E. coli in Surface Waters

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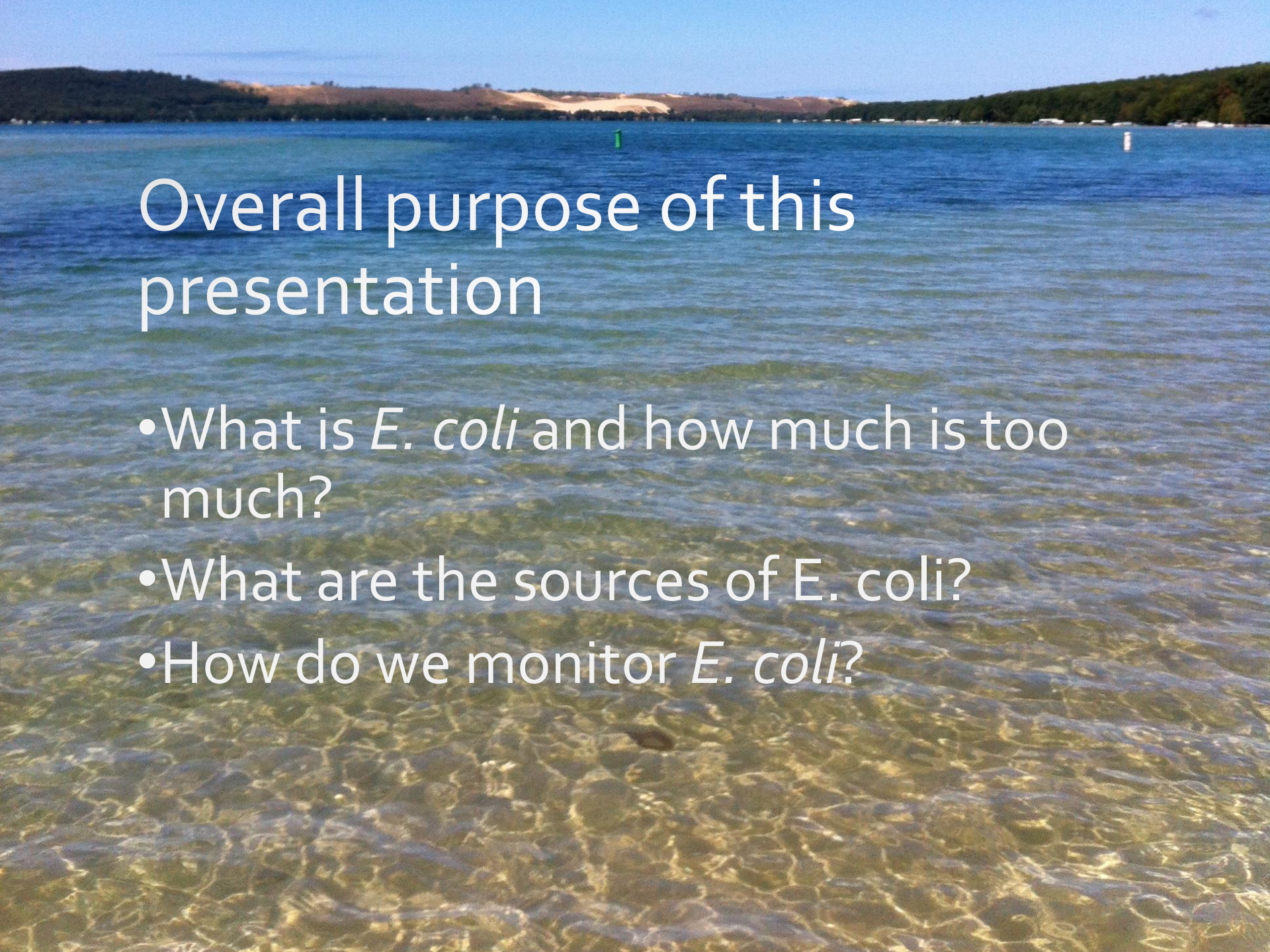
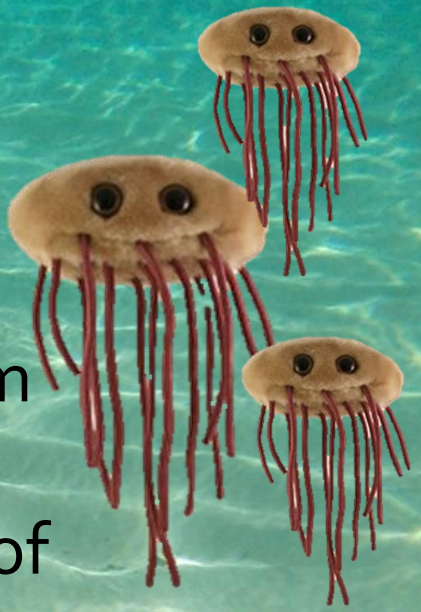


Overall purpose of this presentation

- What is *E. coli* and how much is too much?
- What are the sources of E. coli?
- How do we monitor *E. coli*?

E. coli Water Quality Standard



- *E. coli* is present in the digestive system and feces of mammals and birds
- *E. coli* indicates the possible presence of other pathogens that can cause gastroenteritis and more serious diseases
- Michigan has a water quality standard designed to protect human health during <u>recreation</u>

E. coli in Surface Water

- 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**

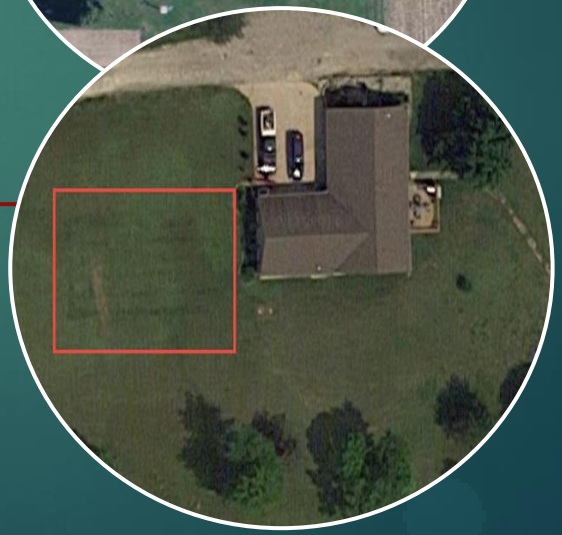
"All rivers
lead to
the beach"

CAUTION
This river may contain harmful bacteria.
Testing has shown that this body of water is often polluted and is not safe for swimming.
How can you enjoy this river safely?
-Avoid the river during and immediately after rainfall.
-Do not let the water get in your mouth, nose or eyes.
-Wash your hands with soap and water before eating.
-Shower when you return home.

