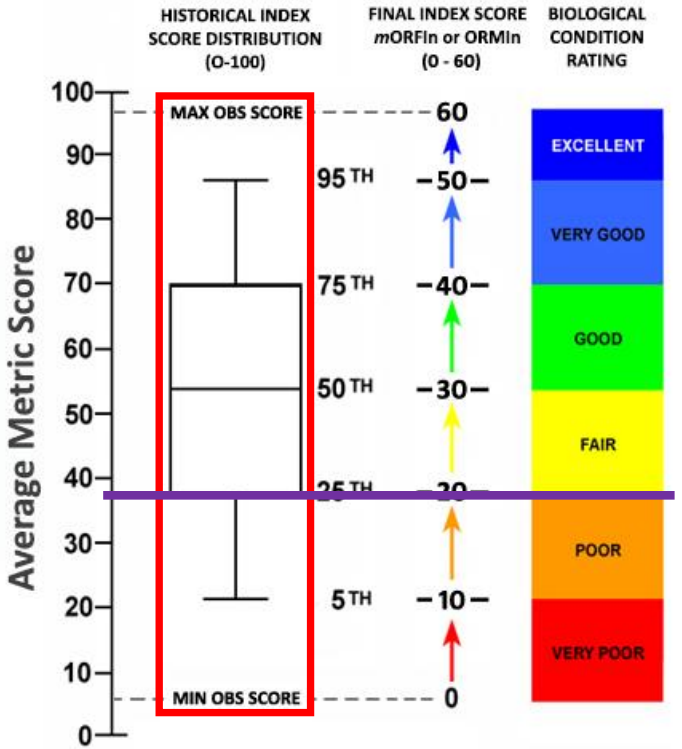
Biological Indices measure the relative health of an ecosystem by scoring components of the biological community

- Regular review and adjustment can benefit accuracy

- Criteria help protect the inherent quality of the ecosystem
  - Allows for detection of degradation or improvement

ORSANCO's Biological Indices

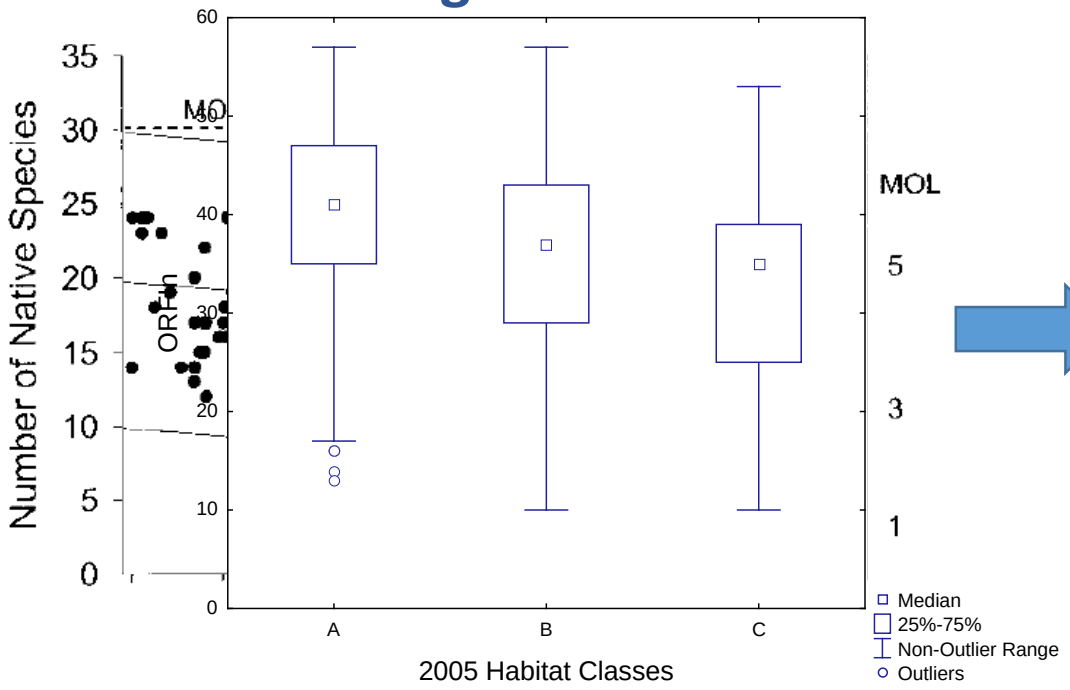
- Without discernible historic or reference condition
  - We use the 25th percentile of past scores from similar habitats
- A typical recalibration for ORSANCO indices would entail
  - Addressing known issues (e.g. logic or IBI advancements)
  - Adding recent biological data to the **calibration data**
  - Re-evaluating habitat class **expectations**
- Golden Rule: Only ever ***RAISE*** expectation during recalibration

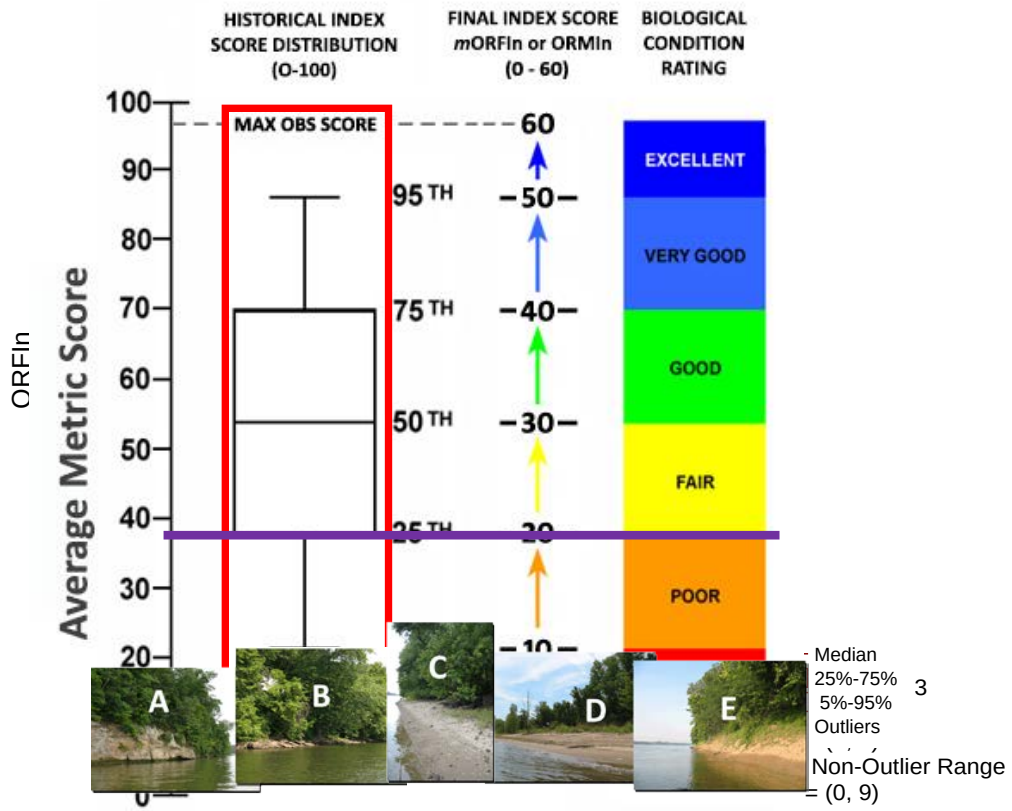


After 1st Cycle - 2010 Fish Index Recalibration

Known Issues	Resolutions
Discrete metric scoring	Continuous metric scoring
Wide range of scores per habitat class	Re-evaluated classes using 120+ habitat measures
	Added means to aggregate scores across habitats

Original ORFIn





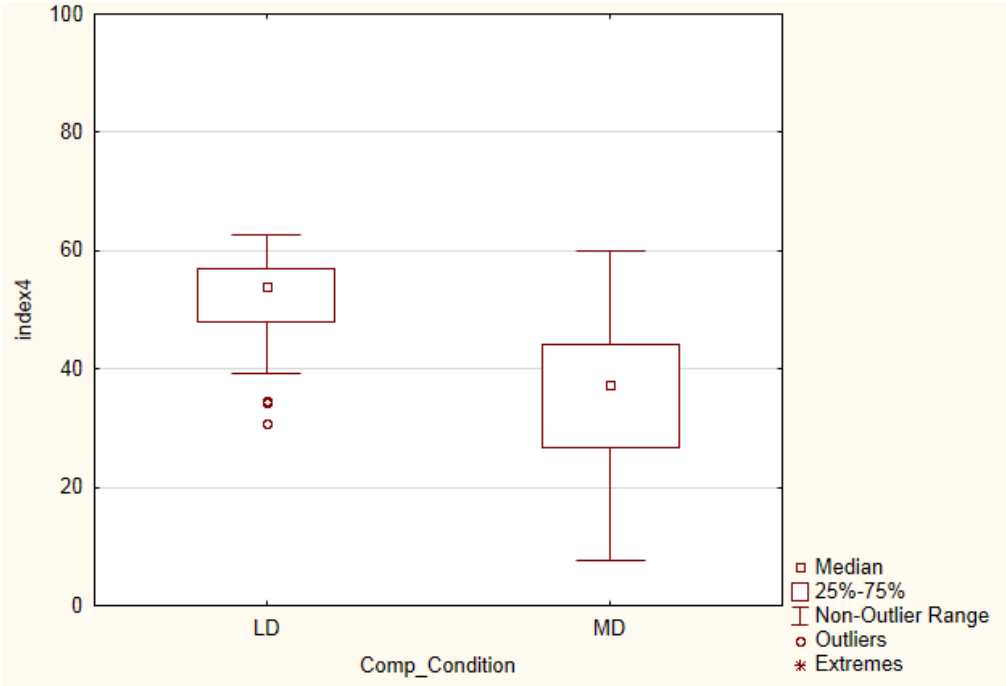
After 2nd Cycle – 2015 Macro Index (ORMIn)

Known Issues	Resolutions
ORFIn was derived based on idyllic fish assemblage - Tested at point sources (chemical, thermal, wastewater)	Develop a complementary, statistically derived macro index - Responsive to observed abiotic gradients on the Ohio River
Two indices are better than One	Incorporated into assessments

