MINNEHAHA CREEK WATERSHED DISTRICT
2021 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.

Current Board of Managers
Table 1

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 25 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
15320 Minnetonka Blvd.
Minnetonka, MN 55345
Phone: 952-641-4509
Email: jwisker@minnehahacreek.org

Assessment of 2021 Work Plans

The majority of activities identified in the 2021 work plan were completed or were initiated and continue into 2022.

In the Six Mile Creek – Halsted Bay subwatershed, the below work was conducted in 2021:

- Completion of Wassermann Lake Preserve construction and transition into warranty phase.
- Completion for the Six Mile Marsh Prairie Restoration Trail Project's design, which will be constructed in 2022.
- Completion of alum treatment on two waterbodies, the Wassermann West Pond and Wassermann Lake.
- On-going carp management.

In addition, MCWD is conducting feasibility on a wetland restoration project in the Wassermann-East Auburn Corridor, which will align with restoration work targeting both Wassermann and East Auburn Lakes over the last five years. MCWD continues to evaluate the next phase of capital project work in two project areas, the Turbid-Lundsten corridor and Halsted Bay.

In the Minnehaha Creek subwatershed, the below work continued in 2021:

- The 325 Blake Road Restoration and Redevelopment (325 Blake Road) Project continues to advance, with 60% design plans complete. The associated Greenway to Cedar Trail Connection and Streambank Restoration is being coordinated with the City of St. Louis Park and Met Council's SWLRT project. Design will be initiated soon after the 325 Blake Road Project moves into construction.
- The Arden Park Restoration Project has demonstrated strong vegetation establishment as it enters its final year of warranty, with the regional stormwater system now ready to accept stormwater flows from approximately 80-acres in early 2022.

In addition, MCWD continues to work closely with the City of Minneapolis and the Minneapolis Park and Recreation Board to develop an implementation plan for the Minneapolis Parkway Master Plan, completed in 2020.

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 by the District's auditor). The 2019 Watershed Based Funding was allocated to Arden Park, Wassermann West Pond, and 325 Blake Road projects. Both Arden Park and Wassermann West Pond projects are complete. The District has also been awarded Clean Water Fund grants for the 325 Blake Road Project and the Wassermann Lake Internal Load Management Project. On the 325 Blake Road Project, staff is in coordination with BWSR staff regarding the project schedule.

Watershed-wide efforts in 2021 included on-going work to improve how MCWD completes capital improvements in close coordination with its public and private partners, aligning plans and resources prior to advancing implementation. As part of this early coordination effort, MCWD and the City of Plymouth identified an opportunity to leverage a planned drainage improvement project to enhance water quality for Gleason Lake (Maple Creek Pond Improvement Project). MCWD and the City of

Plymouth entered into a Funding Agreement for MCWD to support the water quality components of the project. This project is currently under construction and will be completed in 2022.

In addition, MCWD continued to build out its network of remote sensors, known as RESNET, which provides real-time data on water level, flow, and pollutant loading throughout the watershed. During 2021, MCWD initiated work and coordination with partners to build a pilot 2-dimensional model that will inform the future development of a watershed wide 2-dimensional model to predict and understand the watershed system in unprecedented detail.

2022 Work Plans

For 2022, 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 programming. This document includes a summary of the District's 2022 budget and can be found on the District website provided below and is also attached as Appendix A.
https://www.minnehahacreek.org/sites/minnehahacreek.org/files/attachments/2022%20Budget%20Workplan%20-%20FINAL.pdf.

Evaluation of Progress on Goals and Implementation Actions

In January 2018, the District adopted its 2017-2027 Watershed Management Plan (WMP). 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.

Below is a summary of the available metrics for District implementation to-date under the 2017-2027 WMP. 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.

Minnehaha Creek Subwatershed Projects

325 Blake Road Demolition (2018)

- Removed industrial facility containing mercury and asbestos and recycled/salvaged over 65% of the materials from the project site.

