



MICHIGAN DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY

# What are microplastics, why do we care, and what is EGLE doing about them?

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# What are microplastics?



- General definition
  - *Microplastics are small plastic pieces less than 5 mm in size, or around the width of a standard drinking straw.*
- California state water resources control board definition
  - *Solid polymeric materials to which chemical additives or other substances may have been added, which are particles which have at least three dimensions that are greater than 1 nm and less than 5,000  $\mu\text{m}$ . Polymers that are derived in nature that have not been chemically modified (other than by hydrolysis) are excluded.*
- IJC proposed definition of microplastics for the Great Lakes
  - *Microplastics are defined solid polymeric materials to which chemical additives or other substances may have been added, which are particles greater than 1  $\mu\text{m}$  and less than 5,000  $\mu\text{m}$  in all three dimensions. Polymers that are derived in nature that have not been chemically modified (other than by hydrolysis) are excluded.*

# What are microplastics?

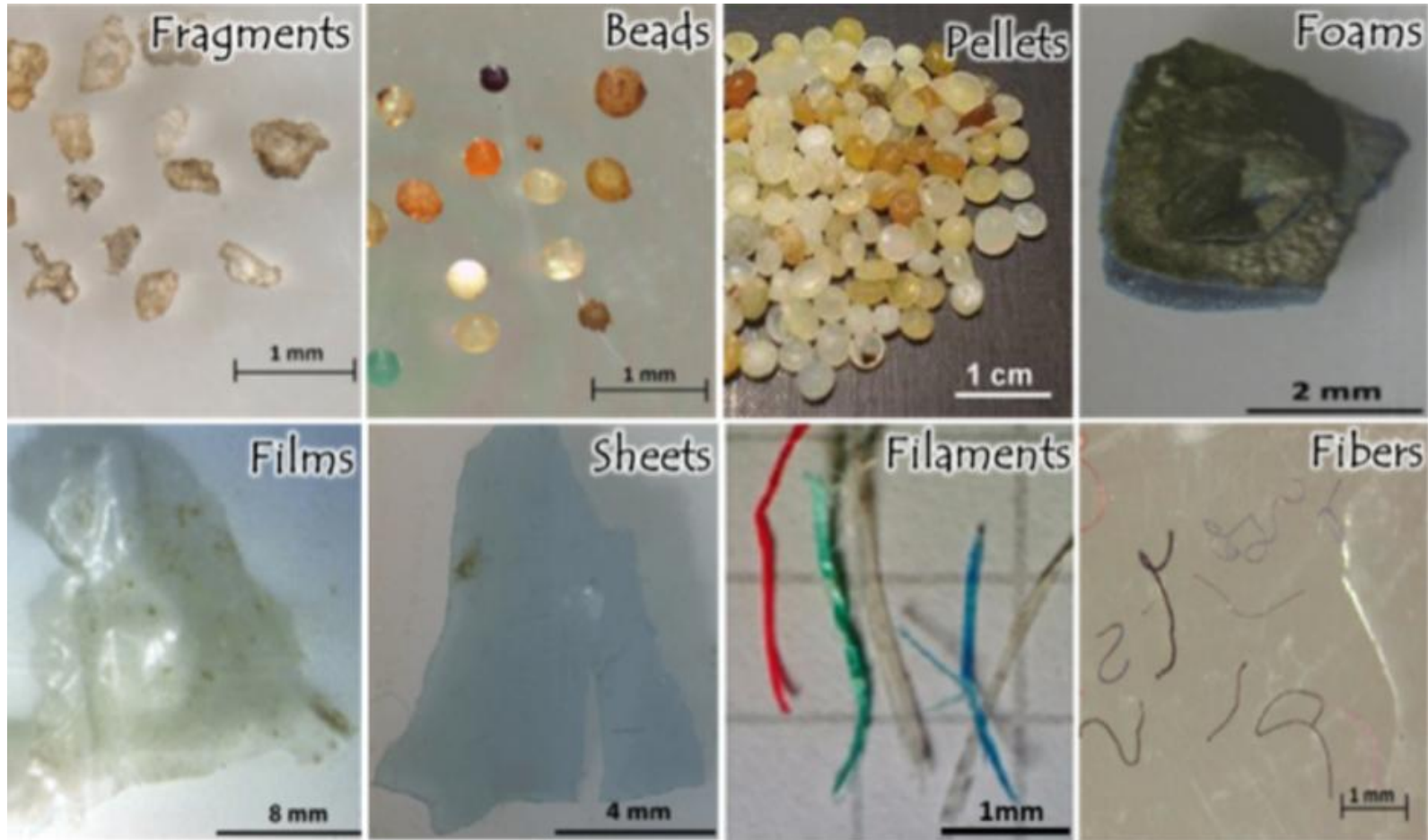
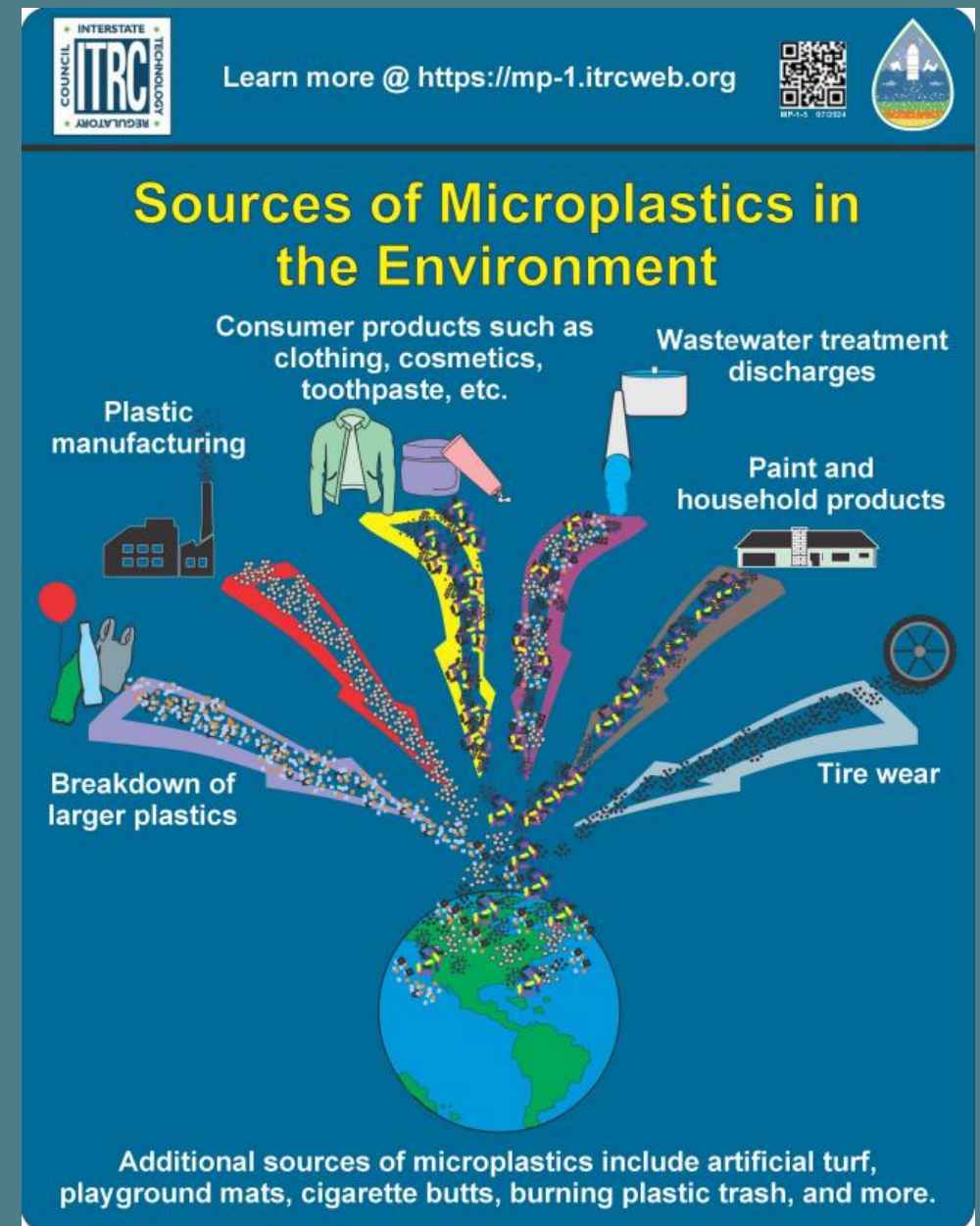


Image depicting shapes and types of microplastics.

