

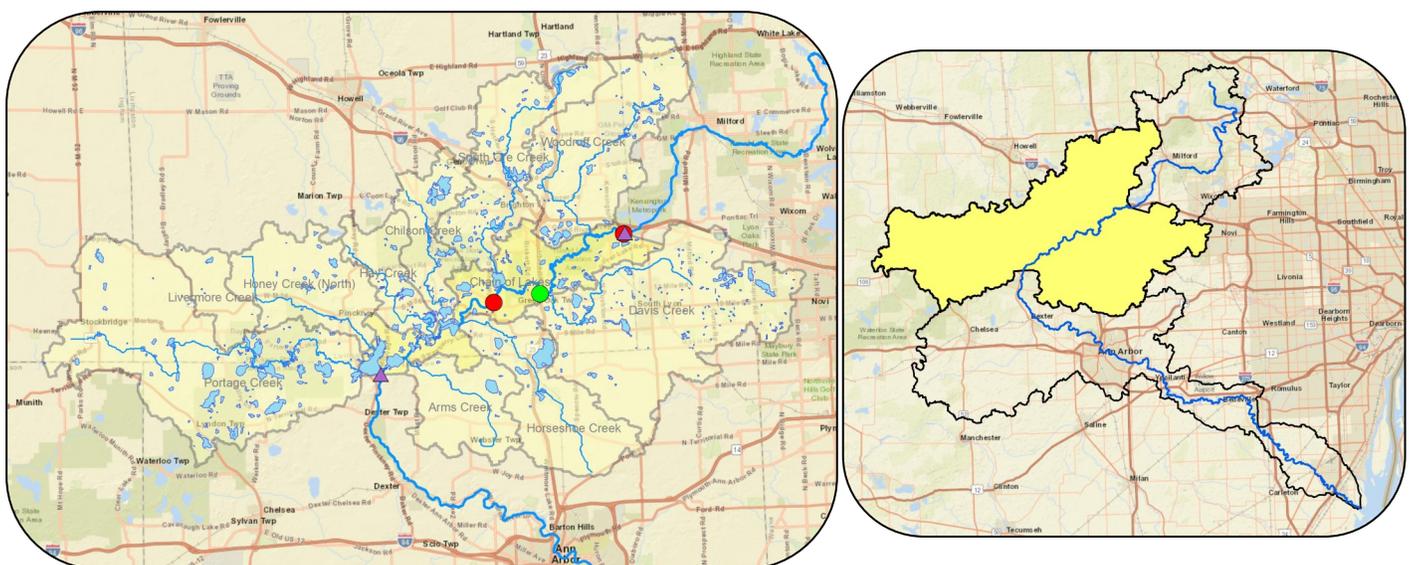
Creekshed Profile

The Huron River flows 125 miles from its headwaters at Big Lake, near Pontiac in Oakland County, to its mouth at Lake Erie in Monroe County. HRWC divides the river into five sections based on its geology, ecology, and hydrology. This report is based on the section that runs between Kent and Portage lakes. The land immediately around the Huron River in this section (darker yellow, map below) is the focus of this report.

The river runs at a rapid pace for 12.3 miles starting at Kent Lake Dam, with a gradient of 10.7 feet per mile, as it flows through hills of sand and gravel created by the glaciers as they melted away 10,000 years ago. After Ore Lake, the river slows down in the flat terrain, running another 3.7 miles at a gradient of 0.8 feet per mile, picking up speed a little as it enters Strawberry Lake and the rest of the Chain of Lakes (Gallagher, Whitewood, and Baseline), and traveling the last 6 miles at a gradient of 1.5 feet per mile. Several other lakes are considered to be part of the Chain of Lakes and are connected to the system, but the Huron River does not flow directly through them (Loon, Little Portage, Portage, Tamarack, and Zukey). Altogether, there are 29 lakes (open water > 5 acres), and 22 ponds (open water < 5 acres) throughout the watershed area highlighted in darker yellow on the map below.

The glacial hills were once predominantly oak barrens, with tamarack and hardwood swamps growing in the low areas connecting the lakes. Oak barrens are now considered a critically imperiled ecosystem in the state by the Michigan Natural Features Inventory due to their massive clearing for agriculture during European settlement and continued development. Tamarack and hardwood swamps have also been much reduced throughout the Huron River watershed.

A river ecosystem is only as healthy as the quality of the water flowing into it. Many of the Huron's biggest tributaries flow into the Huron River in the Chain of Lakes region: Arms, Chilson, Davis, Hay, Honey, Horseshoe, Portage, South Ore, and Woodruff. And of course this section is heavily influenced by the upstream Huron River. Reports exist for all of these sections (www.hrwc.org/huron-river-creeks-streams/). Livingston County and Green Oak and Hamburg townships govern the biggest sections (primarily the steeper upstream region), while the flatter section runs through Hamburg Township.



