



2022

Water Resources Update

The Water Resources group in the Metropolitan Council Environmental Services division works to build strong partnerships dedicated to ensuring clean, healthy, and sustainable water resources in the seven-county Twin Cities region. Our work helps the Metropolitan Council and other organizations make informed decisions about how to protect our region's lakes, rivers, and streams.

We are responsible for developing an overall, regional approach to water planning and management. Part of that responsibility includes water monitoring and assessment to better understand and address water quality challenges throughout the region.

This *Update* highlights our group's recent water monitoring, assessment, and planning efforts. Please contact us with any questions.

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Water Monitoring

We routinely monitor chemical, biological, and physical parameters in many rivers, streams, and lakes across the region. At our wastewater treatment plants, we also monitor groundwater levels and test to make sure the treated water discharged back into the environment is not toxic to living organisms. Monitoring work continued throughout the past year despite the challenges presented by the COVID-19 pandemic. To keep staff safe, we followed social distancing practices and required the use of personal protective equipment. The next few stories highlight some of our recent monitoring efforts and improvements in 2021 and 2022. For more information about our monitoring programs and how the data are used, visit our [Water Quality Management webpage](#).

Stream Flow Monitoring Challenges

Every year, we face new and unique challenges when collecting water quality information – and 2021 was no exception for our stream monitoring program.

Bassett Creek

A local sewer construction project interrupted monitoring at Bassett Creek Mile 1.9. The monitoring equipment was moved to mile 1.7 (pictured right) in June 2021. Unfortunately, there it was vandalized, and several important pieces of equipment were stolen. Staff quickly deployed spare equipment to resume data collection.



Battle Creek

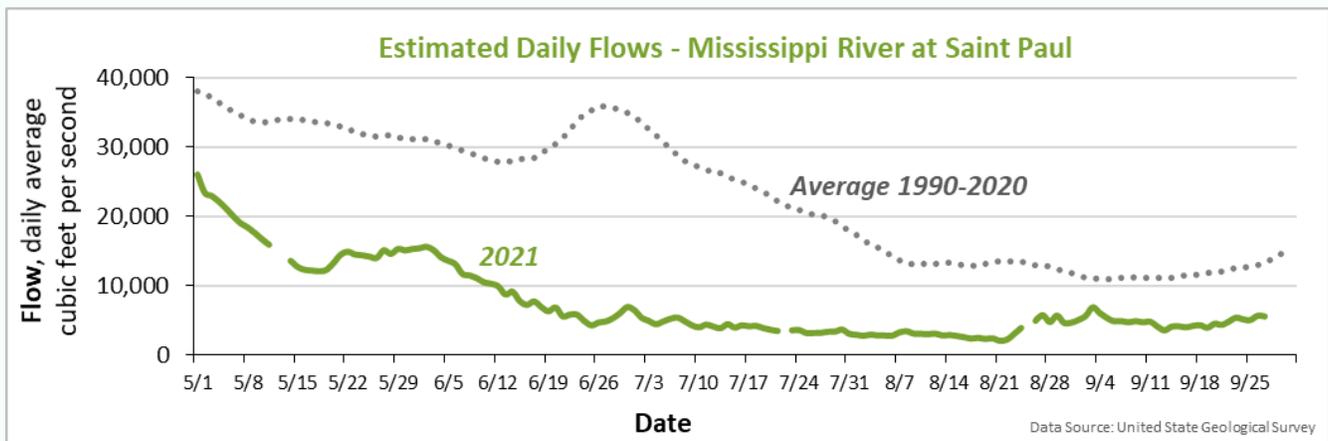
A beaver took up residence just downstream from the monitoring site at Battle Creek Mile 2.2, complicating the collection of flow data. Water level monitoring equipment was installed further upstream, above the impact of the beaver dam, so reliable flow monitoring could continue. The photo to the left shows how the beaver dam affected the water level.

