



Leelanau County Septic Ordinance

Why It's Needed

Skip Pruss

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About FLOW (For Love of Water)

- **Organization:** Great Lakes law and policy center based in Traverse City. Independent nonprofit. Founded in 2011.
- **Mission:** Ensuring the waters of the Great Lakes Basin are healthy, public, and protected for all. Uphold the public trust.



Why Do We Need a Septic Code?

- Protect public health – Applying the Public Health Code
- Protect quality of water resources, drinking water supplies, and the natural environment
- Ensure safe operation of sewage systems
- Locate and address potential environmental and public health hazards
- Protect property owners
- Raise level of awareness of onsite sewage systems & sustain them as a long-term solution

Linking fecal bacteria in rivers to landscape, geochemical, and hydrologic factors and sources at the basin scale

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Edited* by Rita R. Colwell, University of Maryland, College Park, MD, and approved June 29, 2015 (received for review August 15, 2014)

Linking fecal indicator bacteria concentrations in large mixed-use watersheds back to diffuse human sources, such as septic systems, has met limited success. In this study, 64 rivers that drain 84% of Michigan's Lower Peninsula were sampled under baseflow conditions for *Escherichia coli*, *Bacteroides thetaiotaomicron* (a human source-tracking marker), landscape characteristics, and geochemical and hydrologic variables. *E. coli* and *B. thetaiotaomicron* were routinely detected in sampled rivers and an *E. coli* reference level was defined (1.4 log₁₀ most probable number/100 mL⁻¹). Using classification and regression tree analysis and demographic estimates of wastewater treatments per watershed, septic systems seem to be the primary driver of fecal bacteria levels. In particular, watersheds with more than 1,621 septic systems exhibited signif-

definitive conclusions (15, 16). Using molecular approaches, specific source targets can be isolated in complex systems and have recently been used to investigate land use and water quality impairments (17). Furtula et al. (18) demonstrated ruminant, pig, and dog fecal contamination in an agriculturally dominated watershed (Canada) using *Bacteroides* markers. The *Bacteroides thetaiotaomicron* α -1-6 mannanase (*B. theta*) gene has a high human specificity (19–22), but no studies to date have linked its presence to land use patterns.

Reference conditions have been established for minimally disturbed environments based on measurements of macroinvertebrates, fish, and diatoms (23–25), but microbial reference conditions have

Sampling water quality and the Landscape

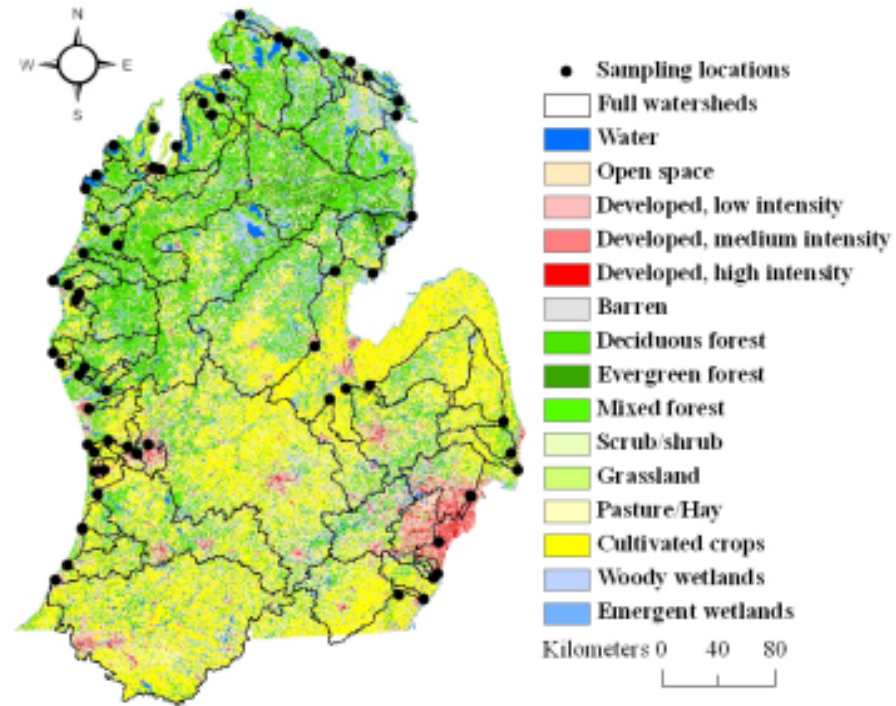
Baseflow (October 2010)