- Monitoring sites for Aquatic Insects, Stream Habitat, and Stream Temperature For more details on these parameters, please see inside.
- Monitoring site for Stream Flow, Phosphorus, Total Suspended Solids, and *E. coli*
- ▲ Dams

Watershed Status and Trends



The sun sets over beautiful Little Portage Lake. Credit: Rebecca Foster

Watershed Land Use

Impacted by polluted runoff

Total watershed size: 34 square miles of direct drainage (not including the large tributary creeksheds)

Land use based on the year 2000:

Agriculture: 6%, 2 square miles

Residential & urban: 38%, 13 square miles

Forest: 13%, 5 square miles

Open: 17%, 6 square miles

Wetland: 14%, 5 square miles

Total impervious surface: 10%, 3.4 square miles

Fish and insect communities are less diverse when impervious surface exceeds 10-12% of the total watershed area. 10% of this area is impervious; most of the tributaries that flow into this stretch are also within this range. Therefore much of the system is at the tipping point of losing much of its biological diversity.

Watershed Natural Areas

Many natural lands yet unprotected

The watershed's forests, wetlands, and grasslands soak up rainwater and runoff, filter pollutants from runoff, and provide wildlife habitat and beautiful places for us all to enjoy. About 28% of this stretch remains as intact natural areas. Almost two-thirds of these areas are protected from development (in Island Lake Recreation Area and Huron Meadows Metropark). Without designated protection, the rest of these natural areas face an uncertain future. It will be important to keep these lands natural, so they can continue to help keep the creek healthy.

River Habitat

Healthy habitat throughout

The Huron River has substrate favorable for river life; a mix of boulders, rocks, sand, and gravel in fast flowing areas and sand and muck in slow-water areas. Plenty of fallen trees line the banks and provide habitat for fish, turtles, and birds. Most of the riparian areas are full of large trees, which provide shade for the river and stability for the streambanks.

Lake Habitat

Lake residential communities

The Chain of Lakes region is, understandably, filled with lakes! Like most inland lakes in Michigan, the lakes are surrounded by residential houses, holding both seasonal and full-time residents. Such houses typically have grassy yards that stretch to the lake's edge, and many shorelines are protected by seawalls to prevent erosion. However, grassy yards and seawalls make for wildlife-unfriendly habitat, and they do little to prevent stormwater carrying oils, sediment, nutrients, and other forms of pollution from entering

Fish Community

Warm-water lake communities

Lakes in this section support warm-water fish communities. Sunfish and bass are common, as are suckers, carp, and catfish. Northern pike are known to get quite large in the vegetated margins of the lakes. In the flowing parts of this section, anglers enjoy fishing a healthy smallmouth bass population.

Aquatic Insect Community

Average insect diversity and abundance

The deep water of this section prevents access for insect sampling, and there is only one sampling point, where US-23 crosses the river. The insect community here is of average diversity, showing a mix of caddisflies, stoneflies, and mayflies. Only a couple of the most pollution-sensitive families are found here at any one sampling event. The water is often high, which may prevent thorough sampling by HRWC volunteers.

Stream Water Temperature

Normal summer temperatures

The Huron River receives a mix of cold groundwater and warmer surface runoff and is an average of about 72-75°F during July and August, reaching 80°F on the hottest days. The lakes in this region get warmer at the surface, given their exposure to the sun. Temperature data recorded through the Cooperative Lake Monitoring Program shows that the highest recorded temperature is around 85°F, but a more normal daily maximum temperature is 80°F.

Pathogens

Low, but more data needed

E. coli bacteria is a useful water quality indicator for the presence of fecal contamination. In this area near Hamburg Road, limited sampling of *E. coli* showed low concentrations. Upstream tributaries have not been sampled for *E. coli*, so we cannot be certain that conditions are similar. After heavy rain events, *E. coli* levels may rise above State standards. It can take 48 hours for the *E. coli* to return to safe levels.

Phosphorus

Moderate

Phosphorus is the limiting nutrient in most freshwater systems, and too much phosphorus can cause algal blooms and water quality problems. The target for area streams is < 30 mg/l. In this section of the river the mean phosphorus (TP) is 30 mg/l. Lake phosphorus in this region has significantly declined since the 1970s. This data is available through the MiCorps Data Exchange: <https://data.micorps.net/view/>.

