

April 7, 2022

Commissioners
Technical Advisory Committee Members
Shingle Creek and West Mississippi
Watershed Management Commissions
Hennepin County, Minnesota

The agenda and meeting packet are available to all interested parties on the Commission's web site:

<http://www.shinglecreek.org/minutes--meeting-packets.html>

and

<http://www.shinglecreek.org/technical-advisory-committee.html>

Dear Commissioners and TAC Members:

A joint regular meeting of the Shingle Creek and West Mississippi Watershed Management Commissions will be held **Thursday, April 14, 2022**, at 12:45 p.m., in the downstairs Community Room in Crystal City Hall, 4141 Douglas Drive. **This will be an in-person meeting.**

The Technical Advisory Committee (TAC) will meet prior to the regular meeting at 10:30 a.m., also in person.

The second 2022-2023 WBIF Convene meeting will take place during the TAC meeting.

For our April regular meeting we will be ordering from Jimmy John's. Please make your meal choice from the page below and email me at judie@jass.biz to confirm your attendance and your meal selection **BY TUESDAY, APRIL 12, AT 5:00 PM.** Lunch will be available at the meeting at 12:00 noon.

Mark Ray suggests that, due to construction, you park in the lot closer to 41st Avenue or on 41st Avenue.

Thank you.

Regards,

Judie A. Anderson
Administrator

cc: Alternate Commissioners
TAC Members

Member Cities
Hennepin County

Wenck/Stantec
Reviewing Agencies

Troy Gilchrist

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All sandwiches are regular size.
All orders come with chips, pickle spear, cookie, and water.
Please order by number.

#1 THE PEPE® ham & cheese

#2 BIG JOHN® roast beef

#3 TOTALLY TUNA® tuna salad & cucumber

#4 TURKEY TOM® turkey

#5 VITO® salami, capicola, cheese, onion, oil & vinegar, & oregano-basil (no mayo)

6 THE VEGGIE double cheese, avocado spread & cucumber

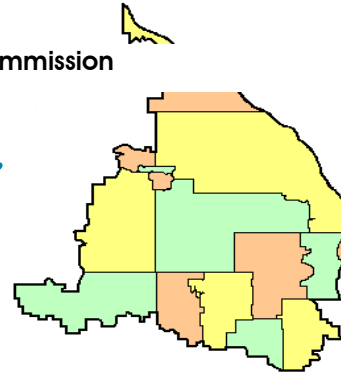
#8 BILLY CLUB® roast beef, ham, cheese & Dijon

#11 COUNTRY CLUB® turkey, ham & cheese

#12 BEACH CLUB® turkey, double cheese, avocado spread & cucumber

#14 BOOTLEGGER CLUB® roast beef & turkey

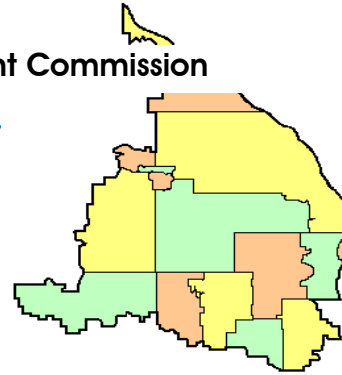
#15 CLUB TUNA® tuna salad, double cheese & cucumber



AGENDA – April 14, 2022

A combined regular meeting of the Shingle Creek (SC) and West Mississippi (WM) Watershed Management Commissions will be convened Thursday, March 10, 2022, at 12:45 p.m. Agenda items are available at <http://www.shinglecreek.org/minutes--meeting-packets.html>. *Black typeface denotes SCWM items, blue denotes SC items, green denotes WM items.*

- | | | | |
|---|------|-----|--|
| | SCWM | 1. | Call to order. |
| | SCWM | a. | Roll call. |
| ✓ | SCWM | b. | Approve agenda.* |
| ✓ | SCWM | c. | Approve minutes of last meeting.* |
| | | 2. | Reports. |
| ✓ | SC | a. | Treasurer's Report and Claims** - voice vote. |
| ✓ | WM | b. | Treasurer's Report and Claims** - voice vote. |
| | SCWM | 3. | Open forum. |
| | | 4. | Project reviews. |
| ✓ | SC | a. | SC2022-Nathan Lane Business Center, Plymouth.* |
| ✓ | WM | b. | WM2022-002 NorthPark Bus. Center Bldgs. 8-10+Xylon Ext., Brooklyn Park.* |
| | SCWM | 5. | Fourth Generation Watershed Management Plan. |
| | | a. | Updates.* |
| | | 1) | Equity Workshop.* |
| | SCWM | 6. | Third Gen. Watershed Management Plan. |
| ✓ | | a. | Initiate Minor Plan Amendment.* |
| | | 7. | Water quality. |
| ✓ | SCWM | a. | Presentation - 2021 Water Quality Report.* |
| | | 8. | Grant opportunities. |
| | SC | a. | CPL Grant for Bass Lake – verbal update. |
| | SC | b. | Resiliency Grant – verbal update. |
| | SCWM | 9. | Education and public outreach. |
| | | a. | WMWA update.** |
| ✓ | SCWM | b. | WMWA 2021 Annual Report.* |
| ✓ | SCWM | c. | 2021 NPDES Report.** |
| | | d. | Next WMWA meeting – via zoom. 8:30 a.m., Tuesday, May 10, |
| | SCWM | 10. | Communications. |
| ✓ | SCWM | a. | 2021 Annual Reports.** |
| | | b. | Staff Report.* |
| | | c. | Communications Log.* |
| | | d. | In-person meetings.* |
| | | 11. | Other business. |
| | | 12. | Adjournment. |



MINUTES
March 10, 2022

(Action by the SCWMC appears in blue, by the WMWMC in green and shared information in black.
*indicates items included in the meeting packet.)

I. A joint virtual meeting of the Shingle Creek Watershed Management Commission and the West Mississippi Watershed Management Commission was called to order by Shingle Creek Chairman Andy Polzin at 12:50 p.m. on Thursday, March 10, 2022.

Present for Shingle Creek were: Alex Prasch, Brooklyn Park; Burt Orred, Jr., Crystal; Karen Jaeger, Maple Grove; Ray Schoch, Minneapolis; Robert Grant, New Hope; John Roach, Osseo; Andy Polzin, Plymouth; Wayne Sicora, Robbinsdale; Diane Spector, Katie Kemmitt, and Erik Megow, Stantec; Sam Ketchum, Kennedy & Graven; and Amy Juntunen and Judie Anderson, JASS.

Not represented: Brooklyn Center.

Present for West Mississippi were: Alex Prasch, Brooklyn Park; Gerry Butcher, Champlin; Karen Jaeger, Maple Grove; Harold Johnson, Osseo; Diane Spector, Katie Kemmitt and Erik Megow, Stantec; Sam Ketchum, Kennedy & Graven; and Amy Juntunen and Judie Anderson, JASS.

Not represented: Brooklyn Center.

Also present were: Jay Hill, Brooklyn Center; Melissa Collins and Mitchell Robinson, Brooklyn Park; Mark Ray, Crystal; Derek Asche, Maple Grove; Liz Stout, Minneapolis; Nick Macklem, New Hope; Leah Gifford, Amy Riegel and Ben Scharenbroich, Plymouth; and Richard McCoy, Robbinsdale.

II. **Agendas and Minutes.**

Motion by Schoch, second by Jaeger to approve the **Shingle Creek agenda**.** Motion carried unanimously.*

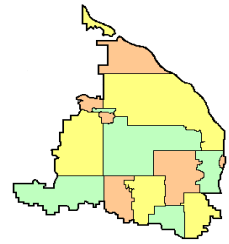
Motion by Butcher, second by Johnson to approve the **West Mississippi agenda**.** Motion carried unanimously.*

Motion Schoch, second by Prasch to approve the **minutes of the February 10, 2022, regular meeting**.** Motion carried unanimously.*

Motion by Butcher, second by Prasch to approve the **minutes of the February 10, 2022, regular meeting**.** Motion carried unanimously.*

III. **Finances and Reports.**

A. Motion by Orred, second by Schoch to approve the Shingle Creek **March Treasurer's Report* and claims** totaling \$113,061.79. Voting aye: Prasch, Orred, Jaeger, Schoch, Grant, Roach, Polzin, and Sicora; voting nay: none; absent: Brooklyn Center.



B. Motion by Jaeger, second by Johnson to approve the **West Mississippi February Treasurer's Report* and claims** totaling \$21,989.98. Voting aye: Prasch, Butcher, Jaeger, and Johnson; voting nay: none; absent: Brooklyn Center.

IV. Open Forum.

VI. Project Review.

SC2022-03 Arbor Lakes Business Park Phase II, Building B, Maple Grove.* Construction of a new building and associated parking and loading docks on a 11.2 acre site located at 10900 Fountains Drive. Following development, the site will be approximately 87 percent impervious with 9.7 acres of impervious surface, an increase of 9.7 acres. A complete project application was received on February 25, 2022.

The project is located within the Maple Grove Gravel Mining Area (GMA). In 2010, the Commission reviewed and approved a plan by the City of Maple Grove to obtain infiltration credits for this new development by constructing biofiltration basins adjacent to four existing regional stormwater ponds. Stormwater from areas that developed prior to the infiltration rule is directed to these basins. The Commission agreed that these new infiltration basins are adequate to provide regional infiltration for the 553 acres of undeveloped area (SC2010-04). The subject project is located within that area and therefore meets Commission rate, water quality, and volume control treatment requirements. This has been verified with City staff.

The erosion control plan includes rock construction entrances, perimeter silt fence/biolog, and inlet protection. The erosion control plan does not meet Commission requirements.

The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements.

There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.

There is no FEMA-regulated floodplain on this site. The low floor elevations of the buildings are at least two feet higher than downstream high water elevations according to Atlas 14 precipitation. The applicant meets Commission floodplain requirements.

The site is not located in a Drinking Water Management Area (DWSMA). The applicant meets Commission drinking water protection requirements.

A public hearing on the project is not required per the City's Planning Manager. There was a public hearing with the concept plan submitted to the city in 2021.

A draft Operations & Maintenance (O&M) agreement between the applicant and the City is not applicable.

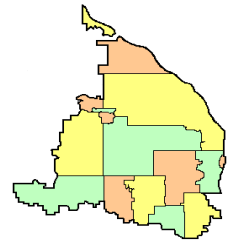
Motion by Jaeger, second by Schoch to advise the City of Maple Grove that project SC2022-03 is approved subject to the following condition:

1. Clarify the final revegetation plan for pervious areas. It is not clear from the plans if sod or seed and mulch/blanket will be used to stabilize pervious areas. Further, provide sufficient stabilization for the steep slopes at the west and southwest portions of the site.

Motion carried unanimously.

VII. Fourth Generation Watershed Management Plan.*

Staff's March 4, 2022, memo* discussed four items:



A. Equity workshop. Bassett Creek administrator Laura Jester and Spector have initially met with representatives from Metro Blooms, who are helping to coordinate an Equity Workshop for the three watersheds as they prepare (or ramp up to) their fourth-generation plans. County Commissioner Irene Fernando has agreed to chair the workshop, which will be held in person from 6 to 8 pm on April 25, at the Crystal Community Center. Commissioners and alternates, TAC members and other City staff will be invited, so please hold the date. Some of the topics being considered for the workshop include:

1. History of environmental justice in our area
2. How and where watershed resources/funding have been concentrated in the past.
3. How other watershed organizations are addressing the issue.
4. How are cities addressing the issue and/or what role do they see for watersheds?
5. Challenges and opportunities for providing equitable environmental outcomes in underserved communities.

At this point the agenda, topics, and speakers are still fluid, although we have a few ideas of who might be invited to speak to these topics. We'd like to get your feedback on what needs you see in this area and what you'd like to see discussed.

B. Rules revisions. The TAC continues to discuss proposed language bringing the rules into conformance with the latest NPDES permit. A marked-up draft is circulating with the intent to begin the formal review and adoption process in April, with revisions effective June 1, 2022.

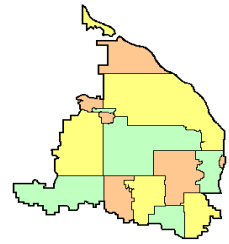
C. Website Interactive Map. Staff would like to have this in place prior to the CAC meetings, tentatively mid-March. They have also been refreshing the web site. A notice will be sent out when the map is in place.

D. Monitoring program framework. Staff will begin discussing the existing monitoring program to see if it still meets the Commissions' and cities' needs. For example, is there value to continuing monitoring outflow in West Mississippi? Should the frequency of monitoring in lakes be adjusted? Should Staff test for new parameters, do targeted monitoring on outfalls into the creek?

VIII. Water Quality.

A. Each year the Shingle Creek Commission budgets and undertakes monitoring activities, including routine stream and lake monitoring and volunteer lake, stream, and wetland monitoring. Water quality and quantity monitoring on Shingle Creek and select lakes is performed by Stantec staff and the USGS and macroinvertebrate monitoring in Shingle Creek is performed by volunteers through the Hennepin County Environment and Energy (HCEE) RiverWatch program. Lake monitoring is performed by volunteers through Metropolitan Council's Citizen Assisted Lake Monitoring Program (CAMP). Wetland monitoring is conducted through HCEE's Wetland Health Program (WHEP).

Staff's March 4, 2022,* memo presents the proposed 2022 monitoring program, which is consistent with the program set forth in the Third Generation Watershed Management Plan. It includes routine monitoring tasks, specific monitoring efforts to support Commission administered grants, and monitoring to evaluate progress toward the TMDLs every five years. This year the Commission will complete the 5-year biotic and DO TMDL review report for Shingle and Bass Creeks. The table below explains the various monitoring programs, their purpose, and the proposed costs and funding.



Activity	2022 Budget	2022 Proposed
Routine Stream Monitoring		
Equipment Installation/Deinstallation	\$35,000	\$4,960
Routine monitoring		\$13,215
Storm monitoring		\$7,895
Winter monitoring		\$3,615
Rating curve updates		\$1,460
Biotic sampling		\$3,855
Equipment upgrades at BCP	Grant funded through Bass Lake Stream Restoration Project	\$4,940 ¹
Routine Lake Monitoring		
Intensive Lake WQ Monitoring (Magda, Schmidt)	\$28,000	\$12,500
Aquatic Vegetation Surveys (Magda, Schmidt)		\$10,180
Fish survey (Magda)		\$5,320
Monitoring to Support Grant Projects (funded by grants, not budget)		
Bass and Pomerleau CLP delineation	N/A	\$3,925
Meadow Lake WQ Monitoring, SAV survey, fish survey, and sediment coring	N/A	\$19,265
Crystal Lake WQ Monitoring, CLP delineation, SAV survey, carp survey, and sediment coring	N/A	\$36,080

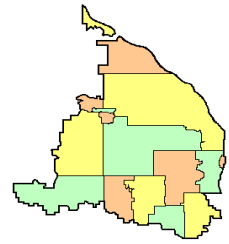
¹ See attached quote for equipment breakdown

B. Routine Stream Flow and Water Quality Monitoring. The Shingle Creek Commission has routinely monitored stream flow and water quality in Shingle Creek since 1996. Two locations, one downstream of Humboldt Avenue in Minneapolis and one upstream of Zane Avenue in Brooklyn Park have been monitored for water quantity and various water quality chemical parameters. In 2007, the monitoring location upstream of Zane Avenue was moved from upstream to just downstream of Brooklyn Boulevard in order to obtain a better stage-discharge relationship. In 2015 Bass Creek was added as a third site to be routinely monitored for water quality and conductivity. The Bass Creek monitoring station has helped provide better information about water quality in Bass Creek, which is impaired for chloride and biota.

A fourth site at Queen Avenue in Minneapolis is monitored for flow by the US Geological Survey (USGS) as a part of its ongoing National Assessment of Water Quality (NAWQA). Chemical parameters are no longer routinely measured at the USGS site, except for continuous conductivity and temperature. Those data are available on-line real-time at [SHINGLE CREEK AT QUEEN AVE IN MINNEAPOLIS, MN - USGS Water Data for the Nation](#). The Commission also partners financially with the USGS in the operation of the Queen Avenue monitoring station.

A more detailed discussion and breakdown of the routine stream flow and water quality monitoring activities and costs is shown in an attachment* to Staff's memo.

1. Monitoring Equipment. New stream level, temperature, and specific conductivity equipment will be purchased and deployed for BCP under the Bass Lake Stream Restoration project. The full cost shown in a quote* included in the meeting packet (\$2,842.92) will be covered by the grant, but there will be a recurring, yearly cell data plan cost (\$137.40) that will be paid by the Commission.



Motion by Schoch, second by Jaeger to approve this expenditure. *Motion carried unanimously.*

2. Planning Budget. The remaining budget will be used to fund planning meetings and cover other tasks related to field season preparation and troubleshooting.

C Lake Monitoring.

1. Intensive Lake TMDL Monitoring. To track the effectiveness of BMP implementation in improving lake water quality, the Commission routinely performs intensive lake monitoring to supplement the volunteer surface monitoring. Because the Commission's goals include achieving delisting of lakes that meet their TMDLs and water quality, the Third Generation monitoring plan includes more rigorous lake monitoring sufficient to demonstrate to the MPCA and EPA that conditions have improved. A second attachment* to Staff's memo shows the lake monitoring schedule from the Third Generation Plan, updated to reflect the actual monitoring completed.

For 2022, Schmidt Lake and Lake Magda will be monitored biweekly. The water quality data collected for the lakes will include surface and deep-water samples, water column temperature/DO profiles, and zooplankton and phytoplankton sampling. A more detailed discussion and breakdown of these routine monitoring activities and costs is shown in the attachment. The year 2017 marked the point when a full round of sampling for all lakes was completed and the Commission is now on to round two of Intensive Lake Monitoring to support the 5-Year TMDL Reviews.

2. Aquatic Vegetation Surveys. A component of the intensive monitoring is to obtain or update surveys of lake aquatic vegetation. Aquatic vegetation plays an important role in water quality and biotic integrity, and the vegetation community can change as water quality changes. For 2022, surveys for Schmidt and Magda will be updated in tandem with the intensive monitoring. A breakdown of this monitoring activity and costs is also shown in the attachment.

3. A fisheries survey will be completed on Lake Magda in 2022, and a fisheries survey will be completed on Schmidt Lake if budget allows.

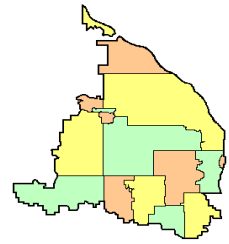
D. Monitoring to Support Grants.

Certain monitoring tasks are built into ongoing grant projects. As such, they are not funded from the Commission's general fund.

1. The Bass and Pomerleau alum project aimed to address nutrient impairments wrapped up in December 2021. Alum was first applied to the lakes in 2019 and was applied again in 2020 to further reduce phosphorus concentrations in the water. The Commission agreed to provide up to 5 years of invasive species monitoring and treatment. A detailed breakdown of the proposed monitoring activity on Bass and Pomerleau Lakes and their associated costs are shown in the third attachment to Staff's memo.

A full Curly-leaf Pondweed (CLP) delineation on Bass and a visual delineation on Pomerleau will occur in Spring 2022. Bass Lake will likely be treated with herbicide for CLP abundance. A breakdown of this monitoring activity and costs is also shown in the third attachment.

2. The Crystal Lake Grant Project began in 2020. This project includes carp assessment and tracking, alum application, carp removal, submerged aquatic vegetation (SAV) surveys, and water quality monitoring and intends to address Crystal Lake's impairment for nutrients. The second year of this grant will be focused on fisheries, water quality, and vegetation data that will allow us to track changes to the lake as



nutrient management occurs. Summer 2022 monitoring will track the impact of the Fall 2021 alum treatment on the lake. A detailed breakdown of the proposed monitoring activity on Crystal Lake and their associated costs are shown in the third attachment.

a. Regular water quality monitoring will be conducted on Crystal Lake in 2022. Crystal Lake will be monitored twice monthly, late May-September. The water quality data collected for the lake will include surface and deep-water samples, water column temperature/DO profiles, and zooplankton and phytoplankton sampling.

b. A spring and fall aquatic vegetation survey will be performed on Crystal Lake. Aquatic vegetation plays an important role in water quality and biotic integrity, and the vegetation community can change as water quality and invasive species presence changes. The fall survey will show impacts to the vegetation community after the alum treatment and be compared to the summer 2021 and 2020 surveys.

c. The DNR planned a general fisheries survey on Crystal Lake in 2020. The survey did not happen due to COVID-19. If the DNR plans to update the survey in 2022, Staff will supplement their survey with a near-shore survey for fish index of biological integrity (IBI) calculation.

d. In 2022 a second round of carp removals will occur on the lake. Preceding carp removals, Stantec will perform a CPUE (catch per unit effort) population estimate and implant PIT (passive integrated transponder) tags. Results from the PIT tags will be used to estimate the population following 2022 removals.

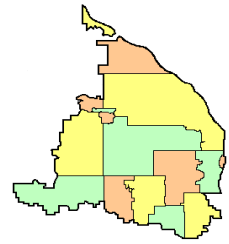
e. In 2022 a follow-up round of sediment cores will be collected from the lake to assess the success of the first alum treatment and plan dosing for the second alum treatment scheduled for Fall 2022.

3. The **Meadow Lake** Drawdown project began in Fall 2021. The project includes adaptive management to control the fathead minnow and CLP populations in the lake and address the nutrient impairment. The first summer season of this project will include monitoring to assess the success of the drawdown at controlling fish and invasive vegetation and will inform future management decision. Monitoring will include a fish survey, a vegetation survey, and monthly water quality monitoring including phytoplankton and zooplankton samples. A detailed breakdown of the proposed monitoring activity on Meadow Lake and their associated costs are shown in attachment three.

E. Volunteer Monitoring.

1. **Volunteer Lake Monitoring.** The Shingle Creek Commission has participated in the Metropolitan Council's "Citizen Assisted Lake Monitoring Program" (CAMP) since 1993. This program trains volunteers to take surface water samples and make water quality observations using standardized reporting techniques and forms. The CAMP program has been the Commission's primary means of obtaining ongoing lake water quality data. This program is also an NPDES Education and Outreach BMP.

CAMP was initiated by Met Council to supplement the water quality monitoring performed by Met Council staff and to increase our knowledge of the water quality of area lakes. Volunteers in the program monitor the lakes every other week from mid-April to mid-October. They measure surface water temperature and Secchi depth, and collect surface water samples that are analyzed by the Met Council for total phosphorous, total Kjeldahl nitrogen, and chlorophyll-a. The volunteers also judge the appearance of the lake, its odor, and its suitability for recreation.



The Met Council charges \$760 per lake to cover the cost of supplies for volunteers, analysis of samples, and the Regional Reports. The Commission owns seven equipment kits purchased in past years and will not have to purchase any more kits unless key equipment needs to be replaced.

Lakes are monitored on a rotating schedule. The larger lakes are monitored every other year while the smaller lakes are monitored every three years. It is assumed that when a lake undergoes the intensive sampling program, no CAMP monitoring will be performed that year. Lakes scheduled for 2022 volunteer lake monitoring are Bass Lake and Upper, Middle, and Lower Twin Lakes. The 2022 budget is \$3,040.

2. Volunteer Stream Monitoring. In previous years high school student volunteers conducted macroinvertebrate monitoring through Hennepin County Environmental and Energy's RiverWatch Program at two locations on Shingle Creek. The Commission contracts with Hennepin County for this service at a cost of \$1,000 per site. Hennepin County maintains an interactive online map showing locations throughout the county and stream grades going back to 1996: hennepin.us/riverwatch. One site was monitored in 2021: Shingle Creek in Webber Park. The 2022 budget includes \$1,000 to monitor one site.

3. Volunteer Wetland Monitoring. In 2007 the Commission began participating in Hennepin County Environment and Energy's Wetland Health Evaluation Program (WHEP), a volunteer monitoring program. Through this program, adult volunteers monitor vegetative diversity and macroinvertebrate communities. In 2021, there were no wetlands monitored in Shingle Creek. The County has an interactive online map showing WHEP locations throughout the County: hennepin.us/your-government/get-involved/wetland-health-evaluation-program. The 2022 budget includes \$2,000 to monitor two wetlands. Staff will work with the cities to identify sites for 2022.

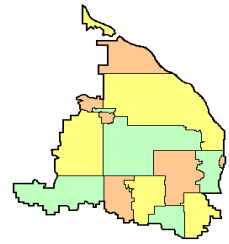
Motion by Schoch, second by Roach to accept the 2022 Shingle Creek Monitoring Plan. *Motion carried unanimously.*

F. The West Mississippi Watershed Management Commission for many years did not routinely monitor water quality in the few streams that are present in the watershed. The Commission undertook stream and outfall monitoring in 1990-1992 and found that the water quality of runoff from the watershed was generally within ecoregion norms. Since much of the watershed was poised to develop under Commission rules regulating the quality and rate of runoff, the Commission elected to discontinue further monitoring. In 2010 and 2011 the Commission authorized a repeat of the 1990-1992 monitoring, to determine current conditions and evaluate whether the development rules were protective of downstream water quality.

The Third Generation Plan and subsequent budgets incorporated ongoing, routine monitoring for West Mississippi that includes monitoring flow and water quality at two sites per year on a rotating basis. In 2021 the Commission monitored the Environmental Preserve outlet and the 65th Avenue outfall. Results of 2021 monitoring will be presented in the Annual Water Quality Report in May 2022.

G. Routine Monitoring. Figure 1 in Staff's March 4, 2022, memo* shows the West Mississippi outfall sites sampled in 2010-2011, and 2013-2019 (no monitoring was conducted in 2012). The 65th Avenue outfall and Oxbow Creek will be monitored in 2022 for flow and water quality using automatic samplers. Continuous flow will be monitored using pressure transducers, and water quality will be analyzed through field parameter measurements, periodic grab samples, and storm composite sampling using ISCO automated samplers purchased by the Commission in 2010.

Due to continued difficulties accessing the 65th Avenue outfall in the past, the Commission partnered with the Mississippi Watershed Management Organization (MWMO) to perform the monitoring in



2020 and 2021. MWMO has experience and equipment for doing stream monitoring in confined spaces like stormwater pipes and can perform the monitoring safely and efficiently. Results from MWMO's monitoring have been satisfactory and the partnership will be continued in 2022. A detailed discussion and breakdown of these routine monitoring activities and costs is shown in Attachment 1 of Staff's memo. The 2022 budget for routine monitoring is \$22,600.

Motion by Johnson, second by Butcher to approve the Professional Services Agreement* with the MWMO in an amount not to exceed \$11,509.73. *Motion carried unanimously.*

H. Volunteer Monitoring.

1. Volunteer Stream Monitoring. In previous years high school student volunteers conducted macroinvertebrate monitoring through Hennepin County Environment and Energy's RiverWatch Program at one location in West Mississippi – Mattson Brook. The Commission contracts with Hennepin County for this service at a cost of \$1,000 per site. In the past few years Hennepin County has been finding it difficult to recruit a high school to monitor this site. The Commission did not budget for this monitoring in 2022.

2. Volunteer Wetland Monitoring. In 2007 the Commission began participating in Hennepin County Environment and Energy's Wetland Health Evaluation Program (WHEP), a volunteer monitoring program. Through this program, adult volunteers monitor vegetative diversity and macroinvertebrate communities. In 2021, no wetlands in the West Mississippi Watershed were monitored. The 2022 budget includes \$2,000 to monitor two wetlands. Staff will work with the cities to identify sites for 2022.

Motion by Butcher, second by Johnson to accept the 2022 West Mississippi Monitoring Plan. *Motion carried unanimously.*

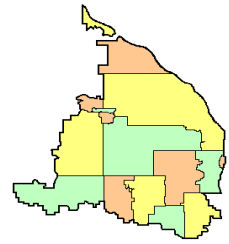
IX. Grant Opportunities.

A. Crystal Lake Management Plan – Change Order.* Carp removals on Crystal Lake in 2021 were extremely successful, with over 3,900 carp removed (an estimated ~33% of the lake's population), moving the lake closer to improved water quality. Because of this success, Staff recommend another field season of carp removal efforts in 2022 to bring the lake's carp population below harmful levels. The grant's carp removal task budget has been expended. In addition, one of two alum doses was successfully applied to the lake in September 2021. The alum treatment came in under budget at \$52,776.69. The second alum treatment will be applied in 2022 and is expected to cost a similar amount.

Staff previously received approval to move some of the projected excess funds from the alum treatment task to the carp removal task to fund 2022 carp removals in the project grant work plan. Staff submitted a grant change order to the MPCA and it was approved. The amended workplan with budget details* is Included in the meeting packet along with the change order.* The change has no impact on the scope and total cost of the project but will allow additional efforts of carp removal on the lake.

Stantec has partnered again with WSB to complete the 2022 carp removals. WSB will use the same methods as in 2021 and will use three baited nets to capture and remove carp in the lake. Up to two Stantec staff will assist with baiting and removing carp. WSB's proposed not-to-exceed budget is also included in the packet accompanied by their Scope of Work. The grant change order will fully cover WSB's proposed budget and will have no impact on the Commission's match share.

Motion by Schoch, second by Grant to approve the Change Order. *Motion carried unanimously.*



B. Watershed-Based Implementation Funding (WBIF). The first Convene Meeting of the 2022-2023 round of WBIF was held during the Technical Advisory Committee (TAC) meeting which preceded this meeting. Present at that meeting were Riegel and Robinson representing the member cities, Jaeger, representing the West Mississippi Commission, Kris Guentzel, representing Hennepin County as the Soil and Water Conservation District, Steve Christopher as the BWSR Board Conservationist, and Spector, serving as the facilitator. Absent was Schoch, representing the Shingle Creek Commission. The members agreed they would use “consensus” as its decision-making process.

The Board of Water and Soil Resources (BWSR) biennially appropriates funding for the WBIF program. The WBIF funding is allocated to targeted watersheds to be distributed according to guidelines agreed upon by the eligible entities in the allocation area (“the Partnership”). The BWSR Board approved allocations for fiscal year 2022 of \$95,501 to the Shingle Creek partnership and \$75,000 to the West Mississippi partnership, which will become available July 1, 2022. A minimum 10% match is required. The grants expire December 31, 2025. The deadline to complete eLINK work plans for approval by BWSR is March 30, 2023.

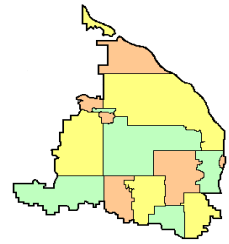
At last month’s TAC meeting, Staff advised the members to begin thinking about their **priorities and objectives for the funding**. Riegel volunteered to reach out to the members to solicit their recommendations. Activities eligible for funding must be focused on prioritized and targeted cost-effective actions with *measurable water quality results*. Funding is not limited to capital projects; anything in the Third Generation Plan’s Implementation Plan may be eligible as long as its end goal is the protection and improvement of water quality. Christopher indicated that activities such as raingarden workshops qualify for funding since their goal is a water quality benefit. Other ideas shared by the members:

1. Subwatershed Assessments (SWAs) may be funded. There would be no requirement to implement a project identified as an outcome of the SWA.
2. Consider activities/projects to reduce allocations of the various TMDLs.
3. Projects could be added to the CIP by Minor Plan Amendment for eligibility for WBIF funding if that is approved prior to submitting a work plan.
4. Education and outreach in the form of visits to groups to inform regarding best management practices.

Spector will put together a list of eligible projects/activities for consideration at the April Convene meeting.

X. Education and Public Outreach.

- A. The West Metro Water Alliance (WMWA) met on March 8, 2022.
- B. WMWA is considering creating a part-time employee position to conduct regular outreach including providing workshops and trainings for citizens, city staff and elected officials, and help public partners to meet federal, state, and local rules and MS4 requirements. This position will coordinate other outreach activities, promote cost-share grants, and maintain a higher level of communications between the member watersheds and cities. It is modeled after the very successful East Metro Water Resources Education Program (EMWREP) which began in 2006 with a single full-time employee and the goal of raising public awareness and inspiring behavior change to protect and improve water quality.
- C. The **next WMWA meeting** will be held via Zoom at 8:30 a.m., April 12, 2022.



XI. Communications.

- A. February Staff Report.**
- B. February Communications Log.*** No items required action.

XII. Other Business.

- A. Annual appointments of Minneapolis Commissioner and Alternate are still due.**
- B. The April meeting** will be held in-person at a location to be determined.

XIII. Adjournment. There being no further business before the Commissions, the joint meeting was adjourned at 2:19 p.m.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Judie A. Anderson". The signature is fluid and cursive.

Judie A. Anderson,
Recording Secretary
JAA:tim

Z:\Shingle Creek\Meetings\Meetings 2022\March 10 meeting minutes.docx

SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION**PROJECT REVIEW SC2022-02: NATHAN LANE BUSINESS CENTER**

Owner: Brian Schack
Company: Endeavor Development
Address: 200 Southdale Center #190
 Edina, MN 55435

Engineer: Chad Ayers
Company: Sambatek
Address: 12800 Whitewater Drive, Suite 300
 Minnetonka, MN 55343

Phone: 763-259-6697
Email: cayers@sambatek.com

Purpose: Redevelopment of property with a 90,000 square foot office/warehouse building and parking lot on approximately 6 acres.

Location: 5005 Nathan Lane N, Plymouth, MN 55442 (Figure 1).

- Exhibits:**
1. Project review application and project review fee of \$2,700, dated 2/21/22, received 2/24/22.
 2. Construction Documents (24 sheets, Utility Plan shown in Figure 2), by Sambatek, dated 3/16/22, received 4/6/22.
 3. Stormwater Management Plan, by Sambatek, dated 3/31/22, received 4/6/22.
 4. North and South Detention System Details (8 sheets), by Contech, dated 3/31/22, received 4/6/22.
 5. Kraken KF 8-14-72 and 8-12-72 (4 sheets), by BioClean, not dated, received 4/6/2022.
 6. Stormwater Best Management Practice Operation & Maintenance Plan, by Sambatek, dated 3/31/22, received 4/6/22.
 7. Declaration for Maintenance of Stormwater Facilities (not executed), not dated, received 4/6/22.

- Findings:**
1. The proposed project is to redevelop the site and construct a 90,000 square foot office/warehouse and associated parking lot. The site is 6.0 acres. Following development, the site will be 78 percent impervious with 4.7 acres of impervious surface, an increase of 2.0 acres.
 2. The complete project application was received on February 24, 2022. To comply with the 60-day review requirement, the Commission must approve or deny this project no later than the April 14, 2022 meeting. Sixty calendar-days expires on April 25, 2022.
 3. To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS

SC2022-02: NATHAN LANE BUSINESS CENTER

removal and 60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment.

Runoff from the site is proposed to be routed to two Kraken filtration systems. The two systems meet the Commission water quality treatment requirements.

4. Commission rules require that site runoff is limited to existing rates for the 2-, 10-, and 100-year storm events. Runoff from the site is directed to two underground detention systems. The applicant meets Commission rate control requirements.

Table 1. Runoff from site (cfs).

