



Huron River

WATERSHED REPORT CARD



MICHIGAN'S HURON RIVER

The Huron River (125 mi) meanders through remnant forests, agricultural areas, and a complex series of wetlands, lakes, and urban environments before flowing into the western basin of Lake Erie. Its network of tributaries is made up of 1,200 miles of creeks and streams. The watershed spans a land area of more than 900 square miles that drains to the river. It includes seven Michigan counties and 68 municipal governments, serving 650,000 residents. It contains two-thirds of southeastern Michigan's public recreation lands and is home to numerous threatened and endangered species and habitat types. The river itself supplies drinking water to over 150,000 people, supports one of Michigan's finest smallmouth bass fisheries, and is the only designated Scenic River in the area. The Scenic River designation is a testament to careful and effective management of the Huron River and its resources: no small feat in a heavily urbanized region.

Michigan's earliest residents were largely affiliated with the Algonquin nation. This migratory population came to organize themselves into three major tribal cultures—the Ottawa, Chippewa, and Potawatomi—forming a loose confederation known as the Three Fires. A fourth group of people, the Wendats (Wyandots), settled in southeastern Michigan. Both the Wendats and the Potawatomi established permanent or semi-permanent villages along the Huron River.



Scientists and the public both value the river.

THE HURON RIVER WATER TRAIL

The Huron was designated as the 18th trail of the National Water Trail System in 2015, joining a network of exemplary nationwide water trails. The Huron River Water Trail is a 104-mile inland paddling trail that connects people to the river's natural environment, its history, and the communities it touches. A broad group of public and private partners support the water trail with projects that improve launches and dam portages, wayfinding signs, a waterproof map book for paddlers, and an online trip planning tool. Half a dozen outfitters, including the busiest livery operation in Michigan, offer paddling equipment for rent along with transportation. An extensive network of parks, greenways with trails for walkers and bicyclists, and five trail towns provide water trail access and opportunities for recreation and enjoyment.



"FOREVER CHEMICALS" IN THE HURON RIVER

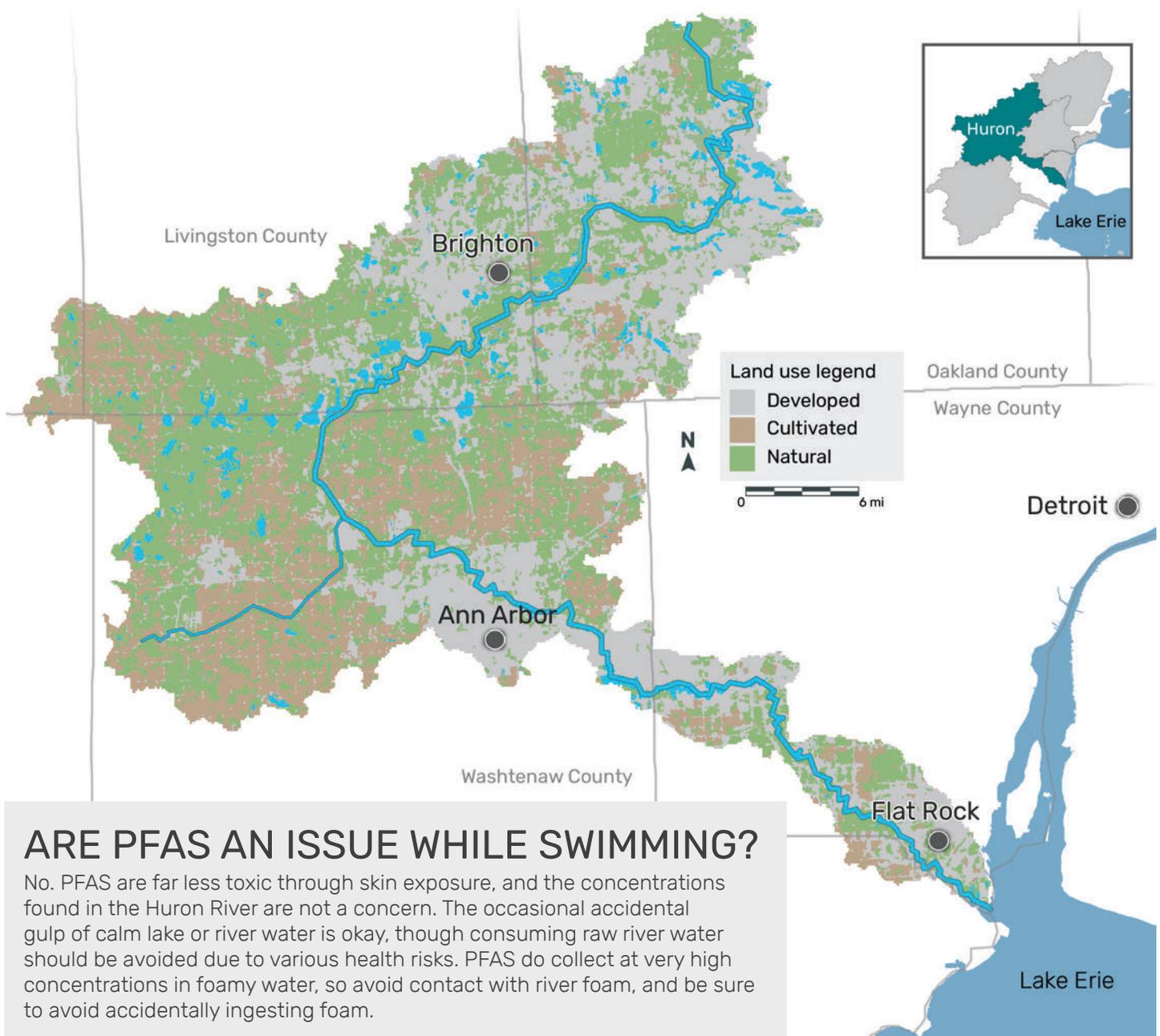
Per- and Polyfluorinated Substances (PFAS) are toxic synthetic chemicals that don't break down readily in the environment. Because they last so long, they are known as "forever chemicals." In 2018, the Michigan Department of Health and Human Services issued a "Do Not Eat Fish" advisory due to PFAS contamination for nearly the entirety of Huron River's main branch. State government investigations initially found a chrome plating company responsible for the PFAS, but then more and more sources were located.

