

Understanding Michigan's Water Quality

2016 Draft Integrated Report

And

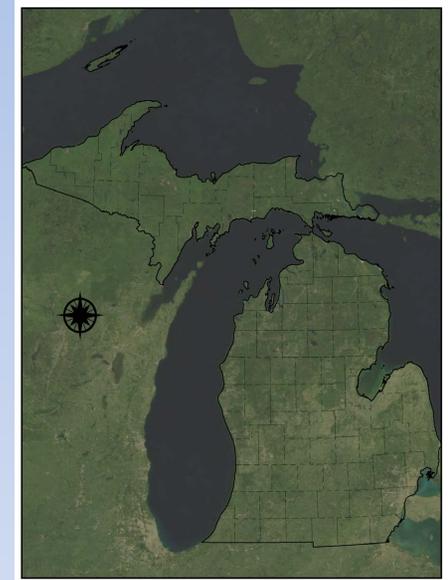
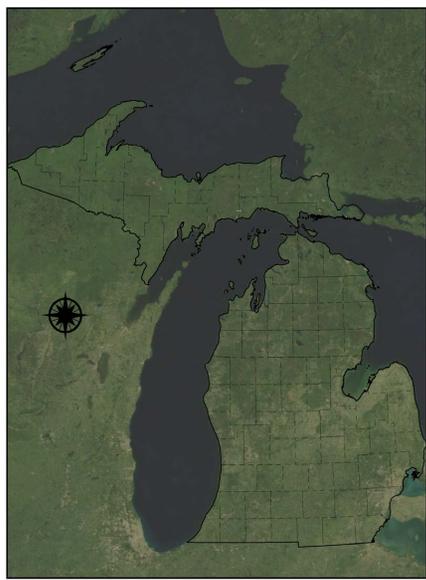
TMDL Vision

Kevin Goodwin Molly Rippke

Tamara Lipsey

Jason Smith Kelly Turek

Sam Noffke



Water Resources Division,
Michigan Department of Environmental
Quality

GOALS:

- MDEQ Water Quality Assessments
- 2016 Highlights
- New TMDL Vision and Approach



Simply Put...

1. Collect Data

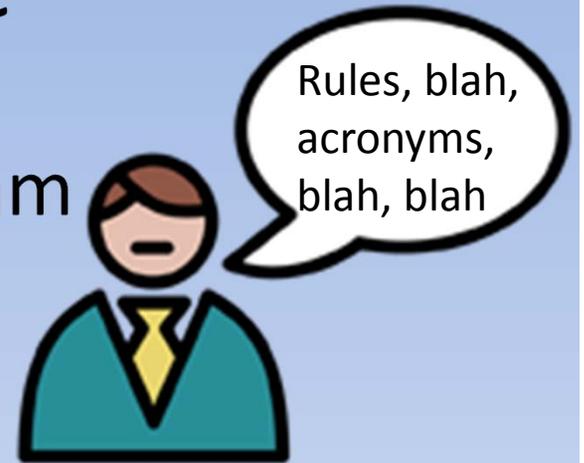


2. Compare Data to an Acceptable Level or Condition

3. Specify where water is “Good”and where it is “Not Good.”

Webinar Outline

- Drivers behind monitoring program
- How we 'convert' data to the idea of quality
- How to interpret water quality State-wide
- 2016 Highlights
- New approach for those water bodies not performing as they should



The Great Lakes State

- Michigan is physically defined by, and easily identifiable because of,

water



- Rivers and Streams: 76,000+ miles
- Inland Lakes: 872,000+ acres (over 11,000 lakes)
- Great Lakes Shoreline: 3,000+ miles
- Wetlands: almost 6.5 million acres
- These high-quality waters are a major driver of:
 - Recreation, Tourism, Industry, overall Quality of Life

Water Quality Monitoring:

Why We Do, What We Do

Water Resources Division Mission:

Clean and Safe Water Resources

- Federal Requirement
 - 1972 Clean Water Act
 - Biennially, even years
 - Convert monitoring data into big pictures in this report

.....2002 2004 2006 2008 2010 2012 2014.....

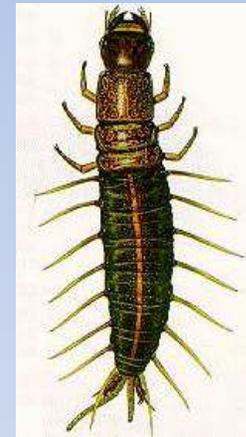
1972 Federal Water Pollution Control Act (*Clean Water Act*)

- All put together equal the *Water Quality and Pollution Control in Michigan Sections 303(d), 305(b), and 314 Integrated Report*.....aka “**Integrated Report**”, submitted every other year
- Section 303(d) – **Impaired Waters**. Identify waters for which current conditions are not meeting ***water quality standards***, prioritize, and ultimately develop target pollutant loads designed to attain ***uses***
- Section 305(b) – **All Water Conditions**. Description of water quality of navigable waters and the extent of use support
- Section 314 – **Lakes**. Identify eutrophic classification of public lakes and those known to be impaired for use(s).

Clean and Safe Water Resources

Data Collection

- Water Chemistry Monitoring (Gt. Lakes tributaries, bays, connecting channels)
- Volunteer Monitoring (lakes and streams)
- Fish Contaminant Monitoring
- Biological Integrity Monitoring
- Beach and River Bacteria Monitoring



- *Large portions of this monitoring are funded by the 1998 voter-approved Clean Michigan Initiative (CMI) bond, expected to sunset in 2017*

Clean and Safe Water Resources

Data Collection

- **Metrics** related to beach and river quality related to recreation contact (bacteria)
- **Metrics** related to fish consumption and aquatic biological health
- Data needed for these also vital to Integrated Report



Assessments

Moving from Data to Quality

- Pool Available Data
- Group by water body types
- Compile and compare data to **Water Quality Standards** and assess **Designated Use** support
- Extrapolate our findings across spatial scale
 - Broad issues (e.g. atmospheric deposition) applied broadly
 - Site-specific (e.g. contaminated groundwater) applied more closely

Water Quality Standards

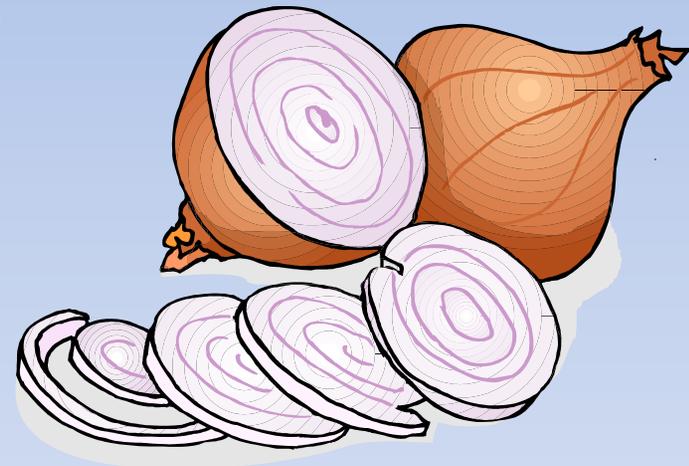
- Numeric criteria
 - Can't be over "X" concentration of a pollutant (e.g. toxic chemicals, metals)
- Narrative criteria
 - Based on a 'condition':
e.g. biological communities,
nuisance nutrients
- Water Quality Standards designed to be protective and support Designated Uses...



Designated Uses

The uses/activities for which Michigan's surface waters are protected.

- Partial/Total Body Contact Recreation
- Other Indigenous Aquatic Life and Wildlife
- Fish Consumption
- Warm/Cold Water Fishery
- Drinking Water
- Agriculture
- Navigation
- Industrial Water Supply



These are our 'bottom lines' when understanding water quality. Each one is looked at as a separate 'layer'.

Support – **Insufficient Info** – **Not Support**

Assessments

Moving from Data to Quality

- By Designated Use, assess as:
 - Fully Supporting: Use being attained
 - Insufficient Information – additional work/info needed
 - Not Supporting: Use not being attained
 - Category 4A
 - Category 4B
 - Category 4C
 - Category 5 – the “List”

TMDL?

- **Total Maximum Daily Load**
 - Identify pollutant(s) causing Use to not be supported
 - Determine pollutant inputs
 - Model reductions predicted to result in meeting WQS and supporting Use
 - Helps prioritize work, grants, more restrictive permits, as needed

I thought he said no acronyms...?