% Ephemeroptera Taxa

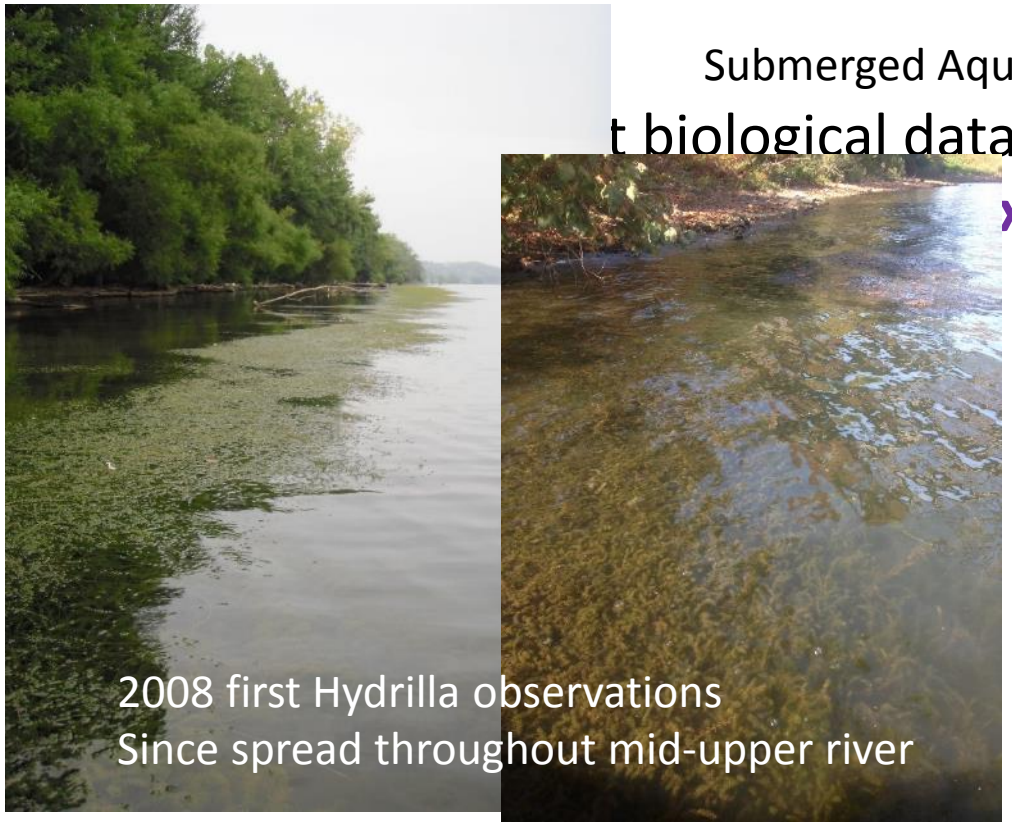
WATER CHEMISTRY NUTRIENTS

ORMIn (HD)



After 3rd Cycle - 2023 Index Recalibration

Known Issues	Possible Resolutions
SAV proliferation has shifted aquatic community structure - Generally results in inflated macro scores (more surface area) - Mixed effect on fish (overall departure from prior composition)	Treat SAV as an additional habitat type - Add SAV subcategories to each Habitat Class (Golden Rule) - Re-classify habitat classes with SAV variables (ala 2010)
Fine sediments are increasing on the main stem	



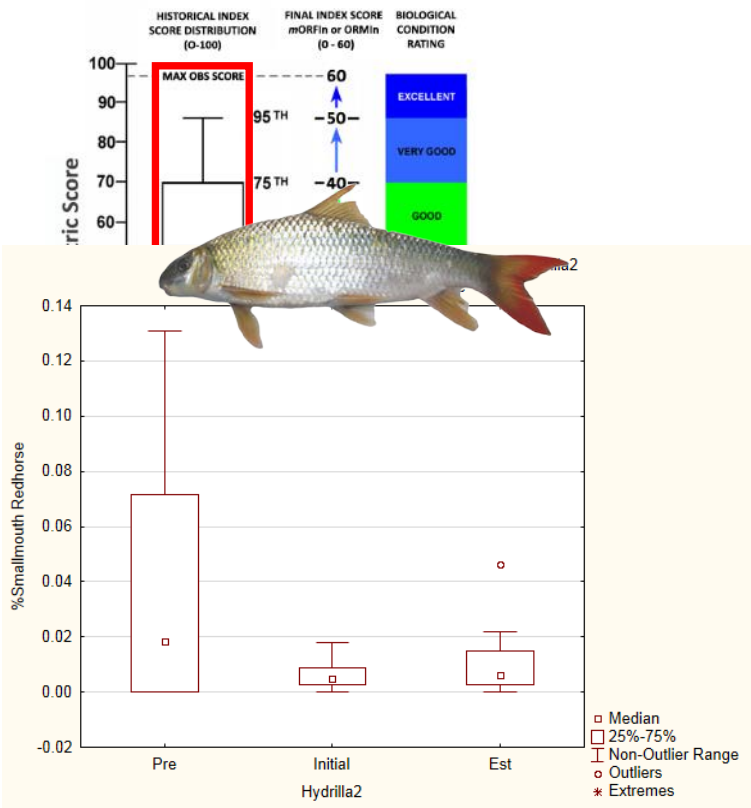
Submerged Aquatic Vegetation (SAV)

t biological data to the **calibration data**

xpectations

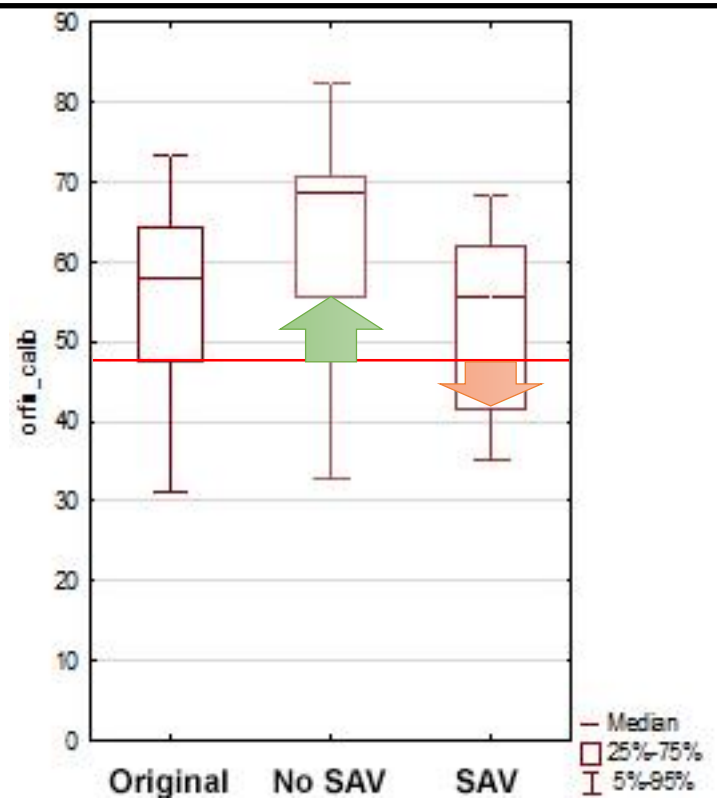
Myriophyllum spicatum

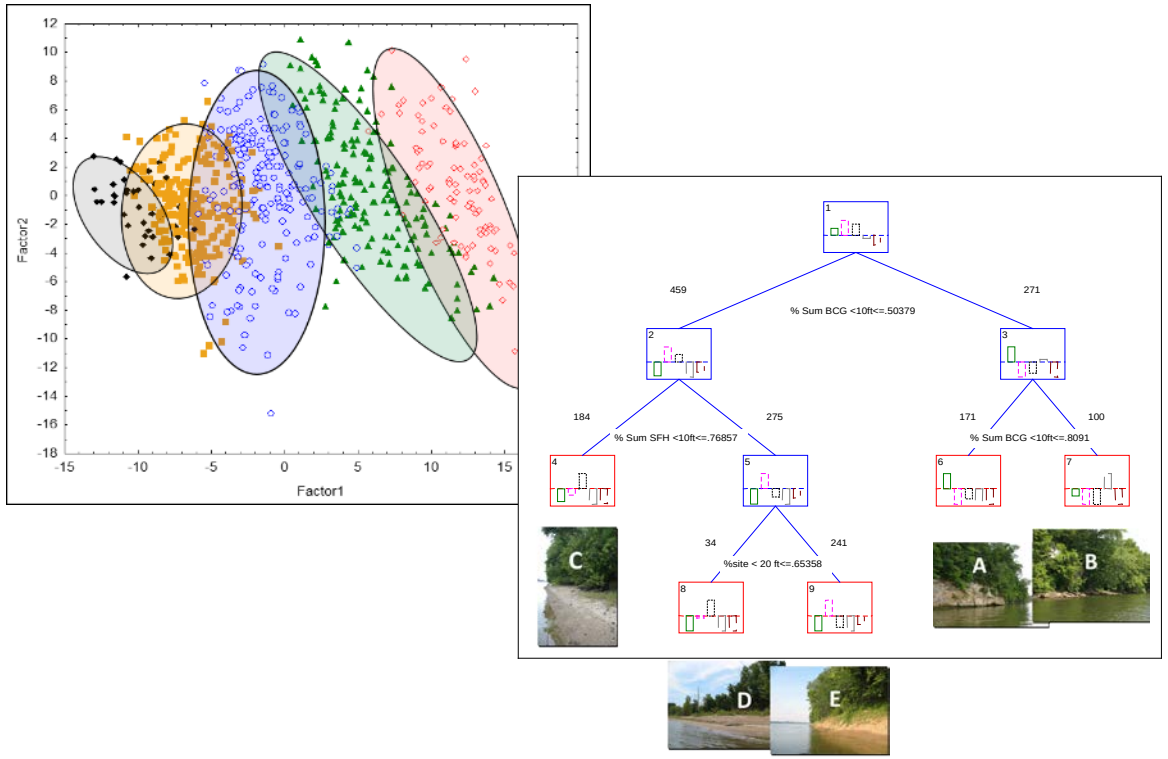
Hydrilla verticillata



After 3rd Cycle - 2023 Index Recalibration

Known Issues	Possible Resolutions
SAV proliferation has shifted aquatic community structure - Generally results in inflated macro scores (more surface area) - Mixed effect on fish (overall departure from prior composition)	Treat SAV as an additional habitat type - Add SAV subcategories to each Habitat Class (Golden Rule) - Re-classify habitat classes with SAV variables (e.g. 2010 *m*ORFIn)
Fine sediments are increasing on the main stem	**Index currently adjusts for this, but should it (applicable to SAV)**





Golden Rule: Only ever ***RAISE*** expectation during recalibration

Hypothetical Example: ↑ Fines at a site over time

TABLE 1. Spearman rank correlations ($\alpha = 0.05$) results for the 13 metrics of the modified Ohio River fish index (*m*ORFIn; $N = 2{,}362$) and two instream variables versus year from 1991 to 2016. For Secchi depth and fine/sandy substrate correlations, $N = 1{,}899$ and 2,166, respectively. Abbreviations: r_s = Spearman rank correlation statistic; Trend, + = increasing and − = decreasing; NS = not significant; DELT = deformities, erosions, lesions, and tumors.

