



MINNEHAHA CREEK WATERSHED DISTRICT 2020 ANNUAL ACTIVITY REPORT



MINNEHAHA CREEK
WATERSHED DISTRICT



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Introduction

This report has been prepared to satisfy the Minnehaha Creek Watershed District's (MCWD or District) annual reporting requirements set forth in Minnesota Statutes Chapter 103D.351, which requires watershed districts to file an annual report with the Board of Soil and Water Resources and the Department of Natural Resources. Metropolitan watershed districts are required to follow reporting requirements described in MR 8410.0150.

Board Members

Below is a list of the District's current Board of Managers, including the designated officers and the county that appointed each member.

Manager	County	Contact Information
Sherry Davis White, President	Hennepin	swhite@minnehahacreek.org
Bill Olson, Vice President	Carver	bolson@minnehahacreek.org
Jessica Loftus, Treasurer	Hennepin	jloftus@minnehahacreek.org
Eugene Maxwell, Secretary	Hennepin	emaxwell@minnehahacreek.org
Richard Miller	Hennepin	rmiller@minnehahacreek.org
Arun Hejmadi	Hennepin	ahejmadi@minnehahacreek.org
Steve Sando	Hennepin	ssando@minnehahacreek.org

Staff Contact Information

The District currently employs 24 staff. The names, job titles, and contact information for all staff can be found on the District website at <https://www.minnehahacreek.org/about/staff>. The contact information for the District Administrator is provided below.

James Wisker, District Administrator
Minnehaha Creek Watershed District
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Minnetonka, MN 55345
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Assessment of 2020 Work Plans

The majority of activities identified in the 2020 work plan were completed or were initiated and continue into 2021. In the Six Mile Creek – Halsted Bay subwatershed, carp management efforts continued, the Wassermann Lake Preserve neared completion, preliminary design efforts began for the Six Mile Marsh Prairie Restoration trail initiative, and small area planning efforts began in the Turbid-Lundsten corridor. In the Minnehaha Creek subwatershed, design of the 325 Blake Road Restoration and Redevelopment commenced and the Minnehaha Creek Restoration work in Minneapolis continued, with the completion of the Minnehaha Parkway Master Plan. Only one capital project was delayed – Meadowbrook Golf Course Ecological Restoration – and funds have been carried forward for implementation in 2021-2022.

The MCWD completes its capital improvements in close coordination with its public and private partners, aligning plans and resources prior to advancing implementation. Due to the complexity of some of these efforts, capital improvements can span multiple years to plan and implement.

Expenditures for each of the District’s programs and projects are included in the audit report (provided separately). The District has been awarded Clean Water Fund grants for the 325 Blake Road project, and staff is in coordination with BWSR staff regarding the project schedule and request for a grant extension.

2021 Work Plans

For 2021, the District prepared one comprehensive work plan encompassing activities in its two focal subwatersheds, Six Mile Creek-Halsted Bay and Minnehaha Creek, as well as its watershed-wide responsive programming. This document includes a summary of the District’s 2021 budget and can be found on the District website provided below and is also attached as Appendix A.

<https://minnehahacreek.org/sites/minnehahacreek.org/files/attachments/2021%20MCWD%20Budget%20and%20Workplan.pdf>.

Evaluation of Progress on Goals and Implementation Actions

In January 2018, the District adopted its new [Watershed Management Plan](#). Section 3.7 of the Plan describes the District’s framework for setting goals and evaluating progress through a sequential process that begins with strategic goals and long-range targets and leads to subwatershed and then project-specific targets, performance measurement, and evaluation.

MR 8410.0150 requires that the District provide, at a minimum of every two years, an evaluation of progress toward the goals and implementation actions identified in its Plan. This evaluation was provided in the 2019 annual report and will be updated for the 2021 annual report. The District is in the process of implementing an information technology update that will improve the District’s ability to comprehensively track and report on progress toward its goals across all of its programs and projects.

Trends in Monitoring Data

The Research and Monitoring program evaluates trends for its long-term (“anchor”) lake and stream monitoring stations throughout the District. The 22 lake stations were assessed for trends in surface water quality for the past ten years (2011-2020). Sampling events outside the growing season of June through September were not included in the analysis since the Minnesota Pollution Control Agency’s water quality standards apply to the growing season average. Trends were computed using the Mann-Kendall test on water clarity (secchi disk), algal abundance (chlorophyll-a) and total phosphorus (TP) in the lake surface water to determine if an increasing or decreasing trend exists for each lake.