Failing Septics

Poor location (soils, lot size, etc)

Old systems



Maintenance issues

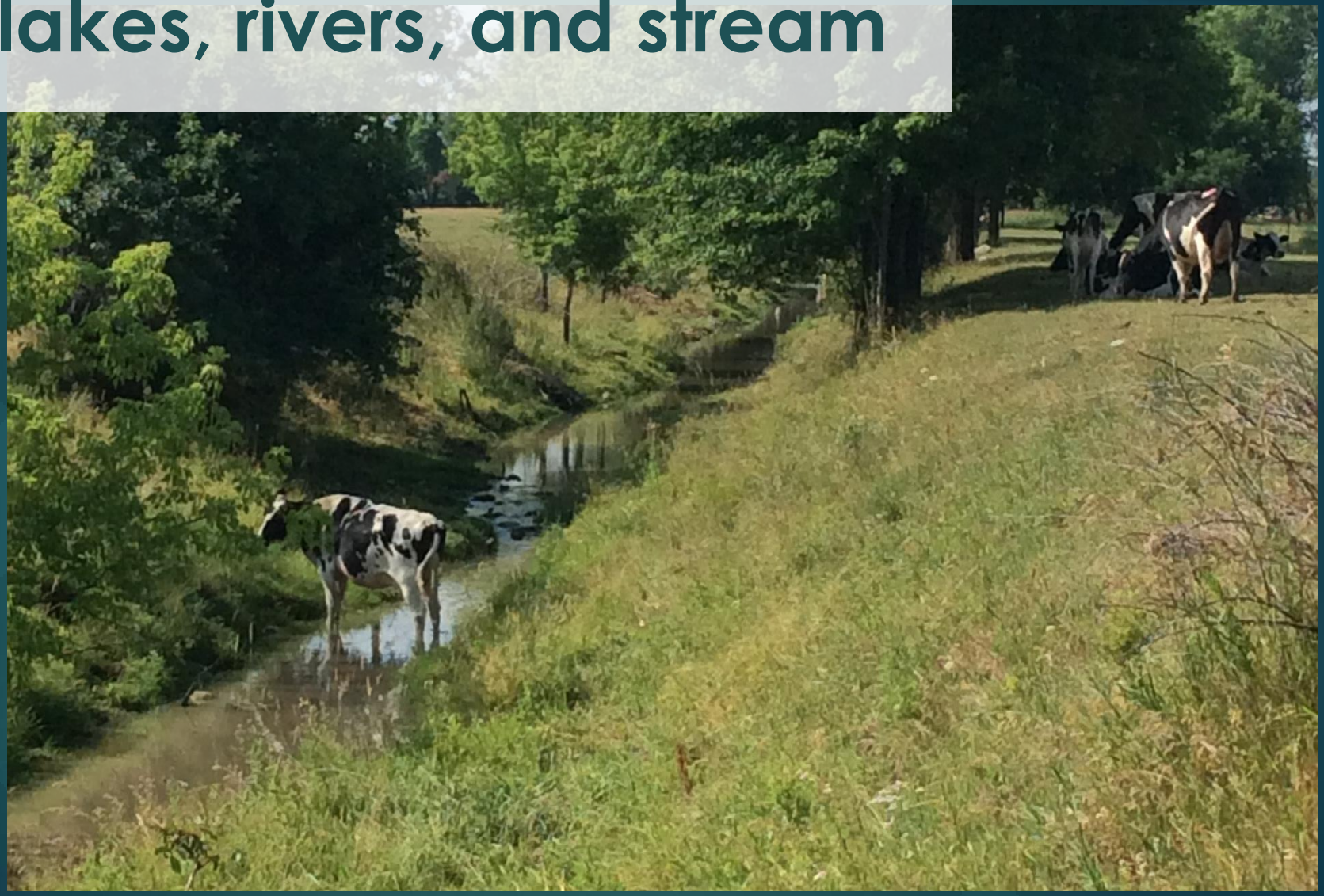
- 1.4 million systems in Michigan
- 25% (or more!) may be failing
- County or local sanitary health codes are the primary means of regulation