Due to these challenges, reviewed and finalized 2021 flow data for Bassett and Battle creeks will be delayed. More measurements are needed at the new monitoring locations before reliable flow estimates can be calculated.

Water Monitoring

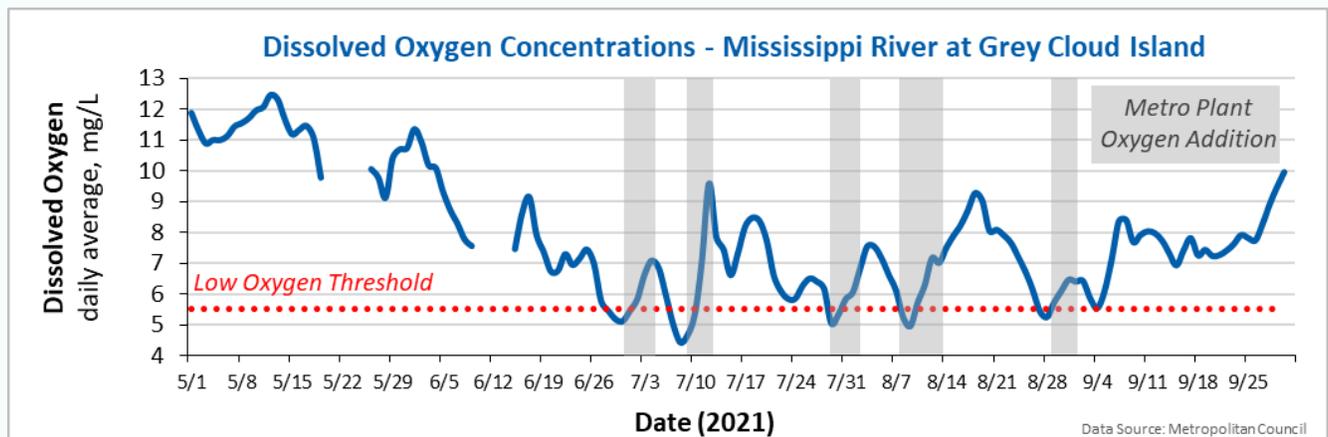
Drought and River Oxygen Levels

Much of the state, including the Twin Cities metro area, experienced drought in the summer of 2021. Drought conditions can affect the characteristics of a waterbody, resulting in lower water levels and water chemistry changes, among other impacts. The photo to the right shows low water levels in the Mississippi River during the drought, and the graph below shows how the flows decreased from May through September in 2021 compared to daily averages from the past 30 years.



Oxygen levels in rivers tend to decrease during droughts, which can create conditions harmful to aquatic life and unpleasant for recreation. In response, our staff kept a close watch on oxygen levels in the river. When oxygen and flow fell below acceptable levels at established monitoring locations on the river, the Metro Plant added oxygen to the water that flows back into the Mississippi River after being treated at the plant. This practice helps prevent additional stress on the river during drought conditions.

The graph below shows the oxygen levels in the Mississippi River near Grey Cloud Island. When the oxygen dropped below the acceptable threshold for two consecutive days, oxygen was pumped into the treated wastewater from the Metro Plant. This happened five times during the drought, shown on the graph as shaded rectangles.



Water Monitoring

Stream Cross-Section Updates

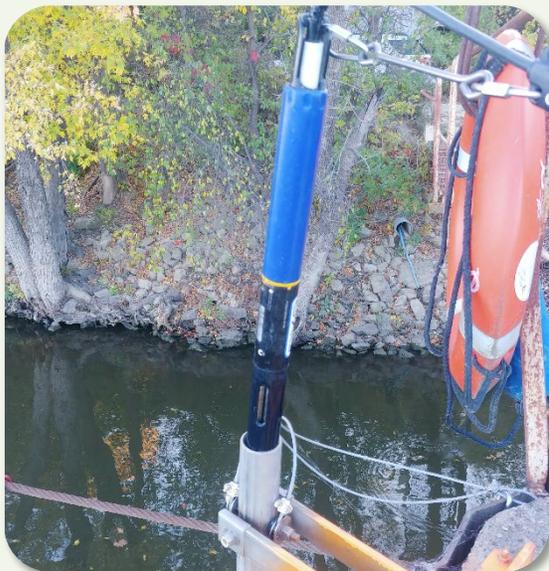
We recently updated the cross-section surveys at our stream monitoring sites. These surveys map the shape of the stream channel underneath the water, which can be used to determine a relationship between the water level and stream flow, known as a rating curve. Rating curves are used to estimate the flow in a river or stream based on the height of the water level. The photo to the right shows staff performing a survey from a bridge over Bevens Creek.