For streams, the Mann-Kendall test was used to compute stream trends on flow-corrected concentrations for both TP and total suspended solids (TSS). In an effort to minimize the impact of sampling duration changes, sampling events outside April through October were not included. A locally weighted scatterplot smoothing (LOWESS) residual was calculated between the parameter of interest (TSS or TP concentrations) and flow. MCWD staff used the Mann-Kendall test to determine if a significant trend existed for TSS or TP at each of the 11 anchor monitoring sites.

All statistical analyses were computed using R-studio statistical packages. An alpha of 0.05 was used to determine if the p-value was significant. Lakes trends are displayed in Table 1, and the stream trends are displayed Table 2.

Minnehaha Creek Subwatershed

In the Minnehaha Creek Subwatershed, every stream station showed an improving trend in total phosphorus concentrations (Table 2). However, there were no lakes within the subwatershed where all water quality parameters (TP, chl-a, clarity) were improving or degrading (Table 1).

MCWD, and partner agencies, have prioritized water quality improvement projects in the Minnehaha Creek Subwatershed in recent years, which may be contributing to the observed improvements in water quality condition in Minnehaha Creek stream locations.

Six Mile Creek Subwatershed

Six Mile Creek subwatershed also showed significant improvements in stream water quality conditions with respect to TP and TSS. These data suggest that recently implemented watershed improvement projects have improved stream water quality conditions.

Lake water quality within Six Mile Creek is not showing significant improvements, which may seem counter intuitive since stream water quality is improving. The lack of observed in-lake water quality improvements is likely due to the magnitude of watershed project nutrient reductions compared to total in-lake nutrient budgets. Often times, in-lake processes such as sediment phosphorus release and common carp sediment resuspension mute the impact of watershed nutrient reductions. Furthermore, watershed nutrient reductions are typically small in magnitude, but need to occur before larger in-lake nutrient reduction projects are implemented.

Other Subwatersheds

No other subwatersheds had significant lake or stream water quality improvements. Furthermore, a few stream and lake stations in these subwatersheds showed signs of degradation in one of the assessed parameters. These trends are relatively intuitive since these watersheds have had fewer BMPs implemented relative to Six Mile Creek and Minnehaha Creek.

Table 1. Significant trends for lakes within Minnehaha Creek Watershed District.

Subwatershed	Lake	Total Phosphorus	Chlorophyll-a	Secchi Disk
Long Lake	Long Lake	No Trend	No Trend	No Trend
	Tanager Lake	Improving	No Trend	No Trend
Six Mile Creek	Parley Lake	No Trend	No Trend	No Trend
	Wassermann Lake	No Trend	No Trend	No Trend
	Steiger	No Trend	Degrading	No Trend
	Auburn	No Trend	No Trend	No Trend
	Zumbra	No Trend	No Trend	No Trend
Minnehaha Creek	Calhoun	No Trend	No Trend	No Trend
	Cedar	No Trend	No Trend	Degrading
	Isles	No Trend	No Trend	No Trend
	Powderhorn	No Trend	No Trend	No Trend
	Nokomis	No Trend	No Trend	No Trend
	Harriet	No Trend	No Trend	No Trend
	Hiawatha	Improving	No Trend	No Trend
Lake Minnetonka	Carman Bay	No Trend	No Trend	No Trend
	Crystal Bay	No Trend	No Trend	No Trend
	Forest Bay	No Trend	Improving	No Trend
	Grays Bay	No Trend	No Trend	No Trend
	Halsted Bay	No Trend	No Trend	No Trend
	Jennings Bay	No Trend	No Trend	No Trend
	Lower Lake South Bay	Degrading	No Trend	No Trend
	Stubbs Bay	No Trend	No Trend	No Trend

Table 2. Significant trends for streams within Minnehaha Creek Watershed District.