Arden Park Restoration Project (2020)

- The project benefits include:
  - 88 acres of stormwater management
  - 33 lbs of annual total phosphorus (TP) load reduction
  - 18,000 lbs of annual total suspended solids (TSS) reduction
  - 1.2 acre-feet storage (volume reduction)
  - 2,154 lineal feet streambank restoration
  - 17 acres of upland and 6.7 acres of wetland site restoration
  - 7,000 feet of newly accessible public trails

Minnehaha Creek FEMA Flood Damage Repairs (2020)

- The project included 500 lineal feet of streambank repair

325 Blake Road Project (ongoing)

- Developed 325 Blake Road Project design and preliminary benefits of its stormwater system. The project is expected to achieve the following benefits:
    - Annual reduction of 43,452 lbs TSS, or 100% of the inflow volume
    - Annual reduction of 162.9 lbs TP, or 68% of the inflow volume
    - 1,200 feet of newly accessible public trails
    - 1,000 feet of riparian restoration
    - 12 acres of Integrated mixed-used development

Six Mile Creek-Halsted Bay Subwatershed Projects

East Auburn Stormwater Enhancement Project (2019)

- The project included a load reduction of 28 lbs/yr of TP

Wassermann West External Load Reduction (pond alum treatment) (2021)

- First year monitoring indicates reduction of 75 lbs/yr of TP
    - Significantly exceeds pre-project estimated load reduction of 39 lbs/yr

Wassermann Lake Preserve (2021)

- 370 lineal feet of stream channel restoration
- 1.56 acres of prairie, 1.62 acres of oak savannah, and 2.14 acres of wetland fringe site restoration
- 5,378 cubic feet of stormwater treatment (1,530 more than required by regulation)

Six Mile Creek-Halsted Bay Carp Management Project (ongoing)

- 4 carp barriers constructed
- 3 utility installations completed for aeration of shallow lake systems
- Adult biomass removals through a combination of targeted removals and natural mortality
    - Carp population across nine primary lakes has been reduced by approximately 28,000 individuals, an estimated 269,000 lbs removed
    - When work was initiated, 12 of 14 lakes had carp levels above threshold where damage is caused to lake ecosystems. Through removals, an additional four lakes are meeting the target threshold and lakes across the subwatershed have seen population declines:

Six Mile Creek-Halsted Bay Carp Population Change (2016-2021)
Table 2

Lake	Est. Number of Individuals	
	2016	2021
Mud	5,148	<500
Parley	16,167	<500
West Auburn	7,201	1,837
East Auburn	6,121	2,627
Turbid	2,273	NA
Wassermann	10,031	530

Six Mile Creek-Halsted Bay Carp Population Change (2016-2021) Table 2		
Lake	**Est. Number of Individuals**	
	2016	**2021**
Piersons	3,580	5,927
Steiger	2,886	996
Zumbra	5,953	3,642
TOTAL	**59,360**	**16,559**

Wassermann Lake Alum Treatment (Ongoing)

- 2 planned treatments, the first completed in 2021 and the second planned for 2022
- Estimated to achieve an annual phosphorus load reduction of 374 lbs

Watershed-Wide Programming

Stormwater Pond Maintenance (2019)

- Bde Maka Ska Cell 1 (2019)
  - Identified 42% wet volume loss
  - Removed 2,000 cu/yds unregulated fill
- Pamela Park (2019)
  - Identified 59% wet volume loss
  - Removed 1,800 cu/yds contaminated sediment

Land Conservation (2019)

- Purchased site for Halsted Bay Watershed Load Management (alum dosing facility)
  - 5.15 acres including 1.25 acres upland and 3.9 acres wetland
  - When constructed, the facility will treat an estimated 1,400 lbs phosphorus

Project Partnerships (On-going)

- Maple Creek Pond Improvement Project (2021-2022)
  - Partnership with the City of Plymouth to reduce nutrient loading to Gleason Lake by 19 lbs/yr
- Long Lake Creek Partnership (LLCP) (On-going)
  - The Cities of Long Lake, Medina, and Orono; Long Lake Waters Association (LLWA); and MCWD have agreed to work together towards a common goal of improving water quality of 5 impaired lakes within the Long Lake Creek Subwatershed
  - MCWD led a subwatershed assessment and to-date has identified and evaluated 54 projects of which 37 are recommended for advancement based on their high cost-effectiveness and feasibility to implement

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 (2012-2021). 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 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 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 3, and the stream trends are displayed Table 4.

Minnehaha Creek Subwatershed

Along Minnehaha Creek, all five anchor stations showed an improving trend for phosphorus (Table 4). There were no lakes within the Minnehaha Creek Subwatershed where significant trends were seen in more than one indicator (TP, chl-a, clarity) (Table 3).