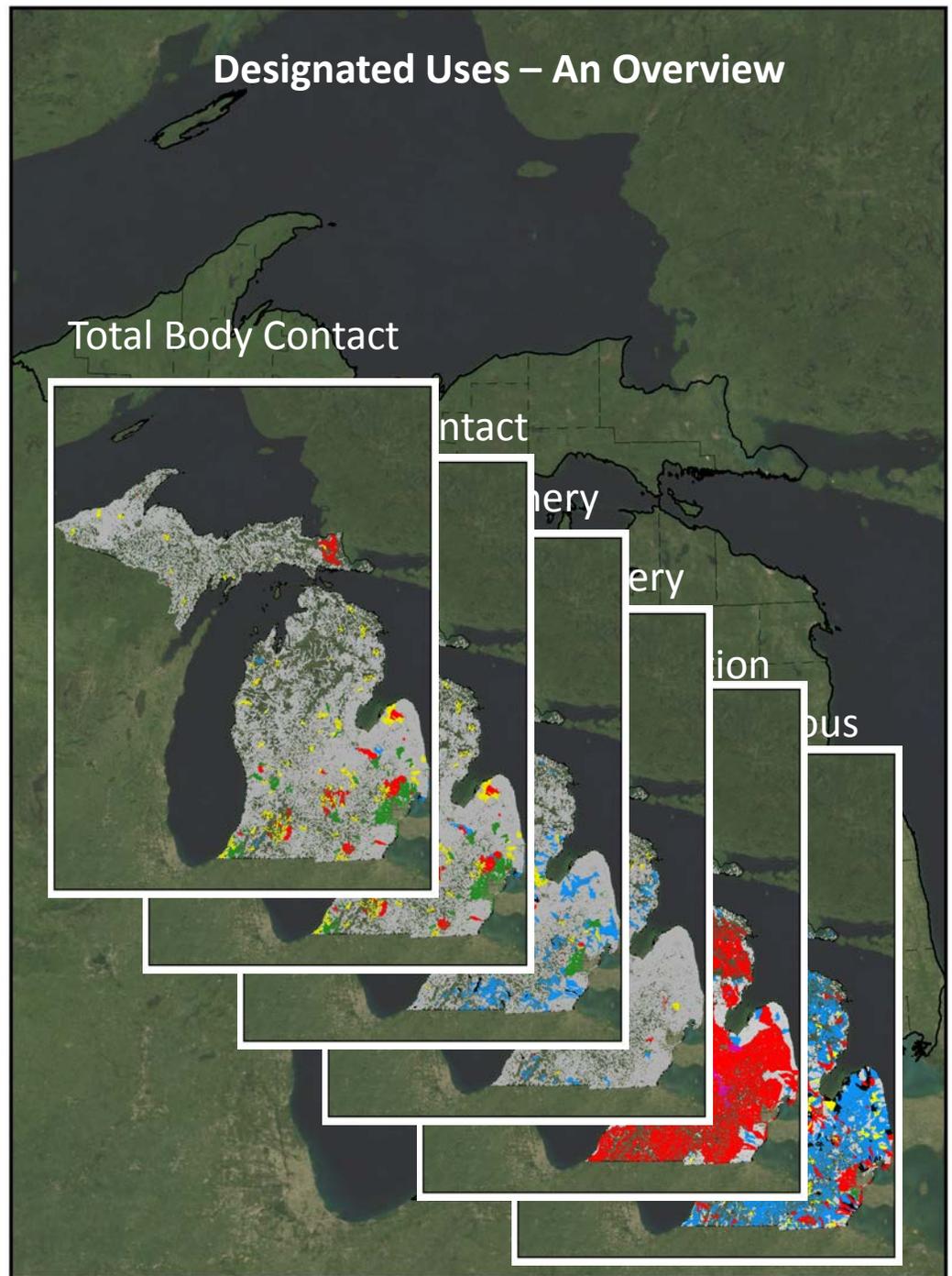


Other Not Supporting Categories

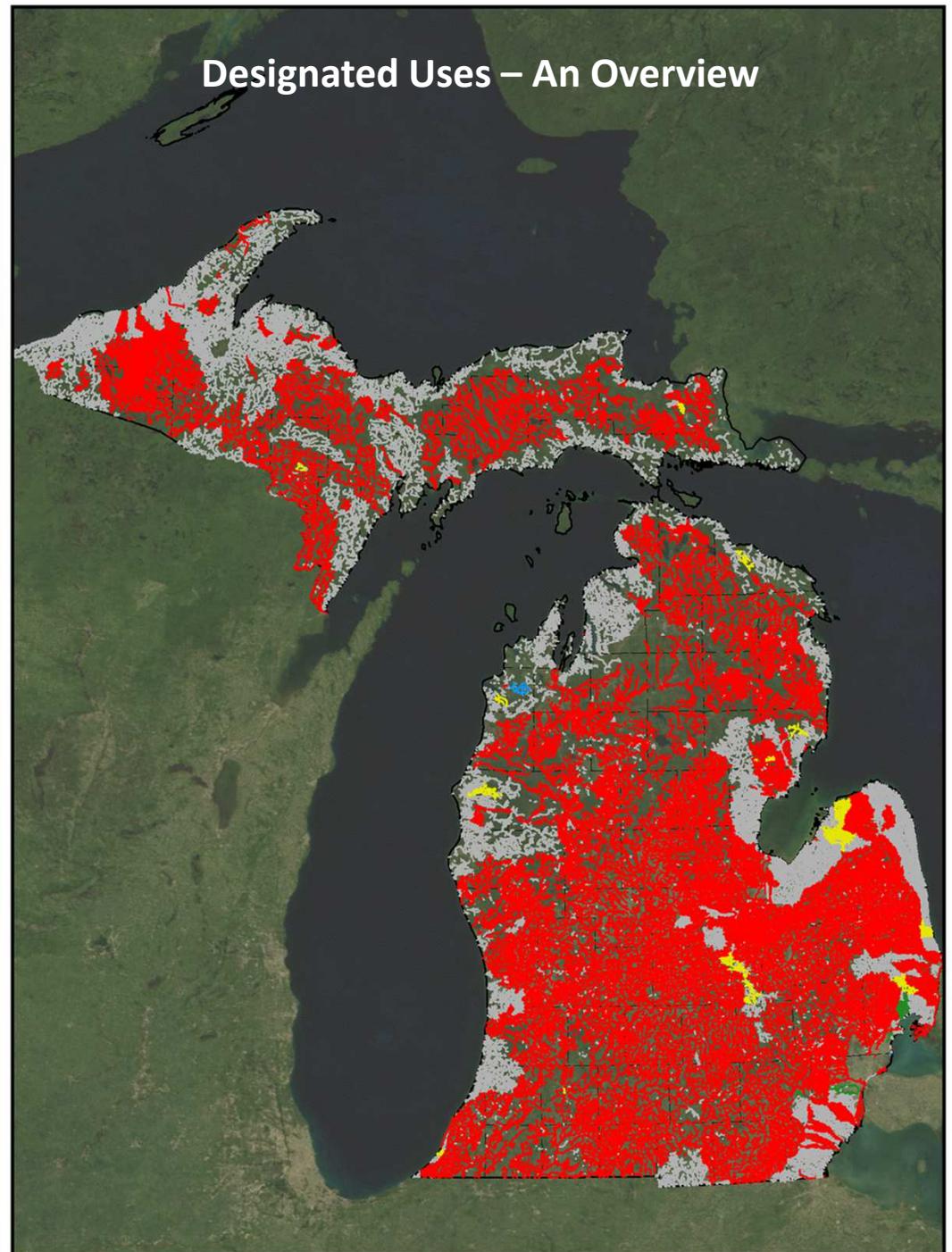
- (Category 4A) **TMDL** in place
- (Category 4B) Work/actions/plan already in place
- (Category 4C) Not caused by a pollutant



When looked at separately, each designated use can be examined closely, with available information and potential problems much more apparent on a statewide basis.



When these layers are 'stacked' and looked at as a group, with red meaning 'not supporting', Michigan's designated use support status is uninformative.

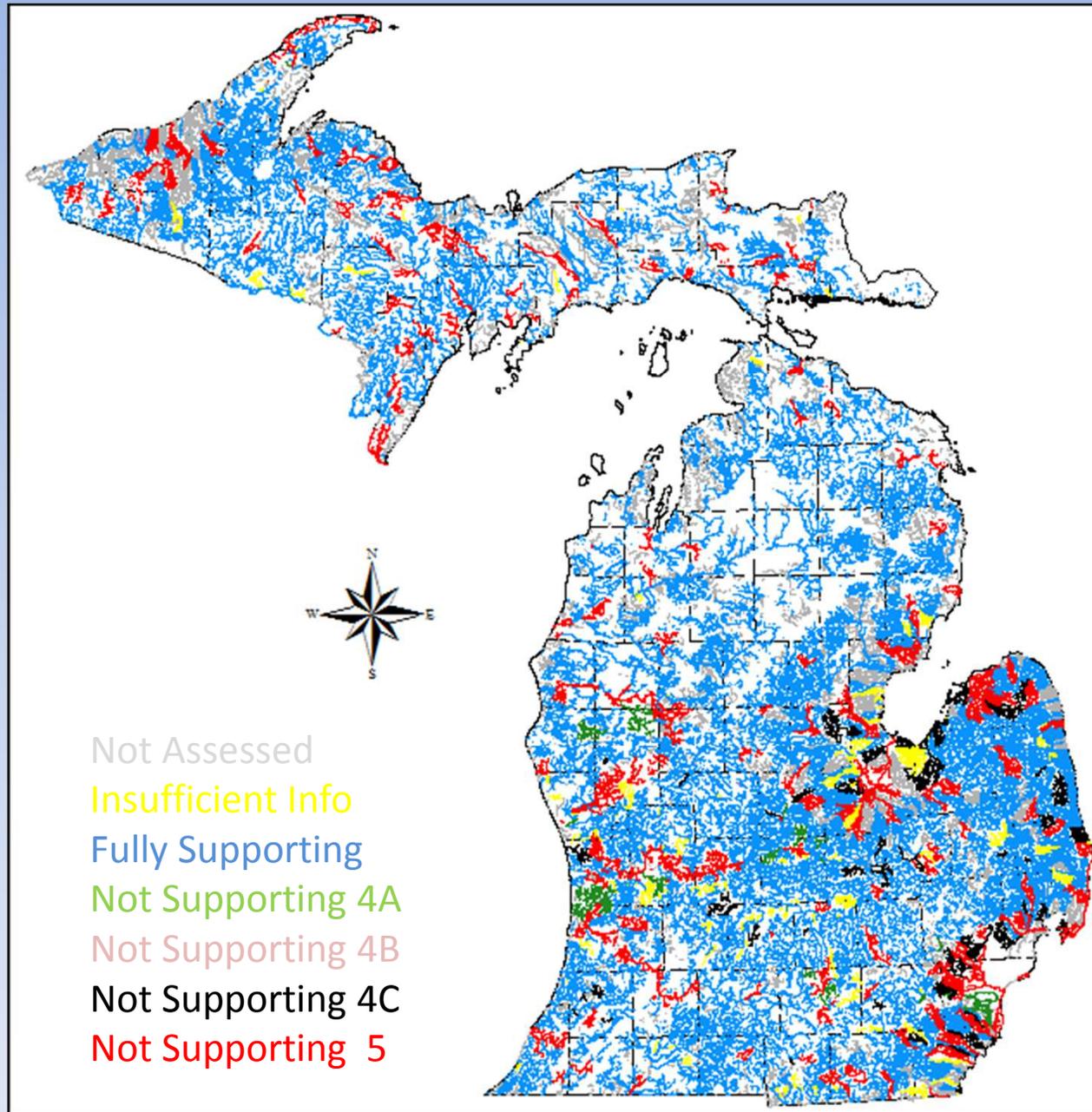


Other Indigenous Aquatic Life & Wildlife

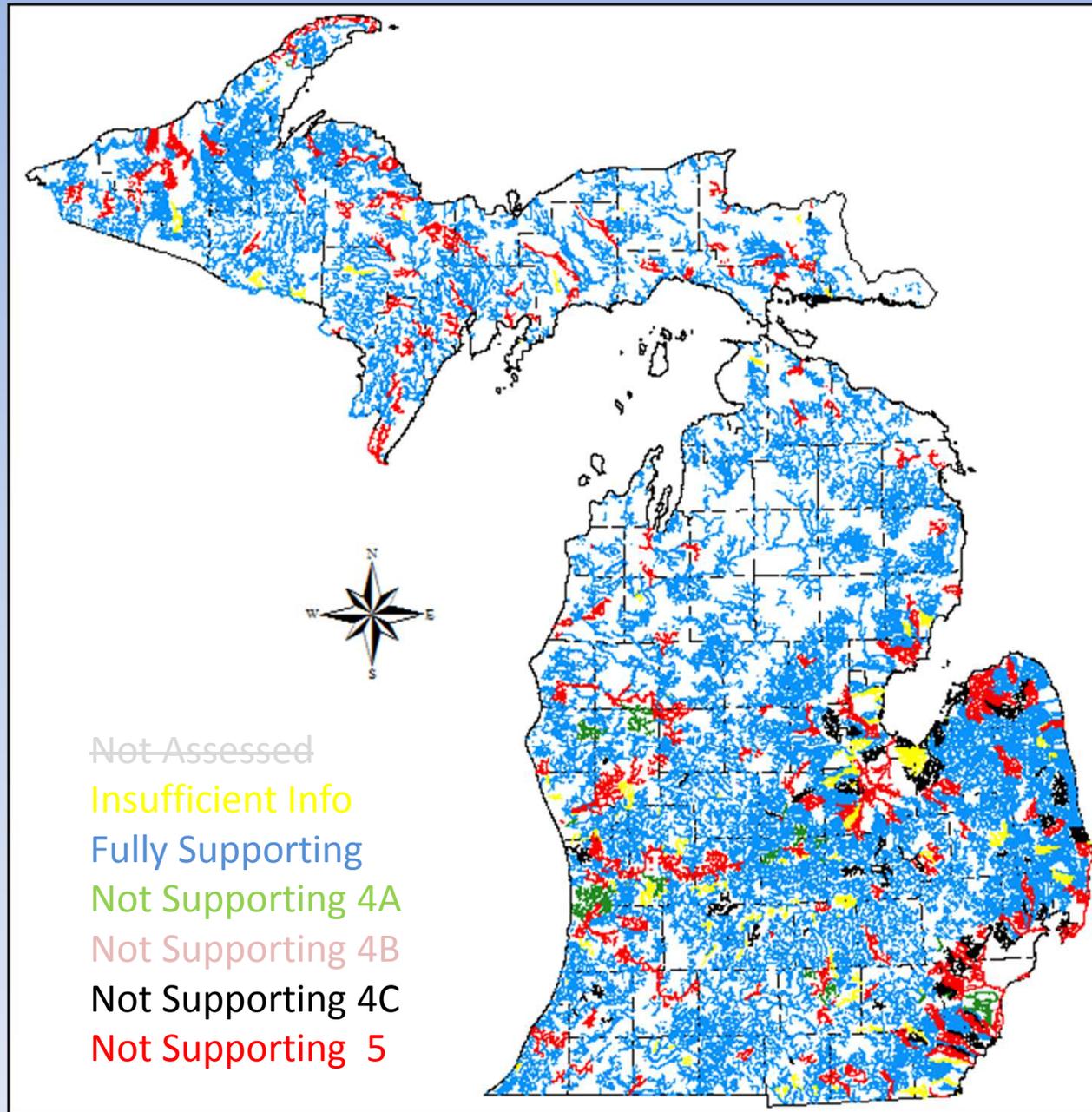
- Broadly encompasses those critters living in/near water
- Indicators of water and habitat quality
- Biological Surveys, Water Chemistry



