

# Status of Ohio's Water Quality: The 2020 Integrated Report

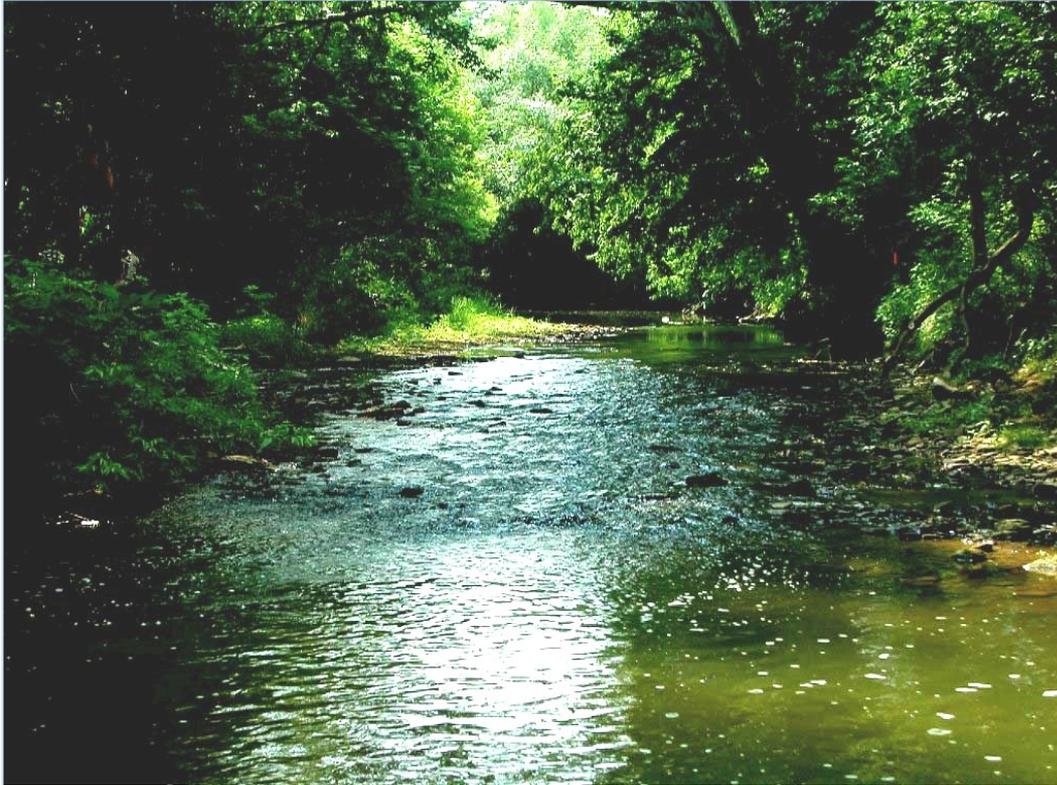
March 2, 2020



# Today's Topics

- Overview of the 2020 Integrated Report
  - Purpose and requirements
  - Assessment overview
- Differences from the 2018 Integrated Report
- Results and trends in Ohio water quality
- Lake Erie update

# Clean Water Act

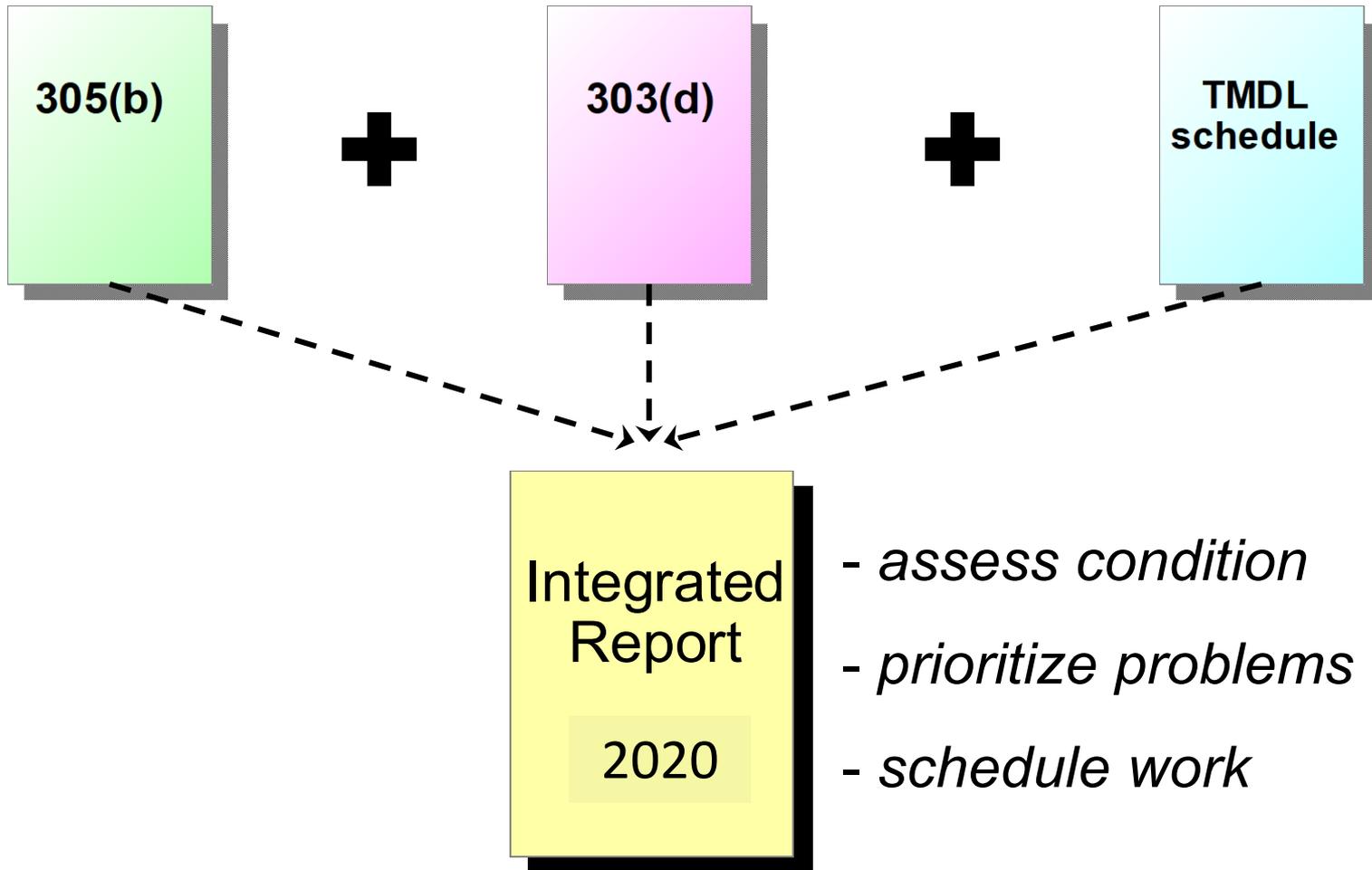


The goal is to restore and maintain the chemical, physical and biological integrity of the Nation's waters

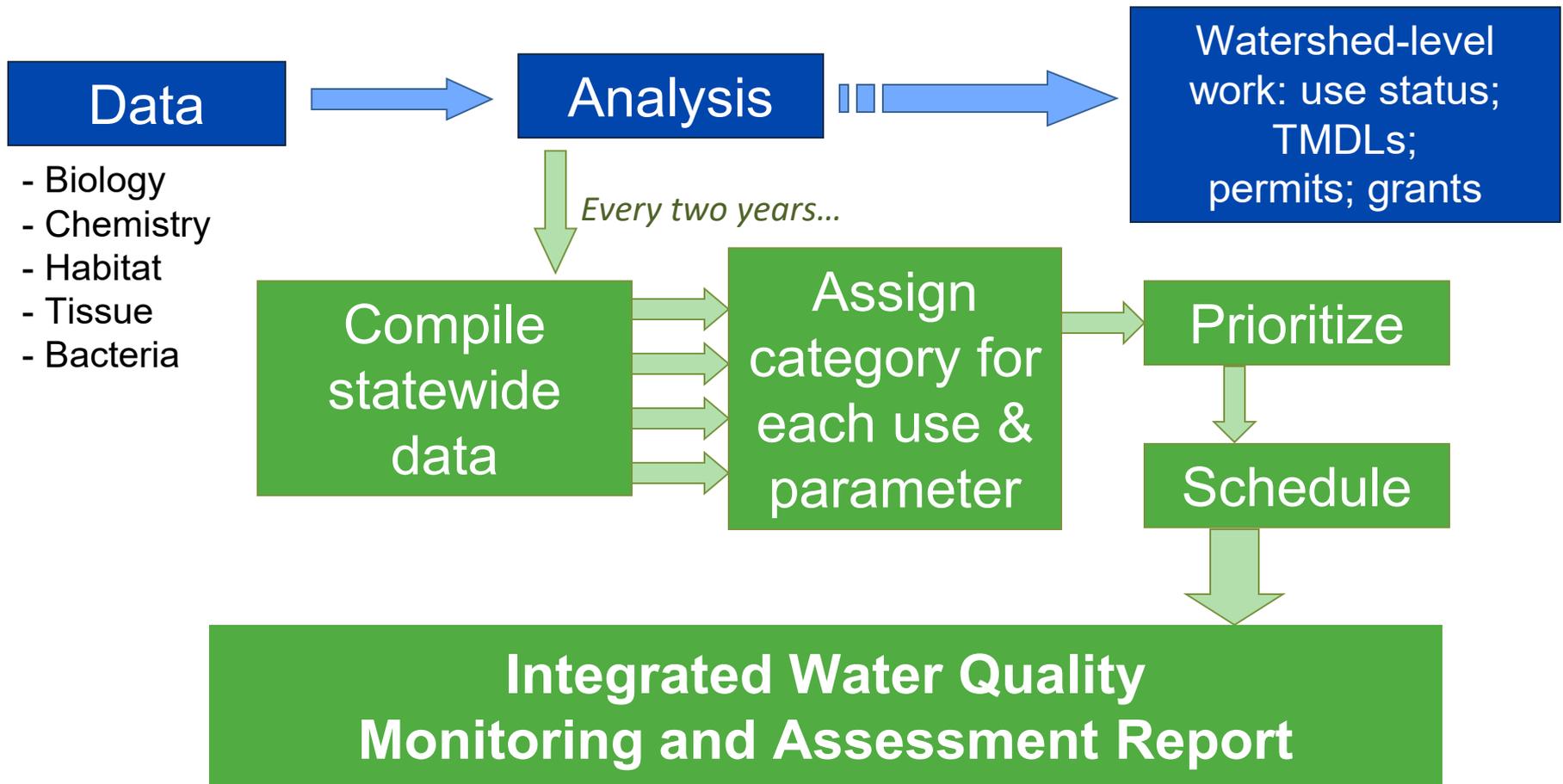
# Clean Water Act

- Reporting requirements:
  - Section 305(b) requires reporting on the condition of all state waters
  - Section 303(d) requires states to list and prioritize impaired waters
- Integrated Report combines these reporting requirements into biennial report