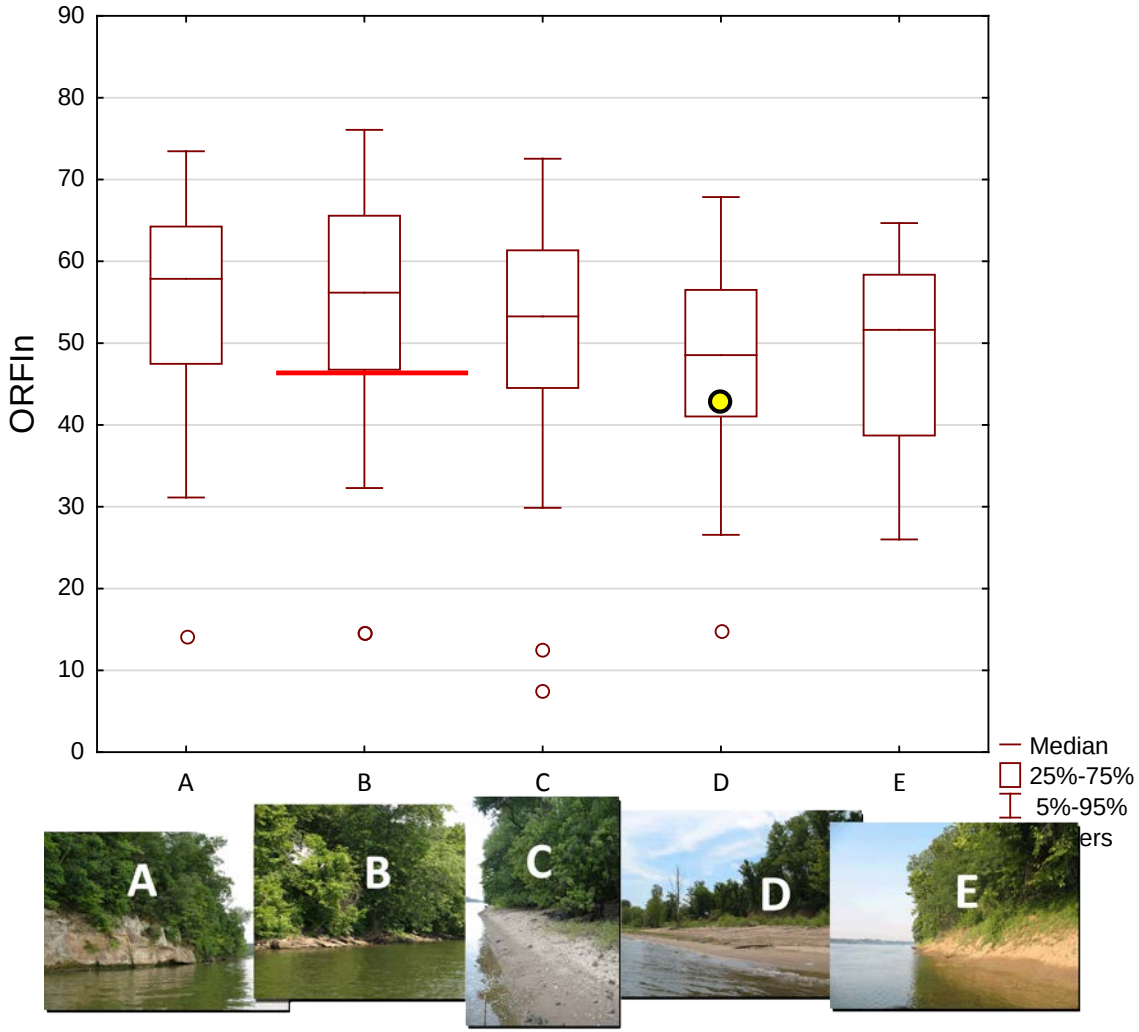
Metric	r_s	Trend
Fish		
Number of species	0.29	+
Number of sucker species	0.25	+
Number of sunfish species	0.19	+
Number of intolerant species	0.17	+
Number of great river species	0.15	−
Number of DELT anomalies	0.17	−
% individuals as tolerant species	0.18	NS
% individuals as omnivore species	0.17	−
% individuals as simple lithophils	0.17	−
% individuals as detritivores	0.19	−
% individuals as invertivores	0.28	+
% individuals as piscivores	0.15	−
Catch per unit effort	0.17	+
Instream		
Secchi depth	0.06	−
% fine/sandy substrates	0.10	+

Currently both indices control habitat influences to allow for detection of a response to water quality

e.g. Sedimentation is accounted for via Habitat Classes

- Simply hold sites/pools to a different standard

- We are effectively saying sedimentation isn't a stressor
  - Should we? Do we want the same for SAV?



Thomas, Jeff A., Schulte, Jerry G., Tennant, Peter A., Argo, D. Ryan. (2019). *Recovery of a Great River Fishery: The Story of the Ohio River*. Pages 211-227 *in* C. C. Krueger, W. W. Taylor, S. Youn, editors. From Catastrophe to Recovery: Stories of Fishery Management Success. American Fisheries Society, Bethesda, Maryland.

Potential Paths Forward

The Established - Proceed with incorporating SAV as a habitat component

- Not as a stressor and shift expectations accordingly

A New Path - Consider entirely new metrics, derivation methods, or assessment tool

- Measure of a deviation from established functionality, species/trophic level evenness
- Potentially combine macros and fish into one community index

Per our Compact - We are tasked to ensure the Ohio River maintains healthy aquatic communities

Constant Considerations

- What does that mean on a highly modified, impounded waterway?
- What aspects are we trying to preserve and maintain?
  - What an unimpounded Great River community should be (e.g. components of mORFIn, Great Rivers Species)
  - What a functioning healthy aquatic community of a modified system looks like (we attempt via 25%tile of past observations)
- What is considered a stressor, what should our resulting tools be calibrated to detect?

Summary of BWQSC Recommendations

1. Approval of the 2022 fish survey results for inclusion in final pool assessments
2. Recommend delaying the assessment of John T. Myers pool until review and potential calibration of biological indices is completed
3. Members will continue review of the draft PCBs Trends in Fish Tissue report, providing any comments in the near future
4. Support continued review and recalibration of existing indices to account for latest data trends and the effects of SAV
5. Convene a meeting in April to review
   - Final 2022 pool assessments
   - Progress towards index recalibration
   - 2023 Field season Priorities

Agenda Item 5:

Source Water Protection & Emergency Response Programs Update

Sam Dinkins

SOURCE WATER PROTECTION EMERGENCY RESPONSE GULF OF MEXICO HYPOXIA

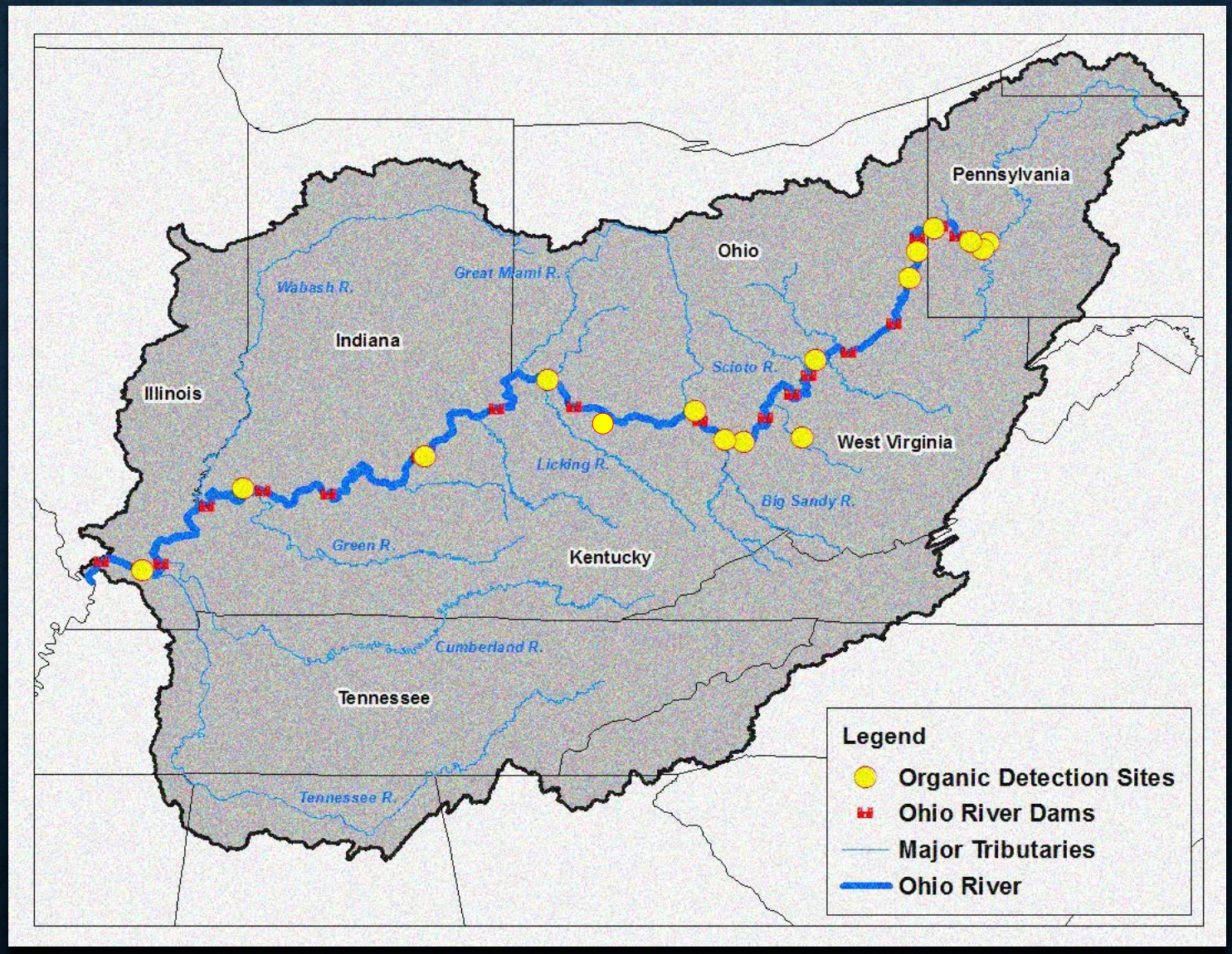
Technical Committee

February 6-7, 2023

OUTLINE

- Source Water Protection
  - Organics Detection System Status
  - Upper Ohio River Basin Activities
- Emergency Response
  - Mahoning River Benzene Detections
- Gulf of Mexico Hypoxia Task Force
  - Task Force Funding Opportunity