Total Suspended Solids

Low

Total suspended solids (TSS) is a measurement of the amount of sediment and organic material held by the stream. A high TSS indicates high turbidity and erosion problems. Good TSS values during rain storms are below 80 mg/l. The section of the river downstream of the Kent Lake Dam has a mean TSS of 4 mg/l. The section of the river at Hamburg Road has a mean TSS of 3 mg/l.

Color Coded Ranking

Excellent

Fair

Poor

Conductivity

Slightly elevated

Conductivity is a measurement of the amount of ions (also known as salts) dissolved in water. Conductivity is a quick and easy measurement to make and is useful as an indicator of potential problems. Conductivity levels in the Huron at US-23 are just slightly elevated over normal background levels, indicating the presence of a slight amount of unknown dissolved pollutants. The elevated levels are likely the result of the site's proximity to the highway, which drains to the river.

Stream Flow

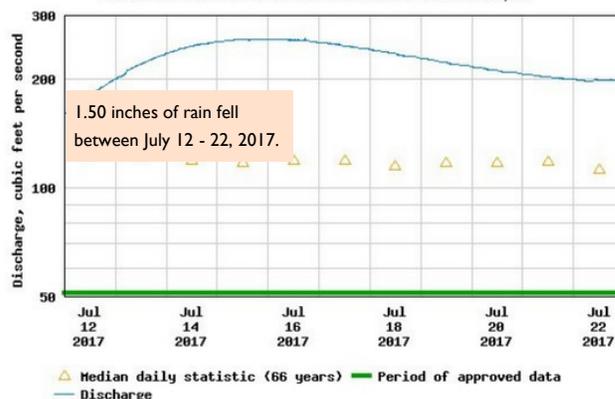
Mostly natural

Stream flow is an important underlying factor for determining likely erosion rates, stream habitat quality, and aquatic community diversity. In this section near Hamburg Road, the river exhibits flow characterized by slow rises during storms and long return periods, resulting in a stable base flow. This is good for aquatic life.

The graph below reflects the slow rise and fall of the river after a rainstorm.



USGS 04172000 HURON RIVER NEAR HAMBURG, MI



Successes & Challenges

Successes

- HRWC's RiverUp program has improved paddling access sites at Flook Dam (Portage Lake) and Kent Lake Dam.
- Green Oak Township has adopted HRWC's model policies that keep development away from waterways and wetlands, allowing them to filter polluted runoff and provide habitat.
- The regionally unique Portage Baseline Whitewood Owners Association formed an assessment district to support a range of management projects along the Chain of Lakes. They work to reduce plant overgrowth and educate lakeside residents on nutrient management, among other projects.
- The Livingston Watershed Advisory Group (a group of municipal and county representatives) developed watershed management plans for the Chain of Lakes, and implement a range of projects to reduce stormwater flow and nutrient inputs.
- The nationally-designated Huron River Water Trail creates linkages from city to village; improves recreational access; adds interpretive, way-finding, and historical signage; and creates economic development opportunities along the entire stretch of the Huron.

Challenges

- The entire Chain of Lakes region is under a "Do Not Eat Fish" advisory due to elevated levels of PFAS, a carcinogenic set of chemicals. Learn more at the HRWC website: <https://www.hrwc.org/our-watershed/threats/pfas-and-the-huron-river/>
- Lake residents need to improve lakeshore habitat quality. Fertilized lawns, removal of native aquatic vegetation, and shoreline hardening such as riprap and seawalls all detract from the water and habitat quality of a lake. This is not a problem limited to the Chain of Lakes, however; lake residents across the country deal with this issue.
- One downside to having many slow-flowing, natural lakes is susceptibility to flooding. Undammed, natural lakes like Ore Lake periodically flood in the spring. Homes built in the floodplain have been damaged. Hamburg Township is especially vulnerable and is working with state and federal agencies to relocate or protect homes against future flooding.



HRWC regularly hosts a swim across Baseline Lake. Credit: Rebecca Foster

- New development continues to appear along the river and lakeshore, clearing the riparian trees, shrubs, and other native vegetation so vital to its health. Communities need to ensure new development is designed to minimize vegetation clearing and impervious surfaces, especially near the river.
- Phosphorus is a known problem in South Ore Creek and other tributaries to the river and lakes. These creeks enter the Huron River in this section, lowering the river's water quality. Learn more about these tributaries from their reports. (<https://www.hrwc.org/our-watershed/features/huron-river-creeks-streams/>)

What you can do!

At home

- Get a copy of *Waterfront Wisdom* (<https://www.hrwc.org/take-action/at-home/riverfront-lakeshore-properties/>) It contains 7 areas of great tips for waterfront homeowners to protect water resources.
- Don't use phosphorus fertilizer. Michigan law prohibits application of phosphorus fertilizer without a soil test to prove that phosphorus is needed.