Subwatershed	Stream Station	Total Phosphorus	Total Suspended Solids
Dutch Lake	Dutch Lake: Lake Outlet	No Trend	No Trend
Langdon Lake	Langdon Lake Outlet	No Trend	Degrading
Minnehaha Creek	Minnehaha Creek I-494 Ramp	Improving	No Trend
	Minnehaha Creek W. 34 St.	Improving	No Trend
	Minnehaha Creek Excelsior Blvd	Improving	No Trend
	Minnehaha Creek: 21st/Minnehaha Pkwy	Improving	No Trend
	Minnehaha Creek: Hiawatha Ave	Improving	No Trend
Painter Creek	Painters Creek: W. Branch Rd	No Trend	No Trend
Six Mile Creek	Six Mile Creek: Auburn Lk East Inlet	Improving	No Trend
	Six Mile Creek: Lundsten Lk - North Outlet	Improving	Improving
	Six Mile Creek: Mud Lake Outlet	Improving	Improving

Annual Communications

MCWD's outreach is guided by the District's 2017 Watershed Management Plan. The goal of MCWD's communication efforts are to increase integration of land use and water planning by raising awareness within the land use community about the benefits of collaborating with the watershed district. This includes an annual budget publication (see Attachment A), e-newsletter, media relations, print and digital publications, and MCWD's website. MCWD also conducts specific outreach and engagement around its key initiatives, such as open houses, listening sessions, direct mail, and signage. MCWD also issues regular communications to its partners, such as the high water e-mail updates, in which MCWD provides timely information and resources on flood risk, recreation conditions, and operation of the Gray's Bay dam.

Solicitation of Services

In accordance with MN Statutes 103B.227, the District solicits proposals for legal, professional, or technical consultant services at least every two years. Below are the dates when the District most recently solicited proposals:

- June 2019 – accounting services (RFPs will be requested June 2021)
- Nov 2019 – engineering services and government relations (RFPs will be requested Nov 2021)
- June 2020 – legal services
- Aug 2020 – audit services
- Nov 2020 – IT managed services

Status of Local Plans

MN Statutes § 103B.235 and MN Rules § 8410.0160 grant watershed districts the authority to review and approve local water management plans (LWMPs). Under this framework, watershed districts can assign responsibilities to local government units (LGUs) for carrying out implementation actions defined in the watershed plan. The LWMP is a required element of the LGU comprehensive land use management plan which LGUs were required to update by the end of 2018.

The primary focus of the LWMP requirements set forth in the District's 2017 Plan is on improving the integration of land use and water planning. To effectively integrate the goals of MCWD and its LGUs in a way that maximizes community benefits and effectively leverages public funds, the District has invited a partnership framework with its communities. In addition to the legally required elements of LWMPs, as defined in State statute and rules, the MCWD Plan requires communities to develop a coordination plan which describes how the LGU and MCWD will share information and work together to integrate land use and water planning.

To date, 27 of the District's 29 communities have received approval of their LWMP. The two remaining communities are Laketown and Watertown Townships, which rely on Carver County as the land use planning authority.

Status of Locally Adopted Ordinances

The District's 2017 Plan did not establish any requirements for local ordinances.

Permits, Variances, and Violations

In 2020, the MCWD reviewed and processed 636 permit applications. No permits were denied, and there were five variances or exceptions approved. A total of 145 inspections were completed in 2020. The majority of non-compliant sites were resolved through MCWD inspection reports to permittees and on-site meetings to discuss corrections and solutions to site-specific issues. MCWD issued five notices of probable violation in 2020, and no Wetland Conservation Act violations. No formal enforcement actions were issued by the MCWD Board of Managers.



2021 BUDGET & WORKPLAN

IN PURSUIT OF A BALANCED URBAN ECOLOGY

We believe that clean water and a healthy natural environment are essential to creating and sustaining vibrant, thriving communities. The beauty, green space, and recreational opportunities found in the Minnehaha Creek watershed create a sense of place that provides a local identity, adds economic value, and increases well-being.

We put this belief into action by partnering with our communities to integrate the natural and built environments across the watershed. In pursuing these partnerships, we focus in areas of high need to achieve significant, measurable improvements, while remaining responsive to needs and opportunities watershed-wide.

This approach allows us to remain focused for greater effectiveness while maintaining the flexibility to respond to significant opportunities created through land use change.