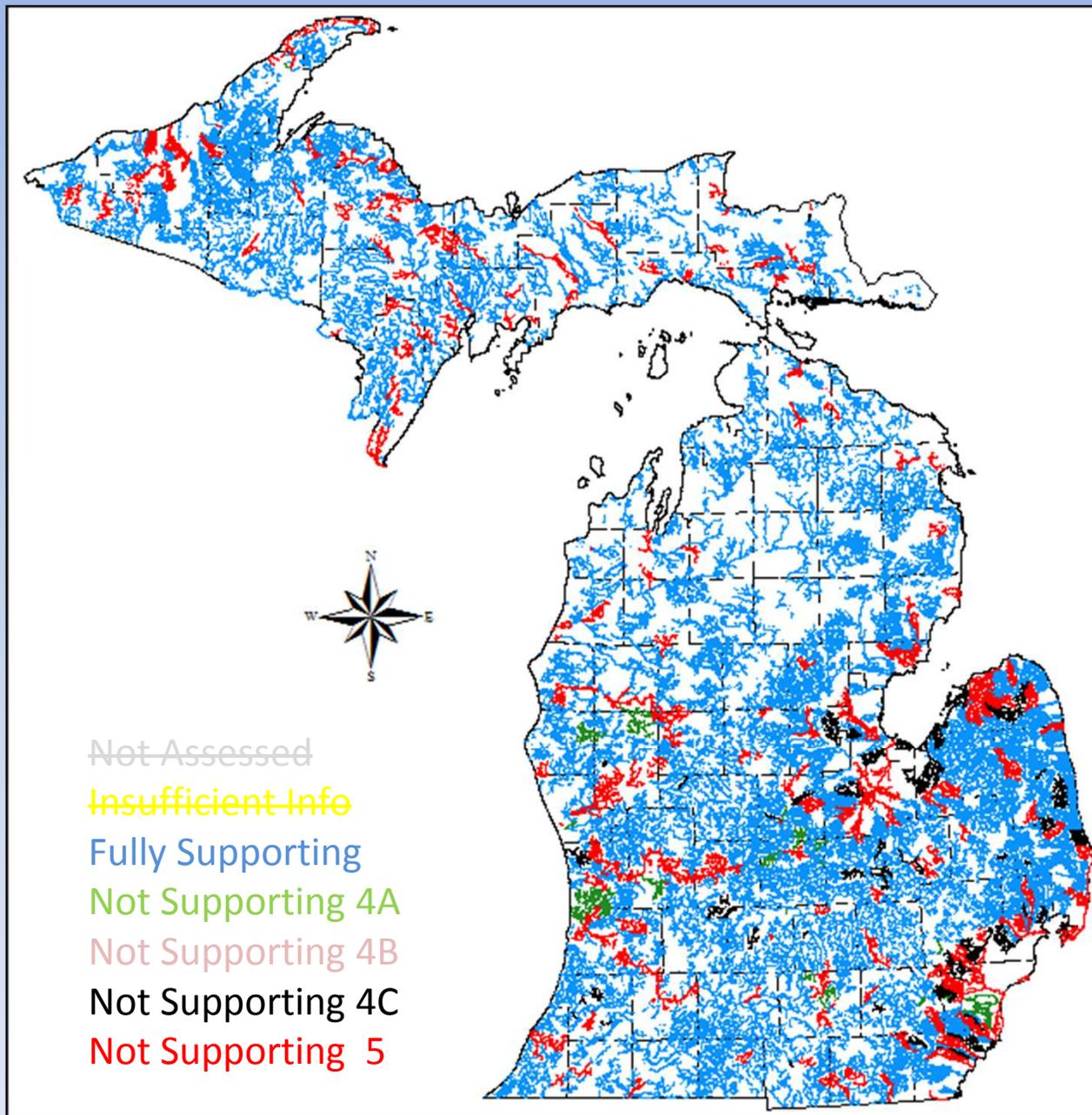
Other Indigenous Aquatic Life & Wildlife



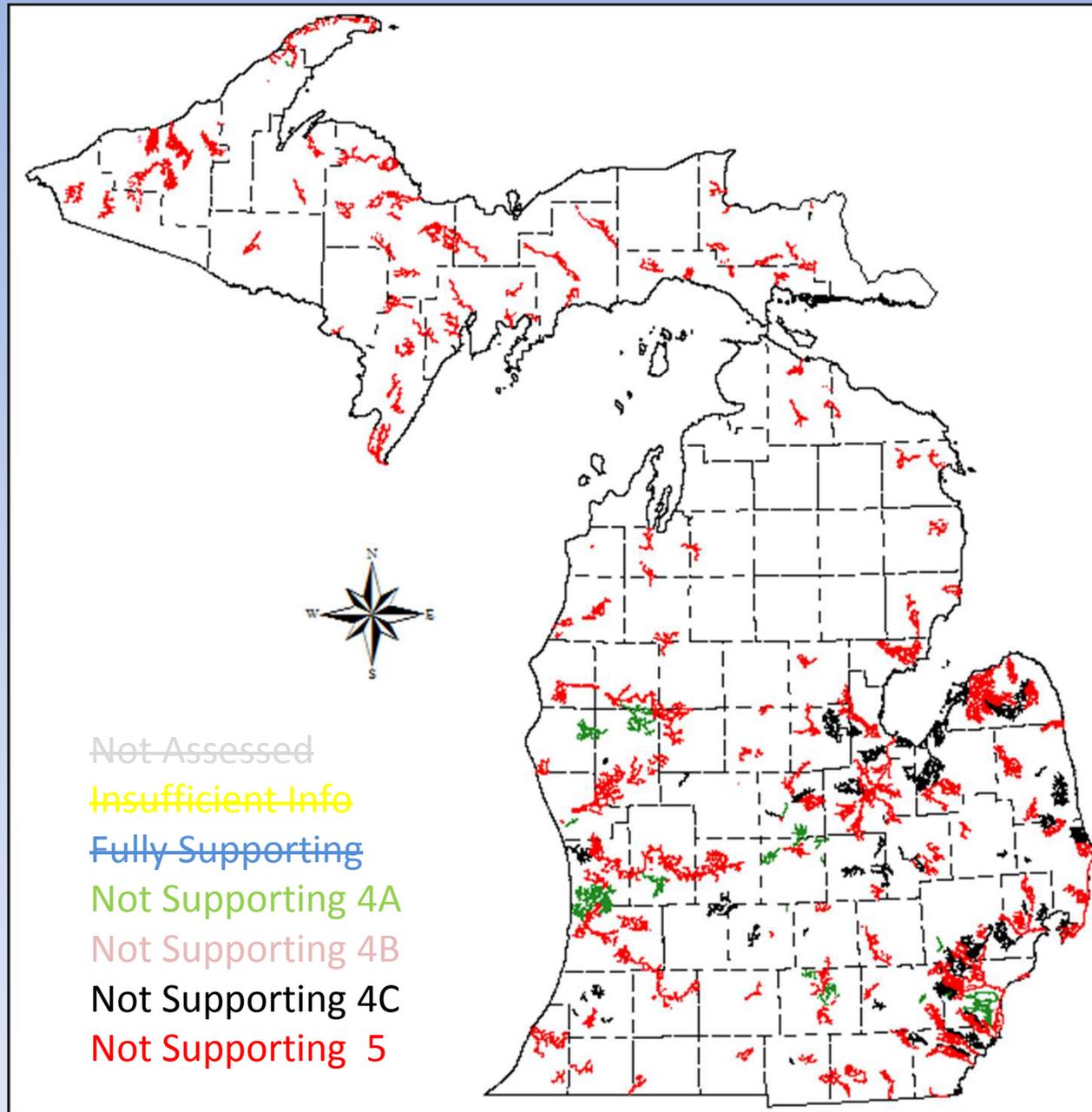
Other Indigenous Aquatic Life & Wildlife



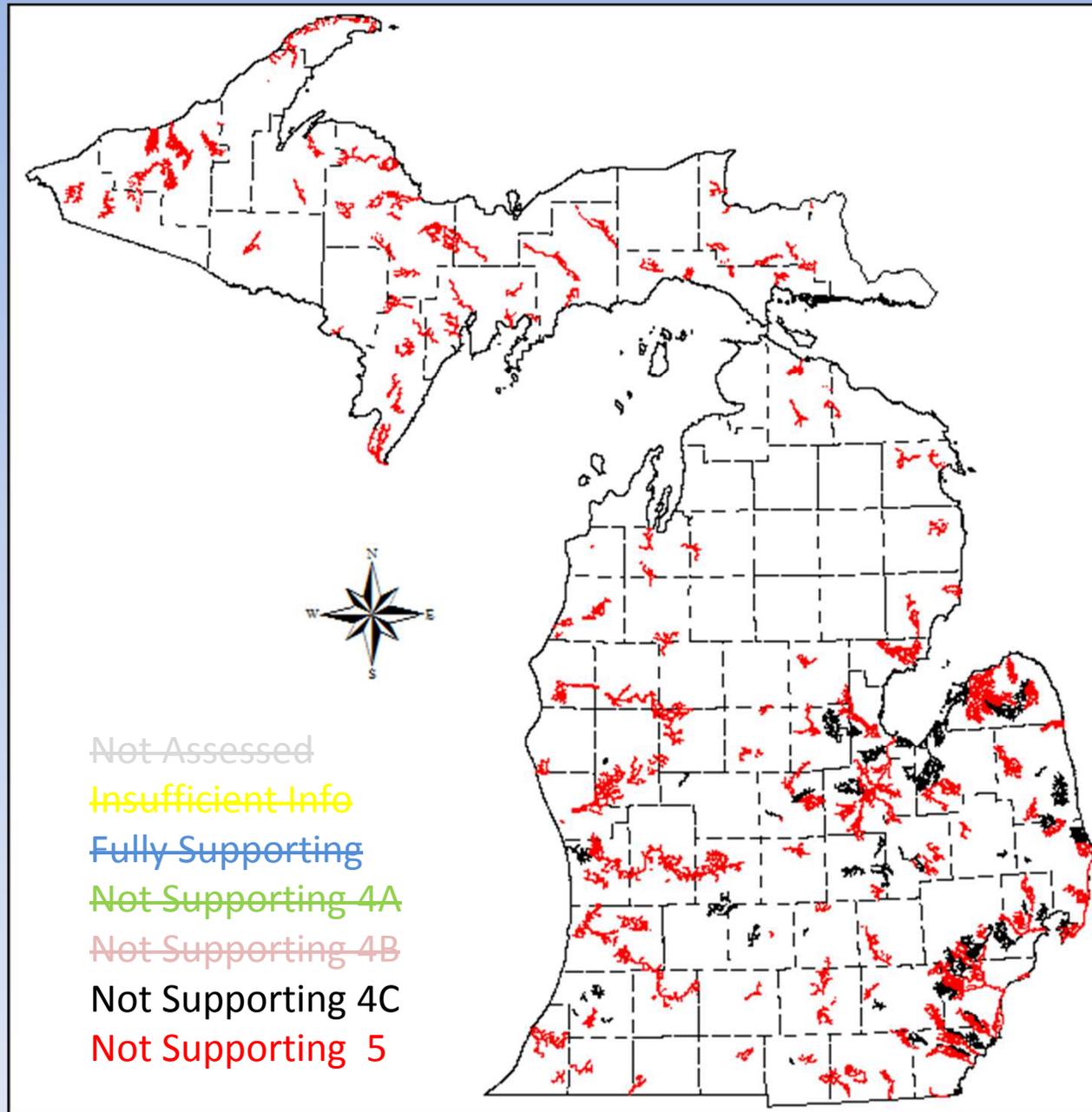
Other Indigenous Aquatic Life & Wildlife



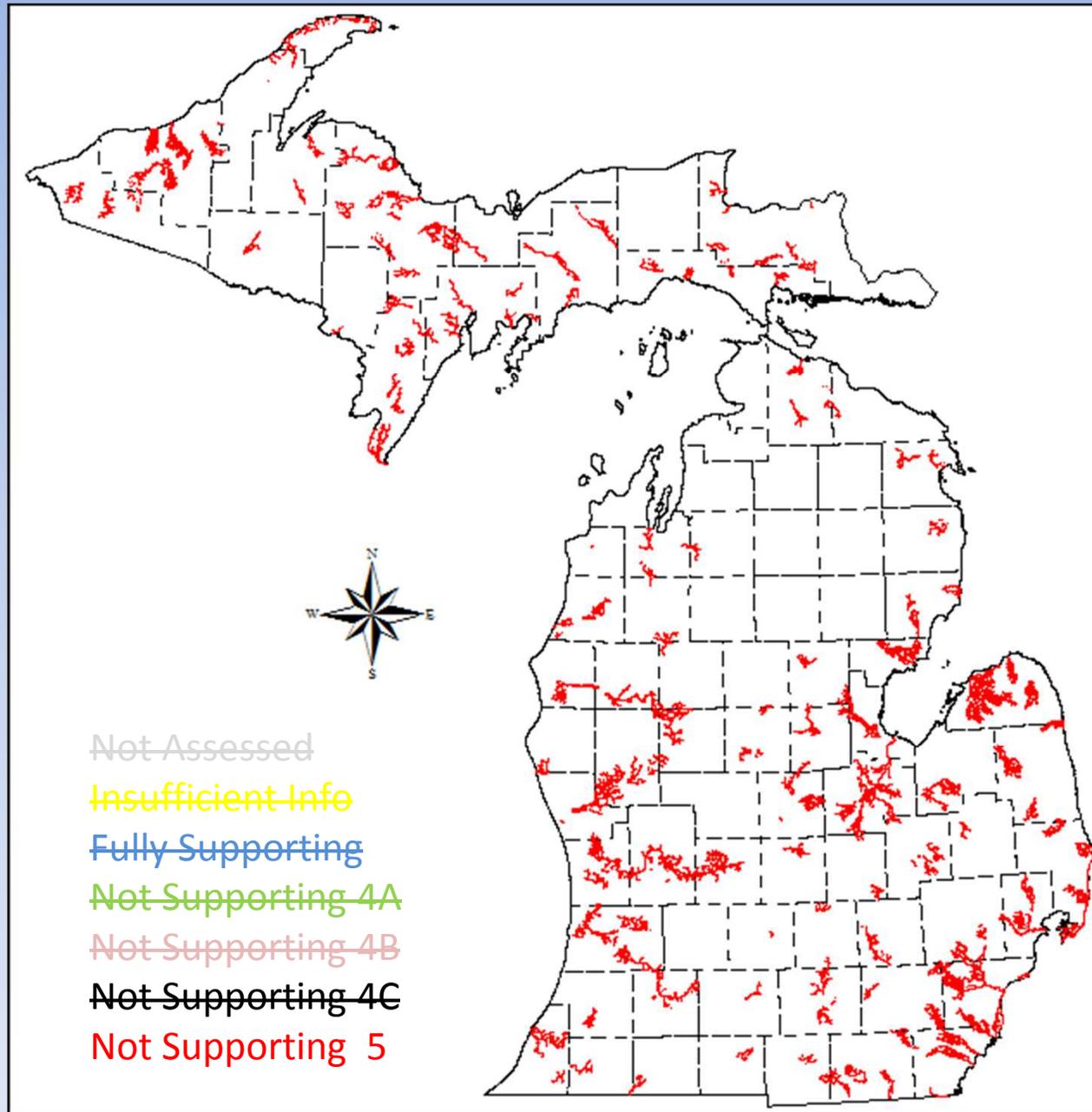
Other Indigenous Aquatic Life & Wildlife



