# Middle Huron Partners

# Section 9. Total Maximum Daily Load (TMDL) Implementation Plan Report

## TMDLs and Water Quality Data

Permittees within the Middle Huron River Watershed agreed to work with the Huron River Watershed Council to develop and conduct a water quality monitoring program to collect data and assess the water quality within the river and its tributaries. There are five stormwater-related TMDLs in the middle Huron River watershed. While the current permit does not specifically require reporting on TMDLs, Permittee and watershed partners have funded monitoring to determine progress toward meeting each TMDL. This monitoring program is also used determine status and trends of water quality within the Middle Huron River Watershed affected by storm water discharges. HRWC submitted a plan for this monitoring as an appendix to Storm Water Management Plans (SWMPs), and subsequent permit applications, submitted by permittees within the watershed. That plan was titled “Middle Huron Stormwater Plan for Addressing Total Maximum Daily Loads (TMDLs).”

Subsequently, HRWC conducts water quality monitoring annually from April through September at eleven long-term sites in the Middle Huron River and its tributaries. Long-term sites help HRWC to determine changing conditions over time. HRWC also monitors at investigative sites located upstream of selected long-term sites to gain a better understanding of upstream conditions. Further, HRWC collaborates with the University of Michigan to install water level and flow sensors, maintain them and provide real-time data to partners and the public. They present the results of all this monitoring and update a dynamic report following the inclusion of results through September. The current report is available at <http://www.hrwc.org/washtenaw-results>. Additional data presentations can be accessed at <http://www.hrwc.org/chemistryandflow>. Further, HRWC developed a geographically navigable, interactive data explorer web tool called Info Stream (<http://www.hrwc.org/maps>). This portal includes all water quality, habitat, biota, and natural area information collected within the watershed, and it is continuously updated as data is generated and quality-assured. Water level and flow sensor data is available at <http://maps.open-storm.org/>.

During the reporting period, COVID-19 posed some challenges to monitoring data collection. Samples were not collecting in April through June 2020 due to stay-at-home orders from the COVID-19 pandemic. However, some flow measurements and in-stream chemistry measurements were collected in June, which continued biweekly until the end of September. In 2020, water samples could not be analyzed by the partnering municipal laboratory due to staff limitations and building restrictions from COVID-19. Therefore, a reduced number of samples were analyzed by a private laboratory (RTI Laboratories) and sample collection in 2020 was limited to the eleven long-term monitoring sites. In 2021, the full frequency of sampling was executed and samples were analyzed by the Ann Arbor Drinking Water Treatment Plant laboratory. During the 2021 monitoring season, the program was able to collect samples from the eleven long-term sites as well as two investigative sites, including the Huron River at Central Street in Dexter and Mill Creek at Jerusalem Road. Samples were processed by the Ann Arbor laboratory for total phosphorus, total suspended solids, *Escherichia coli,* sulphate, nitrate, nitrite, and chloride concentrations. Volunteers, along with support from HRWC staff, directly measured in-stream conductivity, pH, total dissolved solids, temperature, and dissolved oxygen with handheld sondes.

In total, 13 sites were sampled in 2020 and 2021. Since the beginning of the Chemistry and Flow Monitoring program, over fifty sites have been sampled and hundreds of volunteers have been trained and involved in the program. In 2020 and 2021, volunteer involvement was limited to minimize the spread of COVID-19.

Much of this data analysis was also included in the evaluation of four water quality impairments within the watershed. Based on this analysis and discussion with watershed partners, implementation plans were developed and submitted to MDEQ for each of the following five TMDLs:

* [Ford Lake and Belleville Lake – impaired for excessive phosphorus](https://www.hrwc.org/wp-content/uploads/2011/11/Ford-Belleville_Phosphorus_FINAL.pdf)
* [The Huron River between Argo and Geddes Dams – impaired for pathogens](https://www.hrwc.org/wp-content/uploads/2011/11/Geddes_ecoli_FINAL.pdf)
* [Malletts Creek – impaired for aquatic life and habitat](https://www.hrwc.org/wp-content/uploads/2011/11/MallettsCreek_BiotaTMDL_FINAL.pdf)
* [Swift Run -- impaired for aquatic life and habitat](https://www.hrwc.org/wp-content/uploads/2011/11/SwiftRunBiotaTMDL_FINAL.pdf)
* [Honey Creek – impaired for pathogens](https://www.hrwc.org/wp-content/uploads/Honey_Creek_WMP.pdf)

An umbrella WMP was developed and revised for the entire Middle Huron River watershed in 2011[. Click here to view the 2011 Middle Huron River Watershed Management Plan](https://www.hrwc.org/wp-content/uploads/Middle_Huron_WMP-2011.pdf). That plan is in the process of being revised in sections, starting with [Section 2 (Ann Arbor-Ypsilanti)](https://www.hrwc.org/what-we-do/programs/watershed-management-planning/middle-huron-WMP-section-2/), which was completed in 2020.