Drainage Area	2-year event		10-year event		100-year event	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Entire site	14	6.3	25	8.9	48	45

5. Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 4.7 acres, requiring infiltration of 17,061 cubic feet within 48 hours. Because of poor onsite soils, the applicant proposes to filter the required volume within 48 hours. The applicant meets Commission filtration requirements.
6. The erosion control plan includes a rock construction entrance, perimeter silt fence/biolog, and inlet protection. The erosion control plan meets Commission requirements.
7. The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements.
8. There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.
9. There is no FEMA-regulated floodplain on this site. The low floor elevations of the buildings are at least two feet higher than the Atlas 14 high-water elevation of the underground detention systems. The applicant meets Commission floodplain requirements.
10. The site is not located in a Drinking Water Management Area (DWSMA). The applicant meets Commission drinking water protection requirements.
11. A public hearing on the project has been conducted as part of the City of Plymouth Planning Commission and City Council review of this project, meeting Commission public notice requirements.
12. A draft Operations & Maintenance (O&M) agreement between the applicant and the City was provided.
13. A Project Review Fee of \$2,700 has been received.

Recommendation: Approve subject to the following conditions:

1. Amend the Stormwater Best Management Practice Operation & Maintenance Plan for the Kraken units to include:

SC2022-02: NATHAN LANE BUSINESS CENTER

- i. Evidence of a contract with a qualified vendor to conduct maintenance.
 - ii. Expected maintenance intervals based on annual runoff volume and sediment loading to each device with a maximum maintenance interval of one year.
 - iii. Expected filter media replacement interval.
 - iv. Cost estimate for maintenance and replacement of the filter media.
2. Include reference to specific north and south Kraken models on Sheet C6.01. "Bio Clean Kraken Filter-01" shall reference KF-8-14-72, and "Bio Clean Kraken Filter-02" shall reference KF-8-12-72.

Stantec
Engineers for the Commission

Ed Matthiesen, P.E.

Date

SC2022-02: NATHAN LANE BUSINESS CENTER

Figure 1. Site location.

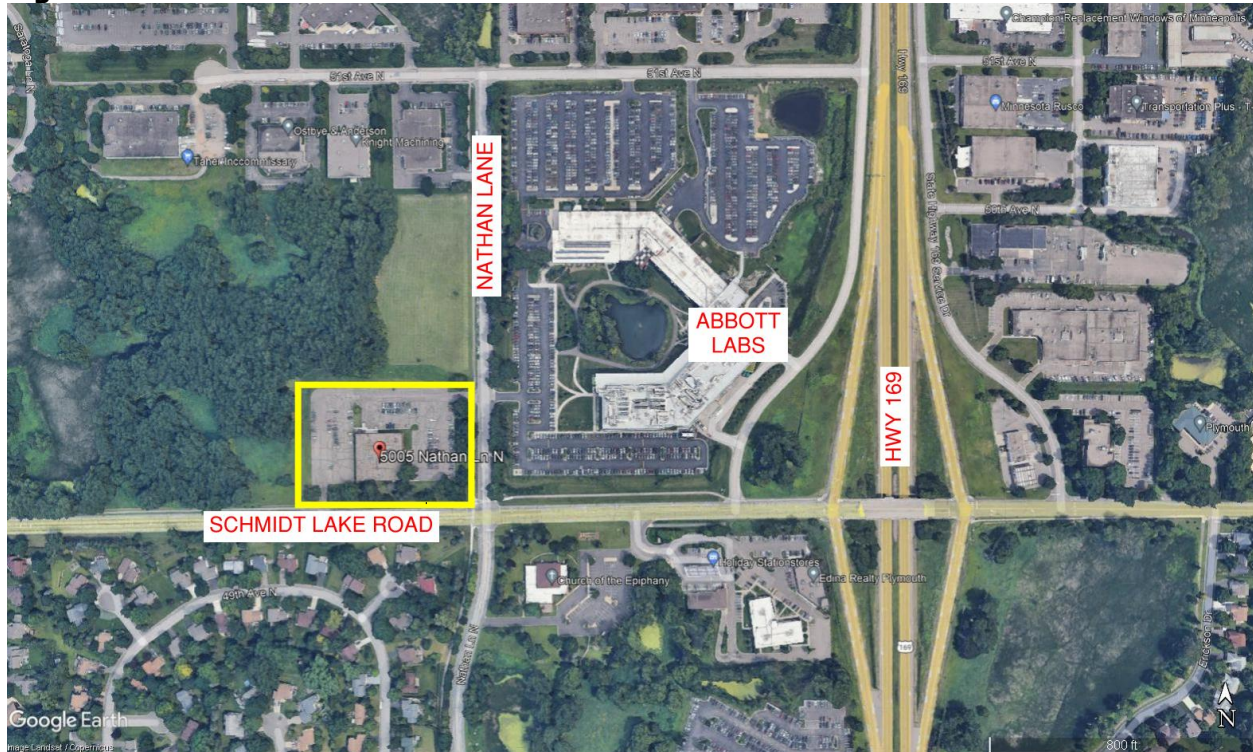
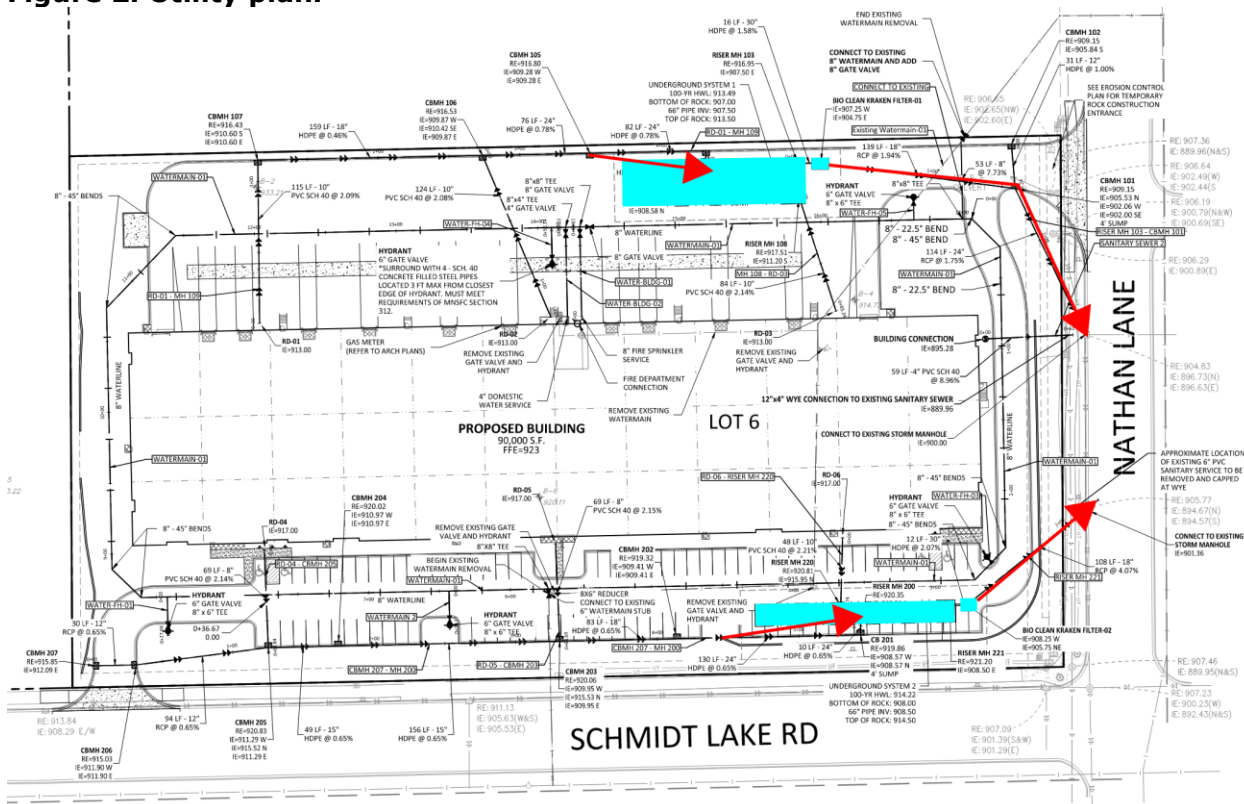


Figure 2. Utility plan.



WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION

PROJECT REVIEW WM2022-002: NorthPark Business Center Buildings 8-10 + Xylon Ext

Owner: Scannel Properties #488/489 LLC
Address: 8801 River Crossing Blvd, Suite 300
Indianapolis, IN

Engineer: Trisha Sieh
Company: Kimley Horn & Associates
Address: 767 Eustis Street, Suite 100
St. Paul, MN 55114
Phone: 612-643-0470

Fax:
Email: trisha.sieh@kimley-horn.com

Purpose: Construction of three office-warehouse buildings and new city street on approximately 50 acres.

Location: Northeast corner of Oxbow Creek Drive and Xylon Avenue in Brooklyn Park, MN (Figures 1a and 1b).

- Exhibits:**
1. Project review application and project review fee of \$2,500, dated 3/11/2022, received 3/14/2022.
 2. Site Development Plans (54 pages), by Kimley-Horn, dated 2/21/2022 and 3/9/2022, received 3/14/2022.
 3. Storm and Site Plans (sheets C520-C524, C400, C410-C415; Figure 2), by Kimley-Horn, dated 3/18/2022, received 4/1/2022.
 4. Proposed HydroCAD Model, by Kimley-Horn, dated 4/1/2022, received 4/1/2022.
 5. Xylon Avenue Roadway, Utility and Storm Sewer Construction Plans (96 pages), by Kimley-Horn, dated 4/1/2022, received 4/1/2022.
 6. Northpark Building VIII-X Drainage Memo (242 pages), by Kimley-Horn, dated 1/28/2022, received 3/14/2022.
 7. Overall Drainage Exhibit, by Kimley-Horn, dated 4/1/2022, recd. 4/1/2022.
 8. Geotechnical report, by AET, dated 11/16/2012, received 4/1/2022.

- Findings:**
1. The proposed project is the construction of three office-warehouse buildings and a new city street on approximately 34 acres. Following development, the site will be 76 percent impervious with 26 acres of impervious surface, an increase of 26 acres.
 2. The complete project application was received on 3/14/2022. To comply with the 60-day review requirement, the Commission must approve or deny this project no later than the 5/12/2022 meeting. Sixty calendar-days expires on 5/13/2022.
 2. To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead

WM 2022-02: Northpark Business Center Building Bldgs 8-10 + Xylon Ext

storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS removal and 60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

Runoff from the site is proposed to be routed to four wet ponds and one infiltration basin. The 200-acre Northpark Business Center is landlocked, so all runoff is infiltrated on-site, including back-to-back 100-year events.

- Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. The applicant proposes to manage all runoff on-site. The applicant meets Commission rate control requirements (Table 1).

Table 1. Runoff from site (cfs).

Drainage Area	2-year event		10-year event		100-year event	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Entire site	0	0	0	0	0	0

- Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 26 acres, requiring infiltration of 2.2 acre-feet within 48 hours. The applicant proposes to infiltrate all runoff onsite due to highly permeable soils that have the capacity to infiltrate more than the required volume within 48 hours. The applicant meets Commission volume control requirements.
- The erosion control plan includes rock construction entrances, sediment traps during construction, perimeter silt fence, inlet protection, rip rap at pond inlets, and native seed specified on the pond slopes. The erosion control plan meets Commission requirements.
- The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements.
- There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.
- There is no FEMA-regulated floodplain on this site. The applicant meets Commission floodplain requirements.
- In a telephone conversation on 5/29/14 between Erik Megow of Wenck Associates and Dan Bowar of EVS Engineering, Mr. Bowar had stated that there is no known groundwater contamination on the project site. The site is located in a Drinking Water Supply Management Area (DSWMA); however, it is outside the emergency response area.
- A public hearing on the project was conducted in October 2021 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

WM 2022-02: Northpark Business Center Building Bldgs 8-10 + Xylon Ext

11. An Operations & Maintenance (O&M) agreement between the applicant and the City of Brooklyn Park was submitted and executed for previously constructed stormwater ponds and basins. A new agreement maintenance plan has been submitted for Buildings 8-10.
12. A Project Review Fee of \$2,500 has been received.

Recommendation: Approve subject to the following conditions:

1. Create and submit a one- or two-dimensional unsteady runoff and hydraulic model (i.e., XP-SWMM, PC-SWMM, EPA-SWMM) for the Northpark Business Center. The current HydroCAD model routing methods do not accurately predict reverse flow conditions, which does not allow for accurate calculation of high water levels.

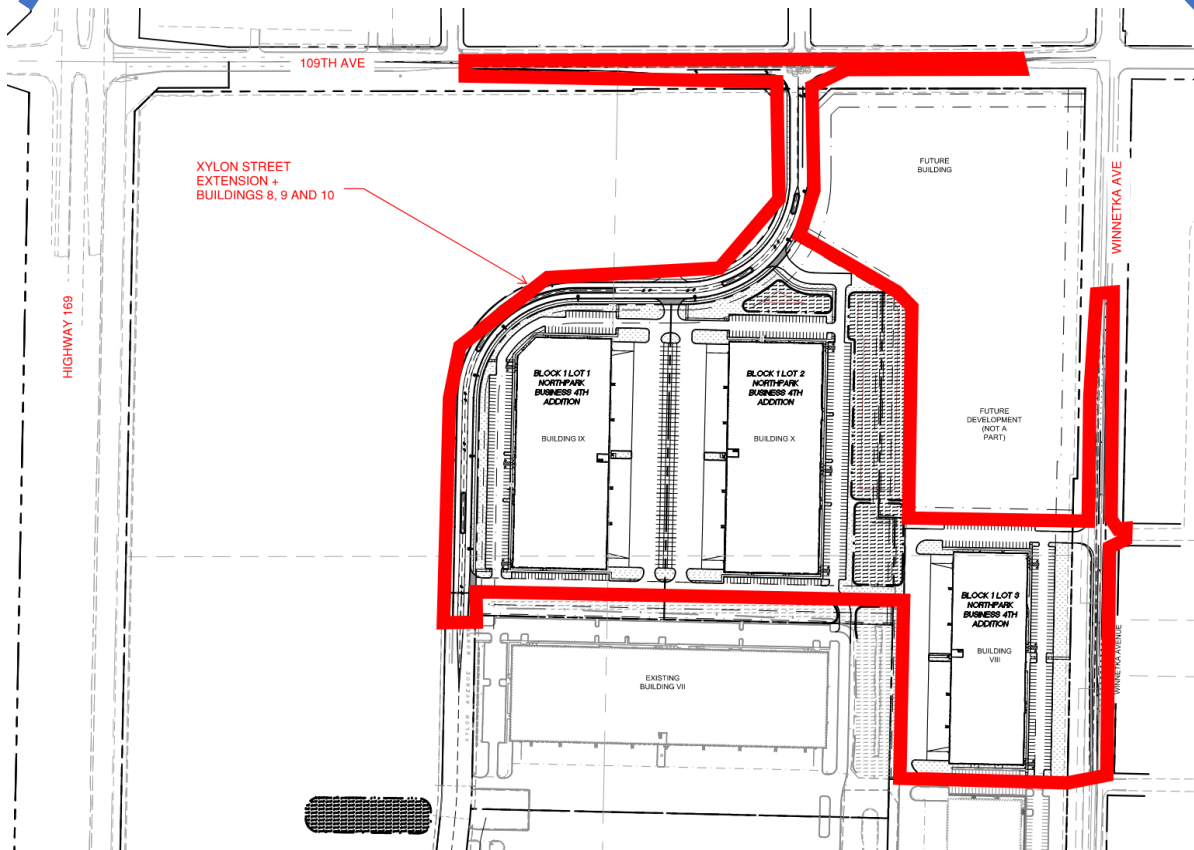
Wenck Associates, Inc.
Engineers for the Commission

Ed Matthiesen, P.E.

Date

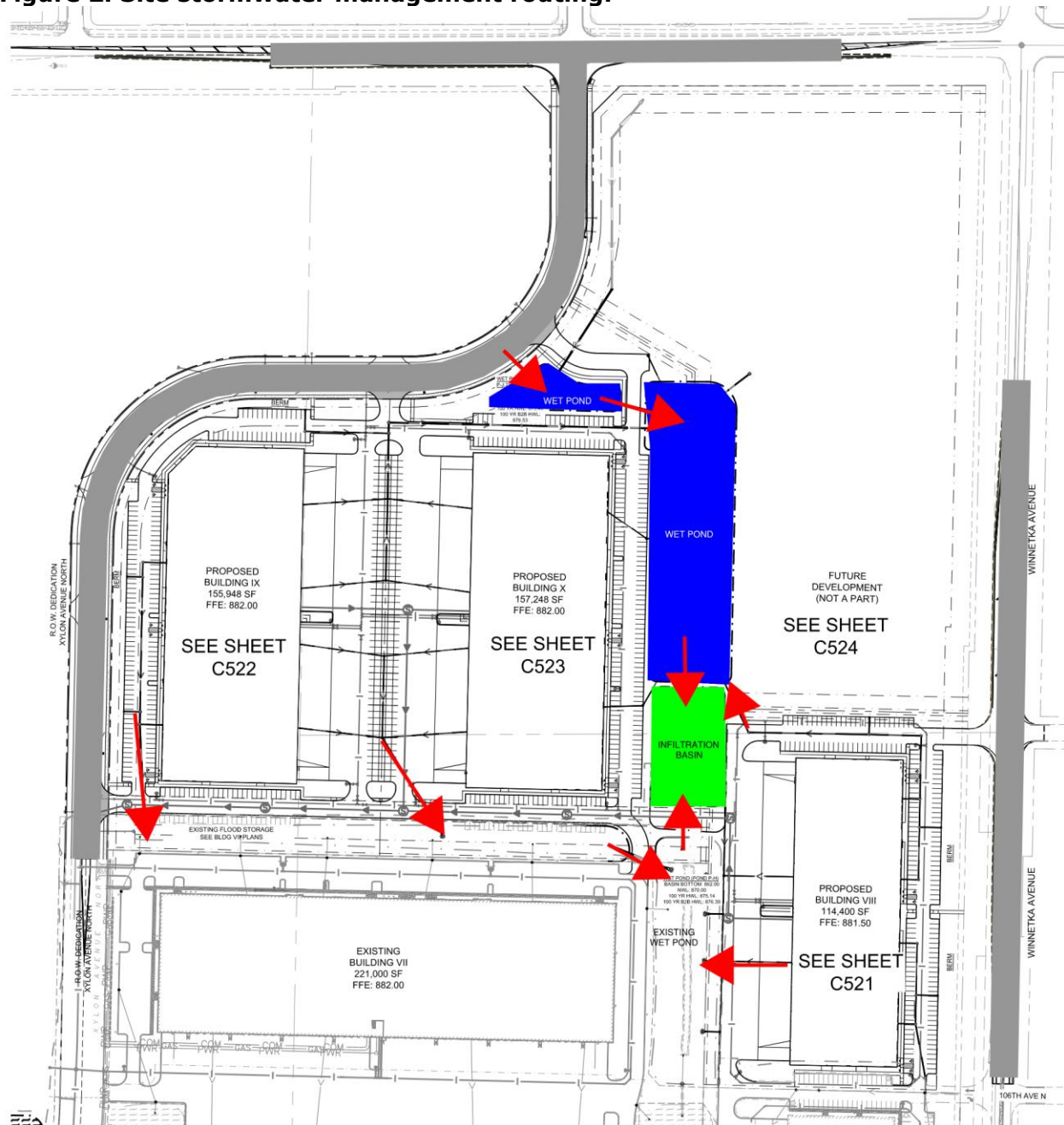
WM 2022-02: Northpark Business Center Building Bldgs 8-10 + Xylon Ext

Figures 1a and 1b. Site location.



WM 2022-02: Northpark Business Center Building Bldgs 8-10 + Xylon Ext

Figure 2. Site stormwater management routing.



To: Shingle Creek/West Mississippi WMO Commissioners

From: Todd Shoemaker, P.E.
Diane Spector

Date: April 8, 2022

Subject: Fourth Generation Plan Update

**Recommended
Commission Action**

For discussion and input.

Just a few items this month as we start to focus on the public input process.

1. *Equity in Watershed Management Workshop.* Reminder of this upcoming Workshop on Monday, April 25, 6-8 pm at the Crystal Community Center. Hennepin County Commissioner Irene Fernando will be the host of the evening. Several speakers will talk about strategies for enhanced inclusion and equity in our work as stewards of natural and water resources in the watersheds, and there will be an opportunity to break out into small groups to share thoughts and ideas.
2. *CAC Meetings.* Cities have started holding their first CAC meetings with citizen commissions. The initial meeting is focused on providing an overview of the WMOs and what they do and have achieved, to explore the issues that residents think are important, and get feedback about preferred methods of communication. The second meeting in a few months will review and get feedback on the specific strategies and actions that you will be focusing on over the next ten years.
3. *Other Public Input.* We will be developing and publishing a series of short online surveys over the next several weeks to obtain further input. Our plan is to disseminate the links to these surveys using city websites and social media, as well as social media and email lists that lake associations use to stay connected.
 - a. What are some things you'd particularly like to know?
 - b. Do you have some suggestions for obtaining additional feedback?



Watershed Management Commissions



Please Join Us!

Equity in Watershed Management Workshop

Monday, April 25, 2022

6:00 – 8:00 p.m.

Crystal Room @ Crystal Community Center
4800 Douglas Dr N, Crystal, MN 55429

For commissioners, staff, and TAC members with the Bassett Creek, Shingle Creek, and West Mississippi River Watershed Management Commissions

Join us for an evening of learning!

With special guest and workshop facilitation by
Hennepin County Commissioner Irene Fernando



Together, we'll develop a shared foundation of knowledge by learning how our work provides opportunities to address historically entrenched and often unintended inequities. Speakers from Metro Blooms, Hennepin County, Mississippi Watershed Management Organization, and others will help us answer questions like:

- What do terms like “diversity, equity, and inclusion” really mean?
- What is the history of environmental injustice in Hennepin County and where do we find environmental justice communities today?
- How are cities incorporating equity in their work and what role do they see for watershed organizations?
- How are other watershed organizations addressing inequities and making connections in underserved communities?
- What are the challenges, opportunities, and best practices for environmental healing in relationship with underserved communities?



We'll also have time as individual watershed organizations to discuss important highlights from what we learned.

To: Shingle Creek/West Mississippi WMC Commissioners

From: Diane Spector
Erik Megow, PE
Todd Shoemaker, PE

Date: April 8, 2022

Subject: 2022 Rules and Standards Minor Plan Amendment

**Recommended
TAC Action**

Staff recommends that each Commission authorize proceeding with the attached Minor Plan Amendment and set the date for the required public meeting as the May 12, 2022, regular meeting.

The Rules and Standards established in the Third Generation Watershed Management Plan are proposed for a Minor Plan Amendment (MPA). The Technical Advisory Committee (TAC) has previously discussed the proposed revisions at length over several meetings, and has recommended the attached revisions for your consideration.

The proposed Amendment would revise Appendix C of the Plan - the Rules and Standards - to 1) make the rules consistent with the most recent Minnesota General Stormwater Permit; and 2) make other various housekeeping revisions to the Rules. The Minor Plan Amendment only calls out those revisions that are substantive policy changes.

If you choose to go forward with the Minor Plan Amendment, we recommend each Commission **set May 12, 2022** as the public meeting at which it would be discussed. At that May 12 meeting, the Commissions would discuss and act on the proposed revisions. If approved, the revised Rules could go into effect June 1, 2022, or some other date if you prefer.

Attached is the proposed Notice of Minor Plan Amendment and the full text of the Rules as proposed to be revised. The Commissions must send a copy of the proposed minor plan amendment to the member cities, Hennepin County, the Met Council, and the state review agencies for review and comment, and must hold a public meeting (not a hearing) to explain the amendment. This meeting must be public noticed twice, at least seven and 14 days prior to the meeting.

Notice of Minor Plan Amendment **Shingle Creek and West Mississippi Watershed Management Commissions**

The Shingle Creek and West Mississippi Watershed Management Commissions propose to amend their joint *Third Generation Watershed Management Plan* to adopt revisions to Appendix C of that document – the development Rules and Standards – to conform the Rules to the most recent Minnesota General Stormwater Permit and the Minnesota Stormwater Manual and to make other housekeeping revisions.

The proposed minor plan revision is shown as additions (underlined) or deletions (~~strike-outs~~).

The Shingle Creek and West Mississippi WMC Third Generation Plan Appendix C Rules and Standards is hereby revised as follows:

1. Rule A is hereby revised as follows:

Fully Reconstructed Impervious. Areas where impervious surfaces have been removed down to the underlying soils. Activities such as structure renovation, mill and overlay projects, and other pavement rehabilitation projects that do not expose underlying soils beneath the structure, pavement, or activity are not considered fully reconstructed. Maintenance activities such as catch basin repair/replacement, utility repair/replacement, pipe repair/replacement, lighting, and pedestrian ramp improvements are not considered fully reconstructed.

Land Disturbing Activity. ~~Any change of the land surface to include removing vegetative cover, excavation, fill, grading, and the construction of any structure that may cause or contribute to erosion or the movement of sediment into waterbodies. The use of land for agricultural activities shall not constitute a land disturbing activity under these Rules.~~ Any activity on property that results in a change or alteration in the existing ground cover (both vegetative and non-vegetative) an/or the existing soil topography. Land disturbing activities include, but are not limited to: development, redevelopment, demolition, construction, reconstruction, clearing, grading, filling, stockpiling, excavation, and borrow pits. The use of land for agricultural activities shall not constitute a land disturbing activity under these Rules. Routine vegetation management, and pavement milling/overlay activities that do not disturb the material beneath the pavement base will not be considered land disturbance or fully reconstructed impervious surface.

Linear project. Linear projects are projects with construction of new or fully reconstructed roads, trails, sidewalks, or rail lines that are not part of a common plan of development or sale.

Low Opening. The low opening is the lowest elevation of an enclosed area, such as a basement, that allows surface water to into the enclosed area. Examples of low openings, include but are not limited to doors and windows. Foundation wall cracks, drainage seepage through drain tile, and sewer backup elevations are not low openings.

Redevelopment. ~~The rebuilding, repair, or alteration of a structure, land surface, or facility for which over 50% of the parcel involved is disturbed by a land disturbing activity.~~ Land-disturbing activity that creates or replaces impervious surface on a parcel that is fully or partially occupied by buildings and/or impervious surface with the exception of Linear Transportation Projects.

2. Rule B is hereby revised as follows:

8. PROJECT REVIEW APPROVAL RENEWALS AND TRANSFERS. Approval for a reviewed project is valid for one year from the date the applicant is advised in writing that the Commission has approved the project. To renew or transfer project review approval, the applicant must notify the Commission in writing, prior to the project approval expiration date, of the reason for the renewal or transfer request. The Commission may impose different or additional conditions on a renewal or deny the renewal in the event of a material change in circumstances.

3. Rule D.2.b is hereby revised as follows:

~~Linear projects that create one acre or more of new impervious surface must meet all Commission requirements for the net new impervious surface. Such projects will be reviewed by the commission or commissions in which the project is located.~~
For linear projects, the water quality volume must be calculated as the larger of one (1) inch times the new impervious surface or one-half (0.5) inch times the sum of the new and the fully reconstructed impervious surface. Where the entire water quality volume cannot be treated within the existing right-of-way, a reasonable attempt to obtain additional right-of-way, easement, or other permission to treat the stormwater during the project planning process must be made. Volume reduction practices must be considered first, as described in the General Stormwater Permit. Volume reduction practices are not required if the practices cannot be provided cost effectively. If additional right-of-way, easements, or other permission cannot be obtained, owners of construction activity must maximize the treatment of the water quality volume prior to discharge to downstream waterbodies.

- (1) For Linear projects that are able to meet the 1.0- or 0.5-inch water quality requirement, the applicant does not need to provide any further volume control or water quality analysis.
- (2) For Linear projects that are unable to meet the 1.0- or 0.5-inch water quality requirement, the applicant needs to provide the following:
 - (i) Show that a reasonable attempt was made to meet the water quality requirement by providing:
 - (a) A summary of additional easements that could be acquired, if space and right-of-way is limiting the feasibility of constructing BMPs.
 - (b) A detailed summary of alternatives that were considered.
 - (ii) Maximize the treatment of the water quality volume.
 - (a) At a minimum, the project needs to provide BMPs that provide rate control and limit TSS/TP Loads to existing conditions.

4. Rule D.3.g is deleted in its entirety.

5. Rule D.3.h is renumbered D.3.g and is hereby revised as follows:

g. Volume Control: Volume control BMPs must be incorporated into the site design to minimize the creation of new impervious surface and reduce existing impervious surfaces, minimize the amount of directly connected impervious surface, preserve the infiltration capacity of the soil, and limit increases in runoff volume exiting the site to the extent feasible considering site-specific conditions.

- (1) ~~Examples of BMPs that preserve pervious areas and reduce runoff volume can be found in "Protecting Water Quality in Urban Areas" (MPCA, 2000, as amended); the "Minnesota Urban Small Sites BMP Manual" (Metropolitan Council 2001, as amended); the "Minnesota Stormwater Manual" (MPCA, 2005, as amended) and other BMP guidance manuals.~~ Design and placement of volume control BMPs

shall be done in accordance with the Minnesota Stormwater Manual guidance and requirements.

- (2) Stormwater runoff volume abstraction via infiltration shall be provided onsite in the amount equivalent to ~~one~~ 1.1 inch times the impervious surface required to ~~be treated of runoff generated from impervious surface~~ in accordance with Tables 2.1 and 2.2. The required stormwater runoff volume shall be calculated as follows:

$$\text{Required Volume (ft}^3\text{)} = \text{Impervious surfaces (ft}^2\text{)} \times 1.1(\text{in}) \times 1/12 (\text{ft/in})$$

- (iii) If infiltration is prohibited or not feasible for the project, filtration BMPs can be used to meet the volume and water quality requirements.
- (a) If filtration of the water quality volume is deemed necessary through alternative compliance sequencing, the required stormwater runoff volume shall be multiplied by 1.82 (i.e. 55% filtration credit) and the filtration BMP shall provide this storage volume below the invert of the low overflow outlet of the BMP (perforated drain pipes for filtration will not be considered the low overflow outlet).
- (b) If iron-enhanced sand is used as a filtration media, the required stormwater runoff volume shall be multiplied by 1.25 (i.e. 80% filtration credit), and the filtration BMP shall provide this storage volume below the invert of the low overflow outlet of the BMP pipes for filtration will not be considered the low overflow outlet).
- (c) Iron-enhanced media shall include a minimum of 5% of iron filings by weight and shall be uniformly blended with filtration media.
- (d) Other enhanced filtration media, including mechanical treatment devices (MTDs), may be considered and credited per guidance within the Minnesota Stormwater Manual.

6. Rule D.3.h is hereby added as follows:

- (h) Water Quality Control: The water quality requirement is met, if the project meets the volume control requirement outlined in 3(g).
- (1) Where infiltration is not advisable or infeasible due to site conditions, biofiltration must be provided for that part of the abstraction volume that is not abstracted by other BMPs. Where biofiltration is infeasible, at a minimum filtration through a medium that incorporates organic material, iron filings, or other material to reduce soluble phosphorus must be provided.
- (2) There shall be no net increase in total phosphorus (TP) or total suspended solids (TSS) from pre-development land cover to post-development land cover. Pre-development land cover is defined as the predominant land cover over the previous 10 years.
- (i) Full abstraction of 1.1 inches of runoff from all impervious surface will satisfy (h).
- (ii) If it is not feasible to achieve the full 1.1 inch abstraction requirement, a combination of BMPs may be used to achieve the no-net-increase requirement using a water quality calculation methods as outlined in the Minnesota Stormwater Manual.
- (iii) If permanent sedimentation and water quality ponds are used they shall be designed to the standards set forth in the Minnesota Stormwater Manual.
- (iv) Runoff may be directed to a downstream facility within the same hydrologic subwatershed that has sufficient capacity to provide the required treatment. This means that no treatment may be required for an individual development

provided there is a regional facility designed and constructed to accommodate the flow from this property.

**Shingle Creek
And
West Mississippi**

Watershed Management Commissions

Rules and Standards

~~April 2013~~

Revisions Effective April 11, 2013

Amended July 11, 2013

Revised xxxxxxxx, 2022

**SHINGLE CREEK/WEST MISSISSIPPI
WATERSHED MANAGEMENT COMMISSIONS
RULES AND STANDARDS**

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POLICY STATEMENT

The Shingle Creek and West Mississippi Watershed Management Commissions are Joint Powers Associations of the State under the Minnesota Watershed Act, and watershed management organizations as defined in the Metropolitan Surface Water Management Act. These acts provide the Commissions with power to accomplish their statutory purpose: the conservation, protection, and management of water resources in the boundaries of the watersheds through sound scientific principles.

The Commissions have adopted a water resources management plan pursuant to the Acts. These Rules implement the plan's principles and objectives.

Land alteration and utilization can affect the rate and volume and degrade the quality of surface water runoff within the watersheds. Sedimentation from ongoing erosion and construction activities will reduce hydraulic capacity of waterbodies and degrade water quality. Water quality problems already exist in many waterbodies in the watershed. Several of the waterbodies have been designated by the State of Minnesota as Impaired Waters, and do not meet state water quality standards.

Activities that increase the rate or volume of stormwater runoff will aggravate existing flooding problems and contribute to new ones. Activities that degrade runoff quality will cause quality problems in receiving water. Activities that fill floodplain or wetland areas will reduce flood storage and hydraulic capacity of waterbodies, and will degrade water quality by eliminating the filtering capacity of such areas.

These Rules and Standards protect the public health, welfare, and natural resources of the watershed by regulating the improvement or alteration of land and waters in the watershed to 1) reduce the severity and frequency of high water, 2) preserve floodplain and wetland storage capacity, 3) improve the chemical and physical quality of surface waters, 4) reduce sedimentation, 5) preserve the hydraulic and navigational capacities of waterbodies, 6) promote and preserve natural infiltration areas, and 7) preserve natural shoreline features. In addition to protecting natural resources, these Rules and Standards are intended to minimize future public expenditures on problems caused by the improvement or land and water alterations.

RELATIONSHIP WITH MUNICIPALITIES AND COUNTY

The Commissions recognize that the control and determination of appropriate land use is the responsibility of the municipalities and the county. The Commissions will review projects involving land-disturbing activities as requested by the local municipalities. The Commissions intend to be active in the regulatory process to ensure that water resources are managed in accordance with its goals and policies. The Commissions will require a project review for developments and improvements in the watershed that meet the thresholds specified in the Rules.

The Commissions desire to provide technical advice to the municipalities in the preparation of local stormwater management plans and the review of projects that may affect water resources prior to investment of significant public or private funds.

RULE A - DEFINITIONS

For the purposes of these Rules, unless the context otherwise requires, the following words and terms shall have the meanings set forth below. References in these Rules to specific sections of the Minnesota Statutes or Rules include amendments, revisions or recodifications of such sections. The words “shall” and “must” are mandatory; the word “may” is permissive.