Periodically updating these cross-sections helps improve the accuracy of our rating curves to produce better flow estimates, particularly in higher flow conditions. It also allows us to track changes in the shape of the stream channel over time.



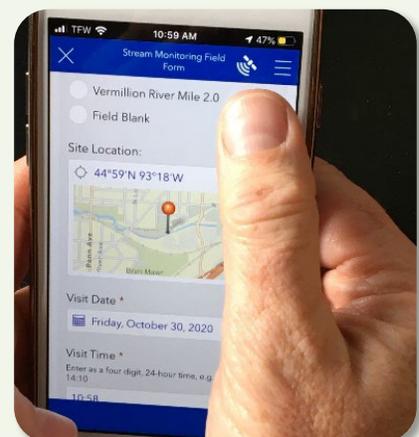
Improvements to River Data Collection Equipment

We measure dissolved oxygen, temperature, and conductivity every 15 minutes at certain established river sites. This spring, we are upgrading the equipment that takes these measurements. We will replace the previous system, which pumped water to shelters with sensors on the riverbank, with equipment that is installed directly into the river (photo below). The newer equipment will help us take measurements that represent conditions in the middle of the river channel and will reduce equipment maintenance.



Electronic Data Collection

Using paper and pencil is a reliable way to record water quality data, but converting the information from paper to a digital format is time-consuming and risks mistakes. This summer, we will continue rolling out digital field forms. The next program to receive the new forms is the Citizen Assisted Monitoring Program (CAMP). Starting this summer, CAMP volunteers will be able to submit lake monitoring information electronically using the software Survey123.



Access to Our Water Data

Our river, stream, and lake data are freely available. Most of our data can be downloaded directly from [our Environmental Information Management System \(EIMS\) data portal](#). Other data can be accessed by contacting us directly.

What data are available on EIMS?

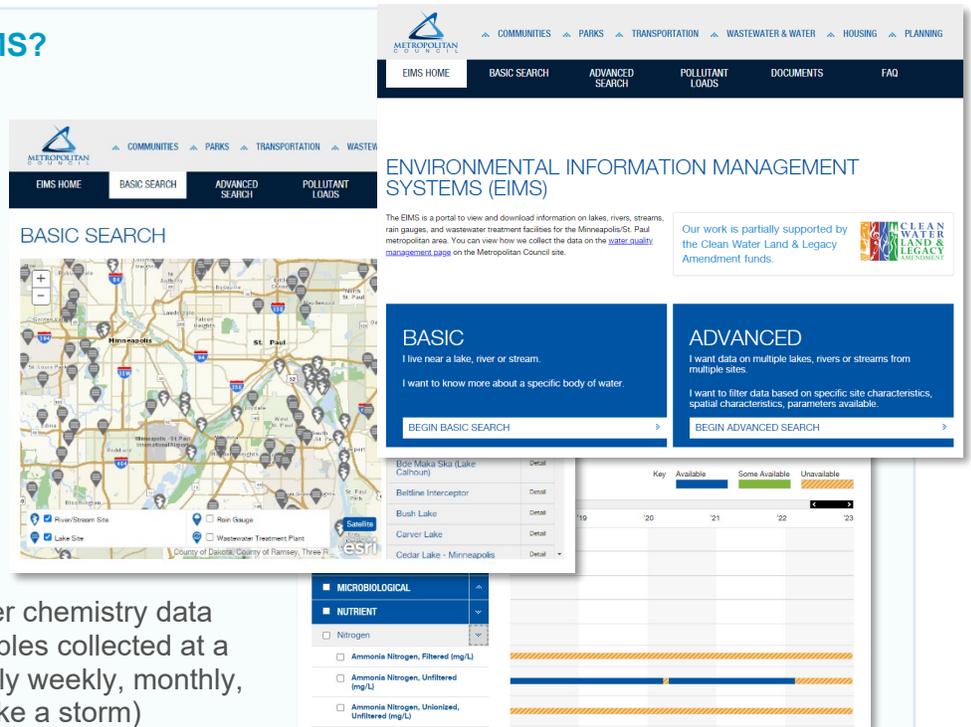
The EIMS data portal can be used to find and download data. Use the [Basic Search page](#) to look for data or information about one specific site or waterbody, or select the [Advanced Search page](#) to look for data from multiple waterbodies or sites.