# Reporting/Listing in a Nutshell



# Integrated Report Process



# Integrated Report

- U.S. EPA provides guidance
- Report includes:
  - Methodology
  - Decision for each water body assessed
  - Data description (supports the listing of each impaired water)
  - Impairment causes and sources available online
  - TMDL and monitoring schedules
- U.S. EPA has 30 days to approve

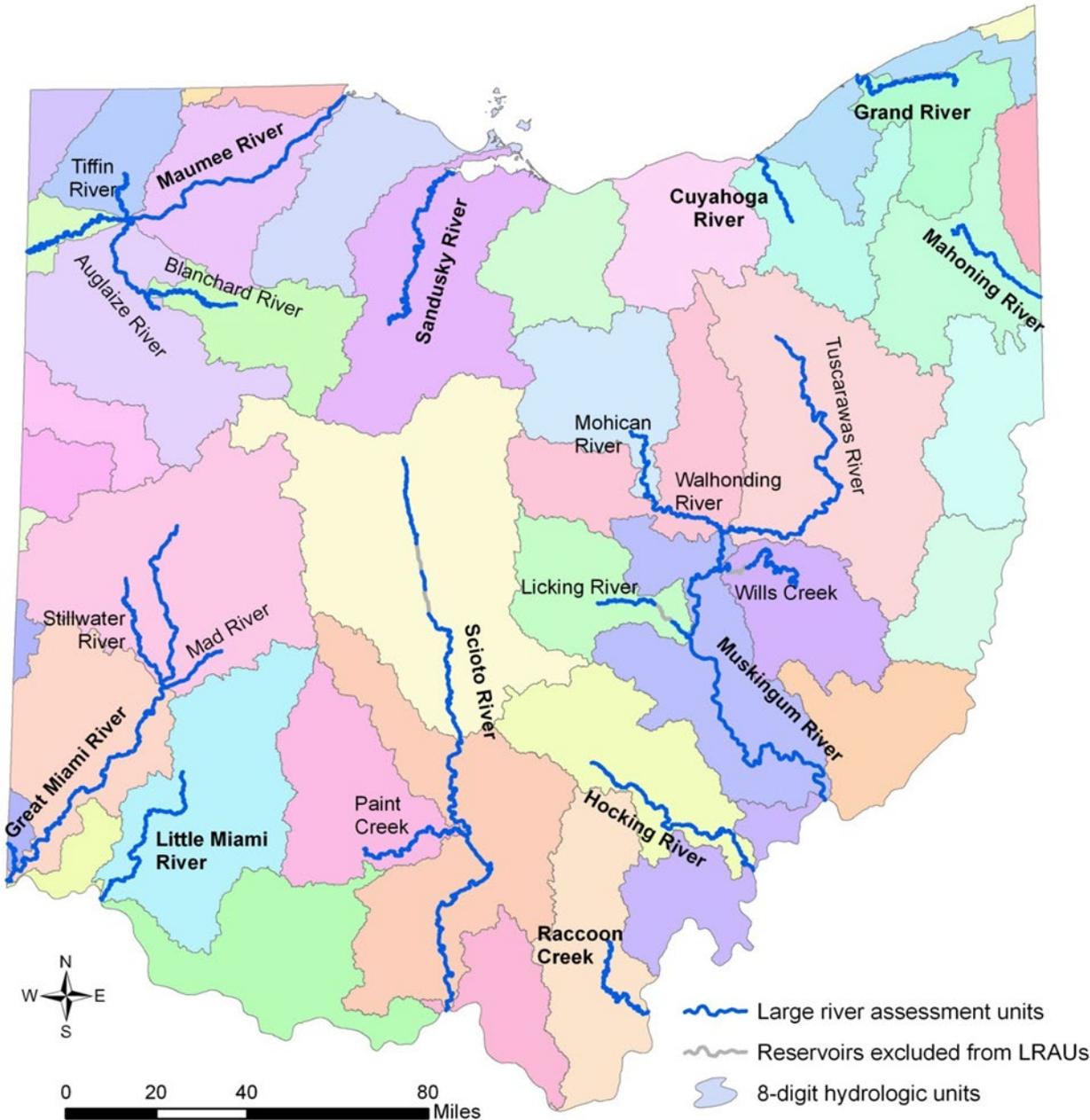


# OHIO'S ASSESSMENT UNITS



# Large Rivers

- 38 reaches of 23 big rivers



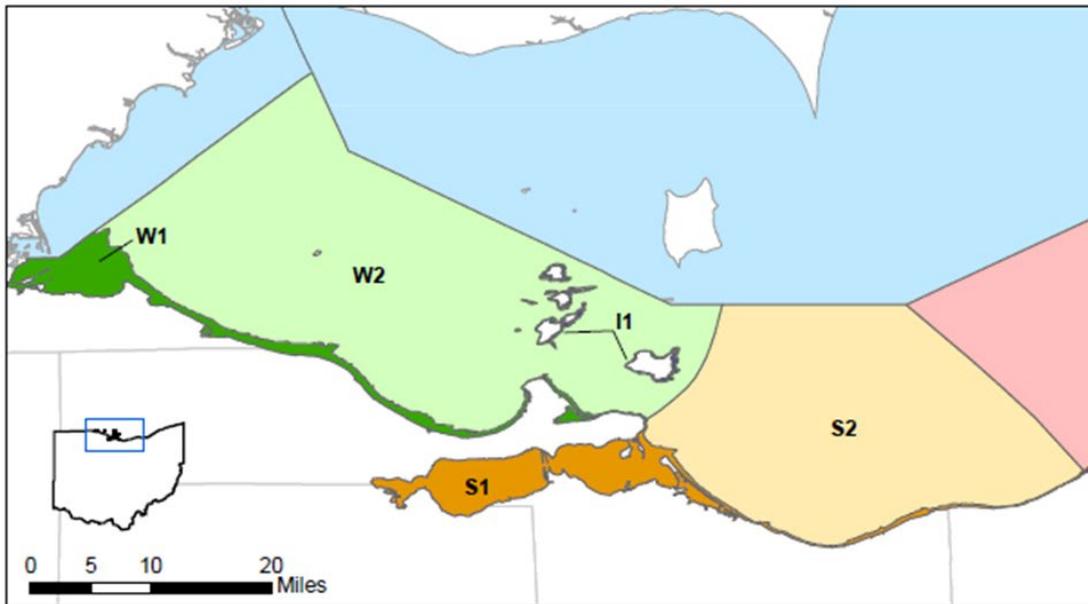
# Watersheds



- 1,538 12-digit HUCs
- Average drainage area: 27 square miles

# Lake Erie

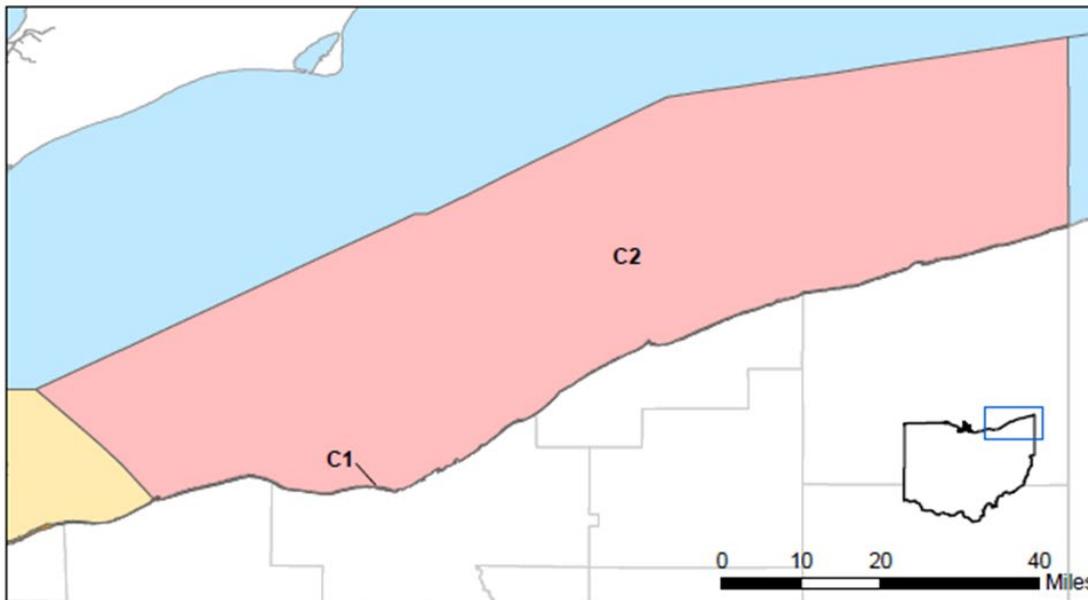
- Four shoreline (western, Sandusky Bay, central, islands)
- Three open water units (western, Sandusky Bay, central)



