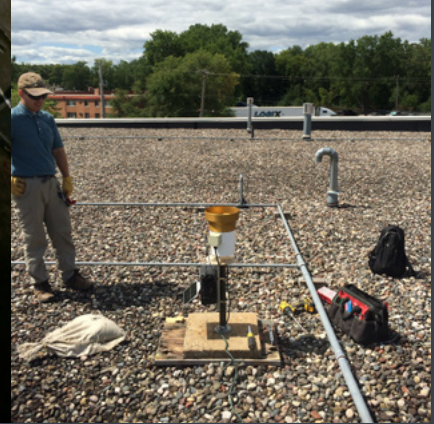




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MISSISSIPPI
WATERSHED
MANAGEMENT
ORGANIZATION

2019 Monitoring Executive Summary





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Executive Summary

The Mississippi Watershed Management Organization's Monitoring team has completed another successful and active year of monitoring the watershed and is pleased to share the results of their work. The [Water Quality Monitoring section](#) of the MWMO website has been updated with the latest [precipitation](#), [stormwater](#), [river water quality](#), [river bacteria](#), and [lake monitoring](#) data from 2019. Data summaries from previous years can also be found on those pages.

Each year, MWMO staff publishes an annual report that summarizes the year's monitoring activities and outlines the next year's work plan. Recently, MWMO monitoring staff have begun publishing monitoring data results and summaries in the monitoring section of the website on an annual basis in lieu of a compiled report. This change has been made to make the data results more accessible and understandable. Current and past reports are available on the MWMO website at mwm.org/monitoring-and-reports/water-quality-monitoring.

The MWMO monitors water quality in the watershed's stormwater drainage system, the Mississippi River, lakes, and wetlands. Within these systems, major factors influencing water quality include the amount of precipitation, timing of precipitation events, and land use practices in the watershed. Long-term monitoring is necessary to characterize the impact of various land use practices on surface water runoff within the MWMO and, ultimately, the Mississippi River. Water quality in the Mississippi River is also influenced by precipitation and land use practices in the entire Mississippi River basin upstream of the MWMO. Long-term monitoring of the river will aid the understanding of upstream weather patterns and land use impacts on the MWMO watershed.

The 2019 monitoring season included collection of precipitation data from eight monitoring locations, collection of bacteria and other water quality samples from seven locations in the Mississippi River, automated collection of water quantity and water quality data from five stormwater outfall sites draining to the Mississippi River and one stormwater pipe at the jurisdictional boundary of the Cities of Saint Anthony Village and Minneapolis, and collection of water quality samples from six stormwater best management practices. The Anoka Conservation District (ACD) collected water elevation and water quality data at Sullivan Lake and Highland Lake for the MWMO.

As previously mentioned, MWMO monitoring staff collected precipitation data across the MWMO watershed. In 2019, the average total rainfall was 34.73 inches and the location with the most rainfall in one month was the rain gauge at Waite Park Elementary with 6.93 inches in August. January had the lowest average precipitation (0.13 inches), and the highest average precipitation was in August (5.92 inches).

Portions of the 14-mile stretch of the Mississippi River in the MWMO are listed on the Federal Clean Water Act's Section 303(d) list of impaired waters for fecal coliform. The Minnesota Pollution Control Agency (MPCA) has moved from a fecal coliform standard to an *Escherichia coli* (*E. coli*) standard; therefore, all fecal coliform impairments are now evaluated with *E. coli* data. Long-term monitoring of both the river and the stormwater drainage system is necessary to evaluate *E. coli* inputs from within the watershed compared to those inputs from upstream sources. The MPCA initiated the [Upper Mississippi River Bacteria Total Maximum Daily Load \(TMDL\) Project](#) in 2008 to develop daily *E. coli* load limits for the Mississippi River. In 2014, the MPCA released its [Upper Mississippi River Bacteria TMDL Study and Protection Plan](#) (PDF). This document designated the stretch of the Mississippi River within the MWMO as a Protection Reach and deferred it for a TMDL study. The chronic standard for *E. coli* in 2B and 2Bd waters is 126 CFU/100 mL for a monthly geometric mean of at least five samples. The MPCA *E. coli* acute standard states that *E. coli* cannot exceed 1,260 CFU/100mL in more than 10 percent of the samples taken in one month. In 2019, two river sites exceeded the acute standard in June, and five river sites exceeded the acute standard in September, likely due to sampling concurrently with a rain event.