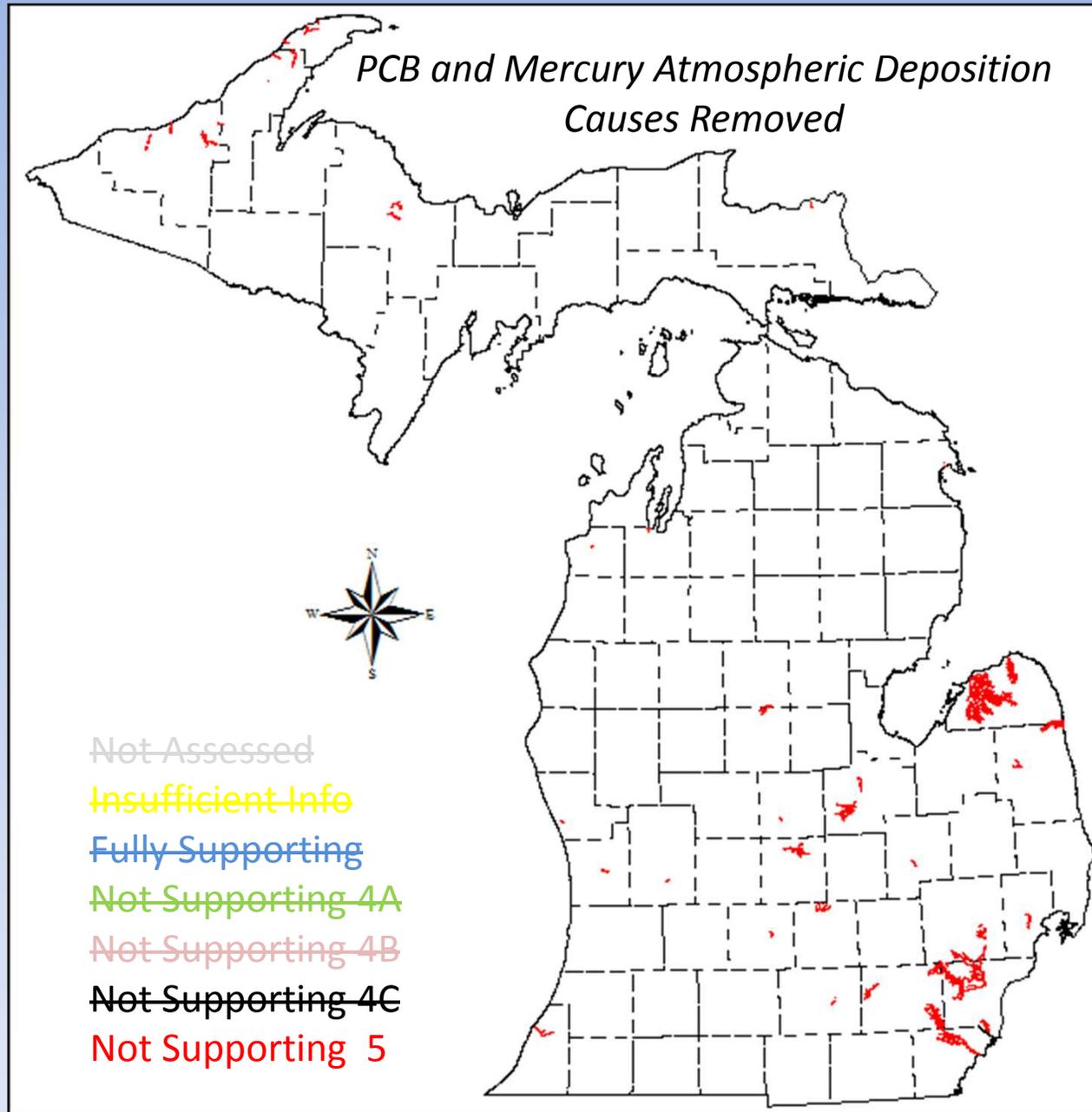
Other Indigenous Aquatic Life & Wildlife



Other Indigenous Aquatic Life & Wildlife

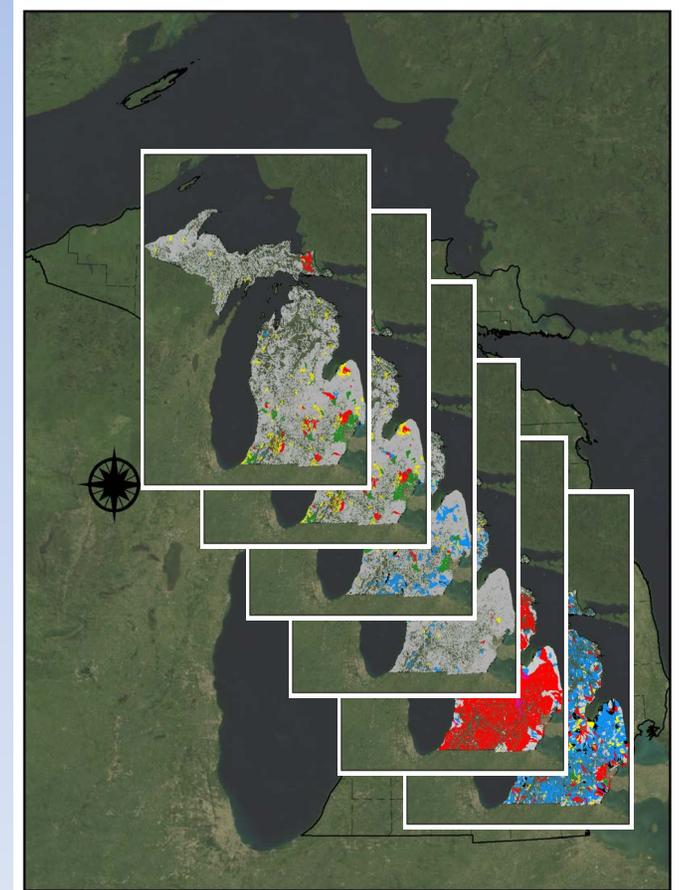


Other Indigenous Aquatic Life & Wildlife



Sum of the Parts

- Each Designated Use layer tells a story of quality, issues, causes, etc...
- Understanding layering helps to interpret water quality at many levels, each speaking differently to our priorities and concerns

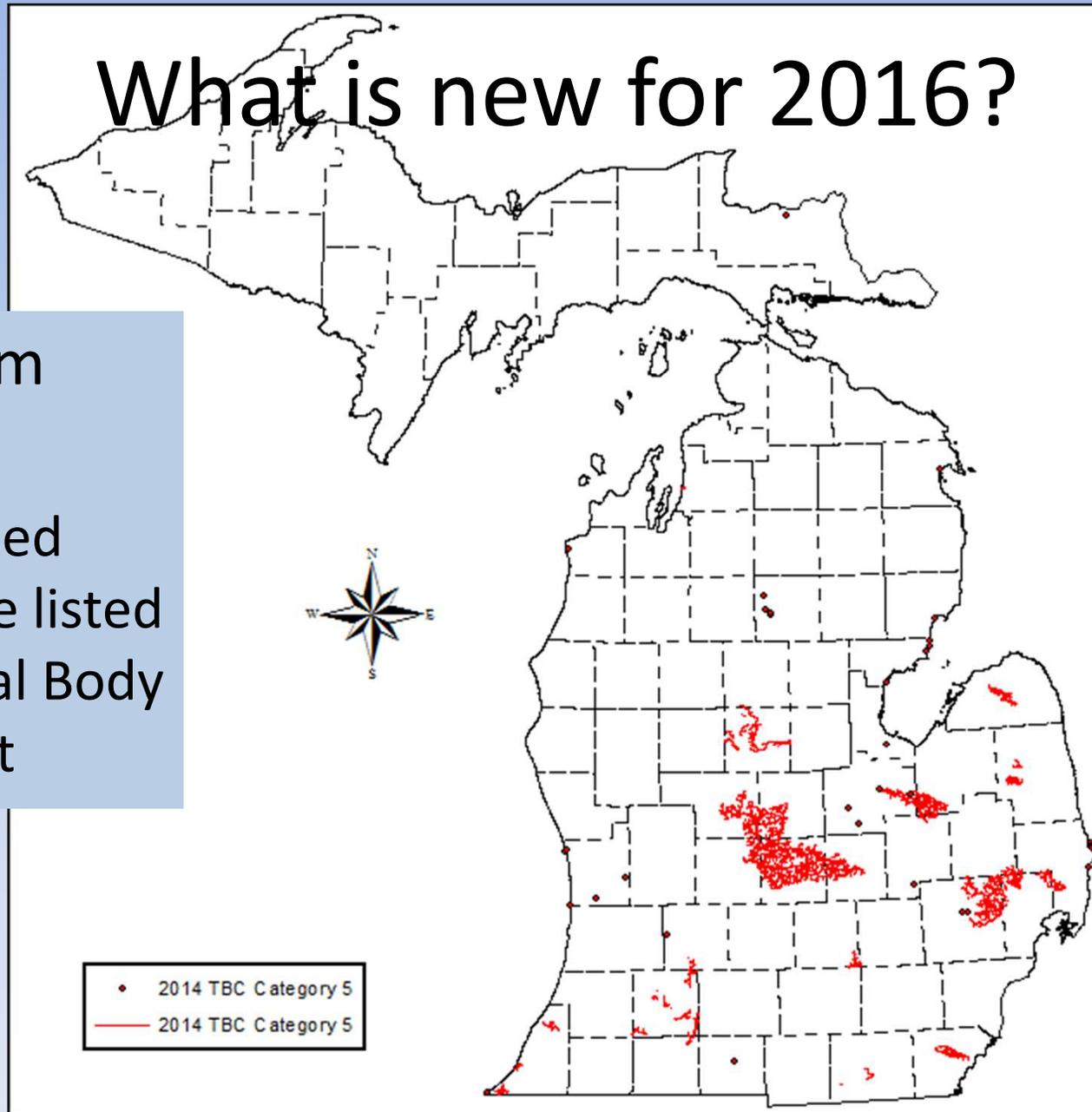


This Integrated Report process is *EVER CHANGING!*

- Shifting priorities and concerns lead to monitoring changes
- Assessment methods –changes in data, more efficient assessment processing, better incorporation of others' data
- Communication of findings and Access to information

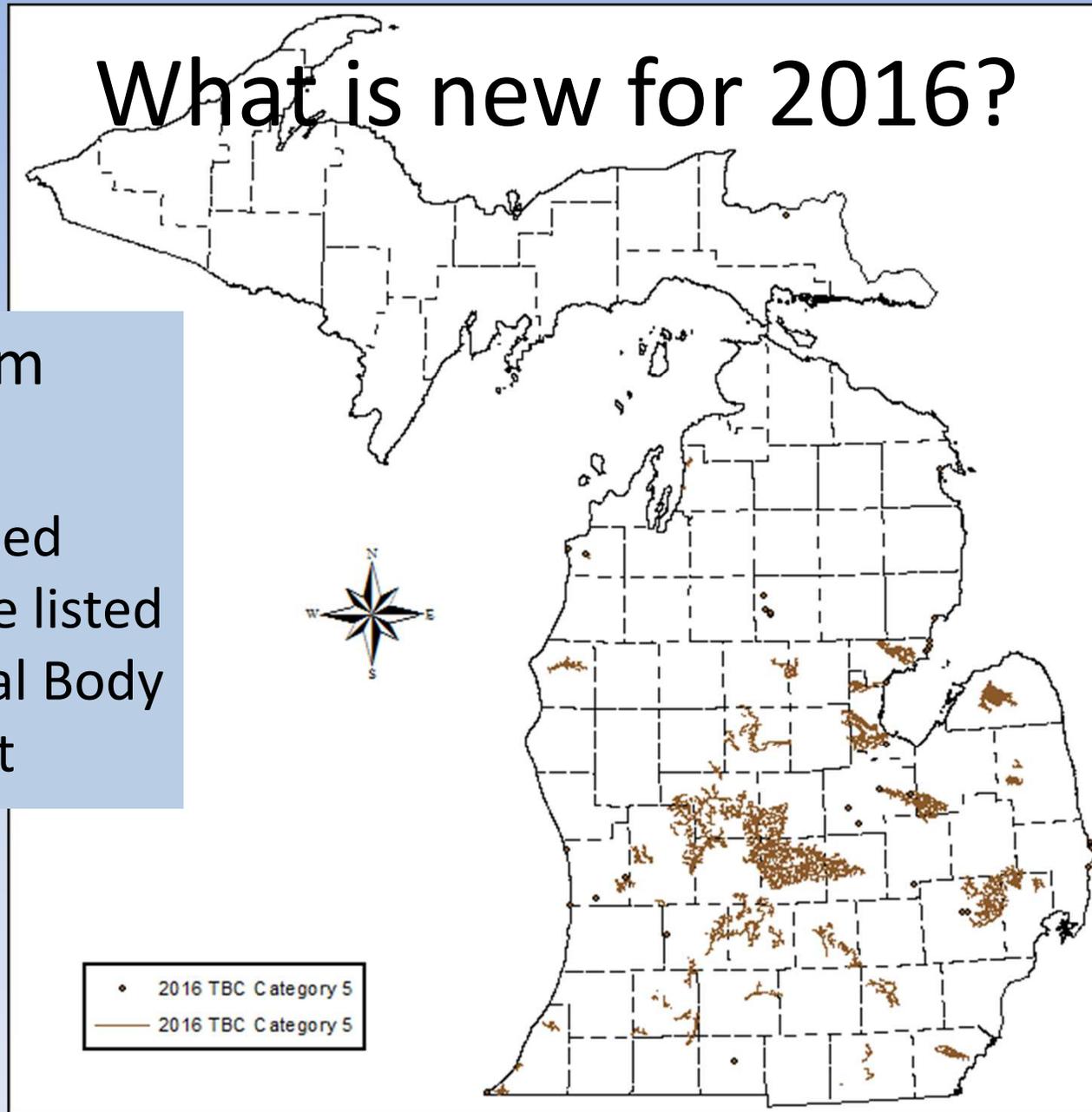
What is new for 2016?