Reference:  
<https://www.yorku.ca/research/2021/05/19/lassonde-professor-combats-microplastic-contamination-in-lake-ontario-2/>.

# Where do microplastics come from?

Microplastics can either be intentionally made (primary) or can come from the breakdown of larger plastics (secondary).



# How do microplastics enter and move in the environment?

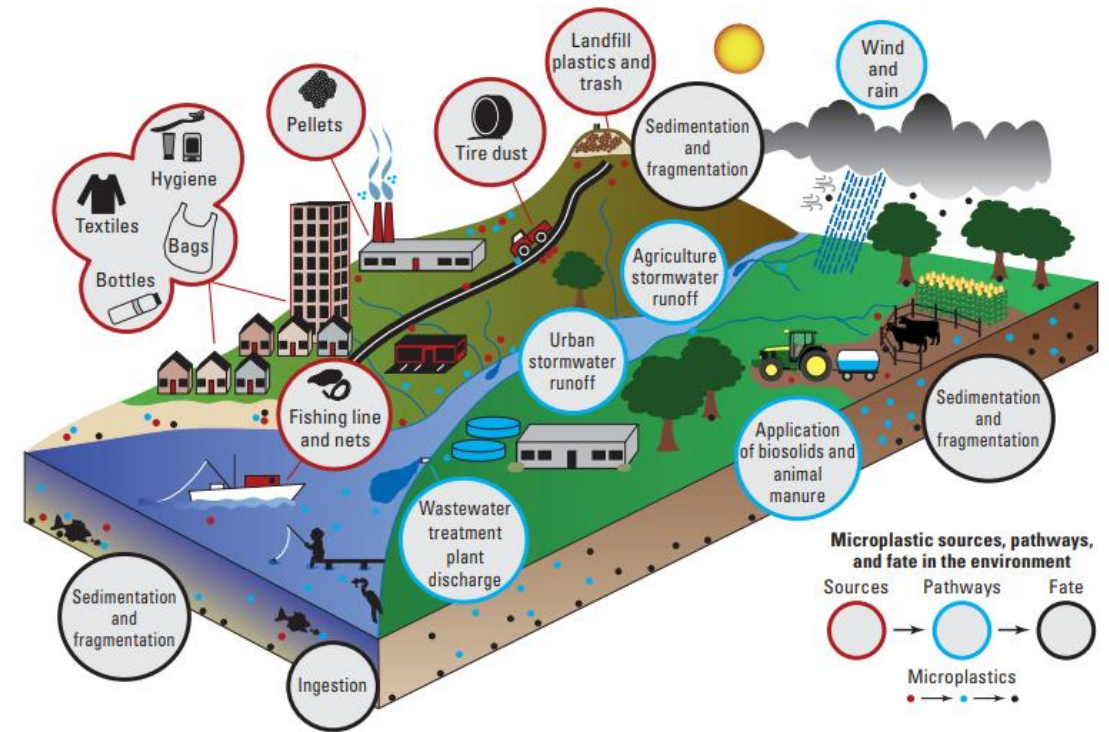
- Sources

- Point sources

- Municipal and industrial wastewater
- Stormwater outfalls
- Industrial smokestacks