## Lake Erie Assessment Units

- W1 - Western Basin Shoreline ( $\leq 3m$ )
- W2 - Western Basin Open Water ( $>3m$ )
- I1 - Islands Shoreline ( $\leq 3m$ )

- S1 - Sandusky Basin Shoreline ( $\leq 3m$ )
- S2 - Sandusky Basin Open Water ( $>3m$ )
- C1 - Central Basin Shoreline ( $\leq 3m$ )
- C2 - Central Basin Open Water ( $>3m$ )



# Beneficial Uses

Methodologies based on water quality standards have been established for each use

- Aquatic life
- Recreation
- Human health (fish consumption)
- Public drinking water

# Assign Category

Assessment units are analyzed for each use & parameter independently

Category 1: Fully supporting

Category 2: Available data indicate some uses attaining

Category 3: Can't tell, not enough information

Category 4: Not supporting and does not require action

A: TMDL report approved

B: Other required control measures will result in attainment

C: Impairment cause not a pollutant (habitat)

Category 5: Not supporting and requires action

# Total Maximum Daily Load

Defines max amount of pollution a stream can handle & still meet CWA goals

# TMDL Stakeholder Involvement



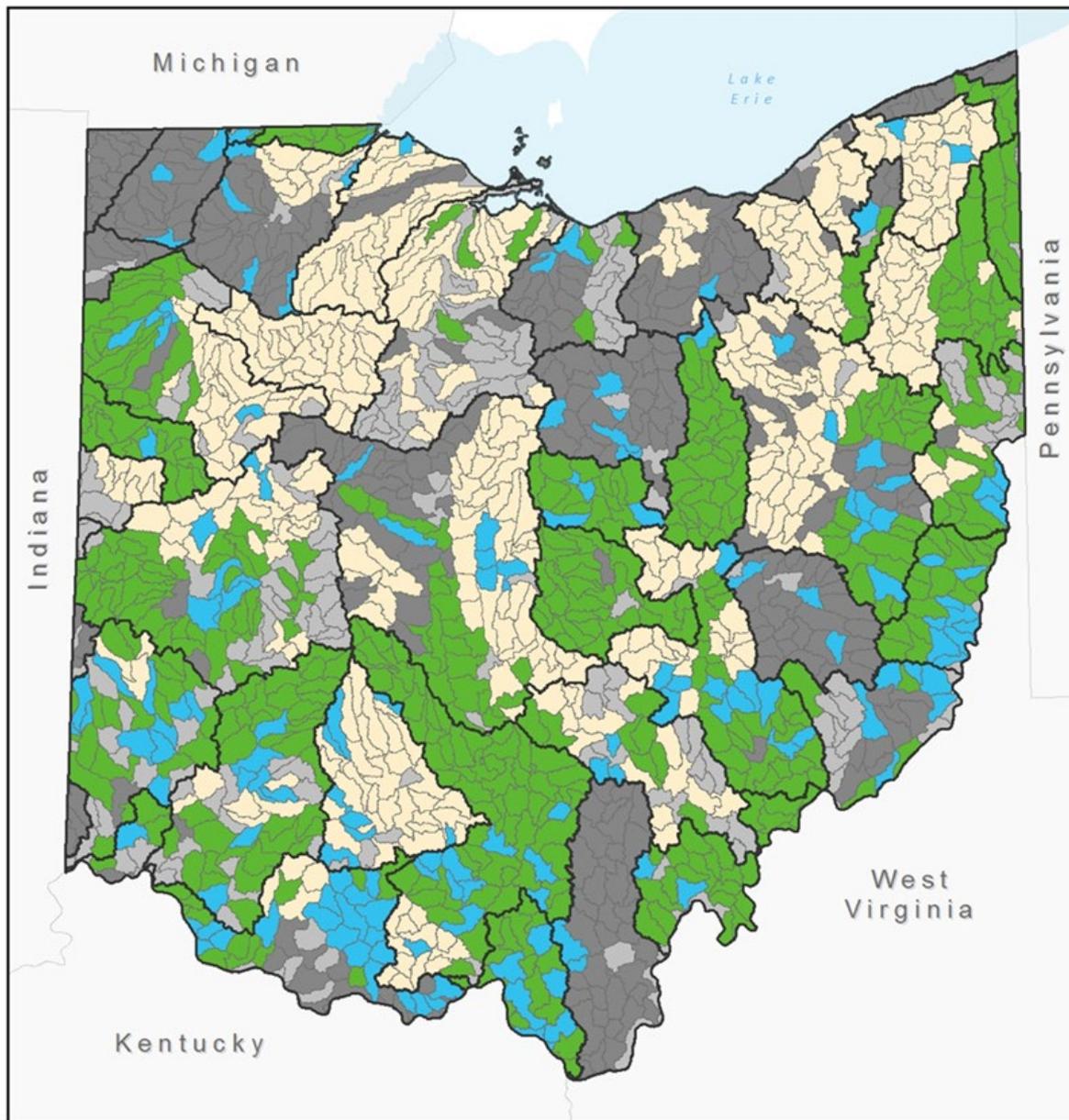
# High Priority TMDL Projects

- Maumee Watershed TMDL to address Lake Erie western basin recreation (algae) and drinking water impairments
- St. Joseph River TMDL
- Black River TMDL
- Multi-watershed Bacteria TMDL

# Multi-watershed Bacteria TMDL

## Watershed Status

-  Impaired; part of 2020 project
-  Impaired; TMDL approved
-  Impaired; not part of project yet
-  Full attainment
-  Not assessed/need more data



# 2020 Monitoring Schedule

Section J-31 in draft Integrated Report:

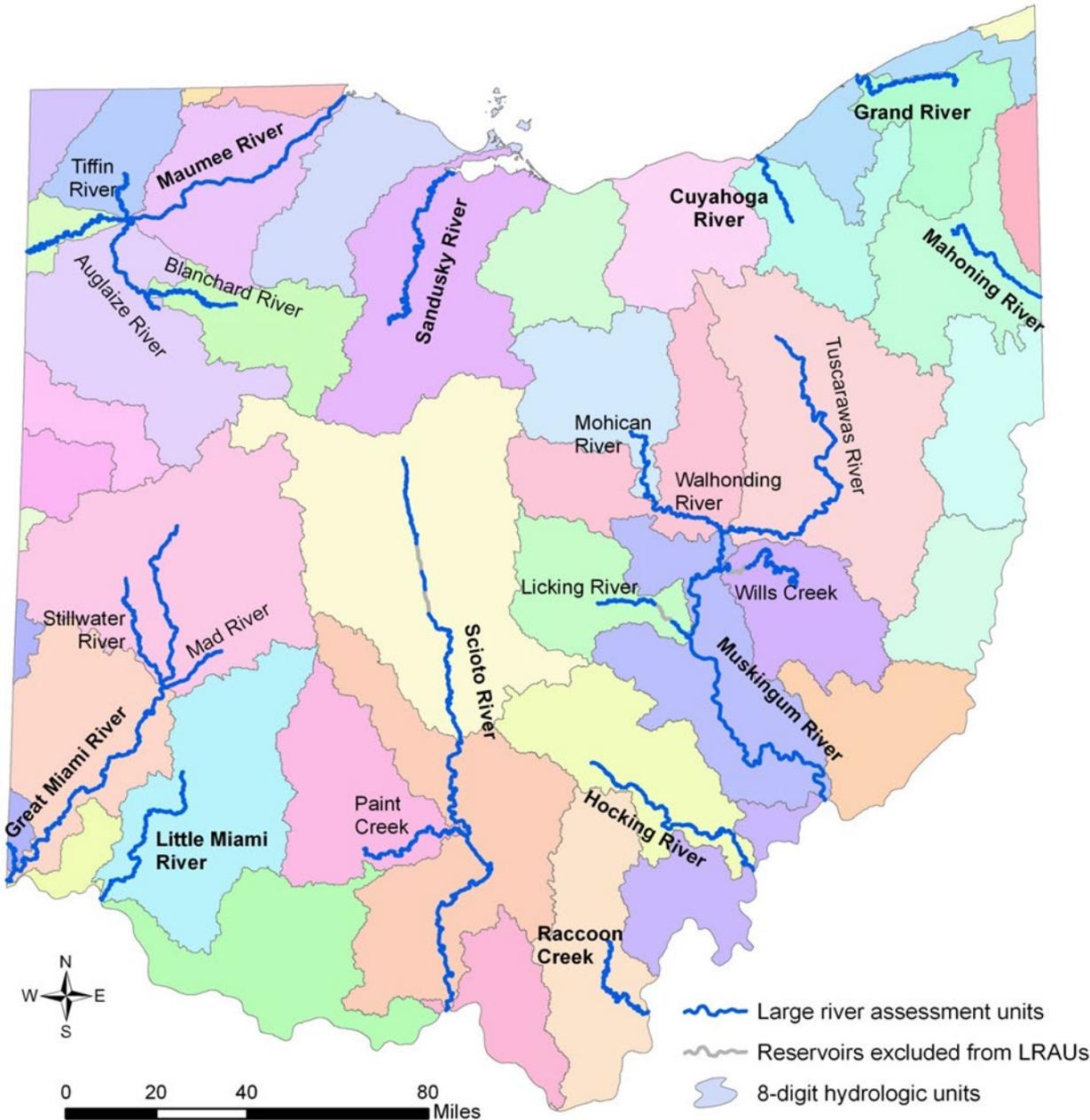
Ohio EPA will be conducting water quality monitoring in **all 23 large rivers** throughout the state (38 large river assessment units)

# 2020 – Large Rivers

- In order to report on the “status/health” of our large rivers to U.S. EPA and the public, we developed a schedule to perform holistic, Large River assessments, to better represent these waterbodies both spatially and temporally
- It will give us a complete snapshot of all our large rivers at the same point in time
- This has never been done