- Program focus:
Increased mileage listed for Total Body Contact



What is new for 2016?

- Program focus:
Increased mileage listed for Total Body Contact



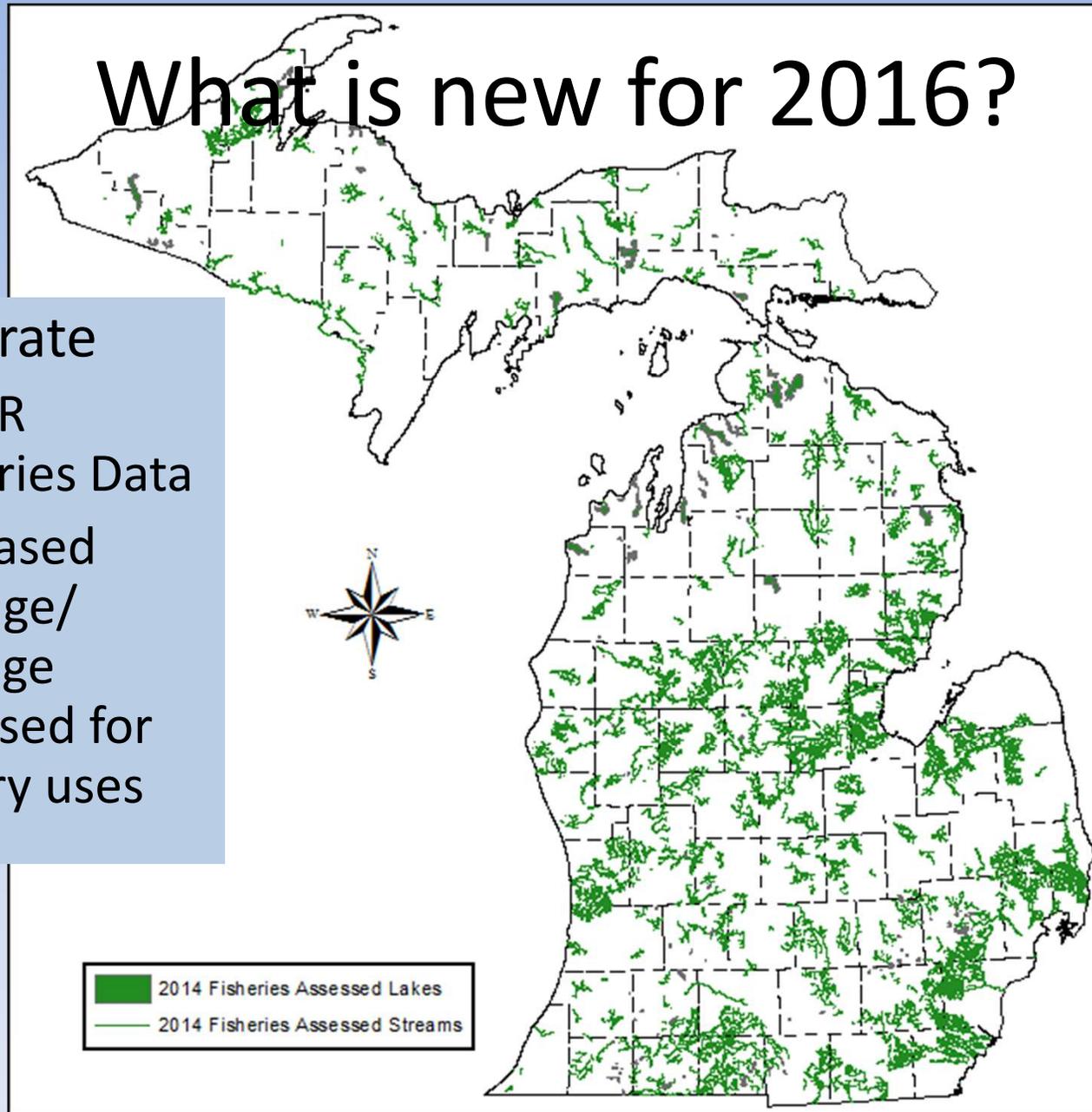
What is new for 2016?

- Program focus:
Increased mileage/
acreage for fish
consumption,
Perfluorooctane
Sulfonate
(PFOS)-related



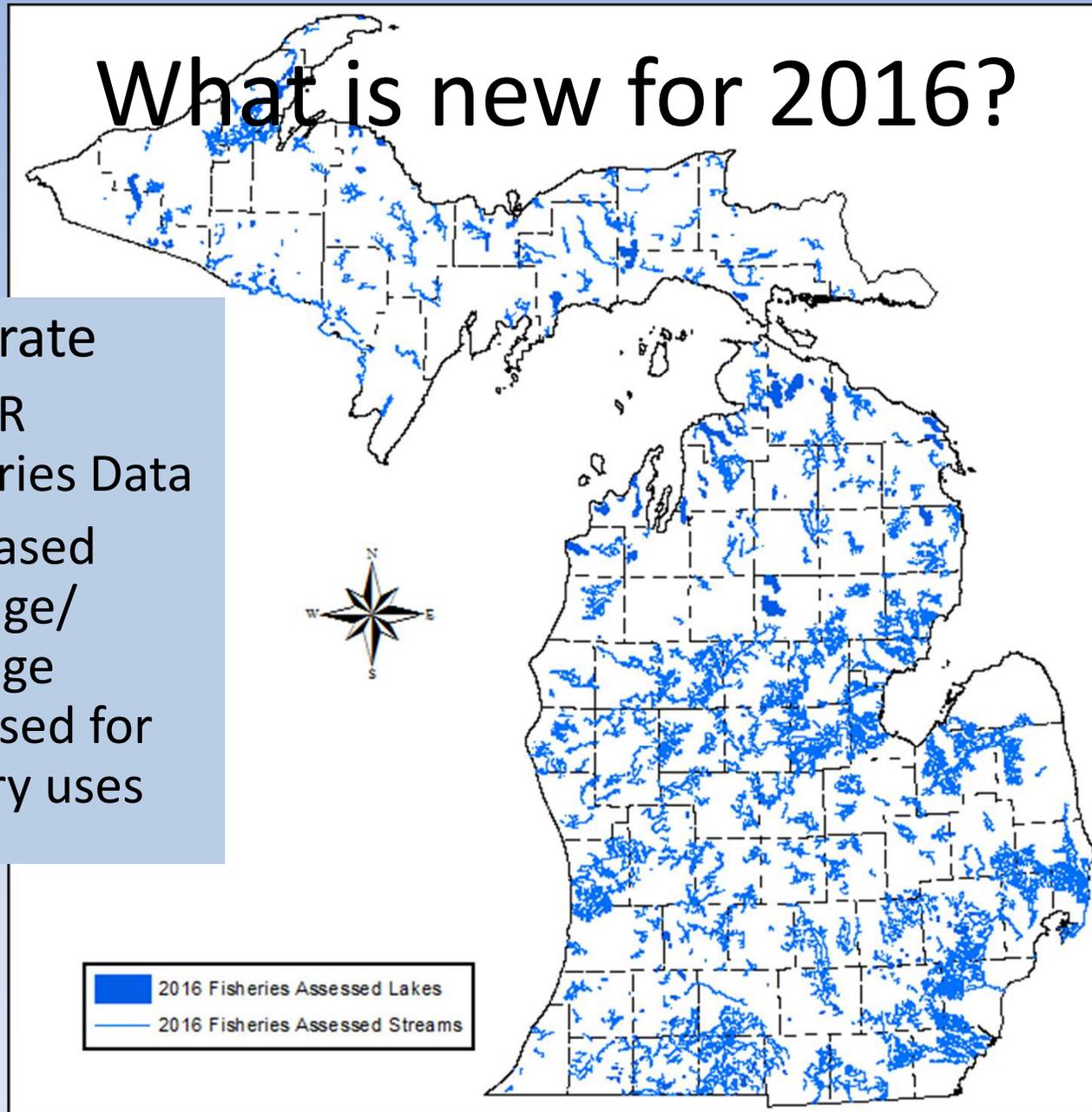
What is new for 2016?

- Collaborate
 - MDNR Fisheries Data
 - Increased mileage/acreage assessed for fishery uses



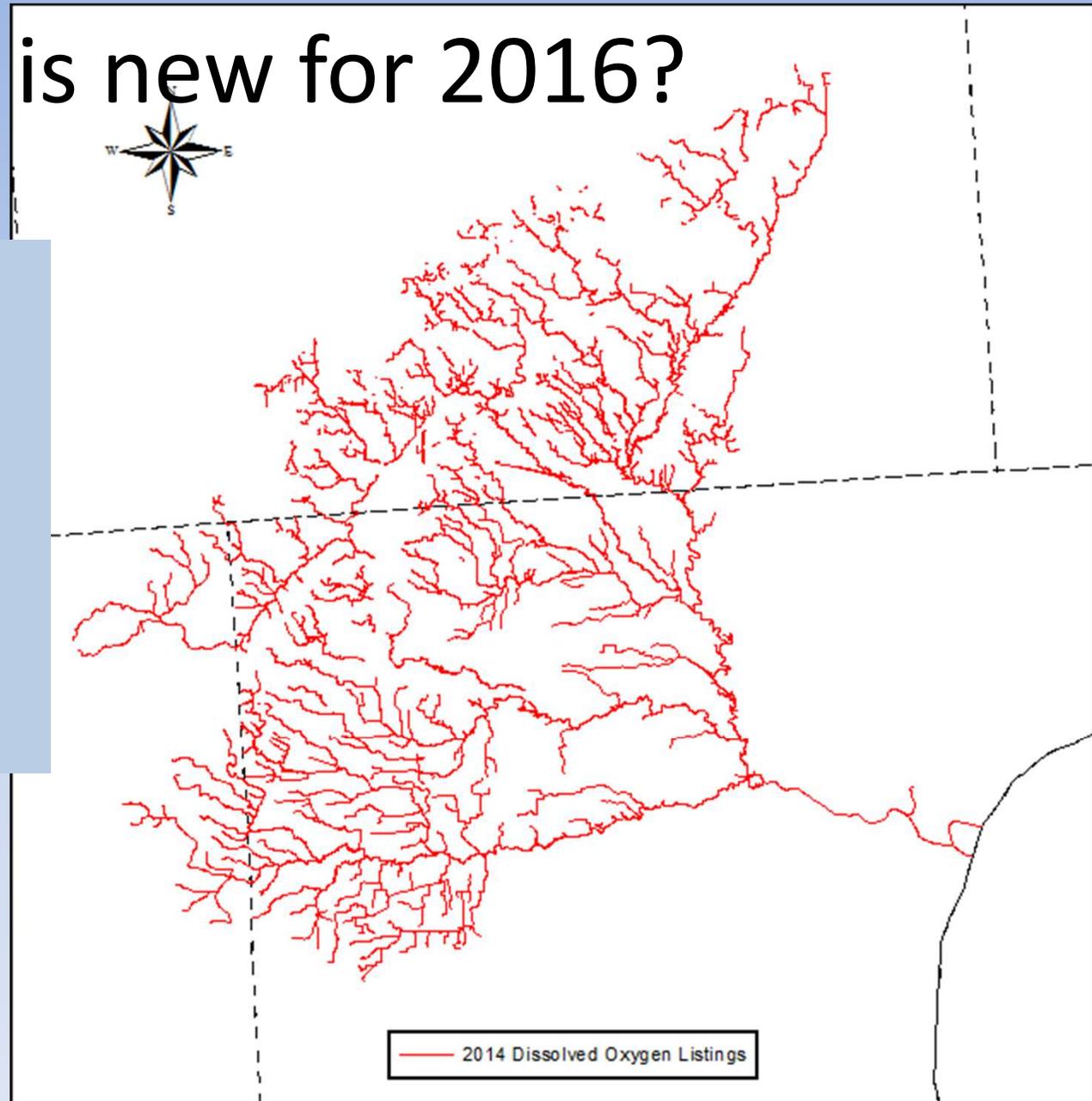
What is new for 2016?