Abstraction. Removal of stormwater from runoff, by such methods as infiltration, evaporation, transpiration by vegetation, and capture and reuse, such as capturing runoff for use as irrigation water.

Agricultural Activity. The use of land for the production of agronomic, horticultural or silvicultural crops, including nursery stock, sod, fruits, vegetables, flowers, cover crops, grains, Christmas trees, and grazing.

Alteration or Alter. When used in connection with public waters or wetlands, any activity that will change or diminish the course, current, or cross-section of public waters or wetlands.

Applicant. Any person or political subdivision that submits an application to the Commissions for a project review under these Rules.

Best Management Practices (BMPs). Techniques proven to be effective in controlling runoff, erosion and sedimentation including those documented in the Minnesota Construction Site Erosion and Sediment Control Planning Handbook (BWSR 1988), Protecting Water Quality in Urban Areas (MPCA 2000), and the Minnesota Stormwater Manual (MPCA 2005) as revised.

Biofiltration. Using living material to capture and/or biologically degrade or process pollutants prior to discharging stormwater, such as directing runoff through a vegetated buffer or to a rain garden or vegetated basin with an underdrain.

Bioretention. A terrestrial-based (upland, as opposed to wetland) water quality and water quantity control process. Bioretention employs a simplistic, site-integrated design that provides opportunity for runoff infiltration, filtration, storage and water uptake by vegetation.

Buffer Strip. An area of natural, unmaintained, vegetated ground cover abutting or surrounding a watercourse or wetland.

BWSR. The Minnesota Board of Water and Soil Resources.

Commission. The Shingle Creek or West Mississippi Watershed Management Commission, as applicable.

Commissioners. The Board of Commissioners of the Shingle Creek or West Mississippi Watershed Management Commissions.

Compensatory Storage. Excavated volume of material below the floodplain elevation required to offset floodplain fill.

County. Hennepin County, Minnesota.

Dead Storage. The permanent pool volume of a water basin or the volume below the runout elevation of a water basin.

Detention Basin. Any natural or manmade depression for the temporary storage of runoff.

Development. The construction of any structure on or the subdivision of land.

Drain or Drainage. Any method for removing or diverting water from waterbodies, including excavation of an open ditch, installation of subsurface drainage tile, filling, diking, or pumping.

Erosion. The wearing away of the ground surface as a result of wind, flowing water, ice movement, or land disturbing activities.

Erosion and Sediment Control Plan. A plan of [best management practices \(BMPs\)](#) or equivalent measures designed to control runoff and erosion and to retain or control sediment on land during the period of land disturbing activities in accordance with the standards set forth in these Rules.

Excavation. The artificial removal of soil or other earth material.

Fill. The deposit of soil or other material by artificial means.

Filtration. A process by which stormwater runoff is captured, temporarily stored, and routed through a filter bed to improve water quality and slow down stormwater runoff.

Floodplain. The area adjacent to a waterbody that is inundated during a 100-year flood.

[Fully Reconstructed Impervious. Areas where impervious surfaces have been removed down to the underlying soils. Activities such as structure renovation, mill and overlay projects, and other pavement rehabilitation projects that do not expose underlying soils beneath the structure, pavement, or activity are not considered fully reconstructed. Maintenance activities such as catch basin repair/replacement, utility repair/replacement, pipe repair/replacement, lighting, and pedestrian ramp improvements are not considered fully reconstructed.](#)

~~**HCD.** The Hennepin Conservation District.~~

Impaired Water. A waterbody that does not meet state water quality standards and that has been included on the MPCA Section 303(d) list of Impaired Waters of the state.

Impervious Surface. A surface compacted or covered with material so as to be highly resistant to infiltration by runoff. Impervious surface shall include roads, driveways and parking areas, whether or not paved, sidewalks greater than 3 feet wide, patios, tennis and basketball courts, swimming pools, covered decks and other structures. Open decks with joints at least ¼ inch wide, areas beneath overhangs less than 2 feet wide, and sidewalks 3 feet or less wide shall not constitute impervious surfaces under these Rules.

Infiltration. The passage of water into the ground through the soil.

Infiltration Area. Natural or constructed depression located in permeable soils that capture, store and infiltrate the volume of stormwater runoff associated with a particular design event.

Interested Party. A person or political subdivision with an interest in the pending subject matter.

Land Disturbing Activity. ~~Any change of the land surface to include removing vegetative cover, excavation, fill, grading, and the construction of any structure that may cause or contribute to erosion or the movement of sediment into waterbodies. Any activity on property that results in a change or alteration in the existing ground cover (both vegetative and non-vegetative) an/or the existing soil topography. Land disturbing activities include, but are not limited to: development, redevelopment, demolition, construction, reconstruction, clearing, grading, filling, stockpiling, excavation, and borrow pits. The use of land for agricultural activities shall not constitute a land disturbing activity under these Rules. Routine vegetation management, and pavement milling/overlay activities that do not disturb the material beneath the pavement base will not be considered land disturbance or fully reconstructed impervious surface. The use of land for agricultural activities shall not constitute a land disturbing activity under these Rules.~~

Landlocked Basin. A basin that is 1 acre or more in size and does not have a natural outlet at or below the 100-year flood elevation as determined by the 100-year, 10-day runoff event.

Linear project. Linear projects are projects with construction of new or fully reconstructed roads, trails, sidewalks, or rail lines that are not part of a common plan of development or sale.

Low Floor. The finished surface of the lowest floor of a structure.

Member City. Any city wholly or partly within the Commission's boundary that has executed the Joint Powers Agreement.

MnDOT. The Minnesota Department of Transportation.

MPCA. The Minnesota Pollution Control Agency.

Municipality. Any city wholly or partly within the Commission's boundary.

NPDES. National Pollutant Discharge Elimination System.

NRCS. The Natural Resource Conservation Service.

NURP. The Nationwide Urban Runoff Program developed by the Environmental Protection Agency to study stormwater runoff from urban development.

Ordinary High Water Level (OHW). The elevation delineating the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape. The ordinary high-water level is commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. For watercourses, the OHW level is the elevation of the top of the bank of the channel. For reservoirs and flowages, the OHW level is the operating elevation for the normal summer pool. For Public Waters and Public Waters Wetlands, the Minnesota Department of Natural Resources (DNR) determines the OHW.~~The boundary of waterbodies and shall be an elevation delineating the highest water level which has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly that point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial. For watercourses, the OHW level is the elevation of the top of the bank of the channel. For reservoirs and flowages, the OHW level is the operating elevation of the normal summer pool.~~

Owner. The owner of a parcel of land or the purchaser under a contract for deed.

Parcel. A parcel of land designated by plat, metes, and bounds, registered land survey, auditor's subdivision, or other accepted means and separated from other parcels or portions by its designation.

Person. Any individual, trustee, partnership, unincorporated association, limited liability company or corporation.

Political Subdivision. A municipality, county or other political division, agency or subdivision of the state.

Project. A space, parcel, or parcels of real property owned by one or more than one person which is being or is capable of being developed or redeveloped as a single project.

Public Health and General Welfare. Defined in Minnesota Statutes, Section 103D.011, Subdivisions 23 and 24.

Public Waters. Any waters as defined in Minnesota Statutes, Section 103G.005, Subdivision 15.

Public Waters Wetland. Any wetland as defined in Minnesota Statutes, Section 103G.005, Subdivision 15a.

Redevelopment. Land-disturbing activity that creates or replaces impervious surface on a parcel that is fully or partially occupied by buildings and/or impervious surface with the exception of Linear Transportation Projects. The rebuilding, repair, or alteration of a structure, land surface, or facility for which over 50% of the parcel involved is disturbed by a land-disturbing activity.

Runoff. Rainfall, snowmelt or irrigation water flowing over the ground surface.

Sediment. Soil or other surficial material transported by surface water as a product of erosion.

Sedimentation. The process or action of depositing sediment.

Shoreland Protection Zone. Land located within a floodplain or within 1,000 feet of the OHW of a public water or public waters wetland.

Site. A space, parcel, or parcels of real property owned by one or more than one person which is being or is capable of being developed or redeveloped as a single project.

Standard. A required level of quantity, quality, or value.

Stormwater Management Plan. A plan for the permanent management and control of runoff prepared and implemented in accordance with the standards set forth in these Rules.

Structure. Anything manufactured, constructed or erected which is normally attached to or positioned on land, including portable structures, earthen structures, roads, water and storage systems, drainage facilities and parking lots.

Subdivision or Subdivide. The separation of a parcel of land into two or more parcels.

TMDL. The Total Maximum Daily Load is the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. "TMDL" can also refer to a study that calculates that load, or to the allocation of that allowable load to its various sources. An Implementation Plan may be part of the TMDL study or it may be a separate document that sets forth the steps that will be taken to achieve the TMDL.

Volume Management. The retention and abstraction of a certain volume of stormwater runoff onsite through techniques such as infiltration, evapotranspiration, and capture and reuse.

Water Basin. An enclosed natural depression with definable banks capable of containing water that may be partly filled with public waters.

Waterbody. All water basins, watercourses and wetlands as defined in these Rules.

Watercourse. Any natural or improved stream, river, creek, ditch, channel, culvert, drain, gully, swale, or wash in which waters flow continuously or intermittently in a definite direction.

Water Resources Management Plan. The watershed management plan for the Commission adopted and implemented in accordance with Minnesota Statutes, Section 103B.231.

Watershed. Region draining to a specific watercourse or water basin.

Wetland. Land transitional between terrestrial and aquatic systems as defined in Minnesota Statutes, Section 103G.005, Subdivision 19.

Wetland Conservation Act (WCA). Minnesota Wetland Conservation Act of 1991 as amended.

RULE B - PROCEDURAL REQUIREMENTS

1. **APPLICATION REQUIRED.** Any person, or political subdivision, undertaking an activity for which a project review is required by these Rules shall first submit to the applicable Commission a project review application, design data, plans, specifications, fees, and such other information and exhibits as may be required by these Rules. Project review applications shall be signed by the owner, or the owner's authorized agent, except for activities of a political subdivision which may be signed by either the owner or the general contractor. All project review applications must be authorized by the municipality where the proposed project is located.
2. **FORMS.** Project review applications shall be submitted on forms provided by the Commission. Forms are available at the Commission office or ~~Internet~~-Web site.
3. **ACTION BY COMMISSION.** The Commission shall act within 60 days after receipt of a complete application, including all required information, exhibits and fees. If a state or federal law or court order requires a process to occur before the Commission acts on an application, or if an application requires prior approval of a state or federal agency, the deadline for the Commission to act is extended to 60 days after completion of the required process or the required prior approval is granted. The Commission may extend the initial 60-day period by providing written notice of the extension to the applicant. The extension may not exceed 60 days unless approved by the applicant.
4. **SUBMITTAL.** A complete project review application with all required information and exhibits shall be filed with the Commission at least 14 calendar days prior to the scheduled meeting date of the Commission. Late or incomplete submittals will be scheduled to a subsequent meeting date.
5. **NOTIFICATION.** The Commission shall mail notice of the project review application to the owners of land located adjacent to the described activity, adjacent defined as located within the radius for which notice is required by the member city for review by its Planning Commission of site plan submittals, to a maximum of 300 feet (or 300 feet if the municipality does not require mailed notice of plan reviews), and to the member city or county with jurisdiction over the activity, at least 7 days prior to the scheduled meeting

date of the Commission at which the application will be considered. The names and addresses of the owners to be notified shall be obtained by the applicant from the Hennepin County Office of Taxpayer Services and furnished to the Commission on mailing labels or electronic file with the project review application. The project review application will not be processed until the list of owners has been submitted. Notice may be waived by the member city if such a notification has been made as a part of the Planning Commission review process. Neither the failure to give mailed notice to any owner nor any defect in the notice shall invalidate an action by the Commission on a project review application.

6. **CONDITIONS.** A project review may be approved subject to reasonable conditions to assure compliance with these Rules. The conditions may include a requirement that the applicant and owner enter into an agreement with the member city in a form acceptable to the Commission to a) specify responsibility for the construction and future maintenance of approved structures or facilities, b) document other continuing obligations of the applicant or owner, c) grant reasonable access to the proper authorities for inspection, monitoring and enforcement purposes, d) affirm that the Commission or other political subdivisions can require or perform necessary repairs or reconstruction of such structures or facilities, e) require indemnification of the Commission for claims arising from issuance of the approved project review or construction and use of the approved structures or facilities, and f) reimburse the reasonable costs incurred to enforce the agreement. Project reviews and agreements may be filed for record to provide notice of the conditions and continuing obligations.

7. **ISSUANCE OF PROJECT REVIEWS.** The Commission will issue a project review approval only after the applicant has satisfied all requirements of these Rules and paid all required fees.

- ~~7-8.~~ **PROJECT REVIEW APPROVAL RENEWALS AND TRANSFERS.** Approval for a reviewed project is valid for one year from the date the applicant is advised in writing that the Commission has approved the project. To renew or transfer project review approval, the applicant must notify the Commission in writing, prior to the project approval expiration date, of the reason for the renewal or transfer request. The Commission may impose different or additional conditions on a renewal or deny the renewal in the event of a material change in circumstances.

- ~~8-9.~~ **VALIDITY.** Issuance of a project review approval based on plans, specifications, or other data shall not prevent the Commission from thereafter requiring the correction of errors in the approved plans, specifications and data, or from preventing any activity being carried on thereunder in violation of these Rules.

- ~~9-10.~~ **MODIFICATIONS.** The applicant shall not modify the approved activity or plans and specifications on file with the Commission without the prior approval of the Commission.

- ~~10-11.~~ **INSPECTION AND MONITORING.** After issuance of a project review approval, the Commission may perform such field inspections and monitoring of the approved activity as

the Commission deems necessary to determine compliance with the conditions of the project review and these Rules. Any portion of the activity not in compliance shall be promptly corrected. In applying for a project review, the applicant consents to entry upon the land for field inspections and monitoring, or for performing any work necessary to bring the activity into compliance.

11.12. SUSPENSION OR REVOCATION. The Commission may suspend or revoke an approved project review issued under these Rules whenever the project review approval is issued in error or on the basis of incorrect information supplied, or in violation of any provision of these Rules, or if the preliminary and final project approvals received from the municipality or county are not consistent with the conditions of the approved project review.

12.13. REGULAR MEETINGS. Regular meetings of the Commission are held on the second Thursday of each month at 12:45 p.m., unless notice of a different date or time is given.

13.14. SEVERABILITY. If any provision of these Rules is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of these Rules shall not be affected thereby.

RULE C - GENERAL STANDARDS

1. POLICY. It is the policy of the Commission to protect the water resources of the watershed by requiring that all activities within the watershed comply with minimum standards for the protection of water quality and the environment.

2. REGULATION.

- (a) All land disturbing activities, whether requiring a project review under these Rules or otherwise, shall be undertaken in conformance with BMPs and in compliance with the standards and criteria in these Rules.
- (b) Project reviews are required of any land disturbing activity meeting the review thresholds set forth in Rule D Section 2.
- (c) In areas that drain to Impaired Waters, TMDL Implementation Plans may include site-specific requirements for any land-disturbing activities that are in addition to these rules and standards.
- (d) No person shall conduct land-disturbing activities without protecting adjacent property and waterbodies from erosion, sedimentation, flooding, or other damage.
- (e) Development shall be planned and conducted to minimize the extent of disturbed area, runoff velocities, and erosion potential, and to reduce and delay runoff volumes. Disturbed areas shall be stabilized and protected as soon as possible and facilities or methods used to retain sediment on-site.

- (f) When possible, existing natural watercourses and vegetated soil surfaces shall be used to convey, store, filter, and retain runoff before discharge into public waters or a stormwater conveyance system.
- (g) When possible, runoff from roof gutter systems shall discharge onto lawns or other pervious surfaces to promote infiltration.
- (h) Use of fertilizers, [deicers](#) and pesticides in the shoreland protection zone shall be so done as to minimize runoff into public waters by the use of earth material, vegetation, or both. No phosphorus fertilizer shall be used unless a soil nutrient analysis shows a need for phosphorus or in the establishment of new turf.
- (i) When development density, topographic features, and soil and vegetation conditions are not sufficient to adequately handle runoff using natural features and vegetation, various types of constructed facilities such as diversions, settling basins, skimming devices, dikes, waterways, and ponds may be used. The Commission encourages designs using surface drainage, vegetation and infiltration rather than buried pipes and man-made materials and facilities.
- (j) Whenever the Commission determines that any land disturbing activity has become a hazard to any person or endangers the property of another, adversely affects water quality or any waterbody, increases flooding, or otherwise violates these Rules, the Commission shall notify the member city where the problem occurs and the member city shall require the owner of the land upon which the land disturbing activity is located, or other person or agent in control of such land, to repair or eliminate such condition within the time period specified therein. The owner of the land upon which a land disturbing activity is located shall be responsible for the cleanup and any damages from sediment that has eroded from such land. The Commission may require the owner to submit a project review application under these Rules before undertaking any repairs or restoration.

RULE D - STORMWATER MANAGEMENT

1. **POLICY.** It is the policy of the Commission to control excessive rates and volumes of runoff, [and protect water quality and biotic integrity](#) by:
 - (a) Requiring that peak runoff rates not exceed existing conditions [where stormwater discharges across the downgradient site boundary and does not exceed](#) ~~or~~ the capacity of downstream conveyance facilities or contribute to flooding.
 - (b) Managing subwatershed discharge rates and flood storage volumes to be consistent with the goals of the Commission's water resources management plan and the local water resources management plans.

- (c) Controlling runoff rates by the use of regional or on-site detention or infiltration facilities where feasible.
- (d) Reviewing stormwater management structures based on the 100-year critical storm event for the drainage area.
- (e) Routing runoff to water treatment ponds or other acceptable facilities before discharging into waterbodies.
- (f) Promoting the use of natural resources for storing runoff and improving water quality and other amenities where appropriate.
- (g) Promoting natural infiltration of runoff.

2. REGULATION. No person or political subdivision shall commence a land disturbing activity or the development or redevelopment of land for the following types of projects without first submitting to and obtaining approval of a project review from the Commission or the city in which the project is located that incorporates a stormwater management plan for the activity, development or redevelopment:

- (a) Plans of any land development or site development as set forth in Tables 2.1 and 2.2 below:

Table 2.1 Project review site size and disturbance area thresholds for all land uses except detached single-family residential.

All Land Uses Except Detached Single-Family Residential			
Development Projects			
City Project Review (site size)		Commission Project Review (site size)	
0.5 acres to < 1 acre	≥ 1 acre to < 5 acres		≥5 acres
<i>Development projects</i>	<i>Development projects</i>		<i>Development projects</i>
Abstract 1.1" runoff from all impervious surface	Meet Commission rate, volume, and water quality, and volume requirements for the entire site		Meet Commission rate, volume, and water quality, and volume requirements for the entire site
Redevelopment Projects			
City Project Review (disturbance area)		Commission Project Review (disturbance area)	
0.5 acres to < 1 acre	≥ 1.0 acres to < 5 acre		≥5 acres
<i>Redevelopment projects</i>	<i>Redevelopment projects</i>		<i>Redevelopment projects</i>
Incorporate permanent water quality BMPs	<50% disturbed	Meet Commission rate, volume, and water quality, and volume requirements for the disturbed area	Meet Commission rate, volume, and water quality, and volume requirements for the entire site
	≥50% disturbed	Meet Commission rate, volume, and water quality quality, and volume requirements for the entire site	

Table 2.2 Project review site size and disturbance area thresholds for detached single-family residential developments.

Detached Single-Family Residential Land Uses	
Development Projects	
City Project Review <u>(site size)</u> ≥ 1 acre to < 15 acres	Commission Project Review <u>(site size)</u> ≥15 acres
<i>Development projects</i> Meet Commission rate, <u>volume, and water</u> quality, and volume requirements for the entire site	<i>Development</i> Meet Commission rate, <u>volume, and water</u> quality, and volume requirements for the entire site
Redevelopment Projects	
City Project Review <u>(disturbance size)</u> ≥ 1 acre to < 15 acres	Commission Project Review <u>(disturbance area)</u> ≥15 acres
<i>Redevelopment projects</i>	<i>Redevelopment projects</i>
<50% disturbed Meet Commission rate, <u>volume and water</u> quality, and volume requirements for the disturbed area	Meet Commission rate, <u>volume, and water</u> quality, and volume requirements for the entire site
≥50% disturbed Meet Commission rate, <u>volume and water</u> quality, and volume requirements for the entire site	

(b) For linear projects, the water quality volume must be calculated as the larger of one (1) inch times the new impervious surface or one-half (0.5) inch times the sum of the new and the fully reconstructed impervious surface. Where the entire water quality volume cannot be treated within the existing right-of-way, a reasonable attempt to obtain additional right-of-way, easement, or other permission to treat the stormwater during the project planning process must be made. Volume reduction practices must be considered first, as described in the General Stormwater Permit. Volume reduction practices are not required if the practices cannot be provided cost effectively. If additional right-of-way, easements, or other permission cannot be obtained, owners of construction activity must maximize the treatment of the water quality volume prior to discharge to downstream waterbodies. ~~Linear projects that create one acre or more of new impervious surface must meet all Commission requirements for the net new impervious surface. Such projects will be reviewed by the commission or commissions in which the project is located.~~

(1) For Linear projects that are able to meet the 1.0- or 0.5-inch water quality requirement, the applicant does not need to provide any further volume control or water quality analysis.

(2) For Linear projects that are *unable* to meet the 1.0- or 0.5-inch water quality requirement, the applicant needs to provide the following:

(i) Show that a reasonable attempt was made to meet the water quality requirement by providing:

(a) A summary of additional easements that could be acquired, if space and right-of-way is limiting the feasibility of constructing BMPs.

(b) A detailed summary of alternatives that were considered.

(ii) Maximize the treatment of the water quality volume

(a) At a minimum, the project needs to provide BMPs that provide rate control and limit TSS/TP Loads to existing conditions.

~~(b)(c)~~ Plans of any land development or individual site development adjacent to or within a lake, wetland, or a natural or altered watercourse as listed in the final inventory of Protected Waters and Wetlands for Hennepin County, as prepared by the DNR. Projects impacting wetlands where the Commission acts as LGU for Wetland Conservation Act administration must be reviewed by the respective Commission regardless of size.

~~(c)(d)~~ Plans for any land development or site development within the 100-year floodplain as defined by the Flood Insurance Study for the member city.

~~(d)(e)~~ Plans of any land development or site development regardless of size, if such review is requested by a member city.

~~(e)(f)~~ Single family developments of more than 15 acres that drain to more than one watershed, for that portion of the site draining into the Shingle Creek or West Mississippi Watershed.

3. **CRITERIA.** Stormwater management plans shall comply with the following criteria regarding runoff **rate control** restrictions, landlocked basin requirements, detention pond design criteria, ~~water quality~~**volume control** requirements, and ~~volume~~**water quality** control requirements:

(a) A hydrograph method based on sound hydrologic theory will be used to analyze runoff for the design or analysis of flows and water levels.

(b) **Rate Control:** Runoff rates for the proposed activity shall not exceed existing runoff rates for the 2-year, 10-year, and 100-year, 24-hour, and 100-year, 10-day critical storm events for the project location as set forth in NOAA Atlas 14 Volume 8, published June 2013, or its successor, using the online NOAA Precipitation Frequency Data Server or a similar data source using Atlas 14 precipitation depths and MSE-3 storm distributions. Applicant must document the location and event depths used. If an approved local water management plan requires more restrictive rate control, then the more restrictive rate shall govern. Runoff rates may be restricted to less than the existing rates when necessary for the public health and general welfare of the watershed.

Member cities and project review applicants shall not exceed discharge rates at City boundaries as determined in the Commission's hydrologic model.

- (c) Regional detention basins shall be utilized to manage peak flow rates and meet water quality objectives when feasible.
- (d) Analysis of flood levels, storage volumes and flow rates for waterbodies and detention basins shall be based on the range of rainfall and snow melt duration producing the critical flood levels and discharges.
- (e) Landlocked water basins may be provided with outlets that:
 - (1) Retain a hydrologic regime complying with floodplain and wetland alterations.
 - (2) Provide sufficient storage below the outlet run-out elevation to retain back-to-back 100-year, 24-hour rainfalls and runoff above the highest anticipated groundwater elevation and ~~prevent damage~~ provide 2 feet of freeboard for ~~to~~ properties adjacent to the basin.
 - (3) Do not create adverse downstream flooding or water quality conditions.
- (f) If detention basins are used to control rate of runoff they shall be designed to provide:
 - (1) An outlet structure to control the 2-year, 10-year, and 100-year critical storm events to predevelopment runoff rates. Said outlet structure will be required to control critical storm events to less than predevelopment runoff rates if downstream facilities have insufficient capacity to handle the increased flow.
 - (2) Alternative to (1), runoff may be directed to a downstream facility within the same hydrologic subwatershed that has sufficient capacity to provide the required rate control. This means that no rate control may be required for an individual development provided there is a regional facility designed and constructed to accommodate the flow from this property.
 - (3) An identified overflow spillway sufficiently stabilized to convey a 100-year critical storm event.
 - (4) A normal water elevation above the OHW of adjacent waterbodies.
 - (5) Access for future maintenance.
 - (6) An outlet skimmer to prevent migration of floatables and oils for at least the two year storm event. Baffled weirs and wooden skimmers are not allowed.
 - (7) The member city's ordinance prescribing a minimum low floor elevation above the pond's high water level shall govern.

~~(g) Stormwater must be treated prior to discharge to remove 60 percent of phosphorus and 85 percent of total suspended solids. Treatment may be provided by one or more permanent sedimentation and water quality ponds or a combination of BMPs that together will meet removal requirements.~~

~~(1) If permanent sedimentation and water quality ponds are used they shall be designed to the Wet Pond Design Standards set forth on Appendix A to these Rules and provide:~~

~~(i) Water quality features consistent with NURP criteria and best management practices.~~

~~(ii) A permanent wet pool with dead storage of at least the runoff from a 2.5-inch storm event.~~

~~(2) Alternative to (1), runoff may be directed to a downstream facility within the same hydrologic subwatershed that has sufficient capacity to provide the required treatment. This means that no treatment may be required for an individual development provided there is a regional facility designed and constructed to accommodate the flow from this property.~~

~~(3) Alternative to (1) or (2), applicant may meet both the treatment requirement and the volume requirement set forth in D.3 (h) below by infiltrating all site runoff from a 1.3 inch rain event using the same criteria set forth in D.3 (h).~~

~~(h)~~(g) **Volume Control:** Volume control BMPs must be incorporated into the site design to minimize the creation of new impervious surface and reduce existing impervious surfaces, minimize the amount of directly connected impervious surface, preserve the infiltration capacity of the soil, and limit increases in runoff volume exiting the site to the extent feasible considering site-specific conditions.

~~(1) Examples of BMPs that preserve pervious areas and reduce runoff volume can be found in "Protecting Water Quality in Urban Areas" (MPCA, 2000, as amended); the "Minnesota Urban Small Sites BMP Manual" (Metropolitan Council 2001, as amended); the "Minnesota Stormwater Manual" (MPCA, 2005, as amended) and other BMP guidance manuals. Design and placement of volume control BMPs shall be done in accordance with the Minnesota Stormwater Manual guidance and requirements.~~

(2) Stormwater runoff volume abstraction via infiltration shall be provided onsite in the amount equivalent to ~~one~~ 1.1 inch times the impervious surface required to be treated of runoff generated from impervious surface in accordance with Tables 2.1 and 2.2. The required stormwater runoff volume shall be calculated as follows:

Required Volume (ft³) = Impervious surfaces (ft²) x 1.1(in) x 1/12 (ft/in)

(i) If infiltration is prohibited or not feasible for the project, filtration BMPs can be used to meet the volume and water quality requirements.

(a) If filtration of the water quality volume is deemed necessary through alternative compliance sequencing, the required stormwater runoff volume shall be multiplied by 1.82 (i.e. 55% filtration credit) and the filtration BMP shall provide this storage volume below the invert of the low overflow outlet of the BMP (perforated drain pipes for filtration will not be considered the low overflow outlet).

(b) If iron-enhanced sand is used as a filtration media, the required stormwater runoff volume shall be multiplied by 1.25 (i.e. 80% filtration credit), and the filtration BMP shall provide this storage volume below the invert of the low overflow outlet of the BMP pipes for filtration will not be considered the low overflow outlet).

(c) Iron-enhanced media shall include a minimum of 5% of iron filings by weight and shall be uniformly blended with filtration media.

(d) Other enhanced filtration media, including mechanical treatment devices (MTDs), may be considered and credited per guidance within the Minnesota Stormwater Manual.

~~(i)~~(ii) When using infiltration for volume reductionFor volume control BMPs, runoff must be infiltrated or filtrated within 48 hours using accepted BMPs for infiltration, such as infiltration trenches, rainwater gardens, or infiltration basins. Infiltration volumes and facility sizes shall be calculated based on the measured infiltration rate determined by a double-ring infiltrometer test(s) conducted to the requirements of ASTM Standard D3385 at the proposed bottom elevation of the infiltration area. Other testing methods may be used with the approval of the Commission's Engineer. The measured infiltration rate shall be divided by the appropriate correction factor selected from the Minnesota Stormwater Manual. This site investigation must be conducted by a licensed soil scientist or engineer.

~~(ii)~~(iii) A post-construction percolation test must be performed on each infiltration practice and must demonstrate that the constructed infiltration rate meets or exceeds the design infiltration rate prior to project acceptance by the city.

(iii) Infiltration areas will be limited to the horizontal areas subject to prolonged wetting.

(iv) Areas of permanent pools tend to lose infiltration capacity over time and will not be accepted as an infiltration practice.

(v) Stormwater runoff must be pretreated to remove solids before discharging to volume control BMPs to maintain the long-term viability and effectiveness of the BMP. Additional information on sizing and approaches can be found within the Minnesota Stormwater Manual. infiltration areas to maintain the long-term viability of the infiltration areas. Examples of pretreatment BMPs can be found in "Protecting Water Quality in Urban Areas" (MPCA, 2000, as amended); the "Minnesota Urban Small Sites BMP Manual" (Metropolitan

~~Council 2001, as amended); the "Minnesota Stormwater Manual" (MPCA, 2005, as amended) and other BMP guidance manuals.~~

- (vi) Design and placement of infiltration BMPs shall be done in accordance with the Minnesota Stormwater Manual and latest guidance from the Minnesota Department of Health, guidance "Evaluating Proposed Stormwater Infiltration Projects in Vulnerable Wellhead Protection Areas," as amended.

- ~~(vii)~~ Constructed bioretention and infiltration practices such as rain gardens, infiltration trenches, and infiltration benches shall be designed in accordance with the Minnesota Stormwater Manual.~~not be used in:~~

- ~~(viii)~~ ~~Fueling and vehicle maintenance areas;~~

- ~~(ix)~~ ~~Areas with less than 3 feet separation from the bottom of the infiltration system to the elevation of seasonal high groundwater;~~

- ~~(x)~~ ~~Areas with runoff from industrial, commercial and institutional parking lots and roads and residential arterial roads with less than 5 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater;~~

- ~~(xi)~~ ~~Areas within 400 feet of a community water well, within 100 feet of a private well, or within a delineated 1-year time of travel zone in a wellhead protection area;~~

- ~~(xii)~~ (vii) Sites containing contaminated soils or groundwater.

- ~~(xiii)~~ (viii) Where infiltration is not advisable or infeasible due to site conditions, biofiltration must be provided for that part of the abstraction volume that is not abstracted by other BMPs. Where biofiltration is infeasible, at a minimum filtration through a medium that incorporates organic material, iron ~~fillings~~filings, or other material to reduce soluble phosphorus must be provided.

- ~~(xiv)~~ (ix) Alternative to (2), runoff may be directed to a downstream facility within the same hydrologic subwatershed that has sufficient capacity to provide the required volume management. This means that no volume management may be required for an individual development provided there is a regional facility designed and constructed to accommodate the volume from this property

- ~~(xv)~~ (x) Credit towards compliance with the abstraction requirement in (2) may be achieved by meeting post construction soil quality and amendment depth requirements. Areas that will be subjected to clearing, grading, or compaction that will not be covered by impervious surface, incorporated into a drainage facility, or engineered as structural fill or slope may be included in the credit calculation if they meet post construction soil quality and amendment depth requirements. The applicant may compute a credit of 0.5 inches over the soil amendment area and apply that toward the abstraction volume requirement.

- (a) A minimum 8-inch depth of compost amended soil or imported topsoil shall be placed in all areas of the project site being considered for the abstraction credit. Before the soil is placed, the subsoil must be scarified (loosened) at least 4 inches deep, with some incorporation of the amended soil into the existing subsoil to avoid stratified layers.
- (b) Soil amendment may be achieved by either mixing 2 inches of approved compost into the 8 inches of soil depth, or by mixing a custom-calculated amount of compost to achieve 8 inches of compacted soil depth with a minimum organic content of five percent.
- (c) The amended areas must pass a 12-inch probe test during the site final inspection. Once amended, soil areas must be protected from recompaction.

(h) Water Quality Control: The water quality requirement is met, if the project meets the volume control requirement outlines in 3(g).

(1) Where infiltration is not advisable or infeasible due to site conditions, biofiltration must be provided for that part of the abstraction volume that is not abstracted by other BMPs. Where biofiltration is infeasible, at a minimum filtration through a medium that incorporates organic material, iron fillings, or other material to reduce soluble phosphorus must be provided.

(2) There shall be no net increase in total phosphorus (TP) or total suspended solids (TSS) from pre-development land cover to post-development land cover. Pre-development land cover is defined as the predominant land cover over the previous 10 years.

(i) Full abstraction of 1.1 inches of runoff from all impervious surface will satisfy (h).

(ii) If it is not feasible to achieve the full 1.1 inch abstraction requirement, a combination of BMPs may be used to achieve the no-net-increase requirement using a water quality calculation method as outlined in the Minnesota Stormwater Manual.

(iii) If permanent sedimentation and water quality ponds are used they shall be designed to the standards set forth in the Minnesota Stormwater Manual.

(iv) Runoff may be directed to a downstream facility within the same hydrologic subwatershed that has sufficient capacity to provide the required treatment. This means that no treatment may be required for an individual development provided there is a regional facility designed and constructed to accommodate the flow from this property.

~~(h) Stormwater must be treated prior to discharge to remove 60 percent of phosphorus and 85 percent of total suspended solids. Treatment may be provided by one or more permanent sedimentation and water quality ponds or a combination of BMPs that together will meet removal requirements.~~

~~(i) If permanent sedimentation and water quality ponds are used they shall be designed to the Wet Pond Design Standards set forth on Appendix A to these Rules and provide:~~

- ~~(j) Water quality features consistent with NURP criteria and best management practices.~~
- ~~(k) A permanent wet pool with dead storage of at least the runoff from a 2.5-inch storm event.~~
- ~~(l) Alternative to (1), runoff may be directed to a downstream facility within the same hydrologic subwatershed that has sufficient capacity to provide the required treatment. This means that no treatment may be required for an individual development provided there is a regional facility designed and constructed to accommodate the flow from this property.~~
- ~~(m) Alternative to (1) or (2), applicant may meet both the treatment requirement and the volume requirement set forth in D.3 (h) below by infiltrating all site runoff from a 1.3-inch rain event using the same criteria set forth in D.3 (h).~~

4. WAIVERS.

- (a) The Commission may waive the on-site runoff rate, volume and water quality control design criteria as noted above, if a municipality has an off-site stormwater facility that provides equivalent control and treatment of runoff that conforms to Commission standards.
- (b) The design criteria for infiltration may be waived for sites with total impervious surface of less than one acre if infiltration BMPs have been incorporated to the maximum extent possible.