Livestock Agriculture

Livestock

- Land-application of manure

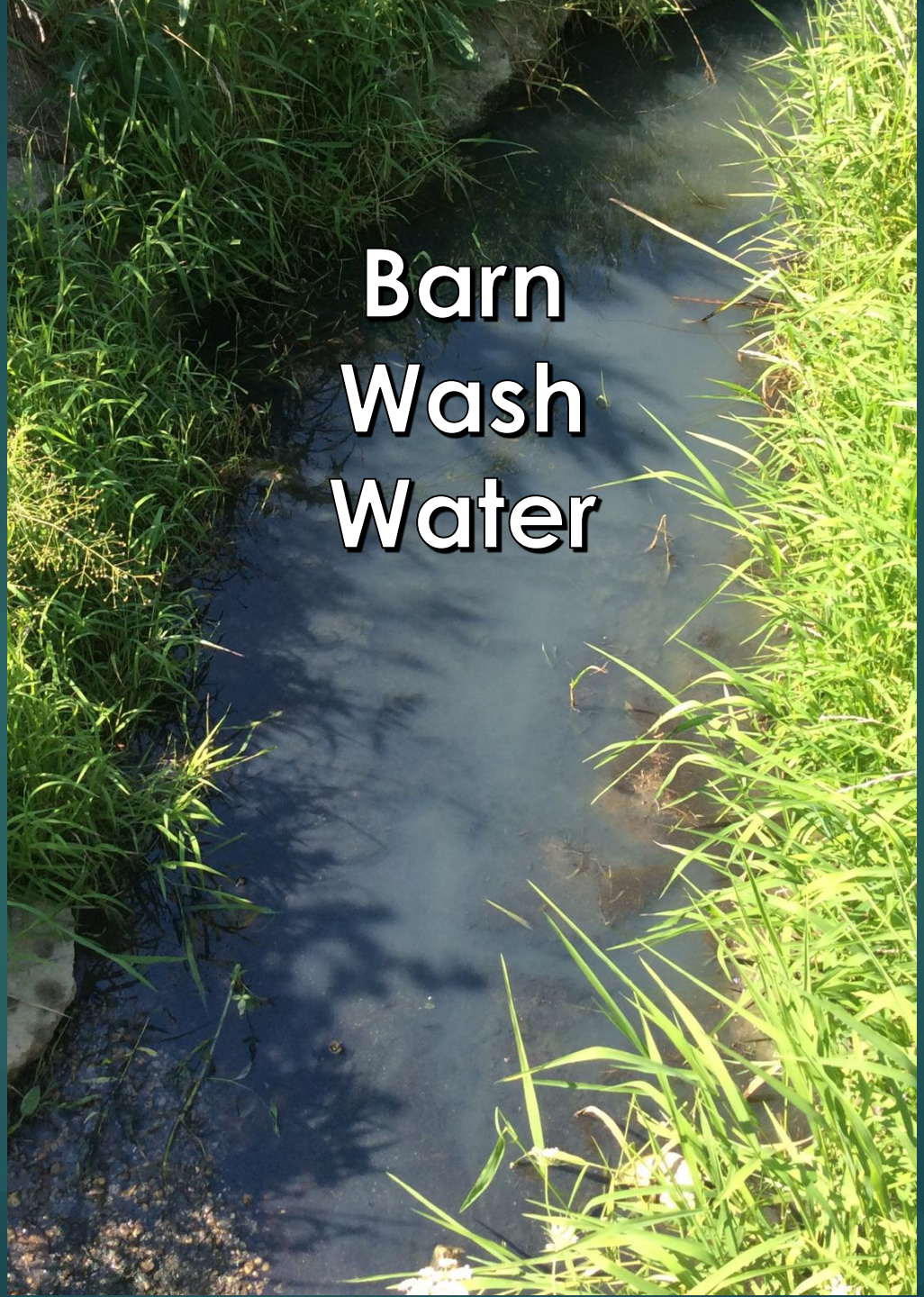
- Livestock with access to lakes, rivers, and stream



- Livestock with access to lakes, rivers, and stream

Pasture runoff

Illegal Sources



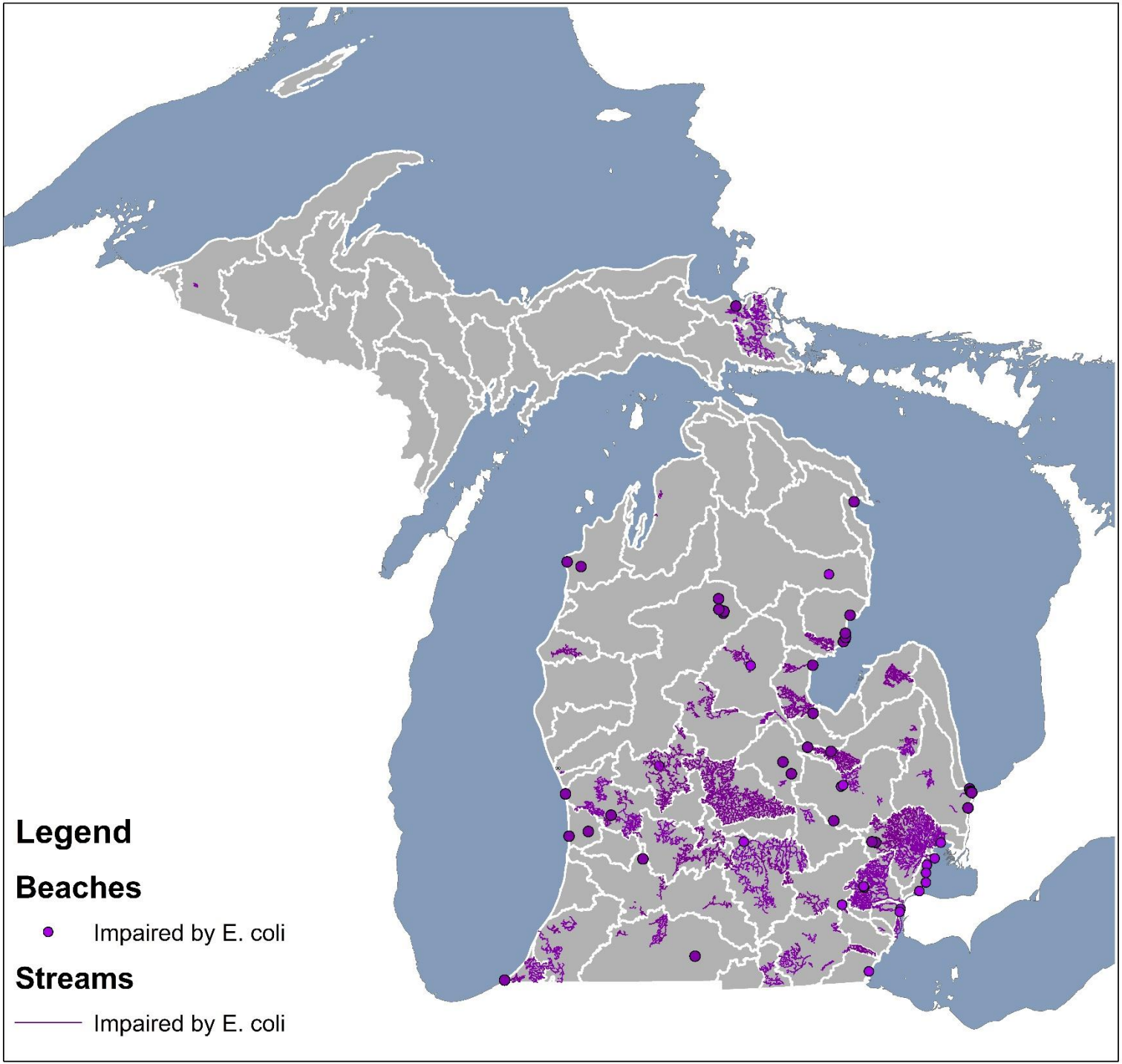
Illicit discharges from Homes/businesses