- Collaborate
 - MDNR Fisheries Data
 - Increased mileage/acreage assessed for fishery uses



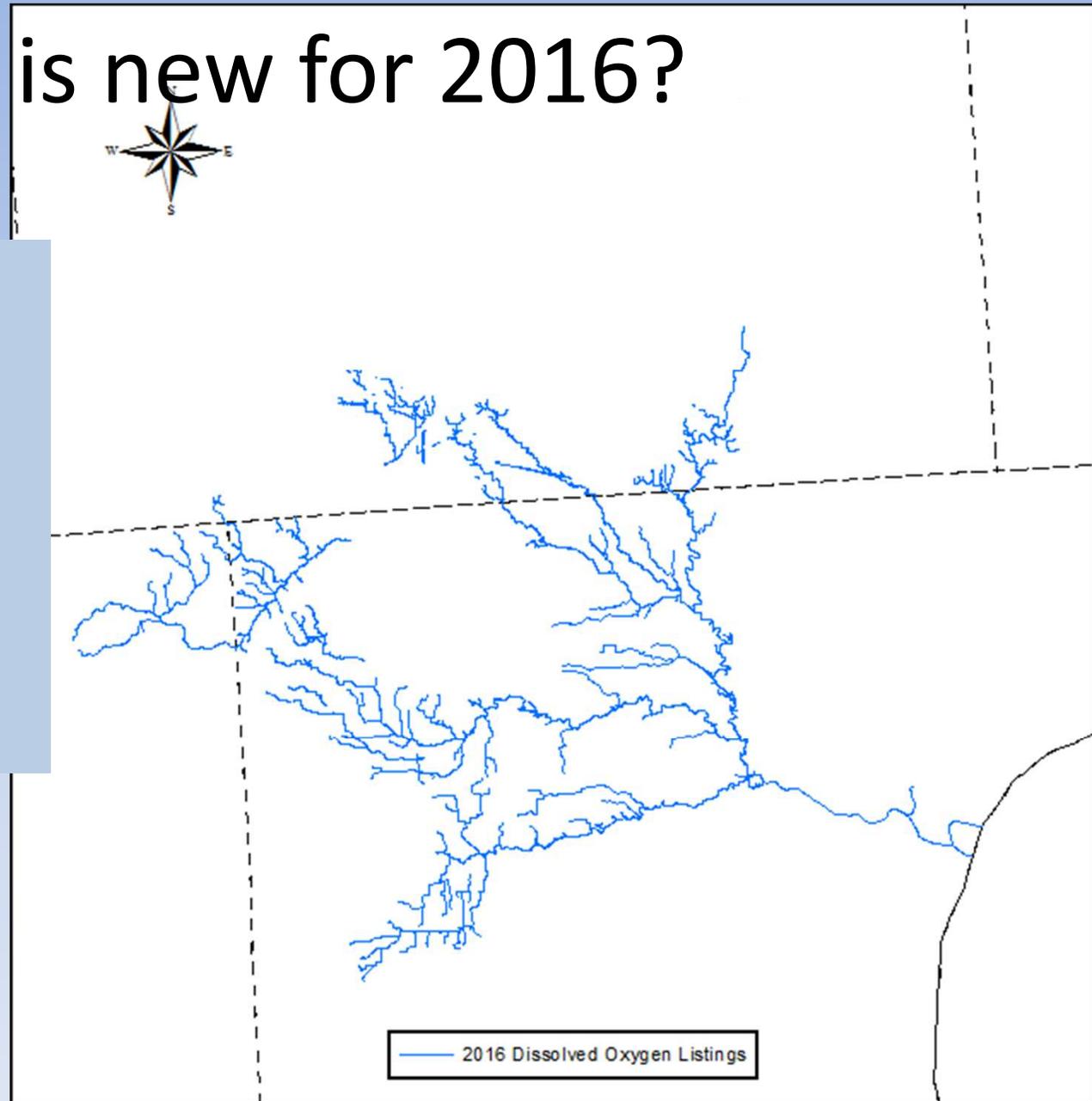
What is new for 2016?

- Celebrate successes!
Delisting of Rouge – Dissolved Oxygen



What is new for 2016?

- Celebrate successes!
Delisting of Rouge – Dissolved Oxygen



Lelse

What is new for 2016?

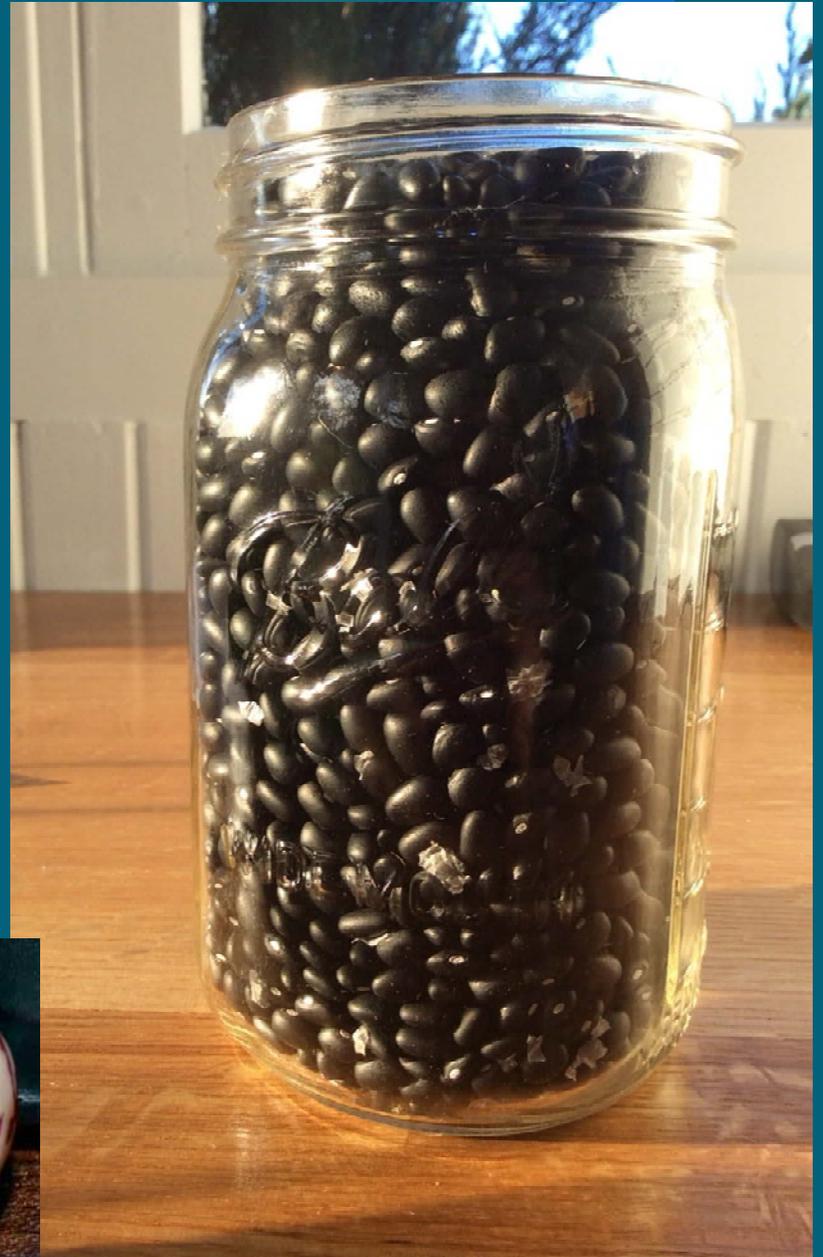


TMDL Vision

In the Past...

U.S. EPA TMDL
Bean Counting

9 RIVER SEGMENTS
PER YEAR QUOTA



The Future...

EPA's "Long-Term Vision
for Assessment,
Restoration, and
Protection under the
Clean Water Act Section
303(d) Program"

“VISION”



The Vision Emphasizes:



- Prioritization of Actions (6 year plans)
- Public Engagement
- Assessment of Waters
- Integration of state programs
- Program Efficiency

Michigan's Vision Prioritization Framework:



- 2016-2022
 - 6 year period of priorities
 - Priorities align with Water Resources Division goals

Water Resources Division

Goals include:

WRD GOAL 1: ENHANCE RECREATIONAL WATERS so that all waters in Michigan are safe for human contact

WRD GOAL 2: ENSURE CONSUMABLE FISH by reducing exposure to contaminants in fish to levels that are safe.

WRD GOAL 3: PROTECT AND RESTORE AQUATIC ECOSYSTEMS

2016-2022 Vision Priorities



Statewide Mercury TMDL

- Public Noticed
- Pertains to inland waters
- Includes mercury reductions from air and water sources

2016-2022 Vision Priorities



Grand River
and Red
Cedar River

Dissolved
Oxygen TMDL



Trap Rock
River and
Owl Creek

Total Copper
TMDLs



Cass River
Watershed

E. Coli TMDL

2016-2022 Vision Priorities



Ox Creek

Suspended
Sediment/Biota TMDL

2016-2022 Vision Priorities



Ox Creek

Suspended
Sediment/Biota TMDL



Bad Axe
Creek

E. Coli and
Total Phosphorus
TMDL

2016-2022 Vision Priorities

Statewide E. coli TMDL



WLA

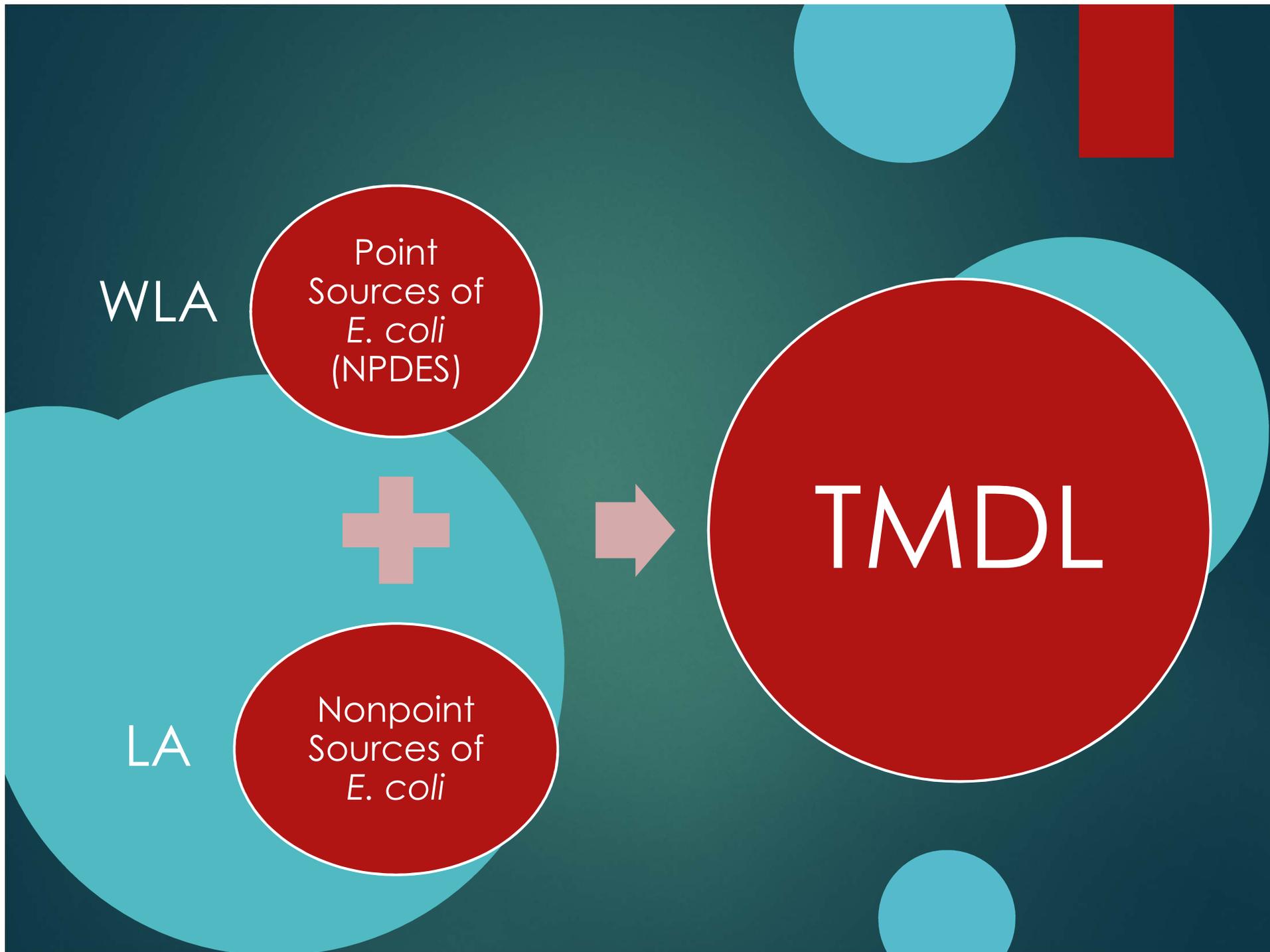
Point Sources of *E. coli* (NPDES)