# Large Rivers

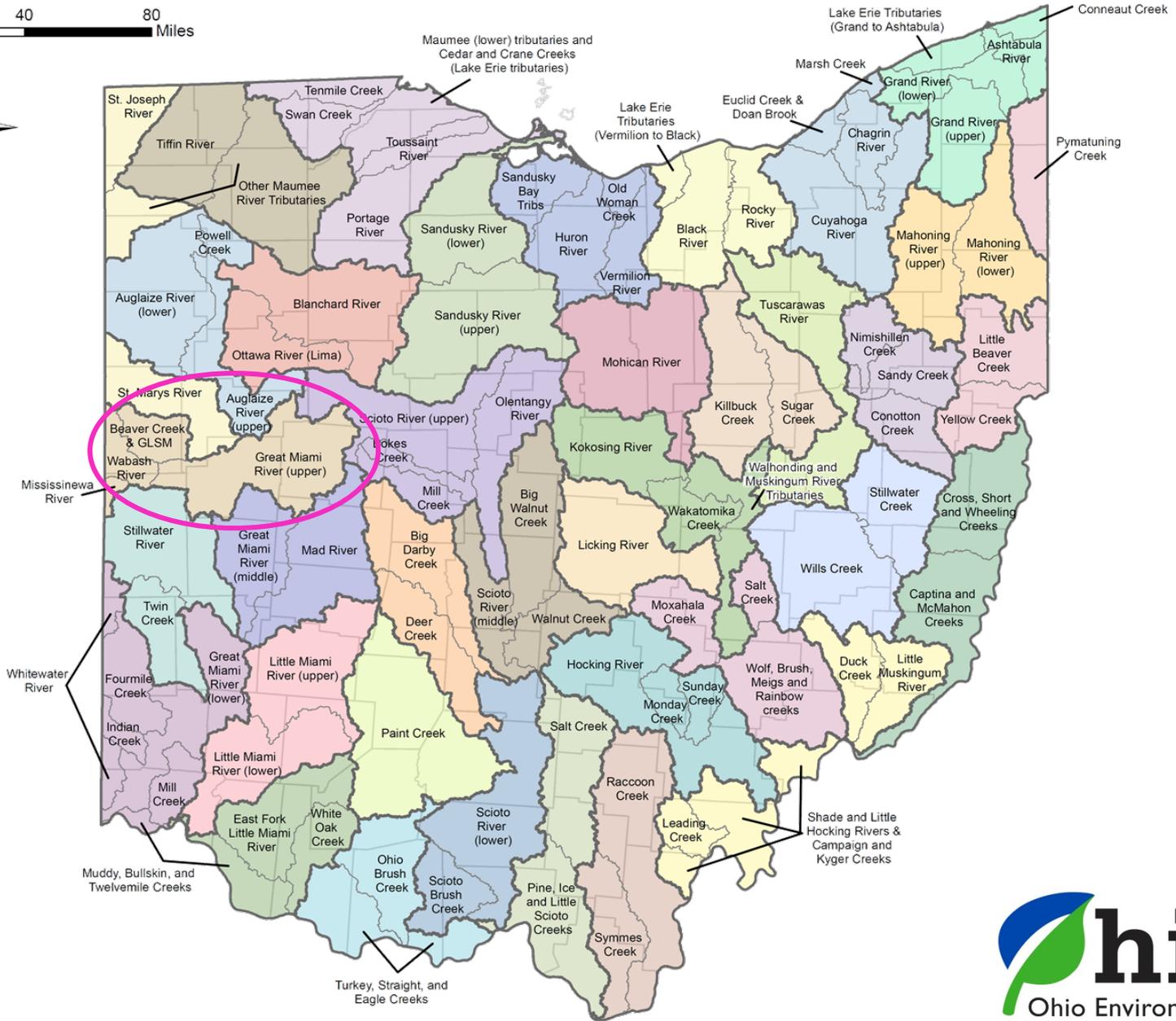
- 38 reaches of 23 big rivers



# 2020 Monitoring Schedule

Section J-31 in draft Integrated Report:

The new Beaver Creek, Grand Lake St. Marys, Mississinewa River, Wabash River and upper Great Miami River watersheds project area



# 2020 Study Plans



- March 2020 Public Notices:
  - 23 Large Rivers
  - Beaver Creek, Grand Lake St. Marys, Mississinewa River, Wabash River and upper Great Miami River
- June 15, 2020 Field Work Begins

# 2021 Monitoring Schedule

Section J-31 in draft Integrated Report:

The new project areas:

- Sandusky River (upper and lower)
- Pymatuning Creek, Little Beaver Creek and Yellow Creek
- Hocking River, Sunday Creek and Monday Creek
- Middle Great Miami River and Mad River





**WHAT'S CHANGED SINCE 2018?**



# Report in Transition

- First Integrated Report prepared and submitted using new U.S. EPA database
  - ATTAINS (Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System)
- Transition from large, static report to web-based, interactive
  - How's My Waterway app – coming spring 2020
    - Public access to ATTAINS data



# How's My Waterway?

Informing the conversation about your waters.

Community

**State**

National

Let's get started! Select your state or territory from the drop down to begin exploring water quality.

Ohio

Go

## Ohio by the Numbers

**1,538**

Total Watershed Assessment Units (HUC-12s)

**1,248**

Large rivers (draining more than 500 sq. miles)  
*miles*

**3,568**

Lake Erie Waters  
*sq. miles*

The Ohio Environmental Protection Agency, Division of Surface Water's mission is to protect, enhance and restore all waters of the state for the health, safety and welfare of present and future generations. The mission is accomplished by monitoring the aquatic environment, permitting, enforcing environmental laws, using and refining scientific methods and regulations, planning, coordinating, educating, providing technical assistance and encouragi... [Show more](#)

DISCLAIMER

State Water Quality Overview

Advanced Search

## Ohio Water Quality

Choose a Topic:

  
Drinking Water

  
Swimming

  
Fishing

  
Other

Pick your Water Type and Use:

Water Type:

Use:

# How's My Waterway?

Informing the conversation about your waters.

Community

State

National

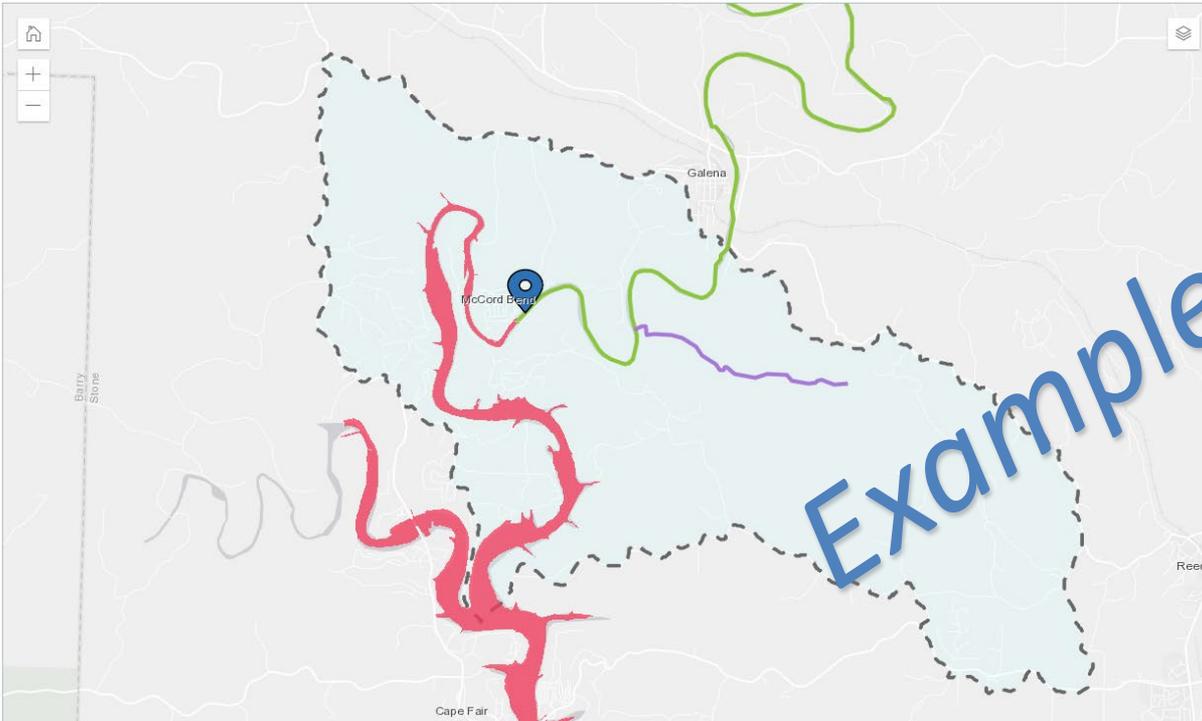
Let's get started!

james river

Go

OR

Use My Location



James River

WATERSHED: Wilson Run-James River (110100020509)

Swimming

Eating Fish

Aquatic Life

Drinking Water

Monitoring

Id

## Aquatic Life

Show Text

EPA, states, and tribes monitor and assess water quality to determine the impact of impairments on plants and animals living in the water.

Plants and animals depend on clean water. Impairments can affect the quality of water, which can have adverse effects on plants and animals living in the water... [Show more](#)

DISCLAIMER

2 waterbodies have been assessed for aquatic life

1

Good

1

Impaired

1

Condition Unknown

Waterbody Conditions:

● Good

● Impaired

▲ Condition Unknown

Expand All

Waterbodies assessed for aquatic life in the Wilson Run-James River watershed.