MWMO staff began collecting water quality samples from the Mississippi River in 2014. The purpose of monitoring the water quality of the Mississippi River is to establish baseline water quality data within the watershed that can be used for understanding characteristics of the river and how they may change over time. Water quality measurements and samples were collected at eight sites, twice per month from April through November and once per month during December through March. Monitoring sites on the Mississippi River and within the MWMO's boundaries were selected to represent three distinct reaches of the river. Samples were collected from the middle of the river at three feet below the water surface and were analyzed for nutrients, sediment, inorganics, organics, and metals. MWMO staff also records river water elevation data between April and November. In 2019, MWMO monitoring staff recorded a total change of 7.5 feet, and the river rose about 5 feet higher and 2.5 feet lower than the five-year average level. MWMO staff also continued to collect bathymetric data on the Mississippi River between Lock and Dam 1 and the Canadian Pacific Railway (CPR) Bridge in line with North 41st Avenue. The purpose of collecting Mississippi River bathymetric data is to provide baseline data on the shape and condition of the river bed and how it changes over time.

The MWMO continued monitoring water quantity and water quality of the watershed's stormwater drainage system by monitoring baseflow, snow-melt and rain events in six stormwater tunnels draining to the Mississippi River. Samples were analyzed for nutrients, sediment, inorganics, organics and metals. Water quality standards do not exist for stormwater; therefore, data were not compared to standards. The MWMO will continue to monitor stormwater drainage systems to develop a record of baseline data with which to

characterize stormwater quality within the watershed. The MWMO also provides stormwater data to the MPCA for TMDL projects within the watershed. In 2019, the MWMO had ten monitoring stations deployed in six monitored subwatersheds. Flow discharge monitoring for the 4PP stormwater outfall was reestablished in September after being taken offline due to construction activity in the tunnel for the past several years. Due to high river levels, three of the outfall monitoring stations were under river water for parts of the year: 6UMN for a total of five months; 4PP for approximately two months of the four months it was monitored for stormwater discharge; and the 1NE outfall for two and a half months. Because of river interference and other sensor issues, more time is needed to adjust and correct the collected data at the subwatershed stations to get a better estimate for their volume and pollutant load results.

In 2019, the MWMO monitored the effectiveness of some best management practices (BMPs) within the watershed. The monitored BMPs include: [St. Anthony Regional Treatment and Research System](#), [Jackson Pond](#) iron-enhanced sand filter bench (Columbia Heights), [Towerside District Stormwater System](#) (Minneapolis), [Edison High School Green Campus](#) parking lot tree trench and athletic field underground storage tank (Minneapolis), and the [MWMO Stormwater Park and Learning Center](#) and its media filter beds (Minneapolis).

The MWMO contracted with the ACD to conduct water level and water quality monitoring activities on Sullivan Lake and Highland Lake in Columbia Heights. Regular water level monitoring was conducted in 2019 between April and October. ACD also collected monthly water quality samples at both lakes. Samples were analyzed for indicators of lake status such as nutrient levels and water clarity. Neither lake has a significant trend in water quality over time and both are highly eutrophic and received lake grades of D (Sullivan) and F (Highland). ACD suspects the reason for poor results are due to the quality and quantity of stormwater these waterbodies receive. Detailed summaries of these data are located on the [Lake Monitoring](#) page of the website.

2019 Monitoring Data (Links)

- [Precipitation](#) (PDF)
- [Stormwater Water Quality](#) (PDF)
- [River Water Quality](#) (PDF)
- [River Bacteria](#) (PDF)
- [Sullivan and Highland Lakes](#) (PDF)

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