ORGANICS DETECTION SYSTEM MAP



ORGANIC DETECTION SYSTEM UPDATE

- Recurring issues with CMS5000 units
- Purchased GC/MS Instrument
  - Demo unit used by manufacturer for training
  - Cost is approx. 1/3 retail price
  - New unit will be installed at Portsmouth, Ohio site
- Data Management & Alert System Project
  - Develop centralized data management system and automated alert system to notify staff when detections occur
  - Under contract with RedHawk Technologies
  - Development initiated in December 2022
  - Completion expected in first half 2023

UPPER OHIO RIVER BASIN SOURCE WATER PROTECTION

- Exploring potential expanded role for ORSANCO to address source water protection needs in upper basin
- Potential areas for expanded activities ???
  - Create Southwest PA Water Users Committee
  - Develop spill notification directory
  - Extend spill notifications to upper basin tributaries
  - Extend spill response services to tributaries
  - Source water protection planning assistance
    - Centralized hub WaterSuite Contaminant Source Inventory software

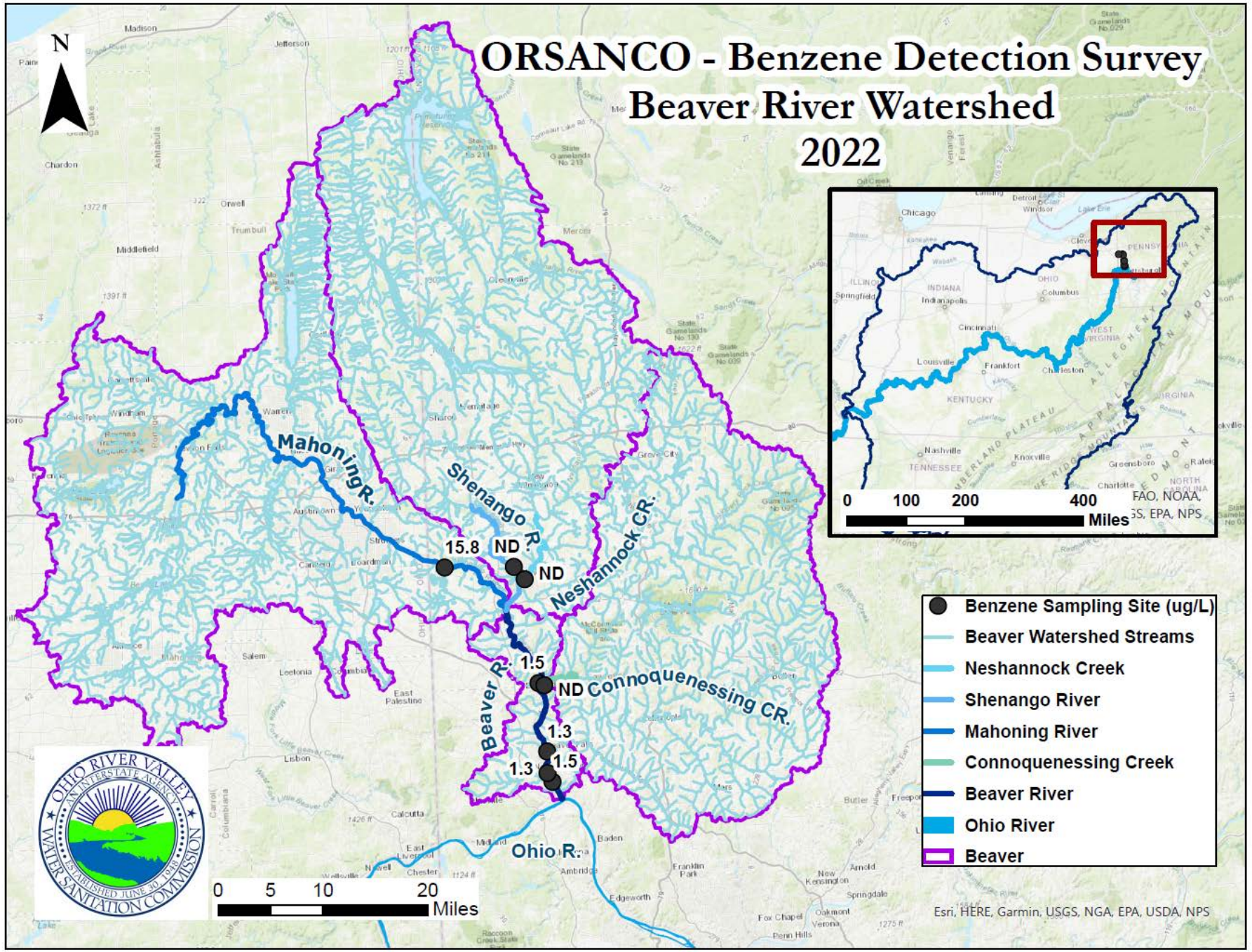
- Ongoing discussions regarding need/desire and possible funding mechanisms

TIMELINE OF RESPONSE TO BENZENE/TOLUENE DETECTIONS

- Feb 1, 2022 – First detected benzene @ Midland, PA (ORM 36)
  - No spills reported
- Feb 3 – Benzene detected @ Weirton (16:00)
- Feb 4 – Benezene detected @ Wheeling (08:00)
- Feb 6 – USEPA/PADEP collected samples upstream of West View
  - All non-detect

TIMELINE OF RESPONSE TO BENZENE/TOLUENE DETECTIONS

- Feb 11 – Beaver Falls receives results of benzene detection from Feb 2
- Feb 11 – ORSANCO detects benzene in Beaver River
- Feb 12 – ORSANCO samples throughout Beaver River watershed
  - Detected benzene in Mahoning River
- Feb 16 – OEPA and PA DEP conduct sampling on Mahoning R.
  - Isolate source area to 4-mile stretch of river
- Identification of specific source elusive

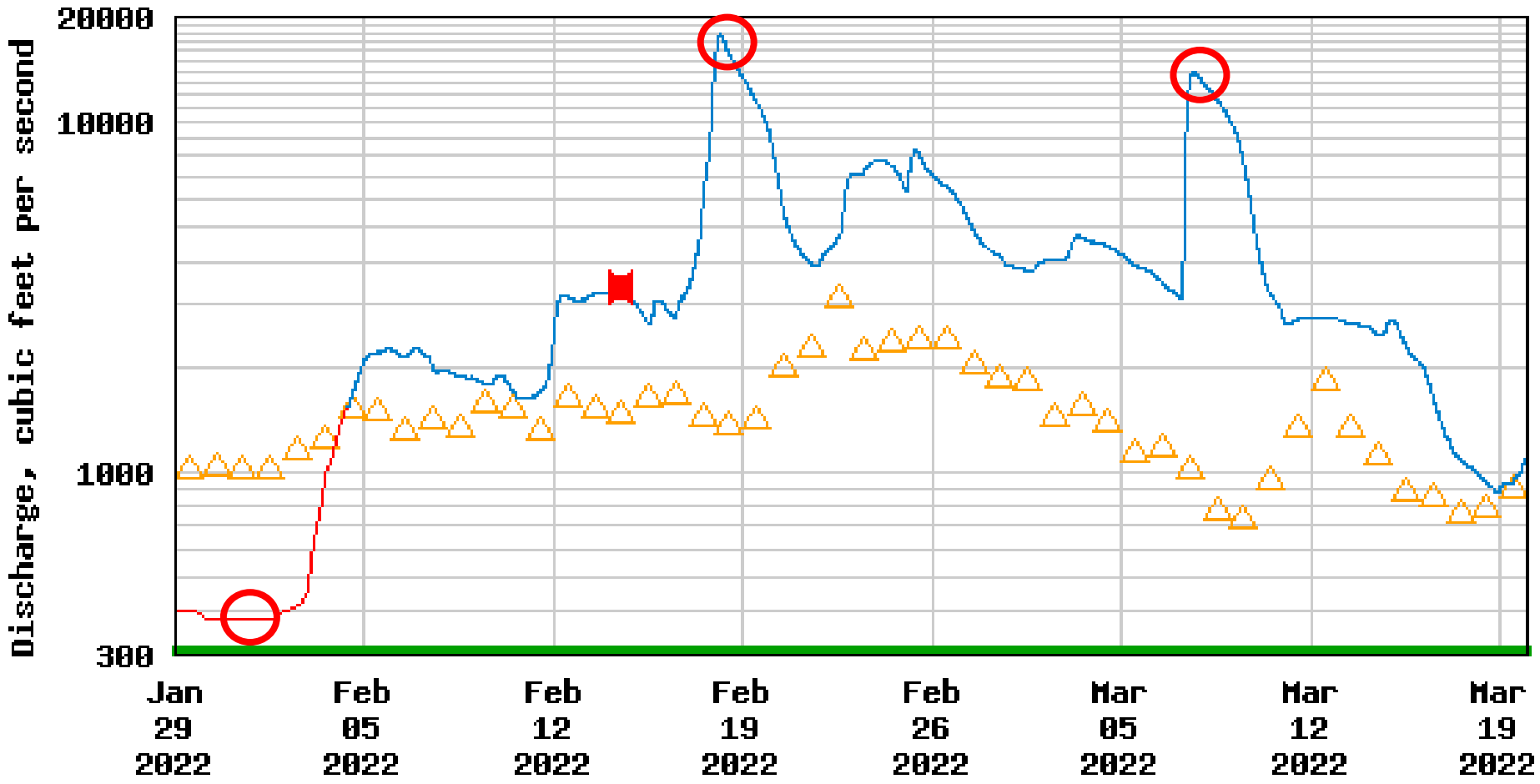

ORSANCO - Benzene Detection Survey
Beaver River Watershed
2022
N
Mahoning R.
Shenango R.
Neshannock CR.
Beaver R.
Connoquenessing CR.
Ohio R.
15.8
ND
ND
1.5
ND
1.3
1.3
1.5
0 5 10 20
Miles
0 100 200 400
Miles
Benzene Sampling Site (ug/L)
Beaver Watershed Streams
Neshannock Creek
Shenango River
Mahoning River
Connoquenessing Creek
Beaver River
Ohio River
Beaver
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS
FAO, NOAA,
GS, EPA, NPS