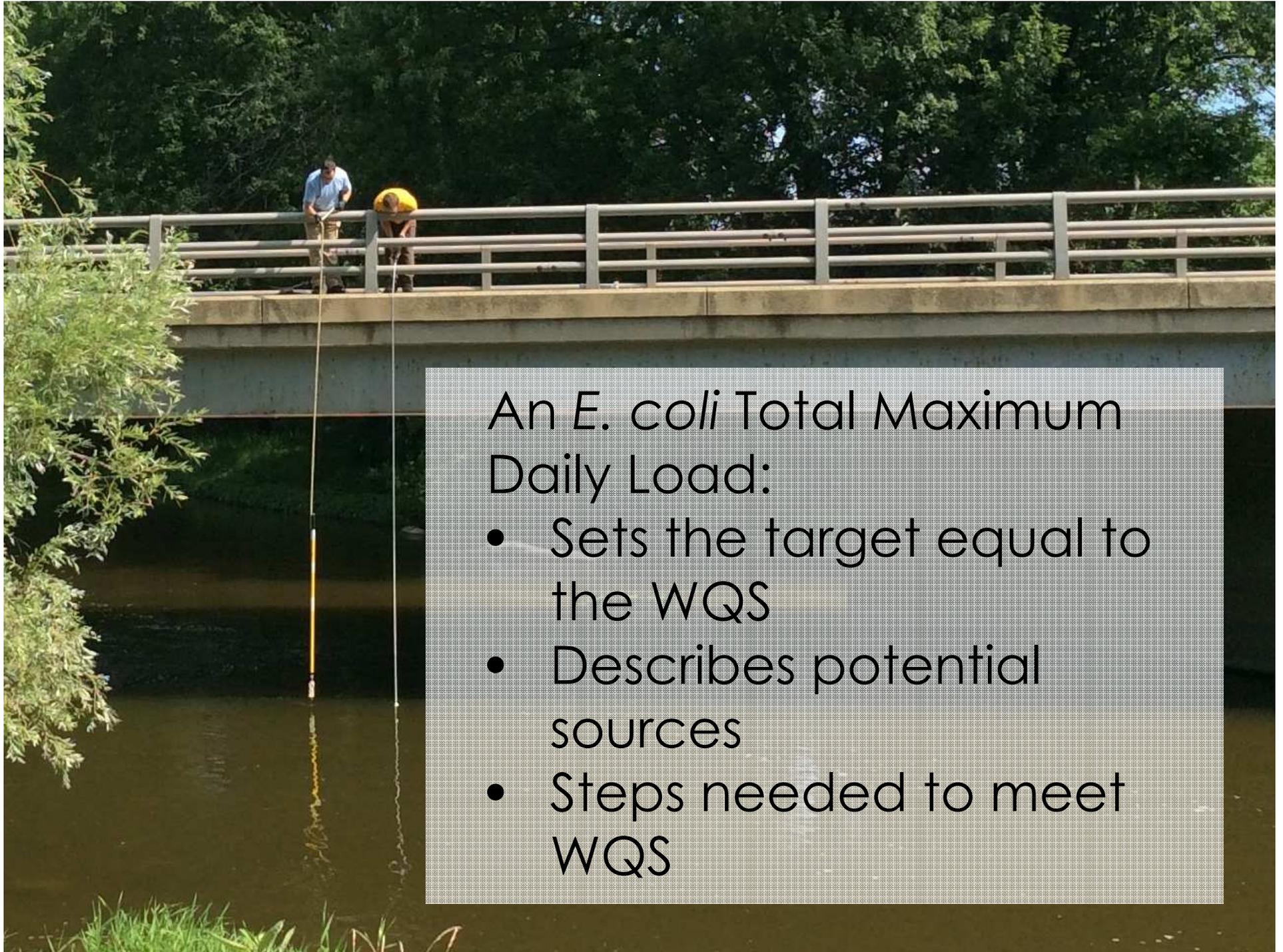


LA

Nonpoint Sources of *E. coli*

TMDL



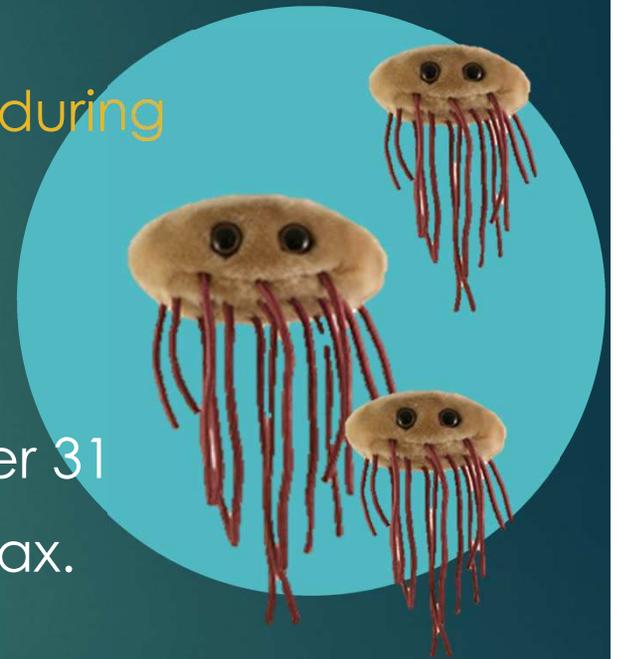


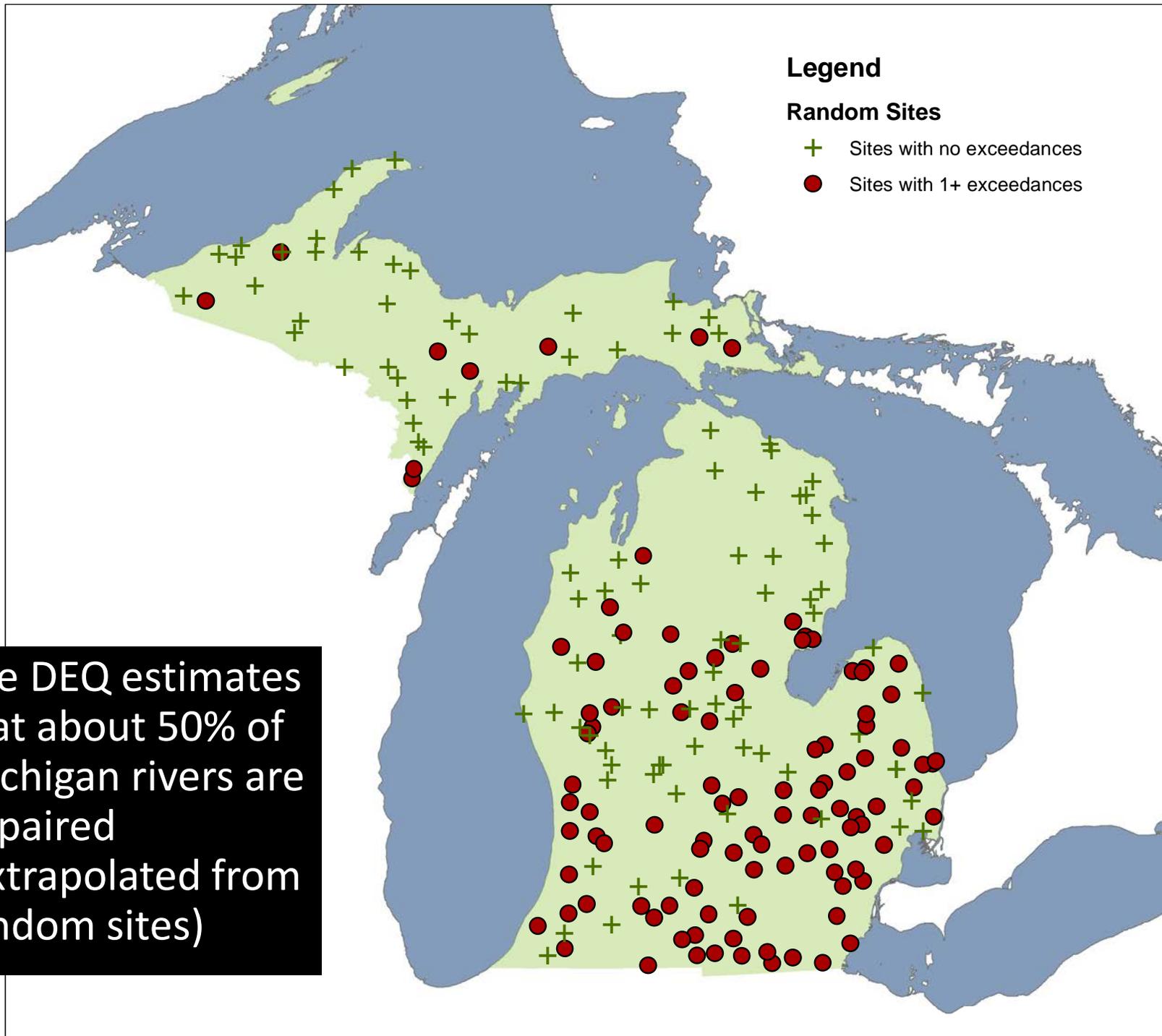
An *E. coli* Total Maximum Daily Load:

- Sets the target equal to the WQS
- Describes potential sources
- Steps needed to meet WQS

Michigan Water Quality Standards for *E. coli*

- Designed to protect human health during recreation
- Partial body contact – year-round
 - 1000 *E.coli* per 100mL
- Total body contact – May 1-October 31
 - 300 *E.coli* per 100mL as a daily max.
 - 130 *E.coli* per 100mL as a 30-day geometric mean



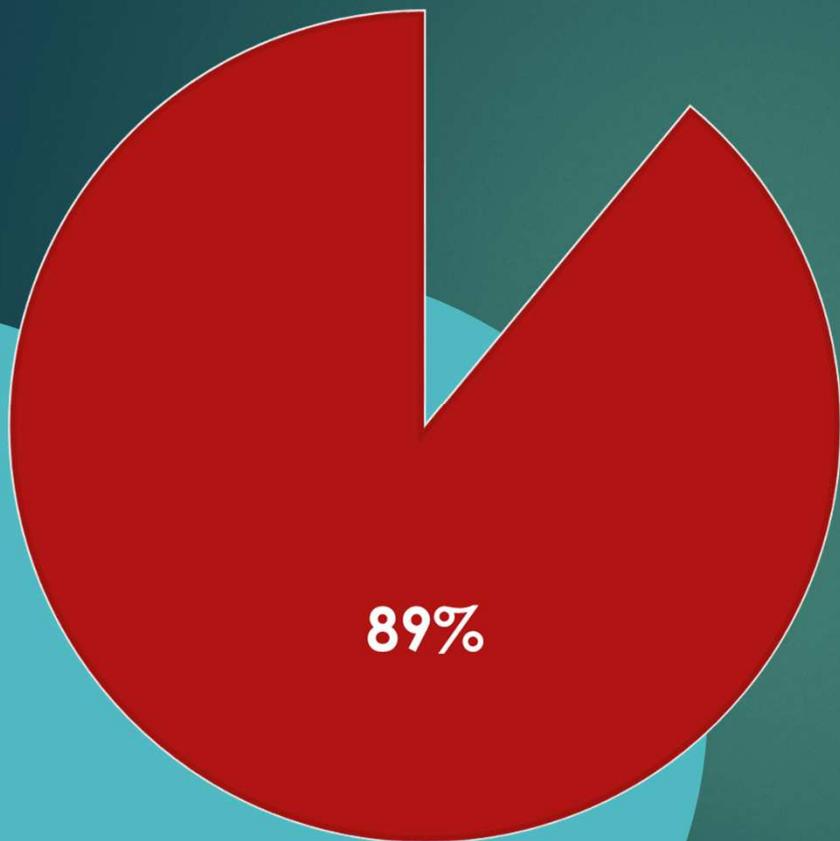


The DEQ estimates that about 50% of Michigan rivers are impaired (extrapolated from random sites)



11%

WE HAVE ONLY
ASSESSED 11%
OF RIVER MILES
FOR E. COLI



LEAVING 89%
OF RIVER
MILES
UNASSESSED



The list for TMDL development was estimated to require at least 17 years to complete.



Alternative Approach:

The MDEQ will address exceedances of the *E. coli* WQS with a “statewide” TMDL.

The background is a dark teal color. It features several decorative elements: a large teal circle on the left side, a smaller teal circle at the top right, a red vertical rectangle at the top right, and a small teal circle at the bottom right. The text is centered in the middle of the slide.