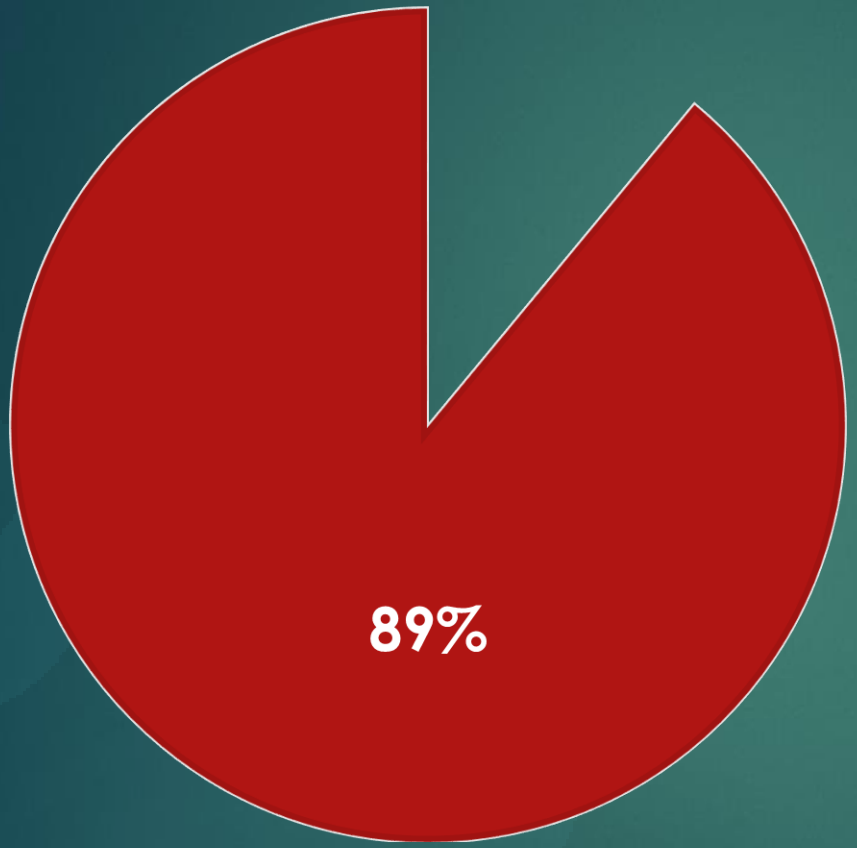
Pets

•Nuisance Wildlife

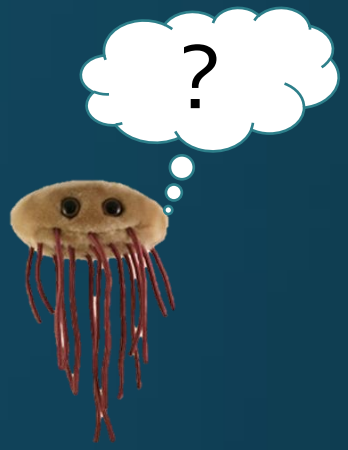
How widespread is this problem?