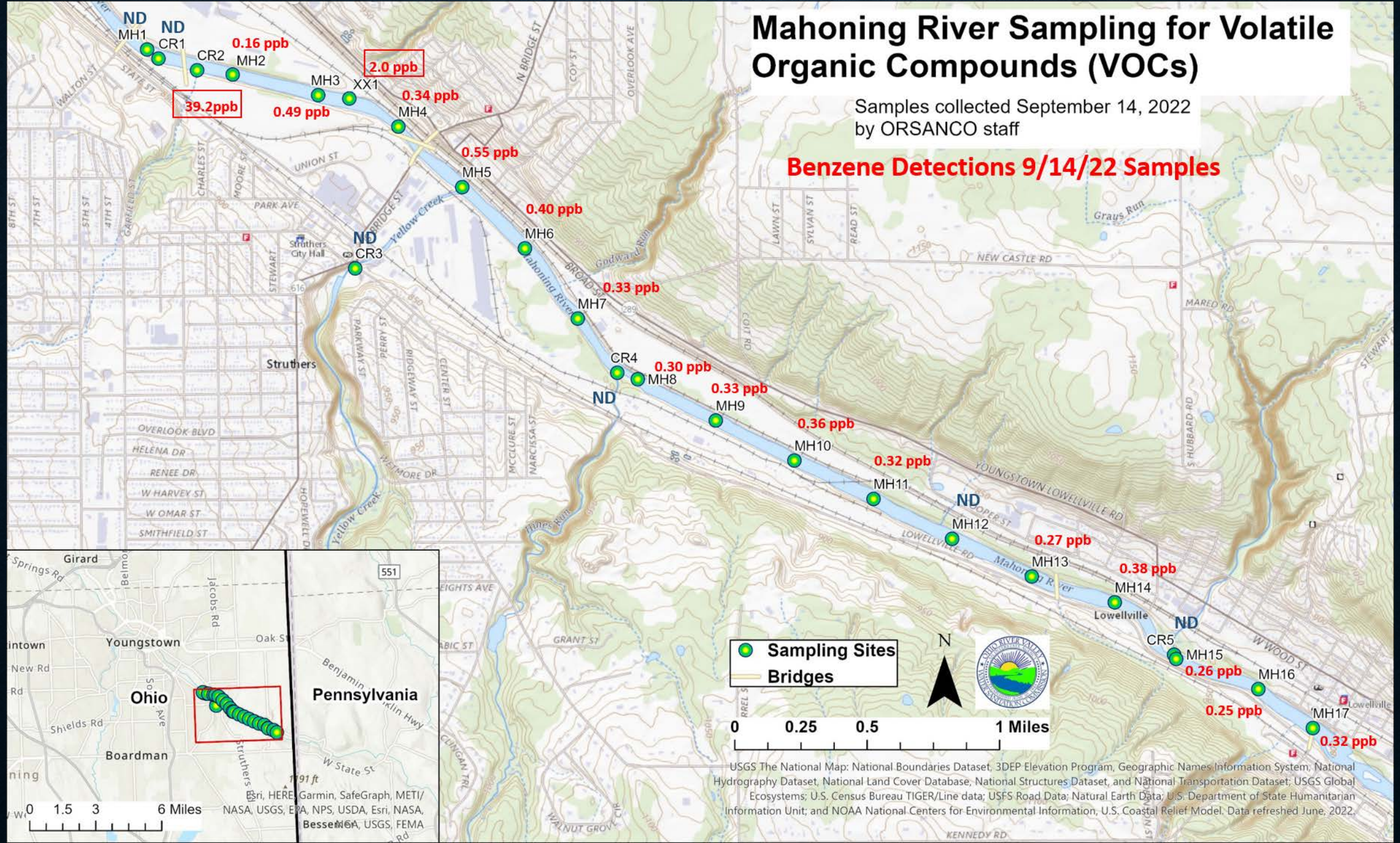
PERSISTENT PRESENCE

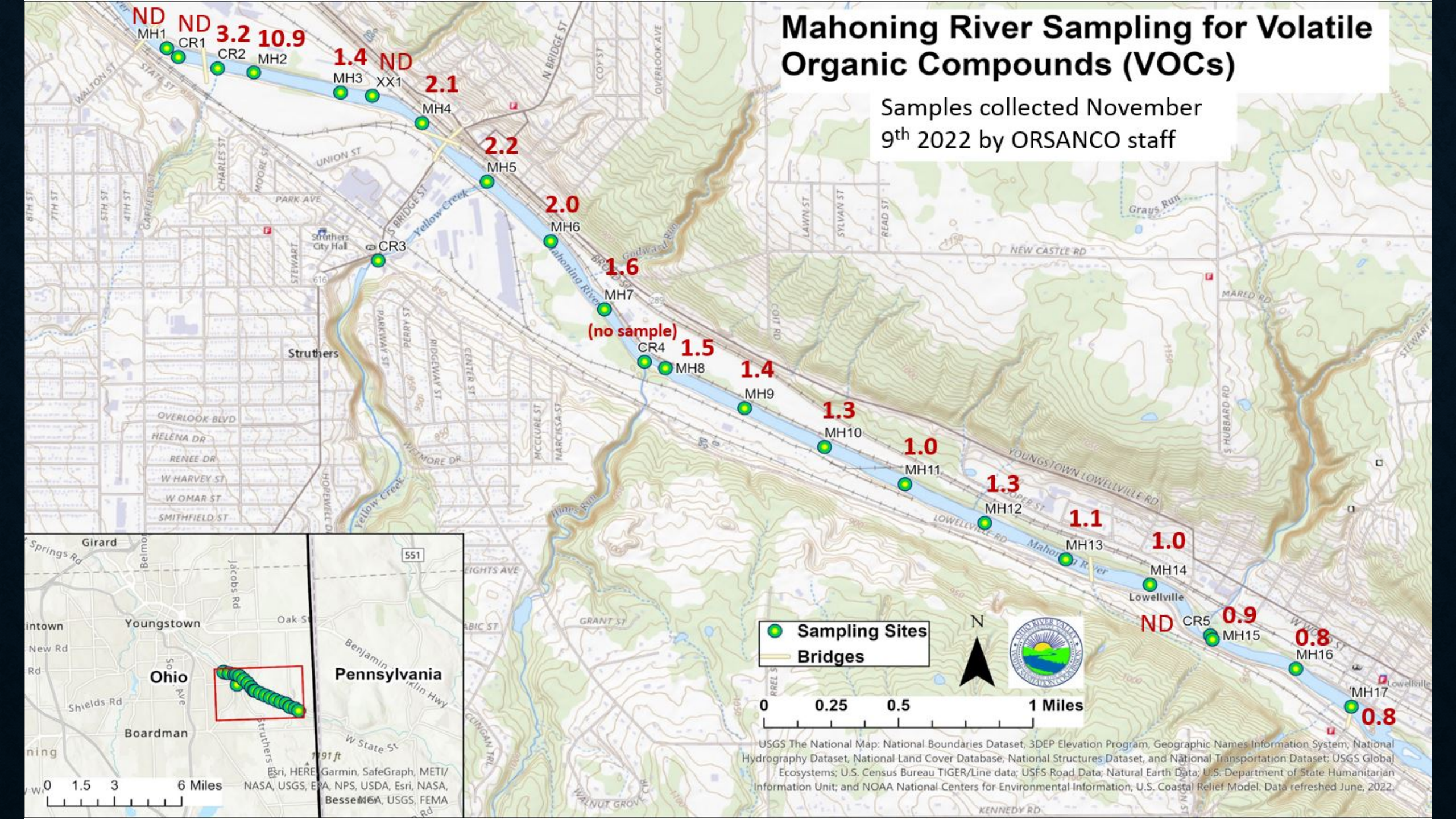
- Benzene detections on Ohio River continued for roughly 2 months
  - Two additional peaks detected mid Feb and early March
- Beaver Falls Water began sending water samples to ORSANCO
  - Benzene consistently detected thru late May
  - Only one detection June thru October
  - Detections became more frequent starting in November 2022
- Detections coincide with high stream flow events