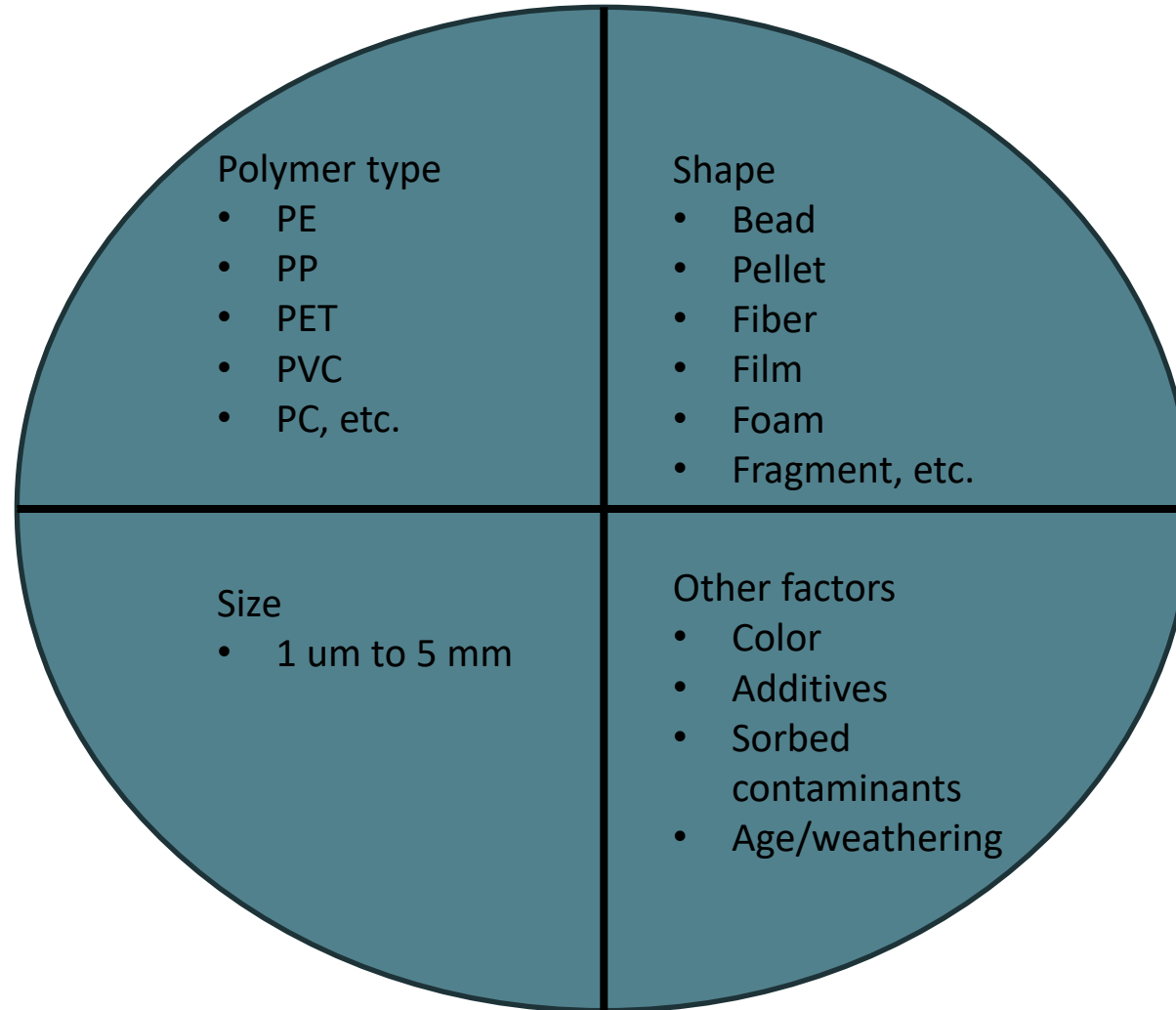
- Nonpoint

- Stormwater runoff
- Atmospheric deposition
- Land application of biosolid



Reference: <https://pubs.usgs.gov/circ/1521/cir1521.pdf>

# Factors affecting the movement of microplastics

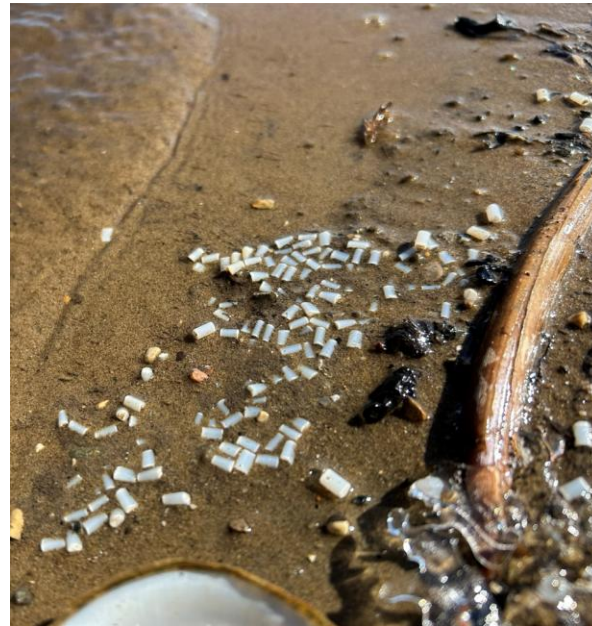


# Why do we care?

- Microplastics are widespread in the environment being found from the most remote to the most urban areas.



Maco and microplastics in algae at a Lake Erie coastal wetland.



Plastic pellets on the banks of the Kalamazoo River.



Polystyrene pellets in grass in an urban environment.



Lake Superior at Whitefish Point in the upper peninsula of Michigan.



Presque Isle River in the Porcupine Mountains Wilderness State Park in the upper peninsula of Michigan.



Common Loon migrating through Mid-Michigan in 2025 searching for food.

# Why do we care?

- Microplastics are widespread in the environment being found from the most remote to the most urban areas.
- Accumulate and persist in the environment for a long time.
- We currently do not know the full story of the distribution and impacts of microplastics on organisms, ecosystems and the environment. But we know that all types of organisms are exposed.

# What is EGLE doing to address microplastic contamination?

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# What is EGLE doing to address microplastics?

- EGLE received a \$2 million one-time appropriation dedicated to microplastics research and recommendations (SB 747 Sec. 1005).
- Set out to develop a plan in collaboration with the Water Resources Division (WRD), Drinking Water Environmental Health Division (DWEHD), and the Office of Great Lakes (OGL). Developed a 4-part plan to begin addressing microplastics in Michigan.

# What is EGLE doing to address microplastics?

- **Part 1: Surface water sampling plan**
  - Sampling random rivers and streams throughout Michigan.
    - Help establish baseline concentration in rivers and streams throughout Michigan.
  - Plans to sample other surface water in the future potentially including inland lakes, Great Lakes, wastewater, stormwater etc.