Spring thaw (March 2011)

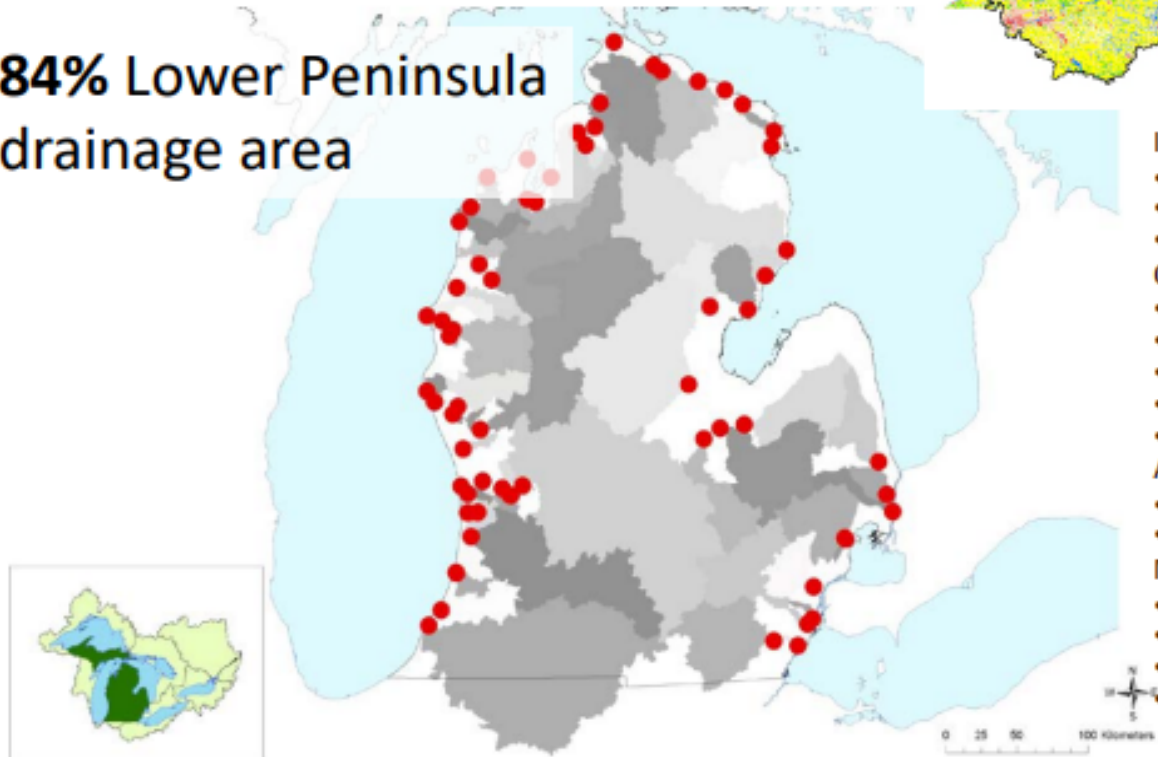
Early summer rain (June 2011)

64 River systems

84% Lower Peninsula
drainage area



Source: MSU
Joan Rose



In Stream Conditions:

- River discharge (ADCP and USGS)
- Temperature
- Physical chemistry (pH and specific conductance)

Chemistry and Nutrients:

- Nutrients (N, P, TN, TP, TDN, TDP, SRP)
- Ions (Na, Ca, Mg, Cl, K, NO₃, SO₄, NH₃)
- Dissolved organic carbon
- Alkalinity
- Stable isotopes (δ H2 and δ O18)

Algae and Chlorophyll:

- Chlorophyll a
- Epiphytic algae (hard and soft substrate)

Microbes and Pathogen Indicators:

- *E.coli*
- *Bacteroides thetaiotaomicron* α -1-6 mannanase (B. theta)
- M2 Bovine marker (*Bacteroides*)
- Pig2bac (*Bacteroides*)

What were the conclusions?