MINNEHAHA CREEK
WATERSHED DISTRICT

OUR 2021 PRIORITIES

- **High-impact capital projects:** A majority of the budget will fund projects that improve natural resources, provide economic value, and support thriving communities
- **Ecological balance:** Our work throughout the watershed will continue to support ecological integrity and balance the natural and built environments to improve water quality, water quantity, and resilience
- **Responsiveness:** MCWD will continue to provide added value to communities across the watershed by gathering robust data, providing technical assistance, and identifying opportunities to support the projects and initiatives of our partners for mutual benefit
- **Improved customer service and efficiency:** Improvements to our permitting process, technology, and facilities will help improve staff's ability to provide excellent customer service to our residents

2021 BUDGET BREAKDOWN

FISCAL RESPONSIBILITY

Our work is supported by an annual tax levy, funds levied in past years for multi-year projects (assigned funds), funds reallocated from projects and programs delivered under-budget, grants and partner funds, interest, and reimbursement of permit fees.

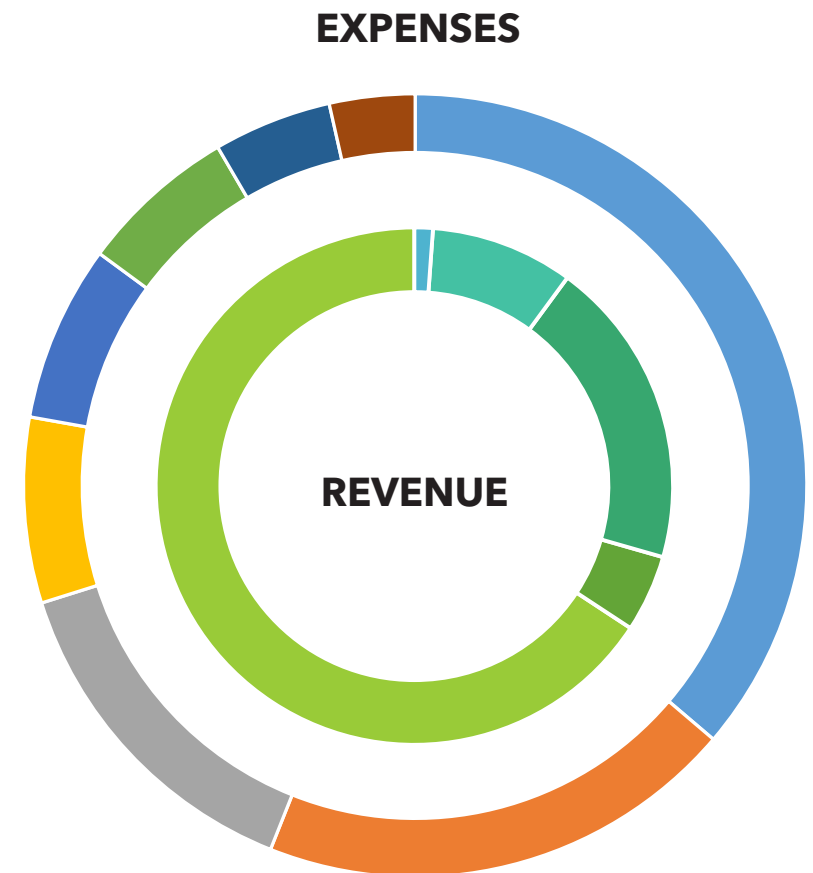
For the fourth consecutive year, there will be no increase in our tax levy in 2021. We will receive approximately \$709,801 in grants and partner contributions.

EXPENSES

	2020	2021
Capital Projects	\$5,961,531	\$5,566,999
Capital Finance	\$2,750,000	\$2,713,653
Operations & Support Services	\$2,037,889	\$1,883,098
Research and Monitoring	\$1,198,049	\$1,178,260
Planning	\$1,080,804	\$1,178,645
Project & Land Maintenance	\$854,762	\$957,806
Permitting	\$765,822	\$718,617
Outreach	\$701,320	\$519,344
TOTAL	\$15,350,177	\$14,716,421

REVENUE

	2020	2021
Levy	\$9,675,993	\$9,675,993
Grants and partner funds	\$2,215,206	\$709,801
Projects fund balance	\$2,371,820	\$2,847,446
Programs fund balance	\$917,938	\$1,313,961
Interest & Fees	\$169,220	\$169,220
TOTAL	\$15,350,177	\$14,716,421



WATERSHED-WIDE SERVICES

In our commitment to serve partners and residents across the watershed's 178 square miles, we provide a variety of services that assist in clean water work. We also remain flexible to respond to opportunities to protect and improve natural resources that are created through land use change and partner initiatives.