The District, 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 phosphorus conditions in Minnehaha Creek stream locations.

Six Mile Creek Subwatershed

The Six Mile Creek subwatershed also showed significant improvements, with all three anchor stations showing improved trends for phosphorus (Table 4). 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, 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.

Significant Trends for Lakes within MCWD
Table 3

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

Significant Trends for Lakes within MCWD
Table 3

Six Mile Creek	Parley Lake	No Trend	No Trend	No Trend
	Wassermann Lake	No Trend	No Trend	No Trend
	Steiger	No Trend	No Trend	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
	Cobblecrest	No Trend	No Trend	No Trend
	Isles	No Trend	No Trend	No Trend
	Powderhorn	No Trend	No Trend	No Trend
	South Oak	No Trend	No Trend	No Trend
	Twin	No Trend	No Trend	No Trend
	Nokomis	No Trend	Degrading	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	No Trend	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

Significant Trends for Streams within MCWD
Table 4

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

Significant Trends for Streams within MCWD Table 4			
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 WMP. The goal of MCWD's communication efforts is 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 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. One example of raising awareness to increase integration of land and water planning, was the participation of MCWD staff on Minnesota Public Radio (MPR) Climate Cast episode.

MCWD also conducts specific outreach and engagement around its key projects or initiatives, such as open houses, listening sessions, direct mail, and signage. During 2021, MCWD's 325 Blake Road Project conducted a robust outreach effort, including:

- Community listening session and survey
- Virtual public meeting and survey
- In-person public meeting
- Participation in community and neighborhood meetings

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 solicited proposals for 2020-2022, including upcoming associated RFPs:

- June 2021 – accounting services
- October 2021 – engineering services
- October 2021 – government relations services
- June 2020 – legal services (RFPs will be requested June 2022)
- August 2020 – audit services (RFPS will be requested June 2022)
- November 2020 – IT managed services (RFPs will be requested Nov 2022)

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 2021, the MCWD reviewed and processed 490 permit applications. No permits were denied, and there were 5 variances or exceptions approved. A total of 50 inspections were completed in 2021. 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 no notices of probable violation in 2021, and no Wetland Conservation Act violations. No formal enforcement actions were issued by the MCWD Board of Managers.

2022 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

2022 WORKPLAN OVERVIEW

The following pages describe how the District provides service and value across the watershed while working to deliver high-impact projects in its two focal subwatersheds of Six Mile Creek-Halsted Bay and Minnehaha Creek. The final section highlights the District's approach for working with its communities to respond to the growing threat of climate change.

2022 BUDGET BREAKDOWN

FISCAL RESPONSIBILITY

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

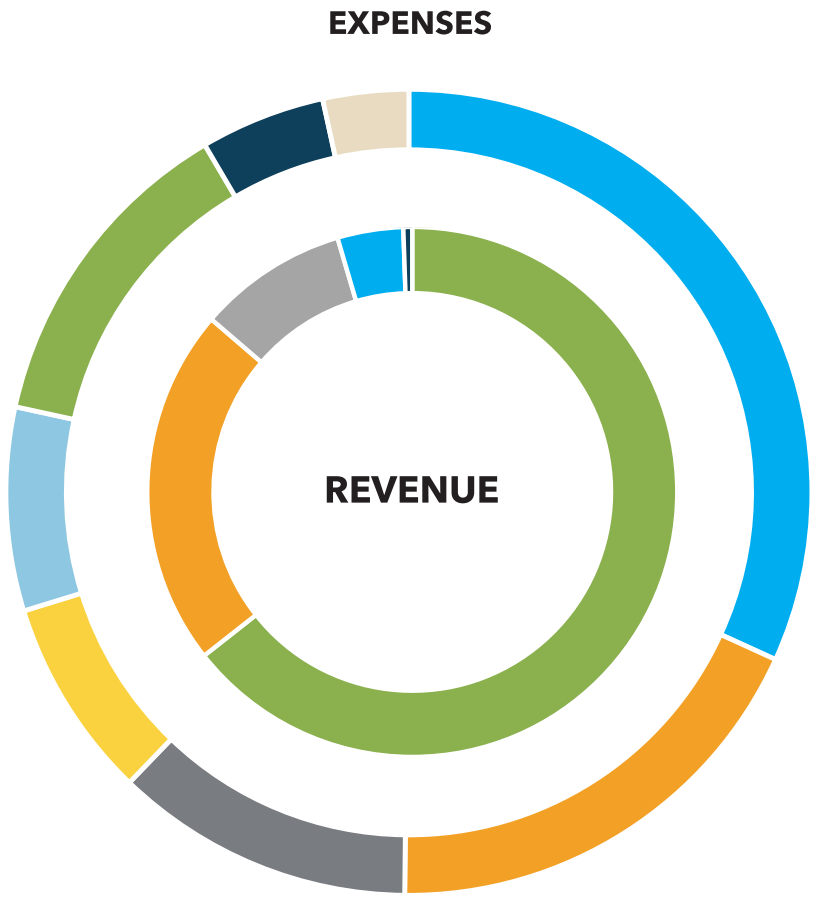
For the fifth consecutive year, there will be no increase in our tax levy in 2022. We will receive approximately $647,218 in grants and partner contributions.

