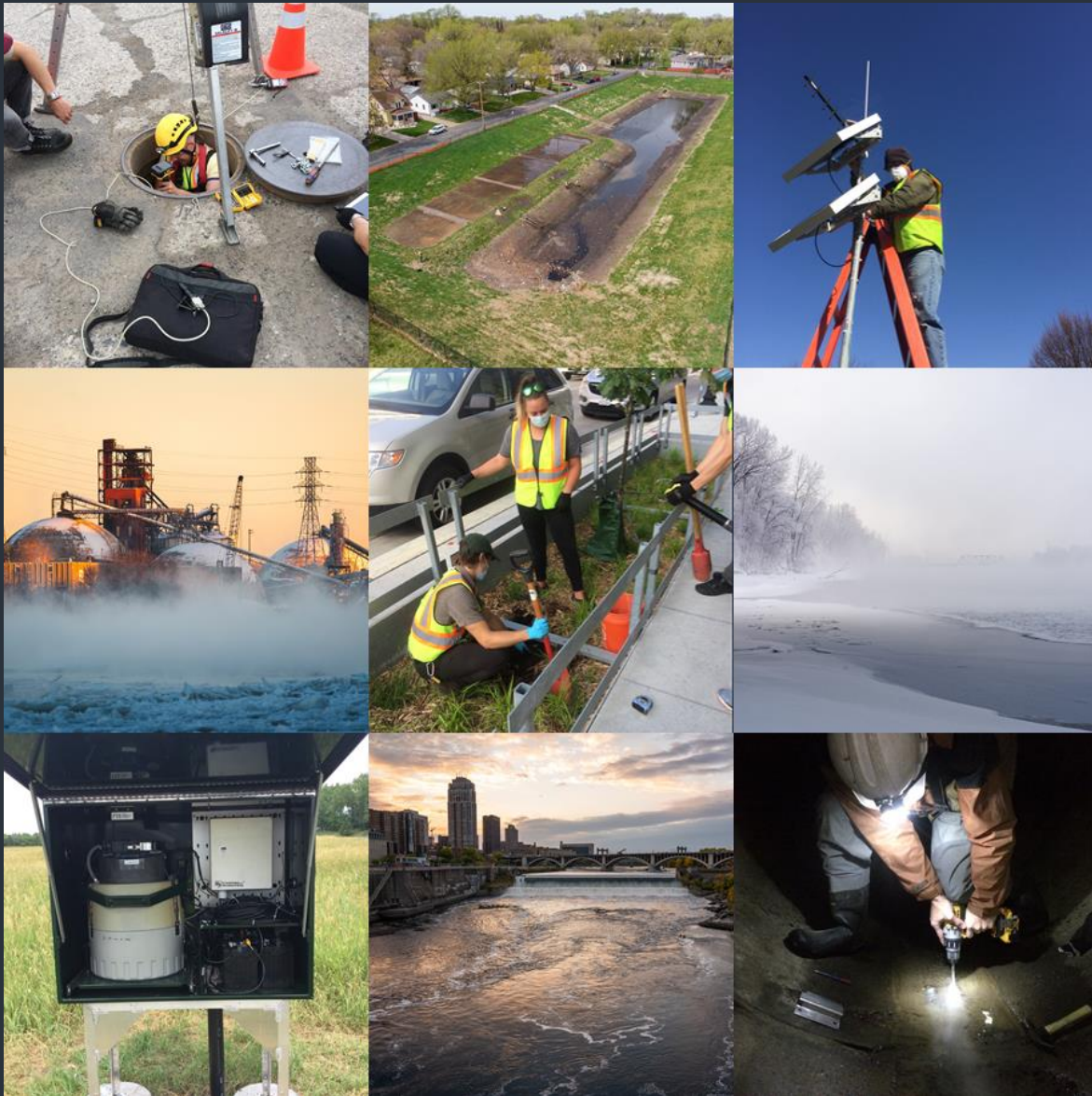




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MISSISSIPPI
WATERSHED
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2020 Monitoring Executive Summary





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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 [Monitoring section](#) of the MWMO website has been updated with the latest [precipitation](#), [stormwater](#), [river water quality](#), [river bacteria](#), and [lake](#) monitoring data from 2020. 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 mwmo.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 2020 monitoring season included collection of precipitation data from ten monitoring locations, collection of bacteria and other water quality samples from seven locations in the Mississippi River, collection of water quantity and/or water quality data from eight 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 eight stormwater best management practices. The Anoka Conservation District (ACD) collected water elevation data at Sullivan Lake and Highland Lake for the MWMO.