● James R.  
ID: MO\_2347.00

Year Last Reported: 2018

Aquatic Life Condition: Good

[View Waterbody Report](#)

[View on Map](#)

# 2020 Results and Trends



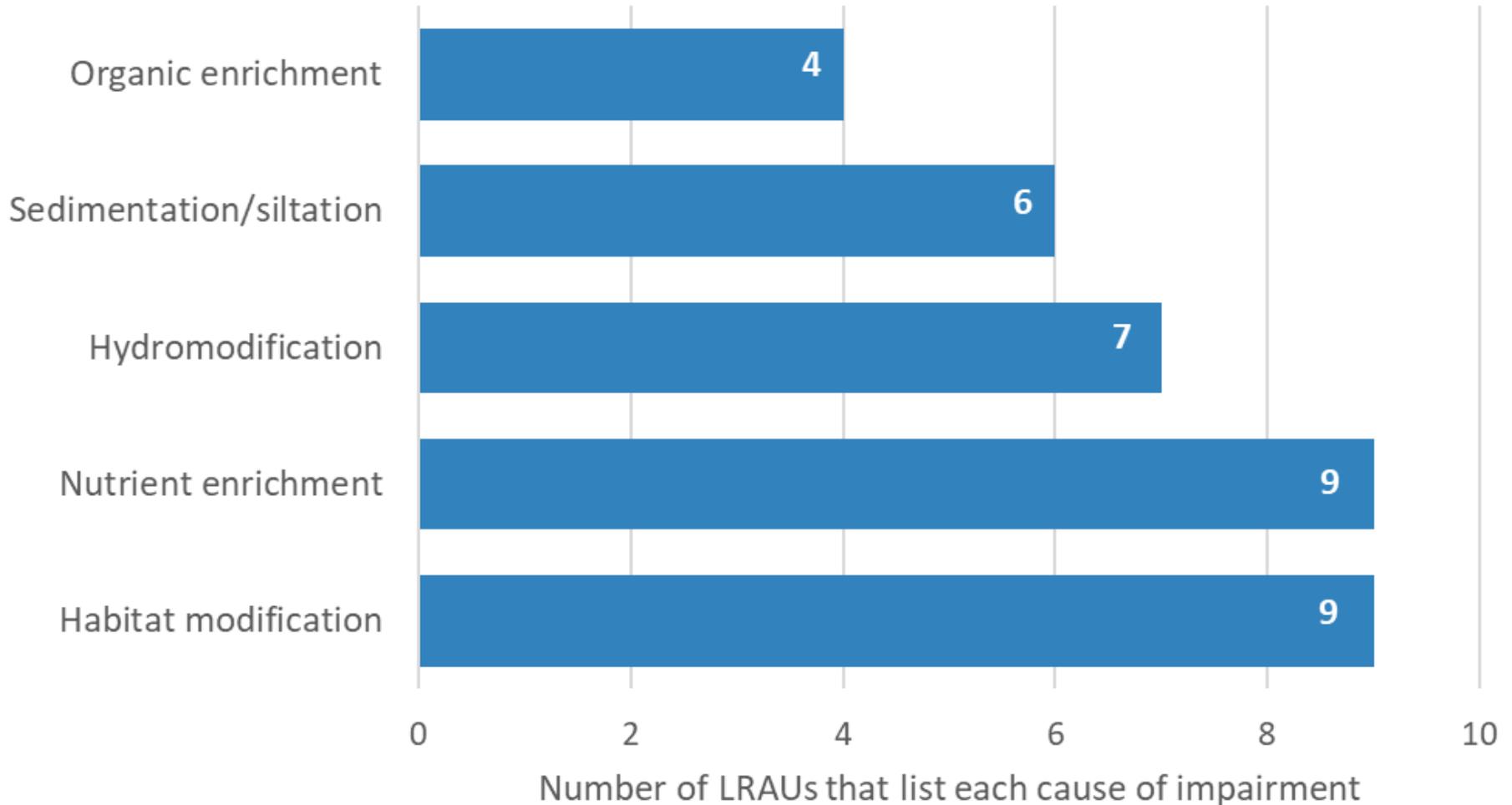


# OVERVIEW OF LARGE RIVERS

## AQUATIC LIFE



# Top Five Causes of Impairment: Large Rivers – 38 Segments



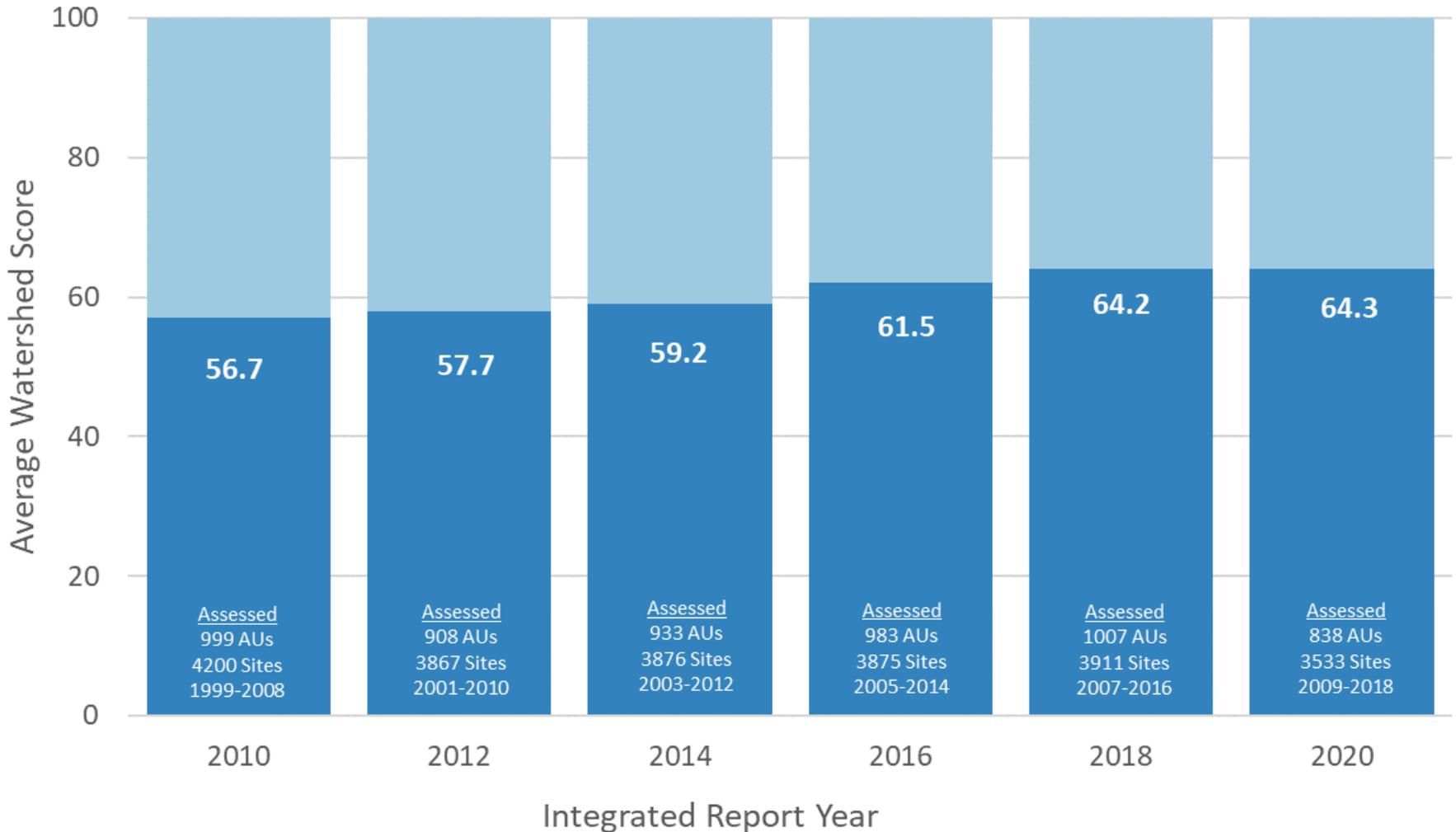


# OVERVIEW OF WATERSHEDS

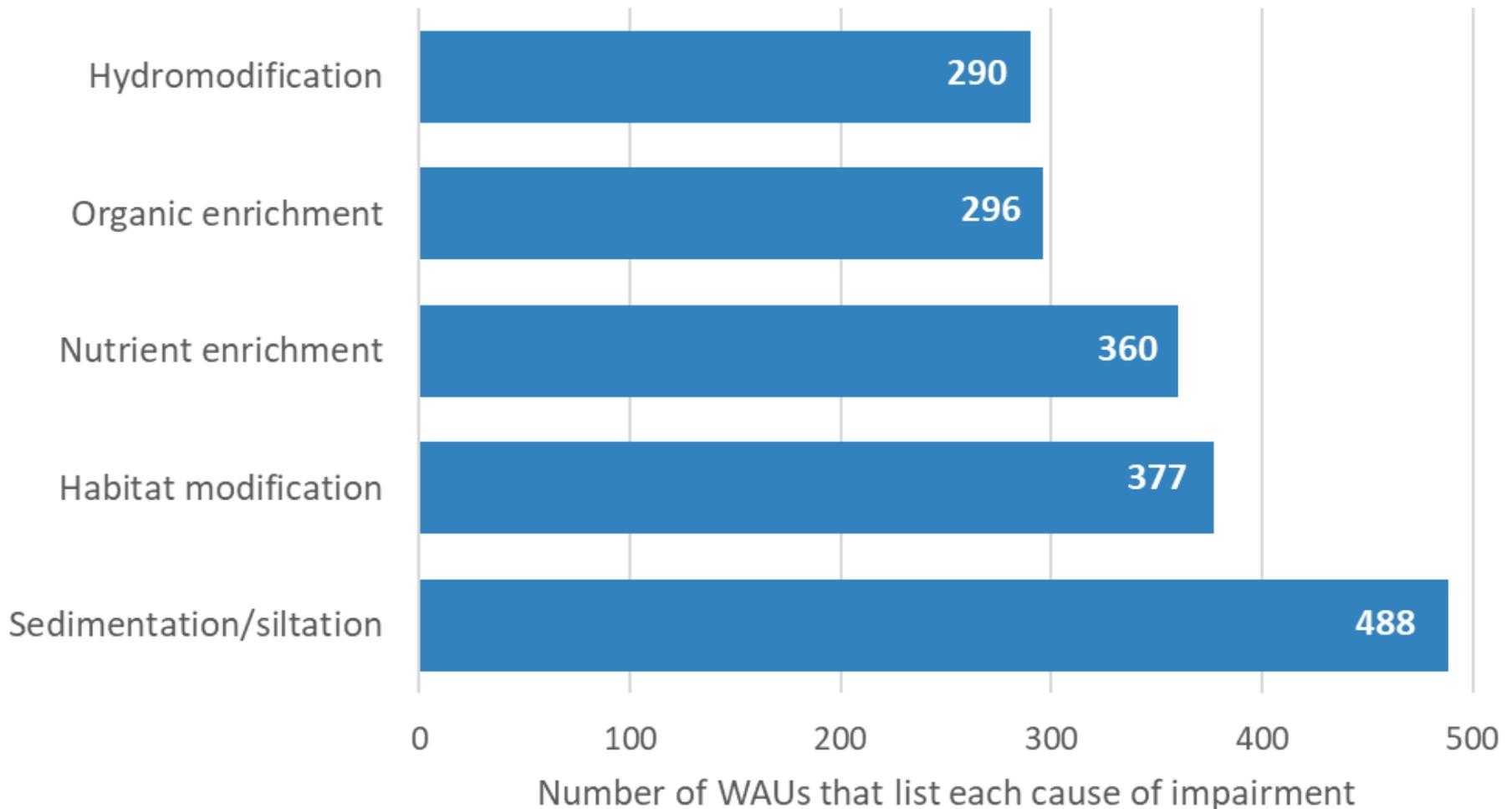
## AQUATIC LIFE

# Aquatic Life Trends: Watersheds

HUC 12 Assessment Units



# Top Five Causes of Impairment: Watersheds (1538 HUC 12s)



# Public Water Supply Use

- In Ohio, 103 public water systems use surface water as water source
- Nitrates, pesticides and cyanotoxins in raw/source water conditions are evaluated for attainment

Water Type	Full Attainment	Not Supporting	Insufficient Information	Not Assessed