Most of our water monitoring data are available on EIMS, including information dating as far back as 1976. The following data are available to download:

- 🔹 Lake, river, and stream water chemistry data from discrete samples (samples collected at a specific point in time, typically weekly, monthly, annually, or after an event like a storm)
 - 🔹 Preliminary results are available the day after they are recorded
 - 🔹 Reviewed results from the previous year are typically available in February
- 🔹 The most recent six months of preliminary stream continuous data (measurements recorded every 15-minutes by equipment installed in the streams)

The EIMS site contains other data products available to download. The [Pollutant Load page](#) provides load calculations through 2015. The [Documents page](#) contains past reports and assessments throughout the years on various water quality topics.

Check out the [FAQ page](#) for more information about the EIMS data portal.



What data are available by request?

Other data are not on EIMS and need to be requested. Please contact Jen Keville at jennifer.keville@metc.state.mn.us to access any of the following data:

- 🔹 Reviewed river and stream continuous data, including daily flow estimates
- 🔹 Biological river and stream data (measurements of species living in the water)
- 🔹 Pollutant load calculations since 2015 (site limited)
- 🔹 River, stream, and lake field visit observations

Data Assessment

After collecting water data, our next step is to review and assess it. This transforms the raw data into a product that can be used to make informed decisions about the protection of water quality in the region. Read on for more information about three of our current water assessment projects.

Stream Chloride Research

Chloride (salt) pollution in surface water continues to be an issue in the region. We recently investigated how chloride levels at our stream monitoring sites have changed over the past two decades. The findings were included in a series of memos sent to our stream monitoring partner organizations. These memos are available to download from the [Documents page of our EIMS data portal](#).

We will be creating a report that compares the chloride changes in each stream. This will provide a summary of the stream chloride conditions across the region, which can be used to help guide chloride management decisions. The report and fact sheets will be completed and available in the spring of 2022.



Lake Reports

Each year, we summarize the water quality of more than a hundred lakes in the region, using data collected by our staff, volunteers in our CAMP program, and other water resource professionals in the region. The most recent assessment can be found in the [2020 Lake Study Report](#) and the [2020 Lake Summary Report](#) (PDF downloads). The 2021 report and summary will be available later this spring.

Updates to the Stream Water Quality Trends

We will be updating our stream water quality trends for total suspended solids, total phosphorus, and nitrate. The trends were originally calculated using data through 2012 for the Comprehensive Water Quality Assessment of Select Metropolitan Area Streams, which can be found by visiting our [Stream Monitoring and Assessment webpage](#). They will be updated to include data through 2020 to provide more up-to-date information on the water quality changes in our regional streams. We plan to work on the updates throughout 2022 and 2023.



Water Resources Policy

The Water Resources group plays an important role in regional planning. Here are several efforts focused on improving water resource planning for the region.