EXPENSES

	2021	2022
Capital Projects	$5,566,999	$4,780,324
Capital Finance	$2,831,750	$2,758,468
Operations & Support Services	$1,883,098	$1,808,491
Research & Monitoring	$1,178,260	$1,208,792
Planning	$1,178,645	$1,226,937
Project & Land Maintenance	$957,806	$1,974,212
Permitting	$718,617	$753,644
Outreach	$401,247	$516,665
TOTAL	**$14,716,421**	**$15,027,532**

REVENUE

	2021	2022
Levy	$9,675,993	$9,675,993
Projects Fund Balance	$2,847,446	$3,411,052
Programs Fund Balance	$1,313,961	$1,212,049
Grants & Partner Funds	$709,801	$647,218
Interest & Fees	$169,220	$81,220
TOTAL	**$14,716,421**	**$15,027,532**



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.

SERVICE IN ACTION

Community members at a demonstration event for the Long Lake Creek Subwatershed Assessment, a collaboration with the cities of Long Lake, Medina, and Orono, and the Long Lake Waters Association to identify projects to restore the five impaired lakes in the subwatershed.

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 align with MCWD goals and priorities and that are well -coordinated to create mutual benefits.
- **Permitting**: Reviewing and overseeing construction activities, in coordination with our communities, to protect natural resources from degradation as a result of land use change. In 2022, continue our efforts to enhance customer service and generate opportunities for win-win partnerships through improvements to our rules, processes, and new online permitting portal.
- **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 system of 14 lakes connected by Six Mile Creek and wetlands that form the ***headwaters*** of Lake Minnetonka and the Minnehaha Creek watershed. Five lakes have impaired waters and Halsted Bay is the most degraded in Lake Minnetonka. To improve the long-term health and habitat of this system, MCWD is forming partnerships and using the strategies outlined below.

PARTNERSHIPS

With its priority to create value-added partnerships, MCWD joined with communities to outline the *Six Mile Creek - Halsted Bay Subwatershed Plan,* a collaborative vision to improve water quality and natural resources and increase public access to the system with trails, signage, and engagement opportunities.