- **Human fecal contamination was affecting 100% of the studied river systems.**
- **Septic systems seem to be the primary driver of fecal bacteria levels.**
- **Pollution arising from septic system discharges are likely more important than previously realized.**
- **Transport was linked to rain.**



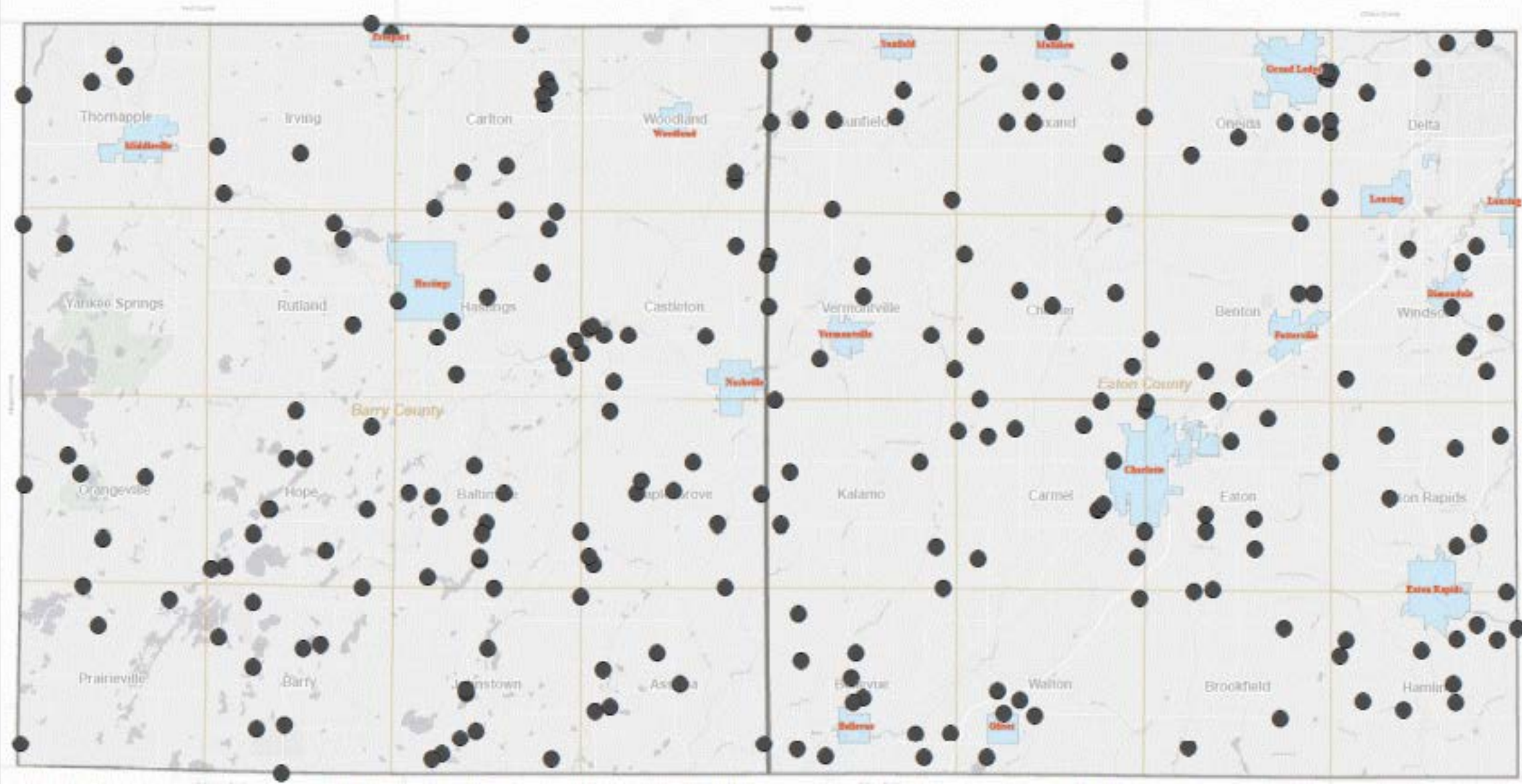
**Sewage Observed at the Ground Surface
Between November 2007 and August 2017
Barry and Eaton Counties, Michigan**

August 2013

*Sewage Observed at the Ground Surface - Condition where sewage is present on the ground surface.