USGS

USGS 03099500 Mahoning River at Lowellville OH

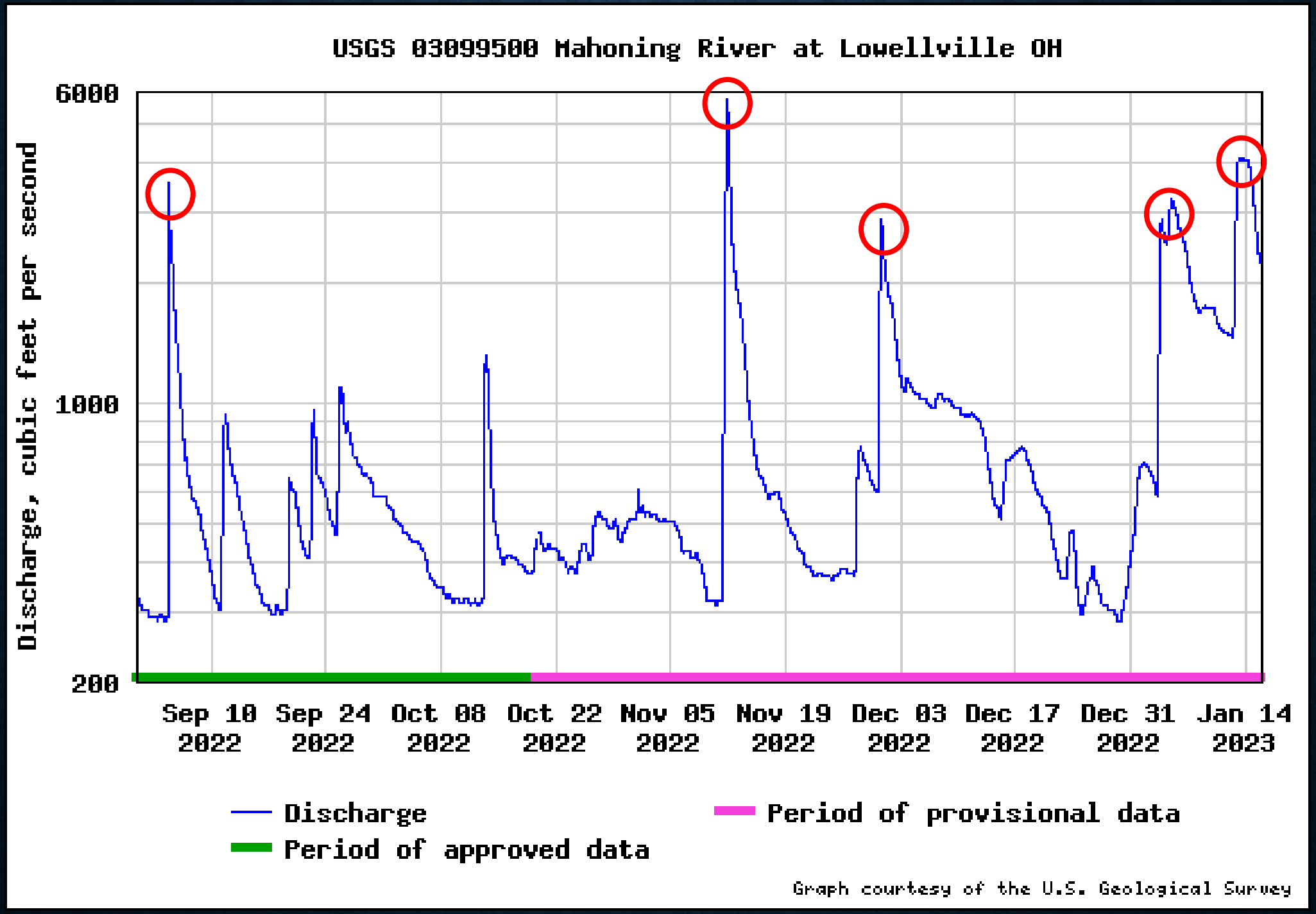



Mahoning River Sampling for Volatile Organic Compounds (VOCs)
Samples collected September 14, 2022
by ORSANCO staff
Benzene Detections 9/14/22 Samples
ND
MH1
ND
CR1
CR2
0.16 ppb
MH2
2.0 ppb
MH3
XX1
0.34 ppb
MH4
39.2ppb
0.49 ppb
0.55 ppb
MH5
0.40 ppb
MH6
ND
CR3
0.33 ppb
MH7
CR4
0.30 ppb
MH8
ND
0.33 ppb
MH9
0.36 ppb
MH10
0.32 ppb
MH11
ND
MH12
0.27 ppb
MH13
0.38 ppb
MH14
Lowellville
ND
CR5
MH15
0.26 ppb
MH16
0.25 ppb
MH17
0.32 ppb
Struthers
Yellow Creek
Mahoning River
Gravs Run
Godward Run
Hines Run
Sampling Sites
Bridges
N
0 0.25 0.5 1 Miles
Girard
Youngstown
Ohio
Pennsylvania
Boardman
Benjamin
Bessemer
0 1.5 3 6 Miles
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2022.
Esri, HERE, Garmin, SafeGraph, METI/ NASA, USGS, EPA, NPS, USDA, Esri, NASA, NGA, USGS, FEMA


Mahoning River Sampling for Volatile Organic Compounds (VOCs)
Samples collected November 9th 2022 by ORSANCO staff
ND
MH1
ND
CR1
3.2
CR2
10.9
MH2
1.4
MH3
ND
XX1
2.1
MH4
2.2
MH5
2.0
MH6
1.6
MH7
(no sample)
CR4
1.5
MH8
1.4
MH9
1.3
MH10
1.0
MH11
1.3
MH12
1.1
MH13
1.0
MH14
Lowellville
ND
CR5
0.9
MH15
0.8
MH16
MH17
0.8
CR3
Struthers
Yellow Creek
Mahoning River
Sampling Sites
Bridges
N
0 0.25 0.5 1 Miles
Girard
Youngstown
Ohio
Boardman
Pennsylvania
0 1.5 3 6 Miles
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2022.

RECENT SAMPLING AT BEAVER FALLS

- November 2022 - Benzene detections observed Nov 12-15
  - Peaked at 2 ppb on Nov 12th
- December 2022 – Benzene detected December 5-7
  - Peaked at 0.8 ppb benzene
- January 2023
  - Benzene detected in 11 of 13 raw water samples collected (1.6 ppb max)
  - 8 of 12 finished water samples had low-level benzene detections (0.8 max)
- Removal efficiency typically around 50% from raw to finished


USGS 03099500 Mahoning River at Lowellville OH
Discharge, cubic feet per second
6000
1000
200
Sep 10 2022
Sep 24 2022
Oct 08 2022
Oct 22 2022
Nov 05 2022
Nov 19 2022
Dec 03 2022
Dec 17 2022
Dec 31 2022
Jan 14 2023
Discharge
Period of approved data
Period of provisional data
Graph courtesy of the U.S. Geological Survey

NEXT STEPS

- Benzene levels in the Beaver River have been consistently well below finished water MCL (i.e. 5 ppb)
- Persistent detections indicate ongoing episodic releases
- ORSANCO will continue to run samples for Beaver Falls Water
- Ohio EPA currently researching possible sources
- Will reconvene multi-agency group to review findings and evaluate follow-up activities

FUNDING FOR HYPOXIA TASK FORCE

- $60 Million for States, Tribes, land grant universities and Sub Basin Committees from the Bipartisan Infrastructure Law ($12 M/yr for 5 yrs)
- USEPA cooperative agreements
- ORSANCO eligible for $400,000 as convener of the Ohio River Sub Basin Committee
- Money can be spent over 3 years
- USEPA has been focused on state and tribal grants. Guidance for sub basins expected soon
- ORSANCO staff will work to see how it can be used to support state efforts

FUNDING DISTRIBUTION

Bipartisan Infrastructure Law Gulf Hypoxia Program Funding Levels FY 22–26					
	FY 22 $	**FY 23 $**	**FY 24 $**	**FY 25 $**	**FY 26 $**
State Annual Total	11,580,000	8,980,000	8,980,000	8,980,000	11,580,000
Each State (Total/12)	**965,000**	**748,333**	**748,333**	**748,333**	**965,000**
Eligible Tribes	-	2,000,000	2,000,000	2,000,000	-
Sub-Basin Committees	-	400,000	400,000	400,000	-
Land Grant University Consortium	-	200,000	200,000	200,000	-
EPA 3% Set Aside	360,000	360,000	360,000	360,000	360,000
EPA 0.5% Inspector General Set Aside	60,000	60,000	60,000	60,000	60,000

STATE ELIGIBLE ACTIVITIES

- EPA guidance notes that state workplans must support the following five strategic outcomes:
  - Supporting staff to implement the workplan;
  - Reducing nonpoint source nutrient pollution as articulated in state strategies;
  - Prioritizing and targeting watersheds with the greatest opportunities for nutrient reductions;
  - Collaborating across state boundaries with HTF partners; and
  - Using state-level water quality programs and actions to better support nutrient reductions.

Agenda Item 6:

Review of Monitoring Programs

Heath

Monitoring Review Committee

- Composed of TEC members and their designees.
- Committee met Aug. 19 & Sept. 23.
- Reviewed 2013 Broad Scan survey monitoring design and results.
- Discussed budget and options for repeating a survey in Federal FY23.
- Using Federal Monitoring Initiative Funding - $66,000.
- TEC approved moving forward with the project at its last meeting.

Broad Scan Survey

- Only a small subset of water quality parameters contained in ORSANCO's Pollution Control Standards are included in our routine monitoring programs.
- A survey of 104 parameters included in the PCS but not routine monitoring programs was completed in 2013.
- EDI sampling was completed for two rounds of sampling at 3 locations (upper, middle and lower river).
- There were no detections of any parameters.
- Objectives of this work to determine if additional parameters should be included in routine monitoring.
- Recommendation is to repeat the suvey but need a team to review specifics of the monitoring effort.

Committee Recommendation

- Repeat the original broad scan survey.
- 2 Rounds sampling by EDI at 3 sites; one week per round.
- One Equipment Blank, One Field Blank, and one duplicate per round of sampling.
- 12 samples total.
- Late spring/summer & fall of 2023.