5. EXHIBITS. The following exhibits shall accompany the project review application ~~(one set full size, one set reduced to a maximum size of 11" x 17", and one electronic set in electronic .pdf format):~~

- (a) Property lines and delineation of lands under ownership of the applicant.
- (b) Delineation of the subwatershed contributing runoff from off-site, proposed and existing subwatersheds on-site, emergency overflows and watercourses.
- (c) Proposed and existing stormwater facilities location, alignment and elevation.
- (d) Delineation of existing on-site wetland, marsh, shoreland and floodplain areas.
- (e) For applications proposing infiltration or filtration as a stormwater management practice, identification, description, results of double-ring infiltrometer tests, and permeability and approximate delineation of site soils in both existing and proposed as-developed condition.
- (f) Existing and proposed ordinary high and 100-year water elevations on-site.
- (g) Existing and proposed site contour elevations at 2-foot intervals, referenced to NAGVD (1988~~29~~ datum).

- (h) Construction plans and specifications of all proposed stormwater management facilities, including design details for outlet controls.
- (i) Runoff volume and rate analysis for the 2-year, 10-year, and 100-year critical storm events, existing and proposed.
- (j) All hydrologic, water quality and hydraulic computations made in designing the proposed stormwater management facilities.
- (k) Narrative addressing incorporation of volume management BMPs.
- (l) Applications requesting an abstraction credit must include a Soil Management Plan (SMP) that shall include ~~an 11" x 17" or larger~~ site map indicating areas where soils will be amended, and calculations for soil volumes to be stockpiled and amounts and specifications of amendment or topsoil to be imported to achieve specified minimum organic matter content.
- (m) Delineation of any ponding, flowage or drainage easements, or other property interests, to be dedicated for stormwater management purposes.

6. **MAINTENANCE.** All stormwater management structures and facilities shall be maintained in perpetuity to assure that the structures and facilities function as originally designed. The owner of any water quality treatment device if not a governmental unit shall provide to the member city, in a form acceptable to the Commission, a recordable agreement detailing an operations and maintenance plan that assures that the structure(s) will be operated and maintained as designed.
7. **EASEMENTS.** The member city shall obtain from the applicant, in form acceptable to the Commission, recordable temporary and perpetual easements for ponding, flowage and drainage purposes over hydrologic features such as waterbodies and stormwater basins. The easements shall include the right of reasonable access for inspection, monitoring, maintenance and enforcement purposes.
8. **COVENANTS.** The Commission may require as a condition of project review approval that the member city shall require that the land be subjected to restrictive covenants or a conservation easement, in form acceptable to the Commission, to prevent the future expansion of impervious surface and the loss of infiltration capacity.

RULE E - EROSION AND SEDIMENT CONTROL

1. **POLICY.** It is the policy of the Commission to control runoff and erosion and to retain or control sediment on land during land disturbing activities by requiring the preparation and implementation of erosion and sediment control plans.
2. **REGULATION.** No person or political subdivision shall commence a land disturbing activity or the development or redevelopment of land for which a project review is required under Rule D without first submitting to and obtaining approval of a project review from the

Commission that incorporates an erosion and sediment control plan for the activity, development or redevelopment.

3. CRITERIA. Erosion and sediment control plans shall comply with the following criteria:

- (a) Erosion and sediment control measures shall be consistent with best management practices as demonstrated in the most current version of the MPCA manual "Protecting Water Quality in Urban Areas," and shall be sufficient to retain sediment on-site.
- (b) Erosion and sediment controls shall meet the standards for the General Permit Authorization to Discharge Storm Water Associated with Construction Activity Under the [current](#) National Pollutant Discharge Elimination System/State Disposal System Permit Program Permit ~~MN-R100001~~ (NPDES General Construction Permit) issued by the Minnesota Pollution Control Agency, except where more specific requirements are required.
- (c) All erosion and sediment controls shall be installed before commencing the land disturbing activity, and shall not be removed until completion.
- (d) The activity shall be phased when possible to minimize disturbed areas subject to erosion at any one time.

4. EXHIBITS. The following exhibits shall accompany the project review application ~~(one set full size, one set reduced to a maximum size of 11" x 17", and one electronic set in electronic .pdf format):~~

- (a) An existing and proposed topographic map showing contours on and adjacent to the land, property lines, all hydrologic features, the proposed land disturbing activities, and the locations of all runoff, erosion and sediment controls and soil stabilization measures.
- (b) Plans and specifications for all proposed runoff, erosion and sediment controls, and temporary and permanent soil stabilization measures.
- (c) Detailed schedules for implementation of the land disturbing activity, the erosion and sediment controls, and soil stabilization measures.
- (d) Detailed description of the methods to be employed for monitoring, maintaining and removing the erosion and sediment controls, and soil stabilization measures.
- (e) Soil borings if requested by the Commission.

5. MAINTENANCE. The project review applicant shall be responsible for proper operation and maintenance of all erosion and sediment controls and soil stabilization measures, in conformance with best management practices and the NPDES permit. The project review applicant shall, at a minimum, inspect and maintain all erosion and sediment controls and soil stabilization measures daily during construction, weekly thereafter, and ~~after every rainfall event exceeding 0.5 inches, until vegetative cover is established~~ [as required from the Minnesota Construction Permit.](#)

RULE F - FLOODPLAIN ALTERATION

1. **POLICY.** It is the policy of the Commission to prevent and control flooding damage by:
 - (a) Preserving existing water storage capacity below the 100-year critical flood elevation on all waterbodies in the watershed to minimize the frequency and severity of high water.
 - (b) Minimizing development in the floodplain that will unduly restrict flood flows or aggravate known high water problems.
 - (c) Requiring compensatory storage for floodplain fill.
2. **REGULATION.** No person or political subdivision shall alter or fill land below the 100-year critical flood elevation of any public waters, public waters wetland or other wetland without first obtaining an approved project review from the Commission.
3. **CRITERIA.**
 - (a) Floodplain alteration or filling shall not cause a net decrease in flood storage capacity below the projected 100-year critical flood elevation unless it is shown that the proposed alteration or filling, together with the alteration or filling of all other land on the affected reach of the waterbody to the same degree of encroachment as proposed by the applicant, will not cause high water or aggravate flooding on other land and will not unduly restrict flood flows.
 - (b) All new structures shall be constructed with the low floor at the elevation required in the municipality's ordinance.
4. **EXHIBITS.** The following exhibits shall accompany the project review` application ~~(one set full size, one set reduced to a maximum size of 11" x 17", and one electronic set in electronic .pdf format)~~:
 - (a) Site plan showing boundary lines, delineation and existing elevation contours of the work area, ordinary high water level, and 100-year critical flood elevation. All elevations shall be referenced to NAGVD (192889 datum).
 - (b) Grading plan showing any proposed elevation changes.
 - (c) Preliminary plat of any proposed subdivision.
 - (d) Determination by a registered professional engineer of the 100-year critical flood elevation before and after the proposed activity.
 - (e) Computation of the change in flood storage capacity as a result of the proposed alteration or fill.

(f) Erosion control and sediment plan which complies with these Rules.

(g) Soil boring logs and report if available.

5. **EXCEPTIONS.** If a municipality or county has adopted a floodplain ordinance that prescribes an allowable degree of floodplain encroachment, the applicable ordinance shall govern the allowable degree of encroachment and no project review will be required under this Floodplain Alteration Rule.

RULE G - WETLAND ALTERATION

1. **POLICY.** It is the policy of the Commission to preserve and protect wetlands for their water quality, stormwater storage, habitat, aesthetic, and other attributes by:

- (a) Achieving no net loss in the quantity, quality and biological diversity of wetlands in the watershed.
- (b) Increasing the quantity, quality and biological diversity of wetlands in the watershed by restoring or enhancing diminished or drained wetlands.
- (c) Avoiding direct or indirect impacts from activities that destroy or diminish the quantity, quality and biological diversity of watershed wetlands.
- (d) Replacing affected wetlands where avoidance is not feasible and prudent.

2. **REGULATION.** No person or political subdivision shall drain, fill, excavate or otherwise alter a wetland without first obtaining the approval of a wetland replacement plan from the local government unit with jurisdiction over the activity. Mitigation of wetland impacts will be considered in the following sequence: 1) mitigated by enhancing the impacted wetland; 2) mitigated within the subcatchment of the impacted wetland; 3) mitigated in the drainage area of the impacted wetland; 4) mitigated in the watershed of the impacted wetland; 5) mitigated through purchase of wetland bank credits.

3. **CRITERIA.**

- (a) Any drainage, filling, excavation or other alteration of a wetland shall be conducted in compliance with Minnesota Statutes, section 103G.245, the ~~wetland~~ Wetland ~~Conservation~~ Act, and regulations adopted thereunder.
- (b) A wetland may be used for stormwater storage and treatment only if the use will not adversely affect the function and public value of the wetland as determined by the local government unit.
- (c) Other activities which would change the character of a wetland shall not diminish the quantity, quality or biological diversity of the wetland.

4. **LOCAL GOVERNMENT UNIT.** The Commission intends to serve as the local government unit for administration of the Wetland Conservation Act for those cities that have designated the Commission to serve in that capacity, as noted in the Commission's annual report.

RULE H - BRIDGE AND CULVERT CROSSINGS

1. **POLICY.** It is the policy of the Commission to maintain channel profile stability and conveyance capacity by regulating crossings of watercourses for driveways, roads and utilities.
2. **REGULATION.** No person or political subdivision shall construct or improve a road or utility crossing across Shingle Creek or any watercourse with a tributary area in excess of 100 acres without first submitting to the Commission and receiving approval of a project review.
3. **CRITERIA.** Crossings shall:
 - (a) Retain adequate hydraulic capacity, which for any crossing over Shingle Creek shall be based on the hydraulic model for the creek.
 - (b) Not adversely affect water quality.
 - (c) Represent the "minimal impact" solution to a specific need with respect to all reasonable alternatives.
 - (d) Allow for future erosion, scour, and sedimentation maintenance considerations.
4. **EXHIBITS.** The following exhibits shall accompany the project review application ~~(one set full size, one set reduced to a maximum size of 11" x 17", and one electronic set in electronic .pdf format);~~
 - (a) Construction plans and specifications.
 - (b) Analysis prepared by a registered professional engineer showing the effect of the project on hydraulic capacity and water quality.
 - (c) An erosion and sediment control plan that complies with these Rules.
5. **MAINTENANCE.**
 - (a) The maintenance, reconstruction and stabilization of any public crossing shall be the responsibility of the political subdivision with jurisdiction over the crossing.
 - (b) The maintenance, reconstruction and stabilization of any private crossing shall be the responsibility of the owner of the crossing.
 - (c) If a crossing over the Shingle Creek is determined by the Commission to be causing significant erosion, the Commission may notify the member city where said crossing is

located and the member city may order the owner of the crossing to make necessary repairs or modifications to the crossing and outlet channel.

RULE I - BUFFER STRIPS

- 1. POLICY.** It is the policy of the Commission to maintain the water quality and ecological functions provided by watercourses and wetlands by requiring the development of vegetated buffers around watercourses and wetlands where development and redevelopment occurs, and to encourage the installation of vegetated buffers around all watercourses and wetlands. Vegetative buffers reduce the impact of surrounding development and land use on watercourse and wetland functions by stabilizing soil to prevent erosion, filtering sediment from runoff, and moderating water level fluctuations during storms. Buffers provide essential habitat for wildlife. Requiring buffers recognizes that watercourse and wetland quality and function are related to the surrounding upland.
- 2. REGULATION.** No person or political subdivision shall commence a land disturbing activity or the development or redevelopment of land for: any single family detached housing project 15 acres or larger in size; projects in any other land use such as commercial/industrial/institutional 5 acres or larger in size; or any land disturbing activity requested by a member city to be reviewed regardless of project size; on land that contains or is adjacent to a watercourse, [lake](#) or wetland without first submitting to and obtaining approval of a project review from the Commission that incorporates a vegetated buffer strip between the development or redevelopment and the watercourse or wetland.
- 3. GENERAL PROVISIONS.**
 - (a) This Rule shall apply to all lands containing or abutting watercourses or wetlands and lands within the buffer strips required by this Rule that are subject to a project review under these Rules. Watercourses and wetlands shall be subject to the requirements established herein, and other applicable federal, state and local ordinances and regulations. If a municipality has a buffer strip requirement that has been reviewed and approved by the Commission, the municipal regulation shall have precedence over the Commission's Rules.
 - (b) An applicant shall determine whether any watercourse or wetland exists on land or within the applicable buffer strip on adjacent land, and shall delineate the boundary for any wetland on the land. An applicant shall not be required to delineate wetlands on adjacent property, but must review available information to estimate the wetland boundary.
 - (c) Documentation identifying the presence of any watercourse or wetland on the applicant's land, including wetland delineation and buffer strip vegetation evaluation, must be provided to the Commission with a project review application.

(d) Wetland and buffer strip identifications and delineations shall be prepared in accordance with state and federal regulations.

4. CRITERIA. The following standards apply to all lands that contain or abut a watercourse or wetland:

(a) BMPs shall be followed to avoid erosion and sedimentation during land disturbing activities.

(b) When a buffer strip is required the applicant shall, as a condition to issuance of an approved project review:

(1) Submit to the member city, in a form acceptable to the Commission, a recordable conservation easement for protection of approved buffer strips. The easement shall describe the boundaries of the watercourse or wetland and buffer strips, identify the monuments and monument locations, and prohibit any of the alterations set forth in Paragraph 6(e) below and the removal of the buffer strip monuments within the buffer strip or the watercourse or wetland.

(2) Install the wetland monumentation required by Paragraph 8 below.

(c) All open areas within the buffer strip shall be seeded or planted in accordance with Paragraph 8 below. All seeding or planting shall be completed prior to removal of any erosion and sediment control measures. If construction is completed after the end of the growing season, erosion and sediment control measures shall be left in place and all disturbed areas shall be mulched for protection over the winter season.

5. BUFFER STRIPS.

(a) For any project review submitted after January 1, 2003, a buffer strip shall be maintained around the perimeter of all watercourses or wetlands. The buffer strip provisions of this Rule shall not apply to any parcel of record as of the date of this Rule until such parcel is developed or redeveloped. The Commission does, however, strongly encourage the installation of buffer strips on all parcels in the watershed.

(b) Buffer strips shall be a minimum of 20 feet wide with an average width of 30 feet, measured from the ordinary high water level of the watercourse or wetland.

(c) Buffer strips shall apply whether or not the watercourse or wetland is on the same parcel as a proposed development.

(d) Buffer strip vegetation shall be established and maintained in accordance with Paragraph 9 below. Buffer strips shall be identified within each parcel by permanent monumentation in accordance with Paragraph 8 below.

(e) Subject to Paragraph 5(f) below, alterations including building, storage, paving, mowing, plowing, introduction of noxious vegetation, cutting, dredging, filling, mining, dumping, grazing livestock, agricultural production, yard waste disposal or fertilizer

application, are prohibited within any buffer strip. Noxious vegetation may be removed as long as the buffer strip is maintained to the standards required by the Commission. Alterations would not include plantings that enhance the natural vegetation or selective clearing or pruning of trees or vegetation that are dead, diseased or pose similar hazards.

(f) The following activities shall be permitted within any buffer strip, and shall not constitute prohibited alterations under Paragraph 5(e) above:

- (1) Use and maintenance of an unimproved access strip through the buffer, not more than 20 feet in width, for recreational access to the watercourse or wetland and the exercise of riparian rights.
- (2) Placement, maintenance, repair or replacement of utility and drainage systems that exist on creation of the buffer strip or are required to comply with any subdivision approval or building permit obtained from the municipality or county, so long as any adverse impacts of utility or drainage systems on the function of the buffer strip have been avoided or minimized to the extent possible.
- (3) Construction, maintenance, repair, reconstruction, or replacement of existing and future public roads crossing the buffer strip, so long as any adverse impacts of the road on the function of the buffer strip have been avoided or minimized to the extent possible.

6. ALTERNATE BUFFER STRIPS.

(a) Because of unique physical characteristics of a specific parcel, narrower buffer strips may be necessary to allow a reasonable use of the parcel, based on an assessment of:

- (1) The size of the parcel.
- (2) Existing roads and utilities on the parcel.
- (3) The percentage of the parcel covered by watercourses or wetlands.
- (4) The configuration of the watercourses or wetlands on the parcel.
- (5) The quality of the affected watercourses and wetlands.
- (6) Any undue hardship that would arise from not allowing the alternative buffer strip.

(b) The use of alternative buffer strips will be evaluated as part of the review of a stormwater management plan under these Rules. Where alternative buffer strip standards are approved, the width of the buffer strips shall be established by the Commission based on a minimum width of 10 feet. Alternative buffer strips must be in keeping with the spirit and intent of this Rule.

7. MONUMENTATION. A monument shall be required at each parcel line where it crosses a buffer strip and shall have a maximum spacing of 200 feet along the edge of the buffer strip.

Additional monuments shall be placed as necessary to accurately define the edge of the buffer strip. A monument shall consist of a post and a buffer strip sign. The signs shall include warnings about disturbing or developing the buffer strip.

8. VEGETATION.

- (a) Where acceptable natural vegetation exists in buffer strip areas, the retention of such vegetation in an undisturbed state is required unless an applicant receives approval to replace such vegetation. A buffer strip has acceptable natural vegetation if it:
 - (1) Has a continuous, dense layer of perennial grasses that has been uncultivated or unbroken for at least 5 consecutive years; or
 - (2) Has an overstory of trees and/or shrubs that has been uncultivated or unbroken for at least 5 consecutive years; or
 - (3) Contains a mixture of the plant communities described in Subparagraphs 8(a)(1) and (2) above that has been uncultivated or unbroken for at least 5 years.
- (b) Notwithstanding the performance standards set forth in Paragraph 8(a), the Commission may determine existing buffer strip vegetation to be unacceptable if:
 - (1) It is composed of undesirable plant species including but not limited to common buckthorn, reed canary grass, or species on the Minnesota State Noxious Weeds List; or
 - (2) It has topography that tends to channelize the flow of runoff; or
 - (3) For some other reason it is unlikely to retain nutrients and sediment.
 - (4) Where buffer strips are not vegetated or have been cultivated or otherwise disturbed within 5 years of the project review application, such areas shall be replanted and maintained with native vegetation. The buffer strip plantings must be identified on the project review application. Acceptable buffer strip design and planting methods are detailed in the reference documents "Restoring and Managing Native Wetland and Upland Vegetation" (Jacobson 2006, prepared for BWSR and MnDOT).
- (c) Buffer strip vegetation shall be established and maintained in accordance with the requirements found in this Paragraph. During the first two full growing seasons, the owner must replant any buffer strip vegetation that does not survive. The owner shall be responsible for reseeding and/or replanting if the buffer strip changes at any time through human intervention or activities. At a minimum the buffer strip must be maintained as a "no mow" area.

9. ENCROACHMENT.

(a) Buffer strips must be kept free of all materials, equipment and structures, including fences and play equipment. Buffer strips must not be grazed, cropped, logged or mown except as approved by the Commission. The topography of the buffer strips shall not be altered by any means, including paving, plowing, cutting, dredging, filling, mining, or dumping.

(b) Variances.

(1) Only variances meeting the standards and criteria set forth in Rule K shall be granted.

(2) Variances shall not be granted that would circumvent the intent and purposes of this Rule.

RULE J - FEES

1. **POLICY.** The Commission finds that it is in the public interest to require applicants to pay the cost of administering and reviewing project review applications, and inspecting approved activities to assure compliance with these Rules, rather than using the Commission's annual administrative levy for such purposes. The Commission shall by resolution establish a schedule of fees that may be amended from time to time to reflect the cost of providing each service.
2. **APPLICATION.** Each application for the issuance, transfer or renewal of a project review recommendation under these Rules shall be accompanied by an application fee to defray the cost of processing the application.
3. **REVIEW.** A project review applicant under these Rules shall pay a fee for the cost of the review and analysis of the proposed activity, including services of engineering, legal, and other consultants. The review fee shall be payable upon the submission of the project review application.
4. **VARIANCE.** A project review applicant requesting a variance from these rules shall pay a deposit for the cost of analyzing the request, including services of engineering, legal, and other consultants. The variance deposit shall be payable upon the submission of the project review application. Should the cost of said variance review exceed the amount on deposit, the application shall deposit such additional sums as are needed to pay such costs. Failure to pay such costs is grounds to deny the application or suspend review. Funds not used shall be returned to the applicant.
5. **WETLAND MITIGATION PLAN.** A project review applicant under these rules shall pay a deposit for the cost of the review and analysis of a proposed activity involving a wetland mitigation plan in a municipality where the Commission is the LGU. The deposit is to cover the costs of engineering, legal, and other consultants. The wetland mitigation deposit shall

be payable upon the submission of the project review application. Should the cost of said wetland mitigation plan review exceed the amount on deposit, the application shall deposit such additional sums as are needed to pay such costs. Failure to pay such costs is grounds to deny the application or suspend review. Funds not used shall be returned to the applicant.

6. **WETLAND MITIGATION PLAN MONITORING.** A project review applicant under these rules in a municipality where the Commission is the LGU shall deposit an escrow to cover the cost of Commission monitoring and annual monitoring plan review for the five-year period. The applicant may apply to the Commission to provide the field monitoring services and to supply to the Commission the annual monitoring report. In the event the applicant does not do the field monitoring the Commission will undertake the data collection. If the escrow amount is insufficient to cover the costs the Commission may require additional funds from the applicant.
7. **WETLAND MITIGATION SECURITY DEPOSIT.** A project review applicant under these rules in a municipality where the Commission is the LGU shall provide a security to assure that the replacement plan is followed. The amount of the security shall be calculated on a case-by-case basis based on the estimated cost of construction, follow up and contingency. The security may also include an amount determined by the Commission to be sufficient to protect the public in the event the replacement plan does not succeed.
8. **DEPOSITS.** The Commission will maintain an accounting for all deposits made under this Rule. No interest will be paid to applicants for funds held in deposit.

RULE K - VARIANCES

1. **WHEN AUTHORIZED.** The Commission may grant variances from the literal provisions of these Rules. A variance shall only be granted when in harmony with the general purpose and intent of the Rules in cases where strict enforcement of the Rules will cause practical difficulties or particular hardship, and when the terms of the variance are consistent with the Commission's water resources management plan and Minnesota Statutes, chapter 103D.
2. **HARDSHIP.** "Hardship" as used in connection with the granting of a variance means the land in question cannot be put to a reasonable use if used under the conditions allowed by these Rules; the plight of the applicant is due to circumstances unique to the land and not created by the applicant; and the variance, if granted, will not adversely affect the essential character of the locality and other adjacent land. Economic considerations alone shall not constitute a hardship if a reasonable use for the land exists under the terms of these Rules.

Conditions may be imposed in the granting of a variance to insure compliance and to protect adjacent land and the public health and general welfare of the Commission.

3. **PROCEDURE.** An application for a variance shall describe the practical difficulty or particular hardship claimed as the basis for the variance. The application shall be accompanied with such surveys, plans, data and other information as may be required by the Commission to consider the application.
4. **VIOLATION.** A violation of any condition imposed in the granting of a variance shall be a violation of these Rules and shall automatically terminate the variance.

RULE L - ENFORCEMENT

1. **ADMINISTRATION.** These Rules shall be administered by the Commission. The Commission shall consider applications required under these Rules and determine whether such applications should be approved, approved with conditions, or denied. Such determination shall be communicated to the member city in which the project lies and to the applicant.
2. **IMPLEMENTATION BY MEMBER CITIES.** It shall be the duty of each city to enforce and implement such determinations by the Commission under the various permitting processes and regulations of the city. Each city shall make such amendments to its official controls, regulations, and permitting processes as are necessary to provide it with the authority to enforce and implement the determinations of the Commission.
3. **FAILURE BY CITY TO IMPLEMENT.** Upon a determination by the Commission that a city has not enforced or implemented a decision of the Commission in the administration of these Rules, the Commission shall notify the city of such determination and direct that appropriate action be taken by the city. If the city does not take such action, the Commission may take such legal steps as are available to it to effect such enforcement or implementation.

RULE M – AMENDMENT OF THESE RULES

1. **AMENDMENT.** These rules may be amended from time to time by the Commission. Proposed amendments shall be reviewed by the member cities prior to adoption unless the Commission determines that said amendment is of a minor or technical nature. Minor or technical amendments include recodifying or streamlining the rules, clarifying policies, or other actions that do not adversely affect a member city or impact the Commission's or member cities' ability to meet their water management plan goals.
2. **PROCEDURE.** Proposed major amendments to these rules shall be first considered by the Commission and then forwarded to the member cities for a 45-day comment period.

Following that comment period, the Commission shall consider the proposed amendment and the comments received for approval. All amendments shall be made by resolution.

~~SHINGLE CREEK/WEST MISSISSIPPI
WATERSHED MANAGEMENT COMMISSIONS~~

~~RULES
APPENDIX A
WET POND DESIGN STANDARDS~~

Permanent Pool Depth	4 to 10 feet
Permanent Pond Surface Area	Greater of 2% of watershed's impervious area and 1% of the watershed
Permanent Pool Length to Width Ratio	3:1 or greater with an irregularly shaped shoreline
Side Slopes	10:1 for 10 foot bench centered on the normal water elevation and between 3:1 and 20:1 elsewhere
Side Slope Stabilization	Native seed with mix 33-261 (MnDOT 310), 34-271 (BWSR W2) or equivalent between NWL and HWL, provide 10' buffer where possible with mix 35-221 (MnDOT 330 (dry)) or mix 35-241 (MnDOT 350 (mesic))
Floatable Removal	Skimming device discharging at no greater than 0.5 fps during the 1-year event or a submerged outlet with a minimum 0.5 feet from the normal water level to the crown of the outlet pipe
Sediment Accumulation Area	Provide maintenance pads to remove sediment deltas at inlets
Permanent Pool Volume	A 4-foot mean depth and equal to 2.5-inch rain over the watershed
Source	Protecting Water Quality in Urban Areas (MPCA 2000)

April 2013

Shingle Creek/West Mississippi Watershed Management Commissions

Management Rules and Standards*

	Standard	Purpose	Applicability
Project Reviews Required	A Stormwater Management Plan consistent with all applicable management rules and standards* must be reviewed and approved prior to commencement of land disturbing activities. Generally, the Commission reviews single family projects larger than 15 acres and all other land uses larger than 5 acres; linear projects; and projects with wetland impacts where the Commission is LGU for WCA. Cities generally review all other projects.	To control excessive rates and volumes of runoff; manage subwatershed discharge rates and flood storage volumes; improve water quality; protect water resources; and promote natural infiltration of runoff.	All development or redevelopment projects of the following types: <ul style="list-style-type: none"> Single family detached housing project 1 acre or larger in size Projects in any other land use 0.5 acres or larger in size Projects within the 100-year floodplain Projects adjacent to or within a lake, wetland, or watercourse Any land disturbing activity requested by a member city to be reviewed regardless of project size Linear projects creating more than one acre of new impervious surface
Rate Control	Peak runoff rates may not exceed existing rates for the 2-year, 10-year, and 100-year critical storm event; or the capacity of downstream conveyance facilities; or contribute to flooding	To control excessive rates and volumes of runoff; manage subwatershed discharge rates and flood storage volumes	All projects on more than one acre requiring a project review. Redevelopment projects disturbing less than 50 percent of the site must meet the requirement only for the disturbed area.
Volume Management	One inch of impervious surface runoff must be abstracted on site for at least 48 hours	To control excessive rates and volumes of runoff; manage subwatershed discharge rates and flood storage volumes; and promote natural infiltration of runoff.	All projects on more than one acre requiring a project review. Redevelopment projects disturbing less than 50 percent of the site must meet the requirement only for the disturbed area.
Erosion and Sediment Control	Erosion control plan using Best Management Practices (BMPs) and consistent with the NPDES General Construction Permit is required	To control erosion and sediment so as to protect conveyance systems and water quality	All projects requiring a project review
Floodplain Alteration	Compensating storage is required to mitigate floodplain fill	To prevent and control flooding damage	All development or redevelopment projects within the 100-year floodplain regardless of project size
Water Quality	Removal of 60% of TP and 85% of TSS, using either permanent sedimentation and water quality ponds consistent with NURP design standards, providing a permanent wet pool with dead storage of at least the runoff from a 2.5 inch event, or a combination of BMPs providing those removals	To protect water quality	All projects on more than one acre requiring a project review. Redevelopment projects disturbing less than 50 percent of the site must meet the requirement only for the disturbed area.
Buffer Strips	Vegetated buffer strips of a minimum 20 foot, average 30 foot width are required adjacent to wetlands and watercourses	To protect water quality; reduce erosion and sedimentation; reduce pollutants from runoff and debris; and provide habitat	All projects requiring a project review that contain or abut a wetland or watercourse
Wetland	Wetlands may not be drained, filled, excavated, or otherwise altered without an approved wetland replacement plan from the local government unit (LGU) with jurisdiction	To preserve and protect wetlands for their water quality, stormwater storage, habitat, aesthetic, and other attributes	All land disturbing activity impacting a wetland as defined by the Wetland Conservation Act (WCA)

*Important Note: Approved TMDL Implementation Plans may have additional site-specific requirements.

Commented [ME1]: Update per acceptance of proposed language changes

April 2013

The Shingle Creek and West Mississippi Commissions approved two regional treatment systems that are incorporated into these Rules and Standards.

SC2010-04 Gravel Mining Area (GMA) Arbor Lakes Infiltration Credit: Maple Grove

The Gravel Mining Area (GMA) at Arbor Lakes in Maple Grove is developing in accordance with a Stormwater Master Plan reviewed and approved by the Shingle Creek Commission. This Master Plan was developed in accordance with the Commission's runoff rate and water quality rules and standards, but before an infiltration requirement was added. There is a large area of the GMA yet to be developed where regional ponds have already been built according to the pre-infiltration requirement. In 2010 the Commission reviewed and approved a plan by the City of Maple Grove to obtain infiltration credits for this new development by constructing biofiltration basins adjacent to four existing regional stormwater ponds. Stormwater from areas that developed prior to the infiltration rule is directed to these new basins. The Commission agreed that these new infiltration basins are adequate to provide regional infiltration for the 553 acres of undeveloped area shown on the attached infiltration credit map. New development in that area will not be required to meet the infiltration standard on site.

WM2007-02 Brooklyn Center Regional Treatment

In 2007 the City of Brooklyn Center constructed a regional treatment system for a large part of the area that is drained by the 65th Avenue trunk storm sewer that outlets to the Mississippi River. This drainage area has little or no treatment. The area is expected to redevelop in the future, and the regional underground treatment system was proposed to provide regional TSS treatment. The treatment device was sized to provide treatment for the equivalent of the runoff from 360 acres. The West Mississippi Commission agreed that future development within that area would not need to provide on-site TSS treatment, and that the TP requirement could be met by infiltrating 0.75 inches of runoff from impervious area. Within the ten year time-of-travel area infiltration is not required, but filtration of the equivalent volume is required if allowed by the Wellhead Protection Plan. Projects will still need to meet rate control, erosion control, and other Commission requirements.

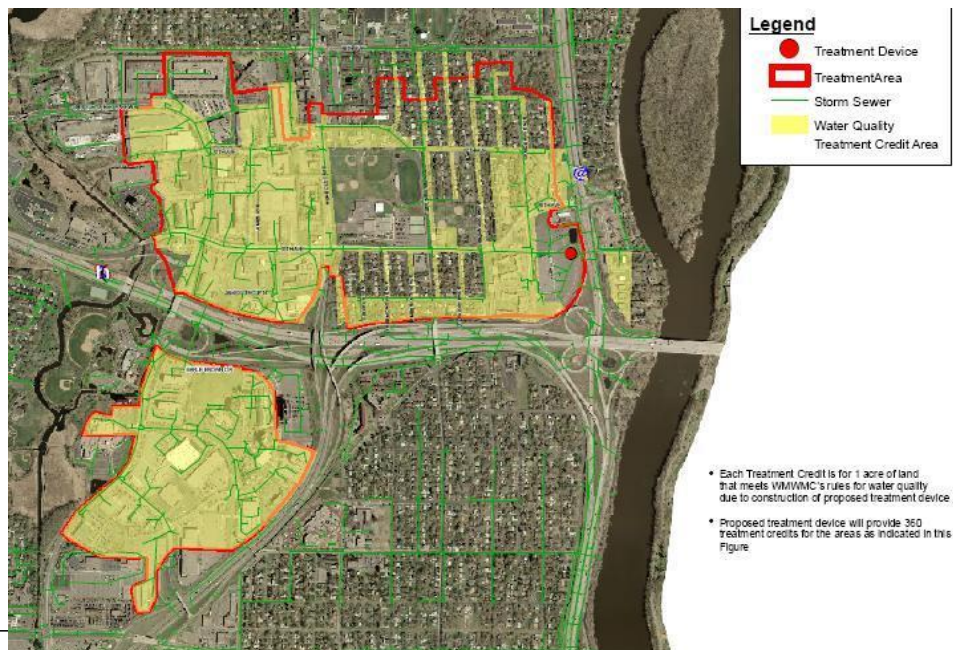
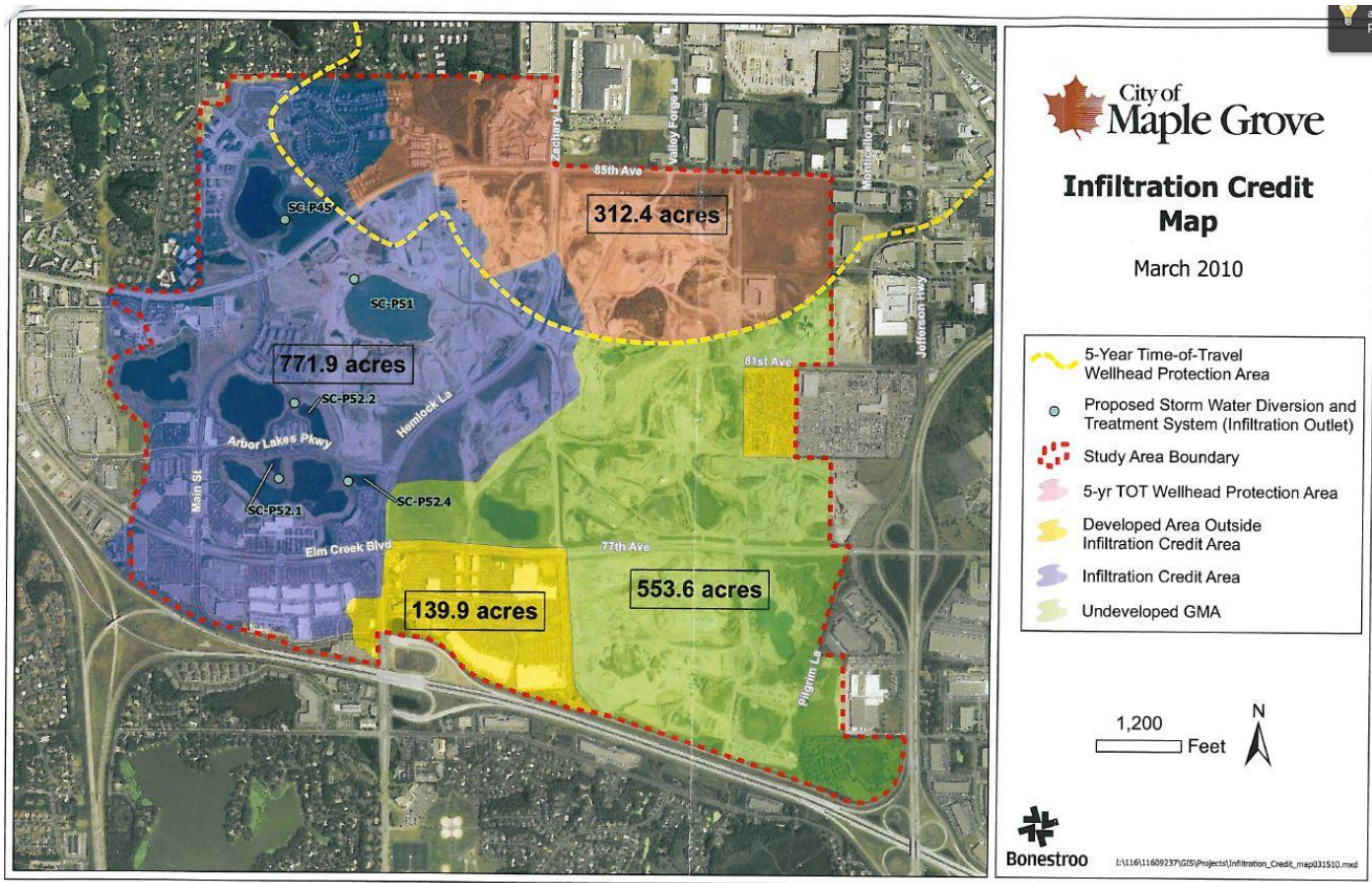


Figure 2. Brooklyn Center Regional Treatment area.