-  Sewage Observed on Ground Surface
 County Boundary
 Township Boundary
 City / Village








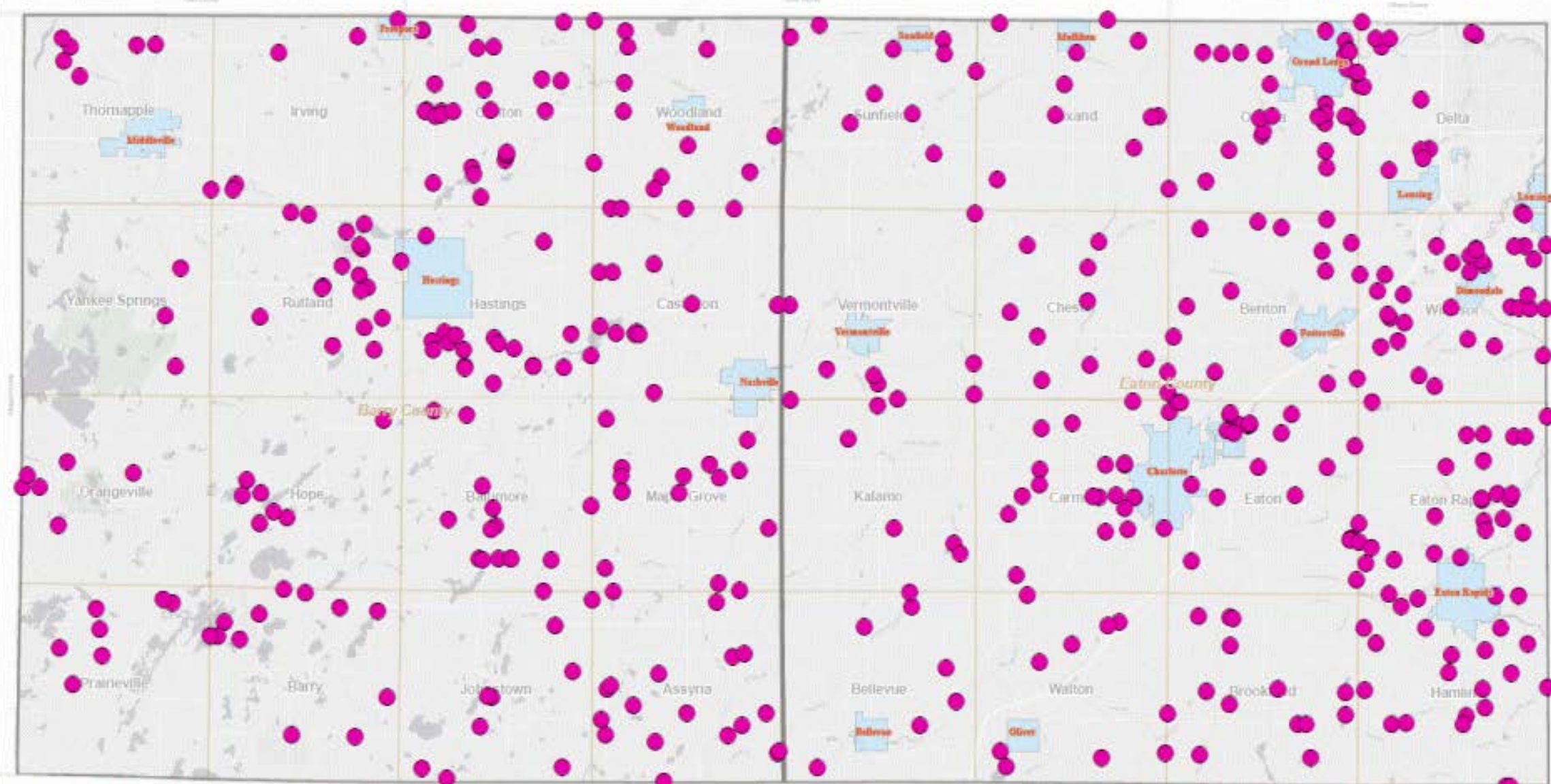
**Illicit Discharges Identified
Between November 2007 and August 2017
Barry and Eaton Counties, Michigan**

August 2011

***Illicit Discharge** - Illegal discharge of sewage that does not reach an absorption system and/or is connected to a field tile, county drain, river, lake, or other water body.



 Illicit Discharge*
 County Boundary
 Township Boundary
 City / Village





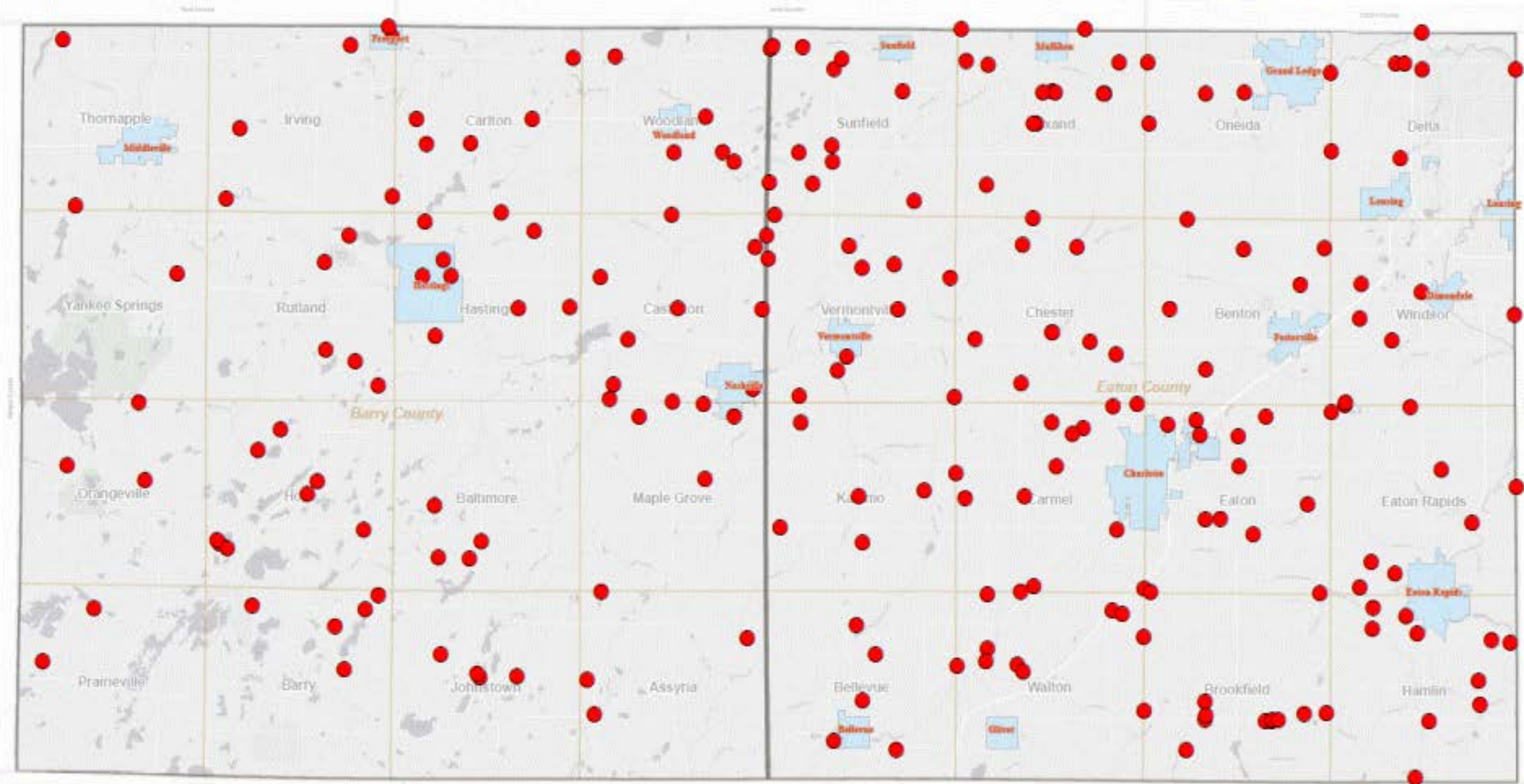
**No Sewage System Identified
Between November 2007 and August 2017
Barry and Eaton Counties, Michigan**