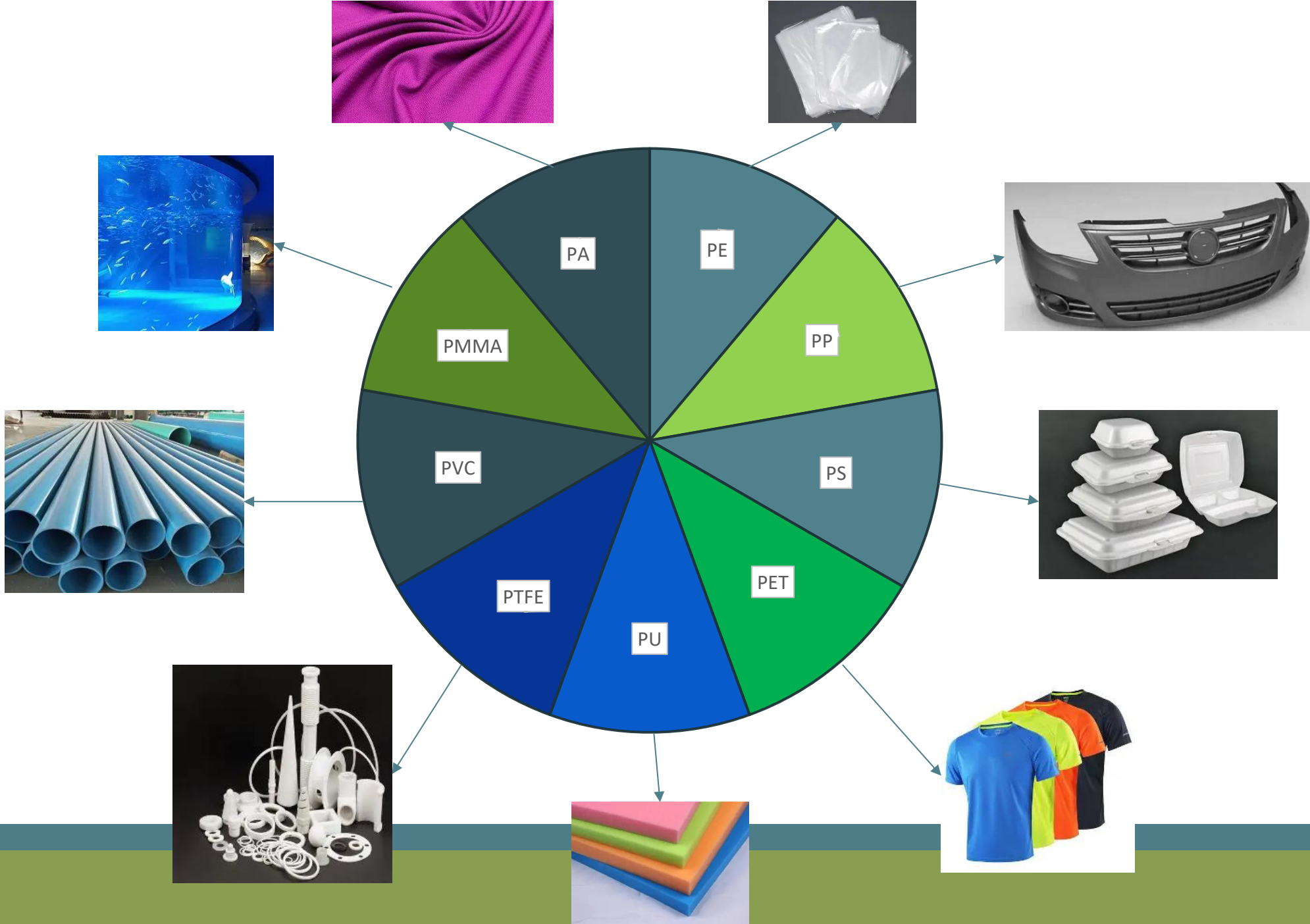
EGLE contractor, Great Lakes Environmental Center, collecting microplastic samples.

# What is EGLE doing to address microplastics?

- **Part 1 cont.**
  - Random river and stream sampling encompasses 200 sites over 4 years, each sampled 3 times at different times of the year.
  - Samples sent to Eurofins Environment Testing microplastics lab for analysis
    - Analysis done with Raman Confocal Microscope.
    - Analysis of size range 20  $\mu\text{m}$  to 5 mm.
    - Plastic composition analyzed: Polyamide (PA), Polycarbonate (PC), Polyethylene (PE), Polyethylene Terephthalate (PET), Polymethyl Methacrylate (PMMA), Polypropylene (PP), Polyurethane (PU), Polyvinyl Chloride (PVC), Polystyrene (PS), Polytetrafluoroethylene (PTFE).



Example image of a Raman Microscope like the one used to identify microplastics in surface water samples in Michigan.



# What is EGLE doing to address microplastics?

- **Part 1 cont.**

- Preliminary conclusions from 2025 sampling data include

- Microplastics are widespread throughout Michigan rivers and streams in varying concentrations
- Polyethylene, polycarbonate, polypropylene, and polyethylene terephthalate are the most found plastic compositions in our 2025 sampling data.

# What is EGLE doing to address microplastics?

- **Part 2:** Microplastics in the public drinking water supply
  - Current work to prioritize public water supplies for future microplastic assessment.
  - Collaborate with Water Research Foundation to add drinking water systems to Michigan to their ongoing studies.
  - Coordination of research efforts with Michigan university partners for increased collaboration across labs.

# What is EGLE doing to address microplastics?

- **Part 3:** Development of request for proposals (RFPs) to address microplastic research and knowledge gaps.
  - Some examples of knowledge and data gaps include:
    - Standard sampling and analysis methods.
    - Presence, distribution, and behavior of microplastics in surface water and/or drinking water.
    - Presence and behavior of microplastics in groundwater and/or sediment.

# What is EGLE doing to address microplastics?

- Part 3 cont.
  - Planning for 2026 Great Lakes Microplastic Summit on October 7<sup>th</sup> and 8<sup>th</sup>, 2026. Call for abstracts closes on May 24<sup>th</sup>, 2026.
  - Covering topics like fate and transport, human health, ecological health, drinking water and microplastics, minimization/mitigation/treatment, regulation/legislation and sampling and analysis methods.