Watershed Assessment Units (HUC 12s)	32	36	35	-
Large Rivers	0	5	4	-
Lake Erie	0	6	-	-

# Recreation Use (Bacteria)

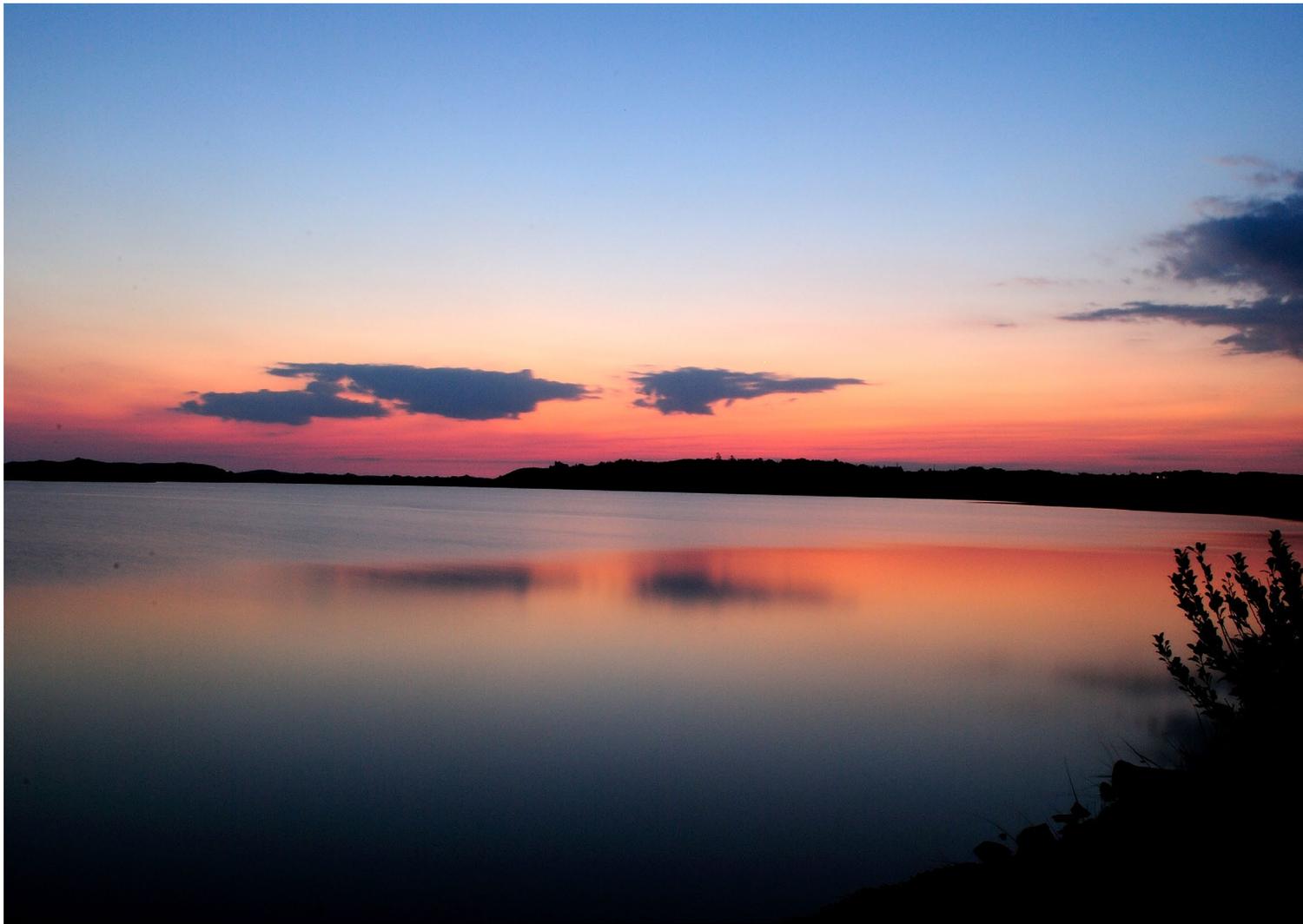
Developing Multi-watershed Bacteria TMDL project to address impaired watersheds

Water Type	Full Attainment	Not Supporting	Insufficient Information	Not Assessed
Watershed Assessment Units (HUC 12s)	159	1171	38	170
Large Rivers	3	32	1	2
Lake Erie	-	4	-	3
Inland Lake Beaches	54	8	37	-

# Human Health (Fish Consumption)

Most common contaminant is PCBs followed by mercury

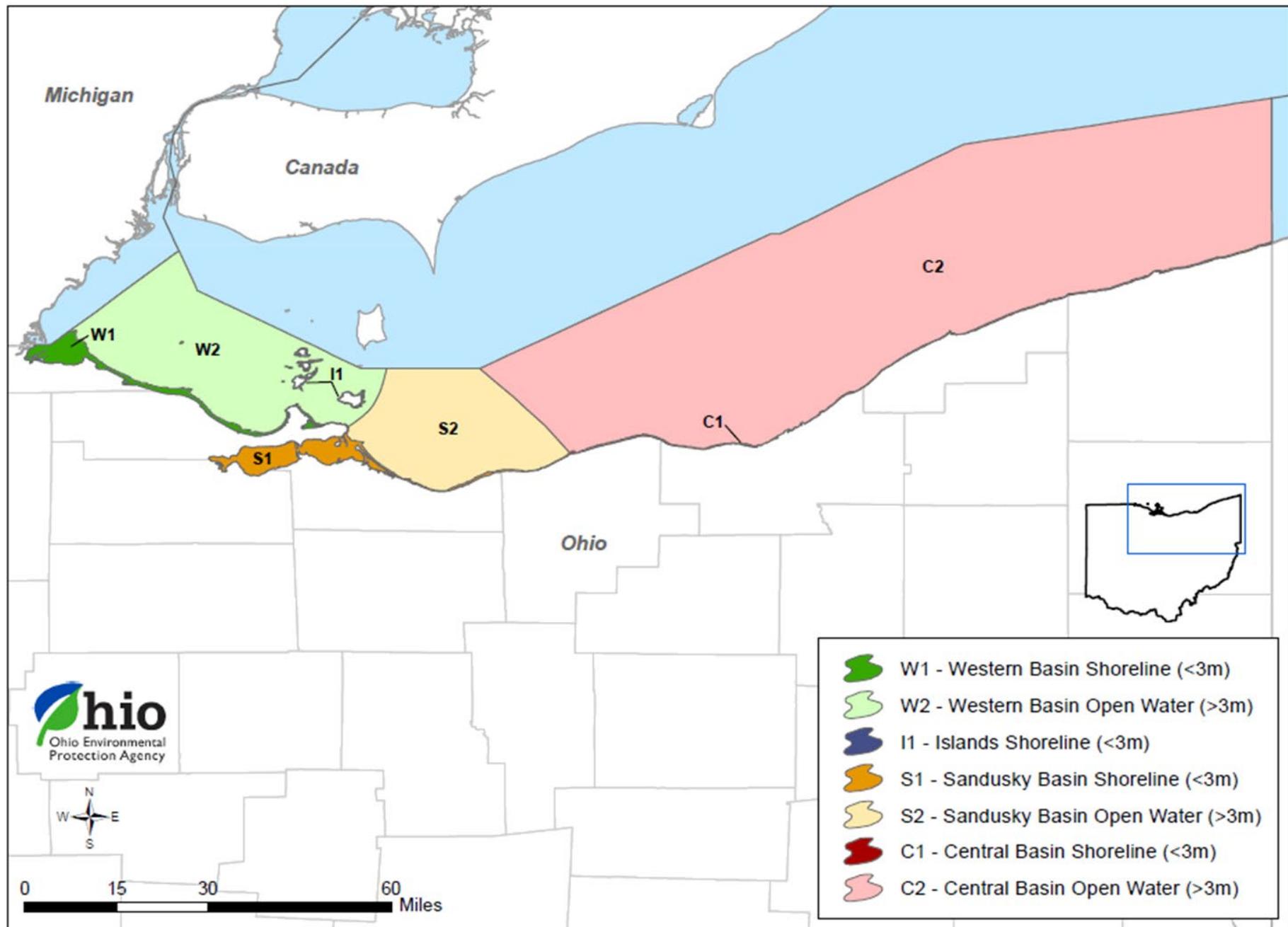
Water Type	Full Attainment	Not Supporting	Insufficient Information	Not Assessed
Watershed Assessment Units (HUC 12s)	242	430	56	810
Large Rivers	6	32	-	-
Lake Erie	-	7	-	-
Inland Lakes	54	8	37	-