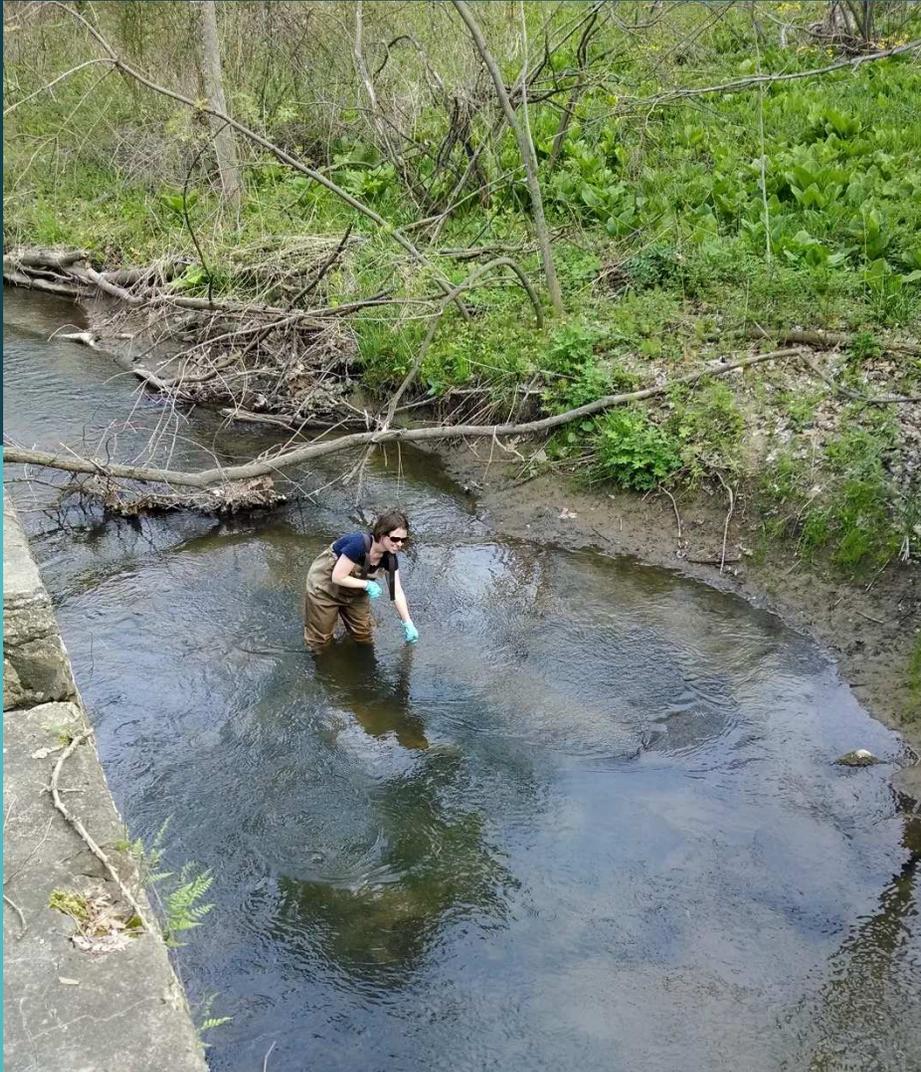
The TMDL will provide a
general legal framework
for reducing pollutant
loads

- ALL *E. COLI* IMPAIRED WATERS ON THE 303D LIST WILL BE ADDRESSED BY TMDL



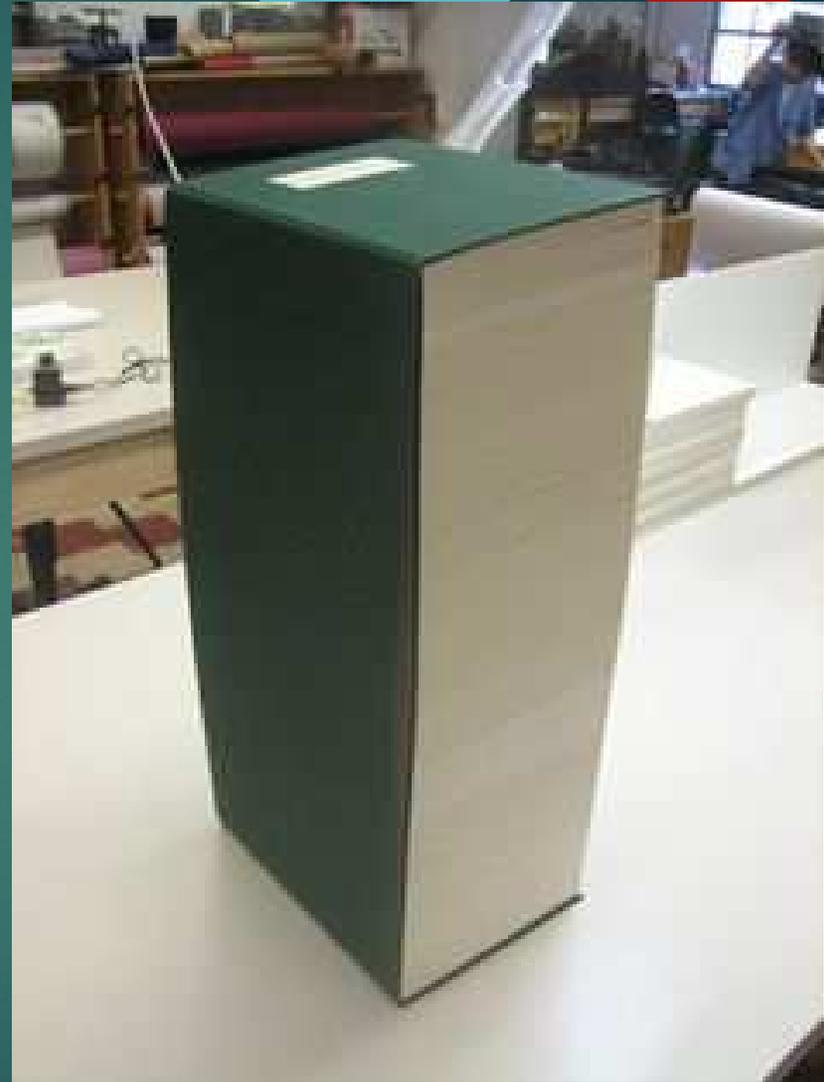
- WILL INCLUDE IMPAIRED BEACHES, STREAMS, LAKES, AND WETLANDS





- AFTER STATEWIDE TMDL IS APPROVED, WE WILL UPDATE IT EVERY TWO YEARS
- NEW IMPAIRED WATERS WILL BE ADDED AS CATEGORY 4A (TMDL COMPLETE)

- UPDATES WILL BE PUBLIC NOTICED WITH EACH BIENNIAL UPDATE OF THE 303(D) INTEGRATED REPORT
- PERMITTEES IN AFFECTED AREAS WILL BE NOTIFIED VIA MIWATERS



The background is a dark teal color. It features several decorative elements: a large teal circle on the left side, a smaller teal circle at the top right, a red vertical rectangle at the top right, a large teal circle on the right side, and a small teal circle at the bottom right.

BENEFITS OF A STATEWIDE APPROACH

Will acknowledge the ubiquity of this problem, and promote collaboration in working toward a common goal



BENEFITS OF A STATEWIDE APPROACH:

- IMPLEMENT NEEDED POLLUTANT REDUCTIONS THROUGH NPDES PERMITS **SIGNIFICANTLY FASTER**
- NO MORE WAITING FOR 17 YEARS!

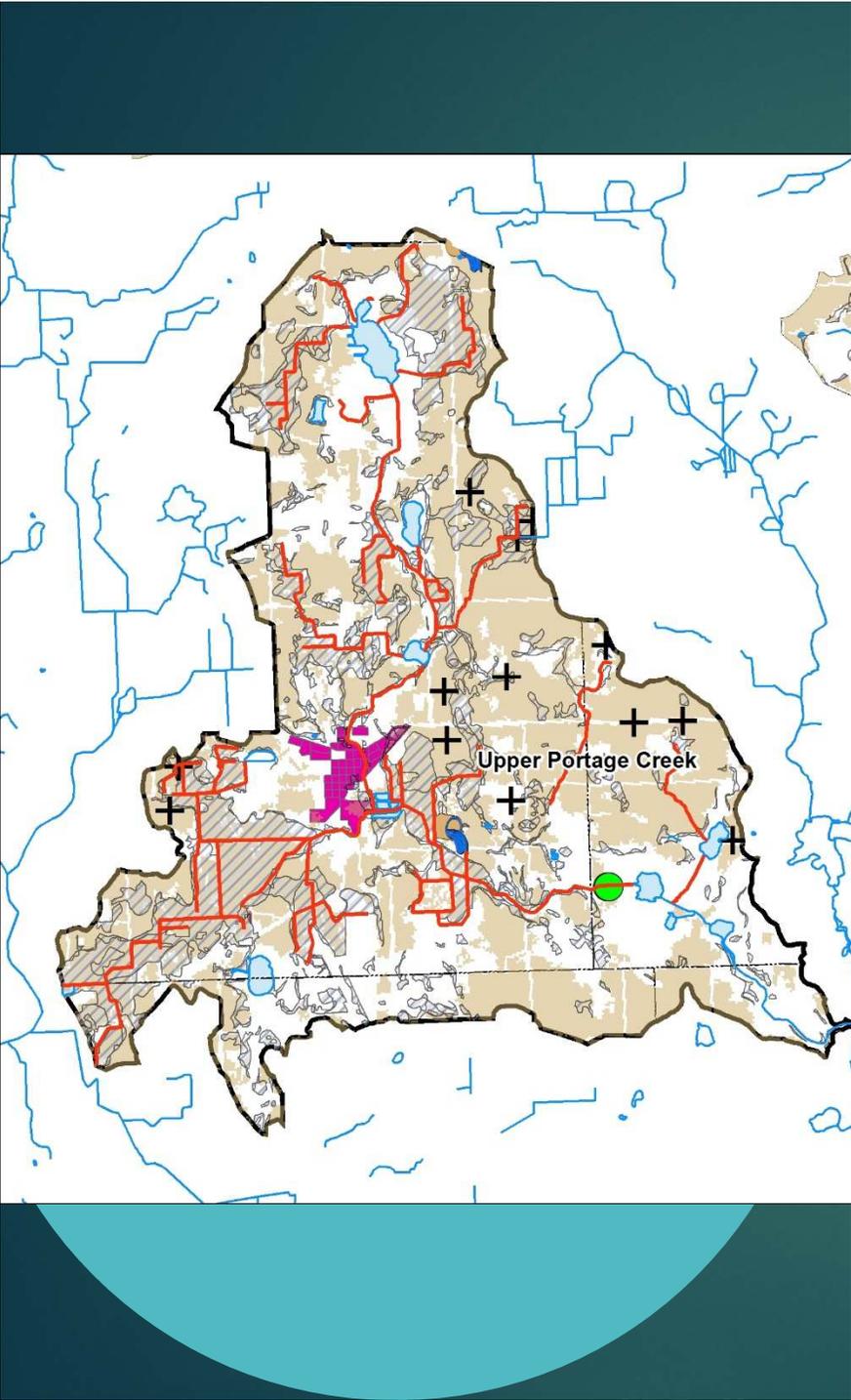
BENEFITS OF A STATEWIDE APPROACH

- REDUCE REDUNDANCY
- FREE-UP PUBLIC RESOURCES TO:
 - Increase ambient *E. coli* monitoring
 - Offer more assistance in post-TMDL monitoring

BENEFITS OF A STATEWIDE APPROACH

ONLINE FORMAT
THAT IS EASILY
UPDATABLE AND
WON'T BECOME
OUT-OF-DATE





Identify

Identify from: Watersheds

Location: 731,892.868 4,706,060.404 Meters

Field	Value
HUC_12	040900050304
HU_12_NAME	Upper Portage Creek
area_sqmi	22.27
Cultivated%	34
High Intensity Developed %	0
Low Intensity Developed %	3
Medium Intensity Developed %	1
Open Developed %	3.9
Hay/Pasture %	21
Water %	2
Total Developed Land %	7.8
Total Agricultural %	55
Total Wetland %	19
Forest %	16
Human Population #	2690
Housing Units #	1110
Population Density per sq. mi.	121
Housing Unit Density per sq. mi.	50
Lost Wetlands (% of presettlement)	39
Natural Buffers %	53
New Developed Land (sq. mi)	0.028
New Cultivated Land (sq. mi)	0.023
Impervious %	1.9
Hogs (estimated)	115
Cattle (estimated)	585
Percent of ag. land that is tilled (estimated)	29
Percent of ag. land that is used for manure application (estimated)	5
Approx. Number of Septic Systems (coming soon)	<null>

Identified 1 feature

The Future



- INFORMATIONAL PRE-TMDL WEBINAR
- JANUARY 19 AT 10 a.m.





Questions

DRAFT 2016 INTEGRATED REPORT

Public Comment through **January 8, 2016**

GOODWINK@michigan.gov

STATEWIDE E. COLI TMDL

Questions?

RIPPKEM@michigan.gov