SERVICES:

- **Monitoring & Assessment:** Collecting and analyzing data across the watershed to identify resource needs to inform planning and implementation.
- **Planning and Technical Assistance:** Collaborating with cities, landowners, and others to identify the most effective strategies to meet partners' goals and improve water quality and ecological integrity.
- **Project Support:** Working with public and private partners to support projects that restore and improve water quality and ecological integrity and that are well coordinated and align with MCWD goals, exceed regulatory requirements, and create mutual benefits.
- **Permitting:** Reviewing and overseeing construction activities, in coordination with our communities, to protect natural resources from degradation that can occur as a result of land use change. In 2021, we will be coordinating with our cities and partners to improve the permitting process, generating opportunities for win-win partnerships and enhancing customer service.
- **Outreach:** Connecting people to information they value and engaging residents, agencies and private sector partners to ensure that our work is integrated with the goals of our communities.
- **Project Maintenance and Land Management:** Maintaining our projects and land to ensure their continued function and value, and managing the operation of Gray's Bay Dam to balance the water budget throughout our 178-square miles and reduce the risk of flooding.



SIX MILE CREEK - HALSTED BAY SUBWATERSHED

OVERVIEW

The Six Mile Creek - Halsted Bay Subwatershed is a complex system of 14 lakes connected by Six Mile Creek and thousands of acres of wetlands that form the headwaters of Lake Minnetonka and the Minnehaha Creek watershed. Five of the lakes are on the state's impaired waters list, and Six Mile Creek flows into Halsted Bay, the most degraded bay in Lake Minnetonka.

As part of MCWD's strategy to address the most significant sources of pollutants to Lake Minnetonka, we are in the midst of a sustained focus on this system to make long-term, measurable improvements to the health of the subwatershed and, in turn, Halsted Bay.

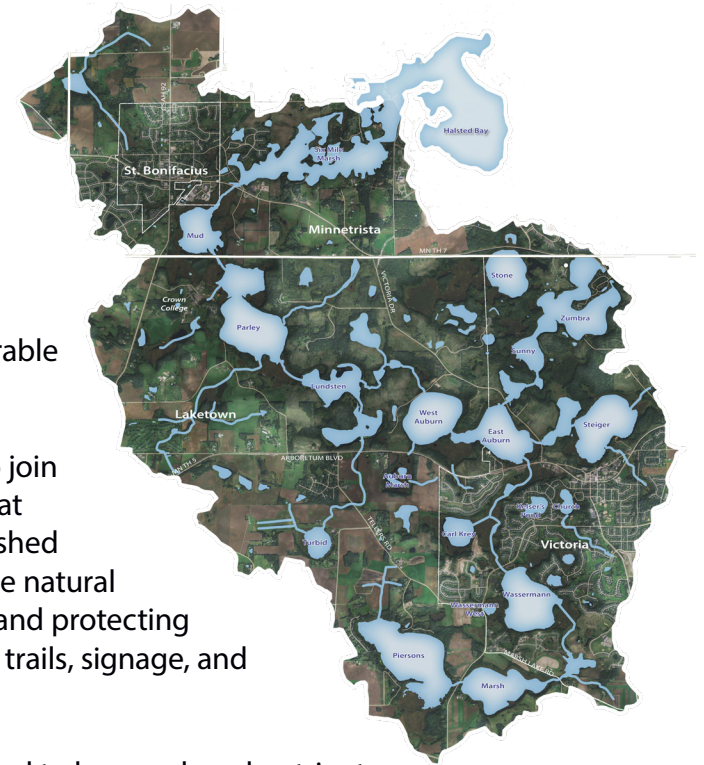
This subwatershed is experiencing rapid development, which presents a unique opportunity to join with our partners to plan for sustainable growth. Integrating natural resource improvements that enhance land-use change is central to our approach. The Six Mile Creek - Halsted Bay Subwatershed Plan, created in collaboration with our partners, is a vision to improve water quality and enhance natural resources across the subwatershed through value-added partnerships. In addition to restoring and protecting natural resources, the plan identifies opportunities for enhancing public access to the area with trails, signage, and engagement opportunities.