WE ESTIMATE THAT
ABOUT 50% OF
MICHIGAN RIVERS
ARE IMPAIRED


Legend
Beaches
Impaired by E. coli
Streams
Impaired by E. coli

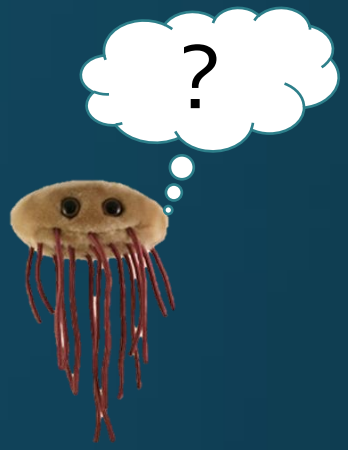


89% OF OUR RIVER MILES DON'T HAVE ENOUGH DATA

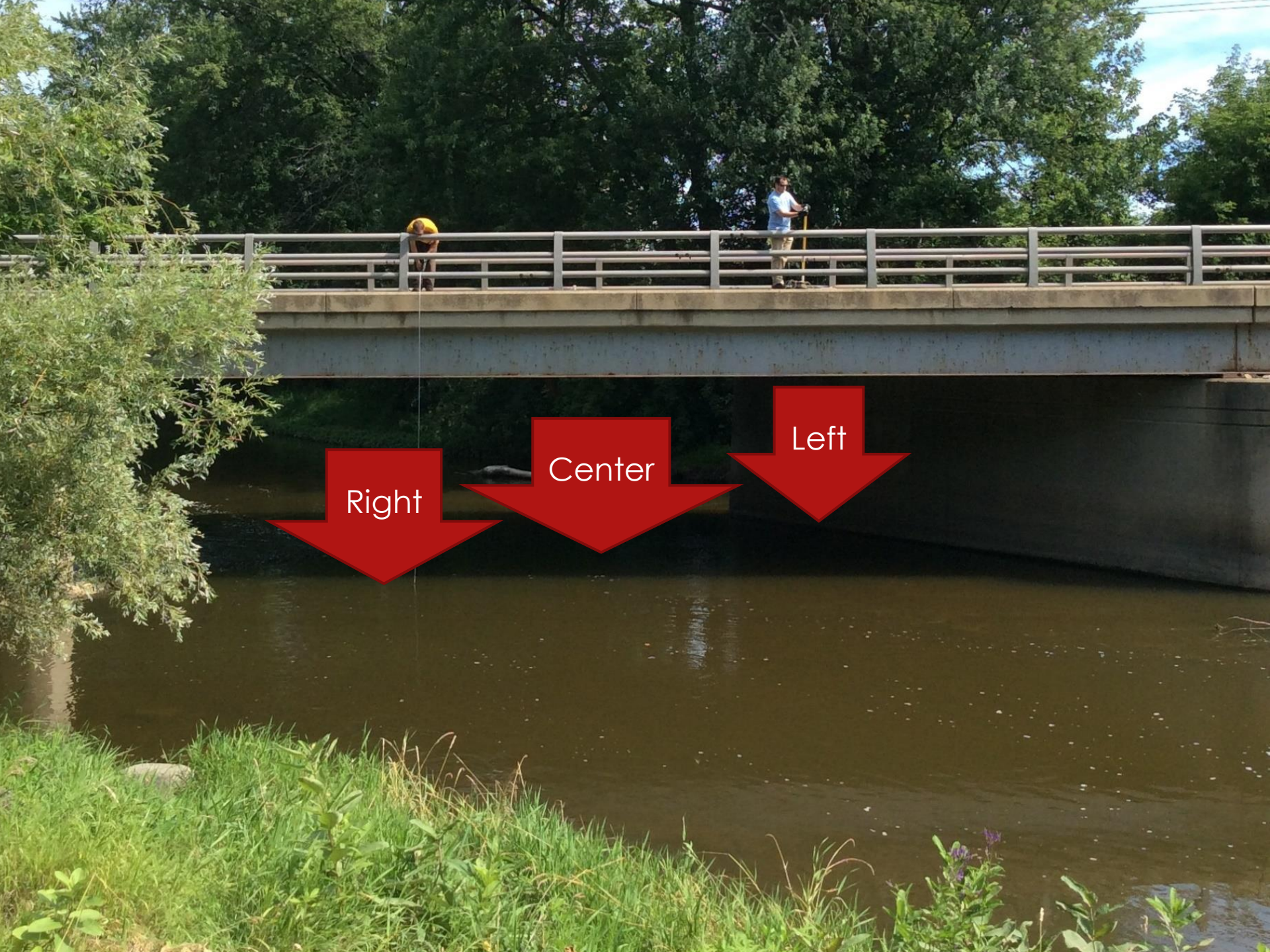


E. coli Monitoring

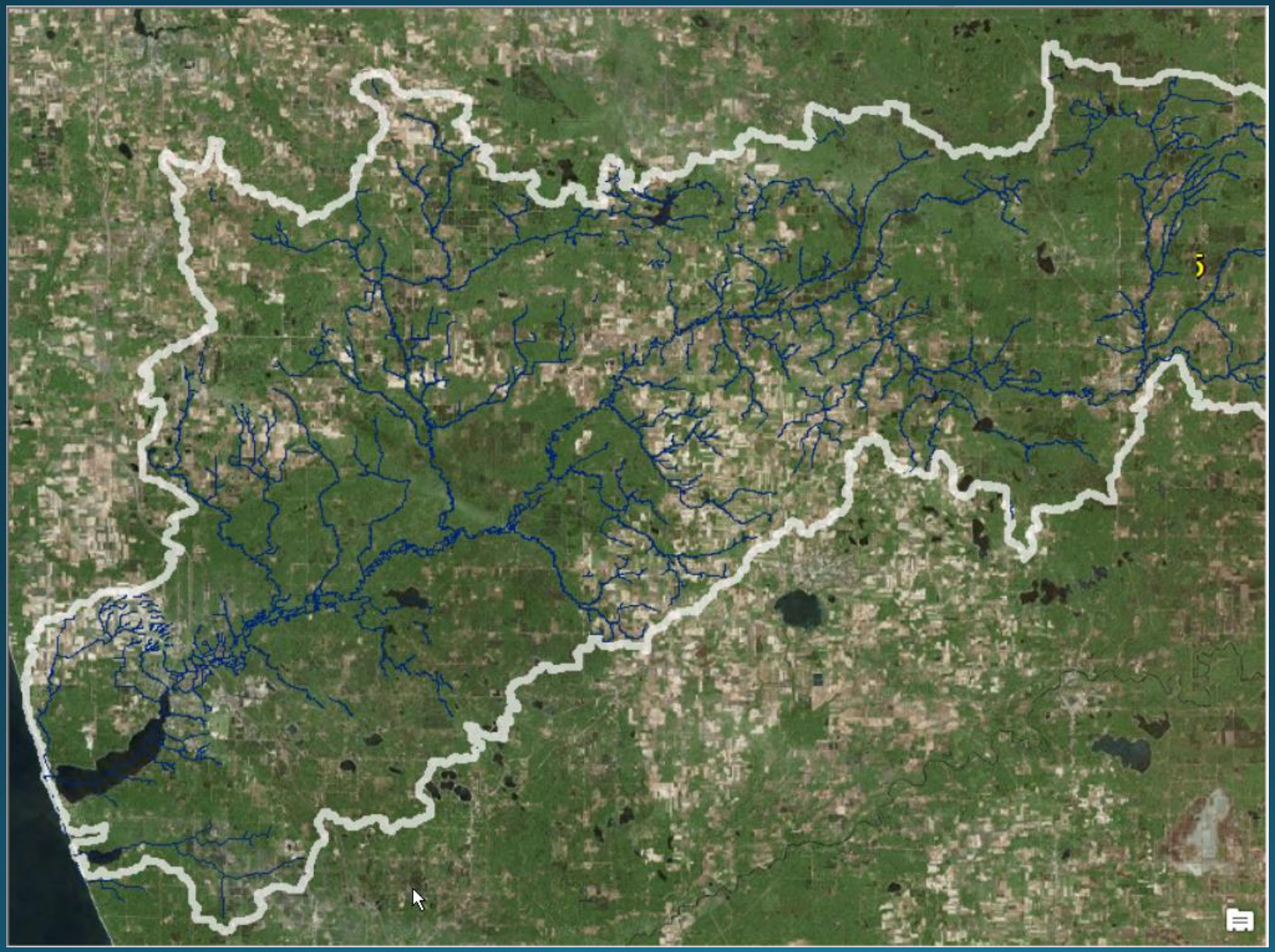
- How much data is needed?
- How should it be collected?