# OVERVIEW OF LAKE ERIE

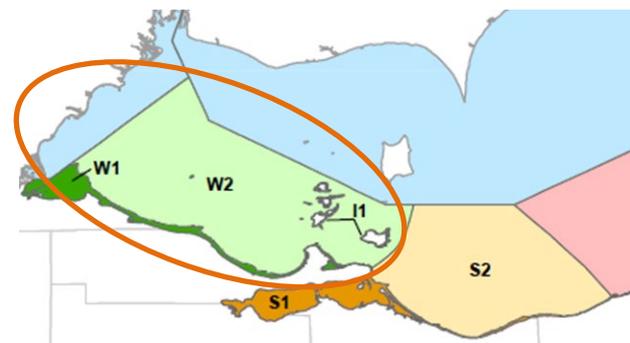


# Lake Erie Assessment Units



# Rec. (algae): Western Basin

- In the 2018 IR: New assessment methodology for algal impacts to recreation in the western basin
- Uses satellite data from NOAA
- Considers western basin open water bloom coverage for each algae season (July–Oct.) over multiple years
- Based on goals set by Great Lakes Water Quality Agreement Annex 4 (i.e., bloom size/severity no greater than observed in 2004 or 2012)



# Rec. (algae): Western Basin Results

≥30% coverage at ≥20k cell/mL; 10-day frames

Year	Western Open waters
2008	4
2009	6
2010	8
2011	8
2012	2
2013	10
2014	6
2015	9
2016	5
2017	7
2018	6
2019	5

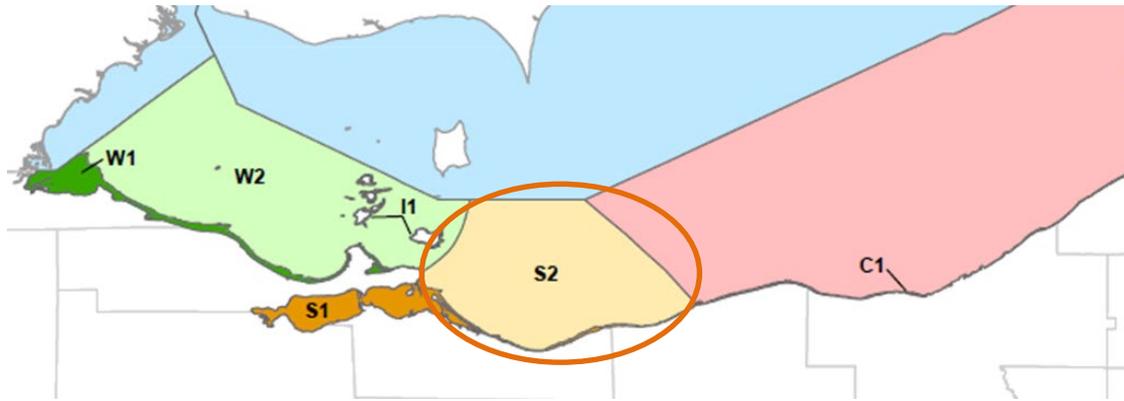
## 2020 IR Status

- Western basin remains impaired for recreation.
- Two or more years have three or more frames that exceed the coverage and cell density thresholds

# **New Assessment of Recreation**

## **Methods & Results Sandusky and Central Basins in 2020 IR**

# Rec. (algae): Sandusky Open Water Assessment Unit



- Transition zone
- Generally most impacted by western *Microcystis* bloom being blown/pushed into this unit. Some *Dolichospermum* blooms occur in this unit as well.

# Rec. (algae): Sandusky Open Water Method

Assessment Unit is Impaired if:

- **Spatial coverage:** satellite data to determine if greater than 30% of area is covered at 20k cell density threshold
- **Duration:** Three or more 10-day frames in a year's algae season (July-Oct)
- **Frequency:** Two or more years in a rolling 6-year window

# Rec. (algae): Sandusky Open Water Results

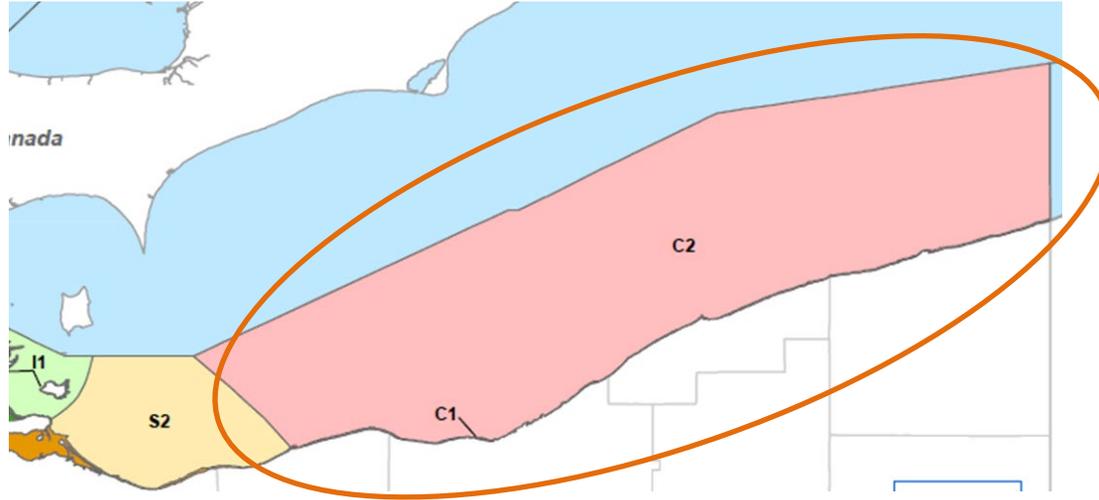
≥30% coverage at ≥20k cell/mL; 10-day frames

Year	Sandusky Open waters
2008	4
2009	1
2010	0
2011	5
2012	4
2013	6
2014	2
2015	8
2016	1
2017	1
2018	2
2019	0

- Only one year exceeded the goal out of the last six
- This assessment unit use is met/not impaired

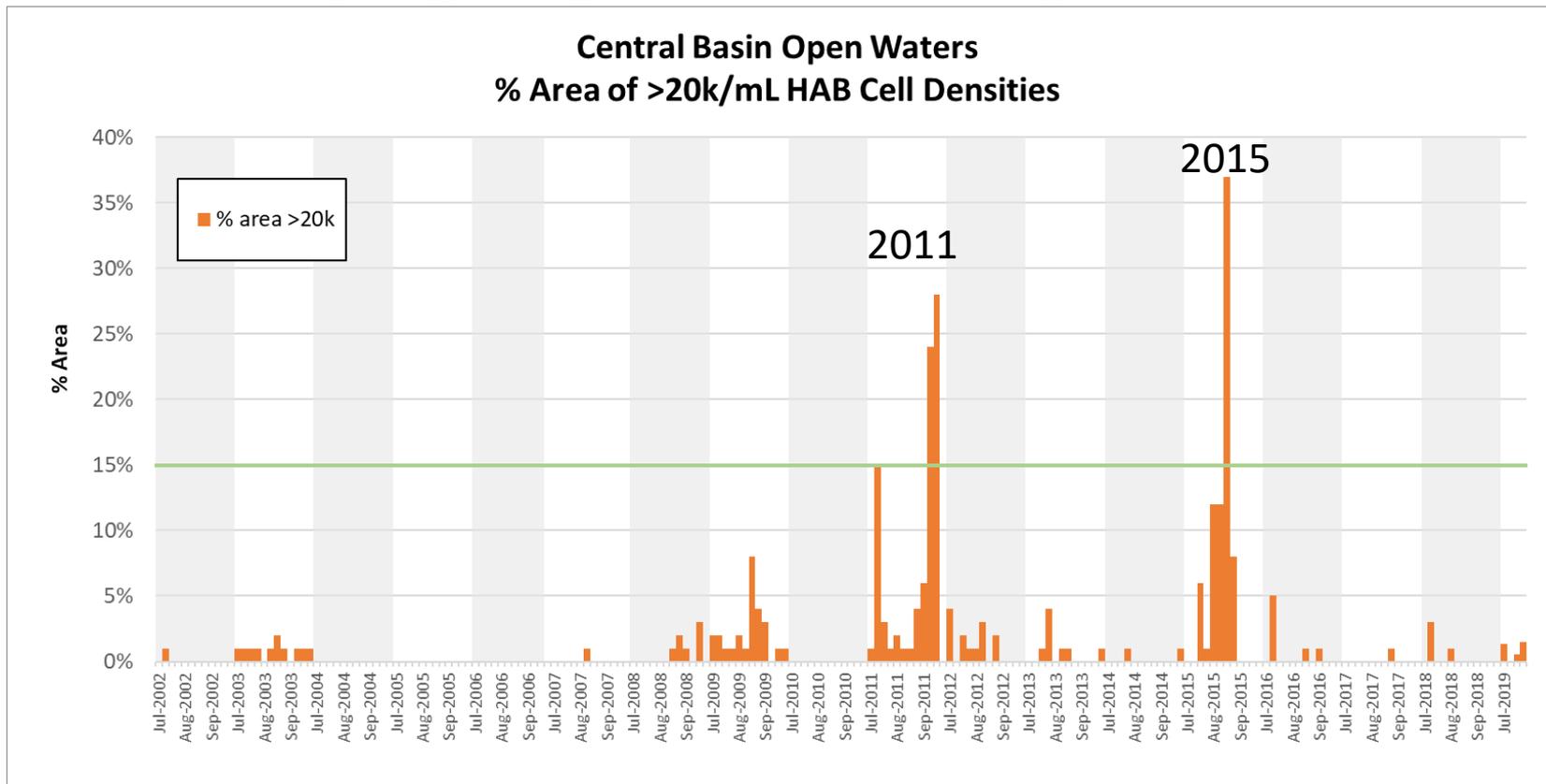


# Rec. (algae): Central Open Water



- Short *Dolichospermum* blooms occur early. Sometimes western *Microcystis* bloom migrates to unit later in the season
- Annex 4 loading goals did not address central basin blooms; therefore a reference “acceptable” bloom is not defined
- Instead looking at unacceptable bloom – 2011. If blooms of this nature were the norm, it would impair recreation use