To: Shingle Creek/West Mississippi WMO Commissioners

From: Todd Shoemaker, P.E. Katie Kemmitt
Ed Matthiesen, P.E. Ali Stone
Diane Spector Nick Omodt

Date: April 8, 2022

Subject: 2021 Annual Water Quality Report

**Recommended
Commission
Action**

For review and information.

Attached is the 2021 Annual Water Quality report. Ali Stone will attend the April 14, 2022 meeting to present the findings. The full report and technical appendices are available at shinglecreek.org/water-quality.html.

2021 was another dry year (as was 2020), with 26.0 inches of precipitation for the year compared to the historic (1992-2020) average of 33.5 inches. Storm events in August pushed that month well above average precipitation, but it could not make up for the other dry months. The dry year contributed to low volume of runoff and a reduction in pollutant load to Shingle and West Mississippi streams. Typically, total phosphorus (TP) and total suspended solids (TSS) values are below state standards except during storm events, when wash-off from the watershed increases those concentrations above the standards. Winter chloride concentrations remain high in Shingle Creek.

Lake conditions (water quality, plankton, vegetation) were monitored in five lakes in the watershed. Cedar Island Lake and Lake Success were sampled as part of the ongoing lake monitoring program. Bass and Pomerleau Lakes were sampled as part of the final year of the grant-funded lake management projects. Both showed continued good water quality following alum treatments in 2019 and 2020. Results from Crystal Lake showed poor water quality, little submerged vegetation, and signs of a potential harmful algae bloom in late summer. This monitoring will serve as the baseline conditions and will be repeated in 2022 and 2023, following the late 2021 alum treatment and the expected fall 2022 alum treatment.

The Water Quality Report provides summary information for each of the water resources within the three management units of Shingle Creek and for West Mississippi as a whole. More detailed information as well as historical and trend data is presented in the appendices.

2021 ANNUAL WATER QUALITY REPORT

APRIL 2022



The Monitoring Program

The Shingle Creek and West Mississippi Watershed Management Commissions annually monitor water quality in the lakes, streams and outfalls of the watersheds. Data has been collected from Shingle Creek since 1996 and at West Mississippi River outfalls since 2010. In 2012 Shingle Creek expanded its volunteer-based lake monitoring program to start systematic detailed lake monitoring. The program has also expanded to incorporate fish, macroinvertebrate, and aquatic vegetation monitoring in the lakes and streams. Student and adult volunteers collect additional lake water quality and stream and wetland macroinvertebrate data. A Water Quality report summarizing current and historic conditions in the watersheds has been published annually since 1998.



Staff conducts fish survey on Shingle Creek, Brooklyn Center MN.

Surface water quality in the watersheds is typical of urban lakes and streams in the Twin Cities metropolitan area. Agriculture followed by urban development have changed drainage patterns, increased pollutants to the waters, and reduced habitat for aquatic and terrestrial life. Both Shingle Creek and Bass Creek do not meet state water quality standards for chloride, bacteria, and dissolved oxygen, and have severely impacted fish and macroinvertebrate communities. Thirteen of the 16 lakes were listed as Impaired Waters of the State because of their high concentrations of phosphorus. Diagnostic and feasibility studies completed between 2007 and 2011 have identified actions that can be taken in the watersheds to help improve water quality.

In the more than ten years since the results have been heartening. Three of the impaired lakes **now meet state standards** and have been removed from the list of Impaired Waters and two others now meet the standards and will be assessed for removal. Long-term stream water quality monitoring shows a **clear improvement** in suspended sediment and nutrient concentrations in both Shingle Creek and Bass Creek, a result of ongoing efforts to stabilize streambanks, increase the frequency of street sweeping, enhance erosion control on construction sites, and install Best Management Practices to treat stormwater before it is discharged into the streams. However, chloride concentrations in the streams, mostly from road salt applied in the winter for snow and ice control, continue to be high.

Why Do We Monitor?

- ▶ To quantify the **current status** of streams and lakes throughout the watershed and compare to water quality standards.
- ▶ To quantify **changes over time**, or trends, in stream and lake water quality
- ▶ To **identify problem areas** for potential BMPs
- ▶ To quantify the **effectiveness** of implemented BMPs throughout the watershed

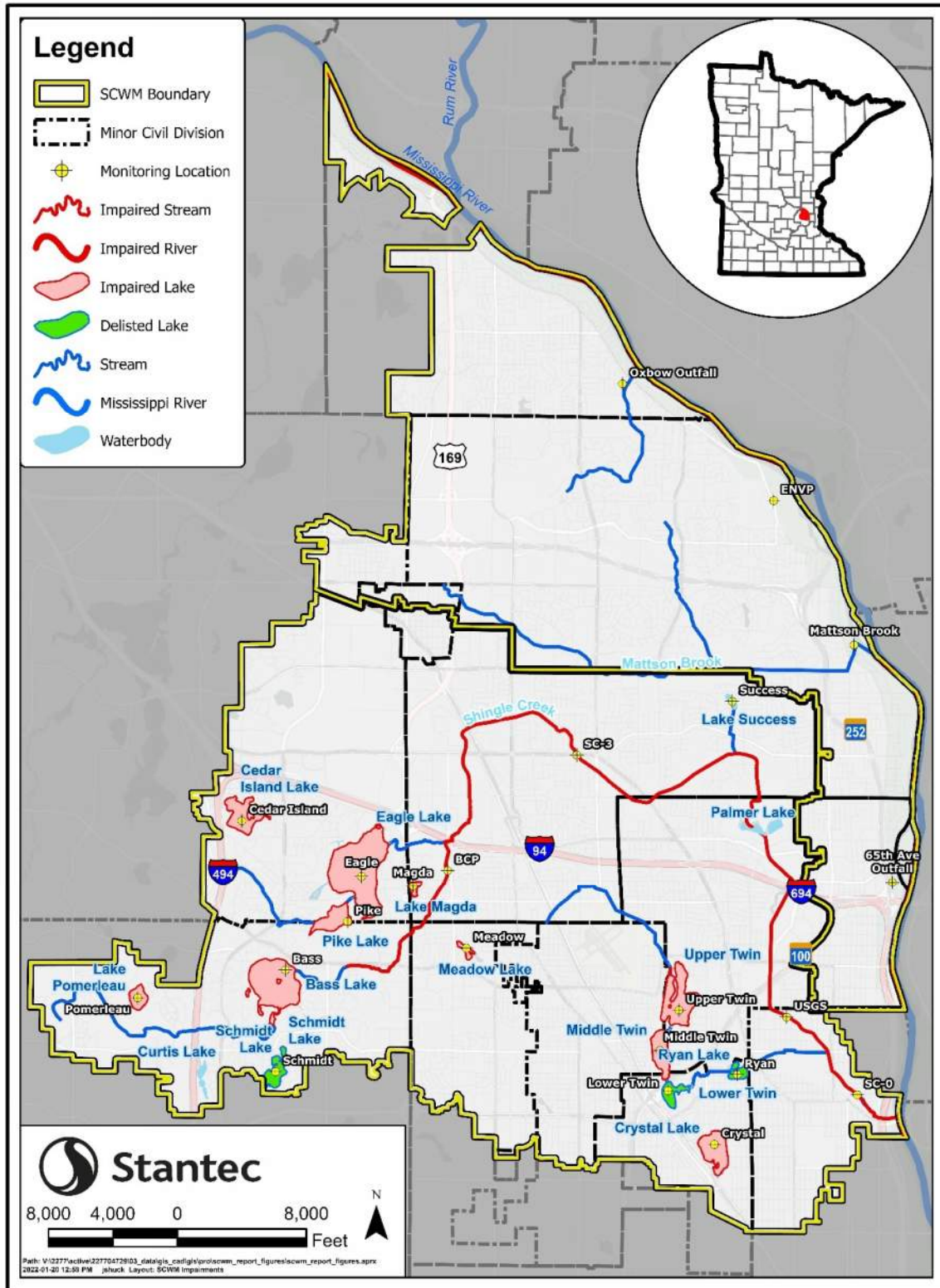


Figure 1. Impairments in the Shingle Creek and West Mississippi Watersheds.

What's in the watershed?

West Mississippi

- ▶ 25 square miles
- ▶ High impervious urban development (25%) and low-moderate impervious urban development (38%)
- ▶ 4 stream sites and 18.3 miles of streams
- ▶ No lakes, few wetlands

Middle Shingle Creek

- ▶ 15 square miles
- ▶ High impervious urban development (45%) and low-moderate impervious urban development (28%)
- ▶ 1 stream and 10.34 miles of streams
- ▶ 2 lakes: Success and Palmer

Upper Shingle Creek

- ▶ Headwaters of Shingle Creek
- ▶ 13 square miles
- ▶ High impervious urban development (28%) and low-moderate impervious urban development (26%)
- ▶ 3 streams and 16.2 miles of streams
- ▶ 8 lakes: Bass, Pomerleau, Schmidt, Cedar Island, Pike, Eagle, Magda, Meadow

Lower Shingle Creek

- ▶ Shingle Creek discharges to the Mississippi River
- ▶ 17 square miles
- ▶ High impervious urban development (71%) and low-moderate impervious urban development (8%)
- ▶ 2 streams and 18.9 miles of streams
- ▶ 5 lakes: Upper Twin, Middle Twin, Lower Twin, Crystal, and Ryan



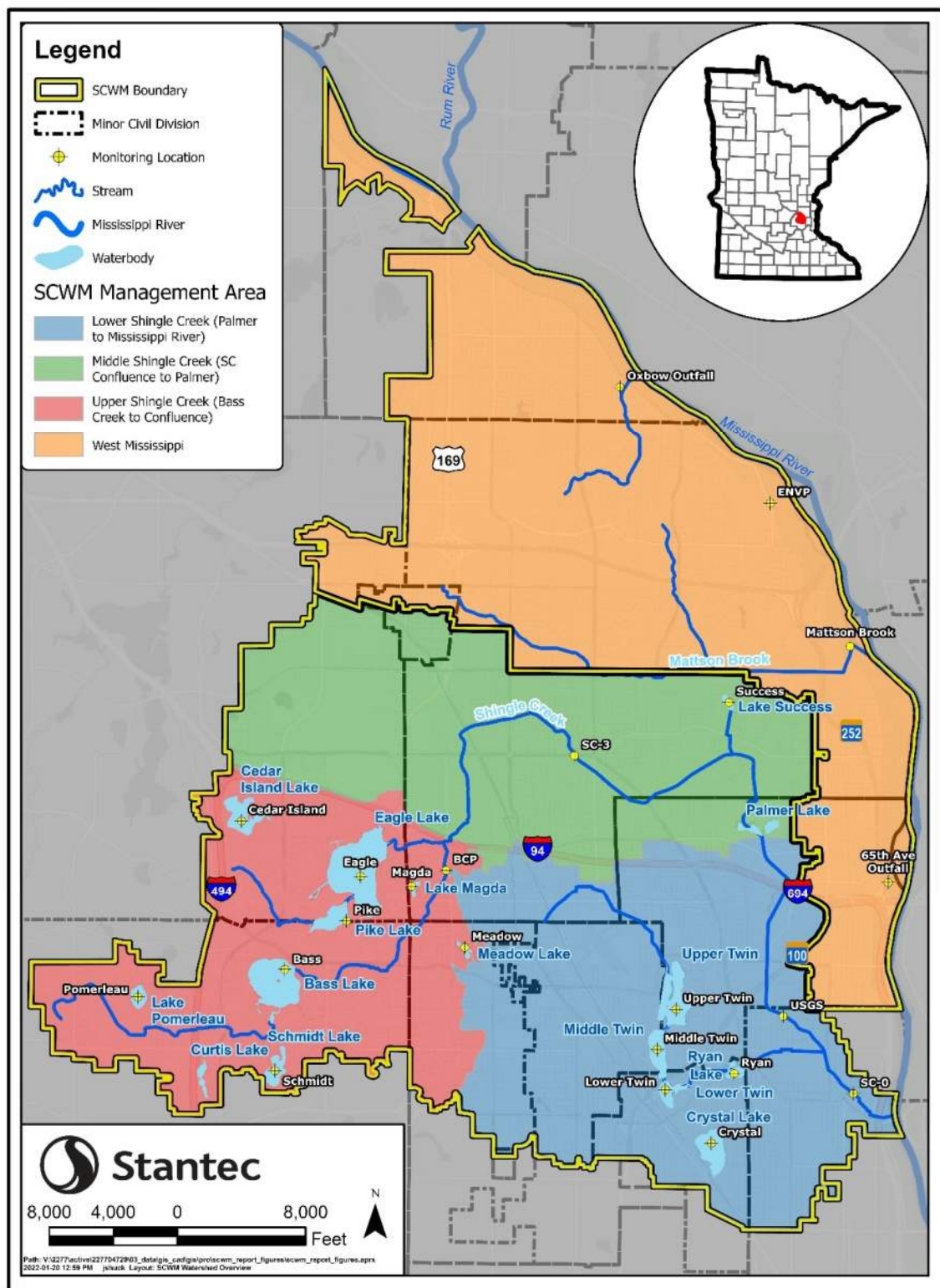


Figure 2. Overview and monitoring locations of the Shingle Creek and West Mississippi Watersheds.

Monitoring in 2021

Stream Monitoring

Routine Flow and Water Quality: Three sites along Bass and Shingle Creek were monitored biweekly from April through October: near the stream's outlet to the Mississippi River in Minneapolis (SC-0); mid-watershed in Brooklyn Park (SC-3); and in Bass Creek (BCP) in the upper watershed. Winter chloride was sampled monthly from November through March at the three locations mentioned and the USGS gage site (SC-1). In the West Mississippi Watershed, Mattson Brook (MB) was monitored monthly April through October and 65th Avenue was monitored year-round.

River Watch: Stream macroinvertebrates are typically monitored by high school students at two sites on Shingle Creek through the Hennepin County River Watch program, however the program has been affected by the COVID-19 pandemic. Shingle Creek at Park Center High School has been monitored for 24 years by science students from the school. Shingle Creek at Webber Park was monitored by students from Patrick Henry High School between 2001 and 2012, then in 2018, 2019, and 2021 by students from the Avail Academy.

Lake Monitoring

Routine Water Quality: Water quality in Cedar Island and Lake Success in Maple Grove was monitored biweekly from May through September as part of Shingle Creek's routing monitoring program. Aquatic vegetation was surveyed once in late spring and once in late summer. The carp and fish population of Cedar Island Lake were surveyed.

CAMP: Each year the Commission sponsors volunteer lake water quality monitoring through the Met Council's Citizen Assisted Monitoring Program (CAMP). Schmidt, Magda, Meadow, Eagle, and Pike Lakes were monitored in 2021.



Staff finds Northern (Pike) while conducting fish survey on Schmidt Lake, Plymouth MN.

Grant Projects: Crystal, Bass, and Pomerleau Lakes were monitored biweekly from June through September for water quality as part of grant projects. These lakes have all been listed as impaired for nutrients and are undergoing active management. Bass and Pomerleau Lakes received a second dose of alum in September 2020, following the first dose that occurred in May 2019. Crystal Lake underwent invasive carp removals in Summer 2021 and received its first dose of alum in September 2021. Water quality monitoring in the lakes has helped our understanding of changes in lake health following management activities.

Wetland Monitoring

The Shingle Creek and West Mississippi Watersheds typically sponsor wetland monitoring through the Wetland Health Evaluation Program (WHEP) administered by Hennepin County. There were no wetlands in either watershed monitored in 2021.

2021 in Review

This summary provides an overview of findings and conditions in the two watersheds in 2021. A more detailed assessment and data are available in the technical appendices, which can be found at shinglecreek.org/water-quality.html.

Rainfall

Water quality in lakes, streams and wetlands is heavily influenced by precipitation and storm water runoff. 2021 was a dry year. Precipitation in 2021 in the Shingle Creek and West Mississippi watersheds was below the historic average (1992-2021) each month except March, August and December. Total rainfall in 2021 was 26.0 inches, 7.5 inches below the historic average of 33.5 inches.

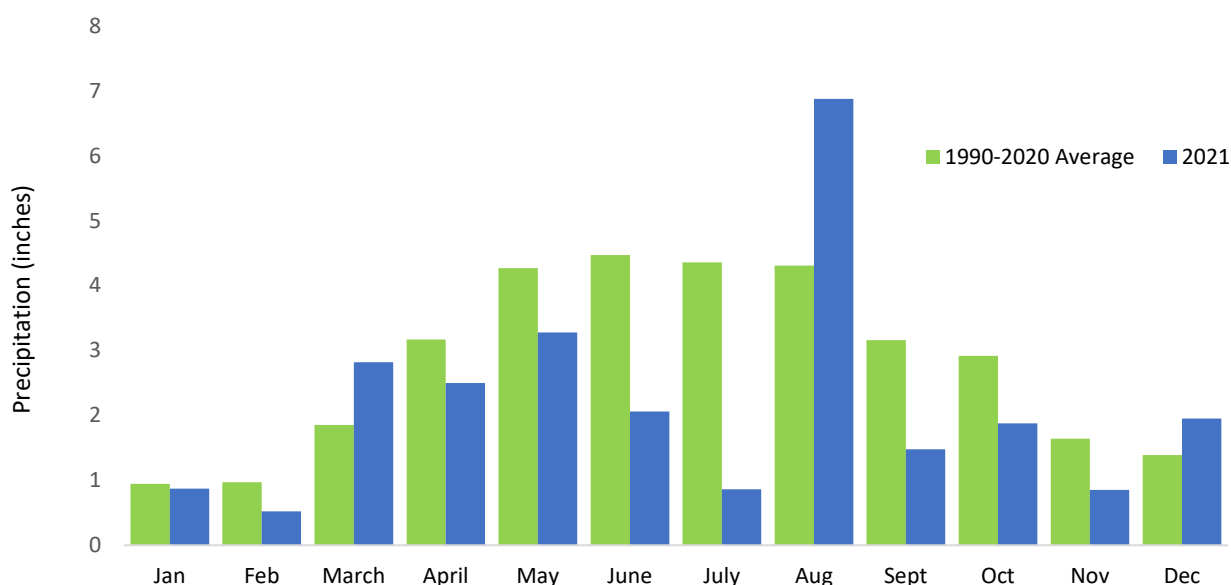


Figure 3. Monthly precipitation totals at the New Hope weather station for 1990-2021 and 2021.

Streams

Stream sites in Shingle Creek and West Mississippi Watersheds are monitored during normal, baseflow conditions (routine monitoring) and during rainfall events (storm monitoring) when flow is higher. Runoff during storms carries pollutants into the stream and can contribute to downstream water body impairments. Stream water quality during storms is often worse than during routine monitoring.

Shingle Creek

Flow at all the monitored Bass and Shingle Creek sites (BCP, SC-3, SC-0) and at the USGS gauge site were similar across sites and was largely driven by rainfall events in the watershed (Figure 4). The highest flows occur at the sites closest to the watershed outlet and the lowest flows occur near the headwaters (BCP). 2021 was a relatively dry year compared to historic precipitation averages (Figure 3), and total runoff from each monitoring site was the lowest it has been since 2003 (Appendix C). The small amount of runoff resulted in historically low TP and TSS loading to the watershed.

Shingle and Bass Creeks 2021 Streamflow

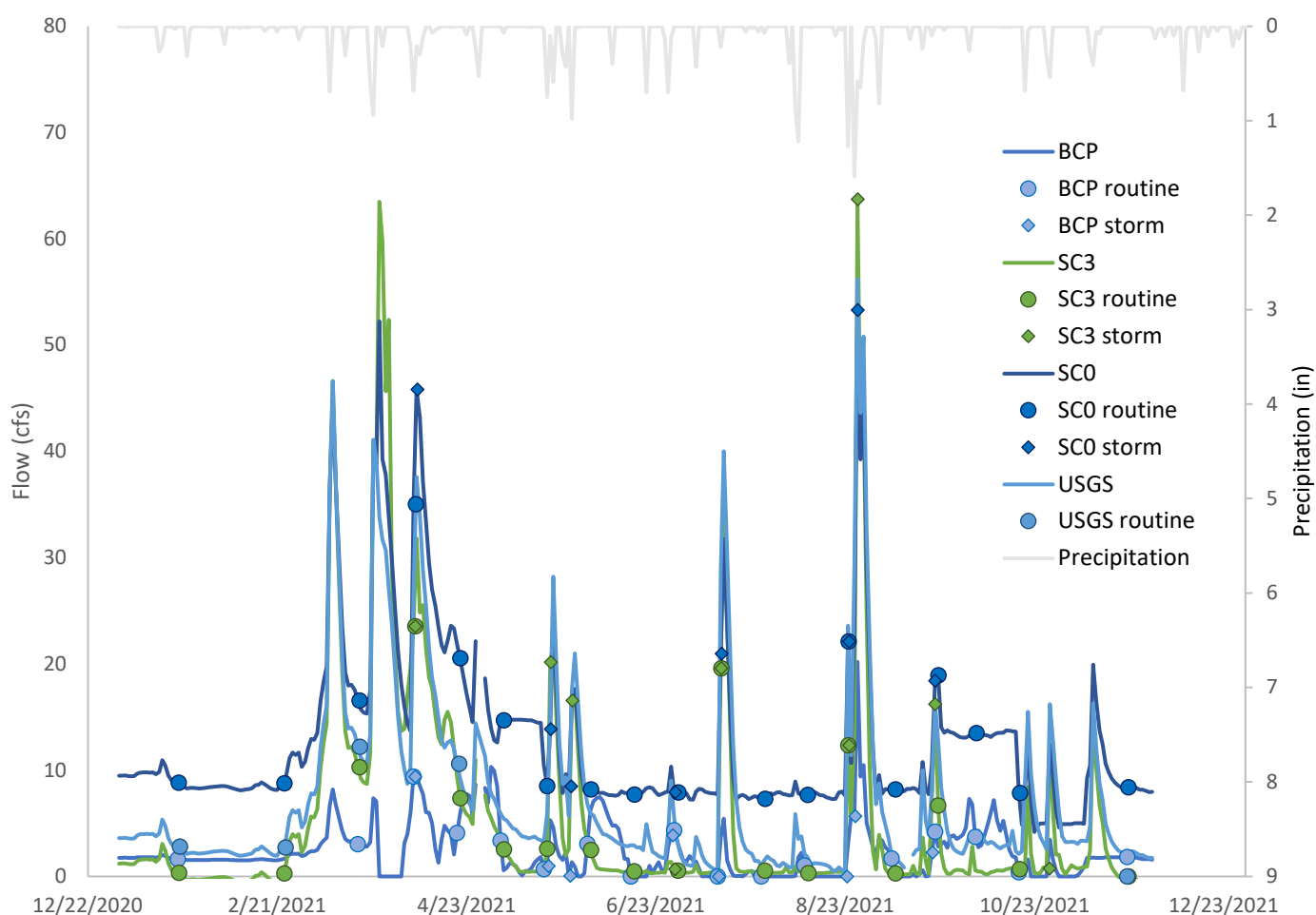


Figure 4. Flow, sample timing, and precipitation at monitored stream sites in the Shingle Creek Watershed during 2021.

Water quality at the Shingle Creek stream sites is generally worse during storm event monitoring (Figure 5). Average concentrations of chloride, *E. coli*, TP, and TSS during storm events were higher than during routine monitoring, with the exception of chloride. Chloride

samples were collected year-round but were highest during winter routine monitoring when road salt application occurs.

Annual pollutant loads of TP, TSS, and chloride were estimated for each monitoring site by multiplying the mean pollutant concentration by the annual volume of runoff at each site. Loads are highest near the Shingle Creek watershed outlet at site SC-0.

Table 1. Annual pollutant loads at each Shingle Creek routine monitoring site.

Site	TP Load (lbs/acre/year)	TSS Load (lbs/acre/year)	Chloride Load (lbs/acre/year)
BCP	0.09	11.2	112
SC-3	0.13	27.5	75
SC-0	0.10	19.13	97

Trends: Water quality data has been collected in Shingle Creek since 1996, and trend analysis shows significant changes to stream water quality. Soluble phosphorus concentrations are improving (decreasing) in both Shingle (SC-0 and SC-3) and Bass Creeks (BCP). TP and TSS has been significantly reduced at SC-0. Trends were not detected for dissolved oxygen, *E. coli*, or nitrogen.

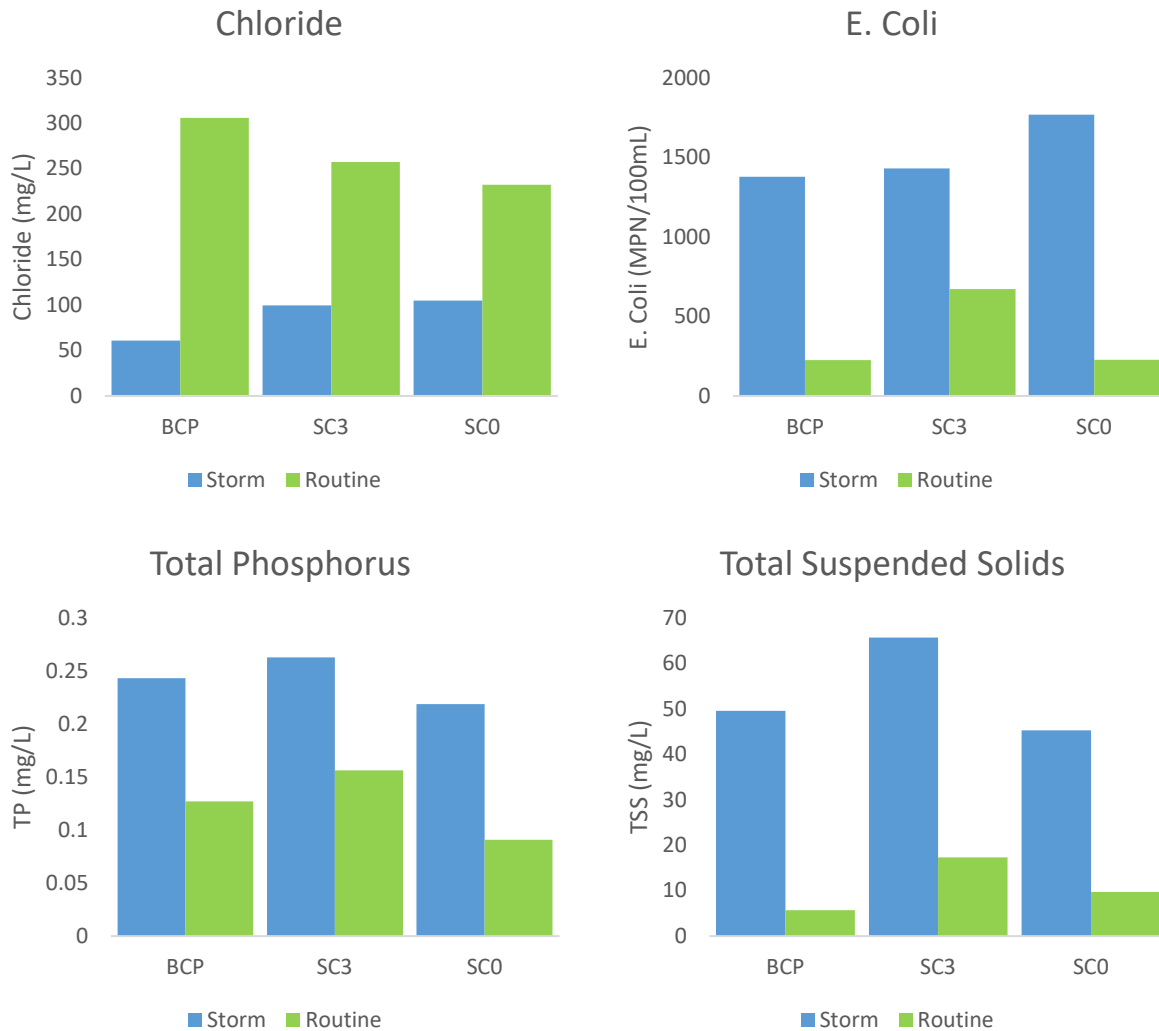


Figure 5. Average concentration of water quality parameters at Shingle Creek sites sampled during storm and routine monitoring in 2021.

West Mississippi

Flow at the Mattson Brook site was monitored starting end of March 2021, and the 65th Ave site was monitored for the entire year. Flow at the 65th Ave site in West Mississippi was much higher than at the Mattson Brook site (

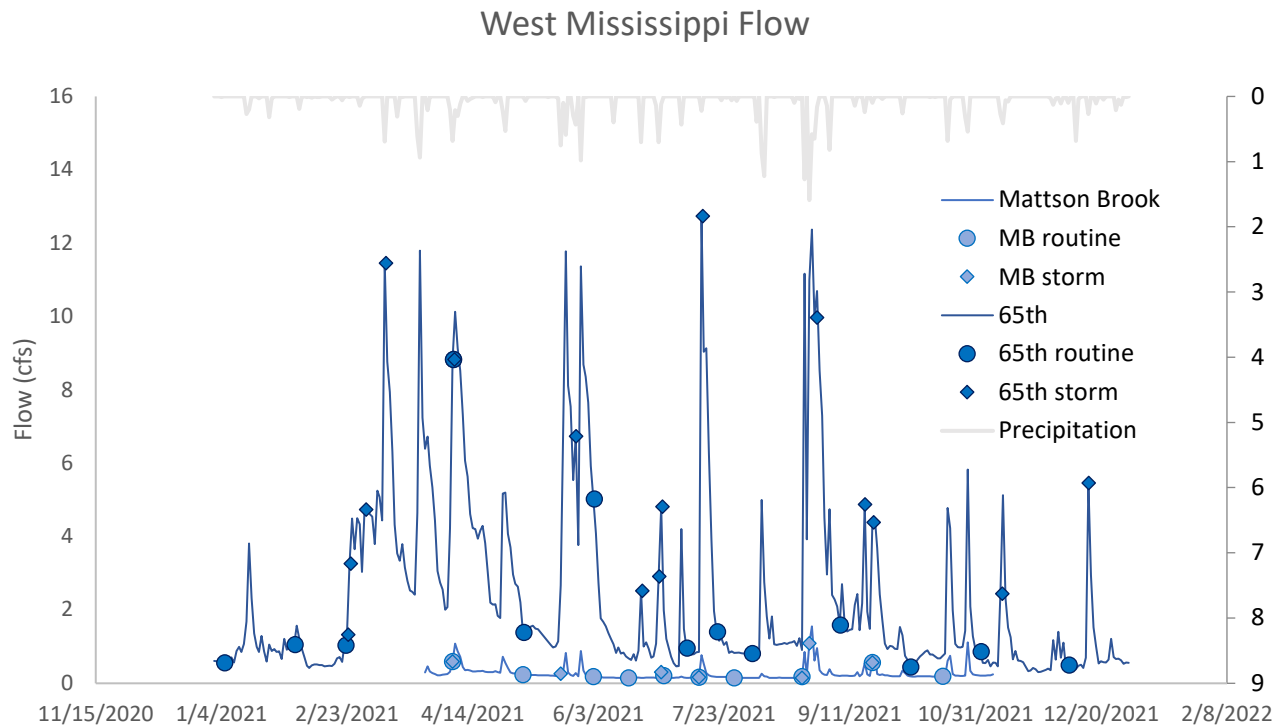


Figure 6. Flow was highest following precipitation events.