STRATEGY

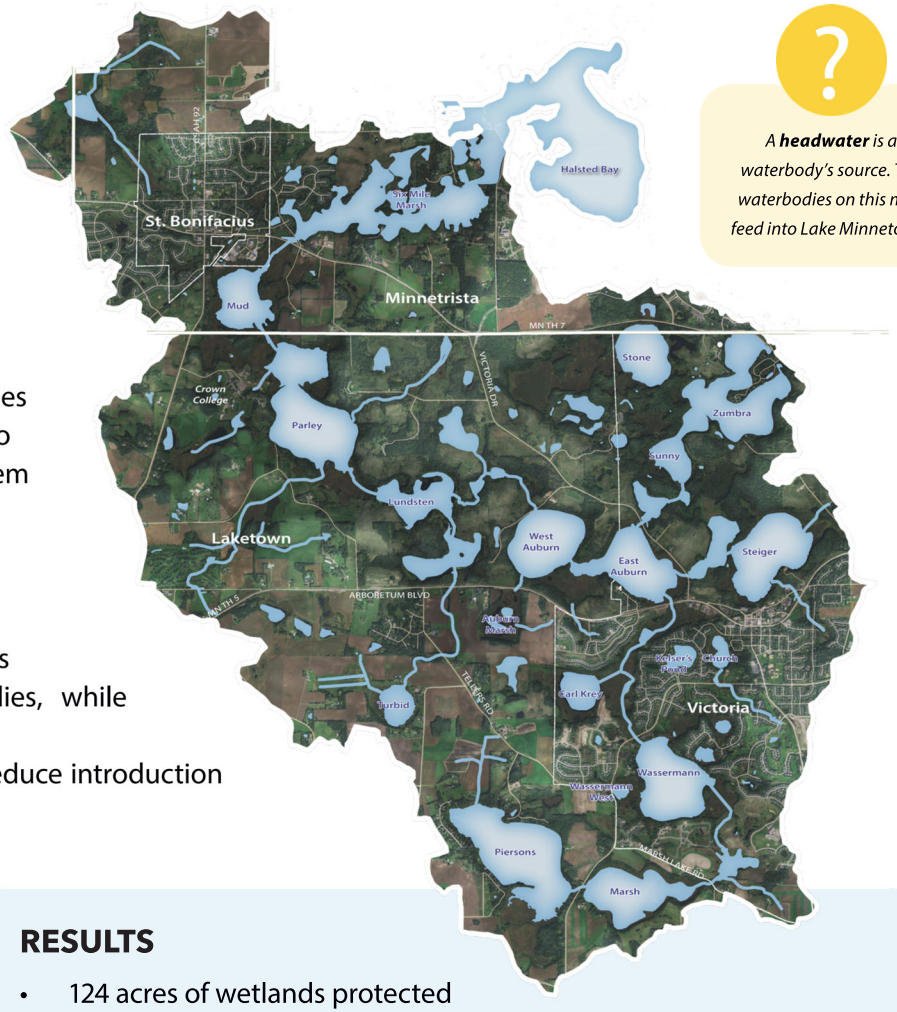
- Restore lake habitat by managing carp populations
- Reduce phosphorus released from lake bottoms by controlling in-lake nutrients
- Protect and restore wetlands to reduce phosphorus entering waterbodies, while connecting habitat corridors and uplands
- Identify stormwater management opportunities with cities & developers to reduce introduction of pollutants

WORK TO DATE

Phase 1 of project implementation focused on restoring Wassermann Lake, an impaired waterbody in the growing city of Victoria. MCWD worked with its partners on the following projects to return the lake to a sustainably healthy state.

- A system-wide carp management program to reduce carp to levels that do not damage ecosystems
- Restoration of a 20-acre wetland in partnership with a private developer
- Alum treatment on an adjacent pond and in the lake itself

The restored lake can be enjoyed from the Wassermann Lake Preserve, a flagship project completed in 2021. This park, situated on the Wassermann shoreline, features restored native upland, shoreline, and stream channel habitat while providing unique nature-based amenities.



*A **headwater** is a waterbody's source. The waterbodies on this map feed into Lake Minnetonka*

RESULTS

- 124 acres of wetlands protected
- $1.2 million in outside capital leveraged
- 545 lbs/yr of nutrient loading reduced by 2022
- 190 acres of publicly accessible green space created
- 142,000 lbs of common carp reduced across 14 lakes
- 2,488 acres of deep and shallow lake habitat restored
- 25% improvement of nutrient concentrations at Six Mile Creek/ Lake Minnetonka outlet over 10 years

SIX MILE CREEK - HALSTED BAY SUBWATERSHED

Left: An alum treatment at a pond upstream of Wasserman Lake .

Below: Wassermann Lake Preserve, a nature-based park that showcases the restoration of Wassermann Lake, opened in June 2021.
Photo: Justin Cox Photography

2022 ACTIVITIES

WASSERMANN NUTRIENT MANAGEMENT

"Internal loading", or the release of ***nutrients*** from the lake bottom into the water, remains the final significant source of nutrient pollution in Wassermann Lake. MCWD secured a $284,720 grant from the Board of Water and Soil Resources Clean Water Fund to prevent internal loading through ***alum treatment***. The treatment is estimated to reduce internal loading by 90 percent, improving the lake's health and clarity while moving it closer to removal from the state's impaired waters list. The second of two treatments will occur in 2022.