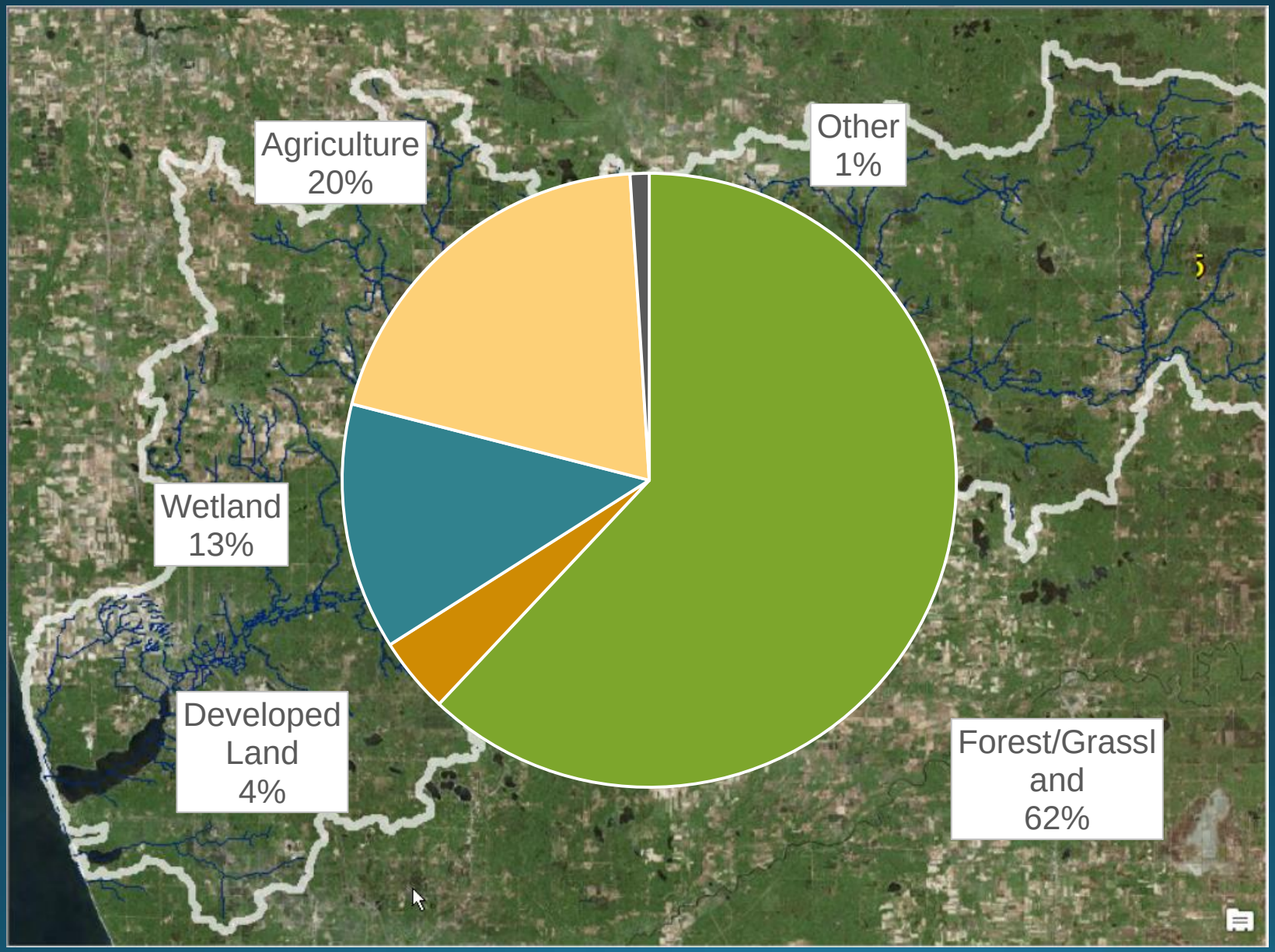


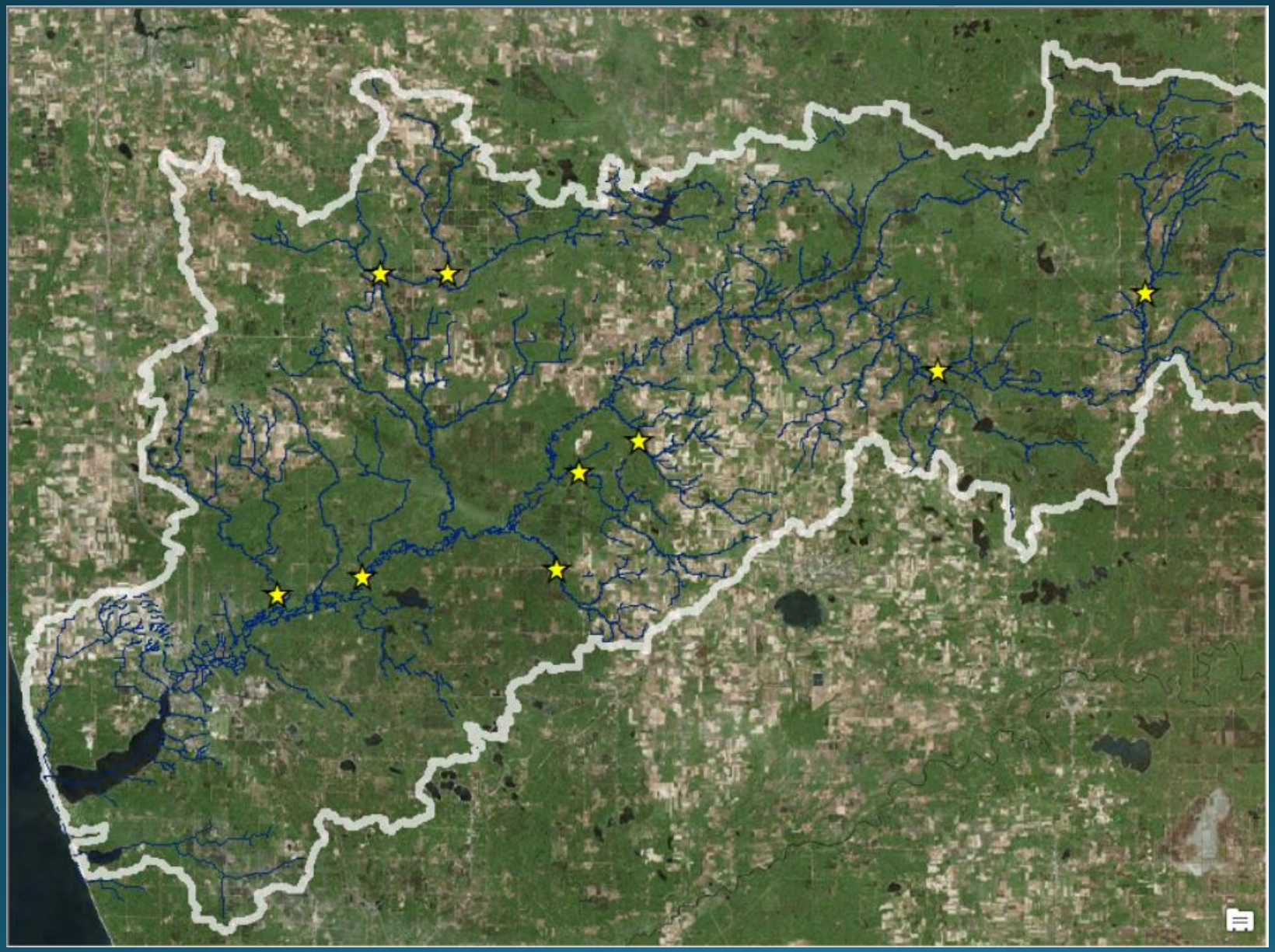
- Currently the standard minimum dataset size (for the DEQ to draw a conclusion) is 5 sampling events
- Our rules require 3 samples per site, per event