**TMDL Progress Summary**

HRWC and watershed partners have engaged in numerous projects to implement recommendations from these plans. Some projects and best management practices (BMPs) have been implemented collectively across the watershed, while others have been implemented locally by our municipality. Appendix A is a table that includes a list of BMPs that work to address TMDL impairments, which we included with our permit application. The table also includes a summary of progress on each practice. [MS4s: review the appendix table and revise as necessary before including. After doing so, delete this guidance.]

**Water Quality Summary**

In general, monitoring data on watershed stressors shows the following key results in the Middle Huron River Watershed:

Concentrations and loading of total phosphorus to Ford and Belleville Lakes have been declining – the most recent loading analysis indicates a 40% reduction in phosphorus loading since the Middle Huron Partnership began in 1996. The most recent annual data indicates a decline in median concentrations down to 0.040 mg/l (mean=0.075 mg/l) in 2019 and 0.046 mg/ in 2020, which is above the updated TMDL target of 0.03 mg/l for Ford and Belleville Lakes. A few urban and suburban tributaries, namely [Boyden](https://www.hrwc.org/gis-online/BC01_TP_large.jpg), [Honey](https://www.hrwc.org/gis-online/MH03_TP_large.jpg), [Allens](https://www.hrwc.org/gis-online/MH04_TP_large.jpg), and [Traver](https://www.hrwc.org/gis-online/MH05B_TP_large.jpg) Creeks, have shown promising reductions in recent years. Main Huron River sampling sites, including [North Territorial Road](https://www.hrwc.org/gis-online/MH01_TP_large.jpg) and [Michigan Avenue](https://www.hrwc.org/gis-online/MH11_TP_large.jpg), have also shown declines. However, a broad examination of total phosphorus concentrations across the eleven long-term sites in the Middle Huron shows that [concentration ranges vary quite a bit year to year](https://www.arcgis.com/sharing/rest/content/items/67e1fd1bbc9a44cf853cd78dd6d8219f/resources/MH%20TP%20B%2BW__1551117799488__w1920.jpg). The bulk of the concentrations range between 0.02 mg/l and 0.06 mg/l, with a few samples exceeding this range. Typically, these high concentrations are measured during or following rain storms. As such, stormwater runoff is still a major pathway of overall phosphorus loading to the middle Huron River.

Mean concentrations of total suspended solids across the Middle Huron are well below sample standards. As shown in [this chart](https://www.arcgis.com/sharing/rest/content/items/67e1fd1bbc9a44cf853cd78dd6d8219f/resources/MH%20TSS%20B%2BW__1551118214200__w1920.jpg), the vast majority of samples from long-term sites in the middle Huron River watershed had TSS concentrations below the target threshold. The mean TSS concentration across all sites for 2019 was 10 mg/l with a median of 6 mg/l and for 2020 was 23 mg/l with a median of 7 mg/l. This reveals most samples throughout the Middle Huron watershed are quite clear of sediments. However, a few sites, namely [Allens Creek](https://www.hrwc.org/gis-online/MH04_TSS_large.jpg%22%20%5Ct%20%22_blank), [Malletts Creek](https://www.hrwc.org/gis-online/MH07_TSS_large.jpg), and [Swift Run](https://www.hrwc.org/gis-online/MH09_TSS_large.jpg), exceed the TSS standard during storms, likely due to erosion and sediment runoff from urban areas.

The data collected on bacteria (as *E. coli*) indicate that most sites in the Middle Huron regularly exceed state standards. Three sites, including [Huron River at North Territorial](https://www.hrwc.org/gis-online/MH01_eColi_large.jpg), [Huron River at Michigan Avenue](https://www.hrwc.org/gis-online/MH11_eColi_large.jpg), and [Boyden Creek](https://www.hrwc.org/gis-online/BC01_eColi_large.jpg), have consistently low E. coli counts with most samples below the state single sample standard for Full Body Contact (300 E. coli cfu per 100 ml). Long-term trends for E. coli in the Middle Huron are steadily declining at urban tributaries (see [Traver](https://www.hrwc.org/gis-online/MH05B_eColi_large.jpg) and [Millers](https://www.hrwc.org/gis-online/MH08B_eColi_large.jpg) Creeks, for example), but not suburban or agricultural tributaries such as [Mill](https://www.hrwc.org/gis-online/MH02B_eColi_large.jpg) and [Honey](https://www.hrwc.org/gis-online/MH03_eColi_large.jpg) Creeks.

HRWC also coordinates a macroinvertebrate monitoring program, which analyzes benthic communities at 41 sites in the Middle Huron annually in April and October. Most sites in the Middle Huron show a stable aquatic insect community. However, some show significant improvements including highly urban creeks such as [Malletts Creek](https://www.hrwc.org/gis-online/Malletts27-Insect1.JPG).

In addition to the TMDL-related parameters measured in the HRWC water quality monitoring programs, HRWC also observed the following results on non-regulated parameters:

* All eleven long-term monitoring sites had average values for dissolved oxygen that are within the normal range for Michigan surface waters.
* Six of the eleven long-term sites had average and median conductivity values that exceed the accepted limits, most of which were the urban sites.
* All eleven long-term sites exhibit measured pH values that are within the expected range for Michigan surface waters.

 [Permittees can add monitoring activities they have engaged outside of the program developed by HRWC.]