Sample Site River Mile	Total Upstream Drainage area (mi^2)	Upstream Municipal Discharges (25 mi)	Upstream Industrial Discharges (25 mi)
192.9	38,144	7	15
633.0	94,282	6	28
912.0	143,244	3	1

Budget Using Federal Monitoring Initiative Funds

- Total Available Funding = $66,000
  - Analytical Costs (12 @ $2,200) $30,000
    - Includes PCBs 1668 congeners; not dioxin
    - EDI samples at 3 sites, 2 rounds.
    - Equipment blanks with every sample; weekly field & trip blanks.
  - Staff Travel (3 staff, 1 week per sampling round' gas) $ 5,000
  - Shipping (est. 8 coolers @$300) $ 1,600
  - Supplies $ 1,000
- Subtotal $37,600
- $24k remaining for staff time (3 staff, 2 wks) $28,400

Reconvening the Monitoring Review Committee

- **305b Workgroup recommends updating bacteria, PCBs, and dioxin data for use in Ohio River assessments.**
- **Need to prioritize updating bacteria data versus PCBs/dioxin data, then develop workplans and budgets.**
- **Bacteria highly dependent on precipitation events.**
- **PCBs/dioxin using high volume sampling is very expensive.**

Agenda Item 7:

CSO Abatement Report & Bacteria Trends Analysis

Stacey Cochran &
UC Senior Students

STATUS OF COMBINED SEWER OVERFLOW ABATEMENT

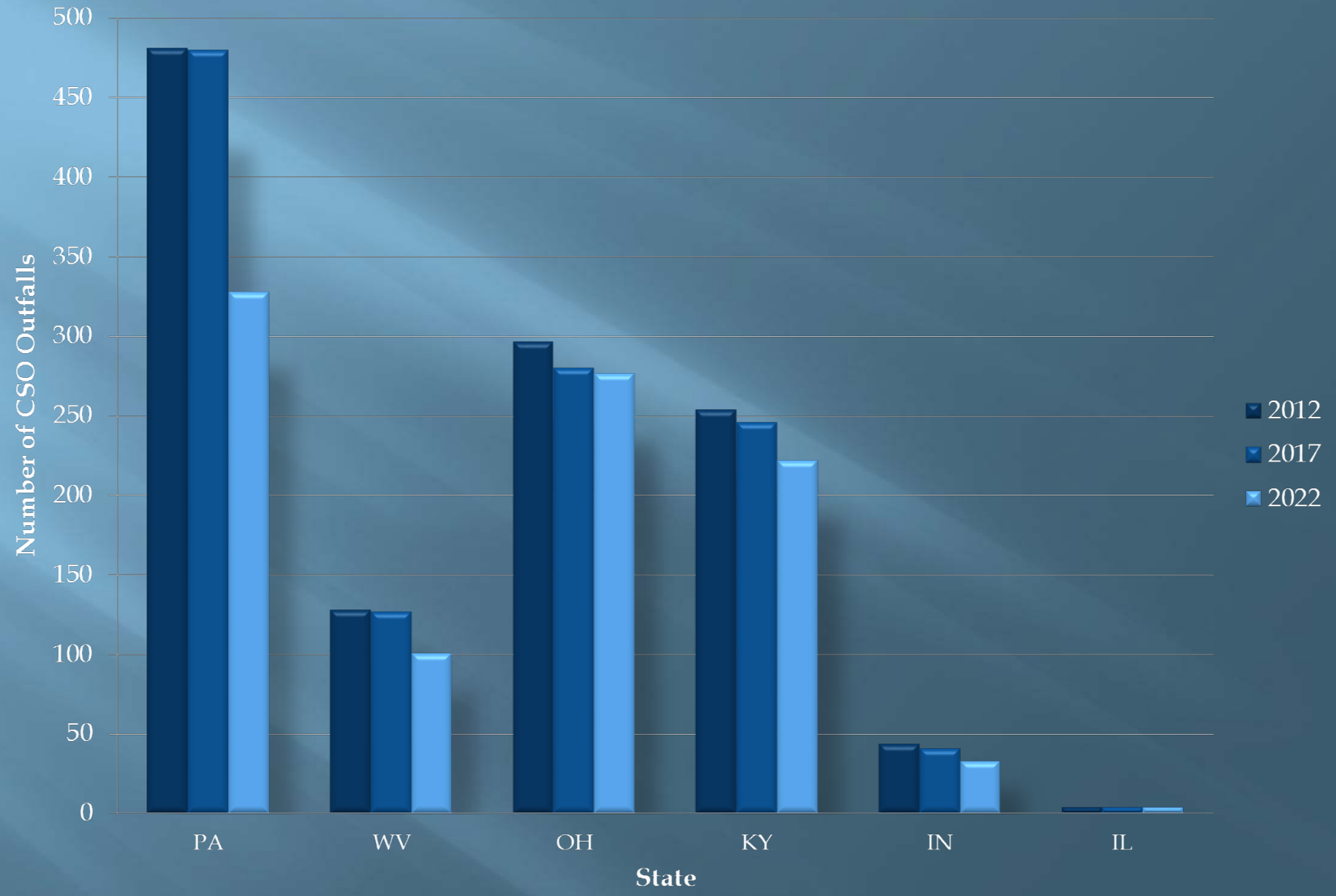
February 7-8, 2023
Agenda Item 7
Informational Item

Background

- Combined Sewer Overflow (CSO)
  - A combined sewer system that collects rainwater runoff, industrial wastewater, and domestic sewage into one pipe
    - Normal conditions it is treated and discharged
    - When capacity is exceeded untreated stormwater and wastewater is discharged directly into near by waterbodies
- CSOs are subject to NPDES permitting which was created in 1972 though the Clean Water Act to address water pollution
- EPA's Combined Sewer Overflow (CSO) Control Policy was approved in April, 1994
  - Provides guidance on how CSO Communities can achieve Clean Water Act goals in a flexible, cost-effective manner
  - Defines expectations for regulated Communities
  - Nine Minimum Controls

- Pennsylvania – 10 Communities
- West Virginia – 10 Communities
- Ohio – 10 Communities
- Kentucky – 9 Communities
- Indiana – 7 Communities
- Illinois – 2 Communities