Priority Waters List

The Twin Cities region has over 950 lakes and hundreds of miles of rivers and streams. We are developing a list to prioritize waterbodies based on their use and benefit to the region. This list will update the Met Council’s current priority lake list and expand it to include streams and rivers. The Met Council will use this list as a tool to help determine how to use limited resources to maintain and improve the region’s water resources.

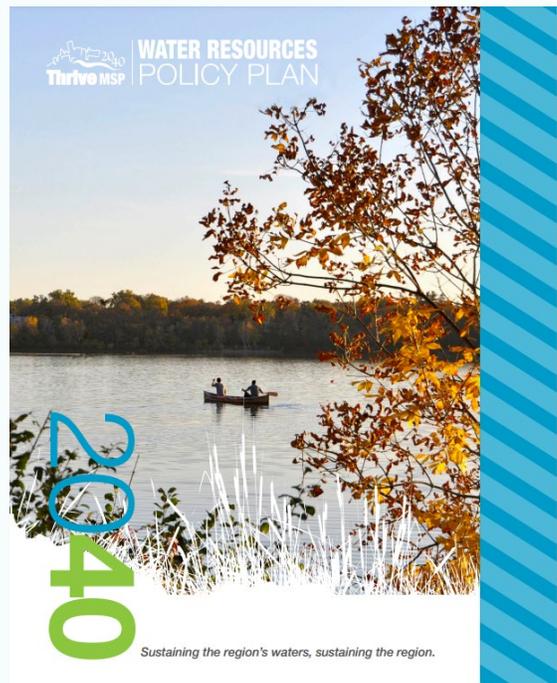
The list is currently in a draft form, and we are gathering feedback from other water resource specialists in the region. A final version of the list will be shared later in 2022 and will be integrated into the next edition of the [Water Resources Policy Plan](#).



The Next Water Resources Policy Plan

The Met Council has implemented regional water management and planning for nearly 40 years. The next edition of the Water Resources Policy Plan (WRPP) – a regional guideline for wastewater service, surface water management, and water supply – will be published in 2025. The current edition of the plan can be found on our [website](#).

A WRPP Advisory Group was recently created to guide the development of the new WRPP. The group includes metro area public works, water supplier, and watershed organization leaders. They will help the Council identify ways to improve the policy plan and integrate feedback from the previous planning cycle.



Water Resources Policy

How Do Residents Value Water?

Environmental Services has partnered with the University of Minnesota to examine how residents in the Twin Cities region value water and perceive water issues. Researchers are gathering feedback from residents on various water topics using surveys and focus groups. The information will be summarized in a report in 2022 to help guide the direction of water management across the region.



Regional Collaboration

Join the Twin Cities Water Monitoring and Data Group

The Twin Cities Water Monitoring and Data Assessment Group (TC-WaMoDaG) is a partnership of public sector water resources practitioners in the Twin Cities metro area. The group hosts events and webinars throughout the year. [Visit their website](#) to learn more about the group and join their email list to hear about upcoming activities. They also have [recordings of past webinars](#) available.

The collage features several elements: a wide shot of a green field with a waterway; a person in a blue jacket painting colorful art on a sidewalk; a poster for 'Art for Water Winter 2020' with event details; a poster for 'FRESHWATER' with names of coordinators; a map of Minnesota with a fish icon; and a photograph of a pond with lily pads.

MDA's Pesticide Water Quality Monitoring
Dave Tollefson | Hydrologist
December 15, 2021
m DEPARTMENT OF AGRICULTURE
www.mda.state.mn.us/monitoring | MDA Monitoring and Assessment

Application of a Fish-based Index of Biological Integrity Framework to Assess Minnesota Lakes
Jacquelyn Bacigalupi, Derek Bahr, Lucas Borgstrom, Aaron Sundmark
MN Department of Natural Resources, Fish IBI Program
m DEPARTMENT OF NATURAL RESOURCES
Jacquelyn.Bacigalupi@state.mn.us
CLEAN WATER LAND & LEGACY