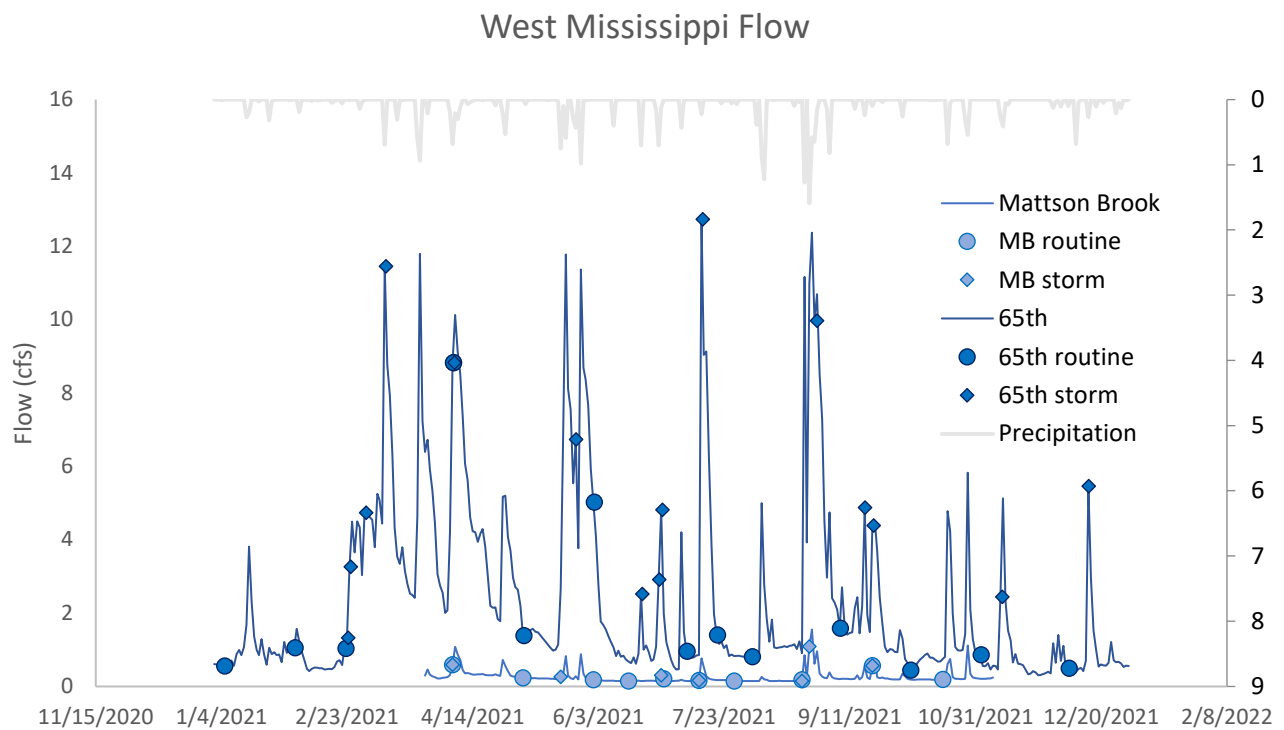


Figure 6. Flow, sample timing, and precipitation at monitored stream sites in the West Mississippi Watershed during 2021.

Similar to Shingle Creek stream sites, water quality (*E. coli*, TP, TSS) at West Mississippi sites was worse during storm events (Figure 7). Chloride is not monitored at these sites during winter months but is still higher in routine samples indicating a dilution effect of storm events on chloride concentrations.

Monitoring season pollutant loads of TP, TSS, and chloride were estimated for each monitoring site by multiplying the mean pollutant concentration by the volume of runoff during the monitoring season at each site. Year-round flow data for the Mattson Brook site were not available, preventing the calculation of an annual pollutant load. Pollutant loads at Mattson Brook are calculated for the monitoring season April 6 - September 20, 2021

Table 2. Monitoring season pollutant loads at West Mississippi routine monitoring sites.

Site	TP Load (lbs)	TSS Load (lbs)	Chloride Load (lbs)
Mattson Brook*	39	5,669	31,689
65 th Ave**	766	127,607	1,191,165

* Mattson Brook load was calculated for the monitoring period April 6th – September 20th, 2021

** 65th Avenue load was calculated for the year 2021

Trends: Water quality data have been collected in the West Mississippi watershed since 2010. Trend analysis did not detect any trends in TP, ortho-P, TSS, *E. coli*, or chloride concentrations at Mattson Brook. Chloride concentrations have significantly increased at 65th Ave, likely due to the addition of winter monitoring at the site in 2020 and 2021 capturing snowmelt runoff. TP, ortho-P, and *E. coli* have significantly increased at 65th Ave.

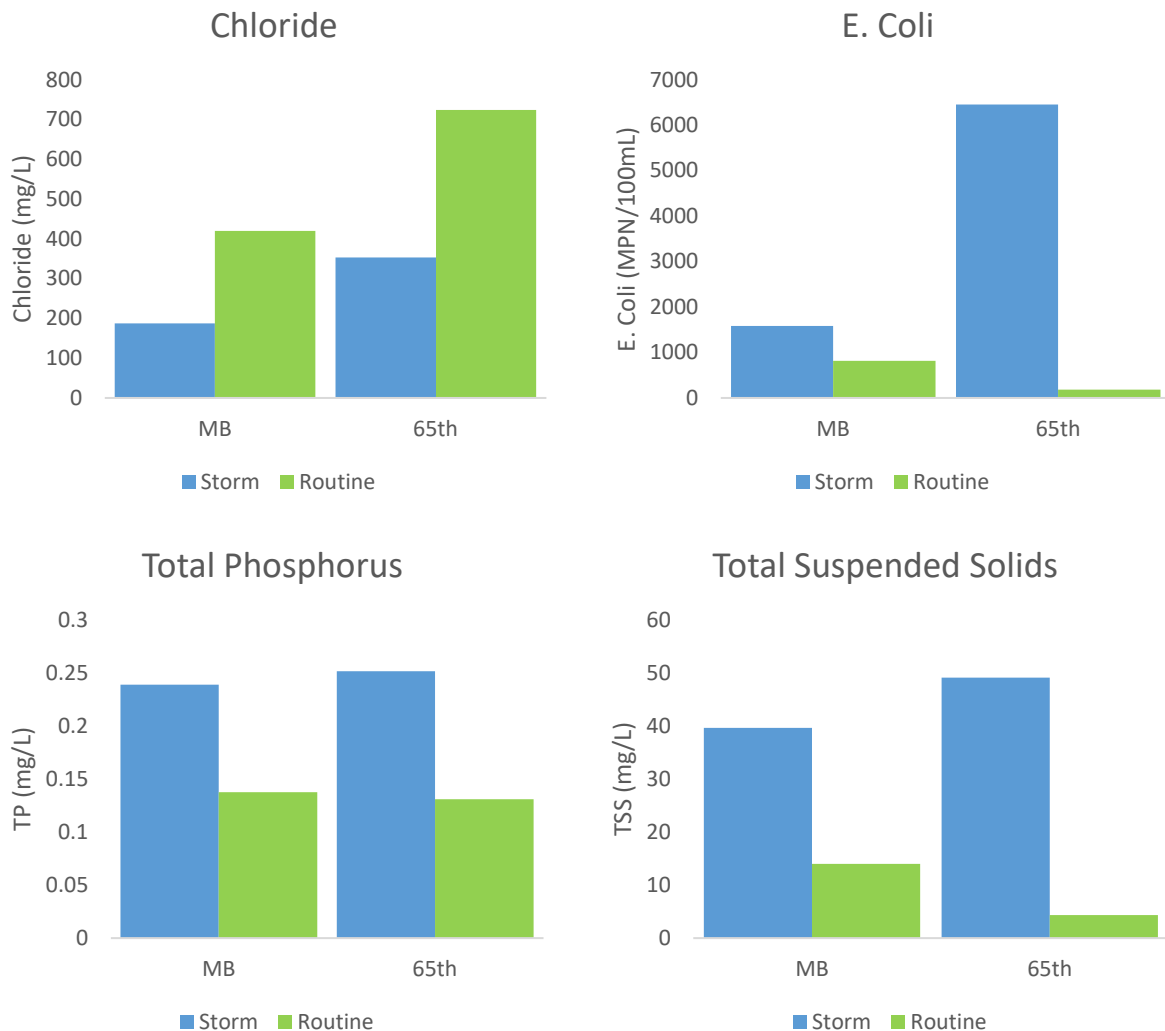


Figure 7. Average concentration of water quality parameters at West Mississippi sites sampled during storm and routine monitoring in 2021.

Chloride

Salt is entering our lakes and streams in the form of chloride from the use of road salt to deice, for water softening, and from fertilizer, manure, and dust suppressants. Once a water body is polluted with salt, it is virtually impossible to remove it. **All it takes is 1 teaspoon of salt to contaminate 5 gallons of water permanently!** Salt is of particular concern in the Shingle Creek watershed because Shingle and Bass Creeks are impaired due to chloride. The chloride impairment affects fish, plants, and invertebrates that live in and near the streams; high chloride concentrations disrupt organisms' ability to function and can result in a stream devoid of life.

In many water bodies, the relationship between chloride concentrations and specific conductivity is linear, meaning specific conductivity measurements can be used to estimate chloride concentrations. Specific conductivity and flow data are collected every 15 minutes at

the USGS gage station on Shingle Creek, providing a long-term, continuous dataset to evaluate changes over time and other patterns. Figure 8 shows estimated chloride concentrations and flow at the USGS site in 2021. The highest chloride concentrations occur in winter and early spring when snowmelt events carry recently applied road salt into the creek. In summer, rain events usually result in a dilution in chloride concentrations.

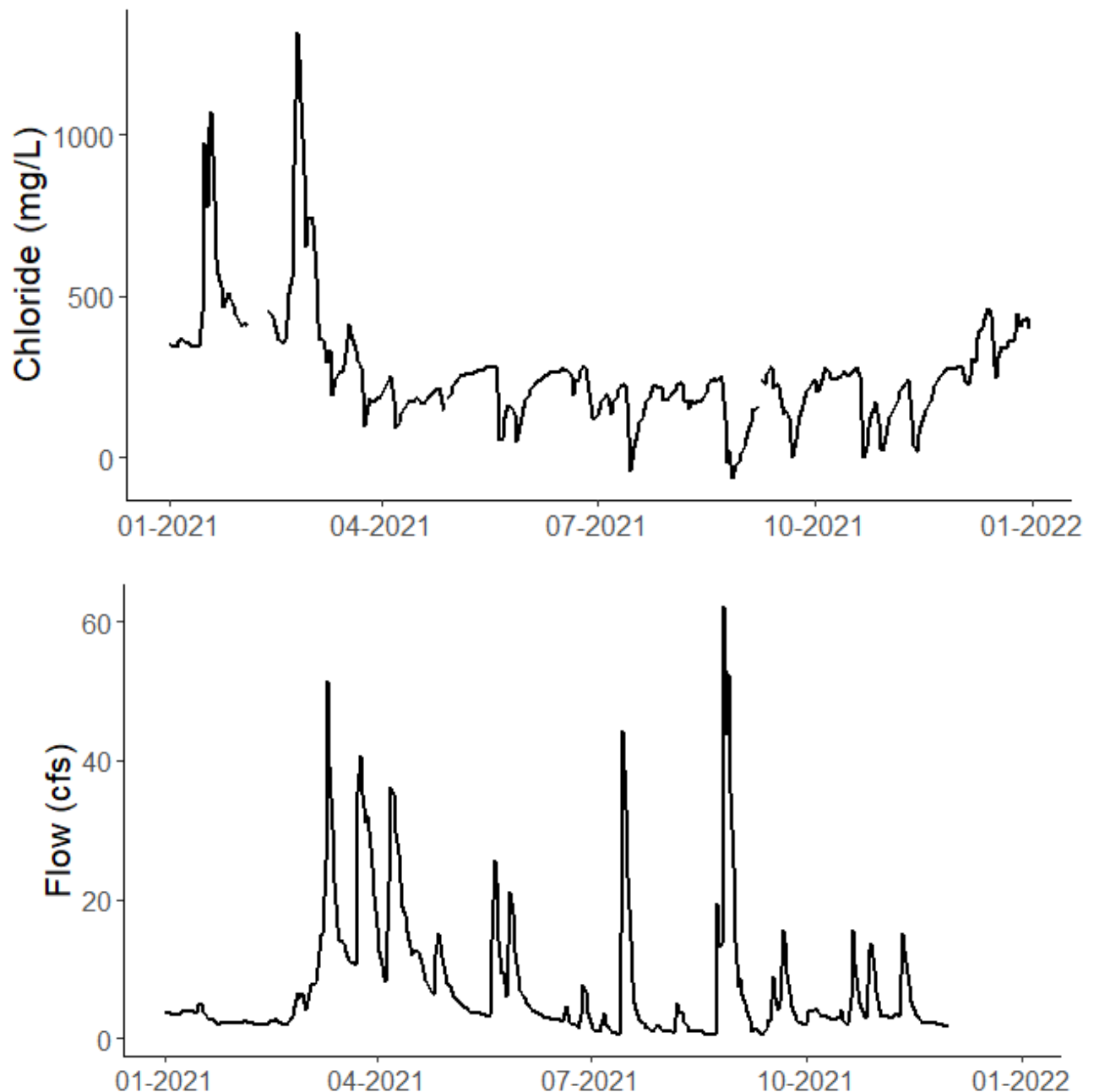
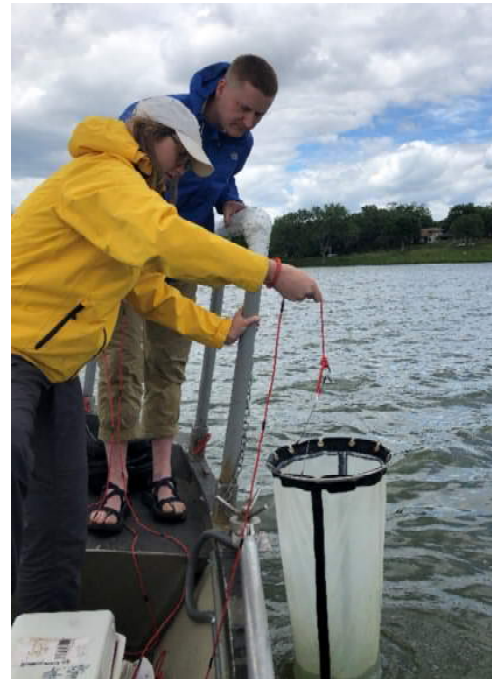


Figure 8. 2021 estimated chloride concentrations and flow at the USGS gage site on Shingle Creek at Queen Ave in Minneapolis.

Lakes

Five lakes were monitored by the Commission in 2021 as part of the routine monitoring program or grant projects. Lakes were visited 10 times from early June through the end of September. Water quality in the lakes was measured as Secchi depth, TP concentration, and chlorophyll-*a* concentration. Submersed aquatic vegetation (SAV) communities were surveyed in all five lakes. The health of the SAV community was measured using the Floristic Quality Index (FQI) and species richness. The second year of routine zooplankton and phytoplankton samples were taken in all five lakes in mid and late summer to assess the plankton community and how it changes over the monitoring season. Adding plankton samples to the routine monitoring program helps inform a holistic view of lake health at every trophic level.

A brief overview of water quality, and SAV, phytoplankton, and zooplankton communities for all five monitored lakes is provided below. For more detailed data and analysis including fisheries assessments, methods, and long-term water quality data, see Appendix D.



Staff raise a plankton net out of the water to sample the zooplankton and phytoplankton communities of lakes in the watershed.

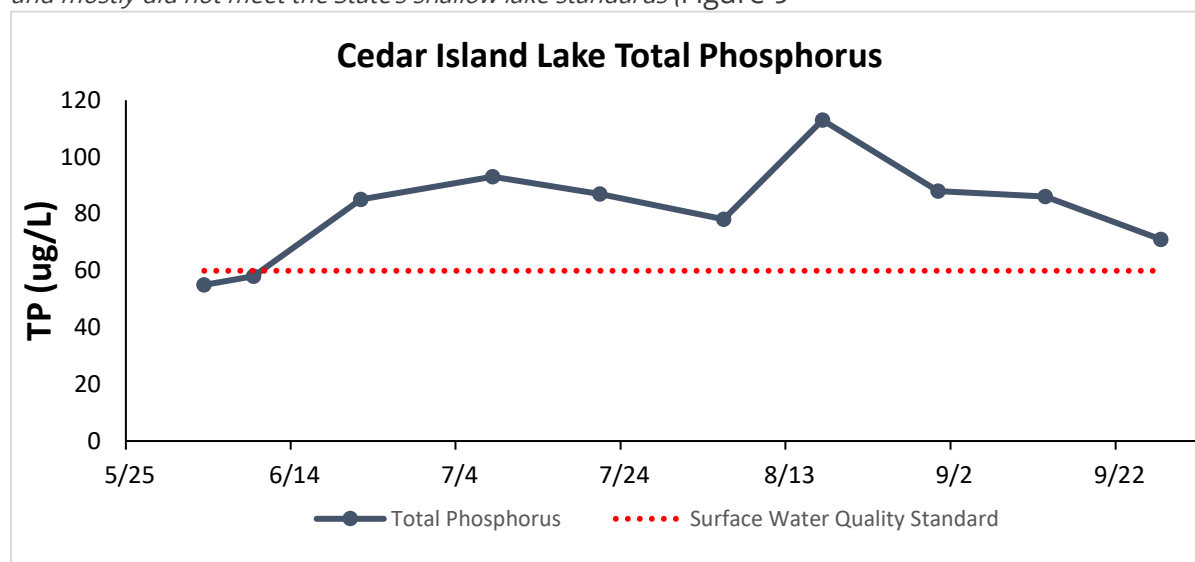
Cedar Island Lake

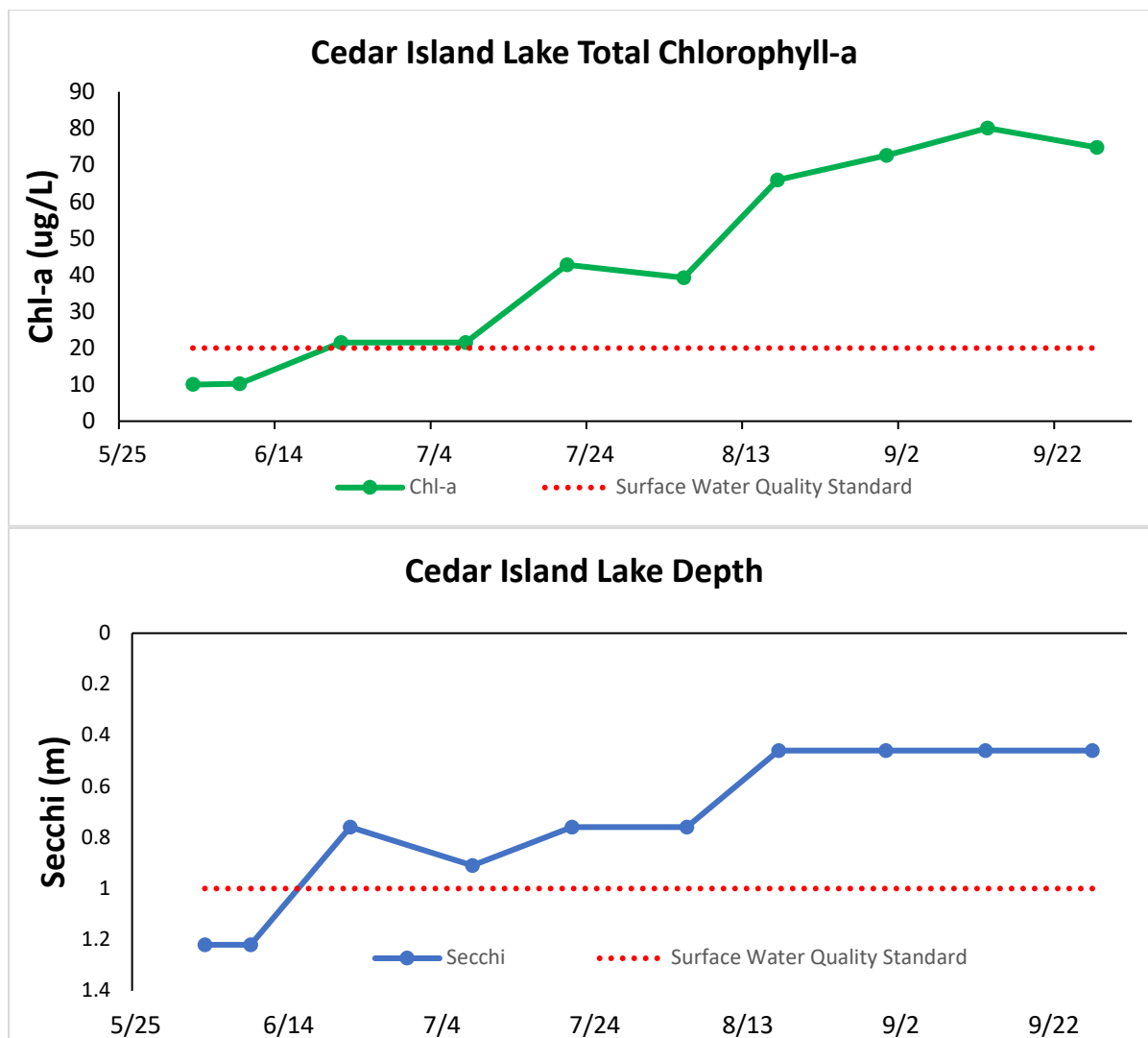
Cedar Island is a shallow lake in Maple Grove, MN. Water quality in the lake was sampled approximately biweekly from June through September 2021. Two SAV surveys were completed, one in early summer and one in late summer to document the vegetation community and how it changes over the growing season. The phytoplankton and zooplankton communities were sampled in mid-summer and late summer. The fish community and common carp population was surveyed in 2021.



Cedar Island Lake, Maple Grove MN

Cedar Island Lake is impaired for nutrients. Water quality declined over the course of the growing season in 2021 and mostly did not meet the State's shallow lake standards (Figure 9)





). TP exceeded the standard of 60 ug/L for most of the monitoring period. Chlorophyll-a, a measure of algal abundance in lake water, increased over the monitoring period. Water clarity, measured as Secchi depth, was generally poor with as little as 1.5 feet in visibility.

The zooplankton and phytoplankton communities of Cedar Island Lake were sampled in June and September 2021. Figure 10 shows the phytoplankton community in Cedar Island Lake. The community shifted from chlorophyta (green algae) in summer to cyanobacteria (blue algae) in the fall, additionally experiencing an increase in dinoflagellates in the fall. Zooplankton shifted from *bosmina*-dominated in summer to *daphnia*-dominated (Figure 11). The shift in zooplankton was unexpected for a typical Minnesota Lake.

The aquatic vegetation surveys in Cedar Island Lake showed low species diversity (Figure 12). Only 8 species were observed in 2021 and coontail, a native but sometimes nuisance aquatic plant, was the dominant species during both surveys. Other species observed include muskgrass, curly-leaf pondweed, straight-leaved pondweed, waterlily, and duckweed. Curly-leaf pondweed was found in low abundance.

Eight fish species were sampled during the fish survey: black bullhead, black crappie, bluegill, central mudminnow, green sunfish, hybrid sunfish, largemouth bass, and pumpkinseed sunfish. No common carp were sampled during the survey.

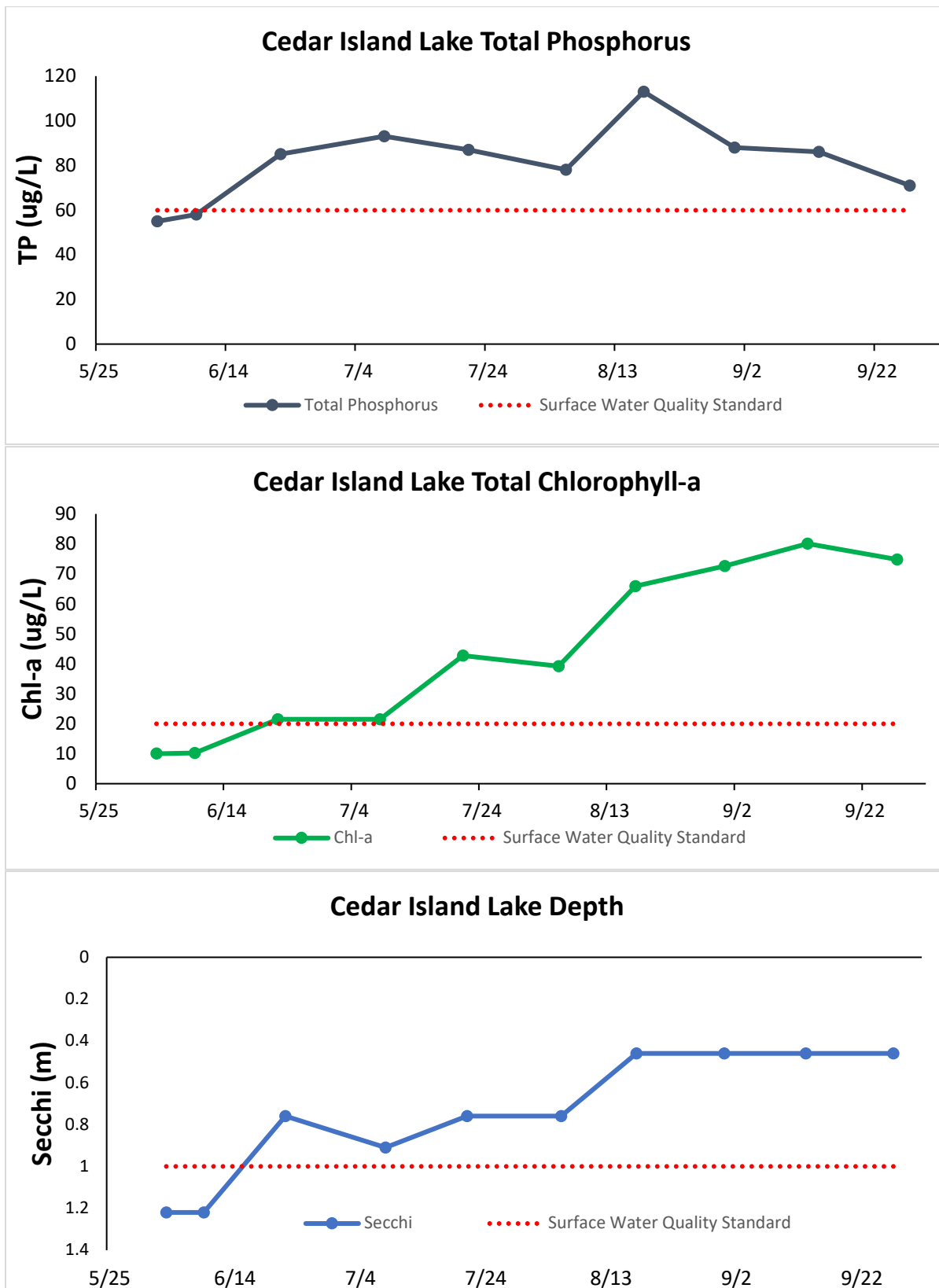


Figure 9. Water quality parameters in Cedar Island Lake during the 2021 monitoring season.

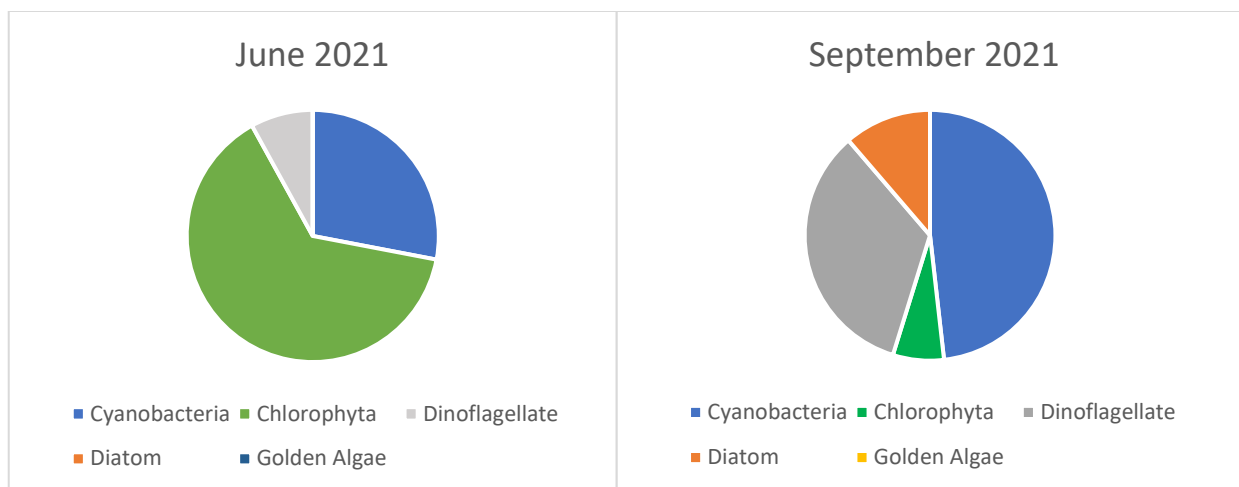


Figure 10. Phytoplankton community as relative percentage from June and September 2021 in Cedar Island Lake.

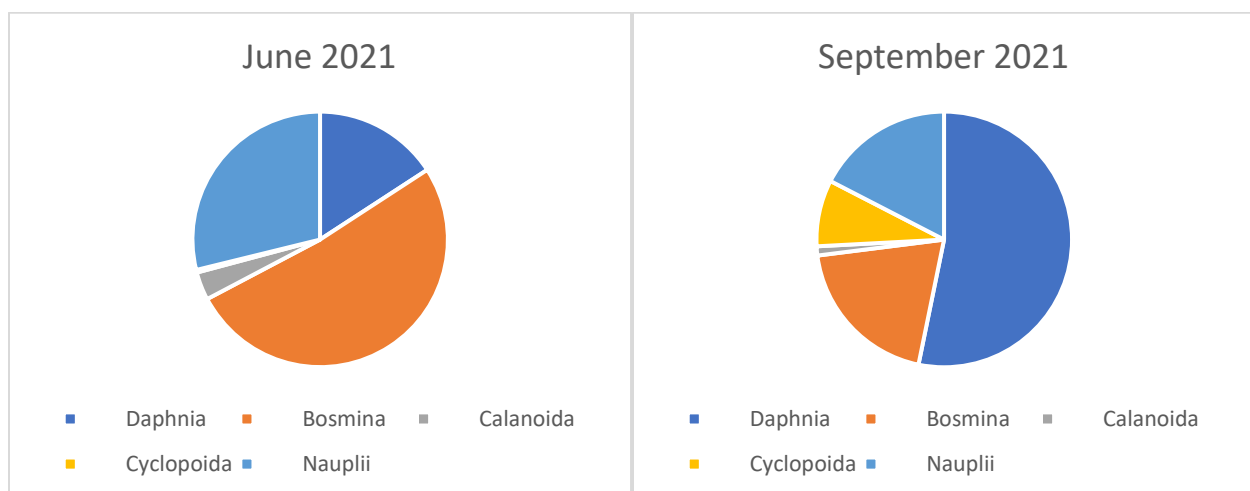


Figure 11. Zooplankton community as relative percentage from June and September 2021 in Cedar Island Lake.

Cedar Island Lake

5/25/2021

Number of Taxa

8/17/2021

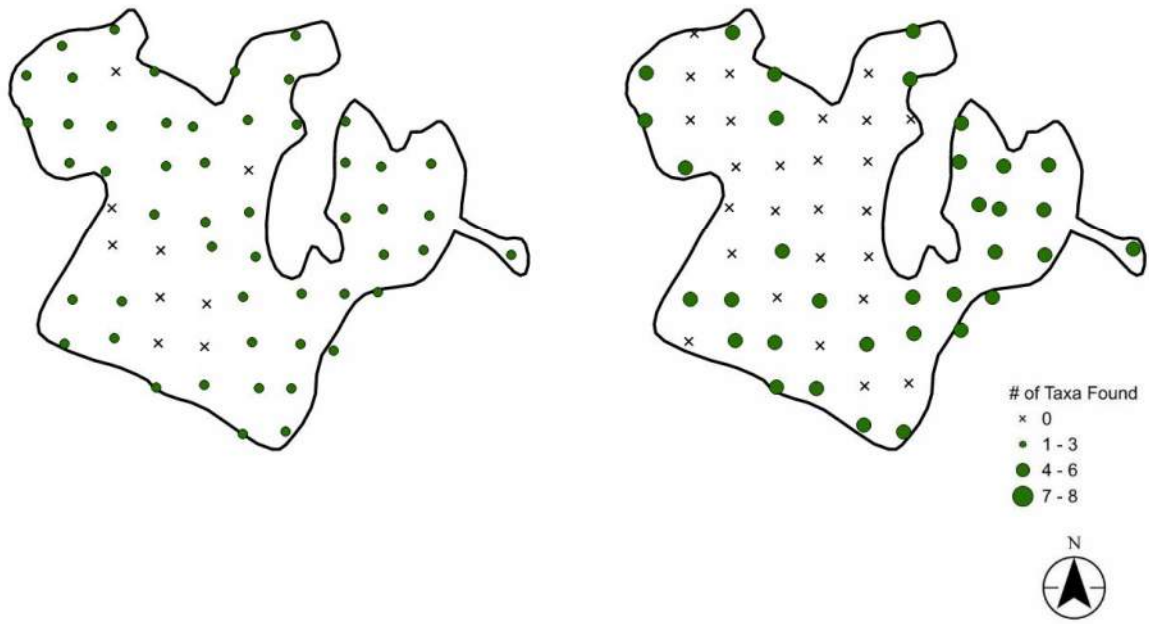


Figure 12. Submersed aquatic vegetation (SAV) showing number of taxa found at each location on Cedar Island Lake during the early and late summer surveys.

Lake Success

Lake Success is a small waterbody in Brooklyn Park. Water quality in the lake was sampled biweekly from June through September 2021. Two SAV surveys were completed, one in early summer and one in late summer, to document the vegetation community and how it changes over the growing season. The phytoplankton and zooplankton communities were sampled in mid-summer and late summer.

Lake Success is not listed as impaired because of lack of data, but water quality has been in decline in recent years. Figure 13 shows TP, chlorophyll-a, and Secchi depth over the course of the monitoring season. Data are shown against the shallow lake standard for reference. Total phosphorus exceeded the standard for most of the season. Chlorophyll-a peaked in late summer, indicating an algae bloom. The increase in chlorophyll-a occurred simultaneously with decreased water clarity.

Staff toss a rake over the side of the boat to sample vegetation in Lake Success.



Straight-leaved pondweed sampled in Lake Success in August 2022.

An analysis of the phytoplankton and zooplankton within the lake indicated a healthy, balanced community. The phytoplankton community was dominated by cyanobacteria during both sampling events, and in late summer was the only genera found in the lake causing a harmful algae bloom (HAB) (Figure 14). The sole genera was *Microcystis*, which is an aggressive, bloom-forming cyanobacteria that has the potential for toxin production. The zooplankton community reflected changes in algae (Figure 15). In late summer, the community shifted to being dominated by *bosmina*, which are a group of zooplankton that can feed on low quality food sources like cyanobacteria and have an advantage in late summer.

Very little vegetation was found in Lake Success during the early and late summer SAV surveys (Figure 16). Only 4 species were observed: muskgrass, curly-leaf pondweed, straight-leaved pondweed, and duckweed.