We know now that PFAS contamination is pervasive throughout the environment and that it will be with us for a very long time. It remains unclear when the Huron River's problems will be resolved, because even as existing pollution is flushed from the river and diluted, new and existing sources continue to discharge PFAS into the river. PFAS was not measured in this report card because there is not yet sufficient data, but PFAS is an issue that requires attention now and into the future.

Learn more about PFAS from the Huron River Watershed Council at <https://www.hrwc.org/pfas>.



A warning to the public about PFAS in fish.



ARE PFAS AN ISSUE WHILE SWIMMING?

No. PFAS are far less toxic through skin exposure, and the concentrations found in the Huron River are not a concern. The occasional accidental gulp of calm lake or river water is okay, though consuming raw river water should be avoided due to various health risks. PFAS do collect at very high concentrations in foamy water, so avoid contact with river foam, and be sure to avoid accidentally ingesting foam.

THE HURON RIVER AND ITS WATERSHED ARE IN MODERATE CONDITION



Grade Scale

A Very Good (100–80%)	B Good (79–60%)	C Moderate (59–40%)
D Poor (39–20%)	F Very Poor (19–0%)	

The Huron River and its watershed are in moderate condition (C+).

Water quality was in good condition (71%); vast improvements to water quality have been made in this region since the Clean Water Act. The Huron only received a C in **Water Temperature** (49%) since it can warm to 85 degrees F in the summer, but has low levels of **Phosphorus** and **Nitrogen**, leading to good and very good scores. **Ecosystem** was in moderate condition (59%). The downstream area contains urban areas, but the headwaters region remains relatively undeveloped. While **Birds** (91%) and the **Benthic Community** (68%) are healthy, **Forests** (41%) and **Wetlands** (56%) scored lower because these land types have been lost over time.

Human Health was in moderate condition (45%). In many places, excess **Bacteria** (13%) in the water makes it unsafe for body contact, especially after heavy rains. **Fish Consumption** (24%) is also problematic (see “Forever Chemicals”, left). **Infrastructure** was in moderate condition (56%). The lowest-scoring infrastructure indicator was **Flooding** (32%). The Huron does not have **Sewer Overflows** because of separated sewer and stormwater systems, so this received a very good score.

Recreation was in good condition (74%). The river is popular and well-used by boaters and anglers. The **Economy** was in moderate condition (45%). The lowest-scoring indicators were **Cost of Flooding** (18%) and **Income Equality** (13%), while **Household Income** received a very good score (86%).

SOCIOENVIRONMENTAL REPORT CARDS ARE USEFUL TOOLS FOR ASSESSMENT

Watershed report cards are powerful tools used around the world to describe ecosystem status, increase public awareness, and inform and influence decision makers to act to improve the health of a watershed. This is the first Huron River Report Card, which assesses the condition of the river itself as well as the surrounding watershed. The results of this report card reflect the progress that has been made in improving a heavily urbanized watershed. The development of a watershed report card is collaborative. Stakeholders from a variety of backgrounds—scientists, researchers, government officials, business owners, and interested residents—collaborate to define what is valuable about an ecosystem and what threatens that value. The resulting report cards are “socioenvironmental” because they contain more than just environmental concerns. A river’s health is about more than its water quality and fish population; rivers have recreational and economic value to the people who live in their watersheds.



REPORT CARD INDICATORS EVALUATE HEALTH

The indicators used in this report card were carefully selected by a group of diverse stakeholders. The thresholds for each indicator are based on existing goals and determined by input from experts. Indicators are separated into six categories; each category score is the average of its component indicator scores. Category scores are averaged together to obtain the overall score for the Huron River and its watershed. For detailed information on indicator thresholds and scoring, please visit MichiganReportCards.org



WATER

The **Water** category includes five indicators. **Nitrogen** measures the amount of nitrogen in the water. In the Huron, nitrate-nitrite data were used to assess nitrogen levels. **Phosphorus** measures the amount of total phosphorus in the water. High nutrient levels in a river lead to overgrowth of algae. **Dissolved Oxygen** measures the amount of oxygen dissolved in the water, which is good for animals. **Water Temperature** measures the temperature of the water; some fish species are sensitive to extreme temperatures. **Turbidity** measures the amount of light that passes through the water; in the Huron, total suspended solids data was used to assess the amount of light that passes through water.