To date our work has leveraged \$1.2 million in outside capital and, by the end of 2021, is projected to have reduced nutrient loading by 545 pounds per year, created 190 acres of publicly accessible green space, protected 124 acres of wetlands, and reduced common carp populations in all 14 lakes in the system by a total of 142,000 pounds. We're already seeing results: Compared to 10 years ago, nutrient concentrations at the outlet of Six Mile Creek into Lake Minnetonka have improved by 25 percent.

STRATEGY

We are addressing subwatershed impairments, improving habitat, and protecting high value resources by:

- **Managing carp** to restore 2,488 acres of deep and shallow lake habitat and to set the stage for future restorations
- **Targeting wetland protection and restoration** to address external phosphorus entering lakes, the creek, and Halsted Bay, while establishing habitat corridors that connect to uplands
- **Identifying stormwater management opportunities** in partnership with cities and developers to address pollutants entering Six Mile Creek, lakes, and wetlands
- **Controlling in-lake nutrients** originating from historical impacts to reduce the amount of phosphorus being released from lake bottoms



SIX MILE CREEK - HALSTED BAY SUBWATERSHED

WORK TO DATE

Work to date has included restoration of a 20-acre wetland in Victoria in partnership with a private developer, restoration of 160 acres of the Six Mile Marsh Prairie, a rigorous study to identify specific opportunities to decrease phosphorus pollution to Mud Lake and Halsted Bay downstream, invasive carp management strategies throughout the subwatershed, and leveraging Clean Water Funds to retrofit stormwater ponds in the City of Victoria to exceed regulatory standards and address nutrient loading to an impaired water body. Most recently, we partnered with the City of Victoria on the design and construction of Wassermann Lake Preserve, a park and restoration project that restores native upland and shoreline habitat, reduces nutrient and sediment loading to Wassermann Lake through alum treatment on a six-acre pond and the restoration of an intermittent stream channel, and creates the City's first nature-based park.

2021 ACTIVITIES

WASSERMANN INTERNAL LOAD MANAGEMENT

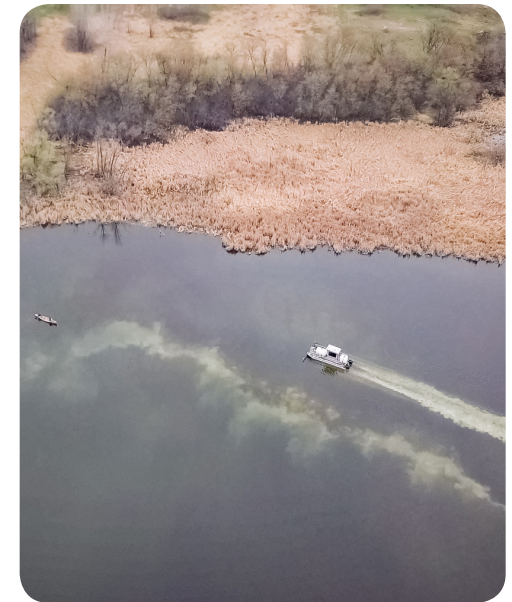
The benefit of sustained focus on a system is that most significant water challenges require multiple solutions. In the case of Victoria's Wassermann Lake, which is considered impaired for nutrient loading, MCWD has worked with land use partners on a multi-year strategy to return the lake to a sustainably healthy state. This work has included wetland restoration, carp management, treatment in a connected pond, and extensive habitat restoration.

Now, "internal loading" — the release of nutrients from the lake bottom into the water — remains the final significant source of nutrient pollution in the lake. To address this, we secured a \$284,720 competitive grant from the Board of Water and Soil Resources Clean Water Fund to prevent this internal loading through a process known as "alum treatment," which uses aluminum sulfate to bind to phosphorus particles and trap them in the lake bottom. The project will reduce internal phosphorus loading by an estimated 90 percent, significantly increasing the health and clarity of the lake while moving it close to the required reduction needed to remove it from the state's impaired waters list.

SIX MILE MARSH PRAIRIE RESTORATION TRAIL

In 2013, we restored 160 acres of steeply-sloped agricultural land in Minnetrista into prairie and oak savanna — keeping 180 pounds of phosphorus per year from draining into Six Mile Creek just before it enters Halsted Bay.

Now known as the Six Mile Marsh Prairie, this property has transformed into a beautiful natural amenity dotted with wetlands, wildlife, and scenic views overlooking the creek and Lake Minnetonka. To further enhance the site, we're working with the Three Rivers Park District to build a trail connection to the nearby Dakota Rail Trail, allowing users to explore and enjoy this revitalized space.