SIX MILE PROJECT PLANNING

With Wassermann poised to meet its restoration goals, MCWD will evaluate where to focus capital project resources next. One area under consideration is the Turbid-Lundsten Corridor. This degraded wetland system presents a unique opportunity to create a contiguous wetland and habitat corridor while reducing nutrient levels in both Turbid and Lundsten Lakes. This restored corridor would be an asset in the future Victoria Greenway, which aims to create a connected system of parks, trails and open space as development progresses south and west.

?

***Nutrients**, such as phosphorus and nitrogen, are important building blocks in a lake's food chain. However, if found at high levels, they can pollute waterbodies and lead to excess algae growth.*

*An **alum treatment** is a process that uses aluminum sulfate to bind to phosphorus particles and trap them in the lake bottom.*

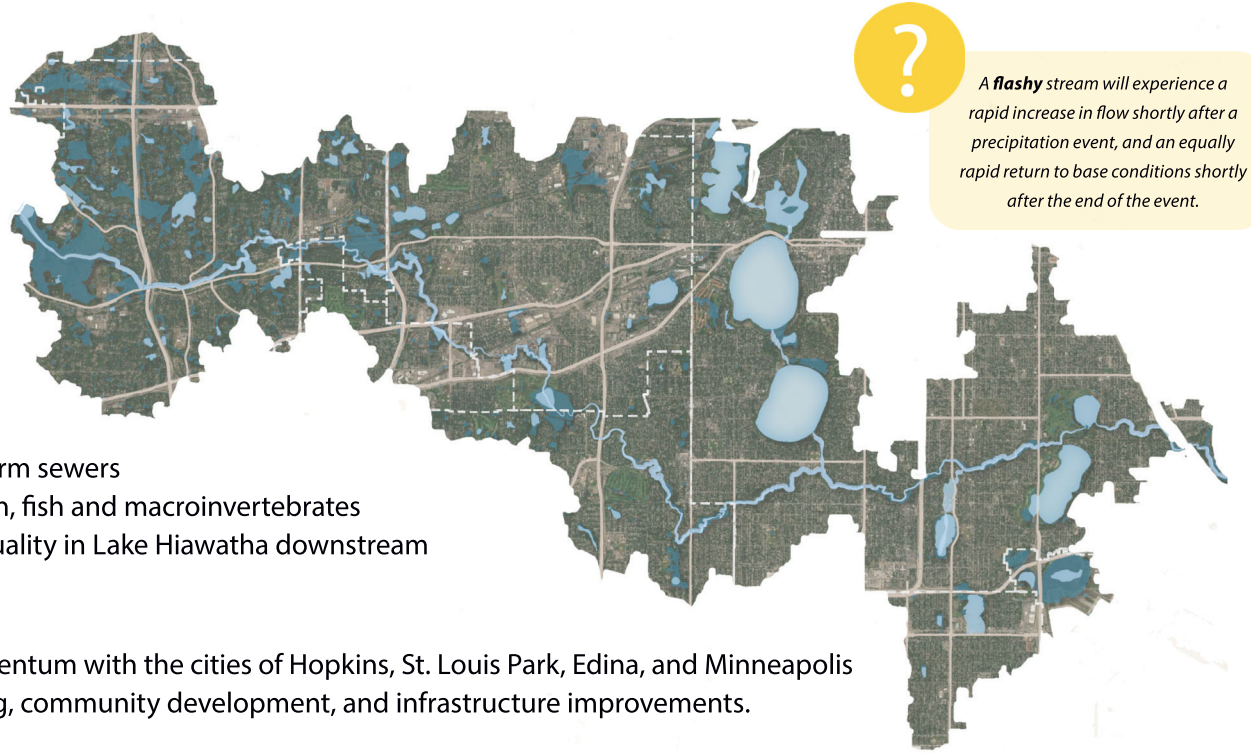
MINNEHAHA CREEK SUBWATERSHED

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:

- ***flashy*** water levels and flooding
- altered stream channels
- 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 downstream



*A **flashy** stream will experience a rapid increase in flow shortly after a precipitation event, and an equally rapid return to base conditions shortly after the end of the event.*

PARTNERSHIPS

MCWD has 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

- Manage regional stormwater to slow down water, reduce runoff and pollution entering the creek, and decrease flood risk
- Restore the creek to reduce bank erosion, slow down water, and improve habitat and buffers while increasing opportunities for public access and economic development
- Restore and connect ecological corridors to maximize green space, improve habitat and flood storage, and strengthen resilience