As previously mentioned, MWMO monitoring staff collected precipitation data across the MWMO watershed. In 2020, the average total rainfall was 20.02 inches and the location with the most rainfall in one month was the rain gauge at Columbia Golf Course with 4.63 inches in May. February had the lowest average precipitation (0.27 inches), and the highest average precipitation was in May (3.69 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 coliform* (*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](#). This document designated the stretch of the Mississippi River within the MWMO as a Protection Reach and deferred it for a TMDL study. Within the MWMO, the Mississippi River is divided by the Saint Anthony Falls into two reaches for classification. Above the Saint Anthony Falls, the river has a water use classification of 2Bd (aquatic life and recreation and source of drinking water). Below the Saint Anthony Falls, the water use classification is 2B (aquatic life and recreation). 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 2020, 85 river samples were collected May through October. One river site exceeded the acute standard in September. Two river sites exceeded the chronic standard in July, four river sites in August, and two in September. Sampling in July and September occurred concurrently with a rain event and sampling in August occurred approximately 12-24 hours after 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 June through November and once per month January, February, March, May, and December. Samples were not collected in April due to COVID-19 pandemic fieldwork restrictions. MWMO monitoring staff collected 116 river water quality samples in 2020. Sampling locations in the Mississippi River and within the MWMO's boundaries were selected to represent three distinct reaches of the river. Each site is located within, at the beginning of, or at the end of a river reach. 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 April through November. Due to the COVID-19 pandemic, field work was delayed so river water elevation data were collected at six of the sites June through October and one site April through October. MWMO monitoring staff recorded a total change of three feet at the MWMO river gage, and the river rose less than half-foot higher and about 2.5 feet lower than the five-year average elevation of 800 feet. 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. In 2020, MWMO staff collected 192 stormwater quality samples. Samples were analyzed for nutrients, sediment, *e. coli*, 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 2020, the MWMO had eleven monitoring stations deployed in eight monitored subwatersheds. Due to high river levels, two of the outfall monitoring locations, 6UMN and 4PP, were under river water for a little over one month in the spring. In 2020, approximately 101,377,000 gallons of stormwater passed by the 10SA monitoring station, 181,183,000 gallons at 11CHF, 160,596,000 gallons at 1.2NE, 3,582,700,000 gallons at 4PP, and 580,919,000 gallons of stormwater passed by the 6UMN monitoring station.

In 2020, the MWMO monitored the effectiveness of several best management practices (BMPs) within the watershed. The monitored BMPs include: [St. Anthony Regional Treatment and Research System \(SART\)](#), [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), [Eighth Street Stormwater Planters](#) (Minneapolis), and the MWMO Stormwater Park and Learning Center and its Media Filter Beds (Minneapolis). MWMO monitoring staff collect stormwater flow, volume, and water quality data at SART, Edison High, MWMO Stormwater Park, and Jackson Pond. At Eighth Street Stormwater Planters, water level is measured in each of the five planters to calculate stormwater infiltration rate and estimate stormwater treatment. Tank and outlet level are measured at Towerside. Staff collected a total of 98 water quality samples from best management practices in 2020.

The MWMO contracted with the ACD to conduct water level monitoring activities on Sullivan Lake and Highland Lake in Columbia Heights. Regular water level monitoring was conducted in 2020 between April and October. Lake levels were measured 25 times at Highland Lake and 26 times at Sullivan Lake. Sullivan Lake water levels fluctuated by about half a foot in response to rainfall and had an overall level fluctuation of 2.1 feet. Highland Lake had an overall water level fluctuation of 0.38 feet. Detailed summaries of these data are located on the [Lake Monitoring page](#) of the website.

2020 Monitoring Data (Links)

- [Precipitation](#) (PDF)
- [Stormwater water quality and water quantity](#) (located under site descriptions)
- [River water quality](#) (PDF)
- [River elevation data](#) (PDF)
- [River bacteria](#) (PDF)
- [Sullivan and Highland Lakes](#) (PDF)