# Section 8. MS4 Jurisdictional-Based General Permit Requirements

## Water Quality Data, Assessment and Stressor Update

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 during the growing season 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. They report the results of this monitoring following the inclusion of results through September. The most recent report is available at <http://www.hrwc.org/washtenaw-results>. Additional reports 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.

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)

HRWC and watershed partners have engaged in numerous projects to implement recommendations from these plans. 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 the middle (Ann Arbor-Ypsilanti) section.

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 0.041 mg/l (mean=0.075 mg/l), which is below the TMDL target for Ford Lake. A few urban and suburban tributaries, including Boyden, Honey, Allens, and Traver Creeks, have also shown promising reductions in recent years. 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 0.03 mg/l and 0.1 mg/l, with a few samples exceeding this range by a considerable margin. 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 2018 was 25 mg/l with a median of 6 mg/l, so most samples are quite clear of sediments throughout the watershed. Recent data even indicates declining TSS at urban tributaries, such as [Allens Creek](https://www.hrwc.org/gis-online/MH04_TSS_large.jpg). A few sites, namely [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), occasionally exceed the TSS standard during storms, likely due to erosion.

The data collected on bacteria (as *E. coli*) thus far indicate that all sites except three regularly exceed state standards. 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.

Lastly, HRWC also coordinates a macroinvertebrate monitoring program, which analyzes benthic communities at 41 sites in the Middle Huron twice per year. Most of sites in the Middle Huron show a stable aquatic insect community, and some have shown 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 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.

HRWC and Middle Huron Partners are also beginning to investigate emerging potential impairments including polyaromatic hydrocarbons (PAHs), per- and polyfluoroalkyl substances (PFAS), and microplastics. Insufficient data has been collected to report on status and trends of these substances at this time.

No additional watershed stresses beyond those listed above and others originally listed in the Middle Huron River WMP have been identified.

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