WORK TO DATE

- Re-meandering sections of the creek in St. Louis Park and Edina
- Implementing stormwater management in Hopkins, St. Louis Park, and Edina
- Repairing eroded streambanks in Minneapolis
- Revitalizing Cottageville Park in Hopkins and Arden Park in Edina
- Creating new trail systems and public access to the creek in St. Louis Park

RESULTS

- 19% reduction in phosphorus levels in Lake Hiawatha
- Creek concentrations of chlorophyll-a that now meet state standards
- 60 acres of newly accessible green space
- 30 acres of restored wetlands
- 150+ lbs of phosphorus removed per year
- 3.2 acre-feet of floodplain storage
- 1.5 miles of restored creek/banks

MINNEHAHA CREEK SUBWATERSHED

2022 ACTIVITIES

325 BLAKE ROAD RESTORATION AND REDEVELOPMENT

MCWD's project at this former industrial site bordering Minnehaha Creek will feature riparian restoration, open space amenities, and regional stormwater treatment. In partnership with the City of Hopkins and a private developer, approximately 12 acres of the site will be transformed into a transit-oriented mixed-use development that integrates with MCWD's project. MCWD has received $2.4 million from Hennepin County, Met Council, Public Facilities Authority, and Clean Water Legacy Fund in project support. MCWD's project will:

- Treat polluted runoff from 270 acres of the surrounding region and reduce phosphorus levels by 181 pounds per year; and
- Create a connection to the Minnehaha Creek Greenway trail system between Cottageville Park and the Minnehaha Creek Preserve.

STREAM ENHANCEMENT & TRAIL CONNECTION

The Southwest LRT line will run through the heart of the Minnehaha Creek Greenway and provide another important community connection to this revitalized corridor. In partnership with the City of St. Louis Park, a key connection will be made during LRT construction that will link investments along the Minnehaha Creek Greenway trail system to the Cedar Regional Trail, and make 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 a 30-year envisioning of the Minnehaha Creek Regional Trail through the parklands of south Minneapolis. In this once-in-a-generation overhaul, the MCWD is working with these agencies and the community to integrate regional stormwater management solutions and creek restoration to make water quality, infrastructure, and ecological improvements.

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: CLIMATE ACTION PLANNING

OVERVIEW

Climate change is already impacting water resources within the MCWD. Over the past decade, the watershed has experienced both flooding and drought conditions. The changes in precipitation and temperature patterns pose a threat to both natural and built systems. As the effects of climate change accelerate, the District recognizes the need to develop a strategy to respond to these changes.

Minnehaha Creek at Methodist Hospital in St. Louis Park during drought conditions in 2012, left, and flood conditions in 2014, below.

WORK TO DATE

In 2020, MCWD assessed its role in responding to climate change. The result was a draft Climate Action Framework that defines the three pillars of the District's role:

1. **Understand & Predict**: Utilize and expand data collection and analysis capabilities to understand and predict climate change impacts on the watershed
2. **Communicate, Convene, & Plan**: Convene partners to build consensus around issues, establish measurable goals, and evaluate potential solutions
3. **Implement, Measure, & Adapt**: Coordinate with partners to implement projects, programming, and policies to achieve measurable progress toward goals

2022 ACTIVITIES

As a regional and technical entity, MCWD is well-positioned to understand the water budget and upstream-downstream cause and effect across communities. To further this effort, MCWD is developing two tools:

- A **Machine Learning Model** that forecasts water levels based on remote sensing data collected through MCWD's RESNET and Hennepin County's MESONET programs. Forecasts will improve MCWD's ability to support Gray's Bay Dam operations and partner agencies' emergency response throughout the District.
- A **2-Dimensional Watershed Model** that will enable MCWD to evaluate hydrologic impacts of potential land use and climate changes. This will position the MCWD as a value-added partner in planning and implementing ***green and gray infrastructure*** adaptations that create resilience in the built and natural environments.

In mid-2022, MCWD will begin engaging with cities and partner agencies through a technical advisory committee that focuses on this work.

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Green infrastructure *uses vegetation, soils, and other natural elements, while* ***grey infrastructure*** *uses pipes and other man-made structures, to manage stormwater.*