An alum treatment occurring at Wasserman West pond, connected to Wasserman Lake, in 2019. In 2021 we will treat Wassermann Lake itself with alum to address internal nutrient pollution.

MINNEHAHA CREEK SUBWATERSHED

OVERVIEW

Minnehaha Creek is the outlet for the entire watershed, flowing nearly 23 miles from Lake Minnetonka and collecting stormwater from Minnetonka, Hopkins, St. Louis Park, Edina, Richfield, and Minneapolis, through the chain of lakes and into the Mississippi River.

The creek suffers from a number of issues, including:

- flashy water levels and flooding
- ditched, straightened, and fragmented stream channel
- lost, impacted, and fragmented riparian corridor
- polluted stormwater runoff from hundreds of storm sewers
- impairments for *E. coli*, chloride, dissolved oxygen, fish and macroinvertebrates
- transportation of nutrients that degrade water quality in Lake Hiawatha (impaired) downstream

To improve water quality and resilience, we have developed strong relationships and momentum with the cities of Hopkins, St. Louis Park, Edina, and Minneapolis to integrate natural resource goals with park planning, community development, and infrastructure improvements.

STRATEGY

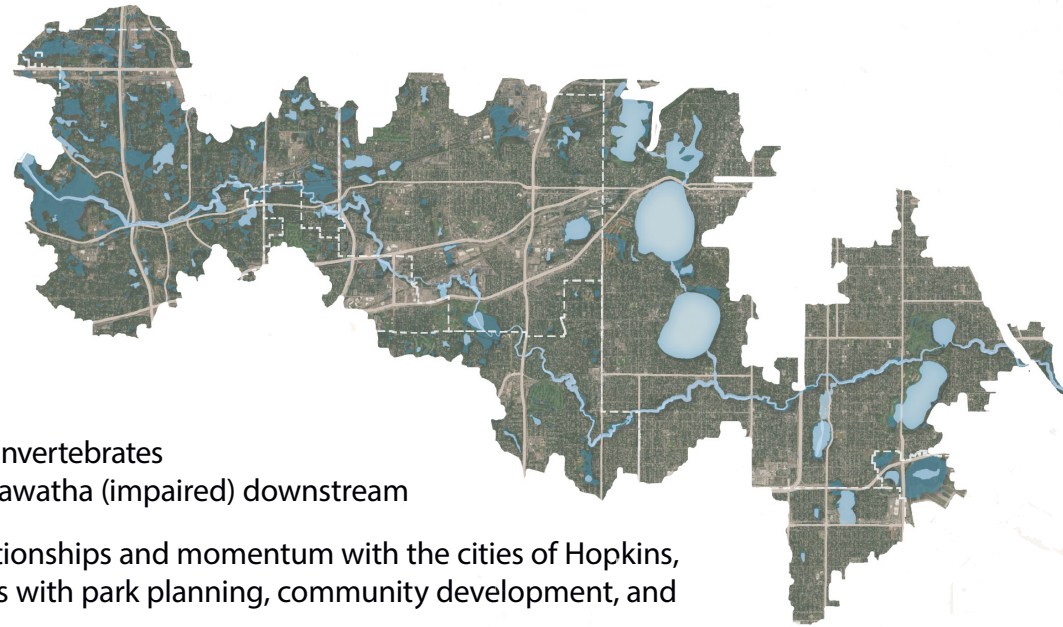
We will address subwatershed impairments, reduce regional flooding, and improve habitat by:

- **Managing regional stormwater** to slow down water, reduce runoff and pollution entering the creek, and decrease flood risk
- **Restoring the creek** to stabilize streambanks, slow down water, and improve in-stream habitat and buffers, while increasing opportunities for public access and economic development
- **Restoring and connecting ecological corridors** to maximize green space, improve habitat and flood storage, and strengthen resilience

WORK TO DATE

2021 activities will build on past work to restore what had been the most degraded section of Minnehaha Creek in St. Louis Park and Hopkins, an area now known as the Minnehaha Creek Greenway. Compared to 10 years ago, we have seen a statistically significant improvement in water quality downstream of the work. In downstream Lake Hiawatha, phosphorus levels have improved by 19 percent and the average chlorophyll-a concentrations have improved to meet the state standards.