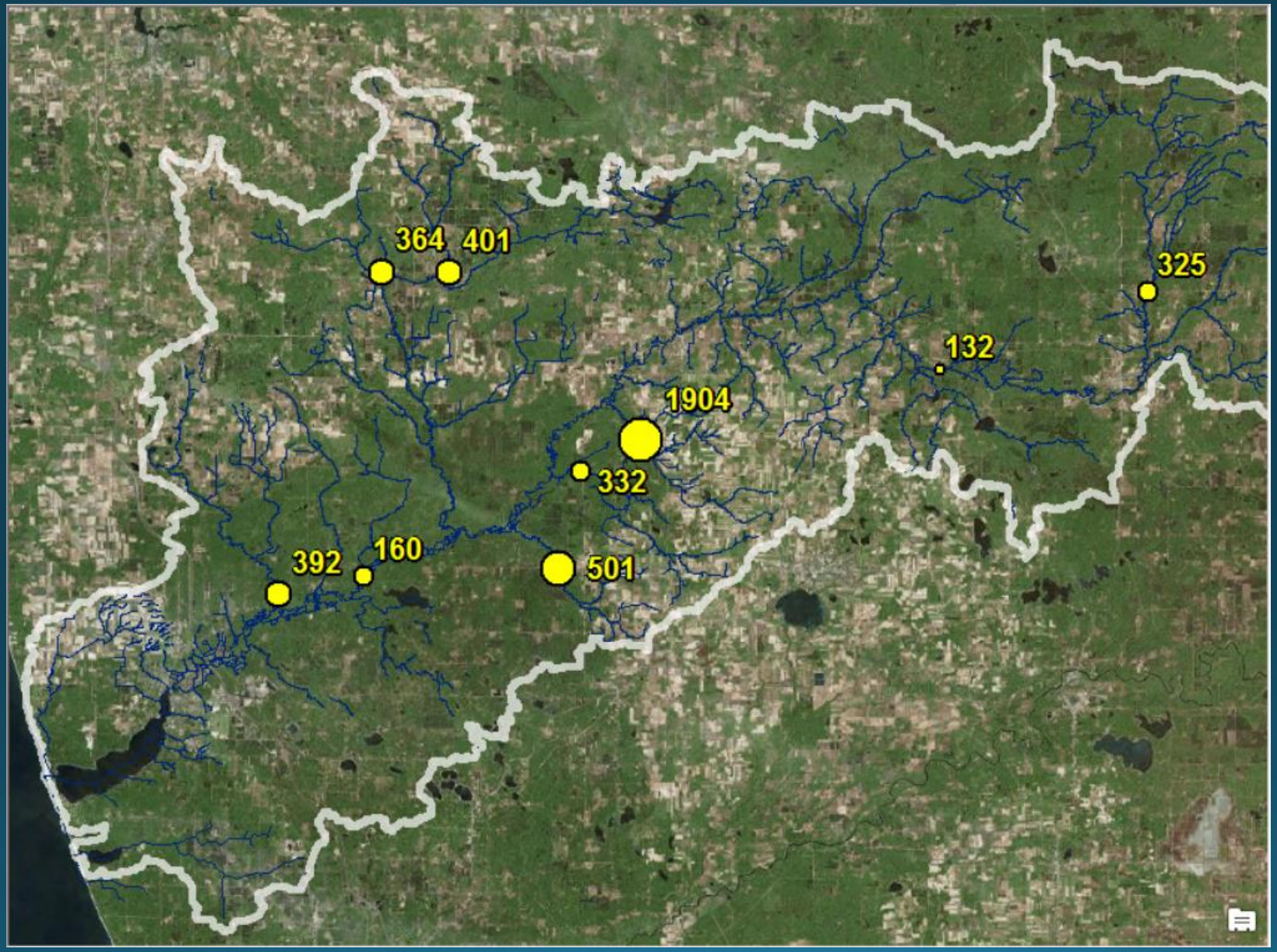

Left
Center
Right

Which stream has the highest *E. coli*?




Agriculture
20%
Other
1%
Wetland
13%
Developed
Land
4%
Forest/Grassl
and
62%




364
401
325
132
1904
332
392
160
501

Which stream has the highest *E. coli*?

The DEQ may be able to monitor in your area!

Detailed Instructions and Monitoring Request Form:

Go to www.Michigan.gov/waterquality
And click on "monitoring request form"

Are there Volunteer Monitoring Opportunities?

- Michigan does not currently have an official volunteer monitoring program for *E. coli*.
- However…..*E. coli* data can be collected by anyone, as long as they follow acceptable quality control procedures.
- A quality assurance project plan is the best way to establish quality control.
- The DEQ has examples we can share and expertise to help!

www.Michigan.gov/ecolitmdl

Public Outreach for the Draft Statewide *E. coli* TMDL

As part of efforts to inform and educate, the draft Statewide *E. coli* TMDL is now available for public discussion. **Comments received by March 17th will be incorporated into the next draft.**

A new statewide, interactive mapping tool is available to assist in identifying impacted areas as well as provide resources for getting involved in efforts to reduce the *E. coli* levels. The purpose is to empower local communities to protect our waters.

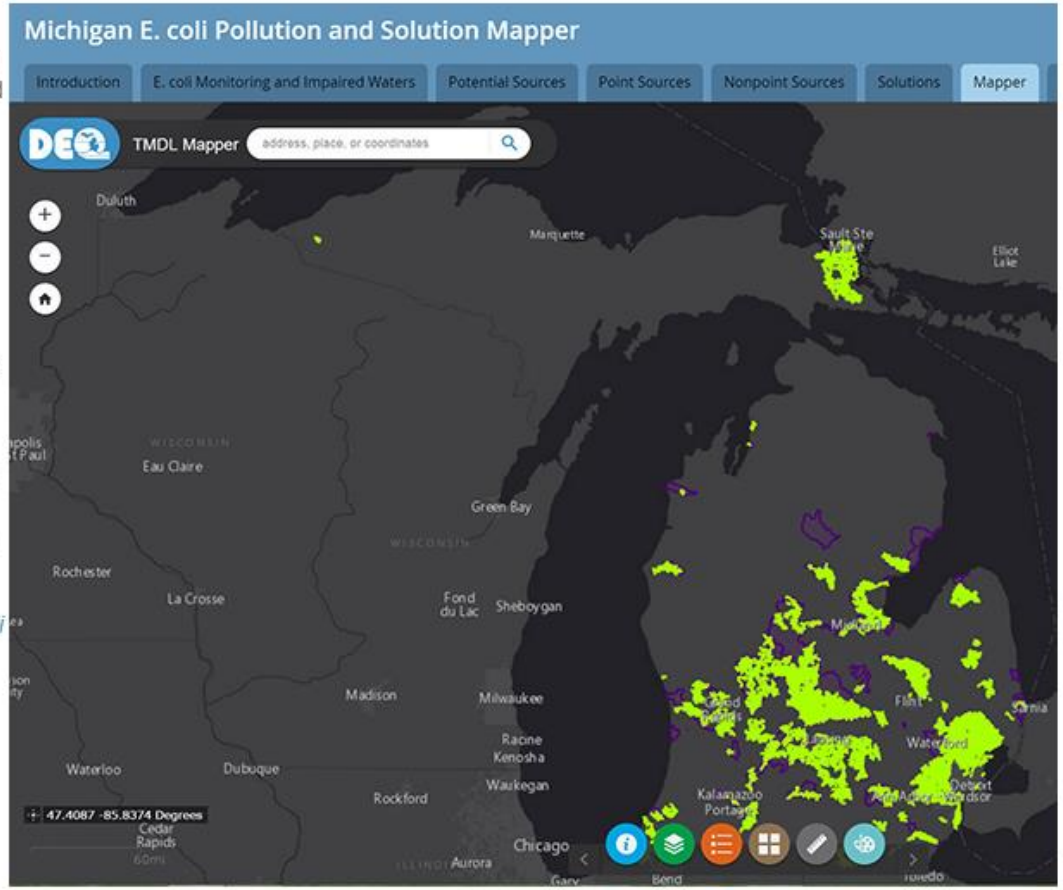
- Draft Statewide *E. coli* TMDL
- Map Help Document
- *E. coli* Success Stories

Educational presentations from MDEQ staff are also available. If your group is interested in a presentation, please complete the TMDL presentation request form. Four webinars took place throughout February and March, 2017. Recorded versions are available by clicking on the following topics:

- General Overview of the Statewide *E. coli* TMDL
- Nonpoint Sources
- Information for MS4 Permittees
- Information for Industrial Stormwater Permittees

Additional Resources

- Permit Holders and Landowners



Questions?
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