# Rec. (algae): Central Open Water



- In 2011, three 10-day frames were >15% area; this is the unacceptable benchmark
- In 2015, one 10-day window exceeded 15% of the area

# Rec. (algae): Central Open Water Method

Assessment Unit is Impaired if:

- **Spatial coverage:** satellite data to determine if greater than 15% of assessment unit area is covered at 20k cell density threshold
- **Duration:** Three or more 10-day frames in a year
- **Frequency:** Two or more years in a rolling 6-year window

# Rec. (algae): Central Open Water Results

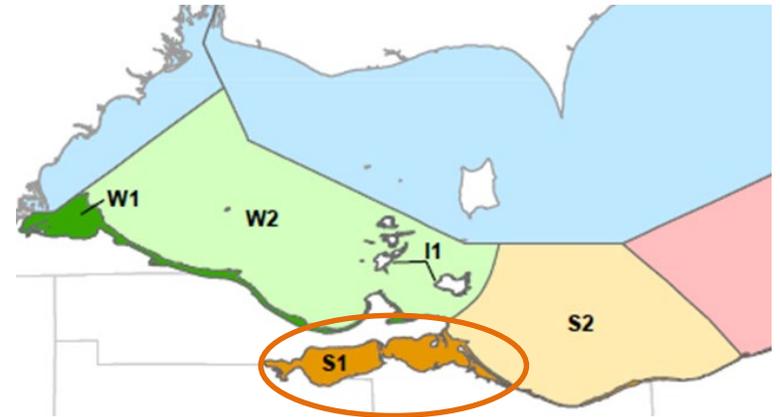
≥15% coverage at ≥20k cell/mL; 10-day frames

Year	Central Open Water
2008	0
2009	0
2010	0
2011	3
2012	0
2013	0
2014	0
2015	1
2016	0
2017	0
2018	0
2019	0

- No years have exceeded the metric out of the last six
- **This assessment unit use is met/not impaired**

# Rec. (algae): Sandusky Shoreline

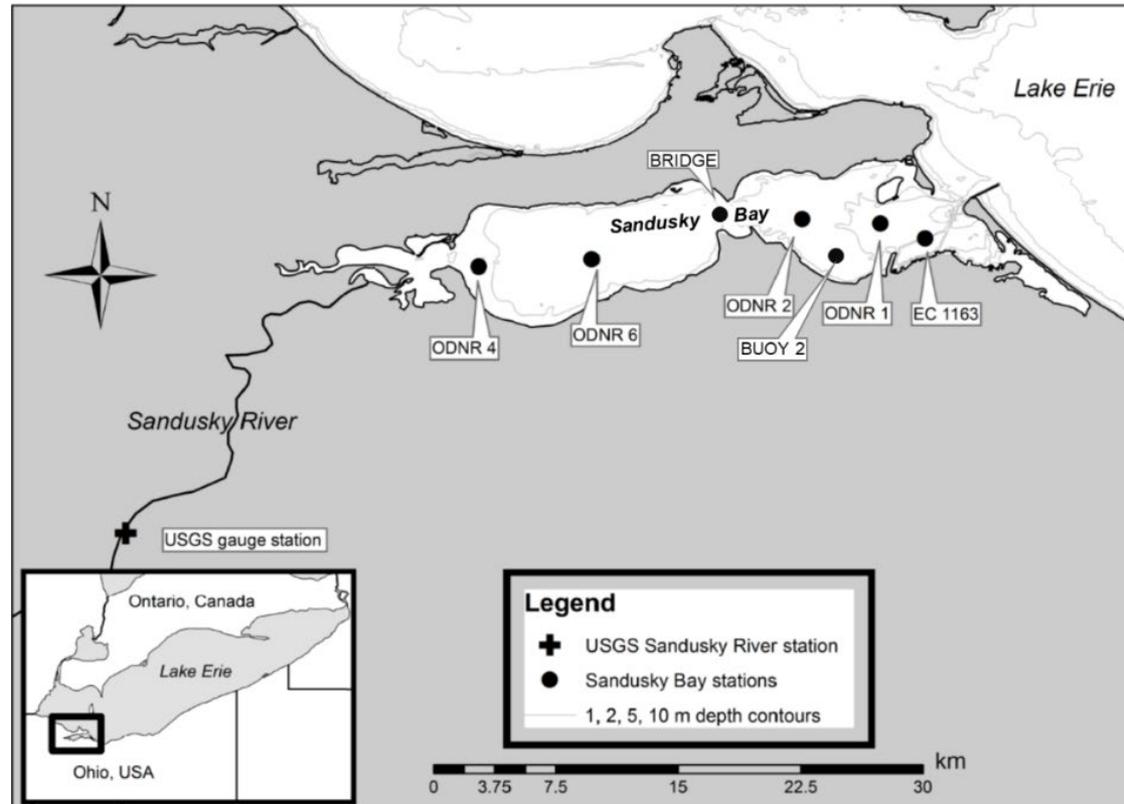
- Assessment unit includes all Sandusky Bay
- Different type of HAB occurs in the Sandusky Bay.
- Satellite data does not predict cyanotoxins as well as in Lake Erie's other units



# Rec. (algae): Sandusky Shoreline Methodology

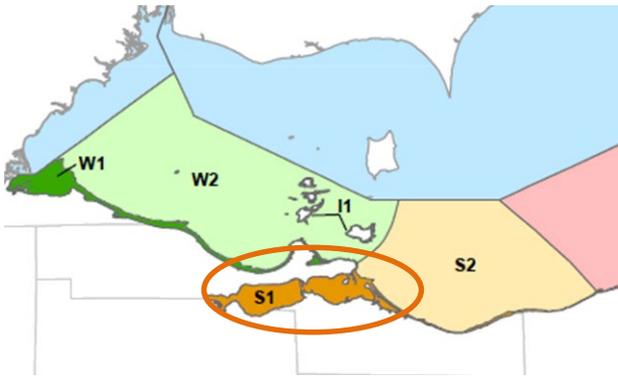
Assessment Unit is Impaired if:

- **Spatial coverage:** Microcystin samples collected at seven locations throughout the Sandusky Bay



- **Duration:** Three or more 10-day frames in a year (June-Sep) exceed  $6 \mu\text{g/L}$
- **Frequency:** Two or more years in a rolling 6-year window

# Rec. (algae): Sandusky Shoreline Results



- Currently only have two years of data collected by Bowling Green State University and submitted to Ohio EPA's lab for analysis
- Insufficient information to determine impairment status

	Average of four sites $\geq 6$ ug/L Microcystins	
Year	10-day frames exceeding	total frames with data
2018	4	4
2019	2	6

# Lake Erie Use Summary

Use Designation Impairment	Western Shoreline	Western Open Water	Islands Shoreline	Sandusky Shoreline	Sandusky Open Water	Central Shoreline	Central Open Water
Aquatic Life Use ( <i>Biological Community/Diversity</i> )	✓	☐	✓	✓	☐	✓	☐
Public Drinking Water Supply ( <i>Algae</i> )	✓	✓	✓	✓	✓	N/A	✓
Human Health - <i>Fish Tissue (PCBs)</i>	✓	✓	✓	✓	✓	✓	✓
Recreation ( <i>E. coli</i> )	✓	☐	✓	✓	☐	✓	☐
Recreation ( <i>Algae</i> )	✓	✓	✓	★	X	X	X

## Legend

- ✓ = Impaired
- N/A = Not applicable
- X = Not impaired
- ☐ = Method under development
- ★ = Insufficient information at this time

# Lake Erie Use Summary

Use Designation Impairment	Western Shoreline	Western Open Water	Islands Shoreline	Sandusky Shoreline	Sandusky Open Water	Central Shoreline	Central Open Water
Aquatic Life Use ( <i>Biological Community/Diversity</i> )	✓	☐	✓	✓	☐	✓	☐
Public Drinking Water Supply ( <i>Algae</i> )	✓	✓	✓	✓	✓	N/A	✓
Human Health - <i>Fish Tissue (PCBs)</i>	✓	✓	✓	✓	✓	✓	✓
Recreation ( <i>E. coli</i> )	✓	☐	✓	✓	☐	✓	☐
Recreation ( <i>Algae</i> )	✓	✓	✓	★	X	X	X

## Legend

- ✓ = Impaired
- N/A = Not applicable
- X = Not impaired
- ☐ = Method under development
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# Comments on 2020 IR

Email: [epatmdl@epa.ohio.gov](mailto:epatmdl@epa.ohio.gov)

Mail: Ohio EPA, Division of Surface Water  
Attn: 303(d) Comments  
P.O. Box 1049  
Columbus, Ohio 43216-1049

Comments must be received by the close of business on **March 13, 2020**. Comments received after this date may be considered as time and circumstances allow.