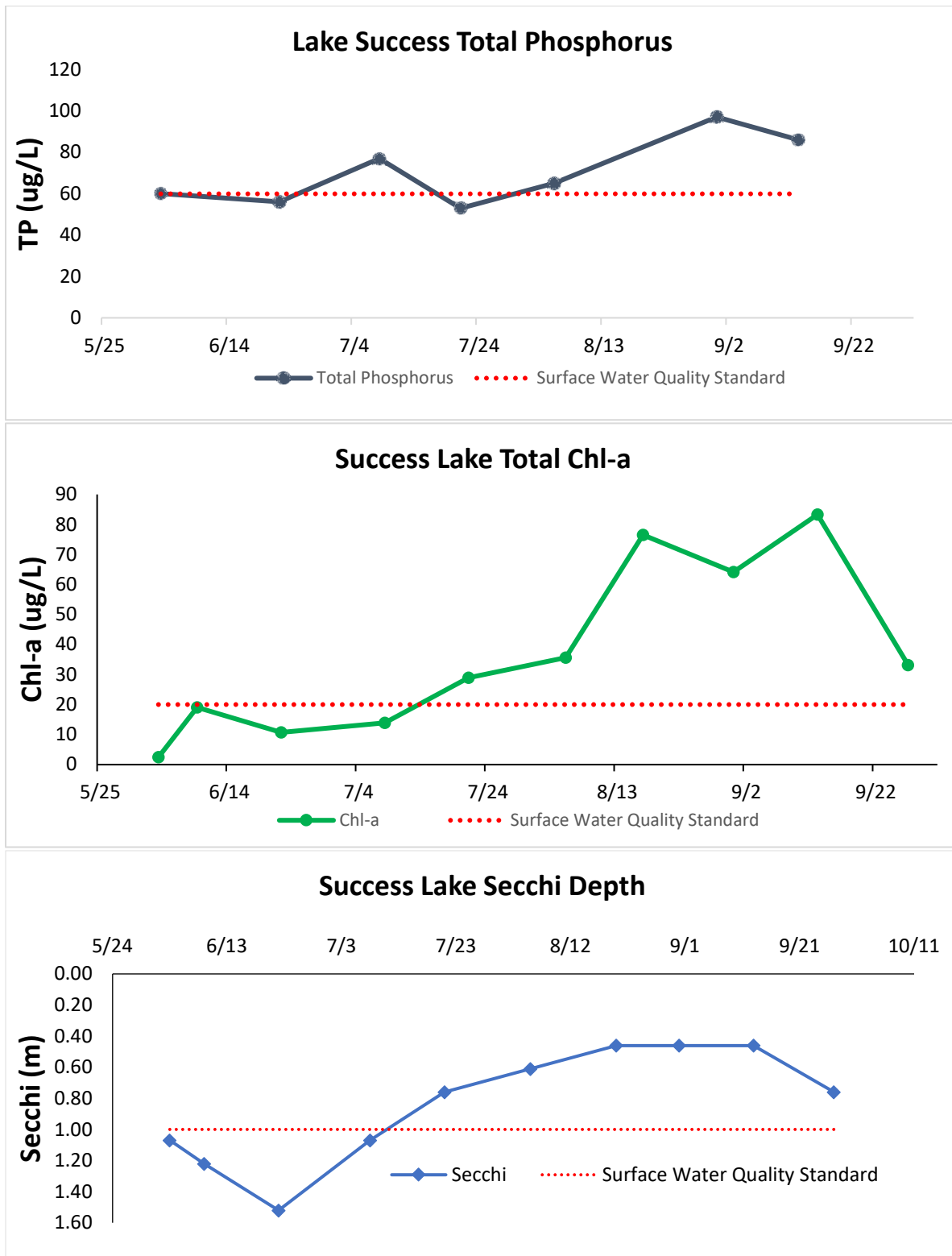


Figure 13. Water quality parameters in Lake Success during the 2021 monitoring season.

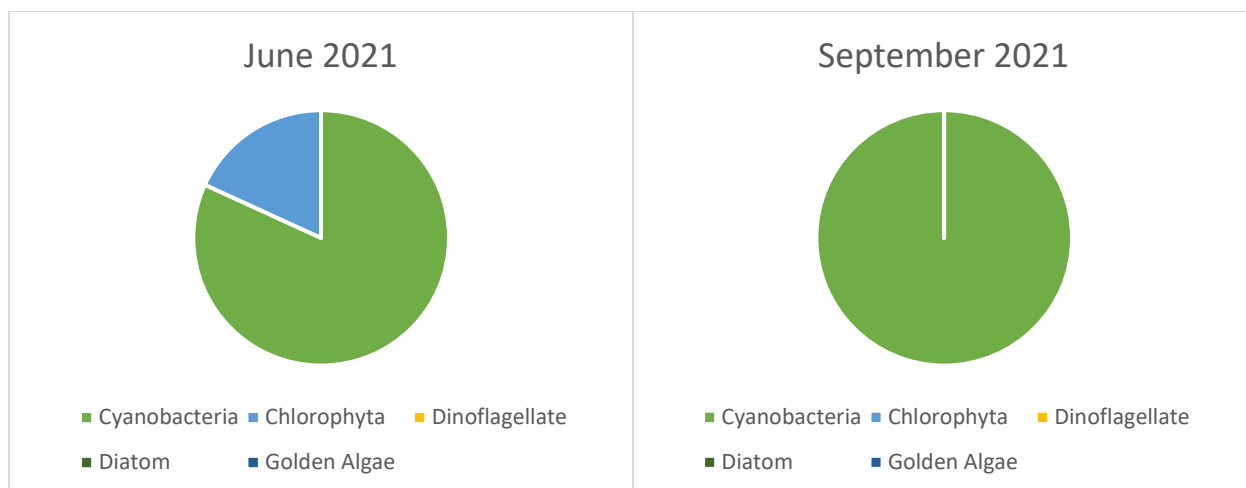


Figure 14. Phytoplankton community as relative percentage from June and September 2021 in Lake Success.

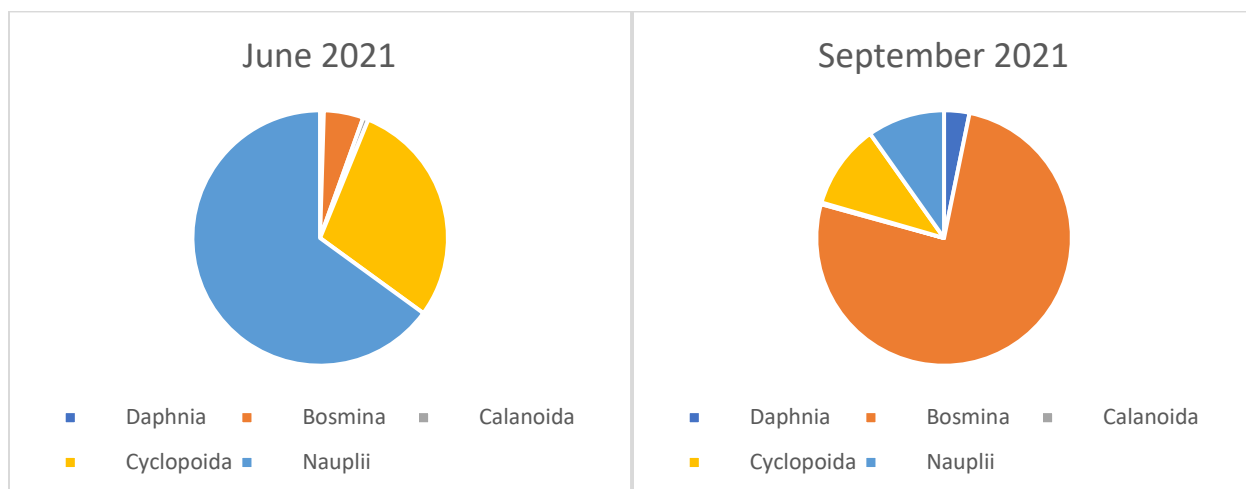


Figure 15. Zooplankton community as relative percentage from June and September 2021 in Lake Success.

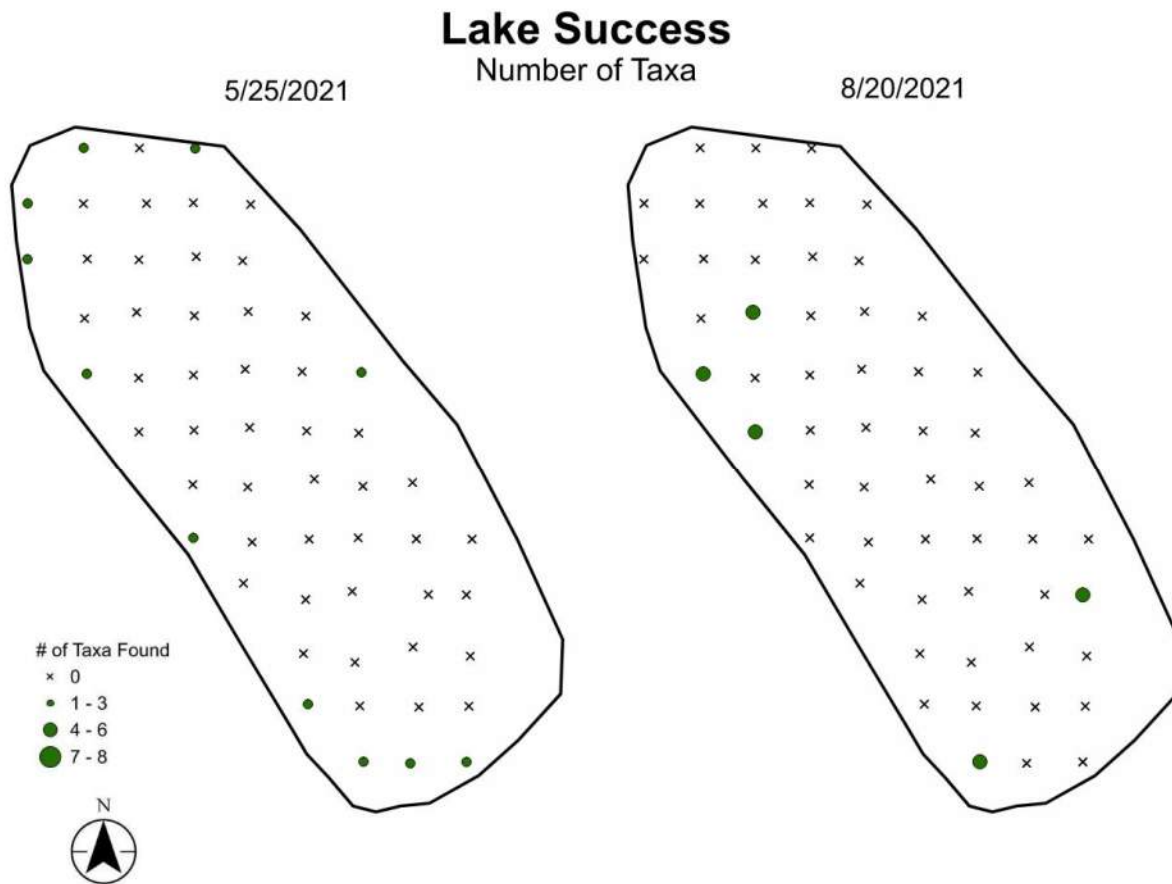


Figure 16. Submersed aquatic vegetation (SAV) showing number of taxa found at each location on Lake Success during the early and late summer surveys.

Bass Lake

Bass Lake is a shallow lake in Plymouth. Water quality in the lake was sampled biweekly from June through September 2021. Two SAV surveys were completed, one in early summer and one in late summer, to document the vegetation community and how it changes over the growing season. The phytoplankton and zooplankton communities were sampled in mid-summer and late summer. A delineation of curly-leaf pondweed was performed in April 2021. Delineated curly-leaf pondweed areas were treated with an herbicide in May 2021.



Bass Lake, Plymouth MN.

Bass Lake is impaired for nutrients and has undergone active management by the Commission in recent years. Bass Lake received its first alum treatment in May 2019. The second treatment was applied in September 2020 at the end of the monitoring season. In 2021, surface TP remained below the shallow lake standard during the entire monitoring season (Figure 17). Chlorophyll-a concentrations increased in mid-summer, exceeding eutrophication standards and indicating an algae bloom. Secchi depth decreased over the course of the summer. Despite declines in water quality in late summer, the lake experienced the best seasonal average water quality on record. TP samples taken from the hypolimnion remained low throughout the monitoring season, like in 2019 and 2020, indicating the efficacy of the 2019 alum treatment. See Appendix D for historical and hypolimnetic water quality data.

An analysis of the phytoplankton and zooplankton within the lake indicated a healthy community. The phytoplankton community was well-balanced in early summer, with diatoms, dinoflagellates, chlorophyta, and cyanobacteria (Figure 18). In late summer, the community shifted to cyanobacteria dominant. Cyanobacteria became slightly more dominant in late summer, a normal shift as water temperature is warmer. The zooplankton community shifted from nauplii-dominated to a more even distribution of groups in late summer (Figure 19). Nauplii are the early stage of many zooplankton species. Their abundance in early summer indicates a healthy zooplankton community with a plentiful food source.

SAV surveys in Bass Lake showed good vegetation growth in the lake and control of curly-leaf pondweed growth (Figure 20). Curly-leaf pondweed was found at 61 locations shortly before herbicide treatment in May, and by August was only observed at two locations. Sixteen species were observed in 2021.

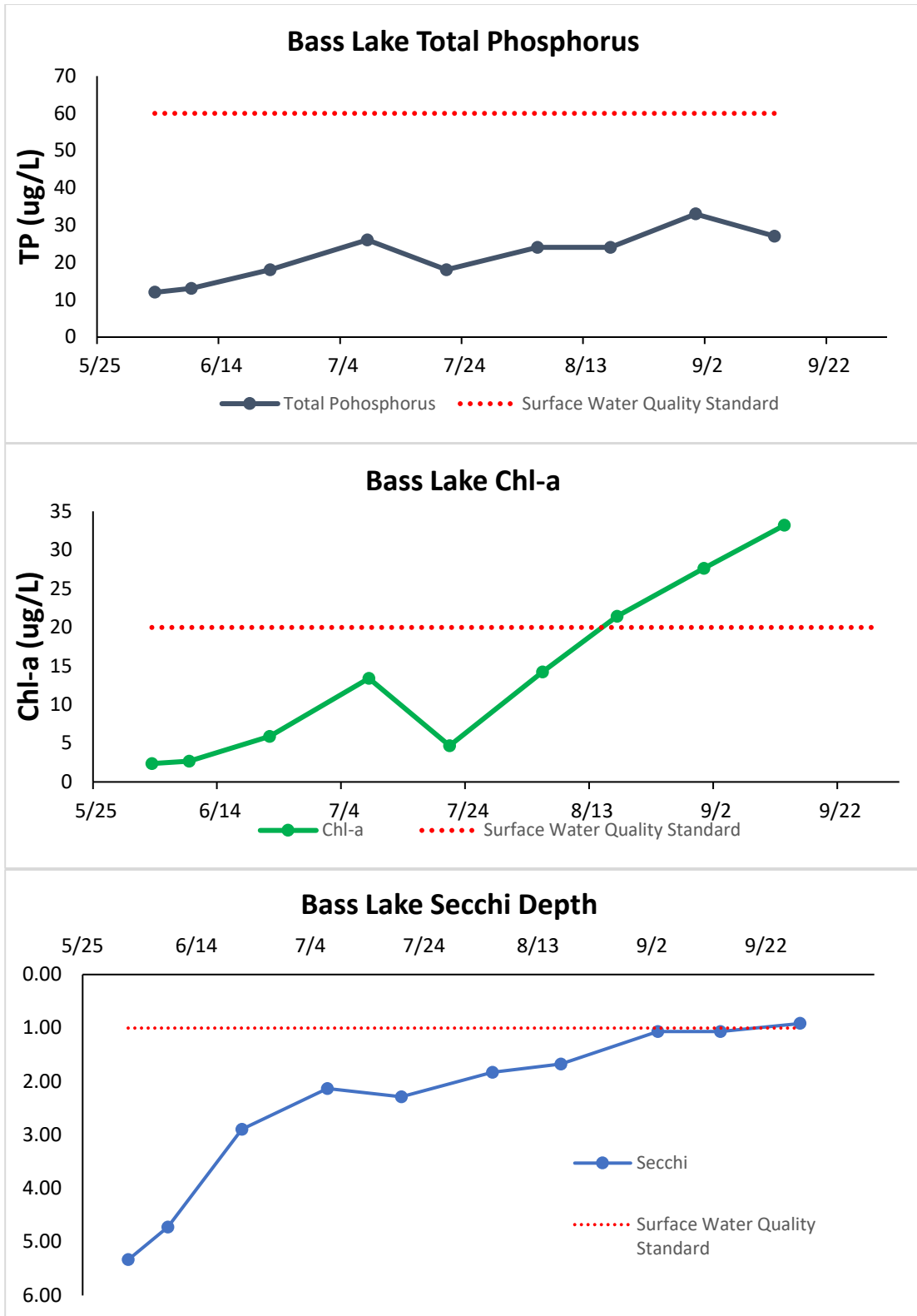


Figure 17. Water quality parameters in Bass Lake during the 2021 monitoring season.

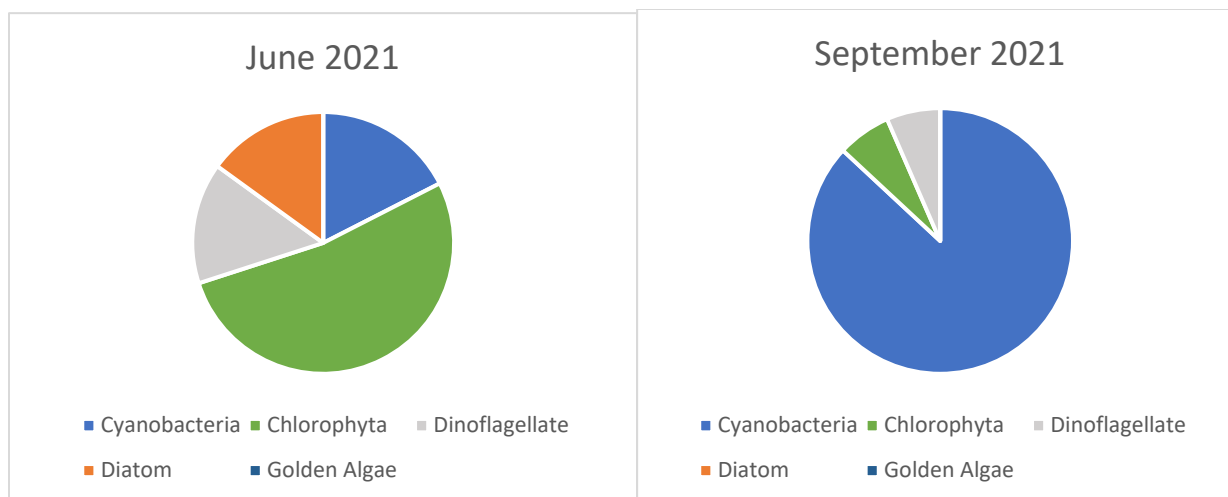


Figure 18. Phytoplankton community as relative percentage from June and September 2021 in Bass Lake.

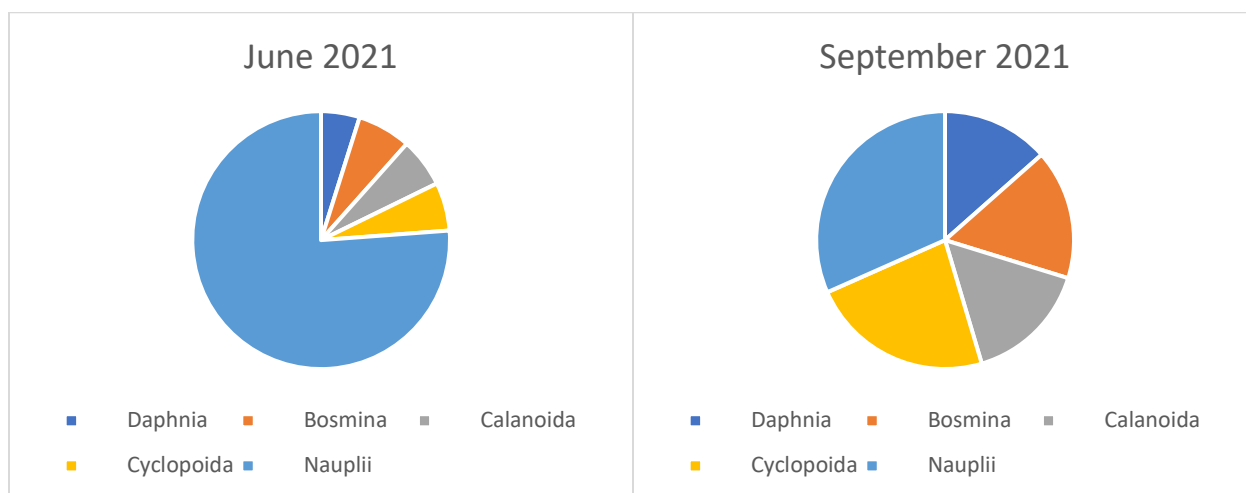


Figure 19. Zooplankton community as relative percentage from June and September 2021 in Bass Lake.

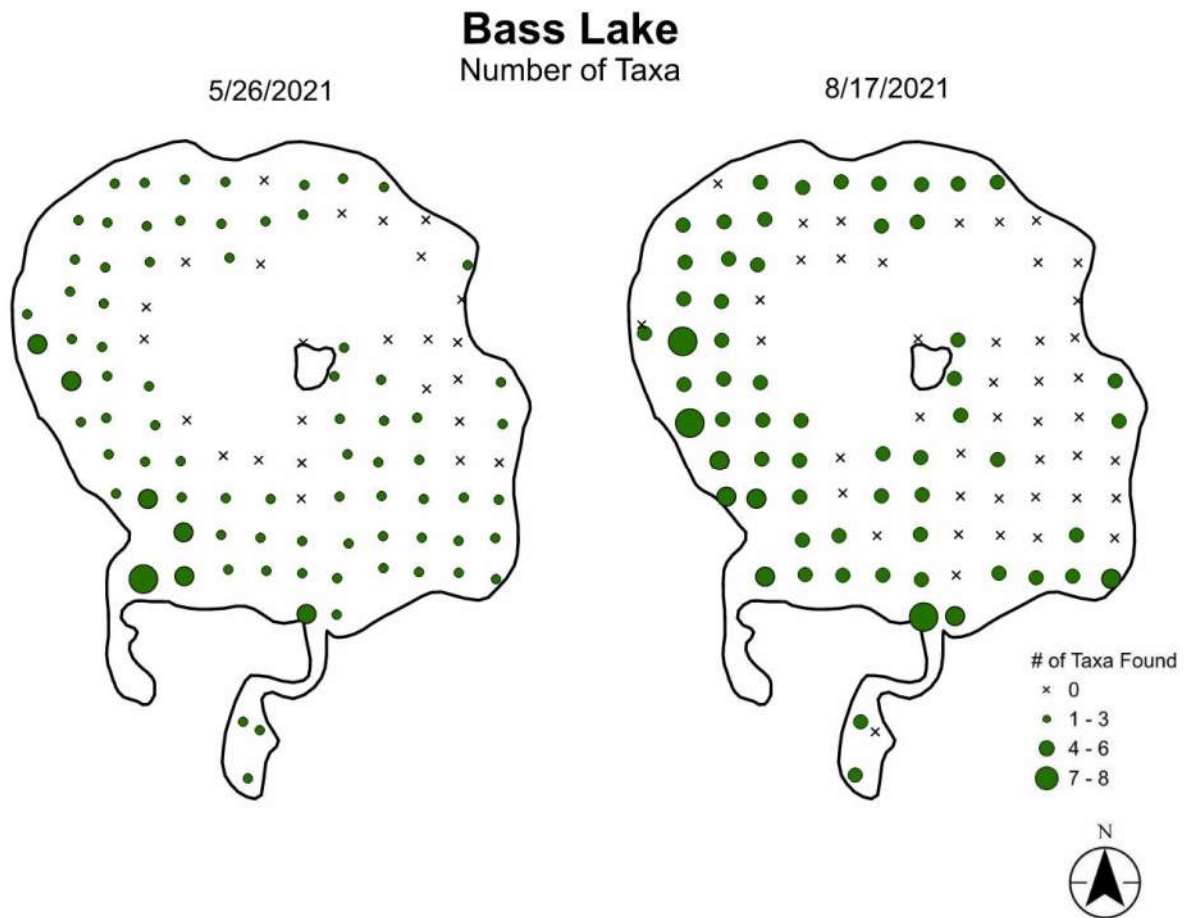


Figure 20. Submersed aquatic vegetation (SAV) showing number of taxa found at each location in Bass Lake during the early and late summer surveys.

Pomerleau Lake

Pomerleau Lake is a deep lake in Plymouth. Water quality in the lake was sampled biweekly from June through September 2021. Two SAV surveys were completed, one in early summer and one in late summer, to document the vegetation community and how it changes over the growing season. A delineation of curly-leaf pondweed was performed in April 2021. Delineated curly-leaf pondweed areas were not treated. The phytoplankton and zooplankton communities were sampled in early summer and late summer.



Pomerleau Lake, Plymouth MN.

Pomerleau Lake is impaired for nutrients and has undergone active management by the Commission. Pomerleau Lake received its first alum treatment in May 2019. The second treatment was applied in September 2020 at the end of the monitoring season. Similar to 2020, water quality in 2021 was excellent. Surface TP, chlorophyll-a, and Secchi depth met deep lake eutrophication standards throughout the entire monitoring season (Figure 21). TP samples taken from the hypolimnion remained low throughout the monitoring season, similar to 2019 monitoring data, indicating the efficacy of the 2019 and 2020 alum treatments. See Appendix D for historic and hypolimnion data.

The phytoplankton community was largely made up of cyanobacteria in both mid and late summer (Figure 18). The only genera of cyanobacteria found in September was *Woronchinia*. *Woronchinia* are a toxin-producing cyanobacteria. The zooplankton community was dominated by nauplii in early summer and shifted to bosmina later in the summer (Figure 19). Bosmina commonly forage on low quality food sources like cyanobacteria.

SAV surveys in Pomerleau Lake showed good vegetation growth in the lake and relatively low abundance of curly-leaf pondweed (Figure 20). Coontail is the dominant species found in the lake. Coontail was found at 64 and 75 locations in early and late summer, respectively. White waterlily was next most common species found during both surveys. Fourteen species were observed in 2021, which shows good species diversity for a metro-area lake.

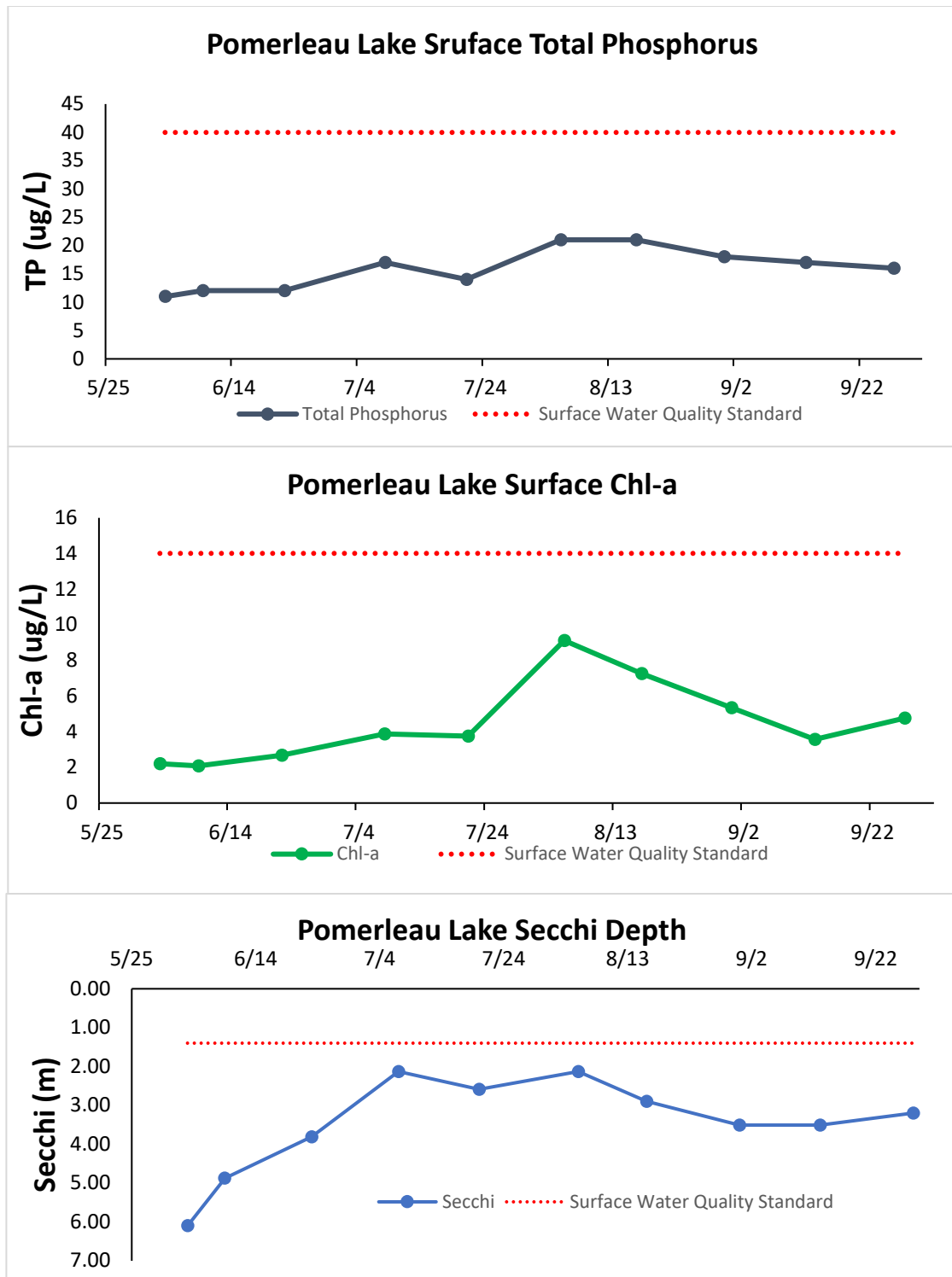


Figure 21. Water quality parameters in Pomerleau Lake during the 2021 monitoring season.

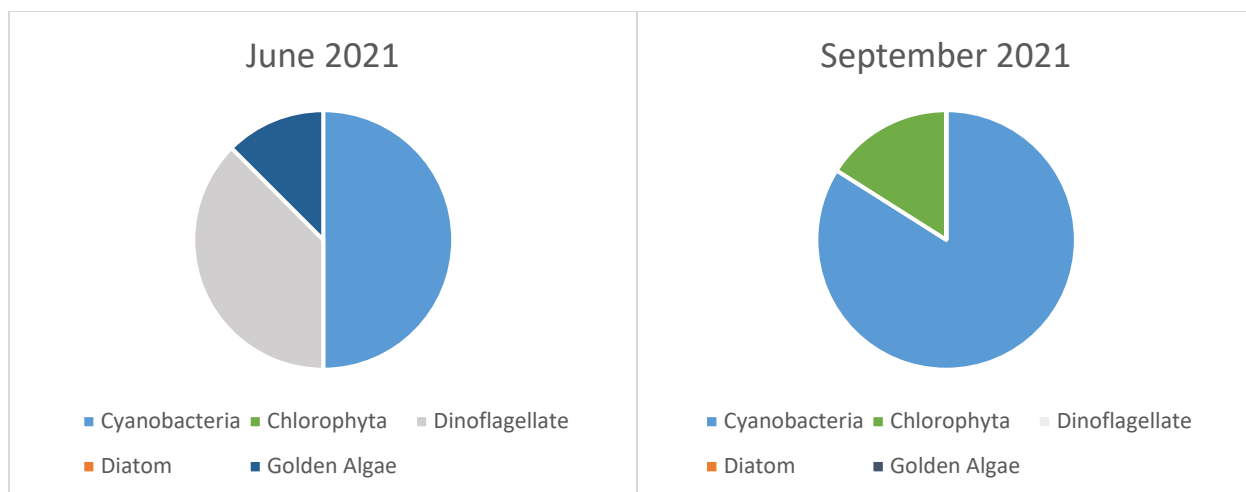


Figure 22. Phytoplankton community as relative percentage from June and August 2021 in Pomerleau Lake.

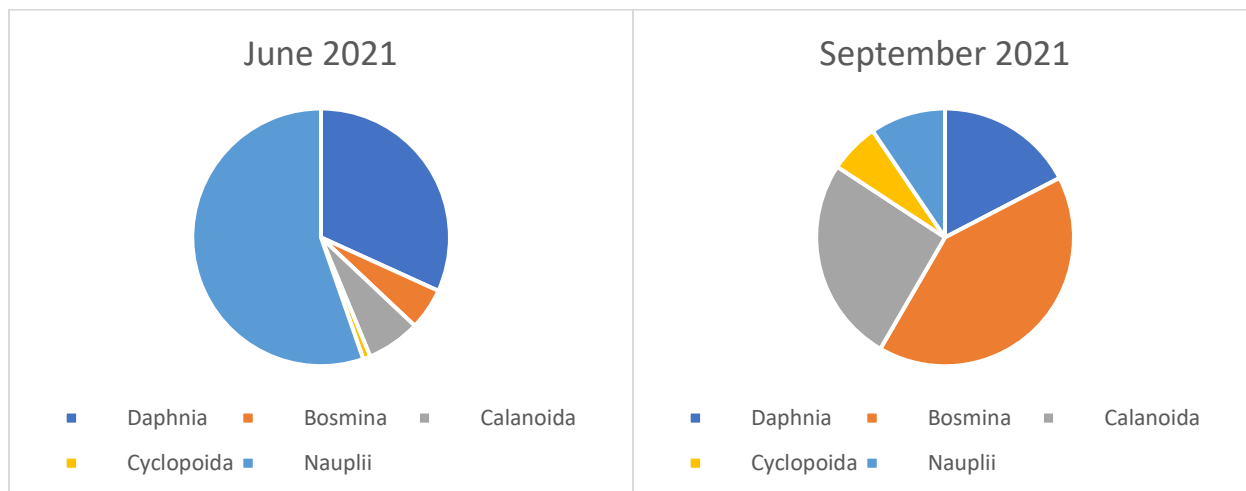


Figure 23. Zooplankton community as relative percentage from June and August 2021 in Pomerleau Lake.