ECONOMY

The **Economy** category includes six indicators. **Household Income** measures the median household incomes in a community, while **Income Equality** measures the economic gap between the richest and poorest in a community. **Local Ownership** measures the locally owned businesses in a community by using company size as a proxy. **Cost of Flooding** measures the financial risk of flooding to a community. **Trade** measures the trade balance per capita, which assesses the amount of money leaving the local economy. **River Economy** measures the jobs and income generated by river-related businesses.



ECOSYSTEM

The **Ecosystem** category includes seven indicators. **Wetlands**, **Tree Cover**, and **Forests** evaluate the change in different types of land cover over time. Loss of natural land cover reduces available habitat, and often increases pollutant runoff. **Fish Populations** evaluates five metrics of the fish community structure based on different species types. **Bird Diversity** calculates the Simpson's Diversity Index for all bird species in the region; a higher number of bird species in an area means that there is adequate habitat available. **Benthic Community** evaluates the health of benthic macroinvertebrate species living on the stream beds, which reflects the overall health of the stream. **Protected Lands** measures the amount of land area protected in the region.



HUMAN HEALTH

The **Human Health** category includes five indicators. **Fish Consumption** assesses the type and severity of fish consumption advisories in the region. **Bacteria** assesses the amount of *E. coli* in the water, a proxy for other bacteria that can cause human illness. **Heat Vulnerability** is an index that assesses a community's vulnerability to climate change-driven heat waves. **Air Quality** assesses air pollutants and includes particulate matter (PM_{2.5}) and ozone (O₃). The **Environmental Justice** indicator is an index developed by the CDC that integrates environmental, social, and health factors to assess the impacts of environmental inequality on human health. Environmental and economic inequality are often linked.



INFRASTRUCTURE

The **Infrastructure** category includes five indicators. **Affordable Housing** measures the amount people spend on housing costs compared to their income. **Farmland** evaluates the change in farmland area over time. Farmland maintains plant-based ground cover but can still contribute to water quality issues. **Impervious Surfaces** measures the amount of surfaces that are impervious to water infiltration in the region. **Sewer Overflows** evaluates the number of overflow events from Sanitary Sewer and Combined Sewer Systems. In the Huron, there are thirteen Sanitary Sewers that were assessed, and no Combined Sewers. **Flooding** evaluates the number of floods reported in a region.



RECREATION

The **Recreation** category includes five indicators. **Fishing** measures the number of fishing licenses that have been issued. **Watercraft Access** measures the number of watercraft launch points along stretches of navigable river. **Beach Access** assesses the time when beaches are closed during the beach season. **Parks** assesses the median park size and percentage of park land in an urban area. **Walkability** assesses if people in urban areas can walk to a park in 10 minutes.

MOVING FORWARD IN A CHANGING WORLD

The most significant threats to the Huron River include stormwater runoff, habitat loss, sediment and nutrient pollution, bacteria, and chemical contaminants. Climate change is a “threat multiplier,” meaning that as patterns in precipitation change and air temperatures increase, the threats to river health are amplified.

Protection of natural lands, especially forests and wetlands in the watershed and the land along creeks and streams, serves to keep the water cool and captures polluted runoff from storms before it reaches the river. In urban areas, similar outcomes are achieved with green stormwater infrastructure like rain gardens that catch and soak in runoff. Removing dams removes the risk of dam failures and restores habitat allowing aquatic biodiversity to recover in ways that make the ecosystem resilient to the shocks of extreme events like floods and drought. Improving and adapting existing infrastructure to higher rainfall will reduce flooding and pollution from runoff. Strategies like these must be deployed rapidly and at-scale. The region’s watershed and river groups are uniquely suited to advancing many of these solutions in partnership with others in the region.

Southeast Michigan is home to nearly half of all Michiganders. The region’s inland lakes and streams are critical to the health and the quality of life of residents. Coordinated and significant federal, state, and local investments in freshwater are needed to improve these natural resources for the benefit of people and wildlife.



Water sampling in a tributary.



Kayakers enjoy the river.



Collecting water data.

ACKNOWLEDGMENTS

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Data sources include: Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry; Detroit Bird Alliance/Audubon Society; Federal Emergency Management Agency; Friends of the Detroit River; Google Earth Engine; Huron River Watershed Council; Implan; Michigan Department of Environment, Great Lakes, and Energy; Michigan Department of Health and Human Services; Michigan Department of Natural Resources; Multi-Resolution Land Characteristics Consortium; National Oceanic and Atmospheric Administration; National Water Quality Monitoring Council; Trust for Public Land; U.S. Census Bureau; U.S. Environmental Protection Agency; U.S. Geological Survey; and Your Economy. To find more information about the data and analyses used, please refer to the methods report.



For more information visit
MichiganReportCards.org