CSO Outfalls in the Ohio River Communities

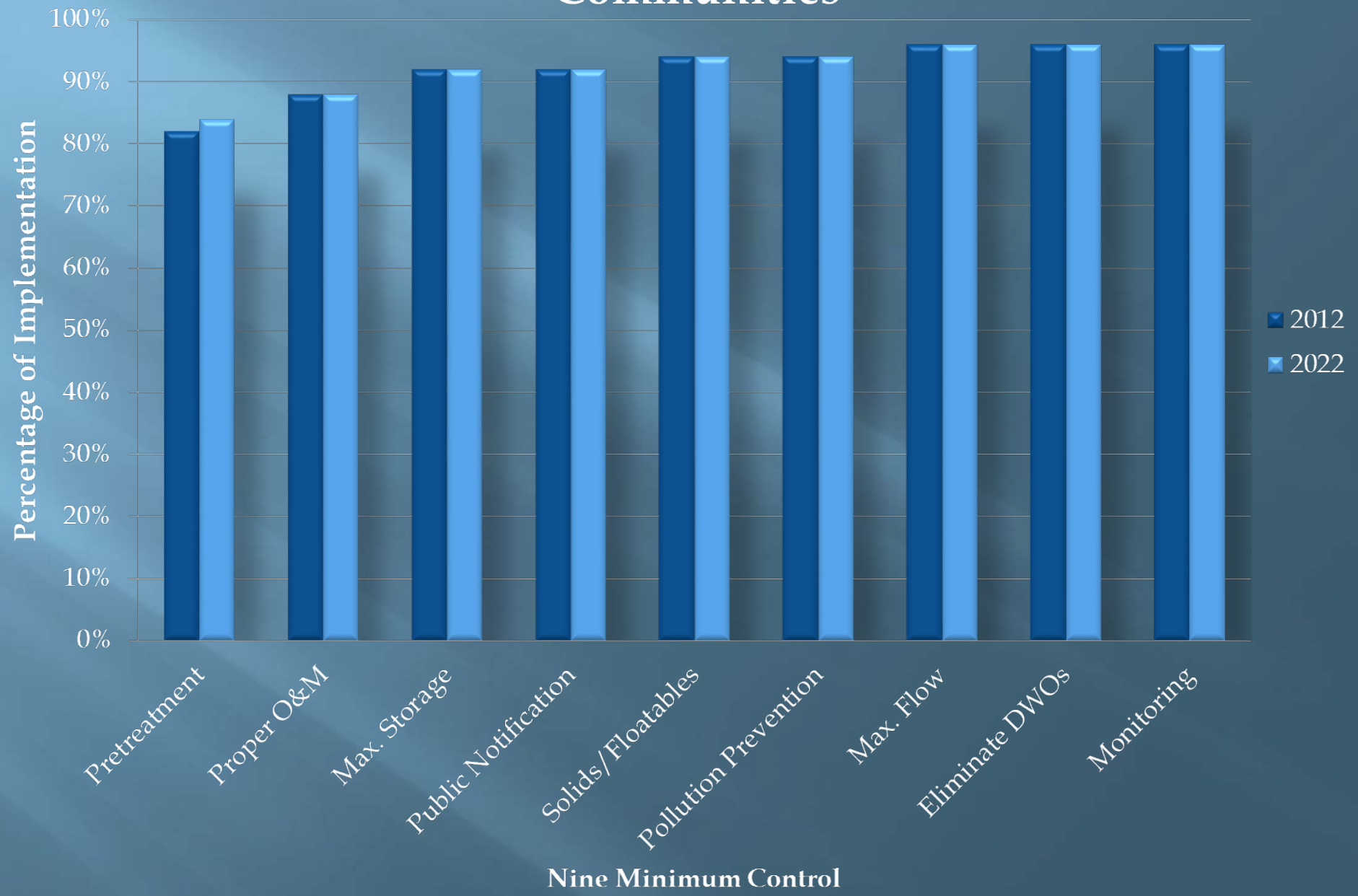


Nine Minimum Controls

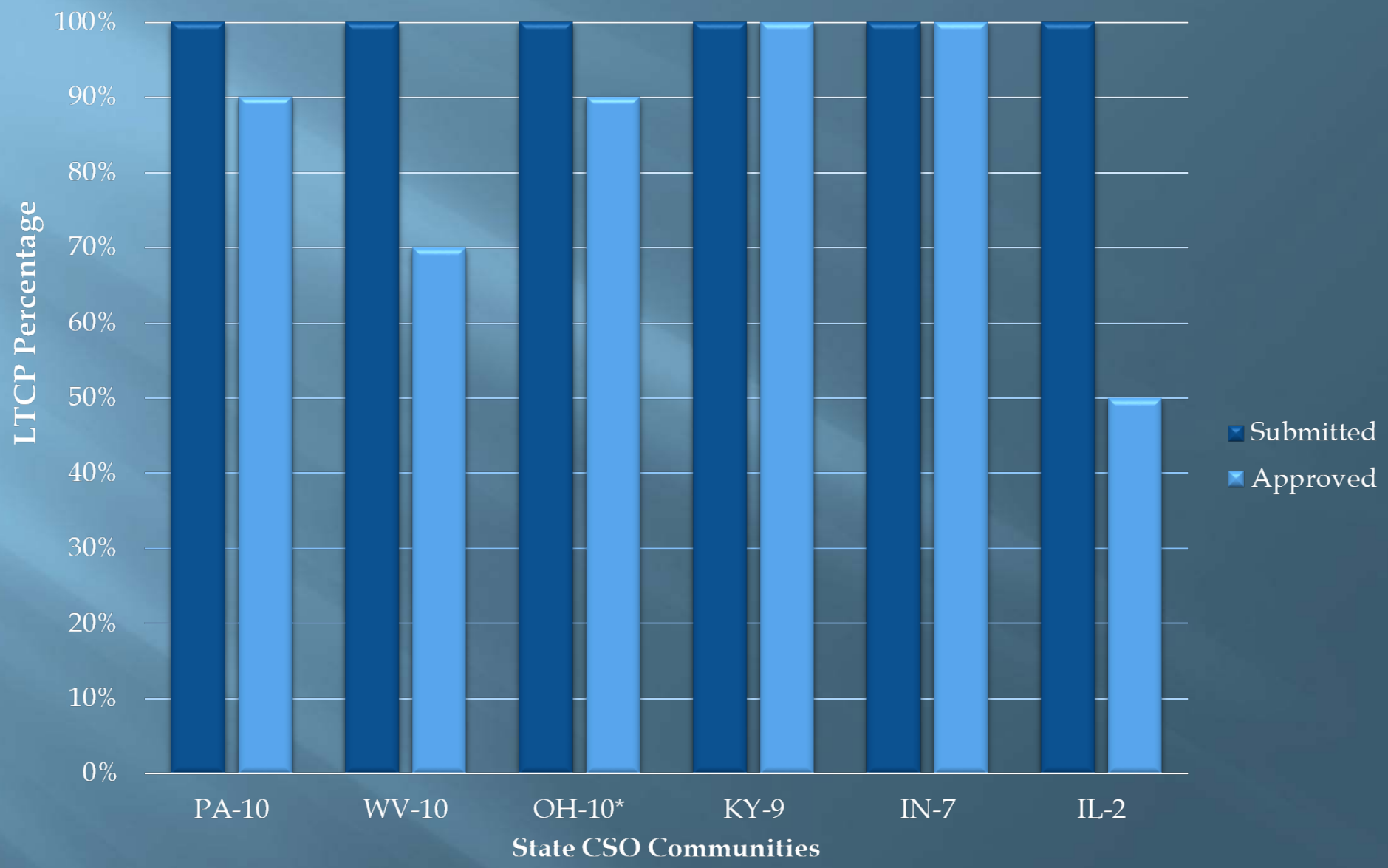
- Measures that can reduce CSOs and their effects on receiving water quality.

1. Pretreatment
2. Proper Operation & Maintenance
3. Maximize Storage
4. Public Notification
5. Control of Solids and Floatables
6. Pollution Prevention
7. Maximize Flow for Treatment
8. Dry Weather CSO Prohibition
9. Monitoring of CSO Impacts

NMC Percentage of Implementation for the 48 CSO Communities



Status of Ohio River Communities LTCP



*New Boston is not required to submit a LTCP.

Status Highlights

- ALCOSAN
  - Construct a Regional Tunnel System (Ohio, Allegheny, and Monongahela Rivers) over next 15 years
  - Expand Northside plant from 250 MGD to 600 MGD by end of 2027
- Cincinnati MSD
  - All Phase 1 projects (100) were completed
  - Continued effort on the completion of the remaining 4 Bridge projects
  - Lick Run Greenway project completed
    - Eliminated about 800 MG of CSO overflow from CSO 5 (largest in area)
- Louisville MSD
  - Louisville MSD Waterway Protection Tunnel was completed
  - Sewer Overflow projects will be constructed through 2024

University of Cincinnati Capstone Project

- The Ohio River Bacteria Trends and Predictive Modeling Project has two goals:
  - A temporal trends assessment to determine if measurable improvements to fecal bacteria levels in the Ohio River have occurred over the past 20-30 years.
  - Evaluate relationships with variables such as stream flow and precipitation to create a predictive water quality model(s) to better inform recreators.

Brasuell, J. (2020). “Two bridges across the Ohio River in Cincinnati closed on the same day.” Planetizen News, Planetizen, <https://www.planetizen.com/news/2020/11/111313-two-bridges-across-ohio-river-cincinnati-closed-same-day> (Jan. 31, 2023).

UC Senior Capstone Project – E.coli data modeling for the Ohio River Valley

As presented by: David Charles, Rose Misleh, Nick Noble, Luke Prather

MIDWESTERN WATER MANAGEMENT

Project Overview

- ORSANCO data collection for *E. Coli*
- Data collected from open sources (USGS, Army Corps of Engineers, Cincinnati MSD, etc.)
- Model data based on historical values to determine how different variables direct the influx of harmful bacteria
- Determine how recent implementations have impacted bacteria counts

MIDWESTERN WATER MANAGEMENT

Design considerations

- Feasibility given variables
- Quality of outputs
- Timeline
- Accessibility for ORSANCO and team

"Cincinnati, Ohio River flood of 2018 by Ina Kratzsch." (n.d.). *Fine Art America,* <https://fineartamerica.com/featured/cincinnati-ohio-river-flood-of-2018-ina-kratzsch.html> (Feb. 2, 2023).

MIDWESTERN WATER MANAGEMENT

Chosen Design

- Historical:
  - Updated Statistical Report
  - Database creation
- Predictive:
  - Multivariable Linear Regressive Model

Staff, T. E. (2021). "Photos of the devastation caused by the 1997 Ohio River Flood." *1997 Ohio River flood*, The Enquirer, <https://www.cincinnati.com/picture-gallery/news/2018/02/22/1997-ohio-river-flood/110720738/> (Feb. 2, 2023).

MIDWESTERN WATER MANAGEMENT

Next Steps

- Model Development
  - Statistical Model for data from 2015-2022
  - Predictive Model to predict 1-5 days in advance
- Database Finalization
  - Variables: Precipitation, flowrates, pH
- Finish Historical Trends Report

MIDWESTERN WATER MANAGEMENT

Additional Information

- Continuous Monitoring
  - Proteus Monitoring Probe
  - H2Now/CURRENT
- Collaboration with water treatment entities
  - Daily treated water discharges
  - CSO events

H2NOW CHICAGO
WATERWAY MONITORING

(n.d.). *Real-time E. coli monitoring in a large river system using the proteus.* <https://proteus-instruments.com/case-studies/proteus-for-real-time-e-coli-monitoring-/> (Feb. 2,

Current

Thank you

Rose Misleh: mislehre@mail.uc.edu
Nick Noble: noblenc@mail.uc.edu
Luke Prather: prathelb@mail.uc.edu
David Charles: charledj@mail.uc.edu

Agenda Item 8a: PFAS Issues

Kentucky PFAS Fish Tissue Monitoring

Melanie Arnold
KY Division of Water

Agenda Item 8b: PFAS Issues

Evaluation of Passive Sampler Technologies for PFAS Collection

Marc Mills
US EPA ORD

Agenda Item 8c: PFAS Issues

Potential Project with WV Water Research Institute & USGS to Evaluate PFAS Sampling Methods

Heath

USGS 104b Grant Proposal on PFAS

- WV colleges & universities are eligible: 50-50 matching grant.
- Project period Sept. 2023 – Aug. 2026.
- We are working with WV Water Research Institute.
- Project to evaluate EDI cross-section sampling versus discrete sampling.
- Considering 2-3 sites, two rounds (high-low flow) per year, for 2-3 yrs.
- Possibly cover half of ORSANCO's field staff time, and travel costs.
- Building upon the PFAS project completed last year.
- Need to perform sampling at locations with detections above the level of quantitation.

Discrete PFAS Data

Round 1

PFOS	1P		2.490	
0257	1R		2.940	
	Left	Midstream	Right	
Surf	3.000	3.960	2.570	
Mid	3.200	2.510	3.370	
Bottom	3.130	2.720	2.320	

PFOA	1P		8.100	
0257	1R		9.630	
	Left	Midstream	Right	
Surf	9.870	9.610	8.160	
Mid	8.260	9.050	7.980	
Bottom	11.400	11.100	9.590	

PFBS	1P		1.850	
0257	1R		1.980	
	Left	Midstream	Right	
Surf	2.100	1.600	1.500	
Mid	2.000	1.520	1.630	
Bottom	1.790	2.040	2.000	

HFPO-DA	1P		13.600	
0257	1R		13.100	
	Left	Midstream	Right	
Surf	15.400	13.900	14.300	
Mid	15.400	13.900	14.600	
Bottom	16.400	16.070	13.100	

PFHxA	1P		1.430	
0257	1R		1.550	
	Left	Midstream	Right	
Surf	1.850	1.420	1.300	
Mid	1.070	1.390	1.190	
Bottom	1.740	1.280	1.050	

PFHpA	1P		0.446	
0257	1R		0.650	
	Left	Midstream	Right	
Surf	0.983	0.596	<1.09	
Mid	0.555	0.462	0.695	
Bottom	0.668	0.371	0.806	

PFOS	1P		2.060	
0551	1R		2.180	
	Left	Midstream	Right	
Surf	2.070	3.050	1.890	
Mid	<0.969	2.050	2.110	
Bottom	1.850	1.710	2.250	

PFOA	1P		4.110	
0551	1R		3.830	
	Left	Midstream	Right	
Surf	4.440	4.600	3.790	
Mid	3.690	3.770	3.340	
Bottom	3.570	4.030	3.640	

PFBS	1P		1.570	
0551	1R		1.630	
	Left	Midstream	Right	
Surf	1.390	1.580	1.490	
Mid	1.440	1.320	1.610	
Bottom	1.360	1.380	1.290	

Agenda Item 9: TEC Members Reports

- IL – Scott Twait
- IN – Brad Gavin
- KY – Katie McKone
- NY – Melanie Wright
- OH – Melinda Harris
- PA – Kevin Halloran
- VA – Jeffrey Hurst
- WV – Scott Mandirola
- USACE – Erich Emery
- USCG – Dana Fleming
- USEPA – David Pfeifer
- USGS – Jeff Frey
- CIAC – Vacant
- PIAC – Cheri Budzynski
- PIACO – Betsy Bialosky
- POTW – Vacant
- WOAC – Chris Tavenor
- WUAC – Chris Bobay

Other Business:

- Comments by Guests
- Announcement of Upcoming Meetings
- Adjourn

Chair, Scott Mandirola