Past projects include re-meandering sections of the creek that were previously ditched and straightened, creating new public access, implementing stormwater management in St. Louis Park, revitalizing Cottageville Park in Hopkins, restoring the creek through Arden Park in Edina, and repairing eroded stream banks in Minneapolis. This work has resulted in 60 acres of newly accessible green space, 28.7 acres of restored wetlands, over 150 pounds of phosphorus removed per year, 3.2 acre feet of floodplain storage, and 1.4 miles of restored creek.



MINNEHAHA CREEK SUBWATERSHED

2021 ACTIVITIES

325 BLAKE ROAD STORMWATER FACILITIES

A former industrial site along 1,000 feet of Minnehaha Creek, the property at 325 Blake Road is a key piece of the Minnehaha Creek Greenway. In 2021 we will begin converting four-to-six acres of the property into a series of stormwater treatment features that will treat polluted runoff from 270 acres of the surrounding region, reduce phosphorus loading by 181 pounds per year, and connect the Minnehaha Creek Greenway trail system between Cottageville Park and the Minnehaha Creek Preserve. The remainder of the 17-acre site will be redeveloped in partnership with the City of Hopkins. The project is supported by \$2.4 million in outside funds from Hennepin County, Metropolitan Council, Public Facilities Authority, and Clean Water Legacy Fund.

STREAM ENHANCEMENT AND TRAIL CONNECTION

When completed, the Southwest LRT line will run through the heart of the Minnehaha Creek Greenway and provide yet another important community connection to this revitalized corridor. In partnership with the City of St. Louis Park, we're taking advantage of the construction period to make a key connection in the Minnehaha Creek Greenway trail system that will link upstream and downstream investments together and connect them to the Cedar Regional Trail, as well as streambank improvements along the construction corridor.

MINNEHAHA CREEK PARKWAY WATER RESOURCE IMPROVEMENTS

The Minneapolis Park and Recreation Board, in coordination with the City of Minneapolis and MCWD, is leading an ambitious 30-year envisioning of the Minnehaha Creek Regional Trail system through the parklands of south Minneapolis. We're working closely with these agencies and community members to integrate regional stormwater management solutions and creek restoration into this once-in-a-generation overhaul, a rare opportunity to make significant water quality infrastructure and ecological improvements in a developed area.



A concept image from the draft Minnehaha Creek Regional Trail Master Plan, picturing people enjoying the many benefits of a restored tributary between Lake Harriet and Minnehaha Creek near Lynnhurst Park

ACTIVITY SPOTLIGHT: HARNESSING DATA ANALYTICS

OVERVIEW

MCWD is a science-driven organization: a trusted broker of scientific information and data to drive decisions about where to focus and how to improve the condition of the watershed.

Like many other fields, advances in data science and computing technology have radically reshaped the ways watershed data can be collected, analyzed, and shared. In 2021 we are continuing a multi-year investment in our data analytical tools to take advantage of these advances to better inform planning, decision making, and communication with partners and the public.

COLLECTING DATA WITH REMOTE SENSING

In 2021 we will continue to build out our network of remote sensors, known as RESNET, which provide real-time data on water level, flow, and pollutant loading throughout the watershed. These sensors will provide 1.3 million data points per year on our water system, up from about 520 data points produced by traditional in-person monitoring.

ANALYZING DATA WITH ADVANCED MODELING

Real-time sensor data is one of several important new data sets that have become recently available for helping understand and predict how water moves through the complex watershed system. Statewide investment in mapping topography and soils allows for a new understanding of how water moves across the landscape and infiltrates into groundwater, and the widespread digitization of storm sewer networks shows how water flows through developed pipe systems.

We are integrating these newly-available datasets into a first-of-its-kind planning tool that will use advanced modeling and machine learning to predict and understand our watershed system in unprecedented detail. This will allow MCWD and our partners to better implement projects, manage flooding, and become more resilient in the face of changing precipitation patterns. In 2021 we will build a pilot version of this model focused on the Six Mile Creek-Halsted Bay subwatershed. Building this model will allow us to assess potential projects in this area of focus while informing the future development of a watershed-wide model.



COMMUNICATING DATA WITH A REDESIGNED WEBSITE

In 2021 we will release a new website, re-built from the ground up to provide excellent customer service for residents and partners. Planned features include an online permitting portal, real-time water conditions, and information about the District's past, current, and future work that matters to users.