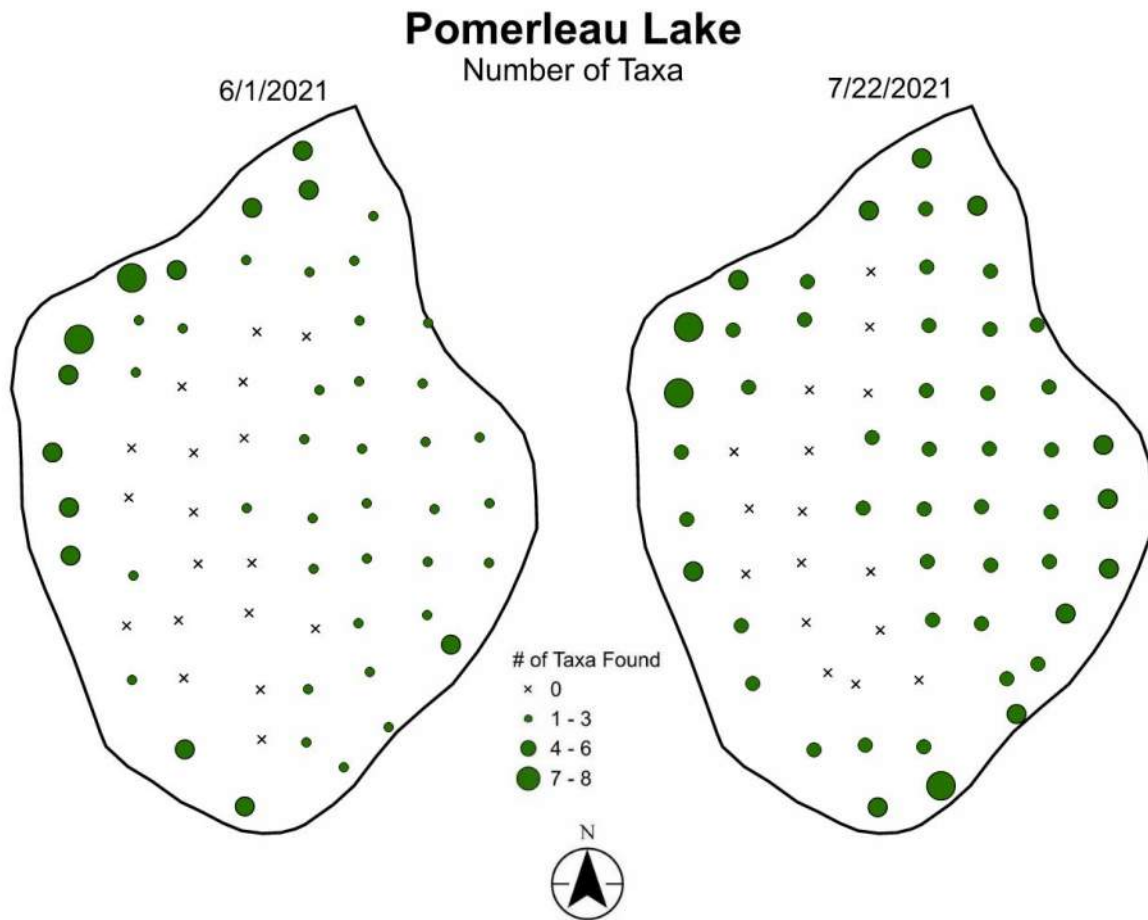


Figure 24. Submersed aquatic vegetation (SAV) showing number of taxa found at each location in Pomerleau Lake during the early and late summer surveys.

Crystal Lake

Crystal Lake is a deep lake in Robbinsdale. Water quality in the lake was sampled biweekly from June through September 2021. A mid-summer SAV survey was completed on the lake in 2021. The phytoplankton and zooplankton communities were sampled in early summer and late summer.

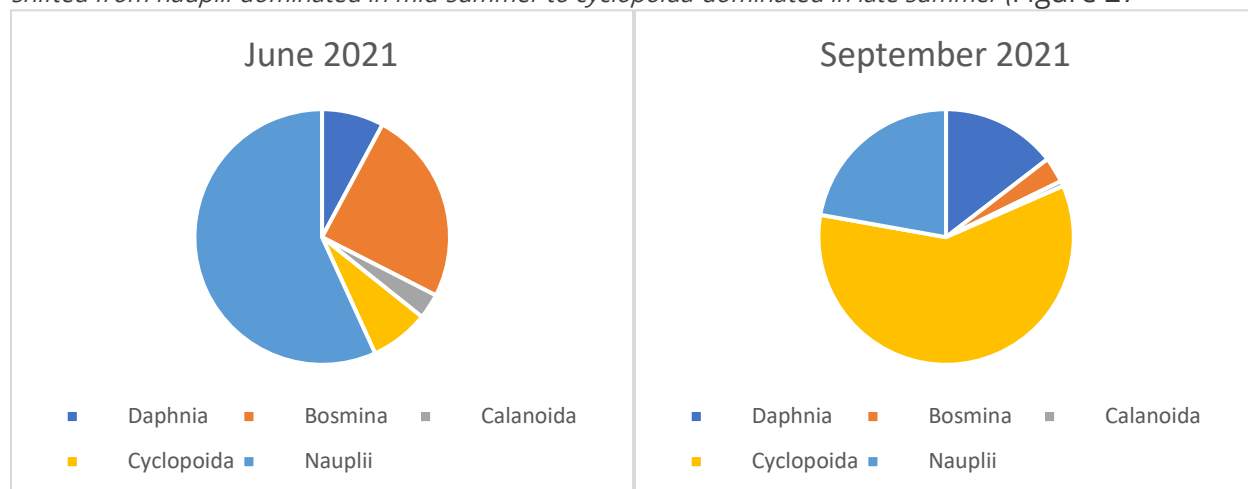
Crystal Lake is impaired for nutrients and is undergoing active management by the Commission. Over 3,000 common carp were removed from the lake in June and July 2021, and the lake received its first alum treatment in September 2021 to reduce internal phosphorus loading. The second alum treatment will be applied in late summer or fall 2022.



Crystal Lake, Crystal MN.

Surface TP exceeded the deep lake eutrophication standard for many of the sampling dates in 2021 and reached peak values in September (Figure 25). Chlorophyll-a concentrations exceeded the standard during all monitoring events. Secchi depth varied over the summer and did not meet the eutrophication standards for any monitoring event. TP samples taken from the hypolimnion show high concentrations, indicating internal loading from lake sediments during anoxic conditions. See Appendix D for historic and hypolimnion data.

An analysis of the phytoplankton in Crystal Lake showed an early summer community dominated by cyanobacteria and a late summer community made up completely of cyanobacteria (Figure 26). Concentrations of cyanobacteria in late summer were very high and indicate the likelihood of a HAB. The zooplankton community shifted from nauplii-dominated in mid-summer to cyclopoida-dominated in late summer (Figure 27



).

A mid-summer aquatic vegetation survey was performed on Crystal Lake in July 2021. As in 2020, only two species were observed during the survey: curly-leaf pondweed and white waterlily. Both species were found in very low abundance (Figure 28). The Crystal Lake vegetation community is in poor condition. Increased water clarity from the 2021 alum treatment and reduced foraging by common carp will support increased vegetation growth in the lake.

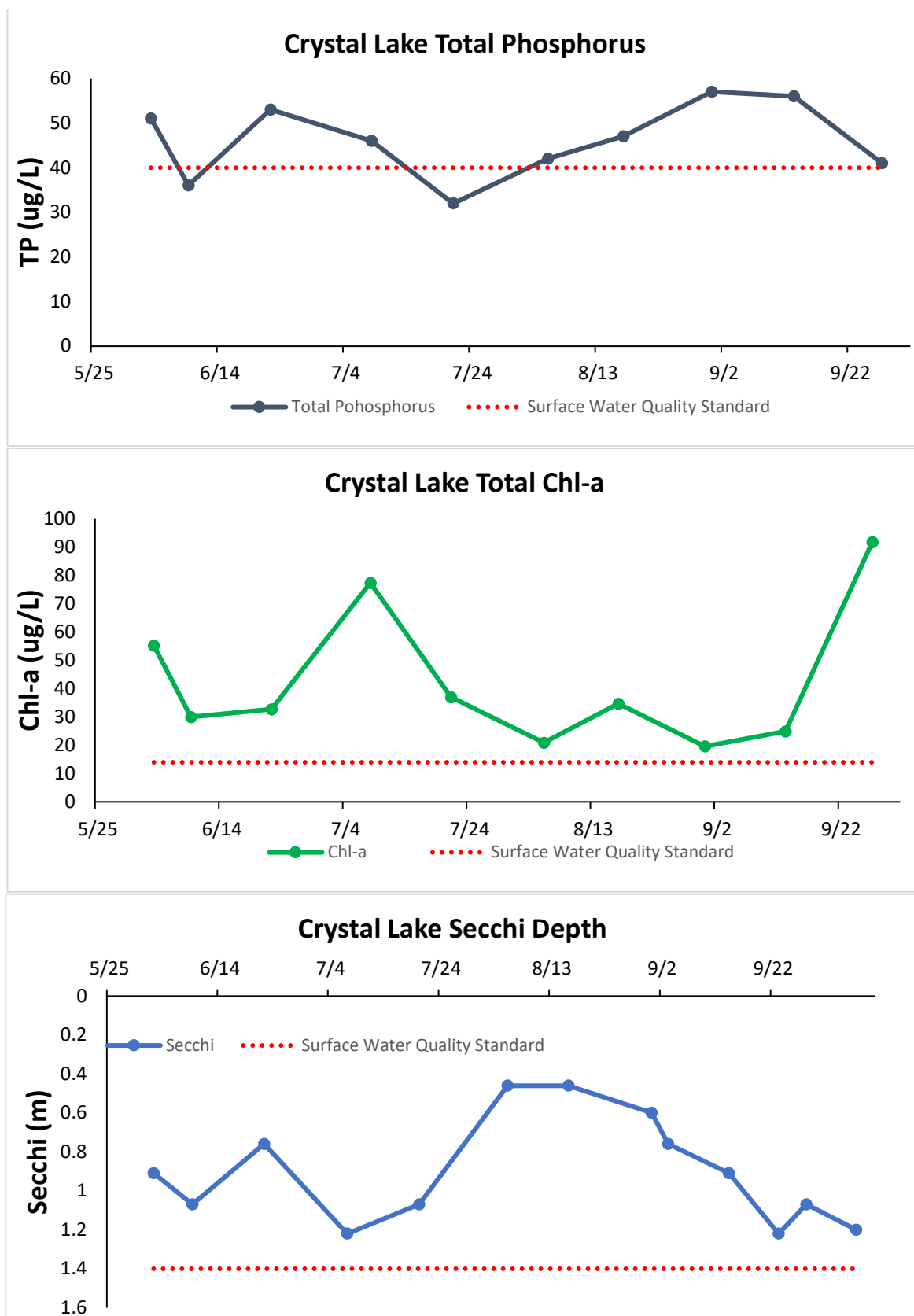


Figure 25. Water quality parameters in Crystal Lake during the 2021 monitoring season.

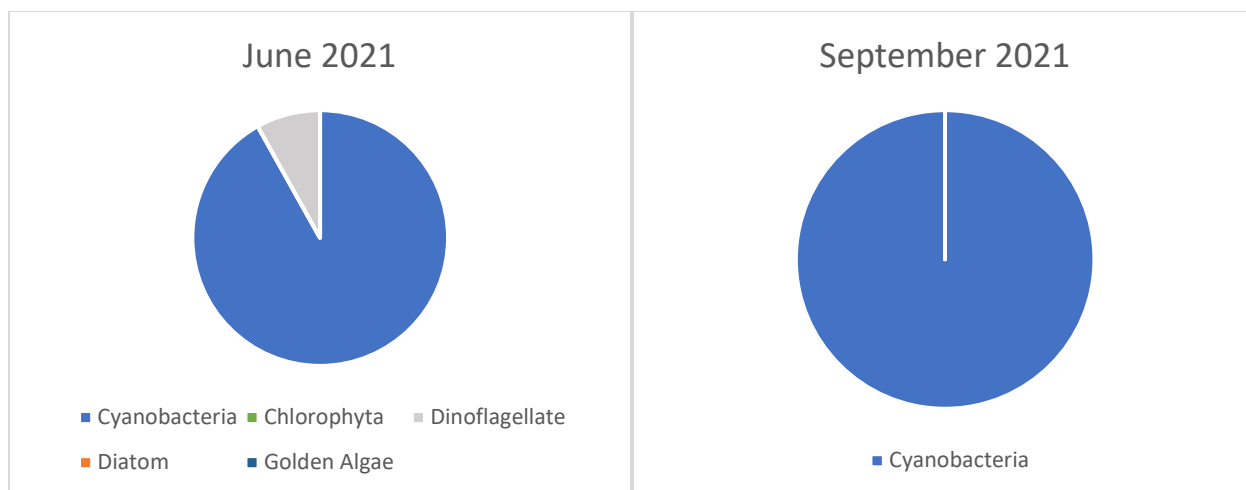


Figure 26. Phytoplankton community as relative percentage from June and September 2021 in Crystal Lake.

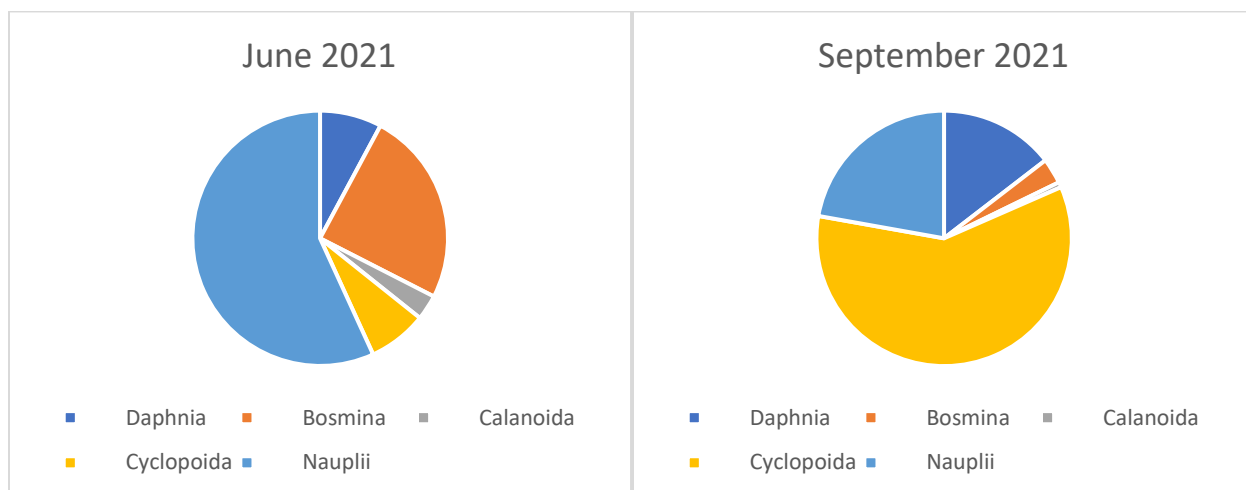


Figure 27. Zooplankton community as relative percentage from June and September 2021 in Crystal Lake.

Crystal Lake

Number of Taxa

7/21/2021

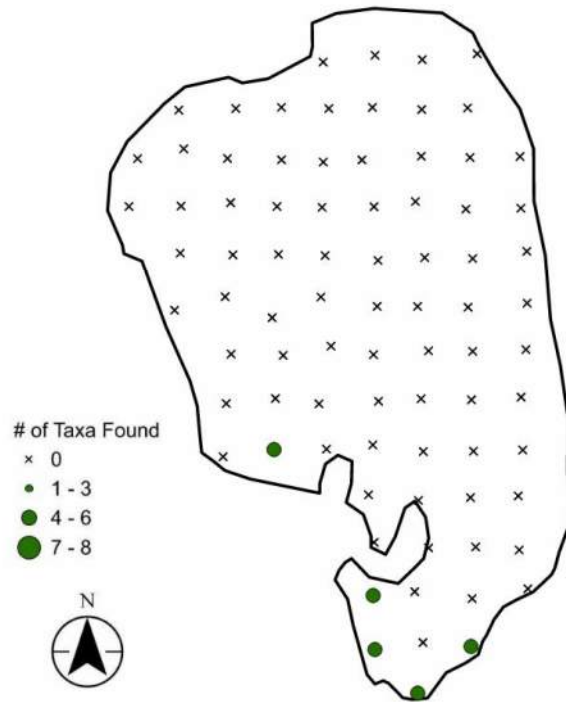


Figure 28. Submersed aquatic vegetation (SAV) showing number of taxa found at each location in Crystal Lake during the mid-summer survey.

Moving Forward



Routine and storm monitoring will continue on Bass and Shingle Creeks in 2022. The 65th Ave outfall and the Environmental Preserve discharge channel in West Mississippi will also be monitored by the Commission.

Lake Magda and Schmidt Lake will undergo routine lake monitoring in 2022. Early and late summer SAV surveys will be done on both lakes, and a fish survey is planned for Lake Magda. Phytoplankton and zooplankton community monitoring will continue. As part of ongoing active management projects, Crystal Lake will be monitored for water quality, SAV, and phytoplankton and zooplankton. Curly-leaf pondweed management is planned for Bass Lake. Crystal Lake will receive the second of two planned alum applications in September and active carp management will continue. Volunteer monitoring through the CAMP program will occur on Upper, Middle, and Lower Twin Lakes and Bass Lake.

Active management of Meadow Lake began in November 2021 with a water level drawdown to consolidate the sediments and significantly reduce or eliminate invasive vegetation and fathead minnows that degrade water quality and clarity. Meadow Lake will be monitored for water quality, SAV, phytoplankton and zooplankton, fish community, and sediment chemistry to assess the impacts of the drawdown.

To: Shingle Creek/West Mississippi WMO Commissioners

From: Todd Shoemaker, P.E.
Diane Spector

Date: April 8, 2022

Subject: WMWA Annual Report

**Recommended
Commission Action**

Accept the report and forward to the member cities for their use.

The West Metro Water Alliance (WMWA) is a consortium of four watershed organizations in Hennepin County – Shingle Creek and West Mississippi, Elm Creek, and Bassett Creek. The loose group meets monthly to undertake joint education and outreach efforts across western Hennepin County. Other cities and WMOs participate occasionally.

Attached is the WMWA Annual Report of activities in 2021, which was a light year due to the ongoing pandemic. Cities may use information in this report as part of their NPDES permit annual reporting on education and outreach efforts.



WEST METRO WATER ALLIANCE

2021 ANNUAL REPORT

BACKGROUND

In 2006 the Shingle Creek and West Mississippi Watershed Management Commission's Education and Public Outreach Committee (EPOC) invited the Education Committee of the Bassett Creek Watershed Management Commission to partner in developing joint education and outreach activities. Since that time this voluntary partnership has grown to include the Elm Creek Watershed Management Commission, the Three Rivers Park District, Hennepin County Department of Environment and Energy, and the Freshwater Society. The WMOs are designated as "members," the latter three organizations as "partners."

This alliance, the West Metro Water Alliance (WMWA), grew from a recognition that the individual organizations have many common education and public outreach goals and messages that could be more efficiently and effectively addressed and delivered collaboratively and on a wider scale.

MEETINGS

WMWA meets monthly, as needed, on the second Tuesday, virtually via Zoom. Member representatives include Laura Jester, Bassett Creek WMC Administrator; Doug Baines, Commissioner, Elm Creek WMC; Nico Cantarero, Stantec, Dayton, Elm Creek WMC; Marta Roser, Robbinsdale, Shingle Creek WMC. and Ben Scharenbroich and Amy Riegel, Plymouth, Shingle Creek, Bassett Creek and Elm Creek WMCs. Other attendees include Sharon Meister, Watershed PREP Educator; Diane Spector, Stantec/Wenck Associates, serves as technical support for WMWA, and Amy Juntunen, JASS, serves as administrative support. In 2021 eleven meetings were held. All WMWA member Commissioners and city staff are welcome to attend meetings.

THE WMWA PROGRAM

Goals of the WMWA program are to:

- Inform the public about the watershed organizations and their programs.
- Provide useful information to the public on priority topics.
- Engage the public and encourage positive, water-friendly behaviors.
- Help member cities meet MS4 permit requirements regarding education.

Three informational pieces have been developed by WMWA to support these goals. The *10 Things You Can Do* Brochure targets the general public. The brochure is distributed at all venues where the Commissions or member cities have a presence and also in the Watershed PREP classrooms. It is also available on the websites of the WMO member cities. In 2019 the *10 Things* brochure was updated and reprinted in partnership with Hennepin County.

The *Maintain Your Property the Watershed Friendly Way* handbook targets small businesses, multi-family housing properties, and common interest communities such as homeowners' associations. It contains tips for specifying and hiring turf and snow maintenance contractors, and includes checklists for BMP inspections.

The *Residential Snow and Ice Care* brochure is an educational piece designed to inform citizens of the chloride pollution problem and ways to reduce salt use. The *Commercial Snow and Ice* brochure is designed to inform HOAs, property managers and commercial applicators of the chloride pollution problem and ways to reduce salt use.

In 2021 WMWA began development of three new flyers to address MS4 permit education needs on the topics of Pet Waste, Water Softener Chlorides, and Deicer Chlorides. These flyers will be completed in 2022 and provided to member cities for distribution and addition to website/social media.

WATERSHED PREP AND COMMUNITY EVENTS

Watershed PREP is a program of WMWA and stands for Protection, Restoration, Education, and Prevention. 2021 was the ninth year of the program. Two contract educators with science education backgrounds are shared between the member watersheds. The focus of the program is two-fold - to present water resource-based classes to fourth grade students and to provide education and outreach to citizens, lake associations, other civic organizations, youth groups, etc. Goals of the program are 1) to have audiences gain a general understanding of watersheds, water resources and the organizations that manage them, and 2) to have audiences understand the connection between actions and water quality and water quantity. The ultimate goal is to make this program available to all fourth graders in the four WMWA watersheds and to other schools as contracted.

Fourth Grade Program. Three individual lessons meeting State education standards have been developed. **Lesson 1, What is a Watershed and Why do We Care?**, provides an overview of the watershed concept and is specific to each school's watershed. It describes threats to the watershed. **Lesson 2, Water Cycle - More than 2-dimensional!**, describes the movement and status of water as it travels through the water cycle. **Lesson 3, Stormwater Walk**, investigates movement of surface water on school grounds.



In 2021, due to COVID, only one classroom presentation was given in the fall. More classes have been scheduled for spring 2022.

Educators created a video of the presentation in 2020 for parents and teachers to use.

Due to COVID there were no community outreach events staffed by educators in 2021.

In 2021, Educator Sharon Meister tendered her resignation. Staff analyzed the hours dedicated to the project by past Educators and created a new Professional Services Agreement. In November 2021, Jessica Sahu Teli was contracted as the new Watershed PREP Educator. Sahu Teli is a wetland scientist and educator with a B.S. in aquatic biology/limnology and is currently pursuing her Masters of Environmental Science degree.

UPDATED WORK PLAN

In 2021 the WMWA Work Plan was updated to reflect current practices. The updated Work Plan included the following major revisions:

1. Added an equity statement affirming the group's commitment to environmental justice for all and outreach to historically underrepresented groups.
2. Revised the general educational goals for non-single family property owners and managers to focus solely on providing information and guidance on appropriate BMPs.

3. Removed educational goals for developers as cities were seen as being the most appropriate points of contact with these stakeholders.
4. Removed educational goals for training city staff, as those are the responsibility of the cities.
5. Removed educational goals for agricultural property owners and operators as Hennepin County staff have taken on that role acting as the County Soil and Water Conservation District.
6. Added a key educational goal for all the stakeholders to “understand the relationship between climate and water quality and water quantity.”
7. Revised the plan to replace references to the Hennepin County website with the WMWA website.
8. Eliminated Measuring and Monitoring Public Awareness as a major task. One of WMWA’s first activities was sponsoring a professional opinion poll in the four watersheds regarding knowledge and behaviors. WMWA does not expect to repeat that poll due to cost but will build measuring and evaluating into individual activities.
9. Strengthened the Communication and Information Sharing activity to incorporate the website and social media.
10. Eliminated the Develop and Coordinate Regional or Countywide Activities task. Early on WMWA had sponsored a series of workshops for broader participation but found it to be an inefficient use of time and resources. The group will focus on spreading information about existing activities sponsored by other groups.

WMWA’s 2020 and 2021 budgets reflect these activities and were approved by the members on January 8, 2019 and January 14, 2020, respectively. The budgets are included in this report as *Appendix C*.

SPECIAL PROJECT

In November 2020, Minnesota Pollution Control Agency approved the new 2020 MS4 general permit. WMWA member cities must apply for the new permit by April 15, 2021. Included in the new permit are several education requirements.

The 2021 Special Project was dedicated to helping member cities meet the new MS4 permit education requirements. The new permit requires cities to distribute educational materials or equivalent outreach to stakeholders at least once per year regarding the impacts of deicing salt and pet waste on surface waters and ways to reduce these impacts.

In 2021 WMWA Special Project funds were approved for the creation of three one-page flyers to address pet waste, deicing chlorides, and water softener chlorides, as well as associated landing pages with further information on the WMWA website. Participating members created the content and hired Taurus Moon Graphic Design to complete the flyer design. The three flyers will be completed and available to member cities in early 2022.

WMWA COORDINATOR POSITION

In the fourth quarter of 2019, members re-evaluated spending on the current Special Project. Looking forward to the needs of 2020 and the future, members voted to use Special Project funding for 2020 to hire a WMWA Coordinator as members did not have enough time to dedicate to certain upcoming projects, such as a survey to inform the update of the Work Plan, planned for 2020. An applicant was hired for the position beginning January 1, 2020.

Due to difficulties with COVID, the applicant was unable to start the position in 2020. The new Educator may be able to take on some of the responsibilities this position was created for in 2022.

RESILIENT YARD WORKSHOPS

Due to COVID, Workshops were not held in-person. Metro Blooms did create an online webinar format of the workshop. WMWA did not sponsor workshops in 2021, though they are available to member cities through Metro Blooms directly.

WINTER MAINTENANCE TRAINING

In 2021, Winter Maintenance Training workshops were hosted via webinar by Plymouth on October 27 for the road applicator training and November 5 for the parking lot and sidewalk training, with about 60 attendees at each training. Attendees learned how to adjust the use of salt de-icing products to be effective without overuse

WMWA WEBSITE

The WMWA website www.westmetrowateralliance.org serves as a repository for documents and information for access by member cities and citizens, lists local events WMWA is participating in and/or otherwise promoting, stores Watershed PREP information for schools, and collects information for the *Pledge to Plant* campaign and newsletter subscriptions.

The website had 689 unique visitors engaged in 786 individual sessions with an average of 1.14 pages viewed per session for a total of 1,092 page views on the website in 2021. The website metrics can be found in Appendix B

2021 MARKETING ACTIVITY

In May 2016 WMWA created a social media campaign for the Pledge to Plant campaign and WMWA in general on Facebook and Twitter. As of December 31, 2020, the WMWA Twitter page had been discontinued. As of December 31, 2021, the Facebook page had 204 followers and 258 posts resulting in 3,109 engagements and 287 shares.

To learn more about WMWA, contact:

*Diane Spector, Stantec, 763.252-6880, diane.spector@stantec.com
or Amy Juntunen, JASS, 763.553.1144, amy@jass.biz*

APPENDIX

APPENDIX A – WATERSHED PREP / EDUCATOR ACTIVITY

Table 1. 2021 schools and students participating in Lesson 1: What is a Watershed?

	Date	School	School District	City	Watershed	Classes	Students
1	10/26	Rice Lake	Osseo	Maple Grove	Elm	4	80
Total:						4	80

Educators created a video of the presentation in 2020 for parents and teachers to use in distance learning during COVID. The video can be found on YouTube at <https://www.youtube.com/watch?v=bq4zKMfc-pQ&t=763s>. The video had 222 views as of December 31, 2021

Watershed PREP

Lesson 1: What is a Watershed and Why Do We Care?

Lesson 2: Project WET, The Incredible Journey

Year	Lesson 1 Classes	Lesson 1 Students	Lesson 2 Classes	Lesson 2 Students
2013	35	870	9	230
2014	73	1875	5	160
2015	118	3106	27	859
2016	107	2850	20	524
2017	125	3358	38	1072
2018	143	3593	69	1755
2019	103	2681	58	1516
2020	20	572	10	256
2021	4	80	0	0
Total	728	18985	236	6372

APPENDIX B – WEBSITE/SOCIAL MEDIA ACTIVITY

Likes grew in 2021 to a total of 172 likes and 204 followers. In 2021 there were 188 posts resulting in 3,109 engagements and 287 shares. The maximum post reach was 83 and maximum post engagements was 47.

APPENDIX C – BUDGET

	2019	2020				2021				2022
	Balance	Budget	Revenue	Expense	Balance	Budget	Revenue	Expense	Balance	Budget
Admin/Tech Services Routine tasks, website, social media, meetings, etc	\$401	\$12,000	\$12,000	\$7,647	\$4,754	\$12,000	\$12,000	\$9,299	\$7,455	\$12,000
Special Projects	\$9,199	8,000	4,000	2,482	10,717	8,000	4,000	0	14,717	8,000
Watershed Prep	\$4,964	16,000	8,000	3,214	9,750	16,000	4,000	315	13,435	16,000
Resilient Yards Metro Blooms workshops		<i>Billed directly to cities</i>				<i>Billed directly to cities</i>				
TOTAL	\$14,564	\$42,000	\$24,000	\$13,343	\$25,221	\$36,000	\$20,000	\$9,614	\$35,607	\$36,000

To: Shingle Creek/West Mississippi WMO Commissioners

From: Todd Shoemaker, PE
Erik Megow, PE
Diane Spector

Date: April 8, 2022

Subject: March 2022 Staff Report

Recommended Commission Action
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For discussion and information.

General Updates

Watershed Boundary Adjustments. Staff has been contacted by a Plymouth resident who requests adjustment of the Shingle Creek / Basset Creek legal boundary. Staff will discuss with City of Plymouth staff and Troy Gilchrist to determine the merit of addressing this individual property in 2022 or this and potentially other boundary adjustments in 2023 with the 4th Generation Watershed Management Plan.

Future Projects. Staff has engaged in some initial conversations with city staff regarding possible future projects (see figures):

Minneapolis/MPRB. Staff continue to work with MPRB staff exploring the possibility of retrofitting the Humboldt Avenue pond in Creekview Park with a pumped iron-enhanced sand filter (IESF).

Bass Creek in Brooklyn Park/New Hope. Staff were contacted by a resident living on Bass Creek in New Hope that cattails were beginning to encroach on the channel, expressing concern the cattails might inhibit flow in the creek. Staff have been in discussion with the cities about a potential future channel stabilization project on this reach between TH 169 and Cherokee Dr.

Project Updates

Crystal Lake Management Plan. Working through the final revisions to the professional services agreement with WSB to perform the carp removal work.

Bass and Pomerleau Lakes Management Plan. We expect to hear from the DNR as to whether the Commission's grant application to fund native plan translocation was approved.

Meadow Lake Management Plan. The lake has started refilling from snowmelt and spring rains. CCX media did a short story on the project at [Meadow Lake Almost Full Again After Winter Drawdown - CCX Media](#).

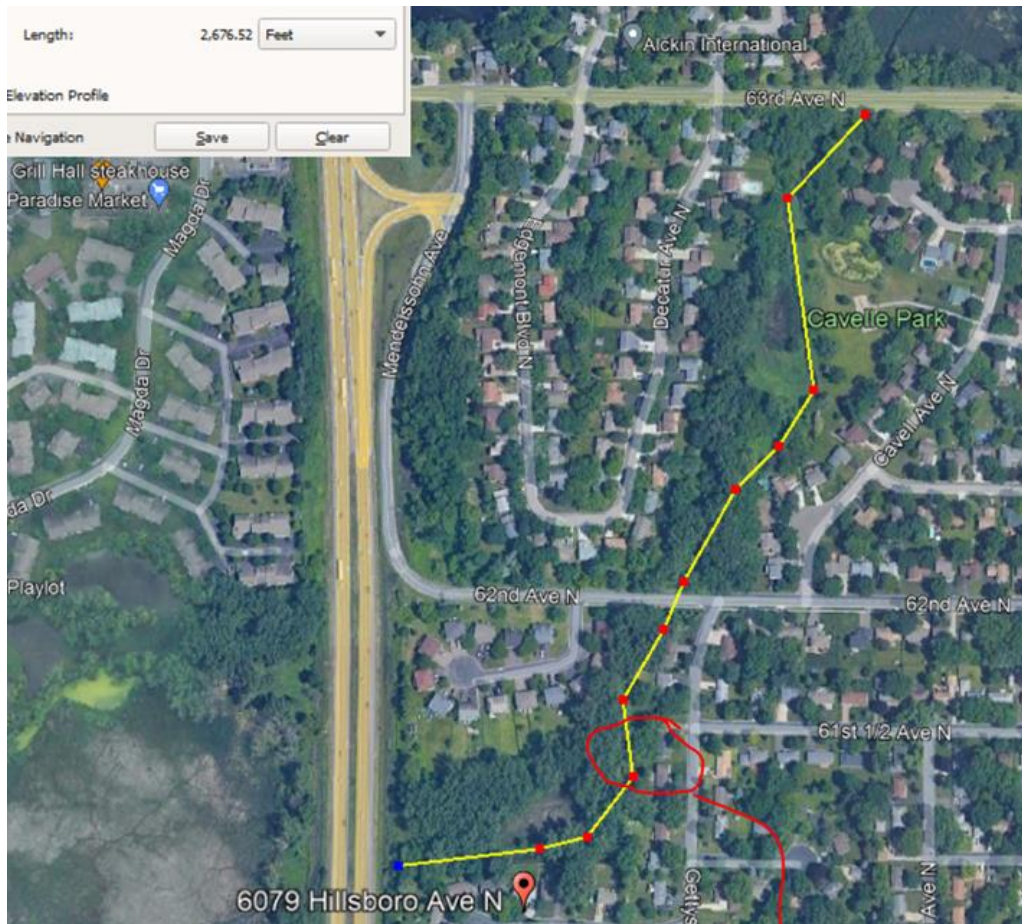
Connections II and Bass Creek Restoration Projects. Most of the major construction work is complete, awaiting restoration work later this spring.

Palmer Creek Estates Channel Restoration. Staff is finalizing a professional services proposal to the City of Plymouth and the contract will be executed and work begin in April, on track for late fall/winter construction.

SRP Extension Project. This project is temporarily on hold as the City of Crystal continues to work with MAC to obtain permission to construct the project on MAC property.

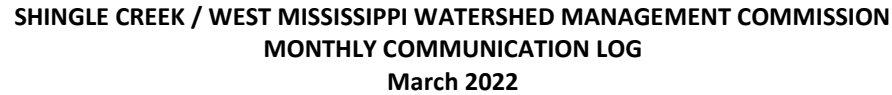


Humboldt Pond in Minneapolis, 49th and Humboldt Avenues N.



(Above) Bass Creek between TH 169 and Cherokee Dr. Circled area is a retaining wall failure.
 Below) Looking upstream towards TH 169 near 6079 Hillsboro Dr at encroaching cattails





1 page 121

Presiding Officer Statement to Return to In-Person Meetings

As the Presiding Officer for the Shingle Creek Watershed Management Commission and the West Mississippi Watershed Management Commission (collectively, the “Commissions”), I find as follows:

- a. The COVID-19 pandemic has necessitated the Commissions to conduct electronic meetings pursuant to Minnesota Statutes, section 13D.021 for most of the last two years.
- b. The Commissions did return to in-person meetings for a short time, but I issued a new statement to return to electronic meetings effective September 5, 2021 due to the rapid spread of a new variant in the on-going health pandemic.
- c. Given the sharp decline in the number of cases and the CDC having relaxed or removed its masking, social distancing, and related protective recommendations, it is possible for the Commissions to return to in-person meetings.
- d. I will continue to monitor the health pandemic and will issue a statement to return to electronic meetings if that becomes necessary.

Based on the above findings, I hereby determine and state as follows:

1. Effective as of 12:01 a.m. on April 1, 2022, meetings of the Commissions and the Technical Advisory Committee shall return to in-person meetings conducted in accordance with the Minnesota Open Meeting Law.
2. The previous statement directing meetings to be conducted by electronic means is rescinded effective as of 12:01 a.m. on April 1, 2022.

Dated this 31st day of March 2022.



Andy Polzin, Chair