August 2003

*No Sewage System Identified - No soil absorption system found.



-  No Sewage System Identified*
 County Boundary
 Township Boundary
 City / Village



All TOST sewage flags





Freedom and Property Rights
are inseparable. You can't have
one without the other.

~ George Washington

*"One great object of Government is the
personal protection and security of property."*

Alexander Hamilton, at the Constitutional Convention of 1787

Michigan Time of Sale or Transfer Ordinances

Counties

- [Barry County](#)
- [Benzie County](#)
- [Ingham County](#)
- [Isabella County](#)
- [Kalkaska County](#)
- [Macomb County](#)
- [Manistee County](#)
- [Ottawa County](#)
- [Shiawassee County](#)
- [Washtenaw County](#)

Townships:

- [Secord Township](#)
- [Glen Arbor Township](#)
- [Milton Township](#)
- [Empire Township](#)
- [Cleveland Township](#)

Villages:

- [Village of Elk Rapids](#)

2020 Study Undertaken by Michigan Relators

The impact of water quality and time-of-sale regulations on residential property values in Michigan

Conclusion: “The estimate of the effect of the time-of-sale policies on affected properties was found to be statistically insignificant, and thus it is assumed to be equal to zero. “

What Do Home Buyers Think of Septic Ordinances?



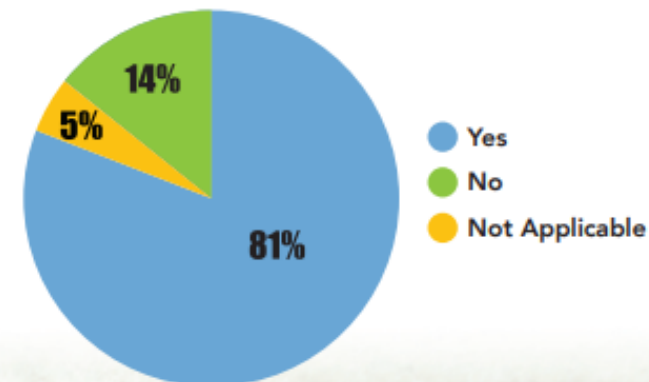
Buying a home is one of the biggest investments people will make. Just like a furnace, the septic system is expensive to repair or replace so it is imperative that it be in good condition when a home is purchased. Having the system inspected before the purchase of a home can help home buyers decide if the home is right for them. Home buyers benefit from knowing the condition of a property's septic system and well, as they can make more informed decisions about their purchase as a result.

In 2019, Milton Township conducted a survey of homeowners who purchased a home under its Time-of-Transfer Septic Ordinance. The ordinance requires the evaluation of septic systems and wells by the Health Department of Northwest Michigan at the time homes are sold.

Surveys were mailed out to homeowners who purchased homes in Milton Township in 2017 and 2018. The results prove that home buyers find the Time-of-Transfer

Program beneficial in ensuring appropriate information is provided to prospective buyers concerning the quality of the drinking water and the status of the septic system prior to the acquisition of properties.

Was it beneficial to know the status of your septic system and well?



- 
- 20% of global fresh surface water
 - 84% of North America's fresh surface water
 - 95% of U.S. fresh surface water

- 750 miles wide
- 94,250 square miles
- 6 quadrillion gallons of fresh water
- 10,000 miles of shoreline



Thank You

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