# What is EGLE doing to address microplastics?

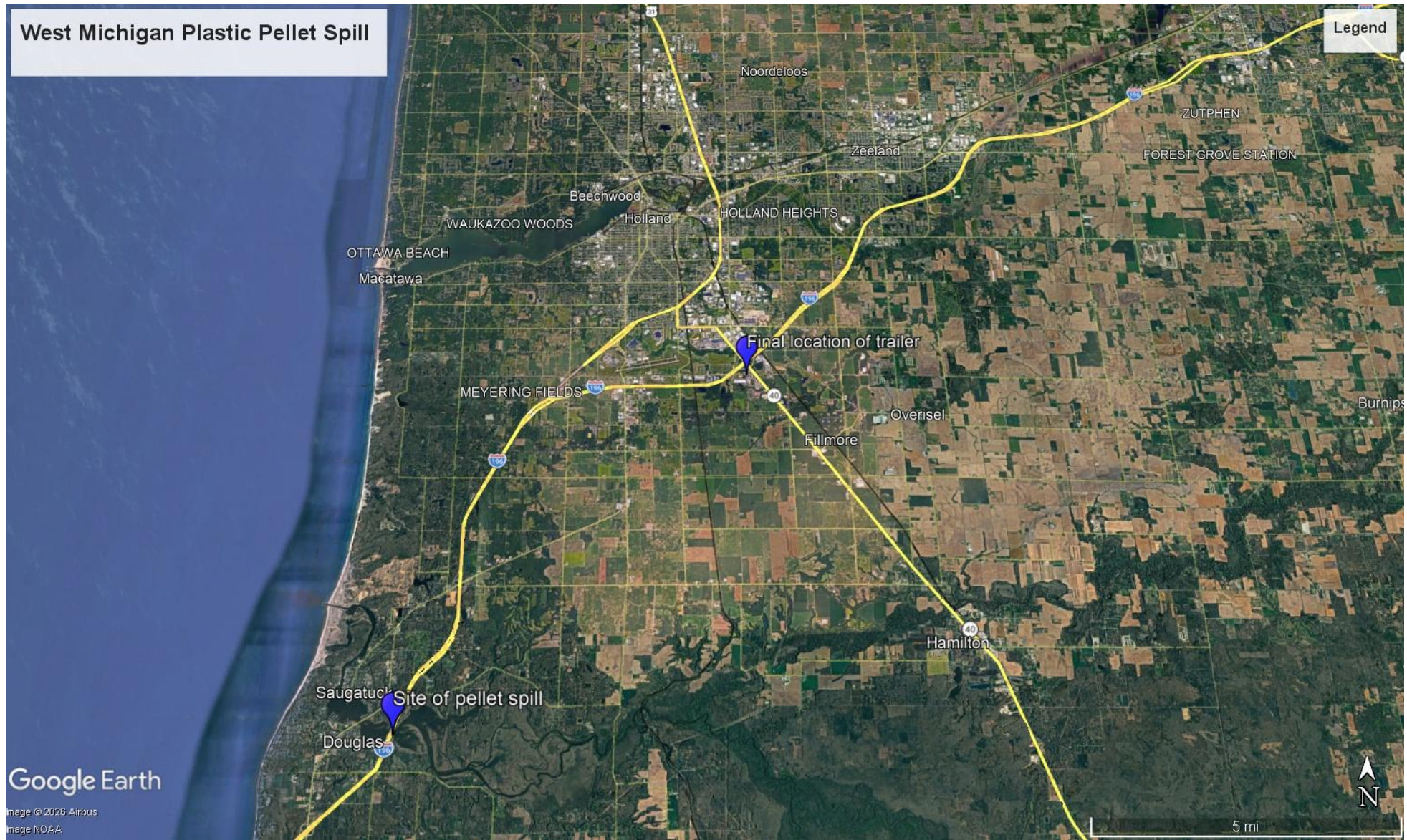
- **Part 4: Statewide microplastics strategy**
  - Will help inform and guide approaches to the following:
    - Policy
    - Monitoring
    - Legislation
    - Research
    - Detection
    - Education and outreach
    - Pollution prevention
  - Development of the strategy will utilize various divisions in EGLE, various state departments, and many stakeholders to help create a robust product.

# What is EGLE doing to address microplastics?

- Case study: Kalamazoo river plastic pellet spill
  - On 2-19-26, EGLE was notified of a crash that resulted in the discharge of preproduction plastic pellets onto the side of the road and into the Kalamazoo River.
  - The crash resulted in the release of around 32,000 lbs of pellets onto the road, in the Kalamazoo river, and in nearby wetlands and tributaries.
  - Pellets were spread all the way down the highway during towing.



# West Michigan Plastic Pellet Spill



Google Earth

Image © 2025 Airbus  
Image NOAA



Plastic pellets located at the initial crash site.



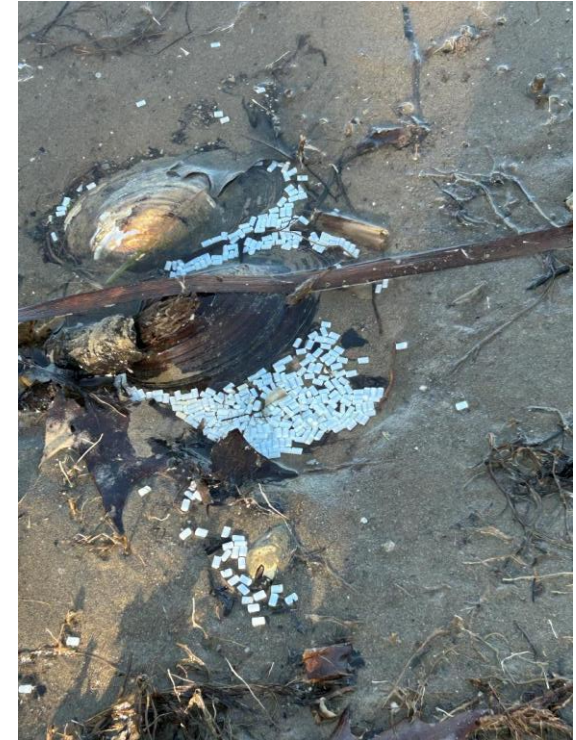
Plastic pellets on the side of the highway down the road from the initial crash site.

# What is EGLE doing to address microplastics?

- After inspection, EGLE issued a violation notice regarding the responsible party's compliance with Michigan Natural Resources Environmental Protection Act (Part 31) and Michigan Water Quality Standards (Part 4).
- More specifically the responsible party's compliance with the following language
  - “The discharge of anything that is or may become injurious into waters of the state is a violation of Part 31 of the NREPA and Rule 50 of Part 4, which states in part “The surface waters of the state shall not have any of the following physical properties in unnatural quantities which are or may become injurious to any designated use: ...(d) Floating solids...(f) Settleable solids...(g) Suspended solids...(h) Deposits.”



Plastic pellets located in vegetation of a nearby ditch.



Plastic pellets located in the Kalamazoo River and inside an empty mussel shell.

# What is EGLE doing to address microplastics?

- Since issuing the violation notice, cleanup and site remediation are ongoing including:
  - Vacuuming up pellets from the crash site and on the roadways and in ditches.
  - Cleaning catch basins.
  - Dive investigations of the river bottom.
  - Manual removal on the banks of the river.
  - Deployment of coconut fiber logs to prevent migration into the river.



Contractors using manipulated lawn mowers to vacuum up plastic pellets on the side of the highway.



Crash site after plastic pellet clean up

# Other Michigan microplastic updates

- Legislation introduced in Michigan related to microplastics
  - **SB 503:** Plastic microbead: Prohibit sale, manufacturing and distribution of products with plastic microbeads and intended for use in the state.
  - **SB 504:** Microplastics in public water supplies: Establishing baseline concentration of microplastics in public water supplies.
  - **SB 505:** Statewide microplastic research and monitoring plan: Assess the occurrence and impacts of microplastics in waterways, animals, plants, and drinking